January 2020 Annual Groundwater Monitoring and Corrective Action Summary Report

Intermountain Generating Facility Delta, Utah



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January 24, 2020

Sign-off Sheet and Signatures of Environmental Professionals

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JANUARY 2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION SUMMARY REPORT EXECUTIVE SUMMARY January 24, 2020

1.0 EXECUTIVE SUMMARY

1.1 PURPOSE OF REPORT

On behalf of Intermountain Power Service Corporation ("IPSC"), Stantec Consulting Services Inc. ("Stantec") has prepared this report to summarize IPSC's 2019 groundwater monitoring and recovery program pursuant to the United States Environmental Protection Agency's ("US EPA") Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals (CCR) from Electric Utilities, 40 CFR 257 Subpart D (the "Federal CCR Rule") (and the corresponding Utah CCR Rule at Utah Admin. Code R315-319 (the "State CCR Rule") (collectively, the "CCR Rules")) at IPSC's Intermountain Generating Facility ("IGF") located approximately ten miles north of Delta, Millard County, Utah. IPSC's compliance program addresses elements prescribed by CCR Rule Parts §257.90 (R315-319-90) Applicability; §257.91 (R315-319-91) Groundwater Monitoring Systems; §257.93 (R315-319-93) Groundwater Sampling and Analysis Requirements; §257.95 (R315-319-95) Assessment Monitoring Program; and §257.96 (R315-319-96) Assessment of Corrective Measures.

This report is formatted in general accordance with reporting requisites prescribed within §257.90(e) (R315-319-90(e)). The report provides a summary of investigative and ongoing remedial activities that were proposed and/or outlined in detail within IPSC's *January 2019 Annual Groundwater Monitoring and Corrective Action Summary Report*; IPSC's January 2019 *Assessment of Corrective Measures and Amended Corrective Action Plan* report; and IPSC's June and December 2019 *Semi-Annual Progress Reports*.

The historical reports presented IPSC's approach for addressing requirements specified by the Federal CCR Rule as well as the facility's Utah Department of Environmental Quality ("UDEQ"), Division of Water Quality ("DWQ") Groundwater Discharge Permit No. UGW270004. The most recent permit renewal was issued by the UDEQ to IPSC's Intermountain Generating Facility ("IGF"), effective May 24, 2016.

The DWQ has regulatory oversight for IPSC's compliance with its Groundwater Discharge Permit. The UDEQ Division of Waste Management and Radiation Control ("DWMRC") also has regulatory oversight pursuant to the State CCR Rule. The CCR Rules apply to each of IPSC's three (3) CCR units (reference Figures 1 and 2 for regional and site-specific, location maps):

- Combustion By-Products Landfill ("CB Landfill");
- Bottom Ash Basin; and
- Waste Water Basin.

This annual summary report provides an overview of groundwater monitoring and recovery activities conducted at the site during 2019 in compliance with the CCR Rules. The report summarizes activities detailed within IPSC's June and December 2019 Semi-Annual Progress Reports and outlines ongoing and 'next-step' actions associated with enhancement of IPSC's existing groundwater monitoring and corrective action program. IPSC intends to utilize several



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additional wells for groundwater recovery in addition to existing recovery wells WR-101, WR-102, and WR-103, as discussed in detail herein.

1.2 SUMMARY OF 2019 ACTIVITIES

IPSC implemented a sequential, groundwater quality investigative program during 2019 to refine IPSC's current Conceptual Site Model (CSM) and understanding of hydraulic conditions characterizing localized portions of the uppermost aquifer beneath the site. The sequenced, investigative approach helped delineate more definitively the physical characteristics and footprints of two different Total Dissolved Solids (TDS) groundwater plumes located downgradient (generally southwest) of the Bottom Ash and Waste Water Basins (surface impoundments), respectively. Six (6) wells were installed and sampled during the Spring of 2019, the analytical results of which were then used to help locate ten additional wells that were installed during the Fall of 2019.

A total of 16 new, 6-inch diameter, groundwater monitoring/recovery wells were installed during 2019, such that each well might be used as a groundwater recovery well if needed. Some wells were located to provide better identification of the two TDS plumes' respective, downgradient, leading edges. Other wells were located to provide more definition regarding the locations of the plumes' centers of TDS mass.

Pump-tests of specific wells were used to help gain a better understanding of yields of localized wells and lateral extent of groundwater capture zones, which in turn were evaluated using Stantec's site-specific, groundwater model. The groundwater model helped IPSC/Stantec identify wells that could be used for groundwater recovery to intercept the downgradient, leading edges of the TDS plumes. The 2019 data are also being evaluated currently to investigate if, and where, additional groundwater monitoring/recovery wells might be needed for more comprehensive TDS plume identification/delineation and control.

Summary 2019 activities included:

- During April and May 2019, IPSC expanded the network of monitoring/recovery wells intended to monitor and control the downgradient (predominantly southwest), leading edge of the TDS plume associated with historical releases from the Bottom Ash Basin, through installation of supplemental monitoring (and remediation, if needed) wells BAC-8, BAC-9, and BAC-10 (reference Figure 3).
- 2) During April and May 2019, IPSC expanded the network of monitoring/recovery wells in apparent downgradient directions (predominantly southwest) in relation to recently discovered, apparent release areas (west and south sides) at the Waste Water Basin, through installation of supplemental monitoring (and remediation, if needed) wells WWC-8, WWC-9, and WWC-10 (reference Figure 3).

The drilling and installation activities associated with the six wells installed during April-May 2019 were discussed in detail, including drilling logs and well schematic diagrams, within



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IPSC's June 2019 Semi-Annual Progress Report. However, at the time of preparation of the June 2019 report, laboratory result reports associated with the May sampling event had not been received by IPSC. Reference Figure 3 herein for a May 2019 groundwater flow map and Figure 5 for a map noting May 2019 TDS concentrations. Monitoring and analytical results are tabulated in Attachment 1 herein.

3) The May 2019 results associated with sampling and monitoring of all CCR Rules monitoring wells at the site, including the six wells installed during April-May 2019, were reviewed and used to help identify data-gap areas where supplemental TDS plume delineation was deemed warranted. Ten supplemental monitoring/recovery wells (wells BAC-11 through BAC-17 located downgradient of the Bottom Ash Basin and wells WWC-11 through WWC-13 located downgradient of the Waste Water Basin) were drilled and installed during November and December 2019 (reference Figure 4 for an October 2019 groundwater flow map).

The ten new wells were being developed at the time of preparation of IPSC's *December* 2019 Semi-Annual Progress Report and will be sampled during IPSC's next semi-annual, groundwater quality sampling event, scheduled tentatively for April 2020. Figure 6 presents TDS concentrations associated with all other wells that were sampled during the October 2019 groundwater sampling event.

4) Stantec has identified several existing wells that will be used as supplemental groundwater recovery wells, designed to focus recovery of groundwater near the downgradient, leading edges and generalized centers of mass associated with the two TDS plumes. Currently, Stantec is designing well-specific, submersible pumps, water level and electrical controls, pump-houses, water conveyance piping, appurtenances, and supervisory control and data acquisition [SCADA] instrumentations, etc. For the foreseeable future, recovered groundwater will be discharged for evaporation within the Recycling Basin, into which existing recovery wells WR-101, WR-102, and WR-103 currently discharge recovered groundwater. Final design is expected to be completed during early-2020.

Although the TDS plumes pose little to no risk to human health or the environment at the present and foreseeable time, IPSC anticipates that the expanded groundwater recovery network will be installed as soon as practicable, likely sometime during mid-2020. It is anticipated that the analytical results associated with IPSC's proposed-Spring 2020 sampling of all CCR Rules compliance wells, including the ten wells that were installed during November-December 2019, may also influence what, if any, additional monitoring wells and recovery wells might be warranted in pursuit of TDS plume delineation and control.



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2.0 BACKGROUND

As summarized in IPSC's January 2019 Annual Summary Report, the quantitative analytical results from the Detection and Assessment Monitoring programs under the CCR Rule indicated the following Appendix IV constituent-specific Lower Confidence Limit (LCL) exceedances above corollary Groundwater Protection Standards (GWPSs) at groundwater monitoring wells located at two of the three CCR-regulated units (all concentrations in mg/L):

<u>CCR Unit</u>	<u>Well</u>	Appendix IV Constituent	LCL Concentration	GWPS Concentration
CB Landfill		NONE		
Bottom Ash Basin	BAC-2	Molybdenum	0.1506	0.1
	BAC-3	Lithium	0.812	0.7415
Waste Water Basin	WWC-1	Arsenic	0.01496	0.01275
	WWC-2	Arsenic	0.01415	0.01275
	WWC-3	Arsenic	0.02045	0.01275

Individual sample results of Appendix IV constituents above the GWPS during Assessment Monitoring are not necessarily a demonstration of statistically significant exceedances of the GWPS. The LCL must exceed the GWPS to demonstrate a statistically significant increase (SSI). If individual constituent concentrations exceed GWPSs, then Assessment Monitoring is to continue at that specific CCR unit, as was conducted by IPSC during 2019.

Statistical analyses to date indicate that the above-listed metals are present at localized boundaries of the two surface impoundments. As additional groundwater quality data are generated at the site, water quality data and analyte-specific GWPSs will be evaluated per statistical analyses performed in accordance with CCR Rule §257.95(d)(2) and §257.95(h) [R315-319-95(d)(2) and R315-319-95(h)] and the following general guidance sources:

- US EPA "Unified Guidance" document (*Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance,* March 2009, *EPA 530/R-09-007*);
- the Interstate Technology and Regulatory Council's ("ITRC") 2013, *Groundwater Statistics for Monitoring and Compliance, Statistical Tools for the Project Lifecycle*, Online Guidance; and
- Ofungwu, J. (2014) *Statistical Applications for Environmental Analysis and Risk Assessment*. Hoboken, New Jersey: John Wiley and Sons, Inc.

Although it is documented throughout Utah and in proximity to the site that Arsenic and Lithium can be present naturally at elevated concentrations, IPSC will continue monitoring these and other CCR Rule metal constituents in groundwater as part of its routine groundwater monitoring program. As additional groundwater quality data is generated, metal concentrations will be evaluated through statistical analysis for potential SSI, in accordance with CCR Rule requisites. Ongoing/future metal water quality data will be evaluated in terms of whether additional monitoring and/or recovery wells might be warranted.



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In light of the clay-rich nature of the uppermost aquifer beneath the site, and as indicated by groundwater quality data to date, Appendix IV constituents, such as Arsenic, Molybdenum, and Lithium, are not anticipated to migrate at the same velocity as natural groundwater. Natural attenuation processes, such as adsorption, cationic exchange, dispersion, dilution, and biological degradation, tend to slow the movement of metals in clay-rich aquifers.

As reported in IPSC's historical reports, groundwater in localized, downgradient directions in relation to the Bottom Ash Basin and the Waste Water Basin contains elevated concentrations of TDS. Groundwater quality data to date indicate that TDS has migrated farther downgradient of the two surface impoundments than the metal constituents located near the impoundment boundaries.

TDS is being used as the leading indicator parameter of impacted groundwater quality for fashioning a suitable groundwater remediation approach. TDS is expected to continue to migrate at a faster rate than dissolved metals in the clay-rich aquifer that underlies the property and the recovery of TDS-impacted groundwater at select recovery wells will also intercept any metal constituent that might be present.

As detailed in historical reports, Stantec constructed and calibrated a three-dimensional, numerical model to simulate groundwater flow and fate and transport of TDS in groundwater beneath the Site, based on pump-testing of existing, groundwater recovery wells. The model was developed generally in accordance with ASTM International's (American Standard for Testing and Materials) *Standard Guide for Application of Groundwater Model to a Site-Specific Problem* and the current version of United States Geological Survey (USGS) *Modular Three-Dimensional Finite Difference Groundwater Flow Model* (MODFLOW-2005).

Stantec extrapolated that the downgradient leading edge of the TDS plume located downgradient of the Bottom Ash Basin appears to be migrating naturally toward the southwest at an approximate rate of 150 to 180 feet per year. However, this is a generalized plume migration rate estimate, considering the relatively large, lateral distances between water quality monitoring well locations and the highly varied lithologic characteristics of the uppermost aquifer underlying the site. The TDS plume associated with the Bottom Ash Basin remains within IPSC property boundaries and currently poses no significant risk to human health or the environment.

Currently, and for the foreseeable future, IPSC operates existing groundwater recovery wells WR-101, WR-102, and WR-103 identified on Figure 3 to help reduce total mass of TDS in groundwater in relatively close proximity to the Bottom Ash Basin. The three wells are recovering groundwater that contains elevated concentrations of TDS, located in relatively close proximity to the apparent historical TDS release areas associated with the Bottom Ash Basin. Continued removal of TDS-elevated groundwater from each of these three wells is helping reduce the total mass of TDS within the uppermost aquifer beneath the site in a generalized downgradient/southwesterly direction in relation to the Bottom Ash Basin.

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2.1 ESTIMATED TDS PLUME LOCATIONS

2.1.1 Bottom Ash Basin

As demonstrated in Attachment 1 and summarized on Figures 5 and 6 (2019 data), groundwater quality data to date indicate that elevated concentrations of TDS extend from the western and southern perimeter boundaries of the Bottom Ash Basin toward the southwest. The downgradient, leading edge of the TDS plume appears to be located somewhere near monitoring well RW-9. During the two 2019 sampling events, downgradient monitoring wells RW-5, RW-6, RW-8, BAC-8, BAC-9, and BAC-10 did not contain any TDS concentration in excess of the Groundwater Discharge Permit GWPS for TDS of 1,100 ppm.

It is anticipated that the downgradient, leading edge of the TDS plume is located generally southwest of well RW-9; northeast of wells BAC-8, BAC-9, and BAC-10; and northwest of well RW-5. Spring 2020 sampling of the six (6), newly installed wells BAC-11 through BAC-16 will provide additional delineation of the TDS plume.

2.1.2 Waste Water Basin

As may be noted by review of historical water quality data presented in Attachment 1 and summarized on Figures 5 and 6 (2019 data), groundwater quality data to date indicate that elevated concentrations of TDS have been identified within monitoring wells WWC-4 and WWC-5 located near the generalized, northwestern-most corner of the surface impoundment. Data to date indicate a generally southwesterly/westerly component of groundwater flow in this area of the site. Downgradient monitoring wells RW-7, WWC-7, and WWC-10 have not contained elevated concentrations of TDS, to date.

Based on data to date, it is unknown whether the elevated TDS concentrations detected at well RW-4 might be attributable to TDS migration from the Bottom Ash Basin and/or the Waste Water Basin. Since well RW-4 is proposed for future groundwater recovery, it is anticipated that future monitoring of water quality in this general area will be used to investigate if additional recovery measures might be needed in this area.

Additionally, groundwater quality data to date indicate that elevated concentrations of TDS have been identified within wells WWC-1, WWC-6, and WWC-8, with an apparent TDS source possibly being in the vicinity of the southeastern-most corner of the surface impoundment. The apparent downgradient, leading edge of the TDS plume appears to be located somewhere near monitoring well WWC-6. During the two 2019 sampling events, downgradient monitoring wells RW-7, WWC-7, WWC-9, and WWC-10 did not contain elevated concentrations of TDS.

It is anticipated that the downgradient, leading edge of the TDS plume is located generally southwest of well WWC-6; northwest of WWC-9; and east of WWC-10 – along a generally, narrow, elongated TDS plume whose apparent source area appears to be the southeastern-most corner of the Waste Water Basin. Spring 2020 sampling of the three, newly installed wells

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WWC-11, WWC-12, and WWC-13 will help investigate and provide additional delineation of the TDS plume in this general area of the site.

SPRING 2019 GROUNDWATER MONITORING/RECOVERY WELL INSTALLATIONS AND SAMPLING EVENT January 24, 2020

3.0 SPRING 2019 GROUNDWATER MONITORING/RECOVERY WELL INSTALLATIONS AND SAMPLING EVENT

This report section presents a summary overview of information presented within IPSC's June and December 2019 Semi-Annual Progress Reports. Copies of drilling logs and well schematic diagrams may be referenced by review of the previous reports.

During April and May 2019, Stantec oversaw the drilling, soil logging, installation, and development of groundwater monitoring wells BAC-8, BAC-9, BAC-10, WWC-8, WWC-9, and WWC-10 at the site by Cascade Drilling, LP of Salt Lake City, Utah, a Utah-certified, water well drilling firm. Each well was installed and developed in similar fashion as previous, historical wells at the site. Figure 4 identifies the locations of the six wells and historical groundwater monitoring wells, as well as groundwater flow patterns associated with those wells monitored during Spring 2019 as part of the CCR Rules compliance monitoring program.

The six new wells were drilled by the sonic drilling method, whereby soil samples were collected continuously in 10-foot, sampling intervals for continuous, real-time visual inspection and Drill Log recording of subsurface soil lithologic and moisture characteristics. Stantec's field geologists screened and logged all soil samples during drilling of each of the six well borings. All down-hole drilling and sampling equipment were decontaminated before use between well locations.

In turn, the subsurface soil data were used to help determine respective groundwater monitoring well construction details. Typically, once each boring was advanced approximately 20 to 25 feet into the uppermost saturated soils, a monitoring well was constructed within each respective borehole. Each groundwater monitoring well was comprised of 6-inch diameter, flush-threaded, Schedule 40 polyvinyl chloride (PVC) pipe with a solid, PVC end-cap. The bottom 25 feet of each well was comprised of 6-inch diameter, flush-threaded, 0.02-slotted, Schedule 40 PVC well screen.

Following installation of each well, 16/30 washed, silica sand was emplaced around the well screen from the bottom of the borehole to an approximate height of several feet above the top of the well screen interval. An approximate five to seven feet thick, bentonite pellet seal was added on top of the sand pack material. Then, a cement-bentonite (typically, 10:1 ratio) grout was tremie-slurried from the top of the bentonite pellet seal to an approximate height of two feet below grade. A 5-ft. long, 6-inch diameter, steel, protective casing/monument was emplaced in concrete around each wellhead, with an approximate 2.5-ft. stick-up above natural grade. Each PVC well was furnished with a locking, expandable well cap and lock.

Following well installations, the ground surface and the top of each wellhead were surveyed in relation to one another and the same on-site, mean sea level benchmark used for surveying the tops of other historical monitoring wells. Table 1 presents a summary of all groundwater monitoring well construction specific details. Copies of Stantec's drilling logs and schematic well diagrams are presented in Appendix A of IPSC's *June 2019 Semi-Annual Progress Report*.



SPRING 2019 GROUNDWATER MONITORING/RECOVERY WELL INSTALLATIONS AND SAMPLING EVENT January 24, 2020

Shortly after well installations, each well was developed by a dedicated, well development drill rig. Typically, the rig removed water from each well by means of bailing followed by air-lift. Well water was removed from each well, until return water was relatively clear and free of fine-grained, formational materials.

Following well development, wells were purged and then sampled in accordance with purging, sampling, and quality assurance/quality control (QA/QC) protocol detailed within IPSC's November 2015 *Groundwater Sampling and Analysis Plan.* TDS analytical results associated with the Spring 2019 sampling event are presented on Figure 5 herein. Only those wells associated with IPSC's CCR Rules compliance monitoring program were sampled. As detailed within following report section *4.0 Fall 2019 Groundwater Monitoring/Recovery Well Installations and Sampling Event*, the analytical results associated with the Spring 2019 sampling event were used to locate ten additional, groundwater monitoring wells that were installed and sampled during the Fall of 2019 to help ongoing TDS plume characterization and delineation.

FALL 2019 GROUNDWATER MONITORING/RECOVERY WELL INSTALLATIONS January 24, 2020

4.0 FALL 2019 GROUNDWATER MONITORING/RECOVERY WELL INSTALLATIONS

This report section presents a summary overview of information presented within IPSC's June and December 2019 Semi-Annual Progress Reports. Copies of drilling logs and well schematic diagrams may be referenced by review of the previous reports.

During November and December 2019, Stantec oversaw the drilling, soil logging, installation, and development of groundwater monitoring/recovery wells BAC-11 through BAC-17 and wells WWC-11 through WWC-13 at the site by Cascade Drilling, LP of Salt Lake City, Utah, a Utah-certified, water well drilling firm. Each well was installed and developed in similar fashion as previous, historical wells at the site. Figure 5 identifies the locations of the ten new wells and historical groundwater monitoring wells, as well as groundwater flow patterns associated with those wells monitored during Fall 2019 as part of the CCR Rules compliance monitoring program.

The ten new wells were drilled by the sonic drilling method, whereby soil samples were collected continuously in 10-foot, sampling intervals for continuous, real-time visual inspection and Drill Log recording of subsurface soil lithologic and moisture characteristics. Stantec's field geologists screened and logged all soil samples during drilling of each of the ten well borings. All downhole drilling and sampling equipment were decontaminated before use between well locations.

In turn, the subsurface soil data were used to help determine respective groundwater monitoring well construction details. Typically, once each boring was advanced approximately 20 to 25 feet into the uppermost saturated soils, a monitoring well was constructed within each respective borehole. Each groundwater monitoring/recovery well was comprised of 6-inch diameter, flush-threaded, Schedule 40 PVC pipe with a solid, PVC end-cap. The bottom 25 feet of each well was comprised of 6-inch diameter, flush-threaded of 6-inch diameter, flush-threaded, Schedule 40 PVC well screen.

Following installation of each well, 16/30 washed, silica sand was emplaced around the well screen from the bottom of the borehole to an approximate height of several feet above the top of the well screen interval. An approximate five to seven feet thick, bentonite pellet seal was added on top of the sand pack material. Then, a cement-bentonite (typically, 10:1 ratio) grout was tremie-slurried from the top of the bentonite pellet seal to an approximate height of two feet below grade. A 5-ft. long, 6-inch diameter, steel, protective casing/monument was emplaced in concrete around each wellhead, with an approximate 2.5-ft. stick-up above natural grade. Each PVC well was furnished with a locking, expandable well cap and lock.

During December 2019, the ground surface and the top of each wellhead was surveyed in relation to one another and the same on-site, mean sea level benchmark used for surveying the tops of other historical monitoring wells. Table 1 presents a summary of all groundwater monitoring well construction specific details. Copies of Stantec's drilling logs and schematic well

FALL 2019 GROUNDWATER MONITORING/RECOVERY WELL INSTALLATIONS January 24, 2020

diagrams associated with the ten new wells are presented in Appendix A of IPSC's *December* 2019 Semi-Annual Progress Report.

Shortly after well installations, each well was developed by a dedicated, well development drill rig. Typically, the rig removed water from each well by means of bailing followed by air-lift. Well water was removed from each well, until return water was relatively clear and free of fine-grained, formational materials.

Prior to the installation of the ten new wells, IPSC sampled all other CCR Rules compliance monitoring wells in October of 2019. The TDS analytical results associated with this sampling event are presented on Figure 6 herein. The ten new wells will be sampled during IPSC's next semiannual, groundwater quality sampling event, scheduled tentatively for April 2020.

As detailed within the following report section, IPSC and Stantec have initiated design of an expanded groundwater recovery network that will start recovering groundwater impacted by TDS at, and/or near, the apparent downgradient, leading edge of each of the two TDS plumes. The lateral extent of the downgradient, leading edge of each TDS plume has not been delineated completely, as yet; however, IPSC intends to install additional groundwater recovery equipment within select wells, as soon as practicable during mid-2020. It is anticipated that the analytical results associated with IPSC's proposed Spring 2020 sampling of all CCR Rules compliance wells will influence what additional monitoring wells and recovery wells might be warranted in pursuit of TDS plume delineation and control.

ONGOING CORRECTIVE ACTIONS AND PROGRESS TOWARD IMPLEMENTING ADDITIONAL GROUNDWATER CORRECTIVE ACTION REMEDY January 24, 2020

5.0 ONGOING CORRECTIVE ACTIONS AND PROGRESS TOWARD IMPLEMENTING ADDITIONAL GROUNDWATER CORRECTIVE ACTION REMEDY

5.1 ONGOING GROUNDWATER RECOVERY AT EXISTING RECOVERY WELLS WR-101, WR-102, AND WR-103

IPSC intends to continue operating existing groundwater recovery wells WR-101, WR-102, and WR-103 identified on Figure 3. The three wells are recovering groundwater that contains elevated concentrations of TDS, located in relatively close proximity to the apparent historical TDS release areas associated with the Bottom Ash Basin. Wells WR-102 and WR-103 are located generally along the apparent TDS plume centerline, as explained in detail in IPSC's 2016 *Updated Corrective Action Plan.* Continued removal of TDS-enriched groundwater from each of these three wells is helping reduce the total mass of TDS within the uppermost aquifer beneath the site in a generalized downgradient/southwesterly direction in relation to the Bottom Ash Basin.

5.2 SUMMARY OF ONGOING ACTIONS ASSOCIATED WITH DESIGN OF EXPANDED GROUNDWATER REMEDY

Currently, Stantec is designing an enhanced TDS plume control and associated groundwater recovery network. The groundwater recovery program will focus on two aspects of TDS plume control, namely: recovery of groundwater from the downgradient, leading edges of each TDS plume, as well as recovery of groundwater from the generalized center of TDS mass of each of the two TDS plumes.

IPSC/Stantec have identified the following wells for *anticipated* groundwater recovery, based on data generated to date and anticipating that these specific wells *will most probably* be found to contain elevated concentrations of TDS during the upcoming, Spring 2020 sampling event – based on extrapolation of elevated TDS concentrations associated with wells that have been sampled historically. Future groundwater monitoring results will influence what additional monitoring and/or recovery wells might also be considered for groundwater monitoring and/or recovery, in addition to the following anticipated, groundwater recovery wells:

- Bottom Ash Basin TDS Plume Recovery Wells: BAC-13; BAC-14, BAC-16 (and possibly well BAC-15).
- ▶ Waste Water Basin Plume Recovery Wells: RW-4, WWC-8, and WWC-6.

ONGOING CORRECTIVE ACTIONS AND PROGRESS TOWARD IMPLEMENTING ADDITIONAL GROUNDWATER CORRECTIVE ACTION REMEDY January 24, 2020

Currently, Stantec is designing well-specific, submersible pumps, water level and electrical controls, pump-houses, water conveyance piping, appurtenances, and SCADA instrumentations for anticipated/possible use in each of the afore-listed wells. It is anticipated that installation and construction of the enhanced groundwater recovery network will be initiated during mid-2020. The Spring 2020 water quality data, which will include analytical results associated with newly-installed wells BAC-11 through BAC-17, as well as WWC-11, WWC-12, and WWC-13, will be evaluated to help investigate which of these specific wells might be used for groundwater recovery.

Upon completion of installation and start-up of the enhanced groundwater recovery network, IPSC will evaluate the degree to which groundwater recovery and natural attenuation processes control the downgradient leading edges of the two TDS plumes. IPSC will continue to conduct and report to the UDEQ its routine, semi-annual, groundwater monitoring and remediation program in formal Summary Reports.

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Figure 1 General Site Location Map



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Figure 2. CCR Units Location Map



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Figure 3 May 2019 Groundwater Flow Map



LEGEND:

- ✤ MONITORING WELL (GREYED WHEN NOT USED FOR CONTOURING)
- ▲ GROUNDWATER CONTOUR

NOTE:

1) DATA COLLECTED JUNE 2018 2) ALL ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL

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Figure 4 October 2019 Groundwater Flow Map







4617.52 GROUNDWATER ELEVATION

GROUNDWATER CONTOUR \sim



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Figure 5 May 2019 TDS Results





LEGEND:

- ✤ MONITORING WELL (GREYED WHEN NOT USED FOR CONTOURING)
- 718 TDS RESULT (parts per million-ppm)
- ▲ GROUNDWATER CONTOUR

NOTE:

1) DATA COLLECTED SPRING 2019 2) ALL ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL

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Figure 6 October TDS Results



LEGEND:

- ✤ MONITORING WELL (GREYED WHEN NOT USED FOR CONTOURING)
- 718 TDS RESULT (parts per million-ppm)
- ▲ GROUNDWATER CONTOUR

NOTE:

1) DATA COLLECTED FALL 2019 2) ALL ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL

	$\mathbf{\wedge}$		FOR:				FIGURE:	
0	1,300 2,60	Stantec	INTERMOUNTAIN PO INTERMOUNTAIN GE DELTA	WER SERVICE CORP. ENERATION FACILITY A, UTAH	FALL 2019 T	DS RESULTS	6	5
	Feet 1 in = 1,350 ft		JOB NUMBER: 203709098	DRAWN BY: CK	CHECKED BY: ALL	APPROVED BY:	DATE: 12	2/18/19

January 24, 2020

TABLE 1 GROUNDWATER MONITORING WELL CONSTRUCTION DETAILS

Table 1 WELL CONSTRUCTION SUMMARY Intermountain Generating Facility Delta, Utah

MONITOR WELL I.D.	DATE COMPLETED	WELL DIAMETER / MATERIAL	TOTAL DEPTH (feet BGS)	WELL SCREENING INTERVAL (feet BGS)	TOP OF PVC CASING ELEVATION (feet MSL*)
	Co	mbustion By-Pro	ducts Landfill We	ells	
CLW-1	5/12/2015	4-inch PVC	65	55-65	4653.46
CLW-2	5/14/2015	4-inch PVC	80	70-80	4648.17
CLW-3	5/13/2015	4-inch PVC	80	70-80	4644.03
CLW-4	5/26/2015	4-inch PVC	82	72-82	4642.88
CLW-5	7/27/2015	4-inch PVC	82	72-82	4640.99
CLW-6	7/26/2015	4-inch PVC	88	78-88	4639.63
CLW-7	7/24/2015	4-inch PVC	72	52-72	4659.34
CLW-8	7/24/2015	4-inch PVC	72	62-72	4655.63
CLW-9	3/25/2018	4-inch PVC	97	87-97	4555.98
CL-U-1	7/23/2015	4-inch PVC	80	68-78	4657.48
CL-U-2	7/22/2015	4-inch PVC	80	70-80	4663.48
CL-U-3	3/27/2018	4-inch PVC	77	67-77	4606.01
		Bottom Ash	Basin Wells		
BAC-1	7/31/2015	4-inch PVC	70	60-70	4668.70
BAC-2	7/29/2015	4-inch PVC	65	55-65	4668.72
BAC-3	7/28/2015	4-inch PVC	72	52-72	4668.84
BAC-4	8/10/2015	4-inch PVC	75	55-75	4649.45
BAC-5	8/9/2015	4-inch PVC	68	58-68	4649.67
BAC-6	8/8/2015	4-inch PVC	65	55-65	4648.15
BAC-7	8/7/2015	4-inch PVC	67	57-68	4650.09
BAC-8	4/29/2019	6-inch PVC	77	52-77	4626.42
BAC-9	5/1/2019	6-inch PVC	77	52-77	4626.27
BAC-10	5/3/2019	6-inch PVC	87	62-87	4626.27

Table 1 WELL CONSTRUCTION SUMMARY Intermountain Generating Facility Delta, Utah

MONITOR WELL I.D.	DATE COMPLETED	WELL DIAMETER / MATERIAL	TOTAL DEPTH (feet BGS)	WELL SCREENING INTERVAL (feet BGS)	TOP OF PVC CASING ELEVATION (feet MSL*)
BAC-11	12/7/2019	6-inch PVC	81	50-75	4624.96
BAC-12	12/6/2019	6-inch PVC	81	53-78	4625.055
BAC-13	11/18/2019	6-inch PVC	91	65-90	4629.834
BAC-14	12/4/2019	6-inch PVC	81	53-78	4627.506
BAC-15	12/9/2019	6-inch PVC	81	50-75	4626.494
BAC-16	11/21/2019	6-inch PVC	91	64-89	4630.426
BAC-17	12/10/2019	6-inch PVC	82	56-81	4629.648
BA-U-1	7/24/2015	4-inch PVC	55	45-55	4665.73
BA-U-2	7/25/2015	4-inch PVC	70	60-70	4661.33

Table 1 WELL CONSTRUCTION SUMMARY Intermountain Generating Facility Delta, Utah

MONITOR WELL I.D.	DATE COMPLETED	WELL DIAMETER / MATERIAL	TOTAL DEPTH (feet BGS)	WELL SCREENING INTERVAL (feet BGS)	TOP OF PVC CASING ELEVATION (feet MSL*)
		Waste Water	Basin Wells		
WWC-1	7/26/2015	4-inch PVC	60	48-58	4644.72
WWC-2	7/27/2015	4-inch PVC	70	60-70	4645.11
WWC-3	7/30/2015	4-inch PVC	65	55-65	4638.90
WWC-4	7/29/2015	4-inch PVC	75	65-75	4640.58
WWC-5	7/28/22015	4-inch PVC	74	64-74	4641.75
WWC-6	3/24/2018	4-inch PVC	87	67-77	4576.26
WWC-7	3/22/2018	4-inch PVC	87	77-87	4570.78
WWC-8	4/25/2019	6-inch PVC	96	71-96	4647.799
WWC-9	4/28/2019	6-inch PVC	89	62-87	4642.58
WWC-10	4/26/2019	6-inch PVC	90	62-87	4633.72
WWC-11	11/16/2019	6-inch PVC	91	65-90	4641.919
WWC-12	11/12/2019	6-inch PVC	91	65-90	4636.661
WWC-13	11/15/2019	6-inch PVC	91	65-90	4635.128
SI-U-1	8/12/2015	4-inch PVC	79	69-79	4664.59
WW-U-1	8/11/2015	4-inch PVC	70	60-70	4665.03
WW-U-2	8/11/2015	4-inch PVC	75	65-75	4665.46

BGS = Below Ground Surface

MSL = Mean Sea Level

Appendix A Drilling Logs and Well Schematic Diagrams January 24, 2020

Appendix A Drilling Logs and Well Schematic Diagrams

	WWC-11 ntermountain Power Service Corporation	Stantec
INTERMOUNTAIN POWER SERVICE CORP. SITE LOCATION: SO	South of Waste Water Basin Surface Impoundment	
DRILLING CONTRACTOR: Cascade Drilling Co DRILLING METHOD: Sonic Ed DRILLING EQUIPMENT: Pro Sonic 600 11-77287 Ed SAMPLING METHOD: 4 inch sonic core barrel 0 to 91 ft bgs., 10 inch sonic core barrel 0 to 91 ft bgs. Do	COORDINATE SYSTEM: EASTING: NORTHING: ELEVATION: BOREHOLE ANGLE: OTAL DEPTH (ft.): 91 GROUNDWATER LEVEL DATE STARTED: 11/15/2019 DATE FINISHED: 11/16 OGGED BY: Michael Ward	90 degrees L (ft. btoc.): 22.82 5/2019
DEPTH DEPTH (feet) feet) DECULL GRAPHIC GRAPHIC	WELL	CONSTUCTION DIAGRAM
0 Poorly graded Sand with Silt (SP), fine sand 95%, loose, sof 7/4), trace gravel 5%.	oft, dry, very pale brown (10 YR	 Above ground monument with well cap
 Clay (CL), medium plasticity, cohesive, moist, soft to mediur mottled with some trace interfingered clay, brownish yellow (Well Graded Sand with Clay (SW-SC), medium grained sand moist, loose, pale brown (10 YR 6/3). Clay with Sand (CL), low to medium plasticity, soft to medium moist, brown (10 YR 5/3). Same as above, Clay (CL), no sand. Poorly Graded Sand (SP), fine sand 98%, loose soft, dry, pa subrounded. 	Im density, light gray (10 YR 7/1), (10 YR 6/8). Ind 85%, gravel 10%, clay 5%, Im density, non cohesive, dry to ale brown (10 YR 6/3), 2% gravel,	Grout 0 to 54.4 ft bgs. Borehole diameter 10 inches from 0 to 91 ft bgs.
35- Well Graded Sand with Gravel (SW), fine to coarse sand 90 40- *** Well Graded Sand with Gravel (SW), fine to coarse sand 90 moist, brown (10 YR 5/3), gravel are subangular to subround	0%, small gravel 10%, loose, ded, assorted gravel matrix.	0 to 65 ft bgs., 6 in dia., Sch. 40 PVC riser
 45 Clay (CL), medium plasticity, medium density, moist to wet, Well Graded Sand with gravel (SW), fine to coarse sand 90% (10 YR 5/3). 	cohesive, pale brown (10 YR 6/3). %, gravel 10%, loose, soft, brown	
 Same as above, becoming wet. Clay (CL), medium plasticity, medium density, wet, cohesive Clay with Sand (CL), low to medium plasticity, soft to medium plate brown (10 YR 6/3). Same as above, fine grained sand, saturated, low plasticity, 65 	e, pale brown (10 YR 6/3). Im density, non cohesive, moist, , non cohesive.	Bentonite 54.4 to 56.7 ft bgs. Filter pack sand 56.7 to 91 ft bgs.
70 Same as above, with trace interfingering clay, reddish yellow 70 Well Graded Sand with Gravel (SW), fine to coarse sand 90° 75 brown (10 YR 5/3), gravel are subrounded, assorted matrix.	w (5 YR 6/6).	65 to 90 ft bgs., 6 in dia., Sch. 40 PVC screen with 0.02 ische alet
		aperture
 Clay with Sand (CL), medium plasticity, medium density, we 6/3). End of borehole to 91 ft bgs., per scope of work. 	et, cohesive, pale brown (10 YR	End Cap
Notes: bgs. = below ground surface Sch. = Schedule dia. = diameter YR = Yellow-Red ft = feet	·	1

MONITORNG WELL ID: CLIENT	WWC-12 Intermountain Power Service Corporation	on Charles
INTERMOUNTAIN POWER SERVICE CORP. PROJECT: SITE LOCATION	Monitoring Well Installation South of Waste Water Basin Surface In	poundment
DRILLING CONTRACTOR: Cascade Drilling	COORDINATE SYSTEM:	
DRILLING METHOD: Sonic	EASTING: NORTHI	NG:
DRILLING EQUIPMENT: Pro Sonic 600 11-77287	ELEVATION: BOREHO	DLE ANGLE: 90 degrees
SAMPLING METHOD: 4 inch sonic core barrel 0 to 91 ft bgs.,	TOTAL DEPTH (ft.): 91 GROUNE	WATER LEVEL (ft. btoc.): 20.46
10 inch sonic core barrel 0 to 91 ft bgs.	DATE STARTED: 11/11/2019 DATE FIN LOGGED BY: Michael Ward	ISHED: 11/12/2019
HITHOLOGICAL DESCRIPTION		WELL CONSTUCTION DIAGRAM
0 Poorly Graded Sand with Silt (SP-SM), 90% sand, 10% loose, fine grained, dry, sand are mostly quartz, subang 5 Same as above, becoming light yellowish brown (10 YR	silts, light gray (7.5 YR 7/1), soft, ular quartz grains. 6/4).	Above ground monument with well cap
10 Same as above, becoming wet at 8.5 ft bgs., perched gr Clay (CL), medium plasticity, medium stiff. cohesive. ver	roundwater.	Grout 0 to 55 ft
Poorly Graded Sand with Silt (SP-SM), 95% fine grained brown (10 YR 4/3), trace gravel. Well Graded Sand with Gravel (SW) 80% sand 20% gr	I sand, 5% silts, loose, soft, moist,	bgs. Borehole diameter 10
soft, dark yellowish brown (10YR 4/4), gravel are subrou	inded to rounded, small.	inches from 0 to 91 ft bgs.
Clay (CL), medium plasticity, medium density, moist, co 6/4), thickly bedded, sharp contact at 25 ft bgs.	hesive, light yellowish brown (10 YR	
30- Poorly Graded Sand (SP), fine grained sand 100%, loos	se, soft, moist, brown (10YR 5/3).	0 to 65 ft bgs., 6 in dia., Sch. 40
		PVC riser
40 Well Graded Sand with Gravel (SW), fine to coarse grain loose, soft, moist, dark yellowish brown (10 YR 4/4). 45 Same as above, increase in gravel to 30%.	ned sand 90%, small gravel 10%,	
Poorly Graded Sand (SP), fined grained sand 100%, loc contact.	ose, moist, brown (10YR 4/3). Sharp	
55 Clay (CL), high plasticity, stiff, moist, cohesive, light yell contact.	owish brown (10 YR 6/4), sharp	Bentonite 55 to 58 ft bgs.
60 Lost core sample from sonic casing. Clay (CH), high plasticity, stiff, moist, cohesive, yellowis	h brown (10 YR 5/4).	Filter Pack Sand 58 to 91 ft bgs.
 Well Graded Sand with Silt and Clay (SW-SM), fine or m loose, brown (10 YR 4/3). Clay (CH), high plasticity, stiff, moist, cohesive, yellowis 	hedium grained sand 100%, soft, h brown (10 YR 5/4).	65 to 90 ft bgs., 6 in dia., Sch. 40
80	rained sand 05% s soft losss wat	0.02 inch slot aperture
85 Clay with Sand (CL), medium plasticity, soft to medium of sand are fine grained.	density, wet, pale brown (10YR 6/3),	
90 Same as above with gradational transition to clay. Clay (CH), high plasticity, mottled, wet, cohesive, pale b reddish yellow (7.5 YR 7/6).	rown (10 YR 6/3), mottled color is	End Cap
Y5 Ling of porenoie to 91 ft pgs., per scope of work.	/	
INOLES: bgs. = below ground surface Sch. = Schedule dia. = diameter YR = Yellow-Red ft = feet YR = Yellow-Red		1

	\wedge	М	ONITORNG WELL ID:	WWC-13 Intermountain Power Service Co	orporation	
INTERMO	IINTAIN POWER S	SERVICE CORP	PROJECT	Monitoring Well Installation	siperation	() Stantec
		SERVICE CONT.	SITE LOCATION	South of Waste Water Basin Su	rface Impoundme	nt
DRILLING C	ONTRACTOR:	Cascade Drilling		COORDINATE SYSTEM:		
DRILLING M	IETHOD:	Sonic		EASTING: N	IORTHING:	
DRILLING E		Pro Sonic 600 1	1-77287	ELEVATION: B	OREHOLE ANGL	E: 90 degrees
SAMPLING I	METHOD:	4 inch sonic core	barrel 0 to 91 ft bgs.,	TOTAL DEPTH (ft.): 91 G	ROUNDWATER L	EVEL (ft. btoc.): 19.55
		10 inch sonic co	e barrel 0 to 91 ft bgs.	DATE STARTED: 11/13/2019 D.	ATE FINISHED: '	11/15/2019
				LOGGED BY: Michael Ward	1	
			LITHOLOGICAL		N N	VELL CONSTUCTION
(fee			DESCRIPTION			DIAGRAM
CITH GI						
0	Poorly Graded (7.5 YR 7/1).	d Sand with Silts (SP-SM), fine sand 95%,	5% silts, soft, loose, dry, light gray	/ -	Above ground monument with well cap
5	Well Graded S YR 7/2), trace	Sand (SW), fine to gravel, small grav	medium grained sand 9 rel, assorted matrix, sub	5%, soft, loose, dry, pinkish gray (ounded.	7.5	wen cap
10	Same as abov	ve, with clay, incre d (CL), low to med	ase gravel 10%, wet ium plasticity, moist, col	nesive, very pale brown (10 YR 7/2	<u>↓</u>	Grout 0 to 52.8 ft
15-	Well Graded S (10 YR 6/3), tr	Sand (SW), fine to race gravel 5%, su	medium grained sand 9 brounded.	5%, soft, loose, , moist, pale brow	n l	bgs. Borehole diameter 10
20-						, inches from 0 to 91 ft bgs.
25-	Same as above Clay with San contact at 23 f	ve, with clay (SW-9 d (CL), medium pl ft, bgs,	SC) at 10%, wet, soft, lo asticity, moist cohesive,	<i>w</i> plasticity clay. thick bedded, fine sand, sharp		8
30-	Same as above Clay with Same Poorly Gradeo	ve, Člay (CL), trace d (CL), medium pla d Sand (SP), fine c	e black staining. asticity, moist cohesive, rained sand 100%, loos	fine sand. e, soft, moist, brown (10 YR 5/3).		0 to 65 ft bgs., 6 in dia., Sch. 40
35–	, -					PVC riser
40-	Well Graded S	Sand with gravel (S	SW) fine to coarse sand	85% 15% gravel loose soft mo	ist –	×
45	brown (10 YR Poorly Graded	5/3), gravel are sr d Sand (SP), fine to	nall, subrounded, assort o medium grained sand	ed matrix. 98%, loose, soft, moist, brown (10		8
50	Same as abov	ve, trace clay.				8
55-	(10 YR 5/4), s	d (CL), low to med secondary sand are	ium plasticity, soft to me e fine grained.	aium aensity, moist, yeilowish bro	wn z	Bentonite 52.8 to 55 ft bgs.
60-	Clay (CL), me brown (10 YR	dium to high plasti 5/3), mottled, rede	city, medium to stiff den dish yellow (5 YR 6/6).	sity, moist, thickly bedded, cohesiv	ve, —	Filter pack sand 55 to 91 ft bgs.
65			· · · · · · · · · · · · · · · · · · ·			
70-	Clay with San Clay (CL), me mottled, reddi	d (CL) , medium p edium plasticity, me sh yellow (5 YR 6/	edium to stiff density, mo 6).	inesive, brown (10 YR 5/3). ist, cohesive, brown (10 YR 5/3),		65 to 90 ft bgs., 6 in dia Sch 40
75-//	Boorly Crades	d Sand with Class (CD CC) fine arctined	0.05% 10000 act wat hrow (4)		PVC screen with
80-08	YR 5/3), some Clay with San	e trace interfingerin d (CL), low plastic	ng clay 5%, reddish yello ty, soft, wet, non cohesi	w (5 YR 5/3). ve, pale brown (10 YR 6/3).		aperture
85-	Clay (CL), me clay reddish y	edium to high plasti rellow (5 YR 6/6), t	city, wet, cohesive, pale race sand.	brown (10 YR 6/3), interfingering		
90-	Same as abov	ve, becoming med	um plasticity.			End Con
95	End of boreho	ble to 91 ft bgs., pe	r scope of work.			
Notes: b	ogs. = below ground : dia. = diameter t = feet	surface Sch. = Schedu YR = Yellow-F	ile Red		I	1

INTERMOUNTAIN POWER SERVICE CORP. MONITORNG WELL ID: CLIENT PROJECT: SITE LOCATION:	BAC-11 Intermountain Power Service Corporation Monitoring Well Installation Southwest of Bottom Ash Basin Surface	on Stantec e Impoundment
DRILLING CONTRACTOR: Cascade Drilling DRILLING METHOD: Sonic DRILLING EQUIPMENT: Pro Sonic 600 11-77287 SAMPLING METHOD: 4 inch sonic core barrel 0 to 91 ft bgs., 10 inch sonic core barrel 0 to 91 ft bgs.	COORDINATE SYSTEM: EASTING: NORTHI ELEVATION: BOREHO TOTAL DEPTH (ft.): 81 GROUND DATE STARTED: 12/6/2019 DATE FIN LOGGED BY: Michael Ward	NG: DLE ANGLE: 90 degrees DWATER LEVEL (ft. btoc.): 48.21 NSHED: 12/7/2019
LITHOLOGICAL DESCRIPTION		WELL CONSTUCTION DIAGRAM
 Fill Poorly Graded Sand with Silt (SP-SM), fine grained sand brown (10 YR 7/3). Clay with Sand (CL), low plasticity, soft to medium densit 6/2). Poorly Graded Sand with Clay (SP-SC), fine grained sand light brownish gray (10 YR 6/2); clay are low plasticity, medium dense, cohesive, n 6/2), mottled with brownish yellow (10 YR 6/8). Clay (CL), medium plasticity, medium dense, cohesive, n 6/2), mottled with brownish yellow (10 YR 6/8). Poorly Graded Sand with Clay (SP-SC), fine grained sand yellowish brown (10 YR 6/4); clay low plasticity, soft, non Same as above, becoming brown (10 YR 5/3). Clay (CL), medium plasticity, medium dense, cohesive, n 6/4). Clay (CL), medium plasticity, medium dense, cohesive, n 6/4). 	ty, moist, light brownish gray (10 YR d 85%, loose, medium dense, moist, edium dense. moist, light brownish gray (10 YR d 90%, loose, soft, moist, light cohesive.	Above ground monument with well cap Borehole diameter 10 inches from 0 to 76 ft bgs., and 4 inches from 76 to 81 ft bgs. Grout 0 to 38 ft bgs. 0 to 50 ft bgs., 6 in dia., Sch. 40 PVC riser Bentonite 38 to 40 ft bgs.
 5/3). 55 Clay (CL), medium plasticity, medium dense, cohesive, n 6/4). 60 Clay with Sand (CL), low plasticity, soft, wet, pale brown Well Graded Sand (SW) fine to coarse Sand 95% loose 	noist, light yellowish brown (10 YR (10 YR 6/3).	Filter Pack Sand 40 to 76 ft bgs.
65- Same as above, increase in coarse grained sand betwee Same as 60 ft bgs.	en 65.2 to 65.8 ft bgs.	50 to 75 ft bgs., 6 in dia., Sch. 40 PVC screen with 0.02 inch slot
 75 Clay (CL), medium plasticity, medium dense, moist, cohe 6/4). 80 End of borehole at 81 ft bgs. Installed monitoring well per set. 	esive, light yellowish brown (10 YR r scope of work.	End Cap
85_		1

CLURIT DRV-12 CLURIT Dremonstain Power Service Corporation Statutec INTERMONTANT POWER SERVICE CORP. STELICORTION Southwast of Bottom Ash Basin Surface Impoundment Southwast of Bottom Ash Basin Surface Impoundment DRLING CONTRACTOR Cascade Diffing CORDINATE SYSTEM DOCREDIATE SYSTEM BOREHOLE ANGLE: 90 degrees SMARLING METHOD Southwast of Bottom Ash Basin Surface Impoundment Docre Stratter 124/2016 DORT STATTER LEVEL (It. thes.): 49.55 SMARLING METHOD 41 cht South core barrel 01 to 91 ft bgs. ILLEVATION: BOREHOLE ANGLE: 90 degrees SMARLING METHOD 41 cht South core barrel 01 to 91 ft bgs. ILLEVATION: BOREHOLE ANGLE: 90 degrees 10 inch asolic core barrel 01 to 91 ft bgs. ILLEVATION: BOREHOLE ANGLE: 90 degrees Michael Ward 0 of Graded Samd with Stit (SP-SM), fine grained sand 95%, loose, solt, dry, pais brown Michael Ward Michael Ward 10 of Graded Samd with Stit (SP-SM), fine grained sand 95%, loose, solt, dry, fight Downiah gray (10 YR 62); dry 10%, low plastidy, soft. Michael Ward Stratter 70 20 of Clay WIL Sand With Gravel, SMU, fine to coarse and 65%, loose, solt, dry, fight Downiah Gravel Da S 8, figs. Gravel Da S 8, figs. 30 of Thy 96, Clay with Sand (CL), medium plastidy, medium dense, moist, cobresive,		BAO 40	
DRLING CONTRACTOR: Cascade Drilling CONTRUME SYSTEM DRLING KETHOD: Sonic EASTING: BORELMONE METHOD: SAMPLING KETHOD: 4 linch aonic core barrel 0 to 91 ft bgs. 10 linch sonic core barrel 0 to 91 ft bgs. 10 linch sonic core barrel 0 to 91 ft bgs. 10 linch sonic core barrel 0 to 91 ft bgs. DATE STARTED: 124/2019 DATE STARTED: 124/2019 DATE STARTED: 124/2019 DOGED BY: Michael Ward Total CEPTH (1): 81 SCONSTORMED Above ground method by the sonic core barrel 0 to 91 ft bgs. Doged BY: UTFICUODICAL DESCRIPTION WELL CONSTUCTION DAGRAM Doged BY: Michael Ward Michael Ward Doged BY: Poorly Graded Sand with Silf (SP-SM), fine grained sand 95%, loose, soft, dry, pale brown find gray (10 YR 6/2). Above ground method by the sonic cohesive. July 100 YR 6/2). Doged BY: Clay (CL), medium plasticity, medium dense, mold, cohesive, vary pale brown (10 YR 6/2). Above ground method by the sonic cohesive. July 100 YR 6/2). Dog Grade Sand with Silf (SP-SM), loose, soft, dry, pale brown (10 YR 6/3). Grout 0 to 38 ft bgs. Clay (CL), medium plasticity, medium dense, mold, cohesive, vary pale brown (10 YR 6/3). Grout 0 to 38 ft bgs. Clay (10 YR 6/2). gravet 15%, sonic and 95%, loose, soft, dry, light brownish gray (10 YR 6/3). Grout 0 to 38 ft bgs. Clay (CL), medium plasticity, medium dense, mol	INTERMOUNTAIN POWER SERVICE CORP. SITE LOCATION	BAC-12 Intermountain Power Service Corporati Monitoring Well Installation Southwest of Bottom Ash Basin Surfac	e Impoundment
Image: Provide and the second seco	DRILLING CONTRACTOR:Cascade DrillingDRILLING METHOD:SonicDRILLING EQUIPMENT:Pro Sonic 600 11-77287SAMPLING METHOD:4 inch sonic core barrel 0 to 91 ft bgs., 10 inch sonic core barrel 0 to 91 ft bgs.	COORDINATE SYSTEM: EASTING: NORTH ELEVATION: BOREH TOTAL DEPTH (ft.): 81 GROUND DATE STARTED: 12/4/2019 DATE FIN LOGGED BY: Michael Ward	ING: OLE ANGLE: 90 degrees DWATER LEVEL (ft. btoc.): 49.55 NISHED: 12/6/2019
0 Poorly Graded Sand with Silt (SP-SM), fine grained sand 95%, loose, soft, dry, pale brown (10 YR 6/3). Above ground monument with well cap boorly Graded Sand with Clay (SP-SC), fine grained sand 90%, loose, soft, dry, light brownish gray (10 YR 6/2), clay 10%, low plasticity, soft. Borehole diameter 10 inches from 0 to 78 ft bgs., and 4 roches from 73 to 81 ft bgs. 20 Clay (CL), medium plasticity, medium dense, moist, cohesive, light brownish gravel 10% R6/2), regret 15%, small submounds with Gravel (SW), fine to coarse sand 85%, loose, soft, dry, light brownish motited with brownish yellow (10 YR 6/8). Grout 0 to 38 ft bgs. 20 Clay (CL), medium plasticity, medium dense, moist, cohesive, very pale brown (10 YR 6/3). Grout 0 to 38 ft bgs. 30	LITHOLOGICAL DESCRIPTION		WELL CONSTUCTION DIAGRAM
85	 Poorly Graded Sand with Silt (SP-SM), fine grained sand (10 YR 6/3). Clay (CL), medium plasticity, medium dense, moist, coh-Poorly Graded Sand with Clay (SP-SC), fine grained sand brownish gray (10 YR 6/2); clay 10%, low plasticity, soft. Clay (CL), medium plasticity, medium dense, moist, coh-mottled with brownish yellow (10 YR 6/8). Poorly Graded Sand with Gravel (SW), fine to coarse sand gray (10 YR 6/2), gravel 15%, small, subangular to subre Poorly Graded Sand (SP), fine grained sand 95%, loose 5% clay. Clay with Sand (CL), medium plasticity, soft, non cohesive, pale Clay with Sand (CL), low plasticity, soft, non cohesive, we Clay (CL), Same as 39.5 ft bgs. Clay (CL), medium plasticity, medium dense, cohesive, with yellowish brown (10 YR 5/6). Clay with Sand (CL), low plasticity, soft, non cohesive, with yellowish brown (10 YR 5/6). Clay with Sand (CL), low plasticity, soft, non cohesive, with yellowish brown (10 YR 5/6). Clay with Sand (CL), low plasticity, soft, non cohesive, with yellowish brown (10 YR 5/6). Clay with Sand (CL), low plasticity, soft, non cohesive, with yellowish brown (10 YR 5/6). Clay with Sand (CL), low plasticity, soft, non cohesive, with yellowish brown (10 YR 5/6). Clay with Sand (CL), low to medium plasticity, medium dense, cohesive, with yell Graded Sand (SW) fine to coarse sand 98%, loose gravel. Clay (CL), medium plasticity, non cohesive. Clay (CL), medium plasticity, medium dense, cohesive , with gliot brownish gray (10 YR 6/2). Well Graded Sand with Clay (SW-SC), fine grained sand sf3); clay 10%, low plasticity, medium dense, cohesive , 800 End of borehole at 81 ft bgs. Insta	d 95%, loose, soft, dry, pale brown esive, light brownish gray (10 YR 6/2). nd 90%, loose, soft, dry, light esive, very pale brown (10 YR 7/3), pale brown (10 YR 6/3). d 85%, loose, soft, dry, light brownish ounded, assorted matrix. , soft, moist, pale brown (10 YR 6/3), moist, light yellowish brown (10 YR brown (10 YR 6/2). vet, brown (10 YR 5/3). wet, brown (10 YR 5/3). moist, brown (10 YR 5/3), mottled vet, brown (10 YR 5/3). , soft, wet, brown (10 YR 5/3), trace dense, wet, non cohesive, brown (10 d 90%, loose, soft, wet, brown (10 YR moist, brown (10 YR 5/3).	Above ground monument with well cap Borehole diameter 10 inches from 0 to 78 ft bgs., and 4 inches from 79 to 81 ft bgs. Grout 0 to 38 ft bgs. 0 to 53 ft bgs., 6 in dia., Sch. 40 PVC riser Bentonite 38 to 40 ft bgs. Filter Pack Sand 40 to 79 ft bgs. 53 to 78ft bgs., 6 in dia., Sch. 40 PVC screen with 0.02 inch slot aperture End Cap
	85	_	1

LILENT Intermolutian Power Service Corporation FIGURATION OF Standard FIGURATION OF Standard Service Corporati		MONITORNG WELL ID:	BAC-13											
Interaction Stretucation Southwest of Bottom Ash Basin Surface Impoundment SPILLING CONTRACTOR: Cascade Drilling COORDINATE SYSTEM: EASTINCE: NORTHING: DRILLING CONTRACTOR: Point 600 11-72287 ELEVENTON: BOREHOLE ANGLE: 0 degrees SAMPI NS METHOD: 4 inch sonic core barrel 0 to 91 ft bgs., 10 inch sonic core barrel 0 to 91 ft bgs., Date StartE 11/19/2019 DATE FINSHED: 11/18/2019 Degree Date StartEn Date StartEn 11/18/2019 Well Construction MonealWard Same as above, noa: Date StartEn Date StartEn Well Construction DARCEAM Same as above, noa: Date StartEn Date StartEn Well Construction DARCEAM Same as above, noa: Barreine as above, noa: Barreine as above, noa: Barreine as above, noa: Barreine as above, noa: Degree Casy with Sand (CL), our yeakieting', wy to most, non concesive, brown (10 VR 5/3), with small clay Barreine 10 mcHes from 0 to 9 11 bgs. Barreine 10 mcHes from 0 to 9 11 bgs. Deproty Graded Sand with Grawel (SV). Bard fine to coarse 85%, gravel 15%, loose, eath, dy, VC fiser Barreine 10 mcHes from 0 to 9 11 bgs. Barreine 10 mcHes from 0 to 9 11 bgs. Deproty Graded Sand (SP), medium grades and 100%, loose, edv, dark brown (10 VR 5/3), with small clay 1 bgs. Barreine 10 mcHes from 0 to 9 11 bgs. Bardes 10 bgs.		CLIENT PROJECT:	Intermountain Power Service Corporation Monitoring Well Installation	🚺 Stantec										
DRILLING CONTRACTOR Cascade Drilling COORDINATE SYSTEM: DRILLING KETHOD Sonic EASTING: NORTHING: DRILLING COLMENT POS obic 600 11-77287 EASTING: BOREHOLE ANGLE: 90 degrees SAMPLING METHOD 4 inch sonic core barrel 0 to 91 ft bgs. 10 inch sonic core barrel 0 to 91 ft bgs. DATE SIARTED: 11/16/2019 DATE FINSHED: 11/18/2019 USGED BY Michael Ward DESCR-FTION WELL CONSTUCTION DAGRAM Description DESCR-FTION WELL CONSTUCTION DAGRAM Same as above, becoming dense, consolidated WELL CONSTUCTION DAGRAM Same as above, noise, consolidated Well Construction Grout 0 to 42 ft ft bgs. Same as above, noise, consolidated Well Construction Grout 0 to 42 ft ft bgs. Same as above, noise, consolidated Well Graded Samed With Same Conselve, brown (10 YR 53), with small clay interingening, reddish yellow (10 YR 60). Mammeter 10 inches from 0 to 91 ft bgs. Same as above, noise, medi (PP). Bine grained sand 100%, losse, dry, dark brown (10 YR 63), with small clay inches from 0 to 91 ft bgs. Oto 65 ft bgs. 6 in dia., Sch. 40 PVC riser Media Grout 0 to 42 ft ft bgs. Grout 0 to 42 ft ft bgs. Daverole ft ft bgs. ft bgs. Clay wit	INTERMOUNTAIN POWER	SERVICE CURP.	Southwest of Bottom Ash Basin Surface In	npoundment										
DBILLING EQUIPMENT Pro Sonic 600 11-77287 DBILLING EQUIPMENT Pro Sonic 600 11-77287 10 inch sonic core barrel 0 to 91 ft bgs. 10 inch sonic core barrel 0 to 91 ft bgs. 10 inch sonic core barrel 0 to 91 ft bgs. 10 inch sonic core barrel 0 to 91 ft bgs. 10 inch sonic core barrel 0 to 91 ft bgs. 10 inch sonic core barrel 0 to 91 ft bgs. 10 inch sonic core barrel 0 to 91 ft bgs. 10 inch sonic core barrel 0 to 91 ft bgs. 10 inch sonic core barrel 0 to 91 ft bgs. 10 GGED BY Michael Ward 0 Poorly Graded Sand with Silt and Gravel (SP-SM), ftme grained sand 85%, silts 10%, trace 10 gravel 5%, todes, dy. light grav (10 YR 772). 10 GGED BY Michael Ward 0 Poorly Graded Sand with Silt and Gravel (SP-SM), ftme grained sand 85%, gravel 15%, losse, soft, dry. 10 Jack Sand With Silt and Gravel (SP-SM), ftme grained sand 85%, gravel 15%, losse, soft, dry. 10 Jack Sand With Silt and Gravel (SP-SM), ftme grained sand 85%, gravel 15%, losse, soft, dry. 10 Jack Sand With Silt Gravel (SP-SM), ftme grained sand 85%, gravel 15%, losse, soft, dry. 10 Jack Sand With Silt GRAVE, dry. Ipatisticly, molist, non cohesive, brown (10 YR 5/3), with small clay 11 Inderformer, reddish yellow (5 YR 68). 12 Well Graded Sand with Gravel (SW), sand fine to coarse 85%, gravel 15%, losse, soft, dry. 13 Jack Sand (SP), ftme grained sand 100%, losse, dry, dark brown (10 YR 5/3), with small clay 14 Dispetition (10 YR 6/3), gravel are subrown (10 YR 5/3), with small clay 14 Dispetition (10 YR 6/3), gravel are subrown (10 YR 5/3), with small clay 14 Dispetition (10 YR 6/3), gravel are subrown (10 YR 6/3), gravel first, well, non cohesive, light yellowish brown (10 10 to 65 ft bgs. 10 to 65 ft bgs	DRILLING CONTRACTOR:	Cascade Drilling	COORDINATE SYSTEM:											
DRLLING DEQUIPRIENT Pro Sonic 600 11-7287 ELEVATION: BOREHOLE: 90 degrees SAMPLING METHOD. 4 Inch sonic core barrel 0 to 91 ft bgs. 10 Inch sonic core barrel 0 to 91 ft bgs. TOUL UE/11/11; 91 GROUNDWATER LEVEL (ft. toto.): 45.38 Date Stanzburg Inch sonic core barrel 0 to 91 ft bgs. Date Stanzburg UNE CONSTUCTION Date Stanzburg Inch sonic core barrel 0 to 91 ft bgs. Date Stanzburg UNE CONSTUCTION Date Stanzburg Inch sonic core barrel 0 to 91 ft bgs. Date Stanzburg Michael Ward Date Stanzburg Inch sonic core barrel 0 to 91 ft bgs. Date Stanzburg Michael Ward Date Stanzburg Inch sonic Gore 10 (0 ft R03) grade at a stanzburg. Bocons, soit,	DRILLING METHOD:	Sonic	EASTING: NORTHING	:										
SAMELING METHOD: 4 inch sonic core barrel (b 69 ft bgs., 101AL DEFTH (E, 91 GROUNDWATER LEVEL (It bloc.): 45.38 10 inch sonic core barrel (b 69 ft bgs., 101AL DEFTH (E, 91 GROUNDWATER LEVEL (It bloc.): 45.38 10 inch sonic core barrel (b 69 ft bgs., 101AL DEFTH (E, 91 GROUNDWATER LEVEL (It bloc.): 45.38 10 inch sonic core barrel (b 69 ft bgs., 101AL DEFTH (E, 91 GROUNDWATER LEVEL (It bloc.): 45.38 10 inch sonic core barrel (b 69 ft bgs., 101AL DEFTH (E, 91 GROUNDWATER LEVEL (It bloc.): 45.38 10 inch sonic core barrel (b 16 9ft bgs., 101AL DEFTH (E, 91 GROUNDWATER LEVEL (It bloc.): 45.38 10 inch sonic core barrel (b 16 9ft bgs., 101AL DEFTH (E, 91 GROUNDWATER LEVEL (It bloc.): 45.38 11 inch sonic core barrel (b 16 9ft bgs., 101AL DEFTH (E, 91 GROUNDWATER LEVEL (It bloc.): 45.38 11 inch sonic core barrel (b 16 9ft bgs., 101AL DEFTH (E, 91 GROUNDWATER LEVEL (It bloc.): 45.38 12 interfinition (G 10 C) GROUNDWATER LEVEL (It bloc.): 45.38 GROUNDWATER LEVEL (It bloc.): 45.38 12 interfinition (G 10 C) GROUNDWATER LEVEL (It bloc.): 45.38 GROUNDWATER LEVEL (It bloc.): 45.38 13 interfinition (G 10 C) GROUNDWATER (G 10 C) GROUNDWATER (G 10 C) GROUNDWATER (G 10 C) 14 interfinition (G 10 C) GROUNDWATER (G 10 C) GROUNDWATER (G 10 C) GROUNDWATER (G 10 C) 14 interfinitio		Pro Sonic 600 11-77287	ELEVATION: BOREHOLE	ANGLE: 90 degrees										
Date Startel Dis 91 Roge. DAte Startel Dis 91 Roge. Three2019 Date Finished Distribution Line Some Core barrel Dis 91 Roge. Line Roge Distribution NetLine Roge Distribution Discrete Price Discrete Price Michael Ward Poorly Graded Sand with Silt and Gravel (SP.SM), fine grained sand 85%, silts 10%, trace Melle Construction Same as above, becoming dense, consolidated. Same as above, becoming dense, consolidated. Same as above, molid Road (SM), dave Same Same Same Same Same Same Same Sam	SAMPLING METHOD:	4 inch sonic core barrel 0 to 91 ft bgs.,	TOTAL DEPTH (ft.): 91 GROUNDWA	ATER LEVEL (ft. btoc.): 45.38										
Hotographic LITHOLOGICAL DESCRIPTION WELL CONSTUCTION 0 Poorly Graded Sand with Still and Gravel (SP-SM), fine grained sand 85%, sills 10%, trace monument with well cap Above ground monument with well cap 5 Same as above, bocoming dense, consolidated cladad Samd with Gravel (SN, Sand fine to coarse 85%, gravel 15%, loose, soft, dry, pale brown (10 YR 6/3), gravel are subrounded. Grout 0 to 42 ft bgs. 16 Clay with Sand (CL), low plasticity, dry to moist non cohesive, brown (10 YR 5/3), with small clay with Sand (CL), low plasticity, moist, non cohesive, brown (10 YR 5/3), with small pale brown (10 YR 6/3), gravel are subrounded. Grout 0 to 42 ft bgs. 20 Clay with Sand (CL), low plasticity, moist, non cohesive, brown (10 YR 5/3), with small clay interfingeng, reddish yellow (5 YR 6/8). Grout 0 to 42 ft bgs. 21 Veli Graded Sand (SP), molity, moist, non cohesive, brown (10 YR 5/3), with small clay interfingeng, reddish yellow (5 YR 6/8). Grout 0 to 42 ft bgs. 23 Veli Graded Sand (SP), medium grained sand 100%, loose, dry, dark brown (10 YR 5/3), with small clay interfingeng, reddish yellow (5 WR 6/8). Grout 0 to 42 ft bgs. 24 Clay with Sand (CL), low plasticity, soft density, wet, non cohesive, light yellowish brown (10 YR 5/3), Clay (CL), medium plasticity, soft density, wet, non cohesive, light plasticy hornish yellow (10 YR 6/3), Clay (CL), medium plasticity, soft medium dense, wet, brown (10 YR 6/3), Clay (CL), hequium plastichy, medium dense, the som (10 YR 6/3), Clay (CL), hequium plastich		10 Inch sonic core barrel 0 to 91 ft bgs.	LOGGED BY: Michael Ward	ED: 11/18/2019										
0 Poorly Graded Sand with Silt and Gravel (SP-SM), fine grained sand 85%, silts 10%, trace gravel 5%, loose, dry, light gray (10 YR 7/2). Above ground monument with well cap 5 Same as above, becoming dense, consolidated. Grout 0 to 42 ft gravel 5% (10, well start) to moist, non cohesive, gravel 15%, loose, soft, dry, gravel as bove, most. Grout 0 to 42 ft gravel as above, no gravel, sand 100%. 10 Same as above, no gravel, sand 100%. Grout 0 to 42 ft gravel as bove, most. Grout 0 to 42 ft gravel as above, most. 11 Same as above, most. Same as above, no gravel, sand 100%. loose, dry, dark brown (10 YR 3/3), with small clay interfingering, reddish yellow (5 YR 6/8). Grout 0 to 42 ft gravel 3% (10, well start), the start of the	DEPTH (feet) LITHOLOGICAL GRAPHIC	LITHOLOGICAL DESCRIPTION		WELL CONSTUCTION DIAGRAM										
 Same as above, becoming dense, consolidated. Well Graded Sand with Gravel (SW), sand fine to coarse 85%, gravel 15%, loose, soft, dry, pale brown (10 YR 6/3), gravel are subrounded. Clay with Sand (CL), low plasticity, dry to moist, non cohesive, brown (10 YR 5/3), with small clay interfingering, reddish yellow (5 YR 6/8). Same as above, moist. Clay with Sand (CL), low plasticity, moist, non cohesive, brown (10 YR 5/3), with small clay interfingering, reddish yellow (5 YR 6/8). Well Graded Sand (SP), fine grained sand 100%, loose, dry, dark brown (10 YR 3/3), thinly bedded. Clay with Sand (CL), low plasticity, moist, non cohesive, brown (10 YR 5/3), with small clay interfingering, reddish yellow (5 YR 6/8). Well Graded Sand with Gravel (SW), sand fine to coarse 85%, gravel 15%, loose, soft, dry, pale brown (10 YR 6/3), gravel are subrounded. Poorly Graded Sand (SP), medium grained sand 100%, loose, soft, moist, brown (10 YR 5/3). Clay (CL), medium plasticity, medium dense, moist, brownish yellow (10 YR 6/6). Clay with Sand (CL), low plasticity, soft density, wet, non cohesive, light yellowish brown (10 YR 6/3). Clay (CL), medium plasticity, soft to medium dense, wet, non cohesive. Clay with Sand (CL), low to medium plasticity, soft to medium dense, wet, non cohesive. Clay with Sand (CL), low to medium plasticity, soft to medium dense, wet, non cohesive. Clay with Sand (CL), low to medium plasticity, soft to medium dense, wet, non cohesive. Clay with Sand (CL), low to medium grained sand 95%, loose, soft, wet, brown (10 YR 6/3). Clay (CL), induit plasticity, soft wet, cohesive, plast brown (10 YR 6/3). Clay (CL), induit mist, cohesive, plast brown (10 YR 6/3). Clay (CL), induit mist, cohesive, plast brown (10 YR 6/3). Clay (CL), induit mist, cohesive, plast brown (10 YR 6/3). Clay (CL), medium plasticity, soft, wet, non cohesi	0 Poorly Grade	ed Sand with Silt and Gravel (SP-SM), fine g	grained sand 85%, silts 10%, trace	Above ground monument with										
10 Same as above, no gravel, sand 100%, or noist, non cohesive, brown (10 YR 5/3), with small clay interfingering, reddish yellow (5 YR 6/8). Grout 0 to 42 ft bgs. 15 Same as above, modit. Same as above, modit. Same as above, modit. 20 Poorly Graded Sand (SP), fine grained sand 100%, loose, dry, dark brown (10 YR 5/3), with small clay interfingering, reddish yellow (5 YR 6/8). 0 to 65 ft bgs., 6 in dia., Sch. 40 25 Clay with Sand (CL), low plasticity, moist, non cohesive, brown (10 YR 5/3), with small clay interfingering, reddish yellow (5 YR 6/8). 0 to 65 ft bgs., 6 in dia., Sch. 40 26 Poorly Graded Sand (SP), medium grained sand 100%, loose, soft, moist, brown (10 YR 5/3). 0 to 65 ft bgs., 6 in dia., Sch. 40 26 Poorly Graded Sand (SP), medium grained sand 100%, loose, soft, moist, brown (10 YR 6/3). 0 to 65 ft bgs., 6 in dia., Sch. 40 26 Poorly Graded Sand (SP), medium dense, moist, cohesive, light yellowish brown (10 YR 6/3). 0 to 65 ft bgs., 6 in dia., Sch. 40 27 Clay (CL), medium plasticity, medium dense, moist, cohesive, light yellow (10 YR 6/6). 0 to 65 ft bgs., 6 in dia., Sch. 40 28 Clay with Sand (CL), low to medium plasticity, soft to medium dense, wet, non cohesive, brown (10 YR 6/3). 0 to 65 ft bgs., 6 in dia., Sch. 40 29 Clay with Sand (CL), low to medium plasticity, soft to medium dense, wet, prown (10 YR 6/3). 0 to ft bgs., 6 in dia., Sch. 40	5 5 Well Graded pale brown (7	Sand with Gravel (SW), sand fine to coarse 10 YR 6/3), gravel are subrounded.	e 85%, gravel 15%, loose, soft, dry,	well cap										
15 Same as above, moist. Same as above, medium plasticity, medium densiticity. 20 Poorly Graded Sand (SP), fine grained sand 100%, loose, dry, dark brown (10 YR 3/3), thinly with Sand (CL), low plasticity, moist, non cohesive, brown (10 YR 5/3), with small clay interfingering, reddish yellow (5 YR 6/8). O to 65 ft bgs., 6 30 Well Graded Sand with Gravel (SW), sand fine to coarse 85%, gravel 15%, loose, soft, dry, pale brown (10 YR 6/3), gravel are subrounded. O to 65 ft bgs., 6 40 Clay with Sand (CL), low plasticity, soft density, wet, non cohesive, brown (10 YR 6/3). Clay with Sand (CL), low plasticity, soft density, wet, non cohesive, light yellowith brown (10 YR 6/3). 41 Clay with Sand (CL), low to medium dense, moist to wet, cohesive, light pelow (10 YR 6/3). Entonite 42 to 44 ft bgs. 42 Clay with Sand (CL), low to medium dense, moist to wet, cohesive, light brownish gray (10 YR 6/3). Filter pack sand 44 to 91 ft bgs. 43 Clay with, Sand (CL), low to medium plasticity, soft to medium dense, wet, brown (10 YR 6/3). Filter pack sand (44 to 91 ft bgs.) 44 Clay with, Sand (CL), low to medium plasticity, soft to medium dense, wet, brown (10 YR 6/3). Filter pack sand (57, medium grane sand 95%, loose, soft, wet, brown (10 YR 6/3). 45 Clay with Sand (CL), low to medium dense, moist to wet, cohesive, light brownish gray (10 YR 6/3). Filter pack sand (58), medium grane sand 95%, loose, soft, wet, brown (10 YR 5/3). 46 <td>10 Same as abo Clay with Same clay interfino</td> <td>ove, no gravel, sand 100%. nd (CL), low plasticity, dry to moist, non col ering, reddish vellow (5 YR 6/8)</td> <td>nesive, brown (10 YR 5/3), with small</td> <td>Grout 0 to 42 ft bgs.</td>	10 Same as abo Clay with Same clay interfino	ove, no gravel, sand 100%. nd (CL), low plasticity, dry to moist, non col ering, reddish vellow (5 YR 6/8)	nesive, brown (10 YR 5/3), with small	Grout 0 to 42 ft bgs.										
20 Poorly Graded Sand (SP), fine grained sand 100%, loose, dry, dark brown (10 YR 3/3), thinly Inclusion of the stand of the stand stand 100%, loose, dry, dark brown (10 YR 3/3), thinly 25 Clay with Sand (CL), low plasticity, moist, non cohesive, brown (10 YR 5/3), with small clay interfingering, reddish yellow (5 YR 6/8). 0 to 65 ft bgs 6 in dia., Sch. 40 PVC riser 36 Poorly Graded Sand with Gravel (SW), sand fine to coarse 85%, gravel 15%, loose, soft, dry, pale brown (10 YR 6/3), Clay (CL), medium plasticity, soft dness, weit, nonist, brown (10 YR 6/3), Clay (CL), medium plasticity, soft dness, weit, nonist, brown (10 YR 6/6), with mottled clay, brownish yellow (10 YR 6/6), with mottled clay, brownish yellow (10 YR 6/6), with mottled clay, brownish yellow (10 YR 6/3), Clay (CL), medium plasticity, soft to medium dense, wet, non cohesive, brown (10 YR 6/3), Clay (CL), low plasticity, soft to medium dense, wet, provide (10 YR 6/3), Clay (CL), low plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3), Clay (CL), low to medium plasticity, soft to medium dense, wet, brown (10 YR 6/3), Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3), Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3), Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3), Poorly Graded Sand (SP), medium dense, moist to wet, cohesive, brown (10 YR 5/3), Poorly Graded Sand (SP), medium graned sand 95%, loose, soft, wet, brown (10 YR 5/3), Poorly Graded Sand (SP), medium dense, moist to wet, cohesive, brown (10 YR 5/3), Poorly Graded Sand (SP), medium dense, moist to wet, cohesive, brown (10 YR 5/3), Poorly Graded Sand (SP), medium dense, moist to wet, cohesive, brown (10 YR 5/3), Clay (CL), ingly plasticity, soft, wet, non cohesive, brown (10 YR 5/3), Poorly Graded Sand (SP), medium dense, moist to we	15-Same as abo	Same as above, moist.												
25 Ordy Mint Sand (CL), four plasticity, model with Strict Christien Construction, with shall only interfingenting, reddish yellow (G YR 6/8). 0 to 65 ft bgs., 6 in dia., Sch. 40 PVC riser 36 Clay (CL), medium plasticity, soft density, wet, non cohesive, light yellowish brown (10 YR 6/8). 0 to 65 ft bgs., 6 in dia., Sch. 40 PVC riser 46 Clay (CL), medium plasticity, soft density, wet, non cohesive, light yellowish brown (10 YR 6/8). Bentonite 42 to 44 ft bgs. 47 Clay with Sand (CL), low plasticity, soft density, wet, non cohesive, light yellow (10 YR 6/8). Filter pack sand 44 to 91 ft bgs. 60 Clay with Sand (CL), low to medium plasticity, soft to medium dense, wet, non cohesive, light brownish gray (10 YR 6/3). Filter pack sand 44 to 91 ft bgs. 61 Clay (CL), indium plasticity, medium dense, moist to wet, cohesive, light brownish gray (10 YR 6/3). Filter pack sand 44 to 91 ft bgs. 62 Clay (CL), ligh plasticity, soft, moist, cohesive, pale brown (10 YR 6/3). Filter pack sand 44 to 91 ft bgs. 70 Clay (CL), indium plasticity, soft, wet, non cohesive, light brownish gray (10 YR 6/3). Filter pack sand (SP), medium grained sand 95%, loose, soft, wet, brown (10 YR 6/3). 71 Clay with Sand (CL), low plasticity, soft, wet, non cohesive, brown (10 YR 6/3). Filter pack sand 44 to 91 ft bgs. 75 Clay with Sand (CL), low plasticity, soft, wet, non cohesive, brown (10 YR 6/3). Fin dia., Sch. 40 PVC scre	20-Poorly Grade bedded.	Poorly Graded Sand (SP), fine grained sand 100%, loose, dry, dark brown (10 YR 3/3), thinly bedded.												
30 0 0 0 to 65 ft bgs., 6 35 10 Poorty Graded Sand with Gravel (SW), sand fine to coarse 85%, gravel 15%, loose, soft, dry, pale brown (10 YR 6/3), gravel are subrounded. 0 0 to 65 ft bgs., 6 40 Poorty Graded Sand (SP), medium grained sand 100%, loose, soft, moist, brown (10 YR 5/3). 0 0 40 Clay vith Sand (CL), wedium plasticity, soft density, wet, non cohesive, light yellowish brown (10 YR 6/6). 0 0 45 Clay vith Sand (CL), low plasticity, soft to medium dense, wet, non cohesive, brown (10 YR 6/6). 0 0 46 Clay vith Sand (CL), low to medium plasticity, soft to medium dense, wet, non cohesive, brown (10 YR 6/3). 0 0 56 Clay vith Sand (CL), low to medium plasticity, soft to medium dense, wet, brown (10 YR 6/3). 0 0 0 66 Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). 0 0 0 0 70 Poorty Graded Sand (SP), medium genes, moist to wet, cohesive, light brownish gray (10 YR 6/2). 0	25- interfingering	, reddish yellow (5 YR 6/8).	blown (10 Th 5/3), with small day											
35- pale brown (10 YR 6/3), gravel are subrounded. PVC riser 40- Clay (CL), medium plasticity, medium dense, moist, brownish yellow (10 YR 6/6). PVC riser 40- Clay (CL), medium plasticity, soft density, wet, non cohesive, light yellowish brown (10 YR 6/6). PVC riser 45- Clay (CL), medium plasticity, medium dense, moist, cohesive, brownish yellow (10 YR 6/6). Filter pack sand (10 YR 6/3). 50- Clay with Sand (CL), low to medium plasticity, soft to medium dense, wet, non cohesive, brown (10 YR 6/3). Filter pack sand (10 YR 6/3). 60- Clay (CL), medium plasticity, medium dense, moist to wet, cohesive, light brownish gray (10 YR 6/2). Filter pack sand (10 YR 6/3). 61- Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). Filter pack sand (5P). 62- Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). Filter pack sand (5P). 70- Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). Forony (10 YR 5/3). 70- Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). For othesistic section with 0.02 inch slot aperture 80- Clay (CL), medium plasticity, soft, wet, non cohesive, brown (10 YR 5/3). For othesistic section with 0.02 inch slot aperture 80- Clay with Sand (CL), low plasticity, soft, wet, non cohes	30-Well Graded	Sand with Gravel (SW) sand fine to coarse	a 85% gravel 15% loose soft dry	0 to 65 ft bgs., 6 in dia., Sch. 40										
 Pointy Graded Sand (SP), medium grained sand 100%, loose, soft, mosk, prown (10 YR 6/3). Clay (CL), medium plasticity, medium dense, moist, brownish yellow (10 YR 6/6). Clay (CL), medium plasticity, medium dense, moist, cohesive, brownish yellow (10 YR 6/6), with mottled clay, brownish yellow (10 YR 6/8). Clay (CL), medium plasticity, medium dense, moist, cohesive, brownish yellow (10 YR 6/6), with mottled clay, brownish yellow (10 YR 6/8). Clay with Sand (CL), low to medium plasticity, soft to medium dense, wet, non cohesive, brown (10 YR 6/3). Clay (CL), medium plasticity, medium dense, moist to wet, cohesive, light brownish gray (10 YR 6/2). Clay (CL), medium plasticity, soft, cohesive, pale brown (10 YR 6/3). Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). Clay (CL), medium plasticity, soft, wet, non cohesive, brown (10 YR 5/3). Clay (CL), medium plasticity, soft, wet, non cohesive, brown (10 YR 5/3). Clay (CL), medium plasticity, soft, wet, non cohesive, brown gray (10 YR 5/3). Clay (CL), medium plasticity, soft, wet, non cohesive, brown gray (10 YR 5/3). End of borehole to 91 ft bgs., per scope of work. 	35– pale brown (10 YR 6/3), gravel are subrounded.		PVC riser										
 45 VR 6/4). Clay (CL), medium plasticity, medium dense, moist, cohesive, brownish yellow (10 YR 6/6), with mottled clay, brownish yellow (10 YR 6/8). 55 Clay with Sand (CL), low to medium plasticity, soft to medium dense, wet, non cohesive, brown (10 YR 6/3). 60 Clay (CL), medium plasticity, medium dense, moist to wet, cohesive, light brownish gray (10 YR 6/2). 61 Clay (CL), medium plasticity, soft medium dense, wet, brown (10 YR 6/3). 62 Clay (CL), medium plasticity, soft of medium dense, wet, brown (10 YR 6/3). 63 Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). 64 Clay (CL), medium plasticity, medium grained sand 95%, loose, soft, wet, brown (10 YR 5/3), trace gravel 5%, rounded to subrounded, assorted matrix. 65 to 90 ft bgs., 6 in dia., Sch. 40 PVC screen with 0.02 inch slot aperture 65 clay (CL), medium plasticity, soft, wet, non cohesive, brown (10 YR 5/3). 66 Clay with Sand (CL), low plasticity, soft, wet, non cohesive, brown (10 YR 5/3). 75 Clay (CL), medium plasticity, soft, wet, non cohesive, brown (10 YR 5/3). 76 Clay (CL), medium plasticity, soft, wet, non cohesive, brown (10 YR 5/3). 77 Clay (CL), medium plasticity, soft, wet, non cohesive, brown (10 YR 5/3). 78 Clay (CL), medium plasticity, soft, wet, non cohesive, brown (10 YR 5/3). 79 Clay (CL), medium plasticity, soft, wet, non cohesive, brown (10 YR 5/3). 70 Clay (CL), medium plasticity, soft, wet, non cohesive, brown (10 YR 5/3). 71 End of borehole to 91 ft bgs., per scope of work. 	40–Clay (CL), mo	edium plasticity, medium grained sand 100%, edium plasticity, medium dense, moist, bro nd (CL), low plasticity, soft density, wet, nor	n cohesive, light yellowish brown (10 YR 5/3).	Bentonite 42 to										
50 Clay with Sand (CL), low to medium plasticity, soft to medium dense, wet, non cohesive, brown (10 YR 6/3). Filter pack sand 44 to 91 ft bgs. 60 Clay (CL), medium plasticity, medium dense, moist to wet, cohesive, light brownish gray (10 YR 6/2). Filter pack sand 44 to 91 ft bgs. 65 Clay (CL), ingh plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). Filter pack sand 44 to 91 ft bgs. 65 Clay (CL), ingh plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). Filter pack sand 95%, loose, soft, wet, brown (10 YR 5/3). 70 Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). Filter pack sand 95%, loose, soft, wet, brown (10 YR 5/3). 75 Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). Filter pack sand 95%, loose, soft, wet, brown (10 YR 5/3). 75 Clay with Sand (CL), low plasticity, soft, wet, non cohesive, brown (10 YR 5/3). Filter pack sand 95%, loose, soft, wet, brown (10 YR 5/3). 80 Clay with Sand (CL), low plasticity, soft, wet, non cohesive, brown gray (10 YR 5/3). End Cap 95 End of borehole to 91 ft bgs., per scope of work. End Cap 95 bgs. = below ground surface Sch. = Schedule dia. = diameter YR = Yellow-Red YR = Yellow-Red	45-YR 6/4). Clay (CL), mo with mottled	edium plasticity, medium dense, moist, coh clay, brownish yellow (10 YR 6/8).	esive, brownish yellow (10 YR 6/6),	44 ft bgs.										
55 Clay with Sand (CL), low to medium plasticity, soft to medium dense, wet, non cohesive, brown (10 YR 6/3). Filter pack sand 44 to 91 ft bgs. 60 Clay (CL), medium plasticity, soft to medium dense, wet, brown (10 YR 6/3). Filter pack sand 44 to 91 ft bgs. 65 Clay (CL), medium plasticity, soft to medium dense, wet, brown (10 YR 6/3). Filter pack sand 44 to 91 ft bgs. 65 Clay (CL), medium plasticity, soft to medium dense, wet, brown (10 YR 6/3). Filter pack sand 44 to 91 ft bgs. 70 Clay (CL), medium plasticity, soft, onesive, pale brown (10 YR 6/3). Foorty Graded Sand (SP), medium grained sand 95%, loose, soft, wet, brown (10 YR 5/3), trace gravel 5%, rounded to subrounded, assorted matrix. 65 to 90 ft bgs., 6 in dia., Sch. 40 PVC screen with 0.02 inch slot aperture 80 Clay with Sand (CL), low plasticity, soft, wet, non cohesive, brown (10 YR 5/3). Filter pack sand 41 to 91 ft bgs. 80 Clay with Sand (CL), low plasticity, soft, wet, non cohesive, brown gray (10 YR 5/3). End of borehole to 91 ft bgs., per scope of work. 90 End of borehole to 91 ft bgs., per scope of work. End Cap 91 Notes: bgs. = below ground surface Sch. = Schedule the ref ametier the fort the refer the fort the schedule the refer the refer the fort the schedule the refer the schedule the refer the schedule the r	50-													
60 Clay (CL), medium plasticity, interfum dense, most to wer, consiste, ingit brownish gray (10 65 Clay with Sand (CL), low to medium plasticity, soft to medium dense, wet, brown (10 YR 6/3). 65 Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). 70 Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). 70 Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). 70 Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). 75 Poorly Graded Sand (SP), medium grained sand 95%, loose, soft, wet, brown (10 YR 5/3), trace gravel 5%, rounded to subrounded, assorted matrix. 80 Clay with Sand (CL), low plasticity, soft, wet, non cohesive, brown (10 YR 5/3). 75 Clay with Sand (CL), low plasticity, soft, wet, non cohesive, brown (10 YR 5/3). 80 Clay (CL), medium plasticity, medium dense, moist to wet, cohesive, brown gray (10 YR 5/3). 90 End of borehole to 91 ft bgs., per scope of work. 91 End of borehole to 91 ft bgs., eschedule the sechedule the sechedul	55 Clay with Sar brown (10 YF	nd (CL), low to medium plasticity, soft to me R 6/3).	edium dense, wet, non cohesive,	Eilter peek cond										
65 Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). 70 Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). 70 Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). 70 Poorly Graded Sand (SP), medium grained sand 95%, loose, soft, wet, brown (10 YR 5/3), trace gravel 5%, rounded to subrounded, assorted matrix. 80 65 81 Clay with Sand (CL), low plasticity, soft, wet, non cohesive, brown (10 YR 5/3). 80 Clay (CL), medium plasticity, soft, wet, non cohesive, brown (10 YR 5/3). 81 Clay (CL), medium plasticity, medium dense, moist to wet, cohesive, brown gray (10 YR 5/3). 82 Clay (CL), medium plasticity, medium dense, moist to wet, cohesive, brown gray (10 YR 5/3). 90 End of borehole to 91 ft bgs., per scope of work. 95 Ind of borehole to 91 ft bgs., per scope of work. 95 Motes: bgs. = below ground surface Sch. = Schedule dia. = diameter YR = Yellow-Red YR = Yellow-Red 1 1	60- YR 6/2).	edium plasticity, medium dense, moist to w	et, conesive, light brown sin gray (10	44 to 91 ft bgs.										
70 Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3). 65 to 90 ft bgs., 6 in dia., Sch. 40 75 Poorly Graded Sand (SP), medium grained sand 95%, loose, soft, wet, brown (10 YR 5/3), trace gravel 5%, rounded to subrounded, assorted matrix. 65 to 90 ft bgs., 6 in dia., Sch. 40 75 PVC screen with 0.02 inch slot aperture 80 80 80 85 Clay with Sand (CL), low plasticity, soft, wet, non cohesive, brown (10 YR 5/3). 6 in dia., Sch. 40 90 End of borehole to 91 ft bgs., per scope of work. 91 ft bgs., per scope of work. End Cap 80 Sis. = below ground surface Sch. = Schedule dia. = diameter YR = Yellow-Red 1	65 Clay (CL), hig Clay (CL), mo VR 6(2)	gh plasticity, stiff, moist, cohesive, pale bro edium plasticity, medium dense, moist to w	wn (10 YR 6/3). et, cohesive, light brownish gray (10											
75 trace gravel 5%, rounded to subrounded, assorted matrix. 80 PVC screen with 0.02 inch slot aperture 85 Clay with Sand (CL), low plasticity, soft, wet, non cohesive, brown (10 YR 5/3). 90 Clay (CL), medium plasticity, medium dense, moist to wet, cohesive, brown gray (10 YR 5/3). 90 End of borehole to 91 ft bgs., per scope of work. 95 Notes: bgs. = below ground surface Sch. = Schedule dia. = diameter YR = Yellow-Red ft = feet	70–21. Clay (CL), hig Poorly Grade	gh plasticity, stiff, moist, cohesive, pale bro ed Sand (SP), medium grained sand 95%, I	wn (10 YR 6/3). oose, soft, wet, brown (10 YR 5/3),	65 to 90 ft bgs., 6 in dia., Sch. 40										
80 Image: Sector of the se	75	b%, rounded to subrounded, assorted matri	х.	PVC screen with 0.02 inch slot aperture										
85 Clay with Sand (CL), low plasticity, soft, wet, non cohesive, brown (10 YR 5/3). 90 Clay (CL), medium plasticity, medium dense, moist to wet, cohesive, brown gray (10 YR 5/3). 90 End of borehole to 91 ft bgs., per scope of work. 95 End of borehole to 91 ft bgs., per scope of work. 95 Sch. = Schedule YR = Yellow-Red ft = fet	80													
90 End of borehole to 91 ft bgs., per scope of work. End Cap 95 Notes: bgs. = below ground surface giameter giam	85 Clay with Sar Clay (CL), m	nd (CL), low plasticity, soft, wet, non cohesi edium plasticity, medium dense, moist to w	ve, brown (10 YR 5/3). et, cohesive, brown gray (10 YR 5/3).											
Notes: bgs. = below ground surface Sch. = Schedule dia. = diameter YR = Yellow-Red fi fi = feet 1	90 End of boreh	ole to 91 ft bgs., per scope of work.		End Cap										
	Notes: bgs. = below ground dia. = diameter ft = feet	d surface Sch. = Schedule YR = Yellow-Red		1										

MONITORNG WELL ID: CLIENT INTERMOUNTAIN POWER SERVICE CORP. SITE LOCATION	BAC-14 Intermountain Power Service Corporation Monitoring Well Installation Southwest of Bottom Ash Basin Surface Im	Stantec
DRILLING CONTRACTOR:Cascade DrillingDRILLING METHOD:SonicDRILLING EQUIPMENT:Pro Sonic 600 11-77287SAMPLING METHOD:4 inch sonic core barrel 0 to 81 ft bgs., 10 inch sonic core barrel 0 to 78 ft bgs.	COORDINATE SYSTEM: EASTING: NORTHING ELEVATION: BOREHOLE TOTAL DEPTH (ft.): 81 GROUNDWA DATE STARTED: 11/21/2019 DATE FINISH LOGGED BY: Michael Ward	: ANGLE: 90 degrees ATER LEVEL (ft. btoc.): 46.81 IED: 12/4/2019
DEPTH DEPTH DESCRIPTION DESCRIPTION		WELL CONSTUCTION DIAGRAM
 veil Graded Sand (SW), fine to coarse sand 95%, loose, 5/4); 5% gravel, subrounded, small. Well Graded Sand with Clay (SW-SC), fine to coarse sand gray (10 YR 7/4). Clay with Sand (CL), low to medium plasticity, soft to med brown (10 YR 7/3). Clay (CL), medium plasticity, medium dense, moist, cohe trace mottled clay, brownish yellow (10 YR 6/8). Poorly Graded Sand (SP), fine sand 100%, loose, soft, lig Poorly Graded Sand with Clay (SP-SC), fine sand 90%, lc (10 YR 6/2); clay 10% low plasticity, soft, non cohesive. Clay (CL), medium plasticity, medium dense, moist, cohe Poorly Graded Sand (SP), fine sand 100%, loose, soft, medium cohe site (10 YR 6/2); clay 10% low plasticity, soft, non cohesive. Clay (CL), medium plasticity, medium dense, moist, cohe Poorly Graded Sand with Clay (SP-SC), fine sand 90%, lc (2ay 10% low plasticity, medium to stiff dense, moist 6/3), mottled with reddish yellow (5YR 6/6). Poorly Graded Sand (SP), fine grained, loose, soft, wet, b Clay (CL), medium plasticity, medium dense, wet, cohesin 6/3, mottled with Clay (SP-SC), fine sand 90%, lc (2ay (CL), medium plasticity, medium dense, wet, cohesin 6/3, mottled with reddish yellow (5YR 6/6). Poorly Graded Sand (SP), fine grained, loose, soft, wet, b Clay (CL), medium plasticity, medium dense, wet, cohesin 6/3, mottled with Clay (SP-SC), fine sand 85%, lc YR 5/3); clay 15% low plasticity, medium dense, wet, cohesin 70 Clay (CL), medium plasticity, medium dense, wet, cohesin 70 Clay (CL), medium plasticity, medium dense, wet, cohesin 70 Clay (CL), medium plasticity, medium dense, wet, cohesin 71 Poorly Graded Sand (SP), fine grained, loose, soft, wet, b Clay (CL), medium plasticity, soft, non cohesive. Poorly Graded Sand (SP), fine grained, loose, soft, wet, b Clay (CL), medium plasticity, soft, non cohesive. Poorly Graded Sand with Clay (SP-SC), fine sand 90%, lc (2ay 10%, low plasticity, soft, non cohesive	sort, dry, yellowish brown (10 YR d 95%, medium dense, dry, light dium dense, dry to moist, very pale sive, pale brown (10 YR 6/3), with bose, pale brown (10 YR 6/2). bose, soft, moist, light brownish gray sive, yellowish brown (10 YR 5/4). oist to wet, brown (10 YR 5/4). t, cohesive, light brownish red (5 YR bose, soft, moist, brown (10 YR 5/3); t, cohesive, light brownish red (5 YR bose, soft, moist, brown (10 YR 5/3); t, cohesive, light brownish red (5 YR brown (10 YR 5/3). ve, light yellowish brown (10 YR 6/4). bose medium dense, wet, brown (10 wish brown (10 YR 6/4). ve, light yellowish brown (10 YR 6/4). bose, soft, wet, brown (10 YR 6/4). rown (10 YR 5/3). e, brown (10 YR 5/3). bose, soft, wet, brown (10 YR 5/3); brown (10 YR 5/3). crown (10 YR 5/3). scope of work.	 monument with well cap Borehole diameter 10 inches from 0 to 79 ft bgs. 4 inch borehole to 81 ft bgs. Grout 0 to 38 ft bgs. O to 53 ft bgs., 6 in dia., Sch. 40 PVC riser Bentonite 38 to 40 ft bgs. Filter Pack Sand 40 to 79 ft bgs. 53 to 78 ft bgs., 6 in dia., Sch. 40 PVC screen with 0.02 inch slot aperture End Cap
85-		
Notes: bgs. = below ground surface Sch. = Schedule dia. = diameter YR = Yellow-Red ft = feet		1

INTERMOUNTAIN POWER SERVICE CORP. MONITORNG WELL ID: CLIENT PROJECT: SITE LOCATION:	BAC-15 Intermountain Power Service Corporati Monitoring Well Installation Southwest of Bottom Ash Basin Surfac	on Stantec e Impoundment
DRILLING CONTRACTOR: Cascade Drilling DRILLING METHOD: Sonic DRILLING EQUIPMENT: Pro Sonic 600 11-77287 SAMPLING METHOD: 4 inch sonic core barrel 0 to 91 ft bgs., 10 inch sonic core barrel 0 to 91 ft bgs.	COORDINATE SYSTEM: EASTING: NORTHIN ELEVATION: BOREHO TOTAL DEPTH (ft.): 81 GROUND DATE STARTED: 12/7/2019 DATE FIN LOGGED BY: Michael Ward	ING: OLE ANGLE: 90 degrees DWATER LEVEL (ft. btoc.): 46.03 NSHED: 12/9/2019
LITHOLOGICAL DESCRIPTION		WELL CONSTUCTION DIAGRAM
0 Fill Poorly Graded Sand (SP), fine grained sand 98%, loose 5 Clay (CL), medium plasticity, medium dense, cohesive, q 10 trace white (10 YR 8/1), trace calcium carbonate betwee 10 Poorly Graded Sand (SP), fine grained sand 98%, loose, trace clay at depth. 20 Poorly Graded Sand with Clay (SP-SC), fine grained sand pale brown (10 YR 6/3), clay low plasticity, medium dense, cohesive, r 30 Clay (CL), medium plasticity, medium dense, cohesive, r 30 Clay (CL), medium plasticity, medium dense, cohesive, r 30 Clay with Sand (CL), low plasticity, soft, non cohesive, lig 40 Clay (CL), medium plasticity, medium dense, cohesive, r 6/4) Well Graded Sand with Gravel (SW), fine to coarse sand 5/3), gravel 10%, subrounded. 50 Same as above, with trace black staining. 51 Clay with Sand (CL), low plasticity, soft, non cohesive, w 60 Poorly Graded Sand (SP), fine grained sand 100%, loose 53 Same as above, with some clay. 64 Same as above, with some clay. 65 Poorly Graded Sand (SP), fine grained sand 100%, loose 66 Poorly Graded Sand (SP), fine grained sand 100%, loose 67 Same as above, with some clay. <t< td=""><td>A, soft, dry, very pale brown (10 YR dry, light brownish gray (10 YR 6/2), en clay layering, effervesces with HCL. A, soft, dry, light gray (10 YR 7/1), and 90%, soft to medium dense, dry, se. moist, pale brown (10 YR 6/3). 6/4). ght yellowish brown (10 YR 6/4). moist, light yellowish brown (10 YR d 90%, loose, soft, wet, brown (10 YR</td><td>Above ground monument with well cap Borehole diameter 10 inches from 0 to 76 ft bgs., and 4 inches from 76 to 81 ft bgs. Grout 0 to 38 ft bgs. 0 to 50 ft bgs., 6 in dia., Sch. 40 PVC riser Bentonite 38 to 40 ft bgs. Filter Pack Sand 40 to 76 ft bgs. 50 to 75 ft bgs., 6 in dia., Sch. 40 PVC screen with 0.02 inch slot aperture End Cap</td></t<>	A, soft, dry, very pale brown (10 YR dry, light brownish gray (10 YR 6/2), en clay layering, effervesces with HCL. A, soft, dry, light gray (10 YR 7/1), and 90%, soft to medium dense, dry, se. moist, pale brown (10 YR 6/3). 6/4). ght yellowish brown (10 YR 6/4). moist, light yellowish brown (10 YR d 90%, loose, soft, wet, brown (10 YR	Above ground monument with well cap Borehole diameter 10 inches from 0 to 76 ft bgs., and 4 inches from 76 to 81 ft bgs. Grout 0 to 38 ft bgs. 0 to 50 ft bgs., 6 in dia., Sch. 40 PVC riser Bentonite 38 to 40 ft bgs. Filter Pack Sand 40 to 76 ft bgs. 50 to 75 ft bgs., 6 in dia., Sch. 40 PVC screen with 0.02 inch slot aperture End Cap
Notes: bgs. = below ground surface Sch. = Schedule dia. = diameter YR = Yellow-Red ft = feet		1

INTERMOUNTAIN POWER SE	MONITORNG WELL ID: CLIENT ERVICE CORP. PROJECT:	BAC-16 Intermountain Power Service Corporation Monitoring Well Installation	on Stantec										
	SITE LOCATION	Southwest of Bottom Ash Basin Surface	e Impoundment										
DRILLING CONTRACTOR: DRILLING METHOD: DRILLING EQUIPMENT: SAMPLING METHOD:	Cascade Drilling Sonic Pro Sonic 600 11-77287 4 inch sonic core barrel 0 to 91 ft bgs., 10 inch sonic core barrel 0 to 91 ft bgs.	COORDINATE SYSTEM: EASTING: NORTHI ELEVATION: BOREHO TOTAL DEPTH (ft.): 91 GROUND DATE STARTED: 11/18/2019 DATE FIN LOGGED BY: Michael Ward	NG: DLE ANGLE: 90 degrees DWATER LEVEL (ft. btoc.): 47.45 ISHED: 11/21/2019										
DEPTH (feet) LITHOLOGICAL GRAPHIC	LITHOLOGICAL DESCRIPTION		WELL CONSTUCTION DIAGRAM										
0 Fill. Clay with Sand	d (CL), low plasticity, soft to medium dense	e, dry, light gray (10 YR 7/1).	Above ground monument with well cap										
10 No core retriev	ved from sonic core barrel.		Grout 0 to 42 ft										
15 Clay with Sand Well Graded S YR 6/2), trace Clay with Sand	G(CL), low plasticity, sort to medium dension and (SW), fine to coarse grained sand 95 gravel 5%, subrounded, small. d (CL), low plasticity, soft to medium dension	e, dry, light gray (10 YR 7/1). %, loose, soft, light brownish gray (10 e, dry, light gray (10 YR 7/1).	bgs. Borehole diameter 10 inches from 0 to										
20			91 ft bgs.										
Clay (CL). Clay with Sand brown (10 VR)	Clay (CL). Clay with Sand (CL), low to medium plasticity, soft to medium dense, dry, non cohesive, pale												
35- 35- 35-	Sand (SP), fine grained 100%, loose to n	nedium dense, dry, light gray (10 YR ^{-/}	in dia., Sch. 40 PVC riser										
40 Clay (CL), med some interfinge	dium plasticity, medium density, moist, ligl ering clay, brownish yellow (10 YR 6/8).	ht yellowish brown (10 YR 6/4), with	Destantia 40 to										
45–Clay with Sand Poorly Graded light yellowish	Sand with clay (SP-SC), fine sand 90%, of brown (10 YR 6/4).	clay 10%, soft, loose, moist to wet,	44 ft bgs.										
50 50 50 50 50 50 50 50 50 50 50 50 50 5	dium plasticity, medium dense, cohesive, i Sand with clay (SP-SC), fine sand 90%, o brown (10 YR 6/4).	clay 10%, soft, loose, moist to wet,											
55 Clay (CL), mec 6/4).	dium plasticity, medium dense, cohesive,	moist, light yellowish brown (10 YR											
60 Poorly Graded	Sand (SP), fine grained sand 95%, loose lay 5%, yellowish red (5 YR5/6).	, soft, brown (10 YR 5/3), with trace	44 to 91 ft bgs.										
65 Well Graded S gravel, small, s	Sand (SW), fine to coarse sand 98%, loose subrounded.	e, soft, wet, brown (10 YR 5/3), 2%											
gray (10 YR 6/ Clay (CL), med	(2). dium plasticity, medium to stiff, cohesive, i	moist, light yellowish gray (10 YR 6/2).	64 to 89 ft bgs., 6 in dia., Sch. 40										
brown (10 YR	5/3). 5/3). dium plasticity, stiff, cohesive, moist to we	t. brown (10 YR 5/3).	0.02 inch slot aperture										
Poorly Graded 85 Clay (CL), sam	Sand (SP), fine grained sand 100%, loos ne as 73 ft bgs.	e, soft, wet, brown (10 YR 5/3).											
90 Clay (CL), sam	Sand with Clay (SP-SC), fine grained sar	nd 85%, clay 15% loose, soft, wet,	End Cap										
95- Clay (CL), sam End of borehol	e as 73 ft bgs., with mottled interbedded le at 91 ft bgs. Installed monitoring well pe	clay, yellowish red (5 YR 5/6).											
	urface. Sch - Schedule												
dia. = diameter ft = feet	YR = Yellow-Red		1										

~		VELLID: E	BAC-17 ntermountain Power Service Cor	poration	
INTERMOUN	ITAIN POWER SERVICE CORP. PI	ROJECT: N DCATION: S	Aonitoring Well Installation Southwest of Bottom Ash Basin S	Surface Impound	ment
DRILLING CO	NTRACTOR: Cascade Drilling	C	COORDINATE SYSTEM:		
DRILLING ME	THOD: Sonic	E	EASTING: NO	ORTHING:	
DRILLING EQ	UIPMENT: Pro Sonic 600 11-77287	OREHOLE ANGL	E: 90 degrees		
SAMPLING M	ETHOD: 4 inch sonic core barrel 0 to 91	ft bgs., T	OTAL DEPTH (ft.): 82 GF	ROUNDWATER LI	EVEL (ft. btoc.): 45.3
	10 inch sonic core barrel 0 to 9	TE FINISHED: 1	12/10/2019		
DEPTH (feet) LITHOLOGICAL GRAPHIC	LITHOLOGIC DESCRIPTIO	CAL ON		Ŵ	ELL CONSTUCTION DIAGRAM
0	Well Graded Sand with Silt (SW-SM), fine to co YR 6/3), fine silts, trace calcium carbonate.		Above ground monument with well cap		
5-	Well Graded Sand (SW), fine to coarse sand 1	00%, loose,	soπ, pale brown (10 YR 6/3).		Borehole
10-			diameter 10 inches from 0 to 81 ft bgs.		
	Nell Graded Sand with Gravel and Clay (SW-	_ 8			
20	oose, soft, pale brown (10 YR 6/3), clay low pl Well Graded Sand (SW), fine to coarse 98%, lo gravel 2%, small, subrounded.		Grout 0 to 40 ft bgs.		
30	Clay (CL), low plasticity, soft, wet, very pale br Clay with Sand (CL), low plasticity, soft, moist,		0 to 56 ft bgs., 6 in dia., Sch. 40		
35-	Clay (CL) medium plasticity medium dense o	sobesive bro	(10 VR 5/3) mottled with son	ne —	PVC riser
40	reddish yellow (5 YR 6/6).	Sonesive, bro	wir (10 113 3/3), notaed with son		Bentonite 40 to 42 ft bgs.
50-					Filter Pack Sand 42 to 81 ft bgs.
55-	Clay with Sand (CL), low plasticity, soft, wet no	on cohesive,	brown (10 YR 5/3).		
60	Poorly Graded Sand with Clay (SP), fine graine 5/3), with trace gravel 2%, subrounded. small.	ed sand 98%	, loose, soft, wet, brown (10 YR		56 to 81 ft bgs., 6 in dia., Sch. 40
65-			6 1 1 1 1 1 1 1 1 1 1		PVC screen with 0.02 inch slot
70-	Poorly Graded Sand with Clay (SP-SC), fine gr YR 5/3), clay, medium plasticity, soft to low de YR 5/4).	rained sand s nsity, non co	98%, loose, soft, wet, brown (10 hesive, light yellowish brown (10		
75	Clay (CL), medium plasticity, medium dense, r Poorly Graded Sand with Clay (SP-SC), fine gr 5/3), clay are low plasticity, soft. Clay with Sand (CL), low to medium plasticity,				
80	Poorly Graded Sand (SP), fine grained sand 10 End of borehole at 81 ft bgs. Installed monitori	00%, loose, s ng well per s	soft, wet, brown (10 YR 5/3). cope of work.		End Cap
Notes: bgs dia ft =	i. = below ground surface Sch. = Schedule . = diameter YR = Yellow-Red feet				1

Attachment 1 TABULATED GROUNDWATER MONITORING DATA January 24, 2020

Attachment 1 TABULATED GROUNDWATER MONITORING DATA

	Round 12 (all results ppm) Assessment Monitoring - April 4 - May 15, 2019															Round 12															
													Results															Field Resu	lts		
Landfill Wells																							Radium 226 and	Landfill Wells	_						
	Boron	Calcium	Chloride	Fluoride	рН	Sulfate	TDS	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226	Radium 228	228 combined		Temp	рН	REDOX	Conductance	Turbidity (NTUs)	DO	TDS
CL-U-1	0	61.1	388	0.989	7.74	112	932	0	0.0279	0.0841	0	0	0	0	0	0.231	0	0.0036	0	0	0.13	0.4	0	CL-U-1	15.92	7.84	-138	1880	1.6	0.42	1.2
CL-U-2	0	68.4	378	1.02	7.74	97.6	920	0	0.0254	0.0943	0	0	0	0	0	0.214	0	0.00405	0	0	0.31	0.94	1.25	CL-U-2	15.68	7.81	-119	1820	4./	0.6	1.1/
CLW-1	0	39.4	303	1.12	7.88	64.5	692	0	0.002	0.0589	0	0	0.00742	0	0	0.203	0	0.00481	0	0	0	0.41	0	CLW-1	15.59	7.68	-68	1540	0.9	2.06	0.984
CLW-2	0	55.1	416	1.25	7.8	96.4	976	0	0.0259	0.0743	0	0	0	0	0	0.253	0	0.00423	0	0	0.21	0.75	0	CLW-2	15.77	7.80	-18/	1870	1./	1.5	1.2
CLW-3	0	20.0	351	1.34	7.83	98.4	884	0	0.0382	0.0970	0	0	0	0	0	0.243	0	0.00488	0	0	0.16	0.49	0	CLW-3	15.45	7.93	-201	1/20	2.1	1.37	1.1
CLW-4	0	20.0	240	1.45	7.90	05.5	908	0	0.0376	0.0707	0	0	0	0	0	0.232	0	0.00425	0	0	0.47	0.34	0	CLW-4	15.51	7.97	-205	1610	2.0	2.02	1.05
CLW-5	0	29.4	270	1.03	7.95	72.9	950	0	0.0250	0.0707	0	0	0	0	0	0.220	0	0.00313	0	0	0.14	0.28	0	CLW-5	16.62	7.94 8.04	-214	1570	3.0	1.54	1.00
CIW-7	0	51.2	270	1.07	7.05	68.0	702	0	0.0271	0.0650	0	0	0	0	0	0.214	0	0.00478	0	0	-0.09	0.54	0	CLW-7	16.75	7.76	-225	1620	0.5	0.01	1.05
CIW-9	0	44.2	217	1.07	7.70	67.2	776	0	0.0220	0.0511	0	0	0.00200	0	0	0.205	0	0.00323	0	0	-0.03	0.34	0	CLW-7	16.75	7.92	-75	1570	0.07	1.7	1.05
CIW-9	0	26.2	298	2.02	7.01	86.4	760	0	0.0268	0.0462	0	0	0.00200	0	0	0.168	0	0.00538	0	0	0.21	0.21	0	CIW-9	15.39	7.98	-184	1550	3.6	0.83	0.993
(1-11-3	0	59.6	390	0.872	7.83	114	984	0	0.0183	0.0495	0	0	0.00565	0	0	0.212	0	0.00372	0	0	0	0.48	0	(1.11.3	15.07	7.55	-197	1830	0.3	2 51	1 17
	Ū	35.0	350	0.072	1.05	114	504	0	0.0105	0.0455	0	, i i i i i i i i i i i i i i i i i i i	0.00505	0	0	U.LIL		0.00372	Ů		Ű	0.40	Ŭ		13.07	1.55	157	1050	0.5	2.51	1.17
													Results					1										Field Resu	lts		
Bottom Ash																							Radium 226 and	Bottom Ash		1	1				
	Boron	Calcium	Chloride	Fluoride	рH	Sulfate	TDS	Antimony	Arsenic	Barium	Bervllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molvbdenum	Selenium	Thallium	Radium 226	Radium 228	228 combined		Temp	pH	REDOX	Conductance	Turbidity (NTUs)	DO	TDS
BA-U-1	0	174	934	0.919	7.61	271	2050	0	0.002	0.0776	0	0	0	0	0	0.354	0	0.00312	0.00458	0	0	0.4	0	BA-U-1	18.39	7.67	-60	3720	1.1	0.31	2.38
BA-U-2	0	91.8	718	0.844	7.68	102	1350	0	0.0211	0.1670	0	0	0	0	0	0.300	0	0.0022	0.00234	0	0.18	0.62	0	BA-U-2	16.57	7.81	-97	2710	2	0.38	1.74
BAC-1	1.31	72.4	431	0.197	8.42	404	1830	0	0.0121	0.0567	0	0	0.00359	0	0	0.172	0	0.142	0.00278	0	0.28	0.09	0	BAC-1	19.56	8.75	-282	1340	22.8	1.17	0.852
BAC-2	10.3	233	1700	1.11	7.2	2590	8310	0	0.0519	0.0180	0	0	0.00556	0	0	0.491	0	0.163	0.0145	0	0.17	0.48	0	BAC-2	18.83	7.25	-39	5370	2.2	1.1	3.38
BAC-3	8.64	417	3400	1.3	7.24	4090	12900	0	0.0472	0.0272	0	0	0.00593	0	0	1.030	0.000105	0.0388	0.0206	0	0.17	0.77	0	BAC-3	17.57	7.34	-11	8.95	1.1	1.61	5.64
BAC-4	0.553	72.4	488	1.22	7.76	269	1270	0	0.0319	0.0641	0	0	0	0	0	0.281	0	0.0196	0	0	0.16	0.58	0	BAC-4	15.14	7.6	-57	2600	0	1.94	1.66
BAC-5	0	91.8	585	1.07	7.73	393	1540	0	0.0294	0.0594	0	0	0	0	0	0.334	0	0.0168	0	0	-0.1	0.27	0	BAC-5	15.26	7.68	-62	2960	0	2.03	1.9
BAC-6	4.4	137	536	0.866	7.84	963	2260	0	0.0248	0.0206	0	0	0	0	0	0.283	0	0.0923	0	0	-0.09	-0.38	0	BAC-6	15.21	7.63	-44	3880	0	1.48	2.48
BAC-7	5.17	142	529	1.34	7.72	985	2760	0	0.0298	0.0184	0	0	0	0	0	0.284	0	0.0908	0.00388	0	0.09	0.34	0	BAC-7	15.95	7.74	-71	4210	0	1.37	2.7
BAC-8	0	27.8	266	1.61	7.92	81.1	708	0	0.0519	0.0732	0	0	0	0	0	0.165	0	0.0055	0	0	0.31	0.41	0	BAC-8	17.34	7.98	-91	1490	3.9	1.21	0.954
BAC-9	0	28.4	283	1.7	7.91	82.6	736	0	0.583	0.051	0	0	0	0	0	0.167	0	0.00451	0	0	0.06	0.53	0	BAC-9	16.49	8.02	-69	1460	1.6	0.96	0.937
BAC-10	0	31.1	273	1.66	7.91	85	788	0	0.0527	0.0612	0	0	0	0	0	0.171	0	0.00567	0	0	0.15	0.5	0	BAC-10	17.35	8	-80	1500	2.9	0.94	0.963
Waste Water	Results																											Field Resu	lts		-
																							Radium 226 and	Waste Water							
	Boron	Calcium	Chloride	Fluoride	pН	Sulfate	TDS	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226	Radium 228	228 combined		Temp	pH	REDOX	Conductance	Turbidity (NTUs)	DO	TDS
SI-U-1	0	147	744	0.519	7.59	263	1840	0	0.00927	0.0634	0	0	0	0	0	0.271	0	0.00206	0	0	0.27	0.59	0	SI-U-1	16.23	7.68	-37	3470	1.9	0.36	2.22
WW-U-1	1.39	323	1820	0.416	7.27	1140	5120	0	0.00592	0.0442	0	0	0.00432	0	0	0.431	0	0.00702	0.00748	0	0.38	0.89	1.27	WW-U-1	16.64	7.24	-17	8020	0	0.41	5.05
WW-U-2	1.16	347	1170	0.633	7.45	872	4270	0	0.0114	0.0473	0	0	0.00237	0	0	0.484	0	0.00411	0.0113	0	0.19	0.54	0	WW-U-2	17.11	7.41	-8	7650	1.1	0.51	4.82
WWC-1	12.9	584	4600	0.245	7.1	3190	13800	0	0.0215	0.0183	0	0	0	0	0	1.000	0.00018	0.00794	0.0146	0	0.13	0.82	0	WWC-1	16.68	7.13	2	9830	0	1.37	6.19
WWC-2	0	54.2	316	0.534	7.75	128	824	0	0.0161	0.0296	0	0	0	0	0	0.128	0	0.00348	0	0	-0.06	0.5	0	WWC-2	15.94	8.03	-95	1550	2.9	1.56	0.989
WWC-3	0	35.3	244	1.14	7.79	86	764	0	0.0226	0.0306	0	0	0	0	0	0.151	0	0.00471	0	0	0.06	0.38	0	WWC-3	16.07	8.01	-144	1310	0	2.09	0.841
WWC-4	1.34	240	1030	0.449	7.97	673	2780	0	0.0133	0.0412	0	0	0	0	0	0.388	0	0	0	0	-0.03	0.56	0	WWC-4	15.29	7.38	-19	4910	0	1.4	3.14

	Round 13 (all results ppm) Assessment Monitoring - September 23 - October 15, 2019															Round 13															
													Results															Field Resu	lts		
Landfill Wells																							Radium 226 and	Landfill Wells							
	Boron	Calcium	Chloride	Fluoride	pН	Sulfate	TDS	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226	Radium 228	228 combined		Temp	pН	REDOX	Conductance	Turbidity (NTUs)	DO	TDS
CL-U-1	0	58.9	432	0.753	7.94	109	976	0	0.0289	0.0799	0	0	0	0	0	0.239	0	0.0035	0	0	0.03	0.75	0.75	CL-U-1	15.85	7.75	-159	777	0	1.62	0.497
CL-U-2	0	60.6	424	0.792	7.87	112	968	0	0.0251	0.0935	0	0	0	0	0	0.229	0	0.00412	0	0	0.03	0.57	0	CL-U-2	15.96	7.7	-158	743	0	1.01	0.476
CLW-1	0	36	328	1.11	8.03	69.1	852	0	0.0295	0.0612	0	0	0	0	0	0.187	0	0.00357	0	0	0.29	0.38	0	CLW-1	15.83	7.73	-48	1480	1.3	2.01	0.948
CLW-2	0	50.8	438	1.13	8.15	88.1	924	0	0.0283	0.1510	0	0	0	0	0	0.253	0	0.0102	0	0	0.08	0.56	0	CLW-2	16.6	7.79	-191	760	0	2	0.488
CLW-3	0	4/	363	1.24	7.99	90.8	828	0	0.039	0.0976	0	0	0	0	0	0.242	0	0.00504	0	0	0.6	0.43	0	CLW-3	17.14	7.84	-215	1/30	0.5	1.43	1.11
CLW-4	0	34.6	332	1.55	7.97	75.6	768	0	0.0387	0.0797	0	0	0	0	0	0.235	0	0.00441	0	0	0.22	1.06	1.06	CLW-4	10.47	7.88	-233	1600	2.7	1.01	1.03
CLW-5	0	37.5	351	1.89	7.09	76.9	1060	0	0.0231	0.0036	0	0	0	0	0	0.237	0	0.00479	0	0	0.25	0.44	1.47	CLW-5	17.05	7.83	-220	1700	1.9	1.84	1.09
CLW-0	0	34.3	262	1.7	7.90	74.4	706	0	0.0145	0.0530	0	0	0	0	0	0.259	0	0.00607	0	0	0.42	1.03	1.47	CLW-0	17.74	7.7	-229	1590	1.6	1.24	1.02
CLW-7	0	45.7	227	1.04	7.09	70.7	926	0	0.0256	0.0525	0	0	0.00000	0	0	0.192	0	0.00402	0	0	-0.05	-0.05	0	CLW-7	16.27	7.70	-37	1520	0.0	1.24	0.060
CLW-0	0	26.0	200	1.04	9.12	99.7	702	0	0.0200	0.0321	0	0	0.00000	0	0	0.190	0	0.00443	0	0	-0.05	0.02	0	CLW-0	16.02	7.01	-30	1610	0.2	7.56	1.02
CL-11-2	0	64.6	200	0.429	0.12	169	506	0	0.0550	0.0403	0	0	0.00287	0	0	0.151	0	0.00073	0	0	2.12	0.02	2 12	CL-11-2	16.1	0.09	-255	502	0.2	1.94	0.222
CL-0-5	Ū	04.0	504	0.423	0.05	100	330	0	0	0.0342	U	0	0.0738	0	Ū	0.132		0.00304	0	0	2.15	0.21	2.13	CE-0-5	10.1	5.00	-70	505	Ū	1.04	0.322
													Results					4				4						Field Resu	lts		
Bottom Ash																							Radium 226 and	Bottom Ash		1	1				
	Boron	Calcium	Chloride	Fluoride	рH	Sulfate	TDS	Antimony	Arsenic	Barium	Bervllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molvbdenum	Selenium	Thallium	Radium 226	Radium 228	228 combined		Temp	рH	REDOX	Conductance	Turbidity (NTUs)	DO	TDS
BA-U-1	0	173	1140	0.587	7.71	314	2290	0	0.0223	0.0770	0	0	0	0	0	0.385	0	0.00302	0.00502	0	0.16	0.73	0.73	BA-U-1	16.68	7.47	-58	1610	0	1.29	1.03
BA-U-2	0	47.1	400	0.893	8.18	56.6	972	0	0.0283	0.1270	0	0	0	0	0	0.247	0	0.00332	0	0	0.26	0.7	0	BA-U-2	16.37	8.94	-255	1550	1.4	0.8	0.99
BAC-1	1.43	93.7	801	0.307	8.16	701	2730	0	0.0126	0.0460	0	0	0.00163	0	0	0.259	0	0.128	0.00436	0	0	0.14	0	BAC-1	17.09	7.98	-50	3950	1.32	3.4	2.53
BAC-2	9.49	208	1730	1.07	7.45	2760	7240	0	0.0647	0.0192	0	0	0.0058	0	0	0.466	0.00028	0.19	0.0145	0	0.12	0.39	0	BAC-2	16.92	7.19	28	10600	3.3	2.45	6.59
BAC-3	7.32	441	3500	0.675	7.49	4310	13900	0.0027	0.0356	0.0321	0	0	0.00449	0	0	0.957	0	0.0255	0.0236	0	0	0.45	0	BAC-3	17.34	7.1	20	16700	2	0.61	10.4
BAC-4	0.606	66.7	573	1.13	7.95	330	1820	0	0.0322	0.0637	0	0	0	0	0	0.279	0	0.0218	0	0	0.15	0.16	0	BAC-4	16.73	7.81	-57	2570	0.6	1.18	1.64
BAC-5	0	66.2	568	1.11	8.07	250	1410	0	0.0321	0.0814	0	0	0	0	0	0.289	0	0.00941	0	0	0.25	0.36	0	BAC-5	17.52	7.84	-50	2540	0.4	1.33	1.63
BAC-6	2.66	119	625	0.796	7.86	646	1870	0	0.0223	0.0338	0	0	0	0	0	0.288	0	0.0651	0.00273	0	0.31	0.83	1.14	BAC-6	16.78	7.74	-52	2670	0.7	0.87	1.71
BAC-7	5.06	107	566	1.31	7.96	1170	2320	0	0.0314	0.0174	0	0	0	0	0	0.248	0	0.0887	0.00276	0	0.04	0.22	0	BAC-7	17.16	7.83	-156	4000	3.1	0.86	2.56
BAC-8	0	23.2	280	1.53	8.05	95.5	784	0	0.0639	0.0389	0	0	0	0	0	0.156	0	0.00545	0	0	0.03	1.21	1.21	BAC-8	15.03	7.65	-41	1540	0.2	5.45	0.989
BAC-9	0	27.1	299	1.45	8.06	87.6	788	0	0.0593	0.0388	0	0	0	0	0	0.16	0	0.00483	0	0	0.09	0	0.53	BAC-9	15.03	7.68	-23	1560	0.3	1.2	0.993
BAC-10	0	25.7	280	1.51	8.09	87.4	808	0	0.0595	0.045	0	0	0	0	0	0.16	0	0.00584	0	0	0.8	1	1.8	BAC-10	14.98	7.65	-31	1560	0.1	1.15	0.999
Waste Water	Results																									r		Field Resu	lts		
																							Radium 226 and	Waste Water							
	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	TDS	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226	Radium 228	228 combined		Temp	pH	REDOX	Conductance	Turbidity (NTUs)	DO	TDS
SI-U-1	0	136	824	0.38	7.71	281	1850	0	0.00981	0.0599	0	0	0	0	0	0.277	0	0	0	0	0.19	1.61	1.61	SI-U-1	16.51	7.63	-12	3290	0.1	0.78	2.11
WW-U-1	1.41	311	1010	0	7.37	588	5720	0	0.00594	0.0419	0	0	0.00166	0	0	0.485	0	0.00689	0.0077	0	-0.08	1.42	1.42	WW-U-1	16.11	7.19	14	8000	2.8	1.93	5.04
WW-U-2	1.02	346	2020	0	7.3	855	4400	0	0.00735	0.0499	0	0	0	0	0	0.54	0	0.00317	0.011	0	-0.2	1.36	1.36	WW-U-2	16.06	7.38	22	7390	0.6	1.32	4.66
WWC-1	13.2	473	4940	0.292	7.42	3570	14900	0	0.0264	0.0205	0	0	0	0	0	0.974	0.000278	0.0113	0.016	0	0.23	0.9	0.9	WWC-1	15.13	6.79	36	1910	0	3.67	11.8
WWC-2	0	57.6	349	0.427	7.99	141	876	0	0.0166	0.0336	0	0	0	U	0	0.126	0	0.00327	0	0	-0.15	0.81	0.81	wwc-2	14.82	/.31	-29	1/20	0.3	0.47	1.1
WWC-3	0	33.3	262	0.986	8.13	95.3	/76	0	0.0236	0.0331	0	0	0	U	0	0.151	0	0.00477	0	0	3.1	0.58	3.1	wwc-3	15.96	/.72	-244	1420	U	0.2	0.909
WWC-4	1.06	176	968	U.453	7.61	594	3080	0	0.0154	0.0456	0	0	0	0	0	U.329	0	0	0.00177	0	0.72	0.57	0	WWC-4	14.38	/.21	-34	4460	U	2.35	2.86