Golden Valley Electric Association, Inc.
Healy Power Plant

GOLDEN VALLEY ELECTRIC ASSOCIATION, INC.
HEALY POWER PLANT
2.5 Mile Healy Spur Road
Healy, AK 99707

This document has been prepared by SLR International Corporation. The material and data in this report were prepared under the supervision and direction of the undersigned.

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# ACRONYMS

°F  degrees Fahrenheit  
AAC  Alaska Administrative Code  
ADEC  Alaska Department of Environmental Conservation  
ADNR  Alaska Department of Natural Resources  
ANOVA  analysis of variance  
brgs  below ground surface  
CCR  coal combustion residuals  
CFR  Code of Federal Regulations  
Cm/s  centimeters per second  
COC  chain of custody  
DOE  U.S. Department of Energy  
EPA  U.S. Environmental Protection Agency  
GMCA  Groundwater Monitoring and Corrective Action  
GWPS  groundwater protection standard  
GVEA  Golden Valley Electric Association, Inc.  
HCCP  Healy Clean Coal Project  
KW  Kruskal-Wallis  
LOD  limit of detection  
LOQ  limit of quantitation  
MCL  maximum contaminant level  
NAD 83  North American Datum of 1983  
NAVD 88  North American Vertical Datum of 1988  
PVC  polyvinyl chloride  
mg/L  milligrams per liter  
RCRA  Resource Conservation and Recovery Act  
SGS  SGS North America, Inc.  
SLR  SLR International Corporation  
TDS  total dissolved solids  
TOC  top of casing  
USGS  U.S. Geological Survey  
USPLS  U.S. Public Land Survey  
WELTS  Well Log Tracking System
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WSR</td>
<td>Wicoxon Signed Rank</td>
</tr>
<tr>
<td>WIIN Act</td>
<td>Water Infrastructure and Improvements for the Nation Act</td>
</tr>
</tbody>
</table>
1. INTRODUCTION

This document is the initial annual Groundwater Monitoring and Corrective Action (GMCA) Report for the four coal combustion residuals (CCR\(^1\)) units at the Golden Valley Electric Association, Inc. (GVEA) Healy Power Plant (Healy Power Plant) in Healy, Alaska (Figure 1). On behalf of GVEA, SLR International Corporation (SLR) has developed this GMCA Report consistent with the requirements described in U.S. Environmental Protection Agency’s (EPA’s) CCR Rule\(^2\) under Subtitle D of the Resource Conservation and Recovery Act (RCRA).

This document was prepared by Ms. Heather Simon a registered Environmental Engineer in the State of Alaska and Amanda Baily a risk assessment scientist, both of SLR, and includes:

- Site background and setting;
- Monitoring well installation activities;
- Groundwater monitoring activities;
- Statistical analysis of monitoring data;
- Summary of results and findings;
- Corrective measures; and
- Future tasks and schedule.

1.1 PURPOSE

The purpose of the GMCA Report is to document the eight groundwater monitoring events performed between April 2016 and October 2017 to comply with the CCR requirements at the Healy Power Plant. The groundwater monitoring activities focused on the following project objectives:

- Establish a groundwater monitoring system/network;
- Characterize site hydrogeology;
- Establish groundwater background levels; and
- Establish groundwater protection standards (GWPS).

\(^1\) CCR is defined under the CCR Rule as fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers.

\(^2\) Title 40 of the Code of Federal Regulations Parts 257 and 261 (40 CFR 257 and 261) dated April 17, 2015
2. SITE BACKGROUND AND SETTING

2.1 SITE DESCRIPTION AND SITE HISTORY

The Healy Power Plant is comprised of two pulverized coal-fired steam generators: Unit 1 and Unit 2 [formerly Healy Clean Coal Project (HCCP)], as shown on Figure 2. Unit 1 is a 25 megawatt station that has been in operation since 1967. Unit 2 is a 54 megawatt station that began burning coal in January 1998, but was placed in warm lay-up status in 2000 until it came online again in May 2015. Unit 2 is expected to be in commercial operation in 2018. Each station has a different coal ash handling system.

Prior to 1990’s, Unit 1 produced coal ash was handled utilizing settling ponds which were located between the Nenana River and Unit 1 building (Figure 2), and eventually were decommissioned for construction of Unit 2 generation station.

The existing coal ash handling system for Unit 1 consists of a primary settling pond, a recirculating pond, an emergency overflow pond, and a drying area. These ponds were constructed in 1990’s. The primary settling pond (Ash Pond) receives sluiced coal ash (i.e., bottom ash, slag and fly ash, and the desulfurization materials) directly from Unit 1. The Recirculating Pond receives water from the Ash Pond to capture the excess water from the coal ash for recycling through the plant. The Emergency Overflow Pond is connected to the Recirculating Pond by a culvert to prevent both the Ash Pond and Recirculating Pond from overfilling. All three ponds are unlined to facilitate dewatering of the sluiced coal ash, which allows the wastewater³ to infiltrate into the ground and/or evaporate. In general, once per week, the settled ash is dredged from the Ash Pond and placed in the Ash Drying Area (defined as CCR landfill per CCR Rule) where excess water drains and evaporates prior to transport and disposal at Usibelli Coal Mine, located approximately four miles north from the facility (Figure 1).

For Unit 2, a dry handling process is used to manage the generated coal ash. Bottom/slag ash accumulates in a water-filled tank and is removed by a slag drag chain system and transferred to an intermediate storage silo. Fly ash is collected using a baghouse and transferred to a separate intermediate storage silo. For disposal, the fly ash is fed through a pugmill where water is added to the ash to minimize fugitive dust, the wetted fly ash and the bottom/slag ash materials are loaded directly into trucks in an enclosed bay for transport and disposal at the Usibelli Coal Mine.

2.2 PHYSICAL SETTING

Healy Power Plant is an electric power generating facility. It is located in a rural setting on approximately 65 acres of land along the eastern bank of the Nenana River where the Healy Spur Road crosses the Nenana River in Healy, Alaska (Latitude: 63° 51' 30" Longitude: 148° 56' 45"; SW ¼ SW ¼ Section 21, T 12S, R 7W, Fairbanks Meridian). The main access road to the facility is approximately 550 feet east of the Nenana River along the Healy Spur Road (Figure

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³ Wastewater discharged from the ponds is authorized under State of Alaska Wastewater Discharge Permit No. 2002-DB0016 that is currently administratively extended.
2). The Healy Power Plant is located in the Healy Creek-Nenana River drainage basin, approximately 0.5 mile north from the confluence of the Nenana River and Healy Creek.

2.2.1 GEOLOGY

The information provided below is based on previous investigations, and it includes results from soil borings and groundwater monitoring wells.

The Healy Power Plant is located on a terrace of glacial outwash sands and gravels. The terrace deposits are underlain at a depth between 10 to 22 feet below ground surface (bgs) by poorly consolidated formations consisting of medium dense to very dense sand and gravel with some very stiff clay. Up to 14 feet of fill consisting of ash, sand, gravel, and construction debris have been placed over terrace deposits since Unit 1 was constructed in 1967.

The Healy Power Plant bedrock geology is comprised of three rock types: unconsolidated glacial outwash and alluvial deposits (Pleistocene and Holocene); poorly consolidated conglomerate, sandstone, siltstone, shale, and coal (Miocene and Oligocene); and metamorphic bedrock (Paleozoic and Pre-Cambrian).

Nenana Gravel underlies alluvial deposits downriver (north) from the facility. Strata underlying the glacial outwash deposits dip steeply to the north. Nenana Gravel outcrops in the hills immediately to the northeast, but is not present under the power plant [U.S. Department of Energy (DOE), 1993].

2.2.2 HYDROGEOLOGY

The outwash and alluvial aquifer (shallow groundwater) consists of silty and gravelly sand. Infiltration of precipitation, snowmelt, floodwaters from the Nenana River and Healy Creek, and storm water basins recharge the glacial outwash and alluvial aquifer (DOE, 1993).

Based on previous investigations, the depth to groundwater at the site ranges from 5 to 17 feet bgs and the groundwater flow direction was inferred to be north-northwest towards the Nenana River. Prior to 2016, no hydraulic testing had been conducted at the site to determine site-specific hydraulic conductivity.

2.2.3 CLIMATE

The area is defined by a subarctic climate with very long bitterly cold winters and short, warm summers. Annual temperatures range between -53 to 93 degrees Fahrenheit (°F). Annual average precipitation is approximately 15 inches, with the majority falling between June and October (Western Regional Climate Center, 2016). The annual average snowfall is approximately 77 inches that occurs between September and May. Prevailing winds are observed to occur from south to north.
2.3 PREVIOUS SUBSURFACE INVESTIGATIONS

In 1964, a geotechnical subsurface investigation was performed to aid in the foundation and structural design of Unit 1 (Adams-Corthell-Lee-Wince and Associates, 1964). Six test holes were drilled, prior to construction of the Healy Power Plant. These test holes encountered groundwater at 5 to 9 feet bgs.

In 1990, field and laboratory studies were performed prior to construction of Unit 2 (Stone & Webster Engineering Corporation, 1991). Ten exploratory borings were drilled ranging in a total depth from approximately 25 to 50 feet bgs. Groundwater was encountered at 9 to 17 feet bgs. Two monitoring wells, MW-1 and MW-2 were installed (Figure 2). Depth to groundwater in September 1990 at both monitoring wells was approximately 10 feet bgs. In addition, eight test pits were dug at various locations. Seven of the test pits encountered coal ash ranging in thickness from of less than a foot to nine feet. In-situ field sand cone density tests to determine grain size were conducted at nine locations within seven of the eight test pits.

As part of the Environmental Impact Statement for the Proposed Healy Clean Coal Project (DOE, 1993), groundwater samples were collected at monitoring well MW-2 and the Unit 1 potable water supply well. Samples were collected at monthly and quarterly intervals to represent seasonal variations in water quality, and analyzed for a variety of water quality constituents and EPA priority pollutants.

In 1993, monitoring well MW-3 was installed to evaluate groundwater conditions between the Emergency Overflow Pond and the Nenana River (Figure 2). Since 1993, this well has been sampled semi-annually in accordance with State of Alaska Wastewater Discharge Permit No. 2002-DB0016.

2.3.1 MONITORING WELLS

Three monitoring wells, MW-1, MW-2, and MW-3, are shown on Figure 2. MW-1 and MW-3 consists of a 2-inch diameter polyvinyl chloride (PVC) casing and screen (14-foot and 10-foot long, respectively), and MW-2 consists of a 4-inch diameter PVC casing and screen (25-foot long). MW-1, MW-2 and MW-3 are approximately 18, 27 and 13 feet deep, respectively. Soil boring logs for the three monitoring wells are provided in Appendix A.

Samples collected at MW-2 in the early 1990s were analyzed for selected metals: barium, copper, iron, lithium, manganese, strontium, and zinc. Barium was detected at 2.5 milligrams per liter (mg/L), above its respective State of Alaska’s groundwater cleanup level of 2 mg/L [Title 18 of Alaska Administrative Code (AAC) Chapter 75 (18 AAC 75), Table C].

Groundwater samples have been collected from monitoring well MW-3 on a semi-annually basis since June 2008. The MW-3 groundwater samples were analyzed for hardness, pH, cadmium, chromium, lead, magnesium, mercury, selenium, silver and total dissolved solids. Concentrations of all constituents were below their respective State of Alaska’s groundwater cleanup level (18 AAC 75, Table C).
2.3.2 SUPPLY WELLS

There are four groundwater supply wells located at the facility that are used for Unit 1 and Unit 2 operational subsystems and to provide potable water. These wells are identified as Well #1 [(Unit 1 Well) drilled in 1967], Well #2 (HCCP Well drilled in 1993), Well #3 (drilled in 2014) and Well #4 (drilled in 2015). Groundwater from all four wells is drawn from the underlying Miocene and Oligocene strata at a depth of between 80 and 400 feet bgs. Well construction and/or soil boring logs for the four supply wells are provided in Appendix B. Location of the wells are shown on Figure 2.

It was observed that pumping at Well #2 caused the Well #1 pump to cavitate and as a result, GVEA is not currently using Well #1. In 2013 construction began on a selective catalytic reduction (SCR) system for NOx reduction on Unit 2 and a selective non-catalytic reduction (SNCR) system for NOx reduction on Unit 1, the operation of both require additional water. To meet this additional water demand, Well #3 and Well #4 were installed.

At Well #2, water is drawn from various depths in a sandstone aquifer (255 to 295 feet bgs, 370 to 380 feet bgs, and 390 to 430 feet bgs), and from claystone aquifer (470 and 490 feet bgs). This well is located in the basement of Unit 2 and is used for plant operations and potable/domestic use. GVEA has plans to not use Well #2 for potable/domestic use in the future, pending redesign and regulatory approval. The water yield at Well #2 is approximately 84 gallons per minute based on historical flow measurements.

At Well #3, water is drawn from a sandstone aquifer between 328 feet and 438 feet bgs (refer to Well #3 boring log in Appendix B). Water from Well #3 is conveyed from the well to the plant via underground piping. Inside the plant, aboveground piping conveys the water and is combined with water from Well #2 and used for Unit 1 plant operations and potable/domestic use. The well yield at Well #3 is approximately 20 gallons per minute based on the analysis of the pump test performed at the well in June 2015.

At Well #4, water is drawn from a sandstone aquifer at approximately 80 feet bgs (refer to Well 4 boring log in Appendix B). Water from Well #4 is conveyed from the well to the plant via underground piping. Inside the plant, aboveground piping conveys the water and is combined with water from Well #2 and used for Unit 2 plant operations. The well yield at Well #4 is approximately 80 gallons per minute based on the analysis of the pump test performed at the well in December 2015.

2.4 POTENTIAL SOURCE AREAS

The Unit 1 Ash Pond, Recirculating Pond, Emergency Overflow Pond, and Ash Drying Area are potential source areas, regulated under the CCR Rule.

Located to the west of Unit 1 and beneath Unit 2 is an unlined historical coal ash pond. Based on plant personnel knowledge, coal ash residuals were removed from the historical pond and surrounding areas within the Unit 2 building foundation footprint prior to construction, as shown on Figure 2. The historical pond is not regulated under the CCR Rule. Coal ash likely remains west and adjacent to Unit 2, but the quantity and extent are unknown. The remaining ash from
this historical pond is a potential source area for CCR contaminates of concern to the groundwater. Contaminates of concern in CCR are metals such as antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, nickel, selenium, silver, and thallium (40 CFR 257).

In 1999 a diesel emergency generator spilled used lube oil (estimated 375 gallons) from a broken supply line, at Unit 1. Ten cubic yards of contaminated soil were removed and a well point installed. An estimated 124 to 150 cubic yards of petroleum-contaminated soil remains under the building. As a result, the GVEA Healy Power Plant is listed as an Alaska Department of Environmental Conservation (ADEC) contaminated site (Hazard ID No. 3228) that has the status of cleanup complete with institutional controls.

2.5 GROUNDWATER RECEPTOR SURVEY

A groundwater supply well search was performed using Alaska Department of Natural Resources (ADNR) Well Log Tracking System (WELTS) to identify supply wells and usage within 0.5 mile and 1 mile radiuses from the CCR Units at the facility. A list of the water supply well search is presented in the table below.

<table>
<thead>
<tr>
<th>Well Name or Type</th>
<th>Location</th>
<th>USPLS Section</th>
<th>ADNR Well Log IDs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GVEA Healy Supply Wells</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well 1</td>
<td>Inside Unit 1</td>
<td>21</td>
<td>19591, 26032</td>
</tr>
<tr>
<td>Well 2</td>
<td>Inside Unit 2</td>
<td>20</td>
<td>26509</td>
</tr>
<tr>
<td>Excavation Well</td>
<td>Was 135 ft SW of Well 2</td>
<td>20</td>
<td>26510</td>
</tr>
<tr>
<td>Well 3</td>
<td>NW of Unit 2; next to MW-1R</td>
<td>20</td>
<td>38868, 40713, 45253</td>
</tr>
<tr>
<td>Well 4</td>
<td>S of Unit 1; near Recirc. pond</td>
<td>21</td>
<td>43433, 45273</td>
</tr>
<tr>
<td><strong>Off-site Private Supply Wells</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic</td>
<td>Upgradient; within 0.5 mile of plant</td>
<td>21</td>
<td>16</td>
</tr>
<tr>
<td>Domestic</td>
<td>Upgradient; within 0.5 mile of plant</td>
<td>21</td>
<td>8210</td>
</tr>
<tr>
<td>Domestic</td>
<td>Upgradient; within 0.5 mile of plant</td>
<td>21</td>
<td>13966</td>
</tr>
<tr>
<td>Domestic</td>
<td>Upgradient; within 0.5 mile of plant</td>
<td>21</td>
<td>28929</td>
</tr>
<tr>
<td>Domestic</td>
<td>Upgradient; within 0.5 mile of plant</td>
<td>21</td>
<td>29013</td>
</tr>
<tr>
<td>Commercial</td>
<td>Upgradient; at crusher plant</td>
<td>21</td>
<td>29286</td>
</tr>
<tr>
<td>Domestic</td>
<td>Upgradient; within 0.5 mile of plant</td>
<td>21</td>
<td>29598</td>
</tr>
<tr>
<td>Domestic</td>
<td>Upgradient; within 0.5 mile of plant</td>
<td>21</td>
<td>29652</td>
</tr>
<tr>
<td>Commercial</td>
<td>Upgradient; within 0.5 mile of plant</td>
<td>21</td>
<td>30055</td>
</tr>
</tbody>
</table>

Note: 1Section numbers corresponds to U.S. Public Land Survey (USPLS) Fairbanks Meridian, Township 12S, Range 7W.

As indicated previously in Section 2.3.2, there are four groundwater supply wells, Well #1 through Well #4, at the facility that are used for plant operational subsystems and

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4 [https://dnr.alaska.gov/welts/#show-welts-intro-template](https://dnr.alaska.gov/welts/#show-welts-intro-template)
potable/domestic supply. Little is known about the Excavation Well, which no longer exists at the facility. It is believed to have been installed in 1992, to have produced slight artesian flow, and to be located 135 feet southwest of Well #2 in an area that is now occupied by a flat gravel pad.

A total of nine private supply wells were identified off-site. The primary use for seven of these private wells is for domestic water supply. Two wells, Well Log IDs 29286 and 30055, were identified as being for commercial purposes. Based on the drill log lithology provided in the well record reports, the off-site private wells are screened at depths ranging from 50 to 180 feet in gravels and sands. Bedrock was only encountered in one boring at 160 feet bgs, as noted on Well Log ID 30055. Note the exact location of these nine off-site private wells is unknown due to the limited location data provided on the well logs. Wells logs for all nine off-site wells are provided in Appendix B.

The nine off-site private wells listed in the table above are located upgradient of the CCR units in Section 21 of USPLS Fairbanks Meridian, Township 12S, Range 7W. No supply wells were identified downgradient from the CCR units within one mile except for those located on the facility property. Although WELTS does list some wells in unspecified areas in Section 20, downgradient and within 1 mile of the CCR units, the exact locations are unknown due to the limited location data or appear to be outside the 1 mile radius based on the well logs. Review of recent aerial photographs of these areas did indicate infrastructure that appears to be used for commercial and not residential, which suggests the presence of a potential water supply well. (Figure B1 in Appendix B). These commercial well areas in Section 20 and the nine off-site well areas in Section 21 are shown on Figure B1 in Appendix B. The areas shown on Figure B1 are based on the presence of infrastructure and any description provided on the nine off-site well logs.
3. MONITORING WELL INSTALLATION ACTIVITIES

As demonstrated in the *Groundwater Monitoring System and Statistical Method Certification* (SLR, 2017), the groundwater monitoring system at Healy Power Plant was designed as a multiunit system as the CCR units operate concurrently and are located in close proximity to one another. Monitoring wells were installed in 2016 and 2017 to characterize groundwater flow direction and groundwater quality associated with the CCR units, and to establish groundwater background levels.

### 3.1 MONITORING WELL INSTALLATION

Seven new monitoring wells and one replacement well were installed at the Healy Power Plant. Five new wells (MW-4, MW-5, MW-6, MW-7, and MW-8) were installed in March 2016 and two additional new wells (MW-9 and MW-10) were installed in April 2017. These new wells were located within the property boundary as shown on Figure 2. A replacement well (MW-1R) was installed in March 2016, as the original MW-1 could not be located was assumed to be destroyed. All monitoring wells were installed consistent with the procedures described in Section 4.1 of the *Groundwater Monitoring Work Plan* (SLR, 2016). The rationale for installation of each monitoring well is provided in the table below:

<table>
<thead>
<tr>
<th>New Wells</th>
<th>Rationale for Installation</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-4</td>
<td>Monitor groundwater quality adjacent to the Ash Pond.</td>
</tr>
<tr>
<td>MW-5</td>
<td>Monitor groundwater quality downgradient to the Recirculating Pond and the Ash Pond.</td>
</tr>
<tr>
<td>MW-6</td>
<td>Monitor groundwater quality downgradient to the Overflow Emergency Pond.</td>
</tr>
<tr>
<td>MW-7</td>
<td>Monitor background groundwater quality and provide groundwater elevation control point relative to other wells in the monitoring network.</td>
</tr>
<tr>
<td>MW-8</td>
<td>Monitor background groundwater quality and provide groundwater elevation control point relative to other wells in the monitoring network.</td>
</tr>
<tr>
<td>MW-9</td>
<td>Evaluate groundwater quality between the Recirculating Pond and the former ash pond, and downgradient of the Ash Drying Area.</td>
</tr>
<tr>
<td>MW-10</td>
<td>Evaluate groundwater quality between the coal pile and most downgradient well, MW-1R, and to provide an additional groundwater elevation control point.</td>
</tr>
</tbody>
</table>

**Replacement Well**

| MW-1R   | Monitor groundwater quality downgradient to CCR units and provide groundwater elevation control point relative to other wells in the monitoring network. |

**Existing Wells**

| MW-2 | Monitor groundwater quality adjacent to the Ash Pond and provide groundwater elevation control point relative to other wells in the monitoring network. |
| MW-3 | Monitor groundwater quality downgradient to Overflow Emergency Pond and provide groundwater elevation control point relative to other wells in the monitoring network. |
All monitoring wells were constructed using a hollow-stem auger drill rig. The monitoring wells were constructed of 2-inch diameter Schedule 40 PVC with a 10-, 15-, or 20-foot screen depending on site conditions. The screens were installed so the water table intersects the top third or middle of the screen within the outwash and alluvial aquifer. Well construction details are summarized on the table below and on well construction logs provided in Appendix A.

<table>
<thead>
<tr>
<th>Well ID</th>
<th>Top Of Casing (TOC) Elevation (NAVD 88, feet)</th>
<th>Total Well Depth from TOC (feet)</th>
<th>Screen Length (feet)</th>
<th>Well Type</th>
<th>June 2017 Groundwater Elevation (NAVD 88, feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-1R</td>
<td>1278.79</td>
<td>27.7</td>
<td>15</td>
<td>2-inch PVC</td>
<td>1259.77</td>
</tr>
<tr>
<td>MW-2</td>
<td>1282.52</td>
<td>30.3</td>
<td>25</td>
<td>4-inch PVC</td>
<td>1271.94</td>
</tr>
<tr>
<td>MW-3</td>
<td>1270.56</td>
<td>16.2</td>
<td>10</td>
<td>2-inch PVC</td>
<td>1260.19</td>
</tr>
<tr>
<td>MW-4</td>
<td>1278.81</td>
<td>16.8</td>
<td>10</td>
<td>2-inch PVC</td>
<td>1269.04</td>
</tr>
<tr>
<td>MW-5</td>
<td>1282.35</td>
<td>27.6</td>
<td>20</td>
<td>2-inch PVC</td>
<td>1266.77</td>
</tr>
<tr>
<td>MW-6</td>
<td>1279.31</td>
<td>25.2</td>
<td>10</td>
<td>2-inch PVC</td>
<td>1265.23</td>
</tr>
<tr>
<td>MW-7</td>
<td>1301.60</td>
<td>20.2</td>
<td>15</td>
<td>2-inch PVC</td>
<td>1288.43</td>
</tr>
<tr>
<td>MW-8</td>
<td>1279.61</td>
<td>33.3</td>
<td>15</td>
<td>2-inch PVC</td>
<td>1254.81</td>
</tr>
<tr>
<td>MW-9</td>
<td>1280.43</td>
<td>22.9</td>
<td>15</td>
<td>2-inch PVC</td>
<td>1265.98</td>
</tr>
<tr>
<td>MW-10</td>
<td>1294.54</td>
<td>32.3</td>
<td>15</td>
<td>2-inch PVC</td>
<td>1273.82</td>
</tr>
</tbody>
</table>

The soil cuttings at each new boring location were logged concurrent with drilling and classified using the Unified Soil Classification System. The boring logs were prepared and maintained by the field geologist overseeing the drilling activities. The boring logs are provided in Appendix A.

### 3.2 WELL DEVELOPMENT

New and replacement monitoring wells were developed by mechanical surging and removal of at least five well and filter pack volumes no sooner than 24 hours after installation, as described in Section 4.1.5 in the *Groundwater Monitoring Work Plan* (SLR, 2016). Monitoring wells were sampled after development once the water table returned to predevelopment levels. In addition to developing the new wells, one pre-existing well (MW-2) was re-developed when highly turbid water was encountered during an initial assessment of well conditions (see Section 4.1 below).
4. GROUNDWATER MONITORING ACTIVITIES

This section describes the groundwater monitoring activities performed in 2016 and 2017 to achieve the project objectives at the Healy Power Plant. All groundwater monitoring activities were performed to be consistent with Standard Operating Procedures described in Section 4.0 of the Groundwater Monitoring Work Plan (SLR, 2016).

4.1 WELL ASSESSMENT

To support the groundwater monitoring program, an assessment of previously installed monitoring wells was performed to verify presence and condition to determine their suitability to serve as part of the CCR Rule monitoring well network. The following activities were conducted in March 2016 to complete the assessment:

- Searched to locate existing well MW-1. Well MW-1 could not be located.

- Located existing wells MW-2 and MW-3 and evaluated their condition by:
  - Visually observed the surface seals and well monuments for cracks, looked for missing well covers, and inspected for frost heaving.
  - Collected measurements of groundwater level and total well depth at each well.

- Conducted low flow groundwater purging at MW-2 and MW-3 to collect field water quality parameters to determine if well is functioning properly and evaluate the need for re-development.

4.2 RIVER STAFF GAUGES

Two staff gauges were established along the east bank of the Nenana River to record surface water levels. The gauging sites were placed at the facility in locations that were: safely accessible, adjacent to the Nenana River to collect measurements, able to withstand winter ice and spring breakup conditions, and were located within the monitoring well network area. One gauging site (SG2) was established along the sheet pile wall at the Unit 1 intake lagoon. The second gauging site (SG1) was established on the Healy Spur Road bridge in a location where a measuring tape could be hung from the guard rail.

Surface water levels were used to evaluate surface water/groundwater relationships. Measurements of surface water levels were collected concurrent with each groundwater sampling event.

4.3 SURVEY

Monitoring wells (existing and new), staff gauges, and other relevant site features such as marked utilities, were surveyed by Lounsbury & Associates, Inc.
Survey data were collected to an accuracy of 0.01 foot vertically and 1.0 feet horizontally. Data were reported in feet using the North American Datum of 1983 (NAD 83) and North American Vertical Datum 1988 (NAVD 88) coordinate systems.

4.4 AQUIFER TESTING

Aquifer testing was performed at three of the monitoring wells during the April 2017 monitoring event to evaluate hydraulic conductivity of the aquifer across the site. Wells MW-1R, MW-5, and MW-7 were chosen to represent the various areas of the site.

Aquifer tests (Slug Tests, or Rising- and Falling-Head Tests) were performed consistent with guidance from the U.S. Geological Survey (USGS, 2010) as follows:

- Groundwater levels were monitored and verified to be stable prior to testing.
- A remotely-controlled submersible electronic pressure transducer was programmed to gather a water level data point every 0.25 seconds and installed in the well below the water level.
- A solid cylindrical device (acrylic rod 1.5 inches in diameter by 3 feet in length) of known volume was prepared and attached securely to a string. The device was held at the top of the well in preparation for the test.
- The first test performed was a Falling-Head Test.
- Upon commencement of the test, the transducer program was started and the device was quickly lowered into the well below the water level. The Falling-Head Test was considered complete when the water level had equilibrated to the pre-test elevation.
- The Rising-Head Test was conducted once the water table stabilized after the Falling-Head Test.
- The Rising-Head Test was performed by quickly pulling the device out of the water column. The test was complete when the water level had equilibrated to the pre-test elevation.
- Tests were repeated at each well as necessary to ensure the possible accuracy and precision.
- Data were downloaded from the transducer logger and analyzed using the RockWare® AQTESOLV software.

4.4.1 AQUIFER TESTING RESULTS

Data collected from the aquifer tests at wells MW-1R, MW-5, and MW-7 were processed with RockWare® AQTESOLV software using Bouwer-Rice and Hvorslev solutions were used to estimate hydraulic conductivity. Results from aquifer testing are presented in the table below.
and in Appendix C. For the purposes of the summary table below only the average hydraulic conductivity value is presented for each well.

The test data from well MW-7 was found to provide the best fit to the solution curve and therefore was considered to provide the best estimate of the three wells. The data from well MW-1R was also a good match to the solution curve. The data from well MW-5 was not a close match to the available solution curves due to the fast recharge resulting in only few data points available to characterize the recharge.

Boring logs, provided in Appendix A, indicate wells MW-1R and MW-7 were installed in sandy and silty soil with some gravel. The conductivities indicated in the table below are within expected ranges (i.e., literature values) provided by Freeze and Cherry (1979). The boring log for MW-5 indicates it was installed in sand, gravel, and gravelly sand. The AQTESOLV calculated hydraulic conductivity shown in the table below for MW-5 is also within an expected range of values.

<table>
<thead>
<tr>
<th>Well</th>
<th>Solution Methods</th>
<th>Conductivity Solution Average [feet per day / centimeters per second (cm/s)]</th>
<th>Soil Description</th>
<th>Literature Value for Conductivity (Freeze and Cherry, 1979) (cm/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-1R</td>
<td>Bouwer-Rice and Hvorslev</td>
<td>7.82 / 2.59x10^-3</td>
<td>Silty Sand with Gravel</td>
<td>10^-3 – 10^-4</td>
</tr>
<tr>
<td>MW-5</td>
<td>Bouwer-Rice and Hvorslev</td>
<td>180 / 6.44x10^-2</td>
<td>Sand, Gravel, Gravelly Sand</td>
<td>10^-1 – 10^-2</td>
</tr>
<tr>
<td>MW-7</td>
<td>Bouwer-Rice and Hvorslev</td>
<td>1.52 / 5.38x10^-4</td>
<td>Sand with Silt and Gravel, Silt</td>
<td>10^-3 – 10^-5</td>
</tr>
</tbody>
</table>

### 4.5 GROUNDWATER MONITORING

Groundwater monitoring was conducted quarterly in 2016 at existing wells MW-2 and MW-3, new monitoring wells MW-4 through MW-8, and at replacement well MW-1R. Groundwater monitoring was also conducted quarterly in 2017 at the eight wells listed above and two additional wells installed in April 2017 (MW-9 and MW-10). A total of eight groundwater sampling events were completed by October 17, 2017 per the CCR Rule. The monitoring events were conducted as follows:
Dates | Wells MW-1R through MW-8 | Wells MW-9 and MW-10
---|---|---
4/1/2016 | Wells Installed, Samples Collected | 
5/31/2016 – 6/1/2016 | Samples Collected | 
8/2/2016 – 8/3/2016 | Samples Collected | 
4/4/2017 – 4/6/2017 | Samples Collected except MW-3 due to ice blockage | Wells Installed, Samples Collected
6/5/2017 – 6/6/2017 | Samples Collected | Samples Collected | 
7/24/2017 – 7/25/2017 | Samples Collected | Samples Collected | 
10/2/2017 – 10/3/2017 | Samples Collected | Samples Collected |

During each sampling event, groundwater levels were measured in all wells to assess the elevation and determine groundwater flow direction and gradients. Water level measurements are provided in Table 1.

Groundwater samples were collected consistent with Section 4.2 of the *Groundwater Monitoring Work Plan* (SLR, 2016). Samples were collected after the field parameters had stabilized. Sample parameters including temperature, specific conductance, dissolved oxygen, oxygen reduction potential, pH and turbidity were measured and documented in the field at each well. Groundwater samples were analyzed for both Detection and Assessment Monitoring constituents listed in Appendix III and IV of the CCR Rule by the following methods:

<table>
<thead>
<tr>
<th>Constituents for Detection Monitoring&lt;sup&gt;A&lt;/sup&gt;</th>
<th>Analytical Method&lt;sup&gt;B&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boron (B)</td>
<td>EPA 200.8</td>
</tr>
<tr>
<td>Calcium (Ca)</td>
<td>EPA 200.8</td>
</tr>
<tr>
<td>Chloride (Cl)</td>
<td>EPA 300.0</td>
</tr>
<tr>
<td>Fluoride (F)</td>
<td>EPA 300.0</td>
</tr>
<tr>
<td>pH</td>
<td>Field Parameter</td>
</tr>
<tr>
<td>Sulfate</td>
<td>EPA 300.0</td>
</tr>
<tr>
<td>Total Dissolved Solids (TDS)</td>
<td>SM 2540C</td>
</tr>
</tbody>
</table>

Notes:

<sup>A</sup> Appendix III, 40 CFR 257

<sup>B</sup> SGS North America Inc. - Alaska Division Sample Guide
### Constituents for Assessment Monitoring

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Analytical Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony (Sb)</td>
<td>EPA 200.8</td>
</tr>
<tr>
<td>Arsenic (As)</td>
<td>EPA 200.8</td>
</tr>
<tr>
<td>Barium (Ba)</td>
<td>EPA 200.8</td>
</tr>
<tr>
<td>Beryllium (Be)</td>
<td>EPA 200.8</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>EPA 200.8</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>EPA 200.8</td>
</tr>
<tr>
<td>Cobalt (Co)</td>
<td>EPA 200.8</td>
</tr>
<tr>
<td>Fluoride (F)</td>
<td>EPA 300.0</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>EPA 200.8</td>
</tr>
<tr>
<td>Lithium (Li)</td>
<td>EPA 200.8</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>EPA 245.1</td>
</tr>
<tr>
<td>Molybdenum (Mo)</td>
<td>EPA 200.8</td>
</tr>
<tr>
<td>Selenium (Se)</td>
<td>EPA 200.8</td>
</tr>
<tr>
<td>Thallium (TI)</td>
<td>EPA 200.8</td>
</tr>
<tr>
<td>Radium 226 and 228 (Ra)</td>
<td>EPA 903.1/904</td>
</tr>
</tbody>
</table>

Notes:
- **A** Appendix IV, 40 CFR 257
- **B** SGS North America Inc. - Alaska Division Sample Guide

All samples were submitted for analysis under proper chain of custody (COC) documentation to SGS North America, Inc. (SGS) in Anchorage, Alaska.

### 4.6 RECIRCULATING POND WATER SAMPLING

Ash contact water sampling was conducted quarterly in 2016 and 2017 concurrent with the groundwater sampling events. A single grab sample was collected from the Recirculating Pond and analyzed for both Detection and Assessment Monitoring constituents identified above in Section 4.5. Field parameters were also collected using a multi-parameter water meter. The field parameters included temperature, specific conductance, dissolved oxygen, oxygen reduction potential, and pH, were measured and documented in the field logbook or sampling form.

### 4.7 QUALITY ASSURANCE AND QUALITY CONTROL

All field activities were documented in a bound project field logbook. The SLR field scientist printed their full name on field sampling forms used during site work. Each sample was documented on a COC form and submitted to SGS. The name of the SLR field scientist was printed on the COC adjacent to their signature. Copies of the field sampling forms are provided in Appendix D.
Field duplicate samples were collected at a frequency of 10 percent of the total number of samples collected during the sampling event. A minimum of one duplicate was collected. To ensure complete laboratory blindness, duplicates were given false sample names on the label and COC. Duplicate sample names followed the same convention as primary sample names. For example, an acceptable duplicate name for primary sample MW-1 would be MW-91. Duplicate samples were not given names that corresponded to an existing well that was not sampled during the event. Duplicate sample identifications were documented in the field logbook and on project-specific field forms, in connection with the primary sample identification.

SLR completed an ADEC Laboratory Data Review Checklist for each analytical report in accordance with ADEC guidance. In addition, SLR completed a quality assurance review for 2016 and 2017 datasets, which are provided as Appendix E.
5. STATISTICAL ANALYSIS

Statistical analyses were completed using the data collected during the eight groundwater monitoring events consistent with the statistical methods specified in the *Groundwater Monitoring System and Statistical Method Certification* (SLR, 2017). This section describes the statistical analysis performed for Appendix III and Appendix IV constituents, provides a summary of the statistical analysis results, and establishes the groundwater projection standards for Appendix IV constituents in accordance with the CCR Rule.

5.1 DETECTION MONITORING

Following eight groundwater sampling events, statistical analyses were completed to determine whether a statistically significant increase over background levels was detected for any Appendix III Detection Monitoring constituent. Statistical methods specified in 40 CFR §257.93(f), in compliance with the performance standards specified in 40 CFR §257.93(g), were used for the evaluation of detection monitoring data. Statistical analyses were completed using the most recent version (5.1) of the statistical software package ProUCL® (EPA, 2016) and performed consistent with the EPA's Unified Guidance (EPA, 2009). The methods used for the statistical analyses were selected based upon an evaluation of the data collected from the last eight sampling events, and are described below.

Ten wells are included in the multiunit groundwater monitoring well network for the Unit 1 coal ash handling system. One of these wells, MW-7, is located upgradient from the four regulated CCR units; constituent concentrations in this well were therefore used to establish background conditions. The remaining nine wells are located at, or downgradient/crossgradient from, the waste boundary and were identified as compliance wells. Background and compliance well data are presented in Tables 2 and 3. The compliance well datasets were statistically compared to the background monitoring well dataset for each Detection Monitoring constituent listed in Appendix III of the CCR Rule. First, goodness of fit testing was completed to determine whether the data from each well for each constituent are normally distributed. For constituents with normally distributed datasets, parametric tests were used to compare constituent concentrations between compliance and background wells. For datasets that do not fit a normal distribution, nonparametric tests were used for the comparisons. Primary field sample results were used for the analyses, and non-detect results were included using the limits of detection (LODs) reported by the laboratory. Data qualified as rejected (“R”) in the data validation process were not included in the evaluation.

The procedures specified in 40 CFR §257.93(f)(1) and/or 40 CFR §257.93(f)(2) were followed, depending on the distributional characteristics of the datasets being compared for each constituent. Either a parametric analysis of variance (ANOVA) test or the Kruskal-Wallis (KW) test, a nonparametric alternative to the parametric ANOVA, was used to compare the mean (ANOVA) or median (KW) concentrations of each constituent between the wells in the multiunit monitoring well network. ANOVA (or KW) tests the null hypothesis that there is no statistically significant difference in mean or median concentrations between any of the groups being compared; the alternative hypothesis is that the mean or median of at least one group is significantly different from others. For ANOVA tests, the probability of making a Type I error
(rejecting the null hypothesis when in fact it is true), or alpha (α), was set at 0.05. If the p-value was less than the specified value of α, the null hypothesis was rejected and the alternative hypothesis was accepted. If the p-value was greater than the specified value of α, the null hypothesis was accepted.

5.1.1 RESULTS

The results of the ANOVA or KW tests indicated a statistically significant difference between wells for each of the Appendix III constituents (Table 4). Pairwise tests were therefore used to compare each constituent concentrations in each individual compliance well with the background well concentrations, to identify specific wells showing a statistically significant increase over background levels. Pairwise tests available in ProUCL® include the parametric Student’s t-test and three nonparametric alternatives: the Wilcoxon-Mann-Whitney test, the Gehan test, and the Tarone-Ware test. The most appropriate test for each comparison was selected based on the characteristics of the datasets being compared, including data distributions and the presence of non-detect results with single or multiple LODs. For pairwise comparisons, α was set at 0.01.

It should be noted that monitoring wells MW-9 and MW-10 are relatively new and only four sampling events have been completed at these wells. As noted in the ProUCL® guidance (EPA, 2016), statistics computed on datasets consisting of less than five samples cannot be considered reliable enough to derive important decisions. Decisions should therefore not be driven by the results of tests completed using the limited data from these wells alone. While the datasets for other wells meet the EPA (2009, 2016) minimum requirement of eight to ten samples, statistical test results based on these small sample sizes should, in general, be interpreted with caution when making important decisions.

The pairwise test results indicated that concentrations of all Appendix III constituents were significantly higher than background in at least one compliance well. Monitoring wells for which a statistically significant increase over background was identified for each constituent are shown in Table 4. Calcium concentrations were significantly lower than background in samples collected from monitoring wells MW-1R, MW-4, and MW-9; in contrast, concentrations in samples collected from wells MW-2, MW-3, MW-8, and MW-10 were significantly higher than those in samples collected from background well MW-7. Such differences may be due to natural variability.

5.2 GROUNDWATER PROTECTION STANDARDS

Based on the results of the statistical analysis for detection monitoring constituents, an assessment monitoring program is required. The assessment monitoring program includes laboratory analysis of the groundwater for all constituents listed in Appendix IV of the CCR Rule, and statistical comparison of detected Appendix IV constituents with the GWPS established consistent with 40 CFR §257.95(h). As indicated in Section 4.0, the groundwater samples collected in 2016 and 2017 were analyzed for Appendix IV constituents and the results are presented in Table 2. Groundwater protection standards were established for each detected Appendix IV constituent in accordance with the CCR Rule, as follows:
• Maximum Contaminant Level (MCL) if available as a Federal Drinking Water Standard and background concentrations reported for monitoring well MW-7 are lower than the MCL.

• Background concentrations reported for monitoring well MW-7 if a MCL is not available or background concentrations are higher than the MCL.

The MCL is identified as the GWPS for all Appendix IV constituents except for cobalt, lithium and molybdenum, which do not have available MCLs. Background concentrations are therefore identified as the GWPS for these three constituents. Cobalt was not detected in any of the eight samples collected from background monitoring well MW-7. Lithium and molybdenum were each reported in one sample collected from background monitoring well MW-7 as estimated detections at concentrations below their respective LODs, and were not detected in any other samples, or in any sample at a concentration above the LOD. The estimated detections of these two metals were reported in different samples, neither of which was collected during the most recent sampling event. These two constituents are therefore considered to be generally not detectable in the background well under current conditions. In order to establish background concentrations for cobalt, lithium, and molybdenum, the level of quantitation (LOQ) for each of these three constituents was therefore used to represent background. The LOQ, which may also be referred to as the reporting limit, is “set high enough so that if a chemical is not present at all in the sample, a detected amount will rarely be recorded” (EPA, 2009). While results may sometimes be reported at concentrations below the LOQ, such results are reported as estimated detections only. The LOQs are therefore considered the most appropriate values to represent background concentrations for each of these metals in the absence of detected results, and are identified as the GWPS for cobalt, lithium, and molybdenum.

5.3 ASSESSMENT MONITORING

Statistical analyses were completed to determine whether a statistically significant increase over the GWPS was detected for any Appendix IV Assessment Monitoring constituent. Statistical methods specified in 40 CFR §257.93(f), in compliance with the performance standards specified in 40 CFR §257.93(g), were used for the evaluation of assessment monitoring data. Statistical analyses were completed using the most recent version (5.1) of the statistical software package ProUCL® (EPA, 2016) and performed consistent with the EPA’s Unified Guidance (EPA, 2009).

The Appendix IV constituent data (Table 2) were compared with the established GWPS to identify compliance wells with constituent concentrations above GWPS. For wells with more than one detected concentration, at least one of which is above the GWPS for a constituent, hypothesis testing was completed to determine whether or not concentrations in that well are statistically significantly higher than the GWPS.

For some constituents, one or more wells had only one detected result across the eight sampling events (Table 2). In such cases, hypothesis testing cannot be completed. Instead, the single detected concentration was compared directly to the GWPS and evaluated on a case-by-case basis.
Single-sample hypothesis tests were used to compare compliance well datasets to GWPS for Appendix IV constituents with more than one detected result and at least one detected result greater than the GWPS. For datasets that are normally distributed and do not include non-detect observations, the one-sample t-test was used. The one-sample t-test is a parametric test; it should also not be used for datasets with non-detect results (EPA, 2016). Either the Sign test or the Wilcoxon Signed Rank (WSR) test was therefore used for comparisons of all other datasets (i.e., not normally distributed and/or containing non-detect results) with GWPS. The Sign test discards all non-detect results that are equal to or greater than the standard used for the comparison (in this case, the GWPS), as well as all detected results that are equal to the standard, and should not be used for datasets containing such results. The WSR test was therefore used as an alternative for datasets containing non-detect results with LODs equal to or greater than, and/or detected results equal to, the GWPS; otherwise the Sign test was used. A Type I error rate of 0.01 was used for the single-sample hypothesis tests. As with the tests described previously in Section 5.1, primary field sample results were used for the analyses, non-detect results were included using the LODs, and data qualified as rejected were not included in the evaluation.

5.3.1 RESULTS

The results of the hypothesis tests for Appendix IV Assessment Monitoring constituents are summarized below and presented in Table 5.

Seven Appendix IV constituents (antimony, arsenic, chromium, cobalt, lithium, molybdenum, and selenium) were detected more than once in at least one monitoring well, with at least one detected concentration above the GWPS. The data for these wells and constituents were therefore statistically compared to the corresponding GWPS. Five of these seven metals (all except for chromium and cobalt) had a statistically significant result (concentrations significantly higher than GWPS) for at least one well. Statistically significant increases above the GWPS were identified for antimony, arsenic, and molybdenum in MW-1R; lithium in MW-3; arsenic and molybdenum in MW-4; arsenic, lithium, molybdenum, and selenium in MW-5; and lithium and molybdenum in MW-6.

It is important to note that when multiple comparisons are completed, as is the case here, the experiment-wide Type I error rate is raised, meaning that the chance of rejecting the null hypothesis when in fact it is true (in this case, concluding that concentrations in a well are statistically significantly higher than the GWPS when in fact they are not) is greater than the Type I error rate used for individual comparisons. This is typically handled by making an adjustment such as the Bonferroni correction, in which the individual-comparison Type I error rate is divided by the number of comparisons performed in order to maintain the desired experiment-wide error rate. The performance standards contained in 40 CFR §257.93(g) specify that the Type I error rate of no less than 0.01 must be maintained for individual comparisons. A Bonferroni correction was therefore not applied to the results of the statistical comparisons. If such a correction were to be used, several of the metals discussed above would not be considered to be statistically significantly higher than the GWPS in any well. Only the differences observed for arsenic in MW-4, lithium in MW-3, and molybdenum in MW-1R, MW-4, and MW-5 would still be considered statistically significant following this correction. This should be considered when making any management decisions based on these results.
Several additional factors should also be considered when interpreting the results of the statistical evaluations presented in this section. First, the GWPS for several constituents were set equal to the LOQ in the absence of MCLs and detections in the single background monitoring well. This results in any detection above the LOQ automatically being higher than the GWPS. Regional background information, if available, or additional background samples, may add useful information for evaluating these constituents. Additionally, other values such as health risk-based standards may be informative even if these cannot be used directly as GWPS based on the regulatory requirements.

Spatial patterns should also be further evaluated to determine whether the CCR units represent a likely source of constituent concentrations identified as being statistically significantly higher than the GWPS. This should be carefully evaluated before making any management decisions, rather than relying solely on statistical comparisons of monitoring well datasets with GWPS. Given the small sample sizes currently available for both the background and compliance wells, graphs of the data should also be used to supplement the statistical analyses to inform decisions.

Finally, the comparison of groundwater monitoring data with GWPS does not consider the relevance of an exceedance from an exposure or risk perspective. Given that there is some potential for the use of risk-based criteria to be used in the future, it would be prudent to consider this in advance of finalizing any management decisions.
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6. SUMMARY OF RESULTS AND FINDINGS

The following sections provide a summary of the analytical results of the groundwater samples and ash pond water samples collected, and the findings of the 2016 and 2017 field activities performed at the Site.

6.1 GROUNDWATER MONITORING RESULTS

During the groundwater monitoring events, static water levels in existing and newly installed monitoring wells ranged from approximately 5.5 feet bgs at MW-4 to 22 feet bgs at MW-8. Groundwater levels were observed to be the highest during the August 2016 monitoring event and the lowest during April 2016 monitoring event. Calculated groundwater elevations in wells were between 1.1 to 2.5 feet higher in August 2016 than in April 2016. Similarly, the Nenana River water levels were observed to 2.8 feet higher in August 2016 compared to April 2016 at staff gauge SG2. As such, groundwater levels vary seasonally at Healy Power Plant. Water level measurements and calculated groundwater elevations are provided in Table 1.

Based on calculated water elevations, the average groundwater gradient is approximately 0.015 toward the west-northwest. Groundwater elevation contours for April and August 2016 are shown on Figures 3 and 4, respectively, and contours for April and July 2017 are shown on Figures 5 and 6, respectively.

As discussed in Section 5.0, the groundwater statistical analysis results indicate a statistically significant increase over background levels (MW-7) for several Appendix III Detection Monitoring constituents. As such, GWPS were established for Appendix IV Assessment Monitoring constituents and the groundwater monitoring data were statistically compared against their respective GWPS. As indicated above, hypothesis testing was completed to determine whether or not concentrations in that well are statistically significantly higher than the GWPS except when one detected result concentration of a constituent was observed over the eight sampling events. Instead, the single detected concentration was compared directly to the GWPS and evaluated on a case-by-case basis. In all but one of these cases, the single detected result was below the GWPS. Cobalt was detected once in monitoring well MW-8, at a concentration of 0.00478 mg/L, slightly higher than the GWPS of 0.004 mg/L. This detected result was reported for the first monitoring event at this well, which occurred in April of 2016, and cobalt has not been detected in any sample collected from this well in the seven monitoring events that have occurred since the first event. Based on the double-quantification rule described by EPA (2009), this would not be considered an exceedance. Since this metal has not been detected in any sample collected from MW-8 since the first sampling event, and since the concentration detected in that event is only very slightly above the GWPS, this constituent is not considered to show a significant increase over the GWPS at this time. Statistical tests can be completed to further evaluate cobalt in MW-8 if this metal is detected again in a future monitoring event.

The statistically significant increases for Appendix III and Appendix IV constituents at each well are listed in the two tables below.
Appendix III Constituents with Statistically Significant Increases Over Background

<table>
<thead>
<tr>
<th>Well</th>
<th>Boron</th>
<th>Calcium</th>
<th>Chloride</th>
<th>Fluoride</th>
<th>pH</th>
<th>Sulfate</th>
<th>TDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>--</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>MW-4</td>
<td>X</td>
<td>--</td>
<td>X</td>
<td>X</td>
<td>--</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>MW-10</td>
<td>--</td>
<td>X</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Crossgradient Wells from CCR Units

<table>
<thead>
<tr>
<th>Well</th>
<th>Antimony</th>
<th>Arsenic</th>
<th>Lithium</th>
<th>Molybdenum</th>
<th>Selenium</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-1R</td>
<td>X</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>MW-3</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>MW-5</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>MW-6</td>
<td>X</td>
<td>--</td>
<td>X</td>
<td>--</td>
<td>X</td>
</tr>
<tr>
<td>MW-8</td>
<td>X</td>
<td>X</td>
<td>--</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>MW-9</td>
<td>X</td>
<td>--</td>
<td>--</td>
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<td>X</td>
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Downgradient Wells from CCR Units

<table>
<thead>
<tr>
<th>Well</th>
<th>Antimony</th>
<th>Arsenic</th>
<th>Lithium</th>
<th>Molybdenum</th>
<th>Selenium</th>
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<tr>
<td>MW-1R</td>
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<td>X</td>
<td>--</td>
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<td>MW-3</td>
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<td>X</td>
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<td>X</td>
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<td>X</td>
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<td>--</td>
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</tbody>
</table>

Note: -- Indicate no statistically significant increase over background.

Appendix IV Constituents with Statistically Significant Exceedances of the GWPS

Antimony was detected at a statistically significant level exceeding the GWPS only at MW-1R. Antimony exceedances were not identified at MW-5 or MW-9, both located downgradient from the ponds and upgradient from the historical ponds. Arsenic was detected at a statistically significant level above the GWPS at MW-1R and MW-5, but not at MW-9, which is located downgradient/crossgradient from MW-5 and upgradient from MW-1R. It is possible that the exceedances of antimony and arsenic at MW-1R are caused by another source other than the CCR units. As discussed in Section 2.4, coal ash residuals may remain from where the historical ponds were located beneath the Unit 2 building foundation (Figure 2). As such, any residual coal ash from the historical pond may be the cause for the increases of antimony and arsenic at MW-1R.

All the GWPS for the Appendix IV constituents listed are the MCLs except for lithium and molybdenum. Background concentrations (MW-7) for lithium and molybdenum were used to establish the GWPS since MCLs are not available for these constituents as required under the CCR Rule. Because lithium and molybdenum were not detected in the background well, MW-7, the laboratory LOQs were used. As a result, any detection above the LOQ in a compliance-well is automatically higher than the GWPS. It is likely that the exceedances of lithium and molybdenum are the result of the very low GWPS established for these two constituents based on the lack of more suitable values, rather than an indication of a release from the CCR units, particularly since the results show no other significant exceedances of other Appendix IV constituents.
constituents at monitoring wells MW-3 and MW-6. Regional background information, if available, or additional background samples, may add useful information for evaluating these constituents. Additionally, other values such as health risk-based standards may be informative even if these cannot be used directly as GWPS based on the regulatory requirements. Therefore, regional background information should be evaluated and/or expanding the background dataset should be considered to further evaluate background concentrations and determine whether the established GWPS for lithium and molybdenum are representative of the background concentrations at the Site.

In addition, as discussed in Section 5.3.1, a Bonferroni correction was not applied to the level used to determine statistical significance for individual comparisons, which is typically used to maintain a sufficiently low experiment-wide Type I error rate when multiple comparisons are made such as in the case of the statistical analysis completed for the Appendix IV dataset. If such a correction were to be used, several of the metals discussed above would not be considered to be statistically significantly higher than the GWPS in any well. Only the differences observed for arsenic in MW-4, lithium in MW-3, and molybdenum in MW-1R, MW-4, and MW-5 would still be considered statistically significant following this correction. This should be considered when making any management decisions based on these results.

6.2 RECIRCULATING POND WATER SAMPLE RESULTS

Analytical results for the Recirculating Pond water samples were compared to the groundwater analytical results from each monitoring well to determine if any correlation exists between these two media for the constituents detected in groundwater with statistically significant exceedances of their GWPS. As discussed above, antimony, arsenic, lithium, molybdenum, and selenium were the only constituents statistically exceeding the GWPS in groundwater at a few monitoring wells.

Of these constituents, antimony, lithium, molybdenum, and selenium were detected at least once above the GWPS in the Recirculating Pond water. Arsenic was not detected above the groundwater protection standard in the Recirculating Pond water. It is possible the increase of arsenic in groundwater is the result of leaching of naturally-occurring arsenic in the aquifer caused by the effect of high pH of the ash contact water in the Ash Pond and Recirculating Pond, and the Ash Drying Area. pH measurements in the pond water range from 11.52 to 12.73, substantially greater than background values at MW-7, which range from 6.95 to 8.67. Similarly high pH has been measured in downgradient wells MW-1R (10.05–11.41) and MW-5 (10.15–12.57) where arsenic concentrations significantly exceed the GWPS.
7. CORRECTIVE MEASURES

Corrective measures must be assessed if Appendix IV constituents in groundwater passing the CCR units are detected at statistically significant levels exceeding the GWPS, as required under the CCR Rule. Within 90 days of this finding, GVEA must initiate an assessment of corrective measures to prevent further releases, to remediate any releases and to restore the affected area to original conditions in accordance with §257.96 of the CCR Rule. In addition, because the ponds are unlined, the ponds are subject to closure requirements under 40 CFR §257.101(a) to retrofit or close, as required in §257.91(d)(2) of the CCR Rule.

Based on the results of the statistical analyses performed using the 2016 and 2017 data, antimony, arsenic, lithium, molybdenum, and selenium have been detected at a statistically significant level above the GWPS at several groundwater monitoring wells. However, as discussed above, several factors must be considered when interpreting the results of the statistical evaluations presented in this report. First, the background dataset should be evaluated to determine whether the established GWPS for lithium and molybdenum are representative of background concentrations at the Site. Regional background information if available will be evaluated to assist with this determination. One or more additional background wells may be installed upgradient of the CCR units to expand the background dataset should regional background information be unavailable or determined not representative for the Site groundwater monitoring system. It should be noted that EPA is currently seeking to remand several provisions of the CCR Rule including the default to background as the groundwater protection standard for Appendix IV constituents without MCLs. Given that there is some potential for EPA to make changes to the CCR Rule or finalize a new rule, future corrective measures for addressing lithium and molybdenum in the groundwater will not be made until EPA finalizes a decision.

Other potential sources should also be further evaluated to determine whether sources other than the CCR units may be responsible for the GWPS exceedances, particularly for antimony and arsenic at MW-1R. Elevated concentrations of antimony and arsenic at MW-1R may be caused by a combination of sources including the CCR units and the historical coal ash pond. A demonstration potentially could be made to support the hypothesis that the increases of arsenic and antimony at MW-1R are caused by the historical ash pond. However, a similar demonstration likely would be more difficult to make for the significant increases of arsenic and selenium at MW-5 and arsenic at MW-4 since these wells are located directly adjacent to the Ash Pond and Recirculating Ash Pond and high pond water pH may be causing naturally-occurring arsenic in the aquifer to leach into groundwater. In the case that a demonstration is made for MW-1R, the demonstration must be certified by a professional engineer and groundwater assessment monitoring at the monitoring well must continue until Appendix III and IV constituent concentrations are at or below the background levels. Therefore, it has been decided that a demonstration will not be made at this time for the exceedances identified at monitoring wells MW-1R (antimony and arsenic), MW-4 (arsenic) and MW-5 (arsenic and selenium).

It should be noted that the Alaska Department of Environmental Conservation (ADEC) is currently pursuing an EPA-approved permitting program under the Water Infrastructure and Improvements for the Nation Act (WIIN Act). The WIIN Act allows states to implement their own
permitting program for managing CCR and adopt risk-based closure alternatives and other regulations that differ from the federal regulations based on site-specific conditions. Because the State of Alaska is in the process of developing new regulations for EPA approval, corrective measures for addressing the exceedances in groundwater will not be made until an EPA-approved permitting program is implemented and enforced with the State of Alaska.

GVEA will not perform an assessment of corrective measures until EPA completes a new rulemaking repealing or revising the provisions under reconsideration including the background levels as GWPS, and ADEC adopts and implements state regulations under the WIIN Act based on Alaska site-specific conditions.

When, and if, an assessment of correction measures is completed, the assessment will include the required elements, as required under the 2015 CCR Rule:

- Evaluation of potential corrective measure alternatives that when implemented will protect human health and the environment, attain the groundwater protection standard, and control the source of releases to reduce or eliminate further releases of constituents into the environment.
- Analysis of the effectiveness of each potential corrective measure alternative will be based on the performance, reliability, ease of implementation, and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination.
- Discussion of the time required to begin and complete each corrective measure alternative.
- Discussion of the institutional requirements such as permits that may be required to implement each corrective measure alternative.

Upon completing the corrective measures assessment, a remedy would be selected and implemented based upon the results of the assessment in accordance with §257.97 of the CCR Rule.

At this time, GVEA will notify ADEC and post the notification that one or more constituents in Appendix IV has been detected at statistically significant levels above the GWPS as required under the CCR Rule. The notification will be completed within 30 days of issuance of this report. In addition, GVEA will continue detection and assessment monitoring at the site to determine if changes to the groundwater monitoring system are necessary to characterize the nature and extent of the release and relevant site conditions that may affect the remedy ultimately selected. This may include installation of additional monitoring wells to define the contaminant plume.

Because a demonstration of another potential source cannot be made for the exceedances identified at monitoring wells MW-4 (arsenic) and MW-5 (arsenic and selenium), the unlined ponds are subject to the closure requirements of the CCR Rule to cease placing CCR into the ponds and retrofit or close the ponds within six months of making this determination (July 31, 2018). GVEA will make efforts to retrofit or close the ponds, but demonstrations are needed to show the pond locations meet the location requirements established in the CCR Rule if ponds are retrofitted. Location requirements include verification that a CCR unit is a minimum of five
feet above the uppermost aquifer, it is not located in wetland, it is not located within 200 feet of a fault, it is not located in seismic impact zones, and it is not located in an unstable area. A demonstration potentially could be made to support all of these location requirements except for the five feet above the uppermost aquifer. The base of each CCR unit is either below or less than five feet above the groundwater surface at the Healy Power Plant, and thus do not meet the CCR location requirement. Therefore, the CCR units must close and an alternative option needs to be selected and constructed to manage the CCR from Unit 1. It is likely that GVEA will not have an alternative option available for managing CCR from Unit 1 by July 31, 2018, and thus will notify ADEC and post the notification of GVEA’s intent to comply with the alternative closure requirements under 40 CFR §257.103 and continue to make efforts to obtain an alternative option to manage CCR from Unit 1. This closure extension is available under the CCR Rule for up to five years from the initial claim, as long as there is no alternative disposal option available and GVEA continues to document its efforts for obtaining an alternative option in an annual progress report. After five years, and if no alternative option has been identified, the existing CCR units must cease receiving CCR and close.
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8. FUTURE TASKS AND SCHEDULE

Based on the findings summarized here from the 2016 and 2017 groundwater monitoring activities, the following future tasks will be completed to comply with the CCR Rule:

- **By February 28, 2018**, a notification will be prepared identifying that one or more constituents in Appendix IV has been detected at statistically significant levels above the GWPS. This notification will be posted on the GVEA’s CCR Compliance Data and Information Website\(^5\) (CCR Website), and ADEC will be notified of the posting.

- Detection and Assessment monitoring will be conducted semi-annually at all monitoring wells within the groundwater monitoring system. Semi-annual monitoring events will be performed in April 2018 and October 2018. ADEC will be notified and a notification will be posted to the CCR Website that assessment monitoring has been established.

- The Groundwater Monitoring Plan will be amended to establish the Detection and Assessment monitoring programs in accordance with the CCR Rule (40 CFR §257.94 and §257.95).

- If an alternative option is not selected and constructed by July 31, 2018, a notification will be prepared stating GVEA’s intent to comply with the alternative closure requirements in accordance with the CCR Rule under §257.103 and GVEA will continue to work towards identifying an alternative option for managing the CCR from Unit 1. With this extended option, GVEA may continue to operate the CCR units for up to five years from the initial claim, as long as there is no alternative disposal option available and GVEA continues to document its efforts for obtaining an alternative option in an annual progress report.

- An annual groundwater monitoring and corrective action report will be prepared by January 31, 2019 to include the 2018 monitoring data in accordance with the CCR Rule under §257.90.

- Upon issuance of any new rulemaking under the CCR Rule by EPA and any new regulations under the WIIN Act by the State of Alaska, GVEA will perform an assessment of corrective measures for the groundwater as necessary to meet new regulatory requirements.

\(^5\) [http://www.gvea.com/energy/ccrulecompliance](http://www.gvea.com/energy/ccrulecompliance)
9. REFERENCES


ADEC, 2014. Alaska Administrative Code (18 AAC 75), Oil and Other Hazardous Substances Pollution Control, as amended through October 1.


U.S. Environmental Protection Agency (EPA), 2016. Statistical Software ProUCL, May.


Western Regional Climate Center, 2016. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ak3585, February

Healy GWM Report_Final.docx January 2018
LIMITATIONS

The services described in this work product were performed in accordance with generally accepted professional consulting principles and practices. No other representations or warranties, expressed or implied, are made. These services were performed consistent with our agreement with our client. This work product is intended solely for the use and information of our client unless otherwise noted. Any reliance on this work product by a third party is at such party's sole risk.

Opinions and recommendations contained in this work product are based on conditions that existed at the time the services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. The data reported and the findings, observations, and conclusions expressed are limited by the scope of work. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this work product.

The purpose of an environmental assessment is to reasonably evaluate the potential for, or actual impact of, past practices on a given site area. In performing an environmental assessment, it is understood that a balance must be struck between a reasonable inquiry into the environmental issues and an appropriate level of analysis for each conceivable issue of potential concern. The following paragraphs discuss the assumptions and parameters under which such an opinion is rendered.

No investigation can be thorough enough to exclude the presence of hazardous materials at a given site. If hazardous conditions have not been identified during the assessment, such a finding should not therefore be construed as a guarantee of the absence of such materials on the site, but rather as the result of the services performed within the scope, practical limitations, and cost of the work performed.

Environmental conditions that are not apparent may exist at the site. Our professional opinions are based in part on interpretation of data from a limited number of discrete sampling locations and therefore may not be representative of the actual overall site environmental conditions.

The passage of time, manifestation of latent conditions, or occurrence of future events may require further study at the site, analysis of the data, and/or reevaluation of the findings, observations, and conclusions in the work product.

This work product presents professional opinions and findings of a scientific and technical nature. The work product shall not be construed to offer legal opinion or representations as to the requirements of, nor the compliance with, environmental laws rules, regulations, or policies of federal, state or local governmental agencies.
FIGURES

Figure 1  Site Location Map
Figure 2  Site Plan
Figure 3  April 2016 Groundwater Contour Map
Figure 4  August 2016 Groundwater Contour Map
Figure 5  April 2017 Groundwater Contour Map
Figure 6  July 2017 Groundwater Contour Map
When plotted at 11 x 17 page size, this drawing is for conceptual purposes only. Actual locations.

Scale: 1" = 200'

Notes:

1. Staff Gauge 1 (SG1): Top of road bridge railing. Elevation 1,283.68 Feet.

The horizontal datum is NAD 83 Alaska State Plane Zone 4 (US feet), the vertical datum is based on NAVD 88 elevations (GEOID12B).

Source notes:

2. This is plotted on SG03B18 at a density of 10ppi (blurred aggregated) by Koleta Mapping, Inc., Palmer, Alaska.
3. This is plotted on SG03B18 at a density of 10ppi (blurred aggregated) by Koleta Mapping, Inc., Palmer, Alaska.

Legend:

- Force
- Overhead Electric Line
- Buried Electric Line
- Communication Line
- Staff Gauge
- Road
- Minor Elevation Contour (1 Ft Interval)
- Major Elevation Contour (5 Ft Interval)
- Vegetation
- Groundwater Supply Well
- Existing Monitoring Well (Groundwater Elevation in feet)
- Pavement
- Power Plant Discharge Line (Approximate)
- Power Plant Intake Line (Approximate)
- Petroleum Contaminated Site (cleanup complete with institutional controls)
- Utilities Known to be Present (Approximate)
- Groundwater Elevation Contour, NAVD88 feet (dashed where inferred)
Groundwater Contour, NAVD 88 feet

Utilities Known to be Present (Approximate)

Petroleum Contaminated Site
(Power Plant Intake Line (Approximate)
(Power Plant Discharge Line (Approximate)
(Pavement
(Overhead Electric Line
(Buried Electric Line
(Communication Line
(Jumpup complete with institutional controls)
(Utilities Known to be Present (Approximate)
(Groundwater Elevation Contour, NAVD88 feet

Groundwater Supply Well

Existing Monitoring Well (Groundwater Elevation in feet)

Vegetation

Groundwater Elevation Contour (1 Ft Interval)

Major Elevation Contour (5 Ft Interval)

Minor Elevation Contour (1 Ft Interval)

Road

Buried Electric Line

Overhead Electric Line

Fence

Vegetation

Power Plant Intake Line (Approximate)

Power Plant Discharge Line (Approximate)

Pavement

Buried Electric Line

Overhead Electric Line

Fence

Vegetation

Power Plant Intake Line (Approximate)

Power Plant Discharge Line (Approximate)

Pavement

Buried Electric Line

Overhead Electric Line

Fence

Vegetation

Power Plant Intake Line (Approximate)

Power Plant Discharge Line (Approximate)

Pavement

Buried Electric Line

Overhead Electric Line

Fence

Vegetation

Power Plant Intake Line (Approximate)

Power Plant Discharge Line (Approximate)

Pavement

Buried Electric Line

Overhead Electric Line

Fence

Vegetation

Power Plant Intake Line (Approximate)

Power Plant Discharge Line (Approximate)

Pavement

Buried Electric Line

Overhead Electric Line

Fence

Vegetation

Staff Gauge 1 (SG1): Top of road bridge railing. Elevation 1,283.68 Feet. on NAVD 88 elevations (GEOID12B).

The horizontal datum is NAD 83 Alaska State Plane Zone 4 (US feet) the vertical datum is based 

Lidar was collected on 05/29/16 at a density of 17ppm (68ppm aggregate) by Kodiak Mapping, 

1.

Drawing developed from Kodiak Mapping Inc., Healy Plant Plan and Topo.dwg dated July 2016 

2.

Drawing developed from Kodiak Mapping Inc., Healy Plant Plan and Topo.dwg dated July 2016 

3.

TABLES

Table 1  Groundwater Elevation and Well Information
Table 2  Groundwater Analytical Results
Table 3  Groundwater Quality Field Parameters
Table 4  Comparison of Appendix III Constituents with Background Concentrations
Table 5  Comparison of Appendix IV Constituents with Groundwater Protection Standards
Table 6  Recirculating Pond Water Analytical Results
Table 7  Recirculating Pond Water Quality Field Parameters
## Table 1 - Groundwater Elevation and Well Information
Golden Valley Electric Association
Healy Power Plant, Healy, Alaska

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<thead>
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<th>MW-3</th>
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**Notes:**
- TOC: Top of PVC well casing
- nm: not measured
- *: Water level elevation above top of screen elevation
2. Converted MW-1 elevations from NGVD 29 to NAVD 88 based on USGS benchmark C4 survey control. In 1992, C4 was at elevation 1344.52 NGVD 29, and in 2016 C4 is at elevation 1350.02 NAVD 88. Therefore, all 1990 survey elevations was increased by 5.5 feet to be in NAVD 88 datum.
4. Bottom of screen elevation = TOC elevation minus total well depth from TOC
5. Top of screen elevation = bottom of screen elevation plus screen length
8. Field notes indicate 1.70 feet, but assumed recorded incorrectly based on historical water levels and field personnel knowledge of water depth was deeper during sampling activities.
Table 1 - Groundwater Elevation and Well Information
Golden Valley Electric Association
Healy Power Plant, Healy, Alaska

<table>
<thead>
<tr>
<th>Well Data</th>
<th>MW-7</th>
<th>MW-8</th>
<th>MW-9</th>
<th>MW-10</th>
<th>SG-1</th>
<th>SG-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Well Depth from TOC (feet)²</td>
<td>20.19</td>
<td>33.25</td>
<td>22.85</td>
<td>32.34</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Diameter Casing (inch)²</td>
<td>2.00</td>
<td>2.00</td>
<td>2.00</td>
<td>2.00</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Screen Length (feet²)</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Ground Surface Elevation (NAVD88, feet)₁,²</td>
<td>1299.25</td>
<td>1276.44</td>
<td>1277.4</td>
<td>1292.1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Top of Casing Elevation (NAVD88, feet)₁,²</td>
<td>1301.60</td>
<td>1279.61</td>
<td>1280.43</td>
<td>1294.54</td>
<td>1283.68</td>
<td>1260.48</td>
</tr>
<tr>
<td>Top of Screen Elevation (NAVD88, feet)²</td>
<td>1296.41</td>
<td>1261.36</td>
<td>1272.58</td>
<td>1277.20</td>
<td>--</td>
<td>--</td>
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<tr>
<td>Bottom of Screen Elevation (MHW, feet)³</td>
<td>1281.41</td>
<td>1246.36</td>
<td>1257.58</td>
<td>1262.20</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Depth to Water from TOC (feet)</th>
<th>Groundwater Elevation (NAVD88, feet)</th>
<th>Depth to Water from TOC (feet)</th>
<th>Groundwater Elevation (NAVD88, feet)</th>
<th>Depth to Water from TOC (feet)</th>
<th>Groundwater Elevation (NAVD88, feet)</th>
<th>Depth to Water from Gauge (feet)</th>
<th>River Elevation (NAVD88, feet)</th>
<th>Depth to Water from Gauge (feet)</th>
<th>River Elevation (NAVD88, feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/17/2002</td>
<td>13.15</td>
<td>1288.45</td>
<td>23.50</td>
<td>1256.11</td>
<td>Installed March 2016</td>
<td>Installed April 2017</td>
<td>23.15</td>
<td>1260.53</td>
<td>4.85</td>
<td>1256.33</td>
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<tr>
<td>5/31/2016</td>
<td>13.23</td>
<td>1288.37</td>
<td>22.71</td>
<td>1256.90</td>
<td>Installed March 2016</td>
<td>Installed April 2017</td>
<td>22.20</td>
<td>1261.48</td>
<td>4.45</td>
<td>1256.03</td>
</tr>
<tr>
<td>4/4/2017</td>
<td>13.16</td>
<td>1288.44</td>
<td>25.48</td>
<td>1254.13</td>
<td>14.41</td>
<td>1266.02</td>
<td>23.21</td>
<td>1271.33</td>
<td>24.82</td>
<td>1258.86</td>
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<tr>
<td>6/5/2017</td>
<td>13.17</td>
<td>1288.43</td>
<td>24.8</td>
<td>1254.81</td>
<td>14.45</td>
<td>1265.98</td>
<td>20.72</td>
<td>1273.82</td>
<td>24.00</td>
<td>1259.68</td>
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<tr>
<td>7/24/2017</td>
<td>13.59</td>
<td>1288.01</td>
<td>24.55</td>
<td>1255.06</td>
<td>13.23</td>
<td>1267.2</td>
<td>18.38</td>
<td>1276.16</td>
<td>23.85</td>
<td>1259.83</td>
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<tr>
<td>10/2 - 10/3/2017</td>
<td>13.64</td>
<td>1287.96</td>
<td>25.12</td>
<td>1254.49</td>
<td>15.61</td>
<td>1264.82</td>
<td>19.58</td>
<td>1274.96</td>
<td>24.10</td>
<td>1259.58</td>
</tr>
</tbody>
</table>

Notes:
- TOC: Top of PVC well casing
- nm: not measured
- *: Water level elevation above top of screen elevation

2. Converted MW-1 elevations from NGVD 29 to NAVD 88 based on USGS benchmark C4 survey control. In 1992, C4 was at elevation 1344.52 NGVD 29, and in 2016 C4 is at elevation 1350.62 NAVD 88. Therefore, all 1990 survey elevations was increased by 5.5 feet to be in NAVD 88 datum.
4. Bottom of screen elevation = TOC elevation minus total well depth from TOC
5. Top of screen elevation = bottom of screen elevation plus screen length
8. Field notes indicate 1.70 feet, but assumed recorded incorrectly based on historical water levels and field personnel knowledge of water depth was deeper during sampling activities.
9. MW-3 had ice plug at 5.40 feet BTOC. 4/4/2017
Table 2 - Groundwater Analytical Results
Golden Valley Electric Association
Healy Power Plant, Healy, Alaska

Appendix IV Assessment Monitoring Constituents (mg/L)
Sample
Location

Sample
Date

Established Groundwater
Protection Standard a

MW-1R

MW-2

MW-3

MW-4

4/1/2016 21:47
6/1/2016 13:12
8/3/2016 9:31
10/4/2016 10:10

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium

Cobalt

Fluoride

Lead

Lithium

Mercury
(EPA 245.1)

Molybdenum

Selenium

Thallium

0.006

0.01

2

0.004

0.005

0.1

0.004

4

0.015

0.01

0.002

0.002

0.05

0.002

Resultb
0.0112
0.0125
0.0103
0.0149

Flag

Resultb Flag Resultb Flag Resultb Flag Resultb Flag Resultb Flag Resultb Flag
0.0551
0.0329
[0.0002] ND 0.00028 J 0.00115 J
[0.002] ND
0.0605
0.0215
[0.0002] ND 0.0002
J 0.00119 J
[0.002] ND
0.0462
0.0289
[0.0002] ND [0.00025] ND [0.001] ND [0.002] ND
0.087
0.0329
[0.0002] ND 0.00022 J 0.00148 J
[0.002] ND

Resultb
13.2
8.5
6.68
7.08

Flag

Resultb
0.00167
0.00104
0.000895
0.0018

P

0.000296

5.01
0.95
1.05
[2]
1.16

J
J
J
ND
J

0.000808
0.000451
0.000251
[0.0001]
[0.0001]

J

0.85

J

0.0000813

J

0.0468

ND

0.798

P

[0.001]

ND

0.0181

4/5/2017 10:40

0.00478

0.0216

0.041

[0.0002] ND [0.00025] ND

[0.001]

ND

[0.002]

ND

8.39

6/6/2017 12:36

0.00657

0.0431

0.0231

[0.0002] ND [0.00025] ND

[0.001]

ND

[0.002]

ND

7.85

0.00265

J

7/24/2017 16:37

0.00723

0.0536

0.047

[0.0002] ND [0.00025] ND 0.00506

10/2/2017 15:20
4/1/2016 16:46
5/31/2016 16:12
8/2/2016 17:32
10/3/2016 18:22

0.00959
0.000974
0.000815
0.00199
0.000951

0.113
0.0132
0.0106
0.0113
0.00435

J

0.0122
0.711
0.605
0.332
0.443

[0.0002]
[0.0002]
[0.0002]
[0.0002]
[0.0002]

4/5/2017 17:20

0.00113

0.00405

J

0.704

[0.0002] ND [0.00025] ND

[0.001]

ND 0.00237

6/6/2017 11:32

[0.0005]

0.29

[0.0002] ND [0.00025] ND

[0.001]

ND

J

0.149

[0.0002] ND [0.00025] ND

J
J
J
ND

[0.0025] ND

ND
ND
ND
ND
ND

[0.00025]
[0.00025]
[0.00025]
[0.00025]
[0.00025]

ND 0.00081 J
[0.002] ND
ND [0.001] ND 0.00531
ND [0.001] ND 0.00334 J
ND [0.001] ND [0.002] ND
ND [0.001] ND 0.00264 J
[0.002]

7.37

7/24/2017 15:43

0.00258

0.00324

10/3/2017 11:20
4/1/2016 18:28
5/31/2016 17:05
8/3/2016 14:05
10/3/2016 17:25

0.00608
0.000414
0.000564
[0.0005]
0.000917

J
J
ND
J

0.0147
[0.0025]
[0.0025]
[0.0025]
[0.0025]

ND
ND
ND
ND

0.0506
0.156
0.12
0.0741
0.0935

6/6/2017 10:21

[0.0005]

ND

[0.0025] ND

0.132

[0.0002] ND [0.00025] ND

[0.001]

ND

[0.002]

ND

0.486

7/24/2017 13:06

0.000612

J

[0.0025] ND

0.114

[0.0002] ND [0.00025] ND

[0.001]

ND

[0.002]

ND

10/3/2017 10:26

J

[0.0025] ND

0.0474

[0.0002] ND [0.00025] ND

[0.001]

ND

[0.002]

ND

10/3/2017 18:00
4/1/2016 10:50
5/31/2016 15:10
8/3/2016 12:31
10/3/2016 16:17

0.000888
0.000895
0.0105
0.0118
0.00994
0.00886

J

[0.0025] ND
0.0602
0.0594
0.0622
0.0777

0.0481
0.0831
0.178
0.315
0.418

[0.0002]
[0.0002]
[0.0002]
[0.001]
[0.001]

[0.001]
0.0102
0.0106
0.0182
0.0349

ND

[0.002]
[0.002]
[0.002]
[0.01]
[0.01]

4/6/2017 14:46

0.00275

[0.0002]
[0.0002]
[0.0002]
[0.0002]
[0.0002]

ND
ND
ND
ND
ND

[0.00025]
[0.00025]
[0.00025]
[0.00025]
[0.00025]

4/4/2017 0:00

6/6/2017 9:04

0.0046

0.0275

ND
ND
ND
ND
ND

[0.0002] ND 0.00017

J

0.00437

0.035

0.136

[0.0002] ND [0.00025] ND 0.00662

7/24/2017 14:08

0.0046

0.0557

0.285

0.00019

10/3/2017 9:42

0.00634

0.0645

0.399

[0.001]

Table 2,6 GW_SW Analytical Results_01 17 2018.xlsx

J

J

0.00272

0.00039 J
ND [0.00125] ND

0.0217
0.0321

B

Resultb
0.318
0.244
0.18
0.25

Flag Resultb Flag Resultb Flag
0.0553
[0.0005] ND
0.0483
[0.0005] ND
0.044
[0.0005] ND
0.0597
[0.0005] ND

[0.0001]

ND

0.251

[0.0511]

[0.0005]

ND

0.011

[0.0001]

ND

0.217

0.0794

[0.0005]

ND

0.0114

[0.0001]

ND

0.126

0.0539

[0.0005]

ND

ND
ND
J
ND
ND

0.0997
0.00977
0.00997
0.0365
0.0164

0.0607
0.00479
0.00299
0.0142
0.00447

J

[0.0005]
[0.0005]
[0.0005]
[0.0005]
[0.0005]

ND
ND
ND
ND
ND

[0.0001]

ND

0.023

0.003

J

[0.0005]

ND

[0.0001]

ND

0.0122

0.00553

[0.0005]

ND

0.00822 J
[0.0001]
0.00982 J
[0.0001]
0.011
0.0000702
ND [0.005] ND [0.0001]
ND
0.015
[0.0001]

J

J
J

[0.0001]

ND

0.0523

0.00686

[0.0005]

ND

[0.0001]
[0.0001]
0.000165
[0.0001]
[0.0001]

ND
ND
J,B
ND
ND

0.141
0.00131
0.00141
0.00366
0.0154

0.0166
0.00182 J
0.00387 J
[0.0025] ND
0.0018
J

[0.0005]
[0.0005]
[0.0005]
[0.0005]
[0.0005]

ND
ND
ND
ND
ND

[0.0005]

ND

[0.0005]

ND

J
J

[0.0001]

ND

0.0558

[0.0001]

ND

0.00267

[0.00025] ND

0.574

[0.0001]

ND

0.0568

[0.0001]

ND

0.00369

0.00194

2.61

[0.0001]

ND

[0.0001]

ND

0.0448

ND

2.62
24.8
15.1
13.9
17.5

[0.0001]
0.000354
0.000534
0.00161
0.0031

[0.0001]
[0.0001]
0.000362
[0.00025]
0.000396

ND
ND
J,B
ND
J

0.0453
0.302
0.285
0.336
0.318

0.00157 J
[0.0025] ND
0.0517
0.0767
0.0562
0.0711

[0.0005]

ND
ND
ND
ND
ND

0.0399
ND 0.0431
[0.005] ND
J 0.00427 J
[0.025] ND
[0.025] ND

[0.0005]
[0.0005]
[0.0005]
[0.0025]
[0.0025]

ND
ND
ND
ND
ND

[0.002]

ND

6.51

0.000522

0.00758

J

[0.0001]

ND

0.171

0.0147

[0.0005]

ND

[0.002]

ND

10.1

0.000573

[0.005]

ND

[0.0001]

ND

0.194

0.03

[0.0005]

ND

0.00139 J
[0.01]
ND

12.1

0.00217

0.338

0.0316

[0.0005]

ND

0.00362

0.000129
[0.0001]

J

14.1

0.00633 J
[0.025] ND

ND

0.266

0.0457

[0.0025]

ND

Page 1 of 6

P

Flag
J
J,B
ND
J

0.0241

[0.001] ND [0.002] ND
1.56
0.0113
0.0000685 J
0.00695
ND 0.00177 J
[0.002] ND
7.73
0.000399
ND [0.001] ND [0.002] ND
1.3
J
0.000201
0.0611
ND [0.001] ND [0.002] ND
1.18
J
0.000133 J,B 0.0569
ND [0.001] ND [0.002] ND
[2]
ND
[0.0001]
ND 0.0432
ND [0.001] ND [0.002] ND
1.11
0.000136
J
0.0584
not sampled due to ice plug at 5.40 feet below top of casing

[0.00025] ND
0.00034 J
0.00026 J
[0.00125] ND
[0.00125] ND

0.148

0.000149

Flag Resultb Flag Resultb
0.0145
0.0000866
0.0143
0.000179
0.0138
[0.00025]
0.0117
0.000131

P

J

January 2018


### Table 2 - Groundwater Analytical Results

<table>
<thead>
<tr>
<th>Sample Location</th>
<th>Sample Date</th>
<th>Antimony</th>
<th>Arsenic</th>
<th>Barium</th>
<th>Beryllium</th>
<th>Cadmium</th>
<th>Chromium</th>
<th>Cobalt</th>
<th>Fluoride</th>
<th>Lead</th>
<th>Lithium</th>
<th>Mercury (EPA 245.1)</th>
<th>Molybdenum</th>
<th>Selenium</th>
<th>Thallium</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antimony</strong></td>
<td></td>
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<tr>
<td><strong>Arsenic</strong></td>
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<td><strong>Cadmium</strong></td>
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<td><strong>Chromium</strong></td>
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<td><strong>Cobalt</strong></td>
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<tr>
<td><strong>Fluoride</strong></td>
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<tr>
<td><strong>Lead</strong></td>
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<tr>
<td><strong>Lithium</strong></td>
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<tr>
<td><strong>Mercury (EPA 245.1)</strong></td>
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<tr>
<td><strong>Molybdenum</strong></td>
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<td><strong>Selenium</strong></td>
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<tr>
<td><strong>Thallium</strong></td>
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</tbody>
</table>

**Table Notes:**
- **Resulta:** Value reported.
- **Flag:** Indication of compliance with regulatory standards.
- **Notes:** Additional information or exceptions.

**Sample Data:**
- **Location:** Site location.
- **Date:** Collection date.
- **Fluoride:** Fluoride concentration.
- **Antimony:** Antimony concentration.
- **Arsenic:** Arsenic concentration.
- **Barium:** Barium concentration.
- **Beryllium:** Beryllium concentration.
- **Cadmium:** Cadmium concentration.
- **Chromium:** Chromium concentration.
- **Cobalt:** Cobalt concentration.
- **Fluoride:** Fluoride concentration.
- **Lead:** Lead concentration.
- **Lithium:** Lithium concentration.
- **Mercury (EPA 245.1):** Mercury concentration.
- **Molybdenum:** Molybdenum concentration.
- **Selenium:** Selenium concentration.
- **Thallium:** Thallium concentration.

**Sample Notes:**
- **Resultb:** Result value.
- **Flag:** Compliance flag.

**Regulatory Standards:**
- **0.001:** Lower limit.
- **0.002:** Upper limit.

**Compliance:**
- **ND:** Not detected.
- **J:** Below detection limit.

**Additional Information:**
- **P:** Partial compliance.

**Date Range:**
- **4/1/2016 12:04:** Start date.
- **10/2/2017 16:49:** End date.

**Location:** Golden Valley Electric Association
Healy Power Plant, Healy, Alaska

---

**MW-5**

<table>
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<th>Cobalt</th>
<th>Fluoride</th>
<th>Lead</th>
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<th>Mercury (EPA 245.1)</th>
<th>Molybdenum</th>
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<td>[0.003]</td>
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<th>Lead</th>
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<th>Mercury (EPA 245.1)</th>
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<td>0.156</td>
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<td>0.0778</td>
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<tr>
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<th>Beryllium</th>
<th>Cadmium</th>
<th>Chromium</th>
<th>Cobalt</th>
<th>Fluoride</th>
<th>Lead</th>
<th>Lithium</th>
<th>Mercury (EPA 245.1)</th>
<th>Molybdenum</th>
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<td>ND</td>
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<th>Lead</th>
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<td>[0.001]</td>
<td>ND</td>
<td>0.0696</td>
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<td>[0.005]</td>
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*Table 2.6 GW_SW Analytical Results_01 17 2018.xlsx*  
Page 2 of 6  
January 2018
Table 2 - Groundwater Analytical Results
Golden Valley Electric Association
Healy Power Plant, Healy, Alaska

Table 2: GW_SW Analytical Results _01 17 2018.xlsx Page 3 of 6 January 2018

<table>
<thead>
<tr>
<th>Sample Location</th>
<th>Sample Date</th>
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<th>Barium</th>
<th>Beryllium</th>
<th>Cadmium</th>
<th>Chromium</th>
<th>Cobalt</th>
<th>Fluoride</th>
<th>Lead</th>
<th>Lithium</th>
<th>Mercury (EPA 245.1)</th>
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<th>Selenium</th>
<th>Thallium</th>
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Notes:

- Established groundwater protection standards (GWPS) are the Federal Drinking Water Standard Maximum Contaminant Level (MCLs) for each Appendix IV constituent, where available. For the three Appendix IV constituents without available MCLs (cobalt, lithium, and molybdenum), the GWPS is the constituent's LOQ.
- For detected results, the sample result is listed in this column. For results of non-detect, the Limit of Detection (LOD) is listed in [ ] in this column.
- Duplicate of preceding sample

Data Flags:

- J Estimated value detected between method reporting limit and limit of quantitation.
- ND Analyte was not detected above the limit of detection. The Limit of Detection is given in brackets.
- QH, QL or QN Estimated value due to quality control failure. "H", "L", or "N" indicates potential high, low, or unknown bias.
- MH, ML, or MN Estimated value due to matrix. "H", "L", or "N" indicates potential high, low, or unknown bias.
- B Laboratory Method Blank Contamination
- P Sample preservation requirements were not met. Data was potentially biased low.
- R Sample result is rejected. Refer to Quality Assurance Report (QAR) for explanation.

Abbreviations:

- LOD limit of detection
- LOQ limit of quantitation
- mg/L milligram per liter
- pCi/L pico Curies per liter
- ns no standard
Table 2 - Groundwater Analytical Results
Golden Valley Electric Association
Healy Power Plant, Healy, Alaska

<table>
<thead>
<tr>
<th>Sample Location</th>
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<th>Radium 226 (EPA 903.1, pCi/L)</th>
<th>Radium 228 (EPA 904, pCi/L)</th>
<th>Total Radium 226 and 228 (pCi/L)</th>
<th>Boron (mg/L)</th>
<th>Calcium (mg/L)</th>
<th>Chloride (mg/L)</th>
<th>pH (Field Measured)</th>
<th>Sulfate (mg/L)</th>
<th>Total Dissolved Solids (SM21 2540C, mg/L)</th>
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| MW-2           | 4/1/2016    | 1.2                            | 2.5                         | 3.7                            | 0.149       | 180           | 726            | 8.47             | 47.5        | 1320                                 |
|                | 6/1/2016    | 0.67                           | 1                            | 1.67                            | 0.141       | 195           | 646            | 6.93             | 24.5        | 1380                                 |
|                | 8/2/2016    | 0.53                           | 1.2                         | 1.73                            | 0.657       | 175           | 437            | 7.41             | 234         | 1360                                 |
|                | 10/3/2016   | 0.61                           | 0.98                        | 1.59                            | 0.564       | 201           | 612            | 7.01             | 71.7        | 1540                                 |
|                | 4/5/2017    | 0.85                           | 0.95                        | 1.6                             | 0.31        | 243           | 813            | 7.19             | 57.4        | 1550                                 |
|                | 6/6/2017    | 0.34                           | 3.4                         | 3.74                            | 0.328       | 175           | 501            | 7.20             | 72.1        | 1220                                 |
|                | 7/24/2017   | 0.24                           | 1.3                         | 1.54                            | 0.933       | 153           | 306            | 8.27             | 57.0        | 1630                                 |
|                | 10/3/2017   | 0.25                           | 0.12                        | 0.37                            | 1.46        | 40.1          | 87.9           | 8.02             | 455         | 1160                                 |

| MW-3           | 4/1/2016    | 0.18                           | 0.96                        | 1.04                            | 0.9953      | 263           | 1040           | 8.94             | 133         | 1870                                 |
|                | 5/5/2016    | 0.08                           | 0.47                        | 0.55                            | 0.104       | 188           | 715            | 7.08             | 211         | 1440                                 |
|                | 8/3/2016    | 0.07                           | 0.82                        | 0.89                            | 0.395       | 113           | 263            | 7.42             | 245         | 985                                  |
|                | 10/3/2016   | 0.08                           | 0.4                        | 0.51                            | 0.649       | 136           | 348            | 7.23             | 269         | 1210                                 |

| MW-4           | 4/4/2017    | not sampled due to ice plug at 5.40 feet below top of casing |
|                | 6/6/2017    | 0.13                           | 2.9                         | 3.03                            | 0.187       | 228           | 637            | 7.20             | 86.6        | 1490                                 |
|                | 7/24/2017   | 0.16                           | 0.45                        | 0.61                            | 0.34        | 190           | 476            | 7.57             | 259         | 700                                  |
|                | 10/3/2017   | 0.16                           | MN                          | 0.12                            | MN          | 0.28          | MN             | 0.4              | 69.5        | 105                                  |
|                | 10/18/2017  | 0.16                           | MN                          | 1.1                             | MN          | 1.2           | MN             | 0.426            | 69.5        | 105                                  |

| MW-4           | 4/1/2016    | 0.27                           | 2.5                         | 2.77                            | 1.63        | 12.7          | 107            | 8.12             | 753         | 1280                                 |
|                | 5/2/2016    | 0.42                           | 0.22                        | 0.64                            | 1.76        | 11.6          | 71.4           | 8.97             | 363         | 941                                  |
|                | 8/3/2016    | 0.03                           | 130                        | 130.03                          | 2.63        | 38.4          | 56.2           | 8.88             | 606         | 1440                                 |
|                | 10/3/2016   | 0.32                           | 0.75                        | 1.07                            | 2.2         | 18.6          | 69.2           | 9.65             | 314         | 1270                                 |
|                | 4/2/2017    | 0.13                           | -0.29                       | -0.16                           | 1.05        | 32.6          | 89.5           | 8.83             | 952         | 1610                                 |
|                | 6/2/2017    | 0.14                           | 0.3                         | 0.44                            | 1.14        | 16.9          | 86.8           | 9.30             | 720         | 1290                                 |
|                | 7/24/2017   | 0.67                           | 0.69                        | 1.36                            | 1.95        | 22            | 11.6           | 8.82             | 452         | 1200                                 |
|                | 10/3/2017   | 0.81                           | 1.4                         | 2.21                            | 1.81        | 17.1          | 48.6           | 9.95             | 399         | 1250                                 |
Table 2 - Groundwater Analytical Results
Golden Valley Electric Association
Healy Power Plant, Healy, Alaska

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## Table 2 - Groundwater Analytical Results
Golden Valley Electric Association
Healy Power Plant, Healy, Alaska

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### Notes:

- Established groundwater protection standards (GWPS) are the Federal Drinking Water Standard Maximum Contaminant Level (MCLs) for each Appendix IV constituent, where available. For the three Appendix IV constituents without available MCLs (cobalt, lithium, and molybdenum), the GWPS is the constituent’s LOQ.
- For detected results, the sample result is listed in this column. For results of non-detect, the Limit of Detection (LOD) is listed in [ ] in this column.
- Duplicate of preceding sample

### Data Flags:

- J Estimated value detected between method reporting limit and limit of quantitation.
- ND Analyte was not detected above the limit of detection. The Limit of Detection is given [in brackets].
- QH, QL or QN Estimated value due to quality control failure. “H”, “L”, or “N” indicates potential high, low, or unknown bias.
- MH, ML, or MN Estimated value due to matrix. “H”, “L”, or “N” indicates potential high, low, or unknown bias.
- B Laboratory Method Blank Contamination
- P Sample preservation requirements were not met. Data was potentially biased low.
- R Sample result is rejected. Refer to Quality Assurance Report (QAR) for explanation.

### Abbreviations:

- LOQ limit of quantitation
- mg/L milligram per liter
- pCi/L pico Curies per liter
- ns no standard
Table 3
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Golden Valley Electric Association
Healy Power Plant, Healy, Alaska

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### Table 3
Groundwater Quality Field Parameters
Golden Valley Electric Association
Healy Power Plant, Healy, Alaska

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**Note:**
- Parameters not collected

**Abbreviations:**
- mS/cm: millisiemens per centimeter
- DO: dissolved oxygen
- mg/L: milligrams per liter
- mV: millivolts
- NTU: nephelometric turbidity units
- ORP: oxidation-reduction potential
Table 4
Comparison of Appendix III Constituents with Background Concentrations
Golden Valley Electric Association
Helay Power Plant, Healy, Alaska

<table>
<thead>
<tr>
<th>Constituent</th>
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Table 4
Comparison of Appendix III Constituents with Background Concentrations
Golden Valley Electric Association
Helay Power Plant, Healy, Alaska

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| TDS         | MW - 1R        | Y                                             | Y                                                 |
|             | MW - 2         |                                              | Y                                                 |
|             | MW - 3         |                                              | Y                                                 |
|             | MW - 4         |                                              | Y                                                 |
|             | MW - 5         |                                              | Y                                                 |
|             | MW - 6         |                                              | Y                                                 |
|             | MW - 7         | --                                            |                                                   |
|             | MW - 8         |                                              | Y                                                 |
|             | MW - 9         |                                              | Y                                                 |
|             | MW - 10        |                                              | N                                                 |

Abbreviations:
ANOVA: analysis of variance
KW: Kruskal-Wallis
Y: yes
N: no
TDS: total dissolved solids

Footnotes:
a Statistically significant differences based on the ANOVA or KW test were determined based on p-values less than 0.05.
b Statistically significant differences for individual well comparisons were determined based on p-values less than 0.01.
-- Background concentrations were those reported for monitoring well MW-7
"Y" indicates that concentrations in a monitoring well were statistically significantly higher than background unless otherwise noted.
## Table 5
Comparison of Appendix IV Constituents with Groundwater Protection Standards

Golden Valley Electric Association
Healy Power Plant, Healy, Alaska

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<td>Y</td>
<td>5.75E-03 c</td>
</tr>
</tbody>
</table>

**Abbreviations:**
GWPS: groundwater protection standard
Y: yes
N: no
TDS: total dissolved solids

**Footnotes:**
a Established groundwater protection standards (GWPS) are the Federal Drinking Water Standard Maximum Contaminant Levels (MCLs) for each Appendix IV constituent, where available. For the three Appendix IV constituents without available MCLs (cobalt, lithium, and molybdenum), the GWPS is the constituent's limit of quantitation (LOQ).
b Statistically significant differences for individual well comparisons with GWPS were determined based on p-values less than 0.01. P-values indicating statistically significant differences are shown in bold font.
c Difference would not be considered statistically significant after Bonferroni correction based on 28 total comparisons.
Table 6 - Recirculating Pond Water Analytical Results
Golden Valley Electric Association
Healy Power Plant, Healy, Alaska

<table>
<thead>
<tr>
<th>Sample Location</th>
<th>Sample ID</th>
<th>Sample Date</th>
<th>Antimony</th>
<th>Arsenic</th>
<th>Barium</th>
<th>Beryllium</th>
<th>Cadmium</th>
<th>Chromium</th>
<th>Cobalt</th>
<th>Fluoride</th>
<th>Lead</th>
<th>Lithium</th>
<th>Mercury (EPA 245.1)</th>
<th>Molybdenum</th>
<th>Selenium</th>
<th>Thallium</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recirculating</td>
<td>SW-1</td>
<td>4/1/2016 20:12</td>
<td>0.00112</td>
<td>0.00091</td>
<td>0.027</td>
<td>0.00030</td>
<td>0.0025</td>
<td>0.0017</td>
<td>0.0002</td>
<td>0.00056</td>
<td>0.0421</td>
<td>0.0001</td>
<td>ND</td>
<td>0.00035</td>
<td>ND</td>
<td>ND</td>
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<tr>
<td>Pond</td>
<td>SW-1</td>
<td>6/1/2016 10:30</td>
<td>0.00595</td>
<td>0.00496</td>
<td>0.038</td>
<td>0.00020</td>
<td>0.0016</td>
<td>0.0072</td>
<td>0.0002</td>
<td>0.00032</td>
<td>0.0341</td>
<td>0.00012</td>
<td>ND</td>
<td>0.0055</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td></td>
<td>SW-1</td>
<td>9/3/2016 13:07</td>
<td>0.00723</td>
<td>0.0025</td>
<td>ND</td>
<td>0.0359</td>
<td>0.0002</td>
<td>0.0045</td>
<td>0.0002</td>
<td>4.28</td>
<td>[0.00011]</td>
<td>ND</td>
<td>0.022</td>
<td>ND</td>
<td>0.0477</td>
<td>ND</td>
</tr>
<tr>
<td></td>
<td>SW-1</td>
<td>10/4/2016 11:30</td>
<td>0.00877</td>
<td>0.00346</td>
<td>0.051</td>
<td>0.00030</td>
<td>0.0002</td>
<td>0.108</td>
<td>0.0002</td>
<td>0.0028</td>
<td>0.0392</td>
<td>[0.0001]</td>
<td>ND</td>
<td>0.022</td>
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<tr>
<td></td>
<td>SW-1</td>
<td>10/4/2016 16:48</td>
<td>0.00034</td>
<td>0.00335</td>
<td>0.243</td>
<td>0.00020</td>
<td>0.0019</td>
<td>0.0020</td>
<td>0.0002</td>
<td>3.15</td>
<td>0.00009</td>
<td>0.0119</td>
<td>0.00011</td>
<td>0.0169</td>
<td>0.026</td>
<td>ND</td>
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<tr>
<td></td>
<td>SW-1</td>
<td>6/8/2017 14:14</td>
<td>0.00126</td>
<td>0.0025</td>
<td>ND</td>
<td>0.4055</td>
<td>0.0002</td>
<td>0.0441</td>
<td>0.0002</td>
<td>1.74</td>
<td>0.0062</td>
<td>0.0134</td>
<td>0.275</td>
<td>0.198</td>
<td>0.0147</td>
<td>ND</td>
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<tr>
<td></td>
<td>SW-1</td>
<td>7/24/2017 14:40</td>
<td>0.00358</td>
<td>0.0025</td>
<td>ND</td>
<td>0.335</td>
<td>0.0002</td>
<td>0.0573</td>
<td>0.0002</td>
<td>2.9</td>
<td>0.0043</td>
<td>0.00922</td>
<td>J [0.0001]</td>
<td>0.0059</td>
<td>0.0278</td>
<td>ND</td>
</tr>
<tr>
<td></td>
<td>DN-1</td>
<td>6/3/2017 8:15</td>
<td>0.00303</td>
<td>0.00326</td>
<td>0.244</td>
<td>0.00020</td>
<td>0.00391</td>
<td>0.0003</td>
<td>0.00314</td>
<td>0.0001</td>
<td>3.56</td>
<td>0.0034</td>
<td>0.0017</td>
<td>ND</td>
<td>0.0519</td>
<td>0.0395</td>
</tr>
</tbody>
</table>

Notes:
* For detected results, the sample result is listed in this column. For results of non-detect, the LOD is listed in [ ] in this column.

**Data Flags:**
- J Estimated value detected between method reporting limit and limit of quantitation.
- ND Analyte was not detected above the limit of detection. The Limit of Detection is given [in brackets].
- QH, QL or QN Estimated value due to quality control failure. "H", "L", or "N" indicates potential high, low, or unknown bias.
- P Sample preservation requirements were not met. Data was potentially biased low.

**Abbreviations:**
- LOD limit of detection
- mg/L milligram per liter
- ns no standard
- pCi/L pico Curies per liter

Table 6 GW_SW Analytical Results_01 17 2018.xlsx
Page 1 of 2
January 2018
Table 6 - Recirculating Pond Water Analytical Results
Golden Valley Electric Association
Healy Power Plant, Healy, Alaska

<table>
<thead>
<tr>
<th>Sample Location</th>
<th>Sample ID</th>
<th>Sample Date</th>
<th>Sample pH</th>
<th>Boron (mg/L)</th>
<th>Calcium (mg/L)</th>
<th>Chloride (mg/L)</th>
<th>Sulfate (mg/L)</th>
<th>pH (Field Measured)</th>
<th>Total Dissolved Solids (SM21 2540C, mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recirculating</td>
<td>SW-1</td>
<td>4/1/2016 22:12</td>
<td>0.28</td>
<td>0.3</td>
<td>0.62</td>
<td>1.79</td>
<td>141</td>
<td>92</td>
<td>12.21</td>
</tr>
<tr>
<td></td>
<td>SW-1</td>
<td>6/1/2016 10:30</td>
<td>0.32</td>
<td>0.3</td>
<td>0.62</td>
<td>1.79</td>
<td>141</td>
<td>92</td>
<td>12.21</td>
</tr>
<tr>
<td></td>
<td>SW-1</td>
<td>8/3/2016 13:07</td>
<td>0.16</td>
<td>-0.25</td>
<td>-0.09</td>
<td>0.685</td>
<td>128</td>
<td>60.4</td>
<td>11.65</td>
</tr>
<tr>
<td></td>
<td>SW-1</td>
<td>10/4/2016 11:30</td>
<td>0.26</td>
<td>1.9</td>
<td>2.18</td>
<td>0.926</td>
<td>145</td>
<td>69.9</td>
<td>12.27</td>
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<tr>
<td></td>
<td>SW-1</td>
<td>4/4/2017 18:48</td>
<td>0.17</td>
<td>0.35</td>
<td>0.58</td>
<td>0.0058</td>
<td>174</td>
<td>88.8</td>
<td>12.73</td>
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<tr>
<td></td>
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<td>0.18</td>
<td>0.46</td>
<td>0.64</td>
<td>0.122</td>
<td>38.9</td>
<td>37.8</td>
<td>11.92</td>
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<tr>
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<td>7/24/2017 14:40</td>
<td>0.13</td>
<td>P</td>
<td>-0.02</td>
<td>P</td>
<td>0.291</td>
<td>94.3</td>
<td>29.1</td>
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<td></td>
<td>SW-1</td>
<td>10/3/2017 5:15</td>
<td>0.11</td>
<td>0.29</td>
<td>0.4</td>
<td>0.294</td>
<td>73.7</td>
<td>15.4</td>
<td>11.82</td>
</tr>
</tbody>
</table>

Notes:
* For detected results, the sample result is listed in this column. For results of non-detect, the LOD is listed in [  ] in this column.

Data Flags:
J Estimated value detected between method reporting limit and limit of quantitation.
ND Analyte was not detected above the method reporting. The limit of detection is given [in brackets].
OH, QL or QN Estimated value due to quality control failure. "H", "L", or "N" indicates potential high, low, or unknown bias.
ns no standard
P Sample preservation requirements were not met. Data was potentially biased low.

Abbreviations:
LOD limit of detection
mg/L milligram per liter
PCi/L pico Curies per liter
Table 7
Recirculating Pond Water Quality Field Parameters
Golden Valley Electric Association
Healy Power Plant, Healy, Alaska

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Sample Date</th>
<th>Temperature (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>pH</th>
<th>ORP (mV)</th>
<th>Turbidity (NTU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW-1</td>
<td>4/1/2016</td>
<td>8.05</td>
<td>1817</td>
<td>11.70</td>
<td>12.21</td>
<td>-8.3</td>
<td>13.56</td>
</tr>
<tr>
<td></td>
<td>6/1/2016</td>
<td>19.26</td>
<td>1280</td>
<td>8.00</td>
<td>11.65</td>
<td>45.3</td>
<td>10.15</td>
</tr>
<tr>
<td></td>
<td>8/3/2016</td>
<td>17.84</td>
<td>1328</td>
<td>8.27</td>
<td>11.65</td>
<td>20.1</td>
<td>7.26</td>
</tr>
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<td></td>
<td>10/4/2016</td>
<td>8.75</td>
<td>1396</td>
<td>10.12</td>
<td>12.27</td>
<td>60.6</td>
<td>--</td>
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<td></td>
<td>4/4/2017</td>
<td>6.37</td>
<td>2955</td>
<td>11.35</td>
<td>12.73</td>
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<td>--</td>
</tr>
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<td></td>
<td>6/6/2017</td>
<td>17.01</td>
<td>1051</td>
<td>8.16</td>
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<td>85.10</td>
<td>--</td>
</tr>
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<td></td>
<td>7/24/2017</td>
<td>20.78</td>
<td>1786</td>
<td>5.15</td>
<td>11.60</td>
<td>61.50</td>
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</tr>
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<td></td>
<td>10/3/2017</td>
<td>10.37</td>
<td>1980</td>
<td>9.31</td>
<td>11.82</td>
<td>202.0</td>
<td>--</td>
</tr>
</tbody>
</table>

Abbreviations:
- μS/cm: microsiemens per centimeter
- DO: dissolved oxygen
- mg/L: milligrams per liter
- mV: millivolts
- NTU: nephelometric turbidity units
- ORP: oxidation-reduction potential
- --: parameter not recorded
APPENDIX A

MONITORING WELL BORING AND CONSTRUCTION LOGS
### WELL NUMBER MW-1R

**PROJECT NAME:** Groundwater Monitoring Program  
**PROJECT LOCATION:** Healy Power Plant, Healy AK

**DATE STARTED:** 3/31/16  
**COMPLETED:** 3/31/16

**DRILLING METHOD:** Hollow Stem Auger  
**LOGGED BY:** K. Johnson  
**CHECKED BY:** H. Simon

**HOLE SIZE:** 2.0 inch diameter

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>RECOVERY (%)</th>
<th>BLOW COUNTS PER FOOT (N VALUE)</th>
<th>USCS</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.2</td>
<td></td>
<td></td>
<td></td>
<td>Transition between <strong>SILTY SAND WITH GRAVEL (FILL)</strong> and <strong>ORGANIC SOIL</strong> between 6.2 and 7.0 feet. Exact depth unknown due to lack of recovery. <strong>ORGANIC SOIL</strong> original ground surface below fill material. <strong>SILTY SAND WITH GRAVEL</strong> mostly fine, few coarse sand, few to little coarse gravels, trace to some cobbles, brown to grey.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>NS</td>
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</tr>
<tr>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**
- **AT TIME OF DRILLING** 17.0 feet
- **AFTER DRILLING** 19.26 feet BTOC

**REMARKS:**
- **NS** = Not Sampled
- Driller: Carl Mutchler  
- Drill: Acker ADII

Refer to monitoring well log for well completion details.
### WELL NUMBER MW-2

**HOLE SIZE**: 4.0-inch diameter

**DATE STARTED**: 9/22/90  
**COMPLETED**: 9/22/90

**GROUND ELEVATION**:  
**GROUND WATER LEVELS**:  
**AT TIME OF DRILLING**: 5.5 ft. BGS  
**AFTER DRILLING**: 11.02 ft. BTOC 4/1/2016

**DRILLING CONTRACTOR**:  
**DRILLING METHOD**: Hollow Stem Auger

**LOGGED BY**: Shannon and Wilson  
**CHECKED BY**:  
**NOTES**: Reproduced Well Log

**WELL DIAGRAM**

#### GRAPHIC LOG

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>INTERVAL</th>
<th>TYPE</th>
<th>NAME</th>
<th>U.S.C.S.</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SAND with trace organics, loose, black to dark gray, pieces of coal up to 1 inch in diameter</td>
</tr>
<tr>
<td>4.5</td>
<td></td>
<td>SM</td>
<td></td>
<td>4.5</td>
<td>SILT fine sandy, Gray, Soft, pieces of coal up to 1/4 inch diameter</td>
</tr>
<tr>
<td>7.0</td>
<td></td>
<td>ML</td>
<td></td>
<td>7.0</td>
<td>GRAVEL fine to coarse, orange brown, Medium dense, slightly silty, slightly sandy</td>
</tr>
<tr>
<td>9.5</td>
<td></td>
<td>GM</td>
<td></td>
<td>9.5</td>
<td>GRAVEL fine to coarse, brown, Medium dense to dense, coarse sandy</td>
</tr>
<tr>
<td>19.0</td>
<td></td>
<td>GP-GM</td>
<td></td>
<td>19.0</td>
<td>GRAVEL sandy fine Loose grading to dense, brown to gray,</td>
</tr>
<tr>
<td>31.5</td>
<td></td>
<td>GW-GM</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### WELL COMPLETION DETAILS:

- 0.0 to 2.0': 2"-diameter, flush-threaded Sch. 40 PVC riser.  
- 2.0 to 11.8': 2"-diameter, flush-threaded Sch. 40 PVC 0.010-slotted well screen.  
- 11.8 to 12.0': 2"-diameter Sch. 40 PVC end cap.  
- 0.0 to 1.0 feet: Concrete  
- 1.0 to 1.5 feet: Hydrated bentonite chips  
- 1.5 to 13.0 feet: 10/20 silica sand filter pack  
- 13.0 to 15.0 feet: Hydrated bentonite chips

**REMARKS**

**WELL NUMBER MW-3**

**CLIENT** Golden Valley Electric Association Inc.  
**PROJECT NAME** Groundwater Monitoring Program  
**PROJECT NUMBER** 104.00367.16002 Task 140  
**PROJECT LOCATION** Healy Power Plant, Healy AK

**DATE STARTED** 3/1/02  
**COMPLETED** 3/2/02  
**GROUND ELEVATION**  
**HOLE SIZE** 2.0 inch diameter  
**DRILLING CONTRACTOR** Homestead Drilling Company  
**DRILLING METHOD** Hollow Stem Auger  
**LOGGED BY** Shannon and Wilson  
**CHECKED BY** __________

**DEPTH (ft)**  
**INTERVAL**  
**TYPE**  
**NAME**  
**U.S.C.S.**  
**GRAPHIC LOG**  
**MATERIAL DESCRIPTION**

- **11.5**  
  **SM**  
  **SILTY SAND**

Boring completed at 13.0 feet.

**WELL COMPLETION DETAILS:**
- 0.0 to 3.0': 2”-diameter, flush-threaded Sch. 40 PVC riser.
- 3.0 to 12.8': 2”-diameter, flush-threaded Sch. 40 PVC 0.010-slotted well screen.
- 12.8 to 13.0': 2”-diameter Sch. 40 PVC end cap.

- 0.0 to 1.0 feet: Concrete
- 1.0 to 2.5 feet: Hydrated bentonite chips
- 2.5 to 13.0 feet: 10/20 silica sand filter pack

**REMARKS**
Reproduced log from October 1990 Shannon and Wilson  
Drill: Acker ADII

**Boring Depth to Water 7.0 ft.**

**Depth to Water 9.49 ft. BTOC**

**Boring completed at 13.0 feet.**
### Project Details
- **Client:** Golden Valley Electric Association Inc.
- **Project Name:** Groundwater Monitoring Program
- **Project Number:** 104.00367.16002 Task 140
- **Project Location:** Healy Power Plant, Healy AK

### Log Details
- **Well Number:** MW-4
- **Date Started:** 3/28/16
- **Completed:** 3/28/16
- **Ground Elevation:** 1275.76 feet
- **Hole Size:** 2.0 inch diameter
- **Drilling Contractor:** Homestead Drilling Company
- **Drilling Method:** Hollow Stem Auger
- **Logged By:** K. Johnson
- **Checked By:** H. Simon

### Boring Log

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Recovery (%)</th>
<th>Blow Counts Per Foot (N Value)</th>
<th>USC</th>
<th>Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
<td>3 / 11, 14 / 11</td>
<td>GP-GM</td>
<td></td>
<td>FILL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SILTY SAND well graded sand, brown</td>
</tr>
<tr>
<td>0</td>
<td>100</td>
<td>12 / 7</td>
<td>SW-SM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 / 5</td>
<td>GW-GM</td>
<td></td>
<td>COBBLE</td>
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<td></td>
</tr>
<tr>
<td>10</td>
<td>100</td>
<td>1 / 3</td>
<td></td>
<td></td>
<td>GRAVEL WITH SAND</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Transition between GRAVEL WITH SAND and COAL between 4.3 and 6.0 feet. Exact depth unknown due to lack of recovery.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>COAL crushed, some sand</td>
</tr>
<tr>
<td>10</td>
<td>100</td>
<td>3 / 22</td>
<td></td>
<td></td>
<td>SILTY SAND well graded sand, brown, few cobbles; interbedded with SANDY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>42 / 88</td>
<td></td>
<td></td>
<td>GRAVEL WITH SIL containing rounded to subrounded gravels, well graded sands, some cobbles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13 / 29</td>
<td></td>
<td></td>
<td>SILTY GRAVEL brown, well graded; interbedded with cobbles and coarse sand to fine gravels</td>
</tr>
<tr>
<td>10</td>
<td>100</td>
<td>23 / 20</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>100</td>
<td>14 / 19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>35 / 41</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>100</td>
<td>29 / 37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>27 / 48</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Boring completed at 14.2 feet**

### Remarks
- **NS = Not Sampled**
- **Driller:** Carl Mutchler
- **Drill:** Acker ADII

Refer to monitoring well log for well completion details.
## WELL NUMBER MW-5

**CLIENT:** Golden Valley Electric Association Inc.

**PROJECT NAME:** Groundwater Monitoring Program

**PROJECT NUMBER:** 104.00367.16002 Task 140

**DATE STARTED:** 3/29/16  
**COMPLETED:** 3/29/16

**GROUND ELEVATION:** 1279.08 feet  
**HOLE SIZE:** 2.0 inch diameter

**DRILLING CONTRACTOR:** Homestead Drilling Company

**DRILLING METHOD:** Hollow Stem Auger

**LOGGED BY:** K. Johnson  
**CHECKED BY:** H. Simon

**RETURN**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>RECOVERY (%)</th>
<th>BLOW COUNTS PER FOOT (N VALUE)</th>
<th>USC</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
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<tbody>
<tr>
<td>0</td>
<td>100</td>
<td>12 / 50</td>
<td>GP-</td>
<td>0.2</td>
<td>FILL with grass, coal, and debris</td>
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<tr>
<td></td>
<td></td>
<td>40 / 43</td>
<td>GM</td>
<td>0.2</td>
<td>GRAVEL WITH SAND</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50 for 6”</td>
<td>GW-</td>
<td>2.0</td>
<td>few cobbles, medium grained sand</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>SM</td>
<td>GM</td>
<td>7.8</td>
<td>SILTY SAND WITH GRAVEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11.6</td>
<td>GRAVELLY SAND WITH SILT</td>
</tr>
<tr>
<td>5</td>
<td>NS</td>
<td></td>
<td></td>
<td>14.0</td>
<td>GRAVEL</td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>24 / 25</td>
<td>SM</td>
<td>11.6</td>
<td>brown, fine to coarse angular gravel, pulverized cobbles; interbedded with SAND WITH SILT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>29 / 15</td>
<td></td>
<td></td>
<td>brown, wet</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>8 / 21</td>
<td>GW-</td>
<td>15.42</td>
<td>COBBLE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 / 4</td>
<td>GM</td>
<td></td>
<td>brown, wet, fine to coarse angular gravel, pulverized cobbles; interbedded with SAND WITH SILT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 / 8</td>
<td></td>
<td></td>
<td>brown, wet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 / 15</td>
<td></td>
<td></td>
<td>brown, wet</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>30 / 38</td>
<td>SM</td>
<td></td>
<td>GRAVEL</td>
</tr>
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<td></td>
<td></td>
<td>38 / 34</td>
<td></td>
<td></td>
<td>brown, wet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19 / 7</td>
<td></td>
<td></td>
<td>brown, wet</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>6 / 8</td>
<td></td>
<td></td>
<td>GRAVEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 / 9</td>
<td></td>
<td></td>
<td>brown, wet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 / 10</td>
<td></td>
<td></td>
<td>brown, wet</td>
</tr>
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<td></td>
<td></td>
<td>7 / 7</td>
<td></td>
<td></td>
<td>brown, wet</td>
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<tr>
<td></td>
<td>20</td>
<td>4 / 20</td>
<td>SM</td>
<td></td>
<td>GRAVEL</td>
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<tr>
<td></td>
<td></td>
<td>19 / 20</td>
<td></td>
<td></td>
<td>brown, wet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 / 19</td>
<td></td>
<td></td>
<td>brown, wet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17 / 15</td>
<td></td>
<td></td>
<td>brown, wet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>38 / 34</td>
<td></td>
<td></td>
<td>GRAVEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 / 15</td>
<td></td>
<td></td>
<td>brown, wet</td>
</tr>
</tbody>
</table>

Boring completed at 24.0 feet

**REMARKS**

NS = Not Sampled  
Driller: Carl Mutchler  
Drill: Acker ADII

Refer to monitoring well log for well completion details.
### WELL NUMBER MW-6

#### PROJECT LOCATION
Healy Power Plant, Healy AK

#### DATE STARTED
3/29/16

#### COMPLETED
3/29/16

#### GROUND ELEVATION
1276.14 feet

#### HOLE SIZE
2.0 inch diameter

#### DRILLING CONTRACTOR
Homestead Drilling Company

#### DRILLING METHOD
Hollow Stem Auger

#### DRILLED TO
22.0  feet

#### GROUND WATER LEVELS:

- **NS = Not Sampled**

- **GW-GM**
  - 2.0 inch diameter coarse gravel, brown, rounded clasts, partially frozen, some cobbles, some coal fragments, firm; interbedded with GRAVEL/COBBLES WITH SILTY SAND

- **SW-SM**
  - Transition between GRAVEL WITH SILT and SAND WITH SILT between 6.2 and 10.0 feet. Exact depth unknown due to lack of recovery.

- **GW**
  - Clean, fine to coarse gravel, few cobbles, brown; with interbed of SAND

- **COAL**
  - Trace clay

- **CL**
  - Transition between COAL and CLAY between 19.7 and 20.0 feet. Exact depth unknown due to lack of recovery.

**REMARKS**

- **NS = Not Sampled**

- **GW-GM**
  - 2.0 inch diameter coarse gravel, brown, rounded clasts, partially frozen, some cobbles, some coal fragments, firm; interbedded with GRAVEL/COBBLES WITH SILTY SAND

- **SW-SM**
  - Transition between GRAVEL WITH SILT and SAND WITH SILT between 6.2 and 10.0 feet. Exact depth unknown due to lack of recovery.

- **GW**
  - Clean, fine to coarse gravel, few cobbles, brown; with interbed of SAND

- **COAL**
  - Trace clay

- **CL**
  - Transition between COAL and CLAY between 19.7 and 20.0 feet. Exact depth unknown due to lack of recovery.

Boring completed at 22.0 feet.
Boring completed at 37.0 feet.

**REMARKS**

NS = Not Sampled
Driller: Carl Mutchler     Drill: Acker ADII

Refer to monitoring well log for well completion details.
**WELL NUMBER MW-8**

**DATE STARTED** 3/30/16  **COMPLETED** 3/31/16  **GROUND ELEVATION** 1276.44 feet  **HOLE SIZE** 2.0 inch diameter

**PROJECT LOCATION** Healy Power Plant, Healy AK

**CLIENT** Golden Valley Electric Association Inc.  **PROJECT NAME** Groundwater Monitoring Program

**PROJECT NUMBER** 104.00367.16002 Task 140  **PROJECT NUMBER**

**DRILLING CONTRACTOR** Homestead Drilling Company  **GROUND WATER LEVELS:**

- **NS** = Not Sampled
- Driller: Carl Mutchler  Drill: Acker ADII
- Refer to monitoring well log for well completion details.

**LOGGED BY** K. Johnson  **CHECKED BY** H. Simon

**HOLE SIZE** 2.0 inch diameter

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>RECOVERY (%)</th>
<th>BLOW COUNTS PER FOOT (N VALUE)</th>
<th>U.S.C. S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>95</td>
<td>27/35</td>
<td>SM</td>
<td>2.0</td>
<td>SAND WITH SILT</td>
</tr>
<tr>
<td>5</td>
<td>80</td>
<td>28 /44</td>
<td>SM</td>
<td></td>
<td>SAND WITH SILT AND GRAVELY COBBLES fine to coarse sand, fine gravels, dry; interbedded with SILTY SAND fine sand, trace fine gravels, moist and SAND WITH SILT very fine to medium sand, trace to few fine gravels, dry to moist, grey, some coal fragments</td>
</tr>
<tr>
<td>10</td>
<td>40</td>
<td>37 /50 for 6&quot;</td>
<td>SM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>70</td>
<td>3 /21</td>
<td>SW-SM</td>
<td>14.3</td>
<td>SAND to SILTY SAND fine to coarse sand, few silt, few fine gravels, trace cobbles, dry brown</td>
</tr>
<tr>
<td>20</td>
<td>85</td>
<td>8 /8</td>
<td>SW-SM</td>
<td>17.7</td>
<td>Transition between SAND to SILTY SAND and GRAVELLY SAND WITH SILT between 17.7 and 18.0 feet. Exact depth unknown due to lack of recovery.</td>
</tr>
<tr>
<td>25</td>
<td>55</td>
<td>8 /8</td>
<td>NS</td>
<td>30.0</td>
<td></td>
</tr>
</tbody>
</table>

Boring completed at 30.0 feet
**WELL NUMBER MW-9**

**CLIENT**  Golden Valley Electric Association Inc.  
**PROJECT NAME**  Groundwater Monitoring Program  
**PROJECT NUMBER**  104.00367.17001 Task 140  
**PROJECT LOCATION**  Healy Power Plant, Healy AK  

**DATE STARTED**  4/4/17  
**COMPLETED**  4/4/17  
**GROUND ELEVATION**  1277.4 feet  

**DRILLING CONTRACTOR**  Homestead Drilling Company  
**GROUND WATER LEVELS:**  

- **AT TIME OF DRILLING**  11.5 feet  
- **AFTER DRILLING**  NM  

**DRILLING METHOD**  Hollow Stem Auger (4.5 inch)  

**LOGGED BY**  B. Siwiec, S. Oliver  
**CHECKED BY**  H. Simon  

**DEPTH (ft)**  

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>RECOVERY (%)</th>
<th>BLOW COUNTS PER FOOT (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>NS</td>
<td>22 / 50 for 6”</td>
<td>SW</td>
<td><img src="graphic-log" alt="" /></td>
<td>GRAVELLY SAND well graded, trace fines, clasts up to 2 cm, dark brown, dry</td>
</tr>
<tr>
<td>5</td>
<td>NS</td>
<td>14 / 50 for 6”</td>
<td>GL</td>
<td><img src="graphic-log" alt="" /></td>
<td>SANDY GRAVEL few fines, clasts up to 5 cm, dark brown, moist, frozen in some places</td>
</tr>
<tr>
<td>10</td>
<td>NS</td>
<td>12 / 16</td>
<td>GW</td>
<td><img src="graphic-log" alt="" /></td>
<td>Saturated at 11.5 feet</td>
</tr>
<tr>
<td>15</td>
<td>NS</td>
<td>2 / 1</td>
<td>GW</td>
<td><img src="graphic-log" alt="" /></td>
<td>SANDY GRAVEL WITH SILT clasts up to 3 cm, dark brown, saturated, soft</td>
</tr>
<tr>
<td>20</td>
<td>NS</td>
<td>14 / 16</td>
<td>GW</td>
<td><img src="graphic-log" alt="" /></td>
<td>SANDY GRAVEL WITH SILT clasts up to 6 cm or greater, brown to gray, saturated</td>
</tr>
</tbody>
</table>

**NOTES**  
- 2-inch Split Spoon Sampler  

**PROJECT LOCATION**  Healy Power Plant, Healy AK  

**PROJECT NAME**  Groundwater Monitoring Program  

**PROJECT NUMBER**  104.00367.17001 Task 140  

**CLIENT**  Golden Valley Electric Association Inc.  

**LOGGED BY**  B. Siwiec, S. Oliver  
**CHECKED BY**  H. Simon  

**REMARKS**  
NS = Not Sampled  
NM = Not Measured  

Refer to monitoring well log for well completion details.
### WELL NUMBER MW-10

**CLIENT** | Golden Valley Electric Association Inc.  
---|---
**PROJECT NAME** | Groundwater Monitoring Program  
---|---
**PROJECT NUMBER** | 104.00367.17001 Task 140  
---|---
**PROJECT LOCATION** | Healy Power Plant, Healy AK  
---|---
**DATE STARTED** | 4/3/17  
---|---
**COMPLETED** | 4/4/17  
---|---
**GROUND ELEVATION** | 1292.1 feet  
---|---
**DRILLING CONTRACTOR** | Homestead Drilling Company  
---|---
**DRILLING METHOD** | Hollow Stem Auger (4.5 inch)  
---|---
**LOGGED BY** | B. Siwiec, S. Oliver  
---|---
**CHECKED BY** | H. Simon  
---|---
**NOTES** | 2-inch Split Spoon Sampler  
---|---

### DEPTH (ft) | RECOVERY (%) | BLOW COUNTS PER FT (N VALUE) | U.S.C.S. | GRAPHIC LOG | MATERIAL DESCRIPTION
---|---|---|---|---|---
0  | NS  |  |  |  |  
5  | 120  | 26 / 50 for 4"  | SP  |  | GRAVELLY SAND some cobbles, light brown/tan, dry  
| 109  | 26 / 50 for 5"  |  |  |  
| 100  | 37 / 29  | ML  | 7.4  |  
| 87.5  | 9 / 37  | SM  | 6.0  |  
| 106  | 16 / 37  | 41 / 50  |  |  
| 93  | 16 / 43  |  |  |  
| 15  | 125  | 50 for 4"  | SP  |  | GRAVELLY SAND little silt, weathered clasts up to 2 cm, gray, moist  
| 120  | 16 / 40  |  |  |  
| 20  | 110  | 50 for 4"  | SP  |  | GRAVELLY SAND trace to little fines, clasts up to 4 cm, gray, dry  
| 118  | 29 / 50 for 4"  |  |  |  
| 25  | 112  | 14 / 36  | SP  |  | GRAVELLY SAND little to no fines, well graded sand with fine gravel, gray, saturated  
| 111  | 50 for 5"  |  |  |  
| 45  | 144  | 45 / 50 for 3"  | SW  | 27.5  | Large cobbles at 26.5 feet  
| 27  | 127  | 27 / 50 for 5"  | SW  | 30.0  | Transition between GRAVELLY SAND and SAND WITH SILT between 27 and 28 feet. Exact depth unknown due to lack of recovery.  

### REMARKS

- **NS** = Not Sampled  
- **NM** = Not Measured

Refer to monitoring well log for well completion details.
**REMARKS**

Driller: Carl Mutchler  
Drill: Acker ADII

Refer to boring log for drilling and lithology information.

**TOTAL DEPTH DRILLED:** 25 feet bgs

**TOTAL DEPTH OF WELL:** 25.3 feet bgs
**WELL NUMBER MW-2**

**PROJECT NAME:** Groundwater Monitoring Program

**PROJECT LOCATION:** Healy Power Plant, Healy AK

**DATE STARTED:** 9/22/90  **COMPLETED:** 9/22/90

**GROUND ELEVATION:**  **HOLE SIZE:** 4.0-inch diameter

**DRILLING CONTRACTOR:**

**GROUND WATER LEVELS:**
- **AT TIME OF DRILLING:** 5.5 ft. BGS
- **AFTER DRILLING:** 11.02 ft. BTOC 4/1/2016

**LOGGED BY:** Shannon and Wilson  **CHECKED BY:**

**NOTES:** Reproduced Well Log

---

### DEPTH (ft)

<table>
<thead>
<tr>
<th>INTERVAL</th>
<th>TYPE</th>
<th>NAME</th>
<th>U.S.C.S.</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td>SM</td>
<td>4.5</td>
<td>SAND with trace organics, loose, black to dark gray, pieces of coal up to 1 inch in diameter</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>ML</td>
<td>7.0</td>
<td>SILT fine sandy, Gray, Soft, pieces of coal up to 1/4 inch diameter</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>GM</td>
<td>9.5</td>
<td>GRAVEL fine to coarse, orange brown, Medium dense, slightly silty, slightly sandy</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>GP-GM</td>
<td>19.0</td>
<td>GRAVEL fine to coarse, brown, Medium dense to dense, coarse sandy</td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td>GRAVEL sandy fine Loose grading to dense, brown to gray,</td>
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<tr>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>31.5</td>
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<td></td>
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<td></td>
</tr>
</tbody>
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---

### WELL COMPLETION DETAILS:

- 0.0 to 2.0': 2"-diameter, flush-threaded Sch. 40 PVC riser.
- 2.0 to 11.8': 2"-diameter, flush-threaded Sch. 40 PVC 0.010-slotted well screen.
- 11.8 to 12.0': 2"-diameter Sch. 40 PVC end cap.

### REMARKS
WELL NUMBER MW-3

REMARKS
Reproduced log from October 1990 Shannon and Wilson
Drill: Acker ADII

WELL COMPLETION DETAILS:
0.0 to 3.0': 2"-diameter, flush-threaded Sch. 40 PVC riser.
3.0 to 12.8': 2"-diameter, flush-threaded Sch. 40 PVC 0.010-slotted well screen.
12.8 to 13.0': 2"-diameter Sch. 40 PVC end cap.

0.0 to 1.0 feet: Concrete
1.0 to 2.5 feet: Hydrated bentonite chips
2.5 to 13.0 feet: 10/20 silica sand filter pack

SILTY SANDY GRAVEL brown, occasional cobbles

SILTY SAND

Minimum water level 9.49 ft. BTOC
Boring Depth to Water 7.0 ft.
**REMARKS**
Driller: Carl Mutchler     Drill: Acker ADII

Refer to boring log for drilling and lithology information.

**WELL NUMBER MW-4**

**PROJECT NAME** Groundwater Monitoring Program

**PROJECT LOCATION** Healy Power Plant, Healy AK

**DATE STARTED** 3/28/16   **COMPLETED** 3/28/16

**DRILLING CONTRACTOR** Homestead Drilling Company

**LOGGED BY**  K. Johnson   **CHECKED BY**  H. Simon

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>stick up 2.95 ft.</td>
</tr>
<tr>
<td>10</td>
<td>2&quot;-diameter Sch. 40 PVC</td>
</tr>
<tr>
<td>5</td>
<td>2&quot;-diameter Sch. 40 PVC</td>
</tr>
<tr>
<td>0</td>
<td>2&quot;-diameter Sch. 40 PVC end cap</td>
</tr>
</tbody>
</table>

**WELL DIAGRAM**

**WELL COMPLETION INFORMATION**

**WELL CASING:**
- Stickup: 1278.81 feet [NAVD 88]
- Type: Flush-Treaded Schedule 40 PVC riser
  - Diameter: 2"

**SCREEN:**
- 4.0 to 14.0 feet
  - Type: Flush-Treaded Schedule 40 PVC riser
  - Screen Diameter: 2"
  - Slot Size: 0.020"

**BOTTOM COMPLETION:** 14.0 to 14.3 feet
- Type: Schedule 40 PVC End Cap

**SURFACE PLUG:**
- 0.0 to 1.0 feet
- Type: Cement

**BACKFILL:**
- N/A
- Type: None

**SEAL:**
- 1.0 to 2.0 feet
  - Type: Hydrated Bentonite Chips (Baroid 3/8" Size)

**FILTER PACK:**
- 2.0 to 14.3 feet
- Type: Premier Silica Sand 10/20

**WELL ELEVATION:**
- 1275.76 feet

**GROUND WATER LEVELS:**
- AT TIME OF DRILLING 3.0 feet
- AFTER DRILLING 9.69 feet BTOC

**TOTAL DEPTH DRILLED:** 14.3 feet bgs

**TOTAL DEPTH OF WELL:** 14.3 feet bgs

**PROJECT NUMBER** 104.00367.16002 Task 140

**LOGGED BY**  K. Johnson   **CHECKED BY**  H. Simon

**DATE STARTED** 3/28/16   **COMPLETED** 3/28/16

**GROUND ELEVATION** 1275.76 feet

**HOLE SIZE** 2.0 inch diameter

**PROJECT LOCATION**
- Healy Power Plant, Healy AK

**PROJECT NAME**
- Groundwater Monitoring Program

**CLIENT**
- Golden Valley Electric Association Inc.

**DRILLER**
- Carl Mutchler

**DRILL**
- Acker ADII
Well Diagram:

- **WELL CASING**: 3.20 to 4.0 feet
  - Stickup: 1282.35 feet [NAVD 88]
  - Type: Flush-Treaded Schedule 40 PVC riser
  - Diameter: 2"

- **SCREEN**: 4.0 to 24.0 feet
  - Type: Flush-Treaded Schedule 40 PVC riser
  - Screen Diameter: 2"
  - Slot Size: 0.020"

- **BOTTOM COMPLETION**: 24.0 to 24.3 feet
  - Type: Schedule 40 PVC End Cap

- **SURFACE PLUG**: 0.0 to 1.0 feet
  - Type: Cement

- **BACKFILL**: N/A
  - Type: None

- **SEAL**: 1.0 to 2.5 feet
  - Type: Hydrated Bentonite Chips (Baroid 3/8 Size)

- **FILTER PACK**: 2.5 to 24.3 feet
  - Type: Premier Silica Sand 10/20

**HOLE COMPLETION NOTES**:
- Total Depth Drilled: 24 feet bgs
- Total Depth of Well: 24.3 feet bgs

**REMARKS**
Driller: Carl Mutchler   Drill: Acker ADII

Refer to boring log for drilling and lithology information.
**WELL NUMBER MW-6**

**PROJECT NAME**  Groundwater Monitoring Program

**DATE STARTED**  3/29/16  **COMPLETED**  3/29/16

**PROJECT NUMBER**  104.00367.16002 Task 140  **PROJECT LOCATION**  Healy Power Plant, Healy AK

**DRILLING CONTRACTOR**  Homestead Drilling Company  **GROUND ELEVATION**  1276.14 feet  **HOLE SIZE**  2.0 inch diameter

**LOGGED BY**  K. Johnson  **CHECKED BY**  H. Simon

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### WELL DIAGRAM

- **stick up 3.05 ft.**
- Concrete
- Backfill
- 2\(^{-}\)\text{-diameter Sch. 40 PVC}
- Hydrated bentonite chips
- 10/20 silica sand pack
- 2\(^{-}\)\text{-diameter Sch. 40 PVC 0.020\(^{-}\)\text{-slotted screen}}
- 2\(^{-}\)\text{-diameter Sch. 40 PVC end cap}

---

### WELL COMPLETION INFORMATION

- **WELL CASING:**  -3.05 to 11.7 feet
  - Stickup:  1279.31 feet [NAVD 88]
  - Type:  Flush-Treaded Schedule 40 PVC riser
  - Diameter:  2\(^{-}\)

- **SCREEN:**  11.7 to 21.7 feet
  - Type:  Flush-Treaded Schedule 40 PVC riser
  - Screen Diameter:  2\(^{-}\)
  - Slot Size:  0.020\(^{-}\)

- **BOTTOM COMPLETION:**  21.7 to 22.0 feet
  - Type:  Schedule 40 PVC End Cap

- **SURFACE PLUG:**  0.0 to 1.0 feet
  - Type:  Cement

- **BACKFILL:**  1.0 to 9.0 feet
  - Type:  Cuttings

- **SEAL:**  9.0 to 11.0 feet
  - Type:  Hydrated Bentonite Chips (Baroid 3/8\(^{-}\) Size)

- **FILTER PACK:**  11.0 to 22.0 feet
  - Type:  Premier Silica Sand 10/20

---

### REMARKS

Driller: Carl Mutchler  
Drill: Acker ADII

Refer to boring log for drilling and lithology information.
WELL NUMBER MW-7

-2.35 to 2.0 feet
Stickup: 1301.60 feet [NAVD 88]
Type: Flush-Treaded Schedule 40 PVC riser
Diameter: 2"

2.0 to 17.0 feet
Type: Flush-Treaded Schedule 40 PVC riser
Screen Diameter: 2"
Slot Size: 0.020"

WELL CASING:
17.0 to 17.3 feet
Type: Schedule 40 PVC End Cap

BOTTOM COMPLETION:
0.0 to 1.0 feet
Type: Cement

SURFACE PLUG:
1.0 to 2.0 feet
Type: Hydrated Bentonite Chips (Baroid 3/8" Size)

FILTER PACK:
17.0 to 17.3 feet
Type: Premier Silica Sand 10/20

HOLE COMPLETION NOTES:
Total Depth Drilled: 37 feet bgs
Total Depth of Well: 17.3 feet bgs

REMARKS
Driller: Carl Mutchler     Drill: Acker ADII
Refer to boring log for drilling and lithology information.
## WELL NUMBER MW-8

### WELL DIAGRAM

- ** Depths:**
  - 0 ft: Concrete
  - 2.05 ft: Hydrated bentonite chips
  - 3.0 ft: 2"-diameter Sch. 40 PVC
  - 5 ft: Backfill
  - 6 ft: Hydrated bentonite chips
  - 10 ft: 10/20 silica sand pack
  - 15 ft: 2"-diameter Sch. 40 PVC
  - 20 ft: 0.020"-slotted screen
  - 25 ft: 2"-diameter Sch. 40 PVC end cap

### WELL COMPLETION INFORMATION

- **WELL CASING:** 3.05 to 2.0 feet
  - Stickup: 1279.61 feet [NAVD 88]
  - Type: Flush-Treaded Schedule 40 PVC riser
  - Diameter: 2"

- **SCREEN:** 15.0 to 29.7 feet
  - Type: Flush-Treaded Schedule 40 PVC riser
  - Screen Diameter: 2"
  - Slot Size: 0.020"

- **BOTTOM COMPLETION:** 29.7 to 30 feet
  - Type: Schedule 40 PVC End Cap

- **SURFACE PLUG:** 0.0 to 1.0 feet
  - Type: Cement

- **BACKFILL:** 2.0 to 11.0 feet
  - Type: Cuttings

- **SEAL:** 1.0 to 2.0 feet and 11.0 to 12.0 feet
  - Type: Hydrated Bentonite Chips (Baroid 3/8" Size)

- **FILTER PACK:** 12.0 to 30.0 feet
  - Type: Premier Silica Sand 10/20

### HOLE COMPLETION NOTES:

- **Total Depth Drilled:** 30 feet bgs
- **Total Depth of Well:** 30.0 feet bgs

### REMARKS

Driller: Carl Mutchler    Drill: Acker ADII

Refer to boring log for drilling and lithology information.
**WELL NUMBER MW-9**

**PROJECT NAME**  Groundwater Monitoring Program

**PROJECT LOCATION**  Healy Power Plant, Healy AK

**DATE STARTED**  4/4/17  **COMPLETED**  4/4/17

**CLIENT**  Golden Valley Electric Association Inc.

**PROJECT NUMBER**  104.00367.17001 Task 140

**GROUND ELEVATION**  1277.4 feet

**GROUND WATER LEVELS:**

\[ \text{AT TIME OF DRILLING} \quad 11.5 \text{ feet} \]

\[ \text{AFTER DRILLING} \quad \text{NM} \]

**REMARKS**

Total Depth Drilled: 20 feet bgs

Total Depth of Well: 20.0 feet bgs

---

**WELL DIAGRAM**

- Stick up 2.99 feet
- Concrete Backfill
- 3/8" bentonite chips
- 2" Sch. 40 PVC
- 10/20 silica sand
- 2" Sch. 40 PVC 0.020" slotted screen
- 2" Sch. 40 PVC end cap

**WELL COMPLETION INFORMATION**

**WELL CASING:**
- **Depth:** -2.99 to 5.0 feet
- **Stickup:** 1280.43 feet [NAVD 88]
- **Type:** Flush-Treaded Schedule 40 PVC riser
- **Diameter:** 2"

**SCREEN:**
- **Depth:** 5.0 to 19.7 feet
- **Type:** Flush-Treaded Schedule 40 PVC riser
- **Screen Diameter:** 2"
- **Slot Size:** 0.020"

**BOTTOM COMPLETION:**
- **Depth:** 19.7 to 20 feet
- **Type:** Schedule 40 PVC End Cap

**SURFACE PLUG:**
- **Depth:** 0.0 to 0.4 feet
- **Type:** Cement

**BACKFILL:**
- **Depth:** 0.4 to 0.8 feet
- **Type:** Cuttings

**SEAL:**
- **Depth:** 0.8 to 3.5 feet
- **Type:** Bentonite Chips (3/8" size)

**FILTER PACK:**
- **Depth:** 3.5 to 20.0 feet
- **Type:** 10/20 Silica Sand

---

**HOLE COMPLETION NOTES:**

**REMARKS**

NS = Not Sampled

NM = Not Measured

Refer to boring log for drilling and lithology information.
## WELL NUMBER MW-10

**CLIENT**  Golden Valley Electric Association Inc.  
**PROJECT NAME**  Groundwater Monitoring Program  
**PROJECT NUMBER**  104.00367.17001 Task 140  
**PROJECT LOCATION**  Healy Power Plant, Healy AK  

**DATE STARTED**  4/3/17  **COMPLETED**  4/4/17  
**DRILLING CONTRACTOR**  Homestead Drilling Company  
**DRILLING METHOD**  Hollow Stem Auger (4.5 inch)  
**LOGGED BY**  B. Siwiec, S. Oliver  **CHECKED BY**  H. Simon  
**NOTES**  2-inch Split Spoon Sampler

### PROJECT LOCATION
Healy Power Plant, Healy AK

### PROJECT NAME
Groundwater Monitoring Program

### PROJECT NUMBER
104.00367.17001 Task 140

### CLIENT
Golden Valley Electric Association Inc.

### DATE STARTED
4/3/17

### COMPLETED
4/4/17

### DRILLING CONTRACTOR
Homestead Drilling Company

### DRILLING METHOD
Hollow Stem Auger (4.5 inch)

### LOGGED BY
B. Siwiec, S. Oliver

### CHECKED BY
H. Simon

### NOTES
2-inch Split Spoon Sampler

---

## WELL DIAGRAM

- **WELL CASING:** -2.33 to 15 feet  
  - Stickup: 1294.54 feet [NAVD 88]  
  - Type: Flush-Treaded Schedule 40 PVC riser  
  - Diameter: 2"

- **SCREEN:** 15.0 to 29.7 feet  
  - Type: Flush-Treaded Schedule 40 PVC riser  
  - Screen Diameter: 2"  
  - Slot Size: 0.020"

- **BOTTOM COMPLETION:** 29.7 to 30 feet  
  - Type: Schedule 40 PVC End Cap

- **SURFACE PLUG:** 0.0 to 1.0 feet  
  - Type: Cement

- **BACKFILL:** 1 to 10.8 feet  
  - Type: Cuttings

- **SEAL:** 10.8 to 12.8 feet  
  - Type: Bentonite Chips (3/8" size)

- **FILTER PACK:** 12.8 to 30.0 feet  
  - Type: 10/20 Silica Sand

### HOLE COMPLETION NOTES:
- Total Depth Drilled: 30 feet bgs
- Total Depth of Well: 30.0 feet bgs

---

## REMARKS

NS = Not Sampled  
NM = Not Measured

Refer to boring log for drilling and lithology information.
APPENDIX B

GROUNDWATER SUPPLY WELL LOGS
GOLDEN VALLEY ELECTRIC ASSOCIATION, INC.
HEALY POWER PLANT
HEALY, ALASKA

GROUNDWATER MONITORING REPORT

1/2 Mile Radius

Legend
- GVEA Excavation Well (Abandoned)
- Monitoring Well
- GVEA Supply Well
- Center of Coal Combustion Residuals Units
- Area with Receptor Supply Wells
- Potential Area with Receptor Supply Wells
- Distance From Center of Coal Combustion Residuals Units

F012S007W21 Designation: Fairbanks Meridian, Township 012S, Range 007W, Section 21

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY.
ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

SLR

GROUNDWATER RECEPTOR SUPPLY WELLS

2018-01-01

F012S007W21

GOLDEN VALLEY ELECTRIC ASSOCIATION, INC.
HEALY POWER PLANT
HEALY, ALASKA

GROUNDWATER RECEPTOR SUPPLY WELLS

2018-01-01

F012S007W21
GVEA Healy Supply Wells
WATER WELL LOG

Drilling Started: __/__/____  Completed: 10/1/1992  Pump Install: __/__/____

City/Borough: Healy  Subdivision:  Block:  Lot:  Property Owner Name & Address: GOLDEN VALLEY ELECTRIC ASSOCIATION ,

Meridian: F  Township: 012S  Range: 007W  Section: 21  SW 1/4 of SW 1/4 of 1/4 of 1/4

Borehole Data: (from ground surface)

Suggest T.M. Hanna’s hydrogeologic classification system*

https://my.ngwa.org/NC__Product?id=a185000000BYub3AAD

Drilling method: [ ] Air rotary, [ ] Cable tool, [ ] Other

Well use: [ ] Public supply, [ ] Domestic, [ ] Reinjection, [X] Hydrofracking

[ ] Commercial, [ ] Observation/Monitoring, [ ] Test/Exploratory, [ ] Cooling,

[ ] Irrigation/Agriculture, [ ] Grounding, [ ] Recharge/Aquifer Storage,

[ ] Heating, [ ] Geothermal Exploration, [ ] Other

Depth

From To

Depth of hole: 240 ft  Casing stickup: _________ ft

Casing type: _________  Casing thickness: _________ inches

Casing diameter: _________ inches  Casing depth: _________ ft

Liner type: _________ Depth: _________ ft  Diameter: _________ inches

Note:

Well intake opening type: [ ] Open end, [ ] Open hole, [ ] Other

Screen type: _________, Screen mesh size: _________

Screen start: _________ ft, Screen stop: _________ ft, Perforated: [X] Yes [ ] No

Perforation description: _________, Perf from: _________ ft, Perf to: _________ ft, Perf from: _________ ft, Perf to: _________ ft

Gravel packed: [ ] Yes [ ] No  Gravel start: _________ ft, Gravel stop: _________ ft

Note:

Static water (from top of casing): 0 ft on ____/____/____ Artesian well [ ]

Pumping level & yield: _________ feet after _________ hours at _________ gpm

Method of testing: _________

Development method: _________  Duration: _________

Recovery rate: _________ gpm

Grout type: _________  Volume _________

Depth: From _________ ft, To _________ ft

Final pump intake depth: _________ ft  Model: _________

Pump size: _________ hp  Brand name: _________

Was well disinfected upon completion? [ ] Yes [ ] No

Method of disinfection:

Was water quality tested? [X] Yes [ ] No

Water quality parameters tested:

Well driller name: WAYNE WESTBERG  Company name: M.W. DRILLING INC

Mailing address: PO BOX 110378  City: Anchorage  State: AK Zip: 99511

Phone number: (907) 345 - 4000

Driller’s signature: _________

Date: _________

Anchorage Municipal Code 15.55.060(I) and North Pole Ordinance 13.32.030(D) require that a copy of this well log be submitted to the Development Services Department/City within 30 days of well completion.

City Permit Number: _________

Date of Issue: _________

Parcel Identification Number: _________

*Guide for Using the Hydrogeologic Classification System for Logging Water Well Boreholes by Thomas M. Hanna NGWA Press

AS 41.08.020(b)(4) and AAC 11 AAC 93.140(a) require that a copy of the well log be submitted to the Department of Natural Resources within 45 days of well completion. Well logs may be submitted using the online well log reporting system available at:

https://dnr.alaska.gov/welts/

OR email electronic well logs to

dnr.water.reports@alaska.gov
Well Information - Well log not available

Date: ___/___/___  LAS#: __________________________

Source of information: __________________________________________

Data supplied by (Owner): __________________________

Well location (MTRS): __________________________

Property description: __________________________________________

Well depth: 240 Ft, Static water level (TOC): Slight above flow Ft

Type of well: Drilled, Yield: ________ gpm

Diameter of well: 8 in., Cased? O / N, to 240 Ft, Bedrock? O

Perforated: __________?_________ Ft, Screened? Y / N: __________?

Use of well: Commercial

Remarks: __________________________

Location map (sketch):

See HCCP #1 & Healy 1 well (same date on this log)
casing. We understand that the pump is set in this well at a depth of 147 feet. This well is also capable of producing an artesian flow. The well supplies water to a 5000-gallon raw water tank, controlled by a float switch which activates the pump when the level in the tank drops to 4000 gallons. During normal plant operation we understand that this results in the well cycling about every 3 to 6 hours. This well was observed to produce about 58 gpm during a cycle when it pumped a total of about 3460 gallons. We understand that during operation the top of the casing of the Healy 1 well must be kept sealed to avoid causing the pump to cavitate. However, based on observations of water level in the casing immediately after the pump shut off following a pumping cycle, it appears that even with the casing seal installed, the water column in the well draws down to a depth at least as great as 112 feet which was measured several minutes after the pump shut off.

The second well available for use as an observation well is located about 135 feet southwest of the HCCP well, in the excavation for the proposed new power plant. This well is referred to as the "Excavation Well" (X-well). Little is known about this well except that it is cased with 8-inch I.D. casing, its total depth was sounded at approximately 240 feet, and that it produces a slight artesian flow. We understand that this well was installed about the same time as the Healy 1 well.

Based on a combination of previous survey information and field measurements, approximate top of casing elevations are estimated as presented below:

<table>
<thead>
<tr>
<th>Well Type</th>
<th>Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCCP well</td>
<td>1271.1 feet</td>
</tr>
<tr>
<td>Healy 1 well</td>
<td>1261.5 feet</td>
</tr>
<tr>
<td>Excavation well</td>
<td>1259.6 feet</td>
</tr>
</tbody>
</table>

Pumping of the Healy 1 well has been observed to impact the water level in both the HCCP well and the Excavation well. Therefore it has been impossible to measure a true static water level in any of these wells. Maximum observed water level is presented below:

<table>
<thead>
<tr>
<th>Well Type</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCCP well</td>
<td>Top of Casing, with about 3 gpm artesian flow</td>
</tr>
<tr>
<td>Healy 1 well</td>
<td>6.1 feet above top of casing</td>
</tr>
<tr>
<td>Excavation well</td>
<td>Flowing at 7 feet above top of casing</td>
</tr>
</tbody>
</table>

Background information on the geology and hydrology of the area extracted from the original specification for the HCCP well issued in the Fall of 1991 by Stone & Webster Engineering Corporation is presented in Attachment A.

X-0483
0 feet

Sandy Gravel with Large Boulders

35
Medium to Coarse Grained Sandstone

58
Gray to Green Clay

127
Medium to Coarse Grained Sandstone

140
Tan to Gray Siltstone with Interbedded Sandstone

170
Medium to Coarse Grained Sandstone with Interbedded Siltstone

228
Siltstone with Interbedded Coal

257
Medium to Coarse Grained Sandstone

302
Brown Siltstone with Minor Coal

308

Medium Sandstone Interbedded with Gray-Green Clay/Siltstone and Minor Coal at 428 feet

435
Coal with Brown Siltstone

440
Gray-Green Silt/Claystone

498
Minor Coal

540
"Siltstone and Shales" (per geophysical log)
HCCP Well
Top of Casing
Approx. 1271.1 feet

135 feet

Excavation Well
Top of Casing
Approx. 1259.6 feet

140 feet

Healy #1 Well
Top of Casing
Approx. 1261.5 feet

Note: Vertical Datum = Post Oulake, Mean Sea Level,
USGS Benchmark, "C-4"

NOT TO SCALE

Golden Valley Electric Association - HCCP
Healy, Alaska
WELL LOCATION PLAN
X-0483
April 1993
SHANNON & WILSON, INC.
Geotechnical Consultants
Figure 2
Well #1
### WATER WELL LOG

**Revised 08/18/2016**

<table>
<thead>
<tr>
<th>City/Borough</th>
<th>Subdivision</th>
<th>Block</th>
<th>Lot</th>
<th>Property Owner Name &amp; Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healy</td>
<td></td>
<td></td>
<td></td>
<td>GVEA</td>
</tr>
</tbody>
</table>

#### BOREHOLE DATA

(from ground surface)

<table>
<thead>
<tr>
<th>Depth From</th>
<th>Depth To</th>
</tr>
</thead>
<tbody>
<tr>
<td>400 ft</td>
<td></td>
</tr>
</tbody>
</table>

**Meridian F**  | 012S  | Range 007W  | Section 20  | NE 1/4 of  NE 1/4 of  SE 1/4 of  SE 1/4 |

Drilling method: [ ] Air rotary, [ ] Cable tool, [ ] Other

Well use: [ ] Public supply, [ ] Domestic, [ ] Reinjection, [ ] Hydrofracking

[ ] Commercial, [ ] Observation/Monitoring, [ ] Test/Exploratory, [ ] Cooling,

[ ] Irrigation/Agriculture, [ ] Grounding, [ ] Recharge/Aquifer Storage,

[ ] Heating, [ ] Geothermal Exploration, [ ] Other


- **City Permit Number:** _____________________________
- **Contractor:** _____________________________
- **City:** __________________________  **State:** __________________________  **Zip:** 99567
- **Mailing address:** PO BOX 670272
- **Company name:** CHUGIAK WATER WELLS
- **Driller’s name:** BILL SULLIVAN
- **Phone number:** (______) _______ - ______

- **Method of disinfection:** _____________________________
- **Well driller name:** _____________________________
- **Company name:** _____________________________
- **Mailing address:** PO BOX 670272
- **City:** CHUGIAK
- **State:** AK  Zip: 99567
- **City Permit Number:** _____________________________

- **AS 41.08.020(b)(4) and AAC 11 AAC 93.140(a) require that a copy of the well log be submitted to the Department of Natural Resources within 45 days of well completion. Well logs may be submitted using the online well log reporting system available at:**

  https://dnr.alaska.gov/welts/

- **OR email electronic well logs to:**

  [dnr.water.reports@alaska.gov](mailto:dnr.water.reports@alaska.gov)

- **State of Alaska**
  DEPARTMENT OF NATURAL RESOURCES
  DIVISION OF MINING, LAND & WATER
  Alaska Hydrologic Survey

---

*Guide for Using the Hydrogeologic Classification System for Logging Water Well Boreholes by Thomas M. Hanna NGWA Press*
Lee Sullivan Well Drillers  
Healy, Alaska  
April 29, 1966

Stanley Engineering

Dear Sirs:

This is a log on the well drilled by Lee Sullivan for Golden Valley Electrical Association, Healy, Alaska.

Elevation 1259 MSL

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>15</td>
<td>Sand and Gravel, Surface water</td>
</tr>
<tr>
<td>15</td>
<td>114</td>
<td>Clay</td>
</tr>
<tr>
<td>114</td>
<td>118</td>
<td>Fine Sand Wet</td>
</tr>
<tr>
<td>118</td>
<td>132</td>
<td>Sand Stone with Fractures</td>
</tr>
<tr>
<td>132</td>
<td>186</td>
<td>Sand Stone with Fractures and Clay Seams 1-3 in.</td>
</tr>
<tr>
<td>186</td>
<td>200</td>
<td>Fractures and Broken Sand Stone water 20 G.P.M.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>developed to 60 G.P.M. (pump was at 193 ft.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>36 hrs/air, 24 hrs/pump</td>
</tr>
<tr>
<td>200</td>
<td>202</td>
<td>Clay</td>
</tr>
<tr>
<td>202</td>
<td>238</td>
<td>Sand Stone</td>
</tr>
<tr>
<td>238</td>
<td>247</td>
<td>Coal and Sand Stone layer</td>
</tr>
<tr>
<td>247</td>
<td>292</td>
<td>Fine Sand</td>
</tr>
<tr>
<td>292</td>
<td>327</td>
<td>Clay Hard and Dry</td>
</tr>
<tr>
<td>327</td>
<td>351</td>
<td>Sand and Gravel with thin Clay layer. Developed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>with Air 6 hrs. Max 40 G.P.M., no increase in water.</td>
</tr>
<tr>
<td>351</td>
<td>400</td>
<td>Hard Clay</td>
</tr>
</tbody>
</table>

249 ft of 8 in. casing.

11-15-90
As per Tim Brockets of USGS
This well is used to produce
Electricity & Domestic USE
**WATER WELL LOG**

*Revised 08/18/2016*

**City/Borough:** Healy  
**Subdivision:**  
**Block:**  
**Lot:**  
**Property Owner Name & Address:** GOLDEN VALLEY ELECTRIC ASSOCIATION, PO BOX 110378

**Well location:** Latitude: Meridian F. ____________, Township 012S, Range 007W, Section 21, SW 1/4 of SW 1/4 of 1/4 of 1/4

**Depth:**

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td></td>
</tr>
</tbody>
</table>

**Borehole Data:** (from ground surface)

Suggest T.M. Hanna's hydrogeologic classification system*  
https://my.ngwa.org/NC_Product?id=a185000000BYub3AAD

**Drilling Method:**  
- Air rotary  
- Cable tool  
- Other

**Well use:**  
- Public supply  
- Domestic  
- Reinjection  
- Hydrofracking  
- Commercial  
- Observation/Monitoring  
- Test/Exploratory  
- Cooling  
- Irrigation/Agriculture  
- Grounding  
- Recharge/Aquifer Storage  
- Heating  
- Geothermal Exploration  
- Other

**Driller:**  
**Company Name:** M-W Drilling Inc

**Latitude:** 45° 2′ 3″  
**Longitude:** 149° 14′ 0″

**Drilling Started:** ______/_____/______

**Driller's signature:** ___________________________

**Mailing Address:** PO BOX 110378

**Company Name:** M-W DRILLING INC

**City Permit Number:** _____________________________

**City:** Anchorage  
**State:** AK  
**Zip:** 99511

**Phone Number:** (907) 345-4000

**Date of Issue:** ______/____/______

**Water Well Boreholes by Thomas M. Hanna NGWA Press**

*Guide for Using the Hydrogeologic Classification System for Logging*

**AS 41.08.020(b)(4) and AAC 11 AAC 93.140(a) require that a copy of the well log be submitted to the Department of Natural Resources within 45 days of well completion. Well logs may be submitted using the online well log reporting system available at:**

https://dnr.alaska.gov/welts/

**OR email electronic well logs to:**

dnr.water.reports@alaska.gov

AS 41.08.020(b)(4) and AAC 11 AAC 93.140(a) require that a copy of this well log be submitted to the Development Services Department/City within 30 days of well completion.

**Driller's signature:** ___________________________

**Date:** ______/____/______

**Anchorage Municipal Code 15.55.060(I) and North Pole Ordinance 13.32.030(D) require that a copy of this well log be submitted to the Development Services Department/City within 30 days of well completion.**

---

*Guide for Using the Hydrogeologic Classification System for Logging*
The first is the well which supplies water to the existing Healy 1 power plant, and is referred to as the "Healy 1" well. This well is located in the basement of the power plant, about 140 feet east of the HCCP well (Figure 2). The original driller's log for this well, attached as Figure 3, indicates a total depth of 400 feet, and a sketch of unknown origin (Figure 4) suggests that the lower 200 feet of the well have been filled with gravel. The log indicates 249 feet of 8-inch casing. We understand that the pump is set in this well at a depth of 147 feet. This well is also capable of producing an artesian flow. The well supplies water to a 5000-gallon raw water tank, controlled by a float switch which activates the pump when the level in the tank drops to 4000 gallons. During normal plant operation we understand that this results in the well cycling about every 3 to 6 hours. This well was observed to produce about 58 gpm during a cycle when it pumped a total of about 3460 gallons. We understand that during operation the top of the casing of the Healy 1 well must be kept sealed to avoid causing the pump to cavitate. However, based on observations of water level in the casing immediately after the pump shut off following a pumping cycle, it appears that even with the casing seal installed, the water column in the well draws down to a depth at least as great as 112 feet which was measured several minutes after the pump shut off.
Well #2
WATER WELL LOG

<table>
<thead>
<tr>
<th>City/Borough</th>
<th>Subdivision</th>
<th>Block</th>
<th>Lot</th>
<th>Property Owner Name &amp; Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healy</td>
<td></td>
<td></td>
<td></td>
<td>GOLDEN VALLEY ELECTRIC ASSOCIATION ,</td>
</tr>
</tbody>
</table>

**Well location:** Latitude: Meridian F Town 102S Range 207W Section 21, SW 1/4 of SW 1/4 of 1/4 of 1/4

**BoREHOLE DATA:** (from ground surface)
- Drilling method: [ ] Air rotary, [ ] Cable tool, [ ] Other
- Well use: [ ] Public supply, [ ] Domestic, [ ] Reinjection, [ ] Hydrofracking
  [ ] Commercial, [ ] Observation/Monitoring, [ ] Test/Exploratory, [ ] Cooling,
  [ ] Irrigation/Agriculture, [ ] Grounding, [ ] Recharge/Aquifer Storage,
  [ ] Heating, [ ] Geothermal Exploration, [ ] Other

**Water use:** [ ] Domestic, [ ] Public supply, [ ] Irrigation/Agriculture, [ ] Cooling

**Screen:**
- Depth From: ______ ft, Perf to: ______ ft, Perf from: ______ ft
- Screen start: ______ ft, Screen stop: ______ ft, Screen mesh size: ______

**Liner Type:** __________
- Depth: ______ ft Diameter: ______ inches

**Casing:**
- Depth of hole: 540 ft
- Casing stickup: ______ ft
- Casing type: __________
- Casing thickness: ______ inches
- Casing diameter: ______ inches
- Casing depth: 540 ft
- Liner type: __________
- Depth: ______ ft Diameter: ______ inches

**Note:** FULL CASE

**Driller's signature:** __________

**Method of disinfection:** [ ] Yes, [ ] No

**Was water quality tested?** [ ] Yes, [ ] No

**Water quality parameters tested:**
- Water quality: ____________________________________________
- Method of disinfection: ________________________________
- Was well disinfected upon completion? [ ] Yes, [ ] No
- Driller's signature: ________________________________
- Date: __________

**Distance from top of casing:**
- Static water (from top of casing): ______ ft
- Artesian well: [ ] Yes, [ ] No
- Pumping level & yield: ______ ft after ______ hours at 65 gpm
- Method of testing: ________________________________
- Development method: ________________________________
- Recovery rate: ______ gpm
- Grout type: ________________________________
- Volume: ________________________________
- Depth: From ______ ft, To ______ ft
- Final pump intake depth: ______ ft
- Model: ________________________________
- Pump size: ______ hp
- Brand name: ________________________________
- Was well water tested? [ ] Yes, [ ] No
- Water quality parameters tested: ________________________________

**Well driller name:** WAYNE E WESTBERG
**Company name:** M.W. DRILLING
**Mailing address:** PO BOX 110378
**City:** ANCHORAGE State: AK Zip: 99511
**Phone number:** (907) 945-3287

**AS 41.08.020(b)(4) and AAC 11 AAC 93.140(a) require that a copy of the well log be submitted to the Department of Natural Resources within 45 days of well completion. Well logs may be submitted using the online well log reporting system available at:**
https://dnr.alaska.gov/welts/

OR email electronic well logs to

dnr.water.reports@alaska.gov

*Guide for Using the Hydrogeologic Classification System for Logging Water Well Boreholes by Thomas M. Hanna NGWA Press*
Sandy Gravel with Large Boulders

Medium to Coarse Grained Sandstone

Gray to Green Clay

Medium to Coarse Grained Sandstone

Tan to Gray Siltstone with Interbedded Sandstone

Medium to Coarse Grained Sandstone with Interbedded Siltstone

Siltstone with Interbedded Coal

Medium to Coarse Grained Sandstone

Brown Siltstone with Minor Coal

Medium Sandstone Interbedded with Gray-Green Clay/Siltstone and Minor Coal at 428 feet

Coal with Brown Siltstone

Gray-Green Silt/Claystone

Minor Coal

*Siltstone and Shales* (per geophysical log)
HCCP Well
Top of Casing
Approx. 1271.1 feet

135 feet

Excavation Well
Top of Casing
Approx. 1259.6 feet

140 feet

235 feet

Healy #1 Well
Top of Casing
Approx. 1261.5 feet

Note: Vertical Datum = Post O quê, Mean Sea Level,
USC&GS Benchmark, "C-4"

NOT TO SCALE

Golden Valley Electric Association - HCCP
Healy, Alaska

WELL LOCATION PLAN

X-0483
April 1993

SHANNON & WILSON, INC.
Geotechnical Consultants
Figure 2
Well #3
### WATER WELL LOG

**Revised 08/18/2016**

<table>
<thead>
<tr>
<th>City/Borough</th>
<th>Subdivision</th>
<th>Block</th>
<th>Lot</th>
<th>Property Owner Name &amp; Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEALY</td>
<td>HEALY POWER PLANT</td>
<td>1</td>
<td></td>
<td>GOLDEN VALLEY ELECTRIC ASSOCIATION PO BOX 71249 FAIRBANKS, AK 99701</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Well location: Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>63.855705</td>
<td>-148.94994</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Meridian</th>
<th>Township</th>
<th>Range</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>012S</td>
<td>007W</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BOREHOLE DATA: (from ground surface)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suggest T.M. Hanna’s hydrogeologic classification system* <a href="https://my.ngwa.org/NC_Product?id=a185000000BYub3AAD">https://my.ngwa.org/NC_Product?id=a185000000BYub3AAD</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>BROWN SILTY GRAVEL WITH SAND</td>
<td>0.0</td>
<td>27.0</td>
</tr>
<tr>
<td>BROWN GRAVELLY SILT WITH SAND</td>
<td>27.0</td>
<td>32.0</td>
</tr>
<tr>
<td>BROWN SILTY GRAVEL WITH SAND</td>
<td>32.0</td>
<td>92.0</td>
</tr>
<tr>
<td>SANDSTONE</td>
<td>92.0</td>
<td>462.0</td>
</tr>
<tr>
<td>CLAYSTONE</td>
<td>462.0</td>
<td>490.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drilling method:</th>
<th>Air rotary, Cable tool, Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well use:</td>
<td>Public supply, Domestic, Reinjection, Hydrofracking, Commercial, Observation/monitoring, Test/exploratory, Cooling, Irrigation/agriculture, Grounding, Recharge/aquifer storage, Heating, Geothermal exploration, Other</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth of hole</th>
<th>490 ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing stickup</td>
<td>3 ft</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Casing type</th>
<th>STEEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing thickness</td>
<td>.375 inches</td>
</tr>
<tr>
<td>Casing diameter</td>
<td>8 inches</td>
</tr>
<tr>
<td>Casing depth</td>
<td>454 ft</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Liner type</th>
<th>Depth</th>
<th>Diameter</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Fluids used:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Note:</th>
</tr>
</thead>
<tbody>
<tr>
<td>surface casing to 20', 7' casing from surface to 454', 8' casing from surface to 454' with two intervals of screen</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Well intake opening type:</th>
<th>Open end, Open hole, Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen type:</td>
<td>STAINLESS STEEL, Screen mesh size: .05</td>
</tr>
<tr>
<td>Screen start</td>
<td>328 ft</td>
</tr>
<tr>
<td>Screen stop</td>
<td>398 ft</td>
</tr>
<tr>
<td>Perforated</td>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Perforation description</th>
<th>Perf from</th>
<th>Perf to</th>
<th>Perf from</th>
<th>Perf to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gravel packed</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gravel start</td>
<td>328 ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gravel stop</td>
<td>398 ft</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Note: | SCREENED IN TWO INTERVALS: 328' to 398' and 408' to 438' |

<table>
<thead>
<tr>
<th>Static water (from top of casing):</th>
<th>Surface feet on 11/15/2014 Artesian well</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pumping level &amp; yield:</td>
<td>feet after hours at gpm</td>
</tr>
<tr>
<td>Recovery rate:</td>
<td>gpm</td>
</tr>
<tr>
<td>Grout type:</td>
<td>BENTONITE</td>
</tr>
<tr>
<td>Volume</td>
<td>90 SACKS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final pump intake depth</td>
<td>feet</td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pump size</td>
<td>hp</td>
<td></td>
</tr>
<tr>
<td>Brand name</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Driller's name:</th>
<th>WAYNE WESTBERG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company name:</td>
<td>M.W. DRILLING</td>
</tr>
<tr>
<td>Mailing address:</td>
<td>PO BOX 110389</td>
</tr>
<tr>
<td>City</td>
<td>ANCHORAGE</td>
</tr>
<tr>
<td>State</td>
<td>AK</td>
</tr>
<tr>
<td>Zip</td>
<td>99511</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phone number:</th>
<th>(907) 345-4000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driller's signature:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchorage Municipal Code 15.55.060(I) and North Pole Ordinance 13.32.030(D) require that a copy of this well log be submitted to the Development Services Department/City within 30 days of well completion.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>City Permit Number:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of issue:</td>
</tr>
</tbody>
</table>

| Parcel Identification Number: |

---

*Guide for Using the Hydrogeologic Classification System for Logging Water Well Boreholes by Thomas M. Hanna NGWA Press*
M-W Drilling, Inc.  
P.O. Box 110389 • Anchorage, AK 99511 •  
907-345-4000 • 907-345-3287 Fax•  
Job No. 14-131

GROUNDWATER WELL LOG

Well Owner: GVEA  
Legal Description: Healy Power Plant Subdivision Healy, AK, Lot 1, W1/2 SW1/4 Sec 21 T12S R7W Lat 63° 51' 20.54" N, Long 148° 56' 59.76" W  
Use of Well: Cooling  

CONSTRUCTION

Drill Method: Mud rotary  
Casing Size: 12"  
Hole Size: 12"  
Material: A53 Grade B  
Wall: 0.375"  

Cased to: 96.64'  
Screen X  
Well Completion: Open end  
8" casing 457'-441'; 8" ss pipe size 0.050 slot 304 ss screen 441'-411'; 8" blank  
411'-401'; 8" pipe size 0.050 slot 304 ss screen 401'-331'; 8" casing 331' to +3';  
annulus sand packed w/118 sacks of 8/12 sand, topped w/88 sacks of 3/8  
bentonite chips  

Screen/Assembly description: 

Grout Notes: (90) Sack(s) of Bentonite  
Well Development: Hydropulse, surge/swab, jetting  
Well Disinfected: Y  
Method: Sodium hypochlorite  
Yield test at: GPM for hour(s) with drawdown (DD) from static level(SWL):  
Method: N/A  
Start Date: 10/30/14  
Completion Date: 11/15/14  
Test Pump Date: TBD  
Final Pump Install Date: N/A

WELL LOG

<table>
<thead>
<tr>
<th>Depth in feet from top of casing</th>
<th>Details of formations penetrated, size of material, color and miscellaneous details</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 TO 3</td>
<td>Casing Stick Up</td>
</tr>
<tr>
<td>3 TO 30</td>
<td>Brown silty gravel with sand</td>
</tr>
<tr>
<td>30 TO 35</td>
<td>Brown gravelly silt with sand</td>
</tr>
<tr>
<td>35 TO 95</td>
<td>Brown silty gravel with sand</td>
</tr>
<tr>
<td>95 TO 465</td>
<td>Sandstone</td>
</tr>
<tr>
<td>465 TO 493</td>
<td>Claystone</td>
</tr>
<tr>
<td></td>
<td>NOTE: Will test pump Spring 2015</td>
</tr>
</tbody>
</table>

WAYNE E. WESTBERG  
President, M-W Drilling, Inc.  
NGWA Certified Master Groundwater Contractor  
Alaskan Contr Llc No 1000
M-W DRILLING, INC.

Well As-Built Profile

Client: Golden Valley Electrical Coop

GENERAL

Owner: Golden Valley Electrical Coop  Engineer: Mark Lockwood
City: Healy  County:  State: AK
Contact: Lynn Thompson  Phone: 800-770-4832
Well Used For: Cooling
Date Drilled: 11/15/14  Date In Service:

CONSTRUCTION

Drill Method: Mud rotary  Aquifer Type: Sandstone  TD: 493'
Type Screen: 0.050" 304SS  Gravel Pack (Y/N): Y  Other: QA SAMPLE
Drill Fluid Type: Quik Gel  Developed By:  Hydropulse, surging, jetting
Chemicals Used: Sodium Hypochlorite

MATERIALS

Surface Csg OD: 16"  Depth: 20'  Matl: A53 Grade B  Seal: Bentonite chips 10 sacks
Prod Csg OD: 12"  Depth: 96'  Matl: A53 Grade B  Seal: Bentonite chips 8 sacks
Screen OD: 8" pipe size  Slot: 0.050"  Matl: 304SS
Packers/Plugs: Notes: 6" DECA PIPE TO +3'

ORIGINAL TEST DATA

Static Level: Flowing ½ gpm  Pumping Level: spring  Drawdown: Not complete until
GPM:  Duration:  Recovery:
Specific Capacity:  Sand Content:  Other:
Turbidity:

PUMP & MOTOR

Type:  GPM:  TDH:  PSI(dga):
Pump Mfg:  Model No:  Serial No:
Bowl OD:  Stgs:  HD/Std:  Pump Eff:
Column OD:  Tube:  Shaft:  Wire Size:
Motor Mfg:  HP:  RPM:  Volt:
Amps (Full Load):  SF:  PF:  Eff:

Recent Repair History/Treatment/Test Data:

Date last serviced:  Reason:
SWL:  PWL:  GPM:  PSI:
DD:  Specific Capacity:  Duration:
Last Treated:  How:
Results:

WAYNE E. WESTBERG
President, M-W Drilling, Inc.
NGWA Certified Master Groundwater Contractor
AK Gen Contr Lic No 1000
WATER WELL LOG

Drilling Started: 10 / 30 / 2014  
Completed: 11 / 14 / 2014  
Pump Install: / / /  

City/Borough: HEALY  
Subdivision: HEALY POWER PLANT  
Block: 1  
Lot: 1  
Property Owner Name & Address: GOLDEN VALLEY ELECTRIC ASSOCIATION, AK

<table>
<thead>
<tr>
<th>Well location: Latitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meridian: F</td>
</tr>
<tr>
<td>Township: 012S</td>
</tr>
<tr>
<td>Range: 007W</td>
</tr>
<tr>
<td>Section: 20</td>
</tr>
<tr>
<td>SE 1/4 of</td>
</tr>
<tr>
<td>SE 1/4 of</td>
</tr>
<tr>
<td>SE 1/4 of</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BOREHOLE DATA: (from ground surface)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drilling method: Air rotary, Cable tool, Other</td>
</tr>
<tr>
<td>Well use: Public supply, Domestic, Reinjection, Hydrofracking</td>
</tr>
<tr>
<td>Well use: Commercial, Observation/Monitoring, Test/Exploratory, Cooling,</td>
</tr>
<tr>
<td>Well use: Irrigation/Agriculture, Geothermal, Grounding, Recharge/Aquifer Storage,</td>
</tr>
<tr>
<td>Well use: Heating, Other</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>From: 0.0</td>
</tr>
<tr>
<td>To: 27.0</td>
</tr>
<tr>
<td>From: 27.0</td>
</tr>
<tr>
<td>To: 32.0</td>
</tr>
<tr>
<td>From: 32.0</td>
</tr>
<tr>
<td>To: 92.0</td>
</tr>
<tr>
<td>From: 92.0</td>
</tr>
<tr>
<td>To: 462.0</td>
</tr>
<tr>
<td>From: 462.0</td>
</tr>
<tr>
<td>To: 490.0</td>
</tr>
</tbody>
</table>

| Casing type: STEEL  |
| Length: 12 inches  |
| Casing thickness: _____ inches  |
| Casing depth: 98.64 ft  |
| Liner type: _____ Depth: _____ Diameter: _____ inches  |

| Liner type: _____ Depth: _____ Diameter: _____ inches  |

| Depth of hole: 490 ft  |
| Casing pickup: 3 ft  |
| Casing type: STEEL  |
| Casing thickness: _____ inches  |
| Casing diameter: 12 inches  |
| Casing depth: 98.64 ft  |
| Liner type: _____ Depth: _____ Diameter: _____ inches  |

| Note: 8" CASING TO 331' |

| Well intake opening type: Open end, Open hole, Other  |
| Screen type: STAINLESS STEEL, Screen mesh size: _______ |
| Screen start: _____ ft, Screen stop: _____ ft, Perforated: Yes, No  |
| Perforation description: _____ Perf from: _____ ft, Perf to: _____ ft, Perf from: _____ ft, Perf to: _____ ft  |
| Gravel packed: Yes, No  |
| Gravel start: _____ ft, Gravel stop: _____ ft  |
| Note: SEE WELL LOG FOR SCREEN SPECS  |

| Static water (from top of casing): _____ ft on _____ Artesian well  |
| Pumping level & yield: _____ feet after _____ hours at _____ gpm  |
| Method of testing:  |
| Development method:  |
| Duration:  |
| Recovery rate: _____ gpm  |
| Grout type:  |
| Volume:  |
| Depth: From: _____ ft, To: _____ ft  |
| Final pump intake depth: _____ ft  |
| Model:  |
| Pump size: _____ hp  |
| Brand name:  |
| Was well disinfected upon completion? Yes, No  |
| Method of disinfection:  |
| Was water quality tested? Yes, No  |
| Water quality parameters tested:  |
| Well driller name: WAYNE WESTBERG  |
| Company name: M.W. DRILLING  |
| Mailing address: PO BOX 110389  |
| City: ANCHORAGE, AK  |
| Zip: 99511  |
| Phone number: (907) 345 - 4000  |
| Driller's signature:  |
| Date: / / /  |

Include description or sketch of well location (include road names, buildings, etc.):

AS 41.08.020(b)(4) and AAC 11 AAC 93.140(a) require that a copy of the well log be submitted to the Department of Natural Resources within 45 days of well completion. Well logs may be submitted using the online well log reporting system available at:

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OR email electronic well logs to:

dnr.water.reports@alaska.gov

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STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINING, LAND & WATER
Alaska Hydrologic Survey

40713

Revised 08/18/2016

ANCHORAGE MUNICIPAL CODE 15.55.060(I) AND NORTH POLE ORDINANCE 13.32.030(D) REQUIRE THAT A COPY OF THIS WELL LOG BE SUBMITTED TO THE DEVELOPMENT SERVICES DEPARTMENT/CITY WITHIN 30 DAYS OF WELL COMPLETION.

City Permit Number:  
Date of Issue: / / /

Parcel Identification Number: - - -
M-W Drilling, Inc.
P.O. Box 110389 • Anchorage, AK 99511
907-345-4000 • 907-345-3287 Fax

Job No. 14-131

GROUNDWATER WELL LOG

Well Owner: GVEA
Legal Description: Healy Power Plant Subdivision Healy, AK, Lot 1
Use of Well: Cooling
W1/2 SW1/4 Sec 21 T12S R7W Lat 63° 51' 20.54" N, Long 148° 56' 59.76" W

CONSTRUCTION

Drill Method: Mud rotary
Casing Size: 12" 8" 331'
Cased to: 98.64'
Hole Size: 12"
Material: A53 Grade B
Hole Depth: 493'
Wall: 0.375'
Perforated Screen: X
Method: OPENHOLE INSTALL

Screen/Assembly description:
8" casing 457'-411'; 8" ss pipe size 0.050 slot 304 ss screen 441'-411'; 8" blank
411'-401'; 8" pipe size 0.050 slot 304 ss screen 401'-331'; 8" casing 331' to +3',
annulus sand packed w/118 sacks of 8/12 sand, topped w/86 sacks of 3/8
bentonite chips

Grout Notes: (90) Sack(s) of Bentonite
Well Development: Hydropulse, surge/swab, jetting
Well Drained: Y
Method: Sodium hypochlorite
Yield test at GPM for hour(s) with of drawdown (DD) from static level(SWL).

Method: Static Water Level (SWL):
Start Date: 10/30/14 Completion Date: 11/15/14
Test Pump Date: TBD Final Pump Install Date: N/A

WELL LOG

<table>
<thead>
<tr>
<th>Depth in feet from top of casing</th>
<th>Details of formations penetrated, size of material, color and miscellaneous details</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 TO 3</td>
<td>Casing Stick Up</td>
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<td>3 TO 30</td>
<td>Brown silty gravel with sand</td>
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<tr>
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</tr>
<tr>
<td>TO</td>
<td>NOTE: Will test pump Spring 2015</td>
</tr>
<tr>
<td>TO</td>
<td></td>
</tr>
<tr>
<td>TO</td>
<td></td>
</tr>
<tr>
<td>TO</td>
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<td>TO</td>
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</tr>
<tr>
<td>TO</td>
<td></td>
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<tr>
<td>TO</td>
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<tr>
<td>TO</td>
<td></td>
</tr>
<tr>
<td>TO</td>
<td></td>
</tr>
</tbody>
</table>

WAYNE E. WESTBERG
President: M-W Drilling, Inc.
NGWA Certified Master Groundwater Contractor
Alaska Cont. Lic No 1000
M-W DRILLING, INC.

Well As-Built Profile

Client: Golden Valley Electrical Coop

GENERAL

Owner: Golden Valley Electrical Coop  Engineer: Mark Lockwood
City: Healy  County:  State: AK
Contact: Lynn Thompson  Phone: 800-770-4832
Well Used For: Cooling
Date Drilled: 11/15/14  Date in Service:

CONSTRUCTION

Drill Method: Mud rotary  Aquifer Type: Sandstone  TD: 493'
Type Screen: 0.050 304SS  Gravel Pack (Y/N): Y  Other: 8/12 SANDPACK
Drill Fluid Type: Quik Gel  Developed By: Hydropulse, surging, jetting
Chemicals Used: Sodium Hypoclorite

MATERIALS

Surface Csg OD: 16"  Depth: 20'  Matl: A53 Grade B  Seal: Bentonite chips 10 sacks
Prod Csg OD: 12"  Depth: 96'  Matl: A53 Grade B  Seal: Bentonite chips 86 sacks
Screen OD: 8" pipe size  Slot: 0.050"  Matl: 304SS
Packers/Plugs: 8" ANGRA PIPE TO +3'

ORIGINAL TEST DATA

Static Level: Flowing ½ gpm  Pumping Level: Not complete until
GPM:  Duration: Drawdown:
Specific Capacity: Sand Content:  Turbidity: Other:

PUMP & MOTOR

Type:  GPM:  TDH:  PSI(dsi):
Pump Mfg:  Model No:  Serial No:  Pump Eff:
Bowl OD:  Stgs:  HD/Stg:  8" Blank
Column OD:  Tube:  Shaft:  Wire Size:
Motor Mfg:  HP:  RPM:  Volt:
Amps (Full Load):  SP:  PF:  Eff:

Recent Repair History/Treatment/Test Data:

Date last serviced:  Reason:
SWL:  PWL:  GPM:  PSI:
DD:  Specific Capacity:  Duration:
Last Treated:  How:
Results:

WAYNE E. WESTBERG
President, M-W Drilling, Inc.
NGWA Certified Master Groundwater Contractor
Ak Gen Contr Lic No 1000
WATER WELL LOG

Drilling Started: __/__/____  Completed: 8/1/2015  Pump Install: __/__/____

City/Borough: Healy  Subdivision: NA  Block: NA  Lot: NA  Property Owner Name & Address: GOLDEN VALLEY ELEC ASSOC INC PO BOX 71249 FAIRBANKS, AK 99707

Well location: Latitude 63.85592  Longitude -148.95134

Meridian F  Township 012S  Range 007W  Section 20  NE 1/4 of  NE 1/4 of  SE 1/4 of  SE 1/4

BOREHOLE DATA:

(from ground surface)

Suggest T.M. Hanna’s hydrogeologic classification system* https://my.ngwa.org/NC_Product?id=a185000000BYub3AAD

Depth

BROWN SILTY GRAVEL SAND COBBLES BOULDERS 0.0 30.0

BROWN GRAVELLY SILT 30.0 35.0

BROWN SILTY GRAVEL WITH SAND 35.0 95.0

BROWN COARSE TO FINE SANDSTONE 95.0 465.0

GRAY CLAYSTONE 465.0 493.0

Depth of hole: 493 ft  Casing stickup: _________ ft

Casing type: _________  Casing thickness: _________ inches

Casing diameter: _________ inches  Casing depth: _________ ft

Linier type: _________ Depth: _________ ft Diameter: _________ inches

Drilling method:  [-] Air rotary,  [-] Cable tool  Other:

Well use:  [-] Public supply,  [-] Domestic,  [-] Reinjection,  [-] Hydrofracking

[-] Commercial,  [-] Observation/Monitoring,  [-] Test/Exploratory,  [-] Cooling,

[-] Irrigation/Agriculture,  [-] Grounding,  [-] Recharge/Aquifer Storage,

[-] Heating,  [-] Geothermal Exploration,  [-] Other _________

Fluids used:

Depth From: _________ ft, Perf to: _________ ft, Perf from: _________ ft, Perf to: _________ ft

Perforation description: _________ Yes  No

Gravel packed: _________ No  Gravel start: _________ ft, Gravel stop: _________ ft

Note:

Depth From: _________ ft, To: _________ ft

Static water (from top of casing): _________ ft on____/____/_______ Artesian well

Pumping level & yield: _________ feet after _________ hours at _________ gpm

Method of testing:

Development method: _________ Duration: _________

Recovery rate: _________ gpm

Grout type: BENTONITE  Volume: _________

Depth: From _________ ft, To: _________ ft

Final pump intake depth: _________ ft  Model: _________

Pump size: _________ hp  Brand name: _________

Was well disinfected upon completion?  Yes  No

Method of disinfection:

Was water quality tested?  Yes  No

Water quality parameters tested: _________

Well driller name: _________

Company name: SHANNON AND WILSON _________

Mailing address: _________

City: _________ State: AK Zip: _________

Phone number: (_______) _______ - _______

Driller’s signature: _________

Date: _________

AS 41.08.020(b)(4) and AAC 11 AAC 93.140(a) require that a copy of the well log be submitted to the Department of Natural Resources within 45 days of well completion. Well logs may be submitted using the online well log reporting system available at:

https://dnr.alaska.gov/welts/

OR email electronic well logs to:
dnr.water.reports@alaska.gov

*Guide for Using the Hydrogeologic Classification System for Logging Water Well Boreholes by Thomas M. Hanna NGWA Press

Anchorage Municipal Code 15.55.060(I) and North Pole Ordinance 13.32.030(D) require that a copy of this well log be submitted to the Development Services Department/City within 30 days of well completion.

City Permit Number: _________

Date of Issue: _________

Parcel Identification Number: _______ - _______
0-30' Brown, silty gravel with sand with cobbles and boulders (GM)

30-35' Brown, gravelly silt with (ML)

35-95' Brown, silty gravel with sand (GM), wet

95-465' Brown, course to fine Sandstone (Sa)

Increased silt in drill cuttings

300

8-12 Colorado Silica Sand

Increased silt in drill cuttings

331 feet

6' Diameter 0.06' Slot Wire Wrap Screen

Gamma log shows decreased fines

340

Blank

Increased silt in drill cuttings

401 feet

6' Diameter 0.05' Slot Wire Wrap Screen

Variable drill rate

Possible interbedded

411 feet

Tailpipe

Gamma log shows decreased fines

441 feet

456 feet

493 feet

465-493' Gray Clay Stone (TCs)

Healy Power Plant
Healy, Alaska

WELL 3 SUMMARY

August 2015
Well #4
WATER WELL LOG


City/Borough: Healy  Subdivision: HEALY POWER PLANT  Block: 1  Lot:_____

Property Owner Name & Address: GOLDEN VALLEY ELECTRIC ASSOCIATION , AK

Well location: Latitude 63.856407  Longitude -148.94954

Meridian_F  Township  012S  Range  007W  Section 21  NW  1/4 of SW  1/4 of SW  1/4 of SW  1/4

BoREHOLE DATA: (from ground surface)

Depth

GRANULAR MATERIALS

From  To

Gravel with sand  0.0  14.0

Clay mud red  14.0  20.0

Gravel with sand  20.0  29.0

SANDSTONE WATER FRACTURES  29.0  117.0

Coal with water  117.0  125.0

Sandstone  125.0  227.0

Coal water  227.0  232.0

Sandstone with water  232.0  257.0

Sandstone with water  257.0  280.0

Include description or sketch of well location (include road names, buildings, etc.):

Drilling method: [ ] Air rotary  [ ] Cable tool  [ ] Other

Well use: [ ] Public supply  [ ] Domestic  [ ] Reinjection  [ ] Hydrofracking

Commercial  [ ] Observation/monitoring  [ ] Test/Exploratory  [ ] Cooling

Irrigation/agriculture  [ ] Grounding  [ ] Recharge/aquifer storage, [ ] Heating  [ ] Geothermal Exploration  [ ] Other

Fluids used: [ ] Bentonite  [ ] Other

Depth of hole: 257.00 ft  Casing pickup: 3.00 ft

Casing type: A53B  Casing thickness: 0.25 inches

Casing diameter: ____ inches  Casing depth: 135.70 ft

Liner type: _____ Depth: _____ ft Diameter: _____ inches

Note:

Well intake opening type: [ ] Open end  [ ] Open hole  [ ] Other

Screen type: _____ Screen mesh size: _____

Screen start: _____ ft, Screen stop: _____ ft, Perforated [ ] Yes [ ] No

Perforation description: _____ Perf from: _____ ft, Perf to: _____ ft, Perf from: _____ ft, Perf to: _____ ft

Gravel packed [ ] Yes [ ] No  Gravel start: _____ ft, Gravel stop: _____ ft

Note:

Static water (from top of casing): 16 ft on 8 / 28 / 2015  Artesian well [ ]

Pumping level & yield: 152 ft after 4 hours at 50 gpm

Method of testing: PUMP

Development method: _______ Duration: _______ Recovery rate: _______ gpm

Grout type: BENTONITE  Volume 1 SACK

Depth: From __________ ft, To __________ ft

Final pump intake depth: __________ ft  Model: _______

Pump size: ______ hp  Brand name: _______

Was well disinfected upon completion? [ ] Yes [ ] No

Method of disinfection:

Was water quality tested? [ ] Yes [ ] No

Water quality parameters tested:

Well driller name: WAYNE E WESTBERG

Company name: M.W.DRILLING INC

Mailing address: PO BOX 110378

City: ANCHORAGE  State: AK  Zip: 99511

Phone number: (_____) _____ - ______

Driller's signature: ___________

Date: ______ / ______ / ______

Anchorage Municipal Code 15.55.060(I) and North Pole Ordinance 13.32.030(D) require that a copy of this well log be submitted to the Development Services Department/City within 30 days of well completion.

City Permit Number: ______

Date of Issue: ______ / ______ / ______

Parcel Identification Number: ______ - ______

AS 41.08.020(b)(4) and AAC 11 AAC 93.140(a) require that a copy of the well log be submitted to the Department of Natural Resources within 45 days of well completion. Well logs may be submitted using the online well log reporting system available at:

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*Guide for Using the Hydrogeologic Classification System for Logging Water Well Boreholes by Thomas M. Hanna NGWA Press
M-W Drilling, Inc.
P.O. Box 110389 • Anchorage, AK 99511 • 907-345-4000 • 907-345-3287 Fax

Job No. 15-132

GROUNDWATER WELL LOG

Well Owner: Golden Valley Electric Association Use of Well: Exploratory/Monitor
Legal Description: Healy Power Plant Subdivision Healy, AK Lot 1
W1/2 SW1/4 Sec 21 T12S R7W Lat 63° 51' 20.54" N, Long 148° 56' 59.76" W

CONSTRUCTION

Drill Method: Air rotary Casing Size: 6" Cased to: 138.74' Hole Size: 6" Material: A53 Grade B Hole Depth: 262' Wall: 0.250"

Well Completion: Open end Screen/perforation description:

Screen/perforation description:

Grout Notes: (1) Sack(s) of Bentonite

Well Development:

Well Disinfected: N Method:

Yield test at 50 GPM for 4 hour(s) with 136' of drawdown (DD) from static level (SWL).

Method: Submersible pump Static Water Level (SWL): 16'

Start Date: 8/25/15 Completion Date: 8/28/15

Test Pump Date: 8/28/15 Final Pump Install Date: 

WELL LOG

<table>
<thead>
<tr>
<th>Depth in feet from top of casing.</th>
<th>Details of formations penetrated, size of material, color and miscellaneous details.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 TO 3</td>
<td>Casing Stick Up</td>
</tr>
<tr>
<td>3 TO 17</td>
<td>Gravel w/sand</td>
</tr>
<tr>
<td>17 TO 23</td>
<td>Gravel, mud, red</td>
</tr>
<tr>
<td>23 TO 32</td>
<td>Clay, grey</td>
</tr>
<tr>
<td>32 TO 120</td>
<td>Sandstone, water, 105 &amp; 115 fractures</td>
</tr>
<tr>
<td>120 TO 128</td>
<td>Coal w/water</td>
</tr>
<tr>
<td>128 TO 230</td>
<td>Sandstone</td>
</tr>
<tr>
<td>230 TO 235</td>
<td>Coal, water</td>
</tr>
<tr>
<td>235 TO 260</td>
<td>Sandstone w/water</td>
</tr>
<tr>
<td>TO</td>
<td></td>
</tr>
<tr>
<td>TO</td>
<td></td>
</tr>
<tr>
<td>TO</td>
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<tr>
<td>TO</td>
<td></td>
</tr>
<tr>
<td>TO</td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>SANDY GRAVEL WITH COBBLES</td>
</tr>
<tr>
<td>Depth</td>
<td>CLAY</td>
</tr>
<tr>
<td>Depth</td>
<td>SANDSTONE</td>
</tr>
<tr>
<td>Depth</td>
<td>COAL</td>
</tr>
<tr>
<td>Depth</td>
<td>CLAYSTONE</td>
</tr>
<tr>
<td>Depth</td>
<td>SILTSTONE</td>
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<tr>
<td>Depth</td>
<td>CLAYSTONE</td>
</tr>
<tr>
<td>Depth</td>
<td>SANDSTONE</td>
</tr>
<tr>
<td>Depth</td>
<td>SILTSTONE</td>
</tr>
<tr>
<td>Depth</td>
<td>CLAYSTONE</td>
</tr>
<tr>
<td>Depth</td>
<td>SILTSTONE</td>
</tr>
</tbody>
</table>

Include description or sketch of well location (include road names, buildings, etc.):
**NOTE**

- Lithology based on 250-foot exploratory boring on August 10, 2015.

---

**Healy Power Plant**

**Healy, Alaska**

**WELL 4 SUMMARY**

April 2016

31-1-11736-002

SHANNON & WILSON, INC.

FIG. 3
Off-Site Private Supply Wells
**WATER WELL LOG** Revised 08/18/2016

<table>
<thead>
<tr>
<th>City/Borough</th>
<th>Subdivision</th>
<th>Block</th>
<th>Lot</th>
<th>Property Owner Name &amp; Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healy</td>
<td>HEALY</td>
<td>B5</td>
<td>L12</td>
<td>TREY ACKTENSON,</td>
</tr>
</tbody>
</table>

**Drilling Started:**

**Completed:** 9/4/1985 **Pump Install:**

<table>
<thead>
<tr>
<th>Meridian F</th>
<th>Township 012S Range 007W Section 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 of 1/4 of 1/4 of 1/4</td>
<td></td>
</tr>
</tbody>
</table>

**BOREHOLE DATA:** (from ground surface)

**Drilling method:**
- Air rotary
- Cable tool
- Other

**Well use:**
- Public supply
- Domestic
- Reinjection
- Hydrofracking
- Commercial
- Observation/Monitoring
- Test/Exploratory
- Cooling
- Irrigation/Agriculture
- Grounding
- Recharge/Aquifer Storage
- Heating
- Geothermal Exploration
- Other

**Depth**

<table>
<thead>
<tr>
<th>Depth</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Casing:**

<table>
<thead>
<tr>
<th>Casing type</th>
<th>Casing thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>inches</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Casing diameter:** 80 inches **Casing depth:**

**Liner type:**

<table>
<thead>
<tr>
<th>Liner type</th>
<th>Depth</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>80</td>
<td>inches</td>
</tr>
</tbody>
</table>

**Note:**

**Well intake opening type:**
- Open end
- Open hole
- Other

**Screen type:**

<table>
<thead>
<tr>
<th>Screen type</th>
<th>Screen mesh size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Screen start:**

<table>
<thead>
<tr>
<th>Screen start</th>
<th>Screen stop</th>
<th>Perforated</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Perforation description:**

Perf from: ________ ft, Perf to: ________ ft, Perf from: ________ ft, Perf to: ________ ft

**Gravel packed:**

<table>
<thead>
<tr>
<th>Gravel packed</th>
<th>Gravel start</th>
<th>Gravel stop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>________ ft</td>
<td>________ ft</td>
</tr>
</tbody>
</table>

**Note:**

**Static water:**

<table>
<thead>
<tr>
<th>Static water</th>
<th>ft on</th>
<th>Artesian well</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Pumping level & yield:**

<table>
<thead>
<tr>
<th>Pumping level &amp; yield</th>
<th>After</th>
<th>hrs at</th>
<th>gpm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Method of testing:**

**Development method:**

**Duration:**

**Recovery rate:**

<table>
<thead>
<tr>
<th>Recovery rate</th>
<th>gpm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Grout type:**

<table>
<thead>
<tr>
<th>Grout type</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Depth:**

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Final pump intake depth:**

<table>
<thead>
<tr>
<th>Pump intake depth</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Pump size:**

<table>
<thead>
<tr>
<th>Pump size</th>
<th>hp</th>
<th>Brand name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Was well disinfected upon completion?**

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

**Method of disinfection:**

**Was water quality tested?**

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

**Water quality parameters tested:**

**Well driller name:**

**Company name:** PIONEER DRILLING

**Mailing address:**

**City:**

**State:** AK **Zip:**

**Phone number:** (_____) ________ - ______

**Driller’s signature:**

**Date:**

**Anchorages Municipal Code 15.55.060(I) and North Pole Ordinance 13.32.030(D) require that a copy of this well log be submitted to the Development Services Department/City within 30 days of well completion.**

**City Permit Number:**

**Date of Issue:**

**Parcel Identification Number:**

**AS 41.08.020(b)(4) and AAC 11 AAC 93.140(a) require that a copy of the well log be submitted to the Department of Natural Resources within 45 days of well completion.**

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OR email electronic well logs to

dnr.water.reports@alaska.gov

---

*Guide for Using the Hydrogeologic Classification System for Logging Water Well Boreholes by Thomas M. Hanna, NGWA Press*
**LOCATION OF WELL**

(Please complete either 1a, 1b or 1c.)

<table>
<thead>
<tr>
<th>Borough</th>
<th>Subdivision</th>
<th>Lot</th>
<th>Block</th>
<th>1/4qtrs.</th>
<th>Section No.</th>
<th>Township</th>
<th>Range</th>
<th>Meridian</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEALY</td>
<td></td>
<td>12</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DISTANCE AND DIRECTION FROM ROAD INTERSECTIONS**

Street Address and Area of Well Location

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Feet Below Surface</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRAVEL</td>
<td>0 ft. 30</td>
</tr>
<tr>
<td>GRAVEL &amp; SAND</td>
<td>20 ft. 40</td>
</tr>
<tr>
<td>GRAVEL &amp; SAND</td>
<td>40 ft. 45</td>
</tr>
<tr>
<td>GRAVEL</td>
<td>65 ft. 80</td>
</tr>
</tbody>
</table>

**3. OWNER OF WELL:**

Trey Ackerson

HEALY, AK. 99743

**4. WELL DEPTH:** final

80 ft.

**5. DATE OF COMPLETION:**

9 - 15 - 85

**6. USE:**

- [x] Domestic
- [ ] Public Supply
- [ ] Industry
- [ ] Irrigation
- [ ] Recharge
- [ ] Commercial
- [ ] Test Well
- [ ] Other:

**7. Casing:**

- [ ] Threaded
- [x] Welded

<table>
<thead>
<tr>
<th>Diom.</th>
<th>in.</th>
<th>Depth</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>80</td>
<td>ft.</td>
<td>17 lbs/ft</td>
</tr>
</tbody>
</table>

**8. FINISH OF WELL:**

Type: Diameter:

Slot/Mesh Size: Length:

Set between ft. and ft.

Backfilling: Gravel pack

**9. STATIC WATER LEVEL:**

45 ft. 9/15/85

Above or [ ] Below land surface: Date

Equipment used: Tap

**10. PUMPING LEVEL:**

below land surface and YIELD

ft. after hrs. pumping g.p.m.

ft. after hrs. pumping g.p.m.

**12. SHUTTING:**

[ ] Well Grouted: [ ] Yes [ ] No

Material: [ ] Neat Cement [ ] Other:

**13. PUMP:** (if available)

HP

Length of Drop Pipe ft. capacity g.p.m.

Subm. [ ] Jet [ ] Centrifugal [ ] Other

**14. REMARKS:**

204PM

**15. WATER WELL CONTRACTOR'S CERTIFICATION:**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief:

Pioneer Drilling Inc.

Registered Business Name

Contract License Number

Address: Box 87378 WASILLA, AK. 99687

Signed: Date: 12/9/85

Authorized Representative

Form O2-WWR (11/81) Copy Distribution: WHITE - State DGSS, PINK - Driller, CANARY - Customer
**WATER WELL LOG** Revised 08/18/2016

<table>
<thead>
<tr>
<th>City/Borough</th>
<th>Subdivision</th>
<th>Block</th>
<th>Lot</th>
<th>Property Owner Name &amp; Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healy</td>
<td>HEALY</td>
<td>L05</td>
<td>STEVEN WATTS ,</td>
<td></td>
</tr>
</tbody>
</table>

**Well location:**

**Latitude:**
- Meridian: F
- Township: 012S
- Range: 007W
- Section: 21
- 1/4 of 1/4 of 1/4 of 1/4

**Longitude:**

**Borehole Data:** (from ground surface)

- Drilling method: [ ] Air rotary, [ ] Cable tool, [ ] Other
- Well use: [ ] Public supply, [ ] Domestic, [ ] Reinjection, [ ] Hydrofracking
- [ ] Commercial, [ ] Observation/Monitoring, [ ] Test/Exploratory, [ ] Cooling
- [ ] Irrigation/Agriculture, [ ] Grounding, [ ] Recharge/Aquifer Storage
- [ ] Heating, [ ] Geothermal Exploration, [ ] Other

**Depth**

- Depth of hole: 150 ft
- Casing stickup: _______ ft
- Casing type: _______ inches
- Casing thickness: _______ inches
- Casing diameter: _______ inches
- Casing depth: _______ ft
- Liner type: _______ inches
- Depth: _______ ft
- Diameter: _______ inches

**Note:**

- Well intake opening type: [ ] Open end, [ ] Open hole, [ ] Other
- Screen type: _______ Screen mesh size: _______ Screen start: _______ ft, Screen stop: _______ ft
- Perforation description: _______ Perf from: _______ ft, Perf to: _______ ft
- Gravel packed: [ ] Yes, [ ] No
- Gravel start: _______ ft, Gravel stop: _______ ft

**Fluids used:**

- Static water (from top of casing): _______ ft on _______ / _______ / _______.
- Artesian well [ ]
- Pumping level & yield: _______ feet after _______ hours at _______ gpm.
- Method of testing: _______.
- Development method: _______.
- Duration: _______.
- Recovery rate: _______.

**Grout type:** _______.
- Volume: _______.
- Depth: From _______ ft, To _______ ft

**Final pump intake depth:** _______ ft
- Model: _______.
- Pump size: _______ hp Brand name: _______.

**Was well disinfected upon completion?** [ ] Yes, [ ] No

**Method of disinfection:**

- [ ] Heating, [ ] Geothermal Exploration, [ ] Other

**Well drilled name:** _______.
- Company name: SWAN DRILLING _______.
- Mailing address: _______.
- City: _______.
- State: AK
- Zip: _______.
- Phone number: (______) _______ - _______.
- Driller's signature: _______.

**Date:** _______ / _______ / _______.

**Anchorage Municipal Code 15.55.060(l) and North Pole Ordinance 13.32.030(D) require that a copy of this well log be submitted to the Development Services Department/City within 30 days of well completion.**

**City Permit Number:** _______.
- Date of Issue: _______ / _______ / _______.
- Parcel Identification Number: _______ - _______ - _______.

---

*Guide for Using the Hydrogeologic Classification System for Logging Water Well Boreholes by Thomas M. Hanna NGWA Press*
### Well Log

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Top Soil</td>
</tr>
<tr>
<td>3</td>
<td>Broken Rock</td>
</tr>
<tr>
<td>10</td>
<td>Gravel &amp; Sand</td>
</tr>
<tr>
<td>120</td>
<td>Water Bearing Gravel</td>
</tr>
</tbody>
</table>

- **Date:** 9/16/71
- **Well Owner:** Steven Watts
  - Lot 5
  - Healy, Alaska

- Rig #3
  - Pump set at 125 ft
  - Static Water Level 100 ft

---

### Diagram

```
+---+---+---+---+---+---+---+---+
|   | 1 |   | 2 |   | 3 |   | 4 |
+---+---+---+---+---+---+---+---+
|   |   |   |   |   |   |   |   |
+---+---+---+---+---+---+---+---+
|   |   |   |   |   |   |   |   |
+---+---+---+---+---+---+---+---+
|   |   |   |   |   |   |   |   |
+---+---+---+---+---+---+---+---+
|   |   |   |   |   |   |   |   |
+---+---+---+---+---+---+---+---+
|   |   |   |   |   |   |   |   |
+---+---+---+---+---+---+---+---+
|   |   |   |   |   |   |   |   |
+---+---+---+---+---+---+---+---+
|   |   |   |   |   |   |   |   |
+---+---+---+---+---+---+---+---+
|   |   |   |   |   |   |   |   |
+---+---+---+---+---+---+---+---+
```

---
**WATER WELL LOG** Revised 08/18/2016

<table>
<thead>
<tr>
<th>City/Borough</th>
<th>Subdivision</th>
<th>Block</th>
<th>Lot</th>
<th>Property Owner Name &amp; Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healy</td>
<td></td>
<td></td>
<td></td>
<td>JACK FORENPOHAR ,</td>
</tr>
</tbody>
</table>

**BOREHOLE DATA:** (from ground surface)

<table>
<thead>
<tr>
<th>Meridian</th>
<th>Township</th>
<th>Range</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>012S</td>
<td>007W</td>
<td>21</td>
</tr>
</tbody>
</table>

Depth

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
</table>

**Drilling Started:** / / 1986

**Completed:** 2 / 8 / 1986

**Pump Install:** / / ____________

**Drilling method:**
- Air rotary
- Cable tool
- Other

**Well use:**
- Public supply
- Domestic
- Reinjection
- Hydrofracking
- Commercial
- Observation/Monitoring
- Test/Exploratory
- Cooling
- Irrigation/Agriculture
- Grounding
- Recharge/Aquifer Storage
- Heating
- Geothermal Exploration
- Other

**Fluids used:**
- Other

**Depth of hole:** 58 ft

**Casing stickup:** ______ ft

**Casing type:** __________

**Casing thickness:** ______ inches

**Casing diameter:** ______ inches

**Casing depth:** 58 ft

**Liner type:** __________

**Depth:** ______ ft

**Diameter:** ______ inches

**Note:** FULL CASE

**Well intake opening type:**
- Open end
- Open hole
- Other

**Screen type:** __________

**Screen mesh size:** ______

**Screen start:** ______ ft, Screen stop: ______ ft, Perforated: Yes

**Perforation description:**
- ______ ft, Perf from: ______ ft, Perf to: ______ ft
- ______ ft, Perf from: ______ ft, Perf to: ______ ft

**Gravel packed:**
- Yes
- No

**Gravel start:** ______ ft, Gravel stop: ______ ft

**Note:**

**Static water (from top of casing):**
- 13 ft on / / ______ Artesian well

**Pumping level & yield:**
- _____ feet after ______ hours at 5 gpm

**Method of testing:**

- Development method:
- Duration: ______

**Recovery rate:** ______ gpm

**Grout type:** __________

**Volume:** ______

**Depth:**

- From ______ ft, To ______ ft

**Final pump intake depth:** ______ ft

**Model:** ______

**Pump size:** ______ hp

**Brand name:** ______

**Was well disinfected upon completion?**
- Yes
- No

**Method of disinfection:**

**Was water quality tested?**
- Yes
- No

**Water quality parameters tested:**

**Well driller name:**

**Company name:**

**Mailing address:**

**City:** ______

**State:** AK

**Zip:** ______

**Phone number:** (______) ______ - ______

**Driller’s signature:**

**Date:** / / ______

**Anchorage Municipal Code 15.55.060(I) and North Pole Ordinance 13.32.030(D) require that a copy of this well log be submitted to the Development Services Department/City within 30 days of well completion.**

**City Permit Number:**

**Date of Issue:** / / ______

**Parcel Identification Number:** ______ - ______

---

*Guide for Using the Hydrogeologic Classification System for Logging Water Well Boreholes by Thomas M. Hanna NGWA Press*
**LOCATION OF WELL**

<table>
<thead>
<tr>
<th>Borough</th>
<th>Subdivision</th>
<th>Lot</th>
<th>Block</th>
<th>1/4 Acre</th>
<th>Section No.</th>
<th>Township</th>
<th>Range</th>
<th>Meridian</th>
</tr>
</thead>
</table>

Distance and Direction from Road Intersections

SE ¼ SW ¼ Sec. 21 T12 R7 W6

Street Address and Area of Well Location

**5. OWNER OF WELL**

Joe Foremaki

Address: Box 311

Healy, AK

**4. WELL DEPTH:** (final) 58 ft.

**5. DATE OF COMPLETION:** 2-8-86

**2. WELL LOG**

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Top</th>
<th>Bottom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand &amp; Gravel Brown</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Sand Gray</td>
<td>12</td>
<td>26</td>
</tr>
<tr>
<td>Sand &amp; Gravel Gray</td>
<td>26</td>
<td>34</td>
</tr>
<tr>
<td>Red Clay</td>
<td>34</td>
<td>51</td>
</tr>
<tr>
<td>Coal</td>
<td>41</td>
<td>43</td>
</tr>
<tr>
<td>Shale Graywater</td>
<td>43</td>
<td>68</td>
</tr>
</tbody>
</table>

**6.**

- Cable tool
- Rotary
- Driven
- Dug
- Auger
- Jetted
- Bored
- Other:

**7. USE:**

- Domestic
- Public Supply
- Industry
- Irrigation
- Recharge
- Commercial
- Test Well
- Other:

**8. CASING:**

- Threaded
- Welded

Diam. in. to ft. Depth Weight 17 lbs./ft.

Diam. in. to ft. Depth Stickup 2 ft.

**9. FINISH OF WELL:**

- Open Bottom

Diameter:

- Slot/Mesh Size:
- Length:
- Get between ft. and ft.
- Backfilling
- Gravel pack

**10. STATIC WATER LEVEL:**

13 ft. 2/8/86

**11. PUMPING LEVEL** below land surface and YIELD

- ft. after hrs. pumping g.p.m.
- ft. after hrs. pumping g.p.m.

**12. GROUTING**

- Yes
- No

Material:

- Heat Cement
- Other:

**13. PUMP**

- (if available) HP

Length of Drop Pipe ft. capacity g.p.m.

- Subm.
- Jet
- Centrifugal
- Other

**14. REMARKS:**

Producing Above 56 pm

**15. Water Temperature**

- °F
- C

**16. WATER WELL CONTRACTOR'S CERTIFICATION:**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief;

**Moore Drilling Inc.**

Registered Business Name: A14145

Contract License Number

Address: P.O. Box 914528

Wasilla, AK 99687

Signed: Steven Moore

Authorized Representative

Date: 2-8-86

Form 02: WWR (11/81)
WATER WELL LOG  Revised 08/18/2016


<table>
<thead>
<tr>
<th>City/Borough</th>
<th>Subdivision</th>
<th>Block</th>
<th>Lot</th>
<th>Property Owner Name &amp; Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healy</td>
<td>HEALY B2</td>
<td>L23</td>
<td>JIMMY TOHILL</td>
<td></td>
</tr>
</tbody>
</table>

**Well location:**
- **Latitude:**
  - Meridian: F
  - Township: 012S
  - Range: 007W
  - Section: 21
  - 1/4 of 1/4 of 1/4 of 1/4
- **Longitude:**

**BOREHOLE DATA:**
- **Drilling method:**
  - Air rotary
  - Cable tool
- **Well use:**
  - Public supply
  - Domestic
  - Reinjection
  - Hydrofracking
  - Commercial
  - Observation/Monitoring
  - Test/Exploratory
  - Cooling
  - Irrigation/Agriculture
  - Grounding
  - Recharge/Aquifer Storage
  - Heating
  - Geothermal Exploration
  - Other
- **Depth:**
  - From: ______ ft
  - To: ______ ft

- **Depth of hole:** 92 ft
- **Casing pickup:** ______ ft
- **Casing type:**
  - Diameter: ______
  - Casing thickness: ______ inches
- **Casing diameter:** ______ inches
- **Casing depth:** 92 ft
- **Liner type:**
  - Depth: ______ ft
  - Diameter: ______ inches
- **Note:** FULL CASE

- **Well intake opening type:**
  - Open end
  - Open hole
- **Screen type:**
  - Screen mesh size: ______
- **Screen start:** ______ ft
- **Screen stop:** ______ ft
- **Perforated:**
  - Yes
  - No
- **Perforation description:**
  - Perf from: ______ ft
  - Perf to: ______ ft
  - Perf from: ______ ft
  - Perf to: ______ ft
- **Gravel packed:**
  - Yes
  - No
  - Gravel start: ______ ft
  - Gravel stop: ______ ft

- **Fluids used:**
  - Heating
  - Cooling
  - Grounding
  - Recharge/Aquifer Storage
  - Other

- **Static water (from top of casing):** 65 ft
- **Pumping level & yield:** ______ feet after ______ hours at ______ gpm
- **Method of testing:**
  - __________
  - __________
  - __________
  - __________
- **Development method:**
  - __________
  - __________
- **Duration:**
  - __________
  - __________

- **Recovery rate:**
  - ______
  - ______ gpm

- **Grout type:**
  - __________
  - Volume: ______
- **Depth:**
  - From: ______ ft
  - To: ______ ft
- **Final pump intake depth:** ______ ft
- **Model:**
  - __________
  - __________
- **Pump size:**
  - ______ hp
  - Brand name: __________
- **Well water quality tested:**
  - Yes
  - No
- **Method of disinfection:**
  - __________
  - __________
- **Was water disinfected upon completion?**
  - Yes
  - No

- **Well driller name:** JIMMY TOHILL
- **Company name:** AURORA DRILLING CO.
- **Mailing address:** 215.6.VAN HORN ROAD
- **City:** FAIRBANKS
  - State: AK
  - Zip: 99701
- **Phone number:** (907) 456 - 6712
- **Driller’s signature:**

- **Date:**

- **Anchorage Municipal Code 15.55.060(I) and North Pole Ordinance 13.32.030(D) require that a copy of this well log be submitted to the Development Services Department/City within 30 days of well completion.**

| City Permit Number: ______ |
| Date of Issue: ______/____/____ |
| Parcel Identification Number: ______ |

---

**AS 41.08.20(b)(4) and AAC 11 AAC 93.140(a) require that a copy of the well log be submitted to the Department of Natural Resources within 45 days of well completion.** Well logs may be submitted using the online well log reporting system available at:

[https://dnr.alaska.gov/welts/](https://dnr.alaska.gov/welts/)

OR email electronic well logs to

[dnr.water.reports@alaska.gov](mailto:dnr.water.reports@alaska.gov)

---

*Guide for Using the Hydrogeologic Classification System for Logging Water Well Boreholes by Thomas M. Hanna NGWA Press*
AURORA DRILLING, INC.
1060 Bush Street
Fairbanks, Alaska 99709
(907) 456-6712

Owner: Jimmy Tohill
Mailing Address: PO Box 455, Fairbanks, AK 99703
Well Location: Lot 23, Blk 2, Healy Sub.
Size of Casing: 6" Depth of Well: 92

( ) Screen
Static Water Level: 65  Well Yield GPM: 20  (V) Perforated: 5

Driller: Dale Dunn  Date: 6/12/95 to 6/14/95

Formations Encountered:

<table>
<thead>
<tr>
<th>Depth</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>20</td>
<td>gravel</td>
</tr>
<tr>
<td>76</td>
<td>medium gravel</td>
</tr>
<tr>
<td>92</td>
<td>medium gravel</td>
</tr>
</tbody>
</table>

Pump Installation:

Date Installed: 6-16-95  Type: Sub  Size: 1/2 HP

Pump: Goulas 76505412  Water Line: NONE
Wire: 10/4  Heat Tape: NONE
Pipe: 1" Poly 160  Pump Depth: 90'
Pitless: NONE  Tank: NONE
**WATER WELL LOG** Revised 08/18/2016

<table>
<thead>
<tr>
<th>Drilling Started:</th>
<th>Completed: 6/28/1996</th>
<th>Pump Install:</th>
</tr>
</thead>
<tbody>
<tr>
<td>City/Borough</td>
<td>Subdivision</td>
<td>Block Lot</td>
</tr>
<tr>
<td>Healy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Property Owner Name &amp; Address</td>
<td></td>
<td>Doyle Stratton</td>
</tr>
</tbody>
</table>

**meridian** ______________ Township ______ Range _______ Section _______ , _____ 1/4 of _____ 1/4 of _____ 1/4 of _____ 1/4

**BOREHOLE DATA:** (from ground surface)  
Suggest T.M. Hanna’s hydrogeologic classification system*  
https://my.ngwa.org/NC_Product?id=a165000000BYub3AAD

<table>
<thead>
<tr>
<th>Depth</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Drilling method: [ ] Air rotary, [ ] Cable tool, [ ] Other  
Well use: [ ] Public supply, [ ] Domestic, [ ] Reinjection, [ ] Hydrofracking  
[ ] Commercial, [ ] Observation/Monitoring, [ ] Test/Exploratory, [ ] Cooling,  
[ ] Irrigation/Agriculture, [ ] Grounding, [ ] Recharge/Aquifer Storage,  
[ ] Heating, [ ] Geothermal Exploration, [ ] Other ____________

**Driller’s signature:** ___________________________  
Date: ____/____/_______  
Driller’s address: ___________________________ State: AK Zip: 99701

**Fluids used:**  
- [ ] Domestic, [ ] Other

**Recovery rate:** _________ gpm  
**Duration:** ____________

**Development method:** ___________________________  
**Method of testing:** ___________________________

**Method of disinfection:**  
[ ] Yes [ ] No

**Well quality tested:**  
[ ] Yes [ ] No  
**Water quality parameters tested:** ___________________________

**AS 41.08.020(b)(4) and AAC 11 AAC 93.140(a) require that a copy of the well log be submitted to the Department of Natural Resources within 45 days of well completion.**  
**Well logs may be submitted using the online well log reporting system available at:**  
https://dnr.alaska.gov/welts/

**OR email electronic well logs to:**  
dnr.water.reports@alaska.gov

---

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AURORA DRILLING, INC.
1060 Bush Street
Fairbanks, Alaska 99709
(907) 436-6712 • (907) 452-4536

Well Log

Owner

Mailing Address

Well Location

Size of Casing 6"  Depth of Well 120 ft  Cased to 120 ft

( ) Screen

Static Water Level 78'  Well Yield GPM 15 to 20  ( ) Perforated 90 - 110

Driller Glenn McLendon  Date 6/28/86

Formations Encountered

<table>
<thead>
<tr>
<th>Depth Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 3</td>
<td>Fill</td>
</tr>
<tr>
<td>3 to 6</td>
<td></td>
</tr>
<tr>
<td>6 to 40</td>
<td>Gravel</td>
</tr>
<tr>
<td>40 to 50</td>
<td>Silty gravel</td>
</tr>
<tr>
<td>50 to 70</td>
<td>Gravel</td>
</tr>
<tr>
<td>70 to 80</td>
<td>Silty gravel</td>
</tr>
<tr>
<td>80 to 120</td>
<td>Gravel Wet</td>
</tr>
</tbody>
</table>

Pump Installation

Date Installed  Type  Size

Pump                   Water Line
Wire                   Heat Tape
Pipe                   Pump Depth
Pitless                Tank
STATE OF ALASKA  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF MINING, LAND & WATER  
Alaska Hydrologic Survey  

WATER WELL LOG  
Revised 08/18/2016


City/Borough | Subdivision | Block | Lot | Property Owner Name & Address
--- | --- | --- | --- | ---
Healy | | | | M & M CONSTRUCTION ,

Well location: Latitude Longitude
Meridian F Township 012S Range 007W Section 21 SW 1/4 of SW 1/4 of 1/4 of 1/4

BOREHOLE DATA: (from ground surface)
Suggest T.M. Hanna’s hydrogeologic classification system* https://my.ngwa.org/NC__Product?id=a185000000BYub3AAD

Depth
From | To
--- | ---

Drilling method: Air rotary, Cable tool, Other
Well use: Public supply, Domestic, Reinjection, Hydrofracking
Commercial, Observation/Monitoring, Test/Exploratory, Cooling,
Irrigation/Agriculture, Grounding, Recharge/Aquifer Storage,
Heating, Geothermal Exploration, Other

Fluids used:

Depth of hole: ft  Casing stickup: ft
Casing type:  Casing thickness: inches
Casing diameter: inches  Casing depth: ft
Liner type: Depth: ft Diameter: inches
Note: FULL CASE

Well intake opening type: Open end, Open hole, Other
Screen type:  Screen mesh size: 
Screen start: ft, Screen stop: ft, Perforated Yes No
Perforation description:  Perf from: ft, Perf to: ft, Perf from: ft, Perf to: ft
Gravel packed Yes No  Gravel start: ft, Gravel stop: ft
Note:

Static water (from top of casing): ft on / / Artesian well
Pumping level & yield: feet after hours at gpm
Method of testing:
Development method: Duration:
Recovery rate: gpm
Grout type: Volume
Depth: From ft, To ft
Final pump intake depth: ft Model:
Pump size: hp Brand name:

Was well disinfected upon completion? Yes No
Method of disinfection:
Was water quality tested? Yes No
Water quality parameters tested:

Well driller name: OULI PATTY...
Company name: AURORA DRILLING CO.,...
Mailing address: 215 E VAN HORN ROAD
City: FAIRBANKS State: AK Zip: 99701
Phone number: (907) 456 - 6712

Driller’s signature: 
Date: / / 

AS 41.08.202(b)(4) and AAC 11 AAC 93.140(a) require that a copy of the well log be submitted to the Department of Natural Resources within 45 days of well completion. Well logs may be submitted using the online well log reporting system available at:

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Anchorage Municipal Code 15.55.060(I) and North Pole Ordinance 13.32.030(D) require that a copy of this well log be submitted to the Development Services Department/City within 30 days of well completion.

City Permit Number: 
Date of Issue: / / 
Parcel Identification Number: - - - 
Well Log

M & M Constructors

Mailing Address: % Pat McGlinchy 1684 Chena Ridge Road Fairbanks, AK 99709

Well Location: Healy Crusher Plant

Size of Casing: 6” Depth of Well: 180’ Cased to: 180’

Well Seal: Bentonite

Static Water Level: 134’ Yield in GPM: 20

( ) Screen

( ) Perforated: 175’-180’

Driller: Chris Nuss

Date: 7/5/01

Formations Encountered

0 to 150 Glacial Till
150 to 155 Silt
155 to 180 Water Bearing Gravels + Sands

Pump Installation

Date Installed: Type: Size:

Pump Model: Water Line:

Wire: Heat Tape:

Pipe: Pump Depth:

Pitless Adaptor: Pressure Tank:

Water Analysis

**WATER WELL LOG** Revised 08/18/2016

<table>
<thead>
<tr>
<th>City/Borough</th>
<th>Subdivision</th>
<th>Block</th>
<th>Lot</th>
<th>Property Owner Name &amp; Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healy</td>
<td>HEALY</td>
<td>B2</td>
<td>L13</td>
<td>T &amp; A LOWERY</td>
</tr>
</tbody>
</table>

**Well location:**
- Latitude: Meridian _F_ Township 012S Range 007_W Section 21
- Longitude: 1/4 of 1/4 of 1/4 of 1/4

**BOREHOLE DATA:** (from ground surface)
- Suggest T.M. Hanna’s hydrogeologic classification system*
  - https://my.ngwa.org/NC__Product?id=a185000000BYub3AAD

**Depth**
- From 100 ft, To 100 ft

**Casing type:**
- Casing type: _______
- Casing thickness: _______ inches
- Casing diameter: _______ inches
- Casing depth: 100 ft
- Liner type: __________ Depth: ______ ft Diameter: _______ inches

**Fluids used:**
- __________

**Drilling method:**
- Air rotary, __________,
- Cable tool, __________,
- Other

**Well use:**
- Public supply, __________,
- Domestic, __________,
- Reinjection, __________,
- Hydrofracking,
- Commercial, __________,
- Observation/Monitoring, __________,
- Test/Exploratory, __________,
- Cooling, __________,
- Irrigation/Agriculture, __________,
- Grounding, __________,
- Recharge/Aquifer Storage, __________,
- Heating, __________,
- Geothermal Exploration, __________,
- Other __________

**Drilling Started:** _/__/1995
- Pump Install: _/__/____

**Well location:**
- Latitude: Meridian _F_ Township 012S Range 007_W Section 21
- Longitude: 1/4 of 1/4 of 1/4 of 1/4

**Depth**
- From 100 ft, To 100 ft

**Casing type:**
- Casing type: _______
- Casing thickness: _______ inches
- Casing diameter: _______ inches
- Casing depth: 100 ft
- Liner type: __________ Depth: ______ ft Diameter: _______ inches

**Note:** FULL CASE

**Well intake opening type:**
- Open end, __________,
- Open hole, __________,
- Other

**Screen type:**
- __________
- Screen mesh size: ______

**Screen start:**
- Screen start: ______ ft, Screen stop: ______ ft, Perforated Yes __________
- Yes, No
- Perforation description: __________ Perf from: ______ ft, Perf to: ______ ft, Perf from: ______ ft, Perf to: ______ ft

**Gravel packed:**
- Yes, No
- Gravel start: ______ ft, Gravel stop: ______ ft

**Note:**
- __________

**Static water (from top of casing):**
- 50 ft, Artesian well
- 50 ft, Gravel packed

**Pumping level & yield:**
- ______ feet after ______ hours at 30 gpm

**Method of testing:**
- __________

**Development method:**
- __________ Duration: ______

**Recovery rate:**
- ______ gpm

**Grout type:**
- ______ Volume: ______

**Depth:**
- From ______ ft, To ______ ft

**Final pump intake depth:**
- ______ ft Model: __________

**Pump size:**
- ______ hp Brand name: __________

**Was well disinfected upon completion?**
- Yes, No

**Method of disinfection:**
- __________

**Was water quality tested?**
- Yes, No

**Water quality parameters tested:**
- __________

**Driller’s signature:**
- __________

**Date:**
- ______/____/____

**AS 41.08.020(b)(4) and AAC 11 AAC 93.140(a) require that a copy of the well log be submitted to the Department of Natural Resources within 45 days of well completion. Well logs may be submitted using the online well log reporting system available at:**
- https://dnr.alaska.gov/welts/
- OR email electronic well logs to
- dnr.water.reports@alaska.gov

*Guide for Using the Hydrogeologic Classification System for Logging Water Well Boreholes by Thomas M. Hanna NGWA Press

Anchorage Municipal Code 15.55.060(I) and North Pole Ordinance 13.32.030(D) require that a copy of this well log be submitted to the Development Services Department/City within 30 days of well completion.
AURORA DRILLING, INC.
1060 Bush Street
Fairbanks, Alaska 99709
(907) 456-6712 • (907) 452-4536

Owner: Lawley
Mailing Address: PO Box 96, Denali Park AK 99755
Well Location: Lot 13 Block 2
Size of Casing: 6" Depth of Well: 100' Cased to 100'

Static Water Level: 50' Well Yield GPM: 30
Diller: Dale
Date: 6-12-84

Formations Encountered

0 to 25' Mud boring 4' ID
25' to 100' Mud boring (No)

Pump Installation

Date Installed: 6-16-95
Type: Sub
Size: 3/4 HP

Pump: Goulds 106507412
Water Line: None

Wire: 10/4
Heat Tape: None

Pipe: 1" Poly 100
Pump Depth: 95'

Pitless: None
Tank: None
# WATER WELL LOG

**Revised 08/18/2016**

---

**WATER WELL LOG**

**City/Borough:** Healy

**Subdivision:** HEALY B3

**Block:** L11

**Lot:** B KEITH

---

<table>
<thead>
<tr>
<th>Depth</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing</td>
<td>90</td>
<td>ft</td>
</tr>
<tr>
<td>Casing type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Casing thickness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Casing diameter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Casing depth</td>
<td>90</td>
<td>ft</td>
</tr>
<tr>
<td>Liner type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diameter</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Well Location: Latitude:**

**Meridian:** F

**Township:** 012S

**Range:** 007W

**Section:** 21

**1/4 of ____ 1/4 of ____ 1/4 of ____ 1/4 of ____

---

**Drilling method:**

**Well use:**

**Driller’s name:** OLIN PATTY

---

**Drilling Started:** 7/11/96

**Completed:** 7/11/1996

**Pump Install:**  |  |

---

**Property Owner Name & Address:**

**OLIN PATTY**

---

**City Permit Number:** 99701

**Phone number:** (907) 456-6712

**Company name:** AURORA DRILLING CO.

**Mailing address:** 215 E VAN HORN ROAD

**City:** FAIRBANKS

**State:** AK

**Zip:** 99701

**City/Borough:** Healy

---

**City Permit Number:** 99701

**Phone number:** (907) 456-6712

**Company name:** AURORA DRILLING CO.

**Mailing address:** 215 E VAN HORN ROAD

**City:** FAIRBANKS

**State:** AK

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**OR email electronic well logs to**

dnr.water.reports@alaska.gov

---

*Guide for Using the Hydrogeologic Classification System for Logging Water Well Boreholes by Thomas M. Hanna NGWA Press*
## Well Log

**Owner:** B.J. KEITH  
**Mailing Address:** Box 384, Healy, Ak, 99743  
**Well Location:** Block 3, Lot 11, Healy Sub. N-is-Healy, Lease  
**Size of Casing:** 6"  
**Depth of Well:** 90'  
**Cased to:** 90'  
**Static Water Level:** 78'  
**Well Yield GPM:** 25  
**Perforated:** 8'  
**Driller:** Glenn McLeod  
**Date:** 7-11-96

### Formations Encountered

<table>
<thead>
<tr>
<th>Depth</th>
<th>Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 5'</td>
<td>Surf. Gravel</td>
</tr>
<tr>
<td>5' to 68'</td>
<td>Gravel Sand</td>
</tr>
<tr>
<td>68' to 90'</td>
<td><strong>(WB)</strong></td>
</tr>
</tbody>
</table>

### Pump Installation

**Date Installed:** NONE  
**Type:**  
**Size:**  
**Pump:**  
**Water Line:**  
**Heat Tape:**  
**Pump Depth:**  
**Piters:**  
**Tank:**
**WATER WELL LOG**

Revised 08/18/2016

<table>
<thead>
<tr>
<th>City/Borough</th>
<th>Subdivision</th>
<th>Block</th>
<th>Lot</th>
<th>Property Owner Name &amp; Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healy</td>
<td></td>
<td></td>
<td></td>
<td>J CALRUD ,</td>
</tr>
</tbody>
</table>

**Well location:**

- Latitude: ____________________________
- Longitude: ____________________________

**Depth**

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Drilling:**

- Drilling method: [ ] Air rotary, [ ] Cable tool, [ ] Other
- Well use: [ ] Public supply, [ ] Domestic, [ ] Reinjection, [ ] Hydrofracking
  - [ ] Commercial, [ ] Observation/Monitoring, [ ] Test/Exploratory, [ ] Cooling,
  - [ ] Irrigation/Agriculture, [ ] Grounding, [ ] Recharge/Aquifer Storage,
  - [ ] Heating, [ ] Geothermal Exploration, [ ] Other

**Casing & Liner:**

- Depth of hole: 170 ft, Casing stickup: __________ ft
- Casing type: __________, Casing thickness: __________ inches
- Casing diameter: __________ inches, Casing depth: 160 ft
- Liner type: __________, Depth: __________ ft, Diameter: __________ inches

**Note:** CASE TO 160 FT, OPEN HOLE, PERFS 150 FT TO 160 FT

**Well intake opening type:** [ ] Open end, [ ] Open hole, [ ] Other

**Screen type:** __________, Screen mesh size: __________

**Screen start:** __________ ft, Screen stop: __________ ft, Perforated: Yes [ ] No

**Perforation description:** __________, Perf from: __________ ft, Perf to: __________ ft

**Gravel packed:** Yes [ ] No, Gravel start: __________ ft, Gravel stop: __________ ft

**Fluids used:**

- ___________
- ___________
- ___________

**Well conditions:**

- Static water (from top of casing): 110 ft, on __/__/____ Artesian well [ ]
- Pumping level & yield: ______ feet after ______ hours at 20 gpm
- Method of testing: __________
- Development method: __________, Duration: __________
- Recovery rate: __________ gpm

**Grout type:** __________, Volume: __________

**Depth:**

- From __________ ft, To __________ ft

**Final pump intake depth:** __________ ft, Model: __________

**Pump size:** __________ hp, Brand name: __________

**Was well disinfected upon completion?** [ ] Yes [ ] No

**Method of disinfection:**

**Was water quality tested?** [ ] Yes [ ] No

**Water quality parameters tested:**

**Driller’s signature:** ____________________________

**Date:** _________/_______/__________

**Anchoraged Municipal Code 15.55.060(l) and North Pole Ordinance 13.32.030(D) require that a copy of this well log be submitted to the Development Services Department/City within **30 days of well completion.**

**City Permit Number:** ____________________________

**Date of Issue:** _________/_______/__________

**Parcel Identification Number:** _________ - _________

---

*Guide for Using the Hydrogeologic Classification System for Logging
Water Well Boreholes by Thomas M. Hanna NGWA Press*
J. & O. DRILLING
1932 BRIDGEPARK
FAIRBANKS, ALASKA 99701

OWNER:
Name: Jerry Calvud
Address: 8140 Happy Dr.

Well location: Same place

Type of well: Rotary

Proposed use: Commercial

Casing installed: threaded, weld X

6" diam. 0 ft. to 160 ft. Gauge 236
16" diam. ft. to ft. Gauge
8" diam. ft. to ft. Gauge
12" diam. ft. to ft. Gauge

Perforated: yes X no

Size of perforations: 1/4 X 1/4

40 perfor. from 110 ft. to 160 ft
25 perfor. from 5 ft. to 10 ft
4 perfor. from 5 ft. to 10 ft

Screen Installed: yes X no

Manufacturer:

Type: model

Dia.: slot size

Set from ft. to ft.

Water level: from top of ground to water static level 110’ date 4-10-73

Well test: pump test made yes X no yield 20 gpm with ft. draft draw

Hours pumped

Construction: well seal used X no

Depth of seal:

Gravel pack well yes X no

Gravel placed from ft. to ft

Drive hose used yes X no

WELL LOG:

Diam. of well below casing: 6

Depth well drilled: 170 ft.

Material from ft. to ft.

Rock: 0-145
Gravel: 145-154
Gravel 1/13 138 pl: 154-160
Rock with 78 pl: 160-170

Work started: finished 4-10-73

Pump installed: date

Brand: Sunoco

Hp.: 3 Volts: 230 Depth: 110 ft

Pitless installed: size: [Depth ft. below ground

Drain "Y" No. Size Depth ft

Below pitless type of well cap used:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

Signed: [Signature] Date: 4-10-73
## WELL TEST ANALYSIS

Data Set: N:\...\MW-1R Round 3 Falling B-R.aqt  
Date: 12/19/17  
Time: 13:56:11

## PROJECT INFORMATION

- **Company:** SLR  
- **Client:** GVEA  
- **Project:** 104.00367.17001  
- **Location:** Healy, AK  
- **Test Well:** MW-1R  
- **Test Date:** 4/6/2017

## AQUIFER DATA

- **Saturated Thickness:** 30. ft  
- **Anisotropy Ratio (Kz/Kr):** 1.

## WELL DATA (New Well)

- **Initial Displacement:** 2.507 ft  
- **Static Water Column Height:** 8.14 ft  
- **Total Well Penetration Depth:** 25. ft  
- **Screen Length:** 15. ft  
- **Casing Radius:** 0.083 ft  
- **Well Radius:** 0.083 ft

## SOLUTION

- **Aquifer Model:** Confined  
- **Solution Method:** Bouwer-Rice  
- **K:** 8.935 ft/day  
- **y0:** 0.03248 ft
WELL TEST ANALYSIS

Data Set: N:\...\MW-1R 3rd round Rising H.aqt
Date: 12/19/17               Time: 13:53:13

PROJECT INFORMATION

Company: SLR
Client: GVEA
Project: 104.00367.17001
Location: Healy, AK
Test Well: MW-1R
Test Date: 4/6/2017

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 2.507 ft
Total Well Penetration Depth: 25. ft
Casing Radius: 0.0833 ft
Static Water Column Height: 8.14 ft
Screen Length: 15. ft
Well Radius: 0.0833 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
K = 6.708 ft/day
y0 = 3.524 ft
WELL TEST ANALYSIS

Data Set: N:\...\MW-5 Falling Bouwer.aqt
Date: 12/19/17  Time: 14:02:52

PROJECT INFORMATION

Company: SLR
Client: GVEA
Project: 104.00367.17001
Location: Healy, AK
Test Well: MW-5
Test Date: 4/6/2017

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 0.55 ft
Static Water Column Height: 11.84 ft
Total Well Penetration Depth: 24. ft
Screen Length: 20. ft
Casing Radius: 0.083 ft
Well Radius: 0.083 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 62.6 ft/day
y0 = 9786.2 ft
WELL TEST ANALYSIS

Data Set: N:\...\MW-5 Falling.aqt
Date: 12/11/17
Time: 15:48:28

PROJECT INFORMATION

Company: SLR
Client: GVEA
Project: 104.00367.17001
Location: Healy, AK
Test Well: MW-5
Test Date: 4/6/2017

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-5)

Initial Displacement: 0.55 ft
Total Well Penetration Depth: 24. ft
Casing Radius: 0.083 ft
Static Water Column Height: 11.84 ft
Screen Length: 20. ft
Well Radius: 0.083 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
K = 64.57 ft/day
y0 = 927.9 ft
WELL TEST ANALYSIS

Data Set: N:\...\MW-5 1st round rising B-R.aqt
Date: 12/19/17

PROJECT INFORMATION

Company: SLR
Client: GVEA
Project: 104.00367.17001
Location: Healy, AK
Test Well: MW-5
Test Date: 4/6/2017

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 1.072 ft
Total Well Penetration Depth: 24. ft
Casing Radius: 0.083 ft
Static Water Column Height: 11.84 ft
Screen Length: 20. ft
Well Radius: 0.083 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 268. ft/day
y0 = 2.877E+7 ft
**WELL TEST ANALYSIS**

Data Set: N:\...\MW-5 1st round rising Hvorslev.aqt
Date: 12/19/17
Time: 14:01:50

**PROJECT INFORMATION**

Company: SLR
Client: GVEA
Project: 104.00367.17001
Location: Healy, AK
Test Well: MW-5
Test Date: 4/6/2017

**AQUIFER DATA**

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 1.

**WELL DATA (New Well)**

Initial Displacement: 1.072 ft
Total Well Penetration Depth: 24. ft
Casing Radius: 0.083 ft
Static Water Column Height: 11.84 ft
Screen Length: 20. ft
Well Radius: 0.083 ft

**SOLUTION**

Aquifer Model: Confined
Solution Method: Hvorslev
K = 324.6 ft/day
y0 = 4.599E+6 ft
WELL TEST ANALYSIS
Data Set: N:\..\MW-7 Round 2 Falling Bouwer-Rice.aqt
Date: 12/11/17 Time: 15:45:58

PROJECT INFORMATION
Company: SLR
Client: GVEA
Project: 104.00367.17001
Location: Healy, AK
Test Well: MW-7
Test Date: 4/6/2017

AQUIFER DATA
Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-7)
Initial Displacement: 3.21 ft
Total Well Penetration Depth: 17. ft
Casing Radius: 0.083 ft
Static Water Column Height: 6.96 ft
Screen Length: 15. ft
Well Radius: 0.083 ft

SOLUTION
Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 1.607 ft/day
y0 = 0.2653 ft
WELL TEST ANALYSIS

Data Set: N:\...\MW-7 Round 2 Falling Hvorslev.aqt
Date: 12/19/17    Time: 14:04:39

PROJECT INFORMATION

Company: SLR
Client: GVEA
Project: 104.00367.17001
Location: Healy, AK
Test Well: MW-7
Test Date: 4/6/2017

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 3.21 ft
Total Well Penetration Depth: 17. ft
Casing Radius: 0.083 ft
Static Water Column Height: 6.96 ft
Screen Length: 15. ft
Well Radius: 0.083 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
K = 2.001 ft/day
y0 = 0.2194 ft
WELL TEST ANALYSIS

Data Set: N:\...\MW-7 Round 3 Falling Bouwer-Rice.aqt
Date: 12/19/17
Time: 14:05:47

PROJECT INFORMATION

Company: SLR
Client: GVEA
Project: 104.00367.17001
Location: Healy, AK
Test Well: MW-7
Test Date: 4/6/2017

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 3.795 ft
Total Well Penetration Depth: 17. ft
Casing Radius: 0.083 ft
Static Water Column Height: 6.96 ft
Screen Length: 15. ft
Well Radius: 0.083 ft

SOLUTION

Aquifer Model: Confined
K = 1.073 ft/day
Solution Method: Bouwer-Rice
y0 = 0.2537 ft
WELL TEST ANALYSIS

Data Set: N:\...\MW-7 Round 3 Falling Hvorslev.aqt
Date: 12/19/17    Time: 14:07:46

PROJECT INFORMATION

Company: SLR
Client: GVEA
Project: 104.00367.17001
Location: Healy, AK
Test Well: MW-7
Test Date: 4/6/2017

AQUIFER DATA

Saturated Thickness: 30. ft    Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 3.795 ft
Total Well Penetration Depth: 17. ft
Casing Radius: 0.083 ft
Static Water Column Height: 6.96 ft
Screen Length: 15. ft
Well Radius: 0.083 ft

SOLUTION

Aquifer Model: Confined
K = 1.417 ft/day
Solution Method: Hvorslev
y0 = 0.235 ft
APPENDIX D

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www.tttenviro.com

Item No. 311
NSN: 7550-01-439-5654
ISBN: 978-1-933149-29-6

Made in the USA
US Pat No. 6,868,840
3/27/16  K. Johnson  Clear 38°F

1700 - MW-3 Assessment.
   Monument in good condition
   has locking well marker, possible
   minor frost heave on well monument
   casing. Boiler in well upon inspection
   H2O no smell or odor

MW-3 DTH after removal boiler 10.62 DTH
   total depth 15.78 feet bottom
   Put boiler back in well.

1710 - MW-2 in on inside of gate
   looks intact

MW-4 needs to be installed on outside
   of GVEA property. High beam from
   ponds, no drill access.

1730 - End of Day

3/28/16  K. Johnson  Overcast - 38°F

0650 - Arrive onsite for safety briefing

0730 - Richard says after their meeting
   this morning. Safety will get with
   me for site specific briefing.

0815 - Meet w/ Pat Tillot to get
   issued a Work Permit for today's
   work.

0820 - Meet w/ Don V for site safety
   briefing.

0900 - Speak to Carl the driller eta is
   about 1300.

Look for MW-1, couldn't locate
   Basin is full of water, no sticking
   Monument sound. Look for possible
   new location.

0910 - Inspect MW-8 location, possible
   pad down yard behind warehouse, they
   have to move. Back pad due N of warehouse.

0920 - MW-7 needs new location. No
   access behind Cold Storage. New
   location in front of warehouse, distance
   from overhead line 52 feet.
3/28/16 K. Johnson ~ 38°F

0930 - Locate MW-2, DTW 10.26
4" well, steel monument, 28.5' total depth
Soft bottom.

0947 - Look at proposed MW-5 location
Mark where good location will be.

1002 - Look at MW-4 location on inside
gate access road along beam is uneven
and not good. Drilling outside gate
is best.

1024 - Meet with Richard Mike Herbert
1030 - Call to Heather Simon about possible
well issue locations with A. Locators
South survey at 60 Hertz.

1115 - At MW-1 location, check supply well
to see where power supply coming from.
John back from MTA going to
Check MW-4 now that it is on
the other side of gate.

1142 - Speak with Pat about moving
some debris in cold storage laydown
yard to be able to install MW-7.
Also ask about #3 supp well piping to confirm where it runs.
Richard on phone, will contact him
later to get approval.
Pat Tilton = Control Room Operator

3/28/16 K. Johnson ~ 38°F Winds 5-10 mph

1230 - Setup at MW-2 for well assessment
begin purging, lots of sediment and
pieces coal at beginning due to
pulling near bottom of well.
Turn up flow rate to purge brown
water and adjust tubing up
Approx 6.5 - 7 ft above bottom.
Tubing was at 16 ft, obstruction
in pipe just get tubing to bottom
28.0 feet, pull up and begin purging
water is brown Dark w/ suspended
sediment.

1321 - Call and Dave arrive set them
up w/ safety briefing W/ Dane.
• Note MW-2 2.5 gallons removed
   Dark Brown Sediment rich purge water.

1335 - Discuss Health and Safety Plan
   w/ Homestead Drilling, have
   Sign the plan.

1400 - Drill rig to set up on MW-4
   location.
   Pat Tilton informs me they are clearing
cut area for MW-7 near cold storage.
3/28/16  K. Johnson  74°F  Clear
1405  Call having materials brought down for MW-1R
1410  Rig align with spot for MW-1
      Total Depth  14.20 feet Brekle
1540  Begin well installation
      Total Depth Brekle  14.2
      Screen 19.7 - 3.7
      Sand 4.2 - 2.4
          2.4 feet Berolite
          1.0 concrete
15.2 ft
      Well Measurement to steel 3.5 feet
15.9 ft
      [Total length w/ riser 14.4 - possible silt at bottom]
      Add 1.5 tee he riser for access the well
      DTW 5.98 - from TOC
      Measurement 3.15 AFS
1652  Check MW-7 Area, debris removed
      for well install, plenty of clearance
1700  close out permit w/ PAT at
      control room
1720  Arrive at Tollem
      End of Day

3/29/16  K. Johnson  34°F
0740  Work permit
0800  Pilots arrive and begin setup
      for MW-6
0824  Start purge - Development of MW-2
      w/ 12.25 feet valve, set at ~20 feet
0830  Set at ~20 feet
      Using small 2" surge block in 4"
      well, well casing bulge at 1.5 feet
      BIQC
      Dark Brown to Black purge water
      Coal fragments in purge water
      w/ seds
      18.5 ft water column 4" well
      0.65 x 18.5 = 12.08 gallons = 1 well volume
0937  - 3 gal purge - shut off
0846  Begin Drilling at MW-6
0852  - 6 inches 23 blows next inches
      to hard and bends steel spoon.
      Try w/ out spoon and Auger past
      the 10 inch spot where possible
      almost Large boulder. Able to Auger
      past Auger resistance at 5-5 feet, push
      forward.
3/29/16  K. Johnson

32°F

1425 - Drill Rig Meter having issues w/ Spkr
- Check Spkr, no sound, bad and unsure
- Possible Spkr out connections, Pull
- Hydr. hose away and Stats. backup
- Auger still resistance

1515 - 12-14 Split Spoon sample
- Note DTW at MW-5 being 7-9 feet

1607 - 22-24 Split Spoon advanced

1629 - Begin well inst. 20.6 ft screen
- 5 ft riser 1 ft fsl.

1704 - Check with Pat if water can be put
- Our  Rg on MW-7 neat cold
- Storage so ready to drill AM
- Said it was OK

1718 - Sand up to 2.5 ft bys
- Bentonite to 1.5 1 ft

1737 - Add 2.1 more to riser

1745 - DTW 15.70 at MW-5

1800 - Drill Rig Set up on MW-7

1805 - Begin Development of MW-2

1805 - Start purge at MW-2 - shot at ~16 feet

1815 - 5 gallons per minute total - 10 gallons
- Light to dark brown, less sediment
- Move tubing to 22 feet begin purge again

3/29/16  K. Johnson

Sp FRE

8 3/29/16 K. Johnson  Sp FR

32°F

0845 - Get resistance, decide to
- Auger from 8-10 ft sample
- MW-6
- Try Split Spoon 10-12 ft.

10:00 - Water table at 11, 0 feet, decide
- 10 ft screen 22 ft.
- Set well depth to 22 feet to
- Set 10 ft screen.

1030 - 14-16 ft split Spoon

1050 - 18 20 ft split Spoon

1124 - Bag a well installation, 10 ft screen to
- 22 feet.

1205 - Sand up to 8 1 ft MW-6.
- Bentonite 11.9 ft.
- 9 ft native ground
- 1 ft 6 ft concrete.
- Abundant clay hard on last 82
- 20-3 feet of Auger, 2 ft Auger.
- 8.25 ft off to fit well cap and
- Monument.

1303 - DTW 14.34 total depth 24.5 ft.
- MW-6 complete.

1320 - Move to MW-5 location, set up Rg

1334 - Start inst. at MW-5

1410 - Hit 8 to 10 ft
- Auger making noise and resistance on
- Push down.
3/24/16  K. Johnson  ~38°F
1820 - light to medium brown w/ some coal fragments
236.1 NTU after 16 gallons
1830 - clearing up light brown to clear
small coal fragments 18 gallons removed
138.6 NTU
1835 - 20 gallons removed
move tubing down to 26 feet
purge water Dark Brown w/ sediment
1840 - 25 gallons purged
1844 - 30 gallons removed
NTU at 2.10.0
32.5 gallons removed beginning to clear
1849 - 35 gallons removed
NTU 151.30
1852 - 40 gallons removed
130.6 NTU
move to bottom of well 28.5 ft
Dark Brown to Red sediment
Rich purge water w/ some viscosity
1900 - 45 gallons removed purge water
still purges red brown
1903 - 50 gallons removed, light red brown, beginning to clear
363.2 NTU

3/29/16  V. Johnson  ~38°F
1707 - 55 gallon removed 301.6 NTU
1713 - 60 gallons removed 231.0 NTU
1730 - close out permit
1747 - Anne at Totem Inn
1120 - Work permit

1340 - Driller show up to begin well install

1500 - Setup on well

1530 - Start rig at 10:15 a.m.

1538 - Fist job on well. Board to take with pipe at 12:30. Ready to:

- 20 gusset
- 4 gusset
- 8 gusset
- 12 gusset

1610 - Pumps operating

- 20; 2; 4; 8; 12 barrels

1320 - Build column

2000 - MPF

2300 - Work permit

3400 - I. Johnson

3459 - I. Johnson

6530 - I. Johnson

6538 - I. Johnson

6540 - I. Johnson

6545 - I. Johnson

6550 - I. Johnson

6600 - I. Johnson
3/31/16 K. Johnson M. Woods ~38°F

1730 - Work permit
1800 - Meet w/ Drillers plan today
1830 - Mall setup on MW-6 for development
Drillers start at MW-8 continue
2022 Split Spoon
1000 - Well Drilled to 30 ft, water encountered
at 22 feet, set well w/ 15 ft screen 30-15 ft, sand to 12 feet,
12-11 feet, 1 - 2 brick, 2 - 1 sand, 1 - 0 screen.
DTW w/ Auger Stem 25, 10 ft
1045 - Check DTW MW-5 and sounding depth
15.62 23.33
1050 - MW-6 Development 10 gallons purge
so far, moved tubing down 2 more
feet to get better flow.
1100 - MW-7 33 above ground surface
Casing at 2.34 ft BGS
DTW 13.18 ft TOT
Total sound depth 22.10 TOT
1115 - Well will complete at MW-8
700 lift liner to fit monument
1130 - DTW upon completion 25.24 TOT
Well Sound 33.20 TOT
Casing weight 65 + 3.05
Monument check up height 3.25

3/31/16 K. Johnson M. Woods ~40°F
1145 - Move to MW-1R, very soft earth,
Drillers Stage trailer.
1230 - Check Development MW-6
1400 - DTW in boring 17 ft BGS, oil
Heater for appropriate screen length.
1430 - Decide w/ Heater to set 15 ft
Screen from 25 - 10 ft. DTW was
at 17 ft in boring.
1515 - Begin Well installation
25 ft casing + riser length raising
10 ft screen + 10 ft riser + riser length
1600 - Well installed, setting monument and
Surface Seal.
Sand Bales 10/20
DTW BGS = 16.35
Well Sound depth BGS = 23.85

1720 - Move to MW-4 to begin development
again.
1817 - Finish Developing MW-4, place
pen pump w/ tubing at 13 feet
and purges well to see flow
discharge NTU 138.0 Initial.
1825 - NTU 59.16 MW-4
3/2/16 K. Johnson / M. Woods 11:40°F
1830 - Move tubing to Section 16.8 to clear sediments out of sump.
1840 - Begin development at MW-5 starting at 16 feet and move down 2
intervals to bottom, need 10 gallons per 2 feet interval for total of
60+ gallons.
2000 - Complete half of needed purge at MW-5
Paint MW-6 and MW-4
2015 - Close out permit and leave GVEA
2030 - End of Day

4/1/16 K. Johnson / M. Woods 11:40°F 6:15pm
0740 - Permit at GVEA
0800 - Begin development at MW-5
0850 - Issues w/ waterline tubing freezing; pull tubing to heat up
0845 - Find hot water to unfreeze waterline
0916 - Calibrate VSI 05B2462 AE
1000 - Setup on MW-4 for GW sample
1050 - Sample MW-4, monitors in color of sample
1100 - Setup on MW-6
1200 - Sample MW-6
1230 - Setup at MW-5
1317 - Sample MW-5
1400 - Setup on MW-7
1440 - Purge another 2 gallons out of MW-7
to get turbidity down to 18.62 NTU
for sampling.
1509 - Sample MW-7
and MW-97 duplicate
1535 - Complete purge at MW-7
1600 - Setup at MW-2
1625 - Start purge
1640 - Sample MW-2
1710 - Leave MW-2
4-1-10  K. Jennson M. Woods  ...36°F 10-30 mph
1723 - Setup on MW-3
1730 - Sediment bottom of MW-3 use peri-pump
to dredge out sample DT bottom was
15.65 soft & homogenous
New depth to bottom = 16.20
1828 - Sample MW-3
1843 - End purge MW-3 from sampling
1850 - Head to MW-8 for sampling
1905 - Dredge bottom of MW-8 with peri-pump,
little to no sediement, move to
middle screen at 27.5 and ran
till turbidly lessens.
1915 - Begin purge MW-8 1934 Sample MW-8
2012 - SW-1 Sample taken, see field
        Sample location 63 feet, East of MW-5
2030 - Arrive at MW-1R to set up sample
2147 Sample MW-1R
2200 - Return permit and discuss plan next day.

4-2-10  K. Jennson M. Woods  ...20°F
0800 - Work permit
0910 - Maintenance on wells
1000 - River gauging on 9th metal beam
        on South end of bridge, Gauge
        at 21.20' to Ice.
1010 - Boiler placed in MW-3 for.
        GVEA staff sampling, taking left
        in well, measure to top of I-beam.
1010 - 7.25 top of water from gauge
        Area.
        Total depth from gauge marking
        9.45
1030 - Close out permit, begin cleanup
        of var, re-pack samples, got
        ready for move back to ANC.
1200 - Leave Healy, AK for ANC
1730 - Arrival in ANC, re-pack coolers
        with ice at warehouse.
1800 - End of Day

End of Day
4-11-16  K. Johnson
0900 - prep samples for delivery
1000 - TTT rebuild equipment
1135 - Demob materials and van Clemont
1200 - Demob complete
Keep action packet w/ Heavy materials for next sampling.

End of Day.
6/1/16 K. Johnson M. Woods - Goody

0800 - Arrive on site and receive work permit

0843 - Begin purge at MW-6

0911 - Sample MW-6

Duplicate MW-9c

1016 - Sample MW-5

1030 - Finish purge at MW-5

1030 - Sample SW-1

1035 - Pack up at SW-1 and MW-5

Note: SW-1 sample taken 85 yds East of original SW location due to sodium bicarbonate on surface sampled in clear area.

1050 - Setup at MW-7

1133 - Sample MW-7

1250 - Setup MW-1R and begin purge

1312 - Sample 1-R

1338 - Setup at MW-8

1400 - Sample MW-8

1415 - Clean up site MW-8

1430 - QC bottles and fill out COC

1500 - Arrive back at Totem, permit closed out, call into Headquarter
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:30</td>
<td>arrive onsite</td>
<td></td>
</tr>
<tr>
<td></td>
<td>M. Enloe receives site orientation; M. Vandy completes work permit</td>
<td></td>
</tr>
<tr>
<td>13:46</td>
<td>Safety meeting</td>
<td></td>
</tr>
<tr>
<td>13:52</td>
<td>Calibrate YSF</td>
<td></td>
</tr>
<tr>
<td>14:17</td>
<td>Begin setup on MV-7</td>
<td></td>
</tr>
<tr>
<td>14:30</td>
<td>Start purge on MV-7</td>
<td>Large suspended solids noticed in discharge</td>
</tr>
<tr>
<td>15:14</td>
<td>Complete MV-7 sample collection</td>
<td></td>
</tr>
<tr>
<td>15:37</td>
<td>arrive at MV-8 and setup for sampling</td>
<td></td>
</tr>
<tr>
<td>16:12</td>
<td>Collect sample at MV-8</td>
<td></td>
</tr>
<tr>
<td>16:31</td>
<td>Complete MV-8 sample collection</td>
<td></td>
</tr>
<tr>
<td>16:52</td>
<td>arrive at MV-2 and setup for sampling</td>
<td></td>
</tr>
<tr>
<td>17:08</td>
<td>Begin purge at MV-2</td>
<td></td>
</tr>
<tr>
<td>17:32</td>
<td>Collect sample at MV-2</td>
<td></td>
</tr>
<tr>
<td>18:07</td>
<td>Safety close out permit and leave site by</td>
<td></td>
</tr>
</tbody>
</table>

8/3/16

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:07</td>
<td>arrive onsite; check into control room</td>
<td></td>
</tr>
<tr>
<td>08:35</td>
<td>Begin YSF calibration</td>
<td></td>
</tr>
<tr>
<td>08:51</td>
<td>Finish YSF calibration; begin setup on MV-1-R</td>
<td></td>
</tr>
<tr>
<td>09:31</td>
<td>Collect Sample at MV-1-R</td>
<td></td>
</tr>
<tr>
<td>09:47</td>
<td>Complete sample collection at MV-1-R</td>
<td></td>
</tr>
<tr>
<td>09:59</td>
<td>Setup on MV-6</td>
<td></td>
</tr>
<tr>
<td>10:15</td>
<td>Start purge on MV-6</td>
<td></td>
</tr>
<tr>
<td>10:33</td>
<td>Collect Sample at MV-6</td>
<td></td>
</tr>
<tr>
<td>10:45</td>
<td>Complete sample collection of MV-6</td>
<td></td>
</tr>
<tr>
<td>10:59</td>
<td>Start purge on MV-5</td>
<td></td>
</tr>
<tr>
<td>11:19</td>
<td>Collect Sample at MV-5; MV-59 also collected</td>
<td>Finish collection of MV-5, MV-59</td>
</tr>
<tr>
<td>11:41</td>
<td>Place tubing in SW pond; leave to allow</td>
<td></td>
</tr>
<tr>
<td></td>
<td>suspended solids to settle</td>
<td></td>
</tr>
<tr>
<td>12:31</td>
<td>Begin sampling MV-4</td>
<td></td>
</tr>
<tr>
<td>13:05</td>
<td>Return to sample water location; pour ~ 12</td>
<td></td>
</tr>
<tr>
<td>13:32</td>
<td>Collect SW sample</td>
<td></td>
</tr>
<tr>
<td>13:43</td>
<td>Begin purge at MV-3</td>
<td></td>
</tr>
<tr>
<td>14:05</td>
<td>Collect MV-3</td>
<td></td>
</tr>
<tr>
<td>14:25</td>
<td>Finish collection of MV-3</td>
<td></td>
</tr>
<tr>
<td>14:30</td>
<td>QC samples in van; need 10 precipitate tubes</td>
<td>QC samples in van; need 10 precipitate</td>
</tr>
<tr>
<td></td>
<td>tubes; package samples for</td>
<td>QC samples in van; need 10 precipitate</td>
</tr>
<tr>
<td></td>
<td>shipment; all samples present</td>
<td>QC samples in van; need 10 precipitate</td>
</tr>
</tbody>
</table>

Rats in the Pain...
8/3/14  M. Woods 18.5 mL

1445 Bathy rive gage DTU = 22244
1455 Inther rive gage DTU = 4.4584
1505 check at at condtion, here 6.85

10/3/16 1226 calm after YSE

PH:    | The Value | Value | Temp | Post-corr. Value |
-------|-----------|-------|------|-----------------|
4.00   | 9.01      | 14°C  |      | 4.00            |
10.11  | 10.10     | 14°C  |      | 10.11           |
7.03   | 7.01      | 14°C  |      | 7.09            |

Specific Conductivity: | 1.415 | 1.353 | 19°C | 1.413 | ms/cm |
                        | ms/cm | ms/cm |      | ms/cm |

ORP:   | 240 mV  | 275.1 | 14°C | 240.0 | mV    |
DO     | 7.09 mg/L | 44.5 |      | 76%   |

1347 Start probe at MV-7
1347 Photograph at AIA tank cell
1415 Run calibration check in display
1449 Start probe at FNV-7
1515 Collect sample at MV-8
1532 Complete probe at MV-8
1532 Bury probe at IM1-04 MV-4
1617 Collect sample at MV-4
1629 Conclude sampling
1704 Bury probe at LTV-3

Rit in the Rain
1725 Collected sample at 1204 on MW-3
173x Conclude sampling at MW-3

10/4/16 M. Woods / D. Goldberg

0800 Check in @ GVEA
0805 Calibrate YSI

<table>
<thead>
<tr>
<th>True Value</th>
<th>Post-cal Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORP</td>
<td>240 mV</td>
</tr>
<tr>
<td>Specific Conduct</td>
<td>1.413 mS/cm</td>
</tr>
</tbody>
</table>

pH

YSI was reading 2±3 pH when calibrating to 4.0 pH. Faulty cord switched to SLR & YSI

0825 Calibrate SLR & YSI

<table>
<thead>
<tr>
<th>True Value</th>
<th>Post-cal Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORP</td>
<td>240 mV</td>
</tr>
<tr>
<td>Specific Conduct</td>
<td>1.143 mS/cm</td>
</tr>
</tbody>
</table>

pH

DO -> 8.53% 10.00 10.16 9

Note: Pressure = 931.6
0906  Start purge MW-6
0931  Begin Collecting samples @ MW-6
0941  Finish samples. End purge.
0948  Start purge MW-1R
1010  Begin Collecting samples @ MW-5 MW-1R
1024  Finish samples. End purge
1032  Take reading on River Staff Gauge
      River Staff Gauge = 6.40 ft
1040  Start purge MW-5
1103  Begin collecting samples @ MW-5,
      Duplicate taken = MW-95 @ 1400
1127  Finish Sampling and end purge
1130  Take YSI Measurements and surface water samples "SW-1"

1155  Take measurements & emerg. outflow sump
      Inside Depth
      3.56 + 0.42 = 3.98 ft
      Outside Depth
      3.33 + 0.42 = 3.75 ft

      Outside Depth to water
      4.11 ft
1215  Close cat point @ MX Bottle
1224  Depth to water on bridge
      gage 24.45
4/3/2017  B. Siwiec, S. Oliver

GVEA Healy Well Installation

0900 At GVEA Plant
Weather clear, windy, temp 25°F

Meet with Levi and Mark,
Check out drilling locations

0945 Watch training / Safety video

1005 Drillers arrive

1115 Electric locators arrive

1145 MTA telephone locators arrive

1215 All utilities cleared

1235 Start drilling MW 10

1630 Reach 26 ft, Stop drilling as drillers have no more augers and rods.

1655 Drillers leave to get more rods from Fairbanks.
0830 On site with Homestead. Weather - Clear, windy.
0850 Begin drilling - continue drilling at MW-10.
0955 Boring complete to 30ft. Begin well installation.
1232 Well installation complete. Moving to MW-9.
1243 Begin drilling at MW-9.
1447 Boring complete to 20ft.
1622 Well installation complete. Move to collect sample from MW-5. Homestead drilling.
1728 Begin purge at MW-5.
1805 Collect sample at MW-5 and duplicate MW-95.
1838 Move to Recirc pond.
1848 Collect surface water sample from Recirc pond.

4/5/2017
0830 On site.
0840 At MW-1R, setting up temperature around 25ft. Warming equipment.
0912 Water stage measurement at sheet pile wall:
7.40 ft. - From old mark.
0926 Water/ice stage measurement from bridge:
24.82 ft. + to river ice, from measurement station/casting stop.
0933 MW-3 has ice plug at 5.40 ft. B.D.C.
1008 Begin purge at MW-1R.
1040 Collect sample MW-1R.
1100 Leave MW-1R.
1118 Begin purge of MW-8.
1145 Collect sample MW-8.
1204 Leaving MW-8.
1208 On site at MW-10
1238 Begin surveying and purging.
1315 Stopping development
30 gallons purged, water
showed improvement in clarity.
1525 Leaving MW-10
1528 Arrive at MW-7
1535 Begin purging MW-7
1602 Collect Sample MW-7
1621 Leave MW-7
1628 Arrive MW-2
1646 Begin purge at MW-2
1700 Collect Sample MW-2
1743 Leave MW-2
1747 MW4 - Water Level check:
FT: 9.72 ft, broc
TD: 16.75
1755 At MW-9
Developed - Purged 43 gallons
1946 Leaving MW-9
2600 At MW-5 for slug test
2645 Leaving MW-5, leaving site.

4/6/17 B Smiilec, S Oliver
GVEA Healy
0630 Leaving hotel, driving to Fairbanks to pick up additional sample containers.
0830 In Fairbanks at S65
1030 Back at GVEA Healy
1045 At MW-10, setting up
1201 Begin purge at MW-90
1219 Collect sample at MW-90
1257 Leave MW-90
1300 At MW-9
1318 Begin purge at MW-9
1346 Collect Sample MW-9
1405 Leave MW-9
1407 At MW-4
1414 Begin purge MW-4
1444 Collect Sample MW-4
1502 Leave MW-4
1503 Arrive MW-6
1508 Begin purge at MW-6
1530 Collect sample MW-6
1545 Leave MW-6
1647 At MW-19 for slug test
1654 Leaving MW-19
0500 Meet at SLR-190 to warehouse to pick up lost of equipment
0515 Leave Anchorage for Healy, AK
1110 Check in at GVEA Healy
1115 Bridge Stage measurement: 74.0 feet
1120 Freshwater in head stage: 6.50 feet
1123 Recirculation pond stage: 4.90 feet
1140 Calibrate VSI 556
1200 Set up well sample equipment
1200 Start MW-5 purge
1255 Sample MW-5
1424 Sample MW-9
1538 Sample MW-10
1635 Sample MW-7
1747 Sample MW-6
1845 Check out @ Control room GVEA
1900 Depart GVEA

6/16/2017 Seth Oliver, Carly Grant

0710 Arrival at GVEA Healy Site
0730 Take photos of stage locations
0800 Check in to control room, calibrate YSI 556

1021 Sample MW-3 Temp: 17.0°F DO: 8.16 mg/L
1132 Sample MW-2 Cond: 1051 US/cm pH: 11.52
1236 Sample MW-1A ORP: 85.1 mv
1250 Confirm access to unit 2 freshwater intake building, photograph interior and exterior of freshwater intake structures.
1333 Sample MW-8
1414 Sample SW-1
14:40 Verify sample collection, fill out sample labels, COC and contact lodging.
1500 Check out at GVEA Healy control room
1515 Demolish to Anchorage
2030 Arrival in Anchorage
2045 Demolish of equipment to warehouse

Rita in the Rain
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/24/2017</td>
<td>10:35</td>
<td>Arrival on site</td>
</tr>
<tr>
<td>10:37</td>
<td></td>
<td>Bridge Stage measurement = 23.85'</td>
</tr>
<tr>
<td>10:45</td>
<td></td>
<td>Check in @ control room, inform Katie Sparks of our arrival.</td>
</tr>
<tr>
<td>10:55</td>
<td></td>
<td>Begin YSI 556 calibration</td>
</tr>
<tr>
<td>12:45</td>
<td></td>
<td>Finish MW-6 Duplicate = MW-69</td>
</tr>
<tr>
<td>13:37</td>
<td></td>
<td>Arrival @ MW-4</td>
</tr>
<tr>
<td>14:08</td>
<td></td>
<td>MW-4 Sample time = 14:08</td>
</tr>
<tr>
<td>14:40</td>
<td></td>
<td>Sample SW-1</td>
</tr>
<tr>
<td>15:00</td>
<td></td>
<td>Sample MW-5</td>
</tr>
<tr>
<td>15:20</td>
<td></td>
<td>Finish MW-5</td>
</tr>
<tr>
<td>15:27</td>
<td></td>
<td>Arrival @ MW-2 &amp; begin purge</td>
</tr>
<tr>
<td>16:15</td>
<td></td>
<td>Start Purge MW-1R</td>
</tr>
<tr>
<td>17:15</td>
<td></td>
<td>Check out @ control room</td>
</tr>
<tr>
<td>17:30</td>
<td></td>
<td>Depart GVEA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/25/17</td>
<td>06:00</td>
<td>Check out of lodging</td>
</tr>
<tr>
<td>06:30</td>
<td></td>
<td>Calibrate YSI 556</td>
</tr>
<tr>
<td>06:55</td>
<td></td>
<td>Calibration Complete</td>
</tr>
<tr>
<td>08:00</td>
<td></td>
<td>Arrival &amp; Purge start @ MW-9</td>
</tr>
<tr>
<td>08:45</td>
<td></td>
<td>Area around MW-9 exhibited fluid colored Staining</td>
</tr>
<tr>
<td>09:00</td>
<td></td>
<td>Dark/Iodine color that tapered off in severity in a circular fashion.</td>
</tr>
<tr>
<td>09:45</td>
<td></td>
<td>Sample MW-9</td>
</tr>
<tr>
<td>09:30</td>
<td></td>
<td>Arrive at MW-10 &amp; begin purge</td>
</tr>
<tr>
<td>10:21</td>
<td></td>
<td>Sample MW-7</td>
</tr>
<tr>
<td>10:38</td>
<td></td>
<td>Arrive at MW-8</td>
</tr>
<tr>
<td>11:08</td>
<td></td>
<td>Sample MW-8</td>
</tr>
<tr>
<td>12:00</td>
<td></td>
<td>Finish MW-8; Pack equipment &amp; QL Samples</td>
</tr>
<tr>
<td>14:10</td>
<td></td>
<td>Fresh Water intake Stage is 6.13°F</td>
</tr>
<tr>
<td>14:20</td>
<td></td>
<td>Depart Heavy</td>
</tr>
</tbody>
</table>
10/2/2017 Seth Oliver, Gary Grant

0700 - Meet 2 SLR, Retrieve Ice from warehouse
0730 - Depart Anchorage
1230 - Arrive in Heavy, check into hotel
1255 - Arrive & Usibelli Power Plant
1300 - Check in with control room
1320 - Calibrate YSI 550

1445 - Sample MW-6
1520 - Sample MW-1R
1608 - Sample MW-8
1649 - Sample MW-7

1723 - Sample MW-9
1730 - Leave MW-9
1735 - 6.90 feet, Freeminister Stage
1745 - Bridge Stage 24.10'
1800 - Check out control room
1810 - Depart Usibelli Coal Plant
1910 - Arrive at hotel

END OF DAY

10/3/2017 Seth Oliver, Gary Grant

0700 - Meet in lobby
0730 - Check in at control room
0807 - Calibrate YSI
0815 - Collect samples for SW-1, recirculation pond.
0831 - Collect parameters for SW-1
0859 - Sample MW-5
0942 - Sample MW-4
1024 - Sample MW-3, duplicate
1116 - Sample MW-2
1159 - Sample MW-10
1215 - Recirculation pond stage = 3.0

Depart 1330 Organize samples and equipment
1345 - Check out/closeout work permit
1300 - Depart GNEA Heavy coal plant
1800 - Arrive at Anchorage Warehouse
1830 - Arrange samples in refrigerated
1845 - Decontaminate gear
1900 - END of Day
April 2016
**Surface Water**

---

**Groundwater Sampling Form**

**Site/Client Name:** GVEA  
**Project #:** Heavy Power Plant  
**Sampled By:** K. Johnson  
**Sample ID:** SW-1  
**Sample Date:** 1/1/16  
**Sample Time:** 2012  
**Duplicate ID:**  
**MS/MSD:** Yes  
**Trip Blank Required:** No  
**Well Type:**  
**Well Diameter:**  
**Screen Interval:**  
**Tubing/Pump Depth (ft. BTOC):**  
**Purge Start Time (24-hr):**  
**Depth to Water (ft. BTOC):**  
**Total Depth (ft. BTOC):**  
**Depth to Product (ft. BTOC):**  
**Product Thickness (ft):**  
**Screen Interval:**  
**Tubing/Pump Depth (ft. BTOC):**  

**Gauging/Purging Information**

- **Depth to Water (ft. BTOC):**  
- **Total Depth (ft. BTOC):**  
- **Purge Start Time (24-hr):**  
- **Purge End Time (24-hr):**  
- **Total Purge Time (min):**  

**LOW FLOW**

- **Max Draw Down:** (Tubing Depth - Top of Screen Depth) X 0.25 =  
- **Min. Purge Volume if required:** purge volume (gal) = volume of water/gal X Water column thickness (ft) X # of casing volumes = gal

**Well Diameter - gal/ft:** 1' = 0.041 gal/ft  
**2' = 0.163 gal/ft**  
**4' = 0.653 gal/ft**  
**6' = 1.469 gal/ft**

---

**Water Quality Parameters**

(Achieve stable parameter for 3 consecutive reading [each reading taken after pumping a minimum of 1 foot through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gal/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:1-16</td>
<td>0.12</td>
<td></td>
<td>8.65</td>
<td>1.817</td>
<td>11.70</td>
<td>8.3</td>
<td>12.21</td>
<td>13.56</td>
<td>Just below surface</td>
<td>1-2&quot;</td>
</tr>
</tbody>
</table>

**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** None

---

**Analytical Sampling**

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRO/BTEX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RDO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOCs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SVOCs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAHs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

- Surface water taken just below surface 1-2". Location 65 ft East of MW-5

**Equipment:**

- **Pump Type:** G  
- **Tubing (Type/Length):**  
- **Bailer Type:**  
- **Water Level Meter:**  
- **Multi-Parameter Meter (Make/Model):** YEI 556  
- **Filter Lot #:**  

**IDW Disposal:** □ Discharged to surface □ Treated (how?) □ Other:
**Groundwater Sampling Form**

**Site/Client Name:** GVEA Heavy Power Plant  
**Well ID:** MW-1R

**Sampled By:** K. Johnson  
**Sample Time:** 2147

**Weather Conditions:** N34°F 20 mph overcast  
**Duplicate ID:**

**Sampling Method:** Low Flow  
**MS/MSD:** Yes, No  
**MS/MSD Required:** Yes, No

---

**Well Information**

- **Well Type:** Permanent
- **Well Diameter:** 2" in.
- **Screen Interval:** 25.00 ft BGS to 10 ft BGS
- **Well Condition:** Good
- **Tubing/Pump Depth:** 25.00 ft BGS to 24.00 ft BGS
- **Purge Start Time:** 2120
- **Purge End Time:** 2155
- **Total Purge Time:** 35 min

**LOW FLOW:**

- Max Draw Down = (Tubing Depth – Top of Screen Depth) X 0.25 = ___ (ft); If screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

**Depth to Water:** 19.26 ft BTOC
**Total Depth:** 27.70 ft BTOC

---

**Gauging/Purging Information**

- **Depth to Product:**
- **Tubing/Pump Depth (BTOC):**
- **Purge Start Time (24-hr):** 2120
- **Purge End Time (24-hr):** 2155
- **Total Purge Time (min):** 35

**Product Thickness:**

<table>
<thead>
<tr>
<th>Well Diameter</th>
<th>gal/ft</th>
<th>1&quot; = 0.041 gal/ft</th>
<th>2&quot; = 0.163 gal/ft</th>
<th>4&quot; = 0.663 gal/ft</th>
<th>6&quot; = 1.469 gal/ft</th>
</tr>
</thead>
</table>

---

**Water Quality Parameters**

(Achieve stable parameter for 3 consecutive reading [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gal/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temperature (°C)</th>
<th>Specific Conductance (µS/cm²)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2120</td>
<td>300 mL</td>
<td>500 mL</td>
<td>6.99</td>
<td>1.971</td>
<td>2.51</td>
<td>-0.09</td>
<td>12.280</td>
<td>54.75</td>
<td>19.26</td>
<td>-</td>
</tr>
<tr>
<td>2123</td>
<td>300 mL</td>
<td>800 mL</td>
<td>6.95</td>
<td>1.983</td>
<td>1.21</td>
<td>-0.086</td>
<td>12.380</td>
<td>54.02</td>
<td>19.26</td>
<td>-</td>
</tr>
<tr>
<td>2126</td>
<td>300 mL</td>
<td>800 mL</td>
<td>6.97</td>
<td>1.987</td>
<td>0.98</td>
<td>-0.086</td>
<td>12.380</td>
<td>46.92</td>
<td>19.26</td>
<td>-</td>
</tr>
<tr>
<td>2129</td>
<td>300 mL</td>
<td>800 mL</td>
<td>6.83</td>
<td>1.995</td>
<td>0.88</td>
<td>-0.086</td>
<td>12.380</td>
<td>46.92</td>
<td>19.26</td>
<td>-</td>
</tr>
<tr>
<td>2132</td>
<td>300 mL</td>
<td>800 mL</td>
<td>6.82</td>
<td>2.001</td>
<td>0.98</td>
<td>-11.23</td>
<td>12.495</td>
<td>14.58</td>
<td>19.26</td>
<td>-</td>
</tr>
<tr>
<td>2135</td>
<td>300 mL</td>
<td>800 mL</td>
<td>6.80</td>
<td>2.004</td>
<td>0.98</td>
<td>-11.28</td>
<td>12.484</td>
<td>14.94</td>
<td>19.26</td>
<td>-</td>
</tr>
<tr>
<td>2138</td>
<td>300 mL</td>
<td>800 mL</td>
<td>6.80</td>
<td>2.004</td>
<td>0.98</td>
<td>-11.45</td>
<td>12.499</td>
<td>14.60</td>
<td>19.26</td>
<td>-</td>
</tr>
<tr>
<td>2143</td>
<td>800 mL</td>
<td>800 mL</td>
<td>6.94</td>
<td>2.102</td>
<td>0.85</td>
<td>-11.69</td>
<td>12.684</td>
<td>39.00</td>
<td>19.26</td>
<td>-</td>
</tr>
<tr>
<td>2146</td>
<td>800 mL</td>
<td>800 mL</td>
<td>6.90</td>
<td>2.102</td>
<td>0.87</td>
<td>-11.66</td>
<td>12.684</td>
<td>39.00</td>
<td>19.26</td>
<td>-</td>
</tr>
</tbody>
</table>

**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** None

**Analytical Sampling**

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROBTEX</td>
<td></td>
<td>Total Metals</td>
<td>DRO</td>
<td></td>
<td>Dissolved Metals</td>
</tr>
<tr>
<td>RRO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOCs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SVOCs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAHs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

- **Dredge Bottom before move to middle screen**
- **Shift:** 2041 - 2110 - 7 L pumped 109.0 NTV - Continue pump = 9 L removed 59.82 NTV

**Equipment:**
- **Pump Type:** submersible 600 gpm tubing
- **Tubing (Type/Length):** LOPE
- **Wells:** YSI 556 05 2462 AE
- **Multi-Parameter Meter:** YSI 556
- **Pump:** 2011 06 164
- **Filter Lot #:**

**IDW Disposal:** Discharged to surface  
**Treated (how?):**

---
**Groundwater Sampling Form**

**Site/Client Name:** GVEA Healy Power Plant  
**Well ID:** mw-2

**Project #:** I04.000837.61002  
**Sample ID:** MW-2

**Sampled By:** K. Johnson  
**Sample Date:** 4/1/16

**Weather Conditions:** 35°F, 20-30 mph winds sunny  
**Duplicate ID:**

**Sampling Method:** Low Flow  
**MS/MSD:** Yes  
**Trip Blank Required:** No

---

## Well Information

- **Well Type:** Permanent  
- **Well Diameter:** 4 in.  
- **Screen Interval:** 24.0 ft BGS to 5.0 ft BGS  
- **Sticky?:** Yes  
- **Condition:** Good

---

## Gauging/Pumping Information

- **Depth to Water (ft BTOC):** 11.0 ft  
- **Tubing/Pump Depth (ft BTOC):** 24.0 ft
- **Total Depth (ft BTOC):** 30.25 ft  
- **Purge Start Time (24-hr):** 10/25
- **Depth to Product (ft BTOC):**
- **Purge End Time (24-hr):** 17:00
- **Product Thickness (ft):** 45.14 in.
- **Total Purge Time (min):**

**LOW FLOW:**

- **Max Draw Down:**

**Min. purge volume if required:**

- **purge volume (gal) = volume of water (gal) / (gal/ft) X Water column thickness (ft) X # of casing volumes = gal**

**Well Diameter - gal/ft:**

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gal/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:43</td>
<td>200 gal/min</td>
<td>2.158</td>
<td>3.28</td>
<td>2.158</td>
<td>3.15</td>
<td>-15.8</td>
<td>8.47</td>
<td>24.50</td>
<td>11.62</td>
<td></td>
</tr>
<tr>
<td>16:52</td>
<td>200 gal/min</td>
<td>2.158</td>
<td>3.38</td>
<td>2.158</td>
<td>3.13</td>
<td>-17.6</td>
<td>8.50</td>
<td>19.54</td>
<td>11.92</td>
<td></td>
</tr>
<tr>
<td>16:55</td>
<td>200 gal/min</td>
<td>2.156</td>
<td>3.26</td>
<td>2.156</td>
<td>3.12</td>
<td>-19.2</td>
<td>8.52</td>
<td>18.70</td>
<td>11.62</td>
<td></td>
</tr>
<tr>
<td>16:58</td>
<td>200 gal/min</td>
<td>2.158</td>
<td>3.28</td>
<td>2.158</td>
<td>1.07</td>
<td>-13.9</td>
<td>8.50</td>
<td>18.75</td>
<td>11.02</td>
<td></td>
</tr>
<tr>
<td>16:44</td>
<td>400 gal/min</td>
<td>2.177</td>
<td>3.21</td>
<td>2.177</td>
<td>1.06</td>
<td>-12.2</td>
<td>8.49</td>
<td>23.53</td>
<td>11.02</td>
<td></td>
</tr>
<tr>
<td>16:46 - Staple</td>
<td>400 gal/min</td>
<td>2.179</td>
<td>3.17</td>
<td>2.179</td>
<td>1.05</td>
<td>-12.1</td>
<td>8.49</td>
<td>44.52</td>
<td>11.02</td>
<td></td>
</tr>
</tbody>
</table>

**Sample Color:** Clear w/ suspended particulates  
**Sample Odor:** Slight Iron  
**Sheen:** None

---

## Analytical Sampling

- **GROBTEX**
- **DRO**
- **RRO**
- **VOCs**
- **SVOCs**
- **PAHs**

## Notes:

- 24S brown = Screen 25F, suspended particles in flow thru cell at beginning of purge. Particles sink to bottom of flow thru cell. Possible iron particles?

---

**Equipment:**
- **Pump Type:** Geopump - peri
- **Tubing (Type/Length):** LDE
- **Bailer Type:**
- **Water Level Meter:** 106 ft SLR
- **Turbidity Meter (Make/SN#):** Micro TPW 201106169

**IDW Disposal:**

- **Discharged to surface**
- **Treated (how?):**
- **Other:**

---

**Sample Type:** n/a
## Groundwater Sampling Form

**Site/Client Name:** GEWA  
**Project #:** Power Plant  
**Sampled By:** Johnson  
**Weather Conditions:** 65°F Clear W/ Gs 20-30mph  
**Gauging/Purging Information:**
- **Depth to Water (ft BTOC):** 9.69 ft  
- **Total Depth (ft BTOC):** 19.65 ft  
- **Depth to Product (ft BTOC):** 12.35 ft  
- **Product Thickness (ft):** 4.5 ft  
- **Tubing/Pump Depth (ft BTOC):** 13.0 ft  
- **Purge Start Time (24-hr):** 8:00  
- **Purge End Time (24-hr):** 8:43  
- **Total Purge Time (min):** 45 min  
- **LOW FLOW:** Max Draw Down X 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.  
- **Min. purge volume if required:** Purge Volume (gal) = Volume of Water/ft (gal/ft) X Water column thickness/ft X # of casing volumes  
- **Well Diameter - gal/ft:** 1'-0.041 gal/ft  
- **Water Quality Parameters:**

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gal/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm²)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft) (Max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1807</td>
<td>300 ml</td>
<td>500 ml</td>
<td>1.27</td>
<td>3.018</td>
<td>12.79</td>
<td>-19.3</td>
<td>8.47</td>
<td>43.79</td>
<td>4.70</td>
<td></td>
</tr>
<tr>
<td>1810</td>
<td>300 ml</td>
<td>500 ml</td>
<td>1.20</td>
<td>3.011</td>
<td>7.20</td>
<td>-21.5</td>
<td>8.45</td>
<td>44.70</td>
<td>4.70</td>
<td></td>
</tr>
<tr>
<td>1813</td>
<td>300 ml</td>
<td>500 ml</td>
<td>1.23</td>
<td>3.004</td>
<td>5.99</td>
<td>-26.5</td>
<td>8.52</td>
<td>54.40</td>
<td>9.70</td>
<td></td>
</tr>
<tr>
<td>1816</td>
<td>300 ml</td>
<td>500 ml</td>
<td>1.23</td>
<td>3.020</td>
<td>5.30</td>
<td>-26.6</td>
<td>8.52</td>
<td>58.8</td>
<td>9.70</td>
<td></td>
</tr>
<tr>
<td>1819</td>
<td>300 ml</td>
<td>500 ml</td>
<td>1.20</td>
<td>3.050</td>
<td>4.98</td>
<td>-26.3</td>
<td>8.51</td>
<td>64.38</td>
<td>9.70</td>
<td></td>
</tr>
<tr>
<td>1822</td>
<td>300 ml</td>
<td>500 ml</td>
<td>1.19</td>
<td>3.070</td>
<td>4.77</td>
<td>-26.4</td>
<td>8.53</td>
<td>49.33</td>
<td>9.70</td>
<td></td>
</tr>
<tr>
<td>1825</td>
<td>300 ml</td>
<td>500 ml</td>
<td>1.17</td>
<td>3.083</td>
<td>4.64</td>
<td>-26.6</td>
<td>8.54</td>
<td>61.66</td>
<td>9.70</td>
<td></td>
</tr>
<tr>
<td>1828 Sample time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** None

### Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROBTEX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RRO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOCs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SVOCs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAHs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:
- **Equipment:** Pump Type Gas pump, gpl pump, new tubing not yet installed, silt黄昏.
- **Water Level Meter:** SLR Multi-Parameter Meter (Make/SN#) YSI5560  
- **Turbidity Meter:** Micro PW 4.011069
- **IDW Disposal:** Discharged to surface

---

**Sampled Date:** 4-1-16
Groundwater Sampling Form

Site/Client Name: GVEA Heavy Power Plant
Project #: 104.00367, 16002
Sampled By: K. Johnson
Weather Conditions: 20°F wind, 10-20 mph
Sampling Method: Low Flow

Well Information
- Well Type: Permanent
- Well Diameter: 2" in.
- Well Condition: Poor
- Depth to Water (ft BTMC): 9.67
- Total Depth (ft BTMC): 60.65
- Depth to Product (ft BTMC): 0
- Tubing/Pump Depth (ft BTMC): 60
- Purge Start Time (24-hr): 1025
- Purge End Time (24-hr): 1100
- Product Thickness (ft): 1.5
- Total Purge Time (min): 45

Gauging/Purging Information
- LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) x 0.25 = 12.5 ft
- Min. purge volume if required: = Volume of water/ft x Water column thickness/ft x # of casing volumes

Water Quality Parameters
(Achieve stable parameter for 3 consecutive reading (each reading taken after pumping a minimum of 1 flow through cell volume)

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gal/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTMC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1025</td>
<td>1</td>
<td>18.87</td>
<td>3.13</td>
<td>49.5</td>
<td>7.96</td>
<td>9.69</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1029</td>
<td>300m³</td>
<td>2.97</td>
<td>2.92</td>
<td>1.891</td>
<td>1.64</td>
<td>45.0</td>
<td>7.97</td>
<td>45.5</td>
<td>9.69</td>
<td>9.55</td>
</tr>
<tr>
<td>1033</td>
<td>300m³</td>
<td>10gallon</td>
<td>2.83</td>
<td>1.898</td>
<td>1.30</td>
<td>49.5</td>
<td>8.07</td>
<td>9.56</td>
<td>9.69</td>
<td>9.54</td>
</tr>
<tr>
<td>1036</td>
<td>300m³</td>
<td>13gallon</td>
<td>2.80</td>
<td>1.906</td>
<td>1.24</td>
<td>46.0</td>
<td>8.11</td>
<td>4.54</td>
<td>4.54</td>
<td>4.55</td>
</tr>
<tr>
<td>1039</td>
<td>300m³</td>
<td>4gallon</td>
<td>2.81</td>
<td>1.907</td>
<td>1.17</td>
<td>47.6</td>
<td>8.13</td>
<td>2.73</td>
<td>9.69</td>
<td></td>
</tr>
<tr>
<td>1042</td>
<td>300m³</td>
<td>5gallon</td>
<td>2.96</td>
<td>1.911</td>
<td>1.14</td>
<td>49.2</td>
<td>8.12</td>
<td>4.88</td>
<td>9.64</td>
<td></td>
</tr>
<tr>
<td>1045</td>
<td>300m³</td>
<td>9gallon</td>
<td>2.96</td>
<td>1.911</td>
<td>1.14</td>
<td>49.2</td>
<td>8.12</td>
<td>4.88</td>
<td>9.64</td>
<td></td>
</tr>
</tbody>
</table>

Sample Color: Light brown / tan
Sample Odor: Organic
Sheen: No

Analyses
- Number/Type of Bottle
- Preservative/Comments: Clear to light

Analytical Sampling
- GROBTEX
- DBO
- RRO
- VOCs
- SVOCs
- PAHs

Notes: Well had a lot of seds when developing

Equipment:
- Pump Type: High Flow (600gal/min)
- Tubing (Type/Length): 16.5 ft
- Bailer Type:
- Water Level Meter: Multi-Parameter Meter (Make/Model): SRK O5B2H62, AE
- Turbidity Meter (Make/Model): Micro TPW *2011060169

IDW Disposal: Discharged to surface

Other:
# Groundwater Sampling Form

**Site/Client Name:** GVEA Healy Power Plant  
**Well ID:** mw-5

**Project #:** 104-00367, 16062  
**Sample ID:** mw-5

**Sampled By:**  
**Sample Time:** 1317  
**Sample Date:** 4/1/16

**Weather Conditions:** ~20°F 10-20MPH Clear  
**Duplicate ID:** —

**Sampling Method:** Low Flow  
**Well Information:**

- **Well Type:** Permanent
- **Well Diameter:** 2" in.
- **Screen Interval:** 24.0 ft BGS to 4.0 ft BGS
- **Well Condition:** Good
- **MS/MSD:** Yes No
- **Trip Blank Required:** Yes No

**Gauging/Purging Information**

- **Depth to Water (ft BTOC):** 15.42 ft
- **Tubing/Pump Depth (ft BTOC):** 22.30 ft
- **Total Depth (ft BTOC):** 2.930 ft
- **Total Purge Time (min):** 52 min

**Water Quality Parameters**

- **Flow Rate (gpm):** 2.041
- **Purge Volume (gal):** 500 mL
- **Temp (°C):** 2.31
- **DO (mg/L):** 3.78
- **ORP (mV):** 9.16
- **pH:** 22.49
- **Turbidity (NTU):** 15.40

**Drawdown (ft Max):**

- **Flow (gpm):** 0.000
- **Purge Volume (gal):** 0.000
- **Temp (°C):** 2.31
- **DO (mg/L):** 3.78
- **ORP (mV):** 9.16
- **pH:** 22.49
- **Turbidity (NTU):** 15.40

**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** None

**Analytical Sampling**

- **Number/Type of Bottle:** GROBTEX
- **Preservative/Comments:** Total Metals
- **Number/Type of Bottle:** DRO
- **Preservative/Comments:** Dissolved Metals
- **Number/Type of Bottle:** RRO
- **Preservative/Comments:** VOCs
- **Number/Type of Bottle:** SVOCs
- **Preservative/Comments:** PAHs

**Notes:**

- **Equipment:**
  - Pump Type: Pei GPA Pump
  - Tubing (Type/Length): LDPE
  - Water Level Meter: Geo SLR
  - Multi-Parameter Meter (Make/SN): SLR Y55 FS6 05820422 AE
  - Turbidity Meter (Make/SN): Micro TPW & 201104169
  - Filter Lot #: —

**IDW Disposal:** Discharged to surface  
**Treated (how?):** Other:

---

Tubing set middle screen, left tubing in well
Groundwater Sampling Form

Site/Client Name:  
Well ID:  

Project #:  
Sample ID:  

Sampled By:  
Sample Time:  
Sample Date:  

Weather Conditions:  
Duplicate ID:  

Sampling Method: ☐ Low Flow  ☐ Other  
MS/MSD  ☐ Yes  ☐ No  
Trip Blank Required:  ☐ Yes  ☐ No  

Well Information

Well Type:  ☐ Permanent  ☐ Temporary  
Well Diameter:  in.  
Screen Interval:  ft BGS to  ft BGS  

Well Condition:  ☐ Good  ☐ Fair  ☐ Poor (if fair or poor explain in Notes)  
Stickup  ☐ Yes  ☐ No; if yes,  ft above ground  

Gauging/Purging Information

Depth to Water (ft BTOC):  

Tubing/Pump Depth (ft. BTOC):  

Total Depth (ft. BTOC):  

Purge Start Time (24-hr)  

Depth to Product (ft. BTOC):  

Purge End Time (24-hr)  

Product Thickness (ft):  

Total Purge Time (min):  

LOW FLOW: Max Draw Down = (Tubing Depth – Top of Screen Depth) X 0.25 =  ft; If screen interval is not known or water table is below top of screen, then use default value of 0.3 ft;  

Min. purge volume if required: purge volume (gal) = volume of water/ft X Water column thickness (ft) X # of casing volumes =  gal

Well Diameter – gal/ft: 1' = 0.041 gal/ft  2' = 0.163 gal/ft  4' = 0.853 gal/ft  8' = 1.469 gal/ft

Water Quality Parameters

(Achieve stable parameter for 3 consecutive reading [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gal/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1309</td>
<td>300 ml</td>
<td>1.9 gal</td>
<td>2.43</td>
<td>1.421</td>
<td>3.63</td>
<td>38.5</td>
<td>10.05</td>
<td>1.35</td>
<td>1540</td>
<td></td>
</tr>
<tr>
<td>1312</td>
<td>300 ml</td>
<td>2.0 gal</td>
<td>2.53</td>
<td>1.420</td>
<td>3.42</td>
<td>38.9</td>
<td>10.11</td>
<td>1.14</td>
<td>15.40</td>
<td></td>
</tr>
<tr>
<td>1315</td>
<td>300 ml</td>
<td>2.2 gal</td>
<td>2.57</td>
<td>1.421</td>
<td>3.32</td>
<td>36.7</td>
<td>10.15</td>
<td>1.09</td>
<td>15.40</td>
<td></td>
</tr>
</tbody>
</table>

1317 - Sample time

Sample Color:  
Sample Odor:  
Sheen:  

Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROBTEX</td>
<td></td>
<td></td>
<td>Total Metals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRO</td>
<td></td>
<td></td>
<td>Dissolved Metals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RRO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOCs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SVOCs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAHs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

Equipment: Pump Type  
Tubing (Type/Length)  
Bailer Type  

Water Level Meter:  
Multi-Parameter Meter (Make/SN#)  

Turbidity Meter (Make/SN#)  
Filter Lot #  

IDW Disposal: ☐ Discharged to surface  ☐ Treated (how?):  ☐ Other:  

MW-5  cont.
Groundwater Sampling Form

**Site/Client Name:** GE A Healy Power Plant  
**Well ID:** MW-6

**Project #:** 104. 00367, 1682  
**Sample ID:** MW-6

**Sampled By:** K. Johnson  
**Sample Time:** 12:04  
**Sample Date:** 4/1/10

**Weather Conditions:** 20°F, 10-15 mph wind  
**Duplicate ID:** —

**Sampling Method:** Low Flow  
**MS/MSD:** Yes No  
**Trip Blank Required:** Yes No

---

**Well Information**

**Well Type:** Permanent  
**Well Diameter:** 2′ in.  
**Screen Interval:** 22.0 ft BGS to 11.0 ft BGS

**Well Condition:** Good  
**Stickup:** Yes No  
**SiC:** Yes No

**Depth to Water (ft BTOC):** 14.5  
**Tubing/Pump Depth (ft BTOC):** 20.0 ft

**Total Depth (ft BTOC):** 25.1  
**Purge Start Time (24-hr):** 11:47

**Depth to Product (ft BTOC):** —  
**Purge End Time (24-hr):** 12:20

**Product Thickness (ft):** —  
**Total Purge Time (min):** 33 minutes

**LOW FLOW:** Max Draw Down = (Tubing Depth – Top of Screen Depth) X 0.25 = ___ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

**Min. purge volume if required:** Purge Volume = Volume of Water (ft) X Water Column Thickness (ft) X # of Casing Volumes = ___ gal

**Well Diameter – gal/ft:** 1′ - 0.041 gal/ft  
**2′ - 0.169 gal/ft**  
**4′ - 0.653 gal/ft**  
**6′ - 1.459 gal/ft**

**Water Quality Parameters**

(Achieve stable parameter for 3 consecutive readings (each reading taken after pumping a minimum of 1 flow through cell volume))

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gal/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1147 start</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1149</td>
<td>30 cm¹</td>
<td>70 cm¹</td>
<td>2.26</td>
<td>3.054</td>
<td>7.13</td>
<td>56.5</td>
<td>7.13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1152</td>
<td>30 cm¹</td>
<td>41 cm¹</td>
<td>1.97</td>
<td>3.060</td>
<td>6.80</td>
<td>63.5</td>
<td>6.80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1156</td>
<td>30 cm¹</td>
<td>50 cm¹</td>
<td>1.82</td>
<td>3.079</td>
<td>1.56</td>
<td>67.2</td>
<td>6.80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1159</td>
<td>30 cm¹</td>
<td>40 cm¹</td>
<td>1.81</td>
<td>3.083</td>
<td>1.41</td>
<td>67.7</td>
<td>6.83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1202</td>
<td>30 cm¹</td>
<td>45 cm¹</td>
<td>1.82</td>
<td>3.083</td>
<td>1.39</td>
<td>69.0</td>
<td>6.80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1201 - Sample time total 1+ yellow purged</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sample Color: Clear  
Sample Odor: None  
Sheen: None

---

**Analytical Sampling**

**Analyses**

**Number/Type of Bottle**  
**Preservative/Comments**

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROBTEX</td>
<td></td>
<td></td>
<td>Total Metals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRO</td>
<td></td>
<td></td>
<td>Dissolved Metals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RRO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOCs</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>BVOCs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAPs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** Initial 500 ml very clear, tubing set at 200 ft BTOC, middle of screen, tubing left in well

**Equipment:**

- **Pump Type:** Borehole/Leypump  
- **Tubing (Type/Length):** LDPE  
- **Bailer Type:** —

**Water Level Meter:** 10 ft SLR  
**Multi-Parameter Meter (Make/SN):** YSI 0582462  
**Turbidity Meter (Make/SN):** Micro TAW 201106169  
**Filter Lot #:** 556

**IDW Disposal:** Discharged to surface  
**Treated (how?):** Other:

---
Site/Client Name: GVEA Heavy Power Plant  
Project #: 101-00367, 16662  
Sample ID: MW-7  
Sampled By: K. Johnson  
Sample Time: 1509  
Sample Date: 4/11/16  
Weather Conditions: ~30°F  
Duplicate ID: MW-97  
Sampling Method: Low Flow  
MS/MSD: Yes X No  
Trip Blank Required: Yes X No

Well Information
- Well Type: Permanent
- Well Diameter: 2 1/2 in.
- Well Condition: Good
- Screen Interval: 17.2 ft BGS to 2.0 ft BGS
- Stickup: Yes X No

Gauging/Purging Information
- Depth to Water (ft BTOC): 13.20
- Tubing/Pump Depth (ft BTOC): 16.0 ft
- Total Depth (ft BTOC): 20.15
- Depth to Product (ft BTOC): ___
- Purge Start Time (24-hr): 1451
- Purge End Time (24-hr): 1535
- Total Purge Time (min): 44 min
- Product Thickness (ft): ___

LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25

Min. purge volume if required: purge volume (gal) = volume of water/l (gal/ft) X Water column thickness (ft) X # of casing volumes

Well Diameter - gal/ft: 1' = 0.041 gal/ft, 2' = 0.163 gal/ft, 4' = 0.665 gal/ft, 6' = 1.469 gal/ft

Water Quality Parameters
(Achieve stable parameter for 3 consecutive reading [each reading taken after pumping a minimum of 1 ft flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gpm/ minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mv)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1509 - Start Purge to (11.5 gallon, low cell)</td>
<td>300 ml</td>
<td>700 ml</td>
<td>3.75</td>
<td>0.467</td>
<td>2.8</td>
<td>35.9</td>
<td>8.88</td>
<td>130.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stop purge to purge well at higher volumes</td>
<td>300 ml</td>
<td>500 ml</td>
<td>4.16</td>
<td>0.426</td>
<td>7.66</td>
<td>25.3</td>
<td>8.73</td>
<td>16.12</td>
<td>13.25</td>
<td></td>
</tr>
<tr>
<td>1504 - sample time</td>
<td>300 ml</td>
<td>500 ml</td>
<td>4.16</td>
<td>0.421</td>
<td>1.8</td>
<td>24.8</td>
<td>8.66</td>
<td>15.38</td>
<td>13.25</td>
<td></td>
</tr>
<tr>
<td>1509 - sample time</td>
<td>300 ml</td>
<td>500 ml</td>
<td>4.20</td>
<td>0.421</td>
<td>1.05</td>
<td>23.0</td>
<td>8.67</td>
<td>10.30</td>
<td>13.25</td>
<td></td>
</tr>
</tbody>
</table>

Sample Color: Clear  
Sample Odor: None  
Sheen: None

Analytical Sampling

<table>
<thead>
<tr>
<th>Analytical Sampling</th>
<th>Number/Type of Bottle</th>
<th>Preservative/ Comments</th>
<th>Analytical Sampling</th>
<th>Number/Type of Bottle</th>
<th>Preservative/ Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROBTEX</td>
<td>Total Metals</td>
<td></td>
<td>DRO</td>
<td>Dissolved Metals</td>
<td></td>
</tr>
<tr>
<td>RRO</td>
<td></td>
<td></td>
<td>VOCs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SVOCs</td>
<td></td>
<td></td>
<td>PAHs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:  
Tubing set at 16.0 ft BTOC. Approx. msscreen, note: well was developed 30-60 min before sample purge. Removed 2 gallons with peripump to get turbidity down.

Equipment: Pump Type: Geo pump - per. pump  
Tubing (Type/Length): LDPE  
Bailer Type:  
Water Level Meter: 100 ft  
SLR Multi-Parameter Meter (Make/SN#): YSI 556  
Turbidity Meter (Make/SN#): Micron  
Filter Lot #:  
IDW Disposal: Discharged to surface

Equipment: Pump Type: Geo pump - per. pump  
Tubing (Type/Length): LDPE  
Bailer Type:  
Water Level Meter: 100 ft  
SLR Multi-Parameter Meter (Make/SN#): YSI 556  
Turbidity Meter (Make/SN#): Micron  
Filter Lot #:  
IDW Disposal: Discharged to surface

Other: ___
**Groundwater Sampling Form**

**Site/Client Name:** GVEA Heavy Water Plant  
**Well ID:** MW-8

**Project #:** 104.0036.7.16002  
**Sample ID:** MW-8

**Sampled By:** K. Johnson  
**Sample Time:** 19:34  
**Sample Date:** 4-1-16

**Weather Conditions:** N 31°F 10-20 mph wind cloudy  
**Duplicate ID:** —

**Sampling Method:** Low Flow □ Other □

**Well Information**

- **Well Type:** Permanant □ Temporary □
- **Well Diameter:** in.
- **Screen Interval:** 26.0 ft BGS to 13.6 ft BGS
- **Well Condition:** Good □ Fair □ Poor (if fair or poor explain in Notes) □
- **Stickup:** Yes □ No □

**Gauging/Purging Information**

- **Depth to Water (ft BTOC):** 25.1 ft
- **Tubing/Pump Depth (ft BTOC):** 28.0 ft
- **Total Depth (ft BTOC):** 32.80 ft
- **Purge Start Time (24-hr):** 19:13
- **Depth to Product (ft BTOC):** —
- **Purge End Time (24-hr):** 19:51
- **Product Thickness (ft):** —
- **Total Purge Time (min):** 36 min

**LOW FLOW:** Max Draw Down = (Tubing Depth – Top of Screen Depth) x 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.2 ft.

**Min. purge volume if required:** Purge Volume (gal) = Volume of water/ft (gal/ft) X Water Column thickness (ft) X # of casing volumes = gal

**Well Diameter – gal/ft:**
- 1" – 0.041 gal/ft
- 2" – 0.163 gal/ft
- 4" – 0.653 gal/ft
- 6" – 1.469 gal/ft

**Water Quality Parameters**

(Achieve stable parameter for 3 consecutive reading [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gal/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm²)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>19:20</td>
<td>300 mL</td>
<td>500 mL</td>
<td>3.86</td>
<td>0.632</td>
<td>8.06</td>
<td>-35.9</td>
<td>8.78</td>
<td>18.64</td>
<td>25.17</td>
<td>—</td>
</tr>
<tr>
<td>19:23</td>
<td>300 mL</td>
<td>75mL</td>
<td>8.45</td>
<td>0.620</td>
<td>6.22</td>
<td>-39.0</td>
<td>8.81</td>
<td>15.33</td>
<td>25.17</td>
<td>—</td>
</tr>
<tr>
<td>19:26</td>
<td>300 mL</td>
<td>90 mL</td>
<td>4.51</td>
<td>0.630</td>
<td>6.07</td>
<td>-40.4</td>
<td>8.84</td>
<td>14.14</td>
<td>25.17</td>
<td>—</td>
</tr>
<tr>
<td>19:29</td>
<td>300 mL</td>
<td>30 mL</td>
<td>9.69</td>
<td>0.627</td>
<td>6.03</td>
<td>-41.3</td>
<td>8.85</td>
<td>14.24</td>
<td>25.17</td>
<td>—</td>
</tr>
<tr>
<td>19:32</td>
<td>300 mL</td>
<td>90 mL</td>
<td>4.90</td>
<td>0.626</td>
<td>5.46</td>
<td>-42.3</td>
<td>8.88</td>
<td>6.07</td>
<td>25.17</td>
<td>—</td>
</tr>
</tbody>
</table>

**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** None

**Analytical Sampling**

- **Analyses:** GROBTTEX, DRO, RRO, VOCs, SVOCs, PAHs
- **Preservative/Comments:**
  - Total Metals
  - Dissolved Metals

**Notes:** Caused 33.05 = 7.5 -25.5

**Equipment:**
- Pump Type: DPL pump – Geo pump
- Tubing (Type/Length): LOPE
- Water Level Meter: SLR 100 ft
- Multi-Parameter Meter (Make/SN#): YSI S6 Multi-PWM # 20110616
- Turbidity Meter (Make/SN#): Micro TWP
- Filter Lot #:

**IDW Disposal:** □ Discharged to surface □ Treated (how?): □ Other:
June 2016
**Groundwater Sampling Form**

**Site/Client Name:** LOVEA Hydron Power Plant  
**Well ID:** SW-1

**Project #:** 104.00367  160C2  
**Sample ID:** SW-1

**Sampled By:** K. Johnson M. Woods  
**Sample Time:** 1030  
**Sample Date:** 6-1-16

**Weather Conditions:** Sunny  66°F  
**Duplicate ID:** __________

**Sampling Method:** ☑ Low Flow  ☐ Other  
**MS/MSD:** ☑ Yes  ☐ No  
**Trip Blank Required:** ☐ Yes  ☐ No

### Well Information

<table>
<thead>
<tr>
<th>Depth to Water (ft BTOC):</th>
<th>Tubing/Pump Depth (ft. BTOC):</th>
<th>Total Depth (ft. BTOC):</th>
<th>Purge Start Time (24-hr)</th>
<th>Depth to Product (ft. BTOC)</th>
<th>Purge End Time (24-hr)</th>
<th>Product Thickness (ft)</th>
<th>Total Purge Time (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LOW FLOW:**  Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = __________ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

**Min. purge volume if required:**  purge volume (gal) = volume of water/ft X Water column thickness (ft) X # of casing volumes = __________ gal

**Well Diameter:** 1" = 0.041 gal/ft  2" = 0.163 gal/ft  4" = 0.653 gal/ft  6" = 1.469 gal/ft

### Water Quality Parameters

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate</th>
<th>Flow Volume</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1030</td>
<td></td>
<td>___________</td>
<td>19.24</td>
<td><em>8.00</em> (± 3%)</td>
<td>___________</td>
<td>___________</td>
<td>___________</td>
<td>___________</td>
<td>___________</td>
<td>___________</td>
</tr>
</tbody>
</table>

**Sample Color:**  
**Sample Odor:**  
**Sheen:**

### Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRO/BTEX</td>
<td>Total Metals</td>
<td></td>
<td>DRO</td>
<td>Dissolved Metals</td>
<td></td>
</tr>
<tr>
<td>RRO</td>
<td></td>
<td></td>
<td>VOCs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SVOCs</td>
<td></td>
<td></td>
<td>PAHs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** Sample take 35 yds East of original surface water local due to sodium B carbonate on surface.

**Equipment:**  
**Type:**  
**Grab Sample:**  
**Tubing (Type/Length):**  
**Bailer Type:**  
**Water Level Meter:**  
**Multi-Parameter Meter (Make/SN#):**  
**Turbidity Meter (Make/SN#):**  
**Filter Lot #:**

**IDW Disposal:**  
☐ Discharged to surface  
☐ Treated (how?):  
☐ Other: ___________
Groundwater Sampling Form

<table>
<thead>
<tr>
<th>Site/Client Name: GVEA Hardy Power Plant</th>
<th>Well ID: MW-1R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project #: 100-00-367, 160-002</td>
<td>Sample ID: MW-1R</td>
</tr>
<tr>
<td>Sampled By: Y. Tomin &amp; M. Woods</td>
<td>Sample Time: 1342</td>
</tr>
<tr>
<td>Weather Conditions: Rain, overcast, ~65°F</td>
<td>Sample Date: 6-1-10</td>
</tr>
<tr>
<td>Sampling Method: Low Flow Other</td>
<td>Duplicate ID: —</td>
</tr>
<tr>
<td>MS/MSD: Yes No Trip Blank Required: Yes No</td>
<td></td>
</tr>
</tbody>
</table>

**Well Information**

<table>
<thead>
<tr>
<th>Well Type: Permanent</th>
<th>Well Diameter: 2 in.</th>
<th>Screen Interval: 25.0 ft BGS to 10.0 ft BGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Condition: Good</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sticker: Yes No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth to Water (ft BTOC):</th>
<th>Tubing/Pump Depth (ft BTOC):</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.06</td>
<td>23.5</td>
</tr>
</tbody>
</table>

**Gauging/Purging Information**

<table>
<thead>
<tr>
<th>Total Depth (ft BTOC):</th>
<th>Purge Start Time (24-hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>27.91</td>
<td>1253</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth to Product (ft BTOC):</th>
<th>Purge End Time (24-hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1325</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product Thickness (ft):</th>
<th>Total Purge Time (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

Min. purge volume if required: purge volume (gal) = volume of water/gal X Water column thickness (ft) X # of casing volumes /

<table>
<thead>
<tr>
<th>Well Diameter (gallons)</th>
<th>1&quot; - 0.041 gal/ft</th>
<th>2&quot; - 0.163 gal/ft</th>
<th>4&quot; - 0.653 gal/ft</th>
<th>6&quot; - 1.469 gal/ft</th>
</tr>
</thead>
</table>

**Water Quality Parameters**

(Achieve stable parameter for 3 consecutive readings, each reading taken after pumping a minimum of 1 flow through cell volume)

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gallons/minute)</th>
<th>Purge Volume (gallons)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm³)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:25:00</td>
<td>250e</td>
<td>750e</td>
<td>9.57</td>
<td>1.517</td>
<td>4.99</td>
<td>24.5</td>
<td>10.07</td>
<td>10.07</td>
<td>10.07</td>
<td></td>
</tr>
<tr>
<td>12:59</td>
<td>450e</td>
<td>750e</td>
<td>8.04</td>
<td>1.515</td>
<td>2.20</td>
<td>14.2</td>
<td>10.80</td>
<td>10.80</td>
<td>10.80</td>
<td></td>
</tr>
<tr>
<td>13:02</td>
<td>450e</td>
<td>750e</td>
<td>8.29</td>
<td>1.490</td>
<td>1.85</td>
<td>10.8</td>
<td>10.89</td>
<td>10.89</td>
<td>10.89</td>
<td></td>
</tr>
<tr>
<td>13:05</td>
<td>450e</td>
<td>750e</td>
<td>7.82</td>
<td>1.491</td>
<td>1.77</td>
<td>6.7</td>
<td>10.26</td>
<td>10.26</td>
<td>10.26</td>
<td></td>
</tr>
<tr>
<td>13:12</td>
<td>450e</td>
<td>750e</td>
<td>7.76</td>
<td>1.481</td>
<td>1.75</td>
<td>2.7</td>
<td>10.26</td>
<td>10.26</td>
<td>10.26</td>
<td></td>
</tr>
<tr>
<td>9:25:00</td>
<td>250e</td>
<td>750e</td>
<td>9.57</td>
<td>1.517</td>
<td>4.99</td>
<td>24.5</td>
<td>10.07</td>
<td>10.07</td>
<td>10.07</td>
<td></td>
</tr>
</tbody>
</table>

**Sample Color:** Clear/light tan  
**Sample Odor:** Sulfur/Tien

**Sheen:** —

**Analytical Sampling**

**Analyses**

<table>
<thead>
<tr>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRO/BTEX</td>
<td>Total Metals</td>
<td>Dissolved Metals</td>
<td></td>
</tr>
<tr>
<td>DRO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RNO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOCs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SVOCs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAHs</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

**Equipment:**

- Pump Type: peristaltic pump
- Tubing (Type/Length): LDPE
- Water Level Meter: SLR 1000
- Multi-Parameter Meter (Make/SN#): ONI 12880
- Turbidity Meter (Make/SN#): Micro TP 2011-06192
- Filter Lot #: MA

**IDW Disposal:**

- Discharged to surface
- Treated (how?):
- Other:
## Groundwater Sampling Form

**Site/Client Name:** GVEA Henry power plant  
**Well ID:** MW-2

<table>
<thead>
<tr>
<th>Project #:</th>
<th>104.003-67.16002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sampled By:</td>
<td>K. Johnson M. Woods</td>
</tr>
<tr>
<td>Sample Time:</td>
<td>10/2</td>
</tr>
<tr>
<td>Sample Date:</td>
<td>5/31/16</td>
</tr>
<tr>
<td>Weather Conditions:</td>
<td>Overcast ~ 65°F</td>
</tr>
<tr>
<td>Duplicate ID:</td>
<td>—</td>
</tr>
<tr>
<td>Sampling Method:</td>
<td>Low Flow</td>
</tr>
</tbody>
</table>

### Well Information

<table>
<thead>
<tr>
<th>Well Type:</th>
<th>Permanent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Diameter:</td>
<td>4 in.</td>
</tr>
<tr>
<td>Screen Interval:</td>
<td>29.6 ft BGS to 50 ft BGS</td>
</tr>
<tr>
<td>Well Condition:</td>
<td>Good</td>
</tr>
<tr>
<td>Stuckup:</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Gauging/Purging Information

| Depth to Water (ft BTOC): | 9.73 |
| Tubing/Pump Depth (ft BTOC): | 25 ft |
| Total Depth (ft BTOC): | 1500 ft |
| Purge Start Time (24-h): | 15:50 |
| Purge End Time (24-h): | 16:24 |
| Product Thickness (ft): | — |
| Total Purge Time (min): | 34 min |

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = (ft), if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

Min. purge volume if required: purge volume (gal) = volume of water/ft Water column thickness (ft) X # of casing volumes = gal

| Well Diameter | 4 |
| Purge Volume (gal) | 1 |
| Purge Volume (gal) | 2 |
| Purge Volume (gal) | 4 |
| Purge Volume (gal) | 6 |

### Water Quality Parameters

(Achieve stable parameter for 3 consecutive reading [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-h)</th>
<th>Flow Rate (gallons/min)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:50</td>
<td>1550</td>
<td>750 gal</td>
<td>4.19</td>
<td>2.412</td>
<td>3.85</td>
<td>64.0</td>
<td>7.17</td>
<td>105.8</td>
<td>9.75</td>
<td>0.02</td>
</tr>
<tr>
<td>15:53</td>
<td>1553</td>
<td>50 gal</td>
<td>3.37</td>
<td>2.228</td>
<td>0.96</td>
<td>37.6</td>
<td>6.96</td>
<td>49.86</td>
<td>9.76</td>
<td>0.03</td>
</tr>
<tr>
<td>15:58</td>
<td>1558</td>
<td>1490 gal</td>
<td>2.90</td>
<td>2.338</td>
<td>1.23</td>
<td>30.7</td>
<td>6.94</td>
<td>91.05</td>
<td>9.76</td>
<td>0.03</td>
</tr>
<tr>
<td>15:01</td>
<td>1601</td>
<td>1490 gal</td>
<td>2.97</td>
<td>2.328</td>
<td>0.89</td>
<td>25.2</td>
<td>6.90</td>
<td>49.02</td>
<td>9.76</td>
<td>0.03</td>
</tr>
<tr>
<td>15:04</td>
<td>1604</td>
<td>1490 gal</td>
<td>2.83</td>
<td>2.335</td>
<td>0.95</td>
<td>21.0</td>
<td>6.92</td>
<td>59.87</td>
<td>9.76</td>
<td>0.03</td>
</tr>
<tr>
<td>15:07</td>
<td>1607</td>
<td>1490 gal</td>
<td>2.80</td>
<td>2.335</td>
<td>0.72</td>
<td>17.7</td>
<td>6.91</td>
<td>53.43</td>
<td>9.76</td>
<td>0.03</td>
</tr>
<tr>
<td>16:00-10:00</td>
<td>1490 gal</td>
<td>1490 gal</td>
<td>2.74</td>
<td>2.335</td>
<td>0.74</td>
<td>13.4</td>
<td>6.93</td>
<td>44.10</td>
<td>9.76</td>
<td>0.3</td>
</tr>
</tbody>
</table>

### Analytical Sampling

- **Analyses:** GRO/BTEX, DRO, RRO, VOCs, SVOCs, PAHs
- **Preservative/Comments:** Total Metals, Dissolved Metals

### Notes:

- Begin purge dark brown / Red

### Equipment:

- **Pump Type:** Submersible
- **Tubing Type:** LDPE
- **Pump Type:** 1/4 HP
- **Multi-Parameter Meter:** OHI 610.800
- **Filter Lot #:** N/A

### IDW Disposal:

- Discharged to surface

---

**Sample Color:** Clear / Slight cloudy  
**Sample Odor:** None  
**Sheen:** No
## Groundwater Sampling Form

**Site/Client Name:** DOE A Holy power plan +  
**Well ID:** MW-3

**Project #:** 104.00367 + 1002  
**Sample #:** MW-3

**Sampled By:** K. Johnson M. Woods  
**Sample Time:** 1705  
**Sample Date:** 5/31/16

**Weather Conditions:** Overcast 65°F  
**Duplicate ID:** __________

**Sampling Method:** Low Flow  
**MS/MSD:** Yes No  
**Trip Blank Required:** Yes No

### Well Information

- **Well Type:** Permanent  
- **Well Diameter:** 2 in.

### Gauging/Purging Information

- **Depth to Water (ft BTOC):** 9.0  
- **Tubing/Pump Depth (ft BTOC):** 12.0  
- **Total Depth (ft BTOC):** 16.20  
- **Purge Start Time (24-hr):** 16:24  
- **Depth to Product (ft BTOC):**  
- **Purge End Time (24-hr):** 17:03  
- **Product Thickness (ft):** __________  
- **Total Purge Time (min):** 6 min

### Water Quality Parameters

(achieve stable parameter for 3 consecutive reading [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gal/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm²)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1650</td>
<td>400 mL</td>
<td>0.9 gal</td>
<td>4.82</td>
<td>2.658</td>
<td>4.61</td>
<td>125.1</td>
<td>7.20</td>
<td>34.50</td>
<td>9.10</td>
<td>__________</td>
</tr>
<tr>
<td>1653</td>
<td>400 mL</td>
<td>0.9 gal</td>
<td>4.25</td>
<td>2.455</td>
<td>4.43</td>
<td>113.0</td>
<td>7.12</td>
<td>7.91</td>
<td>9.10</td>
<td>__________</td>
</tr>
<tr>
<td>1656</td>
<td>400 mL</td>
<td>0.5 gal</td>
<td>4.28</td>
<td>2.385</td>
<td>4.46</td>
<td>112.5</td>
<td>7.10</td>
<td>7.10</td>
<td>9.10</td>
<td>__________</td>
</tr>
<tr>
<td>1659</td>
<td>400 mL</td>
<td>0.9 gal</td>
<td>4.10</td>
<td>2.353</td>
<td>4.61</td>
<td>110.8</td>
<td>7.09</td>
<td>5.62</td>
<td>9.10</td>
<td>__________</td>
</tr>
<tr>
<td>1702</td>
<td>400 mL</td>
<td>0.9 gal</td>
<td>3.89</td>
<td>2.315</td>
<td>4.20</td>
<td>119.2</td>
<td>7.08</td>
<td>1.64</td>
<td>9.10</td>
<td>__________</td>
</tr>
</tbody>
</table>

**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** None

### Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRO/BTEX</td>
<td>Total Metals</td>
<td></td>
<td>DRO</td>
<td>Dissolved Metals</td>
<td></td>
</tr>
<tr>
<td>RRO</td>
<td></td>
<td></td>
<td>VOCs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SVOCs</td>
<td></td>
<td></td>
<td>PAHs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

- **Equipment:** Pump Type: __________  
- **Tubing (Type/Length):** LOPE  
- **Bailer Type:** N/A  
- **Water Level Meter:** __________  
- **Multi-Parameter Meter (Make/SN#):** 0416266A AA  
- **Turbidity Meter (Make/SN#):** __________  
- **Filter Lot #:** __________

**IDW Disposal:** Discharged to surface  
**Other:** __________

---

**Field Notes:**

- **Sample Collection:** __________  
- **Field Notes:** __________
Groundwater Sampling Form

Site/Client Name: GVEA Hardy power plant

Well ID: MWH

Project #: 104-1600-16002
Sampled By: M. Johnson
Sampled Date: 5/31/16

Weather Conditions: Overcast Sun 68°F
Duplicate ID: —

Sampling Method: Low Flow
Sampling Time: 1510

Well Information

Well Type: Permanent
Well Diameter: 2 in.
Screen Interval: ft BGS to ft BGS
Well Condition: Good
Sticker: Yes

Gauging/Purging Information

Depth to Water (ft BTOC): 8.77
Depth to Product (ft BTOC): —
Product Thickness (ft): —

Total Depth (ft BTOC): 16.75
Tubing/Pump Depth (ft BTOC): 13.00

Purge Start Time (24-hr): 1433
Purge End Time (24-hr): 1522

Total Purge Time (min): 60 min

LOW FLOW: Max Draw Down = (Tubing Depth – Top of Screen Depth) X 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

Min. purge volume if required: purge volume (gallons) = volume of water (gallons) X Water column thickness (ft) X # of casing volumes

Water Quality Parameters

<table>
<thead>
<tr>
<th>Time</th>
<th>Flow Rate (gallons/minute)</th>
<th>Purge Volume (gallons)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
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<tbody>
<tr>
<td>1435</td>
<td>250</td>
<td>700</td>
<td>8.9</td>
<td>1.50</td>
<td>17.00</td>
<td>18.4</td>
<td>6.77</td>
<td>8.77</td>
<td>—</td>
<td>—</td>
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<tr>
<td>1430</td>
<td>400</td>
<td>1,750</td>
<td>7.83</td>
<td>1.48</td>
<td>19.0</td>
<td>19.7</td>
<td>6.77</td>
<td>8.77</td>
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<td>1450</td>
<td>400</td>
<td>1,750</td>
<td>7.83</td>
<td>1.435</td>
<td>17.00</td>
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<td>1450</td>
<td>400</td>
<td>1,750</td>
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<td>1.428</td>
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<td>250</td>
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<td>1.421</td>
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<td>12.8</td>
<td>5.81</td>
<td>8.77</td>
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Sample Color: Light Brown/Clear
Sample Odor: Organic
Sheen: No

Analytical Sampling

<table>
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<th>Preservative/Comments</th>
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<tbody>
<tr>
<td>GRO/TEX</td>
<td>Total Metals</td>
<td>Dissolved Metals</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>DRO</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>RRO</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>VOCs</td>
<td></td>
<td></td>
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<tr>
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<tr>
<td>PAHs</td>
<td></td>
<td></td>
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</table>

Notes: Tannase in begin purge of 500 mL, clear just light brown color

Equipment: Pump Type: peristaltic
Tubing Type/Length: LDPE
Water Level Meter: SonTek Multi-Parameter Meter (Make/Model): Echelon 1290
Turbidity Meter (Make/Model): Hach
Filter Lot #: N/A

IDW Disposal: × Discharged to surface
□ Treated (how?): Other:
Groundwater Sampling Form

<table>
<thead>
<tr>
<th>Site/Client Name:</th>
<th>GVEA Haley powerplant</th>
<th>Well ID:</th>
<th>MW-5</th>
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</thead>
<tbody>
<tr>
<td>Project #:</td>
<td>101-00347-16002</td>
<td>Sample ID:</td>
<td>MW-5</td>
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<tr>
<td>Sampled By:</td>
<td>K. Janson M. Woods</td>
<td>Sample Time:</td>
<td>10/16</td>
</tr>
<tr>
<td>Weather Conditions:</td>
<td>Sunny/wind ~ 60°F</td>
<td>Sample Date:</td>
<td>6/1/16</td>
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<td>Sampling Method:</td>
<td>Low Flow</td>
<td>Duplicate ID:</td>
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<td></td>
<td>Other</td>
<td>MS/MSD:</td>
<td>Yes</td>
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<tr>
<td></td>
<td></td>
<td>Trip Blank Required:</td>
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</table>

Well Information

- **Well Type**: Permanent [ ] Temporary [ ]
- **Well Diameter**: 2 in.
- **Screen Interval**: 24.0 ft BGS to 44.0 ft BGS
- **Well Condition**: Good [ ] Fair [ ] Poor [ ] (if fair or poor explain in Notes) Stickup [ ] Yes [ ] No [ ]; if yes, 3.20 ft above ground

Gauging/Purging Information

- **Depth to Water (ft BTOC)**: 14.28
- **Tubing/Pump Depth (ft BTOC)**: 27.25
- **Total Depth (ft BTOC)**: 27.25
- **Purge Start Time (24-hr)**: 09:49
- **Purge End Time (24-hr)**: 10:30
- **Product Thickness (ft)**: Total Purge Time (min): 32.9 min
- **LOW FLOW**: Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

Water Quality Parameters

(Achieve stable parameter for 3 consecutive reading [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gal/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm²)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
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</thead>
<tbody>
<tr>
<td>0959</td>
<td>42000 gal/min</td>
<td>4.7</td>
<td>14.87</td>
<td>0.945</td>
<td>3.95</td>
<td>14.9</td>
<td>11.14</td>
<td>14.80</td>
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<td>0.3</td>
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<td>42000 gal/min</td>
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<td>14.91</td>
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<td>11.22</td>
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<td>14.37</td>
<td>14.31</td>
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<td>1012</td>
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<td>14.31</td>
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<td>1015</td>
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<td>14.94</td>
<td>0.935</td>
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<td>11.24</td>
<td>14.31</td>
<td>14.31</td>
<td>14.31</td>
<td>0.3</td>
</tr>
</tbody>
</table>

- **Sample Color**: Clear
- **Sample Odor**: None
- **Sheen**: None

Analytical Sampling

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<td></td>
<td></td>
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<tr>
<td>PAHs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

- **Equipment**: Pump Type
- **Tubing (Type/Length)**
- **Bailer Type**
- **Water Level Meter**
- **Multi-Parameter Meter (Make/SN#)**
- **Turbidity Meter (Make/SN#)**
- **Filter Lot #**

IDW Disposal: [ ] Discharged to surface [ ] Treated (how?) [ ] Other:
Groundwater Sampling Form

**Site/Client Name:** 3VEA Healy Power Plant  
**Well ID:** MWS-6

**Project #:** 104.0036716002  
**Sample ID:** MWS-6

**Sampled By:** K. Johnson  
**Sample Time:** 09:11  
**Sample Date:** 6-1-16

**Weather Conditions:** 04/17/16  
**Duplicate ID:** MWS-6

**Sampling Method:** Low Flow  
**MS/MSD:** Yes  
**Trip Blank Required:** No

### Well Information

- **Well Type:** Permanent  
- **Well Diameter:** 2 in.  
- **Screen Interval:** 22.0 ft BGS to 11.0 ft BGS

**Well Condition:** Good  
**Sticker:** Yes  
**Low Flow:** 50 min

### Gauging/Purging Information

- **Depth to Water (ft BTOC):** 12.72  
- **Tubing/Pump Depth (ft BTOC):** 20.0 ft
- **Total Depth (ft BTOC):** 25.03  
- **Purge Start Time (24-hr):** 0845
- **Depth to Product (ft, BTOC):**  
- **Purge End Time (24-hr):** 0939
- **Product Thickness (ft):**  
- **Total Purge Time (min):** 50

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = (ft), if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft

**Min. purge volume if required:** purge volume (gal) = volume of water at gal(ft) X Water column thickness (ft) X # of casing volumes = gal

- **Well Diameter - gal/ft:** 1 - 0.041 gal/ft  
- **2 - 0.163 gal/ft**  
- **4 - 0.652 gal/ft**  
- **6 - 1.469 gal/ft**

### Water Quality Parameters

( Achieve stable parameter for 3 consecutive reading [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gal/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft) (Max)</th>
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</thead>
<tbody>
<tr>
<td>0840</td>
<td>40046</td>
<td>70046</td>
<td>6.32</td>
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<td>1.47</td>
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<td>70046</td>
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<td>12.74</td>
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<td>70046</td>
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<td>1.16</td>
<td>0.79</td>
<td>20.0</td>
<td>7.36</td>
<td>2.23</td>
<td>12.74</td>
<td>-</td>
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</tbody>
</table>

**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** None

### Analytical Sampling

- **Analyses**  
  **Number/Type of Bottle**  
  **Preservative/Comments**  
  **Analyses**  
  **Number/Type of Bottle**  
  **Preservative/Comments**

- GROBTEX  
- DRO  
- RRO  
- VOCs  
- SVOCs  
- PAHs

**Notes:**

**Equipment:** Pump Type:  
Tubing (Type/Length):  
Bailer Type: N/A

**Water Level Meter:** V04  
Multi-Parameter Meter (Make/SN#):  
Filter Lot #: NA

**Turbidity Meter (Make/SN#):** Micro TPW  
IDW Disposal: Discharged to surface  
Other:

**Other:**
Groundwater Sampling Form

Site/Client Name: GVEA Hardy Power Plant
Well ID: MW-7
Project #: 104.000367.1602
Sample ID: MW-7
Sampled By: M. Woods, K. Johnson
Sample Time: 1133
Sample Date: 6-1-16
Weather Conditions: Sunny ~ 48°F
Duplicate ID: —
Sampling Method: Low Flow
Well Type: Permanent
Well Diameter: 2 in.
Well Condition: Good
Well Water: MS/MSD
Surface Interval: 17.2 ft BGS to 2.0 ft BGS
Screen Interval: 2.0 ft above ground

Gauging/Purging Information
Depth to Water (ft BTOC): 13.15
Total Depth (ft BTOC): 20.10
Depth to Product (ft BTOC): —
Product Thickness (ft): —
Tubing/Pump Depth (ft BTOC): 14.0 ft + 15.0 ft
Purge Start Time (24-hr): 20:10
Purge End Time (24-hr): 11:48
Total Purge Time (min): 38 min

LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) x 0.25 = ___ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

Min. purge volume if required: purge volume (gal) = volume of water/f (gal/ft) x Water column thickness (ft) x # of casing volumes = ___ gal

Water Quality Parameters

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gal/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm²)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
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</thead>
<tbody>
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<td>1110</td>
<td>400 gpm E</td>
<td>760 gals</td>
<td>6.34</td>
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<td>6.39</td>
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<td>1.97</td>
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<td>1.5 gals</td>
<td>5.24</td>
<td>0.431</td>
<td>0.72</td>
<td>-74.4</td>
<td>7.41</td>
<td>3.59</td>
<td>13.25</td>
<td>—</td>
</tr>
</tbody>
</table>

Sample Color: Clear
Sample Odor: None
Sheen: None

Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROBTEX</td>
<td>Total Metals</td>
<td></td>
<td>DRO</td>
<td>Dissolved Metals</td>
<td></td>
</tr>
<tr>
<td>RRO</td>
<td></td>
<td></td>
<td>VOCs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SVOCs</td>
<td></td>
<td></td>
<td>PAHs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

Equipment: Pump Type: peri-pump
Tubing (Type/Length): LDPE
Boiler Type: NA
Water Level Meter: SLR 100 ft
Multi-Parameter Meter (Make/SN#): 04612880 AA
Turbidity Meter (Make/SN#): Milo TAW M20110642
Filter Lot #: NA

IDW Disposal: Discharged to surface
Treated (how?): Other:
# Groundwater Sampling Form

**Site/Client Name:** GWEA Heavy Power plant  
**Well ID:** MW-8

**Project #:** 104.00 367.16002  
**Sample ID:** MW-8

**Sampled By:** L. Thompson  
**Sample Time:** 1400  
**Sample Date:** 6-1-16

**Weather Conditions:** Rain - 60°F Overcast  
**Duplicate ID:** —

**Sampling Method:** Low Flow  
**MS/MSD:** Yes  
**Trip Blank Required:** No

## Well Information

<table>
<thead>
<tr>
<th>Well Type</th>
<th>Permanent</th>
<th>Temporary</th>
<th>Well Diameter</th>
<th>Screen Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 in</td>
<td>30 ft BGS to 15 ft BGS</td>
</tr>
</tbody>
</table>

**Well Condition:** Good  
**Screen:** Yes  
**Trip Blank:** No; If yes, 3.05' above ground

## Gauging/Purging Information

- **Depth to Water (ft BTOC):** 23.50
- **Tubing/Pump Depth (ft BTOC):** 27.0
- **Total Depth (ft BTOC):** 32.10
- **Depth to Product (ft BTOC):** —
- **Purge Start Time (24-hr):** 13:41
- **Purge End Time (24-hr):** 14:14
- **Product Thickness (ft):** —
- **Total Purge Time (min):** 33 min

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) \( \times 0.25 \) (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

**Min. purge volume if required:** Purge volume (gal) = volume of water/ft \( \times \) Water column thickness (ft) \( \times \) # of casing volumes = gal

<table>
<thead>
<tr>
<th>Well Diameter (gal/ft)</th>
<th>Time (24-hr)</th>
<th>Flow Rate (gal/minute)</th>
<th>Purge Volume (gal)</th>
<th>TpH (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1' - 0.041 gal/ft</td>
<td>1341</td>
<td>400 mL</td>
<td>1 liter</td>
<td>6.47</td>
<td>0.667</td>
<td>9.78</td>
<td>100.4</td>
<td>7.12</td>
<td>2.63</td>
<td>23.50</td>
<td>—</td>
</tr>
<tr>
<td>1347</td>
<td>400 mL</td>
<td>3.8 gal</td>
<td>5.32</td>
<td>0.661</td>
<td>7.01</td>
<td>101.6</td>
<td>7.03</td>
<td>1.26</td>
<td>23.60</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>1350</td>
<td>400 mL</td>
<td>5.5 gal</td>
<td>4.98</td>
<td>0.640</td>
<td>6.58</td>
<td>105.1</td>
<td>6.85</td>
<td>2.24</td>
<td>23.50</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>1353</td>
<td>400 mL</td>
<td>0.7 gal</td>
<td>4.80</td>
<td>0.601</td>
<td>6.45</td>
<td>105.0</td>
<td>6.78</td>
<td>1.03</td>
<td>23.50</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>1357</td>
<td>400 mL</td>
<td>1.25 gal</td>
<td>4.76</td>
<td>0.595</td>
<td>6.04</td>
<td>103.2</td>
<td>6.77</td>
<td>1.48</td>
<td>23.50</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** None

## Analytical Sampling

### Analyses

<table>
<thead>
<tr>
<th>Number/Type of Bottle</th>
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</tr>
<tr>
<td>DRO</td>
<td></td>
<td>Dissolved Metals</td>
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<td></td>
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<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

**Equipment:**
- **Pump Type:** peristaltic
- **Tubing (Type/Length):** LDPE
- **Bailer Type:** N/A
- **Water Level Meter:** SLF-LCD
- **Multi-Parameter Meter (Make/Serial #):** 04612880 AA
- **Turbidity Meter (Make/Serial #):** Microl P10 TPW 206 06142
- **Filter Lot #:** N/A

**IDW Disposal:** Discharged to surface  
**Treated (how?):**

---

**File:** Groundwater Sampling Form

---

**Site/Client Name:** GWEA Heavy Power plant  
**Well ID:** MW-8

**Project #:** 104.00 367.16002  
**Sample ID:** MW-8

**Sampled By:** L. Thompson  
**Sample Time:** 1400  
**Sample Date:** 6-1-16

**Weather Conditions:** Rain - 60°F Overcast  
**Duplicate ID:** —

**Sampling Method:** Low Flow  
**MS/MSD:** Yes  
**Trip Blank Required:** No

## Well Information

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**Well Condition:** Good  
**Screen:** Yes  
**Trip Blank:** No; If yes, 3.05' above ground

## Gauging/Purging Information

- **Depth to Water (ft BTOC):** 23.50
- **Tubing/Pump Depth (ft BTOC):** 27.0
- **Total Depth (ft BTOC):** 32.10
- **Depth to Product (ft BTOC):** —
- **Purge Start Time (24-hr):** 13:41
- **Purge End Time (24-hr):** 14:14
- **Product Thickness (ft):** —
- **Total Purge Time (min):** 33 min

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) \( \times 0.25 \) (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

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<th>pH</th>
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<td>6.77</td>
<td>1.48</td>
<td>23.50</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** None

## Analytical Sampling

### Analyses

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</tr>
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<td></td>
<td></td>
</tr>
<tr>
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</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>PAHs</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

**Equipment:**
- **Pump Type:** peristaltic
- **Tubing (Type/Length):** LDPE
- **Bailer Type:** N/A
- **Water Level Meter:** SLF-LCD
- **Multi-Parameter Meter (Make/Serial #):** 04612880 AA
- **Turbidity Meter (Make/Serial #):** Microl P10 TPW 206 06142
- **Filter Lot #:** N/A

**IDW Disposal:** Discharged to surface  
**Treated (how?):**

---

**File:** Groundwater Sampling Form
### Water Parameter Meter Calibration Log

**Date:** 5/31/16  |  **Time:** 1412  |  **Calibration By:** Y. Johnson

**Meter Manufacturer and Identification #:** SSG Y51 04612880 AA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>True Value</th>
<th>Lot #</th>
<th>Date Opened</th>
<th>Expiration Date</th>
<th>PreCalibration Reading</th>
<th>Reading After Calibration</th>
<th>Calibration Acceptance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.00</td>
<td>7.01</td>
<td>TV1</td>
<td>4/1/16</td>
<td>05/17</td>
<td>6.91</td>
<td>7.01</td>
<td>± 0.10</td>
</tr>
<tr>
<td></td>
<td>4.00</td>
<td>4.00</td>
<td>T21</td>
<td>5/31/16</td>
<td>01/17</td>
<td>4.03</td>
<td>4.02</td>
<td>± 0.10</td>
</tr>
<tr>
<td></td>
<td>10.00</td>
<td>10.06</td>
<td>SV1</td>
<td>9/13/15</td>
<td>05/16</td>
<td>9.96</td>
<td>10.07</td>
<td>± 0.10</td>
</tr>
<tr>
<td>Sp Cond (mS/cm)</td>
<td>1.413</td>
<td>1.413</td>
<td>TV2</td>
<td>4/1/16</td>
<td>05/2017</td>
<td>1.283</td>
<td>1.914</td>
<td>± 10%</td>
</tr>
<tr>
<td>ORP (mV)</td>
<td>240</td>
<td>240</td>
<td>1118</td>
<td>12/15/12</td>
<td>03/2012</td>
<td>254.6</td>
<td>240.1</td>
<td>-</td>
</tr>
<tr>
<td>DO*</td>
<td>Baro</td>
<td>726.0</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>108.0%</td>
<td>95.6%</td>
<td>± 2%</td>
</tr>
</tbody>
</table>

* If parameter not included in sampling event, fill in box with NA (not applicable)
* Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table

**Date:** 6/11/16  |  **Time:** 0815  |  **Calibration By:** M. Van

**Meter Manufacturer and Identification #:** SSG Y51 04612880 AA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>True Value</th>
<th>Lot #</th>
<th>Date Opened</th>
<th>Expiration Date</th>
<th>PreCalibration Reading</th>
<th>Reading After Calibration</th>
<th>Calibration Acceptance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.00</td>
<td>7.01</td>
<td>TV1</td>
<td>4/11/16</td>
<td>05/17</td>
<td>7.21</td>
<td>6.98</td>
<td>± 0.10</td>
</tr>
<tr>
<td></td>
<td>4.00</td>
<td>4.00</td>
<td>T21</td>
<td>5/31/16</td>
<td>01/17</td>
<td>3.71</td>
<td>4.00</td>
<td>± 0.10</td>
</tr>
<tr>
<td></td>
<td>10.00</td>
<td>10.06</td>
<td>SV1</td>
<td>9/13/15</td>
<td>05/16</td>
<td>9.57</td>
<td>10.07</td>
<td>± 0.10</td>
</tr>
<tr>
<td>Sp Cond (mS/cm)</td>
<td>1.413</td>
<td>1.413</td>
<td>TV2</td>
<td>4/11/16</td>
<td>05/2017</td>
<td>1.367</td>
<td>1.413</td>
<td>± 10%</td>
</tr>
<tr>
<td>ORP (mV)</td>
<td>240</td>
<td>240</td>
<td>1118</td>
<td>12/15/12</td>
<td>03/2017</td>
<td>253.3</td>
<td>242.5</td>
<td>-</td>
</tr>
<tr>
<td>DO*</td>
<td>Baro</td>
<td>718.2</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>72.8%</td>
<td>94.5%</td>
<td>± 2%</td>
</tr>
</tbody>
</table>

* If parameter not included in sampling event, fill in box with NA (not applicable)
* Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table

**Date:**  |  **Time:**  |  **Calibration By:**

**Meter Manufacturer and Identification #:**

<table>
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August 2016
### Groundwater Sampling Form

**Site/Client Name:**

**Well ID:** S5V-1

**Project #:**

**Sample ID:** S5V-1

**Sampled By:**

**Sample Time:** 13:07

**Sample Date:** 8/13/10

**Weather Conditions:**

**Duplicate ID:**

**Sampling Method:** □ Low Flow □ Other

**MS/MSD** □ Yes □ No

**Trip Blank Required:** □ Yes □ No

---

#### Well Information

**Well Type:** □ Permanent □ Temporary

**Well Diameter in.**

**Screen Interval ft BGS to ft BGS**

**Well Condition:** □ Good □ Fair □ Poor (if fair or poor explain in Notes)

**Stickup □ Yes □ No; if yes, _ _ ft above ground**

---

#### Gauging/Purging Information

**Depth to Water (ft BTOC):**

**Tubing/Pump Depth (ft. BTOC):**

**Total Depth (ft BTOC):**

**Purge Start Time (24-hr):**

**Depth to Product (ft. BTOC):**

**Purge End Time (24-hr):**

**Product Thickness (ft):**

**Total Purge Time (min):**

**LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) \( \times 0.25 \) = _ _ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.**

**Min. purge volume if required: purge volume (gal) = volume of water/ft. (gal/ft) \times Water column thickness (ft) \times \# of casing volumes _ _ gal**

**Well Diameter - gal/ft**

<table>
<thead>
<tr>
<th>1&quot; - 0.041 gal/ft</th>
<th>2&quot; - 0.183 gal/ft</th>
<th>4&quot; - 0.653 gal/ft</th>
<th>6&quot; - 1.469 gal/ft</th>
</tr>
</thead>
</table>

---

#### Water Quality Parameters

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical (each reading taken after pumping a minimum of 1 flow through cell volume))

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C) (± 3%)</th>
<th>Specific Conductance (μS/cm) (± 3%)</th>
<th>DO (mg/L) (± 10%)</th>
<th>ORP (mV) (± 10mV)</th>
<th>pH (± 0.1)</th>
<th>Turbidity (NTU) (± 10%; or &lt; 5 NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft) (Max _ _ ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13/7</td>
<td></td>
<td>17.84</td>
<td>1.32</td>
<td>8.27</td>
<td>20.1</td>
<td>11.65</td>
<td>7.26</td>
<td>24.6 NTU</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Parameter Stable (Check applicable)**

**Sample Color:**

**Sample Odor:**

**Sheen:**

---

#### Analytical Sampling

**Analyses**

**Check Applicable**

**Comments**

---

#### Notes:

*use at peal pump & weight to collect sample*

---

**Equipment:**

**Pump Type**

**Tubing (Type/Length)**

**Bailer Type**

**Water Level Meter**

**Multi-Parameter Meter (Make/SN#)**

**Turbidity Meter (Make/SN#)**

**Filter Lot #**

---

**Purge Water Handling:** □ Discharged to surface □ Containerized □ Treated (how?)

---

*BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable*
# Groundwater Sampling Form

**Site/Client Name:** 

**Well ID:** MV-1R

**Project #:**  

**Sampled By:** 

**Sample ID:** MV-1R

**Sample Time:** 04/3/16  

**Sample Date:** 04/3/16

**Weather Conditions:** n/a

**Duplicate ID:** 

**Sampling Method:** Low Flow

**MS/MSD:** Yes

**Trip Blank Required:** Yes

---

**Well Information**

**Well Type:** Permanent

**Well Diameter:** 3 in.

**Screen Interval:** 25 ft BGS to 100 ft BGS

**Well Condition:** Good

**Gauging/Purging Information**

**Depth to Water (ft BTOC):** 17.77

**Tubing/Pump Depth (ft BTOC):** 22.94

**Total Depth (ft BTOC):** 22.94

**Total Purge Time (min):** 47

---

**Water Quality Parameters**

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/ minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>04:02</td>
<td>~250</td>
<td>500 ml</td>
<td>4.80</td>
<td>1,377</td>
<td>17.6</td>
<td>215.0</td>
<td>9.48</td>
<td>12.61</td>
<td>12.78</td>
<td>0.01</td>
</tr>
<tr>
<td>04:07</td>
<td>250</td>
<td>1.5</td>
<td>7.62</td>
<td>1.254</td>
<td>19.2</td>
<td>9.90</td>
<td>14.55</td>
<td>17.78</td>
<td>12.77</td>
<td>0.01</td>
</tr>
<tr>
<td>04:13</td>
<td>300</td>
<td>375</td>
<td>7.34</td>
<td>1.190</td>
<td>1.17</td>
<td>15.45</td>
<td>10.01</td>
<td>14.44</td>
<td>12.77</td>
<td>0.02</td>
</tr>
<tr>
<td>04:16</td>
<td>300</td>
<td>5.00</td>
<td>4.75</td>
<td>1.187</td>
<td>11.14</td>
<td>14.6</td>
<td>10.04</td>
<td>13.36</td>
<td>12.77</td>
<td>0.02</td>
</tr>
<tr>
<td>04:19</td>
<td>300</td>
<td>4.75</td>
<td>4.35</td>
<td>1.188</td>
<td>11.16</td>
<td>16.3</td>
<td>10.05</td>
<td>14.37</td>
<td>12.77</td>
<td>0.02</td>
</tr>
<tr>
<td>04:31</td>
<td>Sample</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Parameter Stable (Check applicable):** Y Y Y Y Y

**Sample Color:** Clear Light

**Sample Odor:** Sheen,

---

**Analytical Sampling**

**Analyses**

**Check Applicable**

**Comments**

---

**Notes:**

**Equipment:**

**Pump Type:** 

**Tubing (Type/Length):** 

**Bailer Type:** 

**Water Level Meter:** 

**Multi-Parameter Meter (Make/SN#):**

**Turbidity Meter (Make/SN#):**

**Filter Lot #:**

**Purge Water Handling:**

- Discharged to surface
- Containerized
- Treated (how?)

---

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable
## Groundwater Sampling Form

**Site/Client Name:** Iowa Hardy Power Plant  
**Well ID:** M-2  
**Project #:** 101.4036 7.16002  
**Sample ID:** M-2  
**Sampled By:** M. Under, J. Bow  
**Sample Time:** 17:32  
**Sample Date:** 8/12/16  
**Weather Conditions:** Overcast, 60  
**Duplicate ID:** —  
**Sampling Method:** Low Flow  
**Well Type:** Permanent  
**Screen Interval:** 37 ft BGS to 37 ft BGS  
**Well Condition:** Good  
**Trip Blank Required:** No  
**Low Flow:** Yes  
**No:** If yes, 1.0 ft above ground

### Well Information
- **Depth to Water (ft BTOC):** 9.35  
- **Tubing/Pump Depth (ft. BTOC):** 24  
- **Total Depth (ft. BTOC):** 30.9  
- **Purge Start Time (24-hr):** 17:08  
- **Purge End Time (24-hr):** 17:14  
- **Product Thickness (ft):** —  
- **Total Purge Time (min):** 38

### Gauging/Purging Information
- **Max Draw Down = (Tubing Depth — Top of Screen Depth) X 0.25 = (ft).** If screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.
- **Min. purge volume if required:** purge volume (gal) = volume of water(ft.)(gal/ft) X Water column thickness (ft) X # of casing volumes = gal

### Water Quality Parameters

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (ft/day)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm²)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1710</td>
<td>250</td>
<td>504.1</td>
<td>62.4</td>
<td>36</td>
<td>7.01</td>
<td>68.9</td>
<td>7.35</td>
<td>32.83</td>
<td>62.28</td>
<td>9.37</td>
</tr>
<tr>
<td>1715</td>
<td>250</td>
<td>5.5</td>
<td>5.36</td>
<td>21.2</td>
<td>1.77</td>
<td>48.3</td>
<td>7.42</td>
<td>32.83</td>
<td>62.28</td>
<td>9.37</td>
</tr>
<tr>
<td>1718</td>
<td>250</td>
<td>—</td>
<td>5.37</td>
<td>21.7</td>
<td>1.69</td>
<td>42.3</td>
<td>7.43</td>
<td>32.83</td>
<td>62.28</td>
<td>9.37</td>
</tr>
<tr>
<td>1721</td>
<td>250</td>
<td>—</td>
<td>5.11</td>
<td>21.3</td>
<td>1.41</td>
<td>35.2</td>
<td>7.43</td>
<td>32.83</td>
<td>62.28</td>
<td>9.37</td>
</tr>
<tr>
<td>1724</td>
<td>250</td>
<td>—</td>
<td>4.91</td>
<td>21.3</td>
<td>1.54</td>
<td>27.6</td>
<td>7.43</td>
<td>32.83</td>
<td>62.28</td>
<td>9.37</td>
</tr>
<tr>
<td>1727</td>
<td>250</td>
<td>—</td>
<td>4.15</td>
<td>21.3</td>
<td>1.61</td>
<td>24.5</td>
<td>7.43</td>
<td>22.44</td>
<td>9.37</td>
<td>0.02</td>
</tr>
<tr>
<td>1730</td>
<td>250</td>
<td>6.5</td>
<td>4.94</td>
<td>21.3</td>
<td>1.55</td>
<td>24.3</td>
<td>7.43</td>
<td>35.58</td>
<td>9.34</td>
<td>0.02</td>
</tr>
<tr>
<td>1732</td>
<td>Sample</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)  
- Y  
- Y  
- Y  
- Y  
- Y  
- Y  
- Y

### Sample Color: Reddish brown / Cloudy

### Sample Odor: None

### Sheen: None

### Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

Semi-turbid appears to be some sort of precipitate/biological. Clears up with purging.

### Equipment:
- **Pump Type:**  
- **Tubing (Type/Length):**  
- **Bailer Type:**  
- **Water Level Meter:**  
- **Multi-Parameter Meter (Make/SN#):**  
- **Turbidity Meter (Make/SN#):**  
- **Filter Lot #:**  

### Purge Water Handling:
- [ ] Discharged to surface  
- [ ] Containerized  
- [ ] Treated (how?):  

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
Groundwater Sampling Form

Site/Client Name: CVEA Holly Plant

Well ID: MV-3

Project #: 107.033.7.162

Sample ID: MV-3

Sample By: MV

Sample Time: 1505

Sample Date: 03/16

Weather Conditions: SSW

Duplicate ID: __

Sampling Method: Low Flow

Well Information

Well Type: Permanent

Well Diameter: __ in.

Screen Interval: 13.00 ft BGS to 3.0 ft BGS

Well Condition: Good

Pickup: Yes

Trip Blank Required: Yes

Gauging/Purging Information

Depth to Water (ft BTOC): 12.5

Tubing/Pump Depth (ft BTOC): 12

Total Depth (ft BTOC): __

Purge Start Time (24-hr): 13 45

Depth to Product (ft. BTOC): __

Purge End Time (24-hr): 14 25

Product Thickness (ft): __

Total Purge Time (min): __

LOW FLOW: Max Draw Down = (Tubing Depth Top of Screen Depth) X 0.25 = ___(ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft

Min. purge volume if required: purge volume (gal) = volume of water/fl (gal/ft) X Water column thickness (ft) X # of casing volumes = ___ gal

Well Diameter – gal/ft: 1′-0.041 gal/ft

2′-0.163 gal/ft

4′-0.653 gal/ft

6′-1.468 gal/ft

Water Quality Parameters

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1344</td>
<td>400</td>
<td>1520</td>
<td>853</td>
<td>1535</td>
<td>3.01</td>
<td>105.2</td>
<td>8.22</td>
<td>3.82</td>
<td>8.57</td>
<td>0.04</td>
</tr>
<tr>
<td>1349</td>
<td>400</td>
<td>2.5</td>
<td>8.47</td>
<td>1525</td>
<td>1.00</td>
<td>94.2</td>
<td>21.3</td>
<td>2.49</td>
<td>8.41</td>
<td>0.06</td>
</tr>
<tr>
<td>1354</td>
<td>400</td>
<td>3.5</td>
<td>8.44</td>
<td>1521</td>
<td>0.83</td>
<td>74.9</td>
<td>7.57</td>
<td>2.18</td>
<td>8.61</td>
<td>0.06</td>
</tr>
<tr>
<td>1357</td>
<td>400</td>
<td>4.5</td>
<td>8.51</td>
<td>1516</td>
<td>0.71</td>
<td>74.8</td>
<td>7.64</td>
<td>1.18</td>
<td>8.40</td>
<td>0.05</td>
</tr>
<tr>
<td>1400</td>
<td>400</td>
<td>5.5</td>
<td>8.40</td>
<td>1513</td>
<td>0.78</td>
<td>74.1</td>
<td>7.44</td>
<td>1.11</td>
<td>8.62</td>
<td>0.07</td>
</tr>
<tr>
<td>1403</td>
<td>400</td>
<td>6.5</td>
<td>8.39</td>
<td>1510</td>
<td>0.77</td>
<td>74.2</td>
<td>7.43</td>
<td>1.36</td>
<td>5.60</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)

Y Y Y Y

Sample Color: _______ Sample Odor: _______ Sheen: _______

Analytical Sampling

Analyses Check Applicable Comments

Notes:

Equipment: Pump Type ___________ Tubing (Type/Length) ___________ Bailer Type ___________

Water Level Meter ___________ Multi-Parameter Meter (Make/Model) ___________

Turbidity Meter (Make/Model) ___________ Filter Lot # ___________

Purge Water Handling: Yes No Containerized Yes No Treated (how?) ___________
**Groundwater Sampling Form**

**Site/Client Name:**

**Project #:**

**Sampled By:**

**Sample ID:**

**Sample Time:**

**Sample Date:**

**Weather Conditions:**

**Sampling Method:**

**MS/MSD:**

**Duplicate ID:**

**Trip Blank Required:**

### Well Information
- **Well Type:**
- **Well Diameter:** in.
- **Screen Interval:** ft BGS to ft BGS
- **Well Condition:**
- **Stickup:**
- **If yes, ft above ground**

### Gauging/Purging Information
- **Depth to Water (ft BTOC):**
- **Tubing/Pump Depth (ft. BTOC):**
- **Total Depth (ft. BTOC):**
- **Purge Start Time (24-hr):**
- **Depth to Product (ft. BTOC):**
- **Purge End Time (24-hr):**
- **Product Thickness:**
- **Total Purge Time (min):**

**LOW FLOW:**

\[
\text{Max Draw Down} = \left( \text{Tubing Depth} - \text{Top of Screen Depth} \right) \times 0.25 = \text{(ft)}, \text{if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.}
\]

**Min. purge volume if required:**

\[
\text{purge volume (gal)} = \text{volume of well/ft.} \times \text{(gal/ft)} \times \text{Water column thickness} \times \text{(ft)} \times \# \text{of casing volumes} = \text{gal}
\]

### Water Quality Parameters

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft) (Max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:10</td>
<td>700</td>
<td>15</td>
<td>15.38</td>
<td>1854</td>
<td>1.03</td>
<td>8.81</td>
<td>8.54</td>
<td>0.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:15</td>
<td>1000</td>
<td>2.5</td>
<td>15.22</td>
<td>1859</td>
<td>0.95</td>
<td>8.75</td>
<td>8.81</td>
<td>2.84</td>
<td>8.53</td>
<td>0.07</td>
</tr>
<tr>
<td>12:20</td>
<td>900</td>
<td>4.5</td>
<td>15.14</td>
<td>1861</td>
<td>0.39</td>
<td>7.22</td>
<td>8.85</td>
<td>4.5</td>
<td>8.53</td>
<td>0.07</td>
</tr>
<tr>
<td>12:25</td>
<td>400</td>
<td>15.11</td>
<td>1863</td>
<td>0.41</td>
<td>69.0</td>
<td>8.83</td>
<td>8.34</td>
<td>0.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:30</td>
<td>400</td>
<td>15.10</td>
<td>1863</td>
<td>0.38</td>
<td>60.7</td>
<td>8.69</td>
<td>8.39</td>
<td>8.53</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>12:35</td>
<td>7.5</td>
<td>15.11</td>
<td>1863</td>
<td>0.37</td>
<td>58.1</td>
<td>8.88</td>
<td>8.35</td>
<td>8.53</td>
<td>0.07</td>
<td></td>
</tr>
</tbody>
</table>

**Parameter Stable (Check applicable):**

- [ ]

**Sample Color:** brown, tannin

**Sample Odor:** dank sulfur odor

**Sheen:**

### Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
</table>

### Notes:

**Equipment:**
- **Pump Type:**
- **Tubing (Type/Length):**
- **Bailer Type:**
- **Water Level Meter:**
- **Multi-Parameter Meter (Make/SN#):**
- **Turbidity Meter (Make/SN#):** Filter Lot #

**Purge Water Handling:**
- [ ] Discharged to surface
- [ ] Containerized
- [ ] Treated (how?):

\[BGS = \text{Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable}\]
Groundwater Sampling Form

<table>
<thead>
<tr>
<th>Site/Client Name:</th>
<th>Well ID:</th>
<th>MW-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project #:</td>
<td>Sample ID:</td>
<td>MW-5</td>
</tr>
<tr>
<td>Sampled By:</td>
<td>Sample Time:</td>
<td>1/19</td>
</tr>
<tr>
<td>Weather Conditions:</td>
<td>Sample Date:</td>
<td>1/3/16</td>
</tr>
<tr>
<td>Sampling Method:</td>
<td>Duplicate ID:</td>
<td>MW-59</td>
</tr>
<tr>
<td>Low Flow</td>
<td>Other:</td>
<td>MS/MSD:</td>
</tr>
<tr>
<td>Trip Blank Required:</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**Well Information**

- **Well Type:** Permanent
- **Well Diameter:** 2 in.
- **Screen Interval:** 34 ft BGS to 84 ft BGS
- **Well Condition:** Good
- **Screen Thickness:** 2 ft above ground

**Gauging/Purging Information**

- **Depth to Water (ft BTOC):** 14.59
- **Total Depth (ft BTOC):** 27.57
- **Depth to Product (ft BTOC):**
- **Tubing/Pump Depth (ft BTOC):**
- **Purge Start Time (24-hr):** 1059
- **Purge End Time (24-hr):** 1144
- **Product Thickness (ft):**
- **Total Purge Time (min):** 45

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

**Min. purge volume if required:** purge volume (gal) = volume of water/lift(X) X Water column thickness(r) X # of casing volumes = gal

**Water Quality Parameters**

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1101</td>
<td>400</td>
<td>0.5</td>
<td>17.24</td>
<td>117</td>
<td>730</td>
<td>11.15</td>
<td>14.34</td>
<td>0.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1106</td>
<td>400</td>
<td>2.5</td>
<td>10.32</td>
<td>1.15</td>
<td>570</td>
<td>11.34</td>
<td>11.18</td>
<td>14.34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1113</td>
<td>400</td>
<td>4.3</td>
<td>18.37</td>
<td>1.23</td>
<td>51.8</td>
<td>11.27</td>
<td>14.34</td>
<td>0.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1114</td>
<td>400</td>
<td>5.0</td>
<td>18.33</td>
<td>1.21</td>
<td>51.6</td>
<td>11.39</td>
<td>14.33</td>
<td>0.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1115</td>
<td>400</td>
<td>6.0</td>
<td>18.35</td>
<td>1.13</td>
<td>45.5</td>
<td>11.37</td>
<td>14.33</td>
<td>0.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)

| Clear | $ | Clear | $ | Clear | $ | Clear | $ | Clear | $ |

Sample Color: Clear  
Sample Odor: None  
Sheen: None

**Analytical Sampling**

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

- **Equipment:** Pump Type, Tubing (Type/Length), Baller Type, Water Level Meter, Multi-Parameter Meter (Make/SN#), Turbidity Meter (Make/SN#), Filter Lot #
- **Purge Water Handling:** Discharged to surface, Containerized, Treated (how?)

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
**Groundwater Sampling Form**

**Site/Client Name:** [WEA Holy Cross]  
**Well ID:** MV-6  
**Project #:** 042006001  
**Sample ID:** MV-6  
**Sampled By:** MV-6  
**Sample Time:** 1033  
**Sample Date:** 03/27  
**Weather Conditions:** Sunny  
**Duplicate ID:**  
**Sampling Method:** Low Flow  
**MS/MSD:** Yes  
**Trip Blank Required:** Yes  

### Well Information
- **Well Type:** Permanent  
- **Well Diameter:** 8 in.  
- **Screen Interval:** 22 ft BGS to 11 ft BGS  
- **Well Condition:** Good  
- **Well Completion:** *Note: If fair or poor explain in Notes*  
- **Stickup:** Yes  
- **Product Thickness:**  

#### Gauging/Purging Information
- **Depth to Water (ft BTOC):** 26.5  
- **Total Depth (ft BTOC):** 37.3  
- **Depth to Product (ft BTOC):**  
- **Tubing/Pump Depth (ft BTOC):** 30  
- **Purge Start Time (24-hr):** 1045  
- **Purge End Time (24-hr):** 1045  
- **Total Purge Time (min):** 30  

**LOW FLOW:**  
Max. Drawdown = (Tubing Depth – Top of Screen Depth) x 0.25 =  
Min. purge volume if required: purge volume (gal) = volume of water/ft x 0.041 gal/ft x Water column thickness (ft) x # of casing volumes = gal  

### Water Quality Parameters
(Achieve stable parameters for 3 consecutive readings, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp. (°C)</th>
<th>Specific Conductance (µS/cm²)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1017</td>
<td>250</td>
<td>1.5</td>
<td>8.69</td>
<td>1.88</td>
<td>5.00</td>
<td>17.2</td>
<td>8.30</td>
<td>2.64</td>
<td>12.64</td>
<td>0.04</td>
</tr>
<tr>
<td>1022</td>
<td>20</td>
<td>8.44</td>
<td>1.884</td>
<td>0.91</td>
<td>145.4</td>
<td>7.97</td>
<td>1.46</td>
<td>12.69</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>1025</td>
<td>-25</td>
<td>8.42</td>
<td>1.885</td>
<td>0.70</td>
<td>139.2</td>
<td>7.93</td>
<td>1.46</td>
<td>12.70</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>1028</td>
<td>3</td>
<td>8.39</td>
<td>1.887</td>
<td>0.60</td>
<td>136.7</td>
<td>7.41</td>
<td>0.71</td>
<td>12.68</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>1031</td>
<td>3.5</td>
<td>8.38</td>
<td>1.889</td>
<td>0.67</td>
<td>131.7</td>
<td>7.90</td>
<td>0.47</td>
<td>12.64</td>
<td>0.04</td>
<td></td>
</tr>
</tbody>
</table>

**Parameter Stable (Check applicable):** Y Y Y Y Y

**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** None

### Analytical Sampling

- **Analyses**
- **Check Applicable**
- **Comments**

### Notes:

**Equipment:**  
- **Pump Type:**  
- **Tubing (Type/Length):**  
- **Bailer Type:**  
- **Water Level Meter:**  
- **Multi-Parameter Meter (Make/SN#):**  
- **Turbidity Meter (Make/SN#):**  
- **Filter Lot #:**

**Purge Water Handling:**  
- Discharged to surface  
- Containerized  
- Treated (how?):

*BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable*
### Groundwater Sampling Form

**Site/Client Name:** 2EIA Holland Power Plant  
**Project #:** 104.003-12, 1/202  
**Sampled By:** M. Vade, H. Folley  
**Weather Conditions:** Sunny  
**Sampling Method:** Low Flow  
**Well Type:** Permanent  
**Well Diameter:** 12 in.  
**Screen Interval:** 12.2 ft BGS to 2 ft BGS  
**Well Condition:** Good  
**Tubing/Pump Depth:** 15.25 ft BTOC  
**Total Depth:** 20.0 ft BTOC  
**Depth to Product:** 20.0 ft BTOC  
**Product Thickness:** 4.0 ft  
**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = (ft), if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.  
**Min. purge volume if required:** purge volume (gal) = volume of water/ft (gal/ft) X Water column thickness (ft) X # of casing volumes = gal  
**Well Diameter:** 1" - 0.041 gal/ft  
**Flow Rate (liter/minute):** 300  
**Purge Volume (gal):** 0.654  
**Temp (°C):** 4.1  
**Specific Conductance (µS/cm):** 0.545  
**DO (mg/L):** 1.1  
**ORP (mV):** 0.7  
**pH:** 7.0  
**Turbidity:** 3.9 NTU  
**DTW (ft BTOC):** 15.25 ft  
**Drawdown (ft):** 0.08  

**Parameter Stable (Check applicable):** Yes

**Sample Color:** Clear with large suspended solids  
**Sample Odor:** None  
**Sheen:** None

### Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:
Precipitation present in discolored or possibly fouled water

**Equipment:**  
- **Pump Type:** peristaltic  
- **Tubing (Type/Length):** LDPE  
- **Bailer Type:** N/A  
- **Water Level Meter:** SLR  
- **Multi-Parameter Meter (Make/SN#):**  
- **Turbidity Meter (Make/SN#):**  
- **Filter Lot #:** N/A

**Purge Water Handling:** Discharged to surface  

**BGS =** Below Ground Surface, **BTOC =** Below Top of Casing, **NA =** Not Applicable
Groundwater Sampling Form

Site/Client Name: 61st Ave Power Plant  

Project #: 104.00317  
Sample ID: mw-B  
Sampled By: R. Wood  
Sample Time: 16:12  
Sample Date: 8/2/16  
Weather Conditions: 60°F, overcast  
Duplicate ID:  
Sampling Method: Low Flow  
MS/MSD: Yes  
Trip Blank Required: No  

Well Information

Well Type: Permanent  
Well Diameter: 2 in.  
Screen Interval: 30 ft BGS to 15 ft BGS  
Well Condition: Good  
Stickup: No  

Gauging/Purging Information

Depth to Water (ft BTOC): 22.71  
Tubing/Pump Depth (ft, BTOC): 2.70  
Total Depth (ft, BTOC): 23.30  
Purge Start Time (24-hr):  
Depth to Product (ft, BTOC):  
Purge End Time (24-hr):  
Product Thickness (ft):  
Total Purge Time (min):  

LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = _ft, if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

Min. purge volume if required: purge volume (gal) = volume of water/ft X Water column thickness (ft) X # of casing volumes = _gal

Well Diameter – gal/ft: 1” = 0.041 gal/ft  
2” = 0.163 gal/ft  
4” = 0.653 gal/ft  
6” = 1.469 gal/ft

Water Quality Parameters

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical, each reading taken after pumping a minimum of 1 flow through cell volume)

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft, BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 15:58</td>
<td>250</td>
<td>0.57</td>
<td>7.01</td>
<td>0.600</td>
<td>7.01</td>
<td>56.7</td>
<td>7.06</td>
<td>5.37</td>
<td>22.65</td>
<td>0.05</td>
</tr>
<tr>
<td>1:57</td>
<td>250</td>
<td>1.5</td>
<td>8.00</td>
<td>0.592</td>
<td>4.02</td>
<td>59.1</td>
<td>7.05</td>
<td>4.07</td>
<td>22.64</td>
<td>0.05</td>
</tr>
<tr>
<td>16:02</td>
<td>250</td>
<td>2.5</td>
<td>8.37</td>
<td>0.588</td>
<td>4.00</td>
<td>44.1</td>
<td>7.03</td>
<td>1.58</td>
<td>22.64</td>
<td>0.02</td>
</tr>
<tr>
<td>16:05</td>
<td>250</td>
<td>3.0</td>
<td>8.01</td>
<td>0.597</td>
<td>4.61</td>
<td>45.1</td>
<td>7.03</td>
<td>1.98</td>
<td>22.68</td>
<td>0.03</td>
</tr>
<tr>
<td>16:08</td>
<td>250</td>
<td>3.5</td>
<td>7.67</td>
<td>0.587</td>
<td>4.57</td>
<td>43.8</td>
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<td>1.55</td>
<td>23.66</td>
<td>0.05</td>
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<td>16:11</td>
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<td>7.03</td>
<td>2.48</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)

| Clean | No     | Y     | Y     | Y | Y |

Sample Color: Clean  
Sample Odor: None  
Sheen: None

Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
</table>

Notes:

Equipment: Pump Type: sub-pump  
Tubing (Type/Length): LDPE  
Water Level Meter: SCG-100H  
Multi-Parameter Meter (Make/SN#):  
Turbidity Meter (Make/SN#): Filter Lot #: N/A

Purge Water Handling: Discharged to surface  

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable  
Page 1 of
# Water Parameter Meter Calibration Log

**Date:** 8/16/16  
**Time:** 13:52  
**Calibration By:** [Signature]

**Meter Manufacturer and Identification #:** Y51 M60223B

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>True Value</th>
<th>Lot #</th>
<th>Date Opened</th>
<th>Expiration Date</th>
<th>PreCalibration Reading</th>
<th>Reading After Calibration</th>
<th>Calibration Acceptance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.00</td>
<td>7.01</td>
<td>TV1</td>
<td>4-1-16</td>
<td>05-17</td>
<td>10.93</td>
<td>7.02</td>
<td>± 0.10</td>
</tr>
<tr>
<td></td>
<td>4.00</td>
<td>4.00</td>
<td>TV2</td>
<td>5-31-16</td>
<td>01-17</td>
<td>4.23</td>
<td>3.97</td>
<td>± 0.10</td>
</tr>
<tr>
<td></td>
<td>10.00</td>
<td>10.00</td>
<td>TV1</td>
<td>-</td>
<td>06-17</td>
<td>10.08</td>
<td>10.07</td>
<td>± 0.10</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>1.413</td>
<td>1.413</td>
<td>TV2</td>
<td>5-31-16</td>
<td>05-17</td>
<td>14.20</td>
<td>14.11</td>
<td>± 10%</td>
</tr>
<tr>
<td>(mS/cm)</td>
<td>240</td>
<td>240</td>
<td>6273</td>
<td>1-23-15</td>
<td>06-18</td>
<td>252.4</td>
<td>240.2</td>
<td></td>
</tr>
<tr>
<td>DO*</td>
<td>23.8</td>
<td>100%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4.5</td>
<td>95.9</td>
<td>± 2%</td>
</tr>
</tbody>
</table>

*If parameter not included in sampling event, fill in box with NA (not applicable)

*Note that the True Value for DO is dependent on pressure and altitude, reference the DO Calibration Table

---

**Date:** 8/13/16  
**Time:** 08:35  
**Calibration By:** [Signature]

**Meter Manufacturer and Identification #:** Y51 LF0237B

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>True Value</th>
<th>Lot #</th>
<th>Date Opened</th>
<th>Expiration Date</th>
<th>PreCalibration Reading</th>
<th>Reading After Calibration</th>
<th>Calibration Acceptance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.00</td>
<td>7.01</td>
<td>TV1</td>
<td>4-1-16</td>
<td>05-17</td>
<td>6.99</td>
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<td>± 0.10</td>
</tr>
<tr>
<td></td>
<td>4.00</td>
<td>4.00</td>
<td>TV1</td>
<td>5-31-16</td>
<td>01-17</td>
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<td>± 0.10</td>
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<tr>
<td></td>
<td>10.00</td>
<td>10.00</td>
<td>TV1</td>
<td>-</td>
<td>06-17</td>
<td>10.10</td>
<td>10.07</td>
<td>± 0.10</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>1.413</td>
<td>1.413</td>
<td>TV2</td>
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<td>05-17</td>
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<td>1.410</td>
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</tr>
<tr>
<td>(mS/cm)</td>
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<td>240</td>
<td>6273</td>
<td>1-23-15</td>
<td>06-18</td>
<td>252.4</td>
<td>240.2</td>
<td></td>
</tr>
<tr>
<td>DO*</td>
<td>73.9</td>
<td>100%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>104.9</td>
<td>76.1</td>
<td>± 2%</td>
</tr>
</tbody>
</table>

*If parameter not included in sampling event, fill in box with NA (not applicable)

*Note that the True Value for DO is dependent on pressure and altitude, reference the DO Calibration Table

---

**Date:**  
**Time:**  
**Calibration By:**

**Meter Manufacturer and Identification #:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>True Value</th>
<th>Lot #</th>
<th>Date Opened</th>
<th>Expiration Date</th>
<th>PreCalibration Reading</th>
<th>Reading After Calibration</th>
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</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.00</td>
<td></td>
<td></td>
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<td>± 0.10</td>
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<td></td>
<td>4.00</td>
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<td></td>
<td></td>
<td></td>
<td>± 0.10</td>
</tr>
<tr>
<td></td>
<td>10.00</td>
<td></td>
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<td></td>
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<td>± 0.10</td>
</tr>
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<td>Sp Cond</td>
<td>1.413</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>± 10%</td>
</tr>
<tr>
<td>(mS/cm)</td>
<td>240</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>± 2%</td>
</tr>
</tbody>
</table>

*If parameter not included in sampling event, fill in box with NA (not applicable)

*Note that the True Value for DO is dependent on pressure and altitude, reference the DO Calibration Table
October 2016
Site/Client Name: GVEA Healy Power Plant

Project #: 104.00367.16002

Sampled By: [Signature]

Weather Conditions: [Signature]

Sampling Method: Low Flow

Well ID: SW-1

Sample Time: 11:30

Sample Date: 10/4/18

Duplicate ID: [Signature]

MS/MSD: Yes

Trip Blank Required: Yes

Well Type: Permanent

Well Diameter: [Signature]

Screen Interval: [Signature]

ft BGS to [Signature]

ft BGS

Well Condition: Good

Pickup: Yes

Stikup: Yes

No: If yes, [Signature] ft above ground

Depth to Water (ft BTOC): [Signature]

Tubing/Pump Depth (ft BTOC):

Total Depth (ft BTOC):

Depth to Product (ft BTOC):

Product Thickness (ft):

Total Purge Time (min):

Low Flow: Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = [Signature] (ft).

Min. Purge Volume if required: Purge Volume (gal) = Volume of Water Volume of Water (gal/ft) X Water Column Thickness X # of casing volumes = [Signature] gal

Well Diameter = [Signature] ft

1" = 0.041 gal/ft

2" = 0.163 gal/ft

4" = 0.653 gal/ft

6" = 1.469 gal/ft

Minimum Purge Volume = [Signature] gal

Parameter Stable (Check applicable)

Sample Color: Clear

Sample Odor: None

Sheen: None

Analytical Sampling

Analyses

Check Applicable

Comments

Notes:

Original Surface Water Source

Equipment: Pump Type

Tubing (Type/Length):

Bailer Type

Water Level Meter

Multi-Parameter Meter (Make/SN#)

Turbidity Meter (Make/SN#)

Filter Lot #

Purge Water Handling: Discharged to surface

Containerized

Treated (how?)

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable

Page 1 of ____
Groundwater Sampling Form

Site/Client Name: GVEA Healy Power Plant
Project #: 104.00367.16002
Sampled By: D. Goldberg / M. Woods
Weather Conditions: Rain / Snow / 38°F
Sampling Method: ☑ Low Flow ☐ Other
Duplicate ID: 
MS/MSD ☐ Yes ☑ No
Trip Blank Required: ☐ Yes ☑ No

Well Information
Well Type: ☑ Permanent ☐ Temporary
Well Diameter: 2 in.
Screen Interval: 25 ft BGS to 10 ft BGS
Well Condition: ☑ Good ☐ Fair ☐ Poor (if fair or poor explain in Notes)
Stickup ☑ Yes ☐ No; if yes, 30 ft above ground

Gauging/Purging Information
Depth to Water (ft BTOC): 18.80
Tubing/Pump Depth (ft. BTOC): 33
Total Depth (ft BTOC): 27.56
Purge Start Time (24-hr): 09:48
Depth to Product (ft. BTOC): 
Purge End Time (24-hr): 10:29
Product Thickness (ft): 
Total Purge Time (min):

LOW FLOW: Max Draw Down = (Tubing Depth – Top of Screen Depth) X 0.25 = (ft), if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

Min. purge volume if required: purge volume (gal) = volume of water/ft (gal/ft) X Water column thickness (ft) X # of casing volumes = gal
Well Diameter – gal/ft
1' = 0.041 gal/ft
2' = 0.163 gal/ft
4' = 0.653 gal/ft
6' = 1.469 gal/ft

Water Quality Parameters
(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm) (±3%)</th>
<th>DO (mg/L) (±10%)</th>
<th>pH (±0.1)</th>
<th>ORP (mV) (±10mV)</th>
<th>Turbidity (NTU) (±10% or &lt;5 NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft) (Max_50')</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:52</td>
<td>0.25</td>
<td>9.65</td>
<td>1.080</td>
<td>5.11</td>
<td>10.76</td>
<td>132.1</td>
<td>17.5</td>
<td>18.81</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>09:53</td>
<td>1.0</td>
<td>10.10</td>
<td>1.079</td>
<td>1.70</td>
<td>10.84</td>
<td>106.3</td>
<td>14.4</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>10:02</td>
<td>2.0</td>
<td>10.31</td>
<td>1.084</td>
<td>1.22</td>
<td>10.94</td>
<td>82.5</td>
<td>14.3</td>
<td>18.80</td>
<td>0.0</td>
<td></td>
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<tr>
<td>10:05</td>
<td>2.5</td>
<td>10.17</td>
<td>1.087</td>
<td>1.11</td>
<td>10.97</td>
<td>73.0</td>
<td>14.3</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>10:06</td>
<td>3.25</td>
<td>10.21</td>
<td>1.085</td>
<td>1.15</td>
<td>10.49</td>
<td>69.6</td>
<td>14.3</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)

Sample Color: Light yellow/brown
Sample Odor: Strong ammonia smell
Sheen: None

Analytical Sampling
Analyses | Check Applicable | Comments
--- | --- | ---

Notes:

Equipment: Pump Type
Water Level Meter
Turbidity Meter (Make/SN#)
Filter Lot #

Purge Water Handling: ☑ Discharged to surface ☐ Containerized ☐ Treated (how?)

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable
**Site/Client Name:** GVEA Healy Power Plant  
**Project #:** 104.00367.16002  
**Sampled By:** [Signature]  
**Weather Conditions:** 40°F, Drizzle  
**Sampling Method:** Low Flow  
**Sample ID:** MIV-2  
**Duplicate ID:** [Blank]  
**Sample Time:** 10:22  
**Sample Date:** 10/3/12  
**Well ID:** MIV-2  
**MS/MSD:** [Blank]  
**Trip Blank Required:** [Blank]  

### Well Information
- **Well Type:** Permanent  
- **Well Diameter:** 4 in.  
- **Screen Interval:** 29.2 ft BGS to 50 ft BGS  
- **Depth to Water (ft BTOC):** 1.10  
- **Total Depth (ft BTOC):** 31.5  
- **Depth to Product (ft BTOC):** [Blank]  
- **Gauging/Purging Information:**  
  - **Product Thickness:** [Blank]  
  - **Tubing/Pump Depth (ft BTOC):** 24  
  - **Purge Start Time (24-hr):** 8:00  
  - **Purge End Time (24-hr):** 1:40  
- **LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) x 0.25 = [Blank] (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.  
- **Min. purge volume if required:** purge volume (gal) = volume of water/ft (gal/ft) X Water column thickness (ft) X # of casing volumes = [Blank] gal  

### Water Quality Parameters
(All sampling parameters for 3 consecutive readings, 4 parameters if practical, each reading taken after pumping a minimum of 1 flow through cell volume)

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gpm)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>pH</th>
<th>ORP (mV)</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:02</td>
<td>3.00</td>
<td>2.50</td>
<td>0.86</td>
<td>2.286</td>
<td>5.32</td>
<td>0.06</td>
<td>104.2</td>
<td>253</td>
<td>1.72</td>
<td>0.02</td>
</tr>
<tr>
<td>11:01</td>
<td>3.00</td>
<td>2.15</td>
<td>0.29</td>
<td>2.246</td>
<td>1.65</td>
<td>7.03</td>
<td>2.5</td>
<td>2.3</td>
<td>1.71</td>
<td>0.01</td>
</tr>
<tr>
<td>11:12</td>
<td>3.00</td>
<td>2.55</td>
<td>0.88</td>
<td>2.407</td>
<td>1.29</td>
<td>7.03</td>
<td>46.0</td>
<td>2.58</td>
<td>1.72</td>
<td>0.02</td>
</tr>
<tr>
<td>11:15</td>
<td>3.00</td>
<td>2.45</td>
<td>0.80</td>
<td>2.404</td>
<td>1.29</td>
<td>7.03</td>
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<td>0.02</td>
</tr>
<tr>
<td>11:18</td>
<td>3.00</td>
<td>2.65</td>
<td>0.88</td>
<td>2.403</td>
<td>1.29</td>
<td>7.03</td>
<td>46.0</td>
<td>2.58</td>
<td>1.72</td>
<td>0.02</td>
</tr>
<tr>
<td>11:24</td>
<td>3.00</td>
<td>2.04</td>
<td>0.88</td>
<td>2.402</td>
<td>1.29</td>
<td>7.03</td>
<td>46.0</td>
<td>2.58</td>
<td>1.72</td>
<td>0.02</td>
</tr>
</tbody>
</table>

### Parameter Stable (Check applicable)
- Y

### Sample Color:
- [Check]  
### Sample Odor:
- [Check]  
### Sheen:
- [Check]  

### Equipment:
- **Pump Type:** [Blank]  
- **Tubing (Type/Length):** [Blank]  
- **Bailer Type:** [Blank]  
- **Water Level Meter:** [Blank]  
- **Multi-Parameter Meter (Make/SN/#):** [Blank]  
- **Turbidity Meter (Make/SN/#):** [Blank]  
- **Filter Lot #:** [Blank]  

### Purge Water Handling:
- [Check] Discharged to surface  
- [Blank] Containerized  
- [Check] Treated (how?): [Blank]

---

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable  
Page 1 of [Blank]
Groundwater Sampling Form

**Site/Client Name:** GVEA Healy Power Plant

**Project #:** 104.00367.16002

**Sampled By:** Matthew, Dan Goldberg

**Weather Conditions:** Scooter

**Sampling Method:** Low Flow

**Well Information**
- **Well Type:** Permanent
- **Well Diameter:** in.
- **Screen Interval:** ft BGS to ft BGS
- **Well Condition:** Good
- **Depth to Water (ft BTOC):** 10.57
- **Total Depth (ft BTOC):** 14.13
- **Depth to Product (ft BTOC):** 8.09
- **Product Thickness (ft):** Total Purge Time (min)
- **Tubing/Pump Depth (ft BTOC):** 10.57
- **Purge Start Time (24-hr):** 17:04
- **Purge End Time (24-hr):** 17:36

**Gauging/Purging Information**

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

**Min. purge volume if required:** Purge volume (gal) = volume of water/t (gal/ft) X Water column thickness (ft) X # of casing volumes = gal

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm²)</th>
<th>DO (mg/L)</th>
<th>pH</th>
<th>ORP (mV)</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:04</td>
<td>0.25</td>
<td>8.21</td>
<td>1.959</td>
<td>4.36</td>
<td>7.61</td>
<td>1230.3</td>
<td>1.22</td>
<td>0.089</td>
<td>10.63</td>
<td>0.06</td>
</tr>
<tr>
<td>17:12</td>
<td>1.5</td>
<td>8.17</td>
<td>1.954</td>
<td>1.62</td>
<td>7.23</td>
<td>130.3</td>
<td>1.22</td>
<td>0.089</td>
<td>10.64</td>
<td>0.07</td>
</tr>
<tr>
<td>17:17</td>
<td>3.0</td>
<td>8.04</td>
<td>1.945</td>
<td>1.32</td>
<td>7.39</td>
<td>126.3</td>
<td>0.32</td>
<td>0.089</td>
<td>10.64</td>
<td>11</td>
</tr>
<tr>
<td>17:26</td>
<td>4.0</td>
<td>8.11</td>
<td>1.973</td>
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<td>7.23</td>
<td>123.8</td>
<td>0.56</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Parameter Stable (Check applicable)**

- [ ]

**Sample Color:** Clear

**Sample Odor:** None

**Sheen:** None

**Water Quality Parameters**

- (Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

**Analyses**

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
</table>

**Notes:**

**Equipment:**
- **Pump Type:** perpump
- **Tubing (Type/Length):**
- **Bailer Type:**
- **Water Level Meter:**
- **Multi-Parameter Meter (Make/SN#):**
- **Turbidity Meter (Make/SN#):**
- **Filter Lot #:**

**Purge Water Handling:** Discharged to surface Containerized Treated (how?)

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
Groundwater Sampling Form

Site/Client Name: GVEA Healy Power Plant
Project #: 104.00367.16002
Well ID: MW-4
Sample ID: MW-4
Sampled By: M. Woods
Weather Conditions: SOE
Duplicate ID: 
Sampling Method:  ☑ Low Flow ☐ Other
Trip Blank Required: ☐ Yes ☐ No

Well Information
Well Type: ☑ Permanent ☐ Temporary
Well Diameter ___ in.
Screen Interval: _____ ft BGS to _____ ft BGS
Well Condition: ☑ Good ☐ Fair ☐ Poor (if fair or poor explain in Notes)
Stickup ☑ Yes ☐ No; If yes, _____ ft above ground

Gauging/Purging Information
Depth to Water (ft BTOC): ___ 9.65
Tubing/Pump Depth (ft BTOC): ____________ 15.52
Total Depth (ft BTOC): ____________ 16.59
Purge Start Time (24-hr): ______ 16.29
Depth to Product (ft. BTOC): ____________ 16.29
Purge End Time (24-hr): ______ 16.29
Product Thickness (ft): 
Total Purge Time (min): 

LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = _____ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

Min. purge volume if required: purge volume (gal) = volume of water/ft (gal/ft) X Water column thickness (ft) X # of casing volumes = __________ gal

Well Diameter = gal/ft ____________ 1" - 0.041 gal/ft

Water Quality Parameters
(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gallons/minute)</th>
<th>Purge Volume (gallons)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>pH</th>
<th>ORP (mV)</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1556</td>
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<td>1.655</td>
<td>3.96</td>
<td>2.38</td>
<td>9.48</td>
<td>12.1</td>
<td>48.3</td>
<td>9.70</td>
<td>0.655</td>
<td>0.05</td>
</tr>
<tr>
<td>1601</td>
<td>1.25</td>
<td>1.672</td>
<td>4.39</td>
<td>1.86</td>
<td>9.57</td>
<td>100.0</td>
<td>2.67</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>1606</td>
<td>3</td>
<td>1.682</td>
<td>4.45</td>
<td>1.18</td>
<td>9.56</td>
<td>87.0</td>
<td>14.5</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>1609</td>
<td>4</td>
<td>1.682</td>
<td>4.48</td>
<td>1.19</td>
<td>9.54</td>
<td>84.8</td>
<td>16.4</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
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<tr>
<td>1612</td>
<td>4.15</td>
<td>1.683</td>
<td>4.47</td>
<td>1.06</td>
<td>9.77</td>
<td>80.1</td>
<td>15.1</td>
<td>&quot;</td>
<td>&quot;</td>
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</tr>
<tr>
<td>1615</td>
<td>5.75</td>
<td>1.683</td>
<td>4.57</td>
<td>1.05</td>
<td>9.65</td>
<td>76.9</td>
<td>11.9</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)

Sample Odor: Slight ammonia
Sheen: None

Analytical Sampling
Analyses | Check Applicable | Comments
-----------------------------------------------------

Notes:

Equipment: Pump Type, Tubing (Type/Length), Bailier Type, Water Level Meter, Multi-Parameter Meter (Make/SN#), Turbidity Meter (Make/SN#), Filter Lot #

Purge Water Handling: ☑ Discharged to surface ☐ Containerized ☐ Treated (how?)

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
# Groundwater Sampling Form

**Site/Client Name:** GVEA Healy Power Plant  
**Well ID:** MW-5  
**Project #:** 104.00367.16002  
**Sample ID:** MW-5  
**Sample By:** D. Goldberg/M. Wood  
**Sample Time:** 11:03  
**Sample Date:** 10/4/16  
**Weather Conditions:** Rain  
**Weather Conditions:** ~38°F  
**Sampling Method:** Low Flow  
**Duplicate ID:** MW-95  
**MS/MSD:** Yes  
**Trip Blank Required:** No

## Well Information
- **Well Type:** Permanent
- **Well Diameter:** 2 in.
- **Screen Interval:** 24.0 ft BGS to 44.0 ft BGS
- **Well Condition:** Good
- **Stickup:** Yes

## Gauging/Purging Information
- **Depth to Water (ft BTOC):** 15.34
- **Depth to Product (ft BTOC):**
- **Product Thickness (ft):**
- **Tubing/Pump Depth (ft BTOC):**
- **Purge Start Time (24-hr):** 10:40
- **Purge End Time (24-hr):** 11:27
- **Total Purge Time:** 47 min
- **Low Flow:**
- **Max Draw Down:**

## Water Quality Parameters
(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>pH</th>
<th>ORP (mV)</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1044</td>
<td>1.4</td>
<td>10.07</td>
<td>1.121</td>
<td>7.78</td>
<td>12.17</td>
<td>76.1</td>
<td>3.75</td>
<td>15.32</td>
<td></td>
<td>0.02</td>
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<tr>
<td>1049</td>
<td>1.75</td>
<td>9.75</td>
<td>1.44</td>
<td>6.72</td>
<td>12.17</td>
<td>51.1</td>
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<td>15.35</td>
<td></td>
<td>0.01</td>
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<td>1057</td>
<td>2.75</td>
<td>9.60</td>
<td>1.43</td>
<td>5.60</td>
<td>10.18</td>
<td>45.3</td>
<td>0.96</td>
<td>&lt;15 NTU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1057</td>
<td>3.3</td>
<td>9.54</td>
<td>1.42</td>
<td>5.66</td>
<td>12.20</td>
<td>38.8</td>
<td>0.93</td>
<td>15.35</td>
<td></td>
<td>0.01</td>
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<tr>
<td>1100</td>
<td>4.25</td>
<td>9.53</td>
<td>1.45</td>
<td>5.54</td>
<td>12.21</td>
<td>35.2</td>
<td>0.98</td>
<td>&lt;15 NTU</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Parameter Stable (Check applicable) | ✓ | ✓ | ✓ |

**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** None  

## Analytical Sampling
- **Analyses:**
- **Check Applicable:**
- **Comments:**

## Notes:

Equipment:  
- **Pump Type:**  
- **Tubing (Type/Length):**  
- **Bailer Type:**  
- **Water Level Meter:**  
- **Multi-Parameter Meter (Make/SN#):**  
- **Turbidity Meter (Make/SN#):**  
- **Filter Lot #:**

Purge Water Handling:  
- **Discharged to surface** 
- **Containerized**  
- **Treated (how?):**

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable  
Page 1 of ___
Groundwater Sampling Form

**Site/Client Name:** GVEA Healy Power Plant  
**Well ID:** MW-6  
**Project #:** 104.00367.16002

**Sampled By:** Matt Young, Den Ayers  
**Sample ID:** MW-4  
**Sample Time:** 09:31  
**Sample Date:** 10/4/16  
**Weather Conditions:** Rainy/Showery  
**Latitude:** 80°  
**Sampling Method:** ✗ Low Flow  
**Duplicate ID:**  
**MS/MSD:** ✗ No  
**Trip Blank Required:** ✗ Yes  

### Well Information

- **Well Type:** ✗ Permanent  
- **Well Diameter:** 2 in.  
- **Screen Interval:** 32 ft BGS to 11 ft BGS  
- **Well Condition:** ✗ Good  
- **Stickup:** ✗ Yes  
- **Depth to Water (ft BTOC):** 15.82  
- **Total Depth (ft BTOC):** 34.83  
- **Depth to Product (ft. BTOC):**  
- **Product Thickness (ft):** 35  

**Gauging/Purging Information**

- **Draw Down:**  
- **Tubing/Pump Depth (ft. BTOC):**  
- **Purge Start Time (24-hr):** 09:06  
- **Purge End Time (24-hr):** 09:44  
- **Total Purge Time (min):** 35

**LOW FLOW:**

- **Max Draw Down:** (Tubing Depth - Top of Screen Depth) X 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.;
- **Min. purge volume if required:** purge volume (gal) = volume of water/ft (gal/ft) X Water column thickness (ft) X # of casing volumes =

<table>
<thead>
<tr>
<th>Well Diameter - gal/ft</th>
<th>1&quot; - 0.041 gal/ft</th>
<th>2&quot; - 0.163 gal/ft</th>
<th>4&quot; - 0.653 gal/ft</th>
<th>6&quot; - 1.469 gal/ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (24-hr)</td>
<td>Flow Rate (liter/minute)</td>
<td>Purge Volume (gal)</td>
<td>Temp (°C)</td>
<td>Specific Conductance (μS/cm²)</td>
</tr>
<tr>
<td>09:10</td>
<td>1/4</td>
<td>12.16</td>
<td>1.016</td>
<td>3.74</td>
</tr>
<tr>
<td>09:15</td>
<td>1.5</td>
<td>12.38</td>
<td>0.934</td>
<td>1.17</td>
</tr>
<tr>
<td>09:20</td>
<td>3</td>
<td>12.37</td>
<td>0.315</td>
<td>0.92</td>
</tr>
<tr>
<td>09:23</td>
<td>4</td>
<td>12.33</td>
<td>0.311</td>
<td>0.80</td>
</tr>
<tr>
<td>09:26</td>
<td>4.75</td>
<td>12.36</td>
<td>0.310</td>
<td>0.79</td>
</tr>
<tr>
<td>09:29</td>
<td>5.5</td>
<td>12.33</td>
<td>0.310</td>
<td>0.79</td>
</tr>
</tbody>
</table>

- **Parameter Stable:** (Check applicable)
- **Sample Color:** Clear
- **Sample Odor:** None
- **Sheen:** None

### Analytical Sampling

#### Analyses

- **Comments**

### Water Quality Parameters

- **Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume]**

### Notes

- **Equipment:** Pump Type  
- **Tubing (Type/Length):**  
- **Bailer Type:**  
- **Water Level Meter:**  
- **Multi-Parameter Meter (Make/SN#):**  
- **Turbidity Meter (Make/SN#):**  
- **Filter Lot #:**

### Purge Water Handling

- ✗ Discharged to surface  
- ✗ Containerized  
- ✗ Treated (how?)

---

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
### Groundwater Sampling Form

**Site/Client Name:** GVEA Healy Power Plant  
**Well ID:** MV-7  
**Project #:** 104.00367.16002  
**Sample ID:**  
**Sampled By:**  
**Weather Conditions:**  
**Duplicate ID:**  
**Sampling Method:** Low Flow  
**MS/MSD:** Yes  
**Trip Blank Required:** Yes  
**Sample Time:** 14:15  
**Sample Date:** 10/3/16  
**Screen Interval:** ft BGS to ft BGS  
**Well Diameter:** in.  
**Well Condition:** Good  
**Tubing/Pump Depth:** Total Depth ft. BTOC: ft. BTOC:  
**Product Thickness (ft.):** Total Purge Time (min)  
**Max Draw Down:** (Tubing Depth - Top of Screen Depth) X 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft;  
**Min. Purge Volume:** Purge Volume (gal) = Volume of Water (ft. BTOC) X Water column thickness (ft. BTOC) X # of casing volumes = gal.  
**Well Diameter:** 1" - 0.041 gal/ft  
**2" - 0.163 gal/ft  
**4" - 0.653 gal/ft  
**6" - 1.469 gal/ft**  

### Gauging/Purging Information

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm) (±3%)</th>
<th>DO (mg/L) (±10%)</th>
<th>pH</th>
<th>ORP (mV)</th>
<th>Turbidity (NTU) (±10%, &lt; 5 NTU)</th>
<th>DTW (ft BTOC) (Max. ft)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1343</td>
<td>0.3</td>
<td>1/4</td>
<td>8.73</td>
<td>0.504</td>
<td>3.52</td>
<td>6.60</td>
<td>101.7</td>
<td>13.65</td>
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<td>1349</td>
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<td>1/4</td>
<td>8.31</td>
<td>0.493</td>
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<tr>
<td>1354</td>
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<td>1/4</td>
<td>8.22</td>
<td>0.491</td>
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<td>60.0</td>
<td>13.65</td>
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</tr>
<tr>
<td>1358</td>
<td>0.3</td>
<td>1/4</td>
<td>8.27</td>
<td>0.473</td>
<td>1.71</td>
<td>6.74</td>
<td>5.6</td>
<td>13.65</td>
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<td></td>
</tr>
<tr>
<td>1403</td>
<td>0.3</td>
<td>1/4</td>
<td>8.29</td>
<td>0.469</td>
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<td>6.82</td>
<td>5.6</td>
<td>13.67</td>
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<tr>
<td>1405</td>
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<td>1/4</td>
<td>8.26</td>
<td>0.466</td>
<td>1.64</td>
<td>6.85</td>
<td>5.6</td>
<td>13.67</td>
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<td></td>
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<tr>
<td>4111</td>
<td>0.3</td>
<td>1/4</td>
<td>8.33</td>
<td>0.435</td>
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<tr>
<td>1414</td>
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<td>8.25</td>
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<td>6.95</td>
<td>4.5</td>
<td>13.67</td>
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</table>

### Water Quality Parameters

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

- Purge Water Handling: Discharged to surface  
- Containerized  
- Treated (how?)  
- BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
Groundwater Sampling Form

**Site/Client Name:** GVEA Healy Power Plant  
**Well ID:** MW-8  
**Project #:** 104.00367.16002  
**Sample ID:** MW-B  
**Sampled By:** M.Woods  
**Sample Time:** 15:15  
**Sample Date:** 10/3/16  
**Weather Conditions:** Snow, Drizzle  
**Duplicate ID:**  
**Sampling Method:** Low Flow  
**MIS/MSD:** Yes  
**Trip Blank Required:** No  

**Well Information**

- **Well Type:** Permanent  
- **Well Diameter:**  
- **Screen Interval:** 30.0 ft BGS to 15.0 ft BGS  
- **Well Condition:** Good  
- **Screen Interval:**  
- **Stickup:** Yes  
- **Trip Blank Required:** No  

**Gauging/Purging Information**

- **Depth to Water (ft BTOC):** 2.4  
- **Tubing/Pump Depth (ft BTOC):** 2.8  
- **Total Depth (ft BTOC):** 32.9  
- **Purge Start Time (24-hr):** 1419  
- **Depth to Product (ft BTOC):**  
- **Purge Start Time (24-hr):** 1532  
- **Product Thickness (ft):**  
- **Total Purge Time (min):** 

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = (ft), if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.  

**Min. purge volume if required:** purge volume (gal) = volume of water/ft X Water column thickness (ft) X # of casing volumes = gal

**Well Diameter - gal/ft:** 1" = 0.041 gal/ft  
2" = 0.163 gal/ft  
4" = 0.653 gal/ft  
6" = 1.466 gal/ft

**Water Quality Parameters**

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liters/minute)</th>
<th>Purge Volume (gal) (± 3%)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm) (± 3%)</th>
<th>DO (mg/l) (± 10%)</th>
<th>pH</th>
<th>ORP (mV) (± 10 mV)</th>
<th>Turbidity (NTU) (≤ 10 NTU, or ≤ 5 NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft) (Max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1453</td>
<td>3</td>
<td>0</td>
<td>7.26</td>
<td>0.688</td>
<td>4.50</td>
<td>6.66</td>
<td>99.7</td>
<td>6.85</td>
<td>24.83</td>
<td>0.01</td>
</tr>
<tr>
<td>1458</td>
<td>1.25</td>
<td>0.92</td>
<td>7.24</td>
<td>0.610</td>
<td>3.45</td>
<td>6.66</td>
<td>99.5</td>
<td>1.89</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1504</td>
<td>2.5</td>
<td>0.693</td>
<td>7.22</td>
<td>0.693</td>
<td>3.27</td>
<td>6.72</td>
<td>96.2</td>
<td>0.80</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1509</td>
<td>3.5</td>
<td>0.693</td>
<td>7.26</td>
<td>0.693</td>
<td>3.22</td>
<td>6.72</td>
<td>97.3</td>
<td>0.54</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1512</td>
<td>4.0</td>
<td>0.693</td>
<td>7.26</td>
<td>0.693</td>
<td>3.20</td>
<td>6.72</td>
<td>97.6</td>
<td>0.42</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)

**Sample Color:** Clear  
**Sample Odor:** Woody  
**Sheen:** None

**Analytical Sampling**

**Analyses**

**Check Applicable**

**Comments**

**Notes:**

**Equipment:**

- **Pump Type:**  
- **Tubing (Type/Length):**  
- **Bailer Type:**  
- **Water Level Meter:** Multi-Parameter Meter (Make/SN#)  
- **Turbidity Meter (Make/SN#):** Filter Lot #

**Purge Water Handling:** Discharged to surface  
- Containerized

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable

Page 1 of ___
April 2017
### Surface Water Sampling Form

**Site/Client Name:** GVEA Healy Power Plant  
**Location ID:** Recirculation Pond

**Project #:** 104.00367.17001  
**Sample ID:** SW-1

**Sampled By:** Seth Oliver, Ben Swirsh  
**Sample Time:** 1:00 PM

**Weather Conditions:** Clear, light wind, 48°F  
**Sample Date:** 4/4/2017

**Distance from Bank (ft):** 1  
**Depth of Water (ft):** 4.5  
**Flowing Water:** No

**Co-Located Sediment Sample:** No  
**GPS Coordinates:** Northing: 
Easting:

### Location Information

**Sheen Test**  
- No Sheen  
- Sheen Observed: POL-fluid rainbow / Biogenic-platey / Other

### Water Quality Parameters

<table>
<thead>
<tr>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm²)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>Color</th>
<th>Odor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.37</td>
<td>29.55</td>
<td>11.38</td>
<td>18.0</td>
<td>12.73</td>
<td>Clear/Green</td>
<td>Green</td>
<td>No</td>
</tr>
</tbody>
</table>

### Analytical Sampling

<table>
<thead>
<tr>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROIBTEX</td>
<td></td>
<td>DRO</td>
<td>Total Metals</td>
</tr>
<tr>
<td>RRO</td>
<td>Dis. Metals</td>
<td>VOSCs</td>
<td></td>
</tr>
<tr>
<td>SVOSCs</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes (indicate collection method):** Normal collection not accessible due to sheet ice. Sample collected from near east end of pond.

**Equipment Used:** Pump Type Pol, Tubing (Type/Length) Poly, Transfer Bottle Poly, Turbidity Meter (Make/SN#)

**GPS (Type/Unit Number):** Filter Lot #
# Groundwater Sampling Form

**Site/Client Name:** GVEA Healy Power Plant  
**Well ID:** MW-1R

**Project #:** 104.00367.17001  
**Sample #:** MW-1R

**Sampled By:** B. Swink, S. Oliver  
**Sample Time:** 16:40  
**Sample Date:** 4/5/17

**Weather Conditions:** Cloudy, Calm, 25°F  
**Duplicate ID:** 

**Sampling Method:** Low Flow  
**MS/MSD:** Yes  
**Trip Blank Required:** Yes  
**No**

## Well Information

<table>
<thead>
<tr>
<th>Well Type</th>
<th>Temporary</th>
<th>Well Diameter (in)</th>
<th>Screen Interval (ft BGS to ft BGS)</th>
<th>Well Condition</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
<th>If poor, explain in Notes</th>
<th>Stickup</th>
<th>Yes</th>
<th>No</th>
<th>ft above ground</th>
</tr>
</thead>
</table>

## Gauging/Purging Information

<table>
<thead>
<tr>
<th>Depth to Water (ft BTOC)</th>
<th>Tubing/Pump Depth (ft BTOC)</th>
<th>Total Depth (ft BTOC)</th>
<th>Depth to Product (ft BTOC)</th>
<th>Purge Start Time (24-hr)</th>
<th>Purge End Time (24-hr)</th>
<th>Total Purge Time (min)</th>
</tr>
</thead>
</table>

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

**Min. purge volume if required:** purge volume (gal) = volume of water/ft X Water column thickness (ft) X # of casing volumes

## Water Quality Parameters

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μScm⁻¹)</th>
<th>DO (mg/L)</th>
<th>pH</th>
<th>ORP (mV)</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1017</td>
<td>0.35</td>
<td>1.0</td>
<td>4.35</td>
<td>22.39</td>
<td>2.70</td>
<td>10.34</td>
<td>28.1</td>
<td>3.08</td>
<td>19.58</td>
<td></td>
</tr>
<tr>
<td>1020</td>
<td>0.35</td>
<td>1.25</td>
<td>0.16</td>
<td>22.43</td>
<td>1.12</td>
<td>10.58</td>
<td>20.3</td>
<td>19.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1023</td>
<td>0.35</td>
<td>1.5</td>
<td>6.20</td>
<td>22.55</td>
<td>0.87</td>
<td>10.67</td>
<td>19.2</td>
<td>1.11</td>
<td>19.52</td>
<td></td>
</tr>
<tr>
<td>1026</td>
<td>0.35</td>
<td>1.75</td>
<td>0.13</td>
<td>22.64</td>
<td>0.92</td>
<td>10.71</td>
<td>17.8</td>
<td>1.17</td>
<td>19.57</td>
<td></td>
</tr>
<tr>
<td>1029</td>
<td>0.35</td>
<td>2.1</td>
<td>4.07</td>
<td>22.65</td>
<td>0.85</td>
<td>10.73</td>
<td>15.3</td>
<td>1.01</td>
<td>19.52</td>
<td></td>
</tr>
<tr>
<td>1032</td>
<td>0.35</td>
<td>2.4</td>
<td>6.06</td>
<td>22.65</td>
<td>0.75</td>
<td>10.76</td>
<td>12.8</td>
<td>0.96</td>
<td>19.52</td>
<td></td>
</tr>
<tr>
<td>1035</td>
<td>0.35</td>
<td>2.7</td>
<td>6.11</td>
<td>22.69</td>
<td>0.74</td>
<td>10.80</td>
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<td>0.93</td>
<td>19.52</td>
<td></td>
</tr>
<tr>
<td>1038</td>
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<td>3</td>
<td>6.06</td>
<td>22.73</td>
<td>0.73</td>
<td>10.81</td>
<td>9.0</td>
<td>0.93</td>
<td>19.52</td>
<td></td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)  

<table>
<thead>
<tr>
<th>Sample Color:</th>
<th>Clear</th>
<th>Sample Odor:</th>
<th>None</th>
<th>Sheen:</th>
<th>Nonp</th>
</tr>
</thead>
</table>

## Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Notes:

**Equipment:**  
- **Pump Type:** Fairbanks  
- **Tubing (Type/Length):** Poly  
- **Bailer Type:** 
- **Water Level Meter:** Testwell Multi-Parameter Meter (Make/SN#) TSI 556  
- **Turbidity Meter (Make/SN#):** Hach 2100P  
- **Filter Lot #:**  

**Purge Water Handling:**  
- Discharged to surface  
- Containerized  
- Treated (how?)

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable
# Groundwater Sampling Form

**Site/Client Name:** GVEA Healy Power Plant  
**Well ID:** MW-2  
**Project #:** 104.00367.17001  
**Sample ID:** MW-2  
**Sampled By:** BS  
**Sample Time:** 17:20  
**Sample Date:** 4/5/17  
**Weather Conditions:** Cloudy, light wind, 40°F  
**Duplicate ID:**  
**Sampling Method:** Low Flow  
**Screen Interval:** 25 ft BGS to 30 ft BGS  
**Well Type:** Permanent  
**Well Diameter:** 4 in.  
**Well Condition:** Good  
**MS/MSD:** Yes  
**Well Information:**  
**Trip Blank Required:** No  
**Total Depth (ft BTOC):** 30.28  
**Tubing/Pump Depth (ft BTOC):** 13.5  
**Dep end to Product (ft BTOC):**  
**Product Thickness (ft):** 31  
**Total Purge Time (min):** 31  
**Max. Draw Down:** 18.44  
**Purge Volume (gal):** 1.13  
**Water Quality Parameters:**  
(Choose stable parameters for 3 consecutive readings; 4 parameters if practical; each reading taken after pumping a minimum of 1 flow through cell volume)  

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gpm)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>pH</th>
<th>ORP (mV)</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:54</td>
<td>0.36</td>
<td>3.49</td>
<td>3.49</td>
<td>25.62</td>
<td>1.34</td>
<td>7.31</td>
<td>56.4</td>
<td>24.5</td>
<td>10.46</td>
<td></td>
</tr>
<tr>
<td>16:57</td>
<td>0.36</td>
<td>3.39</td>
<td>3.39</td>
<td>25.21</td>
<td>1.00</td>
<td>7.15</td>
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<td>19.8</td>
<td>10.46</td>
<td></td>
</tr>
<tr>
<td>17:00</td>
<td>0.36</td>
<td>3.45</td>
<td>3.45</td>
<td>25.49</td>
<td>0.91</td>
<td>7.21</td>
<td>27.8</td>
<td>23.4</td>
<td>10.46</td>
<td></td>
</tr>
<tr>
<td>17:07</td>
<td>0.36</td>
<td>3.39</td>
<td>3.39</td>
<td>25.48</td>
<td>0.90</td>
<td>7.19</td>
<td>18.6</td>
<td>16.0</td>
<td>10.46</td>
<td></td>
</tr>
<tr>
<td>17:10</td>
<td>0.36</td>
<td>3.41</td>
<td>3.41</td>
<td>27.11</td>
<td>0.80</td>
<td>7.19</td>
<td>9.3</td>
<td>7.88</td>
<td>10.46</td>
<td></td>
</tr>
<tr>
<td>17:15</td>
<td>0.36</td>
<td>3.44</td>
<td>3.44</td>
<td>27.10</td>
<td>0.70</td>
<td>7.18</td>
<td>5.0</td>
<td>9.31</td>
<td>10.46</td>
<td></td>
</tr>
<tr>
<td>17:16</td>
<td>0.36</td>
<td>3.50</td>
<td>3.48</td>
<td>27.84</td>
<td>0.67</td>
<td>7.19</td>
<td>4.8</td>
<td>6.90</td>
<td>10.46</td>
<td></td>
</tr>
</tbody>
</table>

**Parameter Stable (Check applicable):** ✓ ✓ ✓ ✓ ✓ ✓  
**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** None  
**Purge Water Handling:** Discharged to surface  
**Equipment:**  
- **Pump Type:**  
- **Tubing (Type/Length):**  
- **Bailer Type:**  
- **Water Level Meter:**  
- **Multi-Parameter Meter (Make/SN#):**  
- **Turbidity Meter (Make/SN#):**  
- **Filter Lot #:**  

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
**Groundwater Sampling Form**

**Site/Client Name:** GVEA Healy Power Plant  
**Project #:** 104.00367.17001  
**Sampled By:** [Signature]  
**Sample Time:** 1446  
**Sample Date:** 4/16/17

**Weather Conditions:** Clear, light wind 45°F  
**Duplicate ID:** —

**Sampling Method:** [ ] Low Flow  [ ] Other  
**MS/MSD:** [ ] Yes  [ ] No  
**Trip Blank Required:** [ ] Yes  [ ] No

### Well Information

- **Well ID:** MW-4  
- **Sample ID:** MW-4  
- **Well Diameter:** 2 in.
- **Screen Interval:** __________ ft BGS to __________ ft BGS  
- **Well Condition:** [ ] Good  [ ] Fair  [ ] Poor (if fair or poor explain in Notes)  
- **Gauging/Pumping Information:**
  - **Depth to Water (ft BTOC):** 4.34  
  - **Total Depth (ft BTOC):** 16.72
- **Purge Start Time (24-hr):** 1444  
- **Purge End Time (24-hr):** 1444  
- **Low Flow:** [ ] Yes  [ ] No
- **Total Purge Time (min):** 30

### Water Quality Parameters

(Achieve stable parameters for 3 consecutive readings, 4 parameters if practical)  
<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (l/min)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C) (± 3%)</th>
<th>Specific Conductance (µS/cm) (± 3%)</th>
<th>DO (mg/L) (± 10%)</th>
<th>pH (± 0.1)</th>
<th>ORP (mV) (± 10mV)</th>
<th>Turbidity (NTU) (± 10%, &lt; 5 NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft) (Max __________ ft)</th>
</tr>
</thead>
<tbody>
<tr>
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- **Parameter Stable (Check applicable):** [ ] Yes  [ ] No

**Sample Color:** Red Bennett  
**Sample Odor:** None  
**Sheen:** None

### Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

### Notes:

**Equipment:**  
- **Pump Type:** [ ]  
- **Tubing (Type/Length):** LDPE  
- **Bailer Type:**  
- **Water Level Meter:** [ ]  
- **Multi-Parameter Meter (Make/SN#):** 431 556 15103027  
- **Turbidity Meter (Make/SN#):**  
- **Filter Lot #:**  

**Purge Water Handling:** [ ] Discharged to surface  [ ] Contained  [ ] Treated (how?)

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable

Page 1 of
# Groundwater Sampling Form

**Site/Client Name:** GVEA Healy Power Plant  
**Project #:** 104.00367.17001  
**Sample ID:** MW5  
**Sampled By:** B. Swale  
**Sample Time:** 1805  
**Sample Date:** 4/4/17  
**Weather Conditions:** Only Cloudy, It winds 45°  
**Duplicate ID:** MW95  
**Sampling Method:** Low Flow  
**Trip Blank Required:** No  
**Weather Condition:** No  
**Screen Interval:** ft BGS to ft BGS  
**Well Diameter:** in.  
**Stickup:** Yes  
**Well Type:** Permanent  
**Total Purge Time (min):**  
**Well Condition:** Fair  
**Total Depth (ft. BTOC):**  
**Depth to Water (ft BTOC):** 15.5  
**Depth to Product (ft. BTOC):** 27.35  
**Product Thickness (ft):**  
**Tubing/Pump Depth (ft. BTOC):**  
**Purge Start Time (24-hr):** 1728  
**Purge End Time (24-hr):** 1804  
**LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft:**  
**Min. purge volume if required:** purge volume (gal) = volume of water flow (gal/ft) X Water column thickness (ft) X # of casing volumes  
**Well Diameter - gal/ft**  
**Drawdown (ft. BTOC):**  
**Time (24-hr) Field**  
**Flow Rate (liter/minute)**  
**Purge Volume (gal)**  
**Temp (°C)**  
**Specific Conductance (μS/cm)**  
**DO (mg/L)**  
**pH**  
**ORP (mV)**  
**Turbidity (NTU)**  
**DTW (ft BTOC)**  
**Parameter Stable (Check applicable):**  
**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** None  
**Notes:**  
**Equipment:** Pump Type: Diaphragm  
**Tubing (Type/Length):** LDPE  
**Bailer Type:**  
**Water Level Meter:** 110-55  
**Multi-Parameter Meter (Make/Model):** YSI 556  
**Turbidity Meter (Make/SN#):** Hach 210SP  
**Filter Lot #:**  
**Purge Water Handling:** Discharged to surface  
**Containerized:** Yes  
**Treated (how?):**  

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable
# Groundwater Sampling Form

**Site/Client Name:** GVEA Healy Power Plant  
**Project #:** 104.00367.17001  
**Sample ID:** MW-G  
**Sample Time:** 1530  
**Sample Date:** 4/16/17  
**Duplicate ID:**  
**Weather Conditions:** Clear, little wind  
**Weather Condition:** Good  
**MS/MSD:** Yes  
**Trip Blank Required:** Yes  
**Gauging/Purging Information**  
- **Depth to Water (ft BTOC):** 14.05 ft  
- **Total Depth (ft BTOC):** 25.03 ft  
- **Depth to Product (ft BTOC):**  
- **Product Thickness (ft):**  
- **Tubing/Pump Depth (ft BTOC):** 22 ft  
- **Purge Start Time (24-hr):** 1508  
- **Purge End Time (24-hr):** 1528  
- **Total Purge Time (min):** 20 min  

**LOW FLOW:** Max Draw Down = (Tubing Depth – Top of Screen Depth) X 0.25 = (ft); If screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.  
- **Min. purge volume if required:** purge volume (gal) = volume of water/ft (gal/ft) X Water column thickness (ft) X # of casing volumes = gal  
- **Well Diameter – gal/ft:** 1" 0.041 gal/ft  
- **2" 0.163 gal/ft  
- **3" 0.653 gal/ft  
- **4" 1.469 gal/ft  

**Water Quality Parameters**  
(Achieve stable parameters for 3 consecutive readings, 4 parameters critical if practical [each reading taken after pumping a minimum of 1 flow through cell volume])  

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>pH</th>
<th>ORP (mV)</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft) (Max)</th>
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<td>0.25</td>
<td>1.83</td>
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<td>3.49</td>
<td>7.82</td>
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<tr>
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<tr>
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<tr>
<td>1528</td>
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<td>7.89</td>
<td>0.35</td>
<td>14.05</td>
<td></td>
</tr>
</tbody>
</table>

- **Parameter Stable (Check applicable):** ✓ ✓ ✓ ✓ ✓  

**Sample Color:** Clear  
**Sample Odor:**  
**Sheen:**  

**Notes:** Monument need marker flag. Damaged by snow plow.

**Equipment:**  
- **Pump Type:** Peristaltic  
- **Tubing (Type/Length):** LDPE  
- **Bailer Type:**  
- **Water Level Meter:** 100 ft testwell  
- **Multi-Parameter Meter (Make/SN#):** Beckman 2000  
- **Turbidity Meter (Make/SN#):** Hach 2000  
- **Filter Lot #:** 38357  

**Purge Water Handling:** ✓ Discharged to surface  

**BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable**
# Groundwater Sampling Form

**Site/Client Name:** GVEA Healy Power Plant  
**Project #:** 104.00367.17001  
**Sample ID:** MW-7  
**Sampled By:** BS, Oliver  
**Sample Time:** 16:02  
**Sample Date:** 4/5/17  
**Weather Conditions:** Cloudy, Calm, 40°F  
**Sampling Method:** Low Flow  
**Duplicate ID:**  
**MS/MSD:** Yes  
**Trip Blank Required:** Yes  

### Well Information
- **Well Type:** Permanent  
- **Well Diameter:** 2 in.  
- **Screen Interval:** ft BGS to ft BGS  
- **Well Condition:** Good  
- **Stickup:** Yes  
- **Tubing/Pump Depth (ft BTOC):** 16  
- **Total Depth (ft BTOC):** 20.0  
- **Depths to Product (ft BTOC):**  
- **Product Thickness (ft):**  
- **Total Purge Time (min):** 25

### Gauging/Purging Information
- **Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25:** (ft); If screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.  
- **Min. purge volume if required:** purge volume (gal) = volume of water/gal X water column thickness (ft) X number of casing volumes

### Water Quality Parameters

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>pH</th>
<th>ORP (mV)</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
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<td>7.57</td>
<td>-53.3</td>
<td>13.26</td>
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</table>

**Parameter Stable (Check applicable):** ✓ ✓ ✓ ✓ ✓ ✓

**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** None

### Analytical Sampling

#### Analyses

#### Check Applicable

#### Comments

### Notes:

**Equipment:**  
- **Pump Type:** Peristaltic  
- **Tubing (Type/Length):** LDPE  
- **Bailer Type:**  
- **Water Level Meter:**  
- **Multi-Parameter Meter (Make/SN#):** YSI 556 (BI03127)  
- **Turbidity Meter (Make/SN#):** Hach 700P 30573  
- **Filter Lot #:**

**Purge Water Handling:**  
- Discharged to surface  
- Containerized  
- Treated (how?):

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable  
Page 1 of __
Groundwater Sampling Form

Site/Client Name: GVEA Healy Power Plant

Project #: 104.00367.17001

Sampled By: B. Swine, S. Oliver

Sample Time: 145

Sample Date: 4/5/17

Weather Conditions: Cloudy, Calm, about 0°C

Sampling Method: Low Flow

Duplicate ID:

Sample ID: MW-8

Well ID: MW-8

Well Type: Permanent

Well Diameter: 2 in.

Screen Interval: 15 ft BGS to 30 ft BGS

Well Condition: Good

Stickup: Yes No

Trip Blank Required: Yes No

Depth to Water (ft BTOC): 25.48

Total Depth (ft. BTOC): 32.93

Depth to Product (ft. BTOC): 23

Tubing/Pump Depth (ft. BTOC): 31

Purge Start Time (24-hr): 11/8

Purge End Time (24-hr): 11/4

Total Purge Time (min): 23

LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = (ft), if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

Min. purge volume if required: purge volume (gal) = volume of water/ft (gal/ft) X Water column thickness (ft) X # of casing volumes = gal

Well Diameter - gal/ft: 1" - 0.041 gal/ft

4" - 0.163 gal/ft

6" - 1.469 gal/ft

Water Quality Parameters

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>pH</th>
<th>ORP (mV)</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (Max ft)</th>
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<td>0.69</td>
<td>25.48</td>
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</tbody>
</table>

Parameter Stable (Check applicable)

- Check

- Check

- Check

- Check

Sample Color: Clear

Sample Odor: None

Sheen: None

Notes:

Equipment: Peristaltic Pump Type

Tubing (Type/Length) Poly

Bailer Type

Water Level Meter 00+ ft Testwell

Multi-Parameter Meter (Make/Serial#) YSI 556 15E103657

Turbidity Meter (Make/Serial#)

Filter Lot #

Purge Water Handling: Discharged to surface

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable

Page 1 of ___
Groundwater Sampling Form

Site/Client Name: GVEA Healy Power Plant  
Well ID: MW-9

Project #: 104.00367.17001  
Sample ID: MW-9

Sampled By: B Swede, S Diver  
Sample Time: 13:46  
Sample Date: 4/16/17

Weather Conditions: Clear, Windy, ~45°F  
Duplicate ID: 

Sampling Method: Low Flow □ Other MS/MSD □ Yes □ No  
Trip Blank Required: □ Yes □ No

Well Information

Well Type: Permanent □ Temporary  
Well Diameter 2 in.  
Screen Interval: 4 ft GBS to 19 ft BGS

Well Condition: Good □ Fair □ Poor (if fair or poor explain in Notes)  
Stickup □ Yes □ No; If yes, 2.5 ft above ground

Gauging/Purging Information

Depth to Water (ft BTOC): 14.41  
Tubing/Pump Depth (ft. BTOC): 18

Total Depth (ft. BTOC): 22.85 (soft bottom)  
Purge Start Time (24-hr): 1318

Depth to Product (ft. BTOC): 1.44  
Purge End Time (24-hr): 134

Product Thickness (ft)  
Total Purge Time (min) 26

LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) x 0.25 = ___ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

Min. purge volume if required: purge volume (gal) = volume of water(ft) (gal/ft) X Water column thickness (ft) X # of casing volumes = ___ gal

Well Diameter - gal/ft 1" - 0.041 gal/ft 2" - 0.163 gal/ft 4" - 0.653 gal/ft 6" - 1.469 gal/ft

Water Quality Parameters

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (℃)</th>
<th>Specific Conductance (µS/cm) (±3%)</th>
<th>DO (mg/l) (±0.1)</th>
<th>pH</th>
<th>ORP (mV) (±10 mV)</th>
<th>Turbidity (NTU) (±10% or &lt;5 NTU)</th>
<th>DTW (ft BTOC) Drawdown (ft)</th>
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</thead>
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<tr>
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<td>3.44</td>
<td>1936</td>
<td>0.74</td>
<td>1.34</td>
<td>14.1</td>
<td>13.9</td>
<td>14.45</td>
</tr>
<tr>
<td>1344</td>
<td>0.35</td>
<td>1.75</td>
<td>3.28</td>
<td>1945</td>
<td>0.71</td>
<td>1.34</td>
<td>14.1</td>
<td>13.9</td>
<td>14.45</td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)  

Sample Color: Red-Brown (Faint)  
Sample Odor: None  
Sheen: None

Analytical Sampling

Analyses  
Check Applicable  
Comments

Notes:

Equipment: Pump Type: Peristaltic  
Tubing (Type/Length): LDPE  
Bailer Type:  
Water Level Meter: 06-16 testwell  
Multi-Parameter Meter (Make/SN#): YSI 556 (55610327)  
Turbidity Meter (Make/SN#): High  
Filter Lot #

Purge Water Handling: □ Discharged to surface □ Containerized □ Treated (how?):

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable

Page 1 of ___
# Groundwater Sampling Form

**Site/Client Name:** GVEA Healy Power Plant  
**Well ID:** MW-10  
**Project #:** 104.00367.17001  
**Sample ID:** MW-10  
**Sampled By:** B. Swier, S. Oliver  
**Sample Time:** 12/14  
**Sample Date:** 4/6/17  
**Weather Conditions:** Clear, Windy, ~ 40°F  
**Duplicate ID:**  
**Sampling Method:** Low Flow  
**MS/MSD:** Yes  
**Trip Blank Required:** Yes  

## Well Information

<table>
<thead>
<tr>
<th>Well Type</th>
<th>Permanent</th>
<th>Temporary</th>
<th>Well Diameter</th>
<th>Screen Interval</th>
<th>Stickup</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15 ft BGS to 30 ft BGS</td>
<td>Yes No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Well Condition</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(if fair or poor explain in Notes)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gauging/Purging Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth to Water (ft BTOC):</td>
</tr>
<tr>
<td>Total Depth (ft BTOC):</td>
</tr>
<tr>
<td>Purge Start Time (24-hr):</td>
</tr>
<tr>
<td>Purge End Time (24-hr):</td>
</tr>
<tr>
<td>Total Purge Time (min):</td>
</tr>
</tbody>
</table>

**LOW FLOW:**
- Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = ___ ft; if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.
- Min. Purge Volume if required = Purge Volume (gal) = Volume of Water Lift X Water Column Thickness (ft) X # of Casing Volumes = ___ gal

## Water Quality Parameters

(Achieve stable parameters for 3 consecutive readings, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm) (±3%)</th>
<th>DO (mg/L) (±0.1)</th>
<th>pH (±0.1)</th>
<th>ORP (mV) (±10%, or &lt;5 NTU)</th>
<th>Turbidity (NTU) (±10%, or &lt;5 NTU)</th>
<th>DTW (ft BTOC) (Max __ ft)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/39</td>
<td>0.175</td>
<td>0.3</td>
<td>5.41</td>
<td>557</td>
<td>5.30</td>
<td>7.42</td>
<td>179.2</td>
<td>15.7</td>
<td>23.50</td>
<td></td>
</tr>
<tr>
<td>11/39</td>
<td>0.125</td>
<td>1.1</td>
<td>5.81</td>
<td>550</td>
<td>4.31</td>
<td>7.61</td>
<td>145.2</td>
<td>5.82</td>
<td>23.76</td>
<td></td>
</tr>
<tr>
<td>11/39</td>
<td>0.125</td>
<td>1.25</td>
<td>5.59</td>
<td>550</td>
<td>4.31</td>
<td>7.61</td>
<td>145.2</td>
<td>5.47</td>
<td>23.77</td>
<td></td>
</tr>
<tr>
<td>11/39</td>
<td>0.125</td>
<td>1.35</td>
<td>5.63</td>
<td>547</td>
<td>5.33</td>
<td>7.55</td>
<td>142.3</td>
<td>4.41</td>
<td>23.80</td>
<td></td>
</tr>
<tr>
<td>11/39</td>
<td>0.125</td>
<td>1.5</td>
<td>5.01</td>
<td>544</td>
<td>6.03</td>
<td>7.83</td>
<td>136.2</td>
<td>4.52</td>
<td>23.80 (5.46/hr)</td>
<td></td>
</tr>
</tbody>
</table>

- **Parameter Stable (Check applicable):**
  - √

- **Sample Color:** Clear
- **Sample Odor:** None
- **Sheen:** None

## Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
</table>

## Equipment

- **Pump Type:** Peastatic
- **Tubing (Type/Length):** LDPE
- **Bailer Type:**
- **Water Level Meter:** 150 ft, Testwell
- **Multi-Parameter Meter (Make/SN#):** YSI 556 155 031 027
- **Turbidity Meter (Make/SN#):** Hach 2100F 3857.3
- **Filter Lot #:**

## Purge Water Handling

- Discharged to surface
- Containerized
- Treated (how?):

---

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable  
Page 1 of __
June 2017
# Groundwater Sampling Form

**Site/Client Name:** GVEA  
**Well ID:** MW-2  
**Project #:** 114-0031, 11601  
**Sample ID:**  
**Sampled By:** Seth Oliver Farley Grant  
**Sample Time:** 11:32  
**Sample Date:** 01/10/17  
**Weather Conditions:** Sunny  
**Duplicate ID:**  
**Sampling Method:** Low Flow  
**MS/MSD:** Yes  
**Trip Blank Required:** Yes  

## Well Information

<table>
<thead>
<tr>
<th>Well Type</th>
<th>Permanent</th>
<th>Temporary</th>
<th>Well Diameter (in)</th>
<th>Screen Interval (ft BGS to ft BGS)</th>
<th>Well Condition</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
<th>Poor Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Gauging/Purging Information

| Depth to Water (ft BTOC) | 10.58 | Tubing/Pump Depth (ft BTOC): |  
| Total Depth (ft BTOC): | 20.2 | Purge Start Time (24-hr): |  
| Depth to Product (ft BTOC): |  | Purge End Time (24-hr): |  
| Product Thickness (ft) | Total Purge Time (min): |  

**LOW FLOW:**

\[
\text{Max Draw Down} = \left(\text{Tubing Depth} - \text{Top of Screen Depth}\right) \times 0.25 = \text{(ft)}; \text{if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.}
\]

**Min. purge volume if required:**

\[
\text{purge volume (gal)} = \text{volume of water(ft)} \times \text{Water column thickness (ft)} \times \text{# of casing volumes} = \text{gal}
\]

**Well Diameter:**

| 1" | 0.041 gal/ft | 2" | 0.183 gal/ft | 4" | 0.653 gal/ft | 6" | 1.469 gal/ft |

## Water Quality Parameters

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gal/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C) (±3%)</th>
<th>Specific Conductance (μS/cm) (±3%)</th>
<th>DO (mg/L) (±10%)</th>
<th>ORP (mV) (±10mV)</th>
<th>pH</th>
<th>Turbidity (NTU) (±10%, &lt;5 NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft) (Max. 30 ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:01</td>
<td>300</td>
<td>-</td>
<td>-</td>
<td>5.16 (±3%)</td>
<td>1908</td>
<td>5.80</td>
<td>7.18</td>
<td>20.70 10.58</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11:05</td>
<td>300</td>
<td>-</td>
<td>-</td>
<td>3.05 (±3%)</td>
<td>1948</td>
<td>1.07</td>
<td>7.15</td>
<td>10.12 10.58</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11:09</td>
<td>300</td>
<td>-</td>
<td>-</td>
<td>5.05 (±3%)</td>
<td>1953</td>
<td>0.89</td>
<td>7.15</td>
<td>9.50 10.01 0.53</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>11:13</td>
<td>300</td>
<td>-</td>
<td>-</td>
<td>5.51 (±3%)</td>
<td>1946</td>
<td>0.69</td>
<td>7.14</td>
<td>10.03 10.01 0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>11:17</td>
<td>300</td>
<td>-</td>
<td>-</td>
<td>5.35 (±3%)</td>
<td>1949</td>
<td>0.58</td>
<td>7.14</td>
<td>8.74 10.01 0.53</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>11:21</td>
<td>300</td>
<td>-</td>
<td>-</td>
<td>5.93 (±3%)</td>
<td>1936</td>
<td>0.38</td>
<td>7.14</td>
<td>4.22 10.01 0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>11:25</td>
<td>300</td>
<td>-</td>
<td>-</td>
<td>0.15 (±3%)</td>
<td>1940</td>
<td>0.59</td>
<td>7.15</td>
<td>3.00 10.01 0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>11:29</td>
<td>300</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable):

- [ ]  
- [ ]  
- [ ]  
- [ ]  
- [ ]  

## Sample Color:

- [ ]

## Sample Odor:

- [ ]

## Sheen:

- [ ]

## Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
</table>

## Notes:

**Equipment:**

- Pump Type:  
- Tubing (Type/Length):  
- Bailer Type:  
- Water Level Meter:  
- Multi-Parameter Meter (Make/SN#):  
- Turbidity Meter (Make/SN#):  
- Filter Lot #:  

**Purge Water Handling:**

- [ ] Discharged to surface  
- [ ] Containerized  
- [ ] Treated (how?):

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
**Groundwater Sampling Form**

**Site/Client Name:** GVEA  
**Well ID:** WW-3

**Project #:** 104.00467.7901  
**Sample ID:**

**Sampled By:** Seth Glover (flying Grant)  
**Sample Date:** 6/16/17

**Weather Conditions:** 60° sunny  
**Duplicate ID:**

**Sampling Method:**  
**MS/MSD** Yes □ No □  
**Trip Blank Required:** Yes □ No □

**Well Information**

<table>
<thead>
<tr>
<th>Well Type</th>
<th>Well Diameter</th>
<th>Screen Interval</th>
<th>BGS to BGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Permanent</td>
<td>□ Temporary</td>
<td>Yes □ No □</td>
<td>ft BGS □ Yes □ No □</td>
</tr>
</tbody>
</table>

**Well Condition:** □ Good □ Fair □ Poor (if fair or poor explain in Notes)  
**Stickup** Yes □ No □

**Depth to Water (ft BTOC):** 10.37  
**Tubing/Pump Depth (ft. BTOC):**

**Total Depth (ft BTOC):** 15.98  
**Purge Start Time (24-hr):**

**Depth to Product (ft. BTOC):**  
**Purge End Time (24-hr):**

**Product Thickness (ft):**  
**Total Purge Time (min):**

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = ____(ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

**Min. purge volume if required:** purge volume (gal) = volume of water/ft (gal/ft) X Water column thickness (ft) X # of casing volumes = __gal

**Well Diameter - gal/ft:** 1' - 0.041 gal/ft  
2' - 0.163 gal/ft  
4' - 0.653 gal/ft  
8' - 1.469 gal/ft

### Water Quality Parameters

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gal/min)</th>
<th>Purge Volume (gal)</th>
<th>Temp (C°)</th>
<th>Specific Conductance (μScm⁻¹)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:48</td>
<td>200</td>
<td></td>
<td></td>
<td></td>
<td>5.96</td>
<td>24.58</td>
<td>5.1</td>
<td>180.5</td>
<td>6.32</td>
<td>6.5</td>
</tr>
<tr>
<td>09:52</td>
<td>200</td>
<td>-</td>
<td>5.93</td>
<td></td>
<td>24.20</td>
<td>1.90</td>
<td>181.0</td>
<td>7.25</td>
<td>42.24</td>
<td>10.40</td>
</tr>
<tr>
<td>09:56</td>
<td>300</td>
<td>-</td>
<td>5.91</td>
<td></td>
<td>23.94</td>
<td>1.81</td>
<td>181.3</td>
<td>7.21</td>
<td>23.38</td>
<td>10.38</td>
</tr>
<tr>
<td>10:00</td>
<td>300</td>
<td>-</td>
<td>5.95</td>
<td></td>
<td>23.86</td>
<td>1.99</td>
<td>180.3</td>
<td>7.10</td>
<td>23.93</td>
<td>10.38</td>
</tr>
<tr>
<td>10:04</td>
<td>200</td>
<td>-</td>
<td>5.91</td>
<td></td>
<td>23.93</td>
<td>2.14</td>
<td>184.9</td>
<td>7.30</td>
<td>5.93</td>
<td>10.38</td>
</tr>
<tr>
<td>10:06</td>
<td>200</td>
<td>-</td>
<td>5.90</td>
<td></td>
<td>23.85</td>
<td>1.43</td>
<td>183.7</td>
<td>7.30</td>
<td>6.37</td>
<td>10.38</td>
</tr>
<tr>
<td>10:12</td>
<td>300</td>
<td>-</td>
<td>5.95</td>
<td></td>
<td>23.56</td>
<td>2.00</td>
<td>189.5</td>
<td>7.20</td>
<td>3.32</td>
<td>10.38</td>
</tr>
<tr>
<td>10:16</td>
<td>300</td>
<td>-</td>
<td>4.96</td>
<td></td>
<td>23.50</td>
<td>0.00</td>
<td>181.5</td>
<td>7.21</td>
<td>8.12</td>
<td>10.38</td>
</tr>
</tbody>
</table>

**Parameter Stable (Check applicable):** ✔ ✔ ✔ ✔

**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:**

### Analytical Sampling

**Analyses**  
**Check Applicable**  
**Comments**

---

**Notes:**

**Equipment:**  
- Pump Type: Geotech  
- Tubing (Type/Length):  
- Bailer Type:  
- Water Level Meter:  
- Multi-Parameter Meter (Make/SN#): YSI 556  
- Turbidity Meter (Make/SN#):  
- Filter Lot #:  

**Purge Water Handling:** □ Discharged to surface  
□ Containerized  
□ Treated (how?):

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable  
Page 1 of ___
<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gpm)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:09</td>
<td>300</td>
<td>168.3</td>
<td>10.84</td>
<td>2.80</td>
<td>83.4</td>
<td>10.44</td>
<td>7.00</td>
<td>19.05</td>
<td>0.03</td>
<td>19.05</td>
</tr>
<tr>
<td>12:13</td>
<td>300</td>
<td>167.2</td>
<td>9.76</td>
<td>3.03</td>
<td>78.9</td>
<td>10.54</td>
<td>4.76</td>
<td>19.05</td>
<td>0.03</td>
<td>19.05</td>
</tr>
<tr>
<td>12:17</td>
<td>300</td>
<td>166.8</td>
<td>9.73</td>
<td>3.73</td>
<td>73.5</td>
<td>10.61</td>
<td>3.48</td>
<td>19.05</td>
<td>0.03</td>
<td>19.05</td>
</tr>
<tr>
<td>12:21</td>
<td>300</td>
<td>165.6</td>
<td>9.55</td>
<td>0.67</td>
<td>69.6</td>
<td>10.65</td>
<td>2.18</td>
<td>19.05</td>
<td>0.03</td>
<td>19.05</td>
</tr>
<tr>
<td>12:25</td>
<td>300</td>
<td>160.4</td>
<td>9.00</td>
<td>0.11</td>
<td>69.0</td>
<td>10.69</td>
<td>0.71</td>
<td>19.05</td>
<td>0.03</td>
<td>19.05</td>
</tr>
<tr>
<td>12:29</td>
<td>300</td>
<td>160.1</td>
<td>9.73</td>
<td>0.51</td>
<td>60.0</td>
<td>10.67</td>
<td>0.06</td>
<td>19.05</td>
<td>0.03</td>
<td>19.05</td>
</tr>
<tr>
<td>12:33</td>
<td>300</td>
<td>160.1</td>
<td>9.00</td>
<td>0.58</td>
<td>62.3</td>
<td>10.67</td>
<td>0.06</td>
<td>19.05</td>
<td>0.03</td>
<td>19.05</td>
</tr>
<tr>
<td>12:37</td>
<td>300</td>
<td>160.1</td>
<td>9.00</td>
<td>0.58</td>
<td>62.3</td>
<td>10.67</td>
<td>0.06</td>
<td>19.05</td>
<td>0.03</td>
<td>19.05</td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)

Sample Color:  
Sample Odor:  
Sheen:  

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
</table>

Notes:

Equipment: Pump Type:  
Tubing (Type/Length):  
Bailer Type:  
Water Level Meter:  
Multi-Parameter Meter (Make/SN#):  
Turbidity Meter (Make/SN#):  
Filter Lot #:  
Purge Water Handling:  

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
Groundwater Sampling Form

**Site/Client Name:** GVEA Hawai

**Project #:** 104.00367.17004

**Sampled By:** Sam Oliver Carly Gain

**Sample Time:** 13:33

**Sample Date:** 01/01/17

**Weather Conditions:** Partly Cloudy

**Sampling Method:** Low Flow

**Duplicate ID:** None

**MS/MSD:** Yes No Tripl Blank Required: Yes No

### Well Information

<table>
<thead>
<tr>
<th>Well Type</th>
<th>Permanent</th>
<th>Temporary</th>
<th>Well Diameter</th>
<th>Screen Interval</th>
<th>ft BGS to ft BGS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Gauging/Purging Information

<table>
<thead>
<tr>
<th>Depth to Water (ft BTOC)</th>
<th>24.80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Depth (ft BTOC)</td>
<td>26.84</td>
</tr>
<tr>
<td>Depth to Product (ft BTOC)</td>
<td></td>
</tr>
<tr>
<td>Product Thickness (ft)</td>
<td></td>
</tr>
<tr>
<td>Low Flow: Max Draw Down  = (Tubing Depth - Top of Screen Depth) x 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min. purge volume if required</th>
<th>Purge Volume (gal) = volume of water (gal) x Water column thickness (ft) x # of casing volumes = gal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Diameter — gal/ft</td>
<td>1&quot; - 0.041 gal/ft 2&quot; - 0.163 gal/ft 4&quot; - 0.653 gal/ft 6&quot; - 1.469 gal/ft</td>
</tr>
</tbody>
</table>

### Water Quality Parameters

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gpm)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:31</td>
<td>300</td>
<td>10.40</td>
<td>5.39</td>
<td>14.7</td>
<td>7.11</td>
<td></td>
<td></td>
<td></td>
<td>24.83</td>
<td>-0.3</td>
</tr>
<tr>
<td>12:15</td>
<td>300</td>
<td>6.03</td>
<td>5.11</td>
<td>5.38</td>
<td>12.0</td>
<td>-0.81</td>
<td></td>
<td></td>
<td>24.83</td>
<td>-0.3</td>
</tr>
<tr>
<td>12:19</td>
<td>300</td>
<td>5.97</td>
<td>4.44</td>
<td>5.68</td>
<td>12.9</td>
<td>7.01</td>
<td></td>
<td>0.34</td>
<td>24.83</td>
<td>-0.3</td>
</tr>
<tr>
<td>1:32</td>
<td>300</td>
<td>5.47</td>
<td>4.90</td>
<td>5.50</td>
<td>12.3</td>
<td>7.01</td>
<td></td>
<td>0.96</td>
<td>24.83</td>
<td>-0.3</td>
</tr>
<tr>
<td>1:37</td>
<td>300</td>
<td>5.78</td>
<td>4.89</td>
<td>5.46</td>
<td>12.5</td>
<td>7.00</td>
<td></td>
<td>1.29</td>
<td>24.83</td>
<td>-0.3</td>
</tr>
<tr>
<td>1:31</td>
<td>300</td>
<td>5.68</td>
<td>4.89</td>
<td>5.35</td>
<td>12.5</td>
<td>7.01</td>
<td></td>
<td>0.18</td>
<td>24.83</td>
<td>-0.3</td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)

Sample Color: Clear

Sample Odor: None

Sheen: None

### Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
</table>

### Notes

**Equipment:** Pump Type GeoTech Aesthrine

**Water Level Meter:** SLR WL #2

**Tubing (Type/Length):**

**Bailer Type:**

**Multi-Parameter Meter (Make/SN):**

**Turbidity Meter (Make/SN):**

**Filter Lot #:**

**Purge Water Handling:** Discharged to surface

---

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable

---

Page 1 of
# Groundwater Sampling Form

**Site/Client Name:** GIVEA  
**Well ID:** MW-10

**Project #:** 1004.00867, 1900  
**Sample ID:**

**Sampled By:** Seth Oliver, Carly Grant  
**Sample Date:** 5/15/2017

**Weather Conditions:** 50°, Windy, Cloudy  
**Duplicate ID:**

**Sampling Method:** Low Flow  
**MS/MSD:** Yes

## Well Information

- **Well Type:** Permanent  
- **Well Diameter:** 2 in.  
- **Screen Interval:** ft BGS to ft BGS

**Well Condition:** Good  
**Stickup:** Yes

## Gauging/Purging Information

- **Depth to Water (ft BTOC):** 20.32'  
- **Tubing/Pump Depth (ft. BTOC):**

  **Total Depth (ft. BTOC):** 32.24'  
  **Purge Start Time (24-hr):**

  **Depth to Product (ft. BTOC):**

  **Purge End Time (24-hr):**

  **Product Thickness (ft):**

  **Total Purge Time (min):**

**LOW FLOW:** Max Draw Down = (Tubing Depth – Top of Screen Depth) X 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft;

**Min. purge volume if required:** purge volume (gal) = volume of water (gal/ft) X Water column thickness (ft) X # of casing volumes = gal

**Well Diameter – gal/ft:**

1" – 0.041 gal/ft  
2" – 0.163 gal/ft  
4" – 0.653 gal/ft  
6" – 1.469 gal/ft

## Water Quality Parameters

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical)  
(each reading taken after pumping a minimum of 1 ft throughput cell volume)

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gpm)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:44</td>
<td>300</td>
<td>-</td>
<td>6.34</td>
<td>524</td>
<td>6.20</td>
<td>7.79</td>
<td></td>
<td>20.72</td>
<td>-</td>
</tr>
<tr>
<td>15:00</td>
<td>300</td>
<td>-</td>
<td>5.88</td>
<td>615</td>
<td>4.40</td>
<td>7.64</td>
<td></td>
<td>20.72</td>
<td>-</td>
</tr>
<tr>
<td>15:04</td>
<td>300</td>
<td>-</td>
<td>6.88</td>
<td>510</td>
<td>3.86</td>
<td>7.64</td>
<td></td>
<td>20.72</td>
<td>-</td>
</tr>
<tr>
<td>15:08</td>
<td>300</td>
<td>-</td>
<td>6.33</td>
<td>484</td>
<td>2.08</td>
<td>7.68</td>
<td></td>
<td>20.72</td>
<td>-</td>
</tr>
<tr>
<td>15:12</td>
<td>300</td>
<td>-</td>
<td>6.58</td>
<td>461</td>
<td>2.32</td>
<td>7.71</td>
<td></td>
<td>20.72</td>
<td>-</td>
</tr>
<tr>
<td>15:16</td>
<td>300</td>
<td>-</td>
<td>6.68</td>
<td>461</td>
<td>2.50</td>
<td>7.70</td>
<td></td>
<td>20.72</td>
<td>-</td>
</tr>
<tr>
<td>15:20</td>
<td>300</td>
<td>-</td>
<td>7.78</td>
<td>400</td>
<td>2.34</td>
<td>7.67</td>
<td></td>
<td>20.72</td>
<td>-</td>
</tr>
<tr>
<td>15:24</td>
<td>300</td>
<td>-</td>
<td>6.73</td>
<td>473</td>
<td>2.11</td>
<td>7.67</td>
<td></td>
<td>20.72</td>
<td>-</td>
</tr>
</tbody>
</table>

**Parameter Stable (Check applicable):**

- ✔

**Sample Color:**

**Sample Odor:**

**Sheen:**

## Analytical Sampling

**Analyses**

**Check Applicable**

**Comments**

## Notes:

**Equipment:**

- **Pump Type**
- **Tubing (Type/Length)**
- **Bailer Type**
- **Water Level Meter**
- **Multi-Parameter Meter (Make/SN#)**
- **Turbidity Meter (Make/SN#)**
- **Filter Lot #**

**Purge Water Handling:**

- Discharged to surface
- Containerized
- Treated (how?)

---

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable  
Page 1 of ___
# Groundwater Sampling Form

**Site/Client Name:** AVEA  
**Well ID:** mw - 7

**Project #:** 104. 00361. 17001  
**Sample ID:**

**Sampled By:** Sean Oliver, Karley Grant  
**Sample Time:** 6:35  
**Sample Date:** 6/15/2017

**Weather Conditions:** 50% rainy, cloudy  
**Duplicate ID:** None

**Sampling Method:** Low Flow  
**MS/MSD:** Yes  
**Trip Blank Required:** No

---

## Well Information

<table>
<thead>
<tr>
<th>Well Type</th>
<th>Permanent</th>
<th>Temporary</th>
<th>Well Diameter</th>
<th>Screen Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 in.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Well Condition</th>
<th>Good</th>
<th>Fair</th>
<th>Poor (if fair or poor explain in Notes)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Well Information</th>
<th>Sticking</th>
<th>Yes</th>
<th>No</th>
<th>If yes, additional ft above ground</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Depth to Water (ft BTOC):</th>
<th>13.04</th>
<th>13.17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tubing/Pump Depth (ft. BTOC):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Depth (ft. BTOC):</td>
<td>19.98</td>
<td></td>
</tr>
<tr>
<td>Depth to Product (ft. BTOC):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purge Start Time (24-hr):</td>
<td>6:09</td>
<td></td>
</tr>
<tr>
<td>Purge End Time (24-hr):</td>
<td>6:33</td>
<td></td>
</tr>
<tr>
<td>Product Thickness (ft):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Purge Time (min):</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) x 0.25 = ______ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

Min. purge volume if required: purge volume (gal) = volume of water/fth (gal/ft) x Water column thickness (ft) x # of casing volumes = gal

<table>
<thead>
<tr>
<th>Well Diameter</th>
<th>1&quot; - 0.041 gal/ft</th>
<th>2&quot; - 0.163 gal/ft</th>
<th>4&quot; - 0.653 gal/ft</th>
<th>6&quot; - 1.469 gal/ft</th>
</tr>
</thead>
</table>

## Gauging/Purging Information

**Water Quality Parameters**

(Achieve stable parameters for 3 consecutive readings, 4 parameters if practical (each reading taken after pumping a minimum of 1 flow through cell volume))

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gal/min)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm²)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/04</td>
<td>200</td>
<td>385</td>
<td>5.41</td>
<td>383</td>
<td>1.13</td>
<td>-49.5</td>
<td>7.41</td>
<td>10.3</td>
<td>18.21</td>
<td>0.04</td>
</tr>
<tr>
<td>11/13</td>
<td>300</td>
<td>389</td>
<td>5.07</td>
<td>384</td>
<td>0.74</td>
<td>-46.7</td>
<td>7.61</td>
<td>12.8</td>
<td>18.21</td>
<td>0.04</td>
</tr>
<tr>
<td>11/17</td>
<td>300</td>
<td>384</td>
<td>4.65</td>
<td>378</td>
<td>0.40</td>
<td>-43.6</td>
<td>10.01</td>
<td>13.0</td>
<td>18.21</td>
<td>0.04</td>
</tr>
<tr>
<td>11/21</td>
<td>300</td>
<td>374</td>
<td>5.05</td>
<td>374</td>
<td>0.57</td>
<td>-38.8</td>
<td>14.3</td>
<td>20.05</td>
<td>18.21</td>
<td>0.04</td>
</tr>
<tr>
<td>11/25</td>
<td>300</td>
<td>390</td>
<td>4.70</td>
<td>390</td>
<td>0.58</td>
<td>-2.3</td>
<td>12.1</td>
<td>13.21</td>
<td>18.21</td>
<td>0.04</td>
</tr>
<tr>
<td>11/29</td>
<td>300</td>
<td>371</td>
<td>4.75</td>
<td>371</td>
<td>0.64</td>
<td>-47.1</td>
<td>12.1</td>
<td>13.21</td>
<td>18.21</td>
<td>0.04</td>
</tr>
<tr>
<td>11/33</td>
<td>300</td>
<td>372</td>
<td>4.73</td>
<td>372</td>
<td>0.63</td>
<td>-43.4</td>
<td>12.1</td>
<td>13.21</td>
<td>18.21</td>
<td>0.04</td>
</tr>
</tbody>
</table>

**Parameter Stable (Check applicable):** ✔ ✔ ✔ ✔

**Sample Color:**  
**Sample Odor:** None

**Sheen:** None

---

**Analytical Sampling**

**Analyses:**  
**Check Applicable:**  
**Comments:**

---

**Notes:**

**Equipment:**

- **Pump Type:** [Gotech]  
- **Tubing Type/Length:**  
- **Bailer Type:**

- **Water Level Meter:**

- **Multi-Parameter Meter (Make/SN#):**

- **Turbidity Meter (Make/SN#):**

- **Filter Lot #:**

**Purge Water Handling:**

- [ ] Discharged to surface  
- [ ] Containerized  
- [ ] Treated (how?):

---

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable
**Groundwater Sampling Form**

**Site/Client Name:** GVEA Heavy  
**Well ID:** NW-6

**Project #:** 104  
**Sampled By:** [Sign]  
**Sampling Method:** Low Flow  
**Weather Conditions:** 35° Slight Rain

**Duplicate ID:** NA  
**Sample Time:** 17:47  
**Sample Date:** 01/5/2017

**Well Information**

- **Well Type:** Permanent  
- **Well Diameter:** [Inches]  
- **Screen Interval:** [ft BGS] to [ft BGS]

**Well Condition:** Good  
**Sticking:** Yes  
**Trip Blank Required:** Yes

**Gauging/Purging Information**

- **Depth to Water (ft BTOC):** 14.08  
- **Tubing/Pump Depth (ft BTOC):**
  - **Total Depth (ft BTOC):** 24.90  
  - **Purge Start Time (24-hr):** 17:20  
  - **Purge End Time (24-hr):**
  - **Product Thickness (ft):**
  - **Total Purge Time (min):** 17:44

**Low Flow:** Max Draw Down = (Tubing Depth – Top of Screen Depth) x 0.25 = [ft] if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

**Min. purge volume if required:** purge volume (gal) = volume of water(ft³) x Water column thickness (ft) x # of casing volumes = gal

**Well Diameter – gal/ft:** 1" – 0.041 gal/ft  
2" – 0.163 gal/ft  
4" – 0.653 gal/ft  
6" – 1.469 gal/ft

**Water Quality Parameters**

(Achieve stable parameters for 3 consecutive readings, 4 parameters if practical, each reading taken after pumping a minimum of 1 flow through cell volume)

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C) (± 3 %)</th>
<th>Specific Conductance (µS/cm) (± 3 %)</th>
<th>DO (mg/L) (± 10 %)</th>
<th>GRP (mV) (± 0.1)</th>
<th>pH</th>
<th>Turbidity (NTU) (± 10%, or &lt;5 NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (Max ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:20</td>
<td>300</td>
<td>-</td>
<td>4.84</td>
<td>142.2</td>
<td>0.91</td>
<td>77.6</td>
<td>7.99</td>
<td>-</td>
<td>14.10</td>
<td>0.2</td>
</tr>
<tr>
<td>17:24</td>
<td>300</td>
<td>-</td>
<td>4.59</td>
<td>141.9</td>
<td>0.76</td>
<td>76.4</td>
<td>7.94</td>
<td>0.06</td>
<td>14.10</td>
<td>0.2</td>
</tr>
<tr>
<td>17:28</td>
<td>300</td>
<td>-</td>
<td>4.38</td>
<td>141.8</td>
<td>0.64</td>
<td>76.0</td>
<td>7.95</td>
<td>0</td>
<td>14.10</td>
<td>0.2</td>
</tr>
<tr>
<td>17:32</td>
<td>300</td>
<td>-</td>
<td>4.20</td>
<td>142.1</td>
<td>0.65</td>
<td>74.0</td>
<td>7.94</td>
<td>0</td>
<td>14.10</td>
<td>0.2</td>
</tr>
<tr>
<td>17:36</td>
<td>300</td>
<td>-</td>
<td>4.13</td>
<td>142.4</td>
<td>0.39</td>
<td>72.7</td>
<td>7.93</td>
<td>0</td>
<td>14.10</td>
<td>0.2</td>
</tr>
<tr>
<td>17:40</td>
<td>300</td>
<td>-</td>
<td>4.29</td>
<td>142.8</td>
<td>0.44</td>
<td>71.8</td>
<td>7.93</td>
<td>0</td>
<td>14.10</td>
<td>0.2</td>
</tr>
<tr>
<td>17:44</td>
<td>300</td>
<td>8.1</td>
<td>4.40</td>
<td>142.4</td>
<td>0.91</td>
<td>71.4</td>
<td>7.93</td>
<td>0</td>
<td>14.10</td>
<td>0.2</td>
</tr>
</tbody>
</table>

**Parameter Stable (Check applicable):**

- [ ] Yes  
- [ ] No

**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** None

**Analytical Sampling**

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
</table>

**Notes:** Well is jacked high.

**Equipment:**
- **Pump Type:**  
- **Tubing (Type/Length):**  
- **Bailer Type:**  
- **Water Level Meter:**  
- **Multi-Parameter Meter (Make/SN#):**  
- **Turbidity Meter (Make/SN#):**  
- **Filter Lot #:**

**Purge Water Handling:**
- [ ] Discharged to surface  
- [ ] Containerized  
- [ ] Treated (how?):

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
### Groundwater Sampling Form

**Site/Client Name:** EVA

**Project #:** 14.0030-1.700

**Sampled By:** Sam Oliver, Injured Crancy Crunt

**Weather Conditions:** 40° sunny

**Sampling Method:** Low Flow

**Well Information**

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Type</td>
<td>Permanent</td>
</tr>
<tr>
<td>Well Diameter</td>
<td>2 in.</td>
</tr>
<tr>
<td>Screen Interval (ft BGS)</td>
<td>ft BGS to ft BGS</td>
</tr>
<tr>
<td>Stickup</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Gauging/Purging Information**

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth to Water (ft BTOC)</td>
<td>9.17</td>
</tr>
<tr>
<td>Total Depth (ft BTOC)</td>
<td>116.00</td>
</tr>
<tr>
<td>Product Thickness (ft)</td>
<td>Total Purge Time (min)</td>
</tr>
</tbody>
</table>

**LOW FLOW:**

\[
\text{Max Draw Down} = \left(\frac{\text{Tubing Depth} - \text{Top of Screen Depth}}{0.25}\right)\text{X} \left(\frac{\text{ft}}{\text{gal/ft}}\right), \text{if screen interval is not known or water table is below top of screen, then use default value of } 0.3 \text{ ft.}
\]

**Water Quality Parameters**

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical (each reading taken after pumping a minimum of 1 flow through cell volume))

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0830</td>
<td>300</td>
<td>-</td>
<td>7.41</td>
<td>21.94</td>
<td>5.75</td>
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<td>9.82</td>
<td>1.03</td>
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<td>-</td>
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<td>0844</td>
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<td>-</td>
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<td>20.23</td>
<td>2.51</td>
<td>10.44</td>
<td>9.21</td>
<td>147.3</td>
<td>9.03</td>
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<tr>
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<td>-</td>
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<td>19.75</td>
<td>2.33</td>
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<td>166.10</td>
<td>9.83</td>
<td></td>
</tr>
<tr>
<td>0852</td>
<td>300</td>
<td>-</td>
<td>7.44</td>
<td>19.94</td>
<td>2.42</td>
<td>170.0</td>
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<td>30.04</td>
<td>9.83</td>
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</tr>
</tbody>
</table>

Parameter Stable (Check applicable)

**Sample Color:** red

**Sample Odor:**

**Sheen:**

**Analyses**

**Comments**

**Notes:**

**Equipment:**

- **Pump Type:**
- **Tubing (Type/Length):**
- **Bailer Type:**
- **Water Level Meter:**
- **Multi-Parameter Meter (Make/SN#):**
- **Turbidity Meter (Make/SN#):**
- **Filter Lot #:**

**Purge Water Handling:**

- Discharged to surface
- Containerized
- Treated (how?)

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable

Page 1 of ___
Groundwater Sampling Form

Site/Client Name:fonea

Well ID: NW-9

Project #: 104.0036 [1761]
Sample ID:

Sampled By: Soma Oliver, Carley Grant
Sample Time: 14:24
Sample Date: 6/15/17

Weather Conditions: 65°F, partly cloudy/sunny
Duplicate ID: None

Sampling Method: Low Flow
MS/MSD: Yes No
Trip Blank Required: Yes No

Well Information

Well Type: Permanent
Well Diameter: in
Screen Interval: ft BGS to ft BGS
Well Condition: Good Fair Poor
Stickup Yes No
If yes, ft above ground

Gauging/Purging Information

Depth to Water (ft BTOC): 14.46
Tubing/Pump Depth (ft BTOC):
Total Depth (ft BTOC): 24.70
Purge Start Time (24-hr):
Depth to Product (ft BTOC): 13.97
Purge End Time (24-hr):
Product Thickness (ft):
Total Purge Time (min):

LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft;

Min. purge volume if required:

Well Diameter - gal/ft
1' - 0.041 gal/ft
2' - 0.163 gal/ft
4' - 0.653 gal/ft
6' - 1.459 gal/ft

Water Quality Parameters
(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical (each reading taken after pumping a minimum of 1 flow through cell volume))

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gpm)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm²)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1357</td>
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<td>-</td>
<td>7.86</td>
<td>1940</td>
<td>3.30</td>
<td>40.3</td>
<td>11.8</td>
<td>0.90</td>
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<td>0.03</td>
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<td>1739</td>
<td>0.65</td>
<td>85.5</td>
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<td>19.40</td>
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<td>0.03</td>
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<td>1746</td>
<td>0.70</td>
<td>79.3</td>
<td>11.7</td>
<td>19.19</td>
<td>14.42</td>
<td>0.03</td>
</tr>
<tr>
<td>1409</td>
<td>300</td>
<td>-</td>
<td>6.51</td>
<td>1746</td>
<td>0.67</td>
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<td>23.27</td>
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<td>1740</td>
<td>0.72</td>
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<td>1.59</td>
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<td>0.03</td>
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<td>11.22</td>
<td>13.74</td>
<td>14.42</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable):

Sample Color: Red Iron
Sample Odor: None
Sheen: None

Analyses

Analytical Sampling
Check Applicable
Comments

Notes:

Equipment: Pump Type________________________ Tubing (Type/Length)________________________ Bailer Type________________________
Water Level Meter________________________ Multi-Parameter Meter (Make/SN#)________________________
Turbidity Meter (Make/SN#)________________________ Filter Lot #________________________
Purge Water Handling: Discharged to surface Containerized Treated (how?)

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
Groundwater Sampling Form

Site/Client Name: GVEA Heavy
Project #: 104.00367.1701
Sampled By: Seth Oliver
Weather Conditions: 55° cloudy
Sampling Method: Low Flow

Well Information

- Well Type: ✑ Permanent  ❑ Temporary
- Well Diameter: 3 in.
- Screen Interval: _____ ft BGS to _____ ft BGS
- Well Condition: ☑ Good  ❑ Fair  ❑ Poor (if fair or poor explain in Notes)
- Sticup: ☑ Yes  ❑ No; If yes, _____ ft above ground

Depth to Water (ft BTOC): 15.5 ft
Depth to Product (ft BTOC): 24.18 ft
Product Thickness (ft): ___

Gauging/Purging Information

- Tubing/Pump Depth (ft. BTOC): ___
- Purge Start Time (24-hr): ___
- Purge End Time (24-hr): ___
- Total Purge Time (min): ___

Low Flow: Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = ____ (ft);  If screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

Min. purge volume if required: purge volume (gal) = volume of water (gal) X Water column thickness (ft) X # of casing volumes = gal

Well Diameter = gal/ft: 1" - 0.041 gal/ft  2" - 0.163 gal/ft  4" - 0.653 gal/ft  6" - 1.468 gal/ft

Water Quality Parameters

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gpm)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C) (± 3%)</th>
<th>Specific Conductance (μS/cm) (± 3%)</th>
<th>DO (mg/L) (± 10%)</th>
<th>ORP (mV) (± 10mV)</th>
<th>pH (± 0.1)</th>
<th>Turbidity (NTU) (± 10%, or &lt;5 NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00</td>
<td>200</td>
<td></td>
<td>13.28</td>
<td>1950</td>
<td>4.55</td>
<td>14.1</td>
<td>1.149</td>
<td>15.58</td>
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<td>1643</td>
<td>4.67</td>
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<td>1.155</td>
<td>15.56</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>12:42</td>
<td>200</td>
<td></td>
<td>13.02</td>
<td>1590</td>
<td>4.57</td>
<td>12.9</td>
<td>1.148</td>
<td>15.58</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>12:57</td>
<td>200</td>
<td></td>
<td>12.94</td>
<td>1608</td>
<td>4.54</td>
<td>13.0</td>
<td>1.158</td>
<td>15.58</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>12:42</td>
<td>200</td>
<td></td>
<td>12.83</td>
<td>1561</td>
<td>4.56</td>
<td>9.6</td>
<td>1.159</td>
<td>8.65</td>
<td>15.58</td>
<td></td>
</tr>
<tr>
<td>12:47</td>
<td>200</td>
<td></td>
<td>12.91</td>
<td>1561</td>
<td>4.54</td>
<td>9.1</td>
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<td>6.39</td>
<td>15.58</td>
<td></td>
</tr>
<tr>
<td>12:52</td>
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<td>12.91</td>
<td>1561</td>
<td>4.55</td>
<td>7.0</td>
<td>1.122</td>
<td>5.10</td>
<td>15.58</td>
<td></td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable) ☑ ☑ ☑ ☑

Sample Color:  Sample Odor:  Sheen:

Analyses

Analytical Sampling

Check Applicable

Comments

Notes:

Equipment:
- Pump Type:
- Tubing (Type/Length):
- Bailer Type:
- Water Level Meter:
- Multi-Parameter Meter (Make/SN#):
- Turbidity Meter (Make/SN#):
- Filter Lot #:

Purge Water Handling: ☑ Discharged to surface  ❑ Containerized  ❑ Treated (how?):

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
### Surface Water Sampling Form

**Site/Client Name:** GVEA Healy Power Plant  
**Location ID:** SW-1

**Project #:** 104.00357.17001  
**Sample ID:** SW-3

**Sampled By:**  
**Sample Time:** 14:40  
**Sample Date:** 1/4/19

**Weather Conditions:**  
**Duplicate ID:**  
**MS/MSD:** No  
**Trip Blank Required:** No

### Location Information

**Distance from Bank (ft):** 3  
**Depth of Water (ft):** 1.5  
**Flowing Water:** Stagnant Pool

**Co-Located Sediment Sample:** No  
**GPS Coordinates:**

### Sheen Test

- No Sheen
- Sheen Observed: POL-fluid rainbow / Biogenic-platey / Other

### Water Quality Parameters

<table>
<thead>
<tr>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>Color</th>
<th>Odor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18.3</td>
<td>5.15</td>
<td>61.5</td>
<td>11.60</td>
<td>0.27</td>
<td>Clear</td>
<td>Fresh</td>
</tr>
</tbody>
</table>

### Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRO/BTEX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRO</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>RRO</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>VOCs</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>SVOCs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes (indicate collection method):**

- 500 mL HDPE

**Equipment Used:**
- Pump Type
- Tubing (Type/Length)
- Transfer Bottle

**Multi-Parameter Meter (Make/SN#):** YSI 5560

**Turbidity Meter (Make/SN#):** Lamotte

**GPS (Type/Unit Number):**

---

**Site/Client Name:**  
**Location ID:**

**Project #:**  
**Sample ID:**

**Sampled By:**  
**Sample Time:**  
**Sample Date:**

**Weather Conditions:**  
**Duplicate ID:**

**MS/MSD:** No  
**Trip Blank Required:** No

### Location Information

**Distance from Bank (ft):**  
**Depth of Water (ft):**

**Flowing Water:**

**Co-Located Sediment Sample:** No  
**GPS Coordinates:**

### Sheen Test

- No Sheen
- Sheen Observed: POL-fluid rainbow / Biogenic-platey / Other

### Water Quality Parameters

<table>
<thead>
<tr>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>Color</th>
<th>Odor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18.3</td>
<td>5.15</td>
<td>61.5</td>
<td>11.60</td>
<td>0.27</td>
<td>Clear</td>
<td>Fresh</td>
</tr>
</tbody>
</table>

### Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
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<tbody>
<tr>
<td>GRO/BTEX</td>
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</tr>
<tr>
<td>DRO</td>
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</tr>
<tr>
<td>RRO</td>
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<tr>
<td>VOCs</td>
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<tr>
<td>SVOCs</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**Notes (indicate collection method):**

**Equipment Used:**
- Pump Type
- Tubing (Type/Length)
- Transfer Bottle

**Multi-Parameter Meter (Make/SN#):**

**Turbidity Meter (Make/SN#):**

**GPS (Type/Unit Number):**
# Groundwater Sampling Form

**Site/Client Name:** GVEA, Hwy

**Well ID:** MW-10

**Sample ID:** MW-10

**Sampled By:** Stihl, Oliver, Carly Grant

**Sample Time:** 09:30

**Sample Date:** 12/21/17

**Duplicate ID:**

**Weather Conditions:** 60° light rain

**Sampling Method:** Low Flow

**Well Information**

- **Well Type:** Permanent
- **Well Diameter:** 2 in.
- **Screen Interval:** FT BGS to FT BGS
- **Well Condition:** Good
- **Tubing/Pump Depth (ft. BTOC):**
- **Total Depth (ft. BTOC):**
- **Product (ft. BTOC):**
- **Product Thickness (ft):**
- **LOW FLOW:**
- **Max Draw Down:** (Tubing Depth - Top of Screen Depth) X 0.25 = (ft) if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.
- **Min. purge volume if required:** purge volume (gal) = volume of water/ft X Water column thickness X # of casing volumes = gal
- **Purge Volume (gal):**
- **Specific Conductance (μS/cm):**
- **DO (mg/L):**
- **ORP (mV):**
- **pH:**
- **Turbidity (NTU):**
- **Drawdown (ft):**

**Water Quality Parameters**

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical, each reading taken after pumping a minimum of 1 flow through cell volume)

<table>
<thead>
<tr>
<th>Time</th>
<th>Flow Rate</th>
<th>Purge Volume</th>
<th>Temp (°C)</th>
<th>Specific Conductance</th>
<th>DO</th>
<th>ORP</th>
<th>pH</th>
<th>Turbidity</th>
<th>Drawdown</th>
</tr>
</thead>
<tbody>
<tr>
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<td>5.98</td>
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<td>18.40</td>
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<td>5.50</td>
<td>4.80</td>
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<td>3.33</td>
<td>18.40</td>
</tr>
<tr>
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<td>0.6</td>
<td>4.17</td>
<td>4.56</td>
<td>1.57</td>
<td>195.0</td>
<td>7.98</td>
<td>8.42</td>
<td>15.40</td>
</tr>
<tr>
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<td>-</td>
<td>4.74</td>
<td>4.50</td>
<td>0.84</td>
<td>182.5</td>
<td>8.06</td>
<td>5.55</td>
<td>10.40</td>
</tr>
<tr>
<td>0922</td>
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<td>0.6</td>
<td>4.83</td>
<td>4.48</td>
<td>0.62</td>
<td>162.0</td>
<td>8.24</td>
<td>3.40</td>
<td>18.40</td>
</tr>
<tr>
<td>0926</td>
<td>0.275</td>
<td>-</td>
<td>4.47</td>
<td>4.47</td>
<td>0.82</td>
<td>154.4</td>
<td>8.35</td>
<td>3.25</td>
<td>18.40</td>
</tr>
</tbody>
</table>

**Notes:**

**Equipment:**
- **Pump Type:** Geopump
- **Tubing (Type/Length):** 15 gauge silicon
- **Bailer Type:**
- **Water Level Meter:** Multi-Parameter Meter (Make/SN#)
- **Turbidity Meter (Make/SN#):** LaMure 2020 & Turbidity
- **Filter Lot #:**

**Purge Water Handling:** Discharged to surface

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
Groundwater Sampling Form

Site/Client Name: GVEA
Well ID: MW-9
Project #: 104.0034E1.17001
Sampled By: T. EVANS & S. OUVIN
Sample Time: 08:45
Sample Date: 7/15/17
Weather Conditions: Rain

Sampling Method: Low Flow
Duplicate ID:
MS/MSD: Yes
Trip Blank Required: Yes

Well Information
Well Type: Permanent
Well Diameter: 2 in.
Screen Interval: ft BGS to ft BGS
Well Condition: Good

Gauging/Purging Information
Depth to Water (ft BTOC): 12.23
Tubing/Pump Depth (ft BTOC):
Total Depth (ft BTOC):
Purge Start Time (24-hr):
Depth to Product (ft BTOC):
Purge End Time (24-hr):
Product Thickness (ft):
Total Purge Time (min):

LOW FLOW: Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

Min. purge volume if required: Volume = Volume of water in ft X Water column thickness (ft) X # of casing volumes = gal

Well Diameter - gal/ft
1" - 0.041 gal/ft
2" - 0.163 gal/ft
4" - 0.653 gal/ft
6" - 1.469 gal/ft

Water Quality Parameters
(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical (each reading taken after pumping a minimum of 1 flow through cell volume))

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:21</td>
<td>350</td>
<td></td>
<td>11.93</td>
<td>1451</td>
<td>4.99</td>
<td>143.0</td>
<td>10.41</td>
<td>11.3</td>
<td>13.24</td>
<td>.01</td>
</tr>
<tr>
<td>08:20</td>
<td>350</td>
<td></td>
<td>11.71</td>
<td>1465</td>
<td>1.89</td>
<td>127.0</td>
<td>10.88</td>
<td>9.03</td>
<td>13.24</td>
<td>.01</td>
</tr>
<tr>
<td>08:31</td>
<td>350</td>
<td></td>
<td>11.83</td>
<td>1477</td>
<td>1.20</td>
<td>121.1</td>
<td>11.99</td>
<td>9.92</td>
<td>13.24</td>
<td>.01</td>
</tr>
<tr>
<td>08:34</td>
<td>350</td>
<td></td>
<td>11.80</td>
<td>1490</td>
<td>1.14</td>
<td>119.9</td>
<td>11.31</td>
<td>9.54</td>
<td>13.24</td>
<td>.01</td>
</tr>
<tr>
<td>08:37</td>
<td>350</td>
<td></td>
<td>11.58</td>
<td>1501</td>
<td>0.99</td>
<td>112.7</td>
<td>11.37</td>
<td>5.00</td>
<td>13.24</td>
<td>.01</td>
</tr>
<tr>
<td>08:40</td>
<td>350</td>
<td>10</td>
<td>11.58</td>
<td>1499</td>
<td>0.93</td>
<td>110.2</td>
<td>11.40</td>
<td>5.12</td>
<td>13.24</td>
<td>.01</td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)

Sample Color: Light brown
Sample Odor: Sheen:

Notes:
Hydraulic fluid puddles in area, above ground, surrounding MW-9

Equipment:
Pump Type: 
Tubing (Type/Length): 
Bailer Type: 
Water Level Meter: 
Multi-Parameter Meter (Model/Serial): 
Turbidity Meter (Model/Serial):
Filler Lot #:

Purge Water Handling:
Discharged to surface

BGS = Below Ground Surface
BTOC = Below Top of Casing
NA = Not Applicable
Page 1 of ___
**Groundwater Sampling Form**

**Site/Client Name:** GVEA Heavy  
**Well ID:** MW-8  
**Project #:** 104.0083.7.1700  
**Sampled By:** Seth Oliver & Carry Grant  
**Sample ID:** MW-8  
**Sample Time:** 11/8  
**Sample Date:** 7/25/17  
**Weather Conditions:** Low Flow  
**Duplicate ID:**  
**MS/MSD:** Yes  
**Trip Blank Required:** No  
**Well Information**

- **Well Type:** Permanent  
- **Well Diameter:** 6 in.  
- **Screen Interval:** 30 ft BGS to 15 ft BGS  
- **Well Condition:** Good  
- **Screen:** Yes  
- **Stuck:** No  
- **Pumping:** 60 ° Overcast  
- **Total Purge Time (min):**  
- **Screen:** Yes  
- **Pumping:** No  
- **Depth to Water (ft BTOC):** 24.35 ft  
- **Tubing/Pump Depth (ft BTOC):**  
- **Total Depth (ft BTOC):** 20.00 ft  
- **Purge Start Time (24-hr):** 10/4  
- **Purge End Time (24-hr):**  
- **Product Thickness (ft):**  
- **Total Purge Time:**  
- **Low Flow:** Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25  
- **Min. Purge Volume if Required:** Purge Volume (gal) = Volume of Water/ft X Water Column Thickness (ft) X Casing Volume (ft)  
- **Well Diameter (gal/ft):** 1" - 0.041 gal/ft  
- **2" - 0.163 gal/ft**  
- **4" - 0.663 gal/ft**  
- **6" - 1.460 gal/ft**  

**Gauging/Purging Information**

- **Flow Rate (liter/minute):**  
- **Purging Volume (gallons):**  
- **Temp (°C):** (± 5 °C)  
- **Specific Conductance (μS/cm):** (± 3%)  
- **DO (mg/L):** (± 10%)  
- **ORP (mV):** (± 10mV)  
- **pH:** (± 0.1)  
- **Turbidity (NTU):** (± 10%, or ≤ 5 NTU)  
- **DTW (ft BTOC):**  
- **Drawdown (ft):**  

**Water Quality Parameters**

(Achieve stable parameters for 3 consecutive readings, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gallons)</th>
<th>Temp (°C) (± 5%)</th>
<th>Specific Conductance (μS/cm) (± 3%)</th>
<th>DO (mg/L) (± 10%)</th>
<th>ORP (mV) (± 10mV)</th>
<th>pH (± 0.1)</th>
<th>Turbidity (NTU) (± 10%, or ≤ 5 NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft) (Max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1047</td>
<td>350</td>
<td>0.6</td>
<td>6.59</td>
<td>578</td>
<td>14.78</td>
<td>199.5</td>
<td>8.16</td>
<td>0.3</td>
<td>24.57</td>
<td>0.02</td>
</tr>
<tr>
<td>1052</td>
<td>350</td>
<td>0.6</td>
<td>6.17</td>
<td>576</td>
<td>4.17</td>
<td>157.2</td>
<td>7.84</td>
<td>-</td>
<td>24.57</td>
<td>0.02</td>
</tr>
<tr>
<td>1055</td>
<td>350</td>
<td>0.6</td>
<td>5.90</td>
<td>577</td>
<td>4.17</td>
<td>149.6</td>
<td>7.90</td>
<td>-</td>
<td>24.57</td>
<td>0.02</td>
</tr>
<tr>
<td>1058</td>
<td>350</td>
<td>0.6</td>
<td>5.89</td>
<td>578</td>
<td>4.04</td>
<td>135.8</td>
<td>8.07</td>
<td>-</td>
<td>24.57</td>
<td>0.02</td>
</tr>
<tr>
<td>1101</td>
<td>350</td>
<td>0.6</td>
<td>5.89</td>
<td>578</td>
<td>3.43</td>
<td>135.4</td>
<td>8.19</td>
<td>0.04</td>
<td>24.57</td>
<td>0.02</td>
</tr>
<tr>
<td>1104</td>
<td>350</td>
<td>0.6</td>
<td>5.89</td>
<td>578</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Parameter Stable (Check applicable):** Yes
- **Sample Color:**  
- **Sample Odor:**  
- **Sheen:**

**Analytical Sampling**

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
</table>

**Notes:**

- **Equipment:** Pump Type, Tubing (Type/Length), Bailer Type, Water Level Meter, Multi-Parameter Meter (Make/SN#), Turbidity Meter (Make/SN#)
- **Purge Water Handling:** Discharged to Surface, Containerized, Treated (how?)

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
# Groundwater Sampling Form

### Site/Client Name: EVEA

**Well ID:** MW-7

Project #: 104.003M1, 17001  
Sampled By: C. Grant & S. Oliver  
Sample Date: 7/25/17

Weather Conditions: Cloudy, Up Light Rain 
Duplicate ID: None

**Sampling Method:** Low Flow  
MS/MSD: Yes  
Trip Blank Required: No

### Well Information

- **Well Diameter:** 2 in.  
- Screen Interval: ft BGS to ft BGS
- **Well Condition:** Good  
- **Stickup:** Yes  
- **Depth to Water (ft BTOC):** 13.59
- **Total Depth (ft BTOC):**
- **Depth to Production (ft BTOC):**
- **Product Thickness (ft):**

### Gauging/Purging Information

- **Tubing/Pump Depth (ft BTOC):**
- **Purge Start Time:** 24 hr
- **Purge End Time (24-hr):**
- **Total Purge Time (min):**
- **Min. purge volume if required:**
  - Purge Volume (gal) = volume of water/ft (gal/ft) X Water column thickness (ft) X # of casing volumes = gal
- **Well Diameter - gal/ft:** 1" - 0.041 gal/ft, 2" - 0.163 gal/ft, 4" - 0.653 gal/ft, 6" - 1.489 gal/ft

### Water Quality Parameters

(Achieve stable parameters for 3 consecutive readings, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gpm/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C ± 3 %)</th>
<th>Specific Conductance (µS/cm) ± 10 %</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU) ± 10 %, or &lt;5 NTU</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:57</td>
<td>350</td>
<td>-</td>
<td>9.010</td>
<td>439</td>
<td>1.35</td>
<td>143</td>
<td>8.42</td>
<td>18.0</td>
<td>13.07</td>
<td>.08</td>
</tr>
<tr>
<td><strong>10:04</strong></td>
<td>350</td>
<td>-</td>
<td>7.180</td>
<td>441</td>
<td>0.83</td>
<td>158.5</td>
<td>7.77</td>
<td>10.2</td>
<td>13.07</td>
<td>.08</td>
</tr>
<tr>
<td>10:09</td>
<td>350</td>
<td>-</td>
<td>7.160</td>
<td>427</td>
<td>0.64</td>
<td>136.1</td>
<td>8.04</td>
<td>24.3</td>
<td>13.07</td>
<td>.08</td>
</tr>
<tr>
<td>10:12</td>
<td>350</td>
<td>-</td>
<td>7.040</td>
<td>425</td>
<td>0.59</td>
<td>129.1</td>
<td>8.14</td>
<td>4.92</td>
<td>13.07</td>
<td>.08</td>
</tr>
<tr>
<td>10:15</td>
<td>350</td>
<td>-</td>
<td>7.010</td>
<td>424</td>
<td>0.57</td>
<td>123.8</td>
<td>8.17</td>
<td>1.97</td>
<td>13.07</td>
<td>.08</td>
</tr>
<tr>
<td>10:18</td>
<td>350</td>
<td>-</td>
<td>7.590</td>
<td>421</td>
<td>0.52</td>
<td>119.5</td>
<td>8.18</td>
<td>1.97</td>
<td>13.07</td>
<td>.08</td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)

### Sample Color:
- None

### Sample Odor:
- None

### Sheen:
- None

### Analytical Sampling

Analyses | Check Applicable | Comments
---|---|---

### Notes:

**Equipment:**
- **Pump Type:**
- **Tubing (Type/Length):**
- **Bailer Type:**
- **Water Level Meter:**
- **Multi-Parameter Meter (Make/SN#):**
- **Turbidity Meter (Make/SN#):**
- **Filter Lot #:**

**Purge Water Handling:**
- Discharged to surface  
- Containerized  
- Treated (how?):

*BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable*
# Groundwater Sampling Form

**Site/Client Name:** AVEA  
**Well ID:** [MW-2, MW-5]  
**Project #:** 104.00357.17201  
**Sample ID:**  
**Sampled By:** S. Oliver & C. Grant  
**Sample Time:** 15:00  
**Sample Date:** 7/24/17  
**Weather Conditions:** Rain/Cold  
**Duplicate ID:**  
**MS/MSD:** No  
**Trip Blank Required:** No  

## Well Information
- **Well Type:** Permanent  
- **Well Diameter:** in.  
- **Screen Interval:** ft BGS to ft BGS  
- **Well Condition:** Good  
- **Stickup:** No  
- **Top of Screen:** Yes, ft above ground  
- **Tubing/Pump Depth (ft BTOC):**  
- **Purge Start Time (24-hr):**  
- **Purge End Time:** 24-hr  
- **Product Thickness (ft):**  
- **Total Purge Time (min):**  

## Gauging/Purging Information
- **Max Draw Down:** (Tubing Depth - Top of Screen Depth) X 0.25 = (ft): if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft;  
- **Min. purge volume if required:** purge volume (gal) = volume of water (gal) X Water column thickness (ft) X # of casing volumes = gal  
- **Well Diameter - gal/ft:** 1' - 0.041 gal/ft  
- **2' - 0.163 gal/ft**  
- **4' - 0.653 gal/ft**  
- **6' - 1.469 gal/ft**  

## Water Quality Parameters
(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gpm, l/min)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft) (Max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:37</td>
<td>350</td>
<td>-</td>
<td>18.43</td>
<td>1559</td>
<td>2.84</td>
<td>0.97</td>
<td>1.28</td>
<td>14.21</td>
<td>14.4</td>
<td>14.1</td>
</tr>
<tr>
<td>14:42</td>
<td>350</td>
<td>-</td>
<td>18.48</td>
<td>1571</td>
<td>2.44</td>
<td>0.45</td>
<td>1.14</td>
<td>14.14</td>
<td>14.1</td>
<td>14.1</td>
</tr>
<tr>
<td>14:47</td>
<td>350</td>
<td>-</td>
<td>18.53</td>
<td>1506</td>
<td>1.91</td>
<td>0.37</td>
<td>1.22</td>
<td>14.14</td>
<td>14.1</td>
<td>14.1</td>
</tr>
<tr>
<td>14:50</td>
<td>350</td>
<td>-</td>
<td>18.57</td>
<td>1508</td>
<td>1.87</td>
<td>0.22</td>
<td>1.12</td>
<td>14.14</td>
<td>14.1</td>
<td>14.1</td>
</tr>
<tr>
<td>14:53</td>
<td>350</td>
<td>-</td>
<td>18.94</td>
<td>1574</td>
<td>2.01</td>
<td>0.10</td>
<td>1.12</td>
<td>14.14</td>
<td>14.1</td>
<td>14.1</td>
</tr>
<tr>
<td>14:56</td>
<td>350</td>
<td>11.0</td>
<td>18.57</td>
<td>1570</td>
<td>1.98</td>
<td>0.45</td>
<td>1.40</td>
<td>14.14</td>
<td>14.1</td>
<td>14.1</td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)  
Sample Odor: ✔  

## Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
</table>

Notes:

**Equipment:**  
- Pump Type:  
- Tubing (Type/Length):  
- Bailer Type:  
- Water Level Meter:  
- Multi-Parameter Meter (Make/SN#):  
- Turbidity Meter (Make/SN#):  
- Filter Lot #:  

**Purge Water Handling:** Discharged to surface Containerized Treated (how?):  

---  

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable  
Page 1 of ___
# Groundwater Sampling Form

**Site/Client Name:** AVEA  
**Well ID:** MW-4

**Project #:** 104-00367-17001  
**Sample ID:** 0-208

**Sampled By:** C. Grant & S. Oliver  
**Sample Date:** 7/24/17

**Weather Conditions:** Rainy, Cloudy  
**Duplicate ID:**

**Sampling Method:** Low Flow

## Well Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Type:</td>
<td>Permanent</td>
</tr>
<tr>
<td>Well Diameter in.</td>
<td>2</td>
</tr>
<tr>
<td>Screen Interval ft BGS to ft BGS</td>
<td></td>
</tr>
<tr>
<td>Well Condition</td>
<td>Good</td>
</tr>
<tr>
<td>Stickup</td>
<td>Yes</td>
</tr>
</tbody>
</table>

## Gauging/Purging Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth to Water (ft BTOC)</td>
<td>8.47</td>
</tr>
<tr>
<td>Tubing/Pump Depth (ft BTOC):</td>
<td></td>
</tr>
<tr>
<td>Total Depth (ft BTOC):</td>
<td></td>
</tr>
<tr>
<td>Depth to Product (ft BTOC):</td>
<td></td>
</tr>
<tr>
<td>Purge Start Time (24-hr)</td>
<td></td>
</tr>
<tr>
<td>Purge End Time (24-hr)</td>
<td></td>
</tr>
<tr>
<td>Product Thickness (ft)</td>
<td></td>
</tr>
<tr>
<td>Total Purge Time (min)</td>
<td></td>
</tr>
</tbody>
</table>

**Low Flow:**

Max Draw Down = (Tubing Depth - Top of Screen Depth) \[\times 0.25\] (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

Min. purge volume if required: purge volume (gal) = volume of water/ft \(\times\) (gal/ft) \(\times\) Water column thickness (ft) \(\times\) # of casing volumes = gal

<table>
<thead>
<tr>
<th>Well Diameter - gal/ft</th>
<th>1(^{st}) (-0.041) gal/ft</th>
<th>2(^{nd}) (-0.163) gal/ft</th>
<th>4(^{th}) (-0.653) gal/ft</th>
<th>6(^{th}) (-1.469) gal/ft</th>
</tr>
</thead>
</table>

## Water Quality Parameters

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical (each reading taken after pumping a minimum of 1 flow through cell volume))

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (AVL)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C) (±3%)</th>
<th>Specific Conductance (µS/cm) (±3%)</th>
<th>DO (mg/L) (±10%)</th>
<th>ORP (mV) (±10mV)</th>
<th>pH</th>
<th>Turbidity (NTU) (±10%, or &lt;5)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft) (Max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1340</td>
<td>325</td>
<td></td>
<td>12.47</td>
<td>140.5</td>
<td>0.85</td>
<td>105.0</td>
<td>8.81</td>
<td>-</td>
<td>8.47</td>
<td>0</td>
</tr>
<tr>
<td>1345</td>
<td>325</td>
<td></td>
<td>12.45</td>
<td>157.1</td>
<td>0.78</td>
<td>99.0</td>
<td>8.17</td>
<td>-</td>
<td>8.47</td>
<td>0</td>
</tr>
<tr>
<td>1350</td>
<td>325</td>
<td></td>
<td>12.41</td>
<td>157.9</td>
<td>0.70</td>
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<td>8.65</td>
<td>-1.8</td>
</tr>
<tr>
<td>1353</td>
<td>325</td>
<td></td>
<td>12.38</td>
<td>158.8</td>
<td>0.64</td>
<td>96.1</td>
<td>8.81</td>
<td>-</td>
<td>8.65</td>
<td>-1.8</td>
</tr>
<tr>
<td>1354</td>
<td>300</td>
<td></td>
<td>12.42</td>
<td>158.9</td>
<td>0.64</td>
<td>96.1</td>
<td>8.81</td>
<td>-</td>
<td>8.65</td>
<td>-1.8</td>
</tr>
<tr>
<td>1359</td>
<td>300</td>
<td></td>
<td>12.42</td>
<td>158.9</td>
<td>0.64</td>
<td>94.9</td>
<td>8.81</td>
<td>-</td>
<td>8.65</td>
<td>-1.8</td>
</tr>
<tr>
<td>1402</td>
<td>300</td>
<td></td>
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<td>158.9</td>
<td>0.59</td>
<td>94.0</td>
<td>8.81</td>
<td>-</td>
<td>8.65</td>
<td>-1.8</td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)

**Sample Color:** Rust Orange
**Sample Odor:** Dark

## Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

**Equipment:**

- Pump Type
- Tubing (Type/Length)
- Bailer Type
- Water Level Meter
- Multi-Parameter Meter (Make/SN#)
- Turbidity Meter (Make/SN#)
- Filter Lot #

**Purge Water Handling:**

- Discharged to surface
- Containerized
- Treated (how?)

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable
**Groundwater Sampling Form**

<table>
<thead>
<tr>
<th>Site/Client Name:</th>
<th></th>
<th>Well ID:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Project #:</td>
<td>1081</td>
<td>Sample ID:</td>
<td></td>
</tr>
<tr>
<td>Sampled By:</td>
<td>Seth Oliver</td>
<td>Sample Time:</td>
<td>11:58</td>
</tr>
<tr>
<td>Weather Conditions:</td>
<td>Cloudy/Raining</td>
<td>Sample Date:</td>
<td>7/24/17</td>
</tr>
<tr>
<td>Duplicate ID:</td>
<td>MW-69</td>
<td>MS/MSD:</td>
<td>Yes No</td>
</tr>
<tr>
<td>Sampling Method:</td>
<td>Low Flow</td>
<td>Trip Blank Required:</td>
<td>Yes No</td>
</tr>
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</table>

**Well Information**

<table>
<thead>
<tr>
<th>Well Type:</th>
<th>Permanent</th>
<th>Well Diameter:</th>
<th>2</th>
<th>Screen Interval:</th>
<th>ft BGS to</th>
<th>ft BGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Condition:</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
<td>(if fair or poor explain in Notes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stickup:</td>
<td>Yes No</td>
<td>If yes,</td>
<td>ft above ground</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Gauging/Purging Information**

| Depth to Water (ft BTOC): | 12.91 |
| Total Depth (ft BTOC): | 18.90 |
| Depth to Product (ft BTOC): | | |
| Purge End Time (24-hr): | | |
| Purge Start Time (24-hr): | | |
| Product Thickness (ft): | | |
| Tubing/Pump Depth (ft BTOC): | | |
| Total Purge Time (min): | | |

**LOW FLOW:**

Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

Min. Purge Volume if required: Purge Volume (gal) = Volume of Water X (gal/ft) X Water Column thickness (ft) X # of casing volumes = gal

| Well Diameter | 1" | 0.041 gal/ft | 2" | 0.163 gal/ft | 4" | 0.653 gal/ft | 6" | 1.469 gal/ft |

**Water Quality Parameters**

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:36</td>
<td>350</td>
<td>0.6</td>
<td>7.59</td>
<td>1149</td>
<td>2.00</td>
<td>20.1</td>
<td>6.5</td>
<td>0.07</td>
<td>12.94</td>
<td>0.03</td>
</tr>
<tr>
<td>11:40</td>
<td>350</td>
<td>-</td>
<td>7.09</td>
<td>1014</td>
<td>1.78</td>
<td>94.8</td>
<td>7.01</td>
<td>0.06</td>
<td>12.94</td>
<td>0.03</td>
</tr>
<tr>
<td>11:44</td>
<td>350</td>
<td>-</td>
<td>6.63</td>
<td>997</td>
<td>1.78</td>
<td>94.8</td>
<td>7.01</td>
<td>0.06</td>
<td>12.94</td>
<td>0.03</td>
</tr>
<tr>
<td>11:48</td>
<td>350</td>
<td>-</td>
<td>6.44</td>
<td>94.3</td>
<td>1.39</td>
<td>94.3</td>
<td>7.34</td>
<td>0.06</td>
<td>12.94</td>
<td>0.03</td>
</tr>
<tr>
<td>11:51</td>
<td>350</td>
<td>-</td>
<td>6.33</td>
<td>945</td>
<td>1.78</td>
<td>94.3</td>
<td>7.34</td>
<td>0.06</td>
<td>12.94</td>
<td>0.03</td>
</tr>
<tr>
<td>11:54</td>
<td>350</td>
<td>-</td>
<td>6.25</td>
<td>945</td>
<td>1.78</td>
<td>94.3</td>
<td>7.34</td>
<td>0.06</td>
<td>12.94</td>
<td>0.03</td>
</tr>
<tr>
<td>11:57</td>
<td>350</td>
<td>-</td>
<td>6.29</td>
<td>945</td>
<td>1.79</td>
<td>94.9</td>
<td>7.55</td>
<td>0.14</td>
<td>12.94</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable): √ √ √

**Sample Color:**

**Sample Odor:**

**Sheen:**

**Analytical Sampling**

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
</table>

**Notes:**

Well is jacked above ground.

**Equipment:**

- Pump Type:________
- Tubing (Type/Length):________
- Bailer Type:________
- Water Level Meter:________
- Multi-Parameter Meter (Make/SN#):________
- Turbidity Meter (Make/SN#):________
- Filter Lot #:________

**Purge Water Handling:**

- Discharged to surface:□ Containerized:□ Treated:□

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable
Groundwater Sampling Form

Site/Client Name: AVEA  Well ID: MW-3
Project #: 104-2011  Sample ID:
Sampled By: Caney Grant & Sittin Oliver  Sample Time: 13:06  Sample Date: 7/24/11
Weather Conditions: Cloudy & Rainy  Duplicate ID:
Sampling Method: Low Flow  MS/MSD: Yes  No  Trip Blank Required: Yes  No

Well Information
Well Type: Permanent  Temporary  Well Diameter: 2 in.  Screen Interval: ft BGS to ft BGS  Well Condition: Good  Fair  Poor (if fair or poor explain in Notes)

Gauging/Purging Information
Depth to Water (ft BTOC): 12.0  10.22  Tubing/Pump Depth (ft BTOC):
Total Depth (ft BTOC): 18.0  Purge Start Time (24-hr):
Depth to Product (ft BTOC):  Product Thickness (ft):

LOW FLOW:  Max Draw Down = (Tubing Depth – Top of Screen Depth) X 0.25 = ft.

Min. purge volume if required:  purge volume (gal) = volume of water (gal) X Water column thickness (ft) X # of casing volumes = gal

Water Quality Parameters
(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical (each reading taken after pumping a minimum of 1 flow through cell volume))

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gals/min)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1240</td>
<td>350</td>
<td>—</td>
<td>8.27</td>
<td>2200</td>
<td>2.34</td>
<td>128.8</td>
<td>7.84</td>
<td>1.52</td>
<td>10.22</td>
<td>0</td>
</tr>
<tr>
<td>1249</td>
<td>350</td>
<td>—</td>
<td>8.13</td>
<td>2180</td>
<td>1.09</td>
<td>128.1</td>
<td>7.16</td>
<td>2.20</td>
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</tr>
<tr>
<td>1252</td>
<td>350</td>
<td>—</td>
<td>8.05</td>
<td>2177</td>
<td>0.90</td>
<td>134.5</td>
<td>7.60</td>
<td>2.59</td>
<td>10.27</td>
<td>.05</td>
</tr>
<tr>
<td>1255</td>
<td>350</td>
<td>—</td>
<td>7.94</td>
<td>2182</td>
<td>0.59</td>
<td>130.3</td>
<td>7.57</td>
<td>1.54</td>
<td>10.27</td>
<td>.05</td>
</tr>
<tr>
<td>1258</td>
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<td>—</td>
<td>7.85</td>
<td>2189</td>
<td>0.77</td>
<td>124.1</td>
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<td>1.77</td>
<td>10.27</td>
<td>.05</td>
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<tr>
<td>1301</td>
<td>350</td>
<td>—</td>
<td>7.79</td>
<td>2190</td>
<td>0.78</td>
<td>121.7</td>
<td>7.58</td>
<td>1.50</td>
<td>10.27</td>
<td>.05</td>
</tr>
<tr>
<td>1304</td>
<td>350</td>
<td>—</td>
<td>7.80</td>
<td>2191</td>
<td>0.77</td>
<td>118.1</td>
<td>7.57</td>
<td>1.84</td>
<td>10.27</td>
<td>.05</td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)
Sample Color:  Sample Odor:  Sheen:

Analytical Sampling
Analyses  Check Applicable  Comments

Notes:
Equipment: Pump Type  Tubing (Type/Length)  Bailer Type
Water Level Meter  Multi-Parameter Meter (Make/SN#)
Turbidity Meter (Make/SN#)  Filter Lot #

Purge Water Handling: Discharged to surface  Containerized  Treated (how?)

BGS = Below Ground Surface, BTOC=Below Top of Casing, NA = Not Applicable

Page 1 of ___
### Groundwater Sampling Form

**Site/Client Name:** GVEA Healy  
**Well ID:** MW-2  
**Project #:** 204  
**Sample ID:** MW-2  
**Sampled By:** Seth Oliver, Carly Grant  
**Sample Time:** 15:43  
**Sample Date:** 7/24/17  
**Weather Conditions:** 64°F, overcast, light rain  
**Duplicate ID:** N/A  
**Sampling Method:** Low Flow  
**MS/MSD:** Yes  
**Trip Blank Required:** Yes  

#### Well Information

- **Well Type:** Permanent  
- **Well Diameter:** 2 in.  
- **Screen Interval:** ft BGS to ft BGS  
- **Well Condition:** Good  
- **Sticker:** Yes  
- **Above Ground:** ft

#### Gauging/Purging Information

- **Depth to Water (ft BTOC):** 10.43  
- **Tubing/Pump Depth (ft BTOC):**  
- **Total Depth (ft BTOC):**  
- **Depth to Product (ft BTOC):**  
- **Purge Start Time (24-hr):** 15:24  
- **Purge End Time (24-hr):** 15:59  
- **Product Thickness:** (ft)  
- **Total Purge Time (min):**  

#### LOW FLOW:

- **Max Draw Down:**  
- **(Tubing Depth - Top of Screen Depth) X 0.25 = (ft):**  
- **If screen interval is not known or water table is below top of screen, then use default value of 0.3 ft:**

#### Min. Purge Volume if required:

- **Purge Volume (gal) = volume of water/ft X Water column thickness (ft) X # of casing volumes:** gal

#### Water Quality Parameters

- **Well Diameter:** gal/ft
  - 1" - 0.041 gal/ft
  - 2" - 0.163 gal/ft
  - 4" - 0.653 gal/ft
  - 6" - 1.469 gal/ft

#### (Achieve stable parameters for 3 consecutive reading, 4 parameters if practical)

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
<th>Max ___ ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>1527</td>
<td>350</td>
<td>0.6</td>
<td>5.37</td>
<td>2024</td>
<td>2.74</td>
<td>10.5</td>
<td>8.77</td>
<td>54</td>
<td>10.46</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>1532</td>
<td>350</td>
<td>1.10</td>
<td>4.10</td>
<td>2022</td>
<td>1.12</td>
<td>10.7</td>
<td>8.37</td>
<td>52</td>
<td>10.45</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>1537</td>
<td>350</td>
<td>3.59</td>
<td>3.59</td>
<td>2886</td>
<td>1.45</td>
<td>10.5</td>
<td>8.38</td>
<td>64</td>
<td>10.45</td>
<td>0.03</td>
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<td>1540</td>
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<td>3.62</td>
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<td>8.27</td>
<td>38</td>
<td>10.45</td>
<td>0.03</td>
<td></td>
</tr>
</tbody>
</table>

**Parameter Stable (Check applicable):**

**Sample Odor:**

**Sheen:**

### Notes:

**Equipment:**
- **Pump Type:** GeoPump
- **Tubing Type/Length:**
- **Bailer Type:**
- **Water Level Meter:**
- **Multi-Parameter Meter (Make/Model):**
- **Turbidity Meter (Make/SN#):**
- **Filter Lot #:**

**Purge Water Handling:**

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable

Page 1 of ___
### Groundwater Sampling Form

**Site/Client Name:** Hydro Healy  
**Project #:** W4_00367_17001  
**Sampled By:** C. Grant & S. Oliver  
**Weather Conditions:**  
**Sampling Method:** Low Flow  
**Duplicate ID:** N/A  
**MS/MSD:** Yes  
**Trip Blank Required:** No

**Well Information**

- **Well Type:** Permanent  
- **Well Diameter:** 2 in.  
- **Screen Interval:** ft BGS to ft BGS  
- **Well Condition:** Good  
- **Sticky:** Yes  
- **Good:** No  
- **If yes:** ft above ground

**Gauging/Purging Information**

- **Depth to Water (ft BTOC):** 16.43  
- **Tubing/Pump Depth (ft BTOC):**  
- **Total Depth (ft BTOC):**  
- **Depth to Product (ft BTOC):**  
- **Purge Start Time (24-hr):** 16:10  
- **Purge End Time (24-hr):**  
- **Product Thickness (ft):**  
- **Total Purge Time (min):**  

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.20 = (ft), if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft;

**Min. Purge Volume if required:** purge volume (gal) = volume of water/lift (gal/lift) X Water column thickness (ft) X # of casing volumes X gal

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gallons per minute)</th>
<th>Purge Volume (gallons)</th>
<th>Temp (°C ± 3%)</th>
<th>Specific Conductance (μS/cm² ± 3%)</th>
<th>DO (mg/L ±10%)</th>
<th>ORP (mV ±100 mV)</th>
<th>pH</th>
<th>Turbidity (NTU ± 10%)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:13</td>
<td>550</td>
<td>—</td>
<td>8.50</td>
<td>1308</td>
<td>0.95</td>
<td>74.3</td>
<td>10.41</td>
<td>—</td>
<td>1843</td>
<td>—</td>
</tr>
<tr>
<td>16:18</td>
<td>350</td>
<td>—</td>
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<td>1279</td>
<td>0.05</td>
<td>73.4</td>
<td>10.52</td>
<td>40.3</td>
<td>1843</td>
<td>0</td>
</tr>
<tr>
<td>16:23</td>
<td>350</td>
<td>—</td>
<td>8.44</td>
<td>1279</td>
<td>0.08</td>
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<td>19.5</td>
<td>1844</td>
<td>.01</td>
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<tr>
<td>16:24</td>
<td>350</td>
<td>—</td>
<td>8.42</td>
<td>1279</td>
<td>0.00</td>
<td>73.1</td>
<td>10.58</td>
<td>13.0</td>
<td>1844</td>
<td>.01</td>
</tr>
<tr>
<td>16:29</td>
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<td>—</td>
<td>8.39</td>
<td>1278</td>
<td>0.57</td>
<td>75.4</td>
<td>10.59</td>
<td>12.4</td>
<td>18.44</td>
<td>.01</td>
</tr>
<tr>
<td>16:32</td>
<td>350</td>
<td>—</td>
<td>8.38</td>
<td>1279</td>
<td>0.59</td>
<td>75.0</td>
<td>10.58</td>
<td>9.78</td>
<td>18.44</td>
<td>.01</td>
</tr>
<tr>
<td>16:35</td>
<td>350</td>
<td>(0.0)</td>
<td>8.33</td>
<td>1279</td>
<td>0.58</td>
<td>74.4</td>
<td>10.58</td>
<td>9.04</td>
<td>18.44</td>
<td>.01</td>
</tr>
</tbody>
</table>

**Parameter Stable (Check applicable):** ✓ ✓ ✓ ✓ ✓

**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** N/A

### Water Quality Parameters

(Achieve stable parameters for 3 consecutive readings, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

**Analyses**

<p>| | | | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

**Analytical Sampling**

- **Check Applicable:**
- **Comments:**

**Notes:**

- **Equipment:** Pump Type: (specify)  
  Water Level Meter:  
  Turbidity Meter: Make/SN/Model

**Purge Water Handling:** Discharged to surface  
- Containerized  
- Treated (how?)

_BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable_
# Water Parameter Meter Calibration Log

## SLR

### Date: 12/4/17  
Time: 11:47  
Calibration By: [Signature]

**Meter Manufacturer and Identification #:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>True Value</th>
<th>Lot #</th>
<th>Date Opened</th>
<th>Expiration Date</th>
<th>PreCalibration Reading</th>
<th>Reading After Calibration</th>
<th>Calibration Acceptance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.00</td>
<td>7.0</td>
<td>11E45</td>
<td>1/5/17</td>
<td>4/15/17</td>
<td>4.704</td>
<td>6.97</td>
<td>± 0.10</td>
</tr>
<tr>
<td></td>
<td>4.00</td>
<td>4.0</td>
<td>10F12</td>
<td>3/14/17</td>
<td>6/1/17</td>
<td>4.14</td>
<td>3.75</td>
<td>± 0.10</td>
</tr>
<tr>
<td></td>
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<td>10.0</td>
<td>752</td>
<td>8/3/14</td>
<td>8/3/17</td>
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<td>9.57</td>
<td>± 0.10</td>
</tr>
<tr>
<td>Sp Cond</td>
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<td>1.413</td>
<td>0251</td>
<td>08/2016</td>
<td>07/2017</td>
<td>1.383</td>
<td>1.384</td>
<td>± 10%</td>
</tr>
<tr>
<td>(mS/cm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ORP (mV)</td>
<td>240</td>
<td>240</td>
<td>0267</td>
<td>1/5/17</td>
<td>5/20/21</td>
<td>190.2</td>
<td>220.3</td>
<td></td>
</tr>
<tr>
<td>DO*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>124.6</td>
<td>86.27</td>
<td>± 2%</td>
</tr>
</tbody>
</table>

If parameter not included in sampling event, fill in box with NA (not applicable)

* Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table

### Date: 12/5/17  
Time: 06:30  
Calibration By: [Signature]

**Meter Manufacturer and Identification #:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>True Value</th>
<th>Lot #</th>
<th>Date Opened</th>
<th>Expiration Date</th>
<th>PreCalibration Reading</th>
<th>Reading After Calibration</th>
<th>Calibration Acceptance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.00</td>
<td>7.05</td>
<td>16E45</td>
<td>1/5/17</td>
<td>4/15/17</td>
<td>6.10</td>
<td>9.06</td>
<td>± 0.10</td>
</tr>
<tr>
<td></td>
<td>4.00</td>
<td>4.00</td>
<td>16F12</td>
<td>3/14/17</td>
<td>6/1/17</td>
<td>4.32</td>
<td>4.00</td>
<td>± 0.10</td>
</tr>
<tr>
<td></td>
<td>10.00</td>
<td>10.16</td>
<td>752</td>
<td>8/8/16</td>
<td>10/2017</td>
<td>10.53</td>
<td>10.22</td>
<td>± 0.10</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>1.413</td>
<td>1.413</td>
<td>0251</td>
<td>08/2016</td>
<td>07/2017</td>
<td>1.422</td>
<td>1.413</td>
<td>± 10%</td>
</tr>
<tr>
<td>(mS/cm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ORP (mV)</td>
<td>240</td>
<td>240</td>
<td>0207</td>
<td>1/5/17</td>
<td>5/20/21</td>
<td>230.0</td>
<td>240.0</td>
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</tr>
<tr>
<td>DO*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.31 mg/L</td>
<td>9.97 mg/L</td>
<td>± 2%</td>
</tr>
</tbody>
</table>

If parameter not included in sampling event, fill in box with NA (not applicable)

* Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table
October 2017
### Surface Water Sampling Form

**Site/Client Name:** ELVEA  
**Location:** Recirculation Pond  
**Project #:** 10416036717001  
**Sample ID:** SW-1 (Recirc. Pond)  
**Sampled By:** Seth Oliver & Carley Grant  
**Sample Time:** 8:15  
**Sample Date:** 11/3

**Location Information**
- Distance from Bank (ft): 3.0  
- Depth of Water (ft): 2.5  
- Flowing Water:  
- Co-Located Sediment Sample: No  
- GPS Coordinates: Northing  
- Easting  
- MS/MSD: Yes  
- Trip Blank Required: No

**Sheen Test**
- No Sheen  
- Sheen Observed (circle type): POL (e.g. fluid rainbow)  
- Biogenic (platey)  
- Other (describe):  

**Water Quality Parameters**

<table>
<thead>
<tr>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH (std unit)</th>
<th>Turbidity (NTU)</th>
<th>Color</th>
<th>Odor</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.37</td>
<td>1980</td>
<td>9.31</td>
<td>202.0</td>
<td>11.82</td>
<td></td>
<td>Teal</td>
<td>None</td>
</tr>
</tbody>
</table>

**Analytical Sampling**

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRO/BTEX</td>
<td></td>
<td></td>
<td>PAHs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRO</td>
<td></td>
<td></td>
<td>Total Metals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RRO</td>
<td></td>
<td></td>
<td>Dis. Metals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOCs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SVOCs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes (indicate collection method):** Stage Measurement 3.0 feet.

**Equipment Used:**
- Pump Type:  
- Tubing (Type/Length):  
- Transfer Bottle:  
- Multi-Parameter Meter (Make/SN#):  
- Turbidity Meter (Make/SN#):  
- GPS Type:  
- Filter & Lot #:  

---

**Site/Client Name:**  
**Project #:**  
**Sampled By:**  
**Sample Time:**  
**Sample Date:**  
**Location:**  
**Weather Conditions:**  
**Other:**  

**Location Information**
- Distance from Bank (ft):  
- Depth of Water (ft):  
- Flowing Water:  
- Co-Located Sediment Sample: No  
- GPS Coordinates: Northing  
- Easting  
- MS/MSD: Yes  
- Trip Blank Required: No

**Sheen Test**
- No Sheen  
- Sheen Observed (circle type): POL (e.g. fluid rainbow)  
- Biogenic (platey)  
- Other (describe):  

**Water Quality Parameters**

<table>
<thead>
<tr>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH (std unit)</th>
<th>Turbidity (NTU)</th>
<th>Color</th>
<th>Odor</th>
</tr>
</thead>
</table>

**Analytical Sampling**

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
<th>Analyses</th>
<th>Number/Type of Bottle</th>
<th>Preservative/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRO/BTEX</td>
<td></td>
<td></td>
<td>PAHs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRO</td>
<td></td>
<td></td>
<td>Total Metals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RRO</td>
<td></td>
<td></td>
<td>Dis. Metals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOCs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SVOCs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes (indicate collection method):**

**Equipment Used:**
- Pump Type:  
- Tubing (Type/Length):  
- Transfer Bottle:  
- Multi-Parameter Meter (Make/SN#):  
- Turbidity Meter (Make/SN#):  
- GPS Type:  
- Filter & Lot #:  

**Rev. 2016**
# Groundwater Sampling Form

**Site/Client Name:** GreA

**Project #:** 104.0367.1700

**Sample #:** MW-1R

**Sampled By:** Carry Grant

**Sample Time:** 15:20

**Sample Date:** 10/12/2017

**Weather Conditions:** Windy

**Weather Condition:** Good

**Sampling Method:** Low Flow

**MS/MSD:** Yes

**Trip Blank Required:** No

## Well Information

**Well Type:** Permanent

**Well Diameter:** 2

**Screen Interval:** ft BGS to ft BGS

**Well Condition:** Good

**Stickup:** Yes

## Gauging/Purging Information

**Depth to Water (ft BTOC):** 18.60

**Tubing/Pump Depth (ft BTOC):**

**Total Depth (ft BTOC):**

**Depth to Product (ft. BTOC):**

**Purge Time (24-hr):** 145.5

**Purge End Time (24-hr):**

**Product Thickness (ft):**

**Total Purge Time (min):**

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = __________ (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

**Min. purge volume if required:**

**Volume of water (gallons) =** volume of water/ft (gallons/ft) X Water column thickness (ft) X # of casing volumes = ____________ gal

## Water Quality Parameters

(Achieve stable parameters for 3 consecutive readings, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gallons/minute)</th>
<th>Purge Volume (gallons)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1503</td>
<td>250</td>
<td>1.0</td>
<td>10.81</td>
<td>120.8</td>
<td>1.04</td>
<td>96.1</td>
<td>11.25</td>
<td>4.37</td>
<td>18.60</td>
<td>0.00</td>
</tr>
<tr>
<td>1508</td>
<td>.275</td>
<td>2.2</td>
<td>10.83</td>
<td>121.2</td>
<td>0.34</td>
<td>88.1</td>
<td>11.30</td>
<td>3.17</td>
<td>18.60</td>
<td>0.00</td>
</tr>
<tr>
<td>1511</td>
<td>.350</td>
<td>2.3</td>
<td>10.84</td>
<td>120.2</td>
<td>0.61</td>
<td>83.6</td>
<td>11.41</td>
<td>3.50</td>
<td>18.60</td>
<td>0.00</td>
</tr>
<tr>
<td>1519</td>
<td>.350</td>
<td>4.4</td>
<td>10.84</td>
<td>121.9</td>
<td>0.50</td>
<td>71.4</td>
<td>11.40</td>
<td>4.32</td>
<td>18.60</td>
<td>0.00</td>
</tr>
<tr>
<td>1517</td>
<td>.350</td>
<td>5.5</td>
<td>10.85</td>
<td>121.5</td>
<td>0.48</td>
<td>76.1</td>
<td>11.41</td>
<td>4.01</td>
<td>18.60</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)

- ✔
- ✔
- ✔
- ✔

## Sample Color:

- Slight red

## Sample Odor:

- Sheen:

## Analytical Sampling

### Analyses

- Total nitrogen
- Ammonia
- TDS
- Sodium 236 ppm

### Check Applicable

### Comments

## Notes

- Equipment:
  - Pump Type: Geotech Peristaltic
  - Tubing (Type/Length): 15 gauge
  - Bailer Type:
  - Water Level Meter: Multi-Parameter Meter (Make/SN#): YSI 556
  - Turbidity Meter (Make/SN#): Laminar
  - Filter Lot #:

## Purge Water Handling:

- Discharged to surface
- Containerized
- Treated (how?)

---

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
**Groundwater Sampling Form**

**Site/Client Name:** GVEA  
**Well ID:** MW-6

**Project #:** 104.006/67.5001  
**Sample ID:** MW-6  
**Sample Date:** 10/217

**Sampled By:** Carey Grant  
**Sample Time:** 1445

**Weather Conditions:** Windy, 50°F

**Duplicate ID:**  
**MS/MSD:** Yes No  
**Trip Blank Required:** Yes No

---

### Well Information

- **Well Type:** Permanent  
- **Well Diameter:** 2 in.  
- **Screen Interval:** ft BGS to ft BGS

**Well Condition:** Good  
**Fair:** Poor  
**(if fair or poor explain in Notes)**  
**Stickup:** Yes No  
**(If yes, __________ ft above ground)**

### Gauging/Purging Information

- **Depth to Water (ft BTOC):** 13.63
- **Total Depth (ft BTOC):**
- **Depth to Product (ft BTOC):**
- **Product Thickness (ft):**

**Tubing/Pump Depth (ft BTOC):**

**Purge Interval (min):**

**Purge Time (24-hr):**

**Total Purge Time (min):**

**Max. Draw Down:** (Tubing Depth − Top of Screen Depth) X 0.25 = (ft); If screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.

**Min. Purge Volume if Required:** Purge Volume (gallons) = Volume of Water/ft × (gallons/ft) × Water Column Thickness (ft) × # of Casing Volumes

**Well Diameter - gal/ft:**

- 1' = 0.044 gal/ft
- 2' = 0.163 gal/ft
- 4' = 0.653 gal/ft
- 6' = 1.469 gal/ft

### Water Quality Parameters

**Achieve stable parameters for 3 consecutive readings, 4 parameters if practical (each reading taken after pumping a minimum of 1 flow through cell volume).**

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1420</td>
<td>300</td>
<td>-</td>
<td>11.23</td>
<td>1.136</td>
<td>1.00</td>
<td>183.6</td>
<td>7.94</td>
<td>0.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1424</td>
<td>300</td>
<td>-</td>
<td>12.27</td>
<td>1.091</td>
<td>0.82</td>
<td>188.2</td>
<td>8.17</td>
<td>-0.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1427</td>
<td>300</td>
<td>-</td>
<td>12.39</td>
<td>1.080</td>
<td>0.72</td>
<td>181.5</td>
<td>8.20</td>
<td>0.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1430</td>
<td>300</td>
<td>-</td>
<td>12.48</td>
<td>1.079</td>
<td>0.71</td>
<td>154.5</td>
<td>8.32</td>
<td>-0.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1433</td>
<td>300</td>
<td>5.0L</td>
<td>12.51</td>
<td>1.074</td>
<td>0.73</td>
<td>148.4</td>
<td>8.34</td>
<td>0.33</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Parameter Stable (Check applicable):** √
- **Sample Odor:** NONE
- **Sheen:** NO

---

**Notes:** Well Jacked

**Equipment:**
- **Pump Type:** Geotech Pemumatic
- **Tubing (Type/Length):** Teflon lined
- **Bailer Type:**
- **Water Level Meter:**
- **Multi-Parameter Meter (Make/SN#):** YSI 556
- **Turbidity Meter (Make/SN#):**

**Purge Water Handling:** Discharged to surface

---

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable

---

**Page 1 of 1**
## Groundwater Sampling Form

**Site/Client Name:** NORTH SHORE ENERGY ASSOCIATION  
**Well ID:** MW-2

**Project #:** 624.1567.1701  
**Sample ID:** MW-2  
**Sample By:** John Grant  
**Sample Date:** 10/03/17  
**Sample Time:** 11:20  
**Weather Conditions:** Partly Cloudy 50°F  
**Duplicate ID:**

### Well Information

**Well Type:** Permanent  
**Well Diameter:** 4 in.  
**Screen Interval:** BGS to BGS  
**Well Condition:** Good  
**Sticker:** Yes  
**Trip Blank Required:** No

### Gauging/Purging Information

**Depth to Water (ft BTOC):** 10.95  
**Tubing/ Pump Depth (ft BTOC):**  
**Total Depth (ft BTOC):**  
**Depth to Product (ft BTOC):**  
**Purge Start Time (24-hr):** 1053  
**Purge End Time (24-hr):**  
**Product Thickness (ft):**  
**Total Purge Time (min):**

### LOW FLOW:

- **Min. Purge Volume if Required:**
  - Purge Volume (gallons) = Volume of Water
  - Purge Volume (gallons) = Water Column Thickness (ft) × # of Casing Volumes = gallons

- **Tubing Diameter (gallons per minute):**
  - 1" = 0.041 gal/min
  - 2" = 0.163 gal/min
  - 4" = 0.653 gal/min
  - 6" = 1.469 gal/min

### Water Quality Parameters

(Achieve stable parameters for 3 consecutive readings, 4 parameters if practical each reading taken after pumping a minimum of 1 flow through cell volume)

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liters/minute)</th>
<th>Purge Volume (gallons)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1101</td>
<td>335</td>
<td>1.1</td>
<td>5.42</td>
<td>1506</td>
<td>1.46</td>
<td>76.0</td>
<td>8.09</td>
<td>Low</td>
<td>10.97</td>
<td>0.02</td>
</tr>
<tr>
<td>1107</td>
<td>335</td>
<td>2.4</td>
<td>5.39</td>
<td>1511</td>
<td>0.80</td>
<td>74.0</td>
<td>8.09</td>
<td>Low</td>
<td>10.97</td>
<td>0.02</td>
</tr>
<tr>
<td>1110</td>
<td>335</td>
<td>3.6</td>
<td>5.41</td>
<td>1513</td>
<td>0.60</td>
<td>73.0</td>
<td>8.09</td>
<td>Low</td>
<td>10.97</td>
<td>0.02</td>
</tr>
<tr>
<td>1113</td>
<td>335</td>
<td>4.8</td>
<td>5.40</td>
<td>1516</td>
<td>0.68</td>
<td>71.9</td>
<td>8.09</td>
<td>Low</td>
<td>10.97</td>
<td>0.02</td>
</tr>
<tr>
<td>1118</td>
<td>335</td>
<td>5.9</td>
<td>5.38</td>
<td>1516</td>
<td>0.61</td>
<td>71.3</td>
<td>8.09</td>
<td>Low</td>
<td>10.97</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)

**Sample Color:** Slight milky  
**Sample Odor:**  
**Sheen:** None

### Analytical Sampling

**Analyses**  
**Check Applicable**  
**Comments**

### Notes:

**Equipment:**
- **Pump Type:** Gear Pump  
- **Tubing Type/Length:**  
- **Bailer Type:**  
- **Multi-Parameter Meter (Make/SN#):** YSI 556  
- **Turbidity Meter (Make/SN#):** Lachat  
- **Filter Lot #:**

**Purge Water Handling:**
- Discharged to surface  
- Containerized  
- Treated (how?)

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
**Groundwater Sampling Form**

**Site/Client Name:** GVEA  
**Well ID:** MW-3  
**Sample ID:** MW-3  
**Sampled By:** Carly Grant, Seth Oliver  
**Sample Time:** 10:20  
**Sample Date:** 10/3/17  
**Duplicate ID:** MW-99  
**Trip Blank Required:** No  
**Well Information**

- **Well Type:** Permanent  
- **Well Diameter:** 2 in.  
- **Screen Interval:** ft BGS to ft BGS  
- **Well Condition:** Good  
- **Stickyup:** Yes  
- **Trip Blank Required:** No  

**Gauging/Purging Information**

- **Depth to Water (ft BTOC):** 10.73  
- **Tubing/Pump Depth (ft, BTOC):**  
- **Total Depth (ft, BTOC):**  
- **Depth to Product (ft, BTOC):**  
- **Purge Start Time (24-hr):**  
- **Purge End Time (24-hr):**  
- **Product Thickness (ft):**  
- **Total Purge Time (min):**  

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) x 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.  

**Min. purge volume if required:** Purge volume (gal) = volume of water/ft (gal/ft) x Water column thickness (ft) x # of casing volumes = gal  

**Well Diameter – gal/ft:**  
1' - 0.041 gal/ft  
2' - 0.163 gal/ft  
4' - 0.653 gal/ft  
6' - 1.469 gal/ft  

**Water Quality Parameters**

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gpm/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft, BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:09</td>
<td>3.00</td>
<td>0.50</td>
<td>8.33</td>
<td>1.19</td>
<td>4.50</td>
<td>8.26</td>
<td>10.73</td>
<td>0.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:12</td>
<td>3.00</td>
<td>1.50</td>
<td>8.57</td>
<td>1.16</td>
<td>4.02</td>
<td>8.10</td>
<td>10.75</td>
<td>0.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:15</td>
<td>3.00</td>
<td>2.50</td>
<td>8.49</td>
<td>1.08</td>
<td>2.33</td>
<td>8.05</td>
<td>10.70</td>
<td>0.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:18</td>
<td>3.00</td>
<td>3.50</td>
<td>8.44</td>
<td>1.15</td>
<td>4.08</td>
<td>8.04</td>
<td>10.76</td>
<td>0.12</td>
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</tr>
<tr>
<td>10:21</td>
<td>3.00</td>
<td>4.50</td>
<td>8.47</td>
<td>1.15</td>
<td>0.74</td>
<td>8.04</td>
<td>10.76</td>
<td>0.03</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Parameter Stable (Check applicable)  

**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** None  

**Analytical Sampling**

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
</table>

**Notes:**

**Equipment:**  
- **Pump Type:** Pumphi  
- **Tubing (Type/Length):** Fellow Line  
- **Bailer Type:** Yes  
- **Water Level Meter:** Multi-Parameter Meter (Make/SN#)  
- **Turbidity Meter (Make/SN#):** Lamotte  
- **Filter Lot #:**  

**Purge Water Handling:**  
- Discharged to surface  
- Containerized  
- Treated (how?):  

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable  

Page 1 of _
### Groundwater Sampling Form

**Site/Client Name:** EIVEA  
**Well ID:** MW-4  

**Project #:** 104_16317.11_001  
**Sample ID:** MW-4  

**Sampled By:** Carly Grant, Seth Oliver  
**Sampled Date:** 09/12  
**Sample Date:** 10/3/17  

**Weather Conditions:** Partly Cloudy, 50°F  
**Duplicate ID:**  

**Sampling Method:** ◯ Low Flow  
**MS/MSD:** ☑ Yes  
**Trip Blank Required:** ☑ Yes ✗ No  

### Well Information

**Well Type:** ☑ Permanent  
**Well Diameter:** 2"  
**Screen Interval:** □ BGS to □ BGS  
**Well Condition:** ☑ Good  
**Sticksup:** ☑ Yes  
**If yes, □ No; If yes, _ __ ft above ground  

#### Gauging/Purging Information

**Depth to Water (ft BTOC):** 9.20  
**Tubing/Pump Depth (ft BTOC):**  
**Total Depth (ft BTOC):**  
**Depth to Product (ft BTOC):**  
**Purge Start Time (24-hr):** 09/19  
**Purge End Time (24-hr):**  
**Product Thickness (ft):**  
**Total Purge Time (min):**  

**LOW FLOW:** Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = (ft), if screen interval is not known or water table is below top of screen, then use default value of 0.  

**Min. purge volume if required:**  

**Well Diameter** = gal/ft  

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gallons/minute)</th>
<th>Purge Volume (gallons)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:24</td>
<td>.350</td>
<td>1</td>
<td>15.00</td>
<td>149.4</td>
<td>0.98</td>
<td>70.6</td>
<td>9.33</td>
<td>Low</td>
<td>9.22</td>
<td>0.02</td>
</tr>
<tr>
<td>09:29</td>
<td>.350</td>
<td>2,25</td>
<td>15.13</td>
<td>149.8</td>
<td>0.85</td>
<td>61.2</td>
<td>9.35</td>
<td>Low</td>
<td>9.22</td>
<td>0.02</td>
</tr>
<tr>
<td>09:32</td>
<td>.350</td>
<td>3.4</td>
<td>15.18</td>
<td>149.9</td>
<td>0.53</td>
<td>66.3</td>
<td>9.16</td>
<td>Low</td>
<td>9.22</td>
<td>0.02</td>
</tr>
<tr>
<td>09:25</td>
<td>.350</td>
<td>4.6</td>
<td>15.20</td>
<td>149.9</td>
<td>0.52</td>
<td>67.9</td>
<td>9.45</td>
<td>Low</td>
<td>9.22</td>
<td>0.02</td>
</tr>
<tr>
<td>09:28</td>
<td>.350</td>
<td>5.8</td>
<td>15.37</td>
<td>149.9</td>
<td>0.51</td>
<td>67.5</td>
<td>9.95</td>
<td>Low</td>
<td>9.22</td>
<td>0.02</td>
</tr>
</tbody>
</table>

### Parameter Stable (Check applicable)

**Sample Color:** Very dark brown/brownish  
**Sample Odor:**  
**Sheen:** None  

### Analytical Sampling

**Analyses:** Total Nitrates, Fe, Mn, Al, Ca, Mg  
**Check Applicable:** ☑  
**Comments:**  

### Notes:

**Equipment:**  
- **Tubing (Type/Length):**  
- **Bailer Type:**  
- **Water Level Meter:** Multi-Parameter Meter (Make/SN#)  
- **Turbidity Meter (Make/SN#):** Lamotte  
- **Filter Lot #:**  

**Purge Water Handling:** ☑ Discharged to surface  
**BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable**
**Groundwater Sampling Form**

**Site/Client Name:** GIVEA  
**Well ID:** MW-5  
**Project #:** 104-00367-1-7001  
**Sampled By:** Carey Grant  
**Sample ID:** PW-5  
**Sample Time:** 859  
**Sample Date:** 10/3/17  
**Duplicate ID:**  
**Weather Conditions:** Party Cloudy, 50-55°F  
**MS/MSD:** Yes  
**Trip Blank Required:** No  

### Well Information

<table>
<thead>
<tr>
<th>Well Type:</th>
<th>Permanent</th>
<th>Temporary</th>
<th>Well Diameter</th>
<th>Screen Interval(ft BGS to ft BGS)</th>
<th>Well Condition:</th>
<th>Good</th>
<th>Fair</th>
<th>Poor (explain in Notes)</th>
</tr>
</thead>
</table>

| Depth to Water (ft BTOC): | 112.84 | Tubing/Pump Depth (ft. BTOC): |  
| Total Depth (ft. BTOC): |  
| Depth to Product (ft. BTOC): |  
| Product Thickness (ft): |  
| WELL FLOW: | Max Draw Down = (Tubing Depth - Top of Screen Depth) X 0.25 = (ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft;  
| Min. purge volume required = purge volume (gal) x volume of water(ft) x X Case column thickness(ft) X # of casing volumes = gal  
| Well Diameter = gal/ft | 1" - 0.041 gal/ft | 2" - 0.163 gal/ft | 4" - 0.653 gal/ft | 6" - 1.469 gal/ft |

### Gauging/Purging Information

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (μS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>840</td>
<td>300</td>
<td>0.25</td>
<td>11.99</td>
<td>1.59</td>
<td>3.00</td>
<td>132.1</td>
<td>1.98</td>
<td>M</td>
<td>14.84</td>
<td>0.0</td>
</tr>
<tr>
<td>843</td>
<td>300</td>
<td>1.0</td>
<td>12.48</td>
<td>1.51</td>
<td>3.02</td>
<td>107.0</td>
<td>12.21</td>
<td>M</td>
<td>14.84</td>
<td>0.0</td>
</tr>
<tr>
<td>846</td>
<td>300</td>
<td>2.0</td>
<td>12.58</td>
<td>1.58</td>
<td>2.39</td>
<td>101.4</td>
<td>12.24</td>
<td>M</td>
<td>14.84</td>
<td>0.0</td>
</tr>
<tr>
<td>850</td>
<td>300</td>
<td>3.0</td>
<td>12.53</td>
<td>1.59</td>
<td>2.46</td>
<td>94.0</td>
<td>12.30</td>
<td>M</td>
<td>14.84</td>
<td>0.0</td>
</tr>
<tr>
<td>854</td>
<td>300</td>
<td>4.0</td>
<td>12.62</td>
<td>1.59</td>
<td>2.36</td>
<td>86.4</td>
<td>12.31</td>
<td>M</td>
<td>14.84</td>
<td>0.0</td>
</tr>
<tr>
<td>857</td>
<td>300</td>
<td>5.0</td>
<td>12.68</td>
<td>1.59</td>
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<td>74.4</td>
<td>12.32</td>
<td>M</td>
<td>14.84</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Parameter Stable: (Check applicable)

- ✔
- ✔
- ✔
- ✔

**Sample Color:** Clear  
**Sample Odor:** None  
**Sheen:** None

### Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
</table>

### Water Quality Parameters

(Achieve stable parameters for 3 consecutive readings. 4 parameters if practical each reading taken after pumping a minimum of 1 flow through cell volume)

<table>
<thead>
<tr>
<th>Equipment:</th>
<th>Pump Type</th>
<th>Tubing (Type/Length)</th>
<th>Bailier Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Level Meter</td>
<td>Multi-Parameter Meter (Make/SN#)</td>
<td>Filter Lot #</td>
<td></td>
</tr>
</tbody>
</table>

**Purge Water Handling:** Discharged to surface  
**Containerized:**  
**Treated (now?):**

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
Groundwater Sampling Form

**Site/Client Name:** Cvea Heavy Ccr Rule

**Project #:** 104-00367.Nwl

**Sampled By:** John Oliver; Carry Grant

**Weather Conditions:** 50°F Windy

**Sampling Method:** Low Flow

**Well Information**
- **Well Type:** Permanent
- **Well Diameter:** 7 in.
- **Screen Interval:** ft BGS to ft BGS
- **Well Condition:** Good
- **Trip Blank Required:** No
- **Dupe ID:**

**Gauging/Purging Information**
- **Depth to Water (ft BTOC):** 13.66
- **Tubing/Pump Depth (ft BTOC):**
- **Total Depth (ft BTOC):**
- **Depth to Product (ft BTOC):**
- **Purge Start Time (24-hr):** 10:20
- **Total Purge Time (min):**

**LOW FLOW:** Max Draw Down = (Tubing Depth – Top of Screen Depth) X 0.25 = ft

**Min. purge volume if required:**

**Well Diameter – gal/ft**
- 1" - 0.041 gal/ft
- 2" - 0.163 gal/ft
- 4" - 0.653 gal/ft
- 6" - 1.469 gal/ft

**Water Quality Parameters**

<table>
<thead>
<tr>
<th>Time</th>
<th>Flow Rate (litr/minute)</th>
<th>Purge Volume (gal)</th>
<th>Temp (°C) [± 3 %]</th>
<th>Specific Conductance (µS/cm) [± 3 %]</th>
<th>DO (mg/L) [± 10 %]</th>
<th>ORP (mV) [± 10 mV]</th>
<th>pH (± 0.1)</th>
<th>Turbidity (NTU) [± 10%, or ≤5 NTU]</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft) (Max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1430</td>
<td>300</td>
<td></td>
<td>8.7</td>
<td>0.444</td>
<td>0.86</td>
<td>7.41</td>
<td>7.41</td>
<td>m</td>
<td>13.64</td>
<td>0.0</td>
</tr>
<tr>
<td>1435</td>
<td>300</td>
<td></td>
<td>8.8</td>
<td>0.410</td>
<td>0.69</td>
<td>7.41</td>
<td>7.41</td>
<td>m</td>
<td>13.64</td>
<td>0.0</td>
</tr>
<tr>
<td>1441</td>
<td>300</td>
<td></td>
<td>8.8</td>
<td>0.401</td>
<td>0.62</td>
<td>7.57</td>
<td>7.57</td>
<td>m</td>
<td>13.64</td>
<td>0.0</td>
</tr>
<tr>
<td>1444</td>
<td>300</td>
<td>4.0</td>
<td>8.8</td>
<td>0.404</td>
<td>0.57</td>
<td>7.56</td>
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<td>13.64</td>
<td>0.0</td>
</tr>
<tr>
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<td>5.0</td>
<td>8.8</td>
<td>0.400</td>
<td>0.60</td>
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<td>7.58</td>
<td>m</td>
<td>13.64</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**Parameter Stable (Check applicable):**
- Yes
- Yes
- Yes
- Yes
- Yes

**Sample Color:** Red/brown

**Sample Odor:** Organic

**Sheen:** None

**Analytical Sampling**

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
</table>

**Notes:**

**Equipment:**
- Pump Type
- Tubing (Type/Length)
- Bailier Type
- Water Level Meter
- Multi-Parameter Meter (Make/SN#)
- Turbidity Meter (Make/SN#)
- Filter Lot #

**Purge Water Handling:**
- Discharged to surface
- Containerized
- Treated (how?)

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable
**Groundwater Sampling Form**

**Site/Client Name:** Great Salt Lake Water Reclamation District  
**Well ID:** MWW-8

**Project #:** 104.0036  
**Sample ID:** MWW-Y

**Sampled By:** Seth Oliver, Caryn Groen  
**Sample Time:** 10/05/2017  
**Sample Date:** 10/02/2017

**Weather Conditions:** Windy, SoE

**Duplicate ID:**

**Well Information**

**Well Type:**  
**Well Diameter:**  
**Screen Interval:** ft BGS to ft BGS

**Well Condition:** Good  
**Trip Blank Required:** Yes  
**Sticker:** Yes

**Gauging/Purging Information**

**Depth to Water (ft BTOC):** 25.12  
**Tubing/Pump Depth (ft BTOC):**  
**Total Depth (ft BTOC):**

**Depth to Product (ft BTOC):**

**Product Thickness (ft):**

**Purge Start Time (24-hr):** 1544  
**Purge End Time (24-hr):**

**Total Purge Time (min):**

**LOW FLOW:** Max Draw Down = (Tubing Depth – Top of Screen Depth) X 0.25

**Min. purge volume if required:** purge volume (gal) = volume of water/(gal/ft) X Water column thickness (ft) X # of casing volumes

**Well Diameter – gal/ft:** 1' – 0.041 gal/ft  
**2' – 0.163 gal/ft  
**4' – 0.653 gal/ft  
**6' – 1.469 gal/ft**

**Water Quality Parameters**

(Achieve stable parameters for 3 consecutive reading. 4 parameters if practical (each reading taken after pumping a minimum of 1 flow through cell volume))

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gallons per minute)</th>
<th>Purge Volume (gallons)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1549</td>
<td>350</td>
<td>1.0</td>
<td>3.52</td>
<td>559</td>
<td>3.27</td>
<td>65.0</td>
<td>7.57</td>
<td>2.09</td>
<td>25.14</td>
<td>0.02</td>
</tr>
<tr>
<td>1554</td>
<td>350</td>
<td>0.5</td>
<td>2.37</td>
<td>556</td>
<td>3.12</td>
<td>64.8</td>
<td>7.37</td>
<td>0.63</td>
<td>24.14</td>
<td>0.02</td>
</tr>
<tr>
<td>1557</td>
<td>350</td>
<td>3.6</td>
<td>3.62</td>
<td>555</td>
<td>3.09</td>
<td>64.9</td>
<td>7.37</td>
<td>0.54</td>
<td>25.14</td>
<td>0.02</td>
</tr>
<tr>
<td>1600</td>
<td>350</td>
<td>4.7</td>
<td>3.25</td>
<td>555</td>
<td>3.06</td>
<td>65.1</td>
<td>7.37</td>
<td>0.50</td>
<td>25.14</td>
<td>0.02</td>
</tr>
<tr>
<td>1603</td>
<td>350</td>
<td>5.9</td>
<td>3.04</td>
<td>553</td>
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<td>65.2</td>
<td>7.37</td>
<td>0.41</td>
<td>25.14</td>
<td>0.02</td>
</tr>
</tbody>
</table>

**Parameter Stable (Check applicable):**

- [ ]
- [ ]
- [ ]

**Sample Color:** Clear  
**Sample Odor:**

**Sheen:**

**Analytical Sampling**

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Metals</td>
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<tr>
<td>Arsenic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TDS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radium 226</td>
<td>228</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

**Equipment:**

- **Pump Type:** Grundfos Pump
- **Tubing (Type/Length):** 15 gauged Teflon lined
- **Bailer Type:**
- **Water Level Meter:** Multi-Parameter Meter (Make/Model:YSI 556)
- **Turbidity Meter (Make/Model):** Lamotte
- **Filter Lot #:**

**Purge Water Handling:**

- [ ] Discharged to surface
- [ ] Containerized
- [ ] Treated (how?):

---

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable

Page 1 of _
### Groundwater Sampling Form

**Site/Client Name:** GVEA  
**Project #:** J-7-3-6-7-2E-013  
**Sampled By:** Seth Oliver and Casey Grant  
**Well ID:** MW-9  
**Sample ID:** MW-9  
**Sample Time:** 1723  
**Sample Date:** 10/17/17  
**Weather Conditions:** Windy, 30°F  
**Duplicate ID:**  
**MS/MSD:** Yes  
**Trip Blank Required:** No  

### Well Information

- **Well Type:** Permanent  
- **Well Diameter:** 2 in.  
- **Screen Interval:** ft BGS to ft BGS  
- **Well Condition:** Good  
- **Condition of Sample:** Yes  
- **Total Depth (ft BTOC):** 15.61  
- **Tubing/Pump Depth (ft BTOC):**  
- **Depth to Product (ft BTOC):**  
- **Purge Start Time (24-hr):** 1704  
- **Purge End Time (24-hr):**  
- **Product Thickness (ft):**  
- **Total Purge Time (min):**  

### Gauging/Purging Information

- **LOW FLOW:** Max Draw Down = (Tubing Depth – Top of Screen Depth) X 0.25 = ft.  
- **Min. purge volume if required:** Purge volume (gal) = volume of water(ft) X Water column thickness(ft) X # of casing volumes = gal  
- **Well Diameter – gal/ft:** 1" - 0.041 gal/ft  
- **2" - 0.163 gal/ft**  
- **4" - 0.653 gal/ft**  
- **6" - 1.469 gal/ft**

### Water Quality Parameters

**Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume]**

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (liter/minute)</th>
<th>Purge Volume (L)</th>
<th>Temp (°C)</th>
<th>Specific Conductance (µS/cm)</th>
<th>DO (mg/L)</th>
<th>ORP (mV)</th>
<th>pH</th>
<th>Turbidity (NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1106</td>
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<td>0.5</td>
<td>12.23</td>
<td>1.48</td>
<td>1.92</td>
<td>63.4</td>
<td>11.94</td>
<td>M</td>
<td>15.41</td>
<td>0</td>
</tr>
<tr>
<td>1709</td>
<td>300</td>
<td>1.0</td>
<td>12.30</td>
<td>1.379</td>
<td>0.91</td>
<td>49.2</td>
<td>11.93</td>
<td>M</td>
<td>15.41</td>
<td>0</td>
</tr>
<tr>
<td>1712</td>
<td>300</td>
<td>2.0</td>
<td>12.32</td>
<td>1.317</td>
<td>0.141</td>
<td>44.4</td>
<td>11.92</td>
<td>M</td>
<td>15.41</td>
<td>0</td>
</tr>
<tr>
<td>1715</td>
<td>300</td>
<td>3.0</td>
<td>12.35</td>
<td>1.375</td>
<td>0.57</td>
<td>41.4</td>
<td>11.93</td>
<td>M</td>
<td>15.41</td>
<td>0</td>
</tr>
<tr>
<td>1720</td>
<td>300</td>
<td>4.0</td>
<td>12.35</td>
<td>1.317</td>
<td>0.46</td>
<td>38.0</td>
<td>11.93</td>
<td>M</td>
<td>15.41</td>
<td>0</td>
</tr>
</tbody>
</table>

**Parameter Stable (Check applicable):** ✓ ✓ ✓ ✓

**Sample Color:** Orange/Brown  
**Sample Odor:** Organic  
**Sheen:** None

### Analytical Sampling

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Check Applicable</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

**Equipment:** Pump Type Geotech Peristaltic  
**Tubing (Type/Length):** 15 gauge nalgene  
**Bailer Type:**  
**Water Level Meter:** Multi-Parameter Meter (Make/SN#) YSI 5566  
**Turbidity Meter (Make/SN#):** Lamotte  
**Filter Lot #:**  

**Purge Water Handling:** Discharged to surface

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable  
Page 1 of ___
Groundwater Sampling Form

**Site/Client Name:** AVEA  
**Well ID:** MNW-D

**Project #:** 1P-00317  
**Sample ID:** MNW-WW-1

**Sampled By:** Carly Grant  
**Sample Time:** 1159

**Weather Conditions:**  
**Sample Date:** 10/3/17

**Sampling Method:** ✔ Low Flow  
**Duplicate ID:**

**Well Type:** ☐ Permanent  
**MS/MSD:** Yes  
**Trip Blank Required:** No

**Temporary**  
**Yes**  
**No**

**Well Condition:** ☑ Good  
**If fair or poor explain in Notes:** 

**Well Diameter:** 2  
**Foot BGS to Foot BGS:**

**Screen Interval:** 

**Stickup:** Yes  
**No:**

**If yes, foot above ground:**

**Gauging/Purging Information**

**Depth to Water (ft BTOC):** 19.58

**Tubing/Pump Depth (ft BTOC):**

**Total Depth (ft BTOC):**

**Purge Start Time (24-hr):** 1140

**Depth to Product (ft BTOC):**

**Purge End Time (24-hr):**

**Product Thickness (ft):**

**Total Purge Time (min):**

**LOW FLOW:** Max Draw Down = (Tubing Depth – Top of Screen Depth) X 0.25 = ft

**Min. purge volume if required:**

**purge volume (gallons) = volume of water/ft (gal/ft X Water column thickness (ft) X # of casing volumes =**

**Well Diameter – gal/ft:** 1" = 0.041 gal/ft

**2" = 0.163 gal/ft

**4" = 0.653 gal/ft

**6" = 1.469 gal/ft

**Water Quality Parameters**

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical (each reading taken after pumping a minimum of 1 flow through cell volume)

<table>
<thead>
<tr>
<th>Time (24-hr)</th>
<th>Flow Rate (gallons/minute)</th>
<th>Purge Volume (gallons)</th>
<th>Temp (°C) (±3%)</th>
<th>Specific Conductance (µS/cm) (±10%)</th>
<th>DO (mg/L) (±5%)</th>
<th>ORP (mV) (±100mV)</th>
<th>pH (±0.1)</th>
<th>Turbidity (NTU) (±10% or &lt;5 NTU)</th>
<th>DTW (ft BTOC)</th>
<th>Drawdown (ft) (Max—x ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1142</td>
<td>300</td>
<td>1.0</td>
<td>0.30</td>
<td>0.531</td>
<td>0.75</td>
<td>39.9</td>
<td>L</td>
<td>19.58</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>1145</td>
<td>300</td>
<td>3.0</td>
<td>0.29</td>
<td>0.521</td>
<td>0.74</td>
<td>39.4</td>
<td>L</td>
<td>19.59</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>1148</td>
<td>300</td>
<td>3.0</td>
<td>0.32</td>
<td>0.498</td>
<td>0.44</td>
<td>35.1</td>
<td>L</td>
<td>19.59</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>1151</td>
<td>300</td>
<td>3.0</td>
<td>0.31</td>
<td>0.453</td>
<td>1.73</td>
<td>34.3</td>
<td>L</td>
<td>19.59</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>1155</td>
<td>300</td>
<td>3.0</td>
<td>0.31</td>
<td>0.450</td>
<td>2.08</td>
<td>34.2</td>
<td>L</td>
<td>19.59</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>1158</td>
<td>300</td>
<td>0.0</td>
<td>0.18</td>
<td>0.458</td>
<td>2.00</td>
<td>34.2</td>
<td>L</td>
<td>19.59</td>
<td>0.01</td>
<td></td>
</tr>
</tbody>
</table>

**Parameter Stable (Check applicable):** ✔

**Sample Color:**

**Sample Odor:**

**Sheen:**

---

**Notes:**

**Equipment:**

- **Pump Type:**
- **Tubing (Type/Length):**
- **Bailer Type:**
- **Water Level Meter:**
- **Multi-Parameter Meter (Make/SN#):**
- **Turbidity Meter (Make/SN#):**
- **Filter Lot #:**

**Purge Water Handling:**

- ☑ Discharged to surface
- ☑ Containerized
- ☑ Treated (how?):

---

BGS = Below Ground Surface, BTOC = Below Top of Casing, NA = Not Applicable

Page 1 of 1
### Water Parameter Meter Calibration Log

**Date:** 10/02/2017  
**Time:** 13:05  
**Calibration By:** Carly Grant

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>True Value</th>
<th>Lot #</th>
<th>Date Opened</th>
<th>Expiration Date</th>
<th>PreCalibration Reading</th>
<th>Reading After Calibration</th>
<th>Calibration Acceptance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.00</td>
<td>7.00</td>
<td>USL</td>
<td>10/2/17</td>
<td>10/18</td>
<td>6.91</td>
<td>7.00</td>
<td>± 0.10</td>
</tr>
<tr>
<td></td>
<td>4.00</td>
<td>4.00</td>
<td>V21</td>
<td>10/2/17</td>
<td>10/18</td>
<td>4.22</td>
<td>4.00</td>
<td>± 0.10</td>
</tr>
<tr>
<td></td>
<td>10.00</td>
<td>10.18</td>
<td>SV1</td>
<td>10/2/17</td>
<td>10/18</td>
<td>10.12</td>
<td>10.18</td>
<td>± 0.10</td>
</tr>
<tr>
<td>Sp Cond (mS/cm)</td>
<td>1.413</td>
<td>1.413</td>
<td>TV2</td>
<td>10/2/17</td>
<td>10/18</td>
<td>2.270</td>
<td>1.413</td>
<td>± 10%</td>
</tr>
<tr>
<td>ORP (mV)</td>
<td>240</td>
<td>240</td>
<td>1100</td>
<td>10/2/17</td>
<td>10/18</td>
<td>220.6</td>
<td>240</td>
<td></td>
</tr>
<tr>
<td>DO*</td>
<td>10.07</td>
<td>9.95 μg/L</td>
<td>10.07</td>
<td>10/2/17</td>
<td>10/18</td>
<td>9.97 μg/L</td>
<td>9.51 μg/L</td>
<td>± 2%</td>
</tr>
</tbody>
</table>

If parameter not included in sampling event, fill in box with NA (not applicable)

* Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table

---

**Date:** 10/03/17  
**Time:** 08:07  
**Calibration By:** Carly Grant

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>True Value</th>
<th>Lot #</th>
<th>Date Opened</th>
<th>Expiration Date</th>
<th>PreCalibration Reading</th>
<th>Reading After Calibration</th>
<th>Calibration Acceptance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.00</td>
<td>7.00</td>
<td>USL</td>
<td>10/2/17</td>
<td>10/18</td>
<td>6.98</td>
<td>7.00</td>
<td>± 0.10</td>
</tr>
<tr>
<td></td>
<td>4.00</td>
<td>4.00</td>
<td>V21</td>
<td>10/2/17</td>
<td>10/18</td>
<td>4.63</td>
<td>4.00</td>
<td>± 0.10</td>
</tr>
<tr>
<td></td>
<td>10.00</td>
<td>10.18</td>
<td>TV1</td>
<td>10/2/17</td>
<td>10/18</td>
<td>10.21</td>
<td>10.18</td>
<td>± 0.10</td>
</tr>
<tr>
<td>Sp Cond (mS/cm)</td>
<td>1.413</td>
<td>1.413</td>
<td>V1A</td>
<td>10/2/17</td>
<td>10/18</td>
<td>1.41C</td>
<td>1.413</td>
<td>± 10%</td>
</tr>
<tr>
<td>ORP (mV)</td>
<td>240</td>
<td>240</td>
<td>1100</td>
<td>10/2/17</td>
<td>10/18</td>
<td>253.4</td>
<td>240.0</td>
<td></td>
</tr>
<tr>
<td>DO*</td>
<td>10.07</td>
<td>10.41 μg/L</td>
<td>10.07</td>
<td>10/2/17</td>
<td>10/18</td>
<td>10.41 μg/L</td>
<td>9.51 μg/L</td>
<td>± 2%</td>
</tr>
</tbody>
</table>

If parameter not included in sampling event, fill in box with NA (not applicable)

* Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table
APPENDIX E

LABORATORY QUALITY ASSURANCE REVIEW
Report

LABORATORY DATA
QUALITY ASSURANCE REVIEW

2016 QUARTERLY GROUNDWATER MONITORING
GOLDEN VALLEY ELECTRIC ASSOCIATION
HEALY, ALASKA

December 2016

Prepared by: Jason Gray
Reviewed by: Heather Simon

SLR International Corporation
2700 Gambell Street, Suite 200
Anchorage, AK 99503

SLR Project Number 104.00367.16002
ACRONYMS AND ABBREVIATIONS

% percent
AAC Alaska Administrative Code
AK Alaska
ADEC Alaska Department of Environmental Conservation
ACZ ACZ Laboratories of Steamboat Springs, CO.
°C degrees Celsius
CCV continuing calibration verification
Cl chloride
COC chain of custody
DL detection limit
EDDs electronic data deliverable
EPA Environmental Protection Agency
F fluoride
LCL lower control limit
LCS laboratory control sample
LCSD laboratory control sample duplicate
LOD limit of detection
LOQ limit of quantitation
mg/L milligrams per liter
MS matrix spike
MSD matrix spike duplicate
NR not reported
NELAP National Environmental Laboratory Accreditation Program
PARCCS precision, accuracy, representativeness, comparability, completeness, and sensitivity
pCi/L pico Curies per liter
QA quality assurance
QAR quality assurance review
QC quality control
QCS quality control sample
RPD relative percent difference
SDG sample delivery group
SLR SLR International Corporation
SO4 sulfate
SGS SGS North America, Inc.
SM Standard Methods
TDS total dissolved solids
UCL upper control limit
Introduction

This report summarizes a review of analytical data for quarterly groundwater and surface water samples collected between April 1, 2016 and October 10, 2016 at the Healy Power Plant in Healy, Alaska. Samples were collected by SLR International Corporation (SLR) in accordance with the Golden Valley Electric Association (GVEA) Healy Power Plant Groundwater Monitoring Plan (SLR, 2016). SGS North America, Inc (SGS) provided analytical support to the project. SGS maintains a current Alaska Department of Environmental Conservation (ADEC) Contaminated Sites approval number (UST-005) for analytical methods of interest, as applicable. Samples analyzed for radium were transferred to ACZ Laboratories, Inc. (ACZ) in Steamboat Springs, Colorado. ACZ is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory for this analysis. Table 1 provides a sample receipt summary, by sample delivery groups (SDG). Table 2 provides a summary of the methods and analytes performed of each SDG.

Table 1  Sample Receipt Summary

<table>
<thead>
<tr>
<th>SDG</th>
<th>Date Collected</th>
<th>Cooler Temperature Blanks (SGS)</th>
<th>Date Received by SGS</th>
<th>Date Received by ACZ¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>1162808 (SGS) / 1162815 (ACZ)</td>
<td>5/31 and 6/1/2016</td>
<td>1.3 °C, 4.8 °C, 4.7 °C</td>
<td>6/2/2016</td>
<td>6/10/2016</td>
</tr>
</tbody>
</table>

Notes:
1 – Only Radium samples were shipped to ACZ. Refer to Table 2.

Acronyms:
°C – degrees Celsius
SDG – sample delivery group
Table 2  Method, Analyte, and Laboratory

<table>
<thead>
<tr>
<th>Analytical Method</th>
<th>Analyte</th>
<th>Laboratory</th>
<th>Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPA 200.8 Low</td>
<td>14 Metals (Total)</td>
<td>SGS</td>
<td>Water</td>
</tr>
<tr>
<td>EPA 300.0</td>
<td>Chloride</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPA 300.0</td>
<td>Fluoride</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPA 300.0</td>
<td>Sulfate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SM21 2540C</td>
<td>TDS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPA 1631 E</td>
<td>Mercury, Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPA 903.1/904.0</td>
<td>Radium 226 and 228</td>
<td>ACZ</td>
<td></td>
</tr>
</tbody>
</table>

Acronyms:
AK – Alaska
EPA – Environmental Protection Agency
SDG – sample delivery group
SM – Standard Methods
TDS – total dissolved solids

Laboratory final reports were provided as Level II deliverables, and included documentation of each delivery group chain-of-custody (COC) and sample receipt condition. A Microsoft Access compatible electronic data deliverables (EDDs) for each report was also provided. The PDF laboratory reports and the EDDs are provided electronically as Attachment 2.

Quality Assurance Program

A quality assurance (QA) program was followed for this project that addressed project administration, sampling, quality control, and data review. SLR adhered to required and established sampling and COC protocols. The select laboratory maintains an internal quality assurance program and standard operating procedures.

The analytical data was reviewed for consistency with ADEC Technical Memorandum, Environmental Laboratory Data and Quality Assurance (ADEC, 2009) requirements, analytical method criteria and laboratory criteria. An ADEC Laboratory Data Review Checklist was completed for each SDG, and is included as Attachment 1 to this Quality Assurance Review (QAR). A review for any anomalies to the project requirements for precision, accuracy, representativeness, comparability, completeness and sensitivity (PARCCS) are noted in this QAR, and any data qualifications discussed.

The data review included the following, as applicable:

- Reviewing COC records for completeness, signatures, and dates;
- Identifying any sample receipt or preservation anomalies that could impact data quality;
- Evaluating whether laboratory reporting limits met project goals;
- Reviewing calibration verification recoveries, to include confirming that the laboratory did not identify that any Continuing Calibration Verification (CCV) recoveries or other calibration related criteria as being outside applicable acceptance limits;
• Reviewing case narratives for any discussion of any internal standard recoveries outside of acceptance limits. Internal standard performance was not otherwise presented in the report or in the electronic data deliverable and was reviewed only from the case narratives

• Verifying that surrogate analyses were within recovery acceptance limits;

• Verifying that Laboratory Control Samples (LCS), Laboratory Control Sample Duplicates (LCSD), Matrix Spike (MS), and Matrix Spike Duplicate (MSD) recoveries were within acceptance limits;

• Evaluating the result relative percent difference (RPD) between primary and duplicate field samples, LCS/LCSD, MS/MSD, and laboratory duplicates; and

• Providing an overall assessment of laboratory data quality and qualifying sample results as necessary.

Data Qualifications
As part of the quality assurance review, qualifiers (i.e. flags) were applied to datum as determined necessary based on specified criteria, or professional judgement. In all cases, the basis for qualification and the applied data flag are discussed in this QAR. Table 3 provides a list of potential qualifiers (i.e., flags). These data flags were appended to the data as appropriate.

<table>
<thead>
<tr>
<th>Qualifier</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q</td>
<td>One or more laboratory quality control criteria (e.g., LCS recovery, surrogate spike recovery) failed. Where applicable, an “H”, “L”, or “N” was appended to indicate positive, negative, or unknown bias, respectively.</td>
</tr>
<tr>
<td>J</td>
<td>The analyte was positively identified but the result was outside the calibration range, between the limit of quantitation (LOQ) and the detection limit (DL); the quantitation was an estimate.</td>
</tr>
<tr>
<td>M</td>
<td>The concentration was an estimate due to a sample matrix quality control failure. Where applicable, an “H”, “L”, or “N” was appended to indicate positive, negative, or unknown bias, respectively.</td>
</tr>
<tr>
<td>B</td>
<td>Blank contamination: The analyte was positively identified in the blank (e.g., trip blank, method blank, equipment blank, etc.) associated with the sample and the concentration reported for the sample was less than five times that of the blank (ten times for metals and common laboratory contaminants methylene chloride and acetone).</td>
</tr>
<tr>
<td>P</td>
<td>Sample preservation requirements were not satisfied.</td>
</tr>
<tr>
<td>R</td>
<td>Sample result is rejected.</td>
</tr>
</tbody>
</table>

A discussion of the project data quality relative to PARCCS goals and summary of any anomalies or failures requiring data qualifiers follows.

Data Validation

Data Packages
The data packages were checked for transcription errors, omissions, or other anomalies. No issues were noted with regards to the data packages.
Preservation (Chemical and Temperature)
Samples were documented as appropriately preserved upon receipt at SGS and ACZ laboratories with the following noted explanation:

Sample cooler receipt temperatures are listed in Table 1. The E300.0 method for analysis of Chloride (Cl), fluoride (F), and sulfate (SO4), and the SM21 2540C method for analysis of TDS specify a temperature preservation range of 4±2 °C. Temperatures above the required range have the potential to degrade the sample and introduce bias to the reported sample results. Samples for the analysis of metals, mercury and radium do not have a temperature preservation requirement; coolers containing samples for these analysis are considered acceptable when received by the laboratory at ambient (un-chilled) temperature.

Cooler temperatures below the 2°C lower limit could result in freezing of the sample with the potential for damage to the integrity of the sample container. However, there is no concern that unfrozen samples would otherwise be impacted if received below 2°C. In cases where the cooler receipt temperatures were below 2°C, the lab practice is to inspect the sample containers and document if any ice is present in the samples or if there are any other indication of broken or compromised containers. Provided no sample integrity concerns were identified, samples received slightly below the 2°C temperature limit were considered acceptable and analyzed with no qualification of the results applied due to cooler receipt temperature. The cooler temperatures and any anomalous sample conditions are documented in the laboratory data package case narrative and on the sample receipt form. In no instances were sample coolers identified as above a temperature range required for the analysis or frozen at the time of laboratory receipt.

The radium analysis methods included a recommendation that the samples should be preserved with nitric acid within 5 days of collection. For all of the first quarter radium samples, collected on April 1st, 2016, were not preserved until they arrived at ACZ lab 11 days after collection. These radium samples have been qualified as “P” to indicate a deficiency with preservation. All other samples for this project are documented as meeting applicable chemical preservation requirements.

Sample Receipt
The sample receipt documentation was checked for anomalies. The following issues were noted with regards to the receipt of the samples.

SDG 1161485
- Two of the three containers collected for analysis of the first quarter radium sample MW-5 arrived at ACZ lab broken. The laboratory was able to perform the analysis from the one remaining intact container; however, it was necessary to dilute the sample due to insufficient matrix volume and the reporting limits and error are elevated in comparison to typical undiluted samples.

SDG 1164468
- One of the three containers collected for analysis of the third quarter radium sample MW-7 arrived at ACZ lab broken. The laboratory was able to perform the analysis from the two remaining intact container, there was no impact on the data quality.
Holding Times
Analytical holding times were satisfied for all sample results.

Laboratory Method Blanks
Laboratory method blanks were analyzed at the appropriate frequencies. Potential method blank contamination of sample results was not detected in any method blanks at or above the Limit of Detection (LOD). Contamination was present in several method blank samples below the LOD. Associated field sample results from the contaminated batches that were less than, or equal to, ten times the blank detection were considered affected, and were qualified as shown in Table 4. In all cases, affected results were well below applicable project cleanup levels, data usability was not affected.

Table 4  Method Blank Detections and Associated Sample Qualifications

<table>
<thead>
<tr>
<th>SDG</th>
<th>Sample ID</th>
<th>Lab ID</th>
<th>Method</th>
<th>Analyte</th>
<th>Result (mg/L)</th>
<th>Flag</th>
<th>MCL (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB</td>
<td>1327966</td>
<td></td>
<td></td>
<td>E200.8</td>
<td>0.00079</td>
<td>B</td>
<td>0.015</td>
</tr>
<tr>
<td>MW-3</td>
<td>1162808003</td>
<td></td>
<td></td>
<td>0.000133</td>
<td>J, B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MW-7</td>
<td>1162808008</td>
<td></td>
<td></td>
<td>0</td>
<td>J</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MW-5</td>
<td>1162808006</td>
<td></td>
<td></td>
<td>0.0000883</td>
<td>J,B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MW-6</td>
<td>1162808004</td>
<td></td>
<td></td>
<td>0.000139</td>
<td>J,B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MW-96</td>
<td>1162808005</td>
<td></td>
<td></td>
<td>0.000125</td>
<td>J,B</td>
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</tr>
<tr>
<td>MB</td>
<td>1329175</td>
<td></td>
<td></td>
<td>E245.1</td>
<td>0.000079</td>
<td>B</td>
<td>0.0002</td>
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<tr>
<td>MW-1R</td>
<td>1162808009</td>
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<td></td>
<td>0.00179</td>
<td>J,B</td>
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<td></td>
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<td>MW-3</td>
<td>1162808003</td>
<td></td>
<td></td>
<td>0.000165</td>
<td>J,B</td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td>0.000174</td>
<td>J,B</td>
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<tr>
<td>MW-4</td>
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<td></td>
<td>0.000362</td>
<td>J,B</td>
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<tr>
<td>MW-6</td>
<td>1162808004</td>
<td></td>
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<td>0.00013</td>
<td>J,B</td>
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<tr>
<td>MW-7</td>
<td>1162808008</td>
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<td>0.000122</td>
<td>J,B</td>
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<tr>
<td>MW-8</td>
<td>1162808010</td>
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<td></td>
<td>0.000925</td>
<td>J,B</td>
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<tr>
<td>SW-1</td>
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<td></td>
<td>0.000124</td>
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<tr>
<td>MW-96</td>
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<td></td>
<td></td>
<td>0.000145</td>
<td>J,B</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: 1 – MCL Value shown from Federal Drinking Water Primary Standards - Maximum Contaminant Level (MCL) (40 CFR Part 141.)

Abbreviations: mg/L – milligrams per liter

Equipment Blanks
No equipment blank samples were required to be collected or analyzed per the Groundwater Monitoring Plan (SLR, 2016), all samples were collected using disposable or dedicated sampling equipment for each well.

Reporting Limits
For non-detect groundwater sample results, LODs were compared to the Federal Drinking Water Primary Standards - Maximum Contaminant Level (MCL) (40 CFR Part 141.) All results of non-detected analytes had LODs at or below the applicable MCL.
Continuous Calibration Verifications (CCVs)
CCVs were analyzed at the appropriate frequencies. CCV data was included only in the EDDs, but not in the case narratives. All CCV recoveries were within acceptable limits, as reviewed in the EDDs.

Surrogate Recovery Results
None of the analytical methods requested for this project required surrogate spiking of the samples. Radium 228 sample for third quarter analysis of MW-4 was noted in the ACZ report as having a barium tracer recovered above the control limit due to high sediment levels present in the sample. As such, the Radium 228 result for the third quarter analysis of well MW-4 is rejected (R flagged) on the basis of the tracer recovery outlier and should not be considered representative of the sample.

Laboratory Control Samples
Batch LCS were analyzed at the appropriate frequencies. All LCS recoveries were within acceptable limits. LCSD samples were prepared and analyzed for total dissolved solids batches but are not required for the other analytical methods of this project.

Matrix Spike and Matrix Spike Duplicate Samples
Laboratory duplicate samples and batch MS/MSD pairs were analyzed for evaluation of batch precision at the appropriate frequencies. There were several outliers of the batch MS/MSD recovery and RPD; however, none of the parent samples prepared as a batch MS/MSD were field samples of this project. No project samples were qualified on the basis of non-project sample MS/MSD outliers.

Field Duplicates
One blind field duplicate sample set was collected for each quarter from among 9 field samples satisfying the 10% field duplicate frequency. Parent Sample and Field Duplicate pairs are presented in Table 5. The higher value from each pair is recommended as the most conservatively representative result for the location. RPD was calculated all sample pairs with at least one result reported above the LOD. All calculated RPD were below the 30% ADEC limit groundwater demonstrating acceptable precision and sample representativeness with exception of the radium results shown in Table 6. The radium sample duplicate pairs with RPD above the 30% limit have been flagged as QN to indicate a potential bias due to precision not meeting the data quality objective. The radium sample results are still well below the applicable MCL and are useable for the purpose of determining compliance with the MCL.

Table 5  Field Duplicate Identification

<table>
<thead>
<tr>
<th>SDG</th>
<th>Sample Date</th>
<th>Parent Sample ID</th>
<th>Duplicate Sample ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>1161485</td>
<td>4/1/2016</td>
<td>MW-7</td>
<td>MW-97</td>
</tr>
<tr>
<td>1162808</td>
<td>6/1/2016</td>
<td>MW-6</td>
<td>MW-96</td>
</tr>
<tr>
<td>1162808</td>
<td>8/3/2016</td>
<td>MW-5</td>
<td>MW-59</td>
</tr>
<tr>
<td>1162808</td>
<td>10/4/2016</td>
<td>MW-5</td>
<td>MW-95</td>
</tr>
</tbody>
</table>
Table 6  Field Duplicate Precision Exceedances

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Field Sample ID</th>
<th>Sample Date /time</th>
<th>Result</th>
<th>Pair RPD (30% limit)</th>
<th>Flag</th>
<th>Result</th>
<th>Pair RPD (30% limit)</th>
<th>Flag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>MW-5</td>
<td>08/03/2016 11:19</td>
<td>0.04</td>
<td>100%</td>
<td>QN</td>
<td>2</td>
<td>151%</td>
<td>QN</td>
</tr>
<tr>
<td>Duplicate</td>
<td>MW-59</td>
<td>08/03/2016 11:19</td>
<td>0.12</td>
<td></td>
<td>QN</td>
<td>0.28</td>
<td></td>
<td>QN</td>
</tr>
<tr>
<td>Primary</td>
<td>MW-5</td>
<td>10/04/2016 11:03</td>
<td>0.11</td>
<td>75%</td>
<td>QN</td>
<td>1.8</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>Duplicate</td>
<td>MW-95 c</td>
<td>10/04/2016 14:00</td>
<td>0.05</td>
<td></td>
<td>QN</td>
<td>1.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>MW-6</td>
<td>06/01/2016 09:11</td>
<td>0.06</td>
<td>80%</td>
<td>QN</td>
<td>0.08</td>
<td>440%</td>
<td>QN</td>
</tr>
<tr>
<td>Duplicate</td>
<td>MW-96 c</td>
<td>06/01/2016 09:11</td>
<td>0.14</td>
<td></td>
<td>QN</td>
<td>-0.03</td>
<td></td>
<td>QN</td>
</tr>
<tr>
<td>Primary</td>
<td>MW-7</td>
<td>04/01/2016 15:09</td>
<td>0.28</td>
<td>52%</td>
<td>QN</td>
<td>0.78</td>
<td>88%</td>
<td>QN</td>
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<tr>
<td>Duplicate</td>
<td>MW-97 c</td>
<td>04/01/2016 15:09</td>
<td>0.17</td>
<td></td>
<td>QN</td>
<td>0.69</td>
<td></td>
<td>QN</td>
</tr>
</tbody>
</table>

Laboratory Duplicate Samples

Laboratory duplicates were analyzed at appropriate frequencies. All duplicate RPDs were within acceptable limits with the following noted exception; ACZ noted that the laboratory duplicate sample for the fourth quarter samples had radium 228 in a laboratory preparation batch with RPD above the control limit. All radium 228 Results of ACZ report L33556/ SGS report 1165933 are qualified “QN” to indicate a potential for low precision to the results as demonstrated by the batch RPD failure as shown in Table 7.

Table 7 Laboratory Duplicate Precision Exceedance Field Sample Flagging

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Sample Date / Time</th>
<th>EPA 904.0 (pCi/L)</th>
<th>Radium 228</th>
<th>Total Radium 226 and 228</th>
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</thead>
<tbody>
<tr>
<td>MW-1R</td>
<td>10/04/2016 10:10</td>
<td>1.2 QN</td>
<td>1.28</td>
<td>QN</td>
</tr>
<tr>
<td>MW-2</td>
<td>10/03/2016 18:22</td>
<td>0.98 QN</td>
<td>1.59</td>
<td>QN</td>
</tr>
<tr>
<td>MW-3</td>
<td>10/03/2016 17:25</td>
<td>0.43 QN</td>
<td>0.51</td>
<td>QN</td>
</tr>
<tr>
<td>MW-4</td>
<td>10/03/2016 16:17</td>
<td>0.75 QN</td>
<td>1.07</td>
<td>QN</td>
</tr>
<tr>
<td>MW-5</td>
<td>10/04/2016 11:03</td>
<td>1.8 QN</td>
<td>1.91</td>
<td>QN</td>
</tr>
<tr>
<td>MW-95 c</td>
<td>10/04/2016 14:00</td>
<td>1.4 QN</td>
<td>1.45</td>
<td>QN</td>
</tr>
<tr>
<td>MW-6</td>
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<td>0.7 QN</td>
<td>0.77</td>
<td>QN</td>
</tr>
<tr>
<td>MW-7</td>
<td>10/03/2016 14:15</td>
<td>0.45 QN</td>
<td>0.61</td>
<td>QN</td>
</tr>
<tr>
<td>MW-8</td>
<td>10/03/2016 15:15</td>
<td>0.3 QN</td>
<td>0.44</td>
<td>QN</td>
</tr>
<tr>
<td>SW-1</td>
<td>10/03/2016 11:30</td>
<td>1.9 QN</td>
<td>2.26</td>
<td>QN</td>
</tr>
</tbody>
</table>
Overall Assessment

Precision, Accuracy, Representativeness, Comparability, Completeness, and Sensitivity Summary

- Precision: Overall project precision goals were met. There were a few cases where radium results were qualified based on field duplicate RPD (Table 6).
- Accuracy: Overall project accuracy goals were met, except in one case of a radium-228 result was qualified by the lab on the basis of poor tracer recovery due to high sediment matrix effects.
- Representativeness: Representativeness goals were met. The samples were collected from planned locations in accordance with the SLR March 2016 monitoring plan.
- Comparability: Comparability goals were considered acceptable. SGS laboratory provided analytical support for all methods, except radium. This analysis was performed by ACZ, for all samples. Approved methods were used for the analysis of all samples.
- Completeness: Completeness goals were met. The data were >99% complete with the one noted exception of a single rejected radium-228 result.
- Sensitivity: Sensitivity goals were considered met. There were some typical low level detections for a few analytes in method blanks that resulted in qualified data.

This data were considered of overall good quality and acceptable for use with the noted limitations and qualifications in this QAR.

References

- Alaska Department of Environmental Conservation (ADEC), 2016. Title 18 of the Alaska Administrative Code Chapter 75 (18 AAC 75), _Oil and Other Hazardous Substances Pollution Control_, as amended November 6.
Attachments

Attachment 1 – ADEC Data Review Checklists

Attachment 2 – Laboratory Deliverables
Attachment 1

ADEC Data Review Checklists
Laboratory Data Review Checklist

Completed by: Jason Gray

Title: Project Chemist  Date: December 28, 2016


Consultant Firm: SLR International Corporation

Laboratory Name: SGS Anchorage; ACZ CO  Laboratory Report Number: 1161485

ADEC File Number: NA  ADEC RecKey Number: NA

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      ☒ Yes  ☐ No  ☐ NA (Please explain.)  Comments:
      SGS DW certification AK00971, UST-005, ACZ Certification # CO00028
   b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☒ Yes  ☐ No  ☐ NA (Please explain.)  Comments:
      Radium samples analyzed via ACZ Certification # CO00028

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      ☒ Yes  ☐ No  ☐ NA (Please explain.)  Comments:

   b. Correct analyses requested?
      ☒ Yes  ☐ No  ☐ NA (Please explain.)  Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      ☒ Yes  ☐ No  ☐ NA (Please explain.)  Comments:
      Samples requiring temperature preservation were within range, see QAR for details.
b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

- Yes  [X] No  [ ] NA (Please explain.)  Comments:

| Radium samples were not preserved per method, all other analysis samples receipt temperature acceptable, see QAR for details. |

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c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

- Yes  [X] No  [ ] NA (Please explain.)  Comments:

| Sample condition documented in report, several Radium sample containers damaged. |

| |

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d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

- Yes  [X] No  [ ] NA (Please explain.)  Comments:

| No discrepancies noted. |

| |

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e. Data quality or usability affected? (Please explain.)

| Comments: |

| No data usability impacts noted. |

| |

| |

| |

| |

4. Case Narrative

a. Present and understandable?

- Yes  [X] No  [ ] NA (Please explain.)  Comments:

| |

| |

| |

| |

b. Discrepancies, errors or QC failures identified by the lab?

- Yes  [X] No  [ ] NA (Please explain.)  Comments:

| Matrix effect MS/MSD recovery noted in case narrative. |

| |

| |

| |

c. Were all corrective actions documented?

- Yes  [ ] No  [X] NA (Please explain.)  Comments:

| No corrective actions were required. |

| |

| |

| |

| |

d. What is the effect on data quality/usability according to the case narrative?

| Comments: |

| No data quality or usability noted as affected. |

| |

| |

| |

| |
5. **Samples Results**
   a. Correct analyses performed/reported as requested on COC?
      - Yes
      - No
      - NA (Please explain.)
      Comments:

   b. All applicable holding times met?
      - Yes
      - No
      - NA (Please explain.)
      Comments:

   c. All soils reported on a dry weight basis?
      - Yes
      - No
      - NA (Please explain.)
      Comments:
      Only water samples were included in this work order.

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      - Yes
      - No
      - NA (Please explain.)
      Comments:
      PQLs acceptable evaluated against federal drinking water regulations.

   e. Data quality or usability affected?
      Comments:
      No affects.

6. **QC Samples**
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
         - Yes
         - No
         - NA (Please explain.)
         Comments:

      ii. All method blank results less than PQL?
          - Yes
          - No
          - NA (Please explain.)
          Comments:

      iii. If above PQL, what samples are affected?
           Comments:
           None affected.

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
          - Yes
          - No
          - NA (Please explain.)
          Comments:
          None affected.
v. Data quality or usability affected? (Please explain.)

Comments:

Results within 10X the level of MB contamination should be considered as potentially bias high.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

☐ Yes ☐ No ☒ NA (Please explain.)

Comments:

No organics analysis included.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

No data affected.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☐ Yes ☐ No ☒ NA (Please explain.)

Comments:

No results required flags for LCS or LCSD performance.

vii. Data quality or usability affected? (Use comment box to explain.)

No affected results.
c. Surrogates – Organics Only

  i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?  
     □ Yes □ No ☒ NA (Please explain.)  Comments:
     No analysis required surrogates.

  ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits?  
      And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other  
      analyses see the laboratory report pages)  
     □ Yes □ No ☒ NA (Please explain.)  Comments:
     No analysis required surrogates.

  iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data  
       flags clearly defined?  
     □ Yes □ No ☒ NA (Please explain.)  Comments:
     No analysis required surrogates.

  iv. Data quality or usability affected? (Use the comment box to explain.)  
     Comments:
     No impact.

  d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and  
     Soil

     i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?  
        (If not, enter explanation below.)  
     □ Yes □ No ☒ NA (Please explain.)  Comments:
     No volatile samples.

     ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?  
         (If not, a comment explaining why must be entered below)  
     □ Yes □ No ☒ NA (Please explain.)  Comments:
     No volatile samples.

     iii. All results less than PQL?  
          □ Yes □ No ☒ NA (Please explain.)  Comments:
          No volatile samples.

     iv. If above PQL, what samples are affected?  
          Not applicable.
v. Data quality or usability affected? (Please explain.)

No impact.

Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
   ☒ Yes ☐ No ☐ NA (Please explain.)

   Comments:

   See CDQR field duplicate section for frequency and association of primary and duplicate samples. The 10% duplicate frequency requirement was satisfied for all matrix and analyte combinations.

ii. Submitted blind to lab?
   ☒ Yes ☐ No ☐ NA (Please explain.)

   Comments:

   Field duplicates for this project are presented in Table 7 of the CDQR.

iii. Precision – All relative percent differences (RPD) less than specified DQOs?

   (Recommended: 30% water, 50% soil)

   \[
   \text{RPD (\%)} = \frac{\text{Absolute value of: }}{\times 100}
   \]

   \[
   = \frac{(R_1 - R_2)}{(R_1 + R_2) / 2}
   \]

   Where  \( R_1 = \) Sample Concentration

   \( R_2 = \) Field Duplicate Concentration

   ☐ Yes ☒ No ☐ NA (Please explain.)

   Comments:

   See table 7 of CDQR for field duplicate RPD outliers.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

   Yes, See QAR discussion and flagging of field duplicates.

   Comments:

f. Decontamination or Equipment Blank (If not used explain why).

   ☐ Yes ☒ No ☐ NA (Please explain.)

   Comments:

   No equipment blank, not applicable.
i. All results less than PQL?

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<th></th>
<th>Yes</th>
<th>No</th>
<th>NA (Please explain.)</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>No equipment blank, not applicable.</td>
<td></td>
</tr>
</tbody>
</table>

ii. If above PQL, what samples are affected?

Comments:

<table>
<thead>
<tr>
<th></th>
<th>No equipment blank, not applicable.</th>
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</thead>
</table>

iii. Data quality or usability affected? (Please explain.)

Comments:

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<thead>
<tr>
<th></th>
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</tr>
</thead>
</table>

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

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<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>NA (Please explain.)</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No equipment blank, not applicable.
No data affected.
Laboratory Data Review Checklist

Completed by: Jason Gray

Title: Project Chemist Date: December 28, 2016

CS Report Name: GVEA Healy Power Plant Report Date: June 28, 2016

Consultant Firm: SLR International Corporation

Laboratory Name: SGS Anchorage Laboratory Report Number: 1162808

ADEC File Number: NA ADEC RecKey Number: NA

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      □ Yes □ No □ NA (Please explain.) Comments:
      SGS DW certification AK00971

   b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □ Yes □ No □ NA (Please explain.) Comments:
      Analyzed at receipt lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      □ Yes □ No □ NA (Please explain.) Comments:

   b. Correct analyses requested?
      □ Yes □ No □ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      □ Yes □ No □ NA (Please explain.) Comments:
      Samples requiring temperature preservation were within range, see QAR for details.
b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
   ☑ Yes  ☐ No  ☐ NA (Please explain.)  Comments:
   Preservation acceptable.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
   ☑ Yes  ☐ No  ☐ NA (Please explain.)  Comments:
   Sample condition documented in report, no anomalies.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
   ☑ Yes  ☐ No  ☐ NA (Please explain.)  Comments:
   No discrepancies noted.

e. Data quality or usability affected? (Please explain.)
   Comments:
   No data usability impacts noted.

4. Case Narrative
   a. Present and understandable?
      ☑ Yes  ☐ No  ☐ NA (Please explain.)  Comments:

   b. Discrepancies, errors or QC failures identified by the lab?
      ☑ Yes  ☐ No  ☐ NA (Please explain.)  Comments:
   Matrix effect MS/MSD recovery noted in case narrative.

c. Were all corrective actions documented?
   ☐ Yes  ☐ No  ☑ NA (Please explain.)  Comments:
   No corrective actions were required.

d. What is the effect on data quality/usability according to the case narrative?
   Comments:
   No data quality or usability noted as affected.
5. **Samples Results**
   a. Correct analyses performed/reported as requested on COC?
      - Yes
      - No
      - NA (Please explain.)
      - Comments:

   b. All applicable holding times met?
      - Yes
      - No
      - NA (Please explain.)
      - Comments:

   c. All soils reported on a dry weight basis?
      - Yes
      - No
      - NA (Please explain.)
      - Comments:

      Only water samples were included in this work order.

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      - Yes
      - No
      - NA (Please explain.)
      - Comments:

      PQLs acceptable evaluated against federal drinking water regulations.

   e. Data quality or usability affected?
      - Comments:

      No affects.

6. **QC Samples**
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
         - Yes
         - No
         - NA (Please explain.)
         - Comments:

      ii. All method blank results less than PQL?
          - Yes
          - No
          - NA (Please explain.)
          - Comments:

      iii. If above PQL, what samples are affected?
           - Comments:

           See QAR table 4

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

         - Yes
         - No
         - NA (Please explain.)
         - Comments:

         See QAR table 4
v. Data quality or usability affected? (Please explain.)

Comments:

Results within 10X the level of MB contamination for Lead and Mercury should be considered as potentially bias high.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

☐ Yes  ☐ No  ☒ NA (Please explain.)

Comments:

No organics analysis included in report.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

☒ Yes  ☐ No  ☐ NA (Please explain.)

Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

☒ Yes  ☐ No  ☐ NA (Please explain.)

Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

☒ Yes  ☐ No  ☐ NA (Please explain.)

Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

No data affected.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☐ Yes  ☐ No  ☒ NA (Please explain.)

Comments:

No results required flags for LCS or LCSD performance.

vii. Data quality or usability affected? (Use comment box to explain.)

No affected results.
c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

- Yes
- No
- NA (Please explain.)

Comments:

No analysis required surrogates.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

- Yes
- No
- NA (Please explain.)

Comments:

No analysis required surrogates.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

- Yes
- No
- NA (Please explain.)

Comments:

No analysis required surrogates.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

No impact.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

- Yes
- No
- NA (Please explain.)

Comments:

No volatile samples.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

- Yes
- No
- NA (Please explain.)

Comments:

No volatile samples.

iii. All results less than PQL?

- Yes
- No
- NA (Please explain.)

Comments:

No volatile samples.

iv. If above PQL, what samples are affected?

Not applicable.
v. Data quality or usability affected? (Please explain.)

Comments: No impact.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

☐ Yes ☒ No ☐ NA (Please explain.)

Comments: See CDQR field duplicate section for frequency and association of primary and duplicate samples. The 10% duplicate frequency requirement was satisfied for all matrix and analyte combinations.

ii. Submitted blind to lab?

☐ Yes ☒ No ☐ NA (Please explain.)

Field duplicates for this project are presented in Table 7 of the CDQR.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

\[
\text{RPD} (%) = \text{Absolute value of: } \left( \frac{R_1 - R_2}{(R_1 + R_2)/2} \right) \times 100
\]

Where \( R_1 = \text{Sample Concentration} \)

\( R_2 = \text{Field Duplicate Concentration} \)

☐ Yes ☒ No ☐ NA (Please explain.)

Comments: See table 7 of CDQR for field duplicate RPD outliers.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Yes, See QAR discussion and flagging of field duplicates.

Comments:

f. Decontamination or Equipment Blank (If not used explain why).

☐ Yes ☒ No ☐ NA (Please explain.)

Comments: No equipment blank, not applicable.
i. All results less than PQL?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>NA (Please explain.)</th>
<th>Comments:</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No equipment blank, not applicable.</td>
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</tbody>
</table>

ii. If above PQL, what samples are affected?

Comments:

No equipment blank, not applicable.

iii. Data quality or usability affected? (Please explain.)

Comments:

No data affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

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<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>NA (Please explain.)</th>
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</table>
Laboratory Data Review Checklist

Completed by: Jason Gray

Title: Project Chemist Date: December 28, 2016


Consultant Firm: SLR International Corporation

Laboratory Name: SGS Anchorage; ACZ CO Laboratory Report Number: 1162815

ADEC File Number: NA ADEC RecKey Number: NA

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      ☑ Yes ☐ No ☐ NA (Please explain.) Comments:
      Received at SGS Anchorage (DW certification AK00971, UST-005) Radium analyzed at ACZ Certification # CO00028.

   b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☑ Yes ☐ No ☐ NA (Please explain.) Comments:
      Radium samples analyzed via ACZ Certification # CO00028

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      ☑ Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      ☑ Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      ☐ Yes ☐ No ☑ NA (Please explain.) Comments:
      No temperature preservation required for radium methods, see QAR for details.
b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

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<th>Yes</th>
<th>No</th>
<th>NA (Please explain.)</th>
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</table>

Acceptable preservation documented.

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c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

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<th>Yes</th>
<th>No</th>
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No damage noted.

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d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

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<th>Yes</th>
<th>No</th>
<th>NA (Please explain.)</th>
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No discrepancies noted.

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e. Data quality or usability affected? (Please explain.)

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No data usability impacts noted.

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4. Case Narrative

a. Present and understandable?

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<th>Yes</th>
<th>No</th>
<th>NA (Please explain.)</th>
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Case Narrative by SGS.

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b. Discrepancies, errors or QC failures identified by the lab?

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<th>Yes</th>
<th>No</th>
<th>NA (Please explain.)</th>
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No errors or QC failures identified.

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c. Were all corrective actions documented?

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<th>No</th>
<th>NA (Please explain.)</th>
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No corrective actions were required.

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d. What is the effect on data quality/usability according to the case narrative?

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No data quality or usability noted as affected.
5. **Samples Results**
   a. Correct analyses performed/reported as requested on COC?
      - Yes
      - No
      - NA (Please explain.)
      - Comments:

   b. All applicable holding times met?
      - Yes
      - No
      - NA (Please explain.)
      - Comments:

   c. All soils reported on a dry weight basis?
      - Yes
      - No
      - NA (Please explain.)
      - Comments:

      Only water samples were included in this work order.

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      - Yes
      - No
      - NA (Please explain.)
      - Comments:

      PQLs acceptable evaluated against federal drinking water regulations.

   e. Data quality or usability affected?
      - Comments:

      No affects.

6. **QC Samples**
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
         - Yes
         - No
         - NA (Please explain.)
         - Comments:

      ii. All method blank results less than PQL?
          - Yes
          - No
          - NA (Please explain.)
          - Comments:

      iii. If above PQL, what samples are affected?
           - Comments:

           None affected.

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

         - Yes
         - No
         - NA (Please explain.)
         - Comments:

         None affected.
v. Data quality or usability affected? (Please explain.)
   Comments:
   No samples affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)
   
i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
   [ ] Yes    [ ] No    [x] NA (Please explain.)
   Comments:
   No organics analysis included.

   ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
   [x] Yes    [ ] No    [ ] NA (Please explain.)
   Comments:

   iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
   [x] Yes    [ ] No    [ ] NA (Please explain.)
   Comments:

   iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
   [x] Yes    [ ] No    [ ] NA (Please explain.)
   Comments:

   v. If %R or RPD is outside of acceptable limits, what samples are affected?
   Comments:
   No data affected.

   vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
   [ ] Yes    [x] No    [x] NA (Please explain.)
   Comments:
   No results required flags for LCS or LCSD performance.

   vii. Data quality or usability affected? (Use comment box to explain.)
   Comments:
   No affected results.
c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
   - Yes
   - No
   - NA (Please explain.)
   Comments:

   No analysis required surrogates.

   ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits?
       And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
   - Yes
   - No
   - NA (Please explain.)
   Comments:

   No analysis required surrogates.

   iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
       - Yes
       - No
       - NA (Please explain.)
       Comments:

   No analysis required surrogates.

   iv. Data quality or usability affected? (Use the comment box to explain.)
       Comments:

       No impact.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

   i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
      (If not, enter explanation below.)
      - Yes
      - No
      - NA (Please explain.)
      Comments:

      No volatile samples.

   ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?
      (If not, a comment explaining why must be entered below)
      - Yes
      - No
      - NA (Please explain.)
      Comments:

      No volatile samples.

   iii. All results less than PQL?
       - Yes
       - No
       - NA (Please explain.)
       Comments:

       No volatile samples.

   iv. If above PQL, what samples are affected?

       Not applicable.
v. Data quality or usability affected? (Please explain.)

Comments:

No impact.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

☑ Yes ☐ No ☐ NA (Please explain.)

Comments:

See CDQR field duplicate section for frequency and association of primary and duplicate samples. The 10% duplicate frequency requirement was satisfied for all matrix and analyte combinations.

ii. Submitted blind to lab?

☑ Yes ☐ No ☐ NA (Please explain.)

Comments:

Field duplicates for this project are presented in Table 7 of the CDQR.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

\[
\text{RPD (\%) = \frac{|R_1 - R_2|}{\frac{(R_1 + R_2)}{2}} \times 100}
\]

Where

\[ R_1 = \text{Sample Concentration} \]
\[ R_2 = \text{Field Duplicate Concentration} \]

☑ Yes ☐ No ☐ NA (Please explain.)

Comments:

See table 7 of CDQR for field duplicate RPD outliers.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Yes, See QAR discussion and flagging of field duplicates.

Comments:

f. Decontamination or Equipment Blank (If not used explain why).

☐ Yes ☑ No ☐ NA (Please explain.)

Comments:

No equipment blank, not applicable.
i. All results less than PQL?
   - Yes
   - No
   - NA (Please explain.)
   - Comments:
     No equipment blank, not applicable.

ii. If above PQL, what samples are affected?
    - Comments:
      No equipment blank, not applicable.

iii. Data quality or usability affected? (Please explain.)
    - Comments:
      No data affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      - Yes
      - No
      - NA (Please explain.)
      - Comments:
Laboratory Data Review Checklist

Completed by: Jason Gray
Title: Project Chemist Date: December 28, 2016
CS Report Name: GVEA Healy Power Plant Report Date: August 22, 2016
Consultant Firm: SLR International Corporation
Laboratory Name: SGS Anchorage Laboratory Report Number: 1164461
ADEC File Number: NA ADEC RecKey Number: NA

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      ☒ Yes ☐ No ☐ NA (Please explain.) Comments:
      SGS DW certification AK00971, UST 007.
   b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No ☒ NA (Please explain.) Comments:

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      ☒ Yes ☐ No ☐ NA (Please explain.) Comments:
   b. Correct analyses requested?
      ☒ Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      ☒ Yes ☐ No ☐ NA (Please explain.) Comments:
      Samples requiring temperature preservation were within range, see QAR for details.
b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

☑️ Yes ☐ No ☐ NA (Please explain.) Comments:

Sample preservation documented as acceptable.

Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

☑️ Yes ☐ No ☐ NA (Please explain.) Comments:

Sample condition documented in report, no anomalies.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

☑️ Yes ☐ No ☐ NA (Please explain.) Comments:

No discrepancies noted.

e. Data quality or usability affected? (Please explain.)

Comments:

No data usability impacts noted.

4. Case Narrative

a. Present and understandable?

☑️ Yes ☐ No ☐ NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

☑️ Yes ☐ No ☐ NA (Please explain.) Comments:

Matrix effect MS/MSD recovery noted in case narrative.

c. Were all corrective actions documented?

☐ Yes ☐ No ☑️ NA (Please explain.) Comments:

No corrective actions were required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

No data quality or usability noted as affected.
5. **Samples Results**
   a. Correct analyses performed/reported as requested on COC?
      - Yes
      - No
      - NA (Please explain.)
      
   b. All applicable holding times met?
      - Yes
      - No
      - NA (Please explain.)
      
   c. All soils reported on a dry weight basis?
      - Yes
      - No
      - NA (Please explain.)
      
Only water samples were included in this work order.

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      - Yes
      - No
      - NA (Please explain.)
      
PQLs acceptable evaluated against federal drinking water regulations.

   e. Data quality or usability affected?
      
      Comments:

      No affects.

6. **QC Samples**
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
         - Yes
         - No
         - NA (Please explain.)
         
   ii. All method blank results less than PQL?
       - Yes
       - No
       - NA (Please explain.)
       
   iii. If above PQL, what samples are affected?
        
        Comments:

        None effected.

   iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
        
        - Yes
        - No
        - NA (Please explain.)
        
        Comments:

        None effected.
v. Data quality or usability affected? (Please explain.)

<table>
<thead>
<tr>
<th>Comments:</th>
<th>No affected.</th>
</tr>
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</table>

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>NA (Please explain.)</th>
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<td>Comments:</td>
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<table>
<thead>
<tr>
<th>No organics analysis included in report.</th>
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ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

<table>
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<th>Yes</th>
<th>No</th>
<th>NA (Please explain.)</th>
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<td>Comments:</td>
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</table>

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>NA (Please explain.)</th>
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<td>Comments:</td>
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</table>

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

<table>
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<tr>
<th>Yes</th>
<th>No</th>
<th>NA (Please explain.)</th>
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<td>Comments:</td>
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v. If %R or RPD is outside of acceptable limits, what samples are affected?

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<tr>
<th>Comments:</th>
<th>No data affected.</th>
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vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>NA (Please explain.)</th>
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<td>Comments:</td>
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<tr>
<th>No results required flags for LCS or LCSD performance.</th>
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vii. Data quality or usability affected? (Use comment box to explain.)

<table>
<thead>
<tr>
<th>Comments:</th>
<th>No affected results.</th>
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</table>

No affected results.
c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
   - Yes
   - No
   - ❏ NA (Please explain.)
   - Comments:

   No analysis required surrogates.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits?
    And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
   - Yes
   - No
   - ❏ NA (Please explain.)
   - Comments:

   No analysis required surrogates.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
   - Yes
   - No
   - ❏ NA (Please explain.)
   - Comments:

   No analysis required surrogates.

iv. Data quality or usability affected? (Use the comment box to explain.)
   - Comments:

   No impact.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
   (If not, enter explanation below.)
   - Yes
   - No
   - ❏ NA (Please explain.)
   - Comments:

   No volatile samples.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?
    (If not, a comment explaining why must be entered below)
   - Yes
   - No
   - ❏ NA (Please explain.)
   - Comments:

   No volatile samples.

iii. All results less than PQL?
   - Yes
   - No
   - ❏ NA (Please explain.)
   - Comments:

   No volatile samples.

iv. If above PQL, what samples are affected?

   Not applicable.
v. Data quality or usability affected? (Please explain.)

No impact.

Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
   ☒ Yes  ☐ No  ☐ NA (Please explain.)

Comments:

See CDQR field duplicate section for frequency and association of primary and duplicate samples. The 10% duplicate frequency requirement was satisfied for all matrix and analyte combinations.

ii. Submitted blind to lab?
   ☒ Yes  ☐ No  ☐ NA (Please explain.)

Field duplicates for this project are presented in Table 7 of the CDQR.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD} (%) = \frac{(R_1 - R_2)}{\left(\frac{(R_1 + R_2)}{2}\right)} \times 100$$

Where $R_1 = \text{Sample Concentration}$

$R_2 = \text{Field Duplicate Concentration}$

☐ Yes  ☒ No  ☐ NA (Please explain.)

Comments:

See table 7 of CDQR for field duplicate RPD outliers.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Yes, See QAR discussion and flagging of field duplicates.

Comments:

f. Decontamination or Equipment Blank (If not used explain why).

☐ Yes  ☒ No  ☐ NA (Please explain.)

Comments:

No equipment blank, not applicable.
i. All results less than PQL?
   □ Yes   □ No   ☒ NA (Please explain.)   Comments:
   No equipment blank, not applicable.

ii. If above PQL, what samples are affected?
    Comments:
    No equipment blank, not applicable.

iii. Data quality or usability affected? (Please explain.)
     Comments:
     No data affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      ☒ Yes   □ No   □ NA (Please explain.)   Comments:
Laboratory Data Review Checklist

Completed by: Jason Gray

Title: Project Chemist Date: December 28, 2016

CS Report Name: GVEA Healy Power Plant Report Date: September 15, 2016

Consultant Firm: SLR International Corporation

Laboratory Name: SGS Anchorage; ACZ CO Laboratory Report Number: 1164468

ADEC File Number: NA ADEC RecKey Number: NA

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      ☑ Yes ☐ No ☐ NA (Please explain.) Comments:
      
      Received at SGS Anchorage (DW certification AK00971, UST-005) Radium analyzed at ACZ Certification # CO00028.

   b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☑ Yes ☐ No ☐ NA (Please explain.) Comments:
      
      Radium samples analyzed via ACZ Certification # CO00028

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      ☑ Yes ☐ No ☐ NA (Please explain.) Comments:
      
   b. Correct analyses requested?
      ☐ Yes ☑ No ☐ NA (Please explain.) Comments:
      
      Analysis were not indicated on the COC prepared by SGS, correct analysis were performed.

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      ☐ Yes ☐ No ☑ NA (Please explain.) Comments:
      
      No temperature preservation required for radium methods, see QAR for details.
b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

- Yes  
- No  
- NA (Please explain.)  

Comments:

Acceptable preservation documented.

---

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

- Yes  
- No  
- NA (Please explain.)  

Comments:

One sample container for MW-7 was received broken, sufficient sample remained to complete the analysis, see QAR.

---

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

- Yes  
- No  
- NA (Please explain.)  

Comments:

No other discrepancies noted other than broken sample container for MW-7.

---

e. Data quality or usability affected? (Please explain.)

Comments:

No data usability impacts noted.

---

4. Case Narrative

a. Present and understandable?

- Yes  
- No  
- NA (Please explain.)  

Comments:

Case Narrative by ALS

---

b. Discrepancies, errors or QC failures identified by the lab?

- Yes  
- No  
- NA (Please explain.)  

Comments:

Sample MW-4 radium-228 result is invalid due to matrix effects.

---

c. Were all corrective actions documented?

- Yes  
- No  
- NA (Please explain.)  

Comments:

No corrective actions were documented.

---

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Radium-228 results for MW-4 rejected.
5. **Samples Results**
   a. Correct analyses performed/reported as requested on COC?
      - Yes
      - No
      - NA (Please explain.)
      Comments:

   b. All applicable holding times met?
      - Yes
      - No
      - NA (Please explain.)
      Comments:

   c. All soils reported on a dry weight basis?
      - Yes
      - No
      - NA (Please explain.)
      Comments:
      Only water samples were included in this work order.

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      - Yes
      - No
      - NA (Please explain.)
      Comments:
      PQLs acceptable evaluated against federal drinking water regulations.

   e. Data quality or usability affected?
      Comments:
      No affects.

6. **QC Samples**
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
         - Yes
         - No
         - NA (Please explain.)
         Comments:

      ii. All method blank results less than PQL?
          - Yes
          - No
          - NA (Please explain.)
          Comments:

      iii. If above PQL, what samples are affected?
          Comments:
          None affected.

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
          - Yes
          - No
          - NA (Please explain.)
          Comments:
          None affected.
v. Data quality or usability affected? (Please explain.)

Comments:
No samples affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

☐ Yes    ☐ No    ☒ NA (Please explain.)

 Comments:
No organics analysis included.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

☒ Yes    ☐ No    ☐ NA (Please explain.)

 Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

☒ Yes    ☐ No    ☐ NA (Please explain.)

 Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

☒ Yes    ☐ No    ☐ NA (Please explain.)

 Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:
No data affected.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☐ Yes    ☐ No    ☒ NA (Please explain.)

 Comments:
No results required flags for LCS or LCSD performance.

vii. Data quality or usability affected? (Use comment box to explain.)

No affected results.
c. Surrogates – Organics Only

<table>
<thead>
<tr>
<th>i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes ☐ No ☒ NA (Please explain.)</td>
</tr>
<tr>
<td><strong>No analysis required surrogates.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes ☐ No ☒ NA (Please explain.)</td>
</tr>
<tr>
<td><strong>No analysis required surrogates.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes ☐ No ☒ NA (Please explain.)</td>
</tr>
<tr>
<td><strong>No analysis required surrogates.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>iv. Data quality or usability affected? (Use the comment box to explain.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comments:</td>
</tr>
<tr>
<td><strong>No impact.</strong></td>
</tr>
</tbody>
</table>

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

<table>
<thead>
<tr>
<th>i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes ☐ No ☒ NA (Please explain.)</td>
</tr>
<tr>
<td><strong>No volatile samples.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes ☐ No ☒ NA (Please explain.)</td>
</tr>
<tr>
<td><strong>No volatile samples.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>iii. All results less than PQL?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Yes ☐ No ☒ NA (Please explain.)</td>
</tr>
<tr>
<td><strong>No volatile samples.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>iv. If above PQL, what samples are affected?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comments:</td>
</tr>
<tr>
<td><strong>Not applicable.</strong></td>
</tr>
</tbody>
</table>
v. Data quality or usability affected? (Please explain.)

<table>
<thead>
<tr>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>No impact.</td>
</tr>
</tbody>
</table>

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>NA (Please explain.)</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See CDQR field duplicate section for frequency and association of primary and duplicate samples. The 10% duplicate frequency requirement was satisfied for all matrix and analyte combinations.

ii. Submitted blind to lab?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>NA (Please explain.)</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Field duplicates for this project are presented in Table 7 of the CDQR.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

\[
\text{RPD (\%)} = \frac{\text{Absolute value of}: (R_1-R_2)}{((R_1+R_2)/2)} \times 100
\]

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>NA (Please explain.)</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>☑</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See table 7 of CDQR for field duplicate RPD outliers.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

<table>
<thead>
<tr>
<th>Yes, See QAR discussion and flagging of field duplicates.</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

f. Decontamination or Equipment Blank (If not used explain why).

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>NA (Please explain.)</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>☑</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No equipment blank, not applicable.
i. All results less than PQL?
   - Yes
   - No
   - NA (Please explain.)
   Comments:
   No equipment blank, not applicable.

ii. If above PQL, what samples are affected?
   Comments:
   No equipment blank, not applicable.

iii. Data quality or usability affected? (Please explain.)
   Comments:
   No data affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
a. Defined and appropriate?
   - Yes
   - No
   - NA (Please explain.)
   Comments:
Laboratory Data Review Checklist

Completed by: Jason Gray
Title: Project Chemist Date: December 28, 2016
CS Report Name: GVEA Healy Power Plant Report Date: October 19, 2016
Consultant Firm: SLR International Corporation
Laboratory Name: SGS Anchorage Laboratory Report Number: 1165932
ADEC File Number: NA ADEC RecKey Number: NA

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      ☑ Yes ☐ No ☐ NA (Please explain.) Comments:
      SGS DW certification AK00971, UST 007.

   b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐ Yes ☐ No ☑ NA (Please explain.) Comments:

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      ☑ Yes ☐ No ☐ NA (Please explain.) Comments:

   b. Correct analyses requested?
      ☑ Yes ☐ No ☐ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      ☑ Yes ☐ No ☐ NA (Please explain.) Comments:
      Samples requiring temperature preservation were within range, see QAR for details.
b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
   ☒ Yes ☐ No ☐ NA (Please explain.)  Comments:
   Sample preservation documented as acceptable.

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
      ☒ Yes ☐ No ☐ NA (Please explain.)  Comments:
      Sample condition documented in report, no anomalies.

   d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
      ☒ Yes ☐ No ☐ NA (Please explain.)  Comments:
      No discrepancies noted.

   e. Data quality or usability affected? (Please explain.)  Comments:
      No data usability impacts noted.

4. Case Narrative
   a. Present and understandable?
      ☒ Yes ☐ No ☐ NA (Please explain.)  Comments:

   b. Discrepancies, errors or QC failures identified by the lab?
      ☒ Yes ☐ No ☐ NA (Please explain.)  Comments:
      Matrix effect MS/MSD recovery noted in case narrative.

   c. Were all corrective actions documented?
      ☐ Yes ☐ No ☒ NA (Please explain.)  Comments:
      No corrective actions were required.

   d. What is the effect on data quality/usability according to the case narrative?
      Comments:
      No data quality or usability noted as affected.
5. **Samples Results**
   a. Correct analyses performed/reported as requested on COC?
      - Yes
      - No
      - NA (Please explain.)
      Comments:
   
   b. All applicable holding times met?
      - Yes
      - No
      - NA (Please explain.)
      Comments:
   
   c. All soils reported on a dry weight basis?
      - Yes
      - No
      - NA (Please explain.)
      Comments:
      Only water samples were included in this work order.
   
   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      - Yes
      - No
      - NA (Please explain.)
      Comments:
      PQLs acceptable evaluated against federal drinking water regulations.
   
   e. Data quality or usability affected?
      Comments:
      No affects.

6. **QC Samples**
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
         - Yes
         - No
         - NA (Please explain.)
         Comments:
      
      ii. All method blank results less than PQL?
         - Yes
         - No
         - NA (Please explain.)
         Comments:
      
      iii. If above PQL, what samples are affected?
         Comments:
         None effected.
      
      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
         - Yes
         - No
         - NA (Please explain.)
         Comments:
         None effected.
v. Data quality or usability affected? (Please explain.)

Comments:

No affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

☐ Yes  ☐ No  ☒ NA (Please explain.)

Comments:

No organics analysis included in report.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

☒ Yes  ☐ No  ☒ NA (Please explain.)

Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

☒ Yes  ☐ No  ☒ NA (Please explain.)

Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

☒ Yes  ☐ No  ☒ NA (Please explain.)

Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

No data affected.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☐ Yes  ☐ No  ☒ NA (Please explain.)

Comments:

No results required flags for LCS or LCSD performance.

vii. Data quality or usability affected? (Use comment box to explain.)

No affected results.
c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
   - [ ] Yes
   - [ ] No
   - [X] NA (Please explain.)
   Comments:
   
   No analysis required surrogates.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
   - [ ] Yes
   - [ ] No
   - [X] NA (Please explain.)
   Comments:
   
   No analysis required surrogates.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
   - [ ] Yes
   - [ ] No
   - [X] NA (Please explain.)
   Comments:
   
   No analysis required surrogates.

iv. Data quality or usability affected? (Use the comment box to explain.)
   Comments:
   
   No impact.

---

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
   - [ ] Yes
   - [ ] No
   - [X] NA (Please explain.)
   Comments:
   
   No volatile samples.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
   - [ ] Yes
   - [ ] No
   - [X] NA (Please explain.)
   Comments:
   
   No volatile samples.

iii. All results less than PQL?
   - [ ] Yes
   - [ ] No
   - [X] NA (Please explain.)
   Comments:
   
   No volatile samples.

iv. If above PQL, what samples are affected?

   Not applicable.
Comments:

v. Data quality or usability affected? (Please explain.)

No impact.

Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

☐ Yes ☒ No ☐ NA (Please explain.)

Comments:

See CDQR field duplicate section for frequency and association of primary and duplicate samples. The 10% duplicate frequency requirement was satisfied for all matrix and analyte combinations.

ii. Submitted blind to lab?

☐ Yes ☒ No ☐ NA (Please explain.)

Comments:

Field duplicates for this project are presented in Table 7 of the CDQR.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

\[
\text{RPD} \, (\%) = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100
\]

Where  
\( R_1 = \) Sample Concentration  
\( R_2 = \) Field Duplicate Concentration

☐ Yes ☒ No ☐ NA (Please explain.)

Comments:

See table 7 of CDQR for field duplicate RPD outliers.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Yes, See QAR discussion and flagging of field duplicates.

Comments:

f. Decontamination or Equipment Blank (If not used explain why).

☐ Yes ☒ No ☐ NA (Please explain.)

Comments:

No equipment blank, not applicable.
i. All results less than PQL?

☐ Yes  ☐ No  ☒ NA (Please explain.)  Comments: No equipment blank, not applicable.

ii. If above PQL, what samples are affected?

 Comments: No equipment blank, not applicable.

iii. Data quality or usability affected? (Please explain.)

 Comments: No data affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
    a. Defined and appropriate?

☒ Yes  ☐ No  ☐ NA (Please explain.)  Comments:
Laboratory Data Review Checklist

Completed by: Jason Gray

Title: Project Chemist Date: December 28, 2016

CS Report Name: GVEA Healy Power Plant Report Date: November 21, 2016

Consultant Firm: SLR International Corporation

Laboratory Name: SGS Anchorage; ACZ CO Laboratory Report Number: 1165933

ADEC File Number: NA ADEC RecKey Number: NA

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      □ Yes □ No □ NA (Please explain.) Comments:
      Received at SGS Anchorage (DW certification AK00971, UST-005) Radium analyzed at ACZ Certification # CO00028.

   b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □ Yes □ No □ NA (Please explain.) Comments:
      Radium samples analyzed via ACZ Certification # CO00028

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      □ Yes □ No □ NA (Please explain.) Comments:

   b. Correct analyses requested?
      □ Yes □ No □ NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      □ Yes □ No □ NA (Please explain.) Comments:
      No temperature preservation required for radium methods, see QAR for details.
b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
   ☑ Yes ☐ No ☐ NA (Please explain.) Comments:

   Acceptable preservation documented.

   No damage noted.

   No discrepancies noted.

   No data usability impacts noted.

4. Case Narrative
   a. Present and understandable?
      ☑ Yes ☐ No ☐ NA (Please explain.) Comments:

      Case Narrative by ALS

   b. Discrepancies, errors or QC failures identified by the lab?
      ☑ Yes ☐ No ☐ NA (Please explain.) Comments:

      LCS/LCSD RPD exceedance.

   c. Were all corrective actions documented?
      ☑ Yes ☐ No ☐ NA (Please explain.) Comments:

      No corrective actions were performed.

   d. What is the effect on data quality/usability according to the case narrative?
      Comments:

      No data quality or usability effects noted by the case narrative.
5. **Samples Results**
   a. Correct analyses performed/reported as requested on COC?
      - Yes
      - No
      - NA (Please explain.)
      Comments:

   b. All applicable holding times met?
      - Yes
      - No
      - NA (Please explain.)
      Comments:

   c. All soils reported on a dry weight basis?
      - Yes
      - No
      - NA (Please explain.)
      Comments:

      Only water samples were included in this work order.

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      - Yes
      - No
      - NA (Please explain.)
      Comments:

      PQLs acceptable evaluated against federal drinking water regulations.

   e. Data quality or usability affected?
      Comments:
      - No affects.

6. **QC Samples**
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
         - Yes
         - No
         - NA (Please explain.)
         Comments:

      ii. All method blank results less than PQL?
          - Yes
          - No
          - NA (Please explain.)
          Comments:

      iii. If above PQL, what samples are affected? 
          Comments:

          None affected.

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
          - Yes
          - No
          - NA (Please explain.)
          Comments:

          None affected.
v. Data quality or usability affected? (Please explain.)
   Comments:
   No samples effected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

   i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
      □ Yes □ No □ NA (Please explain.)  Comments:
      No organics analysis included.

   ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
      □ Yes □ No □ NA (Please explain.)  Comments:

   iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
      □ Yes □ No □ NA (Please explain.)  Comments:

   iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
      □ Yes □ No □ NA (Please explain.)  Comments:
      Radium-228 batch RPD was above control limit.

   v. If %R or RPD is outside of acceptable limits, what samples are affected?
      Comments:
      All report field samples.

   vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
      □ Yes □ No □ NA (Please explain.)  Comments:
      Results identified as having extended qualifier “*” but the qualifier is not clearly defined other than by mention of the error in the case narrative.

   vii. Data quality or usability affected? (Use comment box to explain.)
      All results should be considered estimates due to failed batch precision.
c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
   
   [ ] Yes   [ ] No   [X] NA (Please explain.)
   
   Comments:

   No analysis required surrogates.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
   
   [ ] Yes   [ ] No   [X] NA (Please explain.)
   
   Comments:

   No analysis required surrogates.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
   
   [ ] Yes   [ ] No   [X] NA (Please explain.)
   
   Comments:

   No analysis required surrogates.

iv. Data quality or usability affected? (Use the comment box to explain.)
   
   Comments:

   No impact.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

   i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
   
   [ ] Yes   [ ] No   [X] NA (Please explain.)
   
   Comments:

   No volatile samples.

   ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
   
   [ ] Yes   [ ] No   [X] NA (Please explain.)
   
   Comments:

   No volatile samples.

   iii. All results less than PQL?
   
   [ ] Yes   [ ] No   [X] NA (Please explain.)
   
   Comments:

   No volatile samples.

   iv. If above PQL, what samples are affected?

   Not applicable.
v. Data quality or usability affected? (Please explain.)

Comments:

No impact.

Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
   ☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

See CDQR field duplicate section for frequency and association of primary and duplicate samples. The 10% duplicate frequency requirement was satisfied for all matrix and analyte combinations.

ii. Submitted blind to lab?
   ☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

Field duplicates for this project are presented in Table 7 of the CDQR.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

   \[
   \text{RPD (\%) = Absolute value of: } \frac{(R_1-R_2)}{\left(\frac{(R_1+R_2)}{2}\right)} \times 100
   \]

   Where
   
   \[
   \begin{align*}
   R_1 &= \text{Sample Concentration}\\
   R_2 &= \text{Field Duplicate Concentration}
   \end{align*}
   \]

   ☐ Yes ☒ No ☐ NA (Please explain.)

Comments:

See table 7 of CDQR for field duplicate RPD outliers.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Yes, See QAR discussion and flagging of field duplicates.

Comments:

Comments:

f. Decontamination or Equipment Blank (If not used explain why).

☐ Yes ☒ No ☐ NA (Please explain.)

Comments:

No equipment blank, not applicable.
i. All results less than PQL?

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<tr>
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</table>

No equipment blank, not applicable.

ii. If above PQL, what samples are affected?

Comments:

No equipment blank, not applicable.

iii. Data quality or usability affected? (Please explain.)

Comments:

No data affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

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</tbody>
</table>

No data affected.
Attachment 2
Laboratory Deliverables

(Data packages and electronic files)
To: SLR Alaska-Anchorage  
2700 Gambell Street Suite 200  
Anchorage, AK 99503  
(907)564-6907  

Report Number: 1161485  
Client Project: GVEA Healy Power Plant  

Dear Heather Simon,  

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.  

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.  

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.  

Sincerely,  
SGS North America Inc.  

Justin Nelson  
Project Manager  
Justin.Nelson@sgs.com
Case Narrative

SGS Client: SLR Alaska-Anchorage
SGS Project: 1161485
Project Name/Site: GVEA Healy Power Plant
Project Contact: Heather Simon

Refer to sample receipt form for information on sample condition.

Radium 226/228 was analyzed by ACZ Lab of Steamboat Springs, CO.

MW-2 (1161485002) PS
300.0 - Anions - LOQ for fluoride was elevated due to matrix interference.

MW-3 (1161485003) PS
300.0 - Anions - LOQ for fluoride was elevated due to matrix interference.

MW-6 (1161485006) PS
300.0 - Anions - LOQ for fluoride was elevated due to matrix interference.

MW-8 (1161485008) PS
300.0 - Anions - LOQ for fluoride was elevated due to matrix interference.

1161503001(1318756MS) (1318759) MS
300.0 - Anions - MS recovery for fluoride is outside of QC criteria (11%). Refer to LCS for accuracy requirements.

1167805001(1319168MS) (1319169) MS
200.8 - Metals MS recovery for calcium (54%) does not meet QC criteria. Sample concentration is 4 times greater than the spike level.

1161546002(1319275MS) (1319278) MS
300.0 - Anions - MS recovery for fluoride is outside of QC criteria (11%). Refer to LCS for accuracy requirements.

1161503001(1318756MSD) (1318760) MSD
300.0 - Anions - MSD recovery is outside of QC criteria for fluoride (112%), nitrite (112%) and total nitrate/nitrite (111%). Refer to LCS for accuracy requirements.

1161546002(1319275MSD) (1319279) MSD
300.0 - Anions - MSD recovery for several analytes is outside QC criteria. Refer to LCS for accuracy requirements.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.
Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

* The analyte has exceeded allowable regulatory or control limits.
! Surrogate out of control limits.
B Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB Closing Continuing Calibration Verification
CL Control Limit
D The analyte concentration is the result of a dilution.
DF Dilution Factor
DL Detection Limit (i.e., maximum method detection limit)
E The analyte result is above the calibrated range.
F Indicates value that is greater than or equal to the DL
GT Greater Than
IB Instrument Blank
ICV Initial Calibration Verification
J The quantitation is an estimation.
JL The analyte was positively identified, but the quantitation is a low estimation.
LCS(D) Laboratory Control Spike (Duplicate)
LOD Limit of Detection (i.e., 1/2 of the LOQ)
LOQ Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT Less Than
M A matrix effect was present.
MB Method Blank
MS(D) Matrix Spike (Duplicate)
ND Indicates the analyte is not detected.
R Rejected
RPD Relative Percent Difference
U Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.
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<th>Client Sample ID</th>
<th>Lab Sample ID</th>
<th>Collected</th>
<th>Received</th>
<th>Matrix</th>
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<td>MW-1R</td>
<td>1161485001</td>
<td>04/01/2016</td>
<td>04/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
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<td>MW-2</td>
<td>1161485002</td>
<td>04/01/2016</td>
<td>04/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-3</td>
<td>1161485003</td>
<td>04/01/2016</td>
<td>04/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
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<td>MW-4</td>
<td>1161485004</td>
<td>04/01/2016</td>
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<td>Water (Surface, Eff., Ground)</td>
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<td>MW-5</td>
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<td>MW-7</td>
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<td>MW-8</td>
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<td>SW-1</td>
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<tr>
<td>EP245.1</td>
<td>Mercury EPA 245.1 for non drinking water</td>
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<tr>
<td>EP200.8</td>
<td>Metals in Water by 200.8 ICP-MS</td>
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<td>Total Dissolved Solids SM18 2540C</td>
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### Detectable Results Summary

**Client Sample ID:** MW-1R  
**Lab Sample ID:** 1161485001

**Metals by ICP/MS**

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<td>Arsenic</td>
<td>55.1</td>
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<td>Barium</td>
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<tr>
<td>Boron</td>
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<td>Cadmium</td>
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<td>Calcium</td>
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<tr>
<td>Chromium</td>
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<tr>
<td>Lead</td>
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<tr>
<td>Lithium</td>
<td>14.5</td>
<td>ug/L</td>
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<tr>
<td>Molybdenum</td>
<td>318</td>
<td>ug/L</td>
</tr>
<tr>
<td>Selenium</td>
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<td>ug/L</td>
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<tr>
<td>Titanium</td>
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<td>Mercury</td>
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**Metals Department**

**Waters Department**

### Client Sample ID: MW-2  
**Lab Sample ID:** 1161485002

**Metals by ICP/MS**

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<td>Barium</td>
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<td>Boron</td>
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<td>Calcium</td>
<td>180000</td>
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<td>Cobalt</td>
<td>5.31</td>
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<td>Lead</td>
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<td>Molybdenum</td>
<td>9.77</td>
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<td>Selenium</td>
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<td>Titanium</td>
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<td>Chloride</td>
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<td>Fluoride</td>
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<td>Sulfate</td>
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Print Date: 04/29/2016 9:58:39AM

SGS North America Inc.

Member of SGS Group
# Detectable Results Summary

**Client Sample ID:** MW-3  
**Lab Sample ID:** 1161485003  

### Metals by ICP/MS

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<td>Boron</td>
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### Waters Department

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<td>Total Dissolved Solids</td>
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**Client Sample ID:** MW-4  
**Lab Sample ID:** 1161485004  

### Metals by ICP/MS

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<td>Boron</td>
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Print Date: 04/29/2016  9:58:39AM
## Detectable Results Summary

### Client Sample ID: MW-5
Lab Sample ID: 1161485005

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<td>Total Dissolved Solids</td>
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### Metals by ICP/MS

### Water Department

### Client Sample ID: MW-6
Lab Sample ID: 1161485006

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<th>Parameter</th>
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<td>Boron</td>
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<td>Lead</td>
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<td>Molybdenum</td>
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<td>Selenium</td>
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### Metals by ICP/MS

### Water Department

### Client Sample ID: MW-7
Lab Sample ID: 1161485007

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<td>Boron</td>
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<td>Calcium</td>
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## Detectable Results Summary

### MW-8

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<tr>
<td>Boron</td>
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<td>Cobalt</td>
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<td>Molybdenium</td>
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<td>Selenium</td>
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<td>Chloride</td>
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### SW-1

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### MW-97

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### Results of MW-1R

**Client Sample ID:** MW-1R  
**Client Project ID:** GVEA Healy Power Plant  
**Lab Sample ID:** 1161485001  
**Lab Project ID:** 1161485

**Collection Date:** 04/01/16 21:47  
**Received Date:** 04/04/16 09:59  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

### Results by Metals by ICP/MS

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<th>Parameter</th>
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<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
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<td>0.310</td>
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<tr>
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<td>ug/L</td>
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</table>

**Batch Information**

- **Analytical Batch:** MMS9305  
- **Analytical Method:** EP200.8  
- **Analyst:** VDL  
- **Analytical Date/Time:** 04/13/16 11:05  
- **Container ID:** 1161485001-C  

- **Prep Batch:** MXX29639  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 04/11/16 12:08  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol.:** 50 mL  

J flagging is activated
Results of **MW-1R**

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<tr>
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<th>Result</th>
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<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
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**Batch Information**

- Analytical Batch: MCV5694
- Analytical Method: EP245.1
- Analyst: MEV
- Analytical Date/Time: 04/05/16 12:49
- Container ID: 1161485001-C

- Prep Batch: MXX29637
- Prep Method: METHOD
- Prep Date/Time: 04/05/16 10:16
- Prep Initial Wt./Vol.: 25 mL
- Prep Extract Vol: 50 mL

---

Print Date: 04/29/2016 9:58:41AM

J flagging is activated
**Results of MW-1R**

**Client Sample ID:** MW-1R  
**Client Project ID:** GVEA Healy Power Plant  
**Lab Sample ID:** 1161485001  
**Lab Project ID:** 1161485  

**Collection Date:** 04/01/16 21:47  
**Received Date:** 04/04/16 09:59  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  

### Results by Waters Department

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<td>mg/L</td>
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**Batch Information**

- **Prep Batch:** WXX11463  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 04/05/16 15:57  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL  

**Analytical Batch:** WIC5528  
**Analytical Method:** EPA 300.0  
**Analyst:** ACF  
**Analytical Date/Time:** 04/06/16 01:38  
**Container ID:** 1161485001-A

**Parameter**  | **Result Qual** | **LOQ/CL** | **DL** | **Units** | **DF** | **Allowable Limits** | **Date Analyzed** |
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**Batch Information**

- **Prep Batch:** STS5005  
- **Prep Method:** SM21 2540C  
- **Prep Date/Time:** 04/05/16 15:57  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL  

**Analytical Batch:** STS5005  
**Analytical Method:** SM21 2540C  
**Analyst:** MBS  
**Analytical Date/Time:** 04/08/16 09:39  
**Container ID:** 1161485001-B
### Results of MW-2

**Client Sample ID:** MW-2  
**Client Project ID:** GVEA Healy Power Plant  
**Lab Sample ID:** 1161485002  
**Lab Project ID:** 1161485  
**Collection Date:** 04/01/16 16:46  
**Received Date:** 04/04/16 09:59  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** Location:

### Results by Metals by ICP/MS

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<tr>
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<td>5.00</td>
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<td>1.50</td>
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<tr>
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### Batch Information

- **Analytical Batch:** MMS9305  
- **Analytical Method:** EP200.8  
- **Analyst:** VDL  
- **Analytical Date/Time:** 04/13/16 11:11  
- **Container ID:** 1161485002-C

- **Prep Batch:** MXX29639  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 04/11/16 12:08  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol.:** 50 mL

---

*J flagging is activated*
Results of MW-2

Client Sample ID: MW-2
Client Project ID: GVEA Healy Power Plant
Lab Sample ID: 1161485002
Lab Project ID: 1161485
Collection Date: 04/01/16 16:46
Received Date: 04/04/16 09:59
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals Department

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<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
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Batch Information

Analytical Batch: MCV5694
Analytical Method: EP245.1
Analyst: MEV
Analytical Date/Time: 04/05/16 12:53
Container ID: 1161485002-C

Prep Batch: MXX29637
Prep Method: METHOD
Prep Date/Time: 04/05/16 10:16
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL

Print Date: 04/29/2016 9:58:41 AM
## Results of MW-2

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<tbody>
<tr>
<td>Chloride</td>
<td>726</td>
<td>2.50</td>
<td>0.775</td>
<td>mg/L</td>
<td>25</td>
<td></td>
<td>04/06/16 02:00</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.950 J</td>
<td>2.50</td>
<td>0.775</td>
<td>mg/L</td>
<td>25</td>
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<tr>
<td>Sulfate</td>
<td>47.5</td>
<td>2.50</td>
<td>0.775</td>
<td>mg/L</td>
<td>25</td>
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<td>04/06/16 02:00</td>
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</table>

### Batch Information

- **Prep Batch:** WXX11463
- **Prep Method:** METHOD
- **Prep Date/Time:** 04/05/16 15:57
- **Prep Initial Wt./Vol.:** 10 mL
- **Prep Extract Vol:** 10 mL

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<th>Units</th>
<th>DF</th>
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<tbody>
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<td>mg/L</td>
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<td></td>
<td>04/08/16 09:39</td>
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### Batch Information

- **Analytical Batch:** STS5005
- **Analytical Method:** SM21 2540C
- **Analyst:** MBS
- **Analytical Date/Time:** 04/08/16 09:39
- **Container ID:** 1161485002-B

---

J flagging is activated.
### Results of MW-3

**Client Sample ID:** MW-3  
**Client Project ID:** GVEA Healy Power Plant  
**Lab Sample ID:** 1161485003  
**Lab Project ID:** 1161485

**Collection Date:** 04/01/16 18:28  
**Received Date:** 04/04/16 09:59  
**Matrix:** Water (Surface, Eff., Ground)

**Location:**

---

**Results by Metals by ICP/MS**

<table>
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<tr>
<th>Parameter</th>
<th>Result Qual</th>
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<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
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<tbody>
<tr>
<td>Antimony</td>
<td>0.414 J</td>
<td>1.00</td>
<td>0.310 ug/L</td>
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</tr>
<tr>
<td>Arsenic</td>
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<td>1.50 ug/L</td>
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<td>04/13/16 10:44</td>
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</tr>
<tr>
<td>Barium</td>
<td>156 U</td>
<td>3.00</td>
<td>0.940 ug/L</td>
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<td>04/13/16 10:44</td>
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</tr>
<tr>
<td>Beryllium</td>
<td>0.200 U</td>
<td>0.400</td>
<td>0.130 ug/L</td>
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<tr>
<td>Boron</td>
<td>95.3 U</td>
<td>50.0</td>
<td>15.0 ug/L</td>
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<td>Cadmium</td>
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<td>Calcium</td>
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<td>Chromium</td>
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</tr>
<tr>
<td>Cobalt</td>
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<td>1.20 ug/L</td>
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<td>Lead</td>
<td>0.201 U</td>
<td>0.200</td>
<td>0.0620 ug/L</td>
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</tr>
<tr>
<td>Lithium</td>
<td>61.1 U</td>
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<td>3.10 ug/L</td>
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<tr>
<td>Molybdenum</td>
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<tr>
<td>Selenium</td>
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<td>1.50 ug/L</td>
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<tr>
<td>Thallium</td>
<td>0.500 U</td>
<td>1.00</td>
<td>0.310 ug/L</td>
<td>1</td>
<td>04/13/16 10:44</td>
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**Batch Information**

- **Analytical Batch:** MMS9305  
- **Analytical Method:** EP200.8  
- **Analyst:** VDL  
- **Analytical Date/Time:** 04/13/16 10:44  
- **Container ID:** 1161485003-C  
- **Prep Batch:** MXX29639  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 04/11/16 12:08  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol.:** 50 mL

---

Print Date: 04/29/2016 9:58:41 AM  
J flagging is activated
## Results of MW-3

**Client Sample ID:** MW-3  
**Client Project ID:** GVEA Healy Power Plant  
**Lab Sample ID:** 1161485003  
**Lab Project ID:** 1161485  
**Collection Date:** 04/01/16 18:28  
**Received Date:** 04/04/16 09:59  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

### Results by Metals Department

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<tr>
<th>Parameter</th>
<th>Result Qual</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>0.100 U</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
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</tbody>
</table>

**Batch Information**

- **Analytical Batch:** MCV5694  
- **Analytical Method:** EP245.1  
- **Analyst:** MEV  
- **Analytical Date/Time:** 04/05/16 12:55  
- **Container ID:** 1161485003-C

- **Prep Batch:** MXX29637  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 04/05/16 10:16  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol.:** 50 mL

---

SGS North America Inc.  
200 West Potter Drive Anchorage, AK 95518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com  
Member of SGS Group

J flagging is activated
Results of MW-3

Client Sample ID: MW-3
Client Project ID: GVEA Healy Power Plant
Lab Sample ID: 1161485003
Lab Project ID: 1161485

Collection Date: 04/01/16 18:28
Received Date: 04/04/16 09:59
Matrix: Water (Surface, Eff., Ground)

### Results by Waters Department

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<thead>
<tr>
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<th>DL</th>
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<th>DF</th>
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<td>mg/L</td>
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<td>Fluoride</td>
<td>1.30 J</td>
<td>2.50</td>
<td>0.775</td>
<td>mg/L</td>
<td>25</td>
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<tr>
<td>Sulfate</td>
<td>133</td>
<td>2.50</td>
<td>0.775</td>
<td>mg/L</td>
<td>25</td>
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</table>

**Batch Information**
- Prep Batch: WXX11463
- Prep Method: METHOD
- Prep Date/Time: 04/05/16 15:57
- Initial Wt./Vol.: 10 mL
- Extract Vol: 10 mL

<table>
<thead>
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<th>DL</th>
<th>Units</th>
<th>DF</th>
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<td>mg/L</td>
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**Batch Information**
- Analytical Batch: STS5005
- Analytical Method: SM21 2540C
- Analyst: MBS
- Date/Time: 04/08/16 09:39
- Container ID: 1161485003-B

J flagging is activated
### Results by Metals by ICP/MS

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<th>Units</th>
<th>DF</th>
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<th>Date Analyzed</th>
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</thead>
<tbody>
<tr>
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<td>10.5</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
<td>1</td>
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<tr>
<td>Arsenic</td>
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<td>ug/L</td>
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<tr>
<td>Barium</td>
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<td>0.940</td>
<td>ug/L</td>
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<td>04/13/16 11:17</td>
</tr>
<tr>
<td>Beryllium</td>
<td>0.200 U</td>
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<td>0.130</td>
<td>ug/L</td>
<td>1</td>
<td></td>
<td>04/13/16 11:17</td>
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<tr>
<td>Boron</td>
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<tr>
<td>Cadmium</td>
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<td>0.150</td>
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<td>ug/L</td>
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<tr>
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<td>1.20</td>
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<td>ug/L</td>
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<td>Molybdenum</td>
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<td>ug/L</td>
<td>1</td>
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<td>04/13/16 11:17</td>
</tr>
<tr>
<td>Thallium</td>
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<td>0.310</td>
<td>ug/L</td>
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<td>04/13/16 11:17</td>
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### Batch Information

- **Prep Batch:** MXX29639
- **Prep Method:** E200.2
- **Prep Date/Time:** 04/11/16 12:08
- **Prep Initial Wt./Vol.:** 20 mL
- **Prep Extract Vol.:** 50 mL

---

J flagging is activated
Results of MW-4

Client Sample ID: MW-4
Client Project ID: GVEA Healy Power Plant
Lab Sample ID: 1161485004
Lab Project ID: 1161485

Collection Date: 04/01/16 10:50
Received Date: 04/04/16 09:59
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals Department

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<tr>
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<th>DL</th>
<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.0620</td>
<td>ug/L</td>
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Batch Information

Analytical Batch: MCV5694
Analytical Method: EP245.1
Analyst: MEV
Analytical Date/Time: 04/05/16 12:58
Container ID: 1161485004-C

Prep Batch: MXX29637
Prep Method: METHOD
Prep Date/Time: 04/05/16 10:16
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL
### Results of MW-4

**Client Sample ID:** MW-4  
**Client Project ID:** GVEA Healy Power Plant  
**Lab Sample ID:** 1161485004  
**Lab Project ID:** 1161485  
**Collection Date:** 04/01/16 10:50  
**Received Date:** 04/04/16 09:59  
**Matrix:** Water (Surface, Eff., Ground)  

#### Results by Waters Department

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<th>Units</th>
<th>DF</th>
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<td>Chloride</td>
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<td>mg/L</td>
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<td>mg/L</td>
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#### Batch Information

- **Prep Batch:** WXX11463  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 04/05/16 15:57  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

#### Results of MW-4

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#### Batch Information

- **Analytical Batch:** STS5005  
- **Analytical Method:** SM21 2540C  
- **Analyst:** MBS  
- **Analytical Date/Time:** 04/08/16 09:39  
- **Container ID:** 1161485004-B
## Results of MW-5

Client Sample ID: **MW-5**  
Client Project ID: **GVEA Healy Power Plant**  
Lab Sample ID: **1161485005**  
Lab Project ID: **1161485**  
Collection Date: **04/01/16 13:17**  
Received Date: **04/04/16 09:59**  
Matrix: **Water (Surface, Eff., Ground)**  
Solids (%): ****  
Location: ****

### Results by Metals by ICP/MS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result Qual</th>
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<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
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<td>04/13/16 10:41</td>
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<tr>
<td>Arsenic</td>
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<td>ug/L</td>
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<td>ug/L</td>
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</tr>
<tr>
<td>Beryllium</td>
<td>0.200 U</td>
<td>0.400</td>
<td>0.130</td>
<td>ug/L</td>
<td>1</td>
<td>04/13/16 10:41</td>
<td></td>
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<tr>
<td>Boron</td>
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<td>15.0</td>
<td>ug/L</td>
<td>1</td>
<td>04/13/16 10:41</td>
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<td>0.150</td>
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<tr>
<td>Cobalt</td>
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<td>1.20</td>
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<td>04/13/16 10:41</td>
<td></td>
</tr>
<tr>
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<td>Molybdenum</td>
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<td>ug/L</td>
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<td></td>
</tr>
<tr>
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<td>5.00</td>
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<td>ug/L</td>
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<td>04/13/16 10:41</td>
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<tr>
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<td>0.500 U</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
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<td>04/13/16 10:41</td>
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<td>7.75</td>
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<td>04/13/16 10:41</td>
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### Batch Information

- **Analytical Batch:** MMS9305  
- **Analytical Method:** EP200.8  
- **Analyst:** VDL  
- **Analytical Date/Time:** 04/13/16 10:41  
- **Container ID:** 1161485005-C

- **Prep Batch:** MXX29639  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 04/11/16 12:08  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol:** 50 mL

---

Print Date: 04/29/2016 9:58:41AM  

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### Results of MW-5

**Client Sample ID:** MW-5  
**Client Project ID:** GVEA Healy Power Plant  
**Lab Sample ID:** 1161485005  
**Lab Project ID:** 1161485  
**Collection Date:** 04/01/16 13:17  
**Received Date:** 04/04/16 09:59

**Matrix:** Water (Surface, Eff., Ground)

**Solids (%):**

**Location:**

### Results by Metals Department

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<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
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</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>0.100 U</td>
<td>0.200</td>
<td>0.0620</td>
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**Batch Information**

- **Analytical Batch:** MCV5695
- **Analytical Method:** EP245.1
- **Analyst:** MEV
- **Analytical Date/Time:** 04/05/16 14:40

- **Prep Batch:** MXX29637
- **Prep Method:** METHOD
- **Prep Date/Time:** 04/05/16 10:16
- **Prep Initial Wt./Vol.:** 25 mL
- **Prep Extract Vol:** 50 mL
### Results by Waters Department

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<th>Parameter</th>
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</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>112</td>
<td>2.50</td>
<td>0.775</td>
<td>mg/L</td>
<td>25</td>
<td></td>
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</tr>
<tr>
<td>Fluoride</td>
<td>8.35</td>
<td>2.50</td>
<td>0.775</td>
<td>mg/L</td>
<td>25</td>
<td></td>
<td>04/06/16 03:51</td>
</tr>
<tr>
<td>Sulfate</td>
<td>614</td>
<td>2.50</td>
<td>0.775</td>
<td>mg/L</td>
<td>25</td>
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<td>04/06/16 03:51</td>
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**Batch Information**

- **Analytical Batch**: WIC5528
- **Analytical Method**: EPA 300.0
- **Analyst**: ACF
- **Analytical Date/Time**: 04/06/16 03:51
- **Container ID**: 1161485005-A

### Results of MW-5

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<tr>
<td>Total Dissolved Solids</td>
<td>939</td>
<td>10.0</td>
<td>3.10</td>
<td>mg/L</td>
<td>1</td>
<td></td>
<td>04/08/16 09:39</td>
</tr>
</tbody>
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**Batch Information**

- **Analytical Batch**: STS5005
- **Analytical Method**: SM21 2540C
- **Analyst**: MBS
- **Analytical Date/Time**: 04/08/16 09:39
- **Container ID**: 1161485005-B

---

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# Results of MW-6

Client Sample ID: **MW-6**
Client Project ID: **GVEA Healy Power Plant**
Lab Sample ID: 1161485006
Lab Project ID: 1161485

Collection Date: 04/01/16 12:04
Received Date: 04/04/16 09:59
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by Metals by ICP/MS

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<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
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</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>1.40</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
<td>1</td>
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<td>04/14/16 18:24</td>
</tr>
<tr>
<td>Arsenic</td>
<td>2.50 U</td>
<td>5.00</td>
<td>1.50</td>
<td>ug/L</td>
<td>1</td>
<td></td>
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<tr>
<td>Barium</td>
<td>156</td>
<td>3.00</td>
<td>0.940</td>
<td>ug/L</td>
<td>1</td>
<td></td>
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<tr>
<td>Beryllium</td>
<td>0.200 U</td>
<td>0.400</td>
<td>0.130</td>
<td>ug/L</td>
<td>1</td>
<td></td>
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<tr>
<td>Boron</td>
<td>316</td>
<td>50.0</td>
<td>15.0</td>
<td>ug/L</td>
<td>1</td>
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</tr>
<tr>
<td>Cadmium</td>
<td>0.250 U</td>
<td>0.500</td>
<td>0.150</td>
<td>ug/L</td>
<td>1</td>
<td></td>
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<tr>
<td>Calcium</td>
<td>223000</td>
<td>500</td>
<td>150</td>
<td>ug/L</td>
<td>1</td>
<td></td>
<td>04/14/16 18:24</td>
</tr>
<tr>
<td>Chromium</td>
<td>1.00 U</td>
<td>2.00</td>
<td>0.620</td>
<td>ug/L</td>
<td>1</td>
<td></td>
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</tr>
<tr>
<td>Cobalt</td>
<td>1.44 J</td>
<td>4.00</td>
<td>1.20</td>
<td>ug/L</td>
<td>1</td>
<td></td>
<td>04/14/16 18:24</td>
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<tr>
<td>Lead</td>
<td>0.108 J</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
<td>1</td>
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<tr>
<td>Lithium</td>
<td>90.9</td>
<td>10.0</td>
<td>3.10</td>
<td>ug/L</td>
<td>1</td>
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<tr>
<td>Molybdenium</td>
<td>11.5</td>
<td>2.00</td>
<td>0.620</td>
<td>ug/L</td>
<td>1</td>
<td></td>
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<tr>
<td>Selenium</td>
<td>3.93 J</td>
<td>5.00</td>
<td>1.50</td>
<td>ug/L</td>
<td>1</td>
<td></td>
<td>04/14/16 18:24</td>
</tr>
<tr>
<td>Thallium</td>
<td>0.500 U</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
<td>1</td>
<td></td>
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## Batch Information

<table>
<thead>
<tr>
<th>Analytical Batch: MMS9306</th>
<th>Prep Batch: MXX29642</th>
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<tr>
<td>Analyst: VDL</td>
<td>Prep Date/Time: 04/13/16 08:25</td>
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<tr>
<td>Analytical Date/Time: 04/14/16 18:24</td>
<td>Prep Initial Wt./Vol.: 20 mL</td>
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<tr>
<td>Container ID: 1161485006-C</td>
<td>Prep Extract Vol: 50 mL</td>
</tr>
</tbody>
</table>

Print Date: 04/29/2016 9:58:41AM

J flagging is activated
**Results of MW-6**

Client Sample ID: MW-6  
Client Project ID: GVEA Healy Power Plant  
Lab Sample ID: 1161485006  
Lab Project ID: 1161485  
Collection Date: 04/01/16 12:04  
Received Date: 04/04/16 09:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:  

**Results by Metals Department**

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<th>DL</th>
<th>Units</th>
<th>DF</th>
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<tbody>
<tr>
<td>Mercury</td>
<td>0.100</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
<td>1</td>
<td>14:43</td>
<td></td>
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**Batch Information**

- Analytical Batch: MCV5695  
- Analytical Method: EP245.1  
- Analyst: MEV  
- Analytical Date/Time: 04/05/16 14:43  
- Container ID: 1161485006-C

- Prep Batch: MXX29637  
- Prep Method: METHOD  
- Prep Date/Time: 04/05/16 10:16  
- Prep Initial Wt./Vol.: 25 mL  
- Prep Extract Vol: 50 mL
**Results of MW-6**

Client Sample ID: **MW-6**
Client Project ID: **GVEA Healy Power Plant**
Lab Sample ID: 1161485006
Lab Project ID: 1161485

Collection Date: 04/01/16 12:04
Received Date: 04/04/16 09:59
Matrix: Water (Surface, Eff., Ground)
Solids (%): Location:

### Results by Waters Department

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<thead>
<tr>
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<th>DL</th>
<th>Units</th>
<th>DF</th>
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<th>Date Analyzed</th>
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</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>801</td>
<td>2.50</td>
<td>0.775</td>
<td>mg/L</td>
<td>25</td>
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</tr>
<tr>
<td>Fluoride</td>
<td>2.40 J</td>
<td>2.50</td>
<td>0.775</td>
<td>mg/L</td>
<td>25</td>
<td></td>
<td>04/06/16 04:36</td>
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<tr>
<td>Sulfate</td>
<td>118</td>
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<td>0.775</td>
<td>mg/L</td>
<td>25</td>
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### Batch Information

- **Analytical Batch:** WIC5528
- **Analytical Method:** EPA 300.0
- **Analyst:** ACF
- **Analytical Date/Time:** 04/06/16 04:36
- **Container ID:** 1161485006-A

- **Prep Batch:** WXX11463
- **Prep Method:** METHOD
- **Prep Date/Time:** 04/05/16 15:57
- **Prep Initial Wt./Vol.:** 10 mL
- **Prep Extract Vol:** 10 mL

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<th>Units</th>
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</thead>
<tbody>
<tr>
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<td>3.10</td>
<td>mg/L</td>
<td>1</td>
<td></td>
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</tbody>
</table>

### Batch Information

- **Analytical Batch:** STS5005
- **Analytical Method:** SM21 2540C
- **Analyst:** MBS
- **Analytical Date/Time:** 04/08/16 09:39
- **Container ID:** 1161485006-B

J flagging is activated
# Results of MW-7

**Client Sample ID:** MW-7  
**Client Project ID:** GVEA Healy Power Plant  
**Lab Sample ID:** 1161485007  
**Lab Project ID:** 1161485  
**Collection Date:** 04/01/16 15:09  
**Received Date:** 04/04/16 09:59  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

## Results by Metals by ICP/MS

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<th>Parameter</th>
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<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>0.500 U</td>
<td>1.00</td>
<td>0.310 ug/L</td>
<td>1</td>
<td>04/13/16 11:08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arsenic</td>
<td>2.50 U</td>
<td>5.00</td>
<td>1.50 ug/L</td>
<td>1</td>
<td>04/13/16 11:08</td>
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<tr>
<td>Barium</td>
<td>50.8</td>
<td>3.00</td>
<td>0.940 ug/L</td>
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<tr>
<td>Beryllium</td>
<td>0.200 U</td>
<td>0.400</td>
<td>0.130 ug/L</td>
<td>1</td>
<td>04/13/16 11:08</td>
<td></td>
<td></td>
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<tr>
<td>Boron</td>
<td>15.2 J</td>
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<td>15.0 ug/L</td>
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<td>04/13/16 11:08</td>
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<td>Cadmium</td>
<td>0.250 U</td>
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<td>0.150 ug/L</td>
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<td>Calcium</td>
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<td>150 ug/L</td>
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<td>Chromium</td>
<td>1.00 U</td>
<td>2.00</td>
<td>0.620 ug/L</td>
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<td>Cobalt</td>
<td>2.00 U</td>
<td>4.00</td>
<td>1.20 ug/L</td>
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<td>Lead</td>
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<td>0.200</td>
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<tr>
<td>Lithium</td>
<td>5.00 U</td>
<td>10.0</td>
<td>3.10 ug/L</td>
<td>1</td>
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<tr>
<td>Molybdenum</td>
<td>0.713 J</td>
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<td>0.620 ug/L</td>
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<tr>
<td>Selenium</td>
<td>2.50 U</td>
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<td>1.50 ug/L</td>
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<tr>
<td>Thallium</td>
<td>0.500 U</td>
<td>1.00</td>
<td>0.310 ug/L</td>
<td>1</td>
<td>04/13/16 11:08</td>
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## Batch Information

- **Analytical Batch:** MMS9305  
- **Analytical Method:** EP200.8  
- **Analyst:** VDL  
- **Analytical Date/Time:** 04/13/16 11:08  
- **Container ID:** 1161485007-C  
- **Prep Batch:** MXX29639  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 04/11/16 12:08  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol.:** 50 mL  

---

**Print Date:** 04/29/2016 9:58:41AM  
**Member of SGS Group**

SGS North America Inc.  
200 West Potter Drive Anchorage, AK 95518  
Tel: 907.562.2343  
Fax: 907.561.5301  
www.us.sgs.com

---

J flagging is activated
## Results of MW-7

**Client Sample ID:** MW-7  
**Client Project ID:** GVEA Healy Power Plant  
**Lab Sample ID:** 1161485007  
**Lab Project ID:** 1161485

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<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
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<td>0.100 U</td>
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### Batch Information

- **Analytical Batch:** MCV5695  
- **Analytical Method:** EP245.1  
- **Analyst:** MEV  
- **Analytical Date/Time:** 04/05/16 14:46  
- **Container ID:** 1161485007-C  
- **Prep Batch:** MXX29637  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 04/05/16 10:16  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol.:** 50 mL
### Results by Waters Department

<table>
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<td>0.0310</td>
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<tr>
<td>Fluoride</td>
<td>0.130</td>
<td>0.100</td>
<td>0.0310</td>
<td>mg/L</td>
<td>1</td>
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<tr>
<td>Sulfate</td>
<td>27.8</td>
<td>0.100</td>
<td>0.0310</td>
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**Batch Information**

- **Prep Batch:** WXX11468
- **Prep Method:** METHOD
- **Prep Date/Time:** 04/08/16 12:52
- **Prep Initial Wt./Vol.:** 10 mL
- **Prep Extract Vol.:** 10 mL

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<tbody>
<tr>
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**Batch Information**

- **Analytical Batch:** STS5005
- **Analytical Method:** SM21 2540C
- **Analyst:** MBS
- **Analytical Date/Time:** 04/08/16 09:39
- **Container ID:** 1161485007-B
### Results of MW-8

**Client Sample ID:** MW-8  
**Client Project ID:** GVEA Healy Power Plant  
**Lab Sample ID:** 1161485008  
**Lab Project ID:** 1161485

**Collection Date:** 04/01/16 19:34  
**Received Date:** 04/04/16 09:59  
**Matrix:** Water (Surface, Eff., Ground)

### Solids (%): Location:

### Results by Metals by ICP/MS

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### Batch Information

**Analytical Batch:** MMS9305  
**Analytical Method:** EP200.8  
**Analyst:** VDL  
**Analytical Date/Time:** 04/13/16 11:35  
**Container ID:** 1161485008-C

**Prep Batch:** MXX29639  
**Prep Method:** E200.2  
**Prep Date/Time:** 04/11/16 12:08  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol.:** 50 mL

---

J flagging is activated
**Client Sample ID:** MW-8  
**Client Project ID:** GVEA Healy Power Plant  
**Lab Sample ID:** 1161485008  
**Lab Project ID:** 1161485

**Collection Date:** 04/01/16 19:34  
**Received Date:** 04/04/16 09:59  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

**Results of MW-8**

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<th>Date Analyzed</th>
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</thead>
<tbody>
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**Batch Information**

- **Prep Batch:** MXX29637  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 04/05/16 10:16  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol:** 50 mL
### Results of MW-8

**Client Sample ID:** MW-8  
**Client Project ID:** GVEA Healy Power Plant  
**Lab Sample ID:** 1161485008  
**Lab Project ID:** 1161485  
**Collection Date:** 04/01/16 19:34  
**Received Date:** 04/04/16 09:59  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** Location:

#### Results by Waters Department

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<td>Chloride</td>
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<td>10</td>
<td>101.00</td>
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<td>0.400 J</td>
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<td>mg/L</td>
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<td>Sulfate</td>
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<td>101.00</td>
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**Batch Information**

- **Prep Batch:** WXX11463  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 04/05/16 15:57  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

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**Batch Information**

- **Analytical Batch:** STS5005  
- **Analytical Method:** SM21 2540C  
- **Analyst:** MBS  
- **Analytical Date/Time:** 04/08/16 09:39  
- **Container ID:** 1161485008-B

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J flagging is activated
### Results of SW-1

**Client Sample ID:** SW-1  
**Client Project ID:** GVEA Healy Power Plant  
**Lab Sample ID:** 1161485009  
**Lab Project ID:** 1161485  

**Collection Date:** 04/01/16 20:12  
**Received Date:** 04/04/16 09:59  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

**Location:**

### Results by Metals by ICP/MS

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<tr>
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<td>0.940</td>
<td>ug/L</td>
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</tr>
<tr>
<td>Beryllium</td>
<td>0.200 U</td>
<td>0.400</td>
<td>0.130</td>
<td>ug/L</td>
<td>1</td>
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<tr>
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<td>Cobalt</td>
<td>2.00 U</td>
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<td>0.0620</td>
<td>ug/L</td>
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### Batch Information

**Analytical Batch:** MMS9305  
**Analytical Method:** EP200.8  
**Analyst:** VDL  
**Analytical Date/Time:** 04/13/16 10:53  
**Container ID:** 1161485009-C  

**Prep Batch:** MXX29639  
**Prep Method:** E200.2  
**Prep Date/Time:** 04/11/16 12:08  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol.:** 50 mL  

Print Date: 04/29/2016 9:58:41AM  

J flagging is activated
### Results of SW-1

**Client Sample ID:** SW-1  
**Client Project ID:** GVEA Healy Power Plant  
**Lab Sample ID:** 1161485009  
**Lab Project ID:** 1161485  
**Collection Date:** 04/01/16 20:12  
**Received Date:** 04/04/16 09:59  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** Location:  

#### Results by Metals Department

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<td>0.0620</td>
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**Batch Information**

- **Analytical Batch:** MCV5695
- **Analytical Method:** EP245.1
- **Analyst:** MEV
- **Analytical Date/Time:** 04/05/16 15:00
- **Container ID:** 1161485009-C

- **Prep Batch:** MXX29637
- **Prep Method:** METHOD
- **Prep Date/Time:** 04/05/16 10:16
- **Prep Initial Wt./Vol.:** 25 mL
- **Prep Extract Vol.:** 50 mL

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Print Date: 04/29/2016 9:58:41AM  
J flagging is activated
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### Results by Metals by ICP/MS

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<td>Boron</td>
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<td>50.0</td>
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<td>Chromium</td>
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### Batch Information

- **Analytical Batch:** MMS9305
- **Analytical Method:** EP200.8
- **Analyst:** VDL
- **Analytical Date/Time:** 04/13/16 11:02
- **Container ID:** 1161485010-C

- **Prep Batch:** MXX29639
- **Prep Method:** E200.2
- **Prep Date/Time:** 04/11/16 12:08
- **Prep Initial Wt./Vol.:** 20 mL
- **Prep Extract Vol.:** 50 mL

---

Print Date: 04/29/2016 9:58:41AM

J flagging is activated
## Results of MW-97

Client Sample ID: MW-97  
Client Project ID: GVEA Healy Power Plant  
Lab Sample ID: 1161485010  
Lab Project ID: 1161485  
Collection Date: 04/01/16 15:09  
Received Date: 04/04/16 09:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:  

### Results by Metals Department

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### Batch Information

- Analytical Batch: MCV5695  
- Analytical Method: EP245.1  
- Analyst: MEV  
- Analytical Date/Time: 04/05/16 15:03  
- Container ID: 1161485010-C  
- Prep Batch: MXX29637  
- Prep Method: METHOD  
- Prep Initial Wt./Vol.: 25 mL  
- Prep Extract Vol: 50 mL  
- Prep Date/Time: 04/05/16 10:16
Results of MW-97

Client Sample ID: MW-97
Client Project ID: GVEA Healy Power Plant
Lab Sample ID: 1161485010
Lab Project ID: 1161485

Collection Date: 04/01/16 15:09
Received Date: 04/04/16 09:59
Matrix: Water (Surface, Eff., Ground)

Solids (%): Location:

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Batch Information

Analytical Batch: STS5005
Analytical Method: SM21 2540C
Analyst: MBS
Analytical Date/Time: 04/08/16 09:39
Container ID: 1161485010-B

Analytical Batch: WIC5529
Analytical Method: EPA 300.0
Analyst: ACF
Analytical Date/Time: 04/08/16 19:40
Container ID: 1161485010-A

Batch Information

Prep Batch: WXX11468
Prep Method: METHOD
Prep Date/Time: 04/08/16 12:52
Prep Initial Wt./Vol.: 10 mL
Prep Extract Vol: 10 mL

Print Date: 04/29/2016  9:58:41AM

J flagging is activated
**Method Blank**

Blank ID: MB for HBN 1730977 [MXX/29637]  
Blank Lab ID: 1318736  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples:  
1161485001, 1161485002, 1161485003, 1161485004, 1161485005, 1161485006, 1161485007, 1161485008, 1161485009, 1161485010

**Results by EP245.1**

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<th>Units</th>
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</thead>
<tbody>
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**Batch Information**

- Analytical Batch: MCV5694  
- Analytical Method: EP245.1  
- Instrument: PSA Millennium mercury AA  
- Analyst: MEV  
- Analytical Date/Time: 4/5/2016 12:29:20PM  
- Prep Batch: MXX29637  
- Prep Method: METHOD  
- Prep Date/Time: 4/5/2016 10:16:00AM  
- Prep Initial Wt./Vol.: 25 mL  
- Prep Extract Vol: 50 mL
Blank Spike Summary

Blank Spike ID: LCS for HBN 1161485 [MXX29637]
Blank Spike Lab ID: 1318737
Date Analyzed: 04/05/2016 12:37

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1161485001, 1161485002, 1161485003, 1161485004, 1161485005, 1161485006, 1161485007, 1161485008, 1161485009, 1161485010

Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
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<td>(85-115)</td>
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Batch Information

Analytical Batch: MCV5694
Analytical Method: EP245.1
Instrument: PSA Millennium mercury AA
Analyst: MEV

Prep Batch: MXX29637
Prep Method: METHOD
Prep Date/Time: 04/05/2016 10:16
Spike Init Wt./Vol.: 4 ug/L  Extract Vol: 50 mL
Dupe Init Wt./Vol.:  Extract Vol:  

Print Date: 04/29/2016 9:59:18AM
### Matrix Spike Summary

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QC for Samples: 1161485001, 1161485002, 1161485003, 1161485004, 1161485005, 1161485006, 1161485007, 1161485008, 1161485009, 1161485010

#### Results by EP245.1

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<th>Spike Duplicate (ug/L)</th>
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<td>Sample</td>
<td>Spike</td>
</tr>
<tr>
<td>0.100U</td>
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#### Batch Information

- **Prep Batch**: MXX29637
- **Prep Method**: Digestion Mercury 245.1 (W)
- **Prep Date/Time**: 4/5/2016 10:16:00AM
- **Prep Initial Wt./Vol.**: 25.00mL
- **Prep Extract Vol**: 50.00mL
- **Analytical Batch**: MCV5694
- **Analytical Method**: EP245.1
- **Analytical Date/Time**: 4/5/2016 12:44:05PM
- **Instrument**: PSA Millennium mercury AA
- **Analyst**: MEV
- **Print Date**: 04/29/2016 9:59:20AM

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### Matrix Spike Summary

| Original Sample ID: 1161437007 | Analysis Date: 04/05/2016 14:52 |
| MS Sample ID: 1318739 MS | Analysis Date: 04/05/2016 14:55 |
| MSD Sample ID: | Analysis Date: |
| QC for Samples: 1161485001, 1161485002, 1161485003, 1161485004, 1161485005, 1161485006, 1161485007, 1161485008, 1161485009, 1161485010 | Matrix: Water (Surface, Eff., Ground) |

### Results by EP245.1

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<th>Sample</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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</thead>
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### Batch Information

- **Analytical Batch**: MCV5695
- **Analytical Method**: EP245.1
- **Instrument**: PSA Millennium mercury AA
- **Analyst**: MEV
- **Analytical Date/Time**: 4/5/2016 2:55:16PM

- **Prep Batch**: MXX29637
- **Prep Method**: Digestion Mercury 245.1 (W)
- **Prep Date/Time**: 4/5/2016 10:16:00AM
- **Prep Initial Wt./Vol.**: 25.00mL
- **Prep Extract Vol**: 50.00mL
**Method Blank**

Blank ID: MB for HBN 1731275 [MXX/29639]  
Blank Lab ID: 1319164  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1161485001, 1161485002, 1161485003, 1161485004, 1161485005, 1161485007, 1161485008, 1161485009, 1161485010

**Results by EP200.8**

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<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
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</thead>
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<td>Antimony</td>
<td>0.500U</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
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<td>Arsenic</td>
<td>2.50U</td>
<td>5.00</td>
<td>1.50</td>
<td>ug/L</td>
</tr>
<tr>
<td>Barium</td>
<td>1.50U</td>
<td>3.00</td>
<td>0.940</td>
<td>ug/L</td>
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<tr>
<td>Beryllium</td>
<td>0.200U</td>
<td>0.400</td>
<td>0.130</td>
<td>ug/L</td>
</tr>
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<td>Boron</td>
<td>25.0U</td>
<td>50.0</td>
<td>15.0</td>
<td>ug/L</td>
</tr>
<tr>
<td>Cadmium</td>
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<tr>
<td>Calcium</td>
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<td>500</td>
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<td>ug/L</td>
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<tr>
<td>Chromium</td>
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<td>2.00</td>
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<td>Lead</td>
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<td>Thallium</td>
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<td>1.00</td>
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<td>Titanium</td>
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**Batch Information**

Analytical Batch: MMS9305  
Analytical Method: EP200.8  
Instrument: Perkin Elmer NexIon P5  
Analyst: VDL  
Analytical Date/Time: 4/13/2016 10:17:54AM

Prep Batch: MXX29639  
Prep Method: E200.2  
Prep Date/Time: 4/11/2016 12:08:45PM  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 04/29/2016 9:59:21AM
### Blank Spike Summary

**Blank Spike ID:** LCS for HBN 1161485 [MXX29639]

**Blank Spike Lab ID:** 1319165

**Date Analyzed:** 04/13/2016 10:20

**Matrix:** Water (Surface, Eff., Ground)

**QC for Samples:** 1161485001, 1161485002, 1161485003, 1161485004, 1161485005, 1161485007, 1161485008, 1161485009, 1161485010

### Results by EP200.8

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<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
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<tbody>
<tr>
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<td>Arsenic</td>
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<td>953</td>
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<td>(85-115)</td>
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<td>Barium</td>
<td>1000</td>
<td>964</td>
<td>96</td>
<td>(85-115)</td>
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<td>Beryllium</td>
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<td>Boron</td>
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### Batch Information

- **Analytical Batch:** MMS9305
- **Analytical Method:** EP200.8
- **Instrument:** Perkin Elmer NexIon P5
- **Analyst:** VDL
- **Prep Batch:** MXX29639
- **Prep Method:** E200.2
- **Prep Date/Time:** 04/11/2016 12:08
- **Spike Init Wt./Vol.:** 1000 ug/L
- **Extract Vol.:** 50 mL

Print Date: 04/29/2016 9:59:23AM

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### Matrix Spike Summary

<table>
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<th>Parameter</th>
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<th>Result</th>
<th>Rec (%)</th>
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### Batch Information

- **Prep Batch:** MXX29639
- **Prep Method:** DW Digest for Metals on ICP-MS
- **Instrument:** Perkin Elmer Nexlon P5
- **Prep Date/Time:** 4/11/2016 12:08:45PM
- **Prep Initial Wt./Vol.:** 20.00mL
- **Prep Extract Vol.:** 50.00mL
### Matrix Spike Summary

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<th>Parameter</th>
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<th>Result</th>
<th>Rec (%)</th>
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<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
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### Batch Information

- **Analytical Batch**: MMS9305
- **Analytical Method**: EP200.8
- **Instrument**: Perkin Elmer NexIon P5
- **Analyst**: VDL
- **Analytical Date/Time**: 4/13/2016 10:59:39AM

- **Prep Batch**: MXX29639
- **Prep Method**: DW Digest for Metals on ICP-MS
- **Prep Date/Time**: 4/11/2016 12:08:45PM
- **Prep Initial Wt./Vol.**: 20.00mL
- **Prep Extract Vol.**: 50.00mL
# Method Blank

**Blank ID:** MB for HBN 1731483 [MXX/29642]  
**Blank Lab ID:** 1319547  
**Matrix:** Water (Surface, Eff., Ground)  
**QC for Samples:** 1161485006

## Results by EP200.8

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<th>Results</th>
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<th>Units</th>
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</thead>
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<tr>
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<td>0.500U</td>
<td>1.00</td>
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<td>ug/L</td>
</tr>
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<td>0.130</td>
<td>ug/L</td>
</tr>
<tr>
<td>Boron</td>
<td>25.0U</td>
<td>50.0</td>
<td>15.0</td>
<td>ug/L</td>
</tr>
<tr>
<td>Cadmium</td>
<td>0.250U</td>
<td>0.500</td>
<td>0.150</td>
<td>ug/L</td>
</tr>
<tr>
<td>Calcium</td>
<td>250U</td>
<td>500</td>
<td>150</td>
<td>ug/L</td>
</tr>
<tr>
<td>Chromium</td>
<td>1.00U</td>
<td>2.00</td>
<td>0.620</td>
<td>ug/L</td>
</tr>
<tr>
<td>Cobalt</td>
<td>2.00U</td>
<td>4.00</td>
<td>1.20</td>
<td>ug/L</td>
</tr>
<tr>
<td>Lead</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
</tr>
<tr>
<td>Lithium</td>
<td>5.00U</td>
<td>10.0</td>
<td>3.10</td>
<td>ug/L</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>1.00U</td>
<td>2.00</td>
<td>0.620</td>
<td>ug/L</td>
</tr>
<tr>
<td>Selenium</td>
<td>2.50U</td>
<td>5.00</td>
<td>1.50</td>
<td>ug/L</td>
</tr>
<tr>
<td>Thallium</td>
<td>0.500U</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
</tr>
</tbody>
</table>

## Batch Information

- **Analytical Batch:** MMS9306  
- **Analytical Method:** EP200.8  
- **Instrument:** Perkin Elmer NexIon P5  
- **Analyst:** VDL  
- **Analytical Date/Time:** 4/14/2016 5:09:36PM  
- **Prep Batch:** MXX29642  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 4/13/2016 8:25:46AM  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol:** 50 mL

---

Print Date: 04/29/2016 9:59:27AM

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### Blank Spike Summary

Blank Spike ID: LCS for HBN 1161485 [MXX29642]
Blank Spike Lab ID: 1319548
Date Analyzed: 04/14/2016 17:12

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1161485006

### Results by EP200.8

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<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>1000</td>
<td>959</td>
<td>96</td>
<td>(85-115 )</td>
</tr>
<tr>
<td>Arsenic</td>
<td>1000</td>
<td>955</td>
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<tr>
<td>Barium</td>
<td>1000</td>
<td>936</td>
<td>94</td>
<td>(85-115 )</td>
</tr>
<tr>
<td>Beryllium</td>
<td>100</td>
<td>96.4</td>
<td>96</td>
<td>(85-115 )</td>
</tr>
<tr>
<td>Boron</td>
<td>1000</td>
<td>942</td>
<td>94</td>
<td>(85-115 )</td>
</tr>
<tr>
<td>Cadmium</td>
<td>100</td>
<td>94.0</td>
<td>94</td>
<td>(85-115 )</td>
</tr>
<tr>
<td>Calcium</td>
<td>10000</td>
<td>9410</td>
<td>94</td>
<td>(85-115 )</td>
</tr>
<tr>
<td>Chromium</td>
<td>400</td>
<td>396</td>
<td>99</td>
<td>(85-115 )</td>
</tr>
<tr>
<td>Cobalt</td>
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<td>97</td>
<td>(85-115 )</td>
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<tr>
<td>Lithium</td>
<td>200</td>
<td>185</td>
<td>92</td>
<td>(85-115 )</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>400</td>
<td>382</td>
<td>96</td>
<td>(85-115 )</td>
</tr>
<tr>
<td>Selenium</td>
<td>1000</td>
<td>983</td>
<td>98</td>
<td>(85-115 )</td>
</tr>
<tr>
<td>Thallium</td>
<td>10</td>
<td>9.78</td>
<td>98</td>
<td>(85-115 )</td>
</tr>
</tbody>
</table>

### Batch Information

Analytical Batch: MMS9306
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: VDL

Prep Batch: MXX29642
Prep Method: E200.2
Prep Date/Time: 04/13/2016 08:25
Spike Init Wt./Vol.: 1000 ug/L
Extract Vol: 50 mL
Dupe Init Wt./Vol.: 
Extract Vol: 

Print Date: 04/29/2016 9:59:31AM
**Matrix Spike Summary**

Original Sample ID: 1319551  
Analysis Date: 04/14/2016 18:03

MS Sample ID: 1319552 MS  
Analysis Date: 04/14/2016 18:06

Matrix Spike Summary

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<thead>
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<th>Parameter</th>
<th>Sample</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>0.500U</td>
<td>1000</td>
<td>984</td>
<td>98</td>
<td></td>
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<td>Arsenic</td>
<td>2.50U</td>
<td>1000</td>
<td>947</td>
<td>95</td>
<td></td>
<td></td>
<td></td>
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<td>Barium</td>
<td>44.5</td>
<td>1000</td>
<td>995</td>
<td>95</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Beryllium</td>
<td>0.200U</td>
<td>100</td>
<td>99.9</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Cadmium</td>
<td>0.250U</td>
<td>100</td>
<td>96.4</td>
<td>96</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>Calcium</td>
<td>17900U</td>
<td>10000</td>
<td>27200</td>
<td>93</td>
<td></td>
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<td>Chromium</td>
<td>1.00U</td>
<td>400</td>
<td>391</td>
<td>98</td>
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<tr>
<td>Cobalt</td>
<td>2.00U</td>
<td>500</td>
<td>489</td>
<td>98</td>
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<tr>
<td>Lead</td>
<td>29.2</td>
<td>1000</td>
<td>1040</td>
<td>101</td>
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<td></td>
</tr>
<tr>
<td>Molybdenum</td>
<td>1.00U</td>
<td>400</td>
<td>386</td>
<td>97</td>
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</tr>
<tr>
<td>Selenium</td>
<td>2.50U</td>
<td>1000</td>
<td>983</td>
<td>98</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thallium</td>
<td>0.500U</td>
<td>10.0</td>
<td>9.91</td>
<td>99</td>
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**Batch Information**

Analytical Batch: MMS9306  
Prep Batch: MXX29642

Analytical Method: EP200.8  
Prep Method: DW Digest for Metals on ICP-MS

Instrument: Perkin Elmer NexIon P5  
Prep Date/Time: 4/13/2016 8:25:46AM

Analyst: VDL  
Prep Initial Wt./Vol.: 20.00mL

Analytical Date/Time: 4/14/2016 6:06:16PM  
Prep Extract Vol: 50.00mL
**Method Blank**

Blank ID: MB for HBN 1731065 [STS/5005]  
Blank Lab ID: 1318798  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples:  
1161485001, 1161485002, 1161485003, 1161485004, 1161485005, 1161485006, 1161485007, 1161485008, 1161485009, 1161485010

**Results by SM21 2540C**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>4.00J</td>
<td>10.0</td>
<td>3.10</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

**Batch Information**

- Analytical Batch: STS5005  
- Analytical Method: SM21 2540C  
- Instrument: 
- Analyst: MBS  
**Duplicate Sample Summary**

Original Sample ID: 1161503001  
Duplicate Sample ID: 1318940  
Analysis Date: 04/08/2016 09:39  
Matrix: Drinking Water  
QC for Samples:  
1161485001, 1161485002, 1161485003, 1161485004, 1161485005, 1161485006, 1161485007, 1161485008, 1161485009, 1161485010

**Results by SM21 2540C**

<table>
<thead>
<tr>
<th>NAME</th>
<th>Original</th>
<th>Duplicate</th>
<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>174</td>
<td>182</td>
<td>mg/L</td>
<td>4.50</td>
<td>(&lt; 5)</td>
</tr>
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**Batch Information**

Analytical Batch: STS5005  
Analytical Method: SM21 2540C  
Instrument:  
Analyst: MBS
Blank Spike Summary

Blank Spike ID: LCS for HBN 1161485 [STS5005]
Blank Spike Lab ID: 1318799
Date Analyzed: 04/08/2016 09:39

Spike Duplicate ID: LCSD for HBN 1161485 [STS5005]
Spike Duplicate Lab ID: 1318800
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1161485001, 1161485002, 1161485003, 1161485004, 1161485005, 1161485006, 1161485007, 1161485008, 1161485009, 1161485010

Results by SM21 2540C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Blank Spike (mg/L)</th>
<th>Spike Duplicate (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spike</td>
<td>Result</td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
<td>330</td>
<td>335</td>
</tr>
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</table>

Batch Information

Analytical Batch: STS5005
Analytical Method: SM21 2540C
Instrument: 
Analyst: MBS

Prep Batch: 
Prep Method: 
Prep Date/Time: 
Spike Init Wt./Vol.: 330 mg/L Extract Vol: 100 mL
Dupe Init Wt./Vol.: 330 mg/L Extract Vol: 100 mL

Print Date: 04/29/2016 9:59:37AM
**Method Blank**

Blank ID: MB for HBN 1730982 [WXX/11463]  
Matrix: Water (Surface, Eff., Ground)  
Blank Lab ID: 1318757  
QC for Samples:  
1161485001, 1161485002, 1161485003, 1161485004, 1161485005, 1161485006, 1161485008, 1161485009

**Results by EPA 300.0**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>0.0500U</td>
<td>0.100</td>
<td>0.0310</td>
<td>mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.0500U</td>
<td>0.100</td>
<td>0.0310</td>
<td>mg/L</td>
</tr>
<tr>
<td>Sulfate</td>
<td>0.0500U</td>
<td>0.100</td>
<td>0.0310</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

**Batch Information**

- Analytical Batch: WIC5528  
- Analytical Method: EPA 300.0  
- Instrument: Metrohm 733 DX2  
- Analyst: ACF  
- Analytical Date/Time: 4/5/2016 6:34:25PM  
- Prep Batch: WXX11463  
- Prep Method: METHOD  
- Prep Date/Time: 4/5/2016 3:57:00PM  
- Prep Initial Wt./Vol.: 10 mL  
- Prep Extract Vol: 10 mL

Print Date: 04/29/2016 9:59:44AM

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## Blank Spike Summary

Blank Spike ID: LCS for HBN 1161485 [WXX11463]
Blank Spike Lab ID: 1318758
Date Analyzed: 04/05/2016 21:10

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1161485001, 1161485002, 1161485003, 1161485004, 1161485005, 1161485006, 1161485008, 1161485009

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>10</td>
<td>10.2</td>
<td>102</td>
<td>(90-110)</td>
</tr>
<tr>
<td>Fluoride</td>
<td>10</td>
<td>10.7</td>
<td>107</td>
<td>(90-110)</td>
</tr>
<tr>
<td>Sulfate</td>
<td>10</td>
<td>9.81</td>
<td>98</td>
<td>(90-110)</td>
</tr>
</tbody>
</table>

### Batch Information

- Analytical Batch: WIC5528
- Analytical Method: EPA 300.0
- Instrument: Metrohm 733 DX2
- Analyst: ACF

Prep Batch: WXX11463
Prep Method: METHOD
Prep Date/Time: 04/05/2016 15:57
Spice Init Wt./Vol.: 10 mg/L
Extract Vol: 10 mL
Dupe Init Wt./Vol.: Extract Vol:
Matrix Spike Summary

Original Sample ID: 1318756
MS Sample ID: 1318759 MS
MSD Sample ID: 1318760 MSD
Analysis Date: 04/05/2016 20:04
Analysis Date: 04/05/2016 20:26
Analysis Date: 04/05/2016 20:48
Matrix: Water (Surface, Eff., Ground)
QC for Samples: 1161485001, 1161485002, 1161485003, 1161485004, 1161485005, 1161485006, 1161485008, 1161485009

Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>1.04</td>
<td>10.0</td>
<td>11.9</td>
<td>109</td>
<td>10.0</td>
<td>12.0</td>
<td>110</td>
<td>90-110</td>
<td>0.73</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.158</td>
<td>10.0</td>
<td>11.2</td>
<td>111</td>
<td>*</td>
<td>11.3</td>
<td>112</td>
<td>*</td>
<td>0.75</td>
</tr>
<tr>
<td>Sulfate</td>
<td>30.1</td>
<td>10.0</td>
<td>39.4</td>
<td>93</td>
<td>10.0</td>
<td>39.6</td>
<td>95</td>
<td>90-110</td>
<td>0.44</td>
</tr>
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</table>

Batch Information

Analytical Batch: WIC5528
Analytical Method: EPA 300.0
Instrument: Metrohm 733 DX2
Analyst: ACF
Analytical Date/Time: 4/5/2016  8:26:23PM

Prep Batch: WXX11463
Prep Method: EPA 300.0 Extraction Waters/Liquids
Prep Date/Time: 4/5/2016  3:57:00PM
Prep Initial Wt./Vol.: 10.00mL
Prep Extract Vol: 10.00mL

Print Date: 04/29/2016  9:59:48AM

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### Method Blank

Blank ID: MB for HBN 1731307 [WXX/11468]  
Blank Lab ID: 1319276  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples:  
1161485007, 1161485010

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>0.0430J</td>
<td>0.100</td>
<td>0.0310</td>
<td>mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.0500U</td>
<td>0.100</td>
<td>0.0310</td>
<td>mg/L</td>
</tr>
<tr>
<td>Sulfate</td>
<td>0.0500U</td>
<td>0.100</td>
<td>0.0310</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

### Batch Information

| Analytical Batch: | WIC5529  
Analytical Method: | EPA 300.0  
Instrument: | Metrohm 733 DX2  
Analyst: | ACF  
Analytical Date/Time: | 4/8/2016 3:39:05PM  
Prep Batch: | WXX11468  
Prep Method: | METHOD  
Prep Date/Time: | 4/8/2016 12:52:00PM  
Prep Initial Wt./Vol.: | 10 mL  
Prep Extract Vol: | 10 mL |
Blank Spike Summary

Blank Spike ID: LCS for HBN 1161485 [WXX11468]
Blank Spike Lab ID: 1319277
Date Analyzed: 04/08/2016 16:48

Matrix: Water (Surface, Eff., Ground)
QC for Samples: 1161485007, 1161485010

Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>10</td>
<td>10.5</td>
<td>105</td>
<td>(90-110)</td>
</tr>
<tr>
<td>Fluoride</td>
<td>10</td>
<td>11.0</td>
<td>110</td>
<td>(90-110)</td>
</tr>
<tr>
<td>Sulfate</td>
<td>10</td>
<td>10.1</td>
<td>101</td>
<td>(90-110)</td>
</tr>
</tbody>
</table>

Batch Information

Analytical Batch: WIC5529
Analytical Method: EPA 300.0
Instrument: Metrohm 733 DX2
Analyst: ACF

Prep Batch: WXX11468
Prep Method: METHOD
Prep Date/Time: 04/08/2016 12:52
Spike Init Wt./Vol.: 10 mg/L  Extract Vol: 10 mL
Dupe Init Wt./Vol.: Extract Vol:  

Print Date: 04/29/2016 9:59:53AM
### Matrix Spike Summary

- **Original Sample ID:** 1319275
- **MS Sample ID:** 1319278 MS
- **MSD Sample ID:** 1319279 MSD
- **Analysis Date:** 04/08/2016 17:23
- **Analysis Date:** 04/08/2016 17:46
- **Analysis Date:** 04/08/2016 18:08
- **Matrix:** Water (Surface, Eff., Ground)
- **QC for Samples:** 1161485007, 1161485010

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sample</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>3.11</td>
<td>10.0</td>
<td>14</td>
<td>109</td>
<td>10.0</td>
<td>14.4</td>
<td>113</td>
<td>90-110</td>
<td>2.50</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.0550J</td>
<td>10.0</td>
<td>11.1</td>
<td>111</td>
<td>10.0</td>
<td>11.4</td>
<td>114</td>
<td>90-110</td>
<td>2.70</td>
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<tr>
<td>Sulfate</td>
<td>3.06</td>
<td>10.0</td>
<td>13.8</td>
<td>107</td>
<td>10.0</td>
<td>14.1</td>
<td>111</td>
<td>90-110</td>
<td>2.40</td>
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</tbody>
</table>

### Batch Information

- **Analytical Batch:** WIC5529
- **Analytical Method:** EPA 300.0 Extraction Waters/Liquids
- **Instrument:** Metrohm 733 DX2
- **Analyst:** ACF
- **Analytical Date/Time:** 4/8/2016 5:46:11PM

- **Prep Batch:** WXX11468
- **Prep Method:** EPA 300.0 Extraction Waters/Liquids
- **Prep Date/Time:** 4/8/2016 12:52:00PM
- **Prep Initial Wt./Vol.:** 10.00mL
- **Prep Extract Vol.:** 10.00mL

Print Date: 04/29/2016 9:59:54AM

SGS North America Inc.

200 West Potter Drive Anchorage, AK 95518

t 907.562.2343 f 907.561.5301  www.us.sgs.com

Member of SGS Group
**SGS North America Inc.**  
**CHAIN OF CUSTODY RECORD**  

**CLIENT:** SLR Alaska - Anchorage  
**CONTACT:** Heather Simon, Kyle Johnson  
**PHONE #:** 907-222-1112  

**PROJECT NAME:** GVEA  
**REPORTS TO:** Heather Simon, Kyle Johnson  
**E-MAIL:** Hsimon@SLRconsulting.com  
**INVOICE TO:** SLR Alaska - Anchorage  
**QUOTE #:**  

---

### Section 3: Preservative

<table>
<thead>
<tr>
<th>Preservative Type</th>
<th>HNO3</th>
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<th>HNO3</th>
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<th>Note</th>
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**CONTAINERS**

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<tr>
<th>SERIAL NO.</th>
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<th>DATE</th>
<th>TIME</th>
<th>HOURS</th>
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**REMARKS/LOC ID**

- Particles at bottom settled.

---

### Section 4: DOD Project? Yes No

- **Yes**

**Data Deliverable Requirements:**

- **Cooler ID:**

**Requested Turnaround Time and/or Special Instructions:**

- **Total Metals:** B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Ti
- **EPA 300.0:** Fluoride, Chloride

**Temp Blank °C:**

- **or Ambient [ ]**

**Chain of Custody Seal:** (Circle)

- **INTACT**
- **BROKEN**
- **ABSENT**

(See attached Sample Receipt Form)

---

**Relinquished By:** Kyle Johnson  
**Date:** 4/4/16  
**Time:** 09:36  
**Received By:**

---

**REMARKS/LOC ID**

---

**Relinquished By:**

**Date:**

**Time:**

**Received By:**

---

**Relinquished By:**

**Date:**

**Time:**

**Received By:**

---

**Relinquished By:**

**Date:**

**Time:**

**Received For Laboratory By:**

---

**Instructions:** Sections 1 - 5 must be filled out.  
Omissions may delay the onset of analysis.
### Review Criteria:

<table>
<thead>
<tr>
<th>Were custody seals intact? Note # &amp; location, if applicable. COC accompanied samples?</th>
<th>Yes</th>
<th>N/A</th>
<th>No</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>✔</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Temperature blank compliant* (i.e., 0-6°C after CF)?  
If >6°C, were samples collected <8 hours ago?  
If <0°C, were all sample containers ice free? | Yes | N/A | No |
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td>✔</td>
<td></td>
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</tr>
</tbody>
</table>

| Cooler ID: 1 | @ 1.4 w/ Therm.ID: D7 |
| Cooler ID: 2 | @ 2.8 w/ Therm.ID: D6 |
| Cooler ID: 3 | @ 2.0 w/ Therm.ID: D9 |
| Cooler ID: 4 | @ 3.8 w/ Therm.ID: D11 |

If samples are received without a temperature blank, the “cooler temperature” will be documented in lieu of the temperature blank & “COOLER TEMP” will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note “ambient” or “chilled.”

<table>
<thead>
<tr>
<th>Delivery method (specify all that apply): Client (hand carried)</th>
<th>Yes</th>
<th>N/A</th>
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<tbody>
<tr>
<td>✔</td>
<td></td>
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</tbody>
</table>

- USPS
- Lynden
- AK Air
- Alert Courier
- UPS
- FedEx
- RAVN
- C&D Delivery
- Carlile
- Pen Air
- Warp Speed

Other: 

- For WO# with airbilfs, was the WO# & airbill info recorded in the Front Counter eLog? ✔

### Comments/Action Taken:

- Exemption permitted if sampler hand carries/delivers.
- Exemption permitted if chilled & collected <8 hrs ago.

### Note to Client:

Any “no” answer above indicates non-compliance with standard procedures and may impact data quality.

---

**F102_eSRF_2015_03_31**

60 of 79
<table>
<thead>
<tr>
<th>Container Id</th>
<th>Preservative</th>
<th>Container Condition</th>
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</table>
## Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates that an inappropriate container was submitted.

- **OK** - The container was received at an acceptable pH for the analysis requested.
- **BU** - The container was received with headspace greater than 6mm.
- **DM** - The container was received damaged.
- **FR** - The container was received frozen and not usable for Bacteria or BOD analyses.
- **PA** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
- **PH** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on April 11, 2016. This project has been assigned to ACZ's project number, L29830. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L29830. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after May 28, 2016. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ’s stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Max Janicek has reviewed and approved this report.
SGS Environmental Services Inc. - Alaska

<table>
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<td>0.31</td>
<td>0.24</td>
<td>0.25</td>
<td>pCi/L</td>
<td>*</td>
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# RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

- **Project ID:** 1161485
- **Sample ID:** MW-2
- **Locator:** RadioChemistry

**ACZ Sample ID:** **L29830-02**

- **Date Sampled:** 04/01/16 16:46
- **Date Received:** 04/11/16
- **Sample Matrix:** Ground Water

<table>
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<th>Result</th>
<th>Error(+/-)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
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<td>1.2</td>
<td>0.22</td>
<td>0.3</td>
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<td>*</td>
<td>mns</td>
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<td>2.5</td>
<td>0.74</td>
<td>0.62</td>
<td>pCi/L</td>
<td>*</td>
<td>tjr</td>
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</table>

*Please refer to Qualifier Reports for details.*
### RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

- **Project ID:** 1161485
- **Sample ID:** MW-3
- **Sample Matrix:** Ground Water

#### Sample Details

- **ACZ Sample ID:** L29830-03
- **Date Sampled:** 04/01/16 18:28
- **Date Received:** 04/11/16

#### Analytical Results

<table>
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<td>*</td>
<td>mns</td>
</tr>
<tr>
<td>Radium 228</td>
<td>04/28/16 11:24</td>
<td>tjr</td>
<td>0.86</td>
<td>0.49</td>
<td>0.46</td>
<td>pCi/L</td>
<td>tjr</td>
<td></td>
</tr>
</tbody>
</table>

* Please refer to Qualifier Reports for details.
SGS Environmental Services Inc. - Alaska

Sample ID: MW-4
Sample Matrix: Ground Water

ACZ Sample ID: L29830-04
Date Sampled: 04/01/16 10:50
Date Received: 04/11/16

**Analytical Results**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
<th>Prep Date</th>
<th>Result</th>
<th>Error(+-)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radium 226</td>
<td>04/26/16 0:10</td>
<td></td>
<td>0.27</td>
<td>0.24</td>
<td>0.21</td>
<td>pCi/L</td>
<td>*</td>
<td>mns</td>
</tr>
<tr>
<td>Radium 228</td>
<td>04/28/16 11:24</td>
<td></td>
<td>2.5</td>
<td>1.2</td>
<td>1.1</td>
<td>pCi/L</td>
<td>*</td>
<td>tjr</td>
</tr>
</tbody>
</table>

* Please refer to Qualifier Reports for details.
SGS Environmental Services Inc. - Alaska  
ACZ Sample ID: L29830-05  
Project ID: 1161485  
Sample ID: MW-5  
Date Sampled: 04/01/16 13:17  
Date Received: 04/11/16  
Sample Matrix: Ground Water  

Radium 226  
M903.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
<th>Prep Date</th>
<th>Result</th>
<th>Error(+/-)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radium 226</td>
<td>04/26/16 0:11</td>
<td></td>
<td>0.07</td>
<td>0.16</td>
<td>0.35</td>
<td>pCi/L</td>
<td>*</td>
<td>mns</td>
</tr>
</tbody>
</table>

Radium 228  
M904.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
<th>Prep Date</th>
<th>Result</th>
<th>Error(+/-)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radium 228</td>
<td>04/28/16 11:24</td>
<td></td>
<td>1.3</td>
<td>1</td>
<td>1</td>
<td>pCi/L</td>
<td>*</td>
<td>tjr</td>
</tr>
</tbody>
</table>

* Please refer to Qualifier Reports for details.
ACZ Sample ID: L29830-06

SGS Environmental Services Inc. - Alaska
Project ID: 1161485
Sample ID: MW-6
Locator:

Sample Matrix: Ground Water
SGS Environmental Services Inc. - Alaska
Project ID: 1161485
Sample ID: MW-6
Locator:

Date Sampled: 04/01/16 12:04
Date Received: 04/11/16
Sample Matrix: Ground Water

### Analytical Results

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
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<th>Result</th>
<th>Error(+-)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
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<tbody>
<tr>
<td>Radium 226</td>
<td>04/26/16 0:12</td>
<td>mns</td>
<td>0.27</td>
<td>0.09</td>
<td>0.24</td>
<td>pCi/L</td>
<td></td>
<td>mns</td>
</tr>
<tr>
<td>Radium 228</td>
<td>04/28/16 11:24</td>
<td>tjr</td>
<td>0.65</td>
<td>0.51</td>
<td>0.5</td>
<td>pCi/L</td>
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<td>tjr</td>
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</table>
SGS Environmental Services Inc. - Alaska

ACZ Sample ID: L29830-07
Date Sampled: 04/01/16 15:09
Date Received: 04/11/16
Sample Matrix: Ground Water

Radium 226
M903.1

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Prep Date</th>
<th>Result</th>
<th>Error(+/-)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
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<tbody>
<tr>
<td>Radium 226</td>
<td>04/26/16 0:14</td>
<td>*</td>
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<td>0.14</td>
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Radium 226
M904.0

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Prep Date</th>
<th>Result</th>
<th>Error(+/-)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radium 228</td>
<td>04/28/16 13:09</td>
<td>tjr</td>
<td>0.78</td>
<td>0.47</td>
<td>0.44</td>
<td>pCi/L</td>
<td></td>
<td>tjr</td>
</tr>
</tbody>
</table>

* Please refer to Qualifier Reports for details.
**SGS Environmental Services Inc. - Alaska**

Project ID: 1161485  
Sample ID: MW-8  
Locator: RadioChemistry

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
<th>Prep Date</th>
<th>Result</th>
<th>Error(+-)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
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<tbody>
<tr>
<td>Radium 226</td>
<td>04/26/16 0:15</td>
<td>mns</td>
<td>0.2</td>
<td>0.08</td>
<td>0.25</td>
<td>pCi/L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radium 228</td>
<td>04/28/16 13:09</td>
<td>tjr</td>
<td>0.62</td>
<td>0.44</td>
<td>0.43</td>
<td>pCi/L</td>
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</table>

ACZ Sample ID: **L29830-08**  
Date Sampled: 04/01/16 19:34  
Date Received: 04/11/16  
Sample Matrix: Ground Water
**RadioChemistry Analytical Results**

SGS Environmental Services Inc. - Alaska

Project ID: 1161485  
Sample ID: SW-1  
Locator:  

---

ACZ Sample ID: **L29830-09**

**Sample Matrix:** Ground Water

**Date Sampled:** 04/01/16 20:12

**Date Received:** 04/11/16

---

### Radium 226

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
<th>Prep Date</th>
<th>Result</th>
<th>Error(+/-)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
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<tbody>
<tr>
<td>Radium 226</td>
<td>04/26/16 0:17</td>
<td>mns</td>
<td>0.32</td>
<td>0.1</td>
<td>0.1</td>
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### Radium 228

<table>
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<tr>
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<th>Measure Date</th>
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<th>Result</th>
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<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radium 228</td>
<td>04/28/16 13:09</td>
<td>tjr</td>
<td>0.3</td>
<td>0.46</td>
<td>0.47</td>
<td>pCi/L</td>
<td>XQ</td>
<td>tjr</td>
</tr>
</tbody>
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**Prep Method:**
# RadioChemistry Analytical Results

## SGS Environmental Services Inc. - Alaska

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
<th>Prep Date</th>
<th>Result</th>
<th>Error(+-)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
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<tbody>
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<td>Radium 226</td>
<td>04/26/16</td>
<td>0:18</td>
<td>0.17</td>
<td>0.09</td>
<td>0.08</td>
<td>pCi/L</td>
<td>mns</td>
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<tr>
<td>Radium 228</td>
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<td>13:09</td>
<td>0.69</td>
<td>0.49</td>
<td>0.48</td>
<td>pCi/L</td>
<td>tjr</td>
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</table>
Report Header Explanations

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batch</td>
<td>A distinct set of samples analyzed at a specific time</td>
</tr>
<tr>
<td>Error(+-)</td>
<td>Calculated sample specific uncertainty</td>
</tr>
<tr>
<td>Found</td>
<td>Value of the QC Type of interest</td>
</tr>
<tr>
<td>Limit</td>
<td>Upper limit for RPD, in %</td>
</tr>
<tr>
<td>LCL</td>
<td>Lower Control Limit, in % (except for LCSS, mg/Kg)</td>
</tr>
<tr>
<td>LLD</td>
<td>Calculated sample specific Lower Limit of Detection</td>
</tr>
<tr>
<td>PCN/SCN</td>
<td>A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis</td>
</tr>
<tr>
<td>PQL</td>
<td>Practical Quantitation Limit</td>
</tr>
<tr>
<td>QC</td>
<td>True Value of the Control Sample or the amount added to the Spike</td>
</tr>
<tr>
<td>Rec</td>
<td>Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)</td>
</tr>
<tr>
<td>RER</td>
<td>Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.</td>
</tr>
<tr>
<td>RPD</td>
<td>Relative Percent Difference, calculation used for Duplicate QC Types</td>
</tr>
<tr>
<td>UCL</td>
<td>Upper Control Limit, in % (except for LCSS, mg/Kg)</td>
</tr>
<tr>
<td>Sample</td>
<td>Value of the Sample of interest</td>
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</tbody>
</table>

QC Sample Types

<table>
<thead>
<tr>
<th>QC Sample Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUP</td>
<td>Sample Duplicate</td>
</tr>
<tr>
<td>LCSS</td>
<td>Laboratory Control Sample - Soil</td>
</tr>
<tr>
<td>LCSW</td>
<td>Laboratory Control Sample - Water</td>
</tr>
<tr>
<td>MS/MSD</td>
<td>Matrix Spike/Matrix Spike Duplicate</td>
</tr>
<tr>
<td>PBS</td>
<td>Prep Blank - Soil</td>
</tr>
<tr>
<td>PBW</td>
<td>Prep Blank - Water</td>
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</table>

QC Sample Type Explanations

<table>
<thead>
<tr>
<th>QC Sample Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blanks</td>
<td>Verifies that there is no or minimal contamination in the prep method procedure.</td>
</tr>
<tr>
<td>Control Samples</td>
<td>Verifies the accuracy of the method, including the prep procedure.</td>
</tr>
<tr>
<td>Duplicates</td>
<td>Verifies the precision of the instrument and/or method.</td>
</tr>
<tr>
<td>Matrix Spikes</td>
<td>Determines sample matrix interferences, if any.</td>
</tr>
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</table>

ACZ Qualifiers (Qual)

<table>
<thead>
<tr>
<th>Qualifier</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>H</td>
<td>Analysis exceeded method hold time.</td>
</tr>
</tbody>
</table>

Method Prefix Reference

<table>
<thead>
<tr>
<th>Method Prefix</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>EPA methodology, including those under SDWA, CWA, and RCRA</td>
</tr>
<tr>
<td>SM</td>
<td>Standard Methods for the Examination of Water and Wastewater.</td>
</tr>
<tr>
<td>D</td>
<td>ASTM</td>
</tr>
<tr>
<td>RP</td>
<td>DOE</td>
</tr>
<tr>
<td>ESM</td>
<td>DOE/ESM</td>
</tr>
</tbody>
</table>

Comments

(1) Solid matrices are reported on a dry weight basis.
(2) Preparation method: "Method" indicates preparation defined in analytical method.
(3) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

<table>
<thead>
<tr>
<th>ACZ ID</th>
<th>WORKNUM</th>
<th>PARAMETER</th>
<th>METHOD</th>
<th>QUAL</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>L29830-01</td>
<td>WG401957</td>
<td>Radium 226</td>
<td>M903.1</td>
<td>DF</td>
<td>Sample required dilution due to high sediment.</td>
</tr>
<tr>
<td>L29830-02</td>
<td>WG401957</td>
<td>Radium 226</td>
<td>M903.1</td>
<td>DF</td>
<td>Sample required dilution due to high sediment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Radium 228</td>
<td>M904.0</td>
<td>DF</td>
<td>Sample required dilution due to high sediment.</td>
</tr>
<tr>
<td>L29830-03</td>
<td>WG401957</td>
<td>Radium 226</td>
<td>M903.1</td>
<td>DF</td>
<td>Sample required dilution due to high sediment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Radium 228</td>
<td>M904.0</td>
<td>DD</td>
<td>Sample required dilution due to matrix color or odor.</td>
</tr>
<tr>
<td>L29830-04</td>
<td>WG401957</td>
<td>Radium 226</td>
<td>M903.1</td>
<td>DF</td>
<td>Sample required dilution due to high sediment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Radium 228</td>
<td>M904.0</td>
<td>DJ</td>
<td>Sample dilution required due to insufficient sample.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DJ</td>
<td>Sample dilution required due to insufficient sample.</td>
</tr>
<tr>
<td>L29830-07</td>
<td>WG401957</td>
<td>Radium 226</td>
<td>M903.1</td>
<td>DF</td>
<td>Sample required dilution due to high sediment.</td>
</tr>
</tbody>
</table>
ACZ Project ID: L29830
Date Received: 04/11/2016 09:53
Received By: ddp
Date Printed: 4/11/2016

Receipt Verification

1) Is a foreign soil permit included for applicable samples?  
   
2) Is the Chain of Custody form or other directive shipping papers present?  
   NO X

3) Does this project require special handling procedures such as CLP protocol?  
   X

4) Are any samples NRC licensable material?  

5) If samples are received past hold time, proceed with requested short hold time analyses?  
   NO X

6) Is the Chain of Custody form complete and accurate?  
   X

7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?  
   NO X

Samples/Containers

8) Are all containers intact and with no leaks?  
   L29830-05 Container B1698046 (RED RAD): This container was received broken.  
   X

9) Are all labels on containers and are they intact and legible?  
   X

10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?  
    X

11) For preserved bottle types, was the pH checked and within limits?  
    L29830-01 Container B1698028 (RED RAD): Added 8 mls nitric acid to the sub-sample to adjust the pH to the appropriate range.  
    X

   L29830-01 Container B1698029 (RED RAD): Added 8 mls nitric acid to the sub-sample to adjust the pH to the appropriate range.  

   L29830-01 Container B1698030 (RED RAD): Added 8 mls nitric acid to the sub-sample to adjust the pH to the appropriate range.  

   L29830-02 Container B1698034 (RED RAD): Added 8 mls nitric acid to the sub-sample to adjust the pH to the appropriate range.  

   L29830-02 Container B1698035 (RED RAD): Added 8 mls nitric acid to the sub-sample to adjust the pH to the appropriate range.  

   L29830-02 Container B1698036 (RED RAD): Added 8 mls nitric acid to the sub-sample to adjust the pH to the appropriate range.  

   L29830-03 Container B1698037 (RED RAD): Added 8 mls nitric acid to the sub-sample to adjust the pH to the appropriate range.  

   L29830-03 Container B1698038 (RED RAD): Added 8 mls nitric acid to the sub-sample to adjust the pH to the appropriate range.  

   L29830-03 Container B1698039 (RED RAD): Added 8 mls nitric acid to the sub-sample to adjust the pH to the appropriate range.  

   L29830-04 Container B1698040 (RED RAD): Added 8 mls nitric acid to the sub-sample to adjust the pH to the appropriate range.
12) Is there sufficient sample volume to perform all requested work?  
   X

13) Is the custody seal intact on all containers?  
   X

14) Are samples that require zero headspace acceptable?  
   X

15) Are all sample containers appropriate for analytical requirements?  
   X
SGS Environmental Services Inc. - Alaska
1161485

16) Is there an Hg-1631 trip blank present?  
   Yes

17) Is there a VOA trip blank present?  
   Yes

18) Were all samples received within hold time?  
   Yes

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

<table>
<thead>
<tr>
<th>Cooler Id</th>
<th>Temp(°C)</th>
<th>Temp Criteria(°C)</th>
<th>Rad(µR/Hr)</th>
<th>Custody Seal Intact?</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA23688</td>
<td>13.3</td>
<td>NA</td>
<td>13</td>
<td>Yes</td>
</tr>
<tr>
<td>NA23689</td>
<td>13</td>
<td>NA</td>
<td>14</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

1 The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).
### CLIENT:  SGS North America Inc. - Alaska Division

### CONTACT:  Julie Shumway  PHONE NO:  (907) 562-2343

### PROJECT NAME:  GVEA Healy Power Plant

### REPORTS TO:  E-MAIL:  julie.shumway@sgs.com

### INVOICE TO:  QUOTE #:  SGS - Alaska  P.O. #:  1161485

### SGS Reference:  ACZ Lab

### Additional Comments:  All soils report out in dry weight unless otherwise requested.

### Table: Radium 226/228

<table>
<thead>
<tr>
<th>SAMPLE IDENTIFICATION</th>
<th>DATE mm/dd/yy</th>
<th>TIME HH:MM</th>
<th>MATRIX/ MATRIX</th>
<th>CONTAINERS</th>
<th>PRESERVATIVE</th>
<th>TYPE</th>
<th>COMP</th>
<th>RAD</th>
<th>GRAB</th>
<th>INCREMENTAL SOILS</th>
<th>MS</th>
<th>MSD</th>
<th>SGS lab #</th>
<th>LOC ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-1R</td>
<td>04/01/16</td>
<td>2147</td>
<td>GW</td>
<td>3</td>
<td>GRAB</td>
<td>X</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>1161485001</td>
<td>1161485001</td>
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<tr>
<td>MW-2</td>
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<td>1646</td>
<td>GW</td>
<td>3</td>
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<td>X</td>
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<td>1161485002</td>
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<td>1828</td>
<td>GW</td>
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<td>GRAB</td>
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<td>1161485004</td>
<td>1161485004</td>
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### Remarks:

- DOD Project?  □ YES  □ NO
- Report to DL (J Flags)  □
- Cooler ID:
- Data Deliverable Requirements:
  - Requested Turnaround Time and/or Special Instructions:
    - Follow times on COC, not yours
- Temp Blank °C:
- Chain of Custody Seal: (Circle)  INTACT  BROKEN  ABSENT

---

200 W. Potter Drive Anchorage, AK 99518  Tel: (907) 562-2343  Fax: (907) 561-5301
5500 Business Drive Wilmington, NC 28405  Tel: (910) 350-1903  Fax: (910) 350-1557

http://www.sgs.com/terms_and_conditions.htm

1161485_Radium_04.04.2016.xls
To: Golden Valley Electric Association  
2700 Gambell Street Suite 200  
Anchorage, AK 99503  
(907)564-6907

Report Number: 1162808  
Client Project: 104.00367.16002 Healy PP GW

Dear Heather Simon,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Justin Nelson  
Project Manager  
Justin.Nelson@sgs.com

Print Date: 06/28/2016 10:38:34AM
Refer to sample receipt form for information on sample condition.

**MW-2 (1162808001) PS**
300.0 - Anions – Fluoride has an elevated LOQ due to matrix interference.

**MW-4 (1162808002) PS**
200.8 - The metals LOQ for lead was elevated due to matrix interference.

**MW-3 (1162808003) PS**
300.0 - Anions – Fluoride has an elevated LOQ due to matrix interference.

**MB for HBN 1735364 [MXX/29826] (1327966) MB**
200.8 - Metals - was detected in the MB greater than the LOQ however less than the LOQ. Sample result is 10 times greater than the level of the MB contamination.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.*
Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

* The analyte has exceeded allowable regulatory or control limits.
! Surrogate out of control limits.
B Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB Closing Continuing Calibration Verification
CL Control Limit
D The analyte concentration is the result of a dilution.
DF Dilution Factor
DL Detection Limit (i.e., maximum method detection limit)
E The analyte result is above the calibrated range.
F Indicates value that is greater than or equal to the DL
GT Greater Than
IB Instrument Blank
ICV Initial Calibration Verification
J The quantitation is an estimation.
JL The analyte was positively identified, but the quantitation is a low estimation.
LCS(D) Laboratory Control Spike (Duplicate)
LOD Limit of Detection (i.e., 1/2 of the LOQ)
LOQ Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT Less Than
M A matrix effect was present.
MB Method Blank
MS(D) Matrix Spike (Duplicate)
ND Indicates the analyte is not detected.
Q QC parameter out of acceptance range.
R Rejected
RPD Relative Percent Difference
U Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.
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<th>Collected</th>
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<td>MW-4</td>
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<td>05/31/2016</td>
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<td>MW-3</td>
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<td>05/31/2016</td>
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<td>Water (Surface, Eff., Ground)</td>
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<td>EP200.8</td>
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### Detectable Results Summary

**Client Sample ID:** MW-2  
**Lab Sample ID:** 1162808001

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<td>Arsenic</td>
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<td>Cobalt</td>
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<td>Lithium</td>
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**Metals Department**

**Waters Department**

<table>
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**Lab Sample ID:** 1162808002

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**Print Date:** 06/28/2016 10:38:40AM

SGS North America Inc.  
200 West Potter Drive, Anchorage, AK 99518  
907.562.2343 907.561.5301  www.us.sgs.com

Member of SGS Group
### Detectable Results Summary

**Client Sample ID:** MW-3  
**Lab Sample ID:** 1162808003

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**Metals Department**

**Waters Department**

### Detectable Results Summary

**Client Sample ID:** MW-6  
**Lab Sample ID:** 1162808004

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**Metals Department**

**Waters Department**

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Print Date: 06/28/2016 10:38:40AM
### Detectable Results Summary

**Client Sample ID:** MW-96  
**Lab Sample ID:** 1162808005

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<td>Lead</td>
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**Metals by ICP/MS**

**Metals Department**  
**Waters Department**

### Detectable Results Summary

**Client Sample ID:** MW-5  
**Lab Sample ID:** 1162808006

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**Metals by ICP/MS**

**Metals Department**  
**Waters Department**
### Detectable Results Summary

#### Client Sample ID: SW-1
Lab Sample ID: 1162808007

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#### Metals Department

#### Waters Department

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#### Client Sample ID: MW-7
Lab Sample ID: 1162808008

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#### Metals Department

#### Waters Department

#### Client Sample ID: MW-1R
Lab Sample ID: 1162808009

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<td>Calcium</td>
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<td>Chromium</td>
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<td>Lead</td>
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<td>Molybdenum</td>
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Detectable Results Summary

Client Sample ID: **MW-8**  
Lab Sample ID: 1162808010

### Metals by ICP/MS

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<td>Calcium</td>
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### Metals Department

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<td>Fluoride</td>
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### Waters Department

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### Results of MW-2

**Client Sample ID:** MW-2  
**Client Project ID:** 104.00367.16002 Healy PP GW  
**Lab Sample ID:** 1162808001  
**Lab Project ID:** 1162808  
**Collection Date:** 05/31/16 16:12  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** 
**Location:**

### Results by Metals by ICP/MS

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<tr>
<td>Arsenic</td>
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<td>0.130</td>
<td>ug/L</td>
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<td>ug/L</td>
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### Batch Information

- **Analytical Batch:** MMS9393  
  **Analytical Method:** EP200.8  
  **Prep Batch:** MXX29826  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 06/06/16 12:38  
  **Prep Initial Wt./Vol.:** 20 mL  
  **Prep Extract Vol.:** 50 mL  
  **Container ID:** 1162808001-A

- **Analytical Batch:** MMS9399  
  **Analytical Method:** EP200.8  
  **Prep Batch:** MXX29847  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 06/10/16 09:48  
  **Prep Initial Wt./Vol.:** 20 mL  
  **Prep Extract Vol.:** 50 mL  
  **Container ID:** 1162808001-A

---

Print Date: 06/28/2016 10:38:41AM  
J flagging is activated
### Results of MW-2

**Client Sample ID:** MW-2  
**Client Project ID:** 104.00367.16002 Healy PP GW  
**Lab Sample ID:** 1162808001  
**Lab Project ID:** 1162808  
**Collection Date:** 05/31/16 16:12  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

### Results by Metals Department

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### Batch Information

- **Analytical Batch:** MCV5714  
- **Analytical Method:** EP245.1  
- **Analyst:** NEG  
- **Analytical Date/Time:** 06/23/16 20:05  
- **Container ID:** 1162808001-A  
- **Prep Batch:** MXX29905  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/23/16 16:40  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol.:** 50 mL

J flagging is activated
**Results of MW-2**

**Client Sample ID:** MW-2  
**Client Project ID:** 104.00367.16002 Healy PP GW  
**Lab Sample ID:** 1162808001  
**Lab Project ID:** 1162808

**Collection Date:** 05/31/16 16:12  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)

**Solids (%):**  
**Location:**

### Results by Waters Department

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**Batch Information**

- **Prep Batch:** WXX11519  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/03/16 12:33  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

- **Analytical Batch:** WIC5544  
- **Analytical Method:** EPA 300.0  
- **Analyst:** ACF  
- **Analytical Date/Time:** 06/03/16 16:37  
- **Container ID:** 1162808001-B

**Parameter**  
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**DL**  
**Units**  
**DF**  
**Allowable Limits**  
**Date Analyzed**

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**Batch Information**

- **Prep Batch:** STS5053  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/03/16 12:33  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

- **Analytical Batch:** STS5053  
- **Analytical Method:** SM21 2540C  
- **Analyst:** NEG  
- **Analytical Date/Time:** 06/06/16 16:57  
- **Container ID:** 1162808001-C

Print Date: 06/28/2016 10:38:41AM

J flagging is activated
**Client Sample ID:** MW-4  
**Client Project ID:** 104.00367.16002 Healy PP GW  
**Lab Sample ID:** 1162808002  
**Lab Project ID:** 1162808  
**Collection Date:** 05/31/16 15:10  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

### Results by Metals by ICP/MS

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<td>0.130</td>
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<td>1.20</td>
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### Batch Information

- **Analytical Batch:** MMS9393  
  **Analytical Method:** EP200.8  
  **Analyst:** VDL  
  **Analytical Date/Time:** 06/09/16 15:10  
  **Container ID:** 1162808002-A  
  **Prep Batch:** MXX29826  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 06/06/16 12:38  
  **Prep Initial Wt./Vol.:** 20 mL  
  **Prep Extract Vol.:** 50 mL

- **Analytical Batch:** MMS9399  
  **Analytical Method:** EP200.8  
  **Analyst:** VDL  
  **Analytical Date/Time:** 06/13/16 16:54  
  **Container ID:** 1162808002-A  
  **Prep Batch:** MXX29847  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 06/10/16 09:48  
  **Prep Initial Wt./Vol.:** 20 mL  
  **Prep Extract Vol.:** 50 mL

---

**Print Date:** 06/28/2016 10:38:41 AM  
**J flagging is activated**

SGS North America Inc.  
200 West Potter Drive Anchorage, AK 95518  
† 907.562.2343 † 907.561.5301  
www.us.sgs.com

Member of SGS Group  
13 of 65
### Results of MW-4

Client Sample ID: **MW-4**  
Client Project ID: **104.00367.16002 Healy PP GW**  
Lab Sample ID: 1162808002  
Lab Project ID: 1162808

#### Collection Details
- **Collection Date:** 05/31/16 15:10  
- **Received Date:** 06/02/16 13:02  
- **Matrix:** Water (Surface, Eff., Ground)  
- **Solids (%):**

#### Results by Metals Department

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<th>Date Analyzed</th>
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<tbody>
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<td>0.155</td>
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<td>10.500</td>
<td>06/09/16 16:50</td>
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#### Batch Information

- **Analytical Batch:** MCV5712  
- **Analytical Method:** EP245.1  
- **Analyst:** NEG  
- **Analytical Date/Time:** 06/09/16 16:50

- **Prep Batch:** MXX29848  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/09/16 12:48  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 50 mL
Results of MW-4

Client Sample ID: MW-4
Client Project ID: 104.00367.16002 Healy PP GW
Lab Sample ID: 1162808002
Lab Project ID: 1162808

Collection Date: 05/31/16 15:10
Received Date: 06/02/16 13:02
Matrix: Water (Surface, Eff., Ground)

Results by Waters Department

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<td>mg/L</td>
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</tr>
<tr>
<td>Sulfate</td>
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<td>0.310</td>
<td>mg/L</td>
<td>10</td>
<td>06/03/16 16:59</td>
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Batch Information

Analytical Batch: WIC5544
Analytical Method: EPA 300.0
Analyst: ACF
Analytical Date/Time: 06/03/16 16:59
Container ID: 1162808002-B

 Prep Batch: WXX11519
 Prep Method: METHOD
 Prep Date/Time: 06/03/16 12:33
 Prep Initial Wt./Vol.: 10 mL
 Prep Extract Vol: 10 mL

Total Dissolved Solids

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Batch Information

Analytical Batch: STS5053
Analytical Method: SM21 2540C
Analyst: NEG
Analytical Date/Time: 06/06/16 16:57
Container ID: 1162808002-C

J flagging is activated
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</tr>
<tr>
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J flagging is activated
Results of MW-3

Client Sample ID: MW-3
Client Project ID: 104.00367.16002 Healy PP GW
Lab Sample ID: 1162808003
Lab Project ID: 1162808
Collection Date: 05/31/16 17:05
Received Date: 06/02/16 13:02
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by Metals Department

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Batch Information

Analytical Batch: MCV5712
Analytical Method: EP245.1
Analyst: NEG
Analytical Date/Time: 06/09/16 16:53
Container ID: 1162808003-A

Prep Batch: MXX29848
Prep Method: METHOD
Prep Date/Time: 06/09/16 12:48
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL

Print Date: 06/28/2016 10:38:41AM

J flagging is activated
### Results of MW-3

**Client Sample ID:** MW-3  
**Client Project ID:** 104.00367.16002 Healy PP GW  
**Lab Sample ID:** 1162808003  
**Lab Project ID:** 1162808  
**Collection Date:** 05/31/16 17:05  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

#### Results by Waters Department

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#### Batch Information

- **Analytical Batch:** WIC5544  
- **Analytical Method:** EPA 300.0  
- **Analyst:** ACF  
- **Analytical Date/Time:** 06/03/16 17:26  
- **Container ID:** 1162808003-B

- **Prep Batch:** WXX11519  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/03/16 12:33  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

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#### Batch Information

- **Analytical Batch:** STS5053  
- **Analytical Method:** SM21 2540C  
- **Analyst:** NEG  
- **Analytical Date/Time:** 06/06/16 16:57  
- **Container ID:** 1162808003-C

---

J flagging is activated
## Results of MW-6

**Client Sample ID:** MW-6  
**Client Project ID:** 104.00367.16002 Healy PP GW  
**Lab Sample ID:** 1162808004  
**Lab Project ID:** 1162808  
**Collection Date:** 06/01/16 09:11  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

**Location:**

### Results by Metals by ICP/MS

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<td>5.00</td>
<td>1.50</td>
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<tr>
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<tr>
<td>Beryllium</td>
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<td>0.400</td>
<td>0.130</td>
<td>ug/L</td>
<td>06/09/16 15:22</td>
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<td>Boron</td>
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<td>15.0</td>
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<td>Cadmium</td>
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<td>0.500</td>
<td>0.150</td>
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<td>Cobalt</td>
<td>2.00 U</td>
<td>4.00</td>
<td>1.20</td>
<td>ug/L</td>
<td>06/09/16 15:22</td>
</tr>
<tr>
<td>Lead</td>
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<td>0.200</td>
<td>0.0620</td>
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<tr>
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### Batch Information

- **Analytical Batch:** MMS9393  
- **Analytical Method:** EP200.8  
- **Analyst:** VDL  
- **Analytical Date/Time:** 06/09/16 15:22  
- **Container ID:** 1162808004-A

- **Prep Batch:** MXX29826  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 06/06/16 12:38  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol.:** 50 mL

---

Print Date: 06/28/2016 10:38:41AM  

J flagging is activated
### Results of MW-6

**Client Sample ID:** MW-6  
**Client Project ID:** 104.00367.16002 Healy PP GW  
**Lab Sample ID:** 1162808004  
**Lab Project ID:** 1162808  
**Collection Date:** 06/01/16 09:11  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** Location:

### Results by Metals Department

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### Batch Information

- **Analytical Batch:** MCV5712  
- **Analytical Method:** EP245.1  
- **Analyst:** NEG  
- **Analytical Date/Time:** 06/09/16 16:56  
- **Container ID:** 1162808004-A  
- **Prep Batch:** MXX29848  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/09/16 12:48  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol:** 50 mL
### Results of MW-6

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### Batch Information

- **Prep Batch**: WXX11519
- **Prep Method**: METHOD
- **Prep Date/Time**: 06/03/16 12:33
- **Prep Initial Wt./Vol.**: 10 mL
- **Prep Extract Vol.**: 10 mL

### Batch Information

- **Analytical Batch**: WIC5544
- **Analytical Method**: EPA 300.0
- **Analyst**: ACF
- **Analytical Date/Time**: 06/03/16 17:48
- **Container ID**: 1162808004-B

- **Total Dissolved Solids**: 745 mg/L

### Batch Information

- **Analytical Batch**: STS5053
- **Analytical Method**: SM21 2540C
- **Analyst**: NEG
- **Analytical Date/Time**: 06/06/16 16:57
- **Container ID**: 1162808004-C
# Results of MW-96

**Client Sample ID:** MW-96  
**Client Project ID:** 104.00367.16002 Healy PP GW  
**Lab Sample ID:** 1162808005  
**Lab Project ID:** 1162808  
**Collection Date:** 06/01/16 09:11  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)

## Results by Metals by ICP/MS

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<td>ug/L</td>
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<td>4.98 J</td>
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</tr>
<tr>
<td>Thallium</td>
<td>0.500 U</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
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## Batch Information

**Prep Batch:** MXX29826  
**Prep Method:** E200.2  
**Prep Date/Time:** 06/06/16 12:38  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol.:** 50 mL  

**Analytical Batch:** MMS9393  
**Analytical Method:** EP200.8  
**Analyst:** VDL  
**Analytical Date/Time:** 06/09/16 15:25  
**Container ID:** 1162808005-A  

Print Date: 06/28/2016 10:38:41AM  
J flagging is activated
### Results by Metals Department

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<td>0.0620</td>
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### Batch Information

- **Analytical Batch**: MCV5712
- **Analytical Method**: EP245.1
- **Analyst**: NEG
- **Analytical Date/Time**: 06/09/16 16:59
- **Container ID**: 1162808005-A

- **Prep Batch**: MXX29848
- **Prep Method**: METHOD
- **Prep Date/Time**: 06/09/16 12:48
- **Prep Initial Wt./Vol.**: 25 mL
- **Prep Extract Vol**: 50 mL

---

**Print Date:** 06/28/2016 10:38:41AM

*SGS North America Inc.*

**200 West Potter Drive Anchorage, AK 99518**

**t 907.562.2343 f 907.561.5301 www.us.sgs.com**

Member of SGS Group
Results of MW-96

Client Sample ID: MW-96
Client Project ID: 104.00367.16002 Healy PP GW
Lab Sample ID: 1162808005
Lab Project ID: 1162808

Collection Date: 06/01/16 09:11
Received Date: 06/02/16 13:02
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Waters Department

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<td>86.7</td>
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<td>0.620</td>
<td>mg/L</td>
<td>20</td>
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<td>Fluoride</td>
<td>3.76</td>
<td>2.00</td>
<td>0.620</td>
<td>mg/L</td>
<td>20</td>
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<td>Sulfate</td>
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<td>0.620</td>
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Batch Information

Prep Batch: WXX11519
Prep Method: METHOD
Prep Date/Time: 06/03/16 12:33
Prep Initial Wt./Vol.: 10 mL
Prep Extract Vol: 10 mL

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<td>mg/L</td>
<td>1</td>
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Batch Information

Analytical Batch: STS5053
Analytical Method: SM21 2540C
Analyst: NEG
Analytical Date/Time: 06/06/16 16:57
Container ID: 1162808005-C

J flagging is activated
### Results of MW-5

Client Sample ID: MW-5  
Client Project ID: 104.00367.16002 Healy PP GW  
Lab Sample ID: 1162808006  
Lab Project ID: 1162808  
Collection Date: 06/01/16 10:16  
Received Date: 06/02/16 13:02  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:  

#### Results by Metals by ICP/MS

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<td>Arsenic</td>
<td>20.5</td>
<td>5.00</td>
<td>1.50</td>
<td>ug/L</td>
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<td>15.00</td>
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<td>Barium</td>
<td>56.8</td>
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<td>Beryllium</td>
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<td>1</td>
<td>0.300</td>
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<td>Boron</td>
<td>835</td>
<td>50.0</td>
<td>15.0</td>
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<td>15.00</td>
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<td>Cadmium</td>
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<td>0.150</td>
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<td>Calcium</td>
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<td>Chromium</td>
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<td>ug/L</td>
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<tr>
<td>Cobalt</td>
<td>2.00 U</td>
<td>4.00</td>
<td>1.20</td>
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<td>1</td>
<td>1.20</td>
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<td>Lead</td>
<td>0.0883 J</td>
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<td>0.0620</td>
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<tr>
<td>Lithium</td>
<td>29.3</td>
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<td>3.10</td>
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<td>Molybdenum</td>
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<td>Selenium</td>
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<td>ug/L</td>
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<tr>
<td>Thallium</td>
<td>0.500 U</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
<td>1</td>
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#### Batch Information

Analytical Batch: MMS9393  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 06/09/16 15:28  
Container ID: 1162808006-A  

Prep Batch: MXX29826  
Prep Method: E200.2  
Prep Date/Time: 06/06/16 12:38  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol. 50 mL
### Results of MW-5

**Client Sample ID:** MW-5  
**Client Project ID:** 104.00367.16002 Healy PP GW  
**Lab Sample ID:** 1162808006  
**Lab Project ID:** 1162808

**Collection Date:** 06/01/16 10:16  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)

### Results by Metals Department

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**Batch Information**

- **Analytical Batch:** MCV5712  
- **Analytical Method:** EP245.1  
- **Prep Batch:** MXX29848  
- **Prep Method:** METHOD  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Date/Time:** 06/09/16 12:48  
- **Prep Extract Vol:** 50 mL  
- **Prep Date/Time:** 06/09/16 12:48  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol:** 50 mL  

---

SGS North America Inc.  
200 West Potter Drive Anchorage, AK 99518  
† 907.562.2343 † 907.561.5301 www.us.sgs.com  
Member of SGS Group
### Results of MW-5

**Client Sample ID:** MW-5  
**Client Project ID:** 104.00367.16002 Healy PP GW  
**Lab Sample ID:** 1162808006  
**Lab Project ID:** 1162808  

**Collection Date:** 06/01/16 10:16  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  

**Location:**

### Results by Waters Department

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<td>mg/L</td>
<td>10</td>
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<tr>
<td>Fluoride</td>
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<td>1.00</td>
<td>0.310</td>
<td>mg/L</td>
<td>10</td>
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<td>Sulfate</td>
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<td>0.310</td>
<td>mg/L</td>
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#### Batch Information

- **Prep Batch:** WXX11519  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/03/16 12:33  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

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#### Batch Information

- **Prep Batch:** STS5053  
- **Prep Method:** SM21 2540C  
- **Prep Date/Time:** 06/06/16 16:57  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

J flagging is activated
## Results of SW-1

**Client Sample ID:** SW-1  
**Client Project ID:** 104.00367.16002 Healy PP GW  
**Lab Sample ID:** 1162808007  
**Lab Project ID:** 1162808  
**Collection Date:** 06/01/16 10:30  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** Location:  

### Results by Metals by ICP/MS

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<tr>
<td>Antimony</td>
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<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
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<td>11.00</td>
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<tr>
<td>Arsenic</td>
<td>4.66 J</td>
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<td>1.50</td>
<td>ug/L</td>
<td>1</td>
<td>15.00</td>
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<td>Barium</td>
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<tr>
<td>Beryllium</td>
<td>0.200 U</td>
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<td>0.130</td>
<td>ug/L</td>
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<td>Boron</td>
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<td>ug/L</td>
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<td>3.10</td>
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<td>Molybdenum</td>
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<td>ug/L</td>
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### Batch Information

- **Analytical Batch:** MMS9393  
  **Analytical Method:** EP200.8  
  **Analyst:** VDL  
  **Analytical Date/Time:** 06/09/16 15:31  
  **Container ID:** 1162808007-A

- **Prep Batch:** MXX29826  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 06/06/16 12:38  
  **Prep Initial Wt./Vol.:** 20 mL  
  **Prep Extract Vol.:** 50 mL

- **Analytical Batch:** MMS9399  
  **Analytical Method:** EP200.8  
  **Analyst:** VDL  
  **Analytical Date/Time:** 06/13/16 16:57  
  **Container ID:** 1162808007-A

- **Prep Batch:** MXX29847  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 06/10/16 09:48  
  **Prep Initial Wt./Vol.:** 20 mL  
  **Prep Extract Vol.:** 50 mL

---

J flagging is activated
Results of SW-1

Client Sample ID: SW-1
Client Project ID: 104.00367.16002 Healy PP GW
Lab Sample ID: 1162808007
Lab Project ID: 1162808

Collection Date: 06/01/16 10:30
Received Date: 06/02/16 13:02
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals Department

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Batch Information

- Analytical Batch: MCV5712
- Analytical Method: EP245.1
- Analyst: NEG
- Analytical Date/Time: 06/09/16 17:05
- Container ID: 1162808007-A

- Prep Batch: MXX29848
- Prep Method: METHOD
- Prep Date/Time: 06/09/16 12:48
- Prep Initial WT/VR: 25 mL
- Prep Extract Vol: 50 mL
## Results of SW-1

**Client Sample ID:** SW-1  
**Client Project ID:** 104.00367.16002 Healy PP GW  
**Lab Sample ID:** 1162808007  
**Lab Project ID:** 1162808

**Collection Date:** 06/01/16 10:30  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

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<td>Fluoride</td>
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<td>20</td>
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<td>0.620</td>
<td>mg/L</td>
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**Batch Information**

- **Prep Batch:** WXX11519  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/03/16 12:33  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

**Analytical Batch:** WIC5544  
**Analytical Method:** EPA 300.0  
**Analyst:** ACF  
**Analytical Date/Time:** 06/03/16 21:08

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**Batch Information**

- **Analytical Batch:** STS5053  
- **Analytical Method:** SM21 2540C  
- **Analyst:** NEG  
- **Analytical Date/Time:** 06/06/16 16:57

**Container ID:** 1162808007-B

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Print Date: 06/28/2016 10:38:41AM

J flagging is activated
## Results of MW-7

**Client Sample ID:** MW-7  
**Client Project ID:** 104.00367.16002 Healy PP GW  
**Lab Sample ID:** 1162808008  
**Lab Project ID:** 1162808  
**Collection Date:** 06/01/16 11:33  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** Location:

## Results by Metals by ICP/MS

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## Batch Information

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<th>Prep Batch:</th>
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Print Date: 06/28/2016 10:38:41AM  
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t 907.562.2343 f 907.561.5301 www.us.sgs.com  
Member of SGS Group  
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## Results of MW-7

Client Sample ID: MW-7  
Client Project ID: 104.00367.16002 Healy PP GW  
Lab Sample ID: 1162808008  
Lab Project ID: 1162808  
Collection Date: 06/01/16 11:33  
Received Date: 06/02/16 13:02  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:  

### Results by Metals Department

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- Analytical Batch: MCV5712  
- Analytical Method: EP245.1  
- Analyst: NEG  
- Analytical Date/Time: 06/09/16 17:08  
- Container ID: 1162808008-A  
- Prep Batch: MXX29848  
- Prep Method: METHOD  
- Prep Date/Time: 06/09/16 12:48  
- Prep Initial Wt./Vol.: 25 mL  
- Prep Extract Vol: 50 mL
### Results of MW-7

**Client Sample ID:** MW-7  
**Client Project ID:** 104.00367.16002 Healy PP GW  
**Lab Sample ID:** 1162808008  
**Lab Project ID:** 1162808  
**Collection Date:** 06/01/16 11:33  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

### Results by Waters Department

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<td>Fluoride</td>
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**Batch Information**

- **Analytical Batch:** WIC5544  
- **Analytical Method:** EPA 300.0  
- **Analyst:** ACF  
- **Prep Batch:** WXX11519  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/03/16 12:33  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

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**Batch Information**

- **Analytical Batch:** STS5053  
- **Analytical Method:** SM21 2540C  
- **Analyst:** NEG  
- **Prep Batch:** WXX11519  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/06/16 16:57  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

**Print Date:** 06/28/2016 10:38:41AM

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33 of 65
### Results of MW-1R

**Client Sample ID:** MW-1R  
**Client Project ID:** 104.00367.16002 Healy PP GW  
**Lab Sample ID:** 1162808009  
**Lab Project ID:** 1162808  
**Collection Date:** 06/01/16 13:12  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

### Results by Metals by ICP/MS

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<td>1</td>
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### Batch Information

- **Analytical Batch:** MMS9393  
  **Analytical Method:** EP200.8  
  **Analyst:** VDL  
  **Analytical Date/Time:** 06/09/16 15:43  
  **Container ID:** 1162808009-A  
- **Prep Batch:** MXX29826  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 06/06/16 12:38  
  **Prep Initial Wt./Vol.:** 20 mL  
  **Prep Extract Vol.:** 50 mL  

- **Analytical Batch:** MMS9399  
  **Analytical Method:** EP200.8  
  **Analyst:** VDL  
  **Analytical Date/Time:** 06/13/16 17:00  
  **Container ID:** 1162808009-A  
- **Prep Batch:** MXX29847  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 06/10/16 09:48  
  **Prep Initial Wt./Vol.:** 20 mL  
  **Prep Extract Vol.:** 50 mL

*J flagging is activated*
Results of MW-1R

Collection Date: 06/01/16 13:12
Received Date: 06/02/16 13:02
Matrix: Water (Surface, Eff., Ground)

Results by Metals Department

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Batch Information

Analytical Batch: MCV5712
Prep Batch: MXX29848

Analytical Method: EP245.1
Prep Method: METHOD

Analyst: NEG
Prep Date/Time: 06/09/16 12:48
Prep Initial Wt./Vol.: 25 mL

Analytical Date/Time: 06/09/16 17:17
Prep Extract Vol: 50 mL

Print Date: 06/28/2016 10:38:41AM

J flagging is activated
### Results of MW-1R

**Client Sample ID:** MW-1R  
**Client Project ID:** 104.00367.16002 Healy PP GW  
**Lab Sample ID:** 1162808009  
**Lab Project ID:** 1162808

**Collection Date:** 06/01/16 13:12  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)

### Results by Waters Department

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**Batch Information**

- **Prep Batch:** WXX11519  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/03/16 12:33  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

### Results of MW-1R

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**Batch Information**

- **Prep Batch:** WXX11519  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/03/16 12:33  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

**J flagging is activated**

Print Date: 06/28/2016 10:38:41AM
### Results of MW-8

**Client Sample ID:** MW-8  
**Client Project ID:** 104.00367.16002 Healy PP GW  
**Lab Sample ID:** 1162808010  
**Lab Project ID:** 1162808  
**Collection Date:** 06/01/16 14:00  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

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### Results by Metals by ICP/MS

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<td>0.620</td>
<td>ug/L</td>
<td>1</td>
<td>06/09/16 15:46</td>
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<tr>
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<td>2.50 U</td>
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<tr>
<td>Thallium</td>
<td>0.500 U</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
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### Batch Information

- **Analytical Batch:** MMS9393  
  **Analytical Method:** EP200.8  
  **Analyst:** VDL  
  **Analytical Date/Time:** 06/09/16 15:46  
  **Container ID:** 1162808010-A

- **Prep Batch:** MXX29826  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 06/06/16 12:38  
  **Prep Initial Wt./Vol.:** 20 mL  
  **Prep Extract Vol.:** 50 mL

- **Analytical Batch:** MMS9399  
  **Analytical Method:** EP200.8  
  **Analyst:** VDL  
  **Analytical Date/Time:** 06/13/16 17:03  
  **Container ID:** 1162808010-A

- **Prep Batch:** MXX29847  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 06/10/16 09:48  
  **Prep Initial Wt./Vol.:** 20 mL  
  **Prep Extract Vol.:** 50 mL

---

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Print Date: 06/28/2016 10:38:41 AM

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37 of 65
### Results of MW-8

<table>
<thead>
<tr>
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<th>Result Qual</th>
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<th>DL</th>
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<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
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<tr>
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<td>0.0925 J</td>
<td>0.200</td>
<td>0.0620 ug/L</td>
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<td>06/09/16 17:19</td>
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### Batch Information

- **Analytical Batch**: MCV5712
- **Analytical Method**: EP245.1
- **Analyst**: NEG
- **Analytical Date/Time**: 06/09/16 17:19
- **Container ID**: 1162808010-A

- **Prep Batch**: MXX29848
- **Prep Method**: METHOD
- **Prep Date/Time**: 06/09/16 12:48
- **Prep Initial WL/Vol.**: 25 mL
- **Prep Extract Vol**: 50 mL
### Results of MW-8

Client Sample ID: **MW-8**  
Client Project ID: **104.00367.16002 Healy PP GW**  
Lab Sample ID: **1162808010**  
Lab Project ID: **1162808**  

**Collection Date:** 06/01/16 14:00  
**Received Date:** 06/02/16 13:02  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

### Results by Waters Department

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<td>0.0310</td>
<td>mg/L</td>
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### Batch Information

- **Prep Batch:** WXX11519  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/03/16 12:33  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol.:** 10 mL

- **Analytical Batch:** WIC5454  
- **Analytical Method:** EPA 300.0  
- **Analyst:** ACF  
- **Analytical Date/Time:** 06/06/16 16:57  
- **Container ID:** 1162808010-B

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### Batch Information

- **Analytical Batch:** STS5053  
- **Analytical Method:** SM21 2540C  
- **Analyst:** NEG  
- **Analytical Date/Time:** 06/06/16 16:57  
- **Container ID:** 1162808010-C

---

Print Date: 06/28/2016 10:38:41AM  
J flagging is activated
## Method Blank

Blank ID: MB for HBN 1735364 [MXX/29826]  
Blank Lab ID: 1327966  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1162808001, 1162808002, 1162808003, 1162808004, 1162808005, 1162808006, 1162808007, 1162808008, 1162808009, 1162808010

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### Results by EP200.8

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<th>DL</th>
<th>Units</th>
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<td>1.00</td>
<td>0.310</td>
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<tr>
<td>Arsenic</td>
<td>2.50U</td>
<td>5.00</td>
<td>1.50</td>
<td>ug/L</td>
</tr>
<tr>
<td>Barium</td>
<td>1.50U</td>
<td>3.00</td>
<td>0.940</td>
<td>ug/L</td>
</tr>
<tr>
<td>Beryllium</td>
<td>0.200U</td>
<td>0.400</td>
<td>0.130</td>
<td>ug/L</td>
</tr>
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<td>Boron</td>
<td>25.0U</td>
<td>50.0</td>
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<td>Cadmium</td>
<td>0.250U</td>
<td>0.500</td>
<td>0.150</td>
<td>ug/L</td>
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<td>Calcium</td>
<td>250U</td>
<td>500</td>
<td>150</td>
<td>ug/L</td>
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<tr>
<td>Chromium</td>
<td>1.00U</td>
<td>2.00</td>
<td>0.620</td>
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<td>Cobalt</td>
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<td>4.00</td>
<td>1.20</td>
<td>ug/L</td>
</tr>
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<td>Lead</td>
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<td>0.0620</td>
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<td>Molybdenum</td>
<td>1.00U</td>
<td>2.00</td>
<td>0.620</td>
<td>ug/L</td>
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<td>Selenium</td>
<td>2.50U</td>
<td>5.00</td>
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<td>ug/L</td>
</tr>
<tr>
<td>Thallium</td>
<td>0.500U</td>
<td>1.00</td>
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### Batch Information

- **Analytical Batch**: MMS9393  
- **Analytical Method**: EP200.8  
- **Instrument**: Perkin Elmer NexIon P5  
- **Analyst**: VDL  
- **Analytical Date/Time**: 6/9/2016 2:40:33PM  
- **Prep Batch**: MXX29826  
- **Prep Method**: E200.2  
- **Prep Date/Time**: 6/6/2016 12:38:46PM  
- **Prep Initial Wt./Vol.**: 20 mL  
- **Prep Extract Vol.**: 50 mL

---

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**Blank Spike Summary**

Blank Spike ID: LCS for HBN 1162808 [MXX29826]
Blank Spike Lab ID: 1327967
Date Analyzed: 06/09/2016 14:16

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1162808001, 1162808002, 1162808003, 1162808004, 1162808005, 1162808006, 1162808007, 1162808008, 1162808009, 1162808010

**Results by EP200.8**

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<th>Result</th>
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<td>Antimony</td>
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<td>104</td>
<td>(85-115)</td>
</tr>
<tr>
<td>Arsenic</td>
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<td>1050</td>
<td>105</td>
<td>(85-115)</td>
</tr>
<tr>
<td>Barium</td>
<td>1000</td>
<td>1040</td>
<td>104</td>
<td>(85-115)</td>
</tr>
<tr>
<td>Beryllium</td>
<td>100</td>
<td>113</td>
<td>113</td>
<td>(85-115)</td>
</tr>
<tr>
<td>Boron</td>
<td>1000</td>
<td>1010</td>
<td>101</td>
<td>(85-115)</td>
</tr>
<tr>
<td>Cadmium</td>
<td>100</td>
<td>108</td>
<td>108</td>
<td>(85-115)</td>
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<tr>
<td>Calcium</td>
<td>10000</td>
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<td>400</td>
<td>435</td>
<td>109</td>
<td>(85-115)</td>
</tr>
<tr>
<td>Cobalt</td>
<td>500</td>
<td>534</td>
<td>107</td>
<td>(85-115)</td>
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<tr>
<td>Lead</td>
<td>1000</td>
<td>1050</td>
<td>105</td>
<td>(85-115)</td>
</tr>
<tr>
<td>Lithium</td>
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<td>216</td>
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<td>(85-115)</td>
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<td>Molybdenum</td>
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<td>415</td>
<td>104</td>
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<tr>
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<td>(85-115)</td>
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<td>(85-115)</td>
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**Batch Information**

Analytical Batch: MMS9393
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: VDL

Prep Batch: MXX29826
Prep Method: E200.2
Prep Date/Time: 06/06/2016 12:38
Spike Init Wt./Vol.: 1000 ug/L  Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:
## Matrix Spike Summary

Original Sample ID: 1327968  
MS Sample ID: 1327969 MS  
MSD Sample ID:  
Analysis Date: 06/09/2016 15:16

QC for Samples: 1162808001, 1162808002, 1162808003, 1162808004, 1162808005, 1162808006, 1162808007, 1162808008, 1162808009, 1162808010

### Results by EP200.8

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### Batch Information

- **Analytical Batch:** MMS9393
- **Analytical Method:** EP200.8
- **Instrument:** Perkin Elmer NexIon P5
- **Analyst:** VDL
- **Analytical Date/Time:** 6/9/2016 3:19:45PM

- **Prep Batch:** MXX29826
- **Prep Method:** DW Digest for Metals on ICP-MS
- **Prep Date/Time:** 6/6/2016 12:38:46PM
- **Prep Initial Wt./Vol.:** 20.00mL
- **Prep Extract Vol.:** 50.00mL

Print Date: 06/28/2016 10:38:47AM

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Matrix Spike Summary

Original Sample ID: 1327978  
MS Sample ID: 1327979 MS  
MSD Sample ID:  
Analysis Date: 06/09/2016 14:19  
Analysis Date: 06/09/2016 14:22  
Analysis Date:  
Matrix: Drinking Water  
QC for Samples: 1162808001, 1162808002, 1162808003

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Batch Information

Analytical Batch: MMS9393  
Analytical Method: EP200.8  
Instrument: Perkin Elmer NexIon P5  
Analyst: VDL  
Analytical Date/Time: 6/9/2016 2:22:37PM  
Prep Batch: MXX29826  
Prep Method: DW Digest for Metals on ICP-MS  
Prep Date/Time: 6/6/2016 12:38:46PM  
Prep Initial Wt./Vol.: 20.00mL  
Prep Extract Vol: 50.00mL

Print Date: 06/28/2016 10:38:47AM
**Method Blank**

Blank ID: MB for HBN 1735684 [MXX/29847]  
Blank Lab ID: 1329135  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples:  
1162808001, 1162808002, 1162808007, 1162808009, 1162808010

**Results by EP200.8**

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<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
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</thead>
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<td>0.0620</td>
<td>ug/L</td>
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**Batch Information**

- Analytical Batch: MMS9399  
- Analytical Method: EP200.8  
- Instrument: Perkin Elmer NexIon P5  
- Analyst: VDL  
- Analytical Date/Time: 6/13/2016 4:01:17PM

- Prep Batch: MXX29847  
- Prep Method: E200.2  
- Prep Date/Time: 6/10/2016 9:48:03AM  
- Prep Initial Wt./Vol.: 20 mL  
- Prep Extract Vol: 50 mL
Blank Spike Summary

Blank Spike ID: LCS for HBN 1162808 [MXX29847]
Blank Spike Lab ID: 1329136
Date Analyzed: 06/13/2016 16:04

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1162808001, 1162808002, 1162808007, 1162808009, 1162808010

Results by EP200.8

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>1000</td>
<td>1040</td>
<td>104</td>
<td>(85-115)</td>
</tr>
</tbody>
</table>

Batch Information

Analytical Batch: MMS9399
Analytical Method: EP200.8
Instrument: Perkin Elmer Nexion P5
Analyst: VDL

Prep Batch: MXX29847
Prep Method: E200.2
Prep Date/Time: 06/10/2016 09:48
Spike Init Wt./Vol.: 1000 ug/L
Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol: |
## Matrix Spike Summary

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sample</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead 1.12</td>
<td></td>
<td>1000</td>
<td>985</td>
<td>98</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Batch Information

- **Analytical Batch:** MMS9399
- **Analytical Method:** EP200.8
- **Instrument:** Perkin Elmer NexIon P5
- **Analyst:** VDL
- **Analytical Date/Time:** 6/13/2016 4:10:14PM
- **Prep Batch:** MXX29847
- **Prep Method:** DW Digest for Metals on ICP-MS
- **Prep Date/Time:** 6/10/2016 9:48:03AM
- **Prep Initial Wt./Vol.:** 20.00mL
- **Prep Extract Vol:** 50.00mL
### Matrix Spike Summary

Original Sample ID: 1329151  
MS Sample ID: 1329152 MS  
MSD Sample ID:   
Analysis Date: 06/13/2016 16:48  
Analysis Date: 06/13/2016 16:51  
Matrix: Drinking Water  
QC for Samples: 1162808001, 1162808002, 1162808007, 1162808009, 1162808010

### Results by EP200.8

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>0.913</td>
<td>1000</td>
<td>98</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>70-130</td>
<td></td>
</tr>
</tbody>
</table>

### Batch Information

- **Analytical Batch**: MMS9399  
- **Analytical Method**: EP200.8  
- **Instrument**: Perkin Elmer Nexlon P5  
- **Analyst**: VDL  
- **Analytical Date/Time**: 6/13/2016 4:51:58PM  
- **Prep Batch**: MXX29847  
- **Prep Method**: DW Digest for Metals on ICP-MS  
- **Prep Date/Time**: 6/10/2016 9:48:03AM  
- **Prep Initial Wt./Vol.**: 20.00mL  
- **Prep Extract Vol**: 50.00mL
### Method Blank

Blank ID: MB for HBN 1735692 [MXX/29848]  
Blank Lab ID: 1329175  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples:  
1162808002, 1162808003, 1162808004, 1162808005, 1162808006, 1162808007, 1162808008, 1162808009, 1162808010

### Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>0.141J</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
</tr>
</tbody>
</table>

### Batch Information

- Analytical Batch: MCV5712  
- Analytical Method: EP245.1  
- Instrument: PSA Millennium mercury AA  
- Analyst: NEG  
- Analytical Date/Time: 6/9/2016 4:33:07PM

- Prep Batch: MXX29848  
- Prep Method: METHOD  
- Prep Date/Time: 6/9/2016 12:48:00PM  
- Prep Initial Wt./Vol.: 25 mL  
- Prep Extract Vol: 50 mL
# Blank Spike Summary

Blank Spike ID: LCS for HBN 1162808 [MXX29848]  
Blank Spike Lab ID: 1329176  
Date Analyzed: 06/09/2016 16:36  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples: 1162808002, 1162808003, 1162808004, 1162808005, 1162808006, 1162808007, 1162808008, 1162808009, 1162808010

## Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>4</td>
<td>4.43</td>
<td>111</td>
<td>(85-115)</td>
</tr>
</tbody>
</table>

## Batch Information

- **Analytical Batch:** MCV5712  
- **Analytical Method:** EP245.1  
- **Instrument:** PSA Millennium mercury AA  
- **Analyst:** NEG  
- **Prep Batch:** MXX29848  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/09/2016 12:48  
- **Spike Init Wt./Vol.:** 4 ug/L  
- **Extract Vol:** 50 mL  
- **Dupe Init Wt./Vol.:** Extract Vol.:
Matrix Spike Summary

Original Sample ID: 1162962001
MS Sample ID: 1329178 MS
MSD Sample ID: 
Analysis Date: 06/09/2016 17:25

QC for Samples: 1162808002, 1162808003, 1162808004, 1162808005, 1162808006, 1162808007, 1162808008, 1162808009, 1162808010

Analysis Date: 06/09/2016 17:28
Matrix: Water (Surface, Eff., Ground)

Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>0.128J</td>
<td>8.00</td>
<td>8.84</td>
<td>109</td>
<td></td>
<td></td>
<td></td>
<td>70-130</td>
<td></td>
</tr>
</tbody>
</table>

Matrix Spike Summary

Parameter | Sample | Spike | Result | Rec (%) | Spike | Result | Rec (%) | CL | RPD (%) | RPD CL |
---------|--------|-------|--------|---------|-------|--------|---------|----|---------|--------|
Mercury  | 0.128J | 8.00  | 8.84   | 109     |       |        |         |    | 70-130  |        |

Batch Information

Analytical Batch: MCV5712
Analytical Method: EP245.1
Instrument: PSA Millennium mercury AA
Analyst: NEG
Analytical Date/Time: 6/9/2016 5:28:47PM

Prep Batch: MXX29848
Prep Method: Digestion Mercury 245.1 (W)
Prep Date/Time: 6/9/2016 12:48:00PM
Prep Initial Wt./Vol.: 25.00mL
Prep Extract Vol: 50.00mL

Print Date: 06/28/2016 10:38:55AM
### Matrix Spike Summary

| Original Sample ID: 1329202 | Analysis Date: 06/09/2016 16:44 |
| MS Sample ID: 1329203 MS | Analysis Date: 06/09/2016 16:47 |
| MSD Sample ID: | Analysis Date: |
| QC for Samples: 1162808002, 1162808003, 1162808004, 1162808005, 1162808006, 1162808007, 1162808008, 1162808009, 1162808010 |

### Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sample Spike (ug/L)</th>
<th>Spike</th>
<th>Rec (%)</th>
<th>Spike Duplicate (ug/L)</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>0.204</td>
<td>8.00</td>
<td>8.75</td>
<td>107</td>
<td>8.75</td>
<td></td>
<td></td>
<td>70-130</td>
</tr>
</tbody>
</table>

### Batch Information

- **Analytical Batch:** MCV5712
- **Analytical Method:** EP245.1
- **Instrument:** PSA Millennium mercury AA
- **Prep Batch:** MXX29848
- **Prep Method:** Digestion Mercury 245.1 (W)
- **Prep Date/Time:** 6/9/2016 12:48:00PM
- **Prep Initial Wt./Vol.:** 25.00mL
- **Prep Extract Vol:** 50.00mL
- **Prep Date/Time:** 6/9/2016 4:47:00PM
- **Prep Initial Wt./Vol.:** 25.00mL
- **Prep Extract Vol:** 50.00mL

Print Date: 06/28/2016 10:38:55AM
# Method Blank

Blank ID: MB for HBN 1737520 [MXX/29905]  
Matrix: Water (Surface, Eff., Ground)  
Blank Lab ID: 1332611  
QC for Samples:  
1162808001

# Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
</tr>
</tbody>
</table>

## Batch Information

- **Analytical Batch**: MCV5714  
- **Analytical Method**: EP245.1  
- **Instrument**: PSA Millennium mercury AA  
- **Analyst**: NEG  
- **Analytical Date/Time**: 6/23/2016 7:53:30PM  
- **Prep Batch**: MXX29905  
- **Prep Method**: METHOD  
- **Prep Date/Time**: 6/23/2016 4:40:00PM  
- **Prep Initial Wt./Vol.**: 25 mL  
- **Prep Extract Vol**: 50 mL
Blank Spike Summary

Blank Spike ID: LCS for HBN 1162808 [MXX29905]
Blank Spike Lab ID: 1332612
Date Analyzed: 06/23/2016 19:56
QC for Samples: 1162808001

Matrix: Water (Surface, Eff., Ground)

Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>4</td>
<td>4.40</td>
<td>110</td>
<td>(85-115)</td>
</tr>
</tbody>
</table>

Batch Information

Analytical Batch: MCV5714
Analytical Method: EP245.1
Instrument: PSA Millennium mercury AA
Analyst: NEG

Prep Batch: MXX29905
Prep Method: METHOD
Prep Date/Time: 06/23/2016 16:40
Spike Init Wt./Vol.: 4 ug/L
Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:
### Matrix Spike Summary

Original Sample ID: 1162808001  
MS Sample ID: 1332613 MS  
MSD Sample ID:  
Analysis Date: 06/23/2016 20:05  
Analysis Date: 06/23/2016 20:08  
Analysis Date:  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples: 1162808001

### Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Matrix Spike (ug/L)</th>
<th>Spike Duplicate (ug/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sample</td>
<td>Spike</td>
</tr>
<tr>
<td>Mercury</td>
<td>0.0702J</td>
<td>8.00</td>
</tr>
</tbody>
</table>

### Batch Information

- Analytical Batch: MCV5714  
- Analytical Method: EP245.1  
- Instrument: PSA Millennium mercury AA  
- Analyst: NEG  
- Analytical Date/Time: 6/23/2016 8:08:10PM  
- Prep Batch: MXX29905  
- Prep Method: Digestion Mercury 245.1 (W)  
- Prep Date/Time: 6/23/2016 4:40:00PM  
- Prep Initial Wt./Vol.: 25.00mL  
- Prep Extract Vol: 50.00mL
### Matrix Spike Summary

Original Sample ID: 1163006006  
MS Sample ID: 1332614 MS  
MSD Sample ID:  
Analysis Date: 06/23/2016 20:40  
Analysis Date: 06/23/2016 20:43  
Analysis Date:  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples: 1162808001

### Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sample</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>0.100U</td>
<td>8.00</td>
<td>8.34</td>
<td>104</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Batch Information

- **Analytical Batch:** MCV5714  
- **Analytical Method:** EP245.1  
- **Instrument:** PSA Millennium mercury AA  
- **Analyst:** NEG  
- **Analytical Date/Time:** 6/23/2016 8:43:19PM

- **Prep Batch:** MXX29905  
- **Prep Method:** Digestion Mercury 245.1 (W)  
- **Prep Date/Time:** 6/23/2016 4:40:00PM  
- **Prep Initial Wt./Vol.:** 25.00mL  
- **Prep Extract Vol:** 50.00mL

---

Print Date: 06/28/2016 10:38:59AM  
SGS North America Inc.  
200 West Potter Drive Anchorage, AK 95518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com
### Method Blank

**Blank ID: MB for HBN 1735411 [STS/5053]**

**Matrix:** Water (Surface, Eff., Ground)

**Blank Lab ID:** 1328127

**QC for Samples:**
1162808001, 1162808002, 1162808003, 1162808004, 1162808005, 1162808006, 1162808007, 1162808008, 1162808009, 1162808010

### Results by **SM21 2540C**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>4.00J</td>
<td>10.0</td>
<td>3.10</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

### Batch Information

- **Analytical Batch:** STS5053
- **Analytical Method:** SM21 2540C
- **Instrument:**
- **Analyst:** NEG
- **Analytical Date/Time:** 6/6/2016 4:57:38PM
**Duplicate Sample Summary**

Original Sample ID: 1162808001  
Duplicate Sample ID: 1328130  
Analysis Date: 06/06/2016 16:57  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples:  
1162808001, 1162808002, 1162808003, 1162808004, 1162808005, 1162808006, 1162808007, 1162808008,  
1162808009, 1162808010  

**Results by SM21 2540C**

<table>
<thead>
<tr>
<th>NAME</th>
<th>Original</th>
<th>Duplicate</th>
<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>1380</td>
<td>1386</td>
<td>mg/L</td>
<td>0.43</td>
<td>(&lt; 5 )</td>
</tr>
</tbody>
</table>

**Batch Information**

Analytical Batch: STS5053  
Analytical Method: SM21 2540C  
Instrument:  
Analyst: NEG
### Duplicate Sample Summary

Original Sample ID: 1162852004  
Duplicate Sample ID: 1328131  
Analysis Date: 06/06/2016 16:57  
Matrix: Drinking Water  
QC for Samples:  
1162808002, 1162808003, 1162808004, 1162808005, 1162808006, 1162808007, 1162808008, 1162808009, 1162808010

### Results by SM21 2540C

<table>
<thead>
<tr>
<th>NAME</th>
<th>Original</th>
<th>Duplicate</th>
<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>613</td>
<td>609</td>
<td>mg/L</td>
<td>0.65</td>
<td>(&lt; 5 )</td>
</tr>
</tbody>
</table>

### Batch Information

- Analytical Batch: STS5053
- Analytical Method: SM21 2540C
- Instrument:
- Analyst: NEG
### Blank Spike Summary

Blank Spike ID: LCS for HBN 1162808 [STS5053]
Blank Spike Lab ID: 1328128
Date Analyzed: 06/06/2016 16:57

Spike Duplicate ID: LCSD for HBN 1162808
Spike Duplicate Lab ID: 1328129
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1162808001, 1162808002, 1162808003, 1162808004, 1162808005, 1162808006, 1162808007, 1162808008, 1162808009, 1162808010

### Results by SM21 2540C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Blank Spike (mg/L)</th>
<th>Spike Duplicate (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spike</td>
<td>Result</td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
<td>330</td>
<td>333</td>
</tr>
</tbody>
</table>

### Batch Information

Analytical Batch: STS5053
Analytical Method: SM21 2540C
Instrument: 
Analyst: NEG

Prep Batch: 
Prep Method: 
Prep Date/Time: 
Spike Init Wt./Vol.: 330 mg/L Extract Vol: 100 mL
Dupe Init Wt./Vol.: 330 mg/L Extract Vol: 100 mL
Method Blank

Blank ID: MB for HBN 1735562 [WXX/11519]  
Blank Lab ID: 1328608  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1162808001, 1162808002, 1162808003, 1162808004, 1162808005, 1162808006, 1162808007, 1162808008, 1162808009, 1162808010

Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>0.0500U</td>
<td>0.100</td>
<td>0.0310</td>
<td>mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.0500U</td>
<td>0.100</td>
<td>0.0310</td>
<td>mg/L</td>
</tr>
<tr>
<td>Sulfate</td>
<td>0.0500U</td>
<td>0.100</td>
<td>0.0310</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

Batch Information

Analytical Batch: WIC5544  
Analytical Method: EPA 300.0  
Instrument: Metrohm 733 DX2  
Analyst: ACF  
Analytical Date/Time: 6/3/2016 2:46:01PM

Prep Batch: WXX11519  
Prep Method: METHOD  
Prep Date/Time: 6/3/2016 12:33:00PM  
Prep Initial Wt./Vol.: 10 mL  
Prep Extract Vol: 10 mL

Print Date: 06/28/2016 10:39:05AM
Blank Spike Summary

Blank Spike ID: LCS for HBN 1162808 [WXX11519]
Blank Spike Lab ID: 1328609
Date Analyzed: 06/03/2016 15:08

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1162808001, 1162808002, 1162808003, 1162808004, 1162808005, 1162808006, 1162808007, 1162808008, 1162808009, 1162808010

Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>10</td>
<td>9.49</td>
<td>95</td>
<td>(90-110)</td>
</tr>
<tr>
<td>Fluoride</td>
<td>10</td>
<td>9.90</td>
<td>99</td>
<td>(90-110)</td>
</tr>
<tr>
<td>Sulfate</td>
<td>10</td>
<td>9.08</td>
<td>91</td>
<td>(90-110)</td>
</tr>
</tbody>
</table>

Batch Information

Analytical Batch: WIC5544
Analytical Method: EPA 300.0
Instrument: Metrohm 733 DX2
Analyst: ACF

Prep Batch: WXX11519
Prep Method: METHOD
Prep Date/Time: 06/03/2016 12:33
Spike Init Wt./Vol.: 10 mg/L  Extract Vol: 10 mL
Dupe Init Wt./Vol.:  Extract Vol:
Matrix Spike Summary

Original Sample ID: 1162808008  Analysis Date: 06/03/2016 19:17
MS Sample ID: 1328610 MS  Analysis Date: 06/03/2016 19:39
MSD Sample ID: 1328611 MSD  Analysis Date: 06/03/2016 20:01
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1162808001, 1162808002, 1162808003, 1162808004, 1162808005, 1162808006, 1162808007, 1162808008, 1162808009, 1162808010

Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>0.676</td>
<td>10.0</td>
<td>11.3</td>
<td>107</td>
<td>10.0</td>
<td>11.1</td>
<td>105</td>
<td>90-110</td>
<td>1.80</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.119</td>
<td>10.0</td>
<td>11.1</td>
<td>109</td>
<td>10.0</td>
<td>10.9</td>
<td>107</td>
<td>90-110</td>
<td>1.70</td>
</tr>
<tr>
<td>Sulfate</td>
<td>28.7</td>
<td>10.0</td>
<td>37.9</td>
<td>92</td>
<td>10.0</td>
<td>37.7</td>
<td>90</td>
<td>*</td>
<td>0.41</td>
</tr>
</tbody>
</table>

Batch Information

Analytical Batch: WIC5544  Prep Batch: WXX11519
Analytical Method: EPA 300.0  Prep Method: EPA 300.0 Extraction Waters/Liquids
Instrument: Metrohm 733 DX2  Prep Date/Time: 6/3/2016 12:33:00PM
Analyst: ACF  Prep Initial Wt./Vol.: 10.00mL
Analytical Date/Time: 6/3/2016 7:39:39PM  Prep Extract Vol: 10.00mL
| SAMPLE IDENTIFICATION | MATRX | Matrx Code | DATE H/M/MYM | TIME H/MM | QC | QC COMMENTS | QC | QC COMMENTS | QC | QC COMMENTS | QC | QC COMMENTS | QC | QC COMMENTS | QC | QC COMMENTS | QC | QC COMMENTS | QC | QC COMMENTS | QC | QC COMMENTS | QC | QC COMMENTS |
|-----------------------|-------|------------|--------------|-----------|----|-------------|----|-------------|----|-------------|----|-------------|----|-------------|----|-------------|----|-------------|----|-------------|----|-------------|----|-------------|----|-------------|----|-------------|----|-------------|
| MW-2                  | water |             | 5-31-16      | 16:12     |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |
| MW-3                  | water |             | 5-31-16      | 17:05     |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |
| MW-4                  | water |             | 5-31-16      | 09:11     |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |
| MW-5                  | water |             | 5-31-16      | 10:16     |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |
| MW-6                  | water |             | 5-31-16      | 13:32     |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |
| MW-7                  | water |             | 5-31-16      | 13:03     |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |
| MW-8                  | water |             | 5-31-16      | 13:03     |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |    |             |

**Remarks:** LOC ID: 116,2815

**Preservatives:**
- Sodium azide
- Glacial acetic acid
- Preservative
- Methanol (25%)
- Sodium (50%)
- Methanol (15%)
- Carboxymethylcellulose (CMC) (1%)
- Formalin (10%)

**Data Deliverable Requirements:**
- Data delivered to site
- Data delivered to site
- Data delivered to site
- Data delivered to site
- Data delivered to site
- Data delivered to site

---

**Notes:**
- Requested turnaround time and/or special instructions:
- Chain of custody (COE) (circle)
- EPA 300.8: Fluoride, Chloride, Sulfate
- EPA 300.8: Mercury, Total (EA 24h) (circle)
- EPA 300.8: Arsenic, Total (EA 24h) (circle)
- Total Metals: As, Cd, Cr, Cu, Pb, Zn, Mo, Thallium, Ag, Be, Se, Mn, Cr, Co.

---

**Contact:**
- Golden Valley Electric Association Inc.
- Kyle Johnson
- Heather Simon, Kyle Johnson
- GVEA Naomi Knight

**Phone:**
- 907-222-1112
- 907-222-1112
- 907-222-1112

---

**Sample(s) in this Request:**
- MW-2
- MW-3
- MW-4
- MW-5
- MW-6
- MW-7
- MW-8
**e-SAMPLE RECEIPT FORM**

<table>
<thead>
<tr>
<th>Review Criteria</th>
<th>Y/N (yes/no)</th>
<th>Exceptions Noted below</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COC accompanied samples?</strong></td>
<td>Y</td>
<td><strong>exemption permitted if sampler hand carries/delivers.</strong></td>
</tr>
<tr>
<td>Were Custody Seals intact? Note # &amp; location</td>
<td>Y</td>
<td>1-F, 1-B</td>
</tr>
<tr>
<td><strong>exemption permitted if chilled &amp; collected &lt;8hrs ago or chilling not required (i.e., waste, oil)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em><em>Temperature blank compliant</em> (i.e., 0-6 °C after CF)?</em>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>If &gt;6°C, were samples collected &lt;8 hours ago?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>If &lt;6°C, were sample containers ice free?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were samples received within hold time?</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td><strong>Do samples match COC</strong> (i.e., sample IDs, dates/times collected)?</td>
<td></td>
<td><strong>Note:</strong> If times differ &lt;1hr, record details &amp; login per COC.</td>
</tr>
<tr>
<td><strong>Were analyses requested unambiguous?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Were proper containers (type/mass/volume/preservative</strong>*) used?</td>
<td></td>
<td><strong>Exemption permitted for metals (e.g., 200.8/6020A)</strong></td>
</tr>
<tr>
<td><strong>IF APPLICABLE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were all VOA vials free of headspace (i.e., bubbles ≤ 6mm)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were all soil VOAs field extracted with MeOH+BFB?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Note to Client:** Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.

**Additional notes (if applicable):**
### Sample Containers and Preservatives

<table>
<thead>
<tr>
<th>Container Id</th>
<th>Preservative Condition</th>
<th>Container Id</th>
<th>Preservative Condition</th>
</tr>
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<tbody>
<tr>
<td>1162808001-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
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<td>No Preservative Required</td>
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<td></td>
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<tr>
<td>1162808001-C</td>
<td>No Preservative Required</td>
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<tr>
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<td>No Preservative Required</td>
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<tr>
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<td>No Preservative Required</td>
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</tr>
<tr>
<td>1162808003-C</td>
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<td>1162808006-B</td>
<td>No Preservative Required</td>
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<td>1162808006-C</td>
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<td>1162808007-B</td>
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</tr>
<tr>
<td>1162808010-C</td>
<td>No Preservative Required</td>
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<td></td>
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</tbody>
</table>

**Container Condition Glossary**

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

- **OK** - The container was received at an acceptable pH for the analysis requested.
- **BU** - The container was received with headspace greater than 6mm.
- **DM** - The container was received damaged.
- **FR** - The container was received frozen and not usable for Bacteria or BOD analyses.
- **PA** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
- **PH** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
To: Golden Valley Electric Association  
2700 Gambell Street Suite 200  
Anchorage, AK 99503  
(907)564-6907

Report Number: 1162815  
Client Project: 104.00367.16002 Healy PP GW

Dear Heather Simon,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,

SGS North America Inc.

Justin Nelson  
Project Manager  
Justin.Nelson@sgs.com
Case Narrative

SGS Client: Golden Valley Electric Association
SGS Project: 1162815
Project Name/Site: 104.00367.16002 Healy PP GW
Project Contact: Heather Simon

Refer to sample receipt form for information on sample condition.

MW-2 (1162815001) PS
  Radium 226/228 was analyzed by ACZ Laboratories of Steamboat Springs, CO.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.
<table>
<thead>
<tr>
<th>Client Sample ID</th>
<th>Lab Sample ID</th>
<th>Collected</th>
<th>Received</th>
<th>Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-2</td>
<td>1162815001</td>
<td>05/31/2016</td>
<td>06/02/2016</td>
<td>Water (Surface, Eff., Ground)</td>
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<tr>
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</tr>
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<tr>
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<td>06/01/2016</td>
<td>06/02/2016</td>
<td>Water (Surface, Eff., Ground)</td>
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<td>MW-8</td>
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<td>06/01/2016</td>
<td>06/02/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
</tbody>
</table>

Method

Method Description
## Chain of Custody Record

**Client:** Golden Valley Electric Association Inc.

**Contact:** Heather Simon_Kyle Johnson

**Phone #:** 907-222-1112

**Project Name:** Healy Power Plant Groundwater Monitoring

**Project/Permit #:** 104.00367.16002

**Reports To:**
- E-mail: Heather Simon_Kyle Johnson @sklamon@slrconsulting.com

**Invoice To:** GVEA Naomi Knight

**P.O. #:** nmknight@gvea.com

---

### Reserved for Lab Use

<table>
<thead>
<tr>
<th>Sample Identification</th>
<th>Date</th>
<th>Time</th>
<th>Matrix Code</th>
<th>Remarks/Loc Id</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-2</td>
<td>5-31-16</td>
<td>1612</td>
<td>water</td>
<td>GW</td>
</tr>
<tr>
<td>MW-4</td>
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<td>MW-8</td>
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<td>water</td>
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</tr>
</tbody>
</table>

---

**Relinquished By:**
- (1) Kyle Johnson
- (2) Kyle Johnson
- (3) Kyle Johnson
- (4) Kyle Johnson

**Date:** 6-2-16

**Time:** 1300

**Received By:**

---

**Section 4**

**DOD Project:** Yes

**Data Deliverable Requirements:**

**Cooler ID:**

**Requested Turnaround Time and/or Special Instructions:**

- Total Metals: B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Thallium
- EPA 300.0: Fluoride, Chloride, Sulfate

**Temp Blank °C:** 4.8

**Chain of Custody Seal:** (Circle)

- INTACT
- BROKEN
- ABSENT

(See attached Sample Receipt Form)
### Review Criteria

<table>
<thead>
<tr>
<th>Y/N (yes/no)</th>
<th>Exceptions Noted below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were Custody Seals intact? Note # &amp; location</td>
<td><strong>exemption permitted if chiller &amp; collected &lt;8hrs or chilling not required (i.e., waste, oil)</strong></td>
</tr>
<tr>
<td>COC accompanied samples?</td>
<td>Y 1-F, 1-B</td>
</tr>
</tbody>
</table>

**Temperature blank compliant* (i.e., 0-6 °C after CF)?**

- **Y** Cooler ID: 1 @ 1.3 °C Therm ID: 242
- **Y** Cooler ID: 2 @ 4.8 °C Therm ID: 242
- **Y** Cooler ID: 3 @ 4.7 °C Therm ID: 242

*If >6°C, were samples collected <8 hours ago?*

If <6°C, were sample containers ice free? [ ]

If samples received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".

Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.

<table>
<thead>
<tr>
<th>Y/N (yes/no)</th>
<th>Exceptions Noted below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were samples received within hold time? Y</td>
<td></td>
</tr>
</tbody>
</table>

Do samples match COC** (i.e., sample IDs, dates/times collected)? Y

**Note: If times differ <1hr, record details & login per COC.

**Were analyses requested unambiguous?** Y

Weren proper containers (type/mass/volume/preservative*** used? Y

***Exemption permitted for metals (i.e., waste, oil, oil, etc.).

**IF APPLICABLE**

- Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples? [ ]
- Were all VOAs free of headspace (i.e., bubbles ≤ 6mm)? [ ]
- Were all soil VOAs field extracted with MeOH+BFB? [ ]

**Note to Client:** Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):
## Sample Containers and Preservatives

<table>
<thead>
<tr>
<th>Container Id</th>
<th>Preservative</th>
<th>Container Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1162815001-A</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1162815001-B</td>
<td>HNO3 to pH &lt; 2</td>
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</tr>
<tr>
<td>1162815001-C</td>
<td>HNO3 to pH &lt; 2</td>
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<td>1162815002-B</td>
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</tr>
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<td>1162815010-C</td>
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</table>

### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

**OK** - The container was received at an acceptable pH for the analysis requested.

**BU** - The container was received with headspace greater than 6mm.

**DM** - The container was received damaged.

**FR** - The container was received frozen and not usable for Bacteria or BOD analyses.

**PA** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

**PH** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
Report to:  
Julie Shumway  
SGS Environmental Services Inc. - Alaska  
200 W. Potter Dr.  
Anchorage, AK 99518

Bill to:  
Julie Shumway  
SGS Environmental Services Inc. - Alaska  
200 W. Potter Dr.  
Anchorage, AK 99518

Project ID: 1162815  
ACZ Project ID: L30940

Julie Shumway:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 10, 2016. This project has been assigned to ACZ's project number, L30940. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L30940. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after July 29, 2016. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Max Janicek has reviewed and approved this report.
### SGS Environmental Services Inc. - Alaska

<table>
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### Radium 228

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# RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

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<tr>
<td>Sample ID:</td>
<td>MW-3</td>
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<td>Locator:</td>
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<td>Sample Matrix:</td>
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## Radium 226

M903.1

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## Radium 228

M904.0

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# RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

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**ACZ Sample ID:** L30940-04  
**Date Sampled:** 06/01/16 9:11  
**Date Received:** 06/10/16  
**Sample Matrix:** Drinking Water
# RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

- **Project ID:** 1162815
- **Sample ID:** MW-96
- **Sample Matrix:** Drinking Water

## Radium 226

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## Radium 228

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## RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

**Project ID:** 1162815  
**Sample ID:** SW-1  
**Locator:**

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**ACZ Sample ID:** L30940-07  
**Date Sampled:** 06/01/16 10:30  
**Date Received:** 06/10/16  
**Sample Matrix:** Drinking Water

---

### Radium 226

**Prep Method:**

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<th>Result</th>
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<tbody>
<tr>
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### Radium 228

**Prep Method:**

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SGS Environmental Services Inc. - Alaska

ACZ Sample ID: L30940-08
Date Sampled: 06/01/16 11:33
Date Received: 06/10/16
Sample Matrix: Drinking Water

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<td>mns</td>
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<table>
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<th>XQ</th>
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# RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

<table>
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**ACZ Sample ID:** **L30940-09**

**Date Sampled:** 06/01/16 13:12

**Date Received:** 06/10/16

**Sample Matrix:** Drinking Water

### Radium 226

#### M903.1

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**Prep Method:**

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*Please refer to Qualifier Reports for details.*
### SGS Environmental Services Inc. - Alaska

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### Report Header Explanations

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
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<tbody>
<tr>
<td>Batch</td>
<td>A distinct set of samples analyzed at a specific time</td>
</tr>
<tr>
<td>Error(+-)</td>
<td>Calculated sample specific uncertainty</td>
</tr>
<tr>
<td>Found</td>
<td>Value of the QC Type of interest</td>
</tr>
<tr>
<td>Limit</td>
<td>Upper limit for RPD, in %.</td>
</tr>
<tr>
<td>LCL</td>
<td>Lower Control Limit, in % (except for LCSS, mg/Kg)</td>
</tr>
<tr>
<td>LLD</td>
<td>Calculated sample specific Lower Limit of Detection</td>
</tr>
<tr>
<td>PCN/SCN</td>
<td>A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis</td>
</tr>
<tr>
<td>PQL</td>
<td>Practical Quantitation Limit</td>
</tr>
<tr>
<td>QC</td>
<td>True Value of the Control Sample or the amount added to the Spike</td>
</tr>
<tr>
<td>Rec</td>
<td>Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)</td>
</tr>
<tr>
<td>RER</td>
<td>Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.</td>
</tr>
<tr>
<td>RPD</td>
<td>Relative Percent Difference, calculation used for Duplicate QC Types</td>
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<tr>
<td>UCL</td>
<td>Upper Control Limit, in % (except for LCSS, mg/Kg)</td>
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<td>Sample</td>
<td>Value of the Sample of interest</td>
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### QC Sample Types

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<tr>
<td>LCSS</td>
<td>Laboratory Control Sample - Soil</td>
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<td>LCSW</td>
<td>Laboratory Control Sample - Water</td>
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<table>
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<th>Type</th>
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<td>Prep Blank - Soil</td>
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<td>PBW</td>
<td>Prep Blank - Water</td>
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### QC Sample Type Explanations

- **Blanks**: Verifies that there is no or minimal contamination in the prep method procedure.
- **Control Samples**: Verifies the accuracy of the method, including the prep procedure.
- **Duplicates**: Verifies the precision of the instrument and/or method.
- **Matrix Spikes**: Determines sample matrix interferences, if any.

### ACZ Qualifiers (Qual)

- **H**: Analysis exceeded method hold time.

### Method Prefix Reference

- **M**: EPA methodology, including those under SDWA, CWA, and RCRA
- **SM**: Standard Methods for the Examination of Water and Wastewater.
- **D**: ASTM
- **RP**: DOE
- **ESM**: DOE/ESM

### Comments

1. Solid matrices are reported on a dry weight basis.
3. QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
4. An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

### Radium 226

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<th>Upper</th>
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- DJ: Sample dilution required due to insufficient sample.
- DF: Sample required dilution due to high sediment.
- RG: Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
Receipt Verification

1) Is a foreign soil permit included for applicable samples?  X
2) Is the Chain of Custody form or other directive shipping papers present?  X
3) Does this project require special handling procedures such as CLP protocol?  X
4) Are any samples NRC licensable material?  X
5) If samples are received past hold time, proceed with requested short hold time analyses?  X
6) Is the Chain of Custody form complete and accurate?  X
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?  X

Samples/Containers

8) Are all containers intact and with no leaks?  X
9) Are all labels on containers and are they intact and legible?  X
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?  X
11) For preserved bottle types, was the pH checked and within limits? 1  X
12) Is there sufficient sample volume to perform all requested work?  X
13) Is the custody seal intact on all containers?  X
14) Are samples that require zero headspace acceptable?  X
15) Are all sample containers appropriate for analytical requirements?  X
16) Is there an Hg-1631 trip blank present?  X
17) Is there a VOA trip blank present?  X
18) Were all samples received within hold time?  X

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

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<th>Temp Criteria(°C)</th>
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Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.
The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).
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<th>TIME HH:MM</th>
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<th>CONTAINERS</th>
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Relinquished By: 1
Reynolds: 5/11/18

Relinquished By: 2

Relinquished By: 3

Relinquished By: 4

DOD Project? □ YES □ NO
Report to DL (J Flags) □
Cooler ID: 1118

Data Deliverable Requirements:
Level 2 + SGS EDD

Requested Turnaround Time and/or Special Instructions:

Temp Blank °C: ______
Chain of Custody Seal: (Circle)
INTACT BROKEN ABSENT

http://www.sgs.com/terms_and_conditions.htm
To: Golden Valley Electric Association  
PO Box 71249  
Healy, AK 99743  
(907)683-8305

Report Number: 1164461
Client Project: Heds Power Plant Grandwater Mo

Dear Naomi Knight,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
GSN North America Inc.

Jennifer Dawkins  
Project Manager

Date
Refer to sample receipt form for information on sample condition.

**MW-2 (1164461002) PS**
300.0 - Anions - LOQ for fluoride was elevated due to matrix interference.

**MW-3 (1164461003) PS**
300.0 - Anions - LOQ for fluoride was elevated due to matrix interference.

**MW-4 (1164461004) PS**
6020A - The metals LOQ for multiple analytes is elevated due to matrix interference.

**MW-7 (1164461008) PS**
300.0 - Anions - LOQ for fluoride was elevated due to matrix interference.

**MW-8 (1164461009) PS**
300.0 - Anions - LOQ for fluoride was elevated due to matrix interference.

**1164455001MS (1344307) MS**
300.0 - Anions - MS recovery is outside of QC criteria for sulfate (112%). Refer to LCS for accuracy requirements.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.*
Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

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SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

* The analyte has exceeded allowable regulatory or control limits.
! Surrogate out of control limits.
B Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB Continuing Calibration Verification
CCCV/CVC/CVA/CVCB Closing Continuing Calibration Verification
CL Control Limit
D The analyte concentration is the result of a dilution.
DF Dilution Factor
DL Detection Limit (i.e., maximum method detection limit)
E The analyte result is above the calibrated range.
F Indicates value that is greater than or equal to the DL
GT Greater Than
IB Instrument Blank
ICV Initial Calibration Verification
J The quantitation is an estimation.
JL The analyte was positively identified, but the quantitation is a low estimation.
LCS(D) Laboratory Control Spike (Duplicate)
LOD Limit of Detection (i.e., 1/2 of the LOQ)
LOQ Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT Less Than
M A matrix effect was present.
MB Method Blank
MS(D) Matrix Spike (Duplicate)
ND Indicates the analyte is not detected.
Q QC parameter out of acceptance range.
R Rejected
RPD Relative Percent Difference
U Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.
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<tr>
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<td>MW-3</td>
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<td>08/04/2016</td>
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<td>EP200.8</td>
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## Detectable Results Summary

**Client Sample ID:** MW-1R  
**Lab Sample ID:** 1164461001  

### Metals by ICP/MS

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### Waters Department

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**Client Sample ID:** MW-2  
**Lab Sample ID:** 1164461002

### Metals by ICP/MS

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<td>Boron</td>
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<td>Calcium</td>
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### Waters Department

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**Client Sample ID:** MW-3  
**Lab Sample ID:** 1164461003

### Metals by ICP/MS

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### Waters Department

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### Detectable Results Summary

**Client Sample ID:** MW-4  
**Lab Sample ID:** 1164461004

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**Waters Department**

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<td>Arsenic</td>
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<td>Barium</td>
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<tr>
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<td>Calcium</td>
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<td>Chromium</td>
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**Client Sample ID:** MW-5  
**Lab Sample ID:** 1164461005

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<td>Arsenic</td>
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<td>Barium</td>
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<tr>
<td>Boron</td>
<td>883</td>
<td>ug/L</td>
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<tr>
<td>Calcium</td>
<td>55600</td>
<td>ug/L</td>
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<td>Chromium</td>
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<td>ug/L</td>
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<td>Lithium</td>
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<td>ug/L</td>
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<tr>
<td>Molybdenum</td>
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<td>Selenium</td>
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<tr>
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<tr>
<td>Fluoride</td>
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<tr>
<td>Sulfate</td>
<td>373</td>
<td>mg/L</td>
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<tr>
<td>Total Dissolved Solids</td>
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<td>mg/L</td>
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**Waters Department**

<table>
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<tr>
<th>Parameter</th>
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<tbody>
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<td>Arsenic</td>
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<td>ug/L</td>
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<td>Fluoride</td>
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### Detectable Results Summary

**Client Sample ID:** MW-6  
**Lab Sample ID:** 1164461007  
**Metals by ICP/MS**

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**Waters Department**

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**Client Sample ID:** MW-7  
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**Metals by ICP/MS**

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**Waters Department**

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<td>Sulfate</td>
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**Client Sample ID:** MW-8  
**Lab Sample ID:** 1164461009  
**Metals by ICP/MS**

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<tr>
<td>Sulfate</td>
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**Waters Department**

<table>
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**Client Sample ID:** SW-1  
**Lab Sample ID:** 1164461010  
**Metals by ICP/MS**

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<td>Chromium</td>
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<tr>
<td>Lithium</td>
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<td>Molybdenum</td>
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<td>Selenium</td>
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<td>Fluoride</td>
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<tr>
<td>Sulfate</td>
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**Waters Department**
# Results of MW-1R

Client Sample ID: **MW-1R**  
Client Project ID: **Heds Power Plant Grandwater Mo**  
Lab Sample ID: **1164461001**  
Lab Project ID: **1164461**  
Collection Date: **08/03/16 09:31**  
Received Date: **08/04/16 09:48**  
Matrix: **Water (Surface, Eff., Ground)**  
Solids (%):  
Location:  

## Results by Metals by ICP/MS

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## Batch Information

**Prep Batch:** MXX30084  
**Prep Method:** E200.2  
**Prep Date/Time:** 08/15/16 09:30  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol.:** 50 mL  

**Analytical Batch:** MMS9497  
**Analytical Method:** EP200.8  
**Analyst:** EAB  
**Analytical Date/Time:** 08/18/16 19:22  
**Container ID:** 1164461001-A  

**Prep Batch:** MXX30084  
**Prep Method:** E200.2  
**Prep Date/Time:** 08/15/16 09:30  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol.:** 50 mL  

**Analytical Batch:** MMS9499  
**Analytical Method:** EP200.8  
**Analyst:** EAB  
**Analytical Date/Time:** 08/19/16 14:03  
**Container ID:** 1164461001-A  

**Prep Batch:** MXX30084  
**Prep Method:** E200.2  
**Prep Date/Time:** 08/15/16 09:30  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol.:** 50 mL  

Print Date: **08/22/2016  8:04:28AM**
### Results of MW-1R

**Client Sample ID:** MW-1R  
**Client Project ID:** Heds Power Plant Grandwater Mo  
**Lab Sample ID:** 1164461001  
**Lab Project ID:** 1164461  
**Collection Date:** 08/03/16 09:31  
**Received Date:** 08/04/16 09:48  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

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**Batch Information**

- **Analytical Batch:** MCV5729  
- **Analytical Method:** EP245.1  
- **Analyst:** NEG  
- **Analytical Date/Time:** 08/09/16 16:29  
- **Prep Batch:** MXX30071  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 08/09/16 12:40  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 50 mL
# Results of MW-1R

**Client Sample ID:** MW-1R  
**Client Project ID:** Heds Power Plant Grandwater Mo  
**Lab Sample ID:** 1164461001  
**Lab Project ID:** 1164461

**Collection Date:** 08/03/16 09:31  
**Received Date:** 08/04/16 09:48  
**Matrix:** Water (Surface, Eff., Ground)

## Results by Waters Department

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## Batch Information

- **Analytical Batch:** WIC5558  
- **Analytical Method:** EPA 300.0  
- **Analyst:** ACF

- **Prep Batch:** WXX11588  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 08/10/16 13:05  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

## Batch Information

- **Parameter:** Total Dissolved Solids
- **Result Qual:** 774  
- **LOQ/CL:** 10.0  
- **DL:** 3.10  
- **Units:** mg/L  
- **DF:** 1

- **Allowable Limits:**  
- **Date Analyzed:** 08/08/16 08:50

### Additional Information

- **Date Analyzed:** 08/10/16 20:45
- **Analyst:** LLP  
- **Analytical Date/Time:** 08/08/16 08:50  
- **Container ID:** 1164461001-C
### Results of MW-2

**Client Sample ID:** MW-2  
**Client Project ID:** Heds Power Plant Grandwater Mo  
**Lab Sample ID:** 1164461002  
**Lab Project ID:** 1164461  
**Collection Date:** 08/02/16 17:32  
**Received Date:** 08/04/16 09:48  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

### Results by Metals by ICP/MS

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<tr>
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<td>0.200</td>
<td>0.0620</td>
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<tr>
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### Batch Information

**Analytical Batch:** MMS9497  
**Analytical Method:** EP200.8  
**Analyst:** EAB  
**Analytical Date/Time:** 08/18/16 19:25  
**Container ID:** 1164461002-A

**Prep Batch:** MXX30084  
**Prep Method:** E200.2  
**Prep Date/Time:** 08/15/16 09:30  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol.:** 50 mL

**Prep Batch:** MXX30084  
**Prep Method:** E200.2  
**Prep Date/Time:** 08/15/16 09:30  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol.:** 50 mL

**Analytical Batch:** MMS9499  
**Analytical Method:** EP200.8  
**Analyst:** EAB  
**Analytical Date/Time:** 08/19/16 14:06  
**Container ID:** 1164461002-A

**Prep Batch:** MXX30084  
**Prep Method:** E200.2  
**Prep Date/Time:** 08/15/16 09:30  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol.:** 50 mL
# Results of MW-2

**Client Sample ID:** MW-2  
**Client Project ID:** Heds Power Plant Grandwater Mo  
**Lab Sample ID:** 1164461002  
**Lab Project ID:** 1164461

**Collection Date:** 08/02/16 17:32  
**Received Date:** 08/04/16 09:48  
**Matrix:** Water (Surface, Eff., Ground)

### Results by Metals Department

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### Batch Information

- **Analytical Batch:** MCV5729  
- **Analytical Method:** EP245.1  
- **Prep Batch:** MXX30071  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 08/09/16 12:40  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Analyst:** NEG  
- **Prep Extract Vol:** 50 mL  
- **Analytical Date/Time:** 08/09/16 16:32  
- **Container ID:** 1164461002-A
### Results of MW-2

**Client Sample ID:** MW-2  
**Client Project ID:** Heds Power Plant Grandwater Mo  
**Lab Sample ID:** 1164461002  
**Lab Project ID:** 1164461  
**Collection Date:** 08/02/16 17:32  
**Received Date:** 08/04/16 09:48  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

#### Results by Waters Department

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#### Batch Information

- **Analytical Batch:** WIC5558  
- **Analytical Method:** EPA 300.0  
- **Analyst:** ACF  
- **Analytical Date/Time:** 08/11/16 11:16  
- **Container ID:** 1164461002-B

- **Prep Batch:** WXX11588  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 08/10/16 13:05  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol.:** 10 mL

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#### Batch Information

- **Analytical Batch:** STS5139  
- **Analytical Method:** SM21 2540C  
- **Analyst:** LLP  
- **Analytical Date/Time:** 08/08/16 08:50  
- **Container ID:** 1164461002-C
# Results of MW-3

**Client Sample ID:** MW-3  
**Client Project ID:** Heds Power Plant Grandwater Mo  
**Lab Sample ID:** 1164461003  
**Lab Project ID:** 1164461  
**Collection Date:** 08/03/16 14:05  
**Received Date:** 08/04/16 09:48  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**  

## Results by Metals by ICP/MS

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## Batch Information

- **Analytical Batch:** MMS9497  
- **Analytical Method:** EP200.8  
- **Analyst:** EAB  
- **Analytical Date/Time:** 08/18/16 19:28  
- **Container ID:** 1164461003-A  

- **Prep Batch:** MXX30084  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 08/15/16 09:30  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol.:** 50 mL

- **Analytical Batch:** MMS9499  
- **Analytical Method:** EP200.8  
- **Analyst:** EAB  
- **Analytical Date/Time:** 08/19/16 14:09  
- **Container ID:** 1164461003-A  

- **Prep Batch:** MXX30084  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 08/15/16 09:30  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol.:** 50 mL

Print Date: 08/22/2016 8:04:28AM
Results of MW-3

Client Sample ID: MW-3
Client Project ID: Heds Power Plant Grandwater Mo
Lab Sample ID: 1164461003
Lab Project ID: 1164461

Collection Date: 08/03/16 14:05
Received Date: 08/04/16 09:48
Matrix: Water (Surface, Eff., Ground)

Solids (%):
Location:

Results by Metals Department

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<th>Units</th>
<th>DF</th>
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<th>Date Analyzed</th>
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<td>Mercury</td>
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Batch Information

Analytical Batch: MCV5729
Analytical Method: EP245.1
Analyst: NEG
Analytical Date/Time: 08/09/16 16:35
Container ID: 1164461003-A

Prep Batch: MXX30071
Prep Method: METHOD
Prep Date/Time: 08/09/16 12:40
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL
### Results of MW-3

**Client Sample ID:** MW-3  
**Client Project ID:** Heds Power Plant Grandwater Mo  
**Lab Sample ID:** 1164461003  
**Lab Project ID:** 1164461  
**Collection Date:** 08/03/16 14:05  
**Received Date:** 08/04/16 09:48  
**Matrix:** Water (Surface, Eff., Ground)

### Results by Waters Department

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<td>263</td>
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<td>1.24</td>
<td>mg/L</td>
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<tr>
<td>Fluoride</td>
<td>4.00 U</td>
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<td>1.24</td>
<td>mg/L</td>
<td>20</td>
<td>08/10/16 21:29</td>
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<tr>
<td>Sulfate</td>
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<td>1.24</td>
<td>mg/L</td>
<td>20</td>
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### Batch Information

- **Prep Batch:** WXX11588  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 08/10/16 13:05  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol.:** 10 mL

- **Analytical Batch:** WIC5558  
- **Analytical Method:** EPA 300.0  
- **Analyst:** ACF  
- **Analytical Date/Time:** 08/10/16 21:29  
- **Container ID:** 1164461003-B

- **Total Dissolved Solids**
  - **Result Qual:** 985
  - **LOQ/CL:** 10.0
  - **DL:** 3.10
  - **Units:** mg/L
  - **DF:** 1
  - **Allowable Limits:**
    - **Date Analyzed:** 08/08/16 08:50

### Batch Information

- **Prep Batch:** STS5139  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 08/08/16 08:50  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol.:** 10 mL

- **Analytical Batch:** STS5139  
- **Analytical Method:** SM21 2540C  
- **Analyst:** LLP  
- **Analytical Date/Time:** 08/08/16 08:50  
- **Container ID:** 1164461003-C
## Results of MW-4

Client Sample ID: **MW-4**
Client Project ID: **Heds Power Plant Grandwater Mo**
Lab Sample ID: **1164461004**
Lab Project ID: **1164461**

### Collection Date

**08/03/16 12:31**

### Received Date

**08/04/16 09:48**

### Matrix

Water (Surface, Eff., Ground)

### Solids (%)

Location:

---

## Results by Metals by ICP/MS

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<th>Units</th>
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<td>Arsenic</td>
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<td>115.00</td>
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<td>Boron</td>
<td>2630</td>
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<td>120.00</td>
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<tr>
<td>Cadmium</td>
<td>2.50 U</td>
<td>2.50</td>
<td>0.750</td>
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<td>20.0 U</td>
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<td>Lead</td>
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<td>1.00</td>
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<td>Selenium</td>
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## Batch Information

**Analytical Batch:** MMS9497
**Analytical Method:** EP200.8
**Analyst:** EAB
**Analytical Date/Time:** 08/18/16 20:07
**Container ID:** 1164461004-A

**Prep Batch:** MXX30084
**Prep Method:** E200.2
**Prep Date/Time:** 08/15/16 09:30
**Prep Initial Wt./Vol.:** 4 mL
**Prep Extract Vol:** 50 mL

---

**Analytical Batch:** MMS9499
**Analytical Method:** EP200.8
**Analyst:** EAB
**Analytical Date/Time:** 08/19/16 14:45
**Container ID:** 1164461004-A

**Prep Batch:** MXX30084
**Prep Method:** E200.2
**Prep Date/Time:** 08/15/16 09:30
**Prep Initial Wt./Vol.:** 4 mL
**Prep Extract Vol:** 50 mL

---

SGS North America Inc. 200 West Potter Drive Anchorage, AK 95518
Tel 907.562.2343  Fax 907.561.5301  www.us.sgs.com
### Results of MW-4

Client Sample ID: MW-4  
Client Project ID: Heds Power Plant Grandwater Mo  
Lab Sample ID: 1164461004  
Lab Project ID: 1164461

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### Batch Information

- **Prep Batch:** MXX30071  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 08/09/16 12:40  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 50 mL  
- **Prep Analyst:** NEG  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 50 mL  

**Analytical Batch:** MCV5729  
**Analytical Method:** EP245.1  
**Analyst:** NEG  
**Analytical Date/Time:** 08/09/16 16:38  
**Container ID:** 1164461004-A
## Results of MW-4

**Client Sample ID:** MW-4  
**Client Project ID:** Heds Power Plant Grandwater Mo  
**Lab Sample ID:** 1164461004  
**Lab Project ID:** 1164461

### Collection Date
08/03/16 12:31

### Received Date
08/04/16 09:48

### Matrix
Water (Surface, Eff., Ground)

### Solids (%):

### Date/Location:

### Results by Waters Department

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### Batch Information

**Prep Batch:** WXX11588  
**Prep Method:** METHOD  
**Prep Date/Time:** 08/10/16 13:05  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol:** 10 mL

## Results by [Another Department]

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### Batch Information

**Analytical Batch:** STS5139  
**Analytical Method:** SM21 2540C  
**Analyst:** LLP  
**Analytical Date/Time:** 08/08/16 08:50  
**Container ID:** 1164461004-C
## Results of MW-5

**Client Sample ID:** MW-5  
**Client Project ID:** Heds Power Plant Grandwater Mo  
**Lab Sample ID:** 1164461005  
**Lab Project ID:** 1164461  
**Collection Date:** 08/03/16 11:19  
**Received Date:** 08/04/16 09:48  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**  

### Results by Metals by ICP/MS

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<tr>
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### Batch Information

- **Analytical Batch:** MMS9497  
  **Analytical Method:** EP200.8  
  **Analyst:** EAB  
  **Analytical Date/Time:** 08/18/16 19:37  
  **Container ID:** 1164461005-A  
  **Prep Batch:** MXX30084  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 08/15/16 09:30  
  **Prep Initial Wt./Vol.:** 20 mL  
  **Prep Extract Vol:** 50 mL

- **Analytical Batch:** MMS9499  
  **Analytical Method:** EP200.8  
  **Analyst:** EAB  
  **Analytical Date/Time:** 08/19/16 14:18  
  **Container ID:** 1164461005-A  
  **Prep Batch:** MXX30084  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 08/15/16 09:30  
  **Prep Initial Wt./Vol.:** 20 mL  
  **Prep Extract Vol:** 50 mL

---

Print Date: 08/22/2016 8:04:28AM
### Results of MW-5

**Client Sample ID:** MW-5  
**Client Project ID:** Heds Power Plant Grandwater Mo  
**Lab Sample ID:** 1164461005  
**Lab Project ID:** 1164461  

**Collection Date:** 08/03/16 11:19  
**Received Date:** 08/04/16 09:48  
**Matrix:** Water (Surface, Eff., Ground)  

#### Results by Metals Department

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<tr>
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<th>Result Qual</th>
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#### Batch Information

- **Analytical Batch:** MCV5729  
- **Analytical Method:** EP245.1  
- **Analyst:** NEG  
- **Analytical Date/Time:** 08/09/16 16:41  
- **Container ID:** 1164461005-A  

- **Prep Batch:** MXX30071  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 08/09/16 12:40  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol.:** 50 mL
### Results of MW-5

**Client Sample ID:** MW-5  
**Client Project ID:** Heds Power Plant Grandwater Mo  
**Lab Sample ID:** 1164461005  
**Lab Project ID:** 1164461  
**Collection Date:** 08/03/16 11:19  
**Received Date:** 08/04/16 09:48  
**Matrix:** Water (Surface, Eff., Ground)

### Results by Waters Department

<table>
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<tr>
<th>Parameter</th>
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<td>mg/L</td>
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**Batch Information**

- **Analytical Batch:** WIC5558  
- **Analytical Method:** EPA 300.0  
- **Analyst:** ACF  
- **Analytical Date/Time:** 08/10/16 22:14  
- **Container ID:** 1164461005-B

- **Prep Batch:** WXX11588  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 08/10/16 13:05  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

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**Batch Information**

- **Analytical Batch:** STS5139  
- **Analytical Method:** SM21 2540C  
- **Analyst:** LLP  
- **Analytical Date/Time:** 08/08/16 08:50  
- **Container ID:** 1164461005-C
### Results by Metals by ICP/MS

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<tr>
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<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
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<tr>
<td>Thallium</td>
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<td>1.00</td>
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### Batch Information

- **Analytical Batch:** MMS9497
- **Analytical Method:** EP200.8
- **Analyst:** EAB
- **Analytical Date/Time:** 08/18/16 19:40
- **Container ID:** 1164461006-A

- **Prep Batch:** MXX30084
- **Prep Method:** E200.2
- **Prep Date/Time:** 08/15/16 09:30
- **Prep Initial Wt./Vol.:** 20 mL
- **Prep Extract Vol.:** 50 mL

- **Analytical Batch:** MMS9499
- **Analytical Method:** EP200.8
- **Analyst:** EAB
- **Analytical Date/Time:** 08/19/16 14:21
- **Container ID:** 1164461006-A

- **Prep Batch:** MXX30084
- **Prep Method:** E200.2
- **Prep Date/Time:** 08/15/16 09:30
- **Prep Initial Wt./Vol.:** 20 mL
- **Prep Extract Vol.:** 50 mL
### Results of MW-59

- **Client Sample ID:** MW-59
- **Client Project ID:** Heds Power Plant Grandwater Mo
- **Lab Sample ID:** 1164461006
- **Lab Project ID:** 1164461
- **Collection Date:** 08/03/16 11:19
- **Received Date:** 08/04/16 09:48
- **Matrix:** Water (Surface, Eff., Ground)
- **Solids (%):**

**Results by Metals Department**

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<th>Result Qual</th>
<th>LOQ/CL</th>
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<th>Date Analyzed</th>
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</thead>
<tbody>
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<td>0.0620</td>
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**Batch Information**

- **Analytical Batch:** MCV5729
- **Analytical Method:** EP245.1
- **Analyst:** NEG
- **Analytical Date/Time:** 08/09/16 16:44
- **Container ID:** 1164461006-A

- **Prep Batch:** MXX30071
- **Prep Method:** METHOD
- **Prep Date/Time:** 08/09/16 12:40
- **Prep Initial Vol.:** 25 mL
- **Prep Extract Vol.:** 50 mL
# Results of MW-59

Client Sample ID: **MW-59**  
Client Project ID: **Heds Power Plant Grandwater Mo**  
Lab Sample ID: **1164461006**  
Lab Project ID: **1164461**  
Collection Date: **08/03/16 11:19**  
Received Date: **08/04/16 09:48**  
Matrix: **Water (Surface, Eff., Ground)**

## Results by Waters Department

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<tbody>
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<tr>
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<td>mg/L</td>
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## Batch Information

- **Analytical Batch:** WIC5558  
- **Analytical Method:** EPA 300.0  
- **Analyst:** ACF  
- **Analytical Date/Time:** 08/10/16 22:36  
- **Container ID:** 1164461006-B

- **Prep Batch:** WXX11588  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 08/10/16 13:05  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

## Batch Information

- **Analytical Batch:** STS5139  
- **Analytical Method:** SM21 2540C  
- **Analyst:** LLP  
- **Analytical Date/Time:** 08/08/16 08:50  
- **Container ID:** 1164461006-C

- **Total Dissolved Solids**  
  - **Result Qual:** 731  
  - **LOQ/CL:** 10.0  
  - **DL:** 3.10  
  - **Units:** mg/L  
  - **DF:** 1  
  - **Allowable Limits:** 110.0  
  - **Date Analyzed:** 08/08/16 08:50
### Results of MW-6

Client Sample ID: **MW-6**  
Client Project ID: **Heds Power Plant Grandwater Mo**  
Lab Sample ID: 1164461007  
Lab Project ID: 1164461

Collection Date: 08/03/16 10:33  
Received Date: 08/04/16 09:48  
Matrix: Water (Surface, Eff., Ground)  
Solids (%): Location:

### Results by Metals by ICP/MS

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<td>1.50</td>
<td>ug/L</td>
<td>1</td>
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<td>0.130</td>
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<td>1</td>
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<td>0.620</td>
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<td>1</td>
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<td>Lead</td>
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<td>ug/L</td>
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### Batch Information

- **Analytical Batch:** MMS9497  
  - **Analytical Method:** EP200.8  
  - **Analyst:** EAB  
  - **Analytical Date/Time:** 08/18/16 19:49  
  - **Container ID:** 1164461007-A

- **Prep Batch:** MXX30084  
  - **Prep Method:** E200.2  
  - **Prep Date/Time:** 08/15/16 09:30  
  - **Prep Initial Wt./Vol.:** 20 mL  
  - **Prep Extract Vol.:** 50 mL

- **Analytical Batch:** MMS9499  
  - **Analytical Method:** EP200.8  
  - **Analyst:** EAB  
  - **Analytical Date/Time:** 08/19/16 14:24  
  - **Container ID:** 1164461007-A

- **Prep Batch:** MXX30084  
  - **Prep Method:** E200.2  
  - **Prep Date/Time:** 08/15/16 09:30  
  - **Prep Initial Wt./Vol.:** 20 mL  
  - **Prep Extract Vol.:** 50 mL
### Results of MW-6

**Client Sample ID:** MW-6  
**Client Project ID:** Heds Power Plant Grandwater Mo  
**Lab Sample ID:** 1164461007  
**Lab Project ID:** 1164461  
**Collection Date:** 08/03/16 10:33  
**Received Date:** 08/04/16 09:48  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

#### Results by Metals Department

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<th>Date Analyzed</th>
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#### Batch Information

- **Analytical Batch:** MCV5729  
- **Analytical Method:** EP245.1  
- **Analyst:** NEG  
- **Analytical Date/Time:** 08/09/16 16:53  
- **Prep Batch:** MXX30071  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 08/09/16 12:40  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol.:** 50 mL
### Results of MW-6

**Client Sample ID:** MW-6  
**Client Project ID:** Heds Power Plant Grandwater Mo  
**Lab Sample ID:** 1164461007  
**Lab Project ID:** 1164461  
**Collection Date:** 08/03/16 10:33  
**Received Date:** 08/04/16 09:48  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

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### Results by Waters Department

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### Batch Information

**Prep Batch:** WXX11588  
**Prep Method:** METHOD  
**Prep Date/Time:** 08/10/16 13:05  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol:** 10 mL

**Analytical Batch:** WIC5558  
**Analytical Method:** EPA 300.0  
**Analyst:** ACF  
**Analytical Date/Time:** 08/10/16 22:58  
**Container ID:** 1164461007-B

**Total Dissolved Solids**

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### Batch Information

**Prep Batch:** WXX11588  
**Prep Method:** METHOD  
**Prep Date/Time:** 08/10/16 13:05  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol:** 10 mL

**Analytical Batch:** STS5139  
**Analytical Method:** SM21 2540C  
**Analyst:** LLP  
**Analytical Date/Time:** 08/08/16 08:50  
**Container ID:** 1164461007-C
### Results by Metals by ICP/MS

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<tr>
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### Batch Information

- **Analytical Batch:** MMS9497
- **Analytical Method:** EP200.8
- **Analyst:** EAB
- **Analytical Date/Time:** 08/18/16 19:52
- **Container ID:** 1164461008-A

- **Prep Batch:** MXX30084
- **Prep Method:** E200.2
- **Prep Date/Time:** 08/15/16 09:30
- **Prep Initial Wt./Vol.:** 20 mL
- **Prep Extract Vol.:** 50 mL

- **Analytical Batch:** MMS9499
- **Analytical Method:** EP200.8
- **Analyst:** EAB
- **Analytical Date/Time:** 08/19/16 14:33
- **Container ID:** 1164461008-A

- **Prep Batch:** MXX30084
- **Prep Method:** E200.2
- **Prep Date/Time:** 08/15/16 09:30
- **Prep Initial Wt./Vol.:** 20 mL
- **Prep Extract Vol.:** 50 mL
Results of MW-7

Client Sample ID: MW-7
Client Project ID: Heds Power Plant Grandwater Mo
Lab Sample ID: 1164461008
Lab Project ID: 1164461

Collection Date: 08/02/16 14:58
Received Date: 08/04/16 09:48
Matrix: Water (Surface, Eff., Ground)

Solids (%): Location:

Results by Metals Department

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Batch Information

Prep Batch: MXX30071
Prep Method: METHOD
Prep Date/Time: 08/09/16 12:40
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL

Prep Batch: MCV5729
Prep Method: EP245.1
Prep Date/Time: 08/09/16 16:56
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL
## Results of MW-7

**Client Sample ID:** MW-7  
**Client Project ID:** Heds Power Plant Grandwater Mo  
**Lab Sample ID:** 1164461008  
**Lab Project ID:** 1164461  
**Collection Date:** 08/02/16 14:58  
**Received Date:** 08/04/16 09:48  
**Matrix:** Water (Surface, Eff., Ground)  
**Location:**

### Results by Waters Department

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<td>5</td>
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<tr>
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<td>1.00</td>
<td>0.310</td>
<td>mg/L</td>
<td>5</td>
<td></td>
<td>08/10/16 23:21</td>
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<tr>
<td>Sulfate</td>
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<td>1.00</td>
<td>0.310</td>
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### Batch Information

**Prep Batch:** WXX11588  
**Prep Method:** METHOD  
**Prep Date/Time:** 08/10/16 13:05  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol:** 10 mL

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### Batch Information

**Analytical Batch:** WIC5558  
**Analytical Method:** EPA 300.0  
**Analyst:** ACF  
**Analytical Date/Time:** 08/10/16 23:21  
**Container ID:** 1164461008-B

**Prep Batch:** STS5139  
**Prep Method:** SM21 2540C  
**Prep Date/Time:** 08/10/16 13:05  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol:** 10 mL

**Analytical Batch:** STS5139  
**Analytical Method:** SM21 2540C  
**Analyst:** LLP  
**Analytical Date/Time:** 08/08/16 08:50  
**Container ID:** 1164461008-C
## Results of MW-8

**Client Sample ID:** MW-8  
**Client Project ID:** Heds Power Plant Grandwater Mo  
**Lab Sample ID:** 1164461009  
**Lab Project ID:** 1164461  
**Collection Date:** 08/02/16 16:12  
**Received Date:** 08/04/16 09:48  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

### Results by Metals by ICP/MS

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<td>0.400</td>
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<td>ug/L</td>
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### Batch Information

**Analytical Batch:** MMS9497  
**Analytical Method:** EP200.8  
**Analyst:** EAB  
**Analytical Date/Time:** 08/18/16 19:55  
**Container ID:** 1164461009-A  
**Prep Batch:** MXX30084  
**Prep Method:** E200.2  
**Prep Date/Time:** 08/15/16 09:30  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol.:** 50 mL

**Analytical Batch:** MMS9499  
**Analytical Method:** EP200.8  
**Analyst:** EAB  
**Analytical Date/Time:** 08/19/16 14:36  
**Container ID:** 1164461009-A  
**Prep Batch:** MXX30084  
**Prep Method:** E200.2  
**Prep Date/Time:** 08/15/16 09:30  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol.:** 50 mL

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Print Date: 08/22/2016 8:04:28AM

SGS North America Inc.  
200 West Potter Drive Anchorage, AK 95518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com
Results of MW-8

Client Sample ID: MW-8
Client Project ID: Heds Power Plant Grandwater Mo
Lab Sample ID: 1164461009
Lab Project ID: 1164461

Collection Date: 08/02/16 16:12
Received Date: 08/04/16 09:48
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals Department

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Batch Information

Analytical Batch: MCV5729
Analytical Method: EP245.1
Analyst: NEG
Analytical Date/Time: 08/09/16 16:59
Container ID: 1164461009-A

Prep Batch: MXX30071
Prep Method: METHOD
Prep Date/Time: 08/09/16 12:40
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL
### Results of MW-8

**Client Sample ID:** MW-8  
**Client Project ID:** Heds Power Plant Grandwater Mo  
**Lab Sample ID:** 1164461009  
**Lab Project ID:** 1164461  
**Collection Date:** 08/02/16 16:12  
**Received Date:** 08/04/16 09:48  
**Matrix:** Water (Surface, Eff., Ground)  
**Location:**

### Results by Waters Department

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**Total Dissolved Solids**

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**Batch Information**

- **Prep Batch:** WXX11588  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 08/10/16 13:05  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

- **Analytical Batch:** STS5139  
- **Analytical Method:** SM21 2540C  
- **Analyst:** LLP  
- **Analytical Date/Time:** 08/08/16 08:50  
- **Container ID:** 1164461009-C

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**Print Date:** 08/22/2016 8:04:28AM

**SGS North America Inc.**

200 West Potter Drive Anchorage, AK 95518  
907.562.2343 907.561.5301 www.us.sgs.com
# Results of SW-1

**Client Sample ID:** SW-1  
**Client Project ID:** Heds Power Plant Grandwater Mo  
**Lab Sample ID:** 1164461010  
**Lab Project ID:** 1164461  

**Collection Date:** 08/03/16 13:07  
**Received Date:** 08/04/16 09:48  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** Location:

## Results by Metals by ICP/MS

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## Batch Information

- **Analytical Batch:** MMS9497  
  **Analytical Method:** EP200.8  
  **Analyst:** EAB  
  **Analytical Date/Time:** 08/18/16 19:58  
  **Container ID:** 1164461010-A  
- **Prep Batch:** MXX30084  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 08/15/16 09:30  
  **Prep Initial Wt./Vol.:** 20 mL  
  **Prep Extract Vol.:** 50 mL  

- **Analytical Batch:** MMS9499  
  **Analytical Method:** EP200.8  
  **Analyst:** EAB  
  **Analytical Date/Time:** 08/19/16 14:39  
  **Container ID:** 1164461010-A  
- **Prep Batch:** MXX30084  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 08/15/16 09:30  
  **Prep Initial Wt./Vol.:** 20 mL  
  **Prep Extract Vol.:** 50 mL  

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Print Date: 08/22/2016 8:04:28 AM

SGS North America Inc.

200 West Potter Drive Anchorage, AK 95518

Member of SGS Group
Results of SW-1

Collection Date: 08/03/16 13:07
Received Date: 08/04/16 09:48
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals Department

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Batch Information

- Analytical Batch: MCV5729
- Analytical Method: EP245.1
- Analyst: NEG
- Analytical Date/Time: 08/09/16 17:02
- Container ID: 1164461010-A

- Prep Batch: MXX30071
- Prep Method: METHOD
- Prep Date/Time: 08/09/16 12:40
- Prep Initial WT/Vol.: 25 mL
- Prep Extract Vol: 50 mL
### Results of SW-1

Client Sample ID: **SW-1**  
Client Project ID: **Heds Power Plant Grandwater Mo**  
Lab Sample ID: **1164461010**  
Lab Project ID: **1164461**

**Collection Date:** 08/03/16 13:07  
**Received Date:** 08/04/16 09:48  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

### Results by Waters Department

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<td>1.24</td>
<td>mg/L</td>
<td>20</td>
<td></td>
<td>08/11/16 01:12</td>
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<tr>
<td>Fluoride</td>
<td>4.28</td>
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<td>mg/L</td>
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<td>08/11/16 01:12</td>
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<tr>
<td>Sulfate</td>
<td>279</td>
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<td>1.24</td>
<td>mg/L</td>
<td>20</td>
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### Batch Information

**Analytical Batch:** WIC5558  
**Analytical Method:** EPA 300.0  
**Analyst:** ACF  
**Analytical Date/Time:** 08/11/16 01:12  
**Container ID:** 1164461010-B

**Prep Batch:** WXX11588  
**Prep Method:** METHOD  
**Prep Date/Time:** 08/10/16 13:05  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol:** 10 mL

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<th>DL</th>
<th>Units</th>
<th>DF</th>
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<th>Date Analyzed</th>
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<td>Total Dissolved Solids</td>
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### Batch Information

**Analytical Batch:** STS5139  
**Analytical Method:** SM21 2540C  
**Analyst:** LLP  
**Analytical Date/Time:** 08/08/16 08:50  
**Container ID:** 1164461010-C
**Method Blank**

Blank ID: MB for HBN 1741351 [MXX/30071]  
Blank Lab ID: 1343861  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples:  
1164461001, 1164461002, 1164461003, 1164461004, 1164461005, 1164461006, 1164461007, 1164461008, 1164461009, 1164461010

**Results by EP245.1**

<table>
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<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
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</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>0.123J</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
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**Batch Information**

- Analytical Batch: MCV5729  
- Analytical Method: EP245.1  
- Instrument: PSA Millennium mercury AA  
- Analyst: NEG  
- Analytical Date/Time: 8/9/2016 4:09:27PM

- Prep Batch: MXX30071  
- Prep Method: METHOD  
- Prep Date/Time: 8/9/2016 12:40:00PM  
- Prep Initial Wt./Vol.: 25 mL  
- Prep Extract Vol: 50 mL
### Blank Spike Summary

Blank Spike ID: LCS for HBN 1164461 [MXX30071]
Blank Spike Lab ID: 1343862
Date Analyzed: 08/09/2016 16:12

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1164461001, 1164461002, 1164461003, 1164461004, 1164461005, 1164461006, 1164461007, 1164461008, 1164461009, 1164461010

### Results by EP245.1

<table>
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<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>4</td>
<td>4.24</td>
<td>106</td>
<td>(85-115)</td>
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### Batch Information

- **Analytical Batch:** MCV5729
- **Analytical Method:** EP245.1
- **Instrument:** PSA Millennium mercury AA
- **Analyst:** NEG

- **Prep Batch:** MXX30071
- **Prep Method:** METHOD
- **Prep Date/Time:** 08/09/2016 12:40
- **Spike Init Wt./Vol.:** 4 ug/L  Extract Vol: 50 mL
- **Dupe Init Wt./Vol.:** Extract Vol:
### Matrix Spike Summary

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<th>Original Sample ID:</th>
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<th>Analysis Date:</th>
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<tbody>
<tr>
<td>MS Sample ID:</td>
<td>1343863 MS</td>
<td>Analysis Date:</td>
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<tr>
<td>QC for Samples:</td>
<td></td>
<td>Matrix:</td>
<td>Water (Surface, Eff., Ground)</td>
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QC for Samples: 1164461001, 1164461002, 1164461003, 1164461004, 1164461005, 1164461007, 1164461008, 1164461009, 1164461010

### Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Matrix Spike (ug/L)</th>
<th>Spike Duplicate (ug/L)</th>
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<tbody>
<tr>
<td></td>
<td>Sample</td>
<td>Spike</td>
</tr>
<tr>
<td>Mercury</td>
<td>0.125J</td>
<td>8.00</td>
</tr>
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### Batch Information

- **Analytical Batch:** MCV5729
- **Analytical Method:** EP245.1
- **Instrument:** PSA Millennium mercury AA
- **Analyst:** NEG
- **Analytical Date/Time:** 8/9/2016 4:18:16PM

- **Prep Batch:** MXX30071
- **Prep Method:** Digestion Mercury 245.1 (W)
- **Prep Date/Time:** 8/9/2016 12:40:00PM
- **Prep Initial Wt./Vol.:** 25.00mL
- **Prep Extract Vol:** 50.00mL
Matrix Spike Summary

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<th>Sample</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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<tbody>
<tr>
<td>Mercury</td>
<td>0.126J</td>
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QC for Samples: 1164461001, 1164461002, 1164461003, 1164461004, 1164461005, 1164461006, 1164461007, 1164461008, 1164461009, 1164461010

Results by EP245.1

Matrix Spike (ug/L) | Spike Duplicate (ug/L)

Batch Information

- Analytical Batch: MCV5729
- Analytical Method: EP245.1
- Instrument: PSA Millennium mercury AA
- Analyst: NEG
- Analytical Date/Time: 8/9/2016 5:08:04PM

Prep Batch: MXX30071
Prep Method: Digestion Mercury 245.1 (W)
Prep Date/Time: 8/9/2016 12:40:00PM
Prep Initial Wt./Vol.: 25.00mL
Prep Extract Vol: 50.00mL

Analysis Date: 08/09/2016 17:05
Analysis Date: 08/09/2016 17:08
Matrix: Water (Surface, Eff., Ground)
Method Blank

Blank ID: MB for HBN 1741530 [MXX/30084]  
Blank Lab ID: 1344739  
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 
1164461001, 1164461002, 1164461003, 1164461004, 1164461005, 1164461006, 1164461007, 1164461008, 1164461009, 1164461010

Results by EP200.8

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<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>0.500U</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
</tr>
<tr>
<td>Arsenic</td>
<td>2.50U</td>
<td>5.00</td>
<td>1.50</td>
<td>ug/L</td>
</tr>
<tr>
<td>Barium</td>
<td>1.50U</td>
<td>3.00</td>
<td>0.940</td>
<td>ug/L</td>
</tr>
<tr>
<td>Beryllium</td>
<td>0.200U</td>
<td>0.400</td>
<td>0.130</td>
<td>ug/L</td>
</tr>
<tr>
<td>Boron</td>
<td>25.0U</td>
<td>50.0</td>
<td>15.0</td>
<td>ug/L</td>
</tr>
<tr>
<td>Cadmium</td>
<td>0.250U</td>
<td>0.500</td>
<td>0.150</td>
<td>ug/L</td>
</tr>
<tr>
<td>Calcium</td>
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<td>500</td>
<td>150</td>
<td>ug/L</td>
</tr>
<tr>
<td>Chromium</td>
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<td>2.00</td>
<td>0.620</td>
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<tr>
<td>Cobalt</td>
<td>2.00U</td>
<td>4.00</td>
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</tr>
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<td>Lead</td>
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<td>0.0620</td>
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<tr>
<td>Lithium</td>
<td>5.00U</td>
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<tr>
<td>Molybdenum</td>
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</tr>
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<td>ug/L</td>
</tr>
<tr>
<td>Thallium</td>
<td>0.500U</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
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Batch Information

Analytical Batch: MMS9497  
Analytical Method: EP200.8  
Instrument: Perkin Elmer NexIon P5  
Analyst: EAB  
Analytical Date/Time: 8/18/2016 6:46:50PM

Prep Batch: MXX30084  
Prep Method: E200.2  
Prep Date/Time: 8/15/2016 9:30:56AM  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Analytical Batch: MMS9499  
Analytical Method: EP200.8  
Instrument: Perkin Elmer NexIon P5  
Analyst: EAB  
Analytical Date/Time: 8/19/2016 1:41:17PM

Prep Batch: MXX30084  
Prep Method: E200.2  
Prep Date/Time: 8/15/2016 9:30:56AM  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 08/22/2016 8:04:36AM  
SGS North America Inc.  
200 West Potter Drive Anchorage, AK 95518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com
### Blank Spike Summary

Blank Spike ID: LCS for HBN 1164461 [MXX30084]
Blank Spike Lab ID: 1344740
Date Analyzed: 08/18/2016 18:49

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1164461001, 1164461002, 1164461003, 1164461004, 1164461005, 1164461006, 1164461007, 1164461008, 1164461009, 1164461010

### Results by EP200.8

<table>
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<tr>
<th>Parameter</th>
<th>Spike (ug/L)</th>
<th>Result (ug/L)</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>1000</td>
<td>1050</td>
<td>105</td>
<td>(85-115)</td>
</tr>
<tr>
<td>Arsenic</td>
<td>1000</td>
<td>1060</td>
<td>106</td>
<td>(85-115)</td>
</tr>
<tr>
<td>Barium</td>
<td>1000</td>
<td>999</td>
<td>100</td>
<td>(85-115)</td>
</tr>
<tr>
<td>Beryllium</td>
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<td>1000</td>
<td>1020</td>
<td>102</td>
<td>(85-115)</td>
</tr>
<tr>
<td>Cadmium</td>
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<td>(85-115)</td>
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<td>Calcium</td>
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<td>(85-115)</td>
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<tr>
<td>Cobalt</td>
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<td>Lead</td>
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<td>Lithium</td>
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<td>Molybdenum</td>
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<td>423</td>
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<td>Selenium</td>
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### Batch Information

Analytical Batch: MMS9497
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: EAB

Prep Batch: MXX30084
Prep Method: E200.2
Prep Date/Time: 08/15/2016 09:30
Spike Init Wt./Vol.: 1000 ug/L  Extract Vol: 50 mL
Dupe Init Wt./Vol.:  Extract Vol:

Analytical Batch: MMS9499
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: EAB

Prep Batch: MXX30084
Prep Method: E200.2
Prep Date/Time: 08/15/2016 09:30
Spike Init Wt./Vol.: 400 ug/L  Extract Vol: 50 mL
Dupe Init Wt./Vol.:  Extract Vol:
Matrix Spike Summary

Original Sample ID: 1344748
MS Sample ID: 1344749 MS
MSD Sample ID: 
QC for Samples: 1164461001, 1164461002, 1164461003

Results by EP200.8

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<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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<td>Arsenic</td>
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Batch Information

Analytical Batch: MMS9497
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: EAB
Analytical Date/Time: 8/18/2016 6:55:50PM

Prep Batch: MXX30084
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 8/15/2016 9:30:56AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Analytical Batch: MMS9499
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: EAB
Analytical Date/Time: 8/19/2016 2:00:03PM

Prep Batch: MXX30084
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 8/15/2016 9:30:56AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 08/22/2016 8:04:38AM
**Matrix Spike Summary**

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<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
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<td>1000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Batch Information**

- **Analytical Batch:** MMS9497
- **Analytical Method:** EP200.8
- **Instrument:** Perkin Elmer NexIon P5
- **Analytical Date/Time:** 8/18/2016 7:34:54PM

- **Prep Batch:** MXX30084
- **Prep Method:** DW Digest for Metals on ICP-MS
- **Prep Date/Time:** 8/15/2016 9:30:56AM
- **Prep Initial Wt./Vol.:** 20.00mL
- **Prep Extract Vol.:** 50.00mL

- **Analytical Batch:** MMS9499
- **Analytical Method:** EP200.8
- **Instrument:** Perkin Elmer NexIon P5
- **Analytical Date/Time:** 8/19/2016 2:15:03PM

- **Prep Batch:** MXX30084
- **Prep Method:** DW Digest for Metals on ICP-MS
- **Prep Date/Time:** 8/15/2016 9:30:56AM
- **Prep Initial Wt./Vol.:** 20.00mL
- **Prep Extract Vol.:** 50.00mL
Method Blank

Blank ID: MB for HBN 1741197 [STS/5139]  
Blank Lab ID: 1343209  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1164461001, 1164461002, 1164461003, 1164461004, 1164461005, 1164461006, 1164461007, 1164461008, 1164461009, 
1164461010

Results by SM21 2540C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>5.00U</td>
<td>10.0</td>
<td>3.10</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

Batch Information

Analytical Batch: STS5139  
Analytical Method: SM21 2540C  
Instrument: LLP  
Analyst: LLP  
Analytical Date/Time: 8/8/2016 8:50:37AM
**Duplicate Sample Summary**

Original Sample ID: 1164352001  
Analysis Date: 08/08/2016 08:50

Duplicate Sample ID: 1343212  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1164461001, 1164461002, 1164461003, 1164461004, 1164461005, 1164461006, 1164461007, 1164461008, 1164461009, 1164461010

**Results by SM21 2540C**

<table>
<thead>
<tr>
<th>NAME</th>
<th>Original</th>
<th>Duplicate</th>
<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>356</td>
<td>354</td>
<td>mg/L</td>
<td>0.40</td>
<td>(&lt; 5 )</td>
</tr>
</tbody>
</table>

**Batch Information**

Analytical Batch: STS5139
Analytical Method: SM21 2540C
Instrument: LLP
Analyst: LLP
## Duplicate Sample Summary

**Original Sample ID:** 1164455002  
**Analysis Date:** 08/08/2016 08:50  
**Duplicate Sample ID:** 1343270  
**Matrix:** Drinking Water  
**QC for Samples:** 1164461007, 1164461008, 1164461009, 1164461010

### Results by SM21 2540C

<table>
<thead>
<tr>
<th>NAME</th>
<th>Original</th>
<th>Duplicate</th>
<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>88.0</td>
<td>84.0</td>
<td>mg/L</td>
<td>4.70</td>
<td></td>
</tr>
</tbody>
</table>

### Batch Information

- **Analytical Batch:** STS5139  
- **Analytical Method:** SM21 2540C  
- **Instrument:**  
- **Analyst:** LLP
### Blank Spike Summary

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Blank Spike ID: LCS for HBN 1164461 [STS5139]</th>
<th>Spike Duplicate ID: LCSD for HBN 1164461 [STS5139]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank Spike Lab ID</td>
<td>1343210</td>
<td>1343211</td>
</tr>
<tr>
<td>Date Analyzed</td>
<td>08/08/2016 08:50</td>
<td>08/08/2016 08:50</td>
</tr>
<tr>
<td>QC for Samples</td>
<td>1164461001, 1164461002, 1164461003, 1164461004, 1164461005, 1164461006, 1164461007, 1164461008, 1164461009, 1164461010</td>
<td></td>
</tr>
</tbody>
</table>

### Results by SM21 2540C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Blank Spike (mg/L)</th>
<th>Spike Duplicate (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>330 330 100</td>
<td>330 330 100 (75-125) 0.00 (&lt;5)</td>
</tr>
</tbody>
</table>

### Batch Information

- **Analytical Batch:** STS5139
- **Analytical Method:** SM21 2540C
- **Instrument:**
- **Analyst:** LLP

- **Prep Batch:**
- **Prep Method:**
- **Prep Date/Time:**
- **Spike Init Wt./Vol.:** 330 mg/L
- **Extract Vol:** 100 mL
- **Dupe Init Wt./Vol.:** 330 mg/L
- **Extract Vol:** 100 mL

---

**Print Date:** 08/22/2016 8:04:42AM

**SGS North America Inc.**

200 West Potter Drive, Anchorage, AK 95518

| t 907.562.2343 | f 907.561.5301 | www.us.sgs.com | Member of SGS Group |
### Method Blank

Blank ID: MB for HBN 1741445 [WXX/11588]  
Blank Lab ID: 1344305  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples:  
1164461001, 1164461002, 1164461003, 1164461004, 1164461005, 1164461006, 1164461007, 1164461008, 1164461009, 1164461010

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
<tr>
<td>Sulfate</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

### Batch Information

- **Analytical Batch:** WIC5558  
- **Analytical Method:** EPA 300.0  
- **Instrument:** Metrohm 733 DX2  
- **Analyst:** ACF
- **Analytical Date/Time:** 8/10/2016 4:17:49PM
- **Prep Batch:** WXX11588  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 8/10/2016 1:05:00PM  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol.:** 10 mL
### Blank Spike Summary

Blank Spike ID: LCS for HBN 1164461 [WXX11588]
Blank Spike Lab ID: 1344306
Date Analyzed: 08/10/2016 18:09

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1164461001, 1164461002, 1164461003, 1164461004, 1164461005, 1164461006, 1164461007, 1164461008, 1164461009, 1164461010

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>5</td>
<td>4.60</td>
<td>92</td>
<td>(90-110)</td>
</tr>
<tr>
<td>Fluoride</td>
<td>5</td>
<td>4.66</td>
<td>93</td>
<td>(90-110)</td>
</tr>
<tr>
<td>Sulfate</td>
<td>5</td>
<td>4.61</td>
<td>92</td>
<td>(90-110)</td>
</tr>
</tbody>
</table>

### Batch Information

Analytical Batch: WIC5558
Analytical Method: EPA 300.0
Instrument: Metrohm 733 DX2
Analyst: ACF

Prep Batch: WXX11588
Prep Method: METHOD
Prep Date/Time: 08/10/2016 13:05
Spike Init Wt./Vol.: 5 mg/L, Extract Vol: 10 mL
Dupe Init Wt./Vol.: Extract Vol:
### Matrix Spike Summary

Original Sample ID: 1164455001  Analysis Date: 08/10/2016 17:02
MS Sample ID: 1344307 MS  Analysis Date: 08/10/2016 17:24
MSD Sample ID: 1344308 MSD  Analysis Date: 08/10/2016 17:46

Matrix: Drinking Water

QC for Samples: 1164461001, 1164461002, 1164461003, 1164461004, 1164461005, 1164461006, 1164461007, 1164461008, 1164461009, 1164461010

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike (mg/L)</th>
<th>Result (mg/L)</th>
<th>Rec (%)</th>
<th>Spike (mg/L)</th>
<th>Result (mg/L)</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>10.8</td>
<td>5.00</td>
<td>15.7</td>
<td>97</td>
<td>5.00</td>
<td>15.6</td>
<td>97</td>
<td>90-110</td>
<td>0.11</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.200U</td>
<td>5.00</td>
<td>5.36</td>
<td>107</td>
<td>5.00</td>
<td>5.33</td>
<td>107</td>
<td>90-110</td>
<td>0.62</td>
</tr>
<tr>
<td>Sulfate</td>
<td>3.63</td>
<td>5.00</td>
<td>9.21</td>
<td>112</td>
<td>*</td>
<td>9.15</td>
<td>110</td>
<td>90-110</td>
<td>0.72</td>
</tr>
</tbody>
</table>

### Batch Information

- Analytical Batch: WIC5558
- Analytical Method: EPA 300.0
- Instrument: Metrohm 733 DX2
- Analyst: ACF
- Analytical Date/Time: 8/10/2016 5:24:38PM

- Prep Batch: WXX11588
- Prep Method: EPA 300.0 Extraction Waters/Liquids
- Prep Date/Time: 8/10/2016 1:05:00PM
- Prep Initial Wt./Vol.: 10.00mL
- Prep Extract Vol: 10.00mL
### Section 1
**CLIENT:** GVEA c/o SLR Consulting
**CONTACT:** Heather Simon, Matt Woods  
**PHONE #:** 907-222-1112
**PROJECT NAME:** Tech Power Plant  
**PW/SID:** Monitoring  
**PERMIT #:** 104.00.267.11.002
**REPORTS TO:** Heather Simon  
**E-MAIL:** hsimon@slrconsulting.com
**INVOICE TO:** GVEA Naomi Knight  
**QUOTE #:** nmknight@gvea.com

### Section 2
**RESERVED for lab use**
**SAMPLE IDENTIFICATION**

<table>
<thead>
<tr>
<th>Sample</th>
<th>DATE mm/dd/yy</th>
<th>TIME HH:MM</th>
<th>MATRIX/MATRIX CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C A E</td>
<td>03/16</td>
<td>0931</td>
<td>Water</td>
</tr>
<tr>
<td>C A E</td>
<td>01/12</td>
<td>1132</td>
<td>Water</td>
</tr>
<tr>
<td>C A E</td>
<td>03/16</td>
<td>1905</td>
<td>Water</td>
</tr>
<tr>
<td>C A E</td>
<td>03/16</td>
<td>1231</td>
<td>Water</td>
</tr>
<tr>
<td>C A E</td>
<td>03/16</td>
<td>1114</td>
<td>Water</td>
</tr>
<tr>
<td>C A E</td>
<td>03/16</td>
<td>1458</td>
<td>Water</td>
</tr>
<tr>
<td>C A E</td>
<td>03/16</td>
<td>1112</td>
<td>Water</td>
</tr>
<tr>
<td>C A E</td>
<td>03/16</td>
<td>1307</td>
<td>Water</td>
</tr>
</tbody>
</table>

### Section 3
**Preservative**

<table>
<thead>
<tr>
<th># CONTAINERS</th>
<th>Pres: Type:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Comp</td>
</tr>
<tr>
<td></td>
<td>Grab</td>
</tr>
<tr>
<td></td>
<td>M (Multi-incremental)</td>
</tr>
</tbody>
</table>

### Section 4
**DOD Project?** Yes [ ] No [x]
**Cooler ID:**

### Section 5
**Requested Turnaround Time** and/or Special Instructions:

- **Total Metals:** B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Thallium,
- **EPA 300.0** : Fluoride, Chloride, Sulfate

**Temp Blank:** °C [243 ambient]

**Chain of Custody Seal:** (Circle)

[ ] INTACT  [ ] BROKEN  [ ] ABSENT

**(See attached Sample Receipt Form)**

http://www.sgs.com/terms-and-conditions

---

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1909 Fax: (910) 350-1557

---

FO83-Blank_COC_Templates_2015-03-19
## Review Criteria

<table>
<thead>
<tr>
<th>Y/N (yes/no)</th>
<th>Exceptions Noted below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>exemption permitted if sampler hand carries/delivers.</td>
</tr>
<tr>
<td>Y</td>
<td>**exemption permitted if chilled &amp; collected &lt;8hrs ago or chilling not required (i.e., waste, oil) **</td>
</tr>
<tr>
<td>Y</td>
<td>Temperature blank compliant* (i.e., 0-6 °C after CF)?</td>
</tr>
<tr>
<td>Y</td>
<td>*If &gt;6°C, were samples collected &lt;8 hours ago?</td>
</tr>
<tr>
<td>Y</td>
<td>If &lt;0°C, were sample containers ice free?</td>
</tr>
<tr>
<td>Y</td>
<td>Were samples received within hold time?</td>
</tr>
<tr>
<td>Y</td>
<td>Do samples match COC** (i.e., sample IDs, dates/times collected)?</td>
</tr>
<tr>
<td>Y</td>
<td>Were analyses requested unambiguous?</td>
</tr>
<tr>
<td>Y</td>
<td>Were proper containers (type/mass/volume/preservative***) used?</td>
</tr>
<tr>
<td>Y</td>
<td>***Exemption permitted for metals (e.g., 200.8/6020A).</td>
</tr>
</tbody>
</table>

### Additional notes (if applicable):

- **Note to Client:** Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.
## Sample Containers and Preservatives

<table>
<thead>
<tr>
<th>Container Id</th>
<th>Preservative</th>
<th>Container Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1164461001-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1164461001-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461001-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461002-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1164461002-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461002-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461003-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1164461003-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461003-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461004-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1164461004-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461004-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461005-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1164461005-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461005-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461006-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1164461006-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461006-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461007-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1164461007-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461007-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461008-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1164461008-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461008-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461009-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1164461009-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461009-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461010-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1164461010-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1164461010-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
</tbody>
</table>

### Container Condition Glossary
- **OK** - The container was received at an acceptable pH for the analysis requested.
- **BU** - The container was received with headspace greater than 6mm.
- **DM** - The container was received damaged.
- **FR** - The container was received frozen and not usable for Bacteria or BOD analyses.
- **PA** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
- **PH** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
Dear Naomi Knight,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,

SGS North America Inc.

---

To: Golden Valley Electric Association
PO Box 71249
Healy, AK 99743
(907)683-8305

Report Number: 1164468
Client Project: Heds Power Plant Groundwater M

Jennifer Dawkins
Project Manager
Date
Refer to sample receipt form for information on sample condition.

**MW-1R (1164468001) PS**
Radium 226/228 were analyzed by ACZ Laboratories of Steamboat Springs, CO.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.*
<table>
<thead>
<tr>
<th>Client Sample ID</th>
<th>Lab Sample ID</th>
<th>Collected</th>
<th>Received</th>
<th>Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-1R</td>
<td>1164468001</td>
<td>08/03/2016</td>
<td>08/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-2</td>
<td>1164468002</td>
<td>08/02/2016</td>
<td>08/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-3</td>
<td>1164468003</td>
<td>08/03/2016</td>
<td>08/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-4</td>
<td>1164468004</td>
<td>08/03/2016</td>
<td>08/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-5</td>
<td>1164468005</td>
<td>08/03/2016</td>
<td>08/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
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<tr>
<td>MW-59</td>
<td>1164468006</td>
<td>08/03/2016</td>
<td>08/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-6</td>
<td>1164468007</td>
<td>08/03/2016</td>
<td>08/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-7</td>
<td>1164468008</td>
<td>08/02/2016</td>
<td>08/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-8</td>
<td>1164468009</td>
<td>08/02/2016</td>
<td>08/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>SW-1</td>
<td>1164468010</td>
<td>08/03/2016</td>
<td>08/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
</tbody>
</table>
### SGS North America Inc.
#### CHAIN OF CUSTODY RECORD

**CLIENT:** GVEA c/o SLR Consulting

**CONTACT:** Heather Simon_Matt Woods

**PHONE #:** 907-222-1112

**PROJECT NAME:** Hodge Power Plant

**PROJECT/PERMIT #:** 104, 0666, 146762

**REPORTS TO:** Heather Simon

**E-MAIL:** hsimon@slrconsulting.com

**INVOICE TO:** GVEA Naomi Knight

**P.O. #:** nmknight@gvea.com

### Section 3

#### Preservative

<table>
<thead>
<tr>
<th><strong>CONTAINERS</strong></th>
<th><strong>Pres. Type:</strong></th>
<th><strong>HgO3</strong></th>
<th><strong>None</strong></th>
<th><strong>None</strong></th>
<th><strong>HgO3</strong></th>
<th><strong>None</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(Multi-incremental)</strong></td>
<td><strong>Comp</strong></td>
<td><strong>Grab</strong></td>
<td><strong>No</strong></td>
<td><strong>Yes</strong></td>
<td><strong>No</strong></td>
<td><strong>Yes</strong></td>
</tr>
<tr>
<td><strong>Radionuclides</strong></td>
<td><strong>No</strong></td>
<td><strong>Yes</strong></td>
<td><strong>No</strong></td>
<td><strong>No</strong></td>
<td><strong>Yes</strong></td>
<td><strong>Yes</strong></td>
</tr>
<tr>
<td><strong>EPA 261</strong></td>
<td><strong>No</strong></td>
<td><strong>Yes</strong></td>
<td><strong>No</strong></td>
<td><strong>No</strong></td>
<td><strong>Yes</strong></td>
<td><strong>Yes</strong></td>
</tr>
<tr>
<td><strong>EPA 258</strong></td>
<td><strong>No</strong></td>
<td><strong>Yes</strong></td>
<td><strong>No</strong></td>
<td><strong>No</strong></td>
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</table>

#### Remarks/LOC ID

<table>
<thead>
<tr>
<th><strong>Remarks/LOC ID</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

### Section 4

#### DOD Project? **Yes**

#### Data Deliverable Requirements:

#### Cooler ID:

#### Requested Turnaround Time and/or Special Instructions:

- **Total Metals:** B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Thallium
- **EPA 300.8:** Fluoride, Chloride, Sulfate

#### Temp Blank C: **263 ambient**

#### Chain of Custody Seal: (Circle)

- [ ] INTACT
- [ ] BROKEN
- [ ] ABSENT

---

(See attached Sample Receipt Form)

---

http://www.sgs.com/terms-and-conditions

---

F083-Blank_COC_Templates_2015-03-19
### Review Criteria

<table>
<thead>
<tr>
<th>Review Criteria</th>
<th>Y/N (yes/no)</th>
<th>Exceptions Noted below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were Custody Seals intact? Note # &amp; location</td>
<td>Y</td>
<td>1F1B</td>
</tr>
</tbody>
</table>
| COC accompanied samples? | Y | **exemption permitted if chilled & collected <8hrs ago or chilling not required (i.e., waste, oil)**
| **exemption permitted if chilled & collected <8hrs ago or chilling not required (i.e., waste, oil)** | Y | Cooler ID: 1 @ Ambient °C Therm ID: |
| Temperature blank compliant* (i.e., 0-6 °C after CF)? | Y | Cooler ID: 2 @ Ambient °C Therm ID: |
| *If >6°C, were samples collected <8 hours ago? | Y |
| If <0°C, were sample containers ice free? | Y |

If samples received without a temperature blank, the “cooler temperature” will be documented in lieu of the temperature blank & “COOLER TEMP” will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note “ambient” or “chilled”.

Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.

Note: Refer to form F-083 "Sample Guide" for hold times.

| Y | Were samples received within hold time? |
| Do samples match COC** (i.e., sample IDs, dates/times collected)? | Y |

**Note: If times differ <1hr, record details & login per COC.

| Y | Were analyses requested unambiguous? |

| Y | Were proper containers (type/mass/volume/preservative***used)? |

** ***Exemption permitted for metals (e.g.,200.8/6020A).

**If applicable**

| Y | Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples? |
| Y | Were all VOA vials free of headspace (i.e., bubbles ≤ 6mm)? |
| Y | Were all soil VOAs field extracted with MeOH+BFB? |

Note to Client: Any “no” answer above indicates non-compliance with standard procedures and may impact data quality.

Samples moved to this WO from WO: 1164461.
Sample Containers and Preservatives

<table>
<thead>
<tr>
<th>Container Id</th>
<th>Preservative</th>
<th>Container Condition</th>
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</thead>
<tbody>
<tr>
<td>1164468001-A</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
</tr>
<tr>
<td>1164468001-B</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
</tr>
<tr>
<td>1164468001-C</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
</tr>
<tr>
<td>1164468002-A</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
</tr>
<tr>
<td>1164468002-B</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
</tr>
<tr>
<td>1164468002-C</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
</tr>
<tr>
<td>1164468003-A</td>
<td>HNO3 to pH &lt; 2</td>
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<tr>
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<td>PA</td>
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<td>1164468003-C</td>
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<td>PA</td>
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<tr>
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<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
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<tr>
<td>1164468004-B</td>
<td>HNO3 to pH &lt; 2</td>
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<tr>
<td>1164468004-C</td>
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<td>PA</td>
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<tr>
<td>1164468005-A</td>
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<td>1164468005-C</td>
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<tr>
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<td>PA</td>
</tr>
<tr>
<td>1164468006-C</td>
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<td>PA</td>
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<tr>
<td>1164468007-A</td>
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<td>PA</td>
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<tr>
<td>1164468007-B</td>
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<td>PA</td>
</tr>
<tr>
<td>1164468007-C</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
</tr>
<tr>
<td>1164468008-A</td>
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<td>1164468008-B</td>
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<td>1164468008-C</td>
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<tr>
<td>1164468009-A</td>
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<td>1164468009-B</td>
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<tr>
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<td>HNO3 to pH &lt; 2</td>
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<tr>
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</tr>
<tr>
<td>1164468010-C</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
</tr>
</tbody>
</table>

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates that an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.
BU - The container was received with headspace greater than 6mm.
DM - The container was received damaged.
FR - The container was received frozen and not usable for Bacteria or BOD analyses.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 08, 2016. This project has been assigned to ACZ’s project number, L32190. Please reference this number in all future inquiries.

All analyses were performed according to ACZ’s Quality Assurance Plan. The enclosed results relate only to the samples received under L32190. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ’s current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 14, 2016. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ’s stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Max Janicek has reviewed and approved this report.
## Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 10 ground water samples from SGS Environmental Services Inc. - Alaska on August 8, 2016. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L32190. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

## Holding Times

All analyses were performed within EPA recommended holding times.

## Sample Analysis

These samples were analyzed for radiochemistry parameters. The individual methods are referenced on both the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

The Radium-228 results for L32190-04 have been qualified with the N1 flag on the extended qualifier report. The chemist noted that the Barium tracer recovery failed high, likely due to matrix interference (sample already being run on a dilution). Comparison of results to historical levels and/or data qualification may be necessary.
### RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

- **Project ID:** 1164468
- **Sample ID:** MW-1R
- **Locator:**

**ACZ Sample ID:** L32190-01

**Date Sampled:** 08/03/16 9:31

**Date Received:** 08/08/16

**Sample Matrix:** Ground Water

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
<th>Prep Date</th>
<th>Result</th>
<th>Error(+/-)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
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<td>0.08</td>
<td>0.11</td>
<td>pCi/L</td>
<td>mns</td>
<td></td>
</tr>
<tr>
<td>Radium 228</td>
<td>09/09/16 13:13</td>
<td>Prep Method:</td>
<td>1.3</td>
<td>0.63</td>
<td>0.58</td>
<td>pCi/L</td>
<td>tjr</td>
<td></td>
</tr>
</tbody>
</table>
SGS Environmental Services Inc. - Alaska

ACZ Sample ID: L32190-02
Sample ID: MW-2
Sample Matrix: Ground Water
Project ID: 1164468
Date Sampled: 08/02/16 17:32
Date Received: 08/08/16
Locator: RadioChemistry

### Radium 226

<table>
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<th>Parameter</th>
<th>Measure Date</th>
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<th>Result</th>
<th>Error(+/-)</th>
<th>LLD</th>
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<th>Analyst</th>
</tr>
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<tbody>
<tr>
<td>Radium 226</td>
<td>09/14/16 0:04</td>
<td>mns</td>
<td>0.53</td>
<td>0.11</td>
<td>0.09</td>
<td>pCi/L</td>
<td>mns</td>
<td>mns</td>
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</table>

### Radium 228

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Result</th>
<th>Error(+/-)</th>
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<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radium 228</td>
<td>09/09/16 13:13</td>
<td>tjr</td>
<td>1.2</td>
<td>0.59</td>
<td>0.54</td>
<td>pCi/L</td>
<td>tjr</td>
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**RadioChemistry Analytical Results**

**SGS Environmental Services Inc. - Alaska**

<table>
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<th>Prep Date</th>
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<th>Analyst</th>
</tr>
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<tbody>
<tr>
<td>Radium 226 M903.1</td>
<td>09/14/16 0:05</td>
<td></td>
<td>0.07</td>
<td>0.09</td>
<td>0.11</td>
<td>pCi/L</td>
<td>mns</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Prep Date</th>
<th>Result</th>
<th>Error(+/-)</th>
<th>LLD</th>
<th>Units</th>
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<th>Analyst</th>
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<tbody>
<tr>
<td>Radium 228 M904.0</td>
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<td>0.82</td>
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<td>pCi/L</td>
<td>tjr</td>
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### SGS Environmental Services Inc. - Alaska

**Project ID:** 1164468  
**Sample ID:** MW-4  
**Locator:**

---

#### Analytical Results

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<tr>
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<tbody>
<tr>
<td>Radium 226</td>
<td>09/14/16 0:07</td>
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<td>0.03</td>
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<td>Radium 228</td>
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<td>130</td>
<td>86</td>
<td>82</td>
<td>pCi/L</td>
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<td>tjr</td>
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</tbody>
</table>

---

*Please refer to Qualifier Reports for details.*

---

**ACZ Sample ID:** L32190-04  
**Date Sampled:** 08/03/16 12:31  
**Date Received:** 08/08/16  
**Sample Matrix:** Ground Water
**RadioChemistry Analytical Results**

**SGS Environmental Services Inc. - Alaska**

**ACZ Sample ID:** L32190-05  
**Date Sampled:** 08/03/16 11:19  
**Date Received:** 08/08/16  
**Sample Matrix:** Ground Water

---

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Prep Date</th>
<th>Result</th>
<th>Error(+/-)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radium 226</td>
<td>09/14/16 0:08</td>
<td></td>
<td>0.04</td>
<td>0.08</td>
<td>0.16</td>
<td>pCi/L</td>
<td>mns</td>
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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
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<th>Result</th>
<th>Error(+/-)</th>
<th>LLD</th>
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<th>XQ</th>
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</thead>
<tbody>
<tr>
<td>Radium 228</td>
<td>09/09/16 13:13</td>
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<td>2</td>
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<td>pCi/L</td>
<td>tjr</td>
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</tr>
</tbody>
</table>
**SGS Environmental Services Inc. - Alaska**

**Project ID:** 1164468  
**Sample ID:** MW-59  
**Sample Matrix:** Ground Water

---

**ACZ Sample ID:** L32190-06  
**Date Sampled:** 08/03/16 11:19  
**Date Received:** 08/08/16  
**Sample Matrix:** Ground Water

---

**Parameter**  | **Measure Date** | **Prep Date** | **Result** | **Error (+/-)** | **LLD** | **Units** | **XQ** | **Analyst**
---|---|---|---|---|---|---|---|---
Radium 226  | 09/14/16 0:10 |  | 0.12 | 0.05 | 0.06 | pCi/L | mns | 
Radium 228  | 09/09/16 13:13 |  | 0.28 | 0.49 | 0.51 | pCi/L | tjr |
SGS Environmental Services Inc. - Alaska

Project ID: 1164468
Sample ID: MW-6
Locator: RadioChemistry

ACZ Sample ID: L32190-07
Date Sampled: 08/03/16 10:33
Date Received: 08/08/16
Sample Matrix: Ground Water

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<th>Parameter</th>
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<tbody>
<tr>
<td>Radium 226</td>
<td>09/14/16 0:11</td>
<td></td>
<td>0.1</td>
<td>0.08</td>
<td>0.07</td>
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<td>09/09/16 13:13</td>
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<td>0.46</td>
<td>0.54</td>
<td>0.54</td>
<td>pCi/L</td>
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</table>
### RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

**Project ID:** 1164468  
**Sample ID:** MW-7  
**Locator:**  

**ACZ Sample ID:** L32190-08  
**Date Sampled:** 08/02/16 14:58  
**Date Received:** 08/08/16  
**Sample Matrix:** Ground Water  

#### Radium 226

**M903.1**

<table>
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#### Radium 228

**M904.0**

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</thead>
<tbody>
<tr>
<td>Radium 228</td>
<td>09/09/16 14:44</td>
<td></td>
<td>-0.01</td>
<td>0.45</td>
<td>0.49</td>
<td>pCi/L</td>
<td>*</td>
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</table>

* Please refer to Qualifier Reports for details.
SGS Environmental Services Inc. - Alaska

Radium 226
M903.1

<table>
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<th>Result</th>
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<tr>
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<td>0.04</td>
<td>0.08</td>
<td>0.25</td>
<td>pCi/L</td>
<td>mns</td>
<td></td>
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</tbody>
</table>

Radium 228
M904.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
<th>Prep Date</th>
<th>Result</th>
<th>Error(+/-)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radium 228</td>
<td>09/09/16 14:44</td>
<td></td>
<td>0.42</td>
<td>0.45</td>
<td>0.46</td>
<td>pCi/L</td>
<td>tjr</td>
<td></td>
</tr>
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</table>
SGS Environmental Services Inc. - Alaska

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
<th>Prep Date</th>
<th>Result</th>
<th>Error(±)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radium 226</td>
<td>09/14/16 0:15</td>
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<td>0.16</td>
<td>0.08</td>
<td>0.09</td>
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<td>mns</td>
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<tr>
<td>Radium 228</td>
<td>09/09/16 14:44</td>
<td></td>
<td>-0.25</td>
<td>0.42</td>
<td>0.47</td>
<td>pCi/L</td>
<td>tjr</td>
<td></td>
</tr>
</tbody>
</table>
## Report Header Explanations

- **Batch**: A distinct set of samples analyzed at a specific time
- **Error(+/-)**: Calculated sample specific uncertainty
- **Found**: Value of the QC Type of interest
- **Limit**: Upper limit for RPD, in %.
- **LCL**: Lower Control Limit, in % (except for LCSS, mg/Kg)
- **LLD**: Calculated sample specific Lower Limit of Detection
- **PCN/SCN**: A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
- **PQL**: Practical Quantitation Limit
- **QC**: True Value of the Control Sample or the amount added to the Spike
- **Rec**: Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
- **RER**: Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.
- **RPD**: Relative Percent Difference, calculation used for Duplicate QC Types
- **UCL**: Upper Control Limit, in % (except for LCSS, mg/Kg)
- **Sample**: Value of the Sample of interest

## QC Sample Types

<table>
<thead>
<tr>
<th>QC Sample Type</th>
<th>Description</th>
<th>Reference Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUP</td>
<td>Sample Duplicate</td>
<td>MS/MSD Matrix Spike/Matrix Spike Duplicate</td>
</tr>
<tr>
<td>LCSS</td>
<td>Laboratory Control Sample - Soil</td>
<td>PBS Prep Blank - Soil</td>
</tr>
<tr>
<td>LCSW</td>
<td>Laboratory Control Sample - Water</td>
<td>PBW Prep Blank - Water</td>
</tr>
</tbody>
</table>

## QC Sample Type Explanations

- **Blanks**: Verifies that there is no or minimal contamination in the prep method procedure.
- **Control Samples**: Verifies the accuracy of the method, including the prep procedure.
- **Duplicates**: Verifies the precision of the instrument and/or method.
- **Matrix Spikes**: Determines sample matrix interferences, if any.

## ACZ Qualifiers (Qual)

- **H**: Analysis exceeded method hold time.

## Method Prefix Reference

- **M**: EPA methodology, including those under SDWA, CWA, and RCRA
- **SM**: Standard Methods for the Examination of Water and Wastewater.
- **D**: ASTM
- **RP**: DOE
- **ESM**: DOE/ESM

## Comments

1. Solid matrices are reported on a dry weight basis.
3. QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
4. An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

### Radium 226 (M903.1)

<table>
<thead>
<tr>
<th>ACZ ID</th>
<th>Type</th>
<th>Analyzed</th>
<th>PCN/SCN</th>
<th>QC</th>
<th>Sample</th>
<th>Error</th>
<th>LLD</th>
<th>Found</th>
<th>Error</th>
<th>LLD</th>
<th>Rec</th>
<th>Lower</th>
<th>Upper</th>
<th>RPD/RER</th>
<th>Limit</th>
<th>Qual</th>
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<tbody>
<tr>
<td>WG409817</td>
<td>PBW</td>
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<td></td>
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<td></td>
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<td>0.22</td>
<td></td>
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<td></td>
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<td>L32304-03MS</td>
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<td>0.11</td>
<td>0.06</td>
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### Radium 228 (M904.0)

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<thead>
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<th>Type</th>
<th>Analyzed</th>
<th>PCN/SCN</th>
<th>QC</th>
<th>Sample</th>
<th>Error</th>
<th>LLD</th>
<th>Found</th>
<th>Error</th>
<th>LLD</th>
<th>Rec</th>
<th>Lower</th>
<th>Upper</th>
<th>RPD/RER</th>
<th>Limit</th>
<th>Qual</th>
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</thead>
<tbody>
<tr>
<td>WG409678</td>
<td>PBW</td>
<td>09/09/16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.46</td>
<td>0.32</td>
<td>0.31</td>
<td></td>
<td></td>
<td>0.62</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>LCSW</td>
<td>09/09/16</td>
<td>PCN50553</td>
<td>18.6</td>
<td></td>
<td></td>
<td>13</td>
<td>1.1</td>
<td>0.5</td>
<td>70</td>
<td>47</td>
<td>123</td>
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<tr>
<td>L32439-01MS</td>
<td>MS</td>
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<td>PCN50553</td>
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<td>13</td>
<td>1.1</td>
<td>0.52</td>
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<td>47</td>
<td>123</td>
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<tr>
<td>L32190-10DUP</td>
<td>DUP-RER</td>
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<td>0.42</td>
<td>0.47</td>
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<td>DUP-RER</td>
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<td>-.28</td>
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<td>1.28</td>
<td>2</td>
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### Table of Radionuclide Qualifiers

<table>
<thead>
<tr>
<th>ACZ ID</th>
<th>WORKNUM</th>
<th>PARAMETER</th>
<th>METHOD</th>
<th>QUAL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>L32190-04</td>
<td>WG409817</td>
<td>Radium 226</td>
<td>M903.1</td>
<td>DF</td>
<td>Sample required dilution due to high sediment.</td>
</tr>
<tr>
<td></td>
<td>WG409678</td>
<td>Radium 228</td>
<td>M904.0</td>
<td>D1</td>
<td>Sample required dilution due to matrix.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M904.0</td>
<td>N1</td>
<td>See Case Narrative.</td>
</tr>
<tr>
<td>L32190-08</td>
<td>WG409678</td>
<td>Radium 228</td>
<td>M904.0</td>
<td>DJ</td>
<td>Sample dilution required due to insufficient sample.</td>
</tr>
</tbody>
</table>
No certification qualifiers associated with this analysis
SGS Environmental Services Inc. - Alaska
1164468

Receipt Verification

<table>
<thead>
<tr>
<th>Question</th>
<th>YES</th>
<th>NO</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Is a foreign soil permit included for applicable samples?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>2) Is the Chain of Custody form or other directive shipping papers present?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Does this project require special handling procedures such as CLP protocol?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>4) Are any samples NRC licensable material?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>5) If samples are received past hold time, proceed with requested short hold time analyses?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6) Is the Chain of Custody form complete and accurate?</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

The analyses were entered per the project manager.

7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples? | X   |    |    |

Samples/Containers

<table>
<thead>
<tr>
<th>Question</th>
<th>YES</th>
<th>NO</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>8) Are all containers intact and with no leaks?</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

L32190-08 Container B1741448 (RED RAD): This container was received broken.

9) Are all labels on containers and are they intact and legible?          | X   |    |    |

10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time? | X   |    |    |

11) For preserved bottle types, was the pH checked and within limits? 1    | X   |    |    |

12) Is there sufficient sample volume to perform all requested work?      | X   |    |    |

13) Is the custody seal intact on all containers?                          |     |    | X  |

14) Are samples that require zero headspace acceptable?                   |     |    | X  |

15) Are all sample containers appropriate for analytical requirements?    | X   |    |    |

16) Is there an Hg-1631 trip blank present?                               |     |    | X  |

17) Is there a VOA trip blank present?                                    |     |    | X  |

18) Were all samples received within hold time?                            | X   |    |    |

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

<table>
<thead>
<tr>
<th>Cooler Id</th>
<th>Temp(°C)</th>
<th>Temp Criteria(°C)</th>
<th>Rad(µR/Hr)</th>
<th>Custody Seal Intact?</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA24490</td>
<td>23</td>
<td>NA</td>
<td>14</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.
The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).
<table>
<thead>
<tr>
<th>SAMPLE IDENTIFICATION</th>
<th>DATE mm/dd/yy</th>
<th>TIME HH:MM</th>
<th>MATRIX/MATRIX</th>
<th>MS</th>
<th>CONTAINERS</th>
<th>SGS lab #</th>
<th>Loc ID</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-1R</td>
<td>08/03/16</td>
<td>931</td>
<td>Water</td>
<td>3</td>
<td>X</td>
<td>1164468001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MW-2</td>
<td>08/02/16</td>
<td>1732</td>
<td>Water</td>
<td>3</td>
<td>X</td>
<td>1164468002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MW-3</td>
<td>08/03/16</td>
<td>1405</td>
<td>Water</td>
<td>3</td>
<td>X</td>
<td>1164468003</td>
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<td>MW-4</td>
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<td>MW-5</td>
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<td>MW-59</td>
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<td>MW-6</td>
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<td>08/02/16</td>
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<td>SW-1</td>
<td>08/03/16</td>
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<tr>
<td>Relinquished By: (1)</td>
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<td>Time: 09:30</td>
<td>Received By:</td>
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<tr>
<td>Relinquished By: (2)</td>
<td>Date:</td>
<td>Time:</td>
<td>Received By:</td>
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<tr>
<td>Relinquished By: (3)</td>
<td>Date:</td>
<td>Time:</td>
<td>Received By:</td>
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<td>Relinquished By: (4)</td>
<td>Date:</td>
<td>Time:</td>
<td>Received For Laboratory By:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
To: Golden Valley Electric Association  
2700 Gambell Street Suite 200  
Anchorage, AK 99503  
(907)564-6907

Report Number: 1165932  
Client Project: 104.00367.16002 Healy Power Pt

Dear Heather Simon,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Justin Nelson  
Project Manager  
Justin.Nelson@sgs.com

Print Date: 10/19/2016 7:39:05AM  
SGS North America Inc.  
200 West Potter Drive, Anchorage, AK 99518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com
Case Narrative

SGS Client: Golden Valley Electric Association
SGS Project: 1165932
Project Name/Site: 104.00367.16002 Healy Power Pt
Project Contact: Heather Simon

Refer to sample receipt form for information on sample condition.

MW-2 (1165932005) PS
300.0 - Anions - The LOQ was raised due to matrix interference.

1166011001(1358961MSD) (1358963) MSD
300.0 - Anions - MSD RPD for several analytes is outside QC criteria. Refer to LCS for accuracy requirements
300.0 - Anions - MSD recovery is outside of QC criteria for fluoride (117%), chloride (117%) and sulfate (122%). Refer to LCS for accuracy requirements

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.
## Report of Manual Integrations

<table>
<thead>
<tr>
<th>Laboratory ID</th>
<th>Client Sample ID</th>
<th>Analytical Batch</th>
<th>Analyte</th>
<th>Reason</th>
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<tbody>
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<tr>
<td>1165932008</td>
<td>MW-5</td>
<td>WIC5571</td>
<td>Sulfate</td>
<td>PNF</td>
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<tr>
<td>1165932009</td>
<td>MW-95</td>
<td>WIC5571</td>
<td>Sulfate</td>
<td>PNF</td>
</tr>
<tr>
<td>1165932010</td>
<td>SW-1</td>
<td>WIC5571</td>
<td>Sulfate</td>
<td>PNF</td>
</tr>
<tr>
<td>1359213</td>
<td>CCV for HBN 1745759 (WIC/5571)</td>
<td>WIC5571</td>
<td>Sulfate</td>
<td>PNF</td>
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<td>1359215</td>
<td>CCV for HBN 1745759 (WIC/5571)</td>
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### Manual Integration Reason Code Descriptions

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<th>Code</th>
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<td>O</td>
<td>Original Chromatogram</td>
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<tr>
<td>M</td>
<td>Modified Chromatogram</td>
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<tr>
<td>SS</td>
<td>Skimmed surrogate</td>
</tr>
<tr>
<td>BLG</td>
<td>Closed baseline gap</td>
</tr>
<tr>
<td>RP</td>
<td>Reassign peak name</td>
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<tr>
<td>PIR</td>
<td>Pattern integration required</td>
</tr>
<tr>
<td>IT</td>
<td>Included tail</td>
</tr>
<tr>
<td>SP</td>
<td>Split peak</td>
</tr>
<tr>
<td>RSP</td>
<td>Removed split peak</td>
</tr>
<tr>
<td>FPS</td>
<td>Forced peak start/stop</td>
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<tr>
<td>BLC</td>
<td>Baseline correction</td>
</tr>
<tr>
<td>PNF</td>
<td>Peak not found by software</td>
</tr>
</tbody>
</table>

All DRO/RRO analysis are integrated per SOP.
Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

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SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

* The analyte has exceeded allowable regulatory or control limits.
! Surrogate out of control limits.
B Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB Closing Continuing Calibration Verification
CL Control Limit
D The analyte concentration is the result of a dilution.
DF Dilution Factor
DL Detection Limit (i.e., maximum method detection limit)
E The analyte result is above the calibrated range.
F Indicates value that is greater than or equal to the DL
GT Greater Than
IB Instrument Blank
ICV Initial Calibration Verification
J The quantitation is an estimation.
JL The analyte was positively identified, but the quantitation is a low estimation.
LCS(D) Laboratory Control Spike (Duplicate)
LOD Limit of Detection (i.e., 1/2 of the LOQ)
LOQ Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT Less Than
M A matrix effect was present.
MB Method Blank
MS(D) Matrix Spike (Duplicate)
ND Indicates the analyte is not detected.
Q QC parameter out of acceptance range.
R Rejected
RPD Relative Percent Difference
U Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.
<table>
<thead>
<tr>
<th>Client Sample ID</th>
<th>Lab Sample ID</th>
<th>Collected</th>
<th>Received</th>
<th>Matrix</th>
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<td>MW-7</td>
<td>1165932001</td>
<td>10/03/2016</td>
<td>10/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-8</td>
<td>1165932002</td>
<td>10/03/2016</td>
<td>10/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-4</td>
<td>1165932003</td>
<td>10/03/2016</td>
<td>10/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-3</td>
<td>1165932004</td>
<td>10/03/2016</td>
<td>10/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-2</td>
<td>1165932005</td>
<td>10/03/2016</td>
<td>10/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
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<td>10/04/2016</td>
<td>10/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
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**Method Description**

- **EPA 300.0**
  - Ion Chromatographic Analysis (W)
- **EP245.1**
  - Mercury EPA 245.1 for non drinking water
- **EP200.8**
  - Metals in Water by 200.8 ICP-MS
- **SM21 2540C**
  - Total Dissolved Solids SM18 2540C
### Detectable Results Summary

#### Client Sample ID: MW-7
Lab Sample ID: 1165932001

<table>
<thead>
<tr>
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<td>Barium</td>
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<tr>
<td>Boron</td>
<td>22.4J</td>
<td>ug/L</td>
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<tr>
<td>Calcium</td>
<td>43300</td>
<td>ug/L</td>
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<tr>
<td>Lead</td>
<td>0.122J</td>
<td>ug/L</td>
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<tr>
<td>Lithium</td>
<td>3.54J</td>
<td>ug/L</td>
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<tr>
<td>Chloride</td>
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<td>mg/L</td>
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<td>Fluoride</td>
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<td>mg/L</td>
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<td>Sulfate</td>
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<td><strong>Total Dissolved Solids</strong></td>
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Lab Sample ID: 1165932002

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<tr>
<td>Calcium</td>
<td>92200</td>
<td>ug/L</td>
</tr>
<tr>
<td>Lead</td>
<td>0.131J</td>
<td>ug/L</td>
</tr>
<tr>
<td>Lithium</td>
<td>5.54J</td>
<td>ug/L</td>
</tr>
<tr>
<td>Chloride</td>
<td>42.3</td>
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<td>Fluoride</td>
<td>0.139J</td>
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<td>Sulfate</td>
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Lab Sample ID: 1165932003

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<td>Barium</td>
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<td>Boron</td>
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<td>Calcium</td>
<td>18600</td>
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<td>Chromium</td>
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<tr>
<td>Lead</td>
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<td>ug/L</td>
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<td>Molybdenium</td>
<td>318</td>
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<td>Selenium</td>
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<td>Mercury</td>
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<tr>
<td>Fluoride</td>
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<tr>
<td>Sulfate</td>
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<td>mg/L</td>
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### Detectable Results Summary

#### Client Sample ID: MW-3
Lab Sample ID: 1165932004

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<td>Barium</td>
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<td>Boron</td>
<td>649</td>
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<td>Calcium</td>
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<td>Lead</td>
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**Waters Department**

<table>
<thead>
<tr>
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<td>Sulfate</td>
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<td>Total Dissolved Solids</td>
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<td>mg/L</td>
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#### Client Sample ID: MW-2
Lab Sample ID: 1165932005

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<td>ug/L</td>
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<td>Barium</td>
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<tr>
<td>Boron</td>
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<tr>
<td>Calcium</td>
<td>201000</td>
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<td>Cobalt</td>
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<td>Lithium</td>
<td>15.0</td>
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<td>Molybdenum</td>
<td>16.4</td>
<td>ug/L</td>
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<td>Selenium</td>
<td>4.47J</td>
<td>ug/L</td>
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**Waters Department**

<table>
<thead>
<tr>
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<td>Total Dissolved Solids</td>
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#### Client Sample ID: MW-6
Lab Sample ID: 1165932006

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<td>Calcium</td>
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<td>Lead</td>
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<td>Lithium</td>
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<td>Molybdenum</td>
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**Waters Department**

<table>
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<tr>
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<td>Sulfate</td>
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<td>Total Dissolved Solids</td>
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### Detectable Results Summary

**Client Sample ID:** MW-1R  
**Lab Sample ID:** 1165932007

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<td>Selenium</td>
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<td>Mercury</td>
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<tr>
<td>Total Dissolved Solids</td>
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</tbody>
</table>

**Metals Department**

**Waters Department**

---

**Client Sample ID:** MW-5  
**Lab Sample ID:** 1165932008

<table>
<thead>
<tr>
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<td>Fluoride</td>
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<td>mg/L</td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
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<td>mg/L</td>
</tr>
</tbody>
</table>

---

SGS North America Inc.  
200 West Potter Drive, Anchorage, AK 99518  
t 907.562.2343 f 907.561.5301  www.us.sgs.com

Print Date: 10/19/2016 7:39:12AM
## Detectable Results Summary

**Client Sample ID:** MW-95  
**Lab Sample ID:** 1165932009

### Metals by ICP/MS

<table>
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<td>ug/L</td>
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<td>Fluoride</td>
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### Waters Department

### Client Sample ID: SW-1  
**Lab Sample ID:** 1165932010

### Metals by ICP/MS

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<td>108</td>
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<tr>
<td>Lead</td>
<td>0.282</td>
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<tr>
<td>Lithium</td>
<td>39.2</td>
<td>ug/L</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>220</td>
<td>ug/L</td>
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<tr>
<td>Selenium</td>
<td>82.7</td>
<td>ug/L</td>
</tr>
<tr>
<td>Chloride</td>
<td>69.9</td>
<td>mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>5.66</td>
<td>mg/L</td>
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<tr>
<td>Sulfate</td>
<td>256</td>
<td>mg/L</td>
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<tr>
<td>Total Dissolved Solids</td>
<td>700</td>
<td>mg/L</td>
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## Results of MW-7

Client Sample ID: **MW-7**  
Client Project ID: **104.00367.16002 Healy Power Pt**  
Lab Sample ID: 1165932001  
Lab Project ID: 1165932  
Collection Date: 10/03/16 14:15  
Received Date: 10/04/16 17:07  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

### Results by Metals by ICP/MS

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<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
<th>DF</th>
<th>Date Analyzed</th>
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<tbody>
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<td>Antimony</td>
<td>0.500 U</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
<td>1</td>
<td>10/13/16 17:06</td>
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<tr>
<td>Arsenic</td>
<td>2.50 U</td>
<td>5.00</td>
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<td>ug/L</td>
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<tr>
<td>Barium</td>
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<td>4.00</td>
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<td>3.10</td>
<td>ug/L</td>
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<tr>
<td>Molybdenum</td>
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<td>0.620</td>
<td>ug/L</td>
<td>1</td>
<td>10/13/16 17:06</td>
</tr>
<tr>
<td>Selenium</td>
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<td>5.00</td>
<td>1.50</td>
<td>ug/L</td>
<td>1</td>
<td>10/13/16 17:06</td>
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<tr>
<td>Thallium</td>
<td>0.500 U</td>
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<td>0.310</td>
<td>ug/L</td>
<td>1</td>
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### Batch Information

Analytical Batch: MMS9579  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 10/13/16 17:06  
Container ID: 1165932001-A  
Prep Batch: MXX30271  
Prep Method: E200.2  
Prep Date/Time: 10/10/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

J flagging is activated
## Results of MW-7

**Client Sample ID:** MW-7  
**Client Project ID:** 104.00367.16002 Healy Power Pt  
**Lab Sample ID:** 1165932001  
**Lab Project ID:** 1165932  
**Collection Date:** 10/03/16 14:15  
**Received Date:** 10/04/16 17:07  
**Matrix:** Water (Surface, Eff., Ground)  

### Results by Metals Department

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<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
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</thead>
<tbody>
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<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
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<td></td>
<td>10/14/16 19:14</td>
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### Batch Information

- **Analytical Batch:** MCV5749  
- **Analytical Method:** EP245.1  
- **Analyst:** NEG  
- **Analytical Date/Time:** 10/14/16 19:14  
- **Container ID:** 1165932001-A  
- **Prep Batch:** MXX30295  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/14/16 13:02  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol.:** 50 mL

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Print Date: 10/19/2016 7:39:13AM  
J flagging is activated
Results of MW-7

Client Sample ID: MW-7
Client Project ID: 104.00367.16002 Healy Power Pt
Lab Sample ID: 1165932001
Lab Project ID: 1165932

Collection Date: 10/03/16 14:15
Received Date: 10/04/16 17:07
Matrix: Water (Surface, Eff., Ground)

Solids (%):

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<th>Parameter</th>
<th>Result Qual</th>
<th>LOQ/CL</th>
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<th>Allowable Limits</th>
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<tbody>
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<td>Chloride</td>
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<td>0.0620</td>
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<tr>
<td></td>
<td></td>
<td>Fluoride</td>
<td>0.170 J</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
<td>1</td>
<td>10/10/16 18:18</td>
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<tr>
<td></td>
<td></td>
<td>Sulfate</td>
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<td>mg/L</td>
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Batch Information

Analytical Batch: WIC5571
Analytical Method: EPA 300.0
Analyst: ACF
Analytical Date/Time: 10/10/16 18:18
Container ID: 1165932001-B

Prep Batch: WXX11652
Prep Method: METHOD
Prep Date/Time: 10/09/16 19:34
Prep Initial Wt./Vol.: 10 mL
Prep Extract Vol: 10 mL

Analytical Batch: STS5242
Analytical Method: SM21 2540C
Analyst: KBE
Analytical Date/Time: 10/10/16 10:02
Container ID: 1165932001-C

Total Dissolved Solids

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<th>LOQ/CL</th>
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<th>Units</th>
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J flagging is activated
### Results of MW-8

Client Sample ID: MW-8  
Client Project ID: 104.00367.16002 Healy Power Pt  
Lab Sample ID: 1165932002  
Lab Project ID: 1165932  
Collection Date: 10/03/16 15:15  
Received Date: 10/04/16 17:07  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

### Results by Metals by ICP/MS

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<th>DF</th>
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<td>10/13/16 17:09</td>
</tr>
<tr>
<td>Arsenic</td>
<td>2.50 U</td>
<td>5.00</td>
<td>1.50</td>
<td>ug/L</td>
<td>1</td>
<td></td>
<td>10/13/16 17:09</td>
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<tr>
<td>Barium</td>
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<td>0.940</td>
<td>ug/L</td>
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<td></td>
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</tr>
<tr>
<td>Beryllium</td>
<td>0.200 U</td>
<td>0.400</td>
<td>0.130</td>
<td>ug/L</td>
<td>1</td>
<td></td>
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<tr>
<td>Boron</td>
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<td>15.0</td>
<td>ug/L</td>
<td>1</td>
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<td>10/13/16 17:09</td>
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<tr>
<td>Cadmium</td>
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<td>0.620</td>
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<tr>
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<tr>
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<td>1</td>
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<td>10/13/16 17:09</td>
</tr>
<tr>
<td>Molybdenum</td>
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<td>2.00</td>
<td>0.620</td>
<td>ug/L</td>
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<td>10/13/16 17:09</td>
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<td>10/13/16 17:09</td>
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<td>Thallium</td>
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<td>0.310</td>
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### Batch Information

Analytical Batch: MMS9579  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 10/13/16 17:09  
Container ID: 1165932002-A  
Prep Batch: MXX30271  
Prep Method: E200.2  
Prep Date/Time: 10/10/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/19/2016 7:39:13AM  
J flagging is activated
Results of MW-8

Client Sample ID: MW-8
Client Project ID: 104.00367.16002 Healy Power Pt
Lab Sample ID: 1165932002
Lab Project ID: 1165932

Collection Date: 10/03/16 15:15
Received Date: 10/04/16 17:07
Matrix: Water (Surface, Eff., Ground)
Solids (%): 
Location: 

Results by Metals Department

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<th>Units</th>
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Batch Information

Analytical Batch: MCV5749
Analytical Method: EP245.1
Analyst: NEG
Analytical Date/Time: 10/14/16 19:17
Container ID: 1165932002-A

Prep Batch: MXX30295
Prep Method: METHOD
Prep Date/Time: 10/14/16 13:02
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL

Print Date: 10/19/2016 7:39:13AM

J flagging is activated

Member of SGS Group

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301   www.us.sgs.com
## Results of MW-8

**Client Sample ID:** MW-8  
**Client Project ID:** 104.00367.16002 Healy Power Pt  
**Lab Sample ID:** 1165932002  
**Lab Project ID:** 1165932  
**Collection Date:** 10/03/16 15:15  
**Received Date:** 10/04/16 17:07  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**  

### Results by Waters Department

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### Batch Information

- **Prep Batch:** WXX11652  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/09/16 19:34  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL  

- **Analytical Batch:** STS5242  
- **Analytical Method:** SM21 2540C  
- **Analyst:** KBE  
- **Analytical Date/Time:** 10/10/16 10:02  
- **Container ID:** 1165932002-C  

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**Print Date:** 10/19/2016 7:39:13AM  
**J flagging is activated**  

**SGS North America Inc.**  
200 West Potter Drive Anchorage, AK 95518  
907.562.2343 f 907.561.5301 www.us.sgs.com  

Member of SGS Group  
15 of 64
Results of MW-4

Client Sample ID: MW-4
Client Project ID: 104.00367.16002 Healy Power Pt
Lab Sample ID: 1165932003
Lab Project ID: 1165932

Collection Date: 10/03/16 16:17
Received Date: 10/04/16 17:07
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals by ICP/MS

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<td>ug/L</td>
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<td>10/13/16 18:15</td>
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Batch Information

Analytical Batch: MMS9579
Analytical Method: EP200.8
Analyst: VDL
Analytical Date/Time: 10/13/16 18:15
Container ID: 1165932003-A

Prep Batch: MXX30271
Prep Method: E200.2
Prep Date/Time: 10/10/16 09:16
Prep Initial Wt./Vol.: 4 mL
Prep Extract Vol: 50 mL

Print Date: 10/19/2016 7:39:13AM

J flagging is activated
## Results of MW-4

Client Sample ID: **MW-4**  
Client Project ID: **104.00367.16002 Healy Power Pt**  
Lab Sample ID: **1165932003**  
Lab Project ID: **1165932**

**Collection Date:** 10/03/16 16:17  
**Received Date:** 10/04/16 17:07  
**Matrix:** Water (Surface, Eff., Ground)

### Results by Metals Department

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<tr>
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### Batch Information

- **Prep Batch:** MXX30295  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/14/16 13:02  
- **Prep Initial Wt./Vol.:** 5 mL  
- **Prep Extract Vol.:** 50 mL
### Results of MW-4

**Client Sample ID:** MW-4  
**Client Project ID:** 104.00367.16002 Healy Power Pt  
**Lab Sample ID:** 1165932003  
**Lab Project ID:** 1165932

**Collection Date:** 10/03/16 16:17  
**Received Date:** 10/04/16 17:07  
**Matrix:** Water (Surface, Eff., Ground)

**Solids (%):**

**Location:**

### Results by Waters Department

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<td>mg/L</td>
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<tr>
<td>Fluoride</td>
<td>17.5</td>
<td>1.00</td>
<td>0.310</td>
<td>mg/L</td>
<td>5</td>
<td>10/10/16 21:39</td>
</tr>
<tr>
<td>Sulfate</td>
<td>314</td>
<td>10.0</td>
<td>3.10</td>
<td>mg/L</td>
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<td>10/10/16 22:01</td>
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### Batch Information

- **Prep Batch:** WXX11652  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/09/16 19:34  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

### Analytical Batch: WIC5571

- **Analytical Method:** EPA 300.0  
- **Analyst:** ACF  
- **Analytical Date/Time:** 10/10/16 21:39  
- **Container ID:** 1165932003-B

### Batch Information

- **Prep Batch:** WXX11652  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/09/16 19:34  
- **Prep Initial Wt./Vol.:** 10 mL

### Analytical Batch: WIC5571

- **Analytical Method:** EPA 300.0  
- **Analyst:** ACF  
- **Analytical Date/Time:** 10/10/16 21:39  
- **Container ID:** 1165932003-B

### Batch Information

- **Prep Batch:** WXX11652  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/09/16 19:34  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

### Analytical Batch: STS5242

- **Analytical Method:** SM21 2540C  
- **Analyst:** KBE  
- **Analytical Date/Time:** 10/10/16 10:02  
- **Container ID:** 1165932003-C

### Batch Information

- **Prep Batch:** WXX11652  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/09/16 19:34  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

### Analytical Batch: STS5242

- **Analytical Method:** SM21 2540C  
- **Analyst:** KBE  
- **Analytical Date/Time:** 10/10/16 10:02  
- **Container ID:** 1165932003-C

**Print Date:** 10/19/2016 7:39:13AM

---

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# Results of MW-3

**Client Sample ID:** MW-3  
**Client Project ID:** 104.00367.16002 Healy Power Pt  
**Lab Sample ID:** 1165932004  
**Lab Project ID:** 1165932

**Collection Date:** 10/03/16 17:25  
**Received Date:** 10/04/16 17:07  
**Matrix:** Water (Surface, Eff., Ground)

## Results by Metals by ICP/MS

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<tr>
<td>Arsenic</td>
<td>2.50 U</td>
<td>5.00</td>
<td>1.50</td>
<td>ug/L</td>
<td>1</td>
<td>15.00</td>
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<td>Barium</td>
<td>93.5</td>
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<td>Beryllium</td>
<td>0.200 U</td>
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<td>Boron</td>
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<tr>
<td>Cadmium</td>
<td>0.250 U</td>
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<td>ug/L</td>
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<td>1.00 U</td>
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<tr>
<td>Cobalt</td>
<td>2.00 U</td>
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<tr>
<td>Lead</td>
<td>0.136 J</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
<td>1</td>
<td>10.500</td>
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<tr>
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<td>58.4</td>
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<td>ug/L</td>
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<td>Molybdenum</td>
<td>15.4</td>
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<td>12.00</td>
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<td>Selenium</td>
<td>1.80 J</td>
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<tr>
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<td>0.500 U</td>
<td>1.00</td>
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## Batch Information

- **Analytical Batch:** MMS9579  
- **Analytical Method:** EP200.8  
- **Analytical Date/Time:** 10/13/16 17:12  
- **Container ID:** 1165932004_A  
- **Prep Batch:** MXX30271  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 10/10/16 09:16  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol.:** 50 mL

---

**Print Date:** 10/19/2016 7:39:13AM  
**J flagging is activated**

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www.us.sgs.com
Results of MW-3

Client Sample ID: MW-3
Client Project ID: 104.00367.16002 Healy Power Pt
Lab Sample ID: 1165932004
Lab Project ID: 1165932

Collection Date: 10/03/16 17:25
Received Date: 10/04/16 17:07
Matrix: Water (Surface, Eff., Ground)
Solids (%): Location:

Results by Metals Department

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Batch Information

Analytical Batch: MCV5749
Analytical Method: EP245.1
Analyst: NEG
Analytical Date/Time: 10/14/16 19:23
Container ID: 1165932004-A

Prep Batch: MXX30295
Prep Method: METHOD
Prep Date/Time: 10/14/16 13:02
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL

J flagging is activated
### Results of MW-3

**Client Sample ID:** MW-3  
**Client Project ID:** 104.00367.16002 Healy Power Pt  
**Lab Sample ID:** 1165932004  
**Lab Project ID:** 1165932  
**Collection Date:** 10/03/16 17:25  
**Received Date:** 10/04/16 17:07  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

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#### Results by Waters Department

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<td>mg/L</td>
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<td>Fluoride</td>
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<td>mg/L</td>
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#### Batch Information

- **Analytical Batch:** WIC5571  
- **Analytical Method:** EPA 300.0  
- **Analyst:** ACF  
- **Analytical Date/Time:** 10/10/16 22:45  
- **Container ID:** 1165932004-B

- **Prep Batch:** WXX11652  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/09/16 19:34  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

#### Batch Information

- **Analytical Batch:** STS5242  
- **Analytical Method:** SM21 2540C  
- **Analyst:** KBE  
- **Analytical Date/Time:** 10/10/16 10:02  
- **Container ID:** 1165932004-C  

---

**Print Date:** 10/19/2016 7:39:13AM  
**J flagging is activated**
### Results of MW-2

**Client Sample ID:** MW-2  
**Client Project ID:** 104.00367.16002 Healy Power Pt  
**Lab Sample ID:** 1165932005  
**Lab Project ID:** 1165932  
**Collection Date:** 10/03/16 18:22  
**Received Date:** 10/04/16 17:07  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

### Results by Metals by ICP/MS

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<td>1</td>
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<td>Barium</td>
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<td>ug/L</td>
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<td>1</td>
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<tr>
<td>Cadmium</td>
<td>0.250 U</td>
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<td>0.150</td>
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<td>ug/L</td>
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<td>Chromium</td>
<td>1.00 U</td>
<td>2.00</td>
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<tr>
<td>Lead</td>
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<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
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<td>10/13/16 17:15</td>
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<td>Molybdenum</td>
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<td>Selenium</td>
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<tr>
<td>Thallium</td>
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### Batch Information

- **Analytical Batch:** MMS9579  
- **Analytical Method:** EP200.8  
- **Analyst:** VDL  
- **Analytical Date/Time:** 10/13/16 17:15  
- **Container ID:** 1165932005-A  

- **Prep Batch:** MXX30271  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 10/10/16 09:16  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol.:** 50 mL

---

Print Date: 10/19/2016  7:39:13AM

J flagging is activated
**Results of MW-2**

Client Sample ID: MW-2  
Client Project ID: 104.00367.16002 Healy Power Pt  
Lab Sample ID: 1165932005  
Lab Project ID: 1165932  

Collection Date: 10/03/16 18:22  
Received Date: 10/04/16 17:07  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:  

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**Results by Metals Department**

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<th>Parameter</th>
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**Batch Information**

- Prep Batch: MXX30295  
- Prep Method: METHOD  
- Prep Date/Time: 10/14/16 13:02  
- Prep Initial Wt./Vol.: 25 mL  
- Prep Extract Vol.: 50 mL  

- Analytical Batch: MCV5749  
- Analytical Method: EP245.1  
- Analyst: NEG  
- Analytical Date/Time: 10/14/16 19:26  
- Container ID: 1165932005-A
Results of MW-2

Client Sample ID: MW-2
Client Project ID: 104.00367.16002 Healy Power Pt
Lab Sample ID: 1165932005
Lab Project ID: 1165932

Collection Date: 10/03/16 18:22
Received Date: 10/04/16 17:07
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Waters Department

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<td>mg/L</td>
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<tr>
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<td>2.00</td>
<td>0.620</td>
<td>mg/L</td>
<td>10</td>
<td>10/11/16 06:11</td>
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<tr>
<td>Sulfate</td>
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<td>0.620</td>
<td>mg/L</td>
<td>10</td>
<td>10/11/16 06:11</td>
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Batch Information

Analytical Batch: WIC5571
Analytical Method: EPA 300.0
Analyst: ACF
Analytical Date/Time: 10/11/16 06:33
Container ID: 1165932005-B

Prep Batch: WXX11655
Prep Method: METHOD
Prep Date/Time: 10/09/16 19:34
Prep Initial Wt./Vol.: 10 mL
Prep Extract Vol: 10 mL

Parameter        | Result Qual | LOQ/CL | DL  | Units | DF | Date Analyzed |
Total Dissolved Solids | 1540         | 10.0   | 3.10| mg/L  | 1  | 10/10/16 10:02|

Batch Information

Analytical Batch: STS5242
Analytical Method: SM21 2540C
Analyst: KBE
Analytical Date/Time: 10/10/16 10:02
Container ID: 1165932005-C

Print Date: 10/19/2016 7:39:13AM
## Results of MW-6

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<td>Arsenic</td>
<td>3.17 J</td>
<td>5.00</td>
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<td>1</td>
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### Batch Information
- Analytical Batch: MMS9579
- Analytical Method: EP200.8
- Analyst: VDL
- Analytical Date/Time: 10/13/16 17:18
- Container ID: 1165932006-A

### Prep Batch Information
- Prep Batch: MXX30271
- Prep Method: E200.2
- Prep Date/Time: 10/10/16 09:16
- Prep Initial Wt./Vol.: 20 mL
- Prep Extract Vol: 50 mL

---

J flagging is activated
Results of MW-6

Client Sample ID: MW-6
Client Project ID: 104.00367.16002 Healy Power Pt
Lab Sample ID: 1165932006
Lab Project ID: 1165932

Collection Date: 10/04/16 09:31
Received Date: 10/04/16 17:07
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals Department

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Batch Information

Analytical Batch: MCV5749
Analytical Method: EP245.1
Analyst: NEG
Analytical Date/Time: 10/14/16 19:35
Container ID: 1165932006-A

Prep Batch: MXX30295
Prep Method: METHOD
Prep Date/Time: 10/14/16 13:02
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL
## Results of MW-6

**Client Sample ID:** MW-6  
**Client Project ID:** 104.00367.16002 Healy Power Pt  
**Lab Sample ID:** 1165932006  
**Lab Project ID:** 1165932  
**Collection Date:** 10/04/16 09:31  
**Received Date:** 10/04/16 17:07  
**Matrix:** Water (Surface, Eff., Ground)  

### Solids (%): Location:

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### Batch Information

#### Preparatory Batch Information

- **Prep Batch:** WXX11655  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/09/16 19:34  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol.:** 10 mL  

- **Prep Date/Time:** 10/09/16 19:34  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol.:** 10 mL  

### Analytical Batch Information

- **Analytical Batch:** WIC5751  
- **Analytical Method:** EPA 300.0  
- **Analyst:** ACF  
- **Analytical Date/Time:** 10/11/16 07:18  
- **Container ID:** 1165932006-B  
- **Prep Batch:** WXX11655  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/09/16 19:34  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol.:** 10 mL  

- **Analytical Batch:** STS5242  
- **Analytical Method:** SM21 2540C  
- **Analyst:** KBE  
- **Analytical Date/Time:** 10/10/16 10:02  
- **Container ID:** 1165932006-C  

Print Date: 10/19/2016 7:39:13AM  
J flagging is activated
### Results by Metals by ICP/MS

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<tr>
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### Batch Information

- **Prep Batch:** MXX30271
- **Prep Method:** E200.2
- **Prep Date/Time:** 10/10/16 09:16
- **Prep Initial Wt./Vol.:** 20 mL
- **Prep Extract Vol:** 50 mL

---

J flagging is activated
Results of MW-1R

Client Sample ID: MW-1R
Client Project ID: 104.00367.16002 Healy Power Pt
Lab Sample ID: 1165932007
Lab Project ID: 1165932

Collection Date: 10/04/16 10:10
Received Date: 10/04/16 17:07
Matrix: Water (Surface, Eff., Ground)
Solids (%): 
Location: 

Results by Metals Department

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Batch Information

Prep Batch: MXX30295
Prep Method: METHOD
Prep Date/Time: 10/14/16 13:02
Prep Initial Wt./Vol.: 15 mL
Prep Extract Vol: 50 mL

Analytical Batch: MCV5749
Analytical Method: EP245.1
Analyst: NEG
Analytical Date/Time: 10/14/16 19:38
Container ID: 1165932007-A
## Results of MW-1R

**Client Sample ID:** MW-1R  
**Client Project ID:** 104.00367.16002 Healy Power Pt  
**Lab Sample ID:** 1165932007  
**Lab Project ID:** 1165932  
**Collection Date:** 10/04/16 10:10  
**Received Date:** 10/04/16 17:07  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

## Results by Waters Department

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### Batch Information

- **Prep Batch:** WXX11652  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/09/16 19:34  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Extract Vol:** 10 mL  

- **Analytical Batch:** WIC5571  
- **Analytical Method:** EPA 300.0  
- **Analyst:** ACF  
- **Analytical Date/Time:** 10/10/16 19:47  
- **Container ID:** 1165932007-B  

- **Total Dissolved Solids**

  - **Result Qual:** 667  
  - **LOQ/CL:** 10.0  
  - **DL:** 3.10  
  - **Units:** mg/L  
  - **Acceptable Limits:** 1  
  - **Date Analyzed:** 10/10/16 10:02

### Batch Information

- **Prep Batch:** STS5242  
- **Prep Method:** SM21 2540C  
- **Prep Date/Time:** 10/09/16 19:34  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Extract Vol:** 10 mL  

- **Analytical Batch:** STS5242  
- **Analytical Method:** SM21 2540C  
- **Analyst:** KBE  
- **Analytical Date/Time:** 10/10/16 10:02  
- **Container ID:** 1165932007-C
### Results of MW-5

**Client Sample ID:** MW-5  
**Client Project ID:** MW-5.00367.16002 Healy Power Pt  
**Lab Sample ID:** 1165932008  
**Lab Project ID:** 1165932  
**Collection Date:** 10/04/16 11:03  
**Received Date:** 10/04/16 17:07  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

### Results by Metals by ICP/MS

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### Batch Information

**Analytical Batch:** MMS9579  
**Analytical Method:** EP200.8  
**Analyst:** VDL  
**Analytical Date/Time:** 10/13/16 17:24  
**Container ID:** 1165932008-A  
**Prep Batch:** MXX30271  
**Prep Method:** E200.2  
**Prep Date/Time:** 10/10/16 09:16  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol.:** 50 mL

---

Print Date: 10/19/2016 7:39:13AM

J flagging is activated
### Results of MW-5

**Client Sample ID:** MW-5  
**Client Project ID:** 104.00367.16002 Healy Power Pt  
**Lab Sample ID:** 1165932008  
**Lab Project ID:** 1165932  
**Collection Date:** 10/04/16 11:03  
**Received Date:** 10/04/16 17:07  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

### Results by Metals Department

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### Batch Information

- **Prep Batch:** MXX30295
- **Prep Method:** METHOD
- **Prep Date/Time:** 10/14/16 13:02
- **Prep Initial Wt./Vol.:** 25 mL
- **Prep Extract Vol:** 50 mL

- **Analytical Batch:** MCV5749
- **Analytical Method:** EP245.1
- **Analyst:** NEG
- **Analytical Date/Time:** 10/14/16 19:41
- **Container ID:** 1165932008-A
### Results of MW-5

Client Sample ID: **MW-5**  
Client Project ID: 104.00367.16002 Healy Power Pt  
Lab Sample ID: 1165932008  
Lab Project ID: 1165932  
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Received Date: 10/04/16 17:07  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

### Results by Waters Department

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<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
<td>1</td>
<td>10/10/16 23:08</td>
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<tr>
<td>Sulfate</td>
<td>250</td>
<td>4.00</td>
<td>1.24</td>
<td>mg/L</td>
<td>20</td>
<td>10/11/16 12:07</td>
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</tbody>
</table>

### Batch Information

**Analytical Batch:** WIC5571  
**Analytical Method:** EPA 300.0  
**Analyst:** ACF  
**Analytical Date/Time:** 10/10/16 23:30  
**Container ID:** 1165932008-B

**Prep Batch:** WXX11652  
**Prep Method:** METHOD  
**Prep Date/Time:** 10/09/16 19:34  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol:** 10 mL

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<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
</tr>
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<tbody>
<tr>
<td>Total Dissolved Solids</td>
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<td>mg/L</td>
<td>1</td>
<td></td>
<td>10/10/16 10:02</td>
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**Analytical Batch:** STS5242  
**Analytical Method:** SM21 2540C  
**Analyst:** KBE  
**Analytical Date/Time:** 10/10/16 10:02  
**Container ID:** 1165932008-C

---

J flagging is activated
**Results of MW-95**

Client Sample ID: **MW-95**  
Client Project ID: **104.00367.16002 Healy Power Pt**  
Lab Sample ID: **1165932009**  
Lab Project ID: **1165932**

Collection Date: **10/04/16 14:00**  
Received Date: **10/04/16 17:07**  
Matrix: Water (Surface, Eff., Ground)

### Results by Metals by ICP/MS

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Antimony</td>
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<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
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</tr>
<tr>
<td>Arsenic</td>
<td>7.92</td>
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<td>1.50</td>
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<tr>
<td>Barium</td>
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<td>3.00</td>
<td>0.940</td>
<td>ug/L</td>
<td>10/13/16 17:27</td>
</tr>
<tr>
<td>Beryllium</td>
<td>0.200 U</td>
<td>0.400</td>
<td>0.130</td>
<td>ug/L</td>
<td>10/13/16 17:27</td>
</tr>
<tr>
<td>Boron</td>
<td>618</td>
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<td>15.0</td>
<td>ug/L</td>
<td>10/13/16 17:27</td>
</tr>
<tr>
<td>Cadmium</td>
<td>0.250 U</td>
<td>0.500</td>
<td>0.150</td>
<td>ug/L</td>
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</tr>
<tr>
<td>Calcium</td>
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<td>ug/L</td>
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<td>Chromium</td>
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</tr>
<tr>
<td>Cobalt</td>
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<td>1.20</td>
<td>ug/L</td>
<td>10/13/16 17:27</td>
</tr>
<tr>
<td>Lead</td>
<td>0.141 J</td>
<td>0.200</td>
<td>0.0620</td>
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<tr>
<td>Lithium</td>
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<td>ug/L</td>
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</tr>
<tr>
<td>Molybdenum</td>
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<td>Selenium</td>
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<tr>
<td>Thallium</td>
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<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
<td>10/13/16 17:27</td>
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**Batch Information**

- **Prep Batch:** MXX30271  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 10/10/16 09:16  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol:** 50 mL

---

**Print Date:** 10/19/2016 7:39:13AM  
**J flagging is activated**
Results of MW-95

Client Sample ID: MW-95
Client Project ID: 104.00367.16002 Healy Power Pt
Lab Sample ID: 1165932009
Lab Project ID: 1165932

Collection Date: 10/04/16 14:00
Received Date: 10/04/16 17:07
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

<table>
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<tr>
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<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
<th>DF</th>
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<th>Date Analyzed</th>
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<tbody>
<tr>
<td>Mercury</td>
<td>0.100 U</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
<td>1</td>
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Batch Information

Analytical Batch: MCV5749
Analytical Method: EP245.1
Analyst: NEG
Analytical Date/Time: 10/14/16 19:44
Container ID: 1165932009-A

Prep Batch: MXX30295
Prep Method: METHOD
Prep Date/Time: 10/14/16 13:02
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL
### Results of MW-95

- **Client Sample ID:** MW-95
- **Client Project ID:** 104.00367.16002 Healy Power Pt
- **Lab Sample ID:** 1165932009
- **Lab Project ID:** 1165932
- **Collection Date:** 10/04/16 14:00
- **Received Date:** 10/04/16 17:07
- **Matrix:** Water (Surface, Eff., Ground)

### Results by Waters Department

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<tr>
<th>Parameter</th>
<th>Result Qual</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
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<th>Allowable Limits</th>
<th>Date Analyzed</th>
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</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>66.2</td>
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<td>10</td>
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<tr>
<td>Fluoride</td>
<td>4.34</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
<td>1</td>
<td></td>
<td>10/10/16 23:52</td>
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<tr>
<td>Sulfate</td>
<td>249</td>
<td>4.00</td>
<td>1.24</td>
<td>mg/L</td>
<td>20</td>
<td></td>
<td>10/11/16 12:30</td>
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</table>

### Batch Information

- **Analytical Batch:** WIC5571
- **Analytical Method:** EPA 300.0
- **Analyst:** ACF
- **Analytical Date/Time:** 10/11/16 05:49
- **Container ID:** 1165932009-B

- **Prep Batch:** WXX11655
- **Prep Method:** METHOD
- **Prep Date/Time:** 10/09/16 19:34
- **Prep Initial Wt./Vol.:** 10 mL
- **Prep Extract Vol:** 10 mL

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<th>Date Analyzed</th>
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<td>mg/L</td>
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### Batch Information

- **Analytical Batch:** STS5242
- **Analytical Method:** SM21 2540C
- **Analyst:** KBE
- **Analytical Date/Time:** 10/10/16 10:02
- **Container ID:** 1165932009-C

---

J flagging is activated
## Results of SW-1

Client Sample ID: **SW-1**  
Client Project ID: **104.00367.16002 Healy Power Pt**  
Lab Sample ID: 1165932010  
Lab Project ID: 1165932  
Collection Date: 10/04/16 11:30  
Received Date: 10/04/16 17:07  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

### Results by Metals by ICP/MS

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<tr>
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<td>Arsenic</td>
<td>3.46 J</td>
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<td>1.50</td>
<td>ug/L</td>
<td>1</td>
<td>15.00</td>
<td>10/13/16 17:36</td>
</tr>
<tr>
<td>Barium</td>
<td>551</td>
<td>3.00</td>
<td>0.940</td>
<td>ug/L</td>
<td>1</td>
<td>13.00</td>
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<tr>
<td>Beryllium</td>
<td>0.200 U</td>
<td>0.400</td>
<td>0.130</td>
<td>ug/L</td>
<td>1</td>
<td>0.200</td>
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<tr>
<td>Boron</td>
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</tr>
<tr>
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<td>0.500</td>
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<td>ug/L</td>
<td>1</td>
<td>1.50</td>
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<tr>
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<td>150</td>
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<tr>
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<tr>
<td>Cobalt</td>
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<td>4.00</td>
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<td>ug/L</td>
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<td>14.00</td>
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<td>Molybdenum</td>
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<td>Selenium</td>
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<td>ug/L</td>
<td>1</td>
<td>15.00</td>
<td>10/13/16 17:36</td>
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<tr>
<td>Thallium</td>
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<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
<td>1</td>
<td>11.00</td>
<td>10/13/16 17:36</td>
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### Batch Information

Analytical Batch: **MMS9579**  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 10/13/16 17:36  
Container ID: **1165932010-A**

Prep Batch: **MXX30271**  
Prep Method: E200.2  
Prep Date/Time: 10/10/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/19/2016 7:39:13AM  
J flagging is activated
**Results of SW-1**

Client Sample ID: **SW-1**
Client Project ID: **104.00367.16002 Healy Power Pt**
Lab Sample ID: **1165932010**
Lab Project ID: **1165932**

Collection Date: **10/04/16 11:30**
Received Date: **10/04/16 17:07**
Matrix: Water (Surface, Eff., Ground)

**Results by Metals Department**

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<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
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<tbody>
<tr>
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<td>0.0620</td>
<td>ug/L</td>
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**Batch Information**

Analytical Batch: **MCV5749**
Analytical Method: **EP245.1**
Analyst: **NEG**
Analytical Date/Time: **10/14/16 19:47**
Container ID: **1165932010-A**

Prep Batch: **MXX30295**
Prep Method: **METHOD**
Prep Date/Time: **10/14/16 13:02**
Prep Initial Wt./Vol.: **25 mL**
Prep Extract Vol: **50 mL**
### Results of SW-1

**Client Sample ID:** SW-1  
**Client Project ID:** 104.00367.16002 Healy Power Pt  
**Lab Sample ID:** 1165932010  
**Lab Project ID:** 1165932  
**Collection Date:** 10/04/16 11:30  
**Received Date:** 10/04/16 17:07  
**Matrix:** Water (Surface, Eff., Ground)

### Lab Information

**Solids (%):**

**Location:**

### Results by Waters Department

<table>
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<tr>
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<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
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</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>69.9</td>
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<td>5</td>
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<tr>
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<td>mg/L</td>
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### Batch Information

**Prep Batch:** WXX11655  
**Prep Method:** METHOD  
**Prep Date/Time:** 10/09/16 19:34  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol.:** 10 mL

### Total Dissolved Solids

**Allowable Limits**: 10/11/16 10:30

<table>
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<th>Units</th>
<th>DF</th>
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### Batch Information

**Analytical Batch:** WIC5571  
**Analytical Method:** EPA 300.0  
**Analyst:** ACF  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol.:** 10 mL

**Analytical Batch:** STS5249  
**Analytical Method:** SM21 2540C  
**Analyst:** LLP  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol.:** 10 mL

---

Print Date: 10/19/2016 7:39:13AM  
J flagging is activated
**Method Blank**

Blank ID: MB for HBN 1745290 [MXX/30271]  
Blank Lab ID: 1357684  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1165932001, 1165932002, 1165932003, 1165932004, 1165932005, 1165932006, 1165932007, 1165932008, 1165932009, 1165932010

---

**Results by EP200.8**

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<td>ug/L</td>
</tr>
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<td>1.50</td>
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</tr>
<tr>
<td>Beryllium</td>
<td>0.200U</td>
<td>0.400</td>
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<td>ug/L</td>
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<td>Boron</td>
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<td>50.0</td>
<td>15.0</td>
<td>ug/L</td>
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<td>ug/L</td>
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<tr>
<td>Chromium</td>
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<td>2.00</td>
<td>0.620</td>
<td>ug/L</td>
</tr>
<tr>
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<td>4.00</td>
<td>1.20</td>
<td>ug/L</td>
</tr>
<tr>
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<td>0.0620</td>
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<td>0.310</td>
<td>ug/L</td>
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**Batch Information**

- Analytical Batch: MMS9579  
- Analytical Method: EP200.8  
- Instrument: Perkin Elmer NexIon P5  
- Analyst: VDL  
- Analytical Date/Time: 10/13/2016 4:48:13PM

- Prep Batch: MXX30271  
- Prep Method: E200.2  
- Prep Date/Time: 10/10/2016 9:16:22AM  
- Prep Initial Wt./Vol.: 20 mL  
- Prep Extract Vol: 50 mL

---

Print Date: 10/19/2016 7:39:22AM
## Blank Spike Summary

**Blank Spike ID:** LCS for HBN 1165932 [MXX30271]

**Blank Spike Lab ID:** 1357685

**Date Analyzed:** 10/13/2016  16:51

**Matrix:** Water (Surface, Eff., Ground)

**QC for Samples:** 1165932001, 1165932002, 1165932003, 1165932004, 1165932005, 1165932006, 1165932007, 1165932008, 1165932009, 1165932010

### Results by EP200.8

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>1000</td>
<td>1010</td>
<td>101</td>
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<tr>
<td>Arsenic</td>
<td>1000</td>
<td>1030</td>
<td>103</td>
<td>(85-115 )</td>
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<tr>
<td>Barium</td>
<td>1000</td>
<td>1000</td>
<td>100</td>
<td>(85-115 )</td>
</tr>
<tr>
<td>Beryllium</td>
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<td>Boron</td>
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<td>1080</td>
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<td>Calcium</td>
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<tr>
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<td>Lead</td>
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<td>Thallium</td>
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<td>(85-115 )</td>
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### Batch Information

- **Analytical Batch:** MMS9579
- **Analytical Method:** EP200.8
- **Instrument:** Perkin Elmer NexIon P5
- **Analyst:** VDL

- **Prep Batch:** MXX30271
- **Prep Method:** E200.2
- **Prep Date/Time:** 10/10/2016  09:16
- **Spike Init Wt./Vol.:** 1000 ug/L  Extract Vol: 50 mL
- **Dupe Init Wt./Vol.:** Extract Vol:
Matrix Spike Summary

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<thead>
<tr>
<th>Parameter</th>
<th>Sample</th>
<th>Matrix Spike (ug/L)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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Batch Information

- Analytical Batch: MMS9579
- Analytical Method: EP200.8
- Instrument: Perkin Elmer NexIon P5
- Analyst: VDL
- Analytical Date/Time: 10/13/2016 5:03:13PM

- Prep Batch: MXX30271
- Prep Method: DW Digest for Metals on ICP-MS
- Prep Date/Time: 10/10/2016 9:16:22AM
- Prep Initial Wt./Vol.: 20.00mL
- Prep Extract Vol: 50.00mL
### Matrix Spike Summary

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sample</th>
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<th>Result</th>
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<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
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### Batch Information

Analytical Batch: MMS9579
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: VDL
Analytical Date/Time: 10/13/2016 5:42:11PM

Prep Batch: MXX30271
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 10/10/2016 9:16:22AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL
**Method Blank**

Blank ID: MB for HBN 1745973 [MXX/30295]  
Blank Lab ID: 1359652  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1165932001, 1165932002, 1165932003, 1165932004, 1165932005, 1165932006, 1165932007, 1165932008, 1165932009, 1165932010

**Results by EP245.1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
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</thead>
<tbody>
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<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
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**Batch Information**

- Analytical Batch: MCV5749  
- Analytical Method: EP245.1  
- Instrument: PSA Millennium mercury AA  
- Analyst: NEG  
- Analytical Date/Time: 10/14/2016 6:51:29PM

- Prep Batch: MXX30295  
- Prep Method: METHOD  
- Prep Date/Time: 10/14/2016 1:02:00PM  
- Prep Initial Wt./Vol.: 25 mL  
- Prep Extract Vol: 50 mL

Print Date: 10/19/2016 7:39:26AM
Blank Spike Summary

Blank Spike ID: LCS for HBN 1165932 [MXX30295]
Blank Spike Lab ID: 1359653
Date Analyzed: 10/14/2016 18:54

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165932001, 1165932002, 1165932003, 1165932004, 1165932005, 1165932006, 1165932007, 1165932008, 1165932009, 1165932010

Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
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</thead>
<tbody>
<tr>
<td>Mercury</td>
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<td>(85-115)</td>
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Batch Information

Analytical Batch: MCV5749
Analytical Method: EP245.1
Instrument: PSA Millennium mercury AA
Analyst: NEG

Prep Batch: MXX30295
Prep Method: METHOD
Prep Date/Time: 10/14/2016 13:02
Spike Init Wt./Vol.: 4 ug/L Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:
### Matrix Spike Summary

Original Sample ID: 1165859001  
MS Sample ID: 1359654 MS  
MSD Sample ID:  
Analysis Date: 10/14/2016 19:00  
Analysis Date: 10/14/2016 19:03  
Analysis Date:  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples: 1165932001, 1165932002, 1165932003, 1165932004, 1165932005, 1165932006, 1165932007, 1165932008, 1165932009, 1165932010  

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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<tbody>
<tr>
<td>Mercury</td>
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### Batch Information

Analytical Batch: MCV5749  
Analytical Method: EP245.1  
Instrument: PSA Millennium mercury AA  
Analyst: NEG  
Analytical Date/Time: 10/14/2016 7:03:15PM  

Prep Batch: MXX30295  
Prep Method: Digestion Mercury 245.1 (W)  
Prep Date/Time: 10/14/2016 1:02:00PM  
Prep Initial Wt./Vol.: 25.00mL  
Prep Extract Vol: 50.00mL
### Matrix Spike Summary

| Original Sample ID: 1165974001 | Analysis Date: 10/14/2016 19:50 |
| MS Sample ID: 1359655 MS | Analysis Date: 10/14/2016 19:53 |
| MSD Sample ID: | Analysis Date: |
| QC for Samples: 1165932001, 1165932002, 1165932003, 1165932004, 1165932005, 1165932006, 1165932007, 1165932008, 1165932009, 1165932010 | Matrix: Water (Surface, Eff., Ground) |

### Results by EP245.1

<table>
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<tr>
<th>Parameter</th>
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<th>Spike Duplicate (ug/L)</th>
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<td>Rec (%)</td>
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### Batch Information

- **Prep Batch**: MXX30295
- **Prep Method**: Digestion Mercury 245.1 (W)
- **Prep Date/Time**: 10/14/2016 1:02:00PM
- **Prep Initial Wt./Vol.**: 25.00mL
- **Prep Extract Vol**: 50.00mL

- **Analytical Batch**: MCV5749
- **Analytical Method**: EP245.1
- **Instrument**: PSA Millennium mercury AA
- **Analyst**: NEG
- **Analytical Date/Time**: 10/14/2016 7:53:07PM
<table>
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<th>Parameter</th>
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<th>Units</th>
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</thead>
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<td>Total Dissolved Solids</td>
<td>4.00J</td>
<td>10.0</td>
<td>3.10</td>
<td>mg/L</td>
</tr>
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**Batch Information**

- Analytical Batch: STS5242
- Analytical Method: SM21 2540C
- Instrument: 
- Analyst: KBE
- Analytical Date/Time: 10/10/2016 10:02:39AM
## Duplicate Sample Summary

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<td>1165915001</td>
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## Results by SM21 2540C

<table>
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<tr>
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<th>Original</th>
<th>Duplicate</th>
<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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<tbody>
<tr>
<td>Total Dissolved Solids</td>
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### Batch Information

- Analytical Batch: STS5242
- Analytical Method: SM21 2540C
- Instrument: SM21 2540C
- Analyst: KBE
## Blank Spike Summary

Blank Spike ID: LCS for HBN 1165932 [STS5242]
Blank Spike Lab ID: 1357724
Date Analyzed: 10/10/2016 10:02
QC for Samples: 1165932001, 1165932002, 1165932003, 1165932004, 1165932005, 1165932006, 1165932007, 1165932008, 1165932009

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Blank Spike (mg/L)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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</thead>
<tbody>
<tr>
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<td>335</td>
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<td>330</td>
<td>334</td>
<td>101</td>
<td>(75-125)</td>
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<td>(&lt;5)</td>
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## Batch Information

Analytical Batch: STS5242
Analytical Method: SM21 2540C
Instrument: Analyst: KBE
Prep Batch: Prep Method: Prep Date/Time:
Spike Init Wt./Vol.: 330 mg/L Extract Vol: 100 mL
Dupe Init Wt./Vol.: 330 mg/L Extract Vol: 100 mL
### Method Blank

Blank ID: MB for HBN 1745395 [STS/5249]  
Blank Lab ID: 1358019  
QC for Samples:  
1165932010  
Matrix: Water (Surface, Eff., Ground)

### Results by SM21 2540C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
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</thead>
<tbody>
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<td>Total Dissolved Solids</td>
<td>5.00U</td>
<td>10.0</td>
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<td>mg/L</td>
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### Batch Information

- Analytical Batch: STS5249  
- Analytical Method: SM21 2540C  
- Instrument:  
- Analyst: LLP  
- Analytical Date/Time: 10/11/2016 10:30:40AM

Print Date: 10/19/2016 7:39:36AM

SGS North America Inc.  
200 West Potter Drive Anchorage, AK 95518  
Phone: 907.562.2343  
Fax: 907.561.5301  
Website: www.us.sgs.com
# Duplicate Sample Summary

- **Original Sample ID:** 1166011001
- **Duplicate Sample ID:** 1358022
- **Analysis Date:** 10/11/2016 10:30
- **Matrix:** Water (Surface, Eff., Ground)
- **QC for Samples:** 1165932010

## Results by SM21 2540C

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<th>Original</th>
<th>Duplicate</th>
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<th>RPD (%)</th>
<th>RPD CL</th>
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<tbody>
<tr>
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## Batch Information

- **Analytical Batch:** STS5249
- **Analytical Method:** SM21 2540C
- **Instrument:** LLP
- **Analyst:** LLP

---

Print Date: 10/19/2016 7:39:37AM

SGS North America Inc. | 200 West Potter Drive Anchorage, AK 95518 | t 907.562.2343 f 907.561.5301 www.us.sgs.com | Member of SGS Group

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**Duplicate Sample Summary**

Original Sample ID: 1168680001  
Duplicate Sample ID: 1358044  
Analysis Date: 10/11/2016 10:30  
Matrix: Water (Surface, Eff., Ground)

**Results by SM21 2540C**

<table>
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<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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<tbody>
<tr>
<td>Total Dissolved Solids</td>
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<td>(&lt; 5 )</td>
</tr>
</tbody>
</table>

**Batch Information**

Analytical Batch: STS5249
Analytical Method: SM21 2540C
Instrument: LLP
Analyst: LLP
Blank Spike Summary

Blank Spike ID: LCS for HBN 1165932 [STS5249]
Blank Spike Lab ID: 1358020
Date Analyzed: 10/11/2016 10:30
QC for Samples: 1165932010

Spike Duplicate ID: LCSD for HBN 1165932 [STS5249]
Spike Duplicate Lab ID: 1358021
Matrix: Water (Surface, Eff., Ground)

Results by SM21 2540C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Blank Spike (mg/L)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL (mg/L)</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td></td>
<td>330</td>
<td>333</td>
<td>101</td>
<td>330</td>
<td>333</td>
<td>101</td>
<td>(75-125)</td>
<td>0.00</td>
<td>(&lt;5)</td>
</tr>
</tbody>
</table>

Batch Information

Analytical Batch: STS5249
Analytical Method: SM21 2540C
Instrument: 
Analyst: LLP

Prep Batch: 
Prep Method: 
Prep Date/Time: 
Spike Init Wt./Vol.: 330 mg/L Extract Vol: 100 mL
Dupe Init Wt./Vol.: 330 mg/L Extract Vol: 100 mL
### Method Blank

Blank ID: MB for HBN 1745357 [WXX/11652]  
Matrix: Water (Surface, Eff., Ground)  
Blank Lab ID: 1357969  
QC for Samples: 1165932001, 1165932002, 1165932003, 1165932004, 1165932007, 1165932008

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
<tr>
<td>Sulfate</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

### Batch Information

- **Analytical Batch:** WIC5571  
- **Analytical Method:** EPA 300.0  
- **Instrument:** Metrohm 733 DX2  
- **Analyst:** ACF  
- **Analytical Date/Time:** 10/10/2016 9:21:18AM  
- **Prep Batch:** WXX11652  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/9/2016 7:34:00PM  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL
## Blank Spike Summary

Blank Spike ID: LCS for HBN 1165932 [WXX11652]  
Blank Spike Lab ID: 1357970  
Date Analyzed: 10/10/2016 09:43  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples: 1165932001, 1165932002, 1165932003, 1165932004, 1165932007, 1165932008

## Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>5</td>
<td>4.99</td>
<td>100</td>
<td>(90-110)</td>
</tr>
<tr>
<td>Fluoride</td>
<td>5</td>
<td>4.94</td>
<td>99</td>
<td>(90-110)</td>
</tr>
<tr>
<td>Sulfate</td>
<td>5</td>
<td>5.02</td>
<td>100</td>
<td>(90-110)</td>
</tr>
</tbody>
</table>

## Batch Information

Analytical Batch: WIC5571  
Analytical Method: EPA 300.0  
Instrument: Metrohm 733 DX2  
Analyst: ACF  
Prep Batch: WXX11652  
Prep Method: METHOD  
Prep Date/Time: 10/09/2016 19:34  
Spike Init Wt./Vol.: 5 mg/L  
Extract Vol: 10 mL  
Dupe Init Wt./Vol.: Extract Vol:
Matrix Spike Summary

Original Sample ID: 1165987001
MS Sample ID: 1357971 MS
MSD Sample ID: 1357972 MSD
QC for Samples: 1165932001, 1165932002, 1165932003, 1165932004, 1165932007, 1165932008

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Matrix Spike (mg/L)</th>
<th>Spike Duplicate (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sample</td>
<td>Spike</td>
</tr>
<tr>
<td>Chloride</td>
<td>3.14</td>
<td>5.00</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.200U</td>
<td>5.00</td>
</tr>
<tr>
<td>Sulfate</td>
<td>2.43</td>
<td>5.00</td>
</tr>
</tbody>
</table>

Batch Information

Analytical Batch: WIC5571
Analytical Method: EPA 300.0
Instrument: Metrohm 733 DX2
Analyst: ACF
Analysis Date/Time: 10/10/2016 10:29:16AM

Prep Batch: WXX11652
Prep Method: EPA 300.0 Extraction Waters/Liquids
Prep Date/Time: 10/9/2016 7:34:00PM
Prep Initial Wt./Vol.: 10.00mL
Prep Extract Vol: 10.00mL
### Matrix Spike Summary

Original Sample ID: 1357973
MS Sample ID: 1357974 MS
MSD Sample ID: 1357975 MSD

Matrix: Water (Surface, Eff., Ground)

Qc for Samples: 1165932001, 1165932002, 1165932003, 1165932004, 1165932007, 1165932008

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sample</th>
<th>Spike (mg/L)</th>
<th>Result (mg/L)</th>
<th>Rec (%)</th>
<th>Spike (mg/L)</th>
<th>Result (mg/L)</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>3.14</td>
<td>5.00</td>
<td>8.37</td>
<td>105</td>
<td>5.00</td>
<td>8.49</td>
<td>107</td>
<td>90-110</td>
<td>1.50 (&lt; 15)</td>
<td></td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.151J</td>
<td>5.00</td>
<td>5.05</td>
<td>98</td>
<td>5.00</td>
<td>5.17</td>
<td>100</td>
<td>90-110</td>
<td>2.20 (&lt; 15)</td>
<td></td>
</tr>
<tr>
<td>Sulfate</td>
<td>2.43</td>
<td>5.00</td>
<td>7.83</td>
<td>108</td>
<td>5.00</td>
<td>7.95</td>
<td>110</td>
<td>90-110</td>
<td>1.50 (&lt; 15)</td>
<td></td>
</tr>
</tbody>
</table>

### Batch Information

Analytical Batch: WIC5571
Analytical Method: EPA 300.0
Instrument: Metrohm 733 DX2
Analyst: ACF
Analytical Date/Time: 10/10/2016 10:29:16AM

Prep Batch: WXX11652
Prep Method: EPA 300.0 Extraction Waters/Liquids
Prep Date/Time: 10/9/2016 7:34:00PM
Prep Initial Wt./Vol.: 10.00mL
Prep Extract Vol: 10.00mL

Print Date: 10/19/2016 7:39:44AM
**Method Blank**

Blank ID: MB for HBN 1745715 [WXX/11655]  
Blank Lab ID: 1358959  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1165932005, 1165932006, 1165932009, 1165932010

**Results by EPA 300.0**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
<tr>
<td>Sulfate</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

**Batch Information**

Analytical Batch: WIC5571  
Analytical Method: EPA 300.0  
Instrument: Metrohm 733 DX2  
Analyst: ACF  
Analytical Date/Time: 10/11/2016 1:21:54AM  
Prep Batch: WXX11655  
Prep Method: METHOD  
Prep Date/Time: 10/9/2016 7:34:00PM  
Prep Initial Wt./Vol.: 10 mL  
Prep Extract Vol: 10 mL
### Blank Spike Summary

Blank Spike ID: LCS for HBN 1165932 [WXX11655]
Blank Spike Lab ID: 1358960
Date Analyzed: 10/11/2016 01:44

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165932005, 1165932006, 1165932009, 1165932010

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>5</td>
<td>5.00</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Fluoride</td>
<td>5</td>
<td>5.01</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Sulfate</td>
<td>5</td>
<td>5.06</td>
<td>101</td>
<td></td>
</tr>
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</table>

### Batch Information

Analytical Batch: WIC5571
Analytical Method: EPA 300.0
Instrument: Metrohm 733 DX2
Analyst: ACF

Prep Batch: WXX11655
Prep Method: METHOD
Prep Date/Time: 10/09/2016 19:34
Spike Init Wt./Vol.: 5 mg/L Extract Vol: 10 mL
Dupe Init Wt./Vol.: Extract Vol:
### Matrix Spike Summary

Original Sample ID: 1358961  
MS Sample ID: 1358962 MS  
MSD Sample ID: 1358963 MSD  

QC for Samples: 1165932005, 1165932006, 1165932009, 1165932010

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sample</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>5.38</td>
<td>5.00</td>
<td>10.5</td>
<td>102</td>
<td>5.00</td>
<td>11.2</td>
<td>117</td>
<td>90-110</td>
<td>7.00</td>
<td>(&lt; 15 )</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.162J</td>
<td>5.00</td>
<td>5.09</td>
<td>99</td>
<td>5.00</td>
<td>6.03</td>
<td>117</td>
<td>90-110</td>
<td>16.80</td>
<td>(&lt; 15 )</td>
</tr>
<tr>
<td>Sulfate</td>
<td>0.177J</td>
<td>5.00</td>
<td>5.16</td>
<td>100</td>
<td>5.00</td>
<td>6.26</td>
<td>122</td>
<td>90-110</td>
<td>19.40</td>
<td>(&lt; 15 )</td>
</tr>
</tbody>
</table>

### Batch Information

Analytical Batch: WIC5571  
Analytical Method: EPA 300.0  
Instrument: Metrohm 733 DX2  
Analyst: ACF  
Analytical Date/Time: 10/11/2016 2:28:44AM

Prep Batch: WXX11655  
Prep Method: EPA 300.0 Extraction Waters/Liquids  
Prep Date/Time: 10/9/2016 7:34:00PM  
Prep Initial Wt./Vol.: 10.00mL  
Prep Extract Vol: 10.00mL
### Instructions:
Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

#### Section 3

<table>
<thead>
<tr>
<th># CONTAINERS</th>
<th>Type</th>
<th>Preservative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C =</td>
<td></td>
</tr>
<tr>
<td></td>
<td>COMP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>G =</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GRAB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MI =</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Multi</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Incremental Soils</td>
<td></td>
</tr>
</tbody>
</table>

#### Remarks/LOC ID

<table>
<thead>
<tr>
<th>REMARKS/LOC ID</th>
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</thead>
</table>

#### Section 4

<table>
<thead>
<tr>
<th>DOD Project?</th>
<th>Data Deliverable Requirements:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>2311</td>
</tr>
</tbody>
</table>

#### Cooler ID

<table>
<thead>
<tr>
<th>Cooler ID</th>
</tr>
</thead>
</table>

#### Requested Turnaround Time and/or Special Instructions:

- (See attached Sample Receipt Form)

#### Temp Blank °C:

- Ambient [ ]

### Chain of Custody Seal:

- (Circle) INTACT
- (Circle) BROKEN
- (Circle) ABSENT
### Review Criteria

<table>
<thead>
<tr>
<th>Y/N (yes/no)</th>
<th>Exceptions Noted below</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>exemption permitted if sampler hand carries/delivers.</td>
</tr>
<tr>
<td></td>
<td><strong>exemption permitted if chilled &amp; collected &lt;8hrs ago or chilling not required (i.e., waste, oil)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>If &gt;6°C, were samples collected &lt;8 hours ago?</strong></td>
</tr>
<tr>
<td></td>
<td>If &lt;0°C, were sample containers ice free?</td>
</tr>
</tbody>
</table>

If samples received without a temperature blank, the “cooler temperature” will be documented in lieu of the temperature blank & “COOLER TEMP” will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note “ambient” or “chilled”.

Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.

Note: Refer to form F-083 “Sample Guide” for hold times.

---

### Exceptions Noted below

- **Y** Were Custody Seals intact? Note # & location
- **Y** COC accompanied samples?
- **Y** Temperature blank compliant* (i.e., 0-6 °C after CF)?
- **Y** Were samples received within hold time?
- **Y** Do samples match COC** (i.e., sample IDs, dates/times collected)?
- **Y** Were analyses requested unambiguous?
- **Y** Were proper containers (type/mass/volume/preservative***used?**

---

### Additional notes (if applicable):

- Radium Samples moved to WO: 1165933.
### Sample Containers and Preservatives

<table>
<thead>
<tr>
<th>Container Id</th>
<th>Preservative</th>
<th>Container Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1165932001-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165932001-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932001-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932002-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165932002-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932002-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932003-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165932003-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932003-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932004-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165932004-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932004-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932005-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165932005-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932005-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932006-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165932006-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932006-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932007-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165932007-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932007-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932008-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165932008-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932008-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932009-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165932009-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932009-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932010-A</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165932010-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1165932010-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
</tbody>
</table>

**Container Condition Glossary**

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

- **OK** - The container was received at an acceptable pH for the analysis requested.
- **BU** - The container was received with headspace greater than 6mm.
- **DM** - The container was received damaged.
- **FR** - The container was received frozen and not usable for Bacteria or BOD analyses.
- **PA** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
- **PH** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

10/4/2016
Dear Heather Simon,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

______________________________
Justin Nelson
Project Manager
Justin.Nelson@sgs.com
WS Client: **Golden Valley Electric Association**  
SGS Project: **1165933**  
Project Name/Site: **104.00367.16002 Healy Power Pt**  
Project Contact: **Heather Simon**

Refer to sample receipt form for information on sample condition.

**MW-7 (1165933001) PS**  
Radium 226/228 were analyzed by ACZ Laboratories of Steamboat Springs, CO.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.*
<table>
<thead>
<tr>
<th>Client Sample ID</th>
<th>Lab Sample ID</th>
<th>Collected</th>
<th>Received</th>
<th>Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-7</td>
<td>1165933001</td>
<td>10/03/2016</td>
<td>10/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
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<td>MW-8</td>
<td>1165933002</td>
<td>10/03/2016</td>
<td>10/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-4</td>
<td>1165933003</td>
<td>10/03/2016</td>
<td>10/04/2016</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-3</td>
<td>1165933004</td>
<td>10/03/2016</td>
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<td>Water (Surface, Eff., Ground)</td>
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<tr>
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<td>10/04/2016</td>
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</tr>
<tr>
<td>SW-1</td>
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### Section 3

<table>
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<tr>
<th>Sample Identification</th>
<th>Date/Time</th>
<th>Matrix/Matrix Code</th>
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</thead>
<tbody>
<tr>
<td>1 AC</td>
<td>10/2/16</td>
<td>14:15</td>
</tr>
<tr>
<td>2 AC</td>
<td>10/3/16</td>
<td>16:17</td>
</tr>
<tr>
<td>3 AC</td>
<td>10/3/16</td>
<td>16:17</td>
</tr>
<tr>
<td>4 AC</td>
<td>10/3/16</td>
<td>17:35</td>
</tr>
<tr>
<td>5 AC</td>
<td>10/3/16</td>
<td>18:22</td>
</tr>
<tr>
<td>6 AC</td>
<td>10/4/16</td>
<td>09:31</td>
</tr>
<tr>
<td>7 AC</td>
<td>10/6/16</td>
<td>11:10</td>
</tr>
<tr>
<td>8 AC</td>
<td>10/5/16</td>
<td>11:05</td>
</tr>
<tr>
<td>9 AC</td>
<td>10/5/16</td>
<td>11:00</td>
</tr>
<tr>
<td>10 AC</td>
<td>10/5/16</td>
<td>11:00</td>
</tr>
</tbody>
</table>

### Section 4

- **DOD Project?** Yes
- **Data Deliverable Requirements:**
  - 
  - 

### Section 5

- **Relinquished By (1):**
  - Date: 10/2/16
  - Time: 14:15
  - Received By: 

- **Relinquished By (2):**
  - Date: 10/3/16
  - Time: 16:17
  - Received By: 

- **Relinquished By (3):**
  - Date: 10/3/16
  - Time: 17:35
  - Received By: 

- **Relinquished By (4):**
  - Date: 10/4/16
  - Time: 17:07
  - Received For Laboratory By: 

---

**Instructions:** Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

---

[http://www.sgs.com/terms-and-conditions](http://www.sgs.com/terms-and-conditions)
**Note: Refer to form F-083 "Sample Guide" for hold times.**

<table>
<thead>
<tr>
<th>Review Criteria</th>
<th>Y/N (yes/no)</th>
<th>Exceptions Noted below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were Custody Seals intact? Note # &amp; location</td>
<td>Y</td>
<td>exemption permitted if sampler hand carries/delivers.</td>
</tr>
<tr>
<td>COC accompanied samples?</td>
<td>Y</td>
<td>absent</td>
</tr>
<tr>
<td>Temperature blank compliant* (i.e., 0-6 °C after CF)?</td>
<td>Y, N</td>
<td><strong>exemption permitted if chilled &amp; collected &lt;8hrs ago or chilling not required (i.e., waste, oil)</strong></td>
</tr>
</tbody>
</table>

If samples received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".

Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.

<table>
<thead>
<tr>
<th>Review Criteria</th>
<th>Y/N (yes/no)</th>
<th>Exceptions Noted below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were samples received within hold time?</td>
<td>Y</td>
<td>*If &gt;6°C, were samples collected &lt;8 hours ago?</td>
</tr>
<tr>
<td>Do samples match COC** (i.e., sample IDs,dates/times collected)?</td>
<td>Y</td>
<td>**Note: If times differ &lt;1hr, record details &amp; login per COC.</td>
</tr>
<tr>
<td>Were analyses requested unambiguous?</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Were proper containers (type/mass/volume/preservative****)used?</td>
<td>Y</td>
<td>***Exemption permitted for metals (e.g.200.8/6020A).</td>
</tr>
</tbody>
</table>

**IF APPLICABLE**

<table>
<thead>
<tr>
<th>Review Criteria</th>
<th>Y/N (yes/no)</th>
<th>Exceptions Noted below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were all VOA vials free of headspace (i.e., bubbles ≤ 6mm)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were all soil VOAs field extracted with MeOH+BFB?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note to Client:** Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.

**Additional notes (if applicable):**

8mL HNO₃ added to each sample bottle from lot LW09-0463-09-09

All of the containers were from work order 1165932, and put on this separate work order 1165933.
## Sample Containers and Preservatives

<table>
<thead>
<tr>
<th>Container Id</th>
<th>Preservative</th>
<th>Container Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1165933001-A</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165933001-B</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165933001-C</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165933002-A</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165933002-B</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165933002-C</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165933003-A</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165933003-B</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165933003-C</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165933004-A</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165933004-B</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165933004-C</td>
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<td>1165933005-A</td>
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<tr>
<td>1165933005-B</td>
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<td>1165933005-C</td>
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<tr>
<td>1165933006-A</td>
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<tr>
<td>1165933006-B</td>
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<td>1165933006-C</td>
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<td>OK</td>
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<tr>
<td>1165933007-A</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165933007-B</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165933007-C</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165933008-A</td>
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<tr>
<td>1165933008-B</td>
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<td>OK</td>
</tr>
<tr>
<td>1165933008-C</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165933009-A</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
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<td>1165933009-B</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165933009-C</td>
<td>HNO3 to pH &lt; 2</td>
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<td>1165933010-A</td>
<td>HNO3 to pH &lt; 2</td>
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<tr>
<td>1165933010-B</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1165933010-C</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
</tbody>
</table>

### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

- **OK** - The container was received at an acceptable pH for the analysis requested.
- **BU** - The container was received with headspace greater than 6mm.
- **DM** - The container was received damaged.
- **FR** - The container was received frozen and not usable for Bacteria or BOD analyses.
- **PA** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
- **PH** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

10/4/2016
Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 12, 2016. This project has been assigned to ACZ's project number, L33556. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L33556. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 21, 2016. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Max Janicek has reviewed and approved this report.
SGS Environmental Services Inc. - Alaska

Project ID:  1165933
ACZ Project ID:  L33556

**Sample Receipt**

ACZ Laboratories, Inc. (ACZ) received 10 drinking water samples from SGS Environmental Services Inc. - Alaska on October 12, 2016. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ’s computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L33556. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

**Holding Times**

All analyses were performed within EPA recommended holding times.

**Sample Analysis**

These samples were analyzed for radiochemistry parameters. The individual methods are referenced on both the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

The Radium-228 results for L33556 have been qualified with the N1 flag on the extended qualifier report. The chemist noted that the sample duplicate RPD exceeded acceptance limits (see QC Summary). Insufficient sample existed to perform reanalysis; all other QC criteria considered within range. Comparison to historical data may be necessary.
SGS Environmental Services Inc. - Alaska

Project ID: 1165933
Sample ID: MW-7
Locator:

ACZ Sample ID: L33556-01
Date Sampled: 10/03/16 14:15
Date Received: 10/12/16
Sample Matrix: Drinking Water

Radium 226
M903.1

<table>
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<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.16</td>
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<td>0.3</td>
<td>pCi/L</td>
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Radium 228
M904.0

<table>
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<th>Prep Date</th>
<th>Result</th>
<th>Error (+/-)</th>
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<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
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</thead>
<tbody>
<tr>
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<td>0.45</td>
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<td>0.22</td>
<td>pCi/L</td>
<td>*</td>
<td>tjr</td>
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</table>

Arizona license number: AZ0102

* Please refer to Qualifier Reports for details
SGS Environmental Services Inc. - Alaska

Project ID: 1165933
Sample ID: MW-8
Locator: RadioChemistry

ACZ Sample ID: L33556-02
Date Sampled: 10/03/16 15:15
Date Received: 10/12/16
Sample Matrix: Drinking Water

### Radium 226

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Prep Date</th>
<th>Result</th>
<th>Error(+-)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
</tr>
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<tbody>
<tr>
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<td>0.14</td>
<td>0.08</td>
<td>0.11</td>
<td>pCi/L</td>
<td>*</td>
<td>mns</td>
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</table>

### Radium 228

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
<th>Prep Date</th>
<th>Result</th>
<th>Error(+-)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
</tr>
</thead>
<tbody>
<tr>
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<td>11/20/16 14:41</td>
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<td>0.3</td>
<td>0.24</td>
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Arizona license number: AZ0102

* Please refer to Qualifier Reports for details.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
<th>Prep Date</th>
<th>Result</th>
<th>Error(±)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
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</thead>
<tbody>
<tr>
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<td>0.33</td>
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<td>pCi/L</td>
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<td>mns</td>
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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
<th>Prep Date</th>
<th>Result</th>
<th>Error(±)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
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<tbody>
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<td>0.5</td>
<td>0.48</td>
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<td>*</td>
<td>tjr</td>
</tr>
</tbody>
</table>

* Please refer to Qualifier Reports for details.
### RadioChemistry Analytical Results

#### SGS Environmental Services Inc. - Alaska

- **Project ID:** 1165933
- **Sample ID:** MW-3
- **Locator:**

#### ACZ Sample ID: L3356-04

- **Date Sampled:** 10/03/16 17:35
- **Date Received:** 10/12/16
- **Sample Matrix:** Drinking Water

---

### Analytical Results

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
<th>Prep Date</th>
<th>Result</th>
<th>Error(±)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radium 226</td>
<td>11/18/16 0:15</td>
<td></td>
<td>0.08</td>
<td>0.09</td>
<td>0.22</td>
<td>pCi/L</td>
<td>*</td>
<td>mns</td>
</tr>
<tr>
<td>Radium 228</td>
<td>11/20/16 14:41</td>
<td></td>
<td>0.43</td>
<td>0.23</td>
<td>0.22</td>
<td>pCi/L</td>
<td>*</td>
<td>tjr</td>
</tr>
</tbody>
</table>

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* Please refer to Qualifier Reports for details.

Arizona license number: AZ0102
SGS Environmental Services Inc. - Alaska

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
<th>Prep Date</th>
<th>Result</th>
<th>Error(+)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
</tr>
</thead>
<tbody>
<tr>
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<td>11/18/16 0:17</td>
<td></td>
<td>0.61</td>
<td>0.11</td>
<td>0.17</td>
<td>pCi/L</td>
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<td>mns</td>
</tr>
<tr>
<td>Radium 228</td>
<td>11/20/16 14:41</td>
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<td>0.24</td>
<td>pCi/L</td>
<td>*</td>
<td>tjr</td>
</tr>
</tbody>
</table>

Prep Method:

Arizona license number: AZ0102

* Please refer to Qualifier Reports for details.
## Analysis Results

### SGS Environmental Services Inc. - Alaska

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
<th>Prep Date</th>
<th>Result</th>
<th>Error(+/-)</th>
<th>LLD</th>
<th>Units</th>
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<th>Analyst</th>
</tr>
</thead>
<tbody>
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<td>0.07</td>
<td>0.11</td>
<td>pCi/L</td>
<td>*</td>
<td>mns</td>
</tr>
<tr>
<td>Radium 228</td>
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<td>0.26</td>
<td>0.22</td>
<td>pCi/L</td>
<td>*</td>
<td>tjr</td>
</tr>
</tbody>
</table>

### ARAR

- **Sample ID:** L33556-06
- **Date Sampled:** 10/04/16 9:31
- **Date Received:** 10/12/16
- **Sample Matrix:** Drinking Water
- **Project ID:** 1165933
- **Location:** RadioChemistry

**Arizona license number:** AZ0102

*Please refer to Qualifier Reports for details.*
### SGS Environmental Services Inc. - Alaska

**Project ID:** 1165933  
**Sample ID:** MW-1R  
**Locator:**  

---

**ACZ Sample ID:** L33566-07  
**Date Sampled:** 10/04/16 10:10  
**Date Received:** 10/12/16  
**Sample Matrix:** Drinking Water

---

#### Radiochemistry Analytical Results

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measure Date</th>
<th>Prep Date</th>
<th>Result</th>
<th>Error(+/-)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
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</tr>
</thead>
<tbody>
<tr>
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<td>0.4</td>
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<td>mns</td>
</tr>
<tr>
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<td>11/20/16 14:41</td>
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**Arizona license number:** AZ0102

* Please refer to Qualifier Reports for details.
SGS Environmental Services Inc. - Alaska

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<th>Prep Date</th>
<th>Result</th>
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<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
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Arizona license number: AZ0102

* Please refer to Qualifier Reports for details.
SGS Environmental Services Inc. - Alaska

ACZ Sample ID: **L33556-09**
Project ID: 1165933
Sample ID: MW-95
Locator:

---

**Sample Matrix:** *Drinking Water*

BD\[Laboratories, Inc.
2773 Downhill Drive
Steamboat Springs, CO  80487
(800) 334-5493

**Date Sampled:** 10/04/16 14:00
**Date Received:** 10/12/16

---

### Analytical Results

#### Radium 226

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#### Radium 228

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* Please refer to Qualifier Reports for details.

Arizona license number: **AZ0102**
### SGS Environmental Services Inc. - Alaska

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### Analysis Method
- **Radium 226**
  - **Prep Method:** M903.1

### Arizona license number: AZ0102

* Please refer to Qualifier Reports for details.
### Report Header Explanations

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<th>Term</th>
<th>Description</th>
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<tr>
<td>Batch</td>
<td>A distinct set of samples analyzed at a specific time</td>
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<tr>
<td>Error(+/-)</td>
<td>Calculated sample specific uncertainty</td>
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<tr>
<td>Found</td>
<td>Value of the QC Type of interest</td>
</tr>
<tr>
<td>Limit</td>
<td>Upper limit for RPD, in %</td>
</tr>
<tr>
<td>LCL</td>
<td>Lower Control Limit, in % (except for LCSS, mg/Kg)</td>
</tr>
<tr>
<td>LLD</td>
<td>Calculated sample specific Lower Limit of Detection</td>
</tr>
<tr>
<td>PCN/SCN</td>
<td>A number assigned to reagents/standards to trace to the manufacturer’s certificate of analysis</td>
</tr>
<tr>
<td>PQL</td>
<td>Practical Quantitation Limit</td>
</tr>
<tr>
<td>QC</td>
<td>True Value of the Control Sample or the amount added to the Spike</td>
</tr>
<tr>
<td>Rec</td>
<td>Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)</td>
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<tr>
<td>RER</td>
<td>Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.</td>
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<tr>
<td>RPD</td>
<td>Relative Percent Difference, calculation used for Duplicate QC Types</td>
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<td>UCL</td>
<td>Upper Control Limit, in % (except for LCSS, mg/Kg)</td>
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<td>Sample</td>
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<td>DUP</td>
<td>Sample Duplicate</td>
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<tr>
<td>LCSS</td>
<td>Laboratory Control Sample - Soil</td>
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<tr>
<td>LCSW</td>
<td>Laboratory Control Sample - Water</td>
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<td>MS/MSD</td>
<td>Matrix Spike/Matrix Spike Duplicate</td>
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<td>Prep Blank - Soil</td>
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### QC Sample Type Explanations

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<td>Blanks</td>
<td>Verifies that there is no or minimal contamination in the prep method procedure.</td>
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<tr>
<td>Control Samples</td>
<td>Verifies the accuracy of the method, including the prep procedure.</td>
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<tr>
<td>Duplicates</td>
<td>Verifies the precision of the instrument and/or method.</td>
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<tr>
<td>Matrix Spikes</td>
<td>Determines sample matrix interferences, if any.</td>
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### ACZ Qualifiers (Qual)

- **H**: Analysis exceeded method hold time.

### Method Prefix Reference

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<td>Standard Methods for the Examination of Water and Wastewater.</td>
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<td>ESM</td>
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### Comments

1. Solid matrices are reported on a dry weight basis.
3. QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
4. An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

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<th>Type</th>
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<th>QC</th>
<th>Sample</th>
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<td>DF</td>
<td>Sample required dilution due to high sediment.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L33556-08</td>
<td>WG413482</td>
<td>Radium 226</td>
<td>M903.1</td>
<td>RG</td>
<td>Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WG413597</td>
<td>Radium 228</td>
<td>M904.0</td>
<td>DJ</td>
<td>Sample dilution required due to insufficient sample.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L33556-09</td>
<td>WG413482</td>
<td>Radium 226</td>
<td>M903.1</td>
<td>RG</td>
<td>Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WG413597</td>
<td>Radium 228</td>
<td>M904.0</td>
<td>DJ</td>
<td>Sample dilution required due to insufficient sample.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>L33556-10</td>
<td>WG413482</td>
<td>Radium 226</td>
<td>M903.1</td>
<td>RG</td>
<td>Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WG413597</td>
<td>Radium 228</td>
<td>M904.0</td>
<td>N1</td>
<td>See Case Narrative.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
No certification qualifiers associated with this analysis
SGS Environmental Services Inc. - Alaska
1165933

Sample Receipt

SGS Environmental Services Inc. - Alaska
1165933

ACZ Project ID: L33556
Date Received: 10/12/2016 10:00
Received By: pjs
Date Printed: 10/13/2016

Receipt Verification

1) Is a foreign soil permit included for applicable samples?
   YES NO NA
   X

2) Is the Chain of Custody form or other directive shipping papers present?
   X

3) Does this project require special handling procedures such as CLP protocol?
   X

4) Are any samples NRC licensable material?
   X

5) If samples are received past hold time, proceed with requested short hold time analyses?
   X

6) Is the Chain of Custody form complete and accurate?
   X

7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?
   X

Samples/Containers

8) Are all containers intact and with no leaks?
   X

9) Are all labels on containers and are they intact and legible?
   X

10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?
    X

11) For preserved bottle types, was the pH checked and within limits? ¹
    X

12) Is there sufficient sample volume to perform all requested work?
    X

13) Is the custody seal intact on all containers?
    X

14) Are samples that require zero headspace acceptable?
    X

15) Are all sample containers appropriate for analytical requirements?
    X

16) Is there an Hg-1631 trip blank present?
    X

17) Is there a VOA trip blank present?
    X

18) Were all samples received within hold time?
    X

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

<table>
<thead>
<tr>
<th>Cooler Id</th>
<th>Temp(°C)</th>
<th>Temp Criteria(°C)</th>
<th>Rad(μR/Hr)</th>
<th>Custody Seal</th>
<th>Intact?</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA24891</td>
<td>15.3</td>
<td>NA</td>
<td>14</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.
The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na₂S₂O₃ preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).
<table>
<thead>
<tr>
<th>SAMPLE IDENTIFICATION</th>
<th>DATE mm/dd/yy</th>
<th>TIME HHMM</th>
<th>MATRIX/ MATRIX</th>
<th>Preserv-</th>
<th>MS</th>
<th>MSD</th>
<th>SGS lab #</th>
<th>Loc ID</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-7</td>
<td>10/03/16</td>
<td>1415</td>
<td>W</td>
<td>3</td>
<td>X</td>
<td></td>
<td>1165933001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MW-8</td>
<td>10/03/16</td>
<td>1515</td>
<td>W</td>
<td>3</td>
<td>X</td>
<td></td>
<td>1165933002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MW-4</td>
<td>10/03/16</td>
<td>1617</td>
<td>W</td>
<td>3</td>
<td>X</td>
<td></td>
<td>1165933003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MW-3</td>
<td>10/03/16</td>
<td>1775</td>
<td>W</td>
<td>3</td>
<td>X</td>
<td></td>
<td>1165933004</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MW-2</td>
<td>10/03/16</td>
<td>1822</td>
<td>W</td>
<td>3</td>
<td>X</td>
<td></td>
<td>1165933005</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MW-6</td>
<td>10/04/16</td>
<td>931</td>
<td>W</td>
<td>3</td>
<td>X</td>
<td></td>
<td>1165933006</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MW-1R</td>
<td>10/04/16</td>
<td>1010</td>
<td>W</td>
<td>3</td>
<td>X</td>
<td></td>
<td>1165933007</td>
<td></td>
<td></td>
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<tr>
<td>MW-5</td>
<td>10/04/16</td>
<td>1103</td>
<td>W</td>
<td>3</td>
<td>X</td>
<td></td>
<td>1165933008</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MW-95</td>
<td>10/04/16</td>
<td>1400</td>
<td>W</td>
<td>3</td>
<td>X</td>
<td></td>
<td>1165933009</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SW-1</td>
<td>10/04/16</td>
<td>1130</td>
<td>W</td>
<td>3</td>
<td>X</td>
<td></td>
<td>1165933010</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Relinquished By: (1)  Date  Time  Received By:  
Junumway  10/04/16  09:35

Relinquished By: (2)  Date  Time  Received By:  

Relinquished By: (3)  Date  Time  Received By:  

Relinquished By: (4)  Date  Time  Received For Laboratory By:  

---

**Locations Nationwide**
- Alaska
- Maryland
- New Jersey
- New York
- North Carolina
- Indiana
- West Virginia
- Kentucky

**SGS North America Inc. - Alaska Division**

**CLIENT:**

**CONTACT:** Julie Shumway  
**PHONE NO:** (907) 562-2343

**PROJECT NAME:** 1165933  
**E-MAIL:** Julie_Shumway@sgs.com

**INVOICE TO:** SGS - Alaska  
**P.O. #:** 1165933

**SGS Reference:**

**ACZ Lab**

Additional Comments: All soils report out in dry weight unless otherwise requested.

**Preservative Used:**
- Radioactive
- COMP
- G = GRAB
- Incremental Soils

**Radium 226/228**

**MS**  
**MSD**  
**SGS lab #**  
**Loc ID**  

**REMARKS**

**DOD Project?**  
- ☐ YES  
- ☑ NO

**Report to DL (J Flags)**  
- ☐

**Cooler ID:**

**Data Deliverable Requirements:**
- Level 2

**Requested Turnaround Time and/or Special Instructions:**

**Temp Blank °C:**

**Chain of Custody Seal:**
- (Circle)
- INTACT
- BROKEN
- ABSENT

**http://www.sgs.com/terms_and_conditions.htm**
Report

LABORATORY DATA
QUALITY ASSURANCE REVIEW

2017 QUARTERLY GROUNDWATER MONITORING
GOLDEN VALLEY ELECTRIC ASSOCIATION
HEALY, ALASKA

January 2018

Prepared by: Sarah Croisant
Reviewed by: Jennifer McLean

SLR International Corporation
2700 Gambell Street, Suite 200
Anchorage, AK 99503

SLR Project Number 104.00367.17001
ACRONYMS AND ABBREVIATIONS

% percent
AAC Alaska Administrative Code
AK Alaska
ADEC Alaska Department of Environmental Conservation
ACZ ACZ Laboratories of Steamboat Springs, CO.
°C degrees Celsius
CCV continuing calibration verification
Cl chloride
COC chain of custody
DL detection limit
EDDs electronic data deliverable
EPA Environmental Protection Agency
LCL lower control limit
LCS laboratory control sample
LCSD laboratory control sample duplicate
LLD lower limit of detection
LOD limit of detection
LOQ limit of quantitation
MCL maximum contaminant level
mg/L milligrams per liter
MS matrix spike
MSD matrix spike duplicate
NA not applicable
NC not calculated
NELAP National Environmental Laboratory Accreditation Program
PARCCS precision, accuracy, representativeness, comparability, completeness, and sensitivity
pCi/L pico Curies per liter
QA quality assurance
QAR quality assurance review
QC quality control
QCS quality control sample
RPD relative percent difference
SDG sample delivery group
SLR SLR International Corporation
SO4 sulfate
SGS SGS North America, Inc.
SM Standard Methods
TDS total dissolved solids
UCL upper control limit
Introduction

This report summarizes a review of analytical data for quarterly groundwater and surface water samples collected between April 4, 2017 and October 3, 2017 at the Healy Power Plant in Healy, Alaska. Samples were collected by SLR International Corporation (SLR) in accordance with the Golden Valley Electric Association (GVEA) Healy Power Plant Groundwater Monitoring Plan (SLR, 2016). SGS North America, Inc (SGS) provided analytical support to the project. SGS maintains a current Alaska Department of Environmental Conservation (ADEC) Contaminated Sites approval number (UST-005) for analytical methods of interest, as applicable. Samples analyzed for radium were transferred to ACZ Laboratories, Inc. (ACZ) in Steamboat Springs, Colorado. ACZ is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory for this analysis. Table 1 provides a sample receipt summary, by sample delivery group (SDG). Table 2 provides a summary of the methods and analytes performed of each SDG.

Table 1  Sample Receipt Summary

<table>
<thead>
<tr>
<th>SDG</th>
<th>Date Collected</th>
<th>Cooler Temperature Blanks (SGS)</th>
<th>Date Received by SGS</th>
<th>Date Received by ACZ¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>1171490 (SGS) / L36627 (ACZ)</td>
<td>4/4/17-7/6/17</td>
<td>1.9°C</td>
<td>4/7/2017</td>
<td>4/17/2017</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.5°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1173057 (SGS) / L37873 (ACZ)</td>
<td>6/5/17-6/6/17</td>
<td>6.6°C</td>
<td>6/7/2017</td>
<td>6/16/2017</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.1°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.7°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1174859 (SGS) / L38870 (ACZ)</td>
<td>7/24/17-7/25/17</td>
<td>1.8°C</td>
<td>7/26/2017</td>
<td>8/1/2017</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.5°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.4°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1177082 (SGS) / L40414 (ACZ)</td>
<td>10/2/17-10/3/17</td>
<td>-0.3°C</td>
<td>10/4/2017</td>
<td>10/9/2017</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.0°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.4°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1177083 (SGS)</td>
<td>10/2/17-10/3/17</td>
<td>4.1°C</td>
<td>10/4/2017</td>
<td>NA²</td>
</tr>
</tbody>
</table>

Notes:
1 – Only Radium samples were shipped to ACZ. Refer to Table 2.
2 – No samples were sent to ACZ under this SGS work order.

Acronyms:
°C – degrees Celsius
SDG – sample delivery group
NA – not available
Table 2  Method, Analyte, Laboratory, and Matrix

<table>
<thead>
<tr>
<th>Analytical Method</th>
<th>Analyte</th>
<th>Laboratory</th>
<th>Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPA 200.8</td>
<td>14 Metals (Total)(^1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPA 300.0</td>
<td>Sulfate, Chloride, and Fluoride</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SM21 2540C</td>
<td>TDS</td>
<td>SGS</td>
<td>Water</td>
</tr>
<tr>
<td>SM21 2340B</td>
<td>Hardness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SM21 4500-H B</td>
<td>pH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SM21 2510B</td>
<td>Conductivity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EP245.1</td>
<td>Mercury, Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPA 903.1/904.0</td>
<td>Radium 226 and 228</td>
<td>ACZ</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1 – The 14 metals analyzed were antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium.

Acronyms:
AK – Alaska
EPA – Environmental Protection Agency
SM – Standard Methods
TDS – total dissolved solids

Laboratory final reports were provided as Level II deliverables, and included documentation of each delivery group chain-of-custody (COC) and sample receipt condition. Microsoft Access compatible electronic data deliverables (EDDs) for each report was also provided. The PDF laboratory reports are provided electronically as Attachment 2.

Quality Assurance Program

A quality assurance (QA) program was followed for this project that addressed project administration, sampling, quality control (QC), and data review. SLR adhered to required and established sampling and COC protocols. The select laboratory maintains an internal QA program and standard operating procedures.

The analytical data was reviewed for consistency with ADEC Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling (ADEC, 2017a) requirements, analytical method criteria and laboratory criteria. An ADEC Laboratory Data Review Checklist was completed for each SDG, and is included as Attachment 1 to this Quality Assurance Review (QAR). A review for any anomalies to the project requirements for precision, accuracy, representativeness, comparability, completeness and sensitivity (PARCCS) are noted in this QAR, and any data qualifications discussed.

The data review included the following, as applicable:

- Reviewing COC records for completeness, signatures, and dates;
- Identifying any sample receipt or preservation anomalies that could impact data quality;
- Evaluating whether laboratory reporting limits met project goals;
- Reviewing calibration verification recoveries, to include confirming that the laboratory did not identify that any Continuing Calibration Verification (CCV) recoveries or other calibration related criteria as being outside applicable acceptance limits;
• Reviewing case narratives for any discussion of any internal standard recoveries outside of acceptance limits. Internal standard performance was not otherwise presented in the report or in the electronic data deliverable and was reviewed only from the case narratives;

• Verifying that surrogate analyses were within recovery acceptance limits;

• Verifying that Laboratory Control Samples (LCS), Laboratory Control Sample Duplicates (LCSD), Matrix Spike (MS), and Matrix Spike Duplicate (MSD) recoveries were within acceptance limits;

• Evaluating the result relative percent difference (RPD) between primary and duplicate field samples, LCS/LCSD, MS/MSD, and laboratory duplicates; and

• Providing an overall assessment of laboratory data quality and qualifying sample results as necessary.

Data Qualifications
As part of this QAR, qualifiers (i.e. flags) were applied to datum as determined necessary based on specified criteria, or professional judgement. In all cases, the basis for qualification and the applied data flag are discussed in this QAR. Table 3 provides a list of potential qualifiers (i.e., flags). These data flags were appended to the data as appropriate.

Table 3      Data Qualifiers

<table>
<thead>
<tr>
<th>Qualifier</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q</td>
<td>One or more laboratory QC criteria (e.g., LCS recovery, surrogate spike recovery) failed. Where applicable, an “H”, “L”, or “N” was appended to indicate positive, negative, or unknown bias, respectively.</td>
</tr>
<tr>
<td>J</td>
<td>The analyte was positively identified but the result was outside the calibration range, between the limit of quantitation (LOQ) and the detection limit (DL); the quantitation was an estimate.</td>
</tr>
<tr>
<td>M</td>
<td>The concentration was an estimate due to a sample matrix QC failure. Where applicable, an “H”, “L”, or “N” was appended to indicate positive, negative, or unknown bias, respectively.</td>
</tr>
<tr>
<td>B</td>
<td>Blank contamination: The analyte was positively identified in the blank (e.g., trip blank, method blank, equipment blank, etc.) associated with the sample and the concentration reported for the sample was less than five times that of the blank (ten times for metals and common laboratory contaminants methylene chloride and acetone).</td>
</tr>
<tr>
<td>P</td>
<td>Sample preservation requirements were not satisfied.</td>
</tr>
<tr>
<td>R</td>
<td>Sample result is rejected.</td>
</tr>
</tbody>
</table>

A discussion of the project data quality relative to PARCCS goals and summary of any anomalies or failures requiring data qualifiers follows.

Data Validation

Data Packages
The data packages were checked for transcription errors, omissions, or other anomalies. No issues were noted with regards to the data packages.
Preservation (Chemical and Temperature)
Samples were documented as appropriately preserved upon receipt at SGS and ACZ laboratories, except as noted below.

- For work orders 1171490 and 1173057, radium samples were received at SGS, Anchorage unpreserved. EPA methods 903.1/904.0 include a recommendation that the samples should be preserved with nitric acid within 5 days of collection. The samples were preserved by SGS personnel within the 5 day required preservation time. Data were not affected.

- For work order 1173057, the sample receipt form noted that all three coolers were received at SGS with temperature blanks slightly above the ADEC required 0-6 °C. The analysis performed on this work order included total metals by EPA Method 200.8, total mercury by EPA Method 245.1, anions by EPA Method 300.0, TDS by SM21 2540C, and hardness by SM21 2340B. The EPA Method 300.0 for analysis of chloride (Cl), fluoride (F), and sulfate (SO₄), and SM21 2540C for analysis of TDS specify a temperature preservation range of 0-6 °. For these analytes, reported results may be potentially biased low. Samples for the analysis of metals, mercury, and radium do not have a temperature preservation requirement, thus were not affected by cooler receipt temperatures over 6°C. For all samples in this work order, chloride, fluoride, sulfate, and TDS results have been flagged P to indicate a preservation anomaly, and these analytes should be considered potentially biased low.

- For work order 1174859, while the temperature blanks were within acceptable temperature range, the sample receipt form indicated that some of the samples had ice in them. The analysis performed on this work order included total metals by EPA Method 200.8, total mercury by EPA Method 245.1, anions by EPA Method 300.0, total dissolved solids by SM21 2540C, and radium analysis by EPA Method 903.1/904. No analysis would be affected by ice in the sample containers, and no sample containers were noted as being damaged by the ice. Data quality or usability was not impacted. Also for this work order, the radium samples were not preserved by either SLR or SGS personnel. EPA method 904.0/903.1 states that it is recommended that samples are preserved in the field. However, samples are required to be preserved within 5 days of collection. In this case, the samples were received by ACZ laboratories, and preserved 8 days after collection. Based on discussion with ACZ, data would in no way be impacted by the slight delay in preservation. All data was considered usable without qualification.

- For work order 1174859, the COC noted the third cooler as having a receipt temperature of 0.4°C, while the sample receipt form noted the temperature of this cooler as ambient. The sample receipt form noted temperature blanks as compliant or NA (not applicable) indicating that only metals samples were included in this cooler. Metals samples have no temperature preservation requirement. All samples were received within method acceptable temperature requirements. Data was not affected.

- For work order 1177082, one cooler was received at SGS Anchorage with a temperature blank of -0.3°C. Only radium samples were included in this cooler, and the sample receipt form noted that all containers were ice free. Data was considered not affected.

Sample Receipt
The sample receipt documentation was checked for anomalies. No issues were noted with regards to the receipt of the samples.
Holding Times
Analytical holding times were satisfied for all sample results.

Laboratory Method Blanks
Laboratory method blanks were analyzed at the appropriate frequencies. Target analytes were not detected in any method blanks at or above the LOD, except as listed in Table 4. Associated field samples with results less than, or equal to, ten times that of the blank were potentially biased high, and were shown in Table 4 with associated qualifications. In all cases, affected results were well below applicable project cleanup levels. All data was usable as qualified.

Table 4 Method Blank Detections and Associated Sample Qualifications

| SDG               | Sample ID | Lab ID      | Method    | Analyte  | Result (mg/L) | Flag | MCL 1
|-------------------|-----------|-------------|-----------|-----------|---------------|------|------
| 1177083 (Fourth Quarter) | MB        | 1417889     | SM21 2540C | TDS       | 16.7          | J    | NA 2

All associated samples had results greater than five times that of the blank. No data were impacted.

| SDG               | Sample ID | Lab ID      | Method    | Analyte  | Result (mg/L) | Flag | MCL 1
|-------------------|-----------|-------------|-----------|-----------|---------------|------|------
| 1173057 (Second Quarter) | MB        | 1389613     | EPA200.8  | Chromium | 0.000701      | J    | 0.1  
|                   |           |             |           |           | 0.00662       | B    |      
|                   |           |             |           |           | 0.0046        | B    |      

Notes:
1 – MCL Value shown from Federal Drinking Water Primary Standards - Maximum Contaminant Level (MCL) (40 CFR Part 141.)
2 – No screening criteria exists for total dissolved solids in Federal Drinking Water Primary Standards - Maximum Contaminant Level (MCL) (40 CFR Part 141.)

Abbreviations:
mg/L – milligrams per liter
TDS – total dissolved solids
MCL -- maximum contaminant level
NA – not applicable

Equipment Blanks
No equipment blank samples were required to be collected or analyzed per the Groundwater Monitoring Plan (SLR, 2016). Dedicated or disposable equipment was used for the collection of all samples.

Reporting Limits
For non-detect groundwater sample results, LODs were compared to the Federal Drinking Water Primary Standards - Maximum Contaminant Level (MCL) (40 CFR Part 141.) All results of non-detected analytes had LODs at or below the applicable MCL.

Continuous Calibration Verifications (CCVs)
CCVs were analyzed at the appropriate frequencies. CCV data was included only in the EDDs, but not in the case narratives. All CCV recoveries were within acceptable limits as reviewed in the EDDs, except as noted below.

- For work order 1173057, for lithium by Method 200.8, three CCVs recovered at 123%, 124%, and 134%, above the acceptable upper control limit of 115%. Only one preparatory batch associated LCS was included in this analytical batch. No project samples were associated with these CCVs. Data was not affected.
Surrogate Recovery Results
For all analyses conducted at SGS, the analytical methods requested for this project did not require surrogate spiking of the samples or QC. For radium 226 and 228 analysis conducted at ACZ, no surrogate spiking was required by the methods used, but all indicator elements and compounds recovered within acceptable limits.

Laboratory Control Samples and Laboratory Control Duplicate Samples
Batch LCS were analyzed at the appropriate frequencies. LCSDs were analyzed for total dissolved solids, but were not required for the other analytical methods evaluated for this project. All LCS and LCSD recoveries and RPDs were within acceptable limits, except as noted below.

- For work order 1171490, for beryllium by method 200.8, the LCS recovery of 117% slightly exceeded the acceptable upper control limit of 115%. Since a high bias was indicated and all associated samples had results of non-detect for beryllium, data was not affected. All data was usable without qualification.

Matrix Spike and Matrix Spike Duplicate Samples
MS and MSDs were analyzed at the appropriate frequencies for evaluation of batch precision. All MS/MSD percent recoveries and RPDs were within acceptable limits, except as listed below.

- For work order 1173057, for sulfate by EPA Method 300.0, one MS/MSD pair recovered at 78.8%/80.4%, below the acceptable lower control limit of 90%. The associated LCS recovered within acceptable limits, and the parent sample was not from this project. Because the LCS established accuracy, only the parent sample, not associated with this project, was considered affected. All data was usable without qualification.

Field Duplicates
One blind field duplicate sample set was collected for each quarter for groundwater samples. A field duplicate was not required for the one surface water sample collected with each sampling event. The field duplicate frequency is presented in Table 5. The ADEC required field duplicate sample frequency of 10% per method and matrix was considered met. Parent sample and field duplicate pairs are presented in Table 6. The higher value from each pair is recommended as the most conservatively representative result for the location. RPD was calculated for all sample pairs with one or more results reported above the LOD (or LLD [lower limit of detection] for radium). All calculated RPD were below the 30% ADEC limit groundwater demonstrating acceptable precision and sample representativeness with exception of the radium results shown in Table 7. The radium sample duplicate pairs with RPD above the 30% limit have been flagged as "MN" to indicate a potential bias due to precision not meeting the data quality objective. All qualified radium sample results are still well below the applicable MCL and are useable for the purpose of determining compliance with the MCL.
### Table 5  Groundwater Field Duplicate Frequency, Methods, and Analytes

<table>
<thead>
<tr>
<th>Matrix</th>
<th>Analytical Method</th>
<th>Analyte</th>
<th>Number of Primary Samples</th>
<th>Number of Field Duplicates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>EPA 200.8/EP245.1</td>
<td>Metals + Mercury</td>
<td>39</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>EPA 300.0</td>
<td>Anions</td>
<td>39</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>SM21 2540</td>
<td>Total Dissolved Solids</td>
<td>39</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>EPA 200.8</td>
<td>Silver</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>SM21 2340B</td>
<td>Hardness</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>SM21 2510B</td>
<td>Conductivity</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>SM21 4500-H B</td>
<td>pH</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>EPA 903.1/904.0</td>
<td>Radium 226 and 228</td>
<td>39</td>
<td>4</td>
</tr>
</tbody>
</table>

### Table 6  Field Duplicate Identification

<table>
<thead>
<tr>
<th>SDG</th>
<th>Sample Date</th>
<th>Parent Sample ID</th>
<th>Duplicate Sample ID</th>
<th>All RPDs Acceptable (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1171490</td>
<td>4/4-6/2017</td>
<td>MW-5</td>
<td>MW-95</td>
<td>Y</td>
</tr>
<tr>
<td>1173057</td>
<td>6/5-6/2017</td>
<td>MW-5</td>
<td>MW-95</td>
<td>N²</td>
</tr>
<tr>
<td>1174859</td>
<td>7/24-25/2017</td>
<td>MW-6</td>
<td>MW-69</td>
<td>N²</td>
</tr>
<tr>
<td>1177083/1177082</td>
<td>10/2-3/2017</td>
<td>MW-3</td>
<td>MW-39</td>
<td>N²</td>
</tr>
</tbody>
</table>

**Note:**
1. **Work order 1177082 contains the same sample IDs as work order 1177083. The samples reported as work order 1177082 were sent to ACZ laboratory for radium analysis. These same field samples were analyzed for all other target analytes at SGS.**
2. **All field duplicate RPDs were within acceptable limits except radium 226 and radium 228 presented in Table 7.**

### Table 7  Radium Field Duplicate Precision Exceedances

<table>
<thead>
<tr>
<th>Primary Sample ID</th>
<th>Field Sample ID</th>
<th>Sample Date</th>
<th>EPA 903.1/904 (pCi/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Radium 226</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Result</td>
</tr>
<tr>
<td>Primary</td>
<td>MW-5</td>
<td>06/05/2017</td>
<td>0.16</td>
</tr>
<tr>
<td>Duplicate</td>
<td>MW-95</td>
<td>06/05/2017</td>
<td>0.12</td>
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<tr>
<td>Primary</td>
<td>MW-6</td>
<td>07/24/2017</td>
<td>0.14</td>
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<tr>
<td>Duplicate</td>
<td>MW-69</td>
<td>07/24/2017</td>
<td>0.06</td>
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<tr>
<td>Primary</td>
<td>MW-3</td>
<td>10/03/2017</td>
<td>0.16</td>
</tr>
<tr>
<td>Duplicate</td>
<td>MW-39</td>
<td>10/03/2017</td>
<td>0.1</td>
</tr>
</tbody>
</table>

**Notes:**
1. **Both results were below the LLD.**

**Abbreviations:**
- NA – not applicable (data was not qualified)
- NC – not calculated
Laboratory Duplicate Samples
Laboratory duplicates were analyzed at appropriate frequencies. All duplicate RPDs were within acceptable limits, except as noted below:

- For work order 1174859 (fourth quarter sampling), ACZ noted that the laboratory duplicate samples for radium 226 and 228 could not be accurately calculated due to low target analyte sample concentration. The relative error ratios (RER), which take into account the error factor, were calculated instead and were within acceptable limits.

Overall Assessment

Precision, Accuracy, Representativeness, Comparability, Completeness, and Sensitivity Summary

- Precision: Overall project precision goals were met. There were a few cases where radium results were qualified based on field duplicate RPD (Table 7).

- Accuracy: Overall project accuracy goals were met, except as noted in the Preservation, CCV, LCS/LCSD, and MS/MSD sections.

- Representativeness: Representativeness goals were met. The samples were collected from planned locations in accordance with the SLR March 2016 monitoring plan.

- Comparability: Comparability goals were considered acceptable. SGS laboratory provided analytical support for all methods, except radium. This analysis was performed by ACZ, for all samples. Approved methods were used for the analysis of all samples.

- Completeness: Completeness goals were met. The data were 100% complete.

- Sensitivity: Sensitivity goals were considered met. There were two typical low level detections in method blanks, one of which resulted in qualified data.

This data were considered of overall good quality and acceptable for use with the noted qualifications in this QAR.
References


- ADEC, 2017b. Title 18 of the Alaska Administrative Code Chapter 75 (18 AAC 75), *Oil and Other Hazardous Substances Pollution Control*, as amended October 1.


Attachments

Attachment 1 – ADEC Data Review Checklists

Attachment 2 – Laboratory Deliverables
Attachment 1

ADEC Data Review Checklists
Laboratory Data Review Checklist

Completed by:

Sarah Croisant

Title:

Staff Scientist

Date:

January 16, 2018

CS Report Name:

GVEA Healy Power Plant
Water Monitoring

Report Date:

May 30, 2017

Consultant Firm:

SLR International Corporation

Laboratory Name:

SGS Anchorage, AK and ACZ laboratories of Steamboat Springs, CO.

Laboratory Report Number:

1171490

ADEC File Number:

N/A

Hazard Identification Number:

N/A
1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      
      | Yes | No |
      |-----|----|
      |     |    |
      |     |    |
      Comments:

      SGS Anchorage, AK is ADEC approved for the methods used. ACZ laboratory is NELAP approved for Radium analysis.

   b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      
      | Yes | No |
      |-----|----|
      |     |    |
      |     |    |
      Comments:

      The samples were transferred from SGS Anchorage to ACZ laboratory, who is NELAP approved for Radium analysis.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      
      | Yes | No |
      |-----|----|
      |     |    |
      |     |    |
      Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?
      
      | Yes | No |
      |-----|----|
      |     |    |
      |     |    |
      Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      
      | Yes | No |
      |-----|----|
      |     |    |
      |     |    |
      Comments:

      Samples for radium analysis were received by SGS Anchorage without preservation. The method (EPA 903.1/904.0) requires preservation within five days of collection. SGS of Anchorage performed appropriate preservation measures, within the five day limit. No data was affected.

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
      
      | Yes | No |
      |-----|----|
      |     |    |
      |     |    |
      Comments:

      All samples were received in acceptable condition.

   d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
      
      No discrepancies were noted.
4. Case Narrative

a. Present and understandable?
   ☐ Yes ☐ No  Comments:
   The case narrative for SGS was present, however, there was no case narrative in the ACZ laboratory report. No issues were noted in the ACZ laboratory report.

b. Discrepancies, errors or QC failures identified by the lab?
   ☐ Yes ☐ No  Comments:
   The case narrative noted that sample MW-5 was analyzed for radium by ACZ Laboratories, when, in fact, all samples included in this work order were analyzed for radium by ACZ Laboratories.

c. Were all corrective actions documented?
   ☐ Yes ☐ No  Comments:
   N/A, no corrective actions were necessary.

d. What is the effect on data quality/usability according to the case narrative?
   Comments:
   N/A, no effect.

5. SamplesResults

a. Correct analyses performed/reported as requested on COC?
   ☐ Yes ☐ No  Comments:

b. All applicable holding times met?
   ☐ Yes ☐ No  Comments:

b. All applicable holding times met?
   ☐ Yes ☐ No  Comments:

b. All applicable holding times met?
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   ☐ Yes ☐ No  Comments:

b. All applicable holding times met?
   ☐ Yes ☐ No  Comments:

b. All applicable holding times met?
   ☐ Yes ☐ No  Comments:
e. Data quality or usability affected?

N/A, no affect.

6. QC Samples

a. Method Blank
   i. One method blank reported per matrix, analysis and 20 samples?
      ☐ Yes ☐ No

   ii. All method blank results less than limit of quantitation (LOQ)?
      ☐ Yes ☐ No

   iii. If above LOQ, what samples are affected?
      N/A, no affect.

   iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
      ☐ Yes ☐ No

      N/A, No samples were affected.

   v. Data quality or usability affected?
      N/A, No affect.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)
   i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
      ☐ Yes ☐ No

   ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
      ☐ Yes ☐ No
iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

☐ Yes  ☐ No  Comments:

For beryllium by method 200.8, the LCS recovery of 117% slightly exceeded the acceptable upper control limit of 115%.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

☐ Yes  ☐ No  Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected? Comments:

Since a high bias was indicated and all associated samples had results of non-detect for beryllium, no data was affected.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☐ Yes  ☐ No  Comments:

N/A, no affected samples.

vii. Data quality or usability affected? Comments:

All data was usable without qualification.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

☐ Yes  ☐ No  Comments:

NA, no spiked surrogates were required for the methods analyzed. Tracer compounds recovered within acceptable limits in all samples and QC.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

☐ Yes  ☐ No  Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

☐ Yes  ☐ No  Comments:

N/A, all tracer compound recoveries were acceptable.
iv. Data quality or usability affected?  
   Comments:  
   N/A, no affect.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil
   i. One trip blank reported per matrix, analysis and cooler?
      □ Yes  □ No  
      Comments:  
      NA, no volatile methods were analyzed.
   ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? 
       (If not, a comment explaining why must be entered below)
      □ Yes  □ No  
      Comments:  
      NA
   iii. All results less than LOQ?
      □ Yes  □ No  
      Comments:  
      NA
   iv. If above LOQ, what samples are affected?
      Comments:  
      NA
   v. Data quality or usability affected?  
      Comments:  
      N/A, no affect.

e. Field Duplicate
   i. One field duplicate submitted per matrix, analysis and 10 project samples?
      □ Yes  □ No  
      Comments:  
      For groundwater samples, one field duplicate was analyzed per 10 samples per analyte and matrix.
   ii. Submitted blind to lab?
      □ Yes  □ No  
      Comments:  
iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

\[
\text{RPD (\%) = } \frac{\text{Absolute value of: } (R_1-R_2)}{((R_1+R_2)/2)} \times 100
\]

Where \( R_1 \) = Sample Concentration
\( R_2 \) = Field Duplicate Concentration

☐ Yes  ☐ No  Comments:

iv. Data quality or usability affected?  
Comments:
No impact.

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below.)

☐ Yes  ☐ No  ☐ Not Applicable

i. All results less than LOQ?

☐ Yes  ☐ No  Comments:
Dedicated or disposable equipment was used for the collection of all samples.

ii. If above LOQ, what samples are affected?

Comments:
N/A, no affect.

iii. Data quality or usability affected?

Comments:
N/A, no affect.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

☐ Yes  ☐ No  Comments:
All other data flags and qualifiers were defined appropriately.
Laboratory Data Review Checklist

Completed by:
Sarah Croisant

Title:
Staff Scientist

Date:
January 17, 2018

CS Report Name:
GVEA Healy Power Plant
Water Monitoring

Report Date:
August 01, 2017

Consultant Firm:
SLR International Corporation

Laboratory Name:
SGS Anchorage, AK and ACZ laboratories of Steamboat Springs, CO.

Laboratory Report Number:
1173057

ADEC File Number:
N/A

Hazard Identification Number:
N/A
1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   - Yes  
   - No  

   Comments:

   SGS Anchorage, AK is ADEC approved for the methods used. ACZ laboratory is NELAP approved for Radium analysis.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

   - Yes  
   - No  

   Comments:

   The samples were transferred from SGS Anchorage to ACZ laboratory, who is NELAP approved for Radium analysis.

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

   - Yes  
   - No  

   Comments:

b. Correct analyses requested?

   - Yes  
   - No  

   Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   - Yes  
   - No  

   Comments:

   The sample receipt form noted that all three coolers were received at SGS with temperature blanks slightly above the ADEC required 0-6°C.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   - Yes  
   - No  

   Comments:

   Radium samples were received at SGS, Anchorage unpreserved. EPA methods 903.1/904.0 include a recommendation that the samples should be preserved with nitric acid within 5 days of collection. The samples were preserved by SGS personnel within the 5 day required preservation time. No data were affected.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   - Yes  
   - No  

   Comments:

   All samples were received in acceptable condition.
d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

   ☐ Yes  ☐ No  Comments:

   Temperature and preservation were noted.

e. Data quality or usability affected?

   Comments:

   Regarding receipt temperature, the analysis performed on this work order included total metals by EPA Method 200.8, total mercury by EPA Method 245.1, anions by EPA Method 300.0, TDS by SM21 2540C, and hardness by SM21 2340B. The EPA Method 300.0 for analysis of chloride (Cl), fluoride (F), and sulfate (SO4), and SM21 2540C for analysis of TDS specify a temperature preservation range of 0-6 °C. For these analytes, reported results may be potentially biased low. Samples for the analysis of metals, mercury, and radium do not have a temperature preservation requirement, thus were not affected by cooler receipt temperatures over 6°C. For all samples in this work order, chloride, fluoride, sulfate, and TDS results have been flagged P to indicate a preservation anomaly, and these analytes should be considered potentially biased low.

4. Case Narrative

a. Present and understandable?

   ☐ Yes  ☐ No  Comments:

   The SGS lab report contained a Case narrative, however, the ACZ lab report did not. All issues were noted elsewhere within the report and no data was affected.

b. Discrepancies, errors or QC failures identified by the lab?

   ☐ Yes  ☐ No  Comments:

   No discrepancies, error or QC failures were noted by the lab.

c. Were all corrective actions documented?

   ☐ Yes  ☐ No  Comments:

   N/A, no corrective actions were necessary.

d. What is the effect on data quality/usability according to the case narrative?

   Comments:

   N/A, no effect.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

   ☐ Yes  ☐ No  Comments:

b. All applicable holding times met?
c. All soils reported on a dry weight basis?
   - Yes ☐ No ☐
   Comments:
   N/A, no soils were analyzed.

   d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?
      - Yes ☐ No ☐
      Comments:

   e. Data quality or usability affected?
      Comments:
      N/A, no affect.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
         - Yes ☐ No ☐
         Comments:

      ii. All method blank results less than limit of quantitation (LOQ)?
         - Yes ☐ No ☐
         Comments:
         One MB (lab ID 1389613) had a chromium detection of 0.701 J µg/L.

      iii. If above LOQ, what samples are affected?
          Comments:
          Most affected samples had results of ND, though two samples (MW-4 and MW-6) had detections less than 10 times the blank detection.

      iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
          - Yes ☐ No ☐
          Comments:
          Chromium results for samples MW-4 and MW-6 received "B" flags for blank detections. These results should be considered potentially biased high.

      v. Data quality or usability affected?
          Comments:
          Since a high bias was indicated and both affected results were well below the applicable cleanup level, all data was usable as qualified.
b. Laboratory Control Sample/Duplicate (LCS/LCSD)
   i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
      ☒ Yes ☐ No Comments:

      ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
          ☒ Yes ☐ No Comments:

      iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
          ☒ Yes ☐ No Comments:
          Three batch associated CCVs recovered above acceptable limits for lithium by Method 200.8. One MS/MSD pair recovered below acceptable limits for sulfate.

      iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
          ☒ Yes ☐ No Comments:

      v. If %R or RPD is outside of acceptable limits, what samples are affected?
          Comments:
          For CCVs, only a project LCS was included in the affected analytical batch. No project data was affected.
          For MS/MSD, the associated LCS recovered within acceptable limits, and the parent sample was not from this project. Because the LCS established accuracy, only the parent sample, not associated with this project, was considered affected.

      vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
          ☒ Yes ☐ No Comments:
          N/A, no affected project samples.

      vii. Data quality or usability affected?
          Comments:
          No, no affect.

c. Surrogates – Organics Only
   i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
      No spiked surrogates were required for the methods analyzed.
ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Comments:


iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Comments:

N/A

iv. Data quality or usability affected?

Comments:

N/A, no affect.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and cooler?

Comments:

NA, no volatiles methods were analyzed.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Comments:

NA

iii. All results less than LOQ?

Comments:

NA

iv. If above LOQ, what samples are affected?

Comments:

NA

v. Data quality or usability affected?

Comments:

N/A, no affect.
e. Field Duplicate
   i. One field duplicate submitted per matrix, analysis and 10 project samples?
      ✗ Yes  ☐ No  Comments:
      
      For groundwater samples, one field duplicate was analyzed per 10 samples per analyte and matrix.

   ii. Submitted blind to lab?
       ✗ Yes  ☐ No  Comments:

   iii. Precision – All relative percent differences (RPD) less than specified DQOs?
        (Recommended: 30% water, 50% soil)

        $\text{RPD (\%)} = \frac{\text{Absolute value of:} \text{ (R}_1\text{-R}_2)}{\left(\frac{\text{R}_1\text{+R}_2}{2}\right)} \times 100$

        Where $\text{R}_1 = \text{Sample Concentration}$
        $\text{R}_2 = \text{Field Duplicate Concentration}$

       ✗ Yes  ☐ No  Comments:

       The primary sample MW-5 and field duplicate MW-95 had an RPD of 102% for radium 228.

   iv. Data quality or usability affected?
       Comments:

       Radium 228 and total (226 and 228) radium results were flagged MN, and should be considered estimated values with unknown bias. All affected results were well below the applicable MCL. All data was usable as qualified.

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below.)
   ☐ Yes  ☐ No  ☐ Not Applicable

   i. All results less than LOQ?
      ✗ Yes  ☐ No  Comments:

      Dedicated or disposable equipment was used for the collection of all samples.

   ii. If above LOQ, what samples are affected?
       Comments:

       N/A, no affect.
iii. Data quality or usability affected?

Comments:

N/A, no affect.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

☐ Yes  ☐ No

Comments:

All other data flags and qualifiers were defined appropriately.
Laboratory Data Review Checklist

Completed by:

Sarah Croisant

Title:

Staff Scientist

Date:

January 17, 2018

CS Report Name:

GVEA Healy Power Plant
Water Monitoring

Report Date:

September 21, 2017

Consultant Firm:

SLR International Corporation

Laboratory Name:

SGS Anchorage, AK and ACZ laboratories of Steamboat Springs, CO.

Laboratory Report Number:

1174859

ADEC File Number:

N/A

Hazard Identification Number:

N/A
1. **Laboratory**

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   - Yes  
   - No  
   
   Comments:
   
   SGS Anchorage, AK is ADEC approved for the methods used. ACZ laboratory is NELAP approved for Radium analysis.

   b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

   - Yes  
   - No  
   
   Comments:
   
   The samples were transferred from SGS Anchorage to ACZ laboratory, who is NELAP approved for Radium analysis.

2. **Chain of Custody (COC)**

   a. COC information completed, signed, and dated (including released/received by)?

   - Yes  
   - No  
   
   Comments:

   b. Correct analyses requested?

   - Yes  
   - No  
   
   Comments:

3. **Laboratory Sample Receipt Documentation**

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   - Yes  
   - No  
   
   Comments:

   The temperature blanks were within acceptable temperature range, however, the sample receipt form indicated that some of the samples had ice in them. The analysis performed on this work order included total metals by EPA Method 200.8, total mercury by EPA Method 245.1, anions by EPA Method 300.0, total dissolved solids by SM21 2540C, and radium analysis by EPA Method 903.1/904.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   - Yes  
   - No  
   
   Comments:

   The radium samples were not preserved by either SLR or SGS personnel. EPA method 904.0/903.1 states that it is recommended that samples are preserved in the field. However, samples are required to be preserved within 5 days of collection. In this case, the samples were received by ACZ laboratories, and preserved 8 days after collection.

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   - Yes  
   - No  
   
   Comments:

   All samples were received in acceptable condition.
d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

- Yes  - No  

Comments:

Ice and preservation were noted.

e. Data quality or usability affected?

Comments:

Regarding ice in samples, it was not noted which samples contained ice, but no effects were noted in the case narrative or the sample receipt form. The analysis performed on this work order include total metals by EPA method 200.8, anions by EPA method 300.0, total dissolved solids by method SM2540C, and radium analysis by EPA method 903.1/904. No analysis would be affected by some ice in the sample containers, and no sample containers were noted as being damaged by the ice. No effect on data or usability was noted. All data was usable without qualification. Regarding radium sample preservation, based on discussion with ACZ, data would in no way be impacted by the slight delay in preservation. All data was considered usable without qualification.

4. Case Narrative

a. Present and understandable?

- Yes  - No  

Comments:

b. Discrepancies, errors or QC failures identified by the lab?

- Yes  - No  

Comments:

The SGS case narrative noted that sample MW-1R was analyzed for radium 226 and 228 at ACZ Laboratories, when, in fact, all samples included in this work order were analyzed for radium 226 and 228 at ACZ Laboratories.

c. Were all corrective actions documented?

- Yes  - No  

Comments:

No corrective actions were necessary.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

- Yes  - No  

Comments:
b. All applicable holding times met?
   - Yes  - No  
   Comments:

   N/A, no soils were analyzed.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?
   - Yes  - No  
   Comments:

   N/A, no affect.

6. QC Samples

   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
   - Yes  - No  
   Comments:

   ii. All method blank results less than limit of quantitation (LOQ)?
      - Yes  - No  
      Comments:

   iii. If above LOQ, what samples are affected?
      Comments:

      N/A, no affect.

      iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
      - Yes  - No  
      Comments:

      N/A, No samples were affected.

      v. Data quality or usability affected?
      Comments:

      N/A, No affect.
b. Laboratory Control Sample/Duplicate (LCS/LCSD)
   i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

   ![Yes][No] Comments:

   ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

   ![Yes][No] Comments:

   iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

   ![Yes][No] Comments:

   iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

   ![Yes][No] Comments:

   v. If %R or RPD is outside of acceptable limits, what samples are affected?
   
   Comments:

   N/A, all recoveries and RPDs were within acceptable limits.

   vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

   ![Yes][No] Comments:

   N/A, no affected samples.

   vii. Data quality or usability affected?

   Comments:

   No, no affect.

c. Surrogates – Organics Only
   i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

   ![Yes][No] Comments:

   Surrogates were not required for the methods analyzed.
ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

☐ Yes  ☐ No  Comments:

NA

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

☐ Yes  ☐ No  Comments:

N/A

iv. Data quality or usability affected?

Comments:

N/A, no affect.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and cooler?

☐ Yes  ☐ No  Comments:

No volatile methods were analyzed.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

☐ Yes  ☐ No  Comments:

NA

iii. All results less than LOQ?

☐ Yes  ☐ No  Comments:

NA

iv. If above LOQ, what samples are affected?

Comments:

NA

v. Data quality or usability affected?

Comments:

N/A, no affect.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

☐ Yes  ☐ No  Comments:

For groundwater samples, one field duplicate was analyzed per 10 samples per analyte and matrix.
ii. Submitted blind to lab?
☐ Yes  ☐ No  Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

\[
\text{RPD (\%)} = \frac{\text{Absolute value of: } (R_1 - R_2)}{(R_1 + R_2)/2} \times 100
\]

Where  \( R_1 \) = Sample Concentration  
\( R_2 \) = Field Duplicate Concentration

Comments:

The primary sample MW-6 and field duplicate MW-69 had an RPD of 80% for Radium 226.

iv. Data quality or usability affected?
Comments:

Radium 226 and total (226 and 228) radium results were flagged MN, and should be considered estimated values with unknown bias. All affected results were well below the applicable MCL. Affected data were considered usable as qualified.

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below.)

☐ Yes  ☐ No  ☐ Not Applicable

i. All results less than LOQ?
☐ Yes  ☐ No  Comments:

Dedicated or disposable equipment was used for the collection of all samples.

ii. If above LOQ, what samples are affected?
Comments:

N/A, no affect.

iii. Data quality or usability affected?
Comments:

N/A, no affect.
7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

   a. Defined and appropriate?

      ☑ Yes  ☐ No

      Comments:

      All other data flags and qualifiers were defined appropriately.
Laboratory Data Review Checklist

Completed by:
Sarah Croisant

Title:
Staff Scientist

Date:
January 17, 2018

CS Report Name:
GVEA Healy Power Plant
Water Monitoring

Report Date:
November 28, 2017

Consultant Firm:
SLR International Corporation

Laboratory Name:
SGS Anchorage, AK and ACZ laboratories of Colorado Springs, CO.

Laboratory Report Number:
1177082

ADEC File Number:
N/A

Hazard Identification Number:
N/A
1. **Laboratory**
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      - Yes  
      - No  
      Comments:
      
      The samples were transferred from SGS Anchorage to ACZ laboratory, who is NELAP approved for Radium analysis.

   b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      - Yes  
      - No  
      Comments:

2. **Chain of Custody (COC)**
   a. COC information completed, signed, and dated (including released/received by)?
      - Yes  
      - No  
      Comments:

   b. Correct analyses requested?
      - Yes  
      - No  
      Comments:

3. **Laboratory Sample Receipt Documentation**
   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?
      - Yes  
      - No  
      Comments:
      
      One cooler was received at SGS Anchorage with a temperature blank of -0.3°C. Only radium samples were included in this cooler, and the sample receipt form noted that all containers were ice free.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      - Yes  
      - No  
      Comments:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
      - Yes  
      - No  
      Comments:
      All samples were received in acceptable condition.
d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

[Radio button choices: Yes, No]  
Comments:  

The sample receipt form noted that all containers were ice free. Data was considered not affected.

4. Case Narrative

a. Present and understandable?

[Radio button choices: Yes, No]  
Comments:  

A case narrative was provided by SGS, but no case narrative was provided by ACZ laboratories.

b. Discrepancies, errors or QC failures identified by the lab?

[Radio button choices: Yes, No]  
Comments:  

No discrepancies, error or QC failures were noted by the lab.

c. Were all corrective actions documented?

[Radio button choices: Yes, No]  
Comments:  

No corrective actions were necessary.

d. What is the effect on data quality/usability according to the case narrative?

Comments:  

N/A, no effect.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

[Radio button choices: Yes, No]  
Comments:  

b. All applicable holding times met?

[Radio button choices: Yes, No]  
Comments:  

c. All soils reported on a dry weight basis?

[Radio button choices: Yes, No]  
Comments:  

N/A, no soils were analyzed.
d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

☐ Yes  ☐ No  Comments:

---

e. Data quality or usability affected?

Comments:

N/A, no affect.

---

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

☐ Yes  ☐ No  Comments:

---

ii. All method blank results less than limit of quantitation (LOQ)?

☐ Yes  ☐ No  Comments:

---

iii. If above LOQ, what samples are affected?

Comments:

N/A, no affect.

---

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☐ Yes  ☐ No  Comments:

N/A, No samples were affected.

---

v. Data quality or usability affected?

Comments:

N/A, No affect.

---

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

☐ Yes  ☐ No  Comments:

---

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

☐ Yes  ☐ No  Comments:

No metals or inorganics were analyzed in this work order.
iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

☐ Yes  ☐ No  Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

☐ Yes  ☐ No  Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A, all recoveries and RPDs were within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☐ Yes  ☐ No  Comments:

N/A, no affected samples.

vii. Data quality or usability affected?

Comments:

No, no affect.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

☐ Yes  ☐ No  Comments:

NA

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

☐ Yes  ☐ No  Comments:

Tracer indicators were within acceptable limits.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

☐ Yes  ☐ No  Comments:

N/A, all recoveries were acceptable.
iv. Data quality or usability affected?  
    Comments: 
    N/A, no affect.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil
   i. One trip blank reported per matrix, analysis and cooler?  
       Yes ☐  No ☐  Comments:  
       N/A, no trip blank was required for radium analysis.
   ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?  
       (If not, a comment explaining why must be entered below)  
       Yes ☐  No ☐  Comments:  
       Yes, all coolers were labeled appropriately.
   iii. All results less than LOQ?  
       Yes ☐  No ☐  Comments:  
       N/A, no trip blank was required.
   iv. If above LOQ, what samples are affected?  
       Comments:  
       N/A, No samples were reported above LOQ.
   v. Data quality or usability affected?  
       Comments:  
       N/A, no affect.

e. Field Duplicate
   i. One field duplicate submitted per matrix, analysis and 10 project samples?  
       Yes ☐  No ☐  Comments:  
       One field duplicate was analyzed per 10 samples per analyte and matrix.
   ii. Submitted blind to lab?  
       Yes ☐  No ☐  Comments:  
       N/A, no affect.
iii. Precision – All relative percent differences (RPD) less than specified DQOs?  
(Recommended: 30% water, 50% soil)

\[
\text{RPD} \, (\%) = \frac{\text{Absolute value of: } (R_1 - R_2)}{((R_1 + R_2)/2)} \times 100
\]

Where  
\( R_1 = \text{Sample Concentration} \)
\( R_2 = \text{Field Duplicate Concentration} \)

☐ Yes  ☐ No  
Comments:

The primary sample MW-3 and field duplicate MW-39 had an RPD of 46% for Radium 226, and an RPD of 160% for radium 228.

iv. Data quality or usability affected?  
Comments:

Radium 226, radium 228, and total radium results for the affected samples were flagged MN, and should be considered estimated with unknown bias. All affected results were well below the applicable MCL; therefore, all data was considered usable as qualified.

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below.)  

☐ Yes  ☐ No  ☐ Not Applicable

i. All results less than LOQ?  

☐ Yes  ☐ No  
Comments:

Dedicated or disposable equipment was used for the collection of all samples.

ii. If above LOQ, what samples are affected?  
Comments:

N/A, no affect.

iii. Data quality or usability affected?  
Comments:

N/A, no affect.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?  

☐ Yes  ☐ No  
Comments:

All other data flags and qualifiers were defined appropriately.
Laboratory Data Review Checklist

Completed by:

Sarah Croisant

Title:

Staff Scientist

Date:

January 17, 2018

CS Report Name:

GVEA Healy Power Plant
Water Monitoring

Report Date:

October 27, 2017

Consultant Firm:

SLR International Corporation

Laboratory Name:

SGS Anchorage, AK.

Laboratory Report Number:

1177083

ADEC File Number:

N/A

Hazard Identification Number:

N/A
1. **Laboratory**
   
a. Did an ADEC CS approved laboratory receive and **perform** all of the submitted sample analyses?
   
   ![Yes No]
   
   Comments:
   
   SGS Anchorage, AK is ADEC approved for the methods used.

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

   ![Yes No]
   
   Comments:
   
   N/A, the samples were not transferred to any other laboratory.

2. **Chain of Custody (COC)**

   a. COC information completed, signed, and dated (including released/received by)?

   ![Yes No]
   
   Comments:

   b. Correct analyses requested?

   ![Yes No]
   
   Comments:

3. **Laboratory Sample Receipt Documentation**

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   ![Yes No]
   
   Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   ![Yes No]
   
   Comments:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   ![Yes No]
   
   Comments:

   All samples were received in acceptable condition.

   d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

   ![Yes No]
   
   Comments:

   No discrepancies were noted.
e. Data quality or usability affected?  

Comments:  

N/A, no affect.

4. Case Narrative

a. Present and understandable?

Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Comments:

No discrepancies, errors or QC failures were noted by the lab.

c. Were all corrective actions documented?

Comments:

N/A, no corrective actions were necessary.

d. What is the effect on data quality/usability according to the case narrative?

Comments:  

N/A, no effect.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Comments:

b. All applicable holding times met?

Comments:

c. All soils reported on a dry weight basis?

Comments:

N/A, no soils were analyzed.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Comments:
e. Data quality or usability affected?  
Comments:

N/A, no affect.

6. QC Samples

a. Method Blank
   i. One method blank reported per matrix, analysis and 20 samples?  
      ☐ Yes ☐ No  
      Comments:

   ii. All method blank results less than limit of quantitation (LOQ)?  
      ☐ Yes ☐ No  
      Comments:

      One method blank for total dissolved solids (Lab ID 1417889) had a result of 16.7 Jµg/L.

   iii. If above LOQ, what samples are affected?  
      Comments:

      All associated sampled had results greater than 10 times the blank detection; therefore, data was not affected.

   iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?  
      ☐ Yes ☐ No  
      Comments:

      No data was affected.

   v. Data quality or usability affected?  
      Comments:

      No affect.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)
   i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
      ☐ Yes ☐ No  
      Comments:

   ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?  
      ☐ Yes ☐ No  
      Comments:
iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

☐ Yes  ☐ No  Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

☐ Yes  ☐ No  Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:  
N/A, all recoveries and RPDs were within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☐ Yes  ☐ No  Comments:  
N/A, no affected samples.

vii. Data quality or usability affected?

Comments:  
No, no affect.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

☐ Yes  ☐ No  Comments:  
Nor applicable for the methods analyzed.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

☐ Yes  ☐ No  Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

☐ Yes  ☐ No  Comments:  
N/A
iv. Data quality or usability affected?
   Comments:
   N/A, no affect.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil
   i. One trip blank reported per matrix, analysis and cooler?
      ☐ Yes  ☐ No  
      Comments:
   No volatile methods were analyzed.
   
   ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
      ☐ Yes  ☐ No  
      Comments:
      NA
   
   iii. All results less than LOQ?
      ☐ Yes  ☐ No  
      Comments:

   iv. If above LOQ, what samples are affected?
      Comments:
      NA

   v. Data quality or usability affected?
      Comments:
      N/A, no affect.

e. Field Duplicate
   i. One field duplicate submitted per matrix, analysis and 10 project samples?
      ☐ Yes  ☐ No  
      Comments:
      For groundwater samples, one field duplicate was analyzed per 10 samples per analyte and matrix.
   
   ii. Submitted blind to lab?
      ☐ Yes  ☐ No  
      Comments:
iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

\[ RPD(\%) = \frac{\text{Absolute value of: } (R_1-R_2)}{((R_1+R_2)/2)} \times 100 \]

Where \( R_1 = \text{Sample Concentration} \)
\( R_2 = \text{Field Duplicate Concentration} \)

☐ Yes ☐ No Comments:

iv. Data quality or usability affected?

Comments:
N/A, no RPD exceedances for results above the LOQ.

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below.)

☐ Yes ☐ No ☐ Not Applicable

i. All results less than LOQ?

☐ Yes ☐ No Comments:
Dedicated or disposable equipment was used for the collection of all samples.

ii. If above LOQ, what samples are affected?

Comments:
N/A, no affect.

iii. Data quality or usability affected?

Comments:
N/A, no affect.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

☐ Yes ☐ No Comments:
All other data flags and qualifiers were defined appropriately.
Attachment 2
Laboratory Deliverables

(Data packages and electronic files)
To: Golden Valley Electric Association  
2700 Gambell Street Suite 200  
Anchorage, AK 99503  
(907)564-6907

Report Number: 1171490
Client Project: 104.00367.17002 Healy Pwrplant

Dear Heather Simon,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Justin Nelson  
Project Manager  
Justin.Nelson@sgs.com
SGS Client: Golden Valley Electric Association
SGS Project: 1171490
Project Name/Site: 104.00367.17002 Healy Pwrplant
Project Contact: Heather Simon

Refer to sample receipt form for information on sample condition.

MW-5 (1171490001) PS
Radium 226 (EPA 903.1) and Radium 228 (EPA 904) were analyzed by ACZ Laboratories of Steamboat Springs, CO.

LCS for HBN 1757279 [MXX/30577 (1379270) LCS
200.8 - Metals - LCS recovery for beryllium (117%) does not meet QC criteria. The associated sample concentrations are less than LOQ.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.
Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company’s findings at the time of its intervention only and within the limits of Client’s instructions, if any. The Company’s sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) for which SGS North America Inc. is Provisionally Certified as of 2/8/2017 & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

- The analyte has exceeded allowable regulatory or control limits.
- Surrogate out of control limits.
- Indicates the analyte is found in a blank associated with the sample.
- Continuing Calibration Verification
- Closing Continuing Calibration Verification
- Control Limit
- Dilution Factor
- Detection Limit (i.e., maximum method detection limit)
- The analyte result is above the calibrated range.
- Greater Than
- Instrument Blank
- Initial Calibration Verification
- The quantitation is an estimation.
- Laboratory Control Spike (Duplicate)
- Low Level Quantitation Check
- Limit of Detection (i.e., 1/2 of the LOQ)
- Limit of Quantitation (i.e., reporting or practical quantitation limit)
- Less Than
- Method Blank
- Matrix Spike (Duplicate)
- Indicates the analyte is not detected.
- Relative Percent Difference
- Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content.

All DRO/RRO analyses are integrated per SOP.
## Sample Summary

<table>
<thead>
<tr>
<th>Client Sample ID</th>
<th>Lab Sample ID</th>
<th>Collected</th>
<th>Received</th>
<th>Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-5</td>
<td>1171490001</td>
<td>04/04/2017</td>
<td>04/07/2017</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-95</td>
<td>1171490002</td>
<td>04/04/2017</td>
<td>04/07/2017</td>
<td>Water (Surface, Eff., Ground)</td>
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<tr>
<td>SW-1</td>
<td>1171490003</td>
<td>04/04/2017</td>
<td>04/07/2017</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-1R</td>
<td>1171490004</td>
<td>04/05/2017</td>
<td>04/07/2017</td>
<td>Water (Surface, Eff., Ground)</td>
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<tr>
<td>MW-8</td>
<td>1171490005</td>
<td>04/05/2017</td>
<td>04/07/2017</td>
<td>Water (Surface, Eff., Ground)</td>
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<tr>
<td>MW-7</td>
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<td>04/07/2017</td>
<td>Water (Surface, Eff., Ground)</td>
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<tr>
<td>MW-2</td>
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<td>04/07/2017</td>
<td>Water (Surface, Eff., Ground)</td>
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<td>MW-10</td>
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<td>04/07/2017</td>
<td>Water (Surface, Eff., Ground)</td>
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<td>MW-9</td>
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<td>04/06/2017</td>
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<td>Water (Surface, Eff., Ground)</td>
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<td>MW-4</td>
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<td>04/07/2017</td>
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<td>04/06/2017</td>
<td>04/07/2017</td>
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### Method

<table>
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<th>Method</th>
<th>Method Description</th>
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<tbody>
<tr>
<td>EPA 300.0</td>
<td>Ion Chromatographic Analysis (W)</td>
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<tr>
<td>EP245.1</td>
<td>Mercury EPA 245.1 for non drinking water</td>
</tr>
<tr>
<td>EP200.8</td>
<td>Metals in Water by 200.8 ICP-MS</td>
</tr>
<tr>
<td>SM21 2540C</td>
<td>Total Dissolved Solids SM18 2540C</td>
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</table>
### Detectable Results Summary

**Client Sample ID:** MW-5  
**Lab Sample ID:** 1171490001

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>Units</th>
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<tbody>
<tr>
<td>Antimony</td>
<td>3.78</td>
<td>ug/L</td>
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<tr>
<td>Arsenic</td>
<td>20.7</td>
<td>ug/L</td>
</tr>
<tr>
<td>Barium</td>
<td>31.6</td>
<td>ug/L</td>
</tr>
<tr>
<td>Boron</td>
<td>157</td>
<td>ug/L</td>
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<tr>
<td>Calcium</td>
<td>26000</td>
<td>ug/L</td>
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<tr>
<td>Chromium</td>
<td>78.2</td>
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<tr>
<td>Lead</td>
<td>0.0680J</td>
<td>ug/L</td>
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<tr>
<td>Lithium</td>
<td>18.6</td>
<td>ug/L</td>
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<tr>
<td>Molybdenium</td>
<td>170</td>
<td>ug/L</td>
</tr>
<tr>
<td>Selenium</td>
<td>129</td>
<td>ug/L</td>
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<tr>
<td>Chloride</td>
<td>96.7</td>
<td>mg/L</td>
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<tr>
<td>Fluoride</td>
<td>5.78</td>
<td>mg/L</td>
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<tr>
<td>Sulfate</td>
<td>918</td>
<td>mg/L</td>
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<td><strong>Total Dissolved Solids</strong></td>
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</table>

#### Waters Department

**Client Sample ID:** MW-5  
**Lab Sample ID:** 1171490002

<table>
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<td>Arsenic</td>
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<tr>
<td>Barium</td>
<td>30.5</td>
<td>ug/L</td>
</tr>
<tr>
<td>Boron</td>
<td>151</td>
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<tr>
<td>Calcium</td>
<td>25700</td>
<td>ug/L</td>
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<td>Chromium</td>
<td>76.2</td>
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<tr>
<td>Lithium</td>
<td>18.6</td>
<td>ug/L</td>
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<tr>
<td>Molybdenium</td>
<td>170</td>
<td>ug/L</td>
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<tr>
<td>Selenium</td>
<td>133</td>
<td>ug/L</td>
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<tr>
<td>Chloride</td>
<td>97.3</td>
<td>mg/L</td>
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<td>Fluoride</td>
<td>5.80</td>
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<tr>
<td>Sulfate</td>
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<td>mg/L</td>
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<td><strong>Total Dissolved Solids</strong></td>
<td></td>
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</tbody>
</table>

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Print Date: 05/26/2017 10:01:51AM

SGS North America Inc.  
200 West Potter Drive, Anchorage, AK 99518  
t 907.562.2343 f 907.561.5301  www.us.sgs.com

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5 of 83
# Detectable Results Summary

**Client Sample ID:** SW-1  
**Lab Sample ID:** 1171490003  
**Metals by ICP/MS**

<table>
<thead>
<tr>
<th>Parameter</th>
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<tr>
<td>Antimony</td>
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<td>Arsenic</td>
<td>3.38J</td>
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<td>Barium</td>
<td>242</td>
<td>ug/L</td>
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<tr>
<td>Boron</td>
<td>95.8</td>
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<tr>
<td>Calcium</td>
<td>112000</td>
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<td>Chromium</td>
<td>62.9</td>
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<td>Lead</td>
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<td>Molybdenum</td>
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<td><strong>Total Dissolved Solids</strong></td>
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**Waters Department**

**Client Sample ID:** MW-1R  
**Lab Sample ID:** 1171490004  
**Metals by ICP/MS**

<table>
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<td>Antimony</td>
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<td>Arsenic</td>
<td>21.6</td>
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<td>Barium</td>
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<td>Boron</td>
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<td>Calcium</td>
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<td>Lead</td>
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<td>Molybdenum</td>
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<td><strong>Total Dissolved Solids</strong></td>
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**Waters Department**

**Client Sample ID:** MW-8  
**Lab Sample ID:** 1171490005  
**Metals by ICP/MS**

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<td>Barium</td>
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<td>Boron</td>
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<td>Sulfate</td>
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<tr>
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Print Date: 05/26/2017 10:01:51AM  
Member of SGS Group  
SGS North America Inc.  
200 West Potter Drive, Anchorage, AK 99518  
† 907.562.2343 f 907.561.5301 www.us.sgs.com
<table>
<thead>
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<td>Lead</td>
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<td>Molybdenum</td>
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# Detectable Results Summary

**Client Sample ID:** MW-9  
**Lab Sample ID:** 1171490009

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<td>Selenium</td>
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<tr>
<td>Chloride</td>
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<tr>
<td>Fluoride</td>
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<td>Sulfate</td>
<td>504</td>
<td>mg/L</td>
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### Waters Department

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<tbody>
<tr>
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<td><strong>Total Dissolved Solids</strong></td>
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**Client Sample ID:** MW-4  
**Lab Sample ID:** 1171490010

### Metals by ICP/MS

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<td>Boron</td>
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### Waters Department

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<td>Fluoride</td>
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<tr>
<td>Sulfate</td>
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<td><strong>mg/L</strong></td>
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</tbody>
</table>

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200 West Potter Drive, Anchorage, AK 99518  
t 907.562.2343  f 907.561.5301  www.us.sgs.com

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# Detectable Results Summary

**Client Sample ID:** MW-6  
**Lab Sample ID:** 1171490011

## Metals by ICP/MS

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<td>Molybdenum</td>
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## Waters Department

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## Results of MW-5

**Client Sample ID:** MW-5  
**Client Project ID:** 104.00367.17002 Healy Pwrplant  
**Lab Sample ID:** 1171490001  
**Lab Project ID:** 1171490  
**Matrix:** Water (Surface, Eff., Ground)  
**Collection Date:** 04/04/17 18:05  
**Received Date:** 04/07/17 10:50  
**Solids (%):**

### Results by Metals by ICP/MS

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<th>DL</th>
<th>Units</th>
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### Batch Information

- **Analytical Batch:** MMS9750  
- **Analytical Method:** EP200.8  
- **Analyst:** VDL  
- **Analytical Date/Time:** 04/11/17 12:47  
- **Container ID:** 1171490001-A  
- **Prep Batch:** MXX30577  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 04/10/17 10:00  
- **Prep Initial WT./Vol.:** 20 mL  
- **Prep Extract Vol.:** 50 mL

---

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### Results of MW-5

**Client Sample ID:** MW-5  
**Client Project ID:** 104.00367.17002 Healy Pwrplant  
**Lab Sample ID:** 1171490001  
**Lab Project ID:** 1171490

**Collection Date:** 04/04/17 18:05  
**Received Date:** 04/07/17 10:50  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

#### Results by Metals Department

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<th>Units</th>
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**Batch Information**

- **Analytical Batch:** MCV5793  
- **Analytical Method:** EP245.1  
- **Analyst:** TMA  
- **Analytical Date/Time:** 04/10/17 16:02  
- **Container ID:** 1171490001-A  

- **Prep Batch:** MXX30580  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 04/10/17 12:30  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol.:** 50 mL
## Results of MW-5

**Client Sample ID:** MW-5  
**Client Project ID:** 104.00367.17002 Healy Pwrplant  
**Lab Sample ID:** 1171490001  
**Lab Project ID:** 1171490

**Collection Date:** 04/04/17 18:05  
**Received Date:** 04/07/17 10:50  
**Matrix:** Water (Surface, Eff., Ground)

### Results by Waters Department

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<td>Fluoride</td>
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<td>2.00</td>
<td>0.620</td>
<td>mg/L</td>
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### Batch Information

**Analytical Batch:** WIC5616  
**Analytical Method:** EPA 300.0  
**Analyst:** NEG  
**Analytical Date/Time:** 04/12/17 04:13  
**Container ID:** 1171490001-C

**Prep Batch:** WXX11800  
**Prep Method:** METHOD  
**Prep Date/Time:** 04/11/17 16:30  
**Prep Initial Wt./Vol.:** 1 mL  
**Prep Extract Vol:** 10 mL

**Analytical Batch:** WIC5616  
**Analytical Method:** EPA 300.0  
**Analyst:** NEG  
**Analytical Date/Time:** 04/11/17 21:31  
**Container ID:** 1171490001-C

**Prep Batch:** WXX11800  
**Prep Method:** METHOD  
**Prep Date/Time:** 04/11/17 16:30  
**Prep Initial Wt./Vol.:** 1 mL  
**Prep Extract Vol:** 10 mL

### Total Dissolved Solids

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<th>Units</th>
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<tr>
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### Batch Information

**Analytical Batch:** STS5430  
**Analytical Method:** SM21 2540C  
**Analyst:** AYC  
**Analytical Date/Time:** 04/11/17 11:44  
**Container ID:** 1171490001-D

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200 West Potter Drive Anchorage, AK 95518  
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**Results of MW-95**

- **Client Sample ID:** MW-95
- **Client Project ID:** 104.00367.17002 Healy Pwrplant
- **Lab Sample ID:** 1171490002
- **Lab Project ID:** 1171490
- **Collection Date:** 04/04/17 18:05
- **Received Date:** 04/07/17 10:50
- **Matrix:** Water (Surface, Eff., Ground)
- **Solids (%):**
- **Location:**

### Results by Metals by ICP/MS

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<tr>
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<td>0.0620</td>
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### Batch Information

- **Analytical Batch:** MMS9750
- **Analytical Method:** EP200.8
- **Analyst:** VDL
- **Analytical Date/Time:** 04/11/17 12:53
- **Container ID:** 1171490002-A

- **Prep Batch:** MXX30577
- **Prep Method:** E200.2
- **Prep Date/Time:** 04/10/17 10:00
- **Prep Initial Wt./Vol.:** 20 mL
- **Prep Extract Vol.:** 50 mL

---

Print Date: 05/26/2017 10:01:52AM

J flagging is activated
### Results of MW-95

#### Client Information
- **Client Sample ID:** MW-95
- **Client Project ID:** 104.00367.17002 Healy Pwrplant
- **Lab Sample ID:** 1171490002
- **Lab Project ID:** 1171490

#### Collection and Received Dates
- **Collection Date:** 04/04/17 18:05
- **Received Date:** 04/07/17 10:50

#### Matrix
- **Solids (%):** Water (Surface, Eff., Ground)

#### Results by Metals Department

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<tr>
<th>Parameter</th>
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<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
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<td>0.0620</td>
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#### Batch Information
- **Prep Batch:** MXX30580
- **Prep Method:** METHOD
- **Prep Date/Time:** 04/10/17 12:30
- **Prep Initial Wt./Vol.:** 25 mL
- **Prep Extract Vol:** 50 mL
### Results by Waters Department

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<td>Fluoride</td>
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### Batch Information

- **Prep Batch**: WXX11800
- **Prep Method**: METHOD
- **Prep Date/Time**: 04/11/17 16:30
- **Prep Initial Wt./Vol.**: 1 mL
- **Prep Extract Vol**: 10 mL

- **Analytical Batch**: WIC5616
- **Analytical Method**: EPA 300.0
- **Analyst**: NEG
- **Analytical Date/Time**: 04/12/17 04:30
- **Container ID**: 1171490002-C

- **Prep Batch**: WXX11800
- **Prep Method**: METHOD
- **Prep Date/Time**: 04/11/17 16:30
- **Prep Initial Wt./Vol.**: 1 mL
- **Prep Extract Vol**: 10 mL

- **Analytical Batch**: STS5430
- **Analytical Method**: SM21 2540C
- **Analyst**: AYC
- **Analytical Date/Time**: 04/11/17 11:44
- **Container ID**: 1171490002-D

### Results of MW-95

- **Client Sample ID**: MW-95
- **Client Project ID**: 104.00367.17002 Healy Pwrplant
- **Lab Sample ID**: 1171490002
- **Lab Project ID**: 1171490

- **Collection Date**: 04/04/17 18:05
- **Received Date**: 04/07/17 10:50
- **Matrix**: Water (Surface, Eff., Ground)
- **Solids (%)**: 
- **Location**: 

- **Date Analyzed**: 04/11/17 11:44
- **Parameter**: Total Dissolved Solids
- **Result Qual**: 1680
- **LOQ/CL**: 20.0
- **DL**: 6.20
- **Units**: mg/L
- **DF**: 1
- **Allowable Limits**: 04/11/17 11:44

---

**J flagging is activated**
## Results of SW-1

**Client Sample ID:** SW-1  
**Client Project ID:** 104.00367.17002 Healy Pwrplant  
**Lab Sample ID:** 1171490003  
**Lab Project ID:** 1171490

**Collection Date:** 04/04/17 18:48  
**Received Date:** 04/07/17 10:50  
**Matrix:** Water (Surface, Eff., Ground)

### Results by Metals by ICP/MS

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<tr>
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<td>0.130</td>
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<td>ug/L</td>
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### Batch Information

- **Analytical Batch:** MMS9750
- **Analytical Method:** EP200.8
- **Analyst:** VDL
- **Analytical Date/Time:** 04/11/17 12:56
- **Container ID:** 1171490003-A
- **Prep Batch:** MXX30577
- **Prep Method:** E200.2
- **Prep Date/Time:** 04/10/17 10:00
- **Prep Initial Wt./Vol.:** 20 mL
- **Prep Extract Vol:** 50 mL

---

**J flagging is activated**
## Results of SW-1

**Client Sample ID:** SW-1  
**Client Project ID:** 104.00367.17002 Healy Pwrplant  
**Lab Sample ID:** 1171490003  
**Lab Project ID:** 1171490  

**Collection Date:** 04/04/17 18:48  
**Received Date:** 04/07/17 10:50  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** 

### Results by Metals Department

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### Batch Information

**Analytical Batch:** MCV5793  
**Analytical Method:** EP245.1  
**Analyst:** TMA  
**Analytical Date/Time:** 04/10/17 16:14  
**Container ID:** 1171490003-A  

**Prep Batch:** MXX30580  
**Prep Method:** METHOD  
**Prep Date/Time:** 04/10/17 12:30  
**Prep Initial Wt./Vol.:** 25 mL  
**Prep Extract Vol:** 50 mL
## Results of SW-1

**Client Sample ID:** SW-1  
**Client Project ID:** 104.00367.17002 Healy Pwrplant  
**Lab Sample ID:** 1171490003  
**Lab Project ID:** 1171490  
**Collection Date:** 04/04/17 18:48  
**Received Date:** 04/07/17 10:50  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**  

## Results by Waters Department

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### Fluoride

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### Sulfate

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### Batch Information

**Analytical Batch:** WIC5616  
**Analytical Method:** EPA 300.0  
**Analyst:** NEG  
**Analytical Date/Time:** 04/12/17 03:56  
**Container ID:** 1171490003-C

**Prep Batch:** WXX11800  
**Prep Method:** METHOD  
**Prep Date/Time:** 04/11/17 16:30  
**Prep Initial Wt./Vol.:** 1 mL  
**Prep Extract Vol.:** 10 mL

**Analytical Batch:** STS5430  
**Analytical Method:** SM21 2540C  
**Analyst:** AYC  
**Analytical Date/Time:** 04/11/17 11:44  
**Container ID:** 1171490003-D

**Prep Batch:** WXX11800  
**Prep Method:** METHOD  
**Prep Date/Time:** 04/11/17 16:30  
**Prep Initial Wt./Vol.:** 1 mL  
**Prep Extract Vol.:** 10 mL
## Results of MW-1R

Client Sample ID: MW-1R  
Client Project ID: 104.00367.17002 Healy Pwrplant  
Lab Sample ID: 1171490004  
Lab Project ID: 1171490  
Collection Date: 04/05/17 10:40  
Received Date: 04/07/17 10:50  
Matrix: Water (Surface, Eff., Ground)

### Solids (%): Location:

### Results by Metals by ICP/MS

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<td>Cadmium</td>
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<td>0.620</td>
<td>ug/L</td>
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<tr>
<td>Cobalt</td>
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<td>1.20</td>
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### Batch Information

- Analytical Batch: MMS9750  
- Analytical Method: EP200.8  
- Analyst: VDL  
- Analytical Date/Time: 04/11/17 12:59  
- Container ID: 1171490004-A  
- Prep Batch: MXX30577  
- Prep Method: E200.2  
- Prep Date/Time: 04/10/17 10:00  
- Prep Initial Wt./Vol.: 20 mL  
- Prep Extract Vol.: 50 mL

Print Date: 05/26/2017 10:01:52AM  
J flagging is activated

SGS North America Inc.  
200 West Potter Drive Anchorage, AK 95518  
t 907.562.2343 f 907.561.5301  www.us.sgs.com  
Member of SGS Group  
19 of 83
Results of MW-1R

Client Sample ID: MW-1R
Client Project ID: 104.00367.17002 Healy Pwrplant
Lab Sample ID: 1171490004
Lab Project ID: 1171490

Collection Date: 04/05/17 10:40
Received Date: 04/07/17 10:50
Matrix: Water (Surface, Eff., Ground)
Solids (%): Location:

Results by Metals Department

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<th>LOQ/CL</th>
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<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
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<td>0.100 U</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
<td>1</td>
<td></td>
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Batch Information

Analytical Batch: MCV5793
Analytical Method: EP245.1
Analyst: TMA
Analytical Date/Time: 04/10/17 16:17
Container ID: 1171490004-A

Prep Batch: MXX30580
Prep Method: METHOD
Prep Date/Time: 04/10/17 12:30
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL
# Results of MW-1R

Client Sample ID: MW-1R  
Client Project ID: 104.00367.17002 Healy Pwrplant  
Lab Sample ID: 1171490004  
Lab Project ID: 1171490  
Collection Date: 04/05/17 10:40  
Received Date: 04/07/17 10:50  
Matrix: Water (Surface, Eff., Ground)  

### Results by Waters Department

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<tr>
<td>Chloride</td>
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<td>Fluoride</td>
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<td>Sulfate</td>
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<td>8.00</td>
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<tr>
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<td>04/11/17 11:44</td>
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### Batch Information

**Prep Batch:** WXX11800  
**Prep Method:** METHOD  
**Prep Date/Time:** 04/11/17 16:30  
**Prep Initial Wt./Vol.:** 1 mL  
**Prep Extract Vol:** 10 mL  

**Analytical Batch:** WIC5616  
**Analytical Method:** EPA 300.0  
**Analyst:** NEG  
**Analytical Date/Time:** 04/12/17 02:47  
**Container ID:** 1171490004-C  
**Prep Batch:** WXX11800  
**Prep Method:** METHOD  
**Prep Date/Time:** 04/11/17 16:30  
**Prep Initial Wt./Vol.:** 1 mL  
**Prep Extract Vol:** 10 mL  

**Analytical Batch:** STS5430  
**Analytical Method:** SM21 2540C  
**Analyst:** AYC  
**Analytical Date/Time:** 04/11/17 11:44  
**Container ID:** 1171490004-D  

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Print Date: 05/26/2017 10:01:52AM  
J flagging is activated
## Results of MW-8

**Client Sample ID:** MW-8  
**Client Project ID:** 104.00367.17002 Healy Pwrplant  
**Lab Sample ID:** 1171490005  
**Lab Project ID:** 1171490

**Collection Date:** 04/05/17 11:45  
**Received Date:** 04/07/17 10:50  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

### Results by Metals by ICP/MS

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<tr>
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<td>0.500 U</td>
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<td>0.310 ug/L</td>
<td>1</td>
<td>04/11/17 13:02</td>
<td></td>
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<tr>
<td>Arsenic</td>
<td>2.50 U</td>
<td>5.00</td>
<td>1.50 ug/L</td>
<td>1</td>
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<tr>
<td>Barium</td>
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<td>0.940 ug/L</td>
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<td>Beryllium</td>
<td>0.200 U</td>
<td>0.400</td>
<td>0.130 ug/L</td>
<td>1</td>
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<tr>
<td>Boron</td>
<td>32.3 J</td>
<td>50.0</td>
<td>15.0 ug/L</td>
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<tr>
<td>Cadmium</td>
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<td>0.500</td>
<td>0.150 ug/L</td>
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<td>04/11/17 13:02</td>
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<td>Calcium</td>
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<td>Chromium</td>
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<td>0.620 ug/L</td>
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<tr>
<td>Cobalt</td>
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<td>4.00</td>
<td>1.20 ug/L</td>
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<td>Lead</td>
<td>0.100 U</td>
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<tr>
<td>Molybdenum</td>
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<td>0.620 ug/L</td>
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<td>Selenium</td>
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<td>1.50 ug/L</td>
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<td>04/11/17 13:02</td>
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</tr>
<tr>
<td>Thallium</td>
<td>0.500 U</td>
<td>1.00</td>
<td>0.310 ug/L</td>
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### Batch Information

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<td>MXX30577</td>
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<td>Analytical Method</td>
<td>Prep Method</td>
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<td>EP200.8</td>
<td>E200.2</td>
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<td>20 mL</td>
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<td>Container ID</td>
<td>Prep Extract Vol.:</td>
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<tr>
<td>1171490005-A</td>
<td>50 mL</td>
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</table>

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t 907.562.2343 f 907.561.5301  www.us.sgs.com

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### Results of MW-8

Client Sample ID: MW-8  
Client Project ID: 104.00367.17002 Healy Pwrplant  
Lab Sample ID: 1171490005  
Lab Project ID: 1171490  

Collection Date: 04/05/17 11:45  
Received Date: 04/07/17 10:50  
Matrix: Water (Surface, Eff., Ground)  
Solids (%): Location:  

### Results by Metals Department

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<tr>
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### Batch Information

- **Prep Batch**: MXX30580  
- **Prep Method**: METHOD  
- **Prep Initial Wt./Vol.**: 25 mL  
- **Prep Extract Vol**: 50 mL

- **Analytical Batch**: MCV5793  
- **Analytical Method**: EP245.1  
- **Analyst**: TMA  
- **Analytical Date/Time**: 04/10/17 16:20  
- **Container ID**: 1171490005-A

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### Results of MW-8

**Client Sample ID:** MW-8  
**Client Project ID:** 104.00367.17002 Healy Pwrplant  
**Lab Sample ID:** 1171490005  
**Lab Project ID:** 1171490  
**Collection Date:** 04/05/17 11:45  
**Received Date:** 04/07/17 10:50  
**Matrix:** Water (Surface, Eff., Ground)

#### Results by Waters Department

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<tr>
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**Batch Information**

- **Prep Batch:** WXX11800  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 04/11/17 16:30  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

- **Analytical Batch:** WIC5616  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Analytical Date/Time:** 04/11/17 18:57  
- **Container ID:** 1171490005-C

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**Batch Information**

- **Analytical Batch:** STS5430  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 04/11/17 11:44  
- **Container ID:** 1171490005-D

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**Print Date:** 05/26/2017 10:01:52AM  
**J flagging is activated**
## Results of MW-7

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<tbody>
<tr>
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<td>0.500 U</td>
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<td>0.310 ug/L</td>
<td>1</td>
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<tr>
<td>Arsenic</td>
<td>1.98 J</td>
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<td>1.50  ug/L</td>
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<tr>
<td>Barium</td>
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<td>0.940 ug/L</td>
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</tr>
<tr>
<td>Beryllium</td>
<td>0.200 U</td>
<td>0.400</td>
<td>0.130 ug/L</td>
<td>1</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Boron</td>
<td>25.0 U</td>
<td>50.0</td>
<td>15.0  ug/L</td>
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<td></td>
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<tr>
<td>Cadmium</td>
<td>0.250 U</td>
<td>0.500</td>
<td>0.150 ug/L</td>
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<td>Calcium</td>
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<td>Chromium</td>
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<td>2.00</td>
<td>0.620 ug/L</td>
<td>1</td>
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<td>Cobalt</td>
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<td>4.00</td>
<td>1.20  ug/L</td>
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<td></td>
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</tr>
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<td>Lead</td>
<td>0.100 U</td>
<td>0.200</td>
<td>0.0620 ug/L</td>
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<tr>
<td>Molybdenum</td>
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<td>0.620 ug/L</td>
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<tr>
<td>Thallium</td>
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## Batch Information

- **Prep Batch:** MXX30577
- **Prep Method:** E200.2
- **Prep Date/Time:** 04/10/17 10:00
- **Prep Initial Wt./Vol.:** 20 mL
- **Prep Extract Vol.:** 50 mL

---

**Print Date:** 05/26/2017 10:01:52AM

J flagging is activated

**Client Sample ID:** MW-7
**Client Project ID:** 104.00367.17002 Healy Pwrplant
**Lab Sample ID:** 1171490006
**Lab Project ID:** 1171490
### Results of MW-7

**Client Sample ID:** MW-7
**Client Project ID:** 104.00367.17002 Healy Pwrplant
**Lab Sample ID:** 1171490006
**Lab Project ID:** 1171490

**Collection Date:** 04/05/17 16:02
**Received Date:** 04/07/17 10:50
**Matrix:** Water (Surface, Eff., Ground)

**Solids (%):**

**Location:**

### Results by Metals Department

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<th>Result Qual</th>
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<th>Allowable Limits</th>
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<tbody>
<tr>
<td>Mercury</td>
<td>0.100 U</td>
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<td>0.0620</td>
<td>ug/L</td>
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### Batch Information

- **Analytical Batch:** MCV5793
- **Analytical Method:** EP245.1
- ** Analyst:** TMA
- **Analytical Date/Time:** 04/10/17 16:23
- **Container ID:** 1171490006-A

- **Prep Batch:** MXX30580
- **Prep Method:** METHOD
- **Prep Date/Time:** 04/10/17 12:30
- **Prep Initial Wt./Vol.:** 25 mL
- **Prep Extract Vol:** 50 mL

---

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### Results of MW-7

**Client Sample ID:** MW-7  
**Client Project ID:** 104.00367.17002 Healy Pwrplant  
**Lab Sample ID:** 1171490006  
**Lab Project ID:** 1171490  
**Collection Date:** 04/05/17 16:02  
**Received Date:** 04/07/17 10:50  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** Location:

#### Results by Waters Department

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<th>Parameter</th>
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<th>Units</th>
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<td>Fluoride</td>
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<td>0.0620</td>
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#### Batch Information

**Prep Batch:** WXX11800  
**Prep Method:** METHOD  
**Prep Date/Time:** 04/11/17 16:30  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol:** 10 mL  
**Analytical Batch:** WIC5616  
**Analytical Method:** EPA 300.0  
**Prep Date/Time:** 04/11/17 11:44  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol:** 10 mL

### Total Dissolved Solids

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#### Batch Information

**Prep Batch:** STS5430  
**Prep Method:** SM21 2540C  
**Prep Date/Time:** 04/11/17 11:44  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol:** 10 mL  
**Analytical Batch:** STS5430  
**Analytical Method:** SM21 2540C  
**Analytical Date/Time:** 04/11/17 11:44  
**Container ID:** 1171490006-D
### Results of MW-2

Client Sample ID: **MW-2**  
Client Project ID: **104.00367.17002 Healy Pwrplant**  
Lab Sample ID: **1171490007**  
Lab Project ID: **1171490**  
Collection Date: **04/05/17 17:20**  
Received Date: **04/07/17 10:50**  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

### Results by Metals by ICP/MS

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### Batch Information

- Analytical Batch: **MMS9750**  
- Analytical Method: **EP200.8**  
- Analyst: **VDL**  
- Analytical Date/Time: **04/11/17 13:08**  
- Container ID: **1171490007-A**  
- Prep Batch: **MXX30577**  
- Prep Method: **E200.2**  
- Prep Date/Time: **04/10/17 10:00**  
- Prep Initial Wt./Vol.: **20 mL**  
- Prep Extract Vol.: **50 mL**
Results of MW-2

Client Sample ID: MW-2
Client Project ID: 104.00367.17002 Healy Pwrplant
Lab Sample ID: 1171490007
Lab Project ID: 1171490

Collection Date: 04/05/17 17:20
Received Date: 04/07/17 10:50
Matrix: Water (Surface, Eff., Ground)

Solids (%):
Location:

Results by Metals Department

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Batch Information

- Analytical Batch: MCV5793
- Analytical Method: EP245.1
- Analyst: TMA
- Analytical Date/Time: 04/10/17 16:28
- Container ID: 1171490007-A

- Prep Batch: MXX30580
- Prep Method: METHOD
- Prep Date/Time: 04/10/17 12:30
- Prep Initial Wt./Vol.: 25 mL
- Prep Extract Vol: 50 mL
### Results of MW-2

**Client Sample ID:** MW-2  
**Client Project ID:** 104.00367.17002 Healy Pwrplant  
**Lab Sample ID:** 1171490007  
**Lab Project ID:** 1171490  
**Collection Date:** 04/05/17 17:20  
**Received Date:** 04/07/17 10:50  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**  

### Results by Waters Department

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### Batch Information

- **Prep Batch:** WXX11800  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 04/11/17 16:30  
- **Prep Initial Wt./Vol.:** 1 mL  
- **Prep Extract Vol:** 10 mL  

- **Analytical Batch:** WIC5616  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Analytical Date/Time:** 04/11/17 20:49  
- **Container ID:** 1171490007-B

- **Prep Batch:** WXX11800  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 04/11/17 16:30  
- **Prep Initial Wt./Vol.:** 1 mL  
- **Prep Extract Vol:** 10 mL  

- **Analytical Batch:** WIC5616  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Analytical Date/Time:** 04/11/17 20:49  
- **Container ID:** 1171490007-B

### Total Dissolved Solids

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### Batch Information

- **Analytical Batch:** STS5430  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 04/11/17 11:44  
- **Container ID:** 1171490007-C

---

**Print Date:** 05/26/2017 10:01:52AM  
**J flagging is activated**

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200 West Potter Drive Anchorage, AK 99518  
† 907.562.2343 † 907.561.5301  
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### Results of MW-10

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<td>Beryllium</td>
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<tr>
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### Batch Information

- **Analytical Batch:** MMS9750
- **Analytical Method:** EP200.8
- **Analyst:** VDL
- **Analytical Date/Time:** 04/11/17 13:23
- **Container ID:** 1171490008-A

- **Prep Batch:** MXX30577
- **Prep Method:** E200.2
- **Prep Initial Wt./Vol.:** 20 mL
- **Prep Extract Vol.:** 50 mL

---

**Print Date:** 05/26/2017 10:01:52AM

**J flagging is activated**
### Results of MW-10

Client Sample ID: **MW-10**  
Client Project ID: **104.00367.17002 Healy Pwrplant**  
Lab Sample ID: **1171490008**  
Lab Project ID: **1171490**

**Matrix:** Water (Surface, Eff., Ground)

**Solids (%):**

**Collection Date:** 04/06/17 12:19  
**Received Date:** 04/07/17 10:50

### Results by Metals Department

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### Batch Information

- **Analytical Batch:** MCV5793  
- **Analytical Method:** EP245.1  
- **Analyst:** TMA  
- **Analytical Date/Time:** 04/10/17 16:31

- **Prep Batch:** MXX30580  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 04/10/17 12:30  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol:** 50 mL
Results of MW-10

Client Sample ID: MW-10
Client Project ID: 104.00367.17002 Healy Pwrplant
Lab Sample ID: 1171490008
Lab Project ID: 1171490

Collection Date: 04/06/17 12:19
Received Date: 04/07/17 10:50
Matrix: Water (Surface, Eff., Ground)
Solids (%): Location:

Results by Waters Department

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Batch Information

Analytical Batch: WIC5616
Analytical Method: EPA 300.0
Analyst: NEG
Analytical Date/Time: 04/11/17 19:25
Container ID: 1171490008-C

Prep Batch: WXX11800
Prep Method: METHOD
Prep Date/Time: 04/11/17 16:30
Prep Initial Wt./Vol.: 10 mL
Prep Extract Vol: 10 mL

Batch Information

Analytical Batch: STS5430
Analytical Method: SM21 2540C
Analyst: AYC
Analytical Date/Time: 04/11/17 11:44
Container ID: 1171490008-D

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----------|-------------|--------|-----|-------|----|------------------|---------------|
Total Dissolved Solids | 504 | 10.0 | 3.10 | mg/L | 1  |                  | 04/11/17 11:44|

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### Results of MW-9

Client Sample ID: **MW-9**  
Client Project ID: **104.00367.17002 Healy Pwrplant**  
Lab Sample ID: **1171490009**  
Lab Project ID: **1171490**  
Collection Date: **04/06/17 13:46**  
Received Date: **04/07/17 10:50**  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

### Results by Metals by ICP/MS

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### Batch Information

- Analytical Batch: **MMS9750**  
- Analytical Method: **EP200.8**  
- Analyst: **VDL**  
- Analytical Date/Time: **04/11/17 13:26**  
- Container ID: **1171490009-A**  
- Prep Batch: **MXX30577**  
- Prep Method: **E200.2**  
- Prep Date/Time: **04/10/17 10:00**  
- Prep Initial Wt./Vol.: **20 mL**  
- Prep Extract Vol.: **50 mL**

**J flagging is activated**
**Results of MW-9**

Client Sample ID: MW-9
Client Project ID: 104.00367.17002 Healy Pwrplant
Lab Sample ID: 1171490009
Lab Project ID: 1171490

Collection Date: 04/06/17 13:46
Received Date: 04/07/17 10:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

### Results by Metals Department

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<td>0.200</td>
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<td>ug/L</td>
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**Batch Information**

Analytical Batch: MCV5793
Analytical Method: EP245.1
Analyst: TMA
Analytical Date/Time: 04/10/17 16:34
Container ID: 1171490009-A

Prep Batch: MXX30580
Prep Method: METHOD
Prep Date/Time: 04/10/17 12:30
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL

Print Date: 05/26/2017 10:01:52AM

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Results of MW-9

Client Sample ID: MW-9
Client Project ID: 104.00367.17002 Healy Pwrplant
Lab Sample ID: 1171490009
Lab Project ID: 1171490

Collection Date: 04/06/17 13:46
Received Date: 04/07/17 10:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Waters Department

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<tr>
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<tr>
<td>Sulfate</td>
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Batch Information

Analytical Batch: WIC5616
Analytical Method: EPA 300.0
Analyst: NEG
Analytical Date/Time: 04/12/17 02:30
Container ID: 1171490009-C

Prep Batch: WXX11800
Prep Method: METHOD
Prep Date/Time: 04/11/17 16:30
Prep Initial Wt./Vol.: 1 mL
Prep Extract Vol: 10 mL

Analytical Batch: WIC5616
Analytical Method: EPA 300.0
Analyst: NEG
Analytical Date/Time: 04/11/17 19:39
Container ID: 1171490009-C

Prep Batch: WXX11800
Prep Method: METHOD
Prep Date/Time: 04/11/17 16:30
Prep Initial Wt./Vol.: 1 mL
Prep Extract Vol: 10 mL

Analytical Batch: STS5430
Analytical Method: SM21 2540C
Analyst: AYC
Analytical Date/Time: 04/11/17 11:44
Container ID: 1171490009-D

Parameter        | Result Qual | LOQ/CL | DL  | Units | DF | Allowable Limits | Date Analyzed |
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Batch Information

Analytical Batch: STS5430
Analytical Method: SM21 2540C
Analyst: AYC
Analytical Date/Time: 04/11/17 11:44
Container ID: 1171490009-D

Print Date: 05/26/2017 10:01:52AM

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36 of 83
Results of MW-4

Collection Date: 04/06/17 14:46
Received Date: 04/07/17 10:50
Matrix: Water (Surface, Eff., Ground)

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<tr>
<td>Beryllium</td>
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<td>ug/L</td>
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<td>Boron</td>
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<tr>
<td>Cobalt</td>
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<td>Molybdenum</td>
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<td>Selenium</td>
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</tr>
<tr>
<td>Thallium</td>
<td>0.500 U</td>
<td>1.00</td>
<td>0.310</td>
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J flagging is activated

Batch Information

Prep Batch: MXX30577
Prep Method: E200.2
Prep Date/Time: 04/10/17 10:00
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol.: 50 mL
## Results of MW-4

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<th>Allowable Limits</th>
<th>Date Analyzed</th>
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</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>0.100 U</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
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### Batch Information

- **Prep Batch**: MXX30580
- **Prep Method**: METHOD
- **Prep Date/Time**: 04/10/17 12:30
- **Prep Initial Wt./Vol.**: 25 mL
- **Prep Extract Vol**: 50 mL
- **Prep Initial Wt./Vol.**: 25 mL
- **Prep Extract Vol**: 50 mL

---

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Results of MW-4

Client Sample ID:  MW-4
Client Project ID:  104.00367.17002 Healy Pwrplant
Lab Sample ID:  1171490010
Lab Project ID:  1171490

Collection Date:  04/06/17 14:46
Received Date:  04/07/17 10:50
Matrix:  Water (Surface, Eff., Ground)
Solids (%): Location:

Results by Waters Department

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<th>Parameter</th>
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<th>Units</th>
<th>DF</th>
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<tbody>
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<td>mg/L</td>
<td>1</td>
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<td>Fluoride</td>
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Batch Information

Analytical Batch:  WIC5616
Analytical Method:  EPA 300.0
Analyst:  NEG
Analytical Date/Time:  04/12/17 03:04
Container ID:  1171490010-C

Prep Batch:  WXX11800
Prep Method:  METHOD
Prep Date/Time:  04/11/17 16:30
Prep Initial Wt./Vol.:  1 mL
Prep Extract Vol:  10 mL

Analytical Batch:  WIC5616
Analytical Method:  EPA 300.0
Analyst:  NEG
Analytical Date/Time:  04/11/17 20:35
Container ID:  1171490010-C

Prep Batch:  WXX11800
Prep Method:  METHOD
Prep Date/Time:  04/11/17 16:30
Prep Initial Wt./Vol.:  1 mL
Prep Extract Vol:  10 mL

Parameter       | Result Qual | LOQ/CL | DL  | Units | DF | Allowable Limits | Date Analyzed |
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</tr>
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<td>6.20</td>
<td>mg/L</td>
<td>1</td>
<td>20.0</td>
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Batch Information

Analytical Batch:  STS5430
Analytical Method:  SM21 2540C
Analyst:  AYC
Analytical Date/Time:  04/11/17 11:44
Container ID:  1171490010-D

Print Date:  05/26/2017 10:01:52AM
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## Results of MW-6

**Client Sample ID:** MW-6  
**Client Project ID:** 104.00367.17002 Healy Pwrplant  
**Lab Sample ID:** 1171490011  
**Lab Project ID:** 1171490

**Collection Date:** 04/06/17 15:30  
**Received Date:** 04/07/17 10:50  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

### Results by Metals by ICP/MS

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<tr>
<td>Arsenic</td>
<td>3.31 J</td>
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<td>1.50</td>
<td>ug/L</td>
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<tr>
<td>Barium</td>
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<td>0.940</td>
<td>ug/L</td>
<td>1</td>
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<td>04/11/17 13:41</td>
</tr>
<tr>
<td>Beryllium</td>
<td>0.200 U</td>
<td>0.400</td>
<td>0.130</td>
<td>ug/L</td>
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<td></td>
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<tr>
<td>Boron</td>
<td>590</td>
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<td>15.0</td>
<td>ug/L</td>
<td>1</td>
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<td>Cadmium</td>
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<td>0.500</td>
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<td>ug/L</td>
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<td>150</td>
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<td>Chromium</td>
<td>1.00 U</td>
<td>2.00</td>
<td>0.620</td>
<td>ug/L</td>
<td>1</td>
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<td>Cobalt</td>
<td>2.00 U</td>
<td>4.00</td>
<td>1.20</td>
<td>ug/L</td>
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<td>Lithium</td>
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<td>3.10</td>
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<td>Molybdenum</td>
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<td>ug/L</td>
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<tr>
<td>Thallium</td>
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<td>0.310</td>
<td>ug/L</td>
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### Batch Information

- **Analytical Batch:** MMS9750  
- **Analytical Method:** EP200.8  
- **Analyst:** VDL  
- **Analytical Date/Time:** 04/11/17 13:41  
- **Container ID:** 1171490011-A

- **Prep Batch:** MXX30577  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 04/10/17 10:00  
- **Prep Initial WT./Vol.:** 20 mL  
- **Prep Extract Vol.:** 50 mL

---

J flagging is activated
## Results of MW-6

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### Batch Information

- **Analytical Batch:** MCV5793
- **Analytical Method:** EP245.1
- **Analyst:** TMA
- **Analytical Date/Time:** 04/10/17 16:40
- **Container ID:** 1171490011-A

- **Prep Batch:** MXX30580
- **Prep Method:** METHOD
- **Prep Date/Time:** 04/10/17 12:30
- **Prep Initial Wt./Vol.:** 25 mL
- **Prep Extract Vol:** 50 mL
## Results of MW-6

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### Batch Information

- **Prep Batch:** WXX11800
- **Prep Method:** METHOD
- **Prep Date/Time:** 04/11/17 16:30
- **Prep Initial Wt./Vol.:** 1 mL
- **Prep Extract Vol:** 10 mL

- **Prep Batch:** WXX11800
- **Prep Method:** METHOD
- **Prep Date/Time:** 04/11/17 16:30
- **Prep Initial Wt./Vol.:** 1 mL
- **Prep Extract Vol:** 10 mL

- **Prep Batch:** WXX11800
- **Prep Method:** METHOD
- **Prep Date/Time:** 04/11/17 16:30
- **Prep Initial Wt./Vol.:** 1 mL
- **Prep Extract Vol:** 10 mL

- **Prep Batch:** WXX11800
- **Prep Method:** METHOD
- **Prep Date/Time:** 04/11/17 16:30
- **Prep Initial Wt./Vol.:** 1 mL
- **Prep Extract Vol:** 10 mL
### Method Blank

Blank ID: MB for HBN 1757279 [MXX/30577]  
Matrix: Water (Surface, Eff., Ground)  
Blank Lab ID: 1379269

QC for Samples:
1171490001, 1171490002, 1171490003, 1171490004, 1171490005, 1171490006, 1171490007, 1171490008, 1171490009, 1171490010, 1171490011

### Results by EP200.8

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<td>0.400</td>
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<td>ug/L</td>
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<td>Molybdenum</td>
<td>1.00U</td>
<td>2.00</td>
<td>0.620</td>
<td>ug/L</td>
</tr>
<tr>
<td>Selenium</td>
<td>2.50U</td>
<td>5.00</td>
<td>1.50</td>
<td>ug/L</td>
</tr>
<tr>
<td>Thallium</td>
<td>0.500U</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
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### Batch Information

Analytical Batch: MMS9750  
Analytical Method: EP200.8  
Instrument: Perkin Elmer NexIon P5  
Analyst: VDL  
Analytical Date/Time: 4/11/2017 1:17:12PM  
Prep Batch: MXX30577  
Prep Method: E200.2  
Prep Date/Time: 4/10/2017 10:00:58AM  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL
**Blank Spike Summary**

Blank Spike ID: LCS for HBN 1171490 [MXX30577]
Blank Spike Lab ID: 1379270
Date Analyzed: 04/11/2017 13:20

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1171490001, 1171490002, 1171490003, 1171490004, 1171490005, 1171490006, 1171490007, 1171490008, 1171490009, 1171490010, 1171490011

**Results by EP200.8**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>1000</td>
<td>1010</td>
<td>101</td>
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<tr>
<td>Arsenic</td>
<td>1000</td>
<td>1020</td>
<td>102</td>
<td>(85-115)</td>
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<tr>
<td>Barium</td>
<td>1000</td>
<td>1010</td>
<td>101</td>
<td>(85-115)</td>
</tr>
<tr>
<td>Beryllium</td>
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<td>117</td>
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<td>Boron</td>
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<td>400</td>
<td>394</td>
<td>99</td>
<td>(85-115)</td>
</tr>
<tr>
<td>Cobalt</td>
<td>500</td>
<td>488</td>
<td>98</td>
<td>(85-115)</td>
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<tr>
<td>Lead</td>
<td>1000</td>
<td>1030</td>
<td>103</td>
<td>(85-115)</td>
</tr>
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<td>Lithium</td>
<td>200</td>
<td>220</td>
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<td>Molybdenum</td>
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<td>(85-115)</td>
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<tr>
<td>Selenium</td>
<td>1000</td>
<td>1040</td>
<td>104</td>
<td>(85-115)</td>
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<tr>
<td>Thallium</td>
<td>10</td>
<td>10.3</td>
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<td>(85-115)</td>
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**Batch Information**

- Analytical Batch: MMS9750
- Analytical Method: EP200.8
- Instrument: Perkin Elmer NexIon P5
- Analyst: VDL
- Prep Batch: MXX30577
- Prep Method: E200.2
- Prep Date/Time: 04/10/2017 10:00
- Spike Init Wt./Vol.: 1000 ug/L
- Extract Vol: 50 mL
- Dupe Init Wt./Vol.: Extract Vol:
### Matrix Spike Summary

Original Sample ID: 1379271  
MS Sample ID: 1379272 MS  
MSD Sample ID:  
Analysis Date: 04/11/2017 12:47  
Analysis Date: 04/11/2017 12:50  
Matrix: Drinking Water  
QC for Samples: 1171490001, 1171490002, 1171490003, 1171490004, 1171490005, 1171490006, 1171490007, 1171490008, 1171490009, 1171490010

### Results by EP200.8

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sample</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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<td>Barium</td>
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<td></td>
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<tr>
<td>Beryllium</td>
<td>0.200U</td>
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<td>103</td>
<td>103</td>
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<td>0.250U</td>
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<td>96.5</td>
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<td>Calcium</td>
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<td>35400</td>
<td>94</td>
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<td>Chromium</td>
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</tr>
<tr>
<td>Cobalt</td>
<td>2.00U</td>
<td>500</td>
<td>465</td>
<td>93</td>
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<td>Lead</td>
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<td>100</td>
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<td>Molybdenum</td>
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<td>593</td>
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<td>129</td>
<td>1000</td>
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<td>101</td>
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<td>9.74</td>
<td>97</td>
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### Batch Information

- **Analytical Batch**: MMS9750  
- **Analytical Method**: EP200.8  
- **Instrument**: Perkin Elmer NexIon P5  
- **Analyst**: VDL  
- **Analytical Date/Time**: 4/11/2017 12:50:14PM  
- **Prep Batch**: MXX30577  
- **Prep Method**: DW Digest for Metals on ICP-MS  
- **Prep Date/Time**: 4/10/2017 10:00:58AM  
- **Prep Initial Wt./Vol.**: 20.00mL  
- **Prep Extract Vol**: 50.00mL

Print Date: 05/26/2017 10:01:59AM
### Matrix Spike Summary

Original Sample ID: 1379273  
MS Sample ID: 1379274 MS  
MSD Sample ID:  
Analysis Date: 04/11/2017 13:32  
Analysis Date: 04/11/2017 13:35  
Analysis Date:  
Matrix: Drinking Water  
QC for Samples: 1171490002, 1171490003, 1171490004, 1171490005, 1171490006, 1171490007, 1171490008, 1171490009, 1171490010, 1171490011

### Results by EP200.8

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sample</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
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<tr>
<td>Antimony</td>
<td>0.500U</td>
<td>1000</td>
<td>1030</td>
<td>103</td>
<td>1000</td>
<td>1030</td>
<td>103</td>
<td>70-130</td>
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<td></td>
</tr>
<tr>
<td>Arsenic</td>
<td>2.50U</td>
<td>1000</td>
<td>1010</td>
<td>101</td>
<td>1000</td>
<td>1010</td>
<td>101</td>
<td>70-130</td>
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<td>1010</td>
<td>100</td>
<td>70-130</td>
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<td></td>
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<td>Beryllium</td>
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<td>100</td>
<td>109</td>
<td>109</td>
<td>100</td>
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<td>109</td>
<td>70-130</td>
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<tr>
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<td>103</td>
<td>103</td>
<td>100</td>
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<td>10000</td>
<td>82300</td>
<td>91</td>
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<td>82300</td>
<td>91</td>
<td>70-130</td>
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<tr>
<td>Chromium</td>
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<td>400</td>
<td>393</td>
<td>98</td>
<td>400</td>
<td>393</td>
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<td>70-130</td>
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<tr>
<td>Cobalt</td>
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<td>500</td>
<td>468</td>
<td>94</td>
<td>500</td>
<td>468</td>
<td>94</td>
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<td>Molybdenum</td>
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<td>412</td>
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<td>412</td>
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<td>10.0</td>
<td>10.3</td>
<td>103</td>
<td>70-130</td>
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### Batch Information

- Analytical Batch: MMS9750
- Analytical Method: EP200.8
- Instrument: Perkin Elmer NexIon P5
- Analyst: VDL
- Analytical Date/Time: 4/11/2017 1:35:08PM
- Prep Batch: MXX30577
- Prep Method: DW Digest for Metals on ICP-MS
- Prep Date/Time: 4/10/2017 10:00:58AM
- Prep Initial Wt./Vol.: 20.00mL
- Prep Extract Vol: 50.00mL

Print Date: 05/26/2017 10:01:59AM

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### Method Blank

Blank ID: MB for HBN 1757286 [MXX/30580]  
Blank Lab ID: 1379311  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1171490001, 1171490002, 1171490003, 1171490004, 1171490005, 1171490006, 1171490007, 1171490008, 1171490009, 1171490010, 1171490011

### Results by EP245.1

<table>
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<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
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<td>Mercury</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
</tr>
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</table>

### Batch Information

- **Analytical Batch:** MCV5793  
- **Analytical Method:** EP245.1  
- **Instrument:** PSA Millennium mercury AA  
- **Analyst:** TMA  
- **Analytical Date/Time:** 4/10/2017 3:38:59PM  
- **Prep Batch:** MXX30580  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 4/10/2017 12:30:00PM  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol.:** 50 mL
Blank Spike Summary

Blank Spike ID: LCS for HBN 1171490 [MXX30580]
Blank Spike Lab ID: 1379312
Date Analyzed: 04/10/2017 15:41

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1171490001, 1171490002, 1171490003, 1171490004, 1171490005, 1171490006, 1171490007, 1171490008, 1171490009, 1171490010, 1171490011

Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>4</td>
<td>4.11</td>
<td>103</td>
<td>(85-115)</td>
</tr>
</tbody>
</table>

Batch Information

Analytical Batch: MCV5793
Analytical Method: EP245.1
Instrument: PSA Millennium mercury AA
Analyst: TMA

Prep Batch: MXX30580
Prep Method: METHOD
Prep Date/Time: 04/10/2017 12:30
Spike Init Wt./Vol.: 4 ug/L  Extract Vol: 50 mL
Dupe Init Wt./Vol.:  Extract Vol:
### Matrix Spike Summary

- **Original Sample ID:** 1171360010  
- **Analysis Date:** 04/10/2017 15:44  
- **MS Sample ID:** 1379313 MS  
- **MSD Sample ID:**  
- **Matrix:** Water (Surface, Eff., Ground)  
- **QC for Samples:** 1171490001, 1171490002, 1171490003, 1171490004, 1171490005, 1171490006, 1171490007, 1171490008, 1171490009, 1171490010, 1171490011

### Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sample</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>0.100U</td>
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<td>8.12</td>
<td>102</td>
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<td>70-130</td>
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### Batch Information

- **Prep Batch:** MXX30580  
- **Prep Method:** Digestion Mercury 245.1 (W)  
- **Prep Date/Time:** 4/10/2017 12:30:00PM  
- **Prep Initial Wt./Vol.:** 25.00mL  
- **Prep Extract Vol:** 50.00mL  
- **Analytical Batch:** MCV5793  
- **Analytical Method:** EP245.1  
- **Instrument:** PSA Millennium mercury AA  
- **Analyst:** TMA  
- **Analytical Date/Time:** 4/10/2017 3:47:47PM
### Matrix Spike Summary

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<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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</thead>
<tbody>
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<td>Mercury</td>
<td>0.100U</td>
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<td>8.51</td>
<td>106</td>
<td>8.51</td>
<td>8.51</td>
<td>106</td>
<td>70-130</td>
<td>70-130</td>
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</tr>
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### Batch Information

- **Prep Batch:** MXX30580
- **Prep Method:** Digestion Mercury 245.1 (W)
- **Prep Date/Time:** 4/10/2017 12:30:00PM
- **Prep Initial Wt./Vol.:** 25.00mL
- **Prep Extract Vol:** 50.00mL

- **Analytical Batch:** MCV5793
- **Analytical Method:** EP245.1
- **Instrument:** PSA Millennium mercury AA
- **Analyst:** TMA
- **Analytical Date/Time:** 4/10/2017 4:25:59PM

---

Original Sample ID: 1171490006
MS Sample ID: 1379314 MS
MSD Sample ID: 
Analysis Date: 04/10/2017 16:23
Analysis Date: 04/10/2017 16:25
Analysis Date: 
Matrix: Water (Surface, Eff., Ground)
QC for Samples: 1171490001, 1171490002, 1171490003, 1171490004, 1171490005, 1171490006, 1171490007, 1171490008, 1171490009, 1171490010, 1171490011

Print Date: 05/26/2017 10:02:05AM

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**Method Blank**

Blank ID: MB for HBN 1757294 [STS/5430]  
Blank Lab ID: 1379354  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1171490001, 1171490002, 1171490003, 1171490004, 1171490005, 1171490006, 1171490007, 1171490008, 1171490009, 1171490010, 1171490011

**Results by SM21 2540C**

<table>
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<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>5.00U</td>
<td>10.0</td>
<td>3.10</td>
<td>mg/L</td>
</tr>
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**Batch Information**

- Analytical Batch: STS5430  
- Analytical Method: SM21 2540C  
- Instrument:  
- Analyst: AYC  
- Analytical Date/Time: 4/11/2017 11:44:42AM
**Duplicate Sample Summary**

Original Sample ID: 1171490001  
Duplicate Sample ID: 1379357  
Analysis Date: 04/11/2017 11:44  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples:  
1171490001, 1171490002, 1171490003, 1171490004, 1171490005, 1171490006, 1171490007, 1171490008, 1171490009, 1171490010, 1171490011

---

### Results by SM21 2540C

<table>
<thead>
<tr>
<th>NAME</th>
<th>Original</th>
<th>Duplicate</th>
<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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</thead>
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<tr>
<td>Total Dissolved Solids</td>
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<td>1736</td>
<td>mg/L</td>
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<td>(&lt; 5 )</td>
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### Batch Information

Analytical Batch: STS5430  
Analytical Method: SM21 2540C  
Instrument:  
Analyst: AYC
### Duplicate Sample Summary

**Original Sample ID:** 1171492001  
**Analysis Date:** 04/11/2017 11:44  
**Duplicate Sample ID:** 1379358  
**Matrix:** Drinking Water  
**QC for Samples:**  
1171490002, 1171490003, 1171490004, 1171490005, 1171490006, 1171490007, 1171490008, 1171490009, 1171490010, 1171490011

### Results by SM21 2540C

<table>
<thead>
<tr>
<th>NAME</th>
<th>Original</th>
<th>Duplicate</th>
<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>146</td>
<td>154</td>
<td>mg/L</td>
<td>5.30*</td>
<td>(&lt; 5 )</td>
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### Batch Information

- **Analytical Batch:** STS5430  
- **Analytical Method:** SM21 2540C  
- **Instrument:**  
- **Analyst:** AYC
### Blank Spike Summary

Blank Spike ID: LCS for HBN 1171490 [STS5430]  
Blank Spike Lab ID: 1379355  
Date Analyzed: 04/11/2017 11:44  
Spike Duplicate ID: LCSD for HBN 1171490 [STS5430]  
Spike Duplicate Lab ID: 1379356  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples: 1171490001, 1171490002, 1171490003, 1171490004, 1171490005, 1171490006, 1171490007, 1171490008, 1171490009, 1171490010, 1171490011

### Results by SM21 2540C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>330</td>
<td>323</td>
<td>98</td>
<td>330</td>
<td>317</td>
<td>96</td>
<td>( 75-125 )</td>
<td>1.90</td>
<td>(&lt; 5 )</td>
</tr>
</tbody>
</table>

### Batch Information

Analytical Batch: STS5430  
Analytical Method: SM21 2540C  
Instrument:  
Analyst: AYC

Print Date: 05/26/2017 10:02:09AM

SGS North America Inc.  
200 West Potter Drive Anchorage, AK 95518  
t 907.562.2343 f 907.561.5301  www.us.sgs.com
**Method Blank**

- Blank ID: MB for HBN 1757348 [WXX/11800]
- Matrix: Water (Surface, Eff., Ground)
- Blank Lab ID: 1379556
- QC for Samples:
  - 1171490001, 1171490002, 1171490003, 1171490004, 1171490005, 1171490006, 1171490007, 1171490008, 1171490009, 1171490010, 1171490011

**Results by EPA 300.0**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
<tr>
<td>Sulfate</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

**Batch Information**

- Analytical Batch: WIC5616
- Analytical Method: EPA 300.0
- Instrument: 930 Metrohm compact IC flex
- Analyst: NEG
- Analytical Date/Time: 4/11/2017 5:34:08PM

- Prep Batch: WXX11800
- Prep Method: METHOD
- Prep Date/Time: 4/11/2017 4:30:00PM
- Prep Initial Wt./Vol.: 10 mL
- Prep Extract Vol: 10 mL
### Blank Spike Summary

**Blank Spike ID:** LCS for HBN 1171490 [WXX11800]  
**Blank Spike Lab ID:** 1379557  
**Date Analyzed:** 04/11/2017 17:48  
**Matrix:** Water (Surface, Eff., Ground)  
**QC for Samples:** 1171490001, 1171490002, 1171490003, 1171490004, 1171490005, 1171490006, 1171490007, 1171490008, 1171490009, 1171490010, 1171490011

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>5</td>
<td>4.67</td>
<td>94</td>
<td>(90-110)</td>
</tr>
<tr>
<td>Fluoride</td>
<td>5</td>
<td>4.76</td>
<td>95</td>
<td>(90-110)</td>
</tr>
<tr>
<td>Sulfate</td>
<td>5</td>
<td>5.04</td>
<td>101</td>
<td>(90-110)</td>
</tr>
</tbody>
</table>

### Batch Information

- **Analytical Batch:** WIC5616  
- **Analytical Method:** EPA 300.0  
- **Instrument:** 930 Metrohm compact IC flex  
- **Analyst:** NEG  
- **Prep Batch:** WXX11800  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 04/11/2017 16:30  
- **Spike Init Wt./Vol.:** 5 mg/L  
- **Extract Vol.:** 10 mL  
- **Dupe Init Wt./Vol.:**  
- **Extract Vol.:**
### Matrix Spike Summary

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike (mg/L)</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike (mg/L)</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>3.39</td>
<td>5.00</td>
<td>8.3</td>
<td>98</td>
<td>5.00</td>
<td>8.40</td>
<td>100</td>
<td>90-110</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.200U</td>
<td>5.00</td>
<td>4.92</td>
<td>98</td>
<td>5.00</td>
<td>5.03</td>
<td>101</td>
<td>90-110</td>
</tr>
<tr>
<td>Sulfate</td>
<td>0.958</td>
<td>5.00</td>
<td>6.11</td>
<td>103</td>
<td>5.00</td>
<td>6.22</td>
<td>105</td>
<td>90-110</td>
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</tbody>
</table>

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike (mg/L)</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike (mg/L)</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>3.39</td>
<td>5.00</td>
<td>8.3</td>
<td>98</td>
<td>5.00</td>
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</tr>
<tr>
<td>Fluoride</td>
<td>0.200U</td>
<td>5.00</td>
<td>4.92</td>
<td>98</td>
<td>5.00</td>
<td>5.03</td>
<td>101</td>
<td>90-110</td>
</tr>
<tr>
<td>Sulfate</td>
<td>0.958</td>
<td>5.00</td>
<td>6.11</td>
<td>103</td>
<td>5.00</td>
<td>6.22</td>
<td>105</td>
<td>90-110</td>
</tr>
</tbody>
</table>

### Batch Information

- **Analytical Batch:** WIC5616
- **Analytical Method:** EPA 300.0
- **Instrument:** 930 Metrohm compact IC flex
- **Analyst:** NEG
- **Analytical Date/Time:** 4/11/2017 6:15:57PM

- **Prep Batch:** WXX11800
- **Prep Method:** EPA 300.0 Extraction Waters/Liquids
- **Prep Date/Time:** 4/11/2017 4:30:00PM
- **Prep Initial Wt./Vol.:** 10.00mL
- **Prep Extract Vol.:** 10.00mL
### Section 3

<table>
<thead>
<tr>
<th>Sample Identification</th>
<th>Matrix Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-5</td>
<td>W</td>
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<tr>
<td>MW-95</td>
<td>W</td>
</tr>
<tr>
<td>SW-1</td>
<td>W</td>
</tr>
<tr>
<td>MW-1R</td>
<td>W</td>
</tr>
<tr>
<td>MW-8</td>
<td>W</td>
</tr>
<tr>
<td>MW-7</td>
<td>W</td>
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<tr>
<td>MW-2</td>
<td>W</td>
</tr>
<tr>
<td>MW-10</td>
<td>W</td>
</tr>
<tr>
<td>MW-4</td>
<td>W</td>
</tr>
</tbody>
</table>

### Section 4

**Data Deliverable Requirements:**

- Cooler ID:
- Requested Turnaround Time and Special Instructions:
  - Temp Blank C: #3:3.5 #4
  - Chain of Custody Seal: (Circle)
  - INTACT BROKEN ABSENT

**Hand Delivered**

---

[http://www.sgs.com/terms-and-conditions](http://www.sgs.com/terms-and-conditions)
<table>
<thead>
<tr>
<th>Section 1</th>
<th>Section 2</th>
<th>Section 3</th>
<th>Section 4</th>
<th>Section 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHONE NO: 987-222-1112</td>
<td>REPORTS TO: Heather Simon</td>
<td>PROJECT/PERMIT#: 104.00367.17002</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>E-MAIL: <a href="mailto:Hsim@esriconsulting.com">Hsim@esriconsulting.com</a></td>
<td>INVOICE TO: NA</td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESERVED for lab use</td>
<td>SAMPLE IDENTIFICATION</td>
<td>DATE mm/dd/yy</td>
<td>TIME HH:MM</td>
<td>MATRIX/MATRIX CODE</td>
</tr>
<tr>
<td></td>
<td>(1)A-G</td>
<td>MW-6</td>
<td>4/6/17 1530</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relinquished By: (1)</td>
<td>Date</td>
<td>Time</td>
<td>Received By:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4/6/17</td>
<td>1050</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relinquished By: (2)</td>
<td>Date</td>
<td>Time</td>
<td>Received By:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relinquished By: (3)</td>
<td>Date</td>
<td>Time</td>
<td>Received By:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relinquished By: (4)</td>
<td>Date</td>
<td>Time</td>
<td>Received For Laboratory By:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4/7/17</td>
<td>10:50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Instructions:** Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.
# Returned Bottles Inventory

**Name of individual returning bottles:** Heather Simon  
**Client Name:** GVEA  
**Project Name:** Healy Power Plant  
**Date Received:** 4/7/17  
**Received by:** JAN

<table>
<thead>
<tr>
<th>HDPE/Nalgene:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1-L</td>
<td>6</td>
</tr>
<tr>
<td>500-ml</td>
<td></td>
</tr>
<tr>
<td>250-ml or 8-oz</td>
<td></td>
</tr>
<tr>
<td>125-ml or 4-oz</td>
<td>8</td>
</tr>
<tr>
<td>60-ml or 2-oz</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Amber glass:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1-L</td>
<td></td>
</tr>
<tr>
<td>500-ml</td>
<td></td>
</tr>
<tr>
<td>250-ml or 8-oz</td>
<td></td>
</tr>
<tr>
<td>125-ml or 4-oz</td>
<td></td>
</tr>
<tr>
<td>with or without septa</td>
<td></td>
</tr>
<tr>
<td>40-ml VOA vial</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal:** 16

*Note: Returned bottles (regardless of size/pres.) are billed back at $4/bottle unless otherwise quoted.*

**Amount to Invoice Client:** $64.00  
**WOS:** 1171490
# e-Sample Receipt Form

**SGS Workorder #: 1171490**

## Review Criteria

<table>
<thead>
<tr>
<th>Chain of Custody / Temperature Requirements</th>
<th>Condition (Yes, No, N/A)</th>
<th>Exceptions Noted below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were Custody Seals intact? Note # &amp; location</td>
<td><strong>N/A</strong> Absent</td>
<td>Exemption permitted if sampler hand carries/delivers.</td>
</tr>
<tr>
<td>COC accompanied samples?</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

### Temperature Blank Compliant* (i.e., 0-6 °C after CF)?

<table>
<thead>
<tr>
<th>Cooler ID</th>
<th>Therm. ID</th>
<th>°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>D23</td>
<td>1.9</td>
</tr>
<tr>
<td>2</td>
<td>D25</td>
<td>1.5</td>
</tr>
<tr>
<td>3</td>
<td>D12</td>
<td>3.5</td>
</tr>
</tbody>
</table>

*If >6°C, were samples collected <8 hours ago?*

<table>
<thead>
<tr>
<th>Cooler ID</th>
<th>Therm. ID</th>
<th>°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If <0°C, were sample containers ice free?  

<table>
<thead>
<tr>
<th>Cooler ID</th>
<th>Therm. ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

If samples received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".

### Holding Time / Documentation / Sample Condition Requirements

- **Note:** Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.

- **Note:** Refer to form F-083 "Sample Guide" for specific holding times.

<table>
<thead>
<tr>
<th>Were samples received within holding time?</th>
<th>Yes</th>
</tr>
</thead>
</table>

### Volatile / LL-Hg Requirements

- **Radium bottles were not preserved.**

- **HNO₃ was added LW09-0463-09-11, pH was good.**

- **Note to Client:** Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

### Exceptions Noted below

- **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required**

- **Exemption permitted if sampler hand carries/delivers.**

### Additional notes (if applicable):
<table>
<thead>
<tr>
<th>Container Id</th>
<th>Preservative</th>
<th>Container Condition</th>
<th>Container Id</th>
<th>Preservative</th>
<th>Container Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1171490001-A</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
<td>1171490007-A</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1171490001-B</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
<td>1171490007-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1171490001-C</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1171490007-C</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1171490001-D</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1171490007-D</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
</tr>
<tr>
<td>1171490001-E</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
<td>1171490007-E</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
</tr>
<tr>
<td>1171490001-F</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
<td>1171490007-F</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
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<tr>
<td>1171490001-G</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
<td>1171490008-A</td>
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<td>1171490008-B</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
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<tr>
<td>1171490002-B</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
<td>1171490008-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1171490002-C</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1171490008-D</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
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<td>OK</td>
<td>1171490008-E</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
</tr>
<tr>
<td>1171490002-E</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
<td>1171490008-F</td>
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<td>PA</td>
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<tr>
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<td>PA</td>
<td>1171490008-G</td>
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<tr>
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<td>1171490009-A</td>
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<td>1171490009-C</td>
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<td>OK</td>
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<tr>
<td>1171490003-C</td>
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<td>OK</td>
<td>1171490009-D</td>
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<td>OK</td>
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<tr>
<td>1171490003-D</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1171490009-E</td>
<td>HNO3 to pH &lt; 2</td>
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<tr>
<td>1171490003-E</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
<td>1171490009-F</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
</tr>
<tr>
<td>1171490003-F</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
<td>1171490009-G</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
</tr>
<tr>
<td>1171490003-G</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
<td>1171490010-A</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1171490004-A</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
<td>1171490010-B</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1171490004-B</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
<td>1171490010-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1171490004-C</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1171490010-D</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1171490004-D</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1171490010-E</td>
<td>HNO3 to pH &lt; 2</td>
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<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
<td>1171490010-G</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
</tr>
<tr>
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<td>HNO3 to pH &lt; 2</td>
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<td>1171490011-A</td>
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<td>1171490011-B</td>
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<tr>
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<td>1171490011-C</td>
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<td>1171490006-G</td>
<td>HNO3 to pH &lt; 2</td>
<td>PA</td>
</tr>
</tbody>
</table>
Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

**OK** - The container was received at an acceptable pH for the analysis requested.

**BU** - The container was received with headspace greater than 6mm.

**DM** - The container was received damaged.

**FR** - The container was received frozen and not usable for Bacteria or BOD analyses.

**PA** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

**PH** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
Report to:  
Julie Shumway  
SGS Environmental Services Inc. - Alaska  
200 W. Potter Dr.  
Anchorage, AK  99518

Bill to:  
Julie Shumway  
SGS Environmental Services Inc. - Alaska  
200 W. Potter Dr.  
Anchorage, AK  99518

May 25, 2017

Project ID:  1171490  
ACZ Project ID:  L36627

Julie Shumway:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on April 17, 2017. This project has been assigned to ACZ's project number, L36627. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L36627. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after June 24, 2017. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ’s stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.
SGS Environmental Services Inc. - Alaska

ACZ Sample ID: **L36627-01**
Date Sampled: **04/04/17 18:05**
Date Received: **04/17/17**
Sample Matrix: **Ground Water**

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### RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

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SGS Environmental Services Inc. - Alaska

ACZ Sample ID: L36627-03
Date Sampled: 04/04/17 18:48
Date Received: 04/17/17
Sample Matrix: Ground Water

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**RadioChemistry Analytical Results**

### SGS Environmental Services Inc. - Alaska

- **ACZ Sample ID:** L36627-04
- **Date Sampled:** 04/05/17 10:40
- **Date Received:** 04/17/17
- **Sample Matrix:** Ground Water

#### Radium 226

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### RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

**Sample ID:** MW-8  
**Sample Matrix:** Ground Water  
**Sample ID:** L36627-05  
**Project ID:** 1171490  
**Date Sampled:** 04/05/17 11:45  
**Date Received:** 04/17/17  
**Locator:** RadioChemistry

#### Parameter Results

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### RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

- **Project ID:** 1171490
- **Sample ID:** MW-7
- **Locator:** RadioChemistry

**ACZ Sample ID:** L36627-06

- **Date Sampled:** 04/05/17 16:02
- **Date Received:** 04/17/17
- **Sample Matrix:** Ground Water

#### Radium 226

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RadioChemistry Analytical Results

SGS Environmental Services Inc. - Alaska

ACZ Sample ID: **L36627-07**
Date Sampled: **04/05/17 17:20**
Date Received: **04/17/17**
Sample Matrix: **Ground Water**

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### SGS Environmental Services Inc. - Alaska

**Project ID:** 1171490  
**Sample ID:** MW-9  
**Locator:**  

---

**ACZ Sample ID:** L36627-09  
**Date Sampled:** 04/06/17 13:46  
**Date Received:** 04/17/17  
**Sample Matrix:** Ground Water

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#### Radium 226
**Prep Method:** M903.1

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**Prep Method:** M904.0

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### RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

- **Project ID:** 1171490
- **Sample ID:** MW-4
- **Locator:**

#### ACZ Sample ID: L36627-10

- **Date Sampled:** 04/06/17 14:46
- **Date Received:** 04/17/17
- **Sample Matrix:** Ground Water

#### Analytical Results

<table>
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* Please refer to Qualifier Reports for details.
### SGS Environmental Services Inc. - Alaska

**Project ID:** 1171490  
**Sample ID:** MW-6  
**Locator:** 

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#### RadioChemistry Analytical Results

**ACZ Sample ID:** L36627-11  
**Date Sampled:** 04/06/17 15:30  
**Date Received:** 04/17/17  
**Sample Matrix:** Ground Water

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</tbody>
</table>

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**REPRC.02.06.05.01**

Page 12 of 20
### Report Header Explanations

- **Batch**: A distinct set of samples analyzed at a specific time
- **Error(+-)**: Calculated sample specific uncertainty
- **Found**: Value of the QC Type of interest
- **Limit**: Upper limit for RPD, in %.
- **LCL**: Lower Control Limit, in % (except for LCSS, mg/Kg)
- **LLD**: Calculated sample specific Lower Limit of Detection
- **PCN/SCN**: A number assigned to reagents/standards to trace to the manufacturer’s certificate of analysis
- **PQL**: Practical Quantitation Limit
- **QC**: True Value of the Control Sample or the amount added to the Spike
- **Rec**: Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
- **RER**: Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.
- **RPD**: Relative Percent Difference, calculation used for Duplicate QC Types
- **UCL**: Upper Control Limit, in % (except for LCSS, mg/Kg)
- **Sample**: Value of the Sample of interest

### QC Sample Types

- **DUP**: Sample Duplicate
- **LCSS**: Laboratory Control Sample - Soil
- **LCSW**: Laboratory Control Sample - Water

**MS/MSD**: Matrix Spike/Matrix Spike Duplicate

**PBS**: Prep Blank - Soil

**PBW**: Prep Blank - Water

### QC Sample Type Explanations

- **Blanks**: Verifies that there is no or minimal contamination in the prep method procedure.
- **Control Samples**: Verifies the accuracy of the method, including the prep procedure.
- **Duplicates**: Verifies the precision of the instrument and/or method.
- **Matrix Spikes**: Determines sample matrix interferences, if any.

### ACZ Qualifiers (Qual)

- **H**: Analysis exceeded method hold time.

### Method Prefix Reference

- **M**: EPA methodology, including those under SDWA, CWA, and RCRA
- **SM**: Standard Methods for the Examination of Water and Wastewater.
- **D**: ASTM
- **RP**: DOE
- **ESM**: DOE/ESM

### Comments

1. Solid matrices are reported on a dry weight basis.
3. QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
4. An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

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<th>ACZ ID</th>
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<th>QC</th>
<th>Sample</th>
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<th>QC</th>
<th>Sample</th>
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<th>Upper</th>
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<tr>
<td>WG4222002PBW</td>
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<td>WG4222002LCSW</td>
<td>LCSW</td>
<td>05/03/17</td>
<td>RC170207-10</td>
<td>9.38</td>
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<td>0.51</td>
<td>84</td>
<td>0.26</td>
<td>0.62</td>
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<tr>
<td>L36627-08DUP</td>
<td>DUP-RER</td>
<td>05/03/17</td>
<td>RC170207-10</td>
<td>0.75</td>
<td>0.57</td>
<td>0.56</td>
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<td>L36345-02MS</td>
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<td>05/03/17</td>
<td>RC170207-10</td>
<td>9.38</td>
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<td>0.57</td>
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<td>1.2</td>
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</table>
## RadChem Extended Qualifier Report

**ACZ Project ID:** L36627

<table>
<thead>
<tr>
<th>ACZ ID</th>
<th>WORKNUM</th>
<th>PARAMETER</th>
<th>METHOD</th>
<th>QUAL</th>
<th>DESCRIPTION</th>
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</thead>
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<tr>
<td>L36627-10</td>
<td>NG422267</td>
<td>Radium 228</td>
<td>M904.0</td>
<td>DF</td>
<td>Sample required dilution due to high sediment.</td>
</tr>
</tbody>
</table>
No certification qualifiers associated with this analysis
SGS Environmental Services Inc. - Alaska
1171490

ACZ Project ID: L36627
Date Received: 04/17/2017 10:00
Received By: 
Date Printed: 4/17/2017

Receipt Verification

<table>
<thead>
<tr>
<th>1) Is a foreign soil permit included for applicable samples?</th>
<th>YES</th>
<th>NO</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2) Is the Chain of Custody form or other directive shipping papers present?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Does this project require special handling procedures such as CLP protocol?</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4) Are any samples NRC licensable material?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>5) If samples are received past hold time, proceed with requested short hold time analyses?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6) Is the Chain of Custody form complete and accurate?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Samples/Containers

<table>
<thead>
<tr>
<th>8) Are all containers intact and with no leaks?</th>
<th>YES</th>
<th>NO</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>9) Are all labels on containers and are they intact and legible?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11) For preserved bottle types, was the pH checked and within limits?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12) Is there sufficient sample volume to perform all requested work?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13) Is the custody seal intact on all containers?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>14) Are samples that require zero headspace acceptable?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>15) Are all sample containers appropriate for analytical requirements?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16) Is there an Hg-1631 trip blank present?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>17) Is there a VOA trip blank present?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>18) Were all samples received within hold time?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
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</table>

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

<table>
<thead>
<tr>
<th>Cooler Id</th>
<th>Temp(°C)</th>
<th>Temp Criteria(°C)</th>
<th>Rad(µR/Hr)</th>
<th>Custody Seal Intact?</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA25865</td>
<td>13.4</td>
<td>NA</td>
<td>13</td>
<td>Yes</td>
</tr>
<tr>
<td>NA25866</td>
<td>15.4</td>
<td>NA</td>
<td>14</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.
The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).
### CHAIN OF CUSTODY RECORD

**CLIENT:** SGS North America Inc. - Alaska Division  
**CONTACT:** Julie Shumway  
**PHONE NO.:** (907) 562-2343  
**PROJECT NAME:** 1171490

#### RESERVED for lab use

<table>
<thead>
<tr>
<th>SAMPLE IDENTIFICATION</th>
<th>DATE mm/dd/yy</th>
<th>TIME HHMM</th>
<th>MATRIX/ MATRIX</th>
<th>PRESERVATIVE TYPE</th>
<th>CONTAINER</th>
<th>LOC ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-5</td>
<td>04/04/17</td>
<td>1805</td>
<td>W</td>
<td>3</td>
<td>GRAB</td>
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<tr>
<td>MW-85</td>
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<td>W</td>
<td>3</td>
<td>GRAB</td>
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<tr>
<td>SW-1</td>
<td>04/04/17</td>
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<td>GRAB</td>
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<tr>
<td>MW-1R</td>
<td>04/05/17</td>
<td>1040</td>
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<td>3</td>
<td>GRAB</td>
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<tr>
<td>MW-8</td>
<td>04/05/17</td>
<td>1145</td>
<td>W</td>
<td>3</td>
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<tr>
<td>MW-7</td>
<td>04/05/17</td>
<td>1602</td>
<td>W</td>
<td>3</td>
<td>GRAB</td>
<td>1171490006</td>
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<td>MW-2</td>
<td>04/05/17</td>
<td>1720</td>
<td>W</td>
<td>3</td>
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<td>MW-10</td>
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<td>3</td>
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<td>1446</td>
<td>W</td>
<td>3</td>
<td>GRAB</td>
<td>1171490010</td>
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</tbody>
</table>

---

**Preservatives Used:**
- **Column 1:** Radon 222 (EPA 900.1)  
- **Column 2:** Radon 222 (EPA 900.2)

**Remarks:**
- **DOD Project:** No
- **Data Deliverable Requirements:** Level 1
- **Cooler ID:**
- **Requested Turnaround Time and/or Special Instructions:**

**Standard:**
- **Temp Blank °C:**
- **Chain of Custody Seal:**

**Locations Nationwide**
- Alaska
- Maryland
- New Jersey
- New York
- North Carolina
- Indiana
- West Virginia
- Kentucky

**www.us.sgs.com**

---

[X] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301  
[X] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

http://www.sgs.com/terms_and_conditions.htm

---

**1171490_Radium 226&228_4.10.17.xls**
**SGS North America Inc.**

**CHAIN OF CUSTODY RECORD**

**CLIENT:** SGS North America Inc. - Alaska Division

**CONTACT:** Julie Shumway

**PHONE NO.:** (907) 562-2343

**PROJECT/NAME:** 1171490

**REPORTS TO:** E-MAIL: Julie.Shumway@sgs.com

**INVOICE TO:** QUOTE #: SGS - Alaska P.O. #: 1171490

**RESERVED for lab use**

<table>
<thead>
<tr>
<th>SAMPLE IDENTIFICATION</th>
<th>DATE</th>
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<th>MATRIX/ MATRIX</th>
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<td>MW-6</td>
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**Additional Comments:**

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<td>Preservative Used:</td>
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<td>HNO3</td>
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<tr>
<td>HNO3</td>
</tr>
<tr>
<td>TYPE</td>
</tr>
<tr>
<td>C = COMPO</td>
</tr>
<tr>
<td>G = GRAB</td>
</tr>
<tr>
<td>Incremental Soils</td>
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<tr>
<td>Radon 226 (EPA 903.2)</td>
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</tr>
<tr>
<td>MSD</td>
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<tr>
<td>SGS lab #</td>
</tr>
<tr>
<td>Loc ID</td>
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<tr>
<td>REMARKS</td>
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**ACZ Lab**

**SGS Reference:**

**DOD Project?** ☐ YES ☑ NO

**Report to DL (J Flags)** ☐

**Cooler ID:**

**Data Deliverable Requirements:** Level 1

**Requested Turnaround Time and-or Special Instructions:**

**Standard**

**Temp Blank °C:**

Chain of Custody Seal: (Circle)

**INTACT BROKEN ABSENT**

http://www.sgs.com/terms_and_conditions.htm

**Locations Nationwide**

Alaska  Maryland
New Jersey  New York
North Carolina  Indiana
West Virginia  Kentucky

1171490_Radium 226&228_4.10.17.xls
To: Golden Valley Electric Association  
2700 Gambell Street Suite 200  
Anchorage, AK 99503  
(907)564-6907

Report Number: 1173057

Client Project: Healy Power Plant GW Monitor

Dear Heather Simon,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,

SGS North America Inc.

Justin Nelson  
Project Manager  
Justin.Nelson@sgs.com

Date
Refer to sample receipt form for information on sample condition.

MW-1R (1173057001) PS
Radium 226/228 was analyzed by ACZ Laboratories of Steamboat Springs, CO.

MB for HBN 1760698 [MXX/30727] (1389613) MB
200.8 - Metals - Zinc was detected in the MB at a concentration greater than the LOQ. Sample result is 10 times greater than the level of the MB contamination or less than the LOQ.

1173213001MS (1390083) MS
300.0 - Anions - MS recovery for Sulfate is outside of QC criteria. Refer to LCS for accuracy requirements.

1173213001MSD (1390084) MSD
300.0 - Anions - MSD recovery for Sulfate is outside of QC criteria. Refer to LCS for accuracy requirements.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.
Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

* The analyte has exceeded allowable regulatory or control limits.
! Surrogate out of control limits.
B Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB Closing Continuing Calibration Verification
CL Control Limit
DF Analytical Dilution Factor
DL Detection Limit (i.e., maximum method detection limit)
E The analyte result is above the calibrated range.
GT Greater Than
IB Instrument Blank
ICV Initial Calibration Verification
J The quantitation is an estimation.
LCS(D) Laboratory Control Spike (Duplicate)
LLQC/LLIQC Low Level Quantitation Check
LOD Limit of Detection (i.e., 1/2 of the LOQ)
LOQ Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT Less Than
MB Method Blank
MS(D) Matrix Spike (Duplicate)
ND Indicates the analyte is not detected.
RPD RelativePercent Difference
U Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.
<table>
<thead>
<tr>
<th>Client Sample ID</th>
<th>Lab Sample ID</th>
<th>Collected</th>
<th>Received</th>
<th>Matrix</th>
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<tbody>
<tr>
<td>MW-1R</td>
<td>1173057001</td>
<td>06/06/2017</td>
<td>06/07/2017</td>
<td>Water (Surface, Eff., Ground)</td>
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<tr>
<td>MW-8</td>
<td>1173057002</td>
<td>06/06/2017</td>
<td>06/07/2017</td>
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<td>1173057003</td>
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<td>Water (Surface, Eff., Ground)</td>
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<td>1173057004</td>
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<td>06/07/2017</td>
<td>Water (Surface, Eff., Ground)</td>
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<td>MW-4</td>
<td>1173057005</td>
<td>06/06/2017</td>
<td>06/07/2017</td>
<td>Water (Surface, Eff., Ground)</td>
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<tr>
<td>MW-6</td>
<td>1173057006</td>
<td>06/05/2017</td>
<td>06/07/2017</td>
<td>Water (Surface, Eff., Ground)</td>
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<td>MW-7</td>
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<td>06/07/2017</td>
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<td>MW-9</td>
<td>1173057009</td>
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<td>06/07/2017</td>
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<td>1173057010</td>
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<td>06/07/2017</td>
<td>Water (Surface, Eff., Ground)</td>
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<td>MW-95</td>
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<td>SW-1</td>
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<td>06/07/2017</td>
<td>Water (Surface, Eff., Ground)</td>
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</table>

<table>
<thead>
<tr>
<th>Method</th>
<th>Method Description</th>
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</thead>
<tbody>
<tr>
<td>SM21 2340B</td>
<td>Hardness as CaCO₃ by ICP-MS</td>
</tr>
<tr>
<td>EPA 300.0</td>
<td>Ion Chromatographic Analysis (W)</td>
</tr>
<tr>
<td>EP245.1</td>
<td>Mercury EPA 245.1 for non drinking water</td>
</tr>
<tr>
<td>EP200.8</td>
<td>Metals in Water by 200.8 ICP-MS</td>
</tr>
<tr>
<td>SM21 2540C</td>
<td>Total Dissolved Solids SM18 2540C</td>
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</table>
### Detectable Results Summary

**Client Sample ID:** MW-1R  
**Lab Sample ID:** 1173057001

#### Metals by ICP/MS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>Units</th>
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<tr>
<td>Arsenic</td>
<td>43.1</td>
<td>ug/L</td>
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<tr>
<td>Barium</td>
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<td>Boron</td>
<td>533</td>
<td>ug/L</td>
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<tr>
<td>Calcium</td>
<td>5430</td>
<td>ug/L</td>
</tr>
<tr>
<td>Lead</td>
<td>0.296</td>
<td>ug/L</td>
</tr>
<tr>
<td>Lithium</td>
<td>11.0</td>
<td>ug/L</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>217</td>
<td>ug/L</td>
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<tr>
<td>Selenium</td>
<td>79.4</td>
<td>ug/L</td>
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<tr>
<td>Chloride</td>
<td>112</td>
<td>mg/L</td>
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<tr>
<td>Fluoride</td>
<td>7.85</td>
<td>mg/L</td>
</tr>
<tr>
<td>Sulfate</td>
<td>568</td>
<td>mg/L</td>
</tr>
<tr>
<td><strong>Total Dissolved Solids</strong></td>
<td>1110</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

#### Waters Department

- Fluoride mg/L: 7.85
- Sulfate mg/L: 568
- Total Dissolved Solids mg/L: 1110

**Client Sample ID:** MW-8  
**Lab Sample ID:** 1173057002

#### Metals by ICP/MS

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barium</td>
<td>86.3</td>
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</tr>
<tr>
<td>Calcium</td>
<td>71300</td>
<td>ug/L</td>
</tr>
<tr>
<td>Chloride</td>
<td>9.33</td>
<td>mg/L</td>
</tr>
<tr>
<td>Sulfate</td>
<td>31.1</td>
<td>mg/L</td>
</tr>
<tr>
<td><strong>Total Dissolved Solids</strong></td>
<td>307</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

#### Waters Department

- Chloride mg/L: 9.33
- Sulfate mg/L: 31.1
- Total Dissolved Solids mg/L: 307

**Client Sample ID:** MW-3  
**Lab Sample ID:** 1173057003

#### Metals by ICP/MS

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barium</td>
<td>132</td>
<td>ug/L</td>
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<tr>
<td>Boron</td>
<td>187</td>
<td>ug/L</td>
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<tr>
<td>Calcium</td>
<td>228000</td>
<td>ug/L</td>
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<tr>
<td>Lithium</td>
<td>714</td>
<td>mg/L</td>
</tr>
<tr>
<td>Magnesium</td>
<td>55.8</td>
<td>ug/L</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>35000</td>
<td>ug/L</td>
</tr>
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<td>Chloride</td>
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<tr>
<td>Fluoride</td>
<td>637</td>
<td>mg/L</td>
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<tr>
<td>Sulfate</td>
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</tr>
<tr>
<td><strong>Total Dissolved Solids</strong></td>
<td>1490</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

#### Waters Department

- Chloride mg/L: 637
- Fluoride mg/L: 0.486
- Sulfate mg/L: 86.6
- Total Dissolved Solids mg/L: 1490

---

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## Detectable Results Summary

### Client Sample ID: MW-2
Lab Sample ID: 1173057004

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<th>Parameter</th>
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<td>Barium</td>
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<td>328</td>
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<td>Calcium</td>
<td>175000</td>
<td>ug/L</td>
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<tr>
<td>Lithium</td>
<td>18.1</td>
<td>ug/L</td>
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<tr>
<td>Molybdenum</td>
<td>12.2</td>
<td>ug/L</td>
</tr>
<tr>
<td>Selenium</td>
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<td>ug/L</td>
</tr>
<tr>
<td>Chloride</td>
<td>501</td>
<td>mg/L</td>
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<tr>
<td>Fluoride</td>
<td>0.798</td>
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<td>Sulfate</td>
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<td>Total Dissolved Solids</td>
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### Metals by ICP/MS

### Waters Department

### Client Sample ID: MW-4
Lab Sample ID: 1173057005

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<th>Parameter</th>
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<tr>
<td>Antimony</td>
<td>4.60</td>
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<tr>
<td>Arsenic</td>
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<tr>
<td>Barium</td>
<td>136</td>
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<td>Boron</td>
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<td>ug/L</td>
</tr>
<tr>
<td>Calcium</td>
<td>16900</td>
<td>ug/L</td>
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<tr>
<td>Chromium</td>
<td>6.62</td>
<td>ug/L</td>
</tr>
<tr>
<td>Lead</td>
<td>0.573</td>
<td>ug/L</td>
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<tr>
<td>Molybdenum</td>
<td>194</td>
<td>ug/L</td>
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<tr>
<td>Selenium</td>
<td>30.0</td>
<td>ug/L</td>
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<tr>
<td>Chloride</td>
<td>86.8</td>
<td>mg/L</td>
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<tr>
<td>Fluoride</td>
<td>10.1</td>
<td>mg/L</td>
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<tr>
<td>Sulfate</td>
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<td>Total Dissolved Solids</td>
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### Metals by ICP/MS

### Waters Department

### Client Sample ID: MW-6
Lab Sample ID: 1173057006

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<th>Parameter</th>
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<td>Antimony</td>
<td>2.11</td>
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<tr>
<td>Barium</td>
<td>39.5</td>
<td>ug/L</td>
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<tr>
<td>Boron</td>
<td>471</td>
<td>ug/L</td>
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<tr>
<td>Calcium</td>
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<td>Chromium</td>
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<td>ug/L</td>
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<tr>
<td>Lithium</td>
<td>25.3</td>
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<tr>
<td>Fluoride</td>
<td>6.80</td>
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<tr>
<td>Sulfate</td>
<td>592</td>
<td>mg/L</td>
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<tr>
<td>Total Dissolved Solids</td>
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<td>mg/L</td>
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### Metals by ICP/MS

### Waters Department
### Detectable Results Summary

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<tr>
<td>Lab Sample ID:</td>
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</tr>
<tr>
<td><strong>Metals by ICP/MS</strong></td>
<td></td>
</tr>
<tr>
<td>Barium</td>
<td>40.9 ug/L</td>
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<tr>
<td>Calcium</td>
<td>33800 ug/L</td>
</tr>
<tr>
<td>Chloride</td>
<td>0.750 mg/L</td>
</tr>
<tr>
<td>Sulfate</td>
<td>26.1 mg/L</td>
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<td><strong>Total Dissolved Solids</strong></td>
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<table>
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<td><strong>Metals by ICP/MS</strong></td>
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<tr>
<td>Barium</td>
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<tr>
<td>Calcium</td>
<td>79700 ug/L</td>
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<tr>
<td>Chloride</td>
<td>1.77 mg/L</td>
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<td>Sulfate</td>
<td>34.7 mg/L</td>
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<td><strong>Total Dissolved Solids</strong></td>
<td>341 mg/L</td>
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</thead>
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<td>Lab Sample ID:</td>
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<td><strong>Metals by ICP/MS</strong></td>
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<tr>
<td>Antimony</td>
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<tr>
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<td>7.39 ug/L</td>
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<td>Boron</td>
<td>629 ug/L</td>
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<tr>
<td>Calcium</td>
<td>1540 ug/L</td>
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<tr>
<td>Lead</td>
<td>0.958 ug/L</td>
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<tr>
<td>Molybdenum</td>
<td>295 ug/L</td>
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<tr>
<td>Selenium</td>
<td>27.2 ug/L</td>
</tr>
<tr>
<td>Chloride</td>
<td>119 mg/L</td>
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<tr>
<td>Fluoride</td>
<td>7.64 mg/L</td>
</tr>
<tr>
<td>Sulfate</td>
<td>546 mg/L</td>
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<tr>
<td><strong>Total Dissolved Solids</strong></td>
<td>1240 mg/L</td>
</tr>
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<table>
<thead>
<tr>
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<tbody>
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<td>Lab Sample ID:</td>
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<tr>
<td><strong>Metals by ICP/MS</strong></td>
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</tr>
<tr>
<td>Antimony</td>
<td>3.23 ug/L</td>
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<tr>
<td>Arsenic</td>
<td>18.3 ug/L</td>
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<tr>
<td>Barium</td>
<td>38.7 ug/L</td>
</tr>
<tr>
<td>Boron</td>
<td>127 ug/L</td>
</tr>
<tr>
<td>Calcium</td>
<td>28700 ug/L</td>
</tr>
<tr>
<td>Chromium</td>
<td>49.8 ug/L</td>
</tr>
<tr>
<td>Lithium</td>
<td>17.4 ug/L</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>131 ug/L</td>
</tr>
<tr>
<td>Selenium</td>
<td>85.7 ug/L</td>
</tr>
<tr>
<td>Chloride</td>
<td>49.5 mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
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<tr>
<td>Sulfate</td>
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<td><strong>Total Dissolved Solids</strong></td>
<td>888 mg/L</td>
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</tbody>
</table>
### Detectable Results Summary

**Client Sample ID:** MW-95  
**Lab Sample ID:** 1173057011

#### Metals by ICP/MS

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<td>Antimony</td>
<td>3.27</td>
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<tr>
<td>Arsenic</td>
<td>17.8</td>
<td>ug/L</td>
</tr>
<tr>
<td>Barium</td>
<td>39.1</td>
<td>ug/L</td>
</tr>
<tr>
<td>Boron</td>
<td>126</td>
<td>ug/L</td>
</tr>
<tr>
<td>Calcium</td>
<td>29800</td>
<td>ug/L</td>
</tr>
<tr>
<td>Chromium</td>
<td>49.8</td>
<td>ug/L</td>
</tr>
<tr>
<td>Lithium</td>
<td>17.7</td>
<td>ug/L</td>
</tr>
<tr>
<td>Molybdenum</td>
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<td>ug/L</td>
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<tr>
<td>Selenium</td>
<td>85.8</td>
<td>ug/L</td>
</tr>
<tr>
<td>Chloride</td>
<td>48.3</td>
<td>mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>3.89</td>
<td>mg/L</td>
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<tr>
<td>Sulfate</td>
<td>349</td>
<td>mg/L</td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
<td>866</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

#### Waters Department

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>Units</th>
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<tbody>
<tr>
<td>Chloride</td>
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<td>mg/L</td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
<td>866</td>
<td>mg/L</td>
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</table>

**Client Sample ID:** SW-1  
**Lab Sample ID:** 1173057012

#### Metals by ICP/MS

<table>
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<tr>
<th>Parameter</th>
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</thead>
<tbody>
<tr>
<td>Antimony</td>
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<td>405</td>
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<tr>
<td>Boron</td>
<td>122</td>
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<td>Calcium</td>
<td>38900</td>
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<tr>
<td>Chromium</td>
<td>46.1</td>
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<td>Hardness as CaCO3</td>
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<tr>
<td>Lead</td>
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<td>Magnesium</td>
<td>486</td>
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<td>Molybdenum</td>
<td>108</td>
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<td>mg/L</td>
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<td>mg/L</td>
</tr>
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</table>

**Print Date:** 08/01/2017 4:17:42PM

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200 West Potter Drive, Anchorage, AK 99518  
1 907.562.2343 f 907.561.5301 www.us.sgs.com  
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## Results of MW-1R

Client Sample ID: MW-1R  
Client Project ID: Healy Power Plant GW Monitor  
Lab Sample ID: 1173057001  
Lab Project ID: 1173057  
Collection Date: 06/06/17 12:36  
Received Date: 06/07/17 12:34  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:  

### Results by Metals by ICP/MS

<table>
<thead>
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<th>Result Qual</th>
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<th>DL</th>
<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
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<tbody>
<tr>
<td>Antimony</td>
<td>6.57</td>
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<td>ug/L</td>
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<td>11.00</td>
<td>06/17/17 16:28</td>
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<tr>
<td>Arsenic</td>
<td>43.1</td>
<td>5.00</td>
<td>1.50</td>
<td>ug/L</td>
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<td>Barium</td>
<td>23.1</td>
<td>3.00</td>
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<td>ug/L</td>
<td>1</td>
<td>13.00</td>
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<td>Beryllium</td>
<td>0.400 U</td>
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<td>Boron</td>
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<td>1</td>
<td>15.00</td>
<td>06/17/17 16:28</td>
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<td>Cadmium</td>
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<td>ug/L</td>
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<td>1.20</td>
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</tr>
<tr>
<td>Calcium</td>
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<td>150</td>
<td>ug/L</td>
<td>1</td>
<td>500</td>
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<tr>
<td>Chromium</td>
<td>2.00 U</td>
<td>2.00</td>
<td>0.620</td>
<td>ug/L</td>
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<td>1.20</td>
<td>06/17/17 16:28</td>
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<td>Cobalt</td>
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<td>4.00</td>
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<td>ug/L</td>
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<td>1.20</td>
<td>06/17/17 16:28</td>
</tr>
<tr>
<td>Lead</td>
<td>0.296</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
<td>1</td>
<td>1.20</td>
<td>06/17/17 16:28</td>
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<tr>
<td>Lithium</td>
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<td>3.10</td>
<td>ug/L</td>
<td>1</td>
<td>3.10</td>
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<tr>
<td>Molybdenum</td>
<td>217</td>
<td>2.00</td>
<td>0.620</td>
<td>ug/L</td>
<td>1</td>
<td>1.20</td>
<td>06/17/17 16:28</td>
</tr>
<tr>
<td>Selenium</td>
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<td>06/17/17 16:28</td>
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### Batch Information

- **Analytical Batch:** MMS9821  
- **Analytical Method:** EP200.8  
- **Analyst:** VDL  
- **Analytical Date/Time:** 06/17/17 16:28  
- **Container ID:** 1173057001-A  
- **Prep Batch:** MXX30727  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 06/09/17 07:05  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol.:** 50 mL
### Results of MW-1R

Client Sample ID: **MW-1R**  
Client Project ID: **Healy Power Plant GW Monitor**  
Lab Sample ID: 1173057001  
Lab Project ID: 1173057  
Collection Date: 06/06/17 12:36  
Received Date: 06/07/17 12:34  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:  

### Results by Metals Department

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### Batch Information

- **Prep Batch:** MXX30742  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/14/17 12:15  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol:** 50 mL  
- **Analytical Batch:** MCV5818  
- **Analytical Method:** EP245.1  
- **Analyst:** TMA  
- **Analytical Date/Time:** 06/14/17 18:45  
- **Container ID:** 1173057001-A
### Results of MW-1R

**Client Sample ID:** MW-1R  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057001  
**Lab Project ID:** 1173057  
**Collection Date:** 06/06/17 12:36  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

### Results by Waters Department

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### Batch Information

- **Analytical Batch:** WIC5646  
- **Analytical Method:** EPA 300.0  
- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

- **Analytical Batch:** STS5505  
- **Analytical Method:** SM21 2540C  
- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

- **Parameter** | **Result Qual** | **LOQ/CL** | **DL** | **Units** | **DF** | **Allowable** | **Date Analyzed** |
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### Results of MW-8

**Client Sample ID:** MW-8  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057002  
**Lab Project ID:** 1173057

**Collection Date:** 06/06/17 13:33  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

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#### Results by Metals by ICP/MS

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<tr>
<td>Arsenic</td>
<td>5.00 U</td>
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<td>1.50</td>
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<td>Beryllium</td>
<td>0.400 U</td>
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<tr>
<td>Boron</td>
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<td>15.0</td>
<td>ug/L</td>
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</tr>
<tr>
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<tr>
<td>Cobalt</td>
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<td>Molybdenum</td>
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<tr>
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#### Batch Information

- **Analytical Batch:** MMS9821  
- **Analytical Method:** EP200.8  
- **Analyst:** VDL  
- **Analytical Date/Time:** 06/17/17 16:31  
- **Container ID:** 1173057002-A  
- **Prep Batch:** MXX30727  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 06/09/17 07:05  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol.:** 50 mL

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Print Date: 08/01/2017 4:17:43 PM
### Results of MW-8

**Client Sample ID:** MW-8  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057002  
**Lab Project ID:** 1173057

**Collection Date:** 06/06/17 13:33  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)

### Results by Metals Department

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<tbody>
<tr>
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**Batch Information**

- **Analytical Batch:** MCV5818  
- **Analytical Method:** EP245.1  
- ** Analyst:** TMA  
- **Analytical Date/Time:** 06/14/17 18:48  
- **Container ID:** 1173057002-A

- **Prep Batch:** MXX30742  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/14/17 12:15  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol.:** 50 mL
### Results of MW-8

**Client Sample ID:** MW-8  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057002  
**Lab Project ID:** 1173057  
**Collection Date:** 06/06/17 13:33  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

#### Results by Waters Department

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**Batch Information**

- **Analytical Batch:** WIC5646  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Analytical Date/Time:** 06/10/17 12:30  
- **Container ID:** 1173057002-B

- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/09/17 12:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

- **Analytical Batch:** STS5505  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 06/09/17 14:40  
- **Container ID:** 1173057002-B

- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/09/17 12:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

**Parameter** | **Result Qual** | **LOQ/CL** | **DL** | **Units** | **DF** | **Date Analyzed**
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Total Dissolved Solids | 307 | 10.0 | 3.10 | mg/L | 1 | 06/09/17 14:40

**Batch Information**

- **Analytical Batch:** STS5505  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 06/09/17 14:40  
- **Container ID:** 1173057002-B

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Print Date: 06/01/2017 4:17:43PM

SGS North America Inc.

200 West Potter Drive Anchorage, AK 99518

† 907.562.2343 † 907.561.5301  www.us.sgs.com

Member of SGS Group

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<table>
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**Batch Information**

Analytical Batch: MMS9821
Analytical Method: EP200.8
Analyst: VDL
Analytical Date/Time: 06/17/17 16:34
Container ID: 1173057003-A

Prep Batch: MXX30727
Prep Method: E200.2
Prep Date/Time: 06/09/17 07:05
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

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**Batch Information**

Analytical Batch: MMS9821
Analytical Method: SM21 2340B
Analyst: VDL
Analytical Date/Time: 06/17/17 16:34
Container ID: 1173057003-A

Prep Batch: MXX30727
Prep Method: E200.2
Prep Date/Time: 06/09/17 07:05
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL
## Results of MW-3

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### Batch Information

- **Analytical Batch:** MCV5818
- **Analytical Method:** EP245.1
- **Analyst:** TMA
- **Analytical Date/Time:** 06/14/17 18:50
- **Container ID:** 1173057003-A
- **Prep Batch:** MXX30742
- **Prep Method:** METHOD
- **Prep Date/Time:** 06/14/17 12:15
- **Prep Initial Wt./Vol.:** 25 mL
- **Prep Extract Vol.:** 50 mL
### Results of MW-3

Client Sample ID: **MW-3**  
Client Project ID: **Healy Power Plant GW Monitor**  
Lab Sample ID: 1173057003  
Lab Project ID: 1173057

**Collection Date:** 06/06/17 10:21  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

### Results by Waters Department

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<td>Fluoride</td>
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<td>mg/L</td>
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<td>4.84</td>
<td>mg/L</td>
<td>78</td>
<td></td>
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#### Batch Information

- **Analytical Batch:** WIC5646  
- **Analytical Method:** EPA 300.0  
- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/09/17 12:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

- **Analytical Batch:** WIC5646  
- **Analytical Method:** EPA 300.0  
- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/10/17 12:48  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

- **Analytical Batch:** STS5505  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 06/09/17 14:40  
- **Container ID:** 1173057003-B

- **Analytical Batch:** STS5505  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 06/09/17 14:40  
- **Container ID:** 1173057003-B

**Parameter**  | **Result Qual** | **LOQ/CL** | **DL** | **Units** | **DF** | **Date Analyzed** |
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**Batch Information**

- **Analytical Batch:** STS5505  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 06/09/17 14:40  
- **Container ID:** 1173057003-B

**Print Date:** 08/01/2017 4:17:43PM
Results of **MW-2**

**Client Sample ID:** MW-2  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057004  
**Lab Project ID:** 1173057

**Collection Date:** 06/06/17 11:32  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)

**Solids (%):** Location:

### Results by Metals by ICP/MS

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<td>Cobalt</td>
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**Batch Information**

- **Analytical Batch:** MMS9821  
- **Analytical Method:** EP200.8  
- **Analyst:** VDL  
- **Analytical Date/Time:** 06/17/17 16:37  
- **Container ID:** 1173057004-A

- **Prep Batch:** MXX30727  
- **Prep Method:** E200.2  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Date/Time:** 06/09/17 07:05  
- **Prep Extract Vol.:** 50 mL

Print Date: 08/01/2017 4:17:43PM
**Results of MW-2**

Client Sample ID: MW-2  
Client Project ID: Healy Power Plant GW Monitor  
Lab Sample ID: 1173057004  
Lab Project ID: 1173057

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**Batch Information**

Analytical Batch: MCV5818  
Analytical Method: EP245.1  
Analyst: TMA  
Analytical Date/Time: 06/14/17 18:53

Prep Batch: MXX30742  
Prep Method: METHOD  
Prep Date/Time: 06/14/17 12:15  
Prep Initial Wt./Vol.: 25 mL  
Prep Extract Vol: 50 mL
### Results of MW-2

**Client Sample ID:** MW-2  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057004  
**Lab Project ID:** 1173057  
**Collection Date:** 06/06/17 11:32  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

#### Results by Waters Department

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#### Batch Information

- **Analytical Batch:** WIC5646  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Analytical Date/Time:** 06/10/17 13:06  
- **Container ID:** 1173057004-B

- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/09/17 12:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

- **Analytical Batch:** WIC5646  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Analytical Date/Time:** 06/10/17 13:06  
- **Container ID:** 1173057004-B

- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/09/17 12:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

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#### Batch Information

- **Analytical Batch:** STS5505  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 06/09/17 14:40  
- **Container ID:** 1173057004-B
Results of MW-4

Client Sample ID: MW-4
Client Project ID: Healy Power Plant GW Monitor
Lab Sample ID: 1173057005
Lab Project ID: 1173057

Collection Date: 06/06/17 09:04
Received Date: 06/07/17 12:34
Matrix: Water (Surface, Eff., Ground)

Solids (%):
Location:

Results by Metals by ICP/MS

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Batch Information

Analytical Batch: MMS9821
Analytical Method: EP200.8
Analyst: VDL
Analytical Date/Time: 06/17/17 16:40
Container ID: 1173057005-A

Prep Batch: MXX30727
Prep Method: E200.2
Prep Date/Time: 06/09/17 07:05
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol.: 50 mL

Print Date: 08/01/2017 4:17:43PM
Results of MW-4

Client Sample ID: MW-4
Client Project ID: Healy Power Plant GW Monitor
Lab Sample ID: 1173057005
Lab Project ID: 1173057

Collection Date: 06/06/17 09:04
Received Date: 06/07/17 12:34
Matrix: Water (Surface, Eff., Ground)

Results by Metals Department

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Batch Information

Analytical Batch: MCV5818
Analytical Method: EP245.1
 Analyst: TMA
Analytical Date/Time: 06/14/17 18:56
Container ID: 1173057005-A

Prep Batch: MXX30742
Prep Method: METHOD
Prep Date/Time: 06/14/17 12:15
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL
### Results by Waters Department

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### Batch Information

- **Analytical Batch**: WIC5646
- **Analytical Method**: EPA 300.0
- **Analyst**: NEG
- **Analytical Date/Time**: 06/10/17 08:55
- **Container ID**: 1173057005-B

- **Prep Batch**: WXX11872
- **Prep Method**: METHOD
- **Prep Date/Time**: 06/09/17 12:00
- **Prep Initial Wt./Vol.**: 10 mL
- **Prep Extract Vol**: 10 mL

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### Batch Information

- **Analytical Batch**: STS5505
- **Analytical Method**: SM21 2540C
- **Analyst**: AYC
- **Analytical Date/Time**: 06/09/17 14:40
- **Container ID**: 1173057005-B

**Collection Date**: 06/06/17 09:04
**Received Date**: 06/07/17 12:34
**Matrix**: Water (Surface, Eff., Ground)
Results of MW-6

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Batch Information

- Analytical Batch: MMS9821
- Analytical Method: EP200.8
- Analyst: VDL
- Analytical Date/Time: 06/17/17 16:55
- Container ID: 1173057006-A
Results of MW-6

Client Sample ID: MW-6
Client Project ID: Healy Power Plant GW Monitor
Lab Sample ID: 1173057006
Lab Project ID: 1173057

Collection Date: 06/05/17 17:47
Received Date: 06/07/17 12:34
Matrix: Water (Surface, Eff., Ground)

Solids (%):

Location:

Results by Metals Department

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Batch Information

Analytical Batch: MCV5818
Analytical Method: EP245.1
Analyst: TMA
Analytical Date/Time: 06/14/17 19:05
Container ID: 1173057006-A

Prep Batch: MXX30742
Prep Method: METHOD
Prep Date/Time: 06/14/17 12:15
Prep Initial WT/Vol.: 25 mL
Prep Extract Vol: 50 mL

Print Date: 08/01/2017 4:17:43PM
### Results of MW-6

**Client Sample ID:** MW-6  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057006  
**Lab Project ID:** 1173057  
**Collection Date:** 06/05/17 17:47  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

### Results by Waters Department

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<td>76</td>
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### Batch Information

- **Analytical Batch:** STS5505  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 06/09/17 14:40  
- **Container ID:** 1173057006-B  
- **Parameter:** Total Dissolved Solids  
- **Result Qual:** 1120  
- **LOQ/CL:** 10.0  
- **DL:** 3.10  
- **Units:** mg/L  
- **DF:** 1  
- **Allowable Limits:** 06/09/17 14:40
**Results of MW-7**

Client Sample ID: **MW-7**  
Client Project ID: **Healy Power Plant GW Monitor**  
Lab Sample ID: **1173057007**  
Lab Project ID: **1173057**

Collection Date: **06/05/17 16:35**  
Received Date: **06/07/17 12:34**

Matrix: Water (Surface, Eff., Ground)

Solids (%): Location:

### Results by Metals by ICP/MS

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### Batch Information

**Analytical Batch:** MMS9819  
**Analytical Method:** EP200.8  
**Analyst:** VDL  
**Analytical Date/Time:** 06/15/17 16:53  
**Container ID:** 1173057007-A

**Prep Batch:** MXX30722  
**Prep Method:** E200.2  
**Prep Date/Time:** 06/08/17 12:36  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol.:** 50 mL

---

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**t** 907.562.2343  
**f** 907.561.5301  
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Results of MW-7

Client Sample ID: MW-7
Client Project ID: Healy Power Plant GW Monitor
Lab Sample ID: 1173057007
Lab Project ID: 1173057

Collection Date: 06/05/17 16:35
Received Date: 06/07/17 12:34
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals Department

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Batch Information

Analytical Batch: MCV5818
Analytical Method: EP245.1
Analyst: TMA
Analytical Date/Time: 06/14/17 19:08
Container ID: 1173057007-A

Prep Batch: MXX30742
Prep Method: METHOD
Prep Date/Time: 06/14/17 12:15
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL
### Results of MW-7

**Client Sample ID:** MW-7  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057007  
**Lab Project ID:** 1173057  
**Collection Date:** 06/05/17 16:35  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)  
**Location:**

### Results by Waters Department

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### Batch Information

- **Analytical Batch:** WIC5646  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prepare Date/Time:** 06/09/17 12:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL  
- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/09/17 12:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

### Batch Information

- **Analytical Batch:** STS5505  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 06/09/17 14:40  
- **Container ID:** 1173057007-B

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### Results of MW-10

**Client Sample ID:** MW-10  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057008  
**Lab Project ID:** 1173057  
**Collection Date:** 06/05/17 15:28  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** Location:

**Results by Metals by ICP/MS**

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**Batch Information**

- **Analytical Batch:** MMS9819  
  - **Analytical Method:** EP200.8  
  - **Analyst:** VDL  
  - **Analytical Date/Time:** 06/15/17 16:56  
  - **Container ID:** 1173057008-A

- **Prep Batch:** MXX30722  
  - **Prep Method:** E200.2  
  - **Prep Date/Time:** 06/08/17 12:36  
  - **Prep Initial Wt./Vol.:** 20 mL  
  - **Prep Extract Vol.:** 50 mL

- **Analytical Batch:** MMS9816  
  - **Analytical Method:** EP200.8  
  - **Analyst:** VDL  
  - **Analytical Date/Time:** 06/13/17 19:55  
  - **Container ID:** 1173057008-A

- **Prep Batch:** MXX30722  
  - **Prep Method:** E200.2  
  - **Prep Date/Time:** 06/08/17 12:36  
  - **Prep Initial Wt./Vol.:** 20 mL  
  - **Prep Extract Vol.:** 50 mL

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## Results of MW-10

**Client Sample ID:** MW-10  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057008  
**Lab Project ID:** 1173057  
**Collection Date:** 06/05/17 15:28  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** 

### Results by Metals Department

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### Batch Information

- **Analytical Batch:** MCV5818
- **Analytical Method:** EP245.1
- **Analyst:** TMA
- **Analytical Date/Time:** 06/14/17 19:11
- **Container ID:** 1173057008-A
- **Prep Batch:** MXX30742
- **Prep Method:** METHOD
- **Prep Date/Time:** 06/14/17 12:15
- **Prep Initial Wt./Vol.:** 25 mL
- **Prep Extract Vol.:** 50 mL
### Results of MW-10

**Client Sample ID:** MW-10  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057008  
**Lab Project ID:** 1173057  
**Collection Date:** 06/05/17 15:28  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

#### Results by Waters Department

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#### Batch Information

- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/09/17 12:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL  

- **Analytical Batch:** WIC5646  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Analytical Date/Time:** 06/10/17 14:52  
- **Container ID:** 1173057008-B  

#### Batch Information

- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/09/17 12:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL  

- **Analytical Batch:** STS5505  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 06/09/17 14:40  
- **Container ID:** 1173057008-B  

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**Print Date:** 08/01/2017  4:17:43PM  

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### Results of MW-9

Client Sample ID: MW-9  
Client Project ID: Healy Power Plant GW Monitor  
Lab Sample ID: 1173057009  
Lab Project ID: 1173057

Collection Date: 06/05/17 14:24  
Received Date: 06/07/17 12:34  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

#### Results by Metals by ICP/MS

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#### Batch Information

- **Analytical Batch:** MMS9819  
  Analytical Method: EP200.8  
  Analyst: VDL  
  Analytical Date/Time: 06/15/17 17:05  
  Container ID: 1173057009-A  
  Analytical Batch: MMS9816  
  Analytical Method: EP200.8  
  Analyst: VDL  
  Analytical Date/Time: 06/13/17 19:58  
  Container ID: 1173057009-A

- **Prep Batch:** MXX30722  
  Prep Method: E200.2  
  Prep Date/Time: 06/08/17 12:36  
  Prep Initial Wt./Vol.: 20 mL  
  Prep Extract Vol.: 50 mL

- **Prep Batch:** MXX30722  
  Prep Method: E200.2  
  Prep Date/Time: 06/08/17 12:36  
  Prep Initial Wt./Vol.: 20 mL  
  Prep Extract Vol.: 50 mL

Print Date: 08/01/2017 4:17:43PM  
SGS North America Inc.  
200 West Potter Drive Anchorage, AK 95518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com  
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## Results of MW-9

**Client Sample ID:** MW-9  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057009  
**Lab Project ID:** 1173057  
**Collection Date:** 06/05/17 14:24  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

### Results by Metals Department

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### Batch Information

- **Analytical Batch:** MCV5818  
- **Analytical Method:** EP245.1  
- **Analyst:** TMA  
- **Analytical Date/Time:** 06/14/17 19:15  
- **Container ID:** 1173057009-A  
- **Prep Batch:** MXX30742  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/14/17 12:15  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol:** 50 mL
## Results of MW-9

**Client Sample ID:** MW-9  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057009  
**Lab Project ID:** 1173057  
**Collection Date:** 06/05/17 14:24  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

### Results by Waters Department

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### Batch Information

- **Analytical Batch:** WIC5646  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Analytical Date/Time:** 06/10/17 10:07  
- **Container ID:** 1173057009-B

- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/09/17 12:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

- **Analytical Batch:** WIC5646  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Analytical Date/Time:** 06/10/17 15:10  
- **Container ID:** 1173057009-B

- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/09/17 12:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

### Batch Information

- **Analytical Batch:** STS5505  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 06/09/17 14:40  
- **Container ID:** 1173057009-B

- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/09/17 12:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

**Total Dissolved Solids**

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**Batch Information**

- **Analytical Batch:** STS5505  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 06/09/17 14:40  
- **Container ID:** 1173057009-B

**Print Date:** 08/01/2017 4:17:43PM

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### Results of MW-5

**Client Sample ID:** MW-5  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057010  
**Lab Project ID:** 1173057  
**Collection Date:** 06/05/17 12:55  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

### Results by Metals by ICP/MS

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### Batch Information

**Analytical Batch:** MMS9819  
**Analytical Method:** EP200.8  
**Analyst:** VDL  
**Analytical Date/Time:** 06/15/17 17:08  
**Container ID:** 1173057010-A  

**Prep Batch:** MXX30722  
**Prep Method:** E200.2  
**Prep Date/Time:** 06/08/17 12:36  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol:** 50 mL

**Analytical Batch:** MMS9816  
**Analytical Method:** EP200.8  
**Analyst:** VDL  
**Analytical Date/Time:** 06/13/17 20:01  
**Container ID:** 1173057010-A  

**Prep Batch:** MXX30722  
**Prep Method:** E200.2  
**Prep Date/Time:** 06/08/17 12:36  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol:** 50 mL
### Results of MW-5

**Client Sample ID:** MW-5  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057010  
**Lab Project ID:** 1173057  
**Collection Date:** 06/05/17 12:55  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

### Results by Metals Department

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<th>Units</th>
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### Batch Information

- **Analytical Batch:** MCV5818  
- **Analytical Method:** EP245.1  
- **Analyst:** TMA  
- **Analytical Date/Time:** 06/14/17 19:21  
- **Container ID:** 1173057010-A  
- **Prep Batch:** MXX30742  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/14/17 12:15  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol:** 50 mL
## Results of MW-5

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### Batch Information

- **Analytical Batch:** WIC5646
- **Analytical Method:** EPA 300.0
- **Analyst:** NEG
- **Prep Batch:** WXX11872
- **Prep Method:** METHOD
- **Prep Date/Time:** 06/09/17 12:00
- **Prep Initial Wt./Vol.:** 10 mL
- **Prep Extract Vol:** 10 mL

- **Analytical Batch:** WIC5646
- **Analytical Method:** EPA 300.0
- **Analyst:** NEG
- **Prep Batch:** WXX11872
- **Prep Method:** METHOD
- **Prep Date/Time:** 06/09/17 12:00
- **Prep Initial Wt./Vol.:** 10 mL
- **Prep Extract Vol:** 10 mL

- **Analytical Batch:** STS5505
- **Analytical Method:** SM21 2540C
- **Analyst:** AYC
- **Prep Batch:** WXX11872
- **Prep Method:** METHOD
- **Prep Date/Time:** 06/09/17 12:00
- **Prep Initial Wt./Vol.:** 10 mL
- **Prep Extract Vol:** 10 mL

## Total Dissolved Solids

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### Batch Information

- **Analytical Batch:** STS5505
- **Analytical Method:** SM21 2540C
- **Analyst:** AYC
- **Prep Batch:** WXX11872
- **Prep Method:** METHOD
- **Prep Date/Time:** 06/09/17 12:00
- **Prep Initial Wt./Vol.:** 10 mL
- **Prep Extract Vol:** 10 mL

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Print Date: 08/01/2017 4:17:43PM
## Results of MW-95

**Client Sample ID:** MW-95  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057011  
**Lab Project ID:** 1173057  
**Collection Date:** 06/05/17 12:55  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

### Results by Metals by ICP/MS

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### Batch Information

**Analytical Batch:** MMS9819  
**Analytical Method:** EP200.8  
**Analyst:** VDL  
**Analytical Date/Time:** 06/15/17 17:11  
**Container ID:** 1173057011-A  
**Prep Batch:** MXX30722  
**Prep Method:** E200.2  
**Prep Date/Time:** 06/08/17 12:36  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol.:** 50 mL

**Analytical Batch:** MMS9816  
**Analytical Method:** EP200.8  
**Analyst:** VDL  
**Analytical Date/Time:** 06/13/17 20:04  
**Container ID:** 1173057011-A  
**Prep Batch:** MXX30722  
**Prep Method:** E200.2  
**Prep Date/Time:** 06/08/17 12:36  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol.:** 50 mL
Results of MW-95

Client Sample ID: MW-95
Client Project ID: Healy Power Plant GW Monitor
Lab Sample ID: 1173057011
Lab Project ID: 1173057

Collection Date: 06/05/17 12:55
Received Date: 06/07/17 12:34
Matrix: Water (Surface, Eff., Ground)

Solids (%):

Location:

Results by Metals Department

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<th>Units</th>
<th>DF</th>
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<th>Date Analyzed</th>
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<tr>
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Batch Information

Analytical Batch: MCV5818
Analytical Method: EP245.1
Analyst: TMA
Analytical Date/Time: 06/14/17 19:24
Container ID: 1173057011-A

Prep Batch: MXX30742
Prep Method: METHOD
Prep Date/Time: 06/14/17 12:15
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL

Print Date: 08/01/2017 4:17:43PM
### Results of MW-95

**Client Sample ID:** MW-95  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057011  
**Lab Project ID:** 1173057  
**Collection Date:** 06/05/17 12:55  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** Location:

#### Results by Waters Department

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<th>Units</th>
<th>DF</th>
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<td>2.85</td>
<td>mg/L</td>
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<td>06/10/17 15:46</td>
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<tr>
<td>Fluoride</td>
<td>3.89</td>
<td>0.400</td>
<td>0.124</td>
<td>mg/L</td>
<td>2</td>
<td></td>
<td>06/10/17 11:19</td>
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<tr>
<td>Sulfate</td>
<td>349</td>
<td>9.20</td>
<td>2.85</td>
<td>mg/L</td>
<td>46</td>
<td></td>
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#### Batch Information

- **Analytical Batch:** WIC5646  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Analytical Date/Time:** 06/10/17 11:19  
- **Container ID:** 1173057011-B

- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/09/17 12:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

- **Analytical Batch:** WIC5646  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Analytical Date/Time:** 06/10/17 15:46  
- **Container ID:** 1173057011-B

- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/09/17 12:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

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<td>3.10</td>
<td>mg/L</td>
<td>1</td>
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#### Batch Information

- **Analytical Batch:** STS5505  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 06/09/17 14:40  
- **Container ID:** 1173057011-B
Results of SW-1

Client Sample ID: SW-1
Client Project ID: Healy Power Plant GW Monitor
Lab Sample ID: 1173057012
Lab Project ID: 1173057

Collection Date: 06/06/17 14:14
Received Date: 06/07/17 12:34
Matrix: Water (Surface, Eff., Ground)
Solids (%): Location:

Results by Metals by ICP/MS

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<th>Units</th>
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<td>ug/L</td>
<td>1</td>
<td>06/17/17 16:58</td>
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<tr>
<td>Arsenic</td>
<td>5.00 U</td>
<td>5.00</td>
<td>1.50</td>
<td>ug/L</td>
<td>1</td>
<td>06/17/17 16:58</td>
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<tr>
<td>Barium</td>
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<td>0.940</td>
<td>ug/L</td>
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<td>06/17/17 16:58</td>
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<tr>
<td>Beryllium</td>
<td>0.400 U</td>
<td>0.400</td>
<td>0.130</td>
<td>ug/L</td>
<td>1</td>
<td>06/17/17 16:58</td>
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<td>Boron</td>
<td>122</td>
<td>50.0</td>
<td>15.0</td>
<td>ug/L</td>
<td>1</td>
<td>06/17/17 16:58</td>
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<tr>
<td>Cadmium</td>
<td>0.500 U</td>
<td>0.500</td>
<td>0.150</td>
<td>ug/L</td>
<td>1</td>
<td>06/17/17 16:58</td>
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<tr>
<td>Calcium</td>
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<td>ug/L</td>
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<td>Chromium</td>
<td>46.1</td>
<td>2.00</td>
<td>0.620</td>
<td>ug/L</td>
<td>1</td>
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<tr>
<td>Cobalt</td>
<td>4.00 U</td>
<td>4.00</td>
<td>1.20</td>
<td>ug/L</td>
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<td>06/17/17 16:58</td>
<td></td>
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<tr>
<td>Lead</td>
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<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
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<td>Lithium</td>
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<td>Molybdenum</td>
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<td>Selenium</td>
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<td>Silver</td>
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Batch Information

Analytical Batch: MMS9821
Analytical Method: EP200.8
Analyst: VDL
Analytical Date/Time: 06/17/17 16:58
Container ID: 1173057012-A

Prep Batch: MXX30727
Prep Method: E200.2
Prep Date/Time: 06/09/17 07:05
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
----------|-------------|--------|----|-------|----|------------------|---------------|
Hardness as CaCO3 | 99.1 | 5.00 | 5.00 | mg/L | 1  | 06/17/17 16:58   |

Batch Information

Analytical Batch: MMS9821
Analytical Method: SM21 2340B
Analyst: VDL
Analytical Date/Time: 06/17/17 16:58
Container ID: 1173057012-A

Prep Batch: MXX30727
Prep Method: E200.2
Prep Date/Time: 06/09/17 07:05
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/01/2017 4:17:43PM

SGS North America Inc.

200 West Potter Drive Anchorage, AK 95518

907.562.2343 907.561.5301 www.us.sgs.com

Member of SGS Group
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### Results of SW-1

Client Sample ID: **SW-1**  
Client Project ID: **Healy Power Plant GW Monitor**  
Lab Sample ID: 1173057012  
Lab Project ID: 1173057  
Collection Date: 06/06/17 14:14  
Received Date: 06/07/17 12:34  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

### Results by Metals Department

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<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
<th>DF</th>
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<tbody>
<tr>
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<td>0.0620</td>
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### Batch Information

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<td>Analyst</td>
<td>TMA</td>
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<td>Prep Batch</td>
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<td>Prep Initial Wt./Vol.</td>
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<td>Prep Extract Vol.</td>
<td>50 mL</td>
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### Results of SW-1

**Client Sample ID:** SW-1  
**Client Project ID:** Healy Power Plant GW Monitor  
**Lab Sample ID:** 1173057012  
**Lab Project ID:** 1173057  
**Collection Date:** 06/06/17 14:14  
**Received Date:** 06/07/17 12:34  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

#### Results by Waters Department

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<th>DF</th>
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<tbody>
<tr>
<td>Chloride</td>
<td>37.8</td>
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<td>mg/L</td>
<td>2</td>
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<tr>
<td>Fluoride</td>
<td>1.74</td>
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<td>0.124</td>
<td>mg/L</td>
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<td>Sulfate</td>
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#### Batch Information

**Analytical Batch:** WIC5646  
**Analytical Method:** EPA 300.0  
**Analyst:** NEG  
**Analytical Date/Time:** 06/10/17 11:37  
**Container ID:** 1173057012-B

**Prep Batch:** WXX11872  
**Prep Method:** METHOD  
**Prep Date/Time:** 06/09/17 12:00  
**Prep Extract Vol:** 10 mL

**Analytical Batch:** WIC5646  
**Analytical Method:** EPA 300.0  
**Analyst:** NEG  
**Analytical Date/Time:** 06/10/17 16:03  
**Container ID:** 1173057012-B

**Prep Batch:** WXX11872  
**Prep Method:** METHOD  
**Prep Date/Time:** 06/09/17 12:00  
**Prep Extract Vol:** 10 mL

**Analytical Batch:** STS5505  
**Analytical Method:** SM21 2540C  
**Analyst:** AYC  
**Analytical Date/Time:** 06/09/17 14:40  
**Container ID:** 1173057012-B

Print Date: 08/01/2017 4:17:43PM
### Method Blank

**Blank ID:** MB for HBN 1760594 [MXX/30722]  
**Blank Lab ID:** 1389342  
**Matrix:** Water (Surface, Eff., Ground)  
**QC for Samples:** 1173057007, 1173057008, 1173057009, 1173057010, 1173057011

### Results by EP200.8

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<td>ug/L</td>
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<td>Barium</td>
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<td>500</td>
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<td>0.620</td>
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### Batch Information

**Analytical Batch:** MMS9816  
**Analytical Method:** EP200.8  
**Instrument:** Perkin Elmer NexIon P5  
**Analyst:** VDL  
**Analytical Date/Time:** 6/13/2017  7:28:22PM

**Prep Batch:** MXX30722  
**Prep Method:** E200.2  
**Prep Date/Time:** 6/8/2017  12:36:57PM  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol:** 50 mL

---

**Analytical Batch:** MMS9819  
**Analytical Method:** EP200.8  
**Instrument:** Perkin Elmer NexIon P5  
**Analyst:** VDL  
**Analytical Date/Time:** 6/15/2017  4:41:13PM

**Prep Batch:** MXX30722  
**Prep Method:** E200.2  
**Prep Date/Time:** 6/8/2017  12:36:57PM  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol:** 50 mL

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Print Date: 08/01/2017  4:17:48PM
## Blank Spike Summary

Blank Spike ID: LCS for HBN 1173057 [MXX30722]  
Blank Spike Lab ID: 1389343  
Date Analyzed: 06/13/2017 19:31  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples: 1173057007, 1173057008, 1173057009, 1173057010, 1173057011

### Results by EP200.8

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<th>Result (ug/L)</th>
<th>Rec (%)</th>
<th>CL (85-115)</th>
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<td>1020</td>
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<td>Arsenic</td>
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<td>992</td>
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<td>Barium</td>
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### Batch Information

- **Analytical Batch:** MMS9816  
  **Analytical Method:** EP200.8  
  **Instrument:** Perkin Elmer NexIon P5  
  **Analyst:** VDL  
  **Prep Batch:** MXX30722  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 06/08/2017 12:36  
  **Spike Init Wt./Vol.:** 1000 ug/L  
  **Extract Vol:** 50 mL

- **Analytical Batch:** MMS9819  
  **Analytical Method:** EP200.8  
  **Instrument:** Perkin Elmer NexIon P5  
  **Analyst:** VDL  
  **Prep Batch:** MXX30722  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 06/08/2017 12:36  
  **Spike Init Wt./Vol.:** 100 ug/L  
  **Extract Vol:** 50 mL

Print Date: 08/01/2017 4:17:49PM
### Matrix Spike Summary

Original Sample ID: 1389349  
MS Sample ID: 1389350 MS  
MSD Sample ID:  
Analysis Date: 06/13/2017 19:34  
Analysis Date: 06/13/2017 19:37  
Matrix: Drinking Water  
QC for Samples: 1173057007, 1173057008, 1173057009, 1173057010, 1173057011

### Results by EP200.8

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<th>Spike</th>
<th>Result</th>
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### Batch Information

Analytical Batch: MMS9816  
Analytical Method: EP200.8  
Instrument: Perkin Elmer NexIon P5  
Analyst: VDL  
Analytical Date/Time: 6/13/2017 7:37:21PM

Prep Batch: MXX30722  
Prep Method: DW Digest for Metals on ICP-MS  
Prep Date/Time: 6/8/2017 12:36:57PM  
Prep Initial Wt./Vol.: 20.00mL  
Prep Extract Vol: 50.00mL

Analytical Batch: MMS9819  
Analytical Method: EP200.8  
Instrument: Perkin Elmer NexIon P5  
Analyst: VDL  
Analytical Date/Time: 6/15/2017 4:50:11PM

Prep Batch: MXX30722  
Prep Method: DW Digest for Metals on ICP-MS  
Prep Date/Time: 6/8/2017 12:36:57PM  
Prep Initial Wt./Vol.: 20.00mL  
Prep Extract Vol: 50.00mL
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<th>Spike (ug/L)</th>
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### Batch Information

- **Analytical Batch:** MMS9816
- **Analytical Method:** EP200.8
- **Instrument:** Perkin Elmer NexIon P5
- **Analyst:** VDL
- **Prep Batch:** MXX30722
- **Prep Method:** DW Digest for Metals on ICP-MS
- **Prep Date/Time:** 6/8/2017 12:36:57PM
- **Prep Initial Wt./Vol.:** 20.00mL
- **Prep Extract Vol.:** 50.00mL

**Print Date:** 08/01/2017 4:17:50PM

SGS North America Inc.  
200 West Potter Drive, Anchorage, AK 95518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group

Page 48 of 89
Method Blank
Blank Lab ID: 1389613

QC for Samples: 1173057001, 1173057002, 1173057003, 1173057004, 1173057005, 1173057006, 1173057012

Results by EP200.8

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Batch Information

Analytical Batch: MMS9816  Prep Batch: MXX30727
Instrument: Perkin Elmer NexIon P5  Prep Date/Time: 6/9/2017 7:05:52AM
Analyst: VDL  Prep Initial Wt./Vol.: 20 mL
Analytical Date/Time: 6/13/2017 5:40:35PM  Prep Extract Vol: 50 mL

Analytical Batch: MMS9819  Prep Batch: MXX30727
Instrument: Perkin Elmer NexIon P5  Prep Date/Time: 6/9/2017 7:05:52AM
Analyst: VDL  Prep Initial Wt./Vol.: 20 mL
Analytical Date/Time: 6/15/2017 4:28:32PM  Prep Extract Vol: 50 mL

Print Date: 08/01/2017 4:17:52PM
### Blank Spike Summary

Blank Spike ID: LCS for HBN 1173057 [MXX30727]
Blank Spike Lab ID: 1389614
Date Analyzed: 06/13/2017 17:43

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1173057001, 1173057002, 1173057003, 1173057004, 1173057005, 1173057006, 1173057012

### Results by EP200.8

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### Batch Information

| Analytical Batch: MMS9816 | Prep Batch: MXX30727 |
| Instrument: Perkin Elmer Nexion P5 | Prep Date/Time: 06/09/2017 07:05 |
| Analyst: VDL | Spike Init Wt./Vol.: 1000 ug/L Extract Vol.: 50 mL |

| Analytical Batch: MMS9819 | Prep Batch: MXX30727 |
| Instrument: Perkin Elmer Nexion P5 | Prep Date/Time: 06/09/2017 07:05 |
| Analyst: VDL | Spike Init Wt./Vol.: 100 ug/L Extract Vol.: 50 mL |
### Matrix Spike Summary

Original Sample ID: 1389615  
MS Sample ID: 1389617 MS  
MSD Sample ID:  
Analysis Date: 06/13/2017 17:46  
Matrix: Drinking Water  
QC for Samples: 1173057001, 1173057002, 1173057003, 1173057004, 1173057005

### Results by EP200.8

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### Batch Information

Analytical Batch: MMS9816  
Analytical Method: EP200.8  
Instrument: Perkin Elmer NexIon P5  
Analyst: VDL  
Analytical Date/Time: 6/13/2017 5:49:33PM

Prep Batch: MXX30727  
Prep Method: DW Digest for Metals on ICP-MS  
Prep Date/Time: 6/9/2017 7:05:52AM  
Prep Initial Wt./Vol.: 20.00mL  
Prep Extract Vol: 50.00mL

Analytical Batch: MMS9819  
Analytical Method: EP200.8  
Instrument: Perkin Elmer NexIon P5  
Analyst: VDL  
Analytical Date/Time: 6/15/2017 4:37:30PM

Prep Batch: MXX30727  
Prep Method: DW Digest for Metals on ICP-MS  
Prep Date/Time: 6/9/2017 7:05:52AM  
Prep Initial Wt./Vol.: 20.00mL  
Prep Extract Vol: 50.00mL

Print Date: 08/01/2017 4:17:55PM
Matrix Spike Summary

Original Sample ID: 1389616  Analysis Date: 06/17/2017 16:43
MS Sample ID: 1389618 MS  Analysis Date: 06/17/2017 16:46
MSD Sample ID: 

QC for Samples: 1173057001, 1173057002, 1173057003, 1173057004, 1173057005, 1173057006, 1173057012

Matrix Spike Summary

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
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<tbody>
<tr>
<td>Antimony</td>
<td>0.500U</td>
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<tr>
<td>Arsenic</td>
<td>2.50U</td>
<td>1000</td>
<td>100</td>
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<td>70-130</td>
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<td>Barium</td>
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<td>Beryllium</td>
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<td>102</td>
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<td>Calcium</td>
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<td>Chromium</td>
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<td>Cobalt</td>
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<tr>
<td>Molybdenum</td>
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<td>Thallium</td>
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<td>103</td>
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Batch Information

Analytical Batch: MMS9821  Prep Batch: MXX30727
Analytical Method: EP200.8  Prep Method: DW Digest for Metals on ICP-MS
Instrument: Perkin Elmer NexIon P5  Prep Date/Time: 6/9/2017 7:05:52AM
Analyst: VDL  Prep Initial Wt./Vol.: 20.00mL
Analytical Date/Time: 6/17/2017 4:46:11PM  Prep Extract Vol: 50.00mL

Print Date: 08/01/2017 4:17:55PM
### Method Blank

**Blank ID:** MB for HBN 1761071 [MXX/30742]  
**Blank Lab ID:** 1390848  
**Matrix:** Water (Surface, Eff., Ground)

**QC for Samples:**  
1173057001, 1173057002, 1173057003, 1173057004, 1173057005, 1173057006, 1173057007, 1173057008, 1173057009, 1173057010, 1173057011, 1173057012

### Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
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### Batch Information

- **Analytical Batch:** MCV5818  
- **Analytical Method:** EP245.1  
- **Instrument:** PSA Millennium mercury AA  
- **Analyst:** TMA  
- **Analytical Date/Time:** 6/14/2017 6:30:22PM

- **Prep Batch:** MXX30742  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 6/14/2017 12:15:00PM  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol.:** 50 mL

---

Print Date: 08/01/2017 4:17:58PM

SGS North America Inc. | 200 West Potter Drive Anchorage, AK 99518 | t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group | Page 53 of 89
Blank Spike Summary

Blank Spike ID: LCS for HBN 1173057 [MXX30742]
Blank Spike Lab ID: 1390849
Date Analyzed: 06/14/2017 18:33

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1173057001, 1173057002, 1173057003, 1173057004, 1173057005, 1173057006, 1173057007, 1173057008, 1173057009, 1173057010, 1173057011, 1173057012

Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>4</td>
<td>4.20</td>
<td>105</td>
<td>(85-115)</td>
</tr>
</tbody>
</table>

Batch Information

Analytical Batch: MCV5818
Analytical Method: EP245.1
Instrument: PSA Millennium mercury AA
Analyst: TMA

Prep Batch: MXX30742
Prep Method: METHOD
Prep Date/Time: 06/14/2017 12:15
Spike Init Wt./Vol.: 4 ug/L  Extract Vol: 50 mL
Dupe Init Wt./Vol.:  Extract Vol:
### Matrix Spike Summary

| Original Sample ID: 1172986001 | Analysis Date: 06/14/2017 18:36 |
| MS Sample ID: 1390850 MS | Analysis Date: 06/14/2017 18:39 |
| MSD Sample ID: | Analysis Date: |
| QC for Samples: 1173057001, 1173057002, 1173057003, 1173057004, 1173057005, 1173057006, 1173057007, 1173057008, 1173057009, 1173057010, 1173057011, 1173057012 | Matrix: Water (Surface, Eff., Ground) |

### Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Matrix Spike (ug/L)</th>
<th>Spike Duplicate (ug/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>Sample</td>
<td>Spike</td>
</tr>
<tr>
<td>Mercury</td>
<td>0.100U</td>
<td>8.00</td>
</tr>
</tbody>
</table>

### Batch Information

| Analytical Batch: MCV5818 | Prep Batch: MXX30742 |
| Instrument: PSA Millennium mercury AA | Prep Date/Time: 6/14/2017 12:15:00PM |
| Analyst: TMA | Prep Initial Wt./Vol.: 25.00mL |
| Analytical Date/Time: 6/14/2017 6:39:09PM | Prep Extract Vol: 50.00mL |
### Matrix Spike Summary

<table>
<thead>
<tr>
<th>Original Sample ID</th>
<th>Analysis Date: 06/14/2017 19:15</th>
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<tr>
<td>MS Sample ID:</td>
<td>Analysis Date: 06/14/2017 19:18</td>
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<td>MSD Sample ID:</td>
<td>Analysis Date:</td>
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<td>Matrix: Water (Surface, Eff., Ground)</td>
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<tr>
<td>QC for Samples:</td>
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<tr>
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<td>1173057001, 1173057002, 1173057003, 1173057004, 1173057005, 1173057006, 1173057007, 1173057008, 1173057009, 1173057010, 1173057011, 1173057012</td>
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### Results by EP245.1

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<thead>
<tr>
<th>Parameter</th>
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<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>0.200U</td>
<td>8.00</td>
<td>6.9</td>
<td>86</td>
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<td>70-130</td>
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</tbody>
</table>

### Batch Information

- Analytical Batch: MCV5818
- Analytical Method: EP245.1
- Instrument: PSA Millennium mercury AA
- Analyst: TMA
- Analytical Date/Time: 6/14/2017 7:18:15PM
- Prep Batch: MXX30742
- Prep Method: Digestion Mercury 245.1 (W)
- Prep Date/Time: 6/14/2017 12:15:00PM
- Prep Initial Wt./Vol.: 25.00mL
- Prep Extract Vol: 50.00mL

Print Date: 08/01/2017 4:18:01PM
**Method Blank**

Blank ID: MB for HBN 1760719 [STS/5505]  
Blank Lab ID: 1389726  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1173057001, 1173057002, 1173057003, 1173057004, 1173057005, 1173057006, 1173057007, 1173057008, 1173057009, 1173057010, 1173057011, 1173057012

**Results by SM21 2540C**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>16.6U</td>
<td>33.3</td>
<td>10.3</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

**Batch Information**

- Analytical Batch: STS5505  
- Analytical Method: SM21 2540C  
- Instrument:  
- Analyst: AYC  
- Analytical Date/Time: 6/9/2017  2:40:39PM
**Duplicate Sample Summary**

Original Sample ID: 1173057001
Duplicate Sample ID: 1389729

Analysis Date: 06/09/2017 14:40
Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1173057001, 1173057002, 1173057003, 1173057004, 1173057005, 1173057006, 1173057007, 1173057008, 1173057009, 1173057010, 1173057011, 1173057012

Results by **SM21 2540C**

<table>
<thead>
<tr>
<th>NAME</th>
<th>Original</th>
<th>Duplicate</th>
<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>1110</td>
<td>1106</td>
<td>mg/L</td>
<td>0.72</td>
<td>(&lt; 5 )</td>
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</table>

**Batch Information**

Analytical Batch: STS5505
Analytical Method: SM21 2540C
Instrument: 
Analyst: AYC
### Duplicate Sample Summary

Original Sample ID: 1173092001  
Duplicate Sample ID: 1389730  
Analysis Date: 06/09/2017 14:40  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1173057002, 1173057003, 1173057004, 1173057005, 1173057006, 1173057007, 1173057008, 1173057009, 1173057010, 1173057011, 1173057012

### Results by SM21 2540C

<table>
<thead>
<tr>
<th>NAME</th>
<th>Original</th>
<th>Duplicate</th>
<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>28400</td>
<td>28100</td>
<td>mg/L</td>
<td>1.10</td>
<td>(&lt; 5 )</td>
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### Batch Information

Analytical Batch: STS5505  
Analytical Method: SM21 2540C  
Instrument:  
Analyst: AYC
**Blank Spike Summary**

Blank Spike ID: LCS for HBN 1173057 [STS5505]  
Spike Duplicate ID: LCSD for HBN 1173057  
Blank Spike Lab ID: 1389727  
Spike Duplicate Lab ID: 1389728  
Date Analyzed: 06/09/2017 14:40  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples: 1173057001, 1173057002, 1173057003, 1173057004, 1173057005, 1173057006, 1173057007, 1173057008, 1173057009, 1173057010, 1173057011, 1173057012  

**Results by SM21 2540C**

<table>
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<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>330</td>
<td>325</td>
<td>99</td>
<td>330</td>
<td>331</td>
<td>100</td>
<td>(75-125)</td>
<td>1.80</td>
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**Batch Information**

Analytical Batch: STS5505  
Analytical Method: SM21 2540C  
Instrument:  
Analyst: AYC
**Method Blank**

Blank ID: MB for HBN 1760888 [WXX/11872]  
Blank Lab ID: 1390081  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples:  
1173057001, 1173057002, 1173057003, 1173057004, 1173057005, 1173057006, 1173057007, 1173057008, 1173057009, 1173057010, 1173057011, 1173057012

**Results by EPA 300.0**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
<tr>
<td>Sulfate</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
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**Batch Information**

Analytical Batch: WIC5646  
Analytical Method: EPA 300.0  
Instrument: 930 Metrohm compact IC flex  
Analyst: NEG  
Analytical Date/Time: 6/10/2017 4:07:24AM  
Prep Batch: WXX11872  
Prep Date/Time: 6/9/2017 12:00:00PM  
Prep Initial Wt./Vol.: 10 mL  
Prep Extract Vol: 10 mL
## Blank Spike Summary

**Blank Spike ID:** LCS for HBN 1173057 [WXX11872]  
**Blank Spike Lab ID:** 1390082  
**Date Analyzed:** 06/10/2017 04:25  
**Matrix:** Water (Surface, Eff., Ground)  
**QC for Samples:** 1173057001, 1173057002, 1173057003, 1173057004, 1173057005, 1173057006, 1173057007, 1173057008, 1173057009, 1173057010, 1173057011, 1173057012

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>5</td>
<td>4.87</td>
<td>98</td>
<td>(90-110 )</td>
</tr>
<tr>
<td>Fluoride</td>
<td>5</td>
<td>4.89</td>
<td>98</td>
<td>(90-110 )</td>
</tr>
<tr>
<td>Sulfate</td>
<td>5</td>
<td>4.90</td>
<td>98</td>
<td>(90-110 )</td>
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</table>

### Batch Information

- **Analytical Batch:** WIC5646  
- **Analytical Method:** EPA 300.0  
- **Instrument:** 930 Metrohm compact IC flex  
- **Analyst:** NEG  
- **Prep Batch:** WXX11872  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 06/09/2017 12:00  
- **Spike Init Wt./Vol.:** 5 mg/L  
- **Extract Vol.:** 10 mL  
- **Dupe Init Wt./Vol.:**  
- **Extract Vol.:**
Matrix Spike Summary

Original Sample ID: 1173213001  Analysis Date: 06/10/2017 4:43
MS Sample ID: 1390083 MS  Analysis Date: 06/10/2017 5:01
MSD Sample ID: 1390084 MSD  Analysis Date: 06/10/2017 5:19
Matrix: Water (Surface, Eff., Ground)
QC for Samples: 1173057001, 1173057002, 1173057003, 1173057004, 1173057005, 1173057006, 1173057007, 1173057008, 1173057009, 1173057010, 1173057011, 1173057012

Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sample</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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<tbody>
<tr>
<td>Sulfate</td>
<td>13.9</td>
<td>5.00</td>
<td>17.8</td>
<td>79</td>
<td>5.00</td>
<td>17.9</td>
<td>80</td>
<td>90-110</td>
<td>0.43</td>
<td>(&lt; 15 )</td>
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</table>

Batch Information

Analytical Batch: WIC5646  Prep Batch: WXX11872
Analytical Method: EPA 300.0  Prep Method: EPA 300.0 Extraction Waters/Liquids
Instrument: 930 Metrohm compact IC flex  Prep Date/Time: 6/9/2017 12:00:00PM
Analyst: NEG  Prep Initial Wt./Vol.: 10.00mL
Analytical Date/Time: 6/10/2017 5:01:21AM  Prep Extract Vol: 10.00mL
<table>
<thead>
<tr>
<th>CLIENT: SGS North America Inc.</th>
<th>CONTACT: Heidi Power Plant</th>
<th>PHONE #: 907-222-1112</th>
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<tbody>
<tr>
<td>PROJECT: Groundwater Monitoring System</td>
<td>INVOICE TO: S. G.</td>
<td>REPORTS TO: H. Simon, B. Shields, S. Oliver</td>
</tr>
<tr>
<td>MEMO:</td>
<td>GVEA: Naomi Knight</td>
<td>E-MAIL: naoknight.gvea.com</td>
</tr>
<tr>
<td>SAMPLE IDENTIFICATION:</td>
<td>DATE:</td>
<td>TIME:</td>
</tr>
<tr>
<td>QA-E MW-1R</td>
<td>06/17</td>
<td>13:35</td>
</tr>
<tr>
<td>QA-E MW-8</td>
<td>06/17</td>
<td>13:33</td>
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<tr>
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</table>
### Instructions:
Sections 1 - 5 must be filled out.
Omissions may delay the onset of analysis.

### Section 3

<table>
<thead>
<tr>
<th>Preservative</th>
<th>CONTAINERS</th>
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<tr>
<td>Type:</td>
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### Section 4

#### DOD Project?
- [ ] Yes
- [ ] No

#### Data Deliverable Requirements:
- [ ] Requested
- [ ] Turnaround Time and/or Special Instructions:
  - Total Metals: B, Ca, Sb, As, Be, Ba, Cd, Cr, Co, Pb, Li, Mo, Se, Thallium,
  - EPA 300.0: Fluoride, Chloride, Sulfate

### Section 5

#### Coolant ID:

#### Chain of Custody Seal:
- [ ] INTACT
- [ ] BROKEN
- [ ] ABSENT

#### Temp Blank Code:
- [ ] D6
- [ ] D8
- [ ] D12

#### Temperature:
- [ ] 0°C
- [ ] Ambient

### Remarks/LOC ID

### RESERVED for lab use

| SAMPLE IDENTIFICATION | DATE | TIME | MATRIX/ | CODE |
|-----------------------|------|------|---------|
|                       |      |      | MATRIX/ | CODE |
|                       |      |      |         |      |
|                       |      |      |         |      |
|                       |      |      |         |      |

### Invoices

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<tr>
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<th>QUOTE #:</th>
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<tbody>
<tr>
<td>H.Simon, B.Swiers, S.Oliver</td>
<td></td>
</tr>
<tr>
<td>H.Simon, B.Swiers, S.Oliver</td>
<td><a href="mailto:Hsimon@SLRconsulting.com">Hsimon@SLRconsulting.com</a></td>
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### Invoices

<table>
<thead>
<tr>
<th>TO: GVEA Naomi Knight</th>
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<tbody>
<tr>
<td><a href="mailto:nmknight@gvea.com">nmknight@gvea.com</a></td>
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<tr>
<td>Field</td>
</tr>
<tr>
<td>-------------------------------</td>
</tr>
<tr>
<td>COC accompanied samples?</td>
</tr>
<tr>
<td>Therm. ID:</td>
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<tr>
<td>Exemption permitted if chilled &amp; collected &lt;8 hours ago, or for samples where chilling is not required</td>
</tr>
<tr>
<td>SGS Workorder #:</td>
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<tr>
<td>cooling blank compliant* (i.e., 0-6 °C after CF)?</td>
</tr>
<tr>
<td>If &gt;6°C, were samples collected &lt;8 hours ago?</td>
</tr>
<tr>
<td>If &lt;0°C, were sample containers ice free?</td>
</tr>
<tr>
<td>Holding Time / Documentation / Sample Condition Requirements</td>
</tr>
<tr>
<td>Chain of Custody / Temperature Requirements</td>
</tr>
<tr>
<td>Additional notes (if applicable):</td>
</tr>
<tr>
<td>Note to Client:</td>
</tr>
<tr>
<td>Additional notes (if applicable):</td>
</tr>
<tr>
<td>Note: If times differ &lt;1hr, record details &amp; login per COC.</td>
</tr>
<tr>
<td>Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.</td>
</tr>
<tr>
<td>Note: If samples received without a temperature blank, the cooler temperature will be documented in lieu of the temperature blank &amp; &quot;COOLER TEMP&quot; will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note &quot;ambient&quot; or &quot;chilled&quot;.</td>
</tr>
<tr>
<td>Temperature blank compliant* (i.e., 0-6 °C after CF)?</td>
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<tr>
<td>If &lt;0°C, were sample containers ice free?</td>
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<tr>
<td>Holding Time / Documentation / Sample Condition Requirements</td>
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<td>Chain of Custody / Temperature Requirements</td>
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<td>Additional notes (if applicable):</td>
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## Sample Containers and Preservatives

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</table>
Container Condition Glossary
Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.
BU - The container was received with headspace greater than 6mm.
DM - The container was received damaged.
FR - The container was received frozen and not usable for Bacteria or BOD analyses.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
Project ID:  1173057
ACZ Project ID:  L37873

Julie Shumway:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 16, 2017. This project has been assigned to ACZ's project number, L37873. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L37873. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 31, 2017. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ’s stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.
SGS Environmental Services Inc. - Alaska

ACZ Sample ID: **L37873-01**

**Project ID:** 1173057  
**Sample ID:** MW-1R  
**Date Sampled:** 06/06/17 12:36  
**Date Received:** 06/16/17  
**Sample Matrix:** Ground Water

### Radium 226

**Parameter:** Radium 226  
**Prep Method:** M903.1  
**Result:** 0.11  
**LLD:** 0.08  
**Units:** pCi/L  
**XQ:** tjr  
**Prep Date:** 07/31/17 0:04  
**Analyst:**

### Radium 228

**Parameter:** Radium 228  
**Prep Method:** M904.0  
**Result:** 0.24  
**LLD:** 0.56  
**Units:** pCi/L  
**XQ:** gjb  
**Prep Date:** 06/29/17 16:20  
**Analyst:**

---

**RadioChemistry Analytical Results**

---

**ACZ Laboratories, Inc.**  
2773 Downhill Drive  
Steamboat Springs, CO 80487  
(800) 334-5493

**SGS Environmental Services Inc. - Alaska**

**Project ID:** 1173057  
**Sample ID:** MW-1R  
**Date Sampled:** 06/06/17 12:36  
**Date Received:** 06/16/17  
**Sample Matrix:** Ground Water

### Radium 226

**Parameter:** Radium 226  
**Prep Method:** M903.1  
**Result:** 0.11  
**LLD:** 0.08  
**Units:** pCi/L  
**XQ:** tjr  
**Prep Date:** 07/31/17 0:04  
**Analyst:**

### Radium 228

**Parameter:** Radium 228  
**Prep Method:** M904.0  
**Result:** 0.24  
**LLD:** 0.56  
**Units:** pCi/L  
**XQ:** gjb  
**Prep Date:** 06/29/17 16:20  
**Analyst:**

---

**RadioChemistry Analytical Results**

---

**ACZ Laboratories, Inc.**  
2773 Downhill Drive  
Steamboat Springs, CO 80487  
(800) 334-5493

**SGS Environmental Services Inc. - Alaska**

**Project ID:** 1173057  
**Sample ID:** MW-1R  
**Date Sampled:** 06/06/17 12:36  
**Date Received:** 06/16/17  
**Sample Matrix:** Ground Water

### Radium 226

**Parameter:** Radium 226  
**Prep Method:** M903.1  
**Result:** 0.11  
**LLD:** 0.08  
**Units:** pCi/L  
**XQ:** tjr  
**Prep Date:** 07/31/17 0:04  
**Analyst:**

### Radium 228

**Parameter:** Radium 228  
**Prep Method:** M904.0  
**Result:** 0.24  
**LLD:** 0.56  
**Units:** pCi/L  
**XQ:** gjb  
**Prep Date:** 06/29/17 16:20  
**Analyst:**
### RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**  
**Project ID:** 1173057  
**Sample ID:** MW-8  
**Locator:**  

**ACZ Sample ID:** L37873-02  
**Date Sampled:** 06/06/17 13:33  
**Date Received:** 06/16/17  
**Sample Matrix:** Ground Water  

#### Radium 226

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**RadioChemistry Analytical Results**

**SGS Environmental Services Inc. - Alaska**

- **Project ID:** 1173057
- **Sample ID:** MW-3
- **Locator:**

**ACZ Sample ID:** L37873-03

- **Date Sampled:** 06/06/17 10:21
- **Date Received:** 06/16/17
- **Sample Matrix:** Ground Water

### Radium 226

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**RadioChemistry Analytical Results**

**SGS Environmental Services Inc. - Alaska**

- **Project ID:** 1173057
- **Sample ID:** MW-2
- **Sample Matrix:** Ground Water

---

**ACZ Sample ID:** L37873-04  
**Date Sampled:** 06/06/17 11:32  
**Date Received:** 06/16/17

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### Radium 226

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SGS Environmental Services Inc. - Alaska

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* Please refer to Qualifier Reports for details.
## RadioChemistry Analytical Results

### SGS Environmental Services Inc. - Alaska

**Project ID:** 1173057  
**Sample ID:** MW-6  
**Locator:**  
**Sample Matrix:** Ground Water  
**ACZ Sample ID:** L37873-06  
**Date Sampled:** 06/05/17 17:47  
**Date Received:** 06/16/17  

### Analytical Results

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* Please refer to Qualifier Reports for details.
SGS Environmental Services Inc. - Alaska

ACZ Sample ID: L37873-07
Date Sampled: 06/05/17 16:35
Date Received: 06/16/17
Sample Matrix: Ground Water

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SGS Environmental Services Inc. - Alaska

ACZ Sample ID: L37873-08
Project ID: 1173057
Sample ID: MW-10
Locator: RadioChemistry

Sample Matrix: Ground Water

**Analytical Results**

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Prep Method:
SGS Environmental Services Inc. - Alaska

Project ID: 1173057
Sample ID: MW-9
Locator:  

ACZ Sample ID: **L37873-09**
Date Sampled: 06/05/17 14:24
Date Received: 06/16/17
Sample Matrix: Ground Water

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* Please refer to Qualifier Reports for details.
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### RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

- **ACZ Sample ID:** L37873-11
- **Project ID:** 1173057
- **Sample ID:** MW-95
- **Date Sampled:** 06/05/17 12:55
- **Date Received:** 06/16/17
- **Sample Matrix:** Ground Water

#### Analytical Results

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**Prep Method:**
SGS Environmental Services Inc. - Alaska

Project ID: 1173057
Sample ID: SW-1
Locator:

ACZ Sample ID: **L37873-12**
Date Sampled: 06/06/17 14:14
Date Received: 06/16/17
Sample Matrix: Ground Water

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### QC Sample Types

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<td>PBS</td>
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<tr>
<td>LCSW</td>
<td>Laboratory Control Sample - Water</td>
<td>PBW</td>
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### QC Sample Type Explanations

| Blanks | Verifies that there is no or minimal contamination in the prep method procedure. |
| Control Samples | Verifies the accuracy of the method, including the prep procedure. |
| Duplicates | Verifies the precision of the instrument and/or method. |
| Matrix Spikes | Determines sample matrix interferences, if any. |

### ACZ Qualifiers (Qual)

| H | Analysis exceeded method hold time. |

### Method Prefix Reference

| M | EPA methodology, including those under SDWA, CWA, and RCRA |
| SM | Standard Methods for the Examination of Water and Wastewater. |
| D | ASTM |
| RP | DOE |
| ESM | DOE/ESM |

### Comments

1. Solid matrices are reported on a dry weight basis.
3. QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
4. An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

# Radiochemistry QC Summary

## SGS Environmental Services Inc. - Alaska

ACZ Project ID: **L37873**

### Radium 226

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### Radium 228

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No certification qualifiers associated with this analysis
SGS Environmental Services Inc. - Alaska

1173057

ACZ Project ID: L37873
Date Received: 06/16/2017 09:49
Received By: sh
Date Printed: 6/16/2017

**Receipt Verification**

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<th></th>
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<tr>
<td>1) Is a foreign soil permit included for applicable samples?</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>2) Is the Chain of Custody form or other directive shipping papers present?</td>
<td>X</td>
<td></td>
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<tr>
<td>3) Does this project require special handling procedures such as CLP protocol?</td>
<td></td>
<td>X</td>
<td></td>
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<tr>
<td>4) Are any samples NRC licensable material?</td>
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</tr>
<tr>
<td>5) If samples are received past hold time, proceed with requested short hold time analyses?</td>
<td>X</td>
<td></td>
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<tr>
<td>6) Is the Chain of Custody form complete and accurate?</td>
<td>X</td>
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</tr>
<tr>
<td>7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?</td>
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**Samples/Containers**

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<tr>
<th></th>
<th>YES</th>
<th>NO</th>
<th>NA</th>
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<tbody>
<tr>
<td>8) Are all containers intact and with no leaks?</td>
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<td></td>
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<tr>
<td>9) Are all labels on containers and are they intact and legible?</td>
<td>X</td>
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<tr>
<td>10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?</td>
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<tr>
<td>11) For preserved bottle types, was the pH checked and within limits?</td>
<td>1</td>
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<tr>
<td>12) Is there sufficient sample volume to perform all requested work?</td>
<td>X</td>
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<tr>
<td>13) Is the custody seal intact on all containers?</td>
<td></td>
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<tr>
<td>14) Are samples that require zero headspace acceptable?</td>
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<tr>
<td>15) Are all sample containers appropriate for analytical requirements?</td>
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<tr>
<td>16) Is there an Hg-1631 trip blank present?</td>
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<tr>
<td>17) Is there a VOA trip blank present?</td>
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<tr>
<td>18) Were all samples received within hold time?</td>
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**Chain of Custody Related Remarks**

**Client Contact Remarks**

**Shipping Containers**

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<tr>
<th>Cooler Id</th>
<th>Temp(°C)</th>
<th>Criteria(°C)</th>
<th>Rad(µR/Hr)</th>
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<td>NA26271</td>
<td>19.9</td>
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<td>11</td>
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Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.
The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).
### SGS North America Inc.
#### CHAIN OF CUSTODY RECORD

**CLIENT:** SGS North America Inc. - Alaska Division  
**CONTACT:** Julie Shumway  
**PHONE NO.:** (907) 562-2343  
**PROJECT NAME:** 1173057  
**REPORTS TO:**  
**E-MAIL:** Julie.Shumway@sgs.com  
**INVOICE TO:** SGS - Alaska  
**P.O. #:** 1173057  

<table>
<thead>
<tr>
<th>RESERVED for lab use</th>
<th>SAMPLE IDENTIFICATION</th>
<th>DATE mm/dd/yy</th>
<th>TIME HHMM</th>
<th>MATRIX/MATRIX</th>
<th>PROS</th>
<th>TYPE</th>
<th>C COMP</th>
<th>G COMP</th>
<th>Preservative Used:</th>
<th>INVOS</th>
<th>RAD 226/238</th>
<th>MS</th>
<th>MSD</th>
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Date: 4/18/17  
Time: 0858  
Received By:  

Relinquished By: (2)  
Date: 4/18/17  
Time: 0858  
Received By:  

Relinquished By: (3)  
Date: 4/18/17  
Time: 0858  
Received By:  

Relinquished By: (4)  
Date: 4/18/17  
Time: 0858  
Received For Laboratory By:  

DOD Project? ☐ YES ☐ NO  
Report to DL (J Flags) ☐  
Cooler ID:  
Requested Turnaround Time and/or Special Instructions:  
Temp Blank °C:  
Chain of Custody Seal: (Circle)  
INTACT BROKEN ABSENT

**Locations Nationwide**  
Alaska  
New Jersey  
New York  
North Carolina  
Indiana  
West Virginia  
Kentucky

http://www.sgs.com/terms_and_conditions.htm

[1173057_Radium_6 7 17_1.xls]
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<th>CONTAINERS</th>
<th>RA DIIUM 226/238</th>
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**Relinquished By:** (1)

Date: 06/06/17, Time: 09:58, Received By: Julie Shumway

Date: 06/06/17, Time: 09:40, Received By: DGS, 6/16/17

DOD Project? ☐ YES ☐ NO

Report to DL (F Flags)

Data Deliverable Requirements:

Cooler ID: LEVEL 1

Requested Turnaround Time and/or Special Instructions:

Temp Blank °C:

Chain of Custody Seal: (Circle)

INTACT BROKEN ABSENT

http://www.sgs.com/terms_and_conditions.htm
To: Golden Valley Electric Association  
2700 Gambell Street Suite 200  
Anchorage, AK 99503  
(907)564-6907

Report Number: 1174859  
Client Project: GVEA Healy

Dear Heather Simon,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,

SGS North America Inc.

Justin Nelson  
Project Manager  
Justin.Nelson@sgs.com

Print Date: 09/21/2017 3:28:37PM
Case Narrative

SGS Client: **Golden Valley Electric Association**
SGS Project: **1174859**
Project Name/Site: **GVEA Healy**
Project Contact: **Heather Simon**

Refer to sample receipt form for information on sample condition.

**MW-1R (1174859001) PS**
Radium (226 & 228) were analyzed by ACZ Laboratories of Steamboat Springs, CO.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.*
Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

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<thead>
<tr>
<th>Descriptor</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>The analyte has exceeded allowable regulatory or control limits.</td>
</tr>
<tr>
<td>!</td>
<td>Surrogate out of control limits.</td>
</tr>
<tr>
<td>B</td>
<td>Indicates the analyte is found in a blank associated with the sample.</td>
</tr>
<tr>
<td>CCV/CVA/CVB</td>
<td>Continuing Calibration Verification</td>
</tr>
<tr>
<td>CCCV/CVC/CA/CVCB</td>
<td>Closing Continuing Calibration Verification</td>
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<tr>
<td>CL</td>
<td>Control Limit</td>
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<tr>
<td>DF</td>
<td>Analytical Dilution Factor</td>
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<tr>
<td>DL</td>
<td>Detection Limit (i.e., maximum method detection limit)</td>
</tr>
<tr>
<td>E</td>
<td>The analyte result is above the calibrated range.</td>
</tr>
<tr>
<td>GT</td>
<td>Greater Than</td>
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<td>Instrument Blank</td>
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<td>Initial Calibration Verification</td>
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<td>J</td>
<td>The quantitation is an estimation.</td>
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<tr>
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<td>Limit of Quantitation (i.e., reporting or practical quantitation limit)</td>
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<td>MB</td>
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<tr>
<td>MS(D)</td>
<td>Matrix Spike (Duplicate)</td>
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<tr>
<td>ND</td>
<td>Indicates the analyte is not detected.</td>
</tr>
<tr>
<td>RPD</td>
<td>Relative Percent Difference</td>
</tr>
<tr>
<td>U</td>
<td>Indicates the analyte was analyzed for but not detected.</td>
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Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.
### Sample Summary

<table>
<thead>
<tr>
<th>Client Sample ID</th>
<th>Lab Sample ID</th>
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### Method Description

- **Method**: EPA 300.0  
  **Method Description**: Ion Chromatographic Analysis (W)
- **Method**: EP245.1  
  **Method Description**: Mercury EPA 245.1 for non drinking water
- **Method**: EP200.8  
  **Method Description**: Metals in Water by 200.8 ICP-MS
- **Method**: SM21 2540C  
  **Method Description**: Total Dissolved Solids SM18 2540C

---

Print Date: 09/21/2017 3:28:41PM
## Detectable Results Summary

### Client Sample ID: MW-1R

**Lab Sample ID:** 1174859001

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### Metals by ICP/MS

**Waters Department**

### Client Sample ID: MW-2

**Lab Sample ID:** 1174859002

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### Metals by ICP/MS

**Waters Department**

### Client Sample ID: MW-3

**Lab Sample ID:** 1174859003

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### Metals by ICP/MS

**Waters Department**
## Detectable Results Summary

### Client Sample ID: MW-6

**Lab Sample ID:** 1174859004

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<td>Lead</td>
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<td>Selenium</td>
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<td>Fluoride</td>
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### Client Sample ID: MW-69

**Lab Sample ID:** 1174859005

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## Detectable Results Summary

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### Metals by ICP/MS

### Waters Department

### Metals Department

### Client Sample ID: MW-4

### Lab Sample ID: 1174859006

### Client Sample ID: MW-5

### Lab Sample ID: 1174859007

### Client Sample ID: MW-7

### Lab Sample ID: 1174859008
## Detectable Results Summary

### Client Sample ID: MW-8
Lab Sample ID: 1174859009

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### Metals by ICP/MS

### Waters Department

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### Client Sample ID: MW-9
Lab Sample ID: 1174859010

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### Metals Department

### Waters Department

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Lab Sample ID: 1174859011

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<td>Lead (ug/L)</td>
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<td>Sulfate (mg/L)</td>
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### Waters Department

<table>
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### Detectable Results Summary

**Client Sample ID:** SW-1  
**Lab Sample ID:** 1174859012

#### Metals by ICP/MS

<table>
<thead>
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<td>Barium</td>
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Print Date: 09/21/2017 3:28:43PM  
Member of SGS Group
### Results of MW-1R

**Client Sample ID:** MW-1R  
**Client Project ID:** GVEA Healy  
**Lab Sample ID:** 1174859001  
**Lab Project ID:** 1174859  
**Collection Date:** 07/24/17 16:37  
**Received Date:** 07/26/17 12:13  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

#### Results by Metals by ICP/MS

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**Batch Information**

- **Analytical Batch:** MMS9879  
  **Analytical Method:** EP200.8  
  **Analyst:** VDL  
  **Analytical Date/Time:** 08/01/17 18:03  
  **Container ID:** 1174859001-A

- **Prep Batch:** MXX30859  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 07/28/17 07:15  
  **Prep Initial Wt./Vol.:** 20 mL  
  **Prep Extract Vol.:** 50 mL

- **Analytical Batch:** MMS9876  
  **Analytical Method:** EP200.8  
  **Analyst:** VDL  
  **Analytical Date/Time:** 07/28/17 20:33  
  **Container ID:** 1174859001-A

- **Prep Batch:** MXX30859  
  **Prep Method:** E200.2  
  **Prep Date/Time:** 07/28/17 07:15  
  **Prep Initial Wt./Vol.:** 20 mL  
  **Prep Extract Vol.:** 50 mL
### Results of MW-1R

**Client Sample ID:** MW-1R  
**Client Project ID:** GVEA Healy  
**Lab Sample ID:** 1174859001  
**Lab Project ID:** 1174859

**Collection Date:** 07/24/17 16:37  
**Received Date:** 07/26/17 12:13  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

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### Batch Information

- **Analytical Batch:** MCV5830  
- **Analytical Method:** EP245.1  
- **Analyst:** TMA  
- **Analytical Date/Time:** 08/01/17 15:11  
- **Container ID:** 1174859001-A

- **Prep Batch:** MXX30877  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 08/01/17 10:40  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol.:** 50 mL

---

*J flagging is activated*
### Results of MW-1R

Client Sample ID: MW-1R  
Client Project ID: GVEA Healy  
Lab Sample ID: 1174859001  
Lab Project ID: 1174859  
Collection Date: 07/24/17 16:37  
Received Date: 07/26/17 12:13  
Matrix: Water (Surface, Eff., Ground)  
Solids (%): 
Location: 

### Results by Waters Department

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### Batch Information

- **Analytical Batch:** WIC5662  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Analytical Date/Time:** 07/27/17 08:11  
- **Container ID:** 1174859001-B

- **Prep Batch:** WXX11932  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 07/26/17 19:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol.:** 10 mL

- **Analytical Batch:** STS5574  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 07/28/17 21:22  
- **Container ID:** 1174859001-B

- **Total Dissolved Solids**  
  - **Result Qual:** 832  
  - **LOQ/CL:** 10.0  
  - **DL:** 3.10  
  - **Units:** mg/L  
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  - **Allowable Limits:** 07/28/17 21:22

J flagging is activated
### Results of MW-2

**Client Sample ID:** MW-2  
**Client Project ID:** GVEA Healy  
**Lab Sample ID:** 1174859002  
**Lab Project ID:** 1174859  
**Collection Date:** 07/24/17 15:43  
**Received Date:** 07/26/17 12:13  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

#### Results by Metals by ICP/MS

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#### Batch Information

**Analytical Batch:** MMS9879  
**Analytical Method:** EP200.8  
**Analyst:** VDL  
**Analytical Date/Time:** 08/01/17 18:06  
**Container ID:** 1174859002-A

**Prep Batch:** MXX30859  
**Prep Method:** E200.2  
**Prep Date/Time:** 07/28/17 07:15  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol:** 50 mL

**Analytical Batch:** MMS9876  
**Analytical Method:** EP200.8  
**Analyst:** VDL  
**Analytical Date/Time:** 07/28/17 20:36  
**Container ID:** 1174859002-A

**Prep Batch:** MXX30859  
**Prep Method:** E200.2  
**Prep Date/Time:** 07/28/17 07:15  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol:** 50 mL

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Print Date: 09/21/2017 3:28:44PM

J flagging is activated
**Results of MW-2**

- **Client Sample ID:** MW-2
- **Client Project ID:** GVEA Healy
- **Lab Sample ID:** 1174859002
- **Lab Project ID:** 1174859
- **Collection Date:** 07/24/17 15:43
- **Received Date:** 07/26/17 12:13
- **Matrix:** Water (Surface, Eff., Ground)
- **Solids (%):**

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**Results by Metals Department**

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**Batch Information**

- **Analytical Batch:** MCV5830
- **Analytical Method:** EP245.1
- **Analyst:** TMA
- **Analytical Date/Time:** 08/01/17 15:35
- **Container ID:** 1174859002-A

- **Prep Batch:** MXX30877
- **Prep Method:** METHOD
- **Prep Date/Time:** 08/01/17 10:40
- **Prep Initial Wt./Vol.:** 25 mL
- **Prep Extract Vol.:** 50 mL
# Results of MW-2

**Client Sample ID:** MW-2  
**Client Project ID:** GVEA Healy  
**Lab Sample ID:** 1174859002  
**Lab Project ID:** 1174859  
**Collection Date:** 07/24/17 15:43  
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**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

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## Results by Waters Department

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## Batch Information

- **Analytical Batch:** WIC5662  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Prep Batch:** WXX11932  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 07/26/17 19:00  
- **Prep Initial Wt./Vol.:** 10 mL  

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## Batch Information

- **Analytical Batch:** WIC5662  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Prep Batch:** WXX11932  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 07/26/17 19:00  
- **Prep Initial Wt./Vol.:** 10 mL  

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## Batch Information

- **Analytical Batch:** STS5574  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 07/28/17 21:22  
- **Container ID:** 1174859002-B

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Print Date: 09/21/2017 3:28:44PM

J flagging is activated
### Results of MW-3

**Client Sample ID:** MW-3  
**Client Project ID:** GVEA Healy  
**Lab Sample ID:** 1174859003  
**Lab Project ID:** 1174859  
**Collection Date:** 07/24/17 13:06  
**Received Date:** 07/26/17 12:13  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

#### Results by Metals by ICP/MS

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<tr>
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<td>0.310</td>
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#### Batch Information

- **Analytical Batch:** MMS9879  
- **Analytical Method:** EP200.8  
- **Analyst:** VDL  
- **Analytical Date/Time:** 08/01/17 18:09  
- **Container ID:** 1174859003-A  
- **Prep Batch:** MXX30859  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 07/28/17 07:15  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol.:** 50 mL

- **Analytical Batch:** MMS9876  
- **Analytical Method:** EP200.8  
- **Analyst:** VDL  
- **Analytical Date/Time:** 07/28/17 20:39  
- **Container ID:** 1174859003-A  
- **Prep Batch:** MXX30859  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 07/28/17 07:15  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol.:** 50 mL

---

**J flagging is activated**

---

**Print Date:** 09/21/2017 3:28:44PM  
**Member of SGS Group**
Results of MW-3

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<td></td>
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**Batch Information**

- Analytical Batch: MCV5830
- Analytical Method: EP245.1
- Analyst: TMA
- Analytical Date/Time: 08/01/17 15:37
- Container ID: 1174859003-A

- Prep Batch: MXX30877
- Prep Method: METHOD
- Prep Date/Time: 08/01/17 10:40
- Prep Initial Wt./Vol.: 25 mL
- Prep Extract Vol: 50 mL
# Results of MW-3

**Client Sample ID:** MW-3  
**Client Project ID:** GVEA Healy  
**Lab Sample ID:** 1174859003  
**Lab Project ID:** 1174859  
**Collection Date:** 07/24/17 13:06  
**Received Date:** 07/26/17 12:13  
**Matrix:** Water (Surface, Eff., Ground)  
**Location:**

## Results by Waters Department

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<th>LOQ/CL</th>
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<td>58</td>
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<td>Fluoride</td>
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## Batch Information

**Analytical Batch:** WIC5662  
**Analytical Method:** EPA 300.0  
**Analyst:** NEG  
**Analytical Date/Time:** 07/27/17 08:47  
**Container ID:** 1174859003-B  
**Prep Batch:** WXX11932  
**Prep Method:** METHOD  
**Prep Date/Time:** 07/26/17 19:00  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol:** 10 mL

**Analytical Batch:** WIC5662  
**Analytical Method:** EPA 300.0  
**Analyst:** NEG  
**Analytical Date/Time:** 07/27/17 15:39  
**Container ID:** 1174859003-B  
**Prep Batch:** WXX11932  
**Prep Method:** METHOD  
**Prep Date/Time:** 07/26/17 19:00  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol:** 10 mL

## Batch Information

**Analytical Batch:** STS5574  
**Analytical Method:** SM21 2540C  
**Analyst:** AYC  
**Analytical Date/Time:** 07/28/17 21:22  
**Container ID:** 1174859003-B  
**Prep Batch:** WXX11932  
**Prep Method:** METHOD  
**Prep Date/Time:** 07/26/17 19:00  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol:** 10 mL

---

**Print Date:** 09/21/2017 3:28:44PM  
**J flagging is activated**

---

**SGS North America Inc.**  
200 West Potter Drive Anchorage, AK 99518  
Tel 907.562.2343 Fax 907.561.5301 www.us.sgs.com  
Member of SGS Group  
18 of 88
Results of MW-6

<table>
<thead>
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<td>ug/L</td>
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<tr>
<td>Barium</td>
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<td>Beryllium</td>
<td>0.200 U</td>
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<td>0.130</td>
<td>ug/L</td>
<td>1</td>
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</tr>
<tr>
<td>Boron</td>
<td>510</td>
<td>50.0</td>
<td>15.0</td>
<td>ug/L</td>
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<tr>
<td>Cadmium</td>
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<tr>
<td>Cobalt</td>
<td>2.00 U</td>
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<td>1.20</td>
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<tr>
<td>Lead</td>
<td>0.100 J</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
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<td>Lithium</td>
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Batch Information

Analytical Batch: MMS9876
Analytical Method: EP200.8
Analyst: VDL
Analytical Date/Time: 08/01/17 18:18
Container ID: 1174859004-A

Prep Batch: MXX30859
Prep Method: E200.2
Prep Date/Time: 07/28/17 07:15
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

J flagging is activated
Results of MW-6

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Batch Information

- Analytical Batch: MCV5830
- Analytical Method: EP245.1
- Analyst: TMA
- Analytical Date/Time: 08/01/17 15:40
- Container ID: 1174859004-A

Prep Batch: MXX30877
Prep Method: METHOD
Prep Date/Time: 08/01/17 10:40
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL
### Results by Waters Department

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<tbody>
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### Batch Information

- **Analytical Batch**: WIC5662
- **Analytical Method**: EPA 300.0
- **Analyst**: NEG
- **Analytical Date/Time**: 07/27/17 09:05
- **Container ID**: 1174859004-B

- **Prep Batch**: WXX11932
- **Prep Method**: METHOD
- **Prep Date/Time**: 07/26/17 19:00
- **Prep Initial Wt./Vol.**: 10 mL
- **Prep Extract Vol**: 10 mL

### Total Dissolved Solids

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<th>Units</th>
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### Batch Information

- **Analytical Batch**: STS5574
- **Analytical Method**: SM21 2540C
- **Analyst**: AYC
- **Analytical Date/Time**: 07/28/17 21:22
- **Container ID**: 1174859004-B

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Print Date: 09/21/2017 3:28:44PM

J flagging is activated
### Results of MW-69

**Client Sample ID:** MW-69  
**Client Project ID:** GVEA Healy  
**Lab Sample ID:** 1174859005  
**Lab Project ID:** 1174859  
**Collection Date:** 07/24/17 11:58  
**Received Date:** 07/26/17 12:13  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**  

### Results by Metals by ICP/MS

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<tr>
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<td>Beryllium</td>
<td>0.200 U</td>
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<td>0.130</td>
<td>ug/L</td>
<td>1</td>
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<td>3.10</td>
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<td>1</td>
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<tr>
<td>Molybdenum</td>
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<td>ug/L</td>
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<tr>
<td>Thallium</td>
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<td>0.310</td>
<td>ug/L</td>
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### Batch Information

- **Analytical Batch:** MMS9879  
  - **Analytical Method:** EP200.8  
  - **Analyst:** VDL  
  - **Analytical Date/Time:** 08/01/17 08:27  
  - **Container ID:** 1174859005-A  
  - **Prep Batch:** MXX30859  
  - **Prep Method:** E200.2  
  - **Prep Date/Time:** 07/28/17 07:15  
  - **Prep Initial Wt./Vol.:** 20 mL  
  - **Prep Extract Vol.:** 50 mL

- **Analytical Batch:** MMS9876  
  - **Analytical Method:** EP200.8  
  - **Analyst:** VDL  
  - **Analytical Date/Time:** 07/28/17 20:51  
  - **Container ID:** 1174859005-A  
  - **Prep Batch:** MXX30859  
  - **Prep Method:** E200.2  
  - **Prep Date/Time:** 07/28/17 07:15  
  - **Prep Initial Wt./Vol.:** 20 mL  
  - **Prep Extract Vol.:** 50 mL

---

**J flagging is activated**
### Results of MW-69

Client Sample ID: MW-69  
Client Project ID: GVEA Healy  
Lab Sample ID: 1174859005  
Lab Project ID: 1174859  
Collection Date: 07/24/17 11:58  
Received Date: 07/26/17 12:13  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

### Results by Metals Department

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<tr>
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### Batch Information

- **Analytical Batch:** MCV5830  
- **Analytical Method:** EP245.1  
- **Analyst:** TMA  
- **Analytical Date/Time:** 08/01/17 15:43  
- **Container ID:** 1174859005-A

- **Prep Batch:** MXX30877  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 08/01/17 10:40  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol:** 50 mL

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J flagging is activated

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200 West Potter Drive Anchorage, AK 95518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com  
Member of SGS Group
### Results of MW-69

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</thead>
<tbody>
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<td>2.42</td>
<td>mg/L</td>
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<tr>
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<td>Sulfate</td>
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<td>2.42</td>
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<td>39</td>
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#### Batch Information

- **Prep Batch:** WXX11932
- **Prep Method:** METHOD
- **Prep Date/Time:** 07/26/17 19:00
- **Prep Initial Wt./Vol.:** 10 mL
- **Prep Extract Vol:** 10 mL

- **Prep Batch:** WXX11932
- **Prep Method:** METHOD
- **Prep Date/Time:** 07/26/17 19:00
- **Prep Initial Wt./Vol.:** 10 mL
- **Prep Extract Vol:** 10 mL

- **Prep Batch:** STS5574
- **Prep Method:** METHOD
- **Prep Date/Time:** 07/26/17 19:00
- **Prep Initial Wt./Vol.:** 10 mL
- **Prep Extract Vol:** 10 mL

### Batch Information

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<tbody>
<tr>
<td>Total Dissolved Solids</td>
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<td>mg/L</td>
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#### Batch Information

- **Prep Batch:** STS5574
- **Prep Method:** SM21 2540C
- **Prep Date/Time:** 07/28/17 21:22
- **Prep Initial Wt./Vol.:** 10 mL
- **Prep Extract Vol:** 10 mL
## Results of MW-4

**Client Sample ID:** MW-4  
**Client Project ID:** GVEA Healy  
**Lab Sample ID:** 1174859006  
**Lab Project ID:** 1174859  
**Collection Date:** 07/24/17 14:08  
**Received Date:** 07/26/17 12:13  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

## Results by Metals by ICP/MS

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### Batch Information

**Analytical Batch:** MMS9879  
**Analytical Method:** EP200.8  
**Analyst:** VDL  
**Analytical Date/Time:** 08/01/17 18:30  
**Container ID:** 1174859006-A

**Prep Batch:** MXX30859  
**Prep Method:** E200.2  
**Prep Date/Time:** 07/28/17 07:15  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol.:** 50 mL

---

J flagging is activated
## Results of MW-4

**Client Sample ID:** MW-4  
**Client Project ID:** GVEA Healy  
**Lab Sample ID:** 1174859006  
**Lab Project ID:** 1174859  
**Collection Date:** 07/24/17 14:08  
**Received Date:** 07/26/17 12:13  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

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### Batch Information

- **Analytical Batch:** MCV5830  
- **Analytical Method:** EP245.1  
- ** Analyst:** TMA  
- **Analytical Date/Time:** 08/01/17 15:46  
- **Container ID:** 1174859006-A  

- **Prep Batch:** MXX30877  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 08/01/17 10:40  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol.:** 50 mL

---

J flagging is activated
# Results of MW-4

Client Sample ID: MW-4  
Client Project ID: GVEA Healy  
Lab Sample ID: 1174859006  
Lab Project ID: 1174859

Collection Date: 07/24/17 14:08  
Received Date: 07/26/17 12:13  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

## Results by Waters Department

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### Batch Information

- **Analytical Batch:** WIC5662  
  **Analytical Method:** EPA 300.0  
  **Analyst:** NEG  
  **Analytical Date/Time:** 07/27/17 09:40  
  **Container ID:** 1174859006-B

#### Prep Information

- **Prep Batch:** WXX11932  
  **Prep Method:** METHOD  
  **Prep Date/Time:** 07/26/17 19:00  
  **Prep Initial Wt./Vol.:** 10 mL  
  **Prep Extract Vol:** 10 mL

- **Analytical Batch:** WIC5662  
  **Analytical Method:** EPA 300.0  
  **Analyst:** NEG  
  **Analytical Date/Time:** 07/27/17 16:32  
  **Container ID:** 1174859006-B

#### Batch Information

- **Analytical Batch:** STS5574  
  **Analytical Method:** SM21 2540C  
  **Analyst:** AYC  
  **Analytical Date/Time:** 07/28/17 21:22  
  **Container ID:** 1174859006-B

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Print Date: 09/21/2017 3:28:44PM

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SGS North America Inc.  
200 West Potter Drive Anchorage, AK 95518  
† 907.562.2343 ‡ 907.561.5301  
www.us.sgs.com

Member of SGS Group  
27 of 88
Results of MW-5

Client Sample ID: MW-5
Client Project ID: GVEA Healy
Lab Sample ID: 1174859007
Lab Project ID: 1174859
Collection Date: 07/24/17 15:00
Received Date: 07/26/17 12:13
Matrix: Water (Surface, Eff., Ground)

Solids (%):
Location:

Results by Metals by ICP/MS

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Batch Information

Analytical Batch: MMS9879
Analytical Method: EP200.8
Analyst: VDL
Analytical Date/Time: 08/01/17 18:36
Container ID: 1174859007-A
Prep Batch: MXX30859
Prep Method: E200.2
Prep Date/Time: 07/28/17 07:15
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Analytical Batch: MMS9876
Analytical Method: EP200.8
Analyst: VDL
Analytical Date/Time: 07/28/17 21:03
Container ID: 1174859007-A
Prep Batch: MXX30859
Prep Method: E200.2
Prep Date/Time: 07/28/17 07:15
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL
### Results of MW-5

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### Batch Information

- **Prep Batch**: MXX30877
- **Prep Method**: METHOD
- **Prep Date/Time**: 08/01/17 10:40
- **Prep Initial Wt./Vol.**: 25 mL
- **Prep Extract Vol.**: 50 mL
- **Prep Initial Wt./Vol.**: 25 mL
- **Prep Extract Vol.**: 50 mL
### Results of MW-5

**Client Sample ID:** MW-5  
**Client Project ID:** GVEA Healy  
**Lab Sample ID:** 1174859007  
**Lab Project ID:** 1174859  
**Collection Date:** 07/24/17 15:00  
**Received Date:** 07/26/17 12:13  
**Matrix:** Water (Surface, Eff., Ground)

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### Results by Waters Department

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<tr>
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<td>mg/L</td>
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### Batch Information

**Analytical Batch:** WIC5662  
**Analytical Method:** EPA 300.0  
**Analyst:** NEG  
**Analytical Date/Time:** 07/27/17 09:58  
**Container ID:** 1174859007-B

**Prep Batch:** WXX11932  
**Prep Method:** METHOD  
**Prep Date/Time:** 07/26/17 19:00  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol:** 10 mL

**Analytical Batch:** STS5574  
**Analytical Method:** SM21 2540C  
**Analyst:** AYC  
**Analytical Date/Time:** 07/28/17 21:22  
**Container ID:** 1174859007-B

**Total Dissolved Solids**  
**Result Qual:** 944  
**LOQ/CL:** 10.0  
**DL:** 3.10  
**Units:** mg/L  
**DF:** 1  
**Allowable Limits:** 07/28/17 21:22

### Batch Information

**Analytical Batch:** STS5574  
**Analytical Method:** SM21 2540C  
**Analyst:** AYC  
**Analytical Date/Time:** 07/28/17 21:22  
**Container ID:** 1174859007-B

**Total Dissolved Solids**  
**Result Qual:** 944  
**LOQ/CL:** 10.0  
**DL:** 3.10  
**Units:** mg/L  
**DF:** 1  
**Allowable Limits:** 07/28/17 21:22

---

**Print Date:** 09/21/2017 3:28:44PM  
**J flagging is activated**

---

**200 West Potter Drive Anchorage, AK 95518**  
**t 907.562.2343 f 907.561.5301**  
**www.us.sgs.com**
**Results of MW-7**

Client Sample ID: **MW-7**  
Client Project ID: **GVEA Healy**  
Lab Sample ID: **1174859008**  
Lab Project ID: **1174859**

Collection Date: **07/25/17 10:21**  
Received Date: **07/26/17 12:13**  
Matrix: **Water (Surface, Eff., Ground)**  
Solids (%):  
Location:

### Results by Metals by ICP/MS

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**Batch Information**

- Analytical Batch: **MMS9879**  
  Analytical Method: **EP200.8**  
  Analyst: **VDL**  
  Analytical Date/Time: **08/01/17 18:39**  
  Container ID: **1174859008-A**

- Prep Batch: **MXX30859**  
  Prep Method: **E200.2**  
  Prep Date/Time: **07/28/17 07:15**  
  Prep Initial Wt./Vol.: **20 mL**  
  Prep Extract Vol: **50 mL**

- Analytical Batch: **MMS9876**  
  Analytical Method: **EP200.8**  
  Analyst: **VDL**  
  Analytical Date/Time: **07/28/17 21:06**  
  Container ID: **1174859008-A**

- Prep Batch: **MXX30859**  
  Prep Method: **E200.2**  
  Prep Date/Time: **07/28/17 07:15**  
  Prep Initial Wt./Vol.: **20 mL**  
  Prep Extract Vol: **50 mL**
Results of MW-7

Client Sample ID: MW-7
Client Project ID: GVEA Healy
Lab Sample ID: 1174859008
Lab Project ID: 1174859
Collection Date: 07/25/17 10:21
Received Date: 07/26/17 12:13
Matrix: Water (Surface, Eff., Ground)
Solids (%): Location:

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<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
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Batch Information

Analytical Batch: MCV5830
Analytical Method: EP245.1
Analyst: TMA
Analytical Date/Time: 08/01/17 15:56
Container ID: 1174859008-A

Prep Batch: MXX30877
Prep Method: METHOD
Prep Date/Time: 08/01/17 10:40
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL
### Results of MW-7

**Client Sample ID:** MW-7  
**Client Project ID:** GVEA Healy  
**Lab Sample ID:** 1174859008  
**Lab Project ID:** 1174859  

**Collection Date:** 07/25/17 10:21  
**Received Date:** 07/26/17 12:13  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** Location:

### Results by Waters Department

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<td>0.0620</td>
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<tr>
<td>Fluoride</td>
<td>0.149 J</td>
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<td>0.0620</td>
<td>mg/L</td>
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<tr>
<td>Sulfate</td>
<td>26.7</td>
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<td>0.186</td>
<td>mg/L</td>
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### Batch Information

- **Prep Batch:** WXX11932  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 07/26/17 19:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL  

- **Prep Batch:** WXX11932  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 07/26/17 19:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL  

- **Prep Batch:** WXX11932  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 07/26/17 19:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL  

### Total Dissolved Solids

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<td>Total Dissolved Solids</td>
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<td>mg/L</td>
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### Batch Information

- **Analytical Batch:** STS5574  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 07/28/17 21:22  
- **Container ID:** 1174859008-B

---

**Print Date:** 09/21/2017 3:28:44PM  
**J flagging is activated**

---

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### Results of MW-8

**Client Sample ID:** MW-8  
**Client Project ID:** GVEA Healy  
**Lab Sample ID:** 1174859009  
**Lab Project ID:** 1174859  
**Collection Date:** 07/25/17 11:08  
**Received Date:** 07/26/17 12:13  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**  

### Results by Metals by ICP/MS

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<td>0.500 U</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
<td>1</td>
<td>07/28/17 21:09</td>
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</tr>
<tr>
<td>Arsenic</td>
<td>2.50 U</td>
<td>5.00</td>
<td>1.50</td>
<td>ug/L</td>
<td>1</td>
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<td>Cadmium</td>
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<td>0.150</td>
<td>ug/L</td>
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<td>Chromium</td>
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<td>Lead</td>
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<td>0.0620</td>
<td>ug/L</td>
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<td>Molybdenum</td>
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<tr>
<td>Selenium</td>
<td>2.50 U</td>
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<td>1.50</td>
<td>ug/L</td>
<td>1</td>
<td>07/28/17 21:09</td>
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<tr>
<td>Thallium</td>
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<td>1.00</td>
<td>0.310</td>
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### Batch Information

- **Analytical Batch:** MMS9879
- **Analytical Method:** EP200.8
- **Analyst:** VDL
- **Analytical Date/Time:** 08/01/17 18:42
- **Container ID:** 1174859009-A

- **Prep Batch:** MXX30859
- **Prep Method:** E200.2
- **Prep Date/Time:** 07/28/17 07:15
- **Prep Initial Wt./Vol.:** 20 mL
- **Prep Extract Vol.:** 50 mL

### Additional Information

- **Prep Batch:** MXX30859
- **Prep Method:** E200.2
- **Prep Date/Time:** 07/28/17 07:15
- **Prep Initial Wt./Vol.:** 20 mL
- **Prep Extract Vol.:** 50 mL

- **Print Date:** 09/21/2017 3:28:44PM

---

J flagging is activated
**Results of MW-8**

Client Sample ID: MW-8  
Client Project ID: GVEA Healy  
Lab Sample ID: 1174859009  
Lab Project ID: 1174859  
Collection Date: 07/25/17 11:08  
Received Date: 07/26/17 12:13  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

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### Results by Metals Department

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### Batch Information

- Analytical Batch: MCV5830  
- Analytical Method: EP245.1  
- Analyst: TMA  
- Analytical Date/Time: 08/01/17 15:59  
- Container ID: 1174859009-A  
- Prep Batch: MXX30877  
- Prep Method: METHOD  
- Prep Date/Time: 08/01/17 10:40  
- Prep Initial Wt./Vol.: 25 mL  
- Prep Extract Vol: 50 mL  

---

**J flagging is activated**
### Results of MW-8

**Client Sample ID:** MW-8  
**Client Project ID:** GVEA Healy  
**Lab Sample ID:** 1174859009  
**Lab Project ID:** 1174859  
**Collection Date:** 07/25/17 11:08  
**Received Date:** 07/26/17 12:13  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

#### Results by Waters Department

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#### Batch Information

- **Analytical Batch:** WIC5662  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Analytical Date/Time:** 07/27/17 11:10  
- **Container ID:** 1174859009-B  
- **Prep Batch:** WXX11932  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 07/26/17 19:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

- **Analytical Batch:** WIC5662  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Analytical Date/Time:** 07/27/17 18:01  
- **Container ID:** 1174859009-B  
- **Prep Batch:** WXX11932  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 07/26/17 19:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

- **Analytical Batch:** STS5574  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 07/28/17 21:22  
- **Container ID:** 1174859009-B

J flagging is activated
Results of MW-9

Client Sample ID: MW-9
Client Project ID: GVEA Healy
Lab Sample ID: 1174859010
Lab Project ID: 1174859

Collection Date: 07/25/17 08:45
Received Date: 07/26/17 12:13
Matrix: Water (Surface, Eff., Ground)
Solids (%): Location:

Results by Metals by ICP/MS

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<td>Arsenic</td>
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<td>Molybdenum</td>
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Batch Information

Analytical Batch: MMS9879
Analytical Method: EP200.8
Analyst: VDL
Analytical Date/Time: 08/01/17 18:45
Container ID: 1174859010-A

Prep Batch: MXX30859
Prep Method: E200.2
Prep Date/Time: 07/28/17 07:15
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Analytical Batch: MMS9876
Analytical Method: EP200.8
Analyst: VDL
Analytical Date/Time: 07/28/17 21:12
Container ID: 1174859010-A

Prep Batch: MXX30859
Prep Method: E200.2
Prep Date/Time: 07/28/17 07:15
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 09/21/2017 3:28:44PM

J flagging is activated
### Results of MW-9

**Client Sample ID:** MW-9  
**Client Project ID:** GVEA Healy  
**Lab Sample ID:** 1174859010  
**Lab Project ID:** 1174859  
**Collection Date:** 07/25/17 08:45  
**Received Date:** 07/26/17 12:13  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

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### Batch Information

- **Analytical Batch:** MCV5830  
- **Analytical Method:** EP245.1  
- **Prep Batch:** MXX30877  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 08/01/17 10:40  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol:** 50 mL  

**Prep Initial Wt./Vol.:** 25 mL  
**Prep Extract Vol:** 50 mL

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Print Date: 09/21/2017 3:28:44PM

J flagging is activated

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200 West Potter Drive Anchorage, AK 95518  
Tel 907.562.2343  Fax 907.561.5301  www.us.sgs.com

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## Results of MW-9

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### Batch Information

- **Analytical Batch:** WIC5662
- **Analytical Method:** EPA 300.0
- **Analyst:** NEG
- **Analytical Date/Time:** 07/27/17 11:28
- **Container ID:** 1174859010-B
- **Prep Batch:** WXX11932
- **Prep Method:** METHOD
- **Prep Date/Time:** 07/26/17 19:00
- **Prep Initial Wt./Vol.:** 10 mL
- **Prep Extract Vol:** 10 mL

### Batch Information

- **Analytical Batch:** WIC5662
- **Analytical Method:** EPA 300.0
- **Analyst:** NEG
- **Analytical Date/Time:** 07/27/17 18:18
- **Container ID:** 1174859010-B
- **Prep Batch:** WXX11932
- **Prep Method:** METHOD
- **Prep Date/Time:** 07/26/17 19:00
- **Prep Initial Wt./Vol.:** 10 mL
- **Prep Extract Vol:** 10 mL

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### Batch Information

- **Analytical Batch:** STS5574
- **Analytical Method:** SM21 2540C
- **Analyst:** AYC
- **Analytical Date/Time:** 07/28/17 21:22
- **Container ID:** 1174859010-B

---

J flagging is activated
### Results by Metals by ICP/MS

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<td>1.50</td>
<td>ug/L</td>
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</tr>
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<td>0.130</td>
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### Batch Information

- **Prep Batch:** MXX30859
- **Prep Method:** E200.2
- **Prep Date/Time:** 07/28/17 07:15
- **Prep Initial Wt./Vol.:** 20 mL
- **Prep Extract Vol:** 50 mL

- **Analytical Batch:** MMS9879
- **Analytical Method:** EP200.8
- **Analytical Date/Time:** 08/01/17 18:48
- **Container ID:** 1174859011-A

- **Prep Batch:** MXX30859
- **Prep Method:** E200.2
- **Prep Date/Time:** 07/28/17 07:15
- **Prep Initial Wt./Vol.:** 20 mL
- **Prep Extract Vol:** 50 mL

- **Analytical Batch:** MMS9876
- **Analytical Method:** EP200.8
- **Analytical Date/Time:** 07/28/17 21:15
- **Container ID:** 1174859011-A

---

J flagging is activated
Results of MW-10

Client Sample ID: **MW-10**
Client Project ID: **GVEA Healy**
Lab Sample ID: 1174859011
Lab Project ID: 1174859

**Collection Date:** 07/25/17 09:30  
**Received Date:** 07/26/17 12:13  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

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<th>DL</th>
<th>Units</th>
<th>DF</th>
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<th>Date Analyzed</th>
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<td>0.0620</td>
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**Batch Information**

- **Analytical Batch:** MCV5830  
- **Analytical Method:** EP245.1  
- **Analyst:** TMA  
- **Analytical Date/Time:** 08/01/17 16:14  
- **Container ID:** 1174859011-A  
- **Prep Batch:** MXX30877  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 08/01/17 10:40  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol.:** 50 mL
## Results of MW-10

**Client Sample ID:** MW-10  
**Client Project ID:** GVEA Healy  
**Lab Sample ID:** 1174859011  
**Lab Project ID:** 1174859  
**Collection Date:** 07/25/17 09:30  
**Received Date:** 07/26/17 12:13  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** Location:

### Results by Waters Department

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### Batch Information

- **Analytical Batch:** WIC5662  
- **Analytical Method:** EPA 300.0  
- **Analyst:** NEG  
- **Analytical Date/Time:** 07/27/17 11:46  
- **Container ID:** 1174859011-B

- **Prep Batch:** WXX11932  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 07/26/17 19:00  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

### Batch Information

- **Analytical Batch:** STS5574  
- **Analytical Method:** SM21 2540C  
- **Analyst:** AYC  
- **Analytical Date/Time:** 07/28/17 21:22  
- **Container ID:** 1174859011-B

- **Total Dissolved Solids**

- **Result Qual:** 367  
- **LOQ/CL:** 10.0  
- **DL:** 3.10  
- **Units:** mg/L  
- **DF:** 1  
- **Allowable Limits:** 07/28/17 21:22

### J flagging is activated

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Print Date: 09/21/2017 3:28:44PM  
SGS North America Inc.  
200 West Potter Drive Anchorage, AK 99518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com  
Member of SGS Group  
42 of 88
### Results of SW-1

<table>
<thead>
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<td>ug/L</td>
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### Batch Information

**Analytical Batch:** MMS9879
**Analytical Method:** EP200.8
**Analyst:** VDL
**Analytical Date/Time:** 08/01/17 18:51
**Container ID:** 1174859012-A

**Prep Batch:** MXX30859
**Prep Method:** E200.2
**Prep Date/Time:** 07/28/17 07:15
**Prep Initial Wt./Vol.:** 20 mL
**Prep Extract Vol.:** 50 mL

**Analytical Batch:** MMS9876
**Analytical Method:** EP200.8
**Analyst:** VDL
**Analytical Date/Time:** 07/28/17 21:18
**Container ID:** 1174859012-A

**Prep Batch:** MXX30859
**Prep Method:** E200.2
**Prep Date/Time:** 07/28/17 07:15
**Prep Initial Wt./Vol.:** 20 mL
**Prep Extract Vol.:** 50 mL

---

J flagging is activated
Results of SW-1

Client Sample ID: SW-1
Client Project ID: GVEA Healy
Lab Sample ID: 1174859012
Lab Project ID: 1174859

Collection Date: 07/24/17 14:40
Received Date: 07/26/17 12:13
Matrix: Water (Surface, Eff., Ground)

Solids (%):

Results by Metals Department

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<th>Units</th>
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Batch Information

Analytical Batch: MCV5830
Analytical Method: EP245.1
Analyst: TMA
Analytical Date/Time: 08/01/17 16:17
Container ID: 1174859012-A

Prep Batch: MXX30877
Prep Method: METHOD
Prep Date/Time: 08/01/17 10:40
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL
Results of SW-1

Client Sample ID: SW-1
Client Project ID: GVEA Healy
Lab Sample ID: 1174859012
Lab Project ID: 1174859
Collection Date: 07/24/17 14:40
Received Date: 07/26/17 12:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Waters Department

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<th>Units</th>
<th>DF</th>
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<td>mg/L</td>
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Batch Information

Analytical Batch: WIC5662
Analytical Method: EPA 300.0
Analyst: NEG
Analytical Date/Time: 07/27/17 12:04
Container ID: 1174859012-B
Prep Batch: WXX11932
Prep Method: METHOD
Prep Date/Time: 07/26/17 19:00
Prep Initial Wt./Vol.: 10 mL
Prep Extract Vol: 10 mL

Analytical Batch: WIC5662
Analytical Method: EPA 300.0
Analyst: NEG
Analytical Date/Time: 07/27/17 18:54
Container ID: 1174859012-B
Prep Batch: WXX11932
Prep Method: METHOD
Prep Date/Time: 07/26/17 19:00
Prep Initial Wt./Vol.: 10 mL
Prep Extract Vol: 10 mL

Total Dissolved Solids

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<tr>
<th>Parameter</th>
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Batch Information

Analytical Batch: STS5574
Analytical Method: SM21 2540C
Analyst: AYC
Analytical Date/Time: 07/28/17 21:22
Container ID: 1174859012-B

J flagging is activated
Method Blank

Blank ID: MB for HBN 1764589 [MXX/30859]
Blank Lab ID: 1400785

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1174859001, 1174859002, 1174859003, 1174859004, 1174859005, 1174859006, 1174859007, 1174859008, 1174859009, 1174859010, 1174859011, 1174859012

Results by EP200.8

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<td>0.500U</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
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<tr>
<td>Arsenic</td>
<td>2.50U</td>
<td>5.00</td>
<td>1.50</td>
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<tr>
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<td>0.200U</td>
<td>0.400</td>
<td>0.130</td>
<td>ug/L</td>
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<td>Boron</td>
<td>25.0U</td>
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<td>Molybdenum</td>
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<td>0.620</td>
<td>ug/L</td>
</tr>
<tr>
<td>Selenium</td>
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<td>ug/L</td>
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<tr>
<td>Thallium</td>
<td>0.500U</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
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Batch Information

Analytical Batch: MMS9876
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: VDL
Analytical Date/Time: 7/28/2017 7:57:24PM

Prep Batch: MXX30859
Prep Method: E200.2
Prep Date/Time: 7/28/2017 7:15:06AM
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Analytical Batch: MMS9879
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: VDL
Analytical Date/Time: 8/1/2017 5:33:20PM

Prep Batch: MXX30859
Prep Method: E200.2
Prep Date/Time: 7/28/2017 7:15:06AM
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 09/21/2017 3:28:48PM
**Blank Spike Summary**

Blank Spike ID: LCS for HBN 1174859 [MXX30859]
Blank Spike Lab ID: 1400786
Date Analyzed: 07/28/2017 20:00

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1174859001, 1174859002, 1174859003, 1174859004, 1174859005, 1174859006, 1174859007, 1174859008, 1174859009, 1174859010, 1174859011, 1174859012

### Results by **EP200.8**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
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</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>1000</td>
<td>996</td>
<td>100</td>
<td>(85-115 )</td>
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<tr>
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<td>(85-115 )</td>
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<td>Barium</td>
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<tr>
<td>Beryllium</td>
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<td>100</td>
<td>100</td>
<td>(85-115 )</td>
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<tr>
<td>Lead</td>
<td>1000</td>
<td>1010</td>
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<td>(85-115 )</td>
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<tr>
<td>Lithium</td>
<td>200</td>
<td>208</td>
<td>104</td>
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<tr>
<td>Molybdenium</td>
<td>400</td>
<td>378</td>
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<td>(85-115 )</td>
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<td>Chromium</td>
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<td>394</td>
<td>99</td>
<td>(85-115 )</td>
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### Batch Information

- **Analytical Batch**: MMS9876
  - **Analytical Method**: EP200.8
  - **Instrument**: Perkin Elmer NexIon P5
  - **Analyst**: VDL

- **Prep Batch**: MXX30859
  - **Prep Method**: E200.2
  - **Prep Date/Time**: 07/28/2017 07:15
  - **Spike Wt./Vol.**: 1000 ug/L, **Extract Vol.**: 50 mL
  - **Dupe Wt./Vol.**: **Extract Vol.**

- **Analytical Batch**: MMS9879
  - **Analytical Method**: EP200.8
  - **Instrument**: Perkin Elmer NexIon P5
  - **Analyst**: VDL

- **Prep Batch**: MXX30859
  - **Prep Method**: E200.2
  - **Prep Date/Time**: 07/28/2017 07:15
  - **Spike Wt./Vol.**: 400 ug/L, **Extract Vol.**: 50 mL
  - **Dupe Wt./Vol.**: **Extract Vol.**
Matrix Spike Summary

Original Sample ID: 1400787
MS Sample ID: 1400788 MS
MSD Sample ID:
QC for Samples: 1174859001, 1174859002, 1174859003

Results by EP200.8

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<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
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<tr>
<td>Antimony</td>
<td>0.500U</td>
<td>1000</td>
<td>104</td>
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<tr>
<td>Arsenic</td>
<td>2.50U</td>
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<td>Cadmium</td>
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<td>Calcium</td>
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<td>Cobalt</td>
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<td>96</td>
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<td>Lead</td>
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<td>202</td>
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<td>Molybdenum</td>
<td>1.00U</td>
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<td>95</td>
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<td>0.500U</td>
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<td>403</td>
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Batch Information

Analytical Batch: MMS9876
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: VDL
Analytical Date/Time: 7/28/2017 8:06:23PM

Prep Batch: MXX30859
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 7/28/2017 7:15:06AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Analytical Batch: MMS9879
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: VDL
Analytical Date/Time: 8/1/2017 5:42:23PM

Prep Batch: MXX30859
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 7/28/2017 7:15:06AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 09/21/2017 3:28:52PM
Matrix Spike Summary

Original Sample ID: 1400789  Analysis Date: 07/28/2017 20:42
MS Sample ID: 1400790 MS  Analysis Date: 07/28/2017 20:45
MSD Sample ID: 
QC for Samples: 1174859001, 1174859002, 1174859003, 1174859004, 1174859005, 1174859006, 1174859007, 1174859008, 1174859009, 1174859010, 1174859011, 1174859012

Results by EP200.8

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike ug/L</th>
<th>Result ug/L</th>
<th>Rec (%)</th>
<th>Spike ug/L</th>
<th>Result ug/L</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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<tbody>
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<td>101</td>
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<td>Barium</td>
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<td>Beryllium</td>
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<td>105</td>
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<td>70-130</td>
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<td>Molybdenum</td>
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Batch Information

Analytical Batch: MMS9876  Prep Batch: MXX30859
Analytical Method: EP200.8  Prep Method: DW Digest for Metals on ICP-MS
Instrument: Perkin Elmer NexIon P5  Prep Date/Time: 7/28/2017 7:15:06AM
Analyst: VDL  Prep Initial Wt./Vol.: 20.00mL
Analytical Date/Time: 7/28/2017 8:45:22PM  Prep Extract Vol: 50.00mL

Analytical Batch: MMS9879  Prep Batch: MXX30859
Analytical Method: EP200.8  Prep Method: DW Digest for Metals on ICP-MS
Instrument: Perkin Elmer NexIon P5  Prep Date/Time: 7/28/2017 7:15:06AM
Analyst: VDL  Prep Initial Wt./Vol.: 20.00mL
Analytical Date/Time: 8/1/2017 6:15:35PM  Prep Extract Vol: 50.00mL
### Method Blank

**Blank ID:** MB for HBN 1765141 [MXX/30877]  
**Blank Lab ID:** 1402206  
**Matrix:** Water (Surface, Eff., Ground)  

**QC for Samples:**  
1174859001, 1174859002, 1174859003, 1174859004, 1174859005, 1174859006, 1174859007, 1174859008, 1174859009, 1174859010, 1174859011, 1174859012

### Results by EP245.1

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<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
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</thead>
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<td>Mercury</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
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</table>

### Batch Information

- **Analytical Batch:** MCV5830  
- **Analytical Method:** EP245.1  
- **Instrument:** PSA Millennium mercury AA  
- **Analyst:** TMA  
- **Analytical Date/Time:** 8/1/2017 2:45:24PM

- **Prep Batch:** MXX30877  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 8/1/2017 10:40:00AM  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol.:** 50 mL

Print Date: 09/21/2017 3:28:53PM
Blank Spike Summary

Blank Spike ID: LCS for HBN 1174859 [MX30877]
Blank Spike Lab ID: 1402207
Date Analyzed: 08/01/2017 14:48

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1174859001, 1174859002, 1174859003, 1174859004, 1174859005, 1174859006, 1174859007, 1174859008, 1174859009, 1174859010, 1174859011, 1174859012

Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>4</td>
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<td>103</td>
<td>(85-115)</td>
</tr>
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Batch Information

Analytical Batch: MCV5830
Analytical Method: EP245.1
Instrument: PSA Millennium mercury AA
Analyst: TMA

Prep Batch: MXX30877
Prep Method: METHOD
Prep Date/Time: 08/01/2017 10:40
Spike Init Wt./Vol.: 4 ug/L Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:
Matrix Spike Summary

Original Sample ID: 1174803001
MS Sample ID: 1402208 MS
MSD Sample ID: 
Analysis Date: 08/01/2017 14:51
Analysis Date: 08/01/2017 14:54
Analysis Date:
Matrix: Water (Surface, Eff., Ground)
QC for Samples: 1174859901, 1174859002, 1174859003, 1174859004, 1174859005, 1174859006, 1174859007, 1174859008, 1174859009, 1174859010, 1174859011, 1174859012

Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike (ug/L)</th>
<th>Result (ug/L)</th>
<th>Rec (%)</th>
<th>Spike (ug/L)</th>
<th>Result (ug/L)</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
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<tbody>
<tr>
<td>Mercury</td>
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Batch Information

Analytical Batch: MCV5830
Analytical Method: EP245.1
Instrument: PSA Millennium mercury AA
Analyst: TMA
Analytical Date/Time: 8/1/2017 2:54:11PM

Prep Batch: MXX30877
Prep Method: Digestion Mercury 245.1 (W)
Prep Date/Time: 8/1/2017 10:40:00AM
Prep Initial Wt./Vol.: 25.00mL
Prep Extract Vol: 50.00mL

Print Date: 09/21/2017 3:28:55PM
### Matrix Spike Summary

Original Sample ID: 1174859007  
MS Sample ID: 1402209 MS  
MSD Sample ID:  

Analysis Date: 08/01/2017 15:49  
Analysis Date: 08/01/2017 15:52  
Analysis Date:  

Matrix: Water (Surface, Eff., Ground)  

QC for Samples: 1174859001, 1174859002, 1174859003, 1174859004, 1174859005, 1174859006, 1174859007, 1174859008, 1174859009, 1174859010, 1174859011, 1174859012

### Results by EP245.1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sample</th>
<th>Matrix Spike (ug/L)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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<tbody>
<tr>
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<td>70-130</td>
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### Batch Information

- **Analytical Batch**: MCV5830  
- **Analytical Method**: EP245.1  
- **Instrument**: PSA Millennium mercury AA  
- **Analyst**: TMA  
- **Analytical Date/Time**: 8/1/2017 3:52:51PM

- **Prep Batch**: MXX30877  
- **Prep Method**: Digestion Mercury 245.1 (W)  
- **Prep Date/Time**: 8/1/2017 10:40:00AM  
- **Prep Initial Wt./Vol.**: 25.00mL  
- **Prep Extract Vol**: 50.00mL
**Method Blank**

Blank ID: MB for HBN 1764707 [STS/5574]  
Blank Lab ID: 1401292  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples:  
1174859001, 1174859002, 1174859003, 1174859004, 1174859005, 1174859006, 1174859007, 1174859008, 1174859009, 1174859010, 1174859011, 1174859012

**Results by SM21 2540C**

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<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
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<td>16.6U</td>
<td>33.3</td>
<td>10.3</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

**Batch Information**

Analytical Batch: STS5574  
Analytical Method: SM21 2540C  
Instrument:  
Analyst: AYC  
Analytical Date/Time: 7/28/2017 9:22:03PM
## Duplicate Sample Summary

Original Sample ID: 1174795001  
Duplicate Sample ID: 1401295  
Analysis Date: 07/28/2017 21:22  
Matrix: Water (Surface, Eff., Ground)

### Results by SM21 2540C

<table>
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<tr>
<th>NAME</th>
<th>Original</th>
<th>Duplicate</th>
<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
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<td>21470</td>
<td>mg/L</td>
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<td>(&lt; 5 )</td>
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### Batch Information

Analytical Batch: STS5574  
Analytical Method: SM21 2540C  
Instrument:  
Analyst: AYC
**Duplicate Sample Summary**

**Original Sample ID:** 1174821001  
**Analysis Date:** 07/28/2017  21:22  
**Duplicate Sample ID:** 1401296  
**Matrix:** Drinking Water

**QC for Samples:**

1174859001, 1174859002, 1174859003, 1174859004, 1174859005, 1174859006, 1174859007, 1174859008, 1174859009, 1174859010, 1174859011, 1174859012

**Results by SM21 2540C**

<table>
<thead>
<tr>
<th>NAME</th>
<th>Original</th>
<th>Duplicate</th>
<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
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<td>483</td>
<td>mg/L</td>
<td>1.60</td>
<td>(&lt; 5 )</td>
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</tbody>
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**Batch Information**

- **Analytical Batch:** STS5574
- **Analytical Method:** SM21 2540C
- **Instrument:**
- **Analyst:** AYC
## Blank Spike Summary

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<tr>
<th>Blank Spike ID:</th>
<th>LCS for HBN 1174859 [STS5574]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank Spike Lab ID:</td>
<td>1401293</td>
</tr>
<tr>
<td>Date Analyzed:</td>
<td>07/28/2017 21:22</td>
</tr>
<tr>
<td>Spike Duplicate ID:</td>
<td>LCSD for HBN 1174859 [STS5574]</td>
</tr>
<tr>
<td>Spike Duplicate Lab ID:</td>
<td>1401294</td>
</tr>
<tr>
<td>QC for Samples:</td>
<td>1174859001, 1174859002, 1174859003, 1174859004, 1174859005, 1174859006, 1174859007, 1174859008, 1174859009, 1174859010, 1174859011, 1174859012</td>
</tr>
<tr>
<td>Matrix:</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
</tbody>
</table>

## Results by SM21 2540C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Blank Spike (mg/L)</th>
<th>Spike Duplicate (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spike</td>
<td>Result</td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
<td>330</td>
<td>327</td>
</tr>
</tbody>
</table>

## Batch Information

- Analytical Batch: STS5574
- Analytical Method: SM21 2540C
- Instrument: 
- Analyst: AYC
### Method Blank

Blank ID: MB for HBN 1765185 [WXX/11932]  
Blank Lab ID: 1402431  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1174859001, 1174859002, 1174859003, 1174859004, 1174859005, 1174859006, 1174859007, 1174859008, 1174859009, 1174859010, 1174859011, 1174859012

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
<tr>
<td>Sulfate</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

### Batch Information

- **Analytical Batch:** WIC5662  
- **Analytical Method:** EPA 300.0  
- **Instrument:** 930 Metrohm compact IC flex  
- **Analyst:** NEG  
- **Analytical Date/Time:** 7/27/2017 4:54:23AM

- **Prep Batch:** WXX11932  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 7/26/2017 7:00:00PM  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol.:** 10 mL

---

**Print Date:** 09/21/2017 3:29:01PM
## Blank Spike Summary

**Blank Spike ID:** LCS for HBN 1174859 [WXX11932]
**Blank Spike Lab ID:** 1402432
**Date Analyzed:** 07/27/2017 05:12

**Matrix:** Water (Surface, Eff., Ground)

**QC for Samples:** 1174859001, 1174859002, 1174859003, 1174859004, 1174859005, 1174859006, 1174859007, 1174859008, 1174859009, 1174859010, 1174859011, 1174859012

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>5</td>
<td>5.01</td>
<td>100</td>
<td>(90-110)</td>
</tr>
<tr>
<td>Fluoride</td>
<td>5</td>
<td>5.02</td>
<td>100</td>
<td>(90-110)</td>
</tr>
<tr>
<td>Sulfate</td>
<td>5</td>
<td>5.03</td>
<td>101</td>
<td>(90-110)</td>
</tr>
</tbody>
</table>

### Batch Information

**Analytical Batch:** WIC5662
**Analytical Method:** EPA 300.0
**Instrument:** 930 Metrohm compact IC flex
**Analyst:** NEG

**Prep Batch:** WXX11932
**Prep Method:** METHOD
**Prep Date/Time:** 07/26/2017 19:00

Spike Init Wt./Vol.: 5 mg/L  Extract Vol: 10 mL
Dupe Init Wt./Vol.:  Extract Vol: [missing]
Matrix Spike Summary

- Original Sample ID: 1174858007
- MS Sample ID: 1402433 MS
- MSD Sample ID: 1402434 MSD
- Analysis Date: 07/27/2017 5:30
- Analysis Date: 07/27/2017 5:48
- Analysis Date: 07/27/2017 6:05
- Matrix: Water (Surface, Eff., Ground)
- QC for Samples: 1174859001, 1174859002, 1174859003, 1174859004, 1174859005, 1174859006, 1174859007, 1174859008, 1174859009, 1174859010, 1174859011, 1174859012

Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sample</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>2.31</td>
<td>5.00</td>
<td>7.17</td>
<td>97</td>
<td>5.00</td>
<td>7.21</td>
<td>98</td>
<td>90-110</td>
<td>0.57</td>
<td>(&lt; 15 )</td>
</tr>
<tr>
<td>Sulfate</td>
<td>0.699</td>
<td>5.00</td>
<td>5.66</td>
<td>99</td>
<td>5.00</td>
<td>5.70</td>
<td>100</td>
<td>90-110</td>
<td>0.69</td>
<td>(&lt; 15 )</td>
</tr>
</tbody>
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Batch Information

- Analytical Batch: WIC5662
- Analytical Method: EPA 300.0
- Instrument: 930 Metrohm compact IC flex
- Analyst: NEG
- Analytical Date/Time: 7/27/2017 5:48:04AM

- Prep Batch: WXX11932
- Prep Method: EPA 300.0 Extraction Waters/Liquids
- Prep Date/Time: 7/26/2017 7:00:00PM
- Prep Initial Wt./Vol.: 10.00mL
- Prep Extract Vol: 10.00mL
### Chain of Custody Record

**Client:** Golden Valley Electric Association Inc.

**Contact:** Heather Simon

**Phone No.:** 204-6907

**Project Name:** GVEA Healy

**Reports To:** Heather Simon

**E-mail:** HSimon@SLrConsulting.com

**Invoice To:** NM_Knight@GVEA.com

**Quote #:**

**P.O. #:**

<table>
<thead>
<tr>
<th>RESERVED for lab use</th>
<th>SAMPLE IDENTIFICATION</th>
<th>DATE mm/dd/yy</th>
<th>TIME HH:MM</th>
<th>MATRIX/MATRIX CODE</th>
<th>CONTAINERS</th>
<th>Preservative</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA-E</td>
<td>MW-1</td>
<td>01/04/17</td>
<td>16:37</td>
<td>W</td>
<td>5</td>
<td>X</td>
</tr>
<tr>
<td>DA-E</td>
<td>MW-2</td>
<td>01/04/17</td>
<td>15:43</td>
<td>W</td>
<td>5</td>
<td>X</td>
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<tr>
<td>DA-E</td>
<td>MW-3</td>
<td>01/04/17</td>
<td>13:06</td>
<td>W</td>
<td>5</td>
<td>X</td>
</tr>
<tr>
<td>DA-E</td>
<td>MW-4</td>
<td>01/04/17</td>
<td>11:58</td>
<td>W</td>
<td>6</td>
<td>X</td>
</tr>
<tr>
<td>DA-E</td>
<td>MW-5</td>
<td>01/04/17</td>
<td>11:58</td>
<td>W</td>
<td>5</td>
<td>X</td>
</tr>
<tr>
<td>DA-E</td>
<td>MW-6</td>
<td>01/15/17</td>
<td>14:08</td>
<td>W</td>
<td>3</td>
<td>X</td>
</tr>
<tr>
<td>DA-E</td>
<td>MW-7</td>
<td>01/15/17</td>
<td>15:00</td>
<td>W</td>
<td>5</td>
<td>X</td>
</tr>
<tr>
<td>DA-E</td>
<td>MW-8</td>
<td>01/25/17</td>
<td>10:21</td>
<td>W</td>
<td>5</td>
<td>X</td>
</tr>
<tr>
<td>DA-E</td>
<td>MW-9</td>
<td>08/25/17</td>
<td>08:45</td>
<td>W</td>
<td>5</td>
<td>X</td>
</tr>
</tbody>
</table>

**Remarks/LOC ID:**

---

**Section 2**

**Reinjured By:**

- **(1)** Air Oliver
- **(2)**
- **(3)**
- **(4)**

**Date:** 01/06/17

**Time:** 11:00

**Received By:**

---

**Section 4**

- **DOD Project?** Yes
- **Data Deliverable Requirements:**
  - Cooler ID:
  - Requested Turnaround Time and/or Special Instructions:
    - Total metals: Ba, Ca, Sb, As, Sr, Be, Cd, Cr, Co, Pb, Li, Mo
    - Se, Tl
    - EPA 3050A: Fluoride, chloride, sulfate
    - Temp Blank °C: 2.5

**Chain of Custody Seal:** (Circle)

- **INTACT**
- **BROKEN**
- **ABSENT**

**Sample Receipt Form:**

- [See attached Sample Receipt Form]

---

**Section 5**

**Received For Laboratory By:** Colie

**Date:** 01/29/17

**Time:** 12:13

---

**Note:**

- [ ] 200 W. Potter Drive Anchorage, AK 99518
- [ ] 2500 Business Drive Wilmington, NC 28405

---

For more information, visit [http://www.sgs.com/terms-and-conditions](http://www.sgs.com/terms-and-conditions)

Revised 2013-03-24
<table>
<thead>
<tr>
<th>Sample Identification</th>
<th>Date</th>
<th>Time</th>
<th>Matrix/Matrix Code</th>
<th>Remarks/LOC ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDA-E NW-10</td>
<td>7/25/17</td>
<td>04:30</td>
<td>W 5 G</td>
<td></td>
</tr>
<tr>
<td>TDA-E SW-1</td>
<td>7/24/17</td>
<td>14:10</td>
<td>W 5 G</td>
<td></td>
</tr>
</tbody>
</table>

---

### Section 3

**Preservative**
- Type: 
  - HA15
  - Anions 300-80
  - Total 301-100
  - U30
  - Radon
- Code: 226
- Code: 228

### Section 4

**DOD Project?** Yes

**Data Deliverable Requirements:**

- Cooler ID:

**Requested Turnaround Time and/or Special Instructions:**
- Total Metals: B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Po, Li, Mo,
- Se, Tellurium,
- EPA 300.0: Fluoride, Chloride, Sulfate,
- [ ] Temp Blank
- 0.4 ppm
- [ ] or Ambient

**Chain of Custody Seal:** (Circle)
- [ ] INTACT
- [ ] BROKEN
- [ ] ABSENT

(See attached Sample Receipt Form)
### Review Criteria

#### Chain of Custody / Temperature Requirements

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>Condition (Yes, No, N/A)</th>
<th>Exceptions Noted below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were Custody Seals intact? Note # &amp; location COC accompanied samples?</td>
<td>Yes</td>
<td>N/A</td>
<td>Exemption permitted if sampler hand carries/delivers.</td>
</tr>
<tr>
<td>Temperature blank compliant* (i.e., 0-6 °C after CF)?</td>
<td></td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>*If &gt;6°C, were samples collected &lt;8 hours ago?</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If &lt;0°C, were sample containers ice free?</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If samples received without a temperature blank, the &quot;cooler temperature&quot; will be documented in lieu of the temperature blank &amp; &quot;COOLER TEMP&quot; will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note &quot;ambient&quot; or &quot;chilled&quot;.</td>
<td></td>
<td></td>
<td>Some samples had some ice in the containers</td>
</tr>
<tr>
<td>Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Holding Time / Documentation / Sample Condition Requirements

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Were samples received within holding time?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do samples match COC** (i.e., sample IDs, dates/times collected)?</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>**Note: If times differ &lt;1hr, record details &amp; login per COC.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were analyses requested unambiguous? (i.e., method is specified for analyses with &gt;1 option for analysis)</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Were proper containers (type/mass/volume/preservative*** used?</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>**Exemption permitted for metals (e.g., 200.8/6020A).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Volatile / LL-Hg Requirements

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Were all soil VOAs field extracted with MeOH+BFB?</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td><strong>Note to Client:</strong> Any &quot;No&quot;, answer above indicates non-compliance with standard procedures and may impact data quality.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Additional notes (if applicable):
# Sample Containers and Preservatives

<table>
<thead>
<tr>
<th>Container Id</th>
<th>Preservative</th>
<th>Container Condition</th>
<th>Container Id</th>
<th>Preservative</th>
<th>Container Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1174859001-A</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
<td>1174859009-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1174859001-B</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1174859009-D</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1174859001-C</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1174859009-E</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1174859001-D</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1174859010-A</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1174859001-E</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1174859010-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1174859002-A</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1174859010-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1174859002-B</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1174859010-D</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1174859002-C</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1174859010-E</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1174859002-D</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1174859011-A</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1174859002-E</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1174859011-B</td>
<td>No Preservative Required</td>
<td>OK</td>
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<tr>
<td>1174859003-A</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
<td>1174859011-C</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1174859003-B</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1174859011-D</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1174859003-C</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1174859011-E</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1174859003-D</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1174859012-A</td>
<td>HNO3 to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1174859003-E</td>
<td>No Preservative Required</td>
<td>OK</td>
<td>1174859012-B</td>
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<td>OK</td>
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<tr>
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<td>1174859012-C</td>
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<td>OK</td>
<td>1174859012-D</td>
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<td>1174859004-C</td>
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<td>OK</td>
<td>1174859012-E</td>
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<tr>
<td>1174859004-D</td>
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<tr>
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<tr>
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<tr>
<td>1174859007-E</td>
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7/26/2017
**Container Condition Glossary**

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.
BU - The container was received with headspace greater than 6mm.
DM - The container was received damaged.
FR - The container was received frozen and not usable for Bacteria or BOD analyses.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 01, 2017. This project has been assigned to ACZ's project number, L38870. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L38870. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 21, 2017. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ’s stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.
ACZ Laboratories, Inc. (ACZ) received 12 drinking water samples from SGS Environmental Services Inc. - Alaska on August 1, 2017. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L38870. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for radiochemistry parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. Radium 226 for L38870-06 (N1) - The barium recovery was low due to the sample matrix. The sample was already run on a dilution. No further action was taken.
SGS Environmental Services Inc. - Alaska

Project ID: 1174859
Sample ID: MW-1R
Locator:  

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Prep Method:

Arizona license number: AZ0102
SGS Environmental Services Inc. - Alaska

Project ID: 1174859
Sample ID: MW-2
Locator: 

ACZ Sample ID: L38870-02
Date Sampled: 07/24/17 15:43
Date Received: 08/01/17
Sample Matrix: Drinking Water

Radium 226
M903.1

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Radium 228
M904.0

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Arizona license number: AZ0102

* Please refer to Qualifier Reports for details.
SGS Environmental Services Inc. - Alaska

Sample ID: MW-3
Sample Matrix: Drinking Water

Radium 226

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Radium 228

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* Please refer to Qualifier Reports for details.

Arizona license number: AZ0102
**RadioChemistry Analytical Results**

**SGS Environmental Services Inc. - Alaska**

- **Project ID:** 1174859
- **Sample ID:** MW-6
- **Locator:**

**ACZ Sample ID:** L38870-04

- **Date Sampled:** 07/24/17 11:58
- **Date Received:** 08/01/17
- **Sample Matrix:** Drinking Water

**Radium 226**

- **Prep Method:** M903.1

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**Radium 228**

- **Prep Method:** M904.0

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* Arizona license number: AZ0102

* Please refer to Qualifier Reports for details.
# RadioChemistry Analytical Results

SGS Environmental Services Inc. - Alaska

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**RadioChemistry Analytical Results**

SGS Environmental Services Inc. - Alaska

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Arizona license number: AZ0102

* Please refer to Qualifier Reports for details.
SGS Environmental Services Inc. - Alaska

ACZ Sample ID: **L38870-07**

- Project ID: 1174859
- Sample ID: MW-5
- Date Sampled: 07/24/17 15:00
- Date Received: 08/01/17
- Sample Matrix: Drinking Water
- Arizona license number: AZ0102

### Radium 226

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### Radium 228

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* Please refer to Qualifier Reports for details.
### SGS Environmental Services Inc. - Alaska

**ACZ Sample ID:** L38870-08  
**Sample ID:** MW-7  
**Sample Matrix:** Drinking Water  
**SGS Environmental Services Inc. - Alaska**

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**Arizona license number:** AZ0102  

* Please refer to Qualifier Reports for details.
SGS Environmental Services Inc. - Alaska

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Arizona license number: AZ0102

* Please refer to Qualifier Reports for details.
SGS Environmental Services Inc. - Alaska

ACZ Sample ID: **L38870-10**

**Project ID:** 1174859

**Sample ID:** MW-9

**Locator:**

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**Sample Matrix:** Drinking Water

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**Date Sampled:** 07/25/17 8:45

**Date Received:** 08/01/17

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### Radium 226

**Prep Method:**

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### Radium 228

**Prep Method:**

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**Arizona license number:** AZ0102

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* Please refer to Qualifier Reports for details.
### RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

- **Project ID:** 1174859
- **Sample ID:** MW-10
- **Locator:**

**ACZ Sample ID:** L38870-11

- **Date Sampled:** 07/25/17 9:30
- **Date Received:** 08/01/17
- **Sample Matrix:** Drinking Water

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**Radium 228**

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</tbody>
</table>

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* Please refer to Qualifier Reports for details.

**Arizona license number:** AZ0102
### RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

- **Project ID:** 1174859
- **Sample ID:** SW-1
- **Locator:**

**ACZ Sample ID:** L38870-12

**Date Sampled:** 07/24/17 14:40

**Date Received:** 08/01/17

**Sample Matrix:** Drinking Water

---

#### Radium 226

<table>
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<tr>
<th>Parameter</th>
<th>Measure Date</th>
<th>Prep Date</th>
<th>Result</th>
<th>Error(+/-)</th>
<th>LLD</th>
<th>Units</th>
<th>XQ</th>
<th>Analyst</th>
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#### Radium 228

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<th>Prep Date</th>
<th>Result</th>
<th>Error(+/-)</th>
<th>LLD</th>
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**Arizona license number:** AZ0102

---

* Please refer to Qualifier Reports for details.
### Report Header Explanations

**Batch** - A distinct set of samples analyzed at a specific time

**Error(+-)** - Calculated sample specific uncertainty

**Found** - Value of the QC Type of interest

**Limit** - Upper limit for RPD, in %.

**LCL** - Lower Control Limit, in % (except for LCSS, mg/Kg)

**LLD** - Calculated sample specific Lower Limit of Detection

**PCN/SCN** - A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis

**PQL** - Practical Quantitation Limit

**QC** - True Value of the Control Sample or the amount added to the Spike

**Rec** - Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)

**RER** - Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.

**RPD** - Relative Percent Difference, calculation used for Duplicate QC Types

**UCL** - Upper Control Limit, in % (except for LCSS, mg/Kg)

**Sample** - Value of the Sample of interest

### QC Sample Types

<table>
<thead>
<tr>
<th>QC Type</th>
<th>Description</th>
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<tr>
<td>DUP</td>
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<tr>
<td>LCSS</td>
<td>Laboratory Control Sample - Soil</td>
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<tr>
<td>LCSW</td>
<td>Laboratory Control Sample - Water</td>
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### QC Sample Type Explanations

- **Blanks** - Verifies that there is no or minimal contamination in the prep method procedure.
- **Control Samples** - Verifies the accuracy of the method, including the prep procedure.
- **Duplicates** - Verifies the precision of the instrument and/or method.
- **Matrix Spikes** - Determines sample matrix interferences, if any.

### ACZ Qualifiers (Qual)

<table>
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<th>Qualifier</th>
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### Method Prefix Reference

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<td>RP</td>
<td>DOE</td>
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<td>ESM</td>
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### Comments

1. Solid matrices are reported on a dry weight basis.
3. QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
4. An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

## Radiochemistry QC Summary

**SGS Environmental Services Inc. - Alaska**

**ACZ Project ID:** L38870

### Radium 226

**M903.1**

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<th>Sample</th>
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<th>Found</th>
<th>Error</th>
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<th>Upper</th>
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### Radium 228

**M904.0**

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**Units:** pCi/L
### RadChem Extended Qualifier Report

**ACZ Project ID:** L38870

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**Notes:**
- RG: Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
- DF: Sample required dilution due to high sediment.
- Q5: Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
<table>
<thead>
<tr>
<th>ACZ ID</th>
<th>WORKNUM</th>
<th>PARAMETER</th>
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<th>QUAL</th>
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<td></td>
<td></td>
<td>M904.0</td>
<td>DJ</td>
<td>Sample dilution required due to insufficient sample.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M904.0</td>
<td>Q5</td>
<td>Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M904.0</td>
<td>RG</td>
<td>Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.</td>
</tr>
</tbody>
</table>
No certification qualifiers associated with this analysis
### Receipt Verification

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Is a foreign soil permit included for applicable samples?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>2) Is the Chain of Custody form or other directive shipping papers present?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Does this project require special handling procedures such as CLP protocol?</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4) Are any samples NRC licensable material?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5) If samples are received past hold time, proceed with requested short hold time analyses?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6) Is the Chain of Custody form complete and accurate?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Samples/Containers

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>8) Are all containers intact and with no leaks?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9) Are all labels on containers and are they intact and legible?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11) For preserved bottle types, was the pH checked and within limits?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12) Is there sufficient sample volume to perform all requested work?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13) Is the custody seal intact on all containers?</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>14) Are samples that require zero headspace acceptable?</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>15) Are all sample containers appropriate for analytical requirements?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16) Is there an Hg-1631 trip blank present?</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>17) Is there a VOA trip blank present?</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>18) Were all samples received within hold time?</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Chain of Custody Related Remarks**

**Client Contact Remarks**

**Shipping Containers**

<table>
<thead>
<tr>
<th>Cooler Id</th>
<th>Temp(°C)</th>
<th>Temp Criteria(°C)</th>
<th>Rad(µR/Hr)</th>
<th>Custody Seal Intact?</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA26558</td>
<td>21.1</td>
<td>NA</td>
<td>14</td>
<td>Yes</td>
</tr>
<tr>
<td>NA26559</td>
<td>23.4</td>
<td>NA</td>
<td>16</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Shipping Containers

<table>
<thead>
<tr>
<th>Cooler Id</th>
<th>Temp(°C)</th>
<th>Temp Criteria(°C)</th>
<th>Rad(µR/Hr)</th>
<th>Custody Seal Intact?</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA26558</td>
<td>21.1</td>
<td>NA</td>
<td>14</td>
<td>Yes</td>
</tr>
<tr>
<td>NA26559</td>
<td>23.4</td>
<td>NA</td>
<td>16</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.
The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na₂S₂O₃ preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).
<table>
<thead>
<tr>
<th>SAMPLE IDENTIFICATION</th>
<th>DATE mm/dd/vy</th>
<th>TIME HHMM</th>
<th>MATRIX/ MATRIX</th>
<th>Preservative Used</th>
<th>CONTAINERS</th>
<th>Loc ID</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-1R</td>
<td>07/24/17</td>
<td>1637</td>
<td>W</td>
<td>3</td>
<td>GRAB X</td>
<td>1174859001</td>
<td></td>
</tr>
<tr>
<td>MW-2</td>
<td>07/24/17</td>
<td>1543</td>
<td>W</td>
<td>3</td>
<td>GRAB X</td>
<td>1174859002</td>
<td></td>
</tr>
<tr>
<td>MW-3</td>
<td>07/24/17</td>
<td>1306</td>
<td>W</td>
<td>3</td>
<td>GRAB X</td>
<td>1174859003</td>
<td></td>
</tr>
<tr>
<td>MW-6</td>
<td>07/24/17</td>
<td>1158</td>
<td>W</td>
<td>3</td>
<td>GRAB X</td>
<td>1174859004</td>
<td></td>
</tr>
<tr>
<td>MW-69</td>
<td>07/24/17</td>
<td>1158</td>
<td>W</td>
<td>3</td>
<td>GRAB X</td>
<td>1174859005</td>
<td></td>
</tr>
<tr>
<td>MW-4</td>
<td>07/24/17</td>
<td>1408</td>
<td>W</td>
<td>3</td>
<td>GRAB X</td>
<td>1174859006</td>
<td></td>
</tr>
<tr>
<td>MW-5</td>
<td>07/24/17</td>
<td>1500</td>
<td>W</td>
<td>3</td>
<td>GRAB X</td>
<td>1174859007</td>
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<tr>
<td>MW-7</td>
<td>07/25/17</td>
<td>1021</td>
<td>W</td>
<td>3</td>
<td>GRAB X</td>
<td>1174859008</td>
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</tr>
<tr>
<td>MW-8</td>
<td>07/25/17</td>
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<td>GRAB X</td>
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<tr>
<td>MW-9</td>
<td>07/25/17</td>
<td>845</td>
<td>W</td>
<td>3</td>
<td>GRAB X</td>
<td>117485910</td>
<td></td>
</tr>
</tbody>
</table>

Additional Comments: All soils report out in dry weight unless otherwise requested.

DOD Project? □ YES □ NO

Data Deliverable Requirements:
Cooler ID: Level 1 + DV EDD
Requested Turnaround Time and/or Special Instructions:

Standard

Temp Blank °C: __________ or Ambient [ ]

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

http://www.sgs.com/terms_and_conditions.htm
## SGS North America Inc. 
CHAIN OF CUSTODY RECORD

### CLIENT:
SGS North America Inc. - Alaska Division

### CONTACT:
Julie Shumway

### PHONE NO.:
(907) 562-2343

### PROJECT:
1174859

### PROJECT NAME:

### REPORTS TO:

### E-MAIL:
Julie.Shumway@sgs.com

### INVOICE TO:

### QUOTE #:

### SGS Reference:

### ACZ Labs

### Additional Comments: All soils report out in dry weight unless otherwise requested.

<table>
<thead>
<tr>
<th>CONTAINERS</th>
<th>Preservative Used:</th>
<th>TYPE</th>
<th>C-</th>
<th>COMP</th>
<th>G-</th>
<th>GRAB</th>
<th>INCREMENTAL SOILS</th>
<th>Radium (226 &amp; 228)</th>
<th>MS</th>
<th>MSD</th>
<th>SGS Lab #</th>
<th>Loc ID</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1174859011</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07/25/17</td>
<td>930</td>
<td>W</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SW-1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td>1174859012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07/24/17</td>
<td>1440</td>
<td>W</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Inquirer By:** (1)

**Inquirer By:** (2)

**Inquirer By:** (3)

**Inquirer By:** (4)

**DOD Project?** □ YES □ NO

**Report to DL (J Flags)** □

**Cooler ID:**

**Level 1 + DV EDD**

**Requested Turnaround Time and-or Special Instructions:**

**Standard**

**Temp Blank °C:**

**INTACT BROKEN ABSENT**

---

[http://www.sgs.com/terms_and_conditions.htm](http://www.sgs.com/terms_and_conditions.htm)
Dear Heather Simon,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Justin Nelson
Project Manager
Justin.Nelson@sgs.com
Case Narrative

SGS Client: **Golden Valley Electric Association**
SGS Project: **1177082**
Project Name/Site: **Healy Power Plant GW Monitoring**
Project Contact: **Heather Simon**

Refer to sample receipt form for information on sample condition.

**MW-1 (1177082001) PS**

Radium 228+226 were analyzed by ACZ Laboratories of Steamboat Springs, CO.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.*
<table>
<thead>
<tr>
<th>Client Sample ID</th>
<th>Lab Sample ID</th>
<th>Collected</th>
<th>Received</th>
<th>Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-1</td>
<td>1177082001</td>
<td>10/02/2017</td>
<td>10/04/2017</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-2</td>
<td>1177082002</td>
<td>10/03/2017</td>
<td>10/04/2017</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-3</td>
<td>1177082003</td>
<td>10/03/2017</td>
<td>10/04/2017</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-4</td>
<td>1177082004</td>
<td>10/03/2017</td>
<td>10/04/2017</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-5</td>
<td>1177082005</td>
<td>10/03/2017</td>
<td>10/04/2017</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-6</td>
<td>1177082006</td>
<td>10/02/2017</td>
<td>10/04/2017</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-7</td>
<td>1177082007</td>
<td>10/02/2017</td>
<td>10/04/2017</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-8</td>
<td>1177082008</td>
<td>10/02/2017</td>
<td>10/04/2017</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>MW-9</td>
<td>1177082009</td>
<td>10/02/2017</td>
<td>10/04/2017</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
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<td>MW-10</td>
<td>1177082010</td>
<td>10/03/2017</td>
<td>10/04/2017</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>SW-1</td>
<td>1177082011</td>
<td>10/03/2017</td>
<td>10/04/2017</td>
<td>Water (Surface, Eff., Ground)</td>
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<td>MW-39</td>
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<td>10/03/2017</td>
<td>10/04/2017</td>
<td>Water (Surface, Eff., Ground)</td>
</tr>
<tr>
<td>SAMPLE IDENTIFICATION</td>
<td>DATE</td>
<td>TIME</td>
<td>MATRIX/MATRIX CODE</td>
<td>CONTAINERS</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------</td>
<td>------</td>
<td>-------------------</td>
<td>------------</td>
</tr>
<tr>
<td>(1)A-C</td>
<td>10/2/17</td>
<td>1520</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>(2)A-C</td>
<td>10/3/17</td>
<td>120</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>(3)A-C</td>
<td>10/3/17</td>
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<td></td>
<td>3</td>
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<tr>
<td>(4)A-C</td>
<td>10/3/17</td>
<td>0942</td>
<td></td>
<td>3</td>
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<td>(5)A-C</td>
<td>10/3/17</td>
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<td></td>
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<tr>
<td>(6)A-C</td>
<td>10/3/17</td>
<td>0649</td>
<td></td>
<td>3</td>
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<td></td>
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<tr>
<td>(12)A-C</td>
<td>10/3/17</td>
<td>1800</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Collected/Relinquished By: (1)  
Received By: L. A  
Date: 10/4/17  
Time: 12:33  

Relinquished By: (2)  
Date: 10/4/17  
Time: 12:00  

Relinquished By: (3)  
Date: 10/4/17  
Time: 12:00  

Relinquished By: (4)  
Date: 10/4/17  
Time: 12:34  

Hand delivered

Temp Blank °C: \( \frac{2}{3} \) °C  
Chain of Custody Seal: (Circle)  
(See attached Sample Receipt Form)
**Review Criteria**

<table>
<thead>
<tr>
<th>Condition (Yes, No, N/A)</th>
<th>Exceptions Noted below</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chain of Custody / Temperature Requirements</strong></td>
<td>Exemption permitted if sampler hand carries/delivers.</td>
</tr>
<tr>
<td>Were Custody Seals intact? Note # &amp; location</td>
<td>N/A</td>
</tr>
<tr>
<td>COC accompanied samples?</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Hand Delivered</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Exemption permitted if chilled &amp; collected &lt;8 hours ago, or for samples where chilling is not required</strong></td>
<td></td>
</tr>
<tr>
<td>Temperature blank compliant* (i.e., 0-6 °C after CF)?</td>
<td>No</td>
</tr>
<tr>
<td>Cooler ID: 1 @</td>
<td>-0.3°C Therm. ID: D20</td>
</tr>
<tr>
<td>Cooler ID: 2 @</td>
<td>2.0°C Therm. ID: D20</td>
</tr>
<tr>
<td>Cooler ID: 3 @</td>
<td>0.4°C Therm. ID: D42</td>
</tr>
<tr>
<td>Cooler ID: @</td>
<td>°C Therm. ID:</td>
</tr>
<tr>
<td>*If &gt;6°C, were samples collected &lt;8 hours ago?</td>
<td>N/A</td>
</tr>
<tr>
<td>If &lt;0°C, were sample containers ice free?</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Exceptions Noted below</strong></td>
<td></td>
</tr>
<tr>
<td>If samples received without a temperature blank, the &quot;cooler temperature&quot; will be documented in lieu of the temperature blank &amp; &quot;COOLER TEMP&quot; will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note &quot;ambient&quot; or &quot;chilled&quot;.</td>
<td></td>
</tr>
<tr>
<td>Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.</td>
<td></td>
</tr>
<tr>
<td><strong>Holding Time / Documentation / Sample Condition Requirements</strong></td>
<td>Note: Refer to form F-083 &quot;Sample Guide&quot; for specific holding times.</td>
</tr>
<tr>
<td>Were samples received within holding time?</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Exceptions Noted below</strong></td>
<td></td>
</tr>
<tr>
<td>Do samples match COC** (i.e., sample IDs, dates/times collected)?</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Note: If times differ &lt;1hr, record details &amp; login per COC.</strong></td>
<td></td>
</tr>
<tr>
<td>Were analyses requested unambiguous? (i.e., method is specified for analyses with &gt;1 option for analysis)</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Exceptions Noted below</strong></td>
<td></td>
</tr>
<tr>
<td>Were proper containers (type/mass/volume/preservative***used?</td>
<td>No</td>
</tr>
<tr>
<td>Each sample was preserved with 8 mL of HNO3 LW09-0463-09-15 pH was verified.</td>
<td></td>
</tr>
<tr>
<td><strong>Volatile / LL-Hg Requirements</strong></td>
<td></td>
</tr>
<tr>
<td>Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples? N/A</td>
<td></td>
</tr>
<tr>
<td>Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)? N/A</td>
<td></td>
</tr>
<tr>
<td>Were all soil VOAs field extracted with MeOH+BFB? N/A</td>
<td></td>
</tr>
<tr>
<td><strong>Exceptions Noted below</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Note to Client:</strong> Any &quot;No&quot;, answer above indicates non-compliance with standard procedures and may impact data quality.</td>
<td></td>
</tr>
<tr>
<td>Additional notes (if applicable):</td>
<td></td>
</tr>
</tbody>
</table>

---

F102b_SRFpm_20170131
### Sample Containers and Preservatives

<table>
<thead>
<tr>
<th>Container Id</th>
<th>Preservative</th>
<th>Container Condition</th>
</tr>
</thead>
<tbody>
<tr>
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**Container Condition Glossary**

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates that an inappropriate container was submitted.

- **OK** - The container was received at an acceptable pH for the analysis requested.
- **BU** - The container was received with headspace greater than 6mm.
- **DM** - The container was received damaged.
- **FR** - The container was received frozen and not usable for Bacteria or BOD analyses.
- **PA** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
- **PH** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
Report to:
Julie Shumway
SGS Environmental Services Inc. - Alaska
200 W. Potter Dr.
Anchorage, AK 99518

Bill to:
Julie Shumway
SGS Environmental Services Inc. - Alaska
200 W. Potter Dr.
Anchorage, AK 99518

Project ID:  1177082
ACZ Project ID: L40414

Julie Shumway:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 09, 2017. This project has been assigned to ACZ's project number, L40414. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L40414. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 27, 2017. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.
### SGS Environmental Services Inc. - Alaska

**ACZ Sample ID:** L40414-01  
**Project ID:** 1177082  
**Sample ID:** MW-1  
**Locator:** RadioChemistry

#### Analytical Results

**Parameter** | **Measure Date** | **Prep Date** | **Result** | **Error(+-)** | **LLD** | **Units** | **XQ** | **Analyst**  
--- | --- | --- | --- | --- | --- | --- | --- | ---  
Radium 226 | 11/20/17 0:20 | | 0.13 | 0.11 | 0.44 | pCi/L | tjr |  
Radium 228 | 11/03/17 12:45 | | 0.86 | 0.85 | 0.85 | pCi/L | * | jlg

* Please refer to Qualifier Reports for details.
### RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

- **Project ID:** 1177082
- **Sample ID:** MW-2
- **Locator:** RadioChemistry

**ACZ Sample ID:** L40414-02

- **Date Sampled:** 10/03/17 11:20
- **Date Received:** 10/09/17
- **Sample Matrix:** Ground Water

#### Parameter: Radium 226 (M903.1)

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#### Parameter: Radium 228 (M904.0)

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* Please refer to Qualifier Reports for details.
### RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

- **Project ID:** 1177082
- **Sample ID:** MW-3
- **Sample Matrix:** Ground Water
- **Sample ID:** ACZ Sample ID: L40414-03
- **Date Sampled:** 10/03/17 10:26
- **Date Received:** 10/09/17

#### Parameter: Radium 226

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#### Parameter: Radium 228

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**RadioChemistry Analytical Results**

**SGS Environmental Services Inc. - Alaska**

ACZ Sample ID: **L40414-04**  
Date Sampled: 10/03/17 9:42  
Date Received: 10/09/17  
Sample Matrix: Ground Water

### Parameter Results

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<td>tjr</td>
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</table>

* Please refer to Qualifier Reports for details.
SGS Environmental Services Inc. - Alaska

ACZ Sample ID: L40414-05
Date Sampled: 10/03/17 8:59
Date Received: 10/09/17
Sample Matrix: Ground Water

Radium 226
M903.1

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Radium 228
M904.0

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### RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

ACZ Sample ID: **L40414-06**

Project ID: 1177082

Sample ID: MW-6

Sample Matrix: Ground Water

### Analytical Results

**Radium 226**

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**Radium 228**

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*Please refer to Qualifier Reports for details.*
**SGS Environmental Services Inc. - Alaska**

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### RadioChemistry Analytical Results

**SGS Environmental Services Inc. - Alaska**

**ACZ Sample ID:** L40414-09  
**Date Sampled:** 10/02/17 17:23  
**Date Received:** 10/09/17  
**Sample Matrix:** Ground Water

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**Prep Method:**

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* Please refer to Qualifier Reports for details.
SGS Environmental Services Inc. - Alaska

- Sample ID: MW-10
- Project ID: 1177082
- Sample Matrix: Ground Water
- Date Sampled: 10/03/17 11:59
- Date Received: 10/09/17
- Sampled Location: RadioChemistry

### Radium 226

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### Radium 228

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SGS Environmental Services Inc. - Alaska

Project ID: 1177082
Sample ID: SW-1
Locator: 

ACZ Sample ID: L40414-11
Date Sampled: 10/03/17 8:15
Date Received: 10/09/17
Sample Matrix: Surface Water

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**RadioChemistry Analytical Results**

**SGS Environmental Services Inc. - Alaska**

**ACZ Sample ID:** L40414-12  
**Date Sampled:** 10/03/17 18:00  
**Date Received:** 10/09/17  
**Sample Matrix:** Ground Water

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</table>
Report Header Explanations

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batch</td>
<td>A distinct set of samples analyzed at a specific time</td>
</tr>
<tr>
<td>Error(+/-)</td>
<td>Calculated sample specific uncertainty</td>
</tr>
<tr>
<td>Found</td>
<td>Value of the QC Type of interest</td>
</tr>
<tr>
<td>Limit</td>
<td>Upper limit for RPD, in %</td>
</tr>
<tr>
<td>LCL</td>
<td>Lower Control Limit, in % (except for LCSS, mg/Kg)</td>
</tr>
<tr>
<td>LLD</td>
<td>Calculated sample specific Lower Limit of Detection</td>
</tr>
<tr>
<td>PCN/SCN</td>
<td>A number assigned to reagents/standards to trace to the manufacturer’s certificate of analysis</td>
</tr>
<tr>
<td>PQL</td>
<td>Practical Quantitation Limit</td>
</tr>
<tr>
<td>QC</td>
<td>True Value of the Control Sample or the amount added to the Spike</td>
</tr>
<tr>
<td>Rec</td>
<td>Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)</td>
</tr>
<tr>
<td>RER</td>
<td>Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.</td>
</tr>
<tr>
<td>RPD</td>
<td>Relative Percent Difference, calculation used for Duplicate QC Types</td>
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<tr>
<td>UCL</td>
<td>Upper Control Limit, in % (except for LCSS, mg/Kg)</td>
</tr>
<tr>
<td>Sample</td>
<td>Value of the Sample of interest</td>
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</table>

QC Sample Types

<table>
<thead>
<tr>
<th>QC Sample Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUP</td>
<td>Sample Duplicate</td>
</tr>
<tr>
<td>LCSS</td>
<td>Laboratory Control Sample - Soil</td>
</tr>
<tr>
<td>LCSW</td>
<td>Laboratory Control Sample - Water</td>
</tr>
<tr>
<td>MS/MSD</td>
<td>Matrix Spike/Matrix Spike Duplicate</td>
</tr>
<tr>
<td>PBS</td>
<td>Prep Blank - Soil</td>
</tr>
<tr>
<td>PBW</td>
<td>Prep Blank - Water</td>
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</table>

QC Sample Type Explanations

<table>
<thead>
<tr>
<th>QC Sample Type</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Blanks</td>
<td>Verifies that there is no or minimal contamination in the prep method procedure.</td>
</tr>
<tr>
<td>Control Samples</td>
<td>Verifies the accuracy of the method, including the prep procedure.</td>
</tr>
<tr>
<td>Duplicates</td>
<td>Verifies the precision of the instrument and/or method.</td>
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<tr>
<td>Matrix Spikes</td>
<td>Determines sample matrix interferences, if any.</td>
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</table>

ACZ Qualifiers (Qual)

<table>
<thead>
<tr>
<th>Qualifiers</th>
<th>Description</th>
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<tbody>
<tr>
<td>H</td>
<td>Analysis exceeded method hold time.</td>
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Method Prefix Reference

<table>
<thead>
<tr>
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<th>Description</th>
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<tbody>
<tr>
<td>M</td>
<td>EPA methodology, including those under SDWA, CWA, and RCRA</td>
</tr>
<tr>
<td>SM</td>
<td>Standard Methods for the Examination of Water and Wastewater.</td>
</tr>
<tr>
<td>D</td>
<td>ASTM</td>
</tr>
<tr>
<td>RP</td>
<td>DOE</td>
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<tr>
<td>ESM</td>
<td>DOE/ESM</td>
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Comments

1. Solid matrices are reported on a dry weight basis.
3. QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
4. An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

## Radiochemistry QC

### Radium 226

<table>
<thead>
<tr>
<th>ACZ ID</th>
<th>Type</th>
<th>Analyzed</th>
<th>PCN/SCN</th>
<th>QC</th>
<th>Sample</th>
<th>Error</th>
<th>LLD</th>
<th>Found</th>
<th>Error</th>
<th>LLD</th>
<th>Rec</th>
<th>Lower</th>
<th>Upper</th>
<th>RPD/RER</th>
<th>Limit</th>
<th>Qual</th>
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<tbody>
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<td>PBW</td>
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<td></td>
<td>2</td>
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<td>0.14</td>
<td>0.07</td>
<td>0.11</td>
<td>0.16</td>
<td>0.1</td>
<td>0.18</td>
<td>0.16</td>
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<td></td>
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<td>L4014-06DUP</td>
<td>PBW</td>
<td>11/20/17</td>
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<td>20</td>
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<td>0.21</td>
<td>0.22</td>
<td>0.09</td>
<td>0.08</td>
<td>0.33</td>
<td>2</td>
<td></td>
<td></td>
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<tr>
<td>L4014-07DUP</td>
<td>PBW</td>
<td>11/20/17</td>
<td></td>
<td>57.14</td>
<td></td>
<td>0.19</td>
<td>0.19</td>
<td>0.24</td>
<td>0.45</td>
<td>1.5</td>
<td>0.24</td>
<td>78</td>
<td>43</td>
<td>148</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L40414-08DUP</td>
<td>PBW</td>
<td>11/20/17</td>
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<td>57.14</td>
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<td>0.19</td>
<td>0.19</td>
<td>0.24</td>
<td>0.45</td>
<td>1.5</td>
<td>0.24</td>
<td>78</td>
<td>43</td>
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### Radium 228

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<th>Type</th>
<th>Analyzed</th>
<th>PCN/SCN</th>
<th>QC</th>
<th>Sample</th>
<th>Error</th>
<th>LLD</th>
<th>Found</th>
<th>Error</th>
<th>LLD</th>
<th>Rec</th>
<th>Lower</th>
<th>Upper</th>
<th>RPD/RER</th>
<th>Limit</th>
<th>Qual</th>
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<tbody>
<tr>
<td>WG43568</td>
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<td>11/20/17</td>
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<td>11/20/17 PCN54812</td>
<td>0.14</td>
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<td>0.11</td>
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<td>0.21</td>
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<td>PBW</td>
<td>11/20/17</td>
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<td>57.14</td>
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<td>0.19</td>
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<td>43</td>
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<td>L40414-08DUP</td>
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<td>11/20/17</td>
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<td>0.19</td>
<td>0.19</td>
<td>0.24</td>
<td>0.45</td>
<td>1.5</td>
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<td>78</td>
<td>43</td>
<td>148</td>
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**Units:** pCi/L
## RadChem Extended Qualifier Report

**ACZ Project ID:** L40414

<table>
<thead>
<tr>
<th>ACZ ID</th>
<th>WORKNUM</th>
<th>PARAMETER</th>
<th>METHOD</th>
<th>QUAL</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>L40414-01</td>
<td>WG435309</td>
<td>Radium 228</td>
<td>M904.0</td>
<td>DD</td>
<td>Sample required dilution due to matrix color or odor.</td>
</tr>
<tr>
<td>L40414-02</td>
<td>WG436568</td>
<td>Radium 226</td>
<td>M903.1</td>
<td>D1</td>
<td>Sample required dilution due to matrix.</td>
</tr>
<tr>
<td></td>
<td>WG435309</td>
<td>Radium 228</td>
<td>M904.0</td>
<td></td>
<td>Sample required dilution due to high sediment.</td>
</tr>
<tr>
<td>L40414-04</td>
<td>WG436568</td>
<td>Radium 226</td>
<td>M903.1</td>
<td>D1</td>
<td>Sample required dilution due to matrix.</td>
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<tr>
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<td>WG435309</td>
<td>Radium 228</td>
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<td>Sample required dilution due to matrix.</td>
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<td>L40414-05</td>
<td>WG436568</td>
<td>Radium 226</td>
<td>M903.1</td>
<td>DJ</td>
<td>Sample dilution required due to insufficient sample.</td>
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<td>L40414-06</td>
<td>WG435309</td>
<td>Radium 228</td>
<td>M904.0</td>
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<td>Sample required dilution due to high sediment.</td>
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<td>L40414-07</td>
<td>WG436568</td>
<td>Radium 226</td>
<td>M903.1</td>
<td>DJ</td>
<td>Sample dilution required due to insufficient sample.</td>
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<td>Radium 226</td>
<td>M903.1</td>
<td>DF</td>
<td>Sample required dilution due to high sediment.</td>
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<tr>
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<td>WG435309</td>
<td>Radium 228</td>
<td>M904.0</td>
<td></td>
<td>Sample required dilution due to matrix color or odor.</td>
</tr>
</tbody>
</table>
No certification qualifiers associated with this analysis
SGS Environmental Services Inc. - Alaska
1177082

ACZ Project ID: L40414
Date Received: 10/09/2017 14:09
Received By:
Date Printed: 10/10/2017

Receipt Verification

1) Is a foreign soil permit included for applicable samples?  NO
2) Is the Chain of Custody form or other directive shipping papers present?  NO
3) Does this project require special handling procedures such as CLP protocol?  NO
4) Are any samples NRC licensable material?  No
5) If samples are received past hold time, proceed with requested short hold time analyses?  No
6) Is the Chain of Custody form complete and accurate?  No
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?  No

Samples/Containers

8) Are all containers intact and with no leaks?  NA
9) Are all labels on containers and are they intact and legible?  NA
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?  NA
11) For preserved bottle types, was the pH checked and within limits?  No
12) Is there sufficient sample volume to perform all requested work?  No
13) Is the custody seal intact on all containers?  No
14) Are samples that require zero headspace acceptable?  No
15) Are all sample containers appropriate for analytical requirements?  Yes
16) Is there an Hg-1631 trip blank present?  Yes
17) Is there a VOA trip blank present?  Yes
18) Were all samples received within hold time?  No

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

<table>
<thead>
<tr>
<th>Cooler Id</th>
<th>Temp(°C)</th>
<th>Temp Criteria(°C)</th>
<th>Rad(μR/Hr)</th>
<th>Custody Seal Intact?</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA27061</td>
<td>21.1</td>
<td>NA</td>
<td>15</td>
<td>Yes</td>
</tr>
</tbody>
</table>

NA indicates Not Applicable

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.
The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).
# SGS North America Inc.
## CHAIN OF CUSTODY RECORD

**CLIENT:** SGS North America Inc. - Alaska Division  
**CONTACT:** Julie Shumway  
**PHONE NO.:** (907) 562-2343  
**PROJECT NAME:** 1177082  
**PROJECT/PWSID/PERMIT:**  
**REPORTS TO:** Julie Shumway@sgs.com  
**INVOICE TO:** SGS - Alaska  
**P.O. #:** 1177082  
**RESERVED for lab use**  

<table>
<thead>
<tr>
<th>SAMPLE IDENTIFICATION</th>
<th>DATE mm/dd/yy</th>
<th>TIME HH:MM</th>
<th>MATRIX/MATRIX</th>
<th>RADIUM 226-228</th>
<th>MS</th>
<th>MSD</th>
<th>SGS lab #</th>
<th>Loc ID</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-1</td>
<td>10/2/2017</td>
<td>1520</td>
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<td>MW-6</td>
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**Reserved for lab use**

**Reinilquished By:** (1)  
**Date:** 10/11/2017  
**Time:** 10:48  
**Received By:** [ ]

**Reinilquished By:** (2)  
**Date:** 10/11/2017  
**Time:** 10:48  
**Received By:** [ ]

**Reinilquished By:** (3)  
**Date:** 10/11/2017  
**Time:** 10:48  
**Received By:** [ ]

**Reinilquished By:** (4)  
**Date:** 10/11/2017  
**Time:** 10:48  
**Received For Laboratory By:** [ ]

**Additional Comments:** All soils report out in dry weight unless otherwise requested.

**Locations Nationwide:**  
- Alaska  
- Maryland  
- New Jersey  
- New York  
- North Carolina  
- Indiana  
- West Virginia  
- Kentucky  

---

**Notes:**  
[X] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301  
[X] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557  

---

**Website:** [http://www.sgs.com/terms_and Conditions.htm](http://www.sgs.com/terms_and_conditions.htm)
**SGS North America Inc.**
**CHAIN OF CUSTODY RECORD**

**CLIENT:** SGS North America Inc. - Alaska Division

**CONTACT:** Julie Shumway
**PHONE NO:** (907) 562-2343

**PROJECT NAME:** 1177082

**REPORTS TO:** E-MAIL: Julie.Shumway@sgs.com

**INVOICE TO:** QUOTE #: 1177082

**RESERVED for lab use**

<table>
<thead>
<tr>
<th>SAMPLE IDENTIFICATION</th>
<th>DATE mm/dd/yy</th>
<th>TIME HHMM</th>
<th>MATRIX/MATRIX</th>
<th>CONTAINERS</th>
<th>PRESERVATIVE</th>
<th>TYPE</th>
<th>LOCATION</th>
<th>SGS lab #</th>
<th>LOC ID</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW-1</td>
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</table>

**Reinforced By:** (1)

Date: 10/5/17 10:48

Date: 10/5/17 14:00

**DOD Project?** ☑ YES ☐ NO
**Report to DL (J Flags)** ☑
**Cooler ID:** LEVEL 2 + EXCEL EDD

**Requested Turnaround Time and/or Special Instructions:**

**STANDARD**

Report all analyses for Soils/Waters in mg/L or mg/Kg

**Temp Blank °C:**

**Chain of Custody Seal:** (Circle)

[ ] INTACT [ ] BROKEN [ ] ABSENT

**http://www.sgs.com/terms_and_conditions.htm**
To: Golden Valley Electric Association  
    2700 Gambell Street Suite 200  
    Anchorage, AK 99503  
    (907)564-6907

Report Number: 1177083  
Client Project: Healy Power Plant GWMonitoring

Dear Heather Simon,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Justin Nelson  
Project Manager  
Justin.Nelson@sgs.com

Date
Refer to sample receipt form for information on sample condition.

**MW-4 (1177083004) PS**

200.8 - The metals LOQ for multiple analytes was elevated due to matrix interference.

**MB for HBN 1769614 [STS/5681] (1417889) MB**

2540C - Total Dissolved Solids - Sample concentrations are 10 times greater than the level of the MB concentration.

**1176684001MS (1419217) MS**

245.1 - Mercury- MS recovery for mercury was outside of acceptance criteria (biased low). Post digestion spike was successful.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.*
Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

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SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 DW Chemistry (Provisionally Certified as of 10/12/2017) & Microbiology (Provisionally Certified as of 9/21/2017) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5050A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

- * The analyte has exceeded allowable regulatory or control limits.
- ! Surrogate out of control limits.
- B Indicates the analyte is found in a blank associated with the sample.
- CCV/CVA/CVB Continuing Calibration Verification
- CCCV/CVC/CVA/CVCB Closing Continuing Calibration Verification
- CL Control Limit
- DF Dilution Factor
- DL Detection Limit (i.e., maximum method detection limit)
- E The analyte result is above the calibrated range.
- GT Greater Than
- IB Instrument Blank
- I CV Initial Calibration Verification
- J The quantitation is an estimation.
- LCS(D) Laboratory Control Spike (Duplicate)
- LLQC/LLIQC Low Level Quantitation Check
- LOD Limit of Detection (i.e., 1/2 of the LOQ)
- LOQ Limit of Quantitation (i.e., reporting or practical quantitation limit)
- LT Less Than
- MB Method Blank
- MS(D) Matrix Spike (Duplicate)
- ND Indicates the analyte is not detected.
- RPD Relative Percent Difference
- U Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.
## Sample Summary

<table>
<thead>
<tr>
<th>Client Sample ID</th>
<th>Lab Sample ID</th>
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### Method Description

- **SM21 2510B**: Conductivity SM2510B
- **SM21 2340B**: Hardness as CaCO\(_3\) by ICP-MS
- **EPA 300.0**: Ion Chromatographic Analysis (W)
- **EP245.1**: Mercury EPA 245.1 for non drinking water
- **EP200.8**: Metals in Water by 200.8 ICP-MS
- **SM21 4500-H B**: pH Analysis
- **SM21 2540C**: Total Dissolved Solids SM18 2540C
### Detectable Results Summary

**Client Sample ID:** MW-1R  
**Lab Sample ID:** 1177083001

#### Metals by ICP/MS

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#### Waters Department

### Detectable Results Summary

**Client Sample ID:** MW-2  
**Lab Sample ID:** 1177083002

#### Metals by ICP/MS

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<td>Chromium</td>
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<td>Lead</td>
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#### Waters Department
### Detectable Results Summary

**Client Sample ID:** MW-3  
**Lab Sample ID:** 1177083003  

#### Metals by ICP/MS

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#### Waters Department

**Client Sample ID:** MW-4  
**Lab Sample ID:** 1177083004

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<td>Barium</td>
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<tr>
<td>Boron</td>
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<td>ug/L</td>
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## Detectable Results Summary

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Lab Sample ID: 1177083005

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<td>Molybdenum</td>
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### Metals by ICP/MS

### Waters Department

### Client Sample ID: MW-6
Lab Sample ID: 1177083006

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### Metals by ICP/MS

### Waters Department

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Lab Sample ID: 1177083007

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### Metals by ICP/MS

### Waters Department
### Detectable Results Summary

**Client Sample ID:** MW-8  
**Lab Sample ID:** 1177083008  
**Units**

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<td>Sulfate</td>
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<tr>
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### Metals by ICP/MS

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### Waters Department

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<td>Sulfate</td>
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**Client Sample ID:** MW-9  
**Lab Sample ID:** 1177083009  
**Units**

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<td>mg/L</td>
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### Metals Department

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<td>Cadmium</td>
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### Waters Department

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**Client Sample ID:** MW-10  
**Lab Sample ID:** 1177083010  
**Units**

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<td>ug/L</td>
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<td>Molybdenum</td>
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Page 8 of 79
**Detectable Results Summary**

**Client Sample ID:** MW-39  
**Lab Sample ID:** 1177083011  
**Metals by ICP/MS**

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<td>Calcium</td>
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<td>Hardness as CaCO3</td>
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**Waters Department**

**Client Sample ID:** SW-1  
**Lab Sample ID:** 1177083012  
**Metals by ICP/MS**

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<td>Hardness as CaCO3</td>
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### Results of MW-1R

**Client Sample ID:** MW-1R  
**Client Project ID:** Healy Power Plant GWMonitoring  
**Lab Sample ID:** 1177083001  
**Lab Project ID:** 1177083  
**Collection Date:** 10/02/17 15:20  
**Received Date:** 10/04/17 12:41  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

### Results by Metals by ICP/MS

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<th>DL</th>
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<th>DF</th>
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<tr>
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<tr>
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<tr>
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<td>0.130</td>
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### Batch Information

- **Analytical Batch:** MMS9966  
- **Analytical Method:** EP200.8  
- **Analyst:** VDL  
- **Analytical Date/Time:** 10/06/17 16:04  
- **Container ID:** 1177083001-C  
- **Prep Batch:** MXX31124  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 10/06/17 09:03  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol.:** 50 mL

---

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**Results of MW-1R**

Client Sample ID: MW-1R  
Client Project ID: Healy Power Plant GWMonitoring  
Lab Sample ID: 1177083001  
Lab Project ID: 1177083  

**Collection Date:** 10/02/17 15:20  
**Received Date:** 10/04/17 12:41  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

**Results by Metals Department**

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<th>DF</th>
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</table>

**Batch Information**

- **Prep Batch:** MX31135  
- **Prep Date/Time:** 10/11/17 11:20  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol:** 50 mL

- **Prep Batch:** MCV5859  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/11/17 16:17  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol:** 50 mL

Print Date: 10/27/2017 10:05:31AM  

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Page 11 of 79
### Results of MW-1R

**Client Sample ID:** MW-1R  
**Client Project ID:** Healy Power Plant GWMonitoring  
**Lab Sample ID:** 1177083001  
**Lab Project ID:** 1177083  
**Collection Date:** 10/02/17 15:20  
**Received Date:** 10/04/17 12:41  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** 

**Location:**

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### Results by Waters Department

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**Batch Information**

- **Prep Batch:** WXX12077
- **Prep Initial Wt./Vol.:** 10 mL
- **Prep Date/Time:** 10/24/17 15:30

- **Prep Batch:** WXX12075
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Date/Time:** 10/23/17 17:50

- **Prep Batch:** WXX12075
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Date/Time:** 10/23/17 17:50

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### Batch Information

- **Analytical Batch:** STS5681
- **Analytical Method:** SM21 2540C
- **Analyst:** EWW
- **Analytical Date/Time:** 10/04/17 18:32

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**J flagging is activated**
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<tr>
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<td>Calcium</td>
<td>40100</td>
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<tr>
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<tr>
<td>Cobalt</td>
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<td>4.00</td>
<td>1.20</td>
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<td>Molybdenium</td>
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<tr>
<td>Thallium</td>
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<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
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## Batch Information

- Analytical Batch: MMS9966
- Analytical Method: EP200.8
- Analyst: VDL
- Analytical Date/Time: 10/06/17 16:07
- Container ID: 1177083002-C

- Prep Batch: MXX31124
- Prep Method: E200.2
- Prep Date/Time: 10/06/17 09:03
- Prep Initial Wt./Vol.: 20 mL
- Prep Extract Vol.: 50 mL

---

J flagging is activated
### Results of MW-2

**Client Sample ID:** MW-2  
**Client Project ID:** Healy Power Plant GWMonitoring  
**Lab Sample ID:** 1177083002  
**Lab Project ID:** 1177083  
**Collection Date:** 10/03/17 11:20  
**Received Date:** 10/04/17 12:41  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** Location:  

#### Results by Metals Department

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<th>Result Qual</th>
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<th>Units</th>
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<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>0.100 U</td>
<td>0.200</td>
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<td>ug/L</td>
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#### Batch Information

- **Analytical Batch:** MCV5859  
- **Analytical Method:** EP245.1  
- **Analyst:** TMA  
- **Analytical Date/Time:** 10/11/17 16:20  
- **Container ID:** 1177083002-C  
- **Prep Batch:** MXX31135  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/11/17 11:20  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol:** 50 mL
### Results of MW-2

**Client Sample ID:** MW-2  
**Client Project ID:** Healy Power Plant GWMonitoring  
**Lab Sample ID:** 1177083002  
**Lab Project ID:** 1177083  
**Collection Date:** 10/03/17 11:20  
**Received Date:** 10/04/17 12:41  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

### Results by Waters Department

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<th>DL</th>
<th>Units</th>
<th>DF</th>
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<th>Date Analyzed</th>
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<td>mg/L</td>
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<td>Fluoride</td>
<td>7.73</td>
<td>0.400</td>
<td>0.124</td>
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### Batch Information

- **Analytical Batch:** WIC5701  
  **Analytical Method:** EPA 300.0  
  **Analyst:** DSH  
  **Prep Batch:** WXX12077  
  **Prep Method:** METHOD  
  **Prep Date/Time:** 10/24/17 15:30  
  **Prep Initial Wt./Vol.:** 10 mL  
  **Prep Extract Vol:** 10 mL

- **Analytical Batch:** WIC5700  
  **Analytical Method:** EPA 300.0  
  **Analyst:** DSH  
  **Prep Batch:** WXX12075  
  **Prep Method:** METHOD  
  **Prep Date/Time:** 10/23/17 17:50  
  **Prep Initial Wt./Vol.:** 10 mL  
  **Prep Extract Vol:** 10 mL

- **Analytical Batch:** WIC5700  
  **Analytical Method:** EPA 300.0  
  **Analyst:** DSH  
  **Prep Batch:** WXX12075  
  **Prep Method:** METHOD  
  **Prep Date/Time:** 10/23/17 17:50  
  **Prep Initial Wt./Vol.:** 10 mL  
  **Prep Extract Vol:** 10 mL

### Parameter

- **Parameter:** Total Dissolved Solids  
  **Result Qual:** 1160  
  **LOQ/CL:** 10.0  
  **DL:** 3.10  
  **Units:** mg/L  
  **DF:** 1  
  **Allowable Limits:** 10/04/17 18:32

### Batch Information

- **Analytical Batch:** STS5681  
  **Analytical Method:** SM21 2540C  
  **Analyst:** EWW  
  **Prep Batch:** WXX12077  
  **Prep Method:** METHOD  
  **Prep Date/Time:** 10/23/17 17:50  
  **Prep Initial Wt./Vol.:** 10 mL  
  **Prep Extract Vol:** 10 mL

---

Print Date: 10/27/2017 10:05:31AM  
J flagging is activated
Results of MW-3

Client Sample ID: MW-3
Client Project ID: Healy Power Plant GWMonitoring
Lab Sample ID: 1177083003
Lab Project ID: 1177083

Collection Date: 10/03/17 10:26
Received Date: 10/04/17 12:41
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals by ICP/MS

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<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
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</thead>
<tbody>
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<td>Antimony</td>
<td>0.888 J</td>
<td>1.00</td>
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<td>ug/L</td>
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</tr>
<tr>
<td>Arsenic</td>
<td>2.50 U</td>
<td>5.00</td>
<td>1.50</td>
<td>ug/L</td>
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<td>Barium</td>
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<td>Beryllium</td>
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<td>1</td>
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<tr>
<td>Boron</td>
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<td>15.0</td>
<td>ug/L</td>
<td>1</td>
<td></td>
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</tr>
<tr>
<td>Cadmium</td>
<td>0.250 U</td>
<td>0.500</td>
<td>0.150</td>
<td>ug/L</td>
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<td></td>
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<td>Chromium</td>
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<td>ug/L</td>
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<tr>
<td>Cobalt</td>
<td>2.00 U</td>
<td>4.00</td>
<td>1.20</td>
<td>ug/L</td>
<td>1</td>
<td></td>
<td>10/06/17 16:10</td>
</tr>
<tr>
<td>Lead</td>
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<td>0.0620</td>
<td>ug/L</td>
<td>1</td>
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<tr>
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<td>Molybdenum</td>
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<td>Selenium</td>
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<td>Silver</td>
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<td>0.310</td>
<td>ug/L</td>
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<tr>
<td>Thallium</td>
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<td>0.310</td>
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Batch Information

Analytical Batch: MMS9966
Analytical Method: EP200.8
Analyst: VDL
Analytical Date/Time: 10/06/17 16:10
Container ID: 1177083003-C

Prep Batch: MXX31124
Prep Method: E200.2
Prep Date/Time: 10/06/17 09:03
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Parameter          | Result Qual | LOQ/CL | DL   | Units | DF | Allowable Limits | Date Analyzed |
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<td>Hardness as CaCO3</td>
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Batch Information

Analytical Batch: MMS9966
Analytical Method: SM21 2340B
Analyst: VDL
Analytical Date/Time: 10/06/17 16:10
Container ID: 1177083003-C

Prep Batch: MXX31124
Prep Method: E200.2
Prep Date/Time: 10/06/17 09:03
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 10/27/2017 10:05:31AM

J flagging is activated
Results of MW-3

Client Sample ID: MW-3
Client Project ID: Healy Power Plant GWMonitoring
Lab Sample ID: 1177083003
Lab Project ID: 1177083

Collection Date: 10/03/17 10:26
Received Date: 10/04/17 12:41
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals Department

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<tbody>
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Batch Information

Analytical Batch: MCV5859
Analytical Method: EP245.1
Analyst: TMA
Analytical Date/Time: 10/11/17 16:26
Container ID: 1177083003-C

Prep Batch: MXX31135
Prep Method: METHOD
Prep Date/Time: 10/11/17 11:20
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL
### Results of MW-3

**Client Sample ID:** MW-3  
**Client Project ID:** Healy Power Plant GWMonitoring  
**Lab Sample ID:** 1177083003  
**Lab Project ID:** 1177083  
**Collection Date:** 10/03/17 10:26  
**Received Date:** 10/04/17 12:41  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

#### Results by Waters Department

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<th>Units</th>
<th>DF</th>
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<td>1</td>
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<td>Sulfate</td>
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#### Batch Information

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<td>10 mL</td>
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<tr>
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<td>10 mL</td>
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<tr>
<td>WIC5700</td>
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<td>METHOD</td>
<td>10/23/17 17:50</td>
<td>10 mL</td>
<td>10 mL</td>
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Print Date: 10/27/2017 10:05:31AM

J flagging is activated
Results of MW-3

Client Sample ID: MW-3
Client Project ID: Healy Power Plant GWMonitoring
Lab Sample ID: 1177083003
Lab Project ID: 1177083

Collection Date: 10/03/17 10:26
Received Date: 10/04/17 12:41
Matrix: Water (Surface, Eff., Ground)
Solids (%): Location:

Results by Waters Department

Batch Information
Analytical Batch: STS5681
Analytical Method: SM21 2540C
Analyst: EWW
Analytical Date/Time: 10/04/17 18:32
Container ID: 1177083003-B

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<th>Date Analyzed</th>
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<tbody>
<tr>
<td>pH</td>
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Batch Information
Analytical Batch: WTI4759
Analytical Method: SM21 4500-H B
Analyst: AYC
Analytical Date/Time: 10/06/17 18:10
Container ID: 1177083003-A
### Results of MW-4

**Client Sample ID:** MW-4  
**Client Project ID:** Healy Power Plant GWMonitoring  
**Lab Sample ID:** 1177083004  
**Lab Project ID:** 1177083  
**Collection Date:** 10/03/17 09:42  
**Received Date:** 10/04/17 12:41  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

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<th>Units</th>
<th>DF</th>
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<tr>
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<tr>
<td>Cobalt</td>
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### Batch Information

- **Analytical Batch:** MMS9966  
- **Analytical Method:** EP200.8  
- **Analyst:** VDL  
- **Analytical Date/Time:** 10/06/17 16:19  
- **Container ID:** 1177083004-C  
- **Prep Batch:** MXX31124  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 10/06/17 09:03  
- **Prep Initial Wt./Vol.:** 4 mL  
- **Prep Extract Vol.:** 50 mL

---

Print Date: 10/27/2017 10:05:31AM  
J flagging is activated
## Results of MW-4

**Client Sample ID:** MW-4  
**Client Project ID:** Healy Power Plant GWMonitoring  
**Lab Sample ID:** 1177083004  
**Lab Project ID:** 1177083

- **Collection Date:** 10/03/17 09:42  
- **Received Date:** 10/04/17 12:41  
- **Matrix:** Water (Surface,Eff.,Ground)  
- **Solids (%):**

### Results by Metals Department

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### Batch Information

- **Analytical Batch:** MCV5859  
- **Analytical Method:** EP245.1  
- **Analyst:** TMA  
- **Analytical Date/Time:** 10/11/17 16:23  
- **Container ID:** 1177083004-C  
- **Prep Batch:** MXX31135  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/11/17 11:20  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol:** 50 mL

---

*J flagging is activated*
### Results of MW-4

**Client Sample ID:** MW-4  
**Client Project ID:** Healy Power Plant GWMonitoring  
**Lab Sample ID:** 1177083004  
**Lab Project ID:** 1177083  
**Collection Date:** 10/03/17 09:42  
**Received Date:** 10/04/17 12:41  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** 
**Location:** 

#### Results by Waters Department

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<td>0.124</td>
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<td>Sulfate</td>
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#### Batch Information

**Prep Batch:** WXX12075  
**Prep Method:** METHOD  
**Prep Date/Time:** 10/23/17 17:50  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol:** 10 mL

**Analytical Batch:** STS5681  
**Analytical Method:** SM21 2540C  
**Analyst:** EWW  
**Analytical Date/Time:** 10/04/17 18:32  
**Container ID:** 1177083004-B

---

Print Date: 10/27/2017 10:05:31AM

SGS North America Inc.

200 West Potter Drive Anchorage, AK 99518  
☎ 907.562.2343 ☎ 907.561.5301 www.us.sgs.com

J flagging is activated
## Results of MW-5

Client Sample ID: MW-5  
Client Project ID: Healy Power Plant GWMonitoring  
Lab Sample ID: 1177083005  
Lab Project ID: 1177083  
Collection Date: 10/03/17 08:59  
Received Date: 10/04/17 12:41  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

### Results by Metals by ICP/MS

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<td>Molybdenum</td>
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<td>ug/L</td>
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### Batch Information

- **Prep Batch:** MXX31124  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 10/06/17 09:03  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol:** 50 mL
### Results of MW-5

**Client Sample ID:** MW-5  
**Client Project ID:** Healy Power Plant GWMonitoring  
**Lab Sample ID:** 1177083005  
**Lab Project ID:** 1177083  
**Collection Date:** 10/03/17 08:59  
**Received Date:** 10/04/17 12:41  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

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#### Results by Metals Department

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#### Batch Information

- **Analytical Batch:** MCV5859  
- **Analytical Method:** EP245.1  
- **Analytical Date/Time:** 10/11/17 16:32  
- **Container ID:** 1177083005-C  
- **Prep Batch:** MXX31135  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/11/17 11:20  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol:** 50 mL

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**Location:**

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**Print Date:** 10/27/2017 10:05:31AM  
**J flagging is activated**
### Results of MW-5

**Client Sample ID:** MW-5  
**Client Project ID:** Healy Power Plant GWMonitoring  
**Lab Sample ID:** 1177083005  
**Lab Project ID:** 1177083  
**Matrix:** Water (Surface, Eff., Ground)

**Collection Date:** 10/03/17 08:59  
**Received Date:** 10/04/17 12:41

#### Results by Waters Department

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#### Batch Information

- **Analytical Batch:** WIC5700  
  **Analytical Method:** EPA 300.0  
  **Analyst:** DSH  
  **Analytical Date/Time:** 10/24/17 00:01  
  **Container ID:** 1177083005-A

- **Prep Batch:** WXX12075  
  **Prep Method:** METHOD  
  **Prep Date/Time:** 10/23/17 17:50  
  **Prep Initial Wt./Vol.:** 10 mL  
  **Prep Extract Vol:** 10 mL

- **Analytical Batch:** WIC5701  
  **Analytical Method:** EPA 300.0  
  **Analyst:** DSH  
  **Analytical Date/Time:** 10/24/17 20:03  
  **Container ID:** 1177083005-A

- **Prep Batch:** WXX12077  
  **Prep Method:** METHOD  
  **Prep Date/Time:** 10/24/17 15:30  
  **Prep Initial Wt./Vol.:** 10 mL  
  **Prep Extract Vol:** 10 mL

- **Analytical Batch:** STS5681  
  **Analytical Method:** SM21 2540C  
  **Analyst:** EWW  
  **Analytical Date/Time:** 10/04/17 18:32  
  **Container ID:** 1177083005-B

**Parameter**  
**Result Qual**  
**LOQ/CL**  
**DL**  
**Units**  
**DF**  
**Allowable Limits**  
**Date Analyzed**

- **Total Dissolved Solids**  
  **Result Qual:** 941  
  **LOQ/CL:** 10.0  
  **DL:** 3.10  
  **Units:** mg/L  
  **DF:** 1  
  **Allowable Limits:** 10/04/17 18:32

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Print Date: 10/27/2017 10:05:31AM

J flagging is activated
## Results by Metals by ICP/MS

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<td>1</td>
<td>J</td>
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## Batch Information

- Analytical Batch: MMS9966
- Analytical Method: EP200.8
- Analyst: VDL
- Analytical Date/Time: 10/06/17 16:25
- Container ID: 1177083006-C

- Prep Batch: MXX31124
- Prep Method: E200.2
- Prep Date/Time: 10/06/17 09:03
- Prep Initial Wt./Vol.: 20 mL
- Prep Extract Vol.: 50 mL

Print Date: 10/27/2017 10:05:31AM

J flagging is activated
### Results by Metals Department

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### Batch Information

- **Analytical Batch:** MCV5859
- **Analytical Method:** EP245.1
- **Analyst:** TMA
- **Analytical Date/Time:** 10/11/17 16:35
- **Container ID:** 1177083006-C

- **Prep Batch:** MXX31135
- **Prep Method:** METHOD
- **Prep Date/Time:** 10/11/17 11:20
- **Prep Initial Wt./Vol.:** 25 mL
- **Prep Extract Vol:** 50 mL
Results of MW-6

Client Sample ID: MW-6
Client Project ID: Healy Power Plant GWMonitoring
Lab Sample ID: 1177083006
Lab Project ID: 1177083

Collection Date: 10/02/17 14:45
Received Date: 10/04/17 12:41
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Waters Department

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Batch Information

Analytical Batch: WIC5700
Analytical Method: EPA 300.0
Analyst: DSH
Analytical Date/Time: 10/24/17 00:37
Container ID: 1177083006-A

Prep Batch: WXX12075
Prep Method: METHOD
Prep Date/Time: 10/23/17 17:50
Prep Initial Wt./Vol.: 10 mL
Prep Extract Vol: 10 mL

Analytical Batch: WIC5700
Analytical Method: EPA 300.0
Analyst: DSH
Analytical Date/Time: 10/24/17 00:55
Container ID: 1177083006-A

Prep Batch: WXX12075
Prep Method: METHOD
Prep Date/Time: 10/23/17 17:50
Prep Initial Wt./Vol.: 10 mL
Prep Extract Vol: 10 mL

Analytical Batch: WIC5701
Analytical Method: EPA 300.0
Analyst: DSH
Analytical Date/Time: 10/24/17 20:21
Container ID: 1177083006-A

Prep Batch: WXX12077
Prep Method: METHOD
Prep Date/Time: 10/24/17 15:30
Prep Initial Wt./Vol.: 10 mL
Prep Extract Vol: 10 mL

Total Dissolved Solids

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Batch Information

Analytical Batch: STS5681
Analytical Method: SM21 2540C
Analyst: EWW
Analytical Date/Time: 10/04/17 18:32
Container ID: 1177083006-B

Print Date: 10/27/2017 10:05:31AM

J flagging is activated
### Results of MW-7

Client Sample ID: **MW-7**  
Client Project ID: **Healy Power Plant GWMonitoring**  
Lab Sample ID:  **1177083007**  
Lab Project ID:  **1177083**  

Collection Date:  **10/02/17 16:49**  
Received Date:  **10/04/17 12:41**  
Matrix: Water (Surface, Eff., Ground)

### Results by Metals by ICP/MS

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### Batch Information

- **Analytical Batch**: MMS9966  
- **Analytical Method**: EP200.8  
- **Analyst**: VDL  
- **Analytical Date/Time**: 10/06/17 16:28  
- **Container ID**: 1177083007-C  

- **Prep Batch**: MXX31124  
- **Prep Method**: E200.2  
- **Prep Date/Time**: 10/06/17 09:03  
- **Prep Initial Wt./Vol.**: 20 mL  
- **Prep Extract Vol.**: 50 mL  

---

J flagging is activated
### Results of MW-7

**Client Sample ID:** MW-7  
**Client Project ID:** Healy Power Plant GWMonitoring  
**Lab Sample ID:** 1177083007  
**Lab Project ID:** 1177083

**Collection Date:** 10/02/17 16:49  
**Received Date:** 10/04/17 12:41  
**Matrix:** Water (Surface, Eff., Ground)

#### Solids (%):

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**Batch Information**

- **Prep Batch:** MXX31135  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/11/17 11:20  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol.:** 50 mL

- **Analytical Batch:** MCV5859  
- **Analytical Method:** EP245.1  
- **Analyst:** TMA  
- **Analytical Date/Time:** 10/11/17 16:44  
- **Container ID:** 1177083007-C

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J flagging is activated

Print Date: 10/27/2017 10:05:31AM

SGS North America Inc.

200 West Potter Drive Anchorage, AK 95518  
**t** 907.562.2343 **f** 907.561.5301  www.us.sgs.com
### Results of MW-7

**Client Sample ID:** MW-7  
**Client Project ID:** Healy Power Plant GWMonitoring  
**Lab Sample ID:** 1177083007  
**Lab Project ID:** 1177083  
**Collection Date:** 10/02/17 16:49  
**Received Date:** 10/04/17 12:41  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  
**Location:**

### Results by Waters Department

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### Batch Information

- **Analytical Batch:** WIC5700  
  - **Prep Batch:** WXX12075  
  - **Prep Method:** METHOD  
  - **Prep Date/Time:** 10/23/17 17:50  
  - **Prep Initial Wt./Vol.:** 10 mL  
  - **Prep Extract Vol:** 10 mL

- **Analytical Batch:** WIC5700  
  - **Prep Batch:** WXX12075  
  - **Prep Method:** METHOD  
  - **Prep Date/Time:** 10/23/17 17:50  
  - **Prep Initial Wt./Vol.:** 10 mL  
  - **Prep Extract Vol:** 10 mL

- **Analytical Batch:** STS5681  
  - **Prep Batch:** WXX12075  
  - **Prep Method:** METHOD  
  - **Prep Date/Time:** 10/23/17 17:50  
  - **Prep Initial Wt./Vol.:** 10 mL  
  - **Prep Extract Vol:** 10 mL

### Batch Information

- **Analytical Batch:** STS5681  
  - **Analytical Method:** SM21 2540C  
  - **Analyst:** EWW  
  - **Analytical Date/Time:** 10/04/17 18:32  
  - **Container ID:** 1177083007-B

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**Print Date:** 10/27/2017 10:05:31AM  
**J flagging is activated**
### Results of MW-8

**Client Sample ID:** MW-8  
**Client Project ID:** Healy Power Plant GWMonitoring  
**Lab Sample ID:** 1177083008  
**Lab Project ID:** 1177083

**Collection Date:** 10/02/17 16:08  
**Received Date:** 10/04/17 12:41  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):** Location:  

#### Results by Metals by ICP/MS

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#### Batch Information

**Analytical Batch:** MMS9966  
**Analytical Method:** EP200.8  
**Analyst:** VDL  
**Analytical Date/Time:** 10/06/17 16:31  
**Container ID:** 1177083008-C

**Prep Batch:** MXX31124  
**Prep Method:** E200.2  
**Prep Date/Time:** 10/06/17 09:03  
**Prep Initial Wt./Vol.:** 20 mL  
**Prep Extract Vol.:** 50 mL

---

J flagging is activated
Results of MW-8

Client Sample ID: MW-8
Client Project ID: Healy Power Plant GWMonitoring
Lab Sample ID: 1177083008
Lab Project ID: 1177083

Collection Date: 10/02/17 16:08
Received Date: 10/04/17 12:41
Matrix: Water (Surface, Eff., Ground)
Solids (%): Location:

Results by Metals Department

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Batch Information

Analytical Batch: MCV5859
Analytical Method: EP245.1
Analyst: TMA
Analytical Date/Time: 10/11/17 16:47
Container ID: 1177083008-C

Prep Batch: MXX31135
Prep Method: METHOD
Prep Date/Time: 10/11/17 11:20
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 50 mL

Print Date: 10/27/2017 10:05:31AM

J flagging is activated

SGS North America Inc. 200 West Potter Drive Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group
### Results of MW-8

Client Sample ID: MW-8  
Client Project ID: Healy Power Plant GWMonitoring  
Lab Sample ID: 1177083008  
Lab Project ID: 1177083  
Collection Date: 10/02/17 16:08  
Received Date: 10/04/17 12:41  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

#### Results by Waters Department

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#### Batch Information

- **Prep Batch:** WXX12075  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/23/17 17:50  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

- **Analytical Batch:** WIC5700  
- **Analytical Method:** EPA 300.0  
- **Analyst:** DSH  
- **Analytical Date/Time:** 10/24/17 02:25  
- **Container ID:** 1177083008-A

#### Batch Information

- **Prep Batch:** WXX12075  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/23/17 17:50  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL

- **Analytical Batch:** WIC5700  
- **Analytical Method:** EPA 300.0  
- **Analyst:** DSH  
- **Analytical Date/Time:** 10/24/17 02:43  
- **Container ID:** 1177083008-A

#### Batch Information

- **Analytical Batch:** STS5681  
- **Analytical Method:** SM21 2540C  
- **Analyst:** EWW  
- **Analytical Date/Time:** 10/04/17 18:32  
- **Container ID:** 1177083008-B

Print Date: 10/27/2017 10:05:31AM  
J flagging is activated
**Results of MW-9**

Client Sample ID: MW-9  
Client Project ID: Healy Power Plant GWMonitoring  
Lab Sample ID: 1177083009  
Lab Project ID: 1177083  
Collection Date: 10/02/17 17:23  
Received Date: 10/04/17 12:41  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:  

### Results by Metals by ICP/MS

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**Batch Information**

Analytical Batch: MMS9966  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 10/06/17 16:34  
Container ID: 1177083009-C  

Prep Batch: MXX31124  
Prep Method: E200.2  
Prep Date/Time: 10/06/17 09:03  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol.: 50 mL

---

Print Date: 10/27/2017 10:05:31AM  
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Results of MW-9

Client Sample ID: MW-9
Client Project ID: Healy Power Plant GWMonitoring
Lab Sample ID: 1177083009
Lab Project ID: 1177083

Collection Date: 10/02/17 17:23
Received Date: 10/04/17 12:41
Matrix: Water (Surface, Eff., Ground)

Results by Metals Department

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Batch Information

Analytical Batch: MCV5859
Analytical Method: EP245.1
Analyst: TMA
Analytical Date/Time: 10/11/17 16:50
Container ID: 1177083009-C

Prep Batch: MXX31135
Prep Method: METHOD
Prep Date/Time: 10/11/17 11:20
Prep Initial WT/Vol.: 25 mL
Prep Extract Vol: 50 mL

Print Date: 10/27/2017 10:05:31AM
J flagging is activated
## Results of MW-9

**Client Sample ID:** MW-9  
**Client Project ID:** Healy Power Plant GWMonitoring  
**Lab Sample ID:** 1177083009  
**Lab Project ID:** 1177083  
**Collection Date:** 10/02/17 17:23  
**Received Date:** 10/04/17 12:41  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**

### Results by Waters Department

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<td>Fluoride</td>
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<td>Sulfate</td>
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### Batch Information

- **Analytical Batch:** WIC5700  
- **Analytical Method:** EPA 300.0  
- **Analyst:** DSH  
- **Analytical Date/Time:** 10/24/17 03:01  
- **Container ID:** 1177083009-A

- **prep batch:** WXX12075  
- **prep method:** METHOD  
- **prep date/time:** 10/23/17 17:50  
- **prep initial wt./vol.:** 10 mL  
- **prep extract vol.:** 10 mL

- **Analytical Batch:** STS5681  
- **Analytical Method:** SM21 2540C  
- **Analyst:** EWW  
- **Analytical Date/Time:** 10/04/17 18:32  
- **Container ID:** 1177083009-B

- **Analytical Batch:** WIC5700  
- **Analytical Method:** EPA 300.0  
- **Analyst:** DSH  
- **Analytical Date/Time:** 10/24/17 03:19  
- **Container ID:** 1177083009-A

- **prep batch:** WXX12075  
- **prep method:** METHOD  
- **prep date/time:** 10/23/17 17:50  
- **prep initial wt./vol.:** 10 mL  
- **prep extract vol.:** 10 mL

- **Total Dissolved Solids**

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**Print Date:** 10/27/2017 10:05:31AM  
**J flagging is activated**
### Results by Metals by ICP/MS

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<tr>
<td>Arsenic</td>
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<td>Boron</td>
<td>17.5 J</td>
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### Batch Information

- **Prep Batch:** MXX31124
- **Prep Method:** E200.2
- **Prep Date/Time:** 10/06/17 09:03
- **Prep Initial Wt./Vol.:** 20 mL
- **Prep Extract Vol.:** 50 mL

- **Analytical Batch:** MMS9966
- **Analytical Method:** EP200.8
- **Analyst:** VDL
- **Analytical Date/Time:** 10/06/17 16:58
- **Container ID:** 1177083010-C
## Results of MW-10

### General Information
- **Client Sample ID:** MW-10
- **Client Project ID:** Healy Power Plant GWMonitoring
- **Lab Sample ID:** 1177083010
- **Lab Project ID:** 1177083
- **Collection Date:** 10/03/17 11:59
- **Received Date:** 10/04/17 12:41
- **Matrix:** Water (Surface, Eff., Ground)

### Results by Metals Department

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### Batch Information
- **Analytical Batch:** MCV5859
- **Analytical Method:** EP245.1
- **Prep Batch:** MXX31135
- **Prep Method:** METHOD
- **Prep Date/Time:** 10/11/17 11:20
- **Prep Initial Wt./Vol.:** 25 mL
- **Prep Extract Vol:** 50 mL

Print Date: 10/27/2017 10:05:31AM

J flagging is activated
# Results of MW-10

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## Batch Information

- **Analytical Batch:** WIC5700
- **Analytical Method:** EPA 300.0
- **Analyst:** DSH
- **Analytical Date/Time:** 10/24/17 03:36
- **Container ID:** 1177083010-A

- **Prep Batch:** WXX12075
- **Prep Method:** METHOD
- **Prep Date/Time:** 10/23/17 17:50
- **Prep Initial Wt./Vol.:** 10 mL
- **Prep Extract Vol.:** 10 mL

- **Analytical Batch:** STS5681
- **Analytical Method:** SM21 2540C
- **Analyst:** EWW
- **Analytical Date/Time:** 10/04/17 18:32
- **Container ID:** 1177083010-B

### Batch Information

- **Analytical Batch:** STS5681
- **Analytical Method:** SM21 2540C
- **Analyst:** EWW
- **Analytical Date/Time:** 10/04/17 18:32
- **Container ID:** 1177083010-B

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Print Date: 10/27/2017 10:05:31AM

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J flagging is activated
### Results of MW-39

Client Sample ID: **MW-39**  
Client Project ID: **Healy Power Plant GWMonitoring**  
Lab Sample ID: **1177083011**  
Lab Project ID: **1177083**  
Collection Date: **10/03/17 18:00**  
Received Date: **10/04/17 12:41**  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

### Results by Metals by ICP/MS

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### Batch Information

- **Analytical Batch:** MMS9966  
- **Analytical Method:** EP200.8  
- **Analyst:** VDL  
- **Analytical Date/Time:** 10/06/17 17:01

- **Prep Batch:** MXX31124  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 10/06/17 09:03  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol:** 50 mL

### Hardness as CaCO3

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### Batch Information

- **Analytical Batch:** MMS9966  
- **Analytical Method:** SM21 2340B  
- **Analyst:** VDL  
- **Analytical Date/Time:** 10/06/17 17:01

- **Prep Batch:** MXX31124  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 10/06/17 09:03  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol:** 50 mL

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J flagging is activated
Results by **Metals Department**

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**Batch Information**

- Analytical Batch: MCV5859
- Analytical Method: EP245.1
- Analyst: TMA
- Analytical Date/Time: 10/11/17 16:55
- Container ID: 1177083011-C
- Prep Batch: MXX31135
- Prep Method: METHOD
- Prep Date/Time: 10/11/17 11:20
- Prep Initial Wt./Vol.: 25 mL
- Prep Extract Vol: 50 mL

J flagging is activated
Results of MW-39

Client Sample ID: MW-39  
Client Project ID: Healy Power Plant GWMonitoring  
Lab Sample ID: 1177083011  
Lab Project ID: 1177083  
Collection Date: 10/03/17 18:00  
Received Date: 10/04/17 12:41  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:  

**Results by Waters Department**

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**Batch Information**

| Analytical Batch: WIC5700 | Prep Batch: WXX12075  
| Analytical Method: EPA 300.0 | Prep Method: METHOD  
| Analyst: DSH | Prep Date/Time: 10/23/17 17:50  
| Analytical Date/Time: 10/24/17 04:12 | Prep Initial Wt./Vol.: 10 mL  
| Container ID: 1177083011-A | Prep Extract Vol: 10 mL  

| Analytical Batch: WIC5700 | Prep Batch: WXX12075  
| Analytical Method: EPA 300.0 | Prep Method: METHOD  
| Analyst: DSH | Prep Date/Time: 10/23/17 17:50  
| Analytical Date/Time: 10/24/17 04:30 | Prep Initial Wt./Vol.: 10 mL  
| Container ID: 1177083011-A | Prep Extract Vol: 10 mL  

| Analytical Batch: WIC5701 | Prep Batch: WXX12077  
| Analytical Method: EPA 300.0 | Prep Method: METHOD  
| Analyst: DSH | Prep Date/Time: 10/24/17 15:30  
| Analytical Date/Time: 10/24/17 20:39 | Prep Initial Wt./Vol.: 10 mL  
| Container ID: 1177083011-A | Prep Extract Vol: 10 mL  

**Parameter**  
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<tr>
<td>1320</td>
<td>1.00</td>
<td>0.477</td>
<td>umhos/cm</td>
<td>1</td>
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</table>

**Batch Information**

| Analytical Batch: WTI4760 |  
| Analytical Method: SM21 2510B |  
| Analyst: AYC |  
| Analytical Date/Time: 10/06/17 18:19 |  
| Container ID: 1177083011-A |  

**Parameter**  
Total Dissolved Solids  
<table>
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<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
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<tbody>
<tr>
<td>848</td>
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<td>mg/L</td>
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</table>

Print Date: 10/27/2017 10:05:31AM  
J flagging is activated
### Results of MW-39

Client Sample ID: **MW-39**  
Client Project ID: **Healy Power Plant GWMonitoring**  
Lab Sample ID: 1177083011  
Lab Project ID: 1177083

Collection Date: **10/03/17 18:00**  
Received Date: **10/04/17 12:41**  
Matrix: **Water (Surface, Eff., Ground)**

### Solids (%): Location:

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<th>Units</th>
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<th>Date Analyzed</th>
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### Batch Information

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<td>SM21 2540C</td>
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<tr>
<td>Analyst:</td>
<td>EWW</td>
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<tr>
<td>Analytical Date/Time:</td>
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<td>Container ID:</td>
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Batch Information

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<td>Analyst:</td>
<td>AYC</td>
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<td>Analytical Date/Time:</td>
<td>10/06/17 18:19</td>
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<tr>
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Print Date: 10/27/2017 10:05:31AM

J flagging is activated
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<th>DL</th>
<th>Units</th>
<th>DF</th>
<th>Date Analyzed</th>
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<tbody>
<tr>
<td>Antimony</td>
<td>3.03</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
<td>1</td>
<td>10/06/17 17:04</td>
</tr>
<tr>
<td>Arsenic</td>
<td>2.16 J</td>
<td>5.00</td>
<td>1.50</td>
<td>ug/L</td>
<td>1</td>
<td>10/06/17 17:04</td>
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<tr>
<td>Barium</td>
<td>244</td>
<td>3.00</td>
<td>0.940</td>
<td>ug/L</td>
<td>1</td>
<td>10/06/17 17:04</td>
</tr>
<tr>
<td>Beryllium</td>
<td>0.200 U</td>
<td>0.400</td>
<td>0.130</td>
<td>ug/L</td>
<td>1</td>
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<td>Boron</td>
<td>294</td>
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<td>ug/L</td>
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<tr>
<td>Cadmium</td>
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<td>0.500</td>
<td>0.150</td>
<td>ug/L</td>
<td>1</td>
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<tr>
<td>Calcium</td>
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<td>150</td>
<td>ug/L</td>
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<tr>
<td>Chromium</td>
<td>39.1</td>
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<td>0.620</td>
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<tr>
<td>Cobalt</td>
<td>2.00 U</td>
<td>4.00</td>
<td>1.20</td>
<td>ug/L</td>
<td>1</td>
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<tr>
<td>Lead</td>
<td>0.129 J</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
<td>1</td>
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<tr>
<td>Lithium</td>
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<td>3.10</td>
<td>ug/L</td>
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<td>Magnesium</td>
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<td>Molybdenum</td>
<td>91.9</td>
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<td>0.620</td>
<td>ug/L</td>
<td>1</td>
<td>10/06/17 17:04</td>
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<tr>
<td>Selenium</td>
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<td>1.50</td>
<td>ug/L</td>
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</tr>
<tr>
<td>Silver</td>
<td>0.500 U</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
<td>1</td>
<td>10/06/17 17:04</td>
</tr>
<tr>
<td>Thallium</td>
<td>0.500 U</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
<td>1</td>
<td>10/06/17 17:04</td>
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</tbody>
</table>

**Batch Information**

Analytical Batch: MMS9966  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 10/06/17 17:04  
Container ID: 1177083012-C

<table>
<thead>
<tr>
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<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
<th>DF</th>
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</thead>
<tbody>
<tr>
<td>Hardness as CaCO3</td>
<td>185</td>
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<td>5.00</td>
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<td>1</td>
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</tr>
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**Batch Information**

Analytical Batch: MMS9966  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 10/06/17 17:04  
Container ID: 1177083012-C

Print Date: 10/27/2017 10:05:31AM

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### Results of SW-1

**Client Sample ID:** SW-1  
**Client Project ID:** Healy Power Plant GWMonitoring  
**Lab Sample ID:** 1177083012  
**Lab Project ID:** 1177083  
**Collection Date:** 10/03/17 08:15  
**Received Date:** 10/04/17 12:41  
**Matrix:** Water (Surface, Eff., Ground)  
**Solids (%):**  

#### Results by Metals Department

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<thead>
<tr>
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<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>0.100 U</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
<td>1</td>
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</tr>
</tbody>
</table>

#### Batch Information

- **Analytical Batch:** MCV5859  
- **Analytical Method:** EP245.1  
- **Analyst:** TMA  
- **Analytical Date/Time:** 10/11/17 16:58  
- **Container ID:** 1177083012-C  
- **Prep Batch:** MXX31135  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/11/17 11:20  
- **Prep Initial Wt./Vol.:** 25 mL  
- **Prep Extract Vol:** 50 mL  

Print Date: 10/27/2017 10:05:31AM

SGS North America Inc.  
200 West Potter Drive Anchorage, AK 95518  
t 907.562.2343 f 907.561.5301  www.us.sgs.com

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Member of SGS Group
## Results of SW-1

**Client Sample ID:** SW-1  
**Client Project ID:** Healy Power Plant GWMonitoring  
**Lab Sample ID:** 1177083012  
**Lab Project ID:** 1177083  
**Collection Date:** 10/03/17 08:15  
**Received Date:** 10/04/17 12:41  
**Matrix:** Water (Surface, Eff., Ground)  
**Location:**

### Results by Waters Department

<table>
<thead>
<tr>
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<th>DF</th>
<th>Allowable Limits</th>
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<tbody>
<tr>
<td>Chloride</td>
<td>15.4</td>
<td>0.400</td>
<td>0.124</td>
<td>mg/L</td>
<td>2</td>
<td>10/24/17 04:48</td>
<td></td>
</tr>
<tr>
<td>Fluoride</td>
<td>3.56</td>
<td>0.400</td>
<td>0.124</td>
<td>mg/L</td>
<td>2</td>
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<tr>
<td>Sulfate</td>
<td>589</td>
<td>20.0</td>
<td>6.20</td>
<td>mg/L</td>
<td>100</td>
<td>10/24/17 20:57</td>
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#### Batch Information

**Analytical Batch:** WIC5700  
**Analytical Method:** EPA 300.0  
**Analyst:** DSH  
**Analytical Date/Time:** 10/24/17 04:48  
**Container ID:** 1177083012-A

**Prep Batch:** WXX12075  
**Prep Method:** METHOD  
**Prep Date/Time:** 10/23/17 17:50  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol:** 10 mL

---

**Analytical Batch:** WIC5701  
**Analytical Method:** EPA 300.0  
**Analyst:** DSH  
**Analytical Date/Time:** 10/24/17 20:57  
**Container ID:** 1177083012-A

**Prep Batch:** WXX12077  
**Prep Method:** METHOD  
**Prep Date/Time:** 10/24/17 15:30  
**Prep Initial Wt./Vol.:** 10 mL  
**Prep Extract Vol:** 10 mL

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**Conductivity**

<table>
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<tr>
<th>Parameter</th>
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<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
<th>DF</th>
<th>Allowable Limits</th>
<th>Date Analyzed</th>
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</thead>
<tbody>
<tr>
<td>Conductivity</td>
<td>2150</td>
<td>1.00</td>
<td>0.477</td>
<td>umhos/cm</td>
<td>1</td>
<td>10/06/17 18:29</td>
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#### Batch Information

**Analytical Batch:** WTI4760  
**Analytical Method:** SM21 2510B  
**Analyst:** AYC  
**Analytical Date/Time:** 10/06/17 18:29  
**Container ID:** 1177083012-A

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**Total Dissolved Solids**

<table>
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<tr>
<th>Parameter</th>
<th>Result Qual</th>
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<th>DL</th>
<th>Units</th>
<th>DF</th>
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<th>Date Analyzed</th>
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<tbody>
<tr>
<td>Total Dissolved Solids</td>
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</table>

#### Batch Information

**Analytical Batch:** STS5681  
**Analytical Method:** SM21 2540C  
**Analyst:** EWW  
**Analytical Date/Time:** 10/04/17 18:32  
**Container ID:** 1177083012-B

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Print Date: 10/27/2017 10:05:31AM  
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## Results of SW-1

**Client Sample ID:** SW-1  
**Client Project ID:** Healy Power Plant GWMonitoring  
**Lab Sample ID:** 1177083012  
**Lab Project ID:** 1177083  
**Collection Date:** 10/03/17 08:15  
**Received Date:** 10/04/17 12:41  
**Matrix:** Water (Surface, Eff., Ground)  

### Results by Waters Department

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<tr>
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**Batch Information**

- **Analytical Batch:** WTI4759  
- **Analytical Method:** SM21 4500-H B  
- **Analyst:** AYC  
- **Analytical Date/Time:** 10/06/17 18:29  
- **Container ID:** 1177083012-A  

Print Date: 10/27/2017 10:05:31AM  

J flagging is activated
### Method Blank

**Blank ID:** MB for HBN 1769686 [MXX/31124]  
**Matrix:** Water (Surface, Eff., Ground)  
**Blank Lab ID:** 1418159

- QC for Samples: 1177083001, 1177083002, 1177083003, 1177083004, 1177083005, 1177083006, 1177083007, 1177083008, 1177083009, 1177083010, 1177083011, 1177083012

### Results by EP200.8

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<tr>
<td>Arsenic</td>
<td>2.50U</td>
</tr>
<tr>
<td>Barium</td>
<td>1.50U</td>
</tr>
<tr>
<td>Beryllium</td>
<td>0.200U</td>
</tr>
<tr>
<td>Boron</td>
<td>25.0U</td>
</tr>
<tr>
<td>Cadmium</td>
<td>0.250U</td>
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<tr>
<td>Calcium</td>
<td>250U</td>
</tr>
<tr>
<td>Chromium</td>
<td>1.00U</td>
</tr>
<tr>
<td>Cobalt</td>
<td>2.00U</td>
</tr>
<tr>
<td>Lead</td>
<td>0.100U</td>
</tr>
<tr>
<td>Lithium</td>
<td>5.00U</td>
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<tr>
<td>Magnesium</td>
<td>25.0U</td>
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<tr>
<td>Molybdenum</td>
<td>1.00U</td>
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<tr>
<td>Selenium</td>
<td>2.50U</td>
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<tr>
<td>Silver</td>
<td>0.500U</td>
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<tr>
<td>Thallium</td>
<td>0.500U</td>
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<table>
<thead>
<tr>
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<th>DL</th>
<th>Units</th>
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<td>Arsenic</td>
<td>5.00</td>
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<td>ug/L</td>
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<tr>
<td>Barium</td>
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<tr>
<td>Beryllium</td>
<td>0.400</td>
<td>0.130</td>
<td>ug/L</td>
<td></td>
</tr>
<tr>
<td>Boron</td>
<td>50.0</td>
<td>15.0</td>
<td>ug/L</td>
<td></td>
</tr>
<tr>
<td>Cadmium</td>
<td>0.500</td>
<td>0.150</td>
<td>ug/L</td>
<td></td>
</tr>
<tr>
<td>Calcium</td>
<td>500</td>
<td>150</td>
<td>ug/L</td>
<td></td>
</tr>
<tr>
<td>Chromium</td>
<td>2.00</td>
<td>0.620</td>
<td>ug/L</td>
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<tr>
<td>Cobalt</td>
<td>4.00</td>
<td>1.20</td>
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<td>Lead</td>
<td>0.200</td>
<td>0.0620</td>
<td>ug/L</td>
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<td>ug/L</td>
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<tr>
<td>Magnesium</td>
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<td>ug/L</td>
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<tr>
<td>Molybdenum</td>
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<td>0.620</td>
<td>ug/L</td>
<td></td>
</tr>
<tr>
<td>Selenium</td>
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<td>1.50</td>
<td>ug/L</td>
<td></td>
</tr>
<tr>
<td>Silver</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
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<tr>
<td>Thallium</td>
<td>1.00</td>
<td>0.310</td>
<td>ug/L</td>
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### Batch Information

- **Analytical Batch:** MMS9966  
- **Analytical Method:** EP200.8  
- **Instrument:** Perkin Elmer NexIon P5  
- **Analyst:** VDL  
- **Analytical Date/Time:** 10/6/2017 3:52:43PM

- **Prep Batch:** MXX31124  
- **Prep Method:** E200.2  
- **Prep Date/Time:** 10/6/2017 9:03:19AM  
- **Prep Initial Wt./Vol.:** 20 mL  
- **Prep Extract Vol.:** 50 mL

Print Date: 10/27/2017 10:05:35AM
## Blank Spike Summary

Blank Spike ID: LCS for HBN 1177083 [MXX31124]
Blank Spike Lab ID: 1418160
Date Analyzed: 10/06/2017 15:55

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1177083001, 1177083002, 1177083003, 1177083004, 1177083005, 1177083006, 1177083007, 1177083008, 1177083009, 1177083010, 1177083011, 1177083012

### Results by EP200.8

<table>
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<tr>
<th>Parameter</th>
<th>Spike (ug/L)</th>
<th>Result (ug/L)</th>
<th>Rec (%)</th>
<th>CL (ppm)</th>
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<tbody>
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<td>102</td>
<td>(85-115)</td>
</tr>
<tr>
<td>Arsenic</td>
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<td>998</td>
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<td>(85-115)</td>
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<tr>
<td>Barium</td>
<td>1000</td>
<td>1000</td>
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<td>(85-115)</td>
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<tr>
<td>Beryllium</td>
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<td>105</td>
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<td>Boron</td>
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<td>(85-115)</td>
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<tr>
<td>Cobalt</td>
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<td>104</td>
<td>(85-115)</td>
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### Batch Information

Analytical Batch: MMS9966
Analytical Method: EP200.8
Instrument: Perkin Elmer Nexion P5
Analyst: VDL

Prep Batch: MXX31124
Prep Method: E200.2
Prep Date/Time: 10/06/2017 09:03
Spike Init Wt./Vol.: 1000 ug/L
Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:
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<th>Result</th>
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### Batch Information

- **Analytical Batch**: MMS9966
- **Prep Batch**: MXX31124
- **Analytical Method**: EP200.8
- **Prep Method**: DW Digest for Metals on ICP-MS
- **Instrument**: Perkin Elmer NexIon P5
- **Prep Date/Time**: 10/6/2017 9:03:19AM
- **Prep Initial Wt./Vol.**: 20.00mL
- **Prep Extract Vol.**: 50.00mL
- **Prep Initial Wt./Vol.**: 20.00mL
- **Prep Extract Vol.**: 50.00mL

---

Print Date: 10/27/2017 10:05:39AM

SGS North America Inc.

200 West Potter Drive Anchorage, AK 95518

t 907.562.2343 f 907.561.5301 www.us.sgs.com

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## Matrix Spike Summary

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sample</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
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### Batch Information

- **Analytical Batch:** MMS9966
- **Analytical Method:** EP200.8
- **Instrument:** Perkin Elmer NexIon P5
- **Analyst:** VDL
- **Analytical Date/Time:** 10/6/2017  4:40:49PM

- **Prep Batch:** MXX31124
- **Prep Method:** DW Digest for Metals on ICP-MS
- **Prep Date/Time:** 10/6/2017  9:03:19AM
- **Prep Initial Wt./Vol.:** 20.00mL
- **Prep Extract Vol.:** 50.00mL
### Method Blank

Blank ID: MB for HBN 1769952 [MXX/31135]
Blank Lab ID: 1419215

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1177083001, 1177083002, 1177083003, 1177083004, 1177083005, 1177083006, 1177083007, 1177083008, 1177083009, 1177083010, 1177083011, 1177083012

### Results by EP245.1

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<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
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### Batch Information

- **Analytical Batch:** MCV5859
- **Analytical Method:** EP245.1
- **Instrument:**
- **Analyst:** TMA
- **Analytical Date/Time:** 10/11/2017 3:25:13PM
- **Prep Batch:** MXX31135
- **Prep Method:** METHOD
- **Prep Date/Time:** 10/11/2017 11:20:00AM
- **Prep Initial Wt./Vol.:** 25 mL
- **Prep Extract Vol.:** 50 mL

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Print Date: 10/27/2017 10:05:44AM

SGS North America Inc. 200 West Potter Drive Anchorage, AK 95518

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### Blank Spike Summary

Blank Spike ID: LCS for HBN 1177083 [MXX31135]  
Blank Spike Lab ID: 1419216  
Date Analyzed: 10/11/2017 15:28  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples: 1177083001, 1177083002, 1177083003, 1177083004, 1177083005, 1177083006, 1177083007, 1177083008, 1177083009, 1177083010, 1177083011, 1177083012

### Results by EP245.1

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<th>Result</th>
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<td>102</td>
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### Batch Information

- **Analytical Batch**: MCV5859  
- **Analytical Method**: EP245.1  
- **Instrument**: Analyst: TMA  
- **Prep Batch**: MXX31135  
- **Prep Method**: METHOD  
- **Prep Date/Time**: 10/11/2017 11:20  
- **Spike Init Wt./Vol.**: 4 ug/L  
- **Extract Vol**: 50 mL  
- **Dupe Init Wt./Vol.**:  
- **Extract Vol**:  

Print Date: 10/27/2017 10:05:46AM

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200 West Potter Drive Anchorage, AK 95518  
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### Matrix Spike Summary

Original Sample ID: 1176684001  
MS Sample ID: 1419217 MS  
MSD Sample ID:  
Analysis Date: 10/11/2017 15:31  
Analysis Date: 10/11/2017 15:42  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples: 1177083001, 1177083002, 1177083003, 1177083004, 1177083005, 1177083006, 1177083007, 1177083008, 1177083009, 1177083010, 1177083011, 1177083012

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<th>Parameter</th>
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<th>Spike (ug/L)</th>
<th>Result (ug/L)</th>
<th>Rec (%)</th>
<th>Spike Duplicate (ug/L)</th>
<th>Result Duplicate (%)</th>
<th>CL</th>
<th>RPD (CL)</th>
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### Batch Information

Analytical Batch: MCV5859  
Analytical Method: EP245.1  
Instrument:  
Analyst: TMA  
Analytical Date/Time: 10/11/2017 3:42:51PM

Prep Batch: MXX31135  
Prep Method: Digestion Mercury 245.1 (W)  
Prep Date/Time: 10/11/2017 11:20:00AM  
Prep Initial Wt./Vol.: 25.00mL  
Prep Extract Vol: 50.00mL
**Matrix Spike Summary**

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<tr>
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<td>Water (Surface, Eff., Ground)</td>
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QC for Samples: 1177083001, 1177083002, 1177083003, 1177083004, 1177083005, 1177083006, 1177083007, 1177083008, 1177083009, 1177083010, 1177083011, 1177083012

**Results by EP245.1**

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<th>Parameter</th>
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<th>Spike</th>
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<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
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<th>RPD (%)</th>
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**Batch Information**

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<td>Prep Method:</td>
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<td>Prep Date/Time:</td>
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### Bench Spike Summary

Original Sample ID: 1176684001
MS Sample ID: 1419475 BND
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1177083001, 1177083002, 1177083003, 1177083004, 1177083005, 1177083006, 1177083007, 1177083008, 1177083009, 1177083010, 1177083011, 1177083012

### Results by EP245.1

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<th>Spike Duplicate (ug/L)</th>
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<td>Spike</td>
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### Batch Information

Analytical Batch: MCV5859
Analytical Method: EP245.1
Prep Batch: MXX31135
Prep Method: Digestion Mercury 245.1 (W)
Prep Date/Time: 10/11/2017 11:20:00AM
Prep Initial Wt./Vol.: 25.00mL
Prep Extract Vol: 50.00mL

Instrument: TMA
Prep Date/Time: 10/11/2017 11:20:00AM
Prep Initial Wt./Vol.: 25.00mL
Prep Extract Vol: 50.00mL

Print Date: 10/27/2017 10:05:47AM
Method Blank

Blank Lab ID: 1417889

QC for Samples:
1177083001, 1177083002, 1177083003, 1177083004, 1177083005, 1177083006, 1177083007, 1177083008, 1177083009,
1177083010, 1177083011, 1177083012

Results by SM21 2540C

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<th>Units</th>
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Batch Information

Analytical Batch: STS5681
Analytical Method: SM21 2540C
Instrument: 
Analyst: EWW
Analytical Date/Time: 10/4/2017  6:32:27PM
## Duplicate Sample Summary

Original Sample ID: 1177061001  
Duplicate Sample ID: 1417892  
Analysis Date: 10/04/2017 18:32  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1177083001, 1177083002, 1177083003, 1177083004

### Results by SM21 2540C

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<th>Duplicate</th>
<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
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### Batch Information

- Analytical Batch: STS5681  
- Analytical Method: SM21 2540C  
- Instrument:  
- Analyst: EWW
## Duplicate Sample Summary

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### Results by SM21 2540C

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<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>1250</td>
<td>1265</td>
<td>mg/L</td>
<td>1.60</td>
<td>(&lt; 5 )</td>
</tr>
</tbody>
</table>

### Batch Information

- Analytical Batch: STS5681
- Analytical Method: SM21 2540C
- Instrument: EWW
- Analyst: EWW

Print Date: 10/27/2017 10:05:49AM
### Blank Spike Summary

<table>
<thead>
<tr>
<th>Blank Spike ID:</th>
<th>LCS for HBN 1177083 [STS5681]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank Spike Lab ID:</td>
<td>1417890</td>
</tr>
<tr>
<td>Date Analyzed:</td>
<td>10/04/2017 18:32</td>
</tr>
<tr>
<td>QC for Samples:</td>
<td>1177083001, 1177083002, 1177083003, 1177083004, 1177083005, 1177083006, 1177083007, 1177083008, 1177083009, 1177083010, 1177083011, 1177083012</td>
</tr>
</tbody>
</table>

### Results by SM21 2540C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Blank Spike (mg/L)</th>
<th>Spike Duplicate (mg/L)</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids</td>
<td>330 317 96</td>
<td>330 314 95 (75-125) 0.95 (&lt;5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Batch Information

- **Analytical Batch:** STS5681
- **Analytical Method:** SM21 2540C
- **Instrument:**
- **Analyst:** EWW
Duplicate Sample Summary

Original Sample ID: 1177124001  Analysis Date: 10/06/2017 17:45
Duplicate Sample ID: 1418781  Matrix: Drinking Water
QC for Samples:
1177083003, 1177083011, 1177083012

Results by SM21 4500-H B

<table>
<thead>
<tr>
<th>NAME</th>
<th>Original</th>
<th>Duplicate</th>
<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.9</td>
<td>7.90</td>
<td>pH units</td>
<td>0.00</td>
<td>(&lt; 5 )</td>
</tr>
</tbody>
</table>

Batch Information

Analytical Batch: WTI4759
Analytical Method: SM21 4500-H B
Instrument: Titration
Analyst: AYC
### Duplicate Sample Summary

Original Sample ID: 1177132001
Duplicate Sample ID: 1418782
Analysis Date: 10/06/2017 19:17
Matrix: Drinking Water

QC for Samples:
1177083003, 1177083011, 1177083012

### Results by SM21 4500-H B

<table>
<thead>
<tr>
<th>NAME</th>
<th>Original</th>
<th>Duplicate</th>
<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>8.1</td>
<td>8.10</td>
<td>pH units</td>
<td>0.00</td>
<td>(&lt; 5 )</td>
</tr>
</tbody>
</table>

### Batch Information

- Analytical Batch: WTI4759
- Analytical Method: SM21 4500-H B
- Instrument: Titration
- Analyst: AYC
**Blank Spike Summary**

Blank Spike ID: LCS for HBN 1177083 [WTI4759]
Blank Spike Lab ID: 1418778
Date Analyzed: 10/06/2017 16:20

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1177083003, 1177083011, 1177083012

**Results by SM21 4500-H B**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7</td>
<td>7.05</td>
<td>101</td>
<td>(99-101)</td>
</tr>
</tbody>
</table>

**Batch Information**

Analytical Batch: WTI4759
Analytical Method: SM21 4500-H B
Instrument: Titration
Analyst: AYC

Print Date: 10/27/2017 10:05:55AM
Method Blank
Blank ID: MB for HBN 1769821 [WTI/4760]
Blank Lab ID: 1418783
Matrix: Water (Surface, Eff., Ground)
QC for Samples:
1177083003, 1177083011, 1177083012

Results by SM21 2510B

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conductivity</td>
<td>0.500U</td>
<td>1.00</td>
<td>0.477</td>
<td>umhos/cm</td>
</tr>
</tbody>
</table>

Batch Information
Analytical Batch: WTI4760
Analytical Method: SM21 2510B
Instrument: Titration
Analyst: AYC
Analytical Date/Time: 10/6/2017  5:15:45PM
## Duplicate Sample Summary

Original Sample ID: 1177124001  
Duplicate Sample ID: 1418786  
Analysis Date: 10/06/2017 17:45  
Matrix: Drinking Water  
QC for Samples:  
1177083003, 1177083011, 1177083012

## Results by SM21 2510B

<table>
<thead>
<tr>
<th>NAME</th>
<th>Original</th>
<th>Duplicate</th>
<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conductivity</td>
<td>433</td>
<td>433</td>
<td>umhos/cm</td>
<td>0.09</td>
<td>(&lt; 20 )</td>
</tr>
</tbody>
</table>

## Batch Information

Analytical Batch: WTI4760  
Analytical Method: SM21 2510B  
Instrument: Titration  
Analyst: AYC
## Duplicate Sample Summary

- **Original Sample ID:** 1177132001
- **Duplicate Sample ID:** 1418787
- **Analysis Date:** 10/06/2017 19:17
- **Matrix:** Drinking Water
- **QC for Samples:**
  - 1177083003, 1177083011, 1177083012

## Results by SM21 2510B

<table>
<thead>
<tr>
<th>NAME</th>
<th>Original</th>
<th>Duplicate</th>
<th>Units</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conductivity</td>
<td>352</td>
<td>353</td>
<td>umhos/cm</td>
<td>0.17</td>
<td>(&lt; 20 )</td>
</tr>
</tbody>
</table>

## Batch Information

- **Analytical Batch:** WTI4760
- **Analytical Method:** SM21 2510B
- **Instrument:** Titration
- **Analyst:** AYC
### Blank Spike Summary

Blank Spike ID: LCS for HBN 1177083 [WTI4760]  
Blank Spike Lab ID: 1418784  
Date Analyzed: 10/06/2017 16:35  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples: 1177083003, 1177083011, 1177083012

### Results by SM21 2510B

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conductivity</td>
<td>11</td>
<td>10.8</td>
<td>99</td>
<td>(90-110)</td>
</tr>
</tbody>
</table>

### Batch Information

- Analytical Batch: WTI4760  
- Analytical Method: SM21 2510B  
- Instrument: Titration  
- Analyst: AYC
Method Blank

Blank Lab ID: 1422321

QC for Samples:
1177083001, 1177083002, 1177083003, 1177083004, 1177083005, 1177083006, 1177083007, 1177083008, 1177083009,
1177083010, 1177083011, 1177083012

Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
<tr>
<td>Sulfate</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

Batch Information

Analytical Batch: WIC5700  Prep Batch: WXX12075
Analytical Method: EPA 300.0  Prep Method: METHOD
Instrument: 930 Metrohm compact IC flex  Prep Date/Time: 10/23/2017  5:50:00PM
Analyst: DSH  Prep Initial Wt./Vol.: 10 mL
Analytical Date/Time: 10/23/2017  7:14:52PM  Prep Extract Vol: 10 mL
Blank Spike Summary

Blank Spike ID: LCS for HBN 1177083 [WXX12075]
Blank Spike Lab ID: 1422322
Date Analyzed: 10/23/2017 19:32

QC for Samples: 1177083001, 1177083002, 1177083003, 1177083004, 1177083005, 1177083006, 1177083007, 1177083008, 1177083009, 1177083010, 1177083011, 1177083012

Matrix: Water (Surface, Eff., Ground)

Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>5</td>
<td>4.95</td>
<td>99</td>
<td>(90-110)</td>
</tr>
<tr>
<td>Fluoride</td>
<td>5</td>
<td>4.88</td>
<td>98</td>
<td>(90-110)</td>
</tr>
<tr>
<td>Sulfate</td>
<td>5</td>
<td>4.84</td>
<td>97</td>
<td>(90-110)</td>
</tr>
</tbody>
</table>

Batch Information

Analytical Batch: WIC5700
Analytical Method: EPA 300.0
Instrument: 930 Metrohm compact IC flex
Analyst: DSH

Prep Batch: WXX12075
Prep Method: METHOD
Prep Date/Time: 10/23/2017 17:50
Spike Init Wt./Vol.: 5 mg/L
Extract Vol: 10 mL
Dupe Init Wt./Vol.: Extract Vol:
## Matrix Spike Summary

<table>
<thead>
<tr>
<th>Original Sample ID</th>
<th>Analysis Date</th>
<th>MS Sample ID</th>
<th>Analysis Date</th>
<th>MSD Sample ID</th>
<th>Analysis Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>19:50</td>
<td></td>
<td>20:08</td>
<td></td>
<td>20:26</td>
</tr>
<tr>
<td>Matrix: Water (Surface, Eff., Ground)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

QC for Samples: 1177083001, 1177083002, 1177083003, 1177083004, 1177083005, 1177083006, 1177083007, 1177083008, 1177083009, 1177083010, 1177083011, 1177083012

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>17.2</td>
<td>25.0</td>
<td>42</td>
<td>25.0</td>
<td>42.1</td>
<td>99</td>
<td>90-110</td>
<td>0.17</td>
<td>(&lt; 15 )</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.500U</td>
<td>25.0</td>
<td>25</td>
<td>25.0</td>
<td>24.9</td>
<td>100</td>
<td>90-110</td>
<td>0.42</td>
<td>(&lt; 15 )</td>
</tr>
<tr>
<td>Sulfate</td>
<td>11.8</td>
<td>25.0</td>
<td>36.3</td>
<td>25.0</td>
<td>36.3</td>
<td>98</td>
<td>90-110</td>
<td>0.14</td>
<td>(&lt; 15 )</td>
</tr>
</tbody>
</table>

### Batch Information

- **Analytical Batch:** WIC5700
- **Analytical Method:** EPA 300.0
- **Instrument:** 930 Metrohm compact IC flex
- **Analyst:** DSH
- **Analytical Date/Time:** 10/23/2017 8:08:50PM
- **Prep Batch:** WXX12075
- **Prep Method:** EPA 300.0 Extraction Waters/Liquids
- **Prep Date/Time:** 10/23/2017 5:50:00PM
- **Prep Initial Wt./Vol.:** 10.00mL
- **Prep Extract Vol:** 10.00mL
**Method Blank**

Blank ID: MB for HBN 1770943 [WXX/12077]  
Blank Lab ID: 1422373  
Matrix: Water (Surface, Eff., Ground)  
QC for Samples: 1177083001, 1177083002, 1177083003, 1177083005, 1177083006, 1177083011, 1177083012

**Results by EPA 300.0**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Results</th>
<th>LOQ/CL</th>
<th>DL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfate</td>
<td>0.100U</td>
<td>0.200</td>
<td>0.0620</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

**Batch Information**

- **Analytical Batch:** WIC5701  
- **Analytical Method:** EPA 300.0  
- **Instrument:** 930 Metrohm compact IC flex  
- **Analyst:** DSH  
- **Analytical Date/Time:** 10/24/2017 4:46:04PM  
- **Prep Batch:** WXX12077  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/24/2017 3:30:00PM  
- **Prep Initial Wt./Vol.:** 10 mL  
- **Prep Extract Vol:** 10 mL
### Blank Spike Summary

Blank Spike ID:  LCS for HBN 1177083 [WXX12077]  
Blank Spike Lab ID:  1422374  
Date Analyzed:  10/24/2017  17:04  

Matrix:  Water (Surface, Eff., Ground)  
QC for Samples:  1177083001, 1177083002, 1177083003, 1177083005, 1177083006, 1177083011, 1177083012

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfate</td>
<td>5</td>
<td>4.85</td>
<td>97</td>
<td>(90-110)</td>
</tr>
</tbody>
</table>

### Batch Information

- **Analytical Batch:** WIC5701  
- **Analytical Method:** EPA 300.0  
- **Instrument:** 930 Metrohm compact IC flex  
- **Analyst:** DSH

- **Prep Batch:** WXX12077  
- **Prep Method:** METHOD  
- **Prep Date/Time:** 10/24/2017  15:30  
- **Spike Init Wt./Vol.:** 5 mg/L  
- **Extract Vol.:** 10 mL
### Matrix Spike Summary

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Original Sample ID</th>
<th>MS Sample ID</th>
<th>MSD Sample ID</th>
<th>Analysis Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfate</td>
<td>1177083001, 1177083002, 1177083003, 1177083005, 1177083006, 1177083011, 1177083012</td>
<td>1422375</td>
<td>1422376 MS</td>
<td>1422377 MSD</td>
</tr>
</tbody>
</table>

### Results by EPA 300.0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sample Spike</th>
<th>Result</th>
<th>Rec (%)</th>
<th>Spike Duplicate</th>
<th>Result</th>
<th>Rec (%)</th>
<th>CL</th>
<th>RPD (%)</th>
<th>RPD CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfate</td>
<td>26.3</td>
<td>25.0</td>
<td>50.1</td>
<td>25.0</td>
<td>50.2</td>
<td>95</td>
<td>96</td>
<td>90-110</td>
<td>0.17</td>
</tr>
</tbody>
</table>

### Batch Information

- **Prep Batch:** WXX12077
- **Prep Method:** EPA 300.0 Extraction Waters/Liquids
- **Prep Date/Time:** 10/24/2017 3:30:00PM
- **Prep Initial Wt./Vol.:** 10.00mL
- **Prep Extract Vol:** 10.00mL
- **Analytical Batch:** WIC5701
- **Analytical Method:** EPA 300.0
- **Instrument:** 930 Metrohm compact IC flex
- **Analyst:** DSH
- **Analytical Date/Time:** 10/24/2017 5:39:51PM
### Section 1

**CLIENT:** Golden Valley Electric Association Inc.  
H. Simon; S. Oliver  
**PHONE NO:** 907-232-1112  

**PROJECT:** Healy Power Plant  
**NAME:** Streamline Monitoring  
**E-MAIL:** hsimon@stellarconsulting.com  
**INVOICE TO:** GVEA Naomi Knight  
**QUOTE #:**  

---

### Section 2

<table>
<thead>
<tr>
<th>RESERVED for lab use</th>
<th>SAMPLE IDENTIFICATION</th>
<th>DATE</th>
<th>TIME</th>
<th>MATRIX/MATRIX CODE</th>
<th>CONTAINERS</th>
<th>PRESERATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MW-1R</td>
<td>10/017</td>
<td>12:20</td>
<td>W</td>
<td>3</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>MW-1R</td>
<td>10/017</td>
<td>12:20</td>
<td>W</td>
<td>3</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>MW-3</td>
<td>10/017</td>
<td>10:26</td>
<td>W</td>
<td>5</td>
<td>X</td>
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<td></td>
<td>MW-4</td>
<td>10/017</td>
<td>09:43</td>
<td>W</td>
<td>3</td>
<td>X</td>
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<tr>
<td></td>
<td>MW-5</td>
<td>10/017</td>
<td>08:59</td>
<td>W</td>
<td>3</td>
<td>X</td>
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<td>10/017</td>
<td>14:45</td>
<td>W</td>
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<td>X</td>
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### Section 3

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<th># CONTAINERS</th>
<th>TYPE</th>
<th>COMP</th>
<th>TOTAL METALS</th>
<th>EPA 3050</th>
<th>TD5</th>
<th>CONDUCTIVITY</th>
<th>pH</th>
<th>TDS</th>
<th>NO2</th>
<th>NO3</th>
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</thead>
<tbody>
<tr>
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<td>3</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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### Section 4

**DOD Project?** Yes  
**Data Deliverable Requirements:**

- **Cooler ID:**
- **Requested Turnaround Time and/or Special Instructions:**
  - Total Metals: B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mn, Sr, Ti, U, V, W, Zr, Zn
  - EPA 3050: Fluoride, Chloride
  - **MW-4 is turbid**

**Temp Blank °C:** 41 D20

**Chain of Custody Seal:** (Circle)

**INTACT**

**Absent**

---

**Received By:**

- **Date:** 10/17/17  
- **Time:** 12:33

---

**Received By:**

- **Date:** 10/17/17  
- **Time:** 12:41

---

**Hand Delivered**

---

**200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301**

**5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557**

http://www.sgs.com/terms-and-conditions
**SGS North America Inc.**

**CHAIN OF CUSTODY RECORD**

**CLIENT:** Golden Valley Electric Association

**CONTACT:** Seth Oliver

**PHONE NO.:** 907-222-1112

**PROJECT NAME:** Haul Power Plant

**REPORTS TO:** H. Simon, S. Oliver

**E-MAIL:** Hello@SGAConsulting.com

**INVOCATION TO:** Golden Valley Electric Association

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**Section 1**

<table>
<thead>
<tr>
<th>RESERVED for lab use</th>
<th>SAMPLE IDENTIFICATION</th>
<th>DATE mm/dd/yy</th>
<th>TIME HH:MM</th>
<th>MATRIX/ MATRIX CODE</th>
<th>CONTAINERS</th>
<th>TYPE</th>
<th>COMP</th>
<th>GRAB W</th>
<th>Multi Incremental Soils</th>
<th>Preservative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1DA-D Mw-39</td>
<td>10/13/17</td>
<td>18:00</td>
<td>W</td>
<td>H</td>
<td>G</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>HNO3</td>
</tr>
<tr>
<td></td>
<td>1DA-D Sw-1</td>
<td>10/13/17</td>
<td>08:15</td>
<td>W</td>
<td>H</td>
<td>G</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>HNO3</td>
</tr>
</tbody>
</table>

**Section 2**

Relinquished By: (1)

Date

Time

Received By:

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Relinquished By: (2)

Date

Time

Received By:

Relinquished By: (3)

Date

Time

Received By:

Relinquished By: (4)

Date

Time

Received For Laboratory By:

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**Section 3**

Omissions may delay the onset of analysis.

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**Section 4**

**DOD Project?** Yes No

**Data Deliverable Requirements:**

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**Section 5**

**Cooler ID:**

Requested Turnaround Time and/or Special Instructions:

**Temp Blank °C:**

Chain of Custody Seal: (Circle)

(See attached Sample Receipt Form)

(See attached Sample Receipt Form)

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http://www.sgs.com/terms-and-conditions

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200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301

5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

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Hand delivered
## e-Sample Receipt Form

**SGS Workorder #: 1177083**

### Review Criteria / Chain of Custody / Temperature Requirements

<table>
<thead>
<tr>
<th>Condition (Yes, No, N/A)</th>
<th>Exceptions Noted below</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yes</strong></td>
<td>Exemption permitted if sampler hand carries/delivers.</td>
</tr>
<tr>
<td>N/A</td>
<td><strong>Yes</strong></td>
</tr>
</tbody>
</table>

- **Were Custody Seals intact?** Note # & location: **Yes**
- **COC accompanied samples?** **Yes**

### Holding Time / Documentation / Sample Condition Requirements

- **Were samples received within holding time?** **Yes**

- **Do samples match COC** (i.e., sample IDs, dates/times collected)? **Yes**

  **Note:** If times differ <1 hr, record details & login per COC.

- **Were analyses requested unambiguous** (i.e., method is specified for analyses with >1 option for analysis)? **Yes**

  **Note:** Exemption permitted for metals (e.g., 200.8/6020A).

- **Were proper containers (type/mass/volume/preservative*** used? **Yes**

### Volatile / LL-Hg Requirements

- **Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?** **N/A**

- **Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?** **N/A**

- **Were all soil VOAs field extracted with MeOH+BFB?** **N/A**

**Note to Client:** Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

### Additional notes (if applicable):

### Exceptions Noted below

#### If >6°C, were samples collected <8 hours ago?

- **No**

#### If <0°C, were sample containers ice free?

- **N/A**

If samples received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".

**Note:** Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.
## Sample Containers and Preservatives

<table>
<thead>
<tr>
<th>Container Id</th>
<th>Preservative</th>
<th>Container Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1177083001-A</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1177083001-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1177083001-C</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1177083002-A</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1177083002-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1177083002-C</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1177083003-A</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1177083003-B</td>
<td>No Preservative Required</td>
<td>OK</td>
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<tr>
<td>1177083003-C</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1177083003-D</td>
<td>HNO₃ to pH &lt; 2</td>
<td>OK</td>
</tr>
<tr>
<td>1177083004-A</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1177083004-B</td>
<td>No Preservative Required</td>
<td>OK</td>
</tr>
<tr>
<td>1177083004-C</td>
<td>HNO₃ to pH &lt; 2</td>
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<tr>
<td>1177083005-A</td>
<td>No Preservative Required</td>
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<td>1177083005-C</td>
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<tr>
<td>1177083006-A</td>
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<tr>
<td>1177083007-A</td>
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<tr>
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<td>1177083007-C</td>
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<td>1177083008-B</td>
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<td>1177083009-A</td>
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<td>1177083011-A</td>
<td>No Preservative Required</td>
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</tbody>
</table>
### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates that an inappropriate container was submitted.

- **OK** - The container was received at an acceptable pH for the analysis requested.
- **BU** - The container was received with headspace greater than 6mm.
- **DM** - The container was received damaged.
- **FR** - The container was received frozen and not usable for Bacteria or BOD analyses.
- **PA** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
- **PH** - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.