

# MEMO

То:	Mr. Jim Ford, NRDP
From:	Mr. William H. Craig, LHG, Tetra Tech
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Subject:	Data Gap Investigation – Silver Bow Creek and Blacktail Creek Corridors

This technical memorandum presents results of soil, sediment, surface water, groundwater, and pore water sampling pertaining to characterization of mine wastes located at the Blacktail Creek (BTC) Berm area and within the historical floodplain deposits associated with the BTC and Silver Bow Creek (SBC) riparian corridors. The sampling results are being utilized to address data gaps and satisfy design needs for the integration of restoration with remedy of mining and mineral processing wastes in the SBC and BTC Corridors (Figure 1; Appendix A) and to support integration of restoration design. Removal of wastes is described in the 2006 Butte Priority Soils Operable Unit (BPSOU) Record of Decision (ROD) Section 12.3.3.2 (EPA 2006a) which requires excavation of contaminated sediment, streambanks, and floodplain wastes from the reach of Blacktail Creek just above the confluence with upper Silver Bow Creek down to the reconstructed floodplain and stream channel in Lower Area One, and the 2015 Preliminary Conceptual Restoration Plan (Confluence, 2015). Field methods and procedures used in this data gap investigation generally followed procedures outlined in the draft final sampling and analysis plan (SAP) and quality assurance project plan (QAPP) (Tetra Tech 2016a).

#### BACKGROUND

In 1983, the State of Montana filed a lawsuit in federal District Court against the Atlantic Richfield Co. (ARCO) for injuries to the natural resources in the Upper Clark Fork River Basin, which extends from Butte to Milltown, Montana. The *Montana v. ARCO* lawsuit, brought under federal and state Superfund laws, sought damages from ARCO, contending that decades of mining and smelting in the Butte and Anaconda areas had greatly harmed natural resources in the basin and deprived Montanans of the use of these resources.

The state settled *Montana v. ARCO* through a series of settlement agreements, or consent decrees, completed and approved by the court in 1999, 2005 and 2008. One of the three injured areas in the Upper Clark Fork River Basin covered under the 2008 settlement agreement was the Butte Area One (BAO) injured groundwater and surface water site.

The 2008 *Montana v. ARCO* Consent Decree allocated \$28.1 million, plus interest, to restore, replace or acquire the equivalent of the injured groundwater and surface water of BAO. Then-Governor Schweitzer created the Butte Natural Resource Damage Restoration Council (BNRC) to give the citizens of Butte a strong voice in how this fund should be spent. The nine member volunteer council, with assistance from the NRDP, developed the 2012 Butte Area One Final Restoration Plan (BNRC 2012) to guide the expenditure of these funds. It was approved by the governor in January 2013.

Injury to groundwater in BAO has been demonstrated by the occurrence of concentrations of contaminants (including cadmium, zinc, iron, lead, copper, arsenic and sulfate) that exceed drinking water standards in the alluvial aquifer. The areal extent of the known contamination above drinking water standards of the alluvial aquifer is about one square mile and extends from the Parrot Tailings area down gradient along the SBC channel. The highest known concentrations of dissolved contaminants in groundwater coincide with wastes from the Parrot Tailings area and the BRW. Other waste areas known as the Diggings East and Northside Tailings also contain waste materials that are leaching contaminants into the groundwater which discharges to adjacent surface waters. In Lower Area One (LAO), west of Montana Street, some of the mine waste tailings were previously removed by ARCO; however, some slag, tailings, and other wastes from the BRW and Colorado Smelter remain in place and have the potential to leach contaminants to ground and surface water.

The discharge of contaminated mine wastes, groundwater and surface water to SBC and BTC in BAO results in floodplain, surface water and instream sediment contamination. Surface runoff from storms and snowmelt carry hazardous substances from waste sources to the Creeks through surface drainages and the stormwater collection system.

The BAO Plan calls for removal of mine wastes left in place along the floodplain of upper Silver Bow Creek through BAO, with an allocation of \$10 million towards that removal. The BAO Plan identifies these wastes, which include the Parrot Tailings, Diggings East, Northside Tailings, and other isolated areas of mine wastes in the Blacktail and Upper Silver Bow Creek floodplains, as the primary sources supplying inorganic contaminants to the alluvial groundwater, surface water, and in-stream sediment resources within the Upper Silver Bow Creek corridor. The 2015 Preliminary Conceptual Restoration Plan (PCRP), issued by NRDP for public input in February 2015, focused on the Upper Silver Bow Creek corridor. The June 2016 draft Parrot Tailings Waste Removal Amendment addresses the removal of the Parrot Tailings waste. This technical memorandum presents results related to the BTC Berm area and historical floodplain deposits associated with the BTC and SBC riparian corridors.

#### SITE DESCRIPTION

BTC receives the majority of its base flow contributions from Summit Valley groundwater in Butte, Montana. The stream intersects both the BAO injured area restoration site and BPSOU, and is a focal point for past and current remediation and restoration activities. The SBC and BTC Corridors study area that is the focus of this data gap investigation extends from below the LAO boundary on lower SBC (west of Montana Street), through the BAO and the confluence of BTC, and continues upstream above the BAO along BTC to Father Sheehan Park above Harrison Avenue (**Figure 2; Appendix A**).

In 1879, the first large-scale mineral processing smelter (Colorado Smelter) was built on SBC, at the west end of the valley. Between 1879 and 1888, at least three more smelters of consequence (BRW, Parrot Smelter and Montana Ore Purchasing Company (M.O.P)) were constructed upstream of the Colorado Smelter, which significantly altered the geomorphology and hydrology of both SBC and the lower portion of BTC. A fifth smelter of consequence, the Bell Smelter, located west of present day Harrison Avenue on the north bank of BTC, was constructed in 1881; and reached a peak production of approximately 30 tons per day in 1883 (primarily silver ore). Production quickly tapered and the smelter was dismantled sometime in the early 1890s.

Water demands during this period increased dramatically, and the stream channels were altered significantly to keep up with the demand. At least three dams were constructed on upper SBC and the confluence area for tailings impoundment and water clarification. The dam at Montana Street (Weed, 1904) was constructed for settlement of tailings from upstream smelters and resulted in significant ponding on both sides of the stream.

Over time, mining and smelting waste materials aggraded in the SBC and BTC channels and floodplain, causing frequent and substantial flooding (Meinzer, 1914). In an attempt to mitigate flooding issues, berms made mostly of readily available waste were constructed throughout the confluence area. The known waste area referred to as the BTC Berm, is an historic remnant of these flood control berms.

#### **PREVIOUS SITE INVESTIGATIONS**

Data characterizing contaminated materials in the vicinity of the Blacktail berm are limited. In May 2013, the Montana Bureau of Mines and Geology (MBMG) conducted trenching, test pit, and borehole investigations in known and suspected mine waste areas of the BTC and SBC confluence in Butte (MBMG 2014a). In particular, the BTC Berm area was evaluated for contaminant concentrations and volumes of impacted sediments. This work was done to quantify the aerial extent and depth of tailings and impacted sediments. Its purpose was to provide an updated characterization and volume estimate of tailings and mining impacted sediments for the State of Montana. Five soil borings were advanced in the BTC Berm to characterize the subsurface material.

The MBMG 2014a report concluded the following:

- The BTC Berm contained tailings/impacted soils (T/IS) that exceeded criteria for constituents of concern (COC) concentrations established in the 2013 MBMG study's SAP.
- T/IS in the BTC Berm is not overlain by thick units of fill material as those at the Diggings East Tailings site. They are closer to the surface, and surficial at times.
- The majority of soil samples collected just above the water table in the BTC Berm, exceeded the COC criteria. Therefore, it was recommended that any potential future removal boundaries include soils down to the water table.
- The majority of organic silt samples met the classification of impacted sediment.
- The average concentrations of arsenic and lead in tailings samples from the BTC Berm area were comparable to the average concentrations of arsenic and lead in Parrot Tailings samples (Tucci, 2010). However, concentrations of average copper concentrations in tailings samples from the BTC Berm, as well as zinc concentrations, were greater than the average copper and zinc concentrations in Parrot Tailings samples.
- In total, T/IS and potential removal volumes for the BTC Berm was estimated at 14,000 cubic yards.

During baseflow conditions in 2011, the MBMG conducted a continuous bromide tracer injection in the BTC and upper SBC confluence area on behalf of the NRDP (MBMG 2014b). The work evaluated streamflow, chemistry, metals loading, and groundwater and surface-water interactions in a reach of stream impacted by more than a century of mining and milling related activities, land development, land use change, and streambed manipulation. The continuous tracer injection test was performed using a sodium bromide solution with a bromide concentration of 22.5 percent wt./wt. to obtain creek bromide concentrations of roughly 3 milligrams per liter (mg/L). Manual measurements of discharge were obtained at 15 sites over a total stream length of 10,500 feet using a SonTek Flow Tracker®. Steady-state conditions with respect to bromide were reached after 11 hours of injection. The tracer results were combined with synoptic sampling of main stem, tributary, and drive point piezometer data. Samples from 30 groundwater wells, 17 main stem locations, 8 tributary locations, and 5 drive point piezometer locations in the BTC streambed and two wetland sites were analyzed for bromide, common cations and anions, and 36 minor and trace analytes. The MBMG 2014b report concluded the following:

- Results from the tracer injection and manual Flow Tracker® measurements were consistent, and suggest that discharge in BTC between Oregon Avenue and George Street increased by 2.2 cubic feet per second (cfs); approximately 22 percent.
- Wetlands located adjacent to BTC received the majority (99 percent) of recharge from local groundwater sources, and contributed 39 percent of the flow increase observed in the studied reach of BTC (Oregon Avenue to George Street).
- The remaining baseflow contributions (61 percent) in BTC were groundwater inputs into the stream.
- Results of the tracer study also indicate that two reaches of BTC are non-gaining reaches, and may be net-losing reaches (MBMG 2014b). Gains in stream flow were not observed in SBC, from a point just downstream of Slag Wall Canyon at surface sample site SS-06 to the pumping vault on upper SBC.
- Results from metals loading assessments indicate that while there appears to be source areas for copper and zinc loading to the stream, concentrations of contaminants of concern (arsenic, cadmium, copper,

lead, and zinc) remained below Circular DEQ-7 (DEQ 2012) acute and chronic life standards for dissolved concentrations throughout the study area (MBMG 2014).

- Total recoverable copper and zinc concentrations were elevated in surface water samples collected from the BTC reach from near the Lexington Avenue overpass to the confluence of BTC with SBC.
- Surface water samples collected from one main stem, one wetland, and two tributary samples exceeded Circular DEQ-7 acute and chronic life standards for total copper, while the two tributary samples exceeded Circular DEQ-7 acute and chronic life standards for total zinc.
- The sources of total recoverable copper and zinc to this area of BTC are thought to be either bed sediment loads or nearby streambank sediment (i.e., BTC Berm) or loading from historic Grove Gulch discharges.
- Surface water samples collected from the two wetlands, located along BTC in the BTC Berm area, exhibited water quality with elevated concentrations of copper and zinc. Both of the wetlands contributed measurable flow into BTC and are potential point sources.
- Concentrations of contaminants in the groundwater that recharges the wetlands near Lexington Avenue were not assessed during this investigation. Therefore, groundwater entering the wetlands could not be ruled out as a potential source.

#### PREVIOUSLY IDENTIFIED DATA GAPS

In order to fill data gaps in information concerning the extent and magnitude of T/IS and to obtain additional data necessary for integration of restoration with remedy, Tetra Tech conducted a limited soil, surface water and groundwater investigation within the SBC and BTC Corridors focused on the following data gaps identified in the Preliminary Conceptual Restoration Plan (PCRP) (Confluence 2015):

- Further define extent and magnitude of T/IS within floodplain soils to assess waste areas and depths;
- Characterize the near-surface aquifer to quantify construction dewatering requirements;
- Evaluate COCs in the in-stream and pond sediments, surface water and the stream banks within the SBC and BTC Corridors to identify potential contaminant loading;
- Collect additional groundwater quality data to define the extent of alluvial impacts and their potential impacts on post-restoration groundwater and surface water quality; and
- Evaluate metals loading from alluvial aquifers to SBC and BTC riparian corridors.

#### **PURPOSE AND OBJECTIVES**

The purpose and objectives of the SBC and BTC Corridors investigation were to:

- Evaluate surface water, in-stream and pond sediment, and floodplain soils in areas within the SBC and BTC Corridors that were not previously investigated;
- Confirm the lateral and vertical extent of the contamination that may require remedial action(s);
- Complete groundwater monitoring of selected monitoring wells to gather pre-construction aquifer and groundwater quality data; and
- Evaluate contaminant loading to SBC and BTC riparian corridors.

In order to meet the site investigation purpose and objectives, the draft final SAP and QAPP (Tetra Tech 2016a) was developed to address data gaps and obtain and analyze data to make sound decisions regarding the restoration efforts within the SBC and BTC Corridors. The draft final SAP outlined the sampling approach, procedures, instrumentation, and analytical requirements for each location and media sampled. The QAPP defined the data quality objectives (DQOs) for this and similar projects that are being conducted for NRDP for BAO and related work.

Soil sample results are compared to Streamside Tailings Operable Unit (SST OU) field screening criteria. The SST OU is adjacent to BPSOU, addressing SBC after it leaves BPSOU.

Water quality sample results are compared to Montana Department of Environmental Quality Circular DEQ-7 standards. In-stream and pond sediment pore water samples are compared to DEQ-7 surface water and groundwater standards.

Sediment sample results are compared to the EPA Region 3 BTAG Freshwater Sediment Screening Benchmarks, which serve as a Tier 1 screening tool to indicate if sediment contaminant concentrations may indicate potential adverse effects. Montana is located within EPA Region 8, which currently has no sediment screening numbers and uses many of the same reference values relied upon by Region 3 BTAG.

Groundwater sample results are compared to DEQ-7 groundwater standards.

#### FLOOD PLAIN SOILS AND MINE WASTE SAMPLING AND ANALYSIS

Three different methods were used to sample and characterize subsurface mine waste deposits, impacted soil, and miscellaneous fill materials deposited in and around the BTC berm area and floodplain. Seventeen test pits were excavated, screened and sampled in the locations shown on **Figure 2** (**Appendix A**). In addition, three direct push technologies (DPT) soil borings were advanced in the berm area and wetland pond #1 (**Pond #1**; **Figure 2**) in order to access deeper subsurface soils at depths below the maximum excavation depths from the test pits. Multiple samples were collected from each test pit and DPT boring based on the various material types encountered and XRF screening results. Lastly, fourteen stream bank soil and opportunity samples were collected by hand tools and sampled for the same constituents as the test pits and DPT borings (**Figure 3**; **Appendix A**). Logging and screening procedures were followed as described in the draft SAP, except as noted:

- Two additional test pits were excavated at the discretion of the Tetra Tech field geologist and approval of the Tetra Tech project manager.
- Five opportunity samples were collected; one sample was collected in the Slag Canyon portion of SBC, two from the BTC berm area on the south side of the creek, one from the banks of Grove Gulch, and one from an island located in the eastern end of wetland pond #3 (**Pond #3; Figure 3**).
- Only four samples, plus one duplicate, were selected for SPLP, ABA, NAG-pH analysis out of 61 test pit and DPT boring natural samples. This ratio is less than the 20% specified in the SAP and was inadvertent. Only two SPLP, ABA, NAG-pH samples were collected from 14 natural bank soil samples. This ratio is also slightly less than the 20% specified in the SAP.
- DPT boring sample designations followed the SAP naming procedures (e.g. BTC-WS-03 (2-5)-BT) however it should be noted that the soil boring lithology consisted of more than just organic rich wetland sediment layers as evidence by the DPT logs and the soil type naming designations (OB, AL, BC, YT, and BT).

XRF screening of soils generally followed the procedures specified in the SAP except for thoroughly drying and sieving to a 10-mesh prior to analysis. In order to conduct the investigation in a timely and efficient manner a field decision to forego preparing and drying XRF samples in the field was made by the supervising geologist.

 Test pit logs, DPT boring logs, XRF field screening tables, and field sampling notes are included in Appendix B. Table 1 (Appendix C) presents results of the total metals analyses with sample results that exceed the SST OU floodplain soil screening criteria (Pioneer 2011) highlighted in yellow. Figure 2 presents the highest total metals results for each sample test pit and DPT sample point; soil screening criteria exceedances are indicated in red. Bank and opportunity soil sample results are summarized in Table 2 (Appendix C), with sample results that exceed EPA Region III Biological Technical Assistance Group (BTAG) Freshwater Sediment Screening Benchmarks (EPA 2006b) highlighted in yellow. EPA established a hierarchy for selection of freshwater sediment screening benchmarks:

- Preference was given to benchmarks based on chronic direct exposure, non-lethal endpoint studies designed to be protective of sensitive species;
- Values derived by statistical- or consensus-based evaluation of multiple studies were given first priority;
- Equilibrium partitioning values were selected for contaminants with 2.0< log Kow <6.0 if empirical values based on multiple studies were not available;</li>
- o Absent consensus or equilibrium partitioning values, single study toxicity values were selected; and
- o Marine values were used for freshwater only if a suitable freshwater value did not exist.

**Figure 3** presents the highest total metals results for each bank and opportunity sample location, with bank soil sample results that exceed EPA Freshwater Sediment Screening Benchmark criteria indicated in red.

As summary of the results and discussion follows:

- <u>Arsenic</u>: Total arsenic concentrations of the 41 test pit samples, 10 DPT samples, and 14 bank and opportunity soil samples ranged from 7 to 1,080 milligrams per kilogram (mg/kg). Stream bank soil samples (note not actually in-stream sediment) were screened to EPA Region III BTAG Freshwater Sediment Screening Benchmarks due to their proximity to the streams. All 14 stream bank soil and opportunity samples exceeded the Freshwater Sediment Screening Benchmark of 9.8 mg/kg. As a comparison, 27 of 61 natural soil samples from test pits and DPT soil borings exceeded the SST OU screening criteria of 200 mg/kg for arsenic. The high concentrations of arsenic amongst the various soil types (overburden, black and yellow colored tailings deposits, black clay, and alluvium) appears to be randomly distributed, though overburden/fill and alluvium appear to exhibit much lower concentrations on average than obvious mine waste or tailings deposits.
- <u>Cadmium</u>: Total cadmium concentrations ranged from 1.1 to 70.2 mg/kg in all the soil samples analyzed. Thirteen of 14 natural bank and opportunity soil samples exceeded the EPA Freshwater Sediment Screening Benchmark of 0.99 mg/kg. Ten test pit and DPT boring samples and one opportunity bank soil sample exceeded the SST OU floodplain soils screening criteria of 20 mg/kg. All of the exceedances but two were samples collected from alluvium.
- <u>Copper</u>: Total copper concentrations in test pit, DPT, and stream bank soil samples ranged from 36 to 20,400 mg/kg. The highest copper concentration measured was from test pit 1 in alluvium from 10-11.5 feet bgs depth. All 14 stream bank soil and opportunity samples exceeded the EPA Freshwater Sediment Screening Benchmark criteria of 31.6 mg/kg. Twenty-six test pit and DPT boring samples and three stream bank soil and opportunity samples exceeded the SST OU floodplain soils screening criteria of 1,000 mg/kg.
- Lead: Total lead concentrations in test pit, DPT, and stream bank soil samples ranged from 20 to 3,570 mg/kg. Similar to copper, the highest lead concentration measured was from test pit 1 in alluvium from 10-11.5 feet bgs depth. Nine test pit and DPT boring samples and two stream bank soil and opportunity samples exceeded the SST OU floodplain soils screening criteria of 1,000 mg/kg. Thirteen of 14 natural bank and opportunity soil samples exceeded the Freshwater Sediment Screening Benchmark of 35.8 mg/kg.
- <u>Zinc</u>: Total zinc concentrations in test pit, DPT, and stream bank soil samples ranged from 78 to 22,000 mg/kg. The highest zinc concentration measured was from test pit 2 in alluvium from 3-4 feet bgs depth. Thirty-six test pit and DPT boring samples and six bank soil and opportunity samples exceeded the SST OU floodplain soils screening criteria of 1,000 mg/kg. Thirteen of 14 natural bank and opportunity soil samples exceeded the Freshwater Sediment Screening Benchmark of 121 mg/kg.
- <u>XRF Screening</u>: XRF results were used primarily to select soil sample intervals for laboratory analysis from various lithologies encountered and from soil horizons suspected to be impacted from mine wastes such as oxidized staining. XRF results were not used to compare to soil criteria. In general XRF results are lower than the total metals values measured in the laboratory; however for most of the COC metals,

the XRF screening results (**Table 3**; **Appendix C**) compare within the same order of magnitude of the total metals lab analyses. The RPD between XRF and laboratory total metals ranged from 0 to over 300%. The mean RPDs for As, Cd, Cu, Pb, and Zn were 74%, 89%, 74%, 75% and 82%, respectively. The RPD variability is likely due to multiple factors. One common factor often cited is matrix or instrument interferences, as interferences may affect detection limits and precision of the instrument. Other common interferences are as follows (EPA 2004):

- Moisture content above 20% may interfere with sample analysis as moisture alters the soil matrix in relation to the XRF calibration matrix. Given the expedited time frame for sample collection, XRF analysis, and selection and submittal of samples for laboratory analysis, samples were not thoroughly dried prior to analysis, and thus, may have had moisture content above 20%. XRF samples were not screened with a 10-mesh sieve prior to analysis. In contrast, laboratory total metals samples were first dried by the laboratory prior to sieving to 10-mesh size and analysis. Also note that the extractable total metals concentrations are reported by the laboratory on a dry weight basis not as received (i.e. the XRF analysis).
- o Chemical matrix effects such as iron absorption of copper x-rays, etc.
- Position of samples in front of the probe window; which results in natural variability in the sample results based upon the position of the instrument and the vector of the narrow X-ray beam. This type of sampling bias is similar to sub-sample selection by the laboratory prior to extractable analysis; the laboratory only takes a small portion of the prepared sample for extraction.
- Instrument resolution limitations may result in problems analyzing some elements, such as the instrument's inability to resolve energy differences. For example, the arsenic peak may overlap with the lead peak and the instrument may not accurately calculate the concentrations. This may particularly be the case where there is a lead-to-arsenic ratio of 10 to 1 or more as the lead peak will overwhelm the arsenic peak.
- RPD variability may also be due the sample selection and field screening process itself, particularly during the test pit investigation where samples from the same depth but opposite walls of the test pit may represent differing material types, such as dealing with miscellaneous fill material/overburden deposits. Some of the XRF material descriptions differ from the laboratory sample material designations.
- The length of time the sample was analyzed. Given the expedited manner in which the field work was conducted, each of the XRF-Field sample was analyzed with the XRF for 75 seconds. A greater analysis time of 120 to 180 seconds may have resulted in better correspondence (i.e. lower RPDs) between the XRF and laboratory results.
- <u>Field Quality Control Samples</u>: Based on a comparison of natural and blind field duplicate samples taken on a 5% frequency (1 per 20 natural samples) during bank and opportunity sampling, test pit excavation, and DPT boring for total metals analysis, the relative precision for the sampling methods can be qualitatively assessed based on the RPD between the two samples. The mean RPDs for As, Cd, Cu, Pb, and Zn were 69%, 34%, 65 %, 58%, and 44%, respectively. The RPD variability is likely due to multiple factors. One common factor often cited is matrix or instrument interferences, as interferences may affect detection limits and precision of the instrument. Other common interferences for the natural and blind field duplicate samples, which are similar to the XRF sample variability are:
  - o Sample matrix effects such as sample heterogeneity, uniformity, and particle size.
  - Chemical matrix effects identified or attributable to the ICP/MS laboratory analysis.
  - Sample selection/splitting effects in the field methods; particularly in dealing with blind duplicate samples selected from the DPT borings since the amount of sample needed by the laboratory precludes exact sample splitting over a specified sample interval from a macro-liner DPT sample.
- <u>Waste Removal Volume Estimation</u>: Based on results of the test pits, DPT borings, and stream bank soil samples along with in-stream and pond sediment samples, a removal volume was made using the following assumptions, previous estimations details are also provided:

- The berm and large pond/wetland area (Pond #1; Figure 2) was the only portion covered in the PCRP (Confluence 2015); the estimated removal volume was 14,000 cubic yards (CY) (MBMG 2014b).
- An alternative initial removal volume estimate was presented in the draft Conceptual Remediation Plan Cost Estimate (CRPCE) (Tetra Tech 2016b) for NRDP under Task Order #5 used an assume removal depth of 4 feet below the base of the sediment/surface water interface and the estimated depth to groundwater. The estimated removal volume for the CRPCE BTC Berm and Pond area was 149,290 CY covering approximately 14.6 acres.
- Mine waste, impacted soil, fill material, and the native black clay soil horizon which underlies most of the BTC berm area is impacted with BAO COC metal levels that exceed SST OU floodplain soils screening criteria and should be targeted for removal. In some places, there may be more than one black clay soil horizon. The depth to the deepest occurrence of black clay at each sample location (DPT boring, existing well log, test pit) was chosen as the base of excavation for removal volume estimation purposes.
- The ground surface elevations used to estimate thickness of impacted materials was based off a LIDAR survey provided by the City of Butte.
- The small wetland pond (**Pond#2**; **Figure 2**) located between the KOA campground and Kaw Avenue overpass, and north of the walking path should no longer be targeted for removal because historical mining related impacts to this wetland are now considered minimal (sediment, surface water and pore water impacts are at or near background levels).
- The northern bank/berm and walkway along BTC from Kaw Avenue to the BTC/SBC confluence should be targeted for removal because the stream bank materials as well as the bulk of the berm materials sampled (garbage, mine waste, tailings, etc.) greatly exceeded screening criteria.

Based on contamination, the revised estimated volume for the BTC Berm area after applying the additional site data, revising the assumptions and kreiging the base surface elevation is 100,185 CY. **Figure 4** (Attachment A) shows the outline and approximate depths.

**Table 4** (**Appendix C**) presents results of the physical and chemical characteristics, nutrients (nitrate), Synthetic Precipitation Leaching Procedure (SPLP), acid-base accounting (ABA), and net acid generating (NAG) pH analysis for floodplain soils and mine waste. The SPLP extraction method followed the standard EPA method protocol resulting in an extraction fluid pH of 5.0 +/- 0.05. SPLP and ABA analyses were performed on four of 61 test pit and DPT boring samples; BTC-TP-01 (8.5-9.5)-BT, BTC-TP-07 (4.5-5)-AL, BTC-TP-17 (2.5-3.5)-GC, and BTC-WS-02 (5-11)-BC. **Table 5** (**Appendix C**) present results of the physical and chemical characteristics, nutrients (nitrate), ABA, SPLP, and NAG pH analysis for bank soil samples. SPLP and ABA analyses were performed on two of sixteen bank soil samples; BTC-SBS-02S (0-12"), and GG-OSBS-01 (0-12").

The relationship between SPLP leachate and total metals concentrations differ by the constituent, the type of mineralization and strength of the sorption to substrate. The total metal concentration (mg/kg) is the total amount of potential load to the environmental, while the SPLP leaching concentration (mg/L) represents the desorption/dissolution of that metal upon exposure to acidic-water. However, since the relative amount/ratio of soil and water in the laboratory SPLP testing (EPA method 1312 calls for a 20:1 water to rock ratio) is not the same as the actual amount/ratio observed in the field, a distribution coefficient/multiplier is needed, which is referred to as the soil water partition coefficient Kd. Because of this fact, estimated field leachate concentrations (CI) must be calculated by their respective SPLP and their total metal concentrations through the development of soil waterpartition coefficients (Kd) for each constituent and each major lithologic unit. This calculated field leachate concentration (CI) can then be compared to calculated leachate criterion (Lc) established from DEQ Circular-7 water quality standards. While comparisons of SPLP leachate to surface water quality standards for floodplain soil/mine waste leaching to groundwater then discharging to surface water can provide a gualitative assessment of metals leaching they cannot be directly compared without further geochemical analysis. Development of soil water partition coefficients (Kd) and estimated field leachate concentrations (CI) for each SPLP sample was outside the scope of this study. Therefore, Tables 4 and 5 compare SPLP leachate concentration to surface water human health standards (HHS; DEQ Circular 7) for qualitative comparison purposes.

In addition to the SPLP leachate qualitative analysis for leaching potential, ABA analysis provides a rough guide as to the potentially acid generating (PAG) nature of sediment and, therefore, provides an estimate whether acidic drainage/leachate may occur.

Results of the SPLP and ABA analysis are summarized as follows:

- Arsenic, lead, and mercury SPLP extractions were the three COCs that exceeded their respective HHS for surface water in test pit, DPT boring, and bank soil samples. Note that SPLP extraction is run as dissolved (extract is filtered as per the method) and surface water standards are based on total metals. Also note that only two lead and no mercury sample results from surface water or groundwater sampling were above their respective water quality standards; therefore the SPLP procedure only provides an assessment of the leaching potential to water resources and not the actual fate and transport mechanisms or impacts. *In situ* geochemical processes determine the fate and transport effects of desorption and leachate migration/mixing. In layman's terms, SPLP leachate concentrations measured in the laboratory are not equivalent to actual field for a variety of reasons.
- No samples were considered potentially acid generating using the Price method (Price et al 1997) (i.e. no samples exhibited total sulfur greater than 0.3%) or the BLM method (no samples resulted in a NP:AP < 3 and NNP < -20 tons/kton).</li>
- Saturated paste pH for test pit, DPT boring, and bank soil samples ranged from 3.8 to 8.1 S.U. with the majority of samples in the moderately acidic and neutral range (5.6 to 6.0 S.U. is moderately acidic, 6.1 to 6.5 S.U. is slightly acidic, and 6.6 to 7.3 S.U. is neutral). Also note that NAG pH can used as a secondary screening tool to provide an estimate of pH upon complete oxidation of all sulfides, thus providing a method for calibrating the effect of sulfides on acid contribution.

## IN-STREAM SEDIMENT AND WETLAND POND SEDIMENT SAMPLING AND ANALYSIS

The in-stream sediment and pond sediment sampling portion of the data gap site investigation of the SBC and BTC riparian corridors consisted of collecting and sampling sediment at 18 stream and three pond stations, plus one opportunity pond sediment sample (**Figure 5**; **Appendix A**); with the in-stream sediment samples corresponding to the station number and a 'SS' designation and the pond sediment samples corresponding to station. These sample locations were co-located with surface water sampling and with pore water sampling and were sampled concurrently on March 7 through 15, 2016. Field sampling and analysis procedures followed the procedures put forth in the SAP; with the following key points and notable exceptions:

- In-stream sediment and pond sediment samples were screened by the laboratory as received (i.e. wet) to a No. 230 mesh (<63 µm) fraction for metals analysis prior to drying for moisture content and extraction.
- Sediment sample collection was limited to 0 to 12 inches below sediment/water interface. Sampling the deeper sediment sample intervals of 24 to 36 inches below grade as proposed in the SAP with an AMS<sup>®</sup> sludge and sediment sampler was not possible in the stream channels due to the coarse nature of the streambed sediments and only possible at one pond sediment location (BTC-PS-01) due to the cohesive nature of the fine grained pond sediments. Multiple attempts to sample the deeper depth interval resulted in little- to no-return and eventually broke the sampler on two separate occasions.
- Multiple in-stream sediment sample points were collected from two surface water station locations (BTC-SS-7 and BTC-SS-8) to determine the spatial variability within the stream channel deposits at stations. Two samples were collected from BTC-7; one in the approximate center of the stream channel (BTC-SS-7) and one from the channel nearest the north bank (BTC-SS-07N). Three samples were collected from BTC-8; BTC-SS-8 was collected from the center portion of the stream channel, BTC-SS-8S from nearest the south bank, and BTC-SS-8N from nearest the north bank.

- One opportunity pond sediment sample (BTC-OSS-01) was collected from a wetland pond discharge channel (western end of pond #3) from 0 to 12" depth interval.
- In-stream sediment and pond sediment sample results were compared to EPA Region III BTAG Freshwater Sediment Screening Benchmarks.

In-stream sediment and pond sediment sampling field notes are included in **Appendix B**. **Table 6** (**Appendix C**) presents results of the total metals analyses with sample results that exceed the EPA BTAG Freshwater Sediment Screening Benchmarks (EPA 2006) highlighted in yellow. **Figure 5** presents the highest total metals results for each sample point; BTAG Freshwater Sediment Screening Benchmarks exceedances are indicated in red. A summary of the results and discussion follows:

- <u>Arsenic</u>: Total arsenic concentrations in the twenty six in-stream sediment and pond sediment samples ranged from 22 to 4,410 milligrams per kilogram (mg/kg). All twenty six natural in-stream and pond sediment samples exceeded the EPA BTAG Freshwater Sediment Screening Benchmark for arsenic of 9.8 mg/kg. By comparison only five in-stream sediment samples and three pond sediment samples exceeded the SST OU soil screening threshold concentration of 200 mg/kg. Both shallow (0 to 12 inches) and deep (24 to 36 inches) sediment samples exceeded the screening criteria for location BTC-PS-01. All three in-stream sediment samples from SBC stream reach exceeded screening criteria; including the highest arsenic sample result measured which was from SBC-SS-02. Note that the instream sediment sample from Grove Gulch (GG-SS-01) also exceeded the screening criteria.
- <u>Cadmium</u>: Total cadmium concentrations ranged from 1.0 to 26 mg/kg. All of the in-stream sediment and pond sediment samples exceeded the EPA BTAG Freshwater Sediment Screening Benchmark for cadmium of 0.99 mg/kg; however several of the in-stream sediment samples standout: Sample SBC-SS-02 (0-12") from the SBC reach contained 26 mg/kg total cadmium, sample BTC-PS-01 (0-12") from wetland pond #1 contained 21.8 mg/kg, and sample BTC-PS-01 (24-36") contained 23.2 mg/kg.
- <u>Copper</u>: Total copper concentrations in the in-stream sediment and pond sediment samples ranged from 194 to 10,500 mg/kg. Streambed concentration were highest in three SBC reach sample locations and lower (downstream) BTC sample locations. Note that the streambed sediment sample from Grove Gulch also exceeded the screening criteria. All twenty six natural in-stream sediment and pond sediment samples exceeded the BTAG Freshwater Sediment Screening Benchmark for copper of 31.6 mg/kg, and six in-stream sediment and two pond sediment samples exceeded the SST OU floodplain screening criteria of 1,000 mg/kg.
- Lead: Total lead concentrations in streambed sediment and pond sediment samples ranged from 125 to 1,420 mg/kg. Total lead concentrations were highest in the Grove Gulch sample location (highest measured), the three SBC reach sample locations, and the wetland pond #1 location (BTC-PS-01; both depths). All twenty six in-stream sediment and pond sediment samples exceeded the BTAG Freshwater Sediment Screening Benchmark for lead of 35.8 mg/kg.
- <u>Mercury</u>: Mercury was detected in five samples with concentrations ranging from 0.99 to 6.0 mg/kg. The Mercury Freshwater Sediment Screening Benchmark is lower than the analytical method reporting limit.
- <u>Zinc</u>: Total zinc concentration in in-stream and pond sediment samples ranged from 232 to 6,510 mg/kg. Total zinc concentrations were highest in the pond sediment samples (highest measured), the Grove Gulch sample location, the three SBC reach sample locations, and the BTC reach sample locations below Grove Gulch. All twenty six in-stream sediment and pond sediment samples exceeded the BTAG Freshwater Sediment Screening Benchmark for zinc of 121 mg/kg.
- <u>Other Metals</u>: Other metals concentrations measured in in-stream and pond sediment samples exceeded the BTAG Freshwater Sediment Benchmarks. These benchmark failures include chromium (43.4 mg/kg;

17 of 26 samples), iron (20,000 mg/kg; all twenty six samples), and manganese (460 mg/kg; 21 of 26 samples). Some of these exceedance may be naturally occurring due to the location of BTC and SBC (Butte mineralized zone), and in the case of the pond samples, may be a result of natural wetland bog/pond conditions.

- <u>Field Quality Control Samples</u>: Based on a comparison of natural and blind field duplicate samples taken on a frequency greater than 5% (2 per 26 natural samples) during in-stream sediment and pond sediment sampling, the relative precision for the sampling method can be qualitatively assessed based on the RPD between the two samples. The mean RPDs for As, Cd, Cu, Pb, and Zn were 42%, 23%, 29 %, 29%, and 18%, respectively. The RPD variability is likely due to multiple factors. One common factor often cited is matrix or instrument interferences, as interferences may affect detection limits and precision of the instrument. Other common interferences for the natural and blind field duplicate samples are:
  - o Sample matrix effects such as sample heterogeneity, uniformity, and particle size.
  - o Chemical matrix effects identified or attributable to the ICP/MS laboratory analysis.
  - o Sample selection/splitting effects from the field method.
- In general, total metals appear to concentrate in the in-stream sediments from the mouth of Grove Gulch down to the confluence with SBC and continue downstream through Slag Canyon and Butte Reduction Works area. In addition, metals appear to concentrate in pond sediments in two of the three wetland ponds. Plots of total metals versus distance downstream from the upper-most in-stream sediment sample location above Father Sheehan Park on BTC illustrate the increasing concentration of metals in sediment, particularly below the mouth of Grove Gulch and the Kaw/Lexington Avenue overpass. The increasing metals load to BTC below the mouth of Grove Gulch indicate that a possible source of metals to BTC is the Grove Gulch tributary and the former zinc mill site located in its headwaters. Other metals trend somewhat differently with obvious increases noted downstream of the forve Gulch. Dissolved metals transport in groundwater and precipitation on the mineral grains of the in-stream sediments and pond sediments can also not be discounted as a potential source of metals loading to the SBC and BTC riparian corridors since the gaining reaches of BTC and SBC correspond to the reaches below the Kaw/Lexington Avenue Overpass and mouth of Grove Gulch.









**Table 7** (**Appendix C**) presents results of the physical and chemical characteristics, nutrients, ABA, SPLP, and NAG pH analysis. SPLP and ABA analyses were performed on five of twenty six (approximately 20%) of the instream and pond sediment samples (SBC-SS-02, SBS-SS-03, BTC-SS-08S, BTC-SS-11, and BTC-SS-13).

The relationship between SPLP leachate and total metals concentrations differ by the constituent, the type of mineralization and strength of the sorption to substrate. **Table 7** compares SPLP leachate concentration to surface water human health standards (HHS; Circular DEQ-7). Three of five SPLP leachate samples exceeded the HHS for arsenic of 0.010 mg/L, and four of five samples exceeded the HHS for lead of 0.015 mg/L. While comparisons of SPLP leachate to surface water quality standards for in-stream sediment and pond sediment leaching potential can provide a useful qualitative tool to assess metals leaching potential; they cannot be directly compared without further geochemical testing and analysis.

ABA analysis provides a rough guide as to the PAG nature of sediment and, therefore, provides an estimate whether acidic drainage may occur. One in-stream sediment sample (SBS-SS-03 (0-12") is considered potentially acid generating using the Price method; it contains total sulfur greater than 0.3%. It is also qualified as potentially acid generating using the BLM method; the ratio of NP:AP was less than 3 and the NNP was less than -20 tons/kton.

The saturated paste pH for in-stream and pond sediment samples ranged from 6.5 to 7.5 S.U., which is considered neutral; however the NAG-pH on two of the SBC in-stream sediment samples was considerably lower than the saturated paste pH indicating that the sulfide content of the sediment has the potential to drive the soil pH to acidic conditions (pH of 5.6 and 4.4 S.U.) upon complete oxidation of all sulfides.

#### SURFACE WATER SAMPLING AND ANALYSIS

The surface water and pond water sampling portion of the data gap site investigation was conducted by Tetra Tech on March 8 through March 16, 2016. Surface water and pond water sample locations correspond to eighteen surface and three pond water sample stations presented on **Figure 6** (**Appendix A**); with the stream surface water samples corresponding to the station number and a 'SW' designation and the pond water samples corresponding to station number with a 'PD' designation. These sample locations were co-located with in-stream sediment and pond sediment sampling and with streambed and pond pore water sampling. Field sampling and analysis procedures followed the procedures put forth in the SAP. Surface water and pond water sampling field notes are included in **Appendix B**.

Results of field parameters, physiochemical, common anions, common cations, nutrients and physical parameters that were measured and/or analyzed are presented in **Table 8** (**Appendix C**). The pH (as measured by the laboratory) of surface waters ranged from 7.4 to 8.7 S.U.; with the lowest pH corresponding to a sample collected from the Slag Canyon portion of SBC (SBS-SW-01). Note that the dissolved oxygen meter was malfunctioning and that even though values presented in **Table 8** correlate well with temperatures; the measured values for some of the samples exceed oxygen solubility limits. The low temperatures measured are understandable given the early spring sampling event and are more likely reflective of the time of day sampling took place rather than due to some groundwater / surface water interaction; though some thermal enhancement from groundwater is likely occurring in gaining sections of SBC, BTC, and the wetland ponds. ORP values ranged from 17 to 335 mV; from near neutral potential to oxidizing.

Results of the total metals and dissolved metals concentrations measured in the surface water and pond water samples are presented in **Table 9** (**Appendix C**) and **Table 10** (**Appendix C**), respectively Results of surface water and pond water sampling were compared to Circular DEQ-7 water quality standards. Chronic and acute aquatic life standards that are hardness dependent were calculated for each sample and were compared to the total metals concentration (**Table 9**). Concentrations that exceeded the surface water quality standards are highlighted yellow in **Table 9**, and highlighted in various shades of red (dark red color for HHS, red color for the acute aquatic life standard, and pink color for the chronic aquatic life standards) on **Figure 6** (**Appendix A**). A summary of the results follow:

• <u>Arsenic</u>: The total metal concentration of arsenic in eighteen surface water and three pond water samples ranged from 0.003 to 0.021 mg/L. Arsenic in surface water exceeded the human health based water quality standard of 0.010 mg/L in two wetland ponds samples but no other surface water samples; BTC-PD-01 contained 0.021 mg/L total arsenic and BTC-PD-01 contained 0.012 mg/L total arsenic.

- <u>Cadmium</u>: The total metal concentration of cadmium in surface water and pond water samples ranged from <0.00003 to 0.00067 mg/L. Cadmium in surface water exceeded the chronic aquatic life standard of 0.0003 mg/L in one surface water sample; BTC-PD-02 contained 0.00067 mg/L.
- <u>Copper</u>: The total metal concentration of copper in surface water and pond water samples ranged from 0.003 to 0.021 mg/L. Copper in surface water exceeded the acute and chronic aquatic life standards in two wetland pond water samples but not in any stream water samples. BTC-PD-01 contained 0.018 mg/L total copper and BTC-PD-02 contained 0.021 mg/L total copper.
- <u>Iron</u>: The total metal concentration of iron in surface water and pond water samples ranged from 0.25 to 1.55 mg/L. Iron in surface water exceeded the chronic aquatic life standard of 1.0 mg/L in six stream and pond water natural samples.
- <u>Lead</u>: The total metal concentration of lead in surface water and pond water samples ranged from 0.0004 to 0.0104 mg/L. Lead in surface water exceeded the chronic aquatic life standard in two pond water samples but did not fail any other lead water quality standards in any other samples. BTC-PD-01 contained 0.0049 mg/L total lead and BTC-PD-01 contained 0.0104 mg/L total lead.
- <u>Field Quality Control Samples</u>: Based on a comparison of natural and blind field duplicate samples taken on a frequency greater than 5% (2 per 21 natural samples) during surface water sampling, the relative precision for the sampling method can be qualitatively assessed based on the RPD between the two samples. The mean RPDs for As, Cd, Cu, Pb, and Zn were 0%, 9%, 9%, 0%, and 3%, respectively. The RPD differences were all with the allowable range as stipulate in EPA's National Functional Guidelines for Inorganic Superfund Data Review (EPA 2014).
- Based on these results, surface water with the highest concentration of total metals of arsenic, cadmium, copper, and lead were from wetland pond samples (BTC-PD-01 and BTC-PD-02) located immediately west of Kaw Avenue within the BTC Berm area and not from the active stream channels or tributary channels within the study area.

#### IN-STREAM AND POND SEDIMENT PORE WATER SAMPLING

The in-stream sediment pore water and pond sediment pore water sampling portion of the data gaps site investigation of the SBC and BTC riparian corridors consisted of collecting and analyzing 53 natural in-stream sediment pore water samples from within the active stream channels and 4 pond sediment pore water samples from three wetland ponds.

Samples were collected using a push-point interstitial water sampler "wand" at specified depths of 12 and 36 inches below the sediment/water interface on March 8 through 16, 2016. Pore water sampling points were colocated with surface water and sediment sample stations (1 through 13). However at each station pore water sample were collected from the stream channel nearest both banks for a total of 4 pore water samples collected at each station (where feasible). In-stream and pond sediment pore water sample locations correspond to eighteen surface and two pond water sample stations presented on Figure 7 (Appendix A); with each in-stream sediment pore water sample designated by the letters "SBC- or BTC-", for Silver Bow Creek and Blacktail Creek Corridors area; "SPW-" for the in-stream sediment pore water sample; followed by the consecutive number of the sample; then either "N" for northern bank or "S" for southern bank; followed by the depth designation of the sample (in inches). Each in-stream sediment pore water sample collected from the tributaries was designated by the letters "GG- or SC-", for tributaries Grove Gulch and Sand Creek and "SPW-" for the stream pore water sample; followed by the location number of the sample; then the bank location "N", "S", "E", "W"; followed by the depth designation (in inches). Each interstitial pore water sample from the wetland pond sediments was designated by the letters "BTC-", for the Blacktail Creek area; "WPPW-" for wetland pond pore water; then the number of the sample labeled consecutively; followed by the sample depth (in inches). In-stream and pond sediment pore water sampling field notes are included in Appendix B. Field sampling and analysis procedures followed the procedures put forth in the SAP; with the following key points and notable exceptions:

- It was not possible to sample some of the proposed streambed and pond pore water sites due to the coarse nature of the streambed substrate in the active stream channels (push point refusal), and due to clogging the sampler 'wand' with mud/muck at other refusal locations (particularly wetland pond #3). Thirteen in-stream and two wetland pond sediment pore water proposed sample points were not able to be sampled using the push-point interstitial water sampler. Multiple attempts at each refusal point were made prior to deeming the point unsuccessful.
- It was not possible to measure depth to water inside of the push-point metal tube during pore water sampling as proposed in the SAP due to the small diameter of the tube. Therefore it was impossible to determine relative vertical gradients at each sample point compared to the hydraulic head in the surface water body being sampled (stream or pond). Even though vertical gradients could not be quantified, anecdotal evidence of artesian head at some of the sample points (Blacktail Creek: BTC-SPW-04 (36") and Sand Creek: SC-SPW-01E (36")) indicate that upward vertical gradients exist which may correspond to gaining reaches of stream. Other anecdotal evidence of the gaining reaches within the lower BTC drainage are the discharge flows out of the two wetland ponds located north of the creek on either side of the Kaw/Lexington Avenue overpass. There were no other sources of surface water flow into the two ponds as observed in March 2016; therefore any discharge out of the ponds into BTC is attributable to groundwater discharge into the wetland ponds.
- Even though pore water samples were analyzed for dissolved metals, like groundwater, they are being compared to surface water quality standards as well as groundwater standards because in gaining reaches of stream, the surface water and sediments are the receptors from both groundwater and pore water discharge. Some of the surface water quality standards are hardness dependent; therefore hardness values used to calculate chronic and acute standards for pore water samples were based on hardness of the receiving waters nearest the sample point (i.e. nearest surface water quality samples).
- The accuracy of the field measurement results for dissolved oxygen (DO) is suspect due to sampling methodology. During surface water sampling values measured with the DO meter exceeded the feasible range of dissolved oxygen over the range of temperatures measured.

Results of field parameters, physiochemical, common anions, common cations, nutrients and physical parameters that were measured and/or analyzed are presented in **Table 11 (Appendix C)**. The pH of pore waters ranged from 4.2 to 7.7 (as measured in the laboratory); with the lowest pH corresponding to a sample collected from the Slag Canyon/Butte Reduction Works portion of SBC. Note that the dissolved oxygen meter was malfunctioning/reading out of range and the values presented in **Table 11** are suspect. ORP values ranged from 17 to 335 mV; from near neutral potential to oxidizing.

Results of the dissolved metals concentrations measured in the in-stream and pond sediment pore water samples are presented in **Table 12 (Appendix C)**. Results of stream water and pond pore water sampling were compared to DEQ Circular 7 surface water quality standards for total metals and DEQ Circular 7 groundwater quality standards for dissolved metals. Chronic and acute aquatic life standards for pore water that are hardness dependent were calculated for each sample based on the nearest receiving surface water sample result for hardness. Stream and pond pore water concentrations that exceeded the surface water quality standards are highlighted yellow in **Table 12** and are shown in **Figure 7**.

A summary of the results and discussion follows:

• <u>Arsenic</u>: Total arsenic concentrations of the 57 natural in-stream and pond sediment pore water samples ranged from <0.001 to 5.1 milligrams per liter (mg/L). Eighteen of 53 in-stream and 2 of 4 pond sediment pore water samples exceeded the water quality standards. Most of the exceedances were based on the human health standard (HHS) of 0.01 mg/L; however some of the samples exceeded the HHS and the acute and chronic standards (0.34 and 0.15 mg/L, respectively). The depth integrated results, where sampled, were interesting. In almost all sample sets, water quality standards that exceeded water quality criteria at the shallow depth (12 inches) also exceeded criteria at the deep depth (36 inches). The highest arsenic sample results measured were from pore water collected in the Slag Canyon portion of SBC and corresponding to the sample location nearest the north bank. Another interesting observation is the

results from the Grove Gulch sample location; neither pore water samples (both sample depths) exceeded the surface water quality standard even though the arsenic sediment sample from this location exceeded the BTAG sediment criteria.

- <u>Cadmium</u>: Dissolved cadmium concentrations ranged in pore water from <0.00003 to 0.155 mg/L. Seven
  of 53 in-stream sediment pore water and 1 of 4 pond sediment pore water samples exceeded the surface
  water quality standard. Sample SBC-SPW-02N (12") and SBC-SPW-02N (36") from the Slag Canyon
  reach of SBC contained the highest pore water results for dissolved cadmium of 0.155 and 0.109 mg/L,
  respectively.</li>
- <u>Copper</u>: Dissolved copper concentrations in in-stream and pond sediment pore water samples ranged from <0.002 to 39.7 mg/L. Five of 53 in-stream sediment pore water and 1 of 4 pond sediment pore water samples exceeded the DEQ-7 surface water quality standards (two in-stream sediment pore water samples exceeded the HHS and the remainder of the samples exceeded the chronic and/or acute standards). The pore water sample concentrations were highest in the Slag Canyon reach of SBC nearest the north bank (SBC-SPW-02N; both depths), one of the lower BTC locations nearest the south bank (BTC-SPW-02S at 36 inches), and in the wetland pond #1 location (BTC-WPPW-01 at 12 inches).
- <u>Iron</u>: The dissolved iron concentrations in pore water samples ranged from <0.02 to 633 mg/L. Twenty eight of 53 in-stream sediment pore water and 3 of 4 pond sediment pore water samples exceeded the chronic aquatic life standard.
- Lead: The dissolved lead concentrations in streambed and pond sediment pore water samples ranged from <0.0003 to 0.0096 mg/L. The pore water sample from the Slag Canyon portion of SBC (SBC-SPW-02N (36")) and the wetland pond #1 pore water sample (BTC-WPPW-01 (12")) exceeded the chronic aquatic life standards.
- <u>Zinc</u>: The dissolved zinc concentrations in streambed and pond sediment pore water samples ranged from <0.008 to 95 mg/L. Four of 53 in-stream sediment pore water and 1 of 4 pond sediment pore water samples exceeded the DEQ-7 surface water quality standards. The highest concentration for zinc was found in the Slag Canyon reach of SBC nearest the north bank (SPBS-SPW-02N), from both depths.
- In general dissolved contaminants in pore water appears to be highest in sections of streams or wetland ponds that contain elevated contaminants in sediment, with notable exceptions such as Grove Gulch (sediment pore water did not exceed surface water quality standards) or in a few upstream reaches on BTC that are only marginally impacted with respect to streambed metals yet exceed the arsenic surface water quality standard (2 samples), the copper standard (1 sample), and the iron standard (multiple samples). Also note that the iron concentrations in pore water may not be related to mining activities, as any reducing conditions due to decay of organic material in groundwater or pore water can mobilize naturally occurring iron.

#### **GROUNDWATER SAMPLING AND ANALYSIS**

Tetra Tech conducted the groundwater sampling portion of the data gap site investigation on 32 existing wells between March 7 through March 11, 2016 and on three newly installed DPT piezometers on April 8, 2016. In addition, MBMG collected 12 split samples concurrent with Tetra Tech sampling for laboratory analysis on March 7, 2016. Groundwater sampling and analysis followed the procedures and analysis list presented in the draft SAP with the following exceptions:

- Three wells were not sampled: Wells BPS07-9A (abandoned), MF-1 (casing obstruction), MT98-3 (casing obstruction).
- Two additional wells were sampled: Replacement wells AMW-13B2 and BT99-4 were sampled at MBMG's suggestion.

 Groundwater split samples AMW-13A, AMW-13B, AMW-13B2, AMW13C, BT98-01, BT98-05, BT99-01, BT99-04, GS-29D, GS-29SR, MT98-05, and MT98-06 were collected by MBMG

Appendix B provides groundwater sampling field logs. Figure 7 (Appendix A) shows the groundwater sampling locations. Table 11 (Appendix C) presents field parameters and laboratory physical parameters and Table 12 (Appendix C) presents the dissolved metals analytical results. Circular DEQ-7 groundwater quality exceedances on Table 12 are shaded yellow. Figure 7 also presents the dissolved metals results for each sampling point and compares them to Circular DEQ-7 groundwater quality standards. Exceedances are highlighted in red.

Groundwater sampling results are discussed as follows:

- <u>Arsenic</u>: Concentrations of dissolved arsenic in groundwater from the 35 wells/piezometers ranged from <0.001 to 0.302 mg/L. Eight natural groundwater samples with concentrations ranging from 0.013 to 0.302 mg/L, exceeded the water quality standard (HHS; 0.01 mg/L) in wells/piezometers located between the BTC berm area and Slag Wall Canyon reach adjacent to the BRW. These include piezometer BTC-DPT-01 and wells AMW-11, GS-29D, BPS07-08A, BPS07-14A, BPS07-15A, BPS07-25, and FP98-1. Arsenic in groundwater did not exceed the water quality standard in wells north or east of the BTC berm area with the exception of wells MF-10 (0.019 mg/L) and BPS07-24 (0.001 mg/L) in the Diggings East Area.</li>
- <u>Cadmium</u>: Concentrations of dissolved cadmium in groundwater from the 35 wells/piezometers sampled ranged from <0.0001 to 0.037 mg/L. The highest concentrations were measured in water from wells FP98-1 (0.037 mg/L) in the BRW area and in BPS07-24 (0.0175 mg/L) in the Diggings East Area, Cadmium groundwater concentrations exceeded the Circular DEQ-7 standard for groundwater in 5 of 35 natural groundwater samples.
- <u>Copper</u>: Concentrations of dissolved copper in groundwater ranged from <0.002 to 0.667 mg/L. The highest concentrations of the wells sampled were found in BPS07-24 (0.667 mg/L), FP98-1 (0.531 mg/L), and in GS-29SR (0.505 mg/L). Copper did not exceed the Circular DEQ-7 standard for groundwater in any of the wells sampled.</li>
- <u>Lead</u>: Dissolved lead in groundwater was detected in two wells, BPS07-14A (0.0013 mg/L) and BTC-DPT-01 (0.0005 mg/L). Lead did not exceed the Circular DEQ-7 standard for groundwater in any of the wells sampled.
- <u>Zinc</u>: Concentrations of dissolved zinc in groundwater sampled from the 35 wells/piezometers ranged from <0.008 to 24.1 mg/L. The highest concentrations of dissolved zinc were found in groundwater samples from BRW wells BPS07-14A (4.07 mg/L) and FP98-1 (24.1 mg/L) and Diggings East wells MF-10 (16 mg/L) and BPS07-24 (4.05 mg/L). Zinc groundwater concentrations exceeded the Circular DEQ-7 standard for groundwater in 4 of 35 natural groundwater samples.
- <u>Iron and Manganese</u>: Groundwater sample concentrations for iron ranged from <0.02 to 17.5 mg/L. There
  is no Circular DEQ-7 standard for iron in groundwater; although many sample concentrations would
  exceed the secondary drinking water MCL of 0.300 mg/L. Groundwater sample concentrations for
  manganese ranged from <0.02 to 56.9 mg/L. There is no groundwater Circular DEQ-7 standard for
  manganese, though concentrations were quite high in several samples which would certainly exceed the
  secondary drinking water MCL of 0.050 mg/L.</li>
- <u>Field Quality Control Samples</u>: Based on a comparison of natural and blind field duplicate samples taken on a frequency greater than 5% (2 per 36 natural samples) during surface water sampling, the relative precision for the sampling method can be qualitatively assessed based on the RPD between the two samples. The mean RPDs for As, Cd, Cu, Pb, and Zn were 5.4%, 1.7%, 0.4%, 0%, and 1.4%, respectively. The RPD differences were all with the allowable range as stipulate in EPA's National Functional Guidelines for Inorganic Superfund Data Review (EPA 2014). Groundwater split samples collected by MBMG compared favorably, generally within 10% or less of the concentrations measured and analyzed by Tetra Tech.
- Based on these results, groundwater with the highest concentrations of arsenic, cadmium, and/or zinc were observed in three primary areas of the BAO during this data gap investigation. These include SWC/BRW area, SBC/BTC confluence and BTC Berm area, and Northside Tailings/Diggings East areas.

Groundwater east of Lexington Avenue did not exceed water quality standards for the metals analyzed during this investigation.

#### AQUIFER TESTING AND ANALYSIS

Tetra Tech conducted two, limited-duration, single-well pumping tests on Blacktail Creek Berm Area monitoring well AMW-11 (GWIC# 161962) (**Figure 7**) on April 28, 2016. The purpose of the testing was to determine aquifer properties that would be expected to occur during construction dewatering.

Well AMW-11 was selected to be representative of the site because the well is located on the BTC Berm which is comprised of a mixture of soil types and fill material prevalent throughout the berm area. The screened interval for the well is 4 to 14 feet below ground surface (bgs) (**Appendix B**). The completion log for the well indicates the material type in the screened interval of the well consists of sandy silt, clay, sand, silt and slag fill, and silty sand (in sequential order). The static water level measured in the well immediately preceding the pumping test was approximately 5.5 feet bgs, which corresponds with the water level recorded on the well completion log.

A portable Grundfos<sup>™</sup> Rediflo-2 submersible pump was used to pump the well at an approximate rate of 2.5 gallons per minute (gpm), which was determined to be the maximum sustainable pumping rate for the available hydraulic head and the permeability of the upper-most alluvial aquifer beneath the BTC Berm area. In addition to the submersible pump, the test well was also fitted with a transducer and data logger to measure and record aquifer response to pumping withdrawals. The SAP indicated that other nearby monitoring wells and piezometers were to be monitored for drawdown; however, no aquifer responses were noted in other wells, therefore the aquifer testing was limited to single-well observations.

The pumping test data was analyzed with aquifer testing software (Aqtesolv 4.5 Professional). A total aquifer thickness of 10 feet was used in the aquifer test analysis and calculations. Theis (1935) and Cooper-Jacob (1946) analysis methods were utilized, and both analyses assumed unconfined conditions. Results are summarized below, and **Appendix D** provides graphical curve matches of the data:

Method <sup>1</sup>	Aquifer Thickness (in feet)	Transmissivity (ft²/day)	Hydraulic Conductivity <sup>2</sup> (ft/day)
Cooper-Jacob 1	10	501.7	50.2
Cooper-Jacob 2	10	781.2	78.1
Theis 1	10	499.6	50.0
Theis 2	10	582.0	58.2
Mean	Value	591	59

Notes: <sup>1</sup>Methods of analysis were based on assumption of unconfined conditions and using two sets of time versus drawdown data (test 1 and test 2). <sup>2</sup>Hydraulic conductivities were calculated from the transmissivity of the aquifer based off of a best-fit curve or line match of the time versus drawdown data and an assumed aquifer thickness of 10 feet; where the hydraulic conductivity K=transmissivity T/aquifer thickness b. ft<sup>2</sup>/day – square feet per day

ft/day - feet per day

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APPENDIX A FIGURES





Screening Criteria (mg/kg)				
Arsenic	200			
Cadmium	20			
Chromium	*			
Copper	1000			
Iron	*			
Lead	1000			
Manganese	*			
Mercury	10			
Zinc 1000				
* - Not established				













APPENDIX B FIELD LOGS, FORMS, WELL LOGS

Tetra Tech					
303 Irene Street					
Helena, MT 59601					
Phone: (406) 443-5210					

### WELL INSTALLATION LOG

Sheet 1 of 1

Phone:	(400)	443	-92	10			Boring BI	C-DPT-01			3	neet i oi i
Project: SBC-BTC Data Gap Investigation							Rig: GeoProbe 5400	Location Coordinates:	N: 1197718 E: 650736.	8.70886 1 254727 1	ft ft	
Project Number: 114-571057							Boring Diameter: 1 in	System: MT S	S.P. (E) 83		Ground Surface Elevation: 54	04.4 ft
Date Started: Date Finished:					ished:		Drilling Fluid:	Abandonment	t Method:		Area:	
4/7/16				4/7/16	<u> </u>		None	N/A	· .		Black Tail Creek	Berm Area
Drilled b	by: ₩ bv: □	/EI RR	Env eed	roprobe	Services		Comments: Boring BTC-P2	converted to Pi Z-01	ezometer			
							l				Well Construction	
Depth (ft)	Operation Sample Type	Recovery (%	RQD (%)	QIA	Lithology		Material I	Description			Wen Construction	511
		50				SA ma ft I	AND with clay, Overburden edium to coarse grained, s ixture with intermittant silt a bgs.	, moist, light brown ubangular, sandy ta ınd clay layers, satu	i to gray, ailings irated at 5	Fli co Be	ush mount impletion with anhole cover. 3/8" entonite Chips	
		47				CI sa sa	ayey SIL1 with sand, Over iturated, dark grayish brow ind, intermittant sand and c	burden, very moist i /n, 15-20% very fine layey layers.	to e-grained	10 Sil Pr - 3	0/20 Colorado lica Sand epacked 1.4" OD 8/4" ID Screen	
		40				CL gr: Sill to sa At	AY with silt and sand, Bla ay, medium plasticity, orga Ity SAND, Alluvial Sedimer coarse grained, subangula and with trace fine-grained 16 ft bgs - gray to orange ace fine-grained gravel, qua	ck Clay, moist, blac nic rich, slight smok nts, very moist, dark ar, intermittant sand gravel. medium-grained sa artz rich rock fragme	k to dark (y odor. (gray, fine y silt-silty nd with ents.			
	14/-	or /	01/2	Ohaamaa	lions	🖂 Du	Boring Depth: 20.0 1	t, Elevation: 5384.4	4 ft Remarka: A	fter douch	onment wont day du	ring
Water Level Observations					.0113	<u> </u>	illing: 10.0 ft iter illing: 11 8 ff		sampling.		opinioni, weni ury uu	
									1			

Tetra Tech						
303 Irene Street						
Helena,	MT 59601					
Phone:	(406) 443-5210					

**Project Number:** 

Project: SBC-BTC Data Gap Investigation

#### WELL INSTALLATION LOG

Location

N: 1198093.458 ft

Coordinates: E: 650443.7433 ft

System: MT S.P. (E)

Boring BTC-DPT-02

Rig:

GeoProbe 5400

Boring Diameter:

**Ground Surface** 114-571057 1 in Datum: NAD83 Elevation: 5406.8 ft **Abandonment Method:** Area: **Date Finished:** Date Started: Drilling Fluid: N/A Black Tail Creek Berm Area 4/7/16 4/7/16 None Drilled by: WET Enviroprobe Services Comments: Boring converted to Piezometer BTC-PZ-02 Logged by: R. Reed Well Construction Recovery (%) Sample Type Lithology Operation 8 Depth B RQD ( **Material Description** (ft) Cap with lock Grass, moist, topsoil. 1 Silty SAND, Overburden, moist to saturated, grayish Above ground brown, fine to medium grained, with debris (glass, brick 2 completion with Ā fragments, wood chips) and organic material, sandy silt at locking well cap. 53 3 1 ft bgs, saturated at 2 ft bgs. 3/8" Bentonite At 2 ft bgs (3rd recovery attempt) - fine to medium-grained Chips 4 sand (possible tailings). Some silty material, micaceous. CLAY with sand, Black Clay, soft to medium stiff, moist to 5 very moist, dark gray to black, medium plasticity, lenses of 6 very fine to fine-grained sand, organic material from 4-5 ft bgs. 7 85 8 10/20 Colorado Silica Sand 9 Prepacked 1.4" OD - 3/4" ID Screen 10 11 SAND with gravel, Alluvial Sediments, saturated, orange to 12 gray, fine to coarse grained, subangular, slight orange 100 coloration from 13 to 13.5 ft bgs, then gray. Orange to 13 orange-brown from 15 to 20 ft bgs. 14 15 16 17 00 18 19 20 Boring Depth: 20.0 ft, Elevation: 5386.8 ft During Water Level Observations Remarks: At time of development Drilling: 2.0 ft After After Drilling: 1.0 ft Drilling

SBC LOGS BTC/BTC SBC-F 2009+.GDT - 6/17/16 15:36 - N:\STAFF\RHIANNA\BAO REVISED WELL - MDT Ċ

BORING

Ę,

Sheet 1 of 1

Tetra Tech						
303 Irene Street						
Helena,	MT 59601					
Phone:	(406) 443-5210					

#### WELL INSTALLATION LOG

Boring BTC-DPT-03

Project: SBC-BTC Data Gap Investigation				ata Gap	Investigation	Rig:         Location         N: 1197386.49859 ft           GeoProbe 5400         Coordinates:         F: 650482 708618 ft			
Project Number: 114-571057							Boring Diameter: 1 in	System: MT S.P. (E) Datum: NAD83	Ground Surface Elevation: 5407.0 ft
Date Started:     Date Finished:       4/8/16     4/8/16       Drilled by:     WET Enviroprobe Services				Date Fin 4/8/16 /iroprobe	ished: Services	Drilling Fluid: None Comments: Boring BTC-P2	Drilling Fluid:         Abandonment Method:         Area:           None         N/A         Black Tail Creek B           Comments:         Boring converted to Piezometer         BTC-PZ-03		
Depth (ft)	Operation	Sample Type	Recovery (%)	RQD (%)	DIA	Lithology	Material I	Description	Well Construction
_ 1 _ _ 2 _ _ 3 _ _ 4 _ _ 5 _ _ 7 _ _ 10 _ _ 11 _ _ 12 _ _ 13 _ _ 14 _ _ 15			60 60 68			L S S S S S S S S S S S S S S S S S S S	lebris, trash, leaves, grass. AND, Tailings, loose, very r ellowish gray, fine to coarse and. At 1.5 ft bgs - gray taili t 2 ft bgs - dark gray tailings ILT with clay and sand, Bla ellowish brown, low plasticit ilty SAND, saturated, fine g AND, Tailings, loose, satura ubangular to angular, quart ne-grained gravel. ilty SAND, saturated, fine g 5% coarse-grained sand. N	rained, intermittant silt lenses, or recovery below 15 ft bgs.	Flush mount completion with manhole cover. 3/8" Bentonite Chips 10/20 Colorado Silica Sand Prepacked 1.4" OD - 3/4" ID Screen
15						0 0 0 0 0 0	Boring Depth: 15.0 1	t, Elevation: 5392.0 ft	

Sheet 1 of 1

∑ During <u>Drilling: 1.0 ft</u> ▲After Drilling: -1.5 ft Remarks: At time of development Water Level Observations ⊈ After ⊉ Drilling:

BORING LOG + WELL - MDT\_REVISED\_2009+.GDT - 6/17/16 15:36 - N:\STAFFIRHIANNA\BAO\_SBC-BTC\BTC-SBC LOGS.GPJ

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17MW-13C	9.61					<i>WA</i>
AMC-24	10.63					081
AMC- 24B	10.29'	<u></u>			_ [	0835
Amc - 24C	8 89'					102
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a desta de la compañía	1			·	All and a second se	

.3 4-7-16 DPT BORINGS, PIEZO INSTALL OBJECTIVE : ADVANCE 3 DIRECT PUSH BORINGS & INSTALL 3 PIEZOS WEATHER : CLEAR 330 PERSONNEL: RHIANNA REED, DON MAY/72) TY DEBOD (WET/ENVICO PROBE SVCS) 0800 MEET ONSITE C CONFLUENCE WAIK LOCATIONS TO CHECK ACCESS. DEIS HAS MEETING 0835 SET UP ON BEAM EAST OF ANW-11 LORING ID: BTC-DAT-01 ¥. OSUS CALIBRATE XRF DASS START PUSHING USING 5 FT LENGTH SLEEVES, 1.375" DIAMETER PVC. 0930 GWE SS' RGS. 1000 TD= 1577. SATURATED MATERIAL PLVGGING UP SLEEVES/RODS. SEVERAL ATTEMPTS TO ADVANCE MADE. 1020 CONFIRM WITH BILL - MATERIAL CHANGE - USING PRE-PACKED 3/4" ID DIAMETER SCREEN, 1.4"0,0 1040 TY HEADS TO SHOP TO PLUP PREPACKED SCREENS + FUSH MOUNT COMPLETIONS. 100 DNSITE SETTING UP TO BUILD PIEZO! 1130 15-20 sieve convected, series were entry 4.7-7-16 Rite in the Rain.

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	.7
4-8-16 BUTE BIC DET/PIEZO INSTALLADON	4-8-16 Butte PPT/PIEZO INSTALLATION
OBJECTIVE- FINISH 3RD DPT BORING +	005 WL IN BTC-DPT-03: 1.7 TOC
INSTALL PIEEDMETER, DEVELOP WELLS	1020 QUELL COMPLETED, MOB RIG TO
PERSONNEL - R. REED, D. MAY, TY DEBOD	BTC-DPT-02" FOR COMPLETON.
WEATHER - COLD, HIGH DE 700	DON MAY SAYING MT DATOS TO
OF30 MOOT & MONTANA AUG EXIT, SCOPE	DEVELOP AND SAMPLE.
OUT SITE & SET UP. H+S MTG	10 25 ONSITE AT BTZ-DPT-02 01
OFOO DRILLING	1035 WL: 5.4 ft to (-toc is = ground
0820 DRILLED TO ISPT - UNABLE TO	SURFACE) MOB TO ISTC-DPT-02
ADVANCE DUG TO CRUSHED GRANITE .	1115 AFZOMETER MONUMENT COMPLETED
MATERIAL PLUGGING UP RODS.	STICK UP: 32 WL 438 TOC
ATTEMPTING TO SET WELL	02 103 BGS
0845- NOT ABLE TO SET WELL DUE TO	1125 DEVETROING WELL WITH 3/4"
HEAVING SANDS.	DISPOSADLE DALLER
0850 BORING #2- COLICCTING MATT	USO RUMPING WELL INTO DERISTRITIC
1905 ONIN MADE TO FT AN BARLANG ATTEMPT	PUMP
START AHZAPT #2	1230 SAMPLE BTC- DET-DD
0925 THE SMALL PIEDON CTER	
SET IN 2RD RORING AT IL FT	TU RILLAG BTO ARTAL
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0920 samer c or this ma (2.5) (T	Jacs FUMFING BIC-DF - OIV (JS-75.167
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OTTO SHIMPLE ISTE WI -OS ( D.S - IS) DL	1300 DON MAT OFFSITE
OTAS FINISHING WELL, FLUSH MOUNT	1515 WELL DR-9-LETTING RECHARGE
0950 FELD BLANK CULECTED	BEPRE SAMPLING
YRR 4-8-16	. YPR 4-8-16 Rite in the Rain.

LETTING RECHARGE Rite in the Rain.

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1-12-16 TEST PITTING BTC OBJECTIVE - EXCANATE TEST PITS + SAMPLE MATERIAL WEATHER - GUNY, PARTIAL CLOUDS TERSUNNEL - RHIANING REED CONNOR MCHNEH PAT HUNTER, HUNTER BROS 0800 MEET PAT HUNTER INSITE @ CHAMBER OF COMMERSE EVALUATE VTILITY MARKINGS DISCUSS ACCESS OF EXCAVATOR SCT UP Dal 4-12-16 0845 SYSTEM CHECK ON XRF SETTING UP ON BIC-TP-01 0850 DIGGING BTC-TP-01 0900 SAMPLE BTC-TP-01 (3-4) FILL 0930 SAMPLE BTC-TP-01/675-85).9+ 0955 SAMPLE STC-TP-DI (8.5-9.5) BT 615 BILL CRAIG (TZ) ONSITE 1100 \$166 MOB TO BTE-TP-02 1120 SCRAPE SURPACE OF GROUND AT CREEK LEVEL - YELIOW- ORANGE MATERIAL PRESENT - DIGGING BACK UP SLOPE 1200 SAMPLE BTC-TP-02(1.5-2)-5-1-1202 1205 SAMPLE BTC-TP-02(2-3)-BE Jane & 4-121 Chite in the Rain.

Rite in the Rain .. 님 SAMPLE BIC-TP-14/1-2)-FILX ダーシアゴ 830 SAMPLE RTC-TP- 15(3-35)-AU 2 samele BTC-TP-14(4-4.5)-AL 1872 SAMPLE BIG-TP-15(1-2)-00 1725 SAMPLE RIG-70-14(2-5)-730 1825 SAMPLE BTC-TR-15(2-3)-181 Ħ, 740 BACKETL/MG TP-15/4 134 COLLECTED OHIZIG-DUP ON BTC TEST PITTING BACKFILLING TP-15 POOL ICGING TP-14 20x 1-15-16 1000 DIGG ING 79-15 D BALLER OFFSITE 7 a O 18 20 100 15% - SAMPLE BTC-18-07(2-3.5)-Claury 1600 TAILE 041216- 2.15 OFF TRONGL 1220 SAMPLE BIT- 18-22 (0-1)-FIL ц х 1630 SAMPLE BTZ-TP-13(2-2)-Y1 1300 SAMPLE BIT-TP-04 (3-3.5) BC 1510 SAMPLE BTE-TP-69(4-45)BC 1520 SAMPLE BTC-TP-09 (3-25) 47 1628 SAMPLE STL-TP-13(0-1)-A1) 1320 SAMPLE OTZ-TP-04/25-3)-47 1340 BIGGING BTC-TP-04 ADJACENT 14-2) SO-DE-LE BID SO-DE- 12- 1) BC 1315 SAMPLE BTZ-79-04(1-2)-FILC 1210 SAMPLE BTC-TP-02 (3-4)- 66 1/35 SAMPLE BIT-TP-13/8-3.5)-BC N. Rended 4-12-16 DIG. NOT SAMPLE FILL 1505 SAMPLE BTG TP 09 1500 D166116 BTC-TP-09 1557 TAKE OUIZIG-FR. 4-12-16 BIC TESTPITING. LLOS PIGING BTC-TP-13 1350 PIGGING RTC-TP.OS 445 RAELEILING TP-05 B. CRAIG OFFS ITE 1230 BACKETULING 1330 BACKFILLING

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1402 24W6RE 310-16-11 (8-1) -03	15 SAMPLE BIL-70-06(2-2-5)AL
1400 5400 5 816-16-11(1-5)-06 -06m1 21 2009	122 DIGGING BIG-16-09
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28 (5-2-2/5-2)-215 378WVS 250	XIN HUNM INTERMITING - NONS - NOH
1020 2200-02-219 370WAS 0201	IDE OF BLACK TAIL CREEK
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Heldel 4-13-16 Rite in the Pain.	Ann 4-13-16
BT - 12 (1.3-2)-16 SAMPLED C 438	HOB 710 MOS TO BEAM BETWEEN
1 7 TESC PIT 7P-12 DUG AT 1430	1645 BACKFILLING + MARKING POMMS
SAMPLE C 1413 - BTC-TP-11(6.5-7)-BC	NATIVE?
- BTC-TP-07 (5-5.5)- AL @ 1200	BLACK SAND AT GFT, CLADED.
- 6TC-TP-07 (4-4.5)-AL @ 1152	RUCK TO GW AT 6FT, TO= 7 FT
- BIC-TP-07 (4-5-5) AL @ 11 50 + BUPUCATE, SALP	TEST PIT IS ALL FILL SAND, CONCRETE,
* ENTRA SAMPLES AT BITC-TP-07:	163 SAMPLE BIC-TO-12/6-7)-03
+ 1915 R. REED, C. MCHUGH OFFSITE NOTES:	1630 SAMPLE PIZ- 70- 13 (1-2)-03
DEMOG OUT OF BERMAREA	SAMPLE TO GW. 12 Mar 4-1946
1845 MARK POINTS, EXCAVATOR	NO COLOR. ADVANCING OPPORTAVITY
+ 1820 BACKFILL TRENCH + TP-14 WATTON	1615 THENCH LOSER TO CALLER = 20FT
18:0 SAMPLE BTC-TP-17(0.5-1)-4T	MANGE SAND PRESENT
TRENCH LENGTH & 35 FT	1600 TRENCHING ON ANCA ON CACCUL SIDE
BERM * TINCHES OUT AT FLOOD PLAIN	(or lace)
TOPSOIL THICKEST AT CENTER OF	OF THE OLANGE SAND 2 27 FT
PINCHES OUT TOWARD CREGIC.	1530 BACKEILLING TALENCHES, LENTHEW
GRANGE SANDY "TAILS" LAYER (MANKER)	ONANGE SAND MESENT, LESS.
- 25 FT FROM STREAMSIDE.	1525 2ND THENCH ID FT FROM PENCE
HIGH POINT OF BEEM TO CATTAILS NOUTH	ORANGE SAND LAYER PRESENT
1800 FAUSH TRENCHING FROM	FENCE ALONG T-90, TAILINGS OR
1730 SAMPLE BIC-TP-14(3.5-4.5)-BC	15 IST TRENCH IS FT FROM MDT
1727 SAMPLE 13TC-7P-1# (25-3.5)-GC	SURROUNDING/NEAR TP-11.
1725 SAMPLE 13-TC-TP-14 (1-2)-08	AT SOUTH END OF BARE GROUND
TP-06 + TP-08 FOR BERM TRENCH	1520 START DIGGING SHALLOW TRENCH
4-13-16 BUTTE BIC TEST PITTING	4-13-16 BUTE BIC TEST PITTING
	14         .

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<pre>Side Side ft water ft. Any Well C feet in diameter = 5.875 x C<sup>2</sup> SET PUMP: DO SET PUMP:</pre>
ft water ft water ft water ft. Any Well C feet in diameter = 5.875 x C <sup>2</sup> SET PUMP: DO TUDDIDIC DTM
r, (Submersible Pump, [] Low Flow for fire for
r, Full Submersible Pump, [] Low Flow Aris Ari Gals. 10.16 /ft. Any Well C feet in diameter = 5.875 x C <sup>2</sup> SET PUMP:
r, Bubmersible Pump, [] Low Flow Aris Ac Gals. 10.10 /it. Any Well C feet in diameter = 5.875 x C <sup>2</sup> SET PUMP:
/ft. Any Well C feet in diameter = 5.875 x C <sup>2</sup> SET PUMP <u>:</u>
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Chain-of-Custody: [] Yes, [] No
Decontamination
Y No [ ] Nitric Acid: Yes [ No [ ]
No[] DIWater: Yes 🖌 No[]
No[+ Steam: Yes[] No[+

	<u>_D</u> #	n, pq		Weather:	Couch	cold		
Casing Dia	meter/Typ	e: <u>2''</u>	PVC.	_Measuring Point De	escription:T	DC North Side		
Well Depth	ı (feet belo	w measuring point):	37.8	Depth	to Water	10.43	ft wate	r
Screen:				Depth	to Product			
<u></u>								
Method: {]	Mechanic	al Bailer - [1Galvar	ived Bailer [] BVC	Bailer [1Dien Boly	ethylene Bailer [15	ST Bailer	ersible Pump [] Low	Flow
	163	cal./ft * = one c	asing volume $4$	$u = \frac{1}{2} $	1 = volume /3	<b>38</b> cais.	cisible i diripi [] cow	1 1017
SCH 40 Pir	pe * 2* we	guint = one o	4" well = 0.653 gal./f	it. 6° well = 1.469	gal./ft. 8" well = 2	2.611 gal./ft. Anv	Well C feet in diameter	= 5.87
START TIN	D g	00		PURGE BATE:	5gPM		SET PUMP: 3	0
	<u>.</u>			EVACUATI	ON DATA		0277 QMA <u>/</u>	
		للم	<u>م</u>	<u></u>		~~		_
11m	<u>, 17</u>	<u></u>	120 N	$\frac{1 \text{ emp}}{M / 2}$	3/2/0	217		<u>[</u>
Nei		7.0	242	7,00	251	210		
201	10	7.00	27.3	7.10	2.0	300		
00		7 10		1.13	NO.7	1316		
10 d		115	7,00	7,47	J. 4	3/2-		
·						· · · · · · · · · · · · · · · · · · ·		
						1		
						1		
	i							
		12		L				
TOTAL GA		13		L		1		
TOTAL GA	LLONS:	13		WELL SA	MPLING		I	
TOTAL GA	LLONS:	13		WELL SA	MPLING			
TOTAL GA	LLONS:	13 Disposable Poly Ba	uiler, () Submersible	WELL SA Pump, [] Low Flow	MPLING /, [] Other: <u>Peri Pu</u>	<u>mp_</u> Sample Type: (	Matural, [] Duplicate	. [ ] Fiel
TOTAL GA	LLONS:	13 Disposable Poly Ba	uiter, MSubmersible Sample Cor	WELL SA Pump, [] Low Flow ntainer	MPLING v, [] Other: <u>Peri Pu</u>	mp_Sample Type: {	/Natural, [] Duplicate.	. [ ] Fiel
TOTAL GA Sampling N	Aethod: []	13 Disposable Poly Ba	uiter, () Submersible <u>Sample Cor</u> (2) 40 ml V()	WELL SA Pump, [] Low Flow <u>ntainer</u> DA	MPLING /, [] Other: <u>Peri Pu</u> <u>Pr</u> Hi	mp_Sample Type: ( reservative ydrochloric acid	/Natural, [] Duplicate.	. [ ] Fie!
TOTAL GA Sampling N	Aethod: [] Paramete Dec BTEX MTBE GBO as 1	13 Disposable Poly Ba	iller, [] Submersible Sample Cor (2) 40 mi V( Extracted fr (2) 40 mi V( (2) 40 mi V(	WELL SA Pump, [] Low Flow <u>ntainer</u> DA om BTEX VOA DA	MPLING /, []Other: <u>Peri Pu</u> /, []Ht Ht	mp_Sample Type: { reservative ydrochloric acid ydrochloric acid	PNatural, [] Duplicate.	, [ ] Fie!
TOTAL GA Sampling N [] [] []	Aethod: [] Paramete DEC BTEX MTBE GRO as DRO as	13 Disposable Poly Ba ar COC Gasoline Diesel	uiler, [/ Submersible <u>Sample Cor</u> (2) 40 mi V( Extracted fr (2) 40 mi V( (2) 1-liter ar	WELL SA Pump, [] Low Flow <u>ntainer</u> DA om BTEX VOA DA nber glass	MPLING /, []Other: <u>Peri Pu</u> Pri Hi Hi Si	mp_Sample Type: { reservative ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid	Matural, [] Duplicate.	. ( ) Fiel
TOTAL GA Sampling N [] [] [] [] []	LLONS: Aethod: [] Parameter BTEX MTBE GRO as I DRO as I Methane Sulfate	13 Disposable Poly Ba COC Gasoline Diesel	aiter, () Submersible Sample Cor (2) 40 mi V( Extracted fn (2) 40 mi V( (2) 1-liter ar (1) 40 mi V( (1) 250 mi 0	WELL SA Pump, [] Low Flow Intainer DA om BTEX VOA DA onber glass DA ooly plastic	MPLING /, []Other: <u>Peri Pu</u> Pr Hi Hi Si Hi Ni Ni Ni Ni Ni	mp_Sample Type: { reservative ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one	/Natural, [] Duplicate	. { ] Fie!
TOTAL GA Sampling N [] [] [] [] []	Aethod: [] Paramete DEC BTEX MTBE GRO as DRO as DRO as Methane Sulfate HACH	1.3 Disposable Poly Ba COC Gasoline Diesel	ailer, () Submersible Sample Cor (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter po (1) 1-liter po	WELL SA Pump, [] Low Flow ntainer DA om BTEX VOA DA nber glass DA ioly plastic by plastic	MPLING /, [] Other: <u>Peri Pu</u> Pi Hi Hi Ni Ni Ni Ni Ni Ni	mp_Sample Type: { reservative ydrochloric acid ydrochloric acid ufuric acid ufuric acid one one	]Natural, [] Duplicate.	. { ] Fie!
TOTAL GA Sampling N () () () () () () () () () () () () ()	Aethod: [] Paramete DEX MTBE GRO as I DRO as I Methane Sulfate HACH Lead VPH	13 Disposable Poly Ba COC Gasoline Diesel	uler, [/ Submersible Sample Cor (2) 40 ml VC Extracted fr (2) 40 ml VC (2) 1-liter ar (1) 40 ml VC (1) 250 ml p (1) 1-liter pc (1) 125 ml p (3) 40 ml VC	WELL SA Pump, [] Low Flow <u>atainer</u> DA om BTEX VOA DA nober glass DA noly plastic Jy plastic Joly plastic JA	MPLING /, []Other: <u>Peri Pu</u> /, Ht Ht Si Ht Ni Ni Ni Ht Ni	mp_Sample Type: { reservative ydrochloric acid ydrochloric acid uffuric acid uffuric acid ydrochloric acid one one tric acid ydrochloric acid	PNatural, []Duplicate,	. { ] Fiel
TOTAL GA Sampling N () () () () () () () () () () () () ()	Aethod: [] Paramete DEC BTEX MTBE GRO as I DRO as I Methane Sulfate HACH Lead VPH EPH	13 Disposable Poly Ba ar COC Gasoline Diesel	ailer, [/ Submersible Sample Cor (2) 40 mi VC Extracted fr (2) 40 ml VC (2) 1-liter ar (1) 40 ml VC (1) 250 ml p (1) 1-liter po (1) 125 ml p (3) 40 ml VC (2) 1-liter ar	WELL SA Pump, [] Low Flow ntainer DA om BTEX VOA DA nber glass DA voly plastic voly plastic voly plastic voly plastic voly plastic voly plastic	MPLING /, []Other: <u>Peri Pu</u> Pri Hi Hi Si Si Ni Ni Ni Hi Ni Ni Hi Hi Hi Hi Hi Hi Hi Hi Hi H	mp_Sample Type: { reservative ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one one tric acid ydrochloric acid ydrochloric acid ydrochloric acid	Matural, []Duplicate	, [ ] Fie! No
TOTAL GA Sampling N [] [] [] [] [] [] [] [] [] [] [] [] []	Aethod: [] Paramete BTEX BTEX GRO as I DRO as I DRO as I DRO as I Methane Sulfate HACH Lead VPH EPH PAHs PAHs	13 Disposable Poly Ba COC Gasoline Diesel	ailer, Submersible Sample Cor (2) 40 ml VC Extracted fr (2) 40 ml VC (2) 1-liter ar (1) 40 ml VC (1) 250 ml p (1) 1-liter pc (1) 125 ml p (3) 40 ml VC (2) 1-liter ar (2) 1-liter ar (3) 40 ml VC	WELL SA Pump, [] Low Flow Intainer DA om BTEX VOA DA onber glass DA ooly plastic ooly plastic ooly plastic DA nober glass nober glass DA	<u>MPLING</u> , [] Other: <u>Peri Pu</u> <u>Pr</u> Hy Hy Si Si Ni Hy Ni Ni Hy Ni Hy Ni Hy Hy Hy Hy Hy Hy Hy Hy Hy Hy	mp_Sample Type: { reservative ydrochloric acid ydrochloric acid ydrochloric acid ufurcic acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid	Filtered: []Yes, [] f	. [ ] Fie!
TOTAL GA Sampling N () () () () () () () () () () () () ()	LLONS: Parameter Parameter BTEX MTBE GRO as I DRO as I DRO as I DRO as I Methane Sulfate HACH Lead VPH PAHs VOC'S Total Met	13 Disposable Poly Ba COC Gasoline Diesel	ailer, () Submersible Sample Cor (2) 40 mi VC Extracted fr (2) 40 mi VC (2) 1-liter ar (1) 40 mi VC (1) 250 ml p (1) 1-liter pc (1) 125 ml p (3) 40 mi VC (2) 1-liter ar (3) 40 mi VC (1) 500ml pc	WELL SA Pump, [] Low Flow ntainer DA om BTEX VOA DA nober glass DA noly plastic DA noly plastic DA mber glass nober glass DA nober glass DA	MPLING MPLING ( ) Other: Peri Pu Pr Pr Hy Hy Na Na Na Na Na Na Na Na Na Na	mp_Sample Type: { reservative ydrochloric acid ydrochloric acid uffuric acid ydrochloric acid one tric acid ydrochloric acid	]Natural, []Duplicate.	() Fiel
TOTAL GA Sampling N () () () () () () () () () () () () ()	Aethod: [] Parameter DEC BTEX MTBE GRO as I DRO as I Methane Sulfate HACH Lead VPH PAHS VOC'S Total Me	13 Disposable Poly Ba CCC Gasoline Diesel	ailer, [/ Submersible Sample Cor (2) 40 mi VC Extracted fr (2) 40 ml VC (2) 1-liter ar (1) 40 ml VC (1) 250 ml p (1) 1-liter pc (1) 125 ml p (3) 40 ml VC (2) 1-liter ar (2) 1-liter ar (3) 40 ml VC (1) 500ml p	WELL SA Pump, [] Low Flow ntainer DA om BTEX VOA DA nber glass DA voly plastic oly plastic oly plastic DA nber glass DA nber glass DA oly DA	MPLING           /, [] Other: Peri Pu           //	mp_Sample Type: { reservative ydrochloric acid ydrochloric acid uffuric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid tricacid	Filtered: []Yes, []f	() Fiel
TOTAL GA Sampling N () () () () () () () () () () () () ()	Aethod: [] Parameter BTEX MTBE GRO as I Methane Sulfate HACH Lead VPH EPH PAHs VOC'S Total Me 	1,3       Disposable Poly Bar       COC       Gasoline       Diesel       tals	ailer, [] Submersible <u>Sample Cor</u> (2) 40 ml VC Extracted fra (2) 40 ml VC (2) 1-liter ar (1) 40 ml VC (1) 250 ml p (1) 1-liter pro (3) 40 ml VC (2) 1-liter ar (2) 1-liter ar (3) 40 ml VC (1) 500ml pro- (1) 500ml pro- (2) 1-liter ar (2) 1-liter ar (3) 40 ml VC (1) 500ml pro- (1) 500ml pro- (1) 500ml pro- (1) 500ml pro- (1) 500ml pro- (1) 500ml pro- (1) 500ml pro- (2) 1-liter ar (3) 40 ml VC (1) 500ml pro- (1) 500ml pro- (2) 1-liter ar (2) 1-liter ar (3) 40 ml VC (1) 500ml pro- (1) 500ml pro- (2) 1-liter ar (2) 1-liter ar (3) 40 ml VC (3) 40 ml VC (4) 1-liter ar (5) 1-liter ar (2) 1-liter ar (2) 1-liter ar (3) 40 ml VC (3) 40 ml VC (4) 1-liter ar (5) 1-liter ar (5) 1-liter ar (1) 500ml pro- (1) 1500ml pro	WELL SA Pump, [] Low Flow ntainer DA om BTEX VOA DA onber glass DA oly plastic oly plastic oly plastic oly plastic DA mber glass nber glass DA oly mer glass DA oly mer glass DA oly mer glass DA oly mer glass DA oly mer glass DA oly mer glass DA oly mer glass DA oly mer glass DA oly mer glass DA oly plastic DA mer glass DA oly plastic DA mer glass DA ner glass DA ner glass DA ner glass DA ner glass DA ner glass DA ner glass DA oly plastic DA ner glass DA ner glass DA	MPLING MPLING ( ) Other: Peri Pu Pr Hy Hy Hy Na Na Na Na Na Na Na Na Na Na	mp_Sample Type: { reservative ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one tric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid	Filtered: []Yes, []f	() Fiel
TOTAL GA Sampling N () () () () () () () () () () () () ()	Aethod: [] Paramete DEX BTEX BTEX BTEX BTEX MTBE GRO as I DRO as I	1,3         Disposable Poly Base         ar         C         Gasoline         Diesel         tals         Arvada, CO, [] Austor         Serial No.	ailer, [] Submersible <u>Sample Cor</u> (2) 40 mi VC Extracted fr (2) 40 ml VC (2) 1-liter ar (1) 40 ml VC (2) 1-liter ar (3) 40 ml VC (2) 1-liter ar (3) 40 ml VC (2) 1-liter ar (3) 40 ml VC (1) 500ml pr in, TX, [] Northern Ar <u>Calibratic</u>	WELL SA Pump, [] Low Flow Itainer DA om BTEX VOA DA om BTEX VOA DA nber glass DA nber glass DA DA nber glass DA DA DA DA DA DA DA DA DA DA	MPLING MPLING ( ) Other: Peri Pu Pi Hi Hi Si Si Ni Hi Ni Mi Mi Mi Mi Mi Mi Mi Mi Mi M	mp_Sample Type: { reservative ydrochloric acid tricacid ydrochloric acid	Filtered: []Yes, []f	() Fiel
TOTAL GA Sampling N [] [] [] [] [] [] [] [] [] [] [] [] Laboratory: <u>Meter</u> pH	LLONS: Aethod: [] Parameter BTEX MTBE GRO as I DRO as I Methane Sulfate HACH Lead VPH EPH PAHs VOC'S Total Me  STL: [],	1,3         Disposable Poly Base         er         COC         Gasoline         Diesel         tals         Arvada, CO, [] Aus         Serial No.         [] [] M. IDI	ailer, [] Submersible <u>Sample Cor</u> (2) 40 ml VC Extracted fr (2) 40 ml VC (2) 1-liter ar (1) 40 ml VC (1) 250 ml p (1) 1-liter po (1) 125 ml p (3) 40 ml VC (2) 1-liter ar (3) 40 ml VC (1) 500ml pr (1) 500ml pr (	WELL SA Pump, [] Low Flow Itainer DA om BTEX VOA DA boly plastic bly plastic bly plastic bly plastic DA mber glass DA oly Date S - / 6	MPLING MPLING ( ] Other: Peri Pu Pr Hy Hy NA NA NA NA NA NA NA NA NA NA	mp_Sample Type: {     ceservative     ydrochloric acid     ydrochloric acid     ydrochloric acid     ulfuric acid     ydrochloric acid     chain-of-l     Decontam     : Yes [ 1 No f 1	Filtered: []Yes, []f	() Fiel
TOTAL GA Sampling N () () () () () () () () () () () () ()	Aethod: [] Paramete BTEX BTEX BTEX BTEX GRO as I DRO as I Methane Sulfate HACH Lead VPH EPH PAHs Total Me SUC'S Total Me SULS STL: [],	13         Disposable Poly Base         ar         Gasoline         Diesel         tals         Arvada, CO, [] Aus         Serial No.         11 M. IDD	ailer, () Submersible Sample Cor (2) 40 mi V( Extracted fr (2) 40 mi V( (2) 1-liter ar (1) 40 mi V( (1) 250 ml p (1) 1-liter pc (1) 125 ml p (3) 40 mi V( (2) 1-liter ar (3) 40 mi V( (2) 1-liter ar (3) 40 mi V( (1) 500ml p 	WELL SA Pump, [] Low Flow Intainer DA om BTEX VOA DA om BTEX VOA DA obly plastic by plastic by plastic DA obly plastic DA	MPLING MPLING ( ) Other: Peri Pu Pi Hi Hi Hi Ni Ni Ni Ni Ni Ni Ni Ni Ni N	mp_Sample Type: { reservative ydrochloric acid tricacid Chain-of-I Decontam : Yes [ No [ ] Yes [ No [ ]	Filtered: []Yes, []f	.[] Fiel

	a, B	Q	Weather:	Cloud	cold	300	
Casing Diameter/Ty	/pe: 2'	PUC	_Measuring Point D	Description:	TOC North Side		
Vell Depth (feet be	low measuring point	»:4	0 Dept	h to Water	11.55	ft wate	er
Screen:			Dept	th to Product	f		
			<u>WELL EV</u>	ACUATION			
Method: [] Mechar	iical Bailer, [] Galva	anized Bailer, [] PVC	Bailer, [] Disp. Po	lyethylene Bailer, [	SST Bailer, [] Subme <b>?_9</b>	ersible Pump, [] Low	Flow
- 10 -	gal./ft * = one	casing volume	gals. x 3 = pu	rge volume	gals.		2
SCH 40 Pipe * 2* v	vell = 0.163 gal./ft.	4" well = 0.653 gal.	/ft. 6" well = 1.46	9 gal./ft. 8" well = 5 a D m	= 2.611 gal./ft. Any V	Vell C feet in diamete	r=5.875 x C* くろく
START TIME <u>: V (</u>			PURGE RATE			SET PUMP <u>:</u>	
		NY		TION DATA			
Time A Q >>>>				089	<u>sc</u>	TURBIDITY	DTW
UDS J	10	5.10	19.10	<u>  ) / · ]</u>	200		
<u>0702</u>	100	2.2d 5 1011	920	229	1222		
NGID	104	2.75	6.72	31.0	2.79		
			<u> </u>				
							-
			1				
	<u> </u>					· · · · · · · · · · · · · · · · · · ·	
<u> </u>							
	AT		-				
FOTAL GALLONS:	15					• .	
							······································
		/	<u>WELL S</u>	AMPLING			
Sampling Method:	[] Disposable Poly E	Bailer, [ <b>/</b> Submersibl	e Pump, [] Low Fk	ow, [] Other: <u>Peri F</u>	<u>Pump_</u> Sample Type: #	Natural, [] Duplicate	e, ( ) Field Blank
Param	eter Cac	<u>Sample Co</u>	ontainer		Preservative		
) BTEX ] MTBE		(2) 40 ml \ Extracted	OA from BTEX VOA		Hydrochloric acid Hydrochloric acid		
] GRO a	is Gasoline is Diesel	(2) 40 ml \ (2) 1-liter a	/OA amber glass		Hydrochloric acid Sulfuric acid		
] Methai ] Sulfate	10 )	(1) 40 ml \ (1) 250 ml	/OA poly plastic		Hydrochloric acid None		
] HACH ] Lead		(1) 1-liter ( (1) 125 ml	poly plastic poly plastic		None Nitric acid	Filtered: [] Yes, []	No
] VPH ] EPH		(3) 40 ml \ (2) 1-liter a	/OA Imber glass		Hydrochloric acid Hydrochloric acid		
) PAHs ) VOC'S	i	(2) 1-liter ( (3) 40 ml \	imber glass /OA		None Hydrochloric acid		
] Total M	/letals	(1) 500ml	poly		Nitricacid		
[]				3			
aboratoov: STL 1	] Arvada, CO, [ ] Au	istin, TX, [] Northern .	Analytical Other 🔚	measter Chely	Chain-of-C	Custody: []Yes, []N	o
Laboratory. <u>9</u> . 1	Serial No.	in the second se	ion Date		Decontam	ination	
<u>Meter</u>	- ELKA L∕IA ∿		- N T/ (D	Potable Wat	er: Yes [ 🖌 No [ ]	Nitric Acid: Yes	[🖍 No[]
<u>Meter</u> pH	11 <u>N 100</u>	<u> </u>			,		
<u>Meter</u> pH SC		<u> </u>		Liquinox:	Yes [ No [ ]	DI Water: Yes	[🥕 No[]

-

Personnel:	mb	D Gample Da	Weather: Cf	Dere	lold	vven 12: vven	
	2"	DVC	Measuring Deint D		2000 NI- 25 OC-1-		
	ype,	84	_weasuning Point L	vescription:	9.63		
	elow measuring point):		Dept	in to water		It wate	ər
			Depi				
			WELL EV	ACUATION			
Method: [] Mecha	nical Bailer, [] Galvar	ized Bailer, [] PVC	Bailer, []Disp. Pol	lyethylene Bailer, [	]SST Bailer, []Subm Э ∕ <b>√</b>	ersible Pump, [] Low	Flow
	gal./ft * = one c	asing volume	• <b>[</b> gals. x 3 = pu	rge volume	<b>56, (</b> gals.		
	well $\approx 0.163$ gal./ft.	4" well = 0.653 gal.	/ft. 6* well = 1.46	9 gal./ft. 8" well /	= 2.611 gai./ft. Any	Well C feet in diamete	$r = 5.875 \times C^2$
START TIME:			PURGE RATE:			SET PUMP <u>: 7</u>	<u></u>
			EVACUA	TION DATA			
	pH				<u>sc</u>		DTW
<u>440</u>	(e.5 (e	1.92	9.10	1990	773		
<u> Tikala</u>	6.5	1,21	999	24+6	708		
14/0	Q.50_		1.19	124.0	/07		
						·····	
1 - 111-1018							
OTAL GALLONS:	23						
			WELL S.	AMPLING		/	
ampling Method:	[] Disposable Poly Ba	iller, [] Submersible	Pump, [] Low Flo	w, [] Other: <u>Peri 8</u>	Pump_Sample Type:	Natural, [] Duplicate	, [] Field Blank
<u>Param</u> 1 90.	<u>leter</u>	Sample Co	ntainer		Preservative		
) BTEX I MTBE		(2) 40 ml V Extracted f	OA rom BTEX VOA		Hydrochloric acid Hydrochloric acid		
GRO a	as Gasoline S Diesel	(2) 40 ml V	OA mber class		Hydrochloric acid		
] Metha	ne	(1) 40 ml V	OA caluateetie		Hydrochloric acid		
] HACH	3	(1) 250 mi (1) 1-liter p	oly plastic		None		
) Lead ) VPH		(1) 125 ml (3) 40 ml V	poly plastic OA		Nitric acid Hydrochloric acid	Filtered: [] Yes, []	No
] EPH ] PAHs		(2) 1-liter a (2) 1-liter a	mber glass mber glass		Hydrochloric acid None		
VOC'S	detals	(3) 40 ml V (1) 500ml r	OA Iolv		Hydrochloric acid Nitricacid		
	· · · · · · · · · · · · · · · · · · ·		····				
		m TV [1]	naturinal Others	- 5 mo			
avoratory: <u>STL</u> : [	Devicitio	ua, i A, [] Northern A	maiytical Other <u>Lear</u>	reaster ~ rung	Chain-of-(	oustody: []Yes, []No	נ
A-+	Serial No.	361 2	-8-11-	<u></u>	Decontar	nnation	
Meter		177 ()	010	Potable Wat	ter: Yes [ 🌱 No [ ]	Nitric Acid: Yes [	/ No[]
<u>Aeter</u> H	$\frac{1}{2}$	····					
<u>Aeter</u> H C				Liquinox:	Yes[ 🖌 No[ ]	DI Water: Yes [	J-No[]

	MBB		Weather:	Inocou	ing		
asing Diameter/	гуре:	AUC	_Measuring Point De	scription:	Y TOC North Side		
/ell Depth (feet b	elow measuring point	):14	Depth	to Water	9.23	ft water	
creen:			Depth	to Product	<u></u>		
			WELL EVA	CUATION			
lethod: [] Mech	anical Bailer, [] Galva	anized Bailer, [] PVC casing volume	Bailer, [] Disp. Poly	ethylene Bailer, [] e volume	SST Bailer, & Subme	ersible Pump, [] Low	-low
CH 40 Pipe * 2*	well = 0.163 gal./ft.	4* well = 0.653 gal./	it. 6" well = 1.469	gal./ft8" well =	= 2.611 gal./ft. Any V	Well C feet in diameter	= 5.875 x C
TART TIME <u>: /</u>	[0]		PURGE RATE:	5gpm		SET PUMP:	$\overline{)}'$
			EVACUATI	ON DATA			
Time	<u>рН</u>	DQ	<u>Temp</u>	ORP	SC	TURBIDITY	DTW
1104	5.85	4.30	6,63	160,3	745		
<u>1108                                   </u>	6,19	1.43	7,77	Celil	218		
1112	631	9.3	Bile	45.5	626		
120_	6.41		8,67	36,3			
				-0			
1200	6,40	1,42	8.76	34.5	655		
12/8	0.38	191	3.74	31.0	1050		
1220	6.37	1,20	8 70	33.2	648		
<u>~~~</u>		+					
					-		
	-						
	<u> </u>						
	kIC		<u> </u>			<u>I</u>	
DTAL GALLONS	<u>~</u>						
		/	WELL SA	<u>MPLING</u>		J	
ampling Method:	[] Disposable Poly B	iailer, MSubmersible	Pump, [] Low Flow	, [] Other: <u>Peri P</u>	<u>ump_Sample Type:</u>	Natural, [] Duplicate,	[] Field Bla
Parar	neter	Sample Cor	ntainer	<u> </u>	Preservative		
10	coc	(2) 40 ml V(	DA		Hydrochloric acid		
AQ BTEX	:	Extracted fr	om BTEX VOA	1	Hydrochloric acid		
	an Casalina	(2) 417 1211 12	JM		hydrochioric acid		
BTEX BTEX GRO DRO	as Gasoline as Diesel	(2) 1-liter ar	nber glass	;	Sulfuric acid		
BTEX BTEX GRO DRO Metha	as Gasoline as Diesel ane	(2) 40 ml v (2) 1-liter ar (1) 40 ml V (1) 250 ml r	nber glass DA	1	Sulfuric acid Hydrochloric acid Noac		
BTEX BTEX GRO DRO Metha Sulfat HACH	as Gasoline as Diesel ane e I	(2) 40 ml v (2) 1-liter ar (1) 40 ml V (1) 250 ml p (1) 1-liter po	nber glass DA ioly plastic ily plastic		Sulfuric acid Hydrochloric acid None None		
BTEX BTEX GRO DRO Metha Sulfat HACF Lead	as Gasoline as Diesel ane e i	(2) 40 ml v( (2) 1-liter au (1) 40 ml v( (1) 250 ml p (1) 1-liter po (1) 125 ml p (2) 40 ml v(	nber glass DA ioly plastic ioly plastic ioly plastic		Sulfuric acid Hydrochloric acid None None Nitric acid	Filtered: []Yes, []N	o
BTEX BTEX GRO DRO Metha Sulfat HACF Lead VPH EPH	as Gasoline as Diesel ne e ł	(2) 4-liter au (1) 40 ml V( (1) 250 ml p (1) 1-liter po (1) 125 ml p (3) 40 ml V( (2) 1-liter ar	nber glass DA poly plastic ply plastic poly plastic DA nber glass		Sulfuric acid Hydrochloric acid None Nitric acid Hydrochloric acid Hydrochloric acid	Filtered: [] Yes, [] N	ō
BTEX BTEX GRO DRO Metha Sulfat HACH Lead VPH EPH PAHS	as Gasoline as Diesel ane e ł	(2) 4-liter au (1) 40 ml V( (1) 250 ml p (1) 1-liter po (3) 40 ml V( (2) 1-liter au (2) 1-liter au	nber glass DA Joly plastic Jy plastic Ja JA nber glass nber glass		Sulfuric acid Hydrochloric acid None Nitric acid Hydrochloric acid Hydrochloric acid None	Filtered: [] Yes, [] N	o
BTEX BTEX GRO DRO Metha Sulfat HACH Lead VPH EPH PAHs VOC' Total	as Gasoline as Diesel ane e i i Metals	(2) 40 ml V( (2) 1-liter au (1) 40 ml V( (1) 250 ml p (1) 1-liter po (1) 125 ml p (3) 40 ml V( (2) 1-liter ar (2) 1-liter ar (3) 40 ml V( (1) 500ml p	nber glass DA koly plastic koly plastic koly plastic DA nber glass nber glass DA DA		Sulfuric acid Hydrochloric acid None Nitric acid Hydrochloric acid Hydrochloric acid None Hydrochloric acid Nitricacid	Filtered: []Yes, []N	o
BTEX MTBE GRO DRO Metha Sulfat HACF Lead VPH EPH PAHs VOC' Total	as Gasoline as Diesel ane e i i S Metals	(2) 4-liter au (1) 40 ml V( (1) 250 ml p (1) 1-liter pp (3) 40 ml V( (2) 1-liter ar (3) 40 ml V( (1) 500ml p)	nber glass DA Joly plastic Joly plastic Joly plastic DA nber glass nber glass DA Joly		Sulfuric acid Hydrochloric acid None None Nitric acid Hydrochloric acid Hydrochloric acid None Hydrochloric acid Nitricacid	Filtered: []Yes, []N	o
BTEX BTEX GRO DRO Metha Sulfat HACH Lead VPH EPH PAHs VOC' Total	as Gasoline as Diesel ane e 1 S Metals 	(2) 40 m V (2) 1-liter a (1) 40 ml V (1) 250 ml p (1) 1-liter pp (3) 40 ml V (2) 1-liter ar (2) 1-liter ar (3) 40 ml V (1) 500ml p 	nber glass DA Joly plastic Joly plastic Joly plastic DA nber glass nber glass DA Joly 	RATES Znugj	Sulfuric acid Hydrochloric acid None None Nitric acid Hydrochloric acid Hydrochloric acid None Hydrochloric acid Nitricacid Chain-of-C	Filtered: [] Yes, [] N	o
BTEX MTBE GRO DRO Metha Sulfat HACH Lead VPH PAHS VOC' Total	as Gasoline as Diesel ane e i S Metals [] Arvada, CO, [] Aus <u>Serial No.</u>	(2) 40 m V (2) 1-liter au (1) 40 m V (1) 250 ml p (1) 1-liter pc (3) 40 ml V (2) 1-liter ar (2) 1-liter ar (3) 40 ml V (1) 500ml pc 	nber glass DA poly plastic loly plastic DA nber glass nber glass DA oly 	anner Znugj	Sulfuric acid Hydrochloric acid None Nitric acid Hydrochloric acid Hydrochloric acid None Hydrochloric acid Nitricacid Chain-of-C <u>Decontami</u>	Filtered: []Yes, []N ustody: []Yes, []No nation	o
BTEX MTEE GRO DRO Metha Sulfat HACH Lead VPH EPH PAHs VOC' Total  thoratory: <u>STL</u> :	as Gasoline as Diesel ane e f Metals [] Arvada, CO, [] Aus <u>Serial No.</u> [] M. [DD 9	(2) 40 m V (2) 1-liter a (1) 40 ml V (1) 250 ml p (1) 1-liter p (3) 40 ml V (2) 1-liter ar (3) 40 ml V (1) 500ml p (1) 500ml p	nber glass DA Joly plastic oly plastic oly plastic DA nber glass nber glass DA oly nalytical Other <u>lyang</u>	a <del>ater Zhugj</del> Potable Wate	Sulfuric acid Hydrochloric acid None Nitric acid Hydrochloric acid Hydrochloric acid None Hydrochloric acid Nitricacid Chain-of-C Decontami er: Yes [ No f 1	Filtered: [] Yes, [] N sustody: [] Yes, [] No nation Nitric Acid: Yes 1/	0 1 No 1 1
BTEX MTEE GRO DRO Metha Sulfat HACH Lead VPH EPH PAHs VOC' Total wboratory: <u>STL</u> :	as Gasoline as Diesel ane e f S Metals [] Arvada, CO, [] Aus <u>Serial No.</u> [] <u>M(DD 9</u>	(2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml p (1) 1-liter pp (3) 40 ml V (2) 1-liter ar (2) 1-liter ar (3) 40 ml V (1) 500ml p (1) 500ml p (1) 500ml p (1) 500ml p (1) 500ml p (1) 500ml p	nber glass DA Joly plastic oly plastic DA nber glass nber glass DA oly 	Raster Enurgy Potable Wate	Sulfuric acid Hydrochloric acid None Nitric acid Hydrochloric acid Hydrochloric acid None Hydrochloric acid Nitricacid Chain-of-C Decontami er: Yes [ No [ ]	Filtered: [] Yes, [] N sustody: [] Yes, [] No nation Nitric Acid: Yes [-	0 T No[]
boratory: <u>STL</u> :	as Gasoline as Diesel ane e d S Metals [] Arvada, CO, [] Aus <u>Serial No.</u> // <i>M(DO 9</i>	(2) 4-liter a (2) 1-liter a (1) 40 ml V( (1) 250 ml r (1) 1-liter p (3) 40 ml V( (2) 1-liter ar (3) 40 ml V( (1) 500ml p 	nber glass DA poly plastic oly plastic DA nber glass DA oly malytical Other <u>leane</u>	Potable Wate Liquinox:	Sulfuric acid Hydrochloric acid None Nitric acid Hydrochloric acid Hydrochloric acid None Hydrochloric acid Nitricacid Chain-of-C Decontami er: Yes [ No [ ] Yes [ No [ ]	Filtered: []Yes, []N sustody: [/]Yes, []No nation Nitric Acid: Yes [- DI Water: Yes [-	0 T No[] T No[]

DO

Comments: \_

	IN A	Sample Da			ime:	Well ID:/	
Personnel:	21	PVC	Weather:	Jaou			
Casing Diameter/1	уре:	70	_Measuring Point De	escription:T	OC North Side		
Vell Depth (feet b	elow measuring point;	: <i>¥ U</i>	Depth	to Water	0111	ft wate	r
Screen:			Depth	to Product			
			WELL EVA	CUATION		/	
Method: [] Mecha	nical Baiter, []Galva	nized Bailer, [] PVC casing volume	Bailer, [] Disp. Poly	rethylene Bailer, []: ge volume	SST Bailer, []/Subm gals.	ersible Pump, { ] Low	Flow
SCH 40 Pipe * 2*	well = 0.163 gal./ft.	4" well = 0.653 gal.	/ft. 6" well = 1.469	gal./ft. 8" well = 1	2.611 gal./ft. Any	Well C feet in diameter	= 5.875 x
	<u>48</u>			9pm			5
			EVACUAT	ON DATA			
Time	рH	DÖ	Temp	ORP	<u>SC</u>	TURBIDITY	DT
1351	6.41	0.32	9.42	85.7	1147		
1356	6.30	6.31	9.57	83.1	11/04		
<u> 140  </u>	6.31	0.31	9,00	817,3	Illoy		
14010	4.35	0,33	9.60	77,6	11/00		
14//	6.35	0.30	9,100	763	1165		
14/10	0.33	0.30	9.62	760	1167		
1421	633	0,30	9,102	76.0	1166		
				-			
FOTAL GALLONS	30						
			WELL SA	MPLING			
Sampling Method:	[] Disposable Poly E	ailer, 🖌 Submersible	Pump, [] Low Flow	v, [] Other: <u>Peri Pu</u>	imp_Sample Type: {	Natural, [] Duplicate	, ( ) Field E
Paran	neter	Sample Co	ntainer	P	reservative		
, Age	COC	(2) 40 ml V	·····		hidrochloric sold		
] MTBE		Extracted f	rom BTEX VOA	н	lydrochloric acid		
] GRO	as Gasoline as Diesel	(2) 40 ml v (2) 1-liter a	OA mber glass	H S	iydrochloric acid iulfuric acid		
] Metha ] Sulfat	ine e	(1) 40 ml V (1) 250 ml	OA polv plastic	H	lydrochloric acid Ione		
] HACH	ł	(1) 1-liter p	oly plastic	N	lone litric opid	Ellered: [])/ee.[])	No
) VPH		(3) 40 ml V	OA	H	lydrochloric acid	Fineleo, [] res,[]i	NO
] EPH ] PAHs		(2) 1-liter a (2) 1-liter a	mber glass mber glass	H	lydrochloric acid Ione		
] VOC'	S Metals	(3) 40 ml V (1) 500ml r	AO Nov	H	lydrochloric acid litricacid		
]			7				
				8.			
aboratory: <u>STL</u> :	[] Arvada, CO, [] Aus	stin, TX, [ ] Northern A	Analytical Other Lan	ecolor cherry	Chain-of-	Custody: [] #es, [] No	)
	<u>Serial No.</u>	Calibrati	on Date		Decontar	<u>nination</u>	
Meter			.X-10	Potable Water	r: Yes[ 1∕No[]	Nitric Acid: Yes [	
<u>Meter</u> oH	IIMIODA	<u>-د_ ال</u>		· otable · vate	/	-	
<u>Meter</u> oH SC		<u>-د ال</u> ې		Liquinox:	Yes[] No[]	DI Water: Yes {	J-No [

	me una	Sample Da	<sub>.te</sub>	<u>[6</u> _	îime:		20
Personnel:	SM BR	A	Weather:	Spowe	ing		
Casing Diame	ter/Type:	32"PVC	Measuring Point Department of the second	escription:T	North Side		
Well Depth (fe	et below measuring poil	nt): <u>70</u>	Depth	to Water	<u>7,81</u>	ft wate	er
Screen:			Depth	to Product			
			WELL EVA	CUATION			
Method: []Me	chanical Bailer, [] Galv	vanized Bailer, [] PVC	Bailer, [] Disp. Poly	ethylene Bailer, []	SST Bailer, [] Subm	ersible Pump, [] Low	/ Flow
14	<b>3</b>	e casing volume	gals. x 3 = purg	je volume <u> </u>	0		
SCH 40 Pipe	* 2* well = 0.163 gal./ft.	4" well = 0.653 gal.	/ft. 6* well = 1.469	gal./ft. 8" well =	2.611 gal./it. Any	Well C feet in diamete	er = 5.875 x ·
START TIME:	1251		PURGE RATE:	Zgpm			25
			EVACUAT				
Time	۵H	DÓ	Temo	OBP	SC		עדח
1200	- 10.15	/_/_///	9.91	91.2	2311		
13/10	10.14	A 37	9,393	az M	1228		
1214	6 11	12.30	941	112	2331		
1310	6.12	1.29	943	813	2330		
1215	612	0 29	9.49	ari. in	2322		
1.01-0-	<i>\</i>			7/1	0.500		
							1
ļ							
	20						
TOTAL GALLC	DNS: <u>30</u>						
TOTAL GALLC	DNS: <u>30</u>		WELL SA	MPLING			
TOTAL GALLC	DNS: <u>30</u>	Poilor (1) Submeraible	WELL SA	MPLING			
TOTAL GALLC	DNS: <u>30</u> nod: [] Disposable Poly	Bailer, [] Submersible	WELL SA	MPLING v, [] Other: <u>Peri P</u>	ump_Sample Type: #	Natural, [] Duplicate	ə, [ ] Field B
TOTAL GALLC	NNS: <u>30</u> NOC: [] Disposable Poly Arameter Sel COC	Baller, [] Submersible Sample Co	WELL SA e Pump, () Low Flow pontainer	<u>MPLING</u> v, [] Other: <u>Peri Pa</u> <u>F</u>	ump_Sample Type: #	]Natural, []Duplicate	9, { ] Field B
TOTAL GALLO	NNS: <u>30</u> NNS: <u>30</u> NOG: [] Disposable Poly arameter per coc FEX TBE	Bailer, [] Submersible Sample Co (2) 40 ml V Extracted f	WELL SA e Pump, [] Low Flow ontainer 'OA rom BTEX VOA	MPLING v, []Other: <u>Peri Pr</u> <u>F</u> +	ump_Sample Type: # Preservative Hydrochloric acid	]Natural, []Duplicate	ə, [ ] Field B
TOTAL GALLC	NNS: <u>30</u> NNS: <u>30</u> NOG: {] Disposable Poly Arameter Dec CO C TEX TEE RO as Gasoline RO as Gasoline	Balier, [] Submersible Sample Co (2) 40 ml V Extracted f (2) 40 ml V	WELL SA e Pump, [] Low Flow ontainer /OA rom BTEX VOA /OA	MPLING v, []Other: <u>Peri Pu</u> <u>F</u> H	ump_Sample Type: # Preservative Hydrochloric acid Hydrochloric acid Hydrochloric acid	]Natural, []Duplicate	ə, { ] Field B
TOTAL GALLC	nod: [] Disposable Poly arameter pl COC TEX TBE RO as Gasoline RO as Diesel ethane	Bailer, [] Submersible Sample Cc (2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V	WELL SA e Pump, [] Low Flow ontainer 'OA rom BTEX VOA 'OA imber glass 'OA	MPLING v, []Other: <u>Peri Pr</u> F F S S F	ump_Sample Type: # Preservative tydrochloric acid tydrochloric acid tydrochloric acid tydrochloric acid tydrochloric acid	Natural, [] Duplicate	a, [ ] Field B
TOTAL GALLC	DNS: <u>30</u> arameter <i>set Co C</i> TEX TBE RO as Gasoline RO as Diesel ethane uitate ACH	Bailer, [] Submersible Sample Cc (2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p	WELL SA e Pump, [] Low Flow ontainer /OA rom BTEX VOA /OA mber glass /OA poly plastic roly plastic	MPLING v, [] Other: <u>Peri Pu</u> F H H S S M N N	ump_Sample Type: # Preservative Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Jydrochloric acid Jydrochloric acid Jone Jone	Natural, [] Duplicate	ə, { ] Field B
TOTAL GALLC Sampling Meth 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	nod: [] Disposable Poly arameter pl CoC TEX TBE RO as Gasoline RO as Diesel ethane ulfate ACH erad PH	Bailer, [] Submersible <u>Sample Cc</u> (2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V	WELL SA e Pump, [] Low Flow ontainer 'OA rom BTEX VOA 'OA mber glass 'OA poly plastic poly plastic poly plastic OA	MPLING v, [] Other: <u>Peri Pt</u> F F F N N N N	ump_Sample Type: # Preservative Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid	TNatural, []Duplicate	a, { ] Field B
TOTAL GALLC Sampling Meth () Bi () Bi () Gi () Gi () Gi () Ci () C	DNS: <u>30</u> and: [] Disposable Poly arameter DEX TEE RO as Gasoline RO as Diesel ethane ulfate ACH and PH PH No	Bailer, [] Submersible Sample Cc (2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a	WELL SA e Pump, [] Low Flow ontainer 'OA rom BTEX VOA 'OA 'OA mber glass 'OA poly plastic poly plastic yoly plastic YOA mber glass	MPLING v, []Other: <u>Peri Pr</u> F F F S S F N N F S F F F F	ump_Sample Type: # Preservative Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Ione Jone Jone Jitric acid Hydrochloric acid Hydrochloric acid	JNatural, []Duplicate	e, { ] Field B
TOTAL GALLC Sampling Meth () () () () () () () () () () () () ()	DNS: <u>30</u> arameter <i>BL CO C</i> TEX TBE RO as Gasoline RO as Diesel ethane ulfate ACH ACH Arad PH AHs DC'S	Balier, [] Submersible Sample Co (2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V	WELL SA e Pump, [] Low Flow entainer /OA rom BTEX VOA /OA mber glass /OA poly plastic poly plastic poly plastic poly plastic mber glass mber glass /OA	MPLING v, [] Other: <u>Peri Pr</u> F F F S S F F F F F N N F F F	ump_Sample Type: Preservative Hydrochloric acid Hydrochloric acid Sulfuric acid Sulfuric acid Hydrochloric acid Jone Hitric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid	JNatural, []Duplicate	ə, [ ] Field B
TOTAL GALLC Sampling Meth [] Bi [] Mi [] Gi [] Mi [] Gi [] Mi [] Su [] H/ [] Le [] Vi [] Ef [] P/ [] Vi [] To [] To	NNS: <u>30</u> NNS: <u>30</u>	Bailer, [] Submersible <u>Sample Cc</u> (2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V (1) 500ml p	WELL SA e Pump, [] Low Flow ontainer VOA rom BTEX VOA 'OA mber glass 'OA poly plastic poly plastic poly plastic poly plastic iol plastic poly plastic OA imber glass mber glass 'OA poly	MPLING v, []Other: <u>Peri Pr</u> F F S S F N N N N N N N N N N N N N	Amp_Sample Type: # Preservative Hydrochloric acid Hydrochloric acid	JNatural, []Duplicate	e, { ] Field B
TOTAL GALLO Sampling Meth () Bi () Bi () Mi () Gi () Di () Di () Ci () C	DNS: <u>30</u> arameter <i>set Co C</i> TEX TBE RO as Gasoline RO as Diesel ethane uifate ACH ad PH AHS DC'S trail Metals	Balier, [] Submersible Sample CC (2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (2) 1-liter a (2) 1-liter a (3) 40 ml V (1) 500ml g	WELL SA e Pump, [] Low Flow ontainer /OA rom BTEX VOA /OA mber glass /OA poly plastic poly plastic poly plastic poly plastic poly plastic mber glass imber glass /OA poly	MPLING w, [] Other: Peri Pa F H H H N N N N N N N N N N N N N	ump_Sample Type: Preservative Hydrochloric acid Hydrochloric acid Hydrochloric acid Sulfuric acid Hydrochloric acid Jone Hitric acid Hydrochloric acid	TNatural, [] Duplicate	ə, { ] Field B
TOTAL GALLO Sampling Meth () Bi () Bi () Gi () Di () Gi () Mi () Su () Ci () C	DNS: <u>30</u> and: [] Disposable Poly arameter per co C FEX TBE RO as Gasoline RO as Diesel ethane alfate ACH arad PH AHS DC'S atal Metals EL: [] Arvada, CO, [] A	Bailer, [] Submersible <u>Sample Cc</u> (2) 40 ml V Extracted fl (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 1250 ml (3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V (1) 500 ml V	WELL SA e Pump, [] Low Flow ontainer VOA rom BTEX VOA VOA Where glass VOA poly plastic voly	MPLING w, [] Other: Peri Pr F F S S H N N N N N N N N N N N N N	ump_Sample Type: # Preservative Aydrochloric acid dydrochloric acid	Filtered: {]Yes, []	9, { ] Field B No
TOTAL GALLO Sampling Meth () () () () () () () () () () () () ()	DNS: <u>30</u> arameter <i>Gal Co C</i> TEX TBE RO as Gasoline RO as Diesel ethane ultate ACH ad PH AHS DC'S tal Metals <u>CL</u> : [] Arvada, CO, [] A <u>Serial No.</u>	Bailer, [] Submersible <u>Sample Cc</u> (2) 40 ml V Extracted f (2) 40 ml V (2) 40 ml V (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 125 ml (3) 40 ml V (2) 1-liter a (3) 40 ml V (1) 500ml g ustin, TX, [] Northern A <u>Calibrati</u>	WELL SA e Pump, [] Low Flow ontainer VOA rom BTEX VOA (OA mber glass (OA poly plastic poly plastic ooly plastic OA mber glass imber glass (OA mber glass (OA coly 	MPLING v, [] Other: Peri Pr F H H H N N N N H H N N H H N N H H N N H H N N H H H H H H H H H H H H H	<u>ump</u> Sample Type: <u>Preservative</u> tydrochloric acid tydrochloric	Filtered: {]Yes, [] Custody: /]Yes, []Natural	o, { ] Field B No
TOTAL GALLO Sampling Meth () () () () () () () () () () () () ()	DNS: <u>30</u> DNS: <u>30</u> arameter <i>Sel COC</i> TEX TBE RO as Gasoline RO as Diesel ethane Jifate ACH HAHS DC'S otal Metals <u>FL</u> : [] Arvada, CO, [] A <u>Serial NO.</u>	Balier, [] Submersible <u>Sample Cc</u> (2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (3) 40 ml V (2) 1-liter a (3) 40 ml V (2) 1-liter a (3) 40 ml V (1) 500ml g 	WELL SA e Pump, [] Low Flow ontainer VOA rom BTEX VOA VOA rom BTEX VOA VOA roly plastic roly plastic rol	MPLING w, [] Other: Peri Pri F H H S H H H S H H H S S H H S S H H S S H H S S H H S S H H S S H H S S H H S S H S S H S S H H S S H S S S S S S S S S S S S S		Filtered: []Yes, [] Custody: [Yes, []Nation Nitric Acid: Yes []	o, { ] Field B No o
TOTAL GALLC Sampling Meth Sampling Meth Sampling Meth Sampling Mether SC	DNS: <u>30</u> and: [] Disposable Poly arameter Dec Co C FEX TEE RO as Gasoline RO as Diesel ethane and PH ACH and PH ACH and PH CC'S atal Metals EL: [] Arvada, CO, [] A <u>Serial No.</u>	Bailer, [] Submersible <u>Sample Cc</u> (2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 1250 ml (1) 1-liter p (1) 1250 ml (1) 1-liter a (2) 1-liter a (3) 40 ml V (2) 1-liter a (3) 40 ml V (1) 500 ml g ustin, TX, [] Northern A <u>Calibrati</u>	WELL SA e Pump, [] Low Flow ontainer VOA rom BTEX VOA OA mber glass VOA poly plastic ioly plastic ioly plastic OA imber glass mber glass mber glass Manalytical Other Lan on Date 8 - / 6	MPLING w, [] Other: Peri Pri F H H S S H N N N N N N N N N N N N N		Filtered: {]Yes, [] Custody: /]Yes, []Network Nitric Acid: Yes [ DI Water: Yes [	o ( ) No ( ) No ( )

	A A R	Sample Dat	e		ime: <u>10a)</u>	_Well ID: // ·	
Personnel:	<u> </u>	DINC	Weather:	w sho	wers	<u></u>	
Casing Diameter/1	Гуре:	NC T	_Measuring Point De	scription:T	C North Side		
Well Depth (feet b	elow measuring point;	<u> </u>	Depth	to Water	10,3 (	ft wa	iter
Screen:			Depth	to Product			
Method: [] Mecha	anical Bailer, [] Galva	nized Bailer, [] PVC	WELL EVA Bailer, [] Disp. Poly 5gals. x 3 = purg	CUATION ethylene Bailer, [] S e volume/	SST Bailer, [4]Subme	ersible Pump, [] Lo	wFlow Aer
SCH 40 Pipe * 2*	well ≈ 0.163 gal./ft.	4" well = 0.653 gal./	ft. 6" well = 1.469	gal./ft. 8" well ≍ 2	2.611 gal./ft. Any \	Vell C feet in diame	ter = 5.875 x C <sup>2</sup>
START TIME:	140		PURGE RATE;			SET PUMP:	
			EVACUATIO	<u>ON DATA</u>			
Time	pН	DO	<u>Temp</u>	OBP	<u>sc</u>	TURBIDITY	DTW
1452	7.10	0,34	8.91	- 228.8.	1224		
1457	4.87	0.32	9,13	-168.2	1287		
1502	6.84	0,32	8,99	-132.5	1328		
1515	6.45	0131	3,90	-20,1	1345		
1525	6,43	0,31	8.98	-202	1330		
		<u></u>					
	b	•		•		•	
TOTAL GALLONS	<u> </u> ]					<u></u>	
TOTAL GALLONS	<u> </u> ]			·	· ·	••••••••••••••••••••••••••••••••••••••	
TOTAL GALLONS	<u>17</u>		WELL SA	MPLING			
TOTAL GALLONS	(] Disposable Poly E	Bailer, [] Submersible	WELL SA	MPLING /, [] Other: <u>Peri Pu</u>	mp_Sample Type: [	Natural, [] Duplica	ute, ( ) Field Blank
TOTAL GALLONS Sampling Method: Param	[] Disposable Poly E	Bailer, [] Submersible Sample Co	WELL SA	MPLING /, []Other: <u>Peri Pu</u> <u>P</u> i	<u>mp_</u> Sample Type: [# reservative	Natural, [] Duplica	ite, [ ] Field Blank
TOTAL GALLONS Sampling Method: Param August [] BTEX	(] Disposable Poly E	Bailer, [] Submersible Sample Co (2) 40 ml V Extracted fr	WELL SA Pump, [] Low Flow ntainer OA	MPLING /, []Other: <u>Peri Pu</u> Pi Hi	mp_Sample Type: [i	Natural, [] Duplica	ite, ( ) Field Blank
TOTAL GALLONS Sampling Method: Param Adda [] BTEX [] MTBE [] GRO	[] Disposable Poly E	Bailer, [] Submersible <u>Sample Co</u> (2) 40 ml Vi Extracted fr (2) 40 ml Vi	WELL SA Pump, [] Low Flow Intainer OA om BTEX VOA DA	MPLING /, []Other: <u>Peri Pu</u> Pr Hi Hi Hi	mp_Sample Type: [# reservative ydrochloric acid ydrochloric acid ydrochloric acid	Natural, [] Duplica	ite, ( ) Field Blank
TOTAL GALLONS Sampling Method: Paran Data (] BTEX [] MTBE [] GRO [] DRO [] Metha	[] Disposable Poly E neter 2 C C C as Gasoline as Diesel ane	Bailer, [] Submersible Sample Co (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter au (1) 40 ml V(	WELL SA Pump, [] Low Flow <u>Intainer</u> OA om BTEX VOA OA DA nber glass OA	MPLING /, []Other: <u>Peri Pu</u> Pi Hi Hi Si Hi Si	mp_Sample Type: [ / reservative ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid	Natural, [] Duplica	ute, ( ) Field Blank
TOTAL GALLONS TOTAL GALLONS Sampling Method: Paran Paran () BTEX [] BTEX [] GRO [] DRO [] DRO [] Metha [] Sulfat [] HACE	[] Disposable Poly E nater COC as Gasoline as Diesel ane H	Bailer, [] Submersible <u>Sample Co</u> (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml g (1) 1-liter ar	WELL SA Pump, [] Low Flow ntainer DA om BTEX VOA DA nber glass DA Doly plastic oly plastic	MPLING /, [] Other: <u>Peri Pu</u> Pi Hi Hi Hi Si N N N	mp_Sample Type: [ ; reservative ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one	Natural, [] Duplica	ite, ( ) Field Blank
TOTAL GALLONS TOTAL GALLONS Sampling Method: Parar 2 A24 [] BTEX [] MTBE [] GRO [] DRO [] Metha [] Sulfat [] Sulfat [] Lead	[] Disposable Poly E neter as Gasoline as Gasoline ane le	Bailer, [] Submersible Sample Co (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml g (1) 1-liter pr (1) 125 ml g	WELL SA Pump, [] Low Flow Intainer OA om BTEX VOA OA DA DA DA DA DA DA DA DA DA DA DA DA	MPLING /, []Other: <u>Peri Pu</u> Pi Hi Hi Si Hi Ni Ni Ni Ni	mp_Sample Type: [# reservative ydrochloric acid ydrochloric acid ulfuric acid udrochloric acid one one tiric acid	Natural, []Duplica	ite, [ ] Field Blank
TOTAL GALLONS TOTAL GALLONS Sampling Method: Parar Barar Bar	[] Disposable Poly E neter 2 C C C as Gasoline as Diesel ane le	Bailer, [] Submersible Sample Co (2) 40 ml Vi Extracted fr (2) 40 ml Vi (2) 1-liter ar (1) 40 ml Vi (1) 250 ml çi (1) 1-liter pr (1) 125 ml çi (3) 40 ml Vi (2) 1-liter ar	WELL SA Pump, [] Low Flow Intainer OA om BTEX VOA OA nber glass OA obly plastic obly plastic oA nber glass	MPLING /, []Other: <u>Peri Pu</u> Hi Hi Hi Ni Ni Ni Ni Ni Hi Hi Ni Ni Ni Ni Ni Ni Ni Ni Ni Ni Ni Ni Ni	mp_Sample Type: [ ; reservative ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one itric acid ydrochloric acid ydrochloric acid	Natural, []Duplica	ite, { } Field Blank
TOTAL GALLONS TOTAL GALLONS Parar Parar () BTEX () BTEX () BTEX () DRO () D	[] Disposable Poly E neter as Gasoline as Gasoline as Diesel ane e t	Bailer, [] Submersible <u>Sample Co</u> (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml g (1) 1-liter pr (3) 40 ml V( (2) 1-liter ar (2) 1-liter ar (3) 40 ml V( (3) 40 ml V(	WELL SA Pump, [] Low Flow ntainer OA om BTEX VOA DA onber glass OA ooly plastic ooly plastic ooly plastic DA mber glass mber glass DA	MPLING /, [] Other: <u>Peri Pu</u> Pr Hi Hi Si Si Ni Ni Ni Ni Ni Ni Hi Hi Ni Ni Hi Hi Hi Hi Hi Hi Hi	mp_Sample Type: [# reservative ydrochloric acid ydrochloric acid ulfuric acid ulfuric acid ydrochloric acid one one itric acid ydrochloric acid ydrochloric acid one ydrochloric acid	Natural, [] Duplica	ite, [ ] Field Blank
TOTAL GALLONS TOTAL GALLONS Sampling Method: Parar Barar Caracteristic Second S	[] Disposable Poly E neter 	Bailer, [] Submersible Sample Co (2) 40 mi V( Extracted fr (2) 40 mi V( (2) 1-liter ar (1) 40 mi V( (1) 250 mi g (1) 1-liter pr (1) 125 mi g (3) 40 mi V( (2) 1-liter ar (3) 40 mi V( (1) 500mi p	WELL SA Pump, [] Low Flow Intainer OA om BTEX VOA OA nber glass OA obly plastic obly plastic obly plastic OA mber glass nber glass OA obly of the state of the state of the state OA	MPLING /, [] Other: <u>Peri Pu</u> Pr Hi Hi Hi Hi Ni Ni Ni Ni Ni Ni Ni Ni Ni Ni Ni Ni Ni	mp_Sample Type: [ } reservative ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one one itric acid ydrochloric acid ydrochloric acid one ydrochloric acid one ydrochloric acid itricacid	Natural, []Duplica	ite, [ ] Field Blank
Sampling Method: Parar Sampling Method: Parar Sampling Method: Parar Parar Parar Parar Parar Parar Parar Parar Sulfat I BRO I DRO I D	[] Disposable Poly E neter as Gasoline as Diesel ane l S Metals	Bailer, [] Submersible <u>Sample Co</u> (2) 40 mi Vi Extracted fr (2) 40 mi Vi (2) 1-liter ar (1) 40 mi Vi (1) 250 mi çi (1) 1-liter pi (3) 40 mi Vi (2) 1-liter ar (3) 40 mi Vi (1) 500mi pi	WELL SA Pump, [] Low Flow ntainer OA om BTEX VOA DA DA DA Da ber glass DA Doly plastic Doly plastic DA nber glass mber glass DA oly	MPLING /, []Other: <u>Peri Pu</u> Pr Hi Hi Si Hi Ni Ni Ni Hi Hi Hi Hi Hi Hi Hi Hi Hi Hi Hi Hi Hi	mp_Sample Type: [# reservative ydrochloric acid ydrochloric acid ulfuric acid ulfuric acid ydrochloric acid one one itric acid ydrochloric acid ydrochloric acid one ydrochloric acid itricacid	Filtered: []Yes, {	ite, [ ] Field Blank
TOTAL GALLONS TOTAL GALLONS Sampling Method: Parar Caracle Content Sampling Method: Caracle Content Caracle Co	[] Disposable Poly E neter as Gasoline as Gasoline as Diesel ane l S Metals [] Arvada, CO, [] Aus	Bailer, [] Submersible Sample Co (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter an (1) 40 ml V( (1) 250 ml g (1) 1-liter pr (1) 125 ml g (3) 40 ml V( (2) 1-liter an (2) 1-liter an (3) 40 ml V( (1) 500ml p (1) 500ml p 	WELL SA Pump, [ ] Low Flow Intainer DA om BTEX VOA DA nber glass DA poly plastic DA nber glass nber glass DA nber glass	MPLING ( ) Other: <u>Peri Pu</u> Pi Hi Hi Hi Ni Ni Ni Ni Ni Ni Ni Ni Ni N	mp_Sample Type: [ } reservative ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one itric acid ydrochloric acid ydrochloric acid one ydrochloric acid one ydrochloric acid one ydrochloric acid one ydrochloric acid one ydrochloric acid one	Filtered: []Yes, [	ite, [ ] Field Blank
TOTAL GALLONS TOTAL GALLONS Sampling Method: Parar J. 424 [] BTEX [] MTBE [] GRO [] DRO [] Metha [] Sulfat [] Lead [] VPH [] Lead [] VPH [] PAHs [] VOC' [] Total []	[] Disposable Poly E neter as Gasoline as Gasoline as Gasoline as Diesel ane le f Metals [] Arvada, CO, [] Aus <u>Serial No.</u>	Bailer, [ ] Submersible Sample Co (2) 40 ml Vi Extracted fr (2) 40 ml Vi (2) 1-liter an (1) 40 ml Vi (1) 250 ml yi (1) 1-liter pa (3) 40 ml Vi (2) 1-liter an (3) 40 ml Vi (2) 1-liter an (3) 40 ml Vi (1) 500ml pi (1) 500ml pi stin, TX, [ ] Northern A Calibratic	WELL SA	MPLING ( ] Other: <u>Peri Pu</u> Pi Hi Hi Si Hi Ni Ni Ni Ni Ni Ni Ni Ni Ni N	mp_Sample Type: [# reservative ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one one tiric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid tiricacid Chain-of-C <u>Decontam</u>	Filtered: []Yes, [ Sustody: []Yes, []	ite, [ ] Field Blank
TOTAL GALLONS TOTAL GALLONS Sampling Method: Parar Sampling Method: BTEX I BTEX I BTEX I BTEX I GRO I DRO I	[] Disposable Poly E neter as Gasoline as Diesel ane l S Metals [] Arvada, CO, [] Aus Serial No. (] M. [DD 9	Bailer, [] Submersible <u>Sample Co</u> (2) 40 mi Vi Extracted fr (2) 40 mi Vi (2) 1-liter ar (1) 40 mi Vi (1) 250 mi g (1) 1-liter pr (3) 40 mi Vi (2) 1-liter ar (3) 40 mi Vi (2) 1-liter ar (3) 40 mi Vi (1) 500mi p 	WELL SA	MPLING ( ] Other: <u>Peri Pu</u> Pr Hi Hi Si Ni Ni Ni Ni Ni Ni Ni Ni Ni N	mp_Sample Type: [# reservative ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid itricacid Chain-of-C Decontam	Filtered: []Yes, [] Custody: []Yes, [] ination Nitric Acid: Ye	tte, [ ] Field Blank `] No No
TOTAL GALLONS TOTAL GALLONS Sampling Method: Parar J. 222 [] BTEX [] MTBE [] GRO [] DRO [] Metha [] Sulfat [] Lead [] VOC' [] EPH [] PAHS [] VOC' [] Total [] VOC' [] Total [] UC' [] Total [] STL: Meter pH SC	[] Disposable Poly E neter as Gasoline as Diesel ane t S Metals [] Arvada, CO, [] Aus Serial No. (IM_1DD 9	Bailer, [] Submersible Sample Co (2) 40 mi V( Extracted fr (2) 40 mi V( (2) 1-liter ar (1) 40 mi V( (1) 250 mi y( (1) 1-liter pr (1) 125 mi y( (2) 1-liter ar (3) 40 mi V( (2) 1-liter ar (3) 40 mi V( (2) 1-liter ar (3) 40 mi V( (1) 500 mi y( (1)	WELL SA Pump, [] Low Flow Intainer DA om BTEX VOA DA nber glass DA poly plastic DA nber glass nber glass DA mber glass DA nber glass DA DA nber glass DA DA nber glass DA DA nber glass DA DA DA DA DA DA DA DA DA DA	MPLING ( ) Other: <u>Peri Pu</u> Pi H H H N N N N N N N N N N N N N	mp_Sample Type: [ } reservative ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one itric acid ydrochloric acid ydrochloric acid ydrochloric acid one ydrochloric acid one ydrochloric acid one ydrochloric acid me ydrochloric acid one ydrochloric acid ydrochloric acid itricacid	Filtered: [] Puplica	tte, [] Field Blank <sup>1</sup> ] No No s [-/] No [] s [-/] No []
Contract Gallons Sampling Method: Parar P	[] Disposable Poly E neter as Gasoline as Diesel ane le l S Metals [] Arvada, CO, [] Autor Serial No. (IM (DD 9)	Bailer, [] Submersible Sample Co (2) 40 mi Vi Extracted fr (2) 40 mi Vi (2) 1-liter ar (1) 40 mi Vi (1) 250 mi g (1) 1-liter pr (3) 40 mi Vi (2) 1-liter ar (3) 40 mi Vi (2) 1-liter ar (3) 40 mi Vi (1) 500mi p 	WELL SA	MPLING ( ] Other: Peri Pu Pr H H H So No No No No No No No No No N	mp_Sample Type: [# reservative ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one one itric acid ydrochloric acid ydrochloric acid ydrochloric acid itricacid Chain-of-C Decontam : Yes [No [ ] Yes [No [ ]	Filtered: []Yes, [] Custody: []Yes, [] ination Nitric Acid: Ye DI Water: Ye Steam: Ye	tte, [] Field Blank

	Project:	Hearen	GROL Sample Dat Sample Dat Steel	JNDWATER le Weather: Measuring Point De Depth Depth	SAMPLING	LOG me: <u>16 D</u> <i>strowers</i> DC North Side 10 m Ca	Well ID: 	<u>110-2</u> 4
1/1	Method: [] Mechanic /, #6 9 SCH 40 Pipe * 2* we	cal Bailer, [] Galva gal./ft * = one o ell = 0.163 gal./ft.	nized Bailer, [] PVC casing volume 4" well = 0.653 gal./	$\frac{\text{WELL EVA}}{\text{Bailer, [] Disp. Poly}}$ $\frac{\text{Gals. x 3 = purg}}{\text{gals. x 3 = purg}}$ (ft. 6' well = 1.469	CUATION rethylene Bailer, [] S ge volume gal./ft. 8* well = 2	ST Bailer, [/] Subm gals. 2.611 gal./ft. Any	ersible Pump, [] Low Well C feet in diameter	Flow r = 5.875 x C <sup>2</sup>
2 5 m / Sgar	START TIME: 5	25		PURGE RATE	<u>() 500 [. ij</u> () ION DATA		SET PUMP <u>;</u>	
J. Swijewow J. Swijewow J. Swije	<u>Time</u> 1551 1555 1607 1107 11031 1619 1631	₽ 2,75 2,44 6,66 <del>2,9</del> 4 6 6,57 6,45	<u>0</u> 0.36 3.30 03-330 03-330 03-10 2.10	<u>Temp</u> <u>B</u> , <u>79</u> <u>9</u> , 75 <u>9</u> , 75 <u>9</u> , 75 <u>9</u> , 85 <u>9</u> , 90	<u>ORP</u> - 133, (0 - 88, (0 - 2, 2 - - - - - - - - - - - - -	<u>sc</u> 471 476 505 573 575		
	Ì		<u> </u>	<u> </u>				
	TOTAL GALLONS:					*******		222000-10000000000000000000000000000000
	Sampling Method: []	Disposable Poly B	ailer, NSubmersible	WELL SA Pump, () Low Flov	<u>MPLING</u> v, [] Other: <u>Peri Pur</u>	np_Sample Type: (	Matural, [] Duplicate	, [ ] Field Blank
	Paramet[]BTEX[]MTBE[]GRO as[]DRO as[]Methane[]Sulfate[]HACH	Gasoline Diesel	Sample Co (2) 40 ml V Extracted fr (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml p (1) 1-liter p (1) 1-liter p	ntainer OA om BTEX VOA OA mber glass OA poly plastic oly plastic	Pr Hy Hy St St No	eservative rdrochloric acid rdrochloric acid rdrochloric acid ufuric acid rdrochloric acid one one		

	Parameter	Sample Container	Preservative	
	Parameter S D C C C BTEX MTBE GRO as Gasoline DRO as Diesel Methane Sulfate HACH Lead VPH EPH PAHs	Sample Container (2) 40 ml VOA Extracted from BTEX VOA (2) 40 ml VOA (2) 1-liter amber glass (1) 40 ml VOA (1) 250 ml poly plastic (1) 1-liter poly plastic (1) 125 ml poly plastic (3) 40 ml VOA (2) 1-liter amber glass (2) 1-liter amber glass	Preservative Hydrochloric acid Hydrochloric acid Sulfuric acid None None Nitric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid None	Filtered: []Yes, []No
[]	VOC'S	(3) 40 ml VOA	Hydrochloric acid	
[] []	I otal Metals	(1) SUOMI poly	Nitricacio	
n				_
Laboratory	r: <u>STL</u> : [] Arvada, CO, [] Austin, TX,	[] Northern Analytical Other Leances	ner Znowy Chain-of-C	ustody: []#es, [] No
<u>Meter</u>	Senar NU.		Decontaini	nation
pН	1 <u>1M10099</u> 9	3-8-16	Potable Water: Yes [ 🌱 No [ ]	Nitric Acid: Yes [ 🕂 No [ ]
SC '			Liquinox: Yes [ / No [ ]	DI Water: Yes [ ]_No [ ]
ORP			Methanol: Yes [] No [ 🖵	Steam: Yes[] No[]
DO				
Comments	¥			

Personnel·	7 MA	BA	Oumpio D	Weather: Apr	the clove	ds + cc	ef	
Cosing Diar	mator/Tuno:	2 "	PVC	Maggirian Baint Da		DC North Side		
	neten rype.	Q	<u> </u>	weasuning Form De	scription:	うん) クフ		
vveli Depin	(feet below i	measuring point):	<u>l</u>	L Depth	to WaterC	<u> </u>	ft water	
Screen:			······································	Depth	to Product			
				WELL EVA	CUATION			
Method: []	Mechanical	Bailer, [] Galvan	ized Bailer, [] PV	C Bailer, [] Disp. Poly	ethylene Bailer, [] S	ST Bailer, [] Subm	ersible Pump, [] Low I	low
<u>%</u>	163	_ gal./ft * = one c	asing volume 🔰	gals. x 3 = purg	e volume/	<u>1,2_gais.</u>		
SCH 40 Pip	oe * 2* well ⊧	= 0,163 gal./ft.	4* well ≈ 0.653 ga	l./ft. 6* well = 1.469	gal./ft.	2.611 gal./ft. Any	Well C feet in diameter	= 5.875 x
START TIM	1 <u>E:087</u>	11		PURGE RATE	ra/min		SET PUMP:	3
				/ EVACUATIO	ON DATA			
Tim	e	<u>pH</u>	DQ	Temp	ORP	SC	TURBIDITY	DT
085	1	6.53	3.48	10.27	86.1	12107		
185	5 6	0.64	3,59	10.35	73.1	(0107		
DBI	-81	5.05	2.24	10,40	1017.1	1072		
991	02 0	6.106	2.12	10.46	59.8	695		
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			·····				<u> </u>	
	L					<u></u>		
TOTAL GAU	LONS:	<u>/</u>						
			······			••••••••••••••••••••••••••••••••••••••		·····
			/	WELL SAI	MPLING			
Sampling M	lethod: []Di	isposable Poly Ba	iler, [] Submersib	le Pump, [] Low Flow	, [] Other: Peri Pur	<u>mp_</u> Sample Type: [	Natural, [] Duplicate,	[] Field B
	Parameter	n P	Sample C	ontainer	Pr	eservative		
ഷം	BTEX	00	(2) 40 ml	VOA	Ну	drochloric acid		
	MTBE GBO as Ga	isoline	Extracted (2) 40 ml	from BTEX VOA	Hy Hy	drochloric acid		
[]	DRO as Die	esel	(2) 1-liter	amber glass	Su	Ifuric acid		
[] [] []	Sulfate		(1) 40 mi (1) 250 m	vOA I poly plastic	Hy No	one		
() () () () ()	oundie		(1) 1-liter (1) 125 m	poly plastic	No	one tric acid	Filtered: [] Vec. [] N	lo.
() () () () () () () ()	HACH		(1) 160 (1)		NI NI	drochloric acid	rinoreu. [] res, [] N	10
() () () () () () () ()	HACH Lead VPH		(3) 40 ml	VUA	Hy			
() () () () () () () () () () () () () (	HACH Lead VPH EPH PAHs		(3) 40 ml (2) 1-liter (2) 1-liter	vOA amber glass amber glass	Hy Hy	drochloric acid		
() () () () () () () () () () () () () (	HACH Lead VPH EPH PAHs VOC'S		(3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml	amber glass amber glass VOA	Hy Hy No Hy	/drochloric acid one /drochloric acid		
	HACH Lead VPH EPH PAHs VOC'S Total Metals	s	(3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500ml	vOA amber glass amber glass VOA poly	Hy Hy No Hy Ni	vdrochloric acid one vdrochloric acid tricacid		
	HACH Lead VPH EPH PAHs VOC'S Total Metals	S	(3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500ml	amber glass amber glass VOA poly	Hy Hy Nc Hy Ni	rdrochloric acid one rdrochloric acid tricacid		
() () () () () () () () () () Laboratory:	HACH Lead VPH EPH PAHs VOC'S Total Metals STL: [] An	s 	(3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500ml 	Analytical Other	ну Ну No Ну Ni а <u>сыс Z пеляч</u>	rdrochloric acid one rdrochloric acid tricacid Chain-of-	 Custody: [)Y∕res, []No	
() () () () () () () () () () () () () (	AACH Lead VPH EPH PAHs VOC'S Total Metals STL: [] An	s vada, CO, [] Austi <u>Serial No</u> .	(3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500ml 	Analytical Other	Hy Hy Ni a <u>ster Energy</u>	rdrochloric acid nne rdrochloric acid tricacid Chain-of-( Decontar	 Custody: [)Y∕Yes, []No nination	
() () () () () () () () () () () () () (	AACH Lead VPH EPH PAHs VOC'S Total Metals <u>STL</u> : [] An	s vada, CO, [] Austi <u>Serial No.</u>	(3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500ml 	Analytical Other	Hy Hy No Hy Nii asier Energy Botable Works	rdrochloric acid one rdrochloric acid tricacid Chain-of-f Decontar	Custody: [¥¥es, []No	1 1-7
() (] (] (] (] (] (] (] (] (] (] Laboratory: <u>Meter</u> pH	AACH Lead VPH EPH PAHs VOC'S Total Metal: <u>STL</u> : [] And	s vada, CO, [] Austi <u>Serial No.</u> / <u>M_100</u> 9	(3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500ml 	Analytical Other teans tion Date 1 - 1 (6)	Hy Hy No Ni <u>aster Energy</u> Potable Water:	rdrochloric acid nne rdrochloric acid tricacid Chain-of-G <u>Decontan</u> Yes [ 1 No [ ]	Custody: [)Ýes, []No nination Nitric Acid: Yes [,	-} No (

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Comments: \_\_\_\_

Personnel:	DI	MBR		Weather: Aar	the close	dy coro	l	
Casing Dia	meter/Type	a: 2"	DVC	Measuring Point De	scription: TO	C North Side		
- Well Depth	n (feet belov	w measuring point)	7,3	Depth	to Water	26	ft wate	 Fr
Screen:	•	51 2		Deoth	to Product			
			······	· · · · ·				
				WELL EVA	CUATION			
Method: []	] Mechanic	al Bailer, [] Galva	nized Bailer, [] PVC	Bailer, []Disp. Poly	ethylene Bailer, [] S	ST Bailer, [] Subme	ersible Pump, [] Low	Flow
<u></u>	3	gal./ft * = one d	asing volume	gals. x 3 ≃ purg	e votume	gals.		
SCH 40 PI	pe * 2* we	ll = 0.163 gal./ft.	4" well = 0.653 gal./	ft. 6* well = 1.469	gai./ft. 8" well = 2	.611 gal./ft. Any \	Vell C feet in diamete	r = 5.875
START TIN	ие <u>: 09</u> .	<u>73</u>		PURGE RATE:			SET PUMP <u>:</u>	
				EVACUATI	ON DATA			
<u>Tin</u>	ne	рH	DO	Temp	ORP	SC	TURBIDITY	D
09	25	6.16	0.69	3,41	132.9	4090		
092	\$7	6.04	0.60	3.38	142.6	4125		
091	42	6.03	0,57	3,41	142,(	4/19		
094	15	6.03	0.57	3,45	1423	4131		
			<u> </u>	-	-			
			<u> </u>					
TOTAL GA	ALLONS:							
		/		WELL SA	MPLING		/	
Sampling N	Method: 👔	Disposable Poly B	ailer, [] Submersible	Pump, [] Low Flow	/, [] Other: <u>Peri Pur</u>	np_Sample Type: (#	Natural, [] Duplicate	e, [ ] Field
	Paramete	<u>भ</u>	Sample Co	ntainer	Pr	eservative		
	BTEX		(2) 40 ml V Extracted fr		Hy	drochloric acid		
[]	GRO as	Gasoline	(2) 40 ml V	OA	Hy	drochloric acid		
		Jiesel	(2) 1-liter a (1) 40 ml V	mber glass OA	Su Hy	lfuric acid drochloric acid		
[] [] [] [] []	DRO as l Methane			only plaetic		one		
	DRO as f Methane Sulfate HACH		(1) 250 ml ( (1) 1-liter p	olv plastic	NC NC	ne		
	DRO as I Methane Sulfate HACH Lead		(1) 250 ml ( (1) 1-liter p (1) 125 ml ( (3) 40 ml (1)	oly plastic oly plastic ooly plastic	NC NC Ni	one tric acid idrochloria acid	Filtered: [] Yes, []	No
	DRO as I Methane Sulfate HACH Lead VPH EPH		(1) 250 ml j (1) 1-liter p (1) 125 ml j (3) 40 ml V (2) 1-liter a	oly plastic ooly plastic OA mber glass	NG Ni Hy Hy	one tric acid rdrochloric acid rdrochloric acid	Filtered: []Yes,[]	No
() () () () () () () () () () () () () (	DRO as I Methane Sulfate HACH Lead VPH EPH PAHs VOC'S		(1) 250 ml ; (1) 1-liter p; (1) 125 ml ; (3) 40 ml V (2) 1-liter au (2) 1-liter au (3) 40 ml V	oly plastic oly plastic OA mber glass mber glass OA	NG NG Ni Hy NG Hy NG	nne tric acid rdrochloric acid rdrochloric acid one rdrochloric acid	Filtered: [] Yes, []	No
	DRO as I Methane Sulfate HACH Lead VPH EPH PAHs VOC'S Total Met	als ·	(1) 250 ml ; (1) 1-liter pr (1) 125 ml ; (3) 40 ml V (2) 1-liter au (3) 40 ml V (1) 500ml p	oly plastic oly plastic OA mber glass mber glass OA OA	NG Ni Hy Nc Hy Nc Ni	one tric acid drochloric acid drochloric acid one drochloric acid tricacid	Filtered: []Yes,[]	No
() () () () () () () () () () () () () (	DRO as I Methane Sulfate HACH Lead VPH EPH PAHs VOC'S Total Mei	als -	(1) 250 ml ; (1) 1-liter pi (1) 125 ml ; (3) 40 ml V (2) 1-liter au (2) 1-liter au (3) 40 ml V (1) 500ml p	oly plastic oly plastic OA mber glass DA oly	NG Ni Hy Ng Ni Ni 	nne Iric acid Idrochloric acid Idrochloric acid Inne Idrochloric acid Iricacid	Filtered: []Yes,[]	No
[] [] [] [] [] [] [] [] [] [] [] [] Laboratory	DRO as f Methane Sulfate HACH Lead VPH EPH PAHs VOC'S Total Met	ials	(1) 250 ml ; (1) 1-liter p (1) 125 ml ; (3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V (1) 500ml p 	oly plastic oly plastic OA mber glass mber glass OA oly 	NG NG Hy NG Ni Ni <del>Saster <i>Erzery</i></del>	nne tric acid rdrochloric acid ndrochloric acid tricacid tricacid Chain-of-C	Filtered: []Yes, []	No 0
[] [] [] [] [] [] [] [] [] [] Laboratory <u>Meter</u>	DRO as I Methane Sulfate HACH Lead VPH EPH PAHs VOC'S Total Mel	als - Arvada, CO, [ ] Aus Serial No.	(1) 250 ml ; (1) 1-liter p; (1) 125 ml ; (3) 40 ml V (2) 1-liter ai (3) 40 ml V (1) 500ml p 	oly plastic oly plastic OA mber glass mber glass OA oly 	NG NG Hy Hy NG Hy NG Hy NG Hy NG Hy NG Hy NG HY NG HY NG HY NG HY NG HY HY NG HY HY HY HY HY HY HY HY HY HY HY HY HY	nne Iric acid rdrochloric acid irdrochloric acid irdrochloric acid Iricacid Chain-of-C Decontam	Filtered: []Yes, [] Custody: /Yes, []N	No 0
[] [] [] [] [] [] [] [] [] [] Laboratory <u>Meter</u> pH	DRO as f Methane Sulfate HACH Lead VPH EPH PAHs VOC'S Total Mei	Arvada, CO, [] Aus	(1) 250 ml ; (1) 1-liter p (1) 125 ml ; (3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V (1) 500ml p 	oly plastic oly plastic OA mber glass mber glass OA oly malytical Other the on Date 	No Ni Hy Ni <del>Daster</del> Potable Water:	nne tric acid tridrochloric acid tridrochloric acid tricacid Chain-of-C Decontam Yes [7] No []	Filtered: []Yes, [] Custody: //Yes, []N ination Nitric Acid: Yes	No 0 [ -} No
[] [] [] [] [] [] [] [] [] [] Laboratory <u>Meter</u> pH SC	DRO as I Methane Sulfate HACH Lead VPH PAHs VOC'S Total Mei	Arvada, CO, [] Aus	(1) 250 ml ; (1) 1-liter p; (1) 125 ml ; (3) 40 ml V/ (2) 1-liter ai (3) 40 ml V/ (1) 500ml p 	oly plastic oly plastic OA mber glass mber glass OA oly malytical Other <u>term</u> on Date	No No Ni Hy No Hy Ni <del>Dagter Ercer</del> Potable Water: Liquinox:	nne tric acid rdrochloric acid rdrochloric acid tricacid Chain-of-C <u>Decontam</u> Yes [] No []	Filtered: []Yes, [] Custody: [Yes, []N ination Nitric Acid: Yes DI Water: Yes	No 0 [-}No [-;No [

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IKAT		GROU	JNDWATER	SAMPLING	LOG		0 ~ -
oject:	Butte area	<u> </u>	te <u>3-9</u>	<u>-/6</u>	me: <u>1032</u>	Weil ID:BP	501-
ersonnel:	PM, BC	<u> </u>	Weather:	oudy	cool		
asing Diame	эter/Туре:	puc	Measuring Point D	escription: <u> </u>	OC North Side		
/ell Depth (fe	eet below measuring point	»J <i>la</i>	Depti	n to Water	20,85	ft water	r
creen.			Denti	a to Product	·		
						,	+
			WELL EV	ACUATION	,		
ethod: []M	echanical Bailer, [] Galva	anized Bailer, [] PVC	Bailer, [] Disp. Pol	yethylene Bailer, [] S	SST Baller, [ Subm	ersible Pump, [] Low	Flow
,10	gal./ft*=one	casing volume <u>- 8</u>	gals. x 3 = pur	rge volume <u>2</u>	<u> </u>		
CH 40 Pipe	* 2" well = 0.163 gal./ft.	4" well = 0.653 gal.	/ft. 6* well = 1.469	∋gal./ft. 8*w,øli=2	2.611 gal./ft. Any	Well C feet in diameter	= 5.875 x C <sup>2</sup>
	1125	-		Baal heirs		SET DI IMP: 24	1
	in the test of the second s		FUNGE HATE.		•	SET FUMF	
			EVACUAT	<u>ION DATA</u>			
Time	<u>pH</u>	DO	Temp	ORP	SC	TURBIDITY	DTW
1026	3 10.77	2.32	8.92	-14.4	1227		
10.30	6,79	1,42	9,03	- 34,5	1221		
10.32	6.81	21.13	9.11	-41.1	1217		
1134							
					-		
							· · · · · · · · · · · · · · · · ·
					~		
OTAL GALL	ONS: 10						
		·····					
			WELL S	AMPLING			
omolina Mat	thed: [1Disconsible Poly [	ailar Déubmaraible		uu (1) Other: Peri Bu	ma Samala Tupor i		[] Field Bleek
amping wei			sranp, [] cow no	w, []Other. <u>Ferro</u>	<u>inp</u> oanipie rype. (	Anatural, [] Doplicate,	, [] Pielo bialix
Ž	ecoe	Sample Co	ontainer	<u>Pr</u>	reservative		
B	TEX	(2) 40 ml V	OA	H	ydrochloric acid		
G	RO as Gasoline	(2) 40 ml V	OA	Li Hy	ydrochloric acid		
	ORO as Diesel	(2) 1-liter a	mber glass	Si	ulfuric acid		
N   S	Aeinane Sulfate	(1) 40 mi v (1) 250 mi	UA notv plastic	H) N	yarochioric acia		
, с ) н	IACH	(1) 1-liter p	oly plastic	N	one		
Ļ	ead	(1) 125 ml	poly plastic	Ni	itric acid	Filtered: []Yes,[]I	No
	'РН :РЦ	(3) 40 ml V	'UA mbar glass	Hy	ydrochloric acid		
, C   P	AHs	(2) 1-liter a	mber glass	N	90100000000000000000000000000000000000		
i v	OC'S	(3) 40 ml V	'OA -	Hy	ydrochloric acid		
т	otal Metals	(1) 500ml p	ooly	Ni	itricacid		
i _							
aboratory: <u>S</u>	STL: [] Arvada, CO, [] Au	stin, TX, [] Northern /	Analytical Other	raster Zaling	Chain-of-	Custody: []Xes, []No	<b>b</b>
<u>Meter</u>	Serial No.	Calibrati	on Date		<u>Decontar</u>	nination	
н	1/11/109	191 3-	9-16	Potable Water		Nitric Acid: Vee [	No I I
•	( <u>1()-/</u>		·	, orable water			
C				Liquinox:	Yes[1] No[]	DI Water: Yes [	]∕No[]

Methanol:

Yes[] No[] Steam:

Yes[] No[,

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ORP

DO

Comments:

Project: Butte a	<u>La L</u> Sample D	ate <u> </u>		me:	_Well ID: _BK	SOA-L
Personnel: <u>VL</u>	<u>u Anc</u>	Weather:	Loudy &	Con .		
Casing Diameter/Type:	2	Measuring Point D	escription: <u>T</u>	C North Side		
Well Depth (feet below measuring	ng point):	J Depth	n to Water	[-1.e]	ft water	
Screen:		Depth	1 to Product			
		WELL EVA	ACUATION			
Method: [] Mechanical Bailer, [ 	] Galvanized Bailer, [] PV * = one casing volume	S Bailer, [] Disp. Poly $\underline{S}$ gals. x 3 = pur	yethylene Bailer, [] S ge volume,	SST Bailer, [}Subm	ersible Pump, [] Low I	Flow
SCH 40 Pipe 2" well = 0.163 (	gal./ft. 4" well = 0.653 ga	l./ft. 6" well = 1.469	gal./ft. 8" well = 2	2.611 gal./ft. Any	Well C feet in diameter	= 5.875 x C <sup>2</sup>
START TIME <u>: () () ()</u>		PURGE RATE <u>: /</u>	<u>5 min /ga</u>		SET PUMP:	3
		EVACUAT	ION DATA			
<u>Time</u> pH		Temp	ORP	SC	TURBIDITY	DTW
1104 6.4	30 0.37	1.77	41.0	2153		
1100 6.7	2 0.33	9,94	47.1	2145-		
1109 6.6	7 0,32	1.48	52.0	RIYU		
12-6.10	M SEE	Canw	LERVIC			
1115 1. 1.	2 2 97	10.02	1027	2/22		
111 - 0, 0;	2 0. 0.4	10100	10017	0100		
TOTAL GALLONS: X						
	······································	WELL S/				
Sampling Method: [] Discosable	e Poly Bailer, [] Submersit	ile Pump. (1 Low Elo	w. [] Other: Peri Pu	mn Sample Type: (	Natural [1 Duplicate	( 1 Field Blank
Parameter	Sample (	Container	Pr	eservative	Artachen, (100phoare,	
	34110-0-0	<u>ornanca</u>	<u></u>	Cocitative.		
000 <u>sac</u>	(2) 40 ml	VOA	L1.	udrophloria poid		
DECOC BTEX DETEX	(2) 40 ml Extracted	VOA from BTEX VOA	Hij Hij	ydrochloric acid ydrochloric acid		
Date         Coc           BTEX         BTEX           MTBE         GRO as Gasoline           DRO as Diesel         DRO as Diesel	(2) 40 ml Extracted (2) 40 ml (2) 1-liter	VOA from BTEX VOA VOA amber glass	Hy Hy Hy St	ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid		
I)     BTEX       BTEX     BTEX       I)     MTBE       I)     GRO as Gasoline       I)     DRO as Diesel       I)     Methane       I)     Sulfate	(2) 40 ml Extracted (2) 40 ml (2) 1-liter (1) 40 ml (1) 250 m	VOA from BTEX VOA VOA amber glass VOA I poly plastic	Hy Hy Su Su No	ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one		
I)       BTEX         BTEX       BTEX         I)       MTBE         I)       GRO as Gasoline         I)       DRO as Diesel         I)       Methane         I]       Sulfate         I]       HACH         I]       Lead	(2) 40 ml Extracted (2) 40 ml (2) 1-liter (1) 40 ml (1) 250 m (1) 1-liter (1) 125 m	VOA from BTEX VOA VOA amber glass VOA I poly plastic poly plastic I poly plastic	Hy Hy Si Ny Ny Ny Ny Ny	ydrochloric acid ydrochloric acid ydrochloric acid Ilfuric acid ydrochloric acid one one one tric acid	Filtered: []Yes, []N	ło
Joe     Coc       BTEX     BTEX       BTEX     BTEX       BTEX     GRO as Gasoline       BTEX     BTEX       BTEX     GRO as Gasoline       BTEX     DRO as Gasoline       BTEX     BTEX       BTEX     GRO as Gasoline       BTEX     BTEX       BTEX     BTEX <t< td=""><td>(2) 40 ml Extracted (2) 40 ml (2) 1-liter (1) 40 ml (1) 250 m (1) 1-liter (1) 125 m (3) 40 ml (2) 1-liter</td><td>VOA from BTEX VOA VOA amber glass VOA I poly plastic poly plastic I poly plastic VOA VOA amber glass</td><td>H) H) S) N( N( N( N( H) H) H)</td><td>ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one tric acid ydrochloric acid ydrochloric acid</td><td>Filtered: []Yes,[]N</td><td>40</td></t<>	(2) 40 ml Extracted (2) 40 ml (2) 1-liter (1) 40 ml (1) 250 m (1) 1-liter (1) 125 m (3) 40 ml (2) 1-liter	VOA from BTEX VOA VOA amber glass VOA I poly plastic poly plastic I poly plastic VOA VOA amber glass	H) H) S) N( N( N( N( H) H) H)	ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one tric acid ydrochloric acid ydrochloric acid	Filtered: []Yes,[]N	40
BTEX       BTEX       MTBE       GRO as Gasoline       DRO as Diesel       Methane       Sulfate       HACH       Lead       VPH       EPH       PAHs       VOC'S	(2) 40 ml Extracted (2) 40 ml (2) 1-liter (1) 40 ml (1) 250 m (1) 1-liter (1) 125 m (3) 40 ml (2) 1-liter (3) 40 ml	VOA from BTEX VOA VOA amber glass VOA I poly plastic poly plastic I poly plastic VOA amber glass amber glass VOA	Hy Hy Si Hy Ni Ni Hy Hy Ni	ydrochloric acid ydrochloric acid ufurochloric acid uffuric acid ydrochloric acid one one tric acid ydrochloric acid ydrochloric acid one ydrochloric acid	Filtered: []Yes, []N	ło
I)       BTEX         BTEX       BTEX         I)       MTBE         GRO as Gasoline       DRO as Diesel         I)       Methane         I)       Methane         I)       HACH         I)       Lead         I)       VPH         I]       EPH         I]       PAHs         I]       VOC'S         I]       Total Metals	(2) 40 ml Extracted (2) 40 ml (2) 1-liter (1) 40 ml (1) 250 m (1) 1-liter (1) 125 m (3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500ml	VOA from BTEX VOA VOA amber glass VOA I poly plastic poly plastic I poly plastic VOA amber glass amber glass VOA poly	Hy Hy Si Na Na Ni Hy Ny Na Na Ni	ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one tric acid ydrochloric acid ydrochloric acid one ydrochloric acid tricacid	Filtered: []Yes,[]N	ło
Image: Decision of the second seco	(2) 40 ml Extracted (2) 40 ml (2) 1-liter (1) 40 ml (1) 250 m (1) 1-liter (1) 125 m (3) 40 ml (2) 1-liter (3) 40 ml (1) 500ml (1) 500ml	VOA from BTEX VOA VOA amber glass VOA I poly plastic poly plastic i poly plastic VOA amber glass amber glass VOA poly 	Hy Hy Si Hy Na Na Hy Hy Ni Hy Ni Hy Ni	ydrochloric acid ydrochloric acid ydrochloric acid llfuric acid ydrochloric acid one one tric acid ydrochloric acid ydrochloric acid one ydrochloric acid tricacid	Filtered: []Yes, []N	ło
Joe       Coc         BTEX       BTEX         I       MTBE         GRO as Gasoline       DRO as Diesel         I       Methane         I       Methane         I       Sulfate         I       HACH         I       Lead         I       VPH         I       EPH         I       PAHs         I       VOC'S         I       Total Metals         I       Laboratory:         STL:       I Arvada, CO	(2) 40 ml Extracted (2) 40 ml (2) 1-liter (1) 40 ml (1) 250 m (1) 1-liter (1) 125 m (3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500ml (1) 500ml (1) 500ml (1) 500ml	VOA from BTEX VOA VOA amber glass VOA il poly plastic poly plastic il poly plastic VOA amber glass amber glass vOA poly 	Hy Hy Si Ni Ni Hy Ni Ni Wi Winter Ni Winter Ni	ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one one tric acid ydrochloric acid ydrochloric acid ydrochloric acid tricacid 	Filtered: []Yes, []N	ło
Joe Coc         BTEX         BTEX         I MTBE         GRO as Gasoline         DRO as Diesel         Methane         Sulfate         HACH         Lead         VPH         EPH         PAHs         VOC'S         Total Metals         Laboratory:         STL:         Arvada, CC         Meter	(2) 40 ml Extracted (2) 40 ml (2) 1-liter (1) 40 ml (1) 250 m (1) 1-liter (1) 125 m (3) 40 ml (2) 1-liter (3) 40 ml (1) 500ml (1) 500ml (1) 500ml (1) 500ml (1) 500ml	VOA from BTEX VOA VOA amber glass VOA I poly plastic poly plastic i poly plastic VOA amber glass amber glass amber glass VOA poly  Analytical Otherar tion Date	Hy Hy Si Na Na Ni Hy Ni Ni Ni Ni Ni Ni Ni Ni Ni Ni Ni Ni Ni	ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one one tric acid ydrochloric acid ydrochloric acid tricacid Chain-of-t <u>Decontan</u>	Filtered: []Yes, []N  Custody: [JYes, []No	ła
Joe       Coc         BTEX       BTEX         I)       MTBE         []       GRO as Gasoline         []       DRO as Diesel         []       Methane         []       Methane         []       HACH         []       Lead         []       VPH         []       EPH         []       VOC'S         []       Total Metals         []       Laboratory:         STL:       [] Arvada, CO         Meter       Serial         pH       /////	(2) 40 ml Extracted (2) 40 ml (2) 1-liter (1) 40 ml (1) 250 m (1) 1-liter (1) 125 m (3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500ml (1) 500m	VOA from BTEX VOA VOA amber glass VOA il poly plastic poly plastic il poly plastic VOA amber glass amber glass VOA poly Analytical Other <u>Lar</u> tion Date <u>9 - 1 6</u>	Hy Hy Su Na Na Hy Hy Na Hy NA Hy NA HA HA HA HA HA HA HA HA HA HA HA HA HA	vdrochloric acid ydrochloric acid ulfuric acid ulfuric acid ydrochloric acid one one tric acid ydrochloric acid ydrochloric acid ydrochloric acid tricacid Chain-of- Decontan	Filtered: []Yes, []N  Custody: [JYes, []No <u>sination</u> Nitric Acid: Yes [	√o ≁No[]
Joe       Coc         BTEX       BTEX         BTEX       GRO as Gasoline         BTEX       DRO as Gasoline         DRO as Gasoline       DRO as Diesel         Methane       Sulfate         HACH       Lead         VPH       EPH         PAHs       VOC'S         Total Metals       I         Laboratory:       STL: [] Arvada, CO         Meter       Serial         pH       /////	(2) 40 ml Extracted (2) 40 ml (2) 1-liter (1) 40 ml (1) 250 m (1) 1-liter (1) 125 m (3) 40 ml (2) 1-liter (3) 40 ml (1) 500ml (1) 500ml (1) 500ml (1) 500ml (2) 1-liter (3) 40 ml (1) 500ml (1) 500m	VOA If rom BTEX VOA VOA amber glass VOA I poly plastic poly plastic il poly plastic VOA amber glass amber glass amber glass VOA poly Analytical Other <u>Lar</u> <u>tion Date</u>	Hy Hy Su Hy Na Na Hy Na Hy Na Na Na Hy Na Na Na Na Na Na Na Na Na Na Na Na Na	ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one one tric acid ydrochloric acid ydrochloric acid tricacid Chaln-of- Decontan : Yes [ ] No [ ] Yes ] No [ ]	Filtered: []Yes, []N 	No }→TNo[]
Image: Control of the second secon	(2) 40 ml Extracted (2) 40 ml (2) 1-liter (1) 40 ml (1) 250 m (1) 1-liter (1) 125 m (3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500ml (1) 500ml D, [] Austin, TX, [] Northerm No. Calibra 100 999 1 3	VOA from BTEX VOA VOA amber glass VOA I poly plastic poly plastic il poly plastic VOA amber glass amber glass VOA poly Analytical Other <u>Lar</u> tion Date <u>- 9 - 1 6</u>	Hy Hy Hy Su Hy Na Na Na Hy Na Na Na Na Na Na Na Na Na Na Na Na Na	vdrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one one tric acid ydrochloric acid ydrochloric acid tricacid Chain-of- Decontan : Yes [ ] No [ ] Yes [ ] No [ ]	Filtered: []Yes, []N Custody: [PYes, []No <u>nination</u> Nitric Acid: Yes [ DI Water: Yes [, Steam: Yes [	№0 ↓No[] ↓-No[] } No[
Image: Control BTEX         Image: Image: Control BTEX         Image: Ima	(2) 40 ml Extracted (2) 40 ml (2) 1-liter (1) 40 ml (1) 250 m (1) 1-liter (1) 125 m (3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500ml (1) 500ml (1) 500ml (2) 1-liter (3) 40 ml (1) 500ml (1) 500ml (1) 500ml (2) 1-liter (3) 40 ml (1) 500ml (2) 1-liter (3) 40 ml (1) 250 ml (2) 1-liter (3) 40 ml (1) 250 ml (2) 1-liter (3) 40 ml (1) 500ml (2) 500ml (2) 500ml (3) 500ml (2) 500ml (3) 50	VOA from BTEX VOA VOA amber glass VOA I poly plastic poly plastic I poly plastic VOA amber glass amber glass amber glass VOA poly Analytical Other-Lar tion Date - 9 - 1 6	Hy Hy Su Hy Na Na Hy NA Hy NA Hy NA Hy NA HA H HA HA HA HA HA HA HA HA HA HA HA	ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid tricacid Chain-of- Decontan : Yes [ ] No [ ] Yes [ ] No [ ]	Filtered: []Yes, []N 	₩0 ₩N0[] ₩N0[] N0[]

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Project:	the area	Sample Da	te	<u>-/0</u>	ime:	_Well ID:	$\mathcal{O}$
Personnel:	<u> yn nr</u>		Weather:	audy f	wood		
Casing Diameter/	Туре:	pre	_Measuring Point D	escription:T	OC North Side		
Well Depth (feet b	below measuring point	):2	Deptł	1 to Water	(0,13)	ft water	
Screen:			Depti	1 to Product			
			WELL EV	CUATION	/		
Method: [] Mech	anical Bailer, [] Galva	anized Bailer, [] PVC	Bailer, []Disp. Poly	yethylene Bailer, [] S	SST Bailer, M Subme	ersible Pump, [] Low I	Flow
.102	gal./ft * = one	casing volume	gals. x 3 = pur	ge volume	2 gals.		
2* * SCH 40 Pipe	' well = 0.163 gal./ft.	4" well ≈ 0.653 gal./	ft. 6" well = 1.469	) gal./ft. 8' well = 2	2.611 gal./ft. Any \ 2	Vell C feet in diameter	= 5.875 x (
START TIME <u>: (</u>	<u>. 1 V</u>		PURGE RATE	E BUN / gd	/	SET PUMP:	<u>,                                    </u>
			EVACUAT	<u>ION DATA</u>			
Time	<u>pH</u>		Temp	<u>ORP</u>	SC Om Carl		DTM
1150	10.07	0,29	7135	117.0	104	1	
113A	$\frac{0.50}{6-9}$	0.20	9.15	1/7, +	2440		
11.) 7			1.10	110.7	0470		
						-	
TOTAL GALLON	s: 5						
			WELL SA	AMPLING		/ /	
	: [] Disposable Poly E	3ailer, [] Submersible	Pump, [] Low Flo	w, [] Other: <u>Peri Pu</u>	<u>imp_</u> Sample Type: ()	Natural, [V Duplicate,	[] Field B
Sampling Method	meter	Sample Co	ntainer	<u>P</u>	reservative		
Sampling Method Para Sec	COL		~				
Sampling Method Para SCC [] BTEX	E COL	(2) 40 ml V Extracted f	rom BTEX VOA	H	ydrochloric acid ydrochloric acid		
Sampling Method Para Seco BTE2 [] BTE2 [] MTB [] GRO [] DRO	K E as Gasoline as Diesel	(2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a	rom BTEX VOA OA mber glass	H H S	ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid		
Sampling Method Pata BTE2 [] MTB [] GRO [] DRO [] Meth [] Sulfa	E as Gasoline as Diesel ane te	(2) 40 mi V Extracted f (2) 40 mi V (2) 1-liter a (1) 40 ml V (1) 250 ml	oA rom BTEX VOA OA mber glass OA poly plastic	H H S H N	ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid lone		
Sampling Method Para SUP DEP DEP DEP DEP DEP DEP DEP DE	E as Gasoline as Diesel ane te H	(2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml	OA rom BTEX VOA OA mber glass OA poly plastic oly plastic poly plastic	н н н 9 н 2 2 2 2	ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid lone lone litric acid	Filtered: []Yes, []N	40
Sampling Method Para BTE2 BTE3 BTE	E as Gasoline as Diesel ane te H	(2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a	OA rom BTEX VOA OA mber glass OA poly plastic oly plastic poly plastic OA mber glass	н н н я 9 н 2 2 1 н 1 н	ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid lone lihic acid lydrochloric acid ydrochloric acid	Filtered: []Yes, []N	ю
Sampling Method Pata BTE2 BTE2 BTE2 BTE3 B	E as Gasoline as Diesel ane te H	(2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V	OA rom BTEX VOA OA mber glass OA poly plastic oly plastic poly plastic OA mber glass mber glass OA	<b>н</b> н н о н о о о о о о о о о о о о о о о	ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid lone lone litric acid ydrochloric acid ydrochloric acid lone ydrochloric acid	Filtered: []Yes,[]N	ю
Sampling Method Para SUP DEP DEP DEP DEP DEP DEP DEP DE	S Metals	(2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 125 ml (3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V (1) 500ml p	OA rom BTEX VOA OA mber glass OA poly plastic poly plastic poly plastic OA mber glass Mber glass OA OA	<b>т</b> т т <i>ю</i> т 2 <i>2</i> 2 т т <i>2</i> т 2 <i>-</i>	ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid lone litric acid ydrochloric acid ydrochloric acid ydrochloric acid lone ydrochloric acid litricacid	Filtered: []Yes, []N	ю
Sampling Method Para BTED B	CCDC X E as Gasoline ane te H S 'S Metals	(2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (3) 40 ml V (1) 500ml p	OA from BTEX VOA OA mber glass OA poly plastic oly plastic poly plastic OA mber glass Mber glass OA ooly	ння с и и и и и и и и и и и и и и и и и и	ydrochloric acid ydrochloric acid ulfuric acid ulfuric acid ydrochloric acid lone lone litric acid ydrochloric acid lydrochloric acid lone lydrochloric acid lone	Filtered: {]Yes, []N	ю
Sampling Method           Para           J           BTE2           J           BTE2           J           BTE2           J           BTE2           BTE2     <	CCDCL E as Gasoline as Diesel ane tte H S 'S Metals [] Arvada, CO, [] Au	(2) 40 mi V Extracted f (2) 40 mi V (2) 1-liter a (1) 40 mi V (1) 250 mi (1) 1-liter p (1) 125 mi (3) 40 mi V (2) 1-liter a (3) 40 mi V (1) 500mi p 	OA oran BTEX VOA OA mber glass OA oly plastic ooly plastic ooly plastic OA mber glass OA OA OA OA	н н ч ч ч ч ч ч ч ч ч ч ч ч ч ч ч ч ч ч	ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid lone lone litric acid ydrochloric acid lone ydrochloric acid lone ydrochloric acid litricacid 	Filtered: []Yes, []N	ło
Sampling Method Para BTE2 BTE3	S Metals Serial No.	(2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V (1) 500ml p stin, TX, [] Northern A	OA from BTEX VOA OA mber glass OA oly plastic oly plastic oly plastic OA mber glass OA mber glass OA mber glass OA moly light of the light malytical Other light on Date O, 1 )	нн н х х т т т т т т т т т т т т т т т т	ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid lone litric acid ydrochloric acid ydrochloric acid ydrochloric acid litricacid 	Filtered: []Yes, []N  Custody: [ <del>]</del> Yes, []No ination	No
Sampling Method Para BTE BTE BTE BTE BTE BTE BTE BTE	S Metals Arvada, CO, [] Aur Serial No.	(2) 40 mi V Extracted f (2) 40 mi V (2) 1-liter a (1) 40 mi V (1) 250 mi (1) 1-liter p (1) 125 mi (3) 40 mi V (2) 1-liter a (3) 40 mi V (1) 500mi p stin, TX, [] Northern A <u>Calibrati</u>	OA from BTEX VOA OA mber glass OA oly plastic oly plastic poly plastic OA mber glass OA mber glastic OA mber glass OA mber glass OA Magnetic OA mber glass OA Magnetic M	H H S H N N N H N N N H N N N N N N N N	ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid lone lone litric acid ydrochloric acid ydrochloric acid litricacid 	Filtered: [] Yes, [] N Custody: [] Yes, [] No ination Nitric Acid: Yes,	No [
Sampling Method           Para           BTE2           BTE2           BTE3           BTE	S Metals Arvada, CO, [] Au Serial No.	(2) 40 mi V Extracted f (2) 40 mi V (2) 1-liter a (1) 40 mi V (1) 250 mi (1) 1-liter p (1) 125 mi (3) 40 mi V (2) 1-liter a (3) 40 mi V (1) 500mi g stin, TX, [] Northern A <u>Calibrati</u>	OA rom BTEX VOA OA mber glass OA oly plastic ooly plastic OA mber glass OA mber glass OA mber glass OA mber glass OA mber glass OA mber glass OA mber glass OA OA Date OA OA OA OA OA OA OA OA OA OA	H H S N N N H H N H N H N H N H N Liquinox:	ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid lone litric acid ydrochloric acid ydrochloric acid litricacid Chain-of-C Decontam r: Yes [ ] No [ ]	Filtered: []Yes, []N 	No [ ]

ersonnel: $\underline{\mathcal{P}}$	M DO		Weather:	oudy + c	col		
asing Diameter/T	ype:	PVC	_Measuring Point D	escription:T	OC North Side		
ell Depth (feet be	low measuring point)	: 91	Dept	h to Water	2:31	10.77	t water
creen:			Dept	h to Product			
							<u></u>
ethod: []Mechar	nical Bailer [] Galva	nized Bailer (1 PVC	Bailer () Disp Pol	vetbylene Bailer [19	SST Bailer	mersible Pump	
.163	gal./ft * = one (	casing volume	aals. x 3 = pu	$r_{ae volume} 39$	v dals.	interenere i enriet (	
CH 40 Pipe * 2* v	well = 0.163 gal./ft.	4" well = 0.653 gal./		9 gal./ft. 8" well = 2	2.611 gal./ft. Ar	w Well C feet in dia	ameter = 5.875 x $C^2$
	240	-	PURGE RATE:	g Am	·	SET PUMP:	25
			EVACUAT	TION DATA			
Time	р <u>Н</u>	DO	Temp	ORP	SC		<u> </u>
245	7.17	22,09	9.94	98,3	1238	3	
4 <u>58</u>							
1241							
QAT_							
256	6.95	1.06	9.95	95.9	1238		
360	6,94	0.89	9,93	95,0	12393		
1300	0.93	0,70	9.93	94.0	1237		
201	10 G1	0,10	999	617	1230		
J <i>a</i> 24		0,00	/s/@				
OTAL GALLONS:	43						
			WELL S	AMPLING			
ampling Method:	[] Disposable Poly B	ailer, []Submersible	Pump, [] Low Flo	w, [] Other: Peri Pu	<u>mp_</u> Sample Type:	[]Natural, []Du	olicate, [ ] Field Blank
Param	eter	ے <u>Sample Co</u>	ntainer	P	reservative		
BTEX		(2) 40 ml V	AC	Hy	ydrochloric acid		
GRO a	is Gasoline	(2) 40 ml V	OM BIEX VOA	H) Hy	ydrochloric acid ydrochloric acid		
Methar	16	(1) 40 ml V (1) 250 ml r	DA DA	Hy	ydrochloric acid		
HACH		(1) 1-liter po (1) 125 ml s	oly plastic	N	one itric acid	Filtereri' 11 Y	es El No
VPH		(3) 40 mi V (2) 1-liter ar	DA mber class	H	ydrochloric acid	i norodi [] i	50,[],(0
PAHs VOC'S	i i	(2) 1-liter a (3) 40 ml V	mber glass OA	No	one ydrochloric acid		
Total N	1etals	(1) 500ml p	oly	Ni	itricacid		
							-
iboratory: <u>STL</u> : [	] Arvada, CO, [ ] Aus	tin, TX, [] Northern A	nalytical Other	scaster Energy	Chain-c	of-Custody: Lives,	[ ] No
eter	Serial No.	Calibratio	on Date	_	Decont	amination	
	111111111111111111111111111111111111111	71	1-14	Potable Water	: Yes [ No [	] Nitric Acid:	Yes [ No [ ]
1	1						

A.	to Ann	1_ GROL	INDWATER		i <b>LOG</b> パナワイ	C .	r-10
Project: Du	neurea la	Sample Dat			ime: 1530		
Personnel: _	Nay DC	This	Weather:	ully of	sug to		
Casing Diameter/T	ype:7 7	PUC ISA	_Measuring Point D	escription:T	OC North Side		
Well Depth (feet be	elow measuring point)	: <u>    (74</u>	Depti	to Water	3,80	ft wate	ır
Зстееп:			Depth	to Product			
			WELL EVA	CUATION	/		
Aethod: [] Mecha	nical Bailer, [] Galva	nized Bailer, [] PVC	Bailer, [] Disp. Poly	vethylene Bailer, []	SST Bailer, [] Subme	ersible Pump, [] Low	Flow
653	gal./ft * = one o	casing volume	D gals. x 3 = pur	ge volume <u>36</u>	Ogals.		,
SCH 40 Pipe * 2*	well = 0,163 gal./ft.	4" well = 0.653 gai./	it. 6" well ≖ 1.469	) gai./ft. 8" well ≕	2.611 gal./ft. Any V	Vell C feet in diameter	$r = 5.875 \times C^2$
	<u>42</u> (			Sapme		SET PUMP:	<u>5</u>
			2 EVACUAT	ION DATA		10	0
Time	р <u>Н</u>	DQ	Temp	ORP	SC	TURBIDITY	DTW
1508	7.74	321	1.44	14.9	1490		
1510	7.72	2-610	9.41	16.9	1490		
1515	7.66	2.32	9.59	23.7	1490		
1520	7.54	2.30	9.81	24,5	1490		
1525	7.52	2.09	10.48	24.3	1490		
15,30	7.52	2010	10.58	23,5	1490		
	· ·						
						· · · · ·	
	him	<b>1</b>	1	<u> </u>		II	
OTAL GALLONS	12						
			WELL SA				
ampling Method:	[] Disposable Poly B	ailer, A Submersible	Pump, [] Low Flor	w, [] Other: Peri Pu	mp Sample Type: [J	Natural, [] Duplicate	, [] Field Blan
Param	neter	Sample Co	ntainer		reservative		
1 BTEX		(2) 40 ml V(	 A		vdrochloric acid		
) MTBE	as Gasoling	Extracted fr	om BTEX VOA	H	ydrochloric acid		
DRÖ a	as Diesel	(2) 1-liter a	nber glass	S	ulfuric acid		
J Metha ] Sulfate	ine e	(1) 40 ml V (1) 250 ml g	UA poly plastic	H N	yarochloric acid one		
] HACH ] Lead	l	(1) 1-liter pr (1) 125 ml r	oly plastic poly plastic	N N	one itric acid	Filtered: [] Yes. []	No
] VPH ] EPH		(3) 40 mi V (2) 1-liter a	DA nber glass	н	ydrochloric acid ydrochloric acid		
] PAHs		(2) 1-liter a	nber glass	N	one		

[] [] [] [] []	VPH EPH PAHs VOC'S Total Metals	(3) 40 ml VOA (2) 1-liter amber glass (2) 1-liter amber glass (3) 40 ml VOA (1) 500ml poly	Hydrochloric acid Hydrochloric acid None Hydrochloric acid Nitricacid
L J Laborator Meter	y: <u>STL</u> : [] Arvada, CO, [] Austin, 7 Serial No.	X, [] Northern Analytical Other Lau Calibration Date	Chain-of-Custody: []Yes, []No
рH	1/M 100	791 3-9-16	Potable Water: Yes [ / No [ ] Nitric Acid: Yes [ / No [ ]
SC		·····	Liquinox: Yes [ / No [ ] DI Water: Yes [ / No [ ]
ORP			Methanol: Yes [] No [] Steam: Yes [] No []
DO Comment	" well from	, down to a	2 in Smin sessit @ 100

		ne: <u>  bdd</u> <u>bacedj Ce</u> DC North Side <u> </u> (b i b 5	(6 \$	<u> </u>
Weather: Measuring Point Do 13 Depth Depth WELL EVA tailer, {] PVC Bailer, [] Disp. Poly Calls x 3 = pure	Dauty () escription:TC to Water to Product ACUATION vethylene Bailer. 11 S	excedy Ce IC North Side (6 1 6 5	ft water	
Measuring Point Do <u>13</u> Depth Depth <u>WELL EVA</u> tailer, {] PVC Bailer, [] Disp. Poly U	to Water      to Product      XCUATION     yethylene Bailer. 11 S	00 North Side	ft water	
13 Depth Depth <u>WELL EVA</u> tailer, {] PVC Bailer, [] Disp. Poly unique cals x 3 = pure	to Water to Product ACUATION yethylene Bailer, f1S	leibr 5	ft water	
Depth WELL EVA	to Product			
WELL EVA	CUATION	Ĵ.		
ailer, [] PVC Bailer, [] Disp. Poly	vethylene Bailer. 11S		<u>ر</u>	
		ST Bailer, M Subm	ersible Pump, [] Low F	low
U = 0.652 a=1 (t) = 61 well = 1.460	ge volume	gais.		E 075 4 02
	GDMA	.өттдагла. Апу	CET DUMP,	1 5.875 X C
EVACUAT			SET POMP:	
DO Temo	OBP	50		DTW
1.17 5.50	14/0.0	288		<u> </u>
58 5.77	148.5	285	·	
.48 7.20	148.6	417		
,44 7.59	135.6	431		
41 7.82	131,3	435		
WELL SA	wert ING	na Camala Turri d	Alexand 13 Durality	
A Submersible Pump, [] Low Flow	w, [] Other: <u>Peri Par</u>	np_sample Type: [	A Natural, []Duplicate,	1 Lieia Risuk
Sample Container	<u>Pr</u>	eservative		
(2) 40 ml VOA Extracted from BTEX VOA	Hy Hy	drochloric acid drochloric acid		
(2) 40 ml VOA (2) 1-liter amber glass	Hy Su	drochloric acid Ifuric acid		
(1) 40 ml VOA	Hy	drochloric acid		
(1) 1-liter poly plastic	No	ine		
	volumegals. x 3 = pur II = 0.653 gal./ft. 6' well = 1.469 PURGE RATE; $PURGE RATE; PURGE RAT$	Bailer, [] PVC Bailer, [] Disp. Polyethylene Bailer, [] S volumegals. x 3 = purge volumee M = 0.653  gal./ft. 6" well = 1.469 gal./ft. 8" well = 2 PURGE RATE: $\frac{19}{Pm}$ EVACUATION DATA <u>EVACUATION DATA</u> <u>DO Temp QRP</u> $\frac{0.777}{5.50}$ <u>1400,0</u> $\frac{0.58}{5.777}$ <u>148,5</u> $\frac{148}{7.20}$ <u>148,6</u> $\frac{148}{7.20}$ <u>148,6</u> $\frac{148}{7.57}$ <u>135,6</u> $\frac{148}{7.57}$ <u>135,6</u> $\frac{117}{7.82}$ <u>135,6</u> $\frac{11}{7.82}$ <u>131,8</u> <u>WELL SAMPLING</u> Submersible Pump, [] Low Flow, [] Other: Peri Pur Sample Container Pr (2) 40 ml VOA Hy (2) 40 ml VOA Hy (2) 1-liter amber glass Su (1) 40 ml VOA Hy (1) 250 ml poly plastic No	Bailer, [] PVC Bailer, [] Disp. Polyethylene Bailer, [] SST Bailer, <b>1</b> Subm volumegals. x 3 = purge volumegals. II = 0.653 gal./t. 6* well = 1.469 gal./t. 8* well = 2.611 gal./t. Any PURGE RATE:PPM EVACUATION DATA <u>PURGE RATE:PPM</u> <u>EVACUATION DATA</u> <u>DO Temp QRP SC</u> <u>0.777 5.50 //H(0,0 288)</u> <u>0.58 5.777 1/8.5 2.855</u> <u>./48 7.20 1/48.0 4/177</u> <u>./44 7.57 1/35.0 4/31</u> <u>./41 7.82 (3).8 4/35</u> <u>./41 7.82 (3).73 4/35</u> <u>./41 7.85 4/35 4/35</u> <u>./41 7.85 4/35 4/35 <u>./41 7.85 4/35 4/35 4/35 <u>./41 7.85 4/35 4/35 4/35 <u>./41 7.85 4/35 4/35 4/35 4/35 <u>./41 7.85 4/35 4/35 4/35 <u>./41 7.85 4/35 4/35 4/35 4/35 <u>./41 7.85 4/35 4/35 4</u></u></u></u></u></u></u>	bailer, [] PVC Bailer, [] Disp. Polyethylene Bailer, [] SST Bailer, f] Submersible Pump, [] Low F volume gals. x 3 = purge volume gals. II = 0.653 gal./ft. 6* well = 1.469 gal./ft. 6* well = 2.611 gal./ft. Any Well C feet in diameter = PURGE RATE: PPTA SET PUMP: EVACUATION DATA $\underline{PQ}$ Temp QEP SC TURBIDITY 0.777 5.50 ///(0,0 088 0.58 5.777 //0.857 0.857 

...

Comments: \_\_\_

	Methane Sulfate HACH Lead VPH EPH PAHs VOC'S Total Metals	<ol> <li>(1) 40 ml VOA</li> <li>(1) 250 ml poly plastic</li> <li>(1) 1-liter poly plastic</li> <li>(3) 40 ml VOA</li> <li>(2) 1-liter amber glass</li> <li>(2) 1-liter amber glass</li> <li>(3) 40 ml VOA</li> <li>(1) 500ml poly</li> </ol>	Hy No Nit Hy Hy No Hy	drochloric a ne ric acid drochloric a drochloric a ne drochloric a ricacid	acid acid acid	Filtered: [] Ye	es, ( ] No	
[] Laboratory:	<u>STL</u> : [] Arvada, CO, [] Austin, TX, [	] Northern Analytical Other	En Eng	c	Chain-of-Cu	- istody:_[]*Yes,	[]No	
Meter	Serial No.	Calibration Date		<u>r</u>	Decontamin	ation		
рH	1(M 100 99/	3-9-16	Potable Water:	Yes [ 🦯	No[]	Nitric Acid:	Yes 🛃	No [ ]
SC			Liquinox:	Yes [ 🖊	No[]	DI Water:	Yes [ 🖌	No [ ]
ORP			Methanol:	Yes[]	No ( 1	Steam:	Yes[]	No [
DO								

TETRATEC	CH the Are	GROU			LOG		1798-6
Project:	MA BQ	Sample Dat	Meather:	POPAY C	me: <u>00/-</u>	Well ID:	
Casing Diameter/		-2"PUC	Measuring Point D	escription: T	C North Side	<u>,</u>	
Well Depth (feet b	elow measuring point)	13	Depth	to Water	,39	ft w	ater
Screen:			Depth	to Product		· · · · ·	
	*******			<u></u>			
Method: []Mecha	nical Bailer, [] Galva gal./ft * = one o	nized Bailer, [] PVC casing volume	Bailer, () Disp. Poly 3 gals. x 3 = pure	rethylene Bailer, [] S ge volume	ST Bailer, [{Subme	rsible Pump, [] L	ow Flow
SCH 40 Pipe * 2*	well = 0.163 gal./ft.	4* well = 0.653 gal./	ft. 6" weil = 1.469	gal./ft. 8 well = 2	2.611 gal./ft. Any W	Vell C feet in diame	eter = 5.875 x C <sup>2</sup>
START TIME	8 <i>0</i> 0		PURGE RATE	al Jum		SET PUMP <u>: /4</u>	<u>s</u>
			EVACUAT	ION DATA			
Time	pH	<u>D0</u>	Temp	ORP	<u>\$C</u>	TURBIDITY	<u>DTW</u>
803	6.43	95.0	8.54	148.8	244		
305	6.77	4,46	8.64	124,1	238		
607	6.81	3,14	8.64	121.6	239		
810	6.83	2.30	8.61	116.2	240		
							•
TOTAL GALLONS						L	
			WELL SA	MPLING		/	
Sampling Method:	[] Disposable Poly 8	lailer, [/Submersible	Pump, [] Low Flow	w, [] Other: <u>Peri Pu</u>	<u>mp_</u> Sample Type: [/]	Natural, [·] Duplic	ate, [ ] Field Blank
Paran	neter P.COC	Sample Co	ntainer	<u>P</u>	<u>eservative</u>		
() BTEX () MTBE		(2) 40 ml V Extracted fr	OA rom BTEX VOA	H	/drochloric acid /drochloric acid		
[] GRO	as Gasoline as Diesel	(2) 40 ml V (2) 1-liter a	OA mber glass	H	/drochloric acid Ifuric acid		
[] Metha	ine e	(1) 40 ml V (1) 250 ml i	OA poly plastic	H	/drochloric acid		
[] HACH	1	(1) 1-liter p	oly plastic	N			( ) NI-
[] Lead		(1) 125 mi (3) 40 ml V	OA	N H	tric acid /drochloric acid	Hitered: [] Yes,	i i no
4.1 ····		(2) 1-liter a	mber glass	H	/drochloric acid		
[] EPH [] PAHs		(2) 1-liter a	mber glass	Nº.	2110		
[] EPH [] PAHs [] VOC'S [] Total	S Metals	(2) 1-liter a (3) 40 ml V (1) 500ml n	mber glass OA Iolv	H N	/drochloric acid tricacid		
[]         EPH           []         PAHs           []         VOC%           []         Total           []         —	S Metals	(2) 1-liter a (3) 40 ml V (1) 500ml p 	mber glass OA poly	N H N	/drochloric acid tricacid	_	
[]         EPH           []         PAHs           []         VOC%           []         Total           []            []            []            []            []            []            []            []            []            Laboratory: <u>STL</u> :	S Metals 	(2) 1-liter a (3) 40 ml V (1) 500ml p 	mber glass OA poly 	Gaster Energy	/drochloric acid tricacid Chain-of-C	ustody: [ <b>Y</b> es, []	No
[] EPH [] PAHs [] VOC'S [] Total [] [] Laboratory: <u>STL</u> : <u>Meter</u>	S Metals 	(2) 1-liter a (3) 40 ml V (1) 500ml p  stin, TX, [] Northern A  Qalibrati	mber glass OA Jooly 	Gaster Erngg	drochloric acid tricacid Chain-of-C Decontami	ustody: [¥es, []	No
[] ЕРН [] РАНз [] VOC <sup>4</sup> [] Total [] [] Laboratory: <u>STL</u> : <u>Meter</u> рН	S Metals [] Arvada, CO, [] Aus <u>Serial No.</u> <u>[] M. [M) 9</u>	(2) 1-liter a (3) 40 ml V (1) 500ml p 	nnalytical Other Lan on Date	Potable Water	/drochloric acid tricacid Chain-of-C <u>Decontami</u> : Yes [ ) No [ ]	iustody: []Yes, [] ination Nitric Acid: Ye	No 25 [ dNo [ ]
[] ЕРН [] РАНз [] VOC'S [] Total [] [] Laboratory: <u>STL</u> : <u>Meter</u> pH SC	S Metals [] Arvada, CO, [] Aus <u>Serial No.</u> <u>  1 M (M) Q</u>	(2) 1-liter a (3) 40 ml V (1) 500ml p 	nder glass OA woly whalytical Other <u>Lan</u> on Date	Potable Water Liquinox:	(drochloric acid tricacid Chain-of-C <u>Decontami</u> : Yes [ ) No [ ] Yes [ ] No [ ]	ustody: []Yes, [] ination Nitric Acid: Ye DI Water: Ye	No 28 [ JNo [ ] 28 [ JNo [ ]
[] EPH [] PAHs [] VOC <sup>4</sup> [] Total [] [] Laboratory: <u>STL</u> : <u>Meter</u> pH SC OBP	S Metals [] Arvada, CO, [] Aus <u>Serial No.</u> <u>[] M. [<i>JJ</i>] 9</u>	(2) 1-liter a (3) 40 ml V (1) 500ml p 	noter glass OA analytical Other <u>Lan</u> <u>on Date</u> 7 <b>0 ~ 1</b> <del>0</del>	Potable Water Liquinox: Methanol:	drochloric acid tricacid Chain-of-C <u>Decontami</u> : Yes[j No[] Yes[j No[]	ustody: [res, [] ination Nitric Acid: Ye DI Water: Ye	No 25 [ JNo [ ] 25 [ JNo [ ] 25 [ ] No [ J
[] ЕРН [] РАНз [] VOC'S [] Totall [] [] Laboratory: <u>STL</u> : <u>Meter</u> pH SC ORP	S Metals [] Arvada, CO, [] Aus <u>Serial No.</u> <u>  1 M [///) Q</u>	(2) 1-liter a (3) 40 ml V (1) 500ml p  stin, TX, [] Northern A <u>Calibrati</u>	mber glass OA woly analytical Other Lan on Date	Potable Water Liquinox: Methanol:	(drochloric acid tricacid Chain-of-C <u>Decontami</u> : Yes [ ] No [ ] Yes [ ] No [ ] Yes [ ] No [ ]	ustody: []Yes, [] ination Nitric Acid: Ye DI Water: Ye Steam: Y	No 28 [ ] No [ ] 28 [ ] No [ ] 28 [ ] No [ ]

Personnel:	NBP		Weather: 🥂	loyds.	t wool		
Casing Diameter/Ty	/pe:	PVC_	_Measuring Point D	escription:	TOC North Side_/		
Nell Depth (feet be	low measuring point)	<u>. 13</u>	Dept	h to Water	4,18	ft wate	r
Screen:			Dept	h to Product			
*•••			WELL EV	ACUATION			
Vethod: []Mechar	ical Bailer, { ] Galva	nized Baller, [] PVC	Bailer, [] Disp. Pol	yethylene Bailer, [	] SST Bailer, [/ Subi	mersible Pump, [] Low	Flow
/63	gai./ft * = one d	asing volume	$\frac{4}{2}$ gais. x 3 = pu	rge volume	1, <u>3</u> gais.		
SCH 40 Pipe * 2* v	vell = 0.163 gai./ft.	4* well = 0.653 gal./	ft. 6" well ≍ 1.46	9 gal./ft. 8".well	= 2.611 gal./ft. Any	/ Well C feet in diameter	<sup>-</sup> = 5.875 x C <sup>2</sup>
	330			galmin		SET PLIMP 11	)
, <u>e</u>			EVACUAT		<b></b>	00110m	
			EVACUA	HON DATA			
Time	p <u>H</u>		Temp	ORP	<u>SC</u>		DTW
<u> 8850 -</u>	10.85	10.10	100	1010,5	390		
832	6.79	4.63	7.53	102.9	1 397		
<u> 834</u>	6.76	4.05	7.67	98.4	400		
836	6.25	3.24	7,71	96.8	401		
<u> </u>							
TOTAL GALLONS:	6						
			······				
		,	WELL S	AMPLING			
Sampling Method:	[] Disposable Poly B	ailer, [] Submersible	Pump, [] Low Flo	w, [] Other: Peri	Pump_Sample Type:	[] Natural, [] Duplicate	, [ ] Field Bla
Param	ator	Sample Co	stainer		Presentative		
200	COC	<u>eample ee</u>	mannar		<u>I leserrative</u>		
] BTEX 1 MTBE		(2) 40 mi V Extracted fi	OA om BTEX VOA		Hydrochloric acid Hydrochloric acid		
] GRO a	s Gasoline	(2) 40 ml V	OA		Hydrochloric acid		
] DRO a ] Methar	s Diesei 1e	(2) 1-liter a (1) 40 mi V	mber glass OA		Sulturic acid Hydrochloric acid		
] Sulfate	ł	(1) 250 ml (	ooly plastic		None		
] HACH ] Lead		(1) 1-liter p (1) 125 ml	oly plastic poly plastic		None Nitric acid	Filtered: []Yes, []	No
) VPH		(3) 40 mi V	OA baralaa		Hydrochloric acid		
1 EPH		(2) 1-liter a (2) 1-liter a	mber glass mber glass		nyarochloric acid None		
J PAHS	Antalo	(3) 40 ml V	OA Ö		Hydrochloric acid		
J PAHs J VOC'S	retais	(1) 500mi p					
] PAHs ] VOC'S ] Total M ]							
PAHs           VOC'S           Total N							
Image: PAHs         PAHs           Image:	] Arvada, CO, [ ] Aus	tin, TX, [] Northern A	nalytical Other La	noester Eners	of Chain-ol	-Custody: [] Yes, [] No	þ

\_\_\_\_\_\_ Methanol: Yes [ ] No [\_] Steam: Yes [ ] No [\_]

Comments: \_\_

ORP DO

	MAR		Weather: A @	itle cha	unds Cr	cal	
o	LA " A	1/1	Weattler:				
Casing Diameter/	ype:	200	Measuring Point De		E. 9 D		
Well Depth (feet b	alow measuring point)		Depth t	o Water	0,10	ft wate	ſ
Screen:		******	Depth t	o Product			
			WELL EVAC	CUATION	_		
Method: [] Mecha	nical Bailer, [] Galva	nized Bailer, [] PVC	Bailer, [] Disp. Polye	thylene Bailer, [] S	ST Bailer, [/ Subn	nersible Pump, [] Low	Flow
- 200-	<u></u> gal./ft * = one o	casing volume	gals. x 3 = purg	e volume	gals,		
SCH 40 Pipe * 2"	well = 0.163 gal./ft.	4" well = 0.653 gal.	/ft. 6" well = 1.469 (	gal./it. 8* well = 2	.611 gal./ft. Any	Well C feet in diameter	= 5.875
START TIME: 0	854			<u>ral/min</u>		set римр <u>: 2 (</u>	$\mathcal{O}$
			EVACUATIO	N DATA			
Time	рНа	DO	Temp	ORP	SC	TURBIDITY	п
85-9	1091	RIN	Real	921	REA		~
GAD	6 92	212	919	825	229		
an1	6 02	2 19	9.00	<u>00.</u>	220		
ainte		X.FI	1.0	<u></u>	$\rho \alpha i$		
1 051	19/12	2.06	IKAL	080	126		
1010	- U. 7 A	d=00	10.01	7013			
910	1097	2910	10 09	108	273		
nois	169	298	112111	72/0	231		
0115	6.74	2.10	10.14	// .9	250		
	2 ~~						
TOTAL GALLONS	:						
						<u> </u>	
		-ilan (Kaburanaihi	<u>VVELL SAN</u>		na Ramala Tunan I		
Constinue Made de	[] Disposable Poly B	aller, ( youbmersible	e Pump, (j Low How	, [ ] Other: <u>Peri Pur</u>	np_sample Type:	Phatural, [] Duplicate	, ( ) Piek
Sampling Method:	ieter	Sample Co	ntainer		eservative		
Sampling Method: Paran	ecoe			<u>r1</u>			
Sampling Method: Param	recoe	(2) 40 ml V Extracted f		Hy Hy	drochloric acid		
Sampling Method: Paran [] BTEX [] MTBE [] GBO	IL COL	(2) 40 ml V Extracted f (2) 40 ml V	OA rom BTEX VOA OA	Hy Hy Hy	drochloric acid drochloric acid drochloric acid		
Sampling Method: Paran [] BTEX [] MTBE [] GRO : [] DRO : [] DRO :	le coe as Gasoline as Diesel ne	(2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V	'OA rom BTEX VOA 'OA Imber glass 'OA	Hy Hy Hy Su Hy	drochloric acid drochloric acid drochloric acid lfuric acid drochloric acid		
Sampling Method: Paran S Paran BTEX MTBE GRO GRO GRO GRO GRO Sulfat	le coe as Gasoline as Diesel ne 3	(2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml	OA rom BTEX VOA OA mber glass OA poly plastic churdeatic	Hy Hy Su Hy No	drochloric acid drochloric acid drochloric acid lfuric acid drochloric acid ne		
Sampling Method: Paran Paran Suffer Paran Para	le coc as Gasoline as Diesel ne 3	(2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (1) 125 ml	OA rom BTEX VOA OA mber glass OA poly plastic poly plastic poly plastic	Hy Hy Su Hy Nc Nc	drochloric acid drochloric acid drochloric acid lluric acid drochloric acid ine ine ine	Filtered: []¥€\$, [] {	No
Sampling Method: Paran BTEX BTEX MTBE GRO : BRO : CRO : C	LCOC as Gasoline as Diesel ne 3	(2) 40 mi V Extracted f (2) 40 mi V (2) 1-liter a (1) 40 mi V (1) 250 mi (1) 1-liter p (1) 125 mi (3) 40 mi V (2) 1 liter a	OA rom BTEX VOA OA mber glass OA poly plastic poly plastic poly plastic OA mber glass	Hy Hy Su Hy No No Ni Hy Hy	drochloric acid drochloric acid drochloric acid lfuric acid drochloric acid ine ine iric acid drochloric acid drochloric acid	Filtered: (,).¥€\$, ( ) {	No
Sampling Method: Paran Paran Sampling Method: BTEX Sufat Sufat Sufat Sufat HACH Lead VPH EPH PAHs	ℓ COC as Gasoline as Diesel ne 3	(2) 40 mi V Extracted f (2) 40 ml V (2) 1-ilter a (1) 40 ml V (1) 250 ml (1) 1-ilter p (1) 125 ml (3) 40 ml V (2) 1-ilter a (2) 1-ilter a	OA rom BTEX VOA OA mber glass OA poly plastic oly plastic poly plastic OA mber glass mber glass	Hy Hy Su No Ni Hy No Ni	drochloric acid drochloric acid drochloric acid líuric acid drochloric acid ne ric acid drochloric acid drochloric acid drochloric acid ne	Filtered: [المركز] Filtered: [] أ	٩o
Sampling Method: Param	le coc as Gasoline as Diesel ne s	(2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (3) 40 ml V (1) 500ml	OA rom BTEX VOA OA mber glass OA poly plastic oly plastic poly plastic OA mber glass mber glass OA	Hy Hy Su Hy No Ni Hy Hy No Ni	drochloric acid drochloric acid drochloric acid llfuric acid drochloric acid ne ne tric acid drochloric acid drochloric acid ne drochloric acid tricacid	Filtered: [,]⊁€Ŝ, [ ] {	٩o
Sampling Method: Param Param BTEX	le coc	(2) 40 mi V Extracted f (2) 40 mi V (2) 1-ilter a (1) 40 mi V (1) 250 mi (1) 1-liter p (1) 125 mi (3) 40 mi V (2) 1-liter a (3) 40 mi V (1) 500mi p	OA rom BTEX VOA OA mber glass OA poly plastic oly plastic poly plastic roly plastic roly plastic oA mber glass mber glass oA	Hy Hy Su Hy No No Hy Hy No Hy Ni	drochloric acid drochloric acid lfuric acid drochloric acid drochloric acid ine ine iric acid drochloric acid drochloric acid ine drochloric acid iricacid	Filtered: []¥ë\$, []{	٧o
Paran           []         BTEX           []         BTEX           []         BTEX           []         MTBE           []         DRO :           []         HACH           []         Lead           []         VOC'S           []         Total !           []	Image: Contract of the contract	(2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (3) 40 ml V (1) 500ml p	OA rom BTEX VOA OA mber glass OA poly plastic oly plastic poly plastic OA mber glass mber glass OA coly	Hy Hy Su Hy No Ni Hy Ni Hy Ni Hy Ni	drochloric acid drochloric acid lfuric acid drochloric acid ine ine iric acid drochloric acid drochloric acid drochloric acid ine drochloric acid ine	Filtered: []¥€\$, [] { 	٧o
Sampling Method: Paran Paran Sampling Method: Sampling Method:	le coc	(2) 40 mi V Extracted f (2) 40 mi V (2) 1-ilter a (1) 40 mi V (1) 250 mi (1) 1-ilter p (1) 125 mi (3) 40 mi V (2) 1-ilter a (3) 40 mi V (1) 500mi p 	OA rom BTEX VOA OA mber glass OA poly plastic oly plastic oly plastic OA mber glass mber glass OA poly	Hy Hy Su Hy No No Ni Hy Hy Ny Ny Ni Hy Ni Hy Ni Hy Ni	drochloric acid drochloric acid drochloric acid líuric acid drochloric acid ine ine drochloric acid drochloric acid drochloric acid ine drochloric acid ricacid Chain-of-	Filtered: [↓¥€\$, [ ] { 	₩o
Sampling Method: Paran	Image: Cocc         as Gasoline         as Diesel         ne         as         as         i         y         wetals         [] Arvada, CO, [] Aus         Serial No.	(2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (3) 40 ml V (1) 500ml f 	OA rom BTEX VOA OA mber glass OA poly plastic oly plastic oly plastic OA mber glass mber glass OA poly 	Hy Hy Su Hy Nc Ni Hy Nc Hy Ni Hy Ni aster	drochloric acid drochloric acid drochloric acid drochloric acid ne ne ric acid drochloric acid drochloric acid drochloric acid ne drochloric acid ricacid Chain-of- Decontar	Filtered: (,)¥es, () {  Custody: [/] Yes, [] No <u>nination</u>	٧o
Sampling Method: Paran	le coc as Gasoline as Diesel ne a vietals [] Arvada, CO, [] Aus <u>Serial No.</u> ] [ M 160 9	(2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (3) 40 ml V (1) 500ml f 	OA rom BTEX VOA OA mber glass OA poly plastic oly plastic poly plastic oly plastic OA mber glass OA mber glass OA analytical Other <u>Lanc</u> on Date	Hy Hy Su Hy No Ni Hy Hy Ni Aster Erectory Potable Water:	drochloric acid drochloric acid lfuric acid drochloric acid ine ine iric acid drochloric acid drochloric acid drochloric acid ine drochloric acid ricacid Chain-of- Decontar Yes [ No [ ]	Filtered: [,]¥es, [] {  Custody: [-] Yes, [] No nination Nitric Acid: Yes [	№ ,

Methanol:

Yes[] No[] Steam:

Yes[] No[\_\_\_\_

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ORP

Comments:

Personnel:	BM	BQ.	L	Weather:C	boring	+ cool	¢.	
Casing Diame	er/Type:	H" F	VC	Measuring Point D	escription: T	OC North Side		
Well Depth (fe	et below m	easuring point	25	Dept	to Water	8,90	ft wate	
Screen:		j+		Depti	to Product			
			n aan an ar an a					
				WELL EV	CUATION			
Method: [] Me	chanical B	ailer, []Galva	anized Bailer, [] PV	C Bailer, [] Disp. Poly	/ethylene Bailer, []	SST Bailer, []،Submi	ersible Pump, [] Low	Flow
<u>, 20</u>	<u> </u>	gal./ft * = one	casing volume	<u>gais.</u> x 3 = pur	ge volume (	gals,		
SCH 40 Pipe	* 2* well = ( ^\	).163 gal./it.	4" well = 0.653 ga	1./ft. 6" well = 1.469	gal./tt. 8" well =	2.611 gal./#. Any \	Well C feet in diameter	= 5.875 x
START TIME <u>:</u>		, ,		PURGE RATE: 1	MAPA		SET PUMP <u>: / </u> 2	·
				EVACUAT	ION DATA			
Time			$\frac{1}{7}$	<u>Temp</u>	ORP 1 11. 1	<u>sc</u>		DT
122	4	2,7/	$\frac{0.00}{1.00}$	10.15	10.0	200		
122		01	4.10	10.00	12.1	272		
9190	-	104	4,49		++1,0	- 20d		
							·	
						r		
		50		····		-	2	
				WELL SA				
Sampling Met	iod: []Disp	oosable Poly I	Bailer, [] Submersit	ble Pump, [] Low Flo	w, [] Other: <u>Peri P</u> u	<u>mp_</u> Sample Type: L	Natural, [] Duplicate	, [ ] Field 8
P	irameter		Sample (	Container	Ē	Preservative		
	ee c	00	(2) 40 ml	VOA	F	lydrochloric acid		
	TBE BO as Gasi	oline	Extracted (2) 40 ml	I from BTEX VOA	4	lydrochloric acid		
[] M	RO as Dies	el	(2) 1-liter	amber glass	· · ·	Sulfuric acid		
[] M [] G [] D	einane		(1) 40 mi (1) 250 m	voa Il poly plastic	r N	lone		
[] M [] G [] D [] M	lfate		(1) 1-liter	poly plastic	N N	lone litric acid	Filterad: []Ves.[]]	No
[] M [] G [] D [] M [] S	ulfate ACH		(1) 105 ~	η μοιγ μιασίίο		lydrochloric acid	i mereo, [] tes,[]]	
[] — М [] — G [] — D [] — М [] — М [] — Ц [] — Ц	ulfate ACH ead PH		(1) 125 m (3) 40 ml	VOA	F	•		
.;;	ulfate ACH Pad PH PH AHs		(1) 125 m (3) 40 ml (2) 1-liter (2) 1-liter	VOA amber glass amber glass	+ + N	iydrochloric acid		
.:	ulfate ACH ead PH PH AHs DC'S		(1) 125 m (3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml	VOA amber glass amber glass VOA	+ + N	lydrochloric acid Ione Iydrochloric acid		
	Ifate ACH PH PH AHs DC'S Dtal Metals		(1) 125 m (3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500m	VOA amber glass amber glass VOA I poly	+ + N + N	ydrochloric acid lone lydrochloric acid litricacid		
() G () G () D () M () S () H () S () H () V () E () V () T () T	ulfate ACH PH PH AHs DC'S Dtal Metals		(1) 125 m (3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500m	VOA amber glass amber glass VOA I poly	+ + - - -	iydrochloric acid Ione Iydrochloric acid Iitricacid		
.;	Ifate ACH PH PH AHs DC'S Dtal Metals	 da, CO, ( ) Au	(1) 125 m (3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500m 	VOA amber glass amber glass VOA I poly 	H H H Naster Epers	iydrochloric acid Jone Iydrochloric acid Jitricacid Chain-of-C	 Custody: {]Yes, []No	)
., []G []D []K []K []K [] [] [] Laboratory: <u>S</u> <u>Meter</u>	Ifate ACH ad PH AHs DC'S otal Metals	da, CO, ( ) Au Serial No.	(1) 125 m (3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500m  stin, TX, [] Northern Calibra	VOA amber glass amber glass VOA I poly Analytical Other tag ation Date	reaster Eperg	ydrochloric acid lone lydrochloric acid litricacid Chain-of-C Decontam	 Custody: {]Yes, [] No ination	1
,	Ifate ACH ad PH AHs DC'S Stal Metals	da, CO, ( ) Au Serial No. 1 / M ( D	(1) 125 m (3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500m 	VOA amber glass amber glass VOA I poly Analytical Other <u>tar</u> ation Date ~/ D t 16	F H H H H H H H H H H H H H H H H H H H	tydrochloric acid Jone Jydrochloric acid Jitricacid Chain-of-C <u>Decontam</u> Ir: Yes ( T No [ 1	Lustody: {]Yes, []No ination Nitric Acid: Yes I	-T No í
,	Ifate ACH add PH PH AHs DC'S otal Metals	da, CO, [] Au Serial No. 1 1 M [D]	(1) 125 m (3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500m (1) 500m (1) 500m (2)	VOA amber glass amber glass VOA I poly Analytical Other tag ation Date -/ D t //6	F H H N H N H H N H H H H H H H H H H H	iydrochloric acid Ione Iydrochloric acid Iltricacid Chain-ol-C Decontam Ir: Yes{	Custody: {] Yes, [] No ination Nitric Acid: Yes [ DI Water: Yes [	T No[
	Ifate ACH ACH PH AHs DC'S Stal Metals	da, CO, [] Au Serial No. 1 / M (D	(1) 125 m (3) 40 ml (2) 1-liter (2) 1-liter (3) 40 ml (1) 500m 	VOA amber glass amber glass VOA I poly Analytical Other <u>tea</u> <u>ation Date</u>	Potable Wate Liquinox:	iydrochloric acid Jone Jydrochloric acid Jitricacid	Custody: {] Yes, [] No ination Nitric Acid: Yes [ DI Water: Yes [	T NO[

DO

Comments: \_

Project		1	2.10	11-	1030	RT	-99
	DM B	Sample Dat	<u>- 370-</u>	<u>70</u>	me: 1000	Well ID:	11
Personnel:	<u> </u>	PIIC	Weather:	ly that	g correct	y con	
Casing Diamet	er/Type:/	15	_Measuring Point De	escription: <u>T</u>	つこ つつつ		
Well Depth (fe	et below measuring poir	it):	Depth	to Water / ( + s	<u>) «</u>	ft wate	er
Screen:		•	Depth	to Product			
			WELL EVA	CUATION	,		
Method: [] Me	chanical Bailer, [] Galv	anized Bailer, [] PVC casing volume	Bailer, [] Disp. Poly	ethylene Bailer, []S	ST Bailer, USubmi	ersible Pump, [] Low	Flow
SCH 40 Pipe	* 2* well = 0.163 gal./ft.	4* weil = 0.653 gal./	it. 6" well = 1.469	gal./ft. 8" well = 2	2.611 gal./ft, Any \	Veil C feet in diamete	r = 5.875
START TIME:	1020		PURGE RATE	OM			3
			EVACUATI	ON DATA			
Time	ъН	DO	Temp	OBP	sc	TURBIDITY	D7
1093	3 10 99	8.90	10.62	101 8	2-22	10/10/01/1	<u></u>
1000	- 7. nct	7/14	6 18	612	501		
102	MMAL	1.05	M 30	59.3	548		
1024	2 7.71	6.77	7.28	55.9	577		
TOTAL GALLC							
TOTAL GALLC	DNS:						
TOTAL GALLC	DNS:		WELL SA	MPLING			
TOTAL GALLC	NS:	Bailer, []Submersible	WELL SA Pump, [] Low Flov	<u>MPLING</u> v, []Other: <u>Peri Pu</u>	<u>mp_</u> Sample Type: [/	Natural, []Duplicate	e, [] Field
TOTAL GALLC	NS:	Bailer, []Submersible Sample Co	WELL SA Pump, [] Low Flov ntainer	<u>MPLING</u> v, []Other: <u>Peri Pur</u> <u>Pr</u>	<u>mp_</u> Sample Type: [/ : <u>eservative</u>	Natural, []Duplicate	e, [ ] Field
TOTAL GALL(	NS:	Bailer, [] Submersible Sample Co (2) 40 ml Vi Extracted fr	WELL SA Pump, [] Low Flov ntainer DA om BTEX VOA	<u>MPLING</u> v, [] Other: <u>Peri Pur</u> Pr Hy Hy	<u>mp_</u> Sample Type: [. <u>eservative</u> ydrochloric acid	Natural, []Duplicate	ə, [ ] Field
Sampling Meth	NS: ind: []Disposable Poly trameter Jeco C TEX TBE RO as Gasoline	Bailer, [] Submersible Sample Co (2) 40 ml Vi Extracted fr (2) 40 ml Vi	WELL SA Pump, [] Low Flov ntainer DA om BTEX VOA DA	MPLING /, []Other: <u>Peri Pur</u> Pr Hy Hy Hy	<u>mp_</u> Sample Type: [/ reservative ydrochloric acid ydrochloric acid ydrochloric acid	Natural, []Duplicate	ə, [ ] Field
TOTAL GALLC	DNS: nod: [] Disposable Poly <u>urameter</u> <u>DE</u> TBE RO as Gasoline RO as Diesel ethane	Bailer, [] Submersible <u>Sample Co</u> (2) 40 ml VI Extracted fr (2) 40 ml VI (2) 1-liter au (1) 40 ml VI	WELL SA Pump, [] Low Flow ntainer OA om BTEX VOA OA mber glass OA	MPLING v, [] Other: <u>Peri Pur</u> Pr Hy Hy Hy Si Hy Si	<u>mp</u> Sample Type: [. <u>eservative</u> ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid	Natural, []Duplicate	9, [ ] Field
TOTAL GALLC	DNS: Tameter Dec Co C TEX TBE RO as Gasoline RO as Diesel ethane Jifate ACH	Bailer, [] Submersible Sample Co (2) 40 ml Vi Extracted fr (2) 40 ml Vi (2) 1-liter au (1) 40 ml Vi (1) 250 ml ( (1) 1-liter pi	WELL SA Pump, [] Low Flov ntainer DA om BTEX VOA OA mber glass OA ooly plastic oly plastic	<u>MPLING</u> v, []Other: <u>Peri Pur</u> Pr Hy Hy Hy St Hy No No No	<u>mp</u> Sample Type: [/ reservative ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one one	Natural, []Duplicate	ə, [ ] Field
TOTAL GALLC	DNS: urameter DEC COC TEX TBE RO as Gasoline RO as Diesel ethane ufate ACH ead DEC DEC DES DES DES DES DES DES DES DES	Bailer, [] Submersible <u>Sample Co</u> (2) 40 ml VI Extracted fr (2) 40 ml VI (2) 1-liter au (1) 40 ml VI (1) 250 ml g (1) 1-liter pu (1) 125 ml g (3) 40 ml VI	WELL SA Pump, [] Low Flow ntainer OA om BTEX VOA OA mber glass OA ooly plastic ooly plastic ooly plastic OA	MPLING /, [] Other: <u>Peri Pur</u> Hy Hy Hy Su Hy Na Ni Hy Na	<u>mp</u> Sample Type: [. <u>eservative</u> ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one one tric acid ydrochloric acid	Natural, []Duplicate	s, [] Field No
Sampling Meth           9           ()         81           ()         81           ()         9           ()         9           ()         9           ()         9           ()         9           ()         9           ()         9           ()         9           ()         9           ()         10           ()         10           ()         10           ()         10           ()         10           ()         10           ()         10           ()         10           ()         10           ()         10           ()         10	NS: DNS: Disposable Poly <u>urameter</u> DE CO EX TEX TEX TO ES TO as Gasoline RO as Diesel ethane Jfate ACH ACH ACH PH DH DH	Bailer, [] Submersible Sample Co (2) 40 ml Vi Extracted fr (2) 40 ml Vi (2) 1-liter au (1) 40 ml Vi (1) 250 ml g (1) 1-liter pr (1) 125 ml g (3) 40 ml Vi (2) 1-liter au	WELL SA Pump, [] Low Flow Intainer DA om BTEX VOA OA mber glass DA Doly plastic Dy plastic DA poly plastic DA mber glass mber glass	MPLING ( ] Other: <u>Peri Pur</u> Pr Hy Hy St Hy No No No No No No No No No No	mp_Sample Type: [/ reservative ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one one one ydrochloric acid ydrochloric acid	Natural, []Duplicate	e, [ ] Field No
TOTAL GALLC	DNS: water Dec Co C TEX TBE RO as Gasoline RO as Diesel ethane ulfate ACH PH PH PH DH DC'S	Bailer, [] Submersible <u>Sample Co</u> (2) 40 ml VI Extracted fr (2) 40 ml VI (2) 1-liter au (1) 40 ml VI (1) 250 ml I (1) 1-liter pu (1) 125 ml I (3) 40 ml VI (2) 1-liter au (2) 1-liter au (3) 40 ml VI	WELL SA Pump, [] Low Flow ntainer OA om BTEX VOA OA mber glass OA ooly plastic ooly plastic ooly plastic OA mber glass mber glass OA	MPLING /, [] Other: <u>Peri Pur</u> Pr Hy Hy Hy Su Hy Na Ni Hy Hy Hy Hy Hy Hy Hy Hy Hy Hy Hy Hy	<u>mp</u> Sample Type: [. <u>eservative</u> ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid yne ydrochloric acid yne	Filtered: []Yes, []	s, [] Field No
TOTAL GALLC	NNS: DNS: Disposable Poly wameter DE COC TEX TBE RO as Gasoline RO as Diesel ethane uffate ACH ad PH PH AHS DC'S stal Metals	Bailer, [] Submersible Sample Co (2) 40 ml Vi Extracted fr (2) 40 ml Vi (2) 1-liter au (1) 40 ml Vi (1) 250 ml g (1) 1-liter pi (3) 40 ml Vi (2) 1-liter au (3) 40 ml Vi (2) 1-liter au (3) 40 ml Vi (1) 500ml pi	WELL SA Pump, [] Low Flow Intainer DA om BTEX VOA OA mber glass DA Doly plastic Day plastic DA mber glass DA mber glass DA OA OA	MPLING V, [] Other: <u>Peri Pur</u> Hy Hy Hy Su Hy Na Na Hy Na Hy Na Na Na Na Na Na Na Na Na Na	mp_Sample Type: [. reservative ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid tricacid	Natural, []Duplicate	9, [] Field No
Sampling Meth           Particular           []	DNS:	Bailer, [] Submersible <u>Sample Co</u> (2) 40 ml VI Extracted fr (2) 40 ml VI (2) 1-liter au (1) 40 ml VI (1) 250 ml ( (1) 1-liter pr (1) 125 ml ( (3) 40 ml VI (2) 1-liter au (3) 40 ml VI (1) 500ml p	WELL SA Pump, [] Low Flow Intainer DA om BTEX VOA DA mber glass DA oby plastic oby plastic oby plastic DA mber glass mber glass OA oly	<u>MPLING</u> /, [] Other: <u>Peri Pur</u> // Hy Hy Na Na Na Hy Na Hy Na Hy Na Hy Na Hy Na Hy Na Hy Na Hy Na Hy Na Hy Na Hy Na Hy Na Hy Na Hy Na Hy Na Hy Na Hy Na Hy Na Hy Hy Na Hy Na Hy Hy Hy Hy Hy Hy Hy Hy Hy Hy	mp_Sample Type: [. reservative ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid one tric acid ydrochloric acid ydrochloric acid ydrochloric acid tricacid	Filtered: [] Yes, []	s, [] Field No
Sampling Meth           Sampling Meth           Pi           ()         Bi           ()         Mi           ()         Ci           ()         Ci           ()         Ci           ()         Ci           ()         Vi           ()         Ci           ()         Ci           ()         Ci           ()         Ci           ()         Ci           ()         Ci	DNS:	Bailer, [] Submersible <u>Sample Co</u> (2) 40 ml Vi Extracted fr (2) 40 ml Vi (2) 1-liter au (1) 40 ml Vi (1) 250 ml pi (1) 1-liter pi (3) 40 ml Vi (2) 1-liter au (2) 1-liter au (3) 40 ml Vi (2) 1-liter au (3) 40 ml Vi (1) 500ml pi ustin, TX, [] Northern A	WELL SA Pump, [] Low Flow Intainer DA om BTEX VOA OA om BTEX VOA OA obly plastic obly plastic obly plastic obly plastic obly plastic obly plastic DA mber glass mber glass mber glass OA oly mber glass DA oly mber glass DA oly plastic DA mber glass DA oly plastic DA mber glass DA oly plastic DA oly plastic DA	MPLING ( ] Other: <u>Peri Pur</u> Pr Hy Hy Su Hy No No No No No No No No No No	mp_Sample Type: [. eservative ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid one tric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid tricacid Chain-of-0	Filtered: []Yes, []	o, [ ] Field No
Sampling Meth           Pa           []           []           []           []           []           []           []           []           []           []           []           []           []           []           []           []           []           []           Laboratory: <u>Meter</u>	DNS:	Bailer, [] Submersible <u>Sample Co</u> (2) 40 ml VI Extracted fr (2) 40 ml VI (2) 1-liter au (1) 40 ml VI (1) 250 ml VI (1) 1-liter pu (1) 125 ml ru (3) 40 ml VI (2) 1-liter au (3) 40 ml VI (1) 500ml pu ustin, TX, [] Northern A <u>Calibratin</u>	WELL SA Pump, [] Low Flow Intainer DA om BTEX VOA OA mber glass DA Doly plastic DA mber glass DA mber glass DA MB MB MB MB MB MB MB MB MB MB	MPLING ( ] Other: <u>Peri Pur</u> Hy Hy Hy Su Hy No No Hy No Hy No Hy No Hy No Hy No Hy No Hy No Hy No Hy No Hy No Hy No Hy No Hy Hy No Hy No Hy Hy Hy Hy Hy Hy Hy Hy Hy Hy	mp_Sample Type: [./ reservative ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid one tric acid ydrochloric acid ydrochloric acid ydrochloric acid tricacid 	Filtered: [] Yes, []	o, [] Field No
TOTAL GALLC         Sampling Meth         Pi         []       Bi         []       Mi         []       Gi         []       Mi         []       Mi         []       Gi         []       Mi         []       Hi         []	DNS: and: []Disposable Poly trameter DE COC TEX TBE RO as Gasoline RO as Gasoline RO as Diesel ethane date ACH AA	Bailer, [] Submersible <u>Sample Co</u> (2) 40 ml Vi Extracted fr (2) 40 ml Vi (2) 1-liter au (1) 40 ml Vi (1) 250 ml Vi (1) 1250 ml Vi (1) 125 ml ( (3) 40 ml Vi (2) 1-liter au (3) 40 ml Vi (1) 125 ml (1) 1-liter au (3) 40 ml Vi (1) 100 ml Vi (2) 1-liter au (3) 40 ml Vi (1) 500	WELL SA Pump, [] Low Flow Intainer DA om BTEX VOA OA om BTEX VOA OA obly plastic obly plastic DA mber glass DA obly plastic DA obly plastic DA	MPLING ( ] Other: <u>Peri Pur</u> Hy Hy Sti Hy Sti Hy No No No No No No No No No No	mp_Sample Type: [. reservative ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid tricacid Chain-of-C Decontam : Yes [ ( No [ ]	Filtered: [] Yes, [] Custody: [] Yes, [] N ination Nitric Acid: Yes	o, [] Field No o
TOTAL GALLC           Sampling Meth           Pa           []         Bi           []         Bi           []         Bi           []         Mi           []         Gi           []         Mi           []         Gi           []         Mi           []         Ci           []         P/           []         VG           []         To           []         To <t< td=""><td>DNS:</td><td>Bailer, [] Submersible <u>Sample Co</u> (2) 40 ml VI Extracted fr (2) 40 ml VI (2) 1-liter au (1) 40 ml VI (1) 250 ml p (1) 1-liter pu (1) 125 ml r (3) 40 ml VI (2) 1-liter au (3) 40 ml VI (1) 500ml p ustin, TX, [] Northern A <u>Calibratin</u> <u>3 - [1]</u></td><td>WELL SA Pump, [] Low Flow Intainer DA om BTEX VOA OA oby plastic oby plastic oby plastic oby plastic OA oby plastic oby plastic OA oby plastic OA oby plastic OA oby plastic OA oby plastic OA oby plastic OA oby plastic OA oby plastic OA oby plastic DA oby plastic OA oby Plastic OA</td><td>MPLING ( ] Other: <u>Peri Pur</u> Hy Hy Hy Su Hy No No No No No No No No No No</td><td>mp_Sample Type: [. reservative ydrochloric acid ydrochloric acid tricacid Chain-of-C <u>Decontam</u> : Yes [ ] No [ ]</td><td>Filtered: [] Puplicate Filtered: [] Yes, [] Dustody: [] Yes, [] N ination Nitric Acid: Yes DI Water: Yes</td><td>o (1) Field No (1) No (1) No (1) No</td></t<>	DNS:	Bailer, [] Submersible <u>Sample Co</u> (2) 40 ml VI Extracted fr (2) 40 ml VI (2) 1-liter au (1) 40 ml VI (1) 250 ml p (1) 1-liter pu (1) 125 ml r (3) 40 ml VI (2) 1-liter au (3) 40 ml VI (1) 500ml p ustin, TX, [] Northern A <u>Calibratin</u> <u>3 - [1]</u>	WELL SA Pump, [] Low Flow Intainer DA om BTEX VOA OA oby plastic oby plastic oby plastic oby plastic OA oby plastic oby plastic OA oby plastic OA oby plastic OA oby plastic OA oby plastic OA oby plastic OA oby plastic OA oby plastic OA oby plastic DA oby plastic OA oby Plastic OA	MPLING ( ] Other: <u>Peri Pur</u> Hy Hy Hy Su Hy No No No No No No No No No No	mp_Sample Type: [. reservative ydrochloric acid ydrochloric acid tricacid Chain-of-C <u>Decontam</u> : Yes [ ] No [ ]	Filtered: [] Puplicate Filtered: [] Yes, [] Dustody: [] Yes, [] N ination Nitric Acid: Yes DI Water: Yes	o (1) Field No (1) No (1) No (1) No
TOTAL GALLC           Sampling Meth           Pi           []         Bi           []         Bi           []         Mi           []         Gi           []         Mi           []         Gi           []         Mi           []         Hi           []         Hi <t< td=""><td>DNS:</td><td>Bailer, [] Submersible <u>Sample Co</u> (2) 40 ml Vi Extracted fr (2) 40 ml Vi (2) 1-liter au (1) 40 ml Vi (1) 250 ml p (1) 125 ml p (3) 40 ml Vi (2) 1-liter au (2) 1-liter au (2) 1-liter au (3) 40 ml Vi (1) 500ml p </td><td>WELL SA Pump, [] Low Flow Intainer DA om BTEX VOA OA om BTEX VOA OA obly plastic obly plast</td><td>MPLING ( ] Other: <u>Peri Pur</u> Hy Hy Su Hy Su No No No No No No No No No No</td><td>mp_Sample Type: [. reservative ydrochloric acid ydrochloric acid tricacid Chain-of-C Decontam : Yes [ ] No [ ] Yes [ ] No [ ]</td><td>Filtered: [] Yes, [] Custody: [] Yes, [] N ination Nitric Acid: Yes DI Water: Yes Steam: Yes</td><td>o No No No No No No No No No N</td></t<>	DNS:	Bailer, [] Submersible <u>Sample Co</u> (2) 40 ml Vi Extracted fr (2) 40 ml Vi (2) 1-liter au (1) 40 ml Vi (1) 250 ml p (1) 125 ml p (3) 40 ml Vi (2) 1-liter au (2) 1-liter au (2) 1-liter au (3) 40 ml Vi (1) 500ml p 	WELL SA Pump, [] Low Flow Intainer DA om BTEX VOA OA om BTEX VOA OA obly plastic obly plast	MPLING ( ] Other: <u>Peri Pur</u> Hy Hy Su Hy Su No No No No No No No No No No	mp_Sample Type: [. reservative ydrochloric acid ydrochloric acid tricacid Chain-of-C Decontam : Yes [ ] No [ ] Yes [ ] No [ ]	Filtered: [] Yes, [] Custody: [] Yes, [] N ination Nitric Acid: Yes DI Water: Yes Steam: Yes	o No No No No No No No No No N

Project: <u>DU</u> Personnel: <u> </u>	We User	Sample Dat	te <u>3-/0-</u> Weather:	-16_TI County y	me: ////	Well ID:	17-
Casing Diameter/Ty	/pe:P	12.5	_Measuring Point De	scription: <u>T</u>	C North Side	ft	-
Screen:	iow measuring point,		Depth	to Product		it wate	ſ
Method: [] Mechar	ical Bailer, {}Gaiva	nized Bailer, [] PVC casing volume	$\frac{\text{WELL EVA}}{\text{Bailer, [] Disp. Polyo}}$	CUATION ethylene Bailer, [] S le volume/ —	ST Bailer, [1]Subm B, 7gals.	ersible Pump, [] Low	Flow
SCH 40 Pipe * 2* v START TIME <u>:     </u>	vell = 0.163 gal./ft.	4* well ≃ 0.653 gal./	ft. 6" well = 1.469 PURGE RATE <u>: / /</u>	gal./ft. 8* well = 2 generation	:.611 gal./ft. Any	Well C feet in diameter SET PUMP <u>: //</u>	= 5.875 x C
			EVACUATI	<u>ON DATA</u>			
Time				ORP	<u>sc</u>		DTW
10	+,55	2,40	0.07	Did	80 T		
112	1095	201	117	059	5/1		
11117	6.84	2,99	7,47	63,5	513		
		-					
·····		·		••• ••••••			
TOTAL GALLONS:	15						-
	·····		WELL SA	MPLING			

	age coc			
[]	BTEX	(2) 40 ml VOA	Hydrochloric acid	
0	MTBE	Extracted from BTEX VOA	Hydrochloric acid	
[]	GRO as Gasoline	(2) 40 ml VOA	Hydrochloric acid	
[]	DRO as Diesel	(2) 1-liter amber glass	Sulfuric acid	
D	Methane	(1) 40 ml VOA	Hydrochloric acid	
()	Sulfate	<ol><li>(1) 250 ml poly plastic</li></ol>	None	
[]	HACH	(1) 1-liter poly plastic	None	
()	Lead	(1) 125 ml poly plastic	Nitric acid	Filtered: [] Yes, [] No
0	VPH	(3) 40 mi VOA	Hydrochloric acid	
Ü	EPH	(2) 1-liter amber glass	Hydrochloric acid	
Ü	PAHs	(2) 1-liter amber glass	None	
Ü	VOC'S	(3) 40 ml VOA	Hydrochloric acid	
0	Total Metals	(1) 500ml poly	Nitricacid	
Ú				
[]		·····		-
Laboratory	: STL: [] Arvada, CO, [] Austin, TX,	[] Northern Analytical Other _Lancat	ster Znaven Chain-of-C	ustody: Hyes, (1No
			7	
Meter	Serial No.	Calibration Date	Decontami	nation
pН	11M100991	<u> 3-10 ×16</u>	Potable Water: Yes [ ] No [ ]	Nitric Acid: Yes 🖌 No [ ]
SC			Liquinox: Yes [ ] No [ ]	DI Water: Yes [ ] No [ ]
ORP	———	· · · · · · · · · · · · · · · · · · ·	Methanoi: Yes [] No []	Steam: Yes[] No[
DO				
Comments	•			

Personnel:	DM, BO	2	Weather:	oudy	cerudy	cool	
Casing Diameter/T		AUC	Measuring Point De	scription: T	OC North Side		
Vell Denth (feet h	elow measuring point'	39	Denth	to Water	7.80	ft wata	r
Screen:	cion metadring pointy	·	Doptin	e Product		in Haio	
	<b>,</b>	<b></b>	Сора				
			WELL EVA	CUATION			
Method: [] Mecha	inical Bailer, []Galva	nized Bailer, [] PVC	Bailer, [] Disp. Polye	thylene Bailer, []	SST Bailer, [] Subm	nersible Pump, [] Low	Flow
0/45	gal./ft * ⊭ one o	casing volume	gals. x 3 = purg	e volume <u>l</u>	d_gais.		
SCH 40 Pipe * 2*	weil = 0.163 gal./ft.	4" well = 0.653 gal./f	t. 6" well = 1.469	gal./ft. 8" well =	2.611 gal./ft. Any	Well C feet in diameter	' ≈ 5.875 x C
START TIME <u>: 1</u>	150		PURGE RATE:	9pm		SET PUMP <u>:</u>	$\overline{v}$
			EVACUATIO	ON DATA			
Time	<u>pH</u>	DO	Temp	<u>08P</u>	SC	TURBIDITY	DTW
1154	B. lolo	1.101	11.44	28.1	598		
1157	<u>4.14</u>	0.50	10.47	45.9	10102		
1202	6.54	0.38	10,48	79.3	669		
1204	6.44	0.39	10,48	79,2	408		
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		1			- <u> </u>		
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	: 1 le				· · · · · · · · · · · · · · · · · · ·		
TOTAL GALLONS							
TOTAL GALLONS							
TOTAL GALLONS			WELL SA	MPLING			
FOTAL GALLONS	[] Disposable Poly B	Jailer, []Submersible	WELL SAI	MPLING , [] Other: <u>Peri Pu</u>	ump_Sample Type:	Natural, [] Duplicate	, [ ] Field Bla
FOTAL GALLONS Sampling Method: Param	[] Disposable Poly B	Bailer, [JSubmersible <u>Sample Co</u> l	<u>WELL SA</u> Pump, [] Low Flow ntainer	MPLING , [] Other: <u>Peri Pu</u> E	ump_Sample Type:   Preservative	ANatural, [] Duplicate	, [ ] Field Bla
FOTAL GALLONS	[] Disposable Poly E <u>neter</u> シュ こつこ	Bailer, [JSubmersible <u>Sample Co</u> (2) 40 ml V(	WELL SA Pump, [] Low Flow ntainer DA	<u>MPLING</u> , [] Other: <u>Peri Pu</u> E	ump_Sample Type:   Preservative łydrochloric acid	KNatural, [] Duplicate	, [ ] Field Bla
FOTAL GALLONS Sampling Method: Paran	[] Disposable Poly E heter heter heter heter heter as Gasoline	Bailer, [JSubmersible <u>Sample Co</u> (2) 40 ml V( Extracted fr (2) 40 ml V(	WELL SAI Pump, [] Low Flow Intainer DA om BTEX VOA DA	<u>vIPLING</u> , []Other: <u>Peri Pu</u> E H H	ump_Sample Type:   <u>Preservative</u> iydrochloric acid iydrochloric acid iydrochloric acid	Natural, [] Duplicate	, [ ] Field Bla
FOTAL GALLONS Sampling Method: Param Param C P	[] Disposable Poly E neter 20 COC. : as Gasoline as Diesel une	Bailer, [JSubmersible <u>Sample Co</u> (2) 40 ml V0 Extracted fr (2) 40 ml V0 (2) 1-liter ar (1) 40 ml V0	WELL SAI Pump, [] Low Flow ntainer DA om BTEX VOA DA nber glass DA	<u>MPLING</u> , [] Other: <u>Peri Pu</u> <u>F</u> + + S S + S	ump_Sample Type:   <u>Preservative</u> iydrochloric acid iydrochloric acid iydrochloric acid Sulfuric acid iydrochloric acid	K Natural, [] Duplicate	, [ ] Field Bla
FOTAL GALLONS Sampling Method: Paran Paran Data BTEX BTEX BTEX GRO GRO GRO Control BTEX Control C	[] Disposable Poly E <u>neter</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u> <u>20</u>	Bailer, [J Submersible Sample Co. (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter po (1) 1-liter po	WELL SAI Pump, [] Low Flow Intainer DA om BTEX VOA DA nber glass DA ooly plastic oly plastic	<u>VPLING</u> , []Other: <u>Peri Pu</u> E H H S S N N	ump_Sample Type:   <u>Preservative</u> iydrochloric acid iydrochloric acid iydrochloric acid iydrochloric acid iydrochloric acid iydrochloric acid ione	Natural, [] Duplicate	, ( ) Field Bla
Control Gallons Sampling Method: Paran Pa	[] Disposable Poly E neter 2 COC i as Gasoline as Diesel une e I	Bailer, [J Submersible Sample Co. (2) 40 ml V0 Extracted fr (2) 40 ml V0 (2) 1-liter ar (1) 40 ml V0 (1) 250 ml p (1) 1-liter pc (1) 125 ml p (3) 40 ml V0	WELL SAI Pump, [] Low Flow Intainer DA om BTEX VOA DA nber glass DA Da plastic oly plastic oly plastic DA	<u>VPLING</u> , [] Other: <u>Peri Pu</u> F F F S F N N F S F F S F F S F F S F F	ump_Sample Type: Preservative Hydrochloric acid Hydrochloric acid Hydrochloric acid Sulfuric acid Hydrochloric acid None None Witric acid Hydrochloric acid Hydrochloric acid	Filtered: [] Yes, []	, [ ] Field Bla
CTAL GALLONS Sampling Method: Param Param Data BTEX BT	[] Disposable Poly E	Bailer, [J Submersible Sample Co. (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter po (1) 125 ml p (3) 40 ml V( (2) 1-liter ar (2) 1-liter ar	WELL SAI Pump, [] Low Flow Intainer DA om BTEX VOA DA DA DA DA DA DA DA DA DA DA DA DA DA	<u>MPLING</u> , [] Other: <u>Peri Pu</u> F F F F N N N N N N N N N N N N N N N	ump_Sample Type:   Preservative fydrochloric acid fydrochloric acid fydrochloric acid fydrochloric acid hydrochloric acid None Non	Filtered: [] Yes, []	, ( ) Field Bla
Corral Gallons	[] Disposable Poly E neter 2 COC as Gasoline as Diesel ine e 1	Bailer, [J Submersible Sample Co. (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 125 ml p (3) 40 ml V( (2) 1-liter ar (2) 1-liter ar (3) 40 ml V( (1) 500ml p	WELL SAI Pump, [] Low Flow ntainer DA om BTEX VOA DA nber glass DA Doly plastic Dy plastic DA nber glass nber glass DA oly Dastic	<u>VPLING</u> , [] Other: <u>Peri Pu</u> F F S S N N N N N N N N N N N N N N N N	ump_Sample Type: Preservative Hydrochloric acid Hydrochloric acid	Filtered: [] Ves, []	, [ ] Field Bla
Sampling Method: Paran Paran Paran Dave BTEX BTE	[] Disposable Poly E neter DCCC as Gasoline as Diesel une e 1 S Metals	Bailer, [J Submersible Sample Co. (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter po (1) 125 ml p (3) 40 ml V( (2) 1-liter ar (2) 1-liter ar (3) 40 ml V( (1) 500ml p	WELL SAI Pump, [] Low Flow Intainer DA om BTEX VOA DA om BTEX VOA DA obly plastic obly plastic obly plastic obly plastic DA obly plastic DA obly plastic DA obly plastic DA obly plastic DA obly plastic DA	<u>VPLING</u> , []Other: <u>Peri Pu</u> F H S S N N N N N N N N N N N N N N N N N	ump_Sample Type: Preservative sydrochloric acid hydrochloric acid	Filtered: [] Yes, []	, [ ] Field Bla
Correct Gallons  Sampling Method:  Paran  Paran Paran  Paran Para	( ] Disposable Poly E neter 2 COC as Gasoline as Diesel ane e 1 S Metals	Bailer, [J Submersible Sample Co. (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter an (1) 40 ml V( (1) 250 ml p (1) 125 ml p (3) 40 ml V( (2) 1-liter an (3) 40 ml V( (2) 1-liter an (3) 40 ml V( (1) 500ml p	WELL SAI	MPLING , [] Other: <u>Peri Pu</u> F H S H N N N N N N N N N N N N N	ump_Sample Type: Preservative Hydrochloric acid Hydrochloric acid	Filtered: (J Ves, [])	, [ ] Field Bla
Sampling Method: Paran	[] Disposable Poly E neter 2 COC. as Gasoline as Diesel ane e 1 S Metals [] Arvada, CO, [] Aus	Bailer, [J Submersible <u>Sample Co</u> (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter po (1) 125 ml p (3) 40 ml V( (2) 1-liter ar (2) 1-liter ar (3) 40 ml V( (1) 500ml p 	WELL SAI Pump, [] Low Flow Intainer DA om BTEX VOA DA om BTEX VOA DA obly plastic obly plastic obly plastic obly plastic DA obly plastic DA	MPLING , [ ] Other: Peri Pu F H S S H N N N H S S H N N N N N N N N N N N N N	ump_Sample Type: Preservative Sydrochloric acid tydrochloric acid	Filtered: (JYes, [])	, [ ] Field Bla No
COTAL GALLONS Compling Method: Compliant Method: Complete	[] Disposable Poly E neter 2 C C as Gasoline as Diesel ne e 1 S Metals [] Arvada, CO, [] Aus Serial No. ] J M 1/2 C	Bailer, [J Submersible <u>Sample Co</u> (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 1250 ml p (1) 1-liter pr (1) 125 ml p (3) 40 ml V( (2) 1-liter ar (3) 40 ml V( (2) 1-liter ar (3) 40 ml V( (1) 500ml p 	WELL SAI	MPLING , [] Other: <u>Peri Pi</u> E H H S H N N H H S A H H S A H H S S H H S S H H S S H H S S H H S S H H S S S S S S S S S S S S S	ump_Sample Type: Preservative tydrochloric acid tydrochloric acid tyricacid Chain-of- Decontar	Filtered: [] Yes, [] ]	, [ ] Field Bla
Sampling Method: Param	[] Disposable Poly E         neter         2       C         2       C         2       C         2       C         2       C         2       C         2       C         2       C         2       C         2       C         2       C         2       C         2       C         2       C         2       C         2       C         2       C         2       C         3       Gasoline         3       Metals	Bailer, [J Submersible <u>Sample Co</u> (2) 40 ml V0 Extracted fr (2) 40 ml V0 (2) 1-liter ar (1) 40 ml V0 (1) 250 ml p (1) 125 ml p (3) 40 ml V0 (2) 1-liter ar (3) 40 ml V0 (1) 500ml p 	WELL SAI	MPLING , [] Other: <u>Peri Pu</u> F H S H N N N H F S H S S H S S H S S H S S H S S H S S S S S S S S S S S S S	ump_Sample Type: Preservative Hydrochloric acid Hydrochloric acid Chain-of- Decontar Tr: Yes [ -] No [ ]	Filtered: (JYes, []) Gustody: (TYes, []No nination Nitric Acid: Yes [	, [] Field Bla No

Personnel:	ON BC	D	Weather:C	County	cool	, <u> </u>	
Casing Diameter/	гуре:	AUC	_Measuring Point De	escription: <u>T</u>	OC North Side		
Weil Depth (feet b	elow measuring point	):40	Depth	to Water	7,71	ft wate	er
Screen:			Depth	to Product			
			WELL EVA	CUATION		,	
Method: [] Mecha	anical Bailer, [] Galva	nized Bailer, [] PVC	Bailer, [] Disp. Poly	ethylene Bailer, []	SST Bailer, [Subm	ersible Pump, [] Low	Flow
0162	gai./ft * = one	casing volume $\underline{\mathcal{S}}_{\mu}$	$3_{\text{gals. x 3} = purg}$	je volume	5,9 gals.		
SCH 40 Pipe * 2'	well = 0.163 gal./ft.	4" well = 0.653 gal./i	t. 6" well = 1.469	gai./ft. 8" well =	2.611 gal./ft. Any	Well C feet in diamete	r = 5.875 x C <sup>2</sup>
	33		PURGE BATE: /	<b>q</b> PM		SET PUMP:	8
			EVACUATI	ON DATA		<u> </u>	
Time	рH	<u>D0</u>	Temp	ORP	<u>sc</u>	TURBIDITY	<u>DTW</u>
1236	6.80	105.04	10.00	54.4	279		
1240_	6.98	5.88	16,40	4615	279		
1245	9,01	5,41	10.39	4514	279		
1250	7.02	541	10.39	45.3	279		
			i		0 1		
	110						
					······································		
			WELL SA	MPLING			
Sampling Method	[] Disposable Poly E	Bailer, I Submersible	Pump, [] Low Flov	v, [] Other: <u>Peri P</u> i	<u></u>	Natural, [] Duplicate	a, [ ] Field Blani
Para	neter	Sample Cor	ntainer	F	reservative		
, So	ecoc	(2) 40 m1)/	~~	-			
] МТВ	-	Extracted fr	om BTEX VOA	ŀ	lydrochloric acid		
] GRO ] DRO	as Gasoline as Diesel	(2) 40 ml V( (2) 1-liter ar	DA nber glass	F	lydrochloric acid Iulfuric acid		
] Metha	ane	(1) 40 ml V( (1) 250 ml r	DA poly plastic	F	lydrochloric acid		
HACI	1	(1) 1-liter po	bly plastic	N	lone		
heel (		(1) 125 ml p (3) 40 ml V(	ooly plastic DA	۲ ۲	litric acid lydrochloric acid	Filtered: []Yes, []	No
] VPH		(2) 1-liter ar	nber glass	F	lydrochloric acid		
] VPH ] EPH		(2) 1-1167 81	DA	יי א	lydrochloric acid		
I         Lead           I         VPH           I         EPH           I         PAHs           I         VOC'	S S	(3) 40 ml V(					
I         VPH           I         EPH           I         PAHs           I         VOC'           I         Total           I	S Metals	(3) 40 ml V( (1) 500ml p	oly	٩ -	litricacid		
1         VPH           1         EPH           1         PAHs           1         VOC'           1         Total           1	S Metals	(3) 40 ml V( (1) 500ml p 	oly	۱  	litricacid	-	
I         Cease           I         VPH           I         EPH           I         PAHs           VOC'         Total           I	, S Metals 	(3) 40 ml V( (1) 500ml p 	nalytical Other	castor Energy	Main-of-4	 Custody: [}79es, []N	o
1         Cease           1         VPH           1         EPH           1         PAHs           1         VOC'           1         Total           1            aboratory:         STL:	S Metals [] Arvada, CO, [] Au <u>Serial No.</u>	(3) 40 ml V( (1) 500ml p 	nalytical Other Lam	oaster Energ	Mitricacid Mitricacid Chain-of-4 Decontar	Custody: []77es, []N	o
1         Cease           1         VPH           1         EPH           1         PAHs           1         VOC'           1         Total           1            aboratory:         STL:           Mater	S Metals [] Arvada, CO, [] Au <u>Serial No,</u> [] // [00]	(3) 40 ml V( (1) 500ml p 	nalytical Other Learn	caster Energy Potable Wate	r: Yes [ No [ ]	 Custody: [ ] Yes, [ ] N <u>nination</u> Nitric Acid: Yes	0 [~ No[_]

Comments: \_\_\_\_

Personnel	JM BQ		Weather:	-loud	4 lenn	la cond	
Casias Diamatari		AVC	Measuring Beint Da	( (	DO North Clife		
Casing Diameter	rype:	20	_weasoning Point De	scription: i			
Well Depth (feet I	elow measuring point)		Depth	to Water	(1.5 0	ft water	r
Screen:			Depth	to Product			
			WELL EVA	CUATION			
Method: [] Mech	anical Bailer, [] Galva	nized Bailer, [] PVC	Bailer, [] Disp. Poly	ethylene Bailer, []	SST Bailer, [] Subn	tersible Pump, [] Low	Flow
0/6-	<b>5</b> gal./ft * = one o	casing volume	gals. x 3 = purg	e volume	gals.		
SCH 40 Pipe * 2	well = 0.163 gal./ft.	4* well = 0.653 gal.,	fft. 6* well ≈ 1,469	gal./ft. 8" well =	2.611 gai./it. Any	Well C feet in diameter	= 5.875 x C
	<u> 369</u>		PURGE RATE:			SET PUMP: 12	2
-			EVACUATI	ON DATA			
_							
	<u>pH</u>			<u>ORP</u>			DTW
19/1_	11.00	10.00	0.04	91,7	40d-		
13/2	Q, I'	3.51	(0.(0)	70,7	403	_	
<u> 1315</u>	Q.10	1.88	10.10d	90,0	4.02		
·							
			· · ·				
TOTAL GALLONS	»						
			1				
			WELL SAI	MPLING			
Sampling Method	[] Disposable Poly B	ailer, i Submersible	Pump, [] Low Flow	, { ] Other: <u>Peri Pu</u>	<u>Imp_Sample Type:</u>	Natural, [] Duplicate,	[] Field Bla
Para	neter	Sample Co	ntainer	P	reservative		
, D	H COC	(2) 40 ml )/			udreeblerie esid		
) MTBI	=	Extracted f	rom BTEX VOA	H	lydrochloric acid		
GRO	as Gasoline as Diesel	(2) 40 ml V (2) 1-liter a	OA mber glass	H	lydrochloric acid Iulfuric acid		
.) 0110	ine	(1) 40 ml V (1) 250 ml	OA poly plastic	H	lydrochloric acid		
] Methania	1	(1) 1-liter p	oly plastic	N	lone		
Metha Sulfa HACI		(1) 125 ml	poly plastic	N	litric acid	Filtered: []Yes,[]1	No
] Methi ] Sulfa ] HACI ] Lead ] VPH		(3) 40 ml V	OA	н	iyorochioric aciu		
Mething       Mething       Sulfa       HACI       Lead       VPH       EPH		(3) 40 ml V (2) 1-liter a	OA mber glass	H H	lydrochloric acid		
]         Methat           ]         Sulfa           ]         HACI           ]         Lead           ]         Lead           ]         VPH           ]         EPH           ]         PAHs           ]         VCC	3	(3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V	OA mber glass OA	H H N H	lydrochloric acid lydrochloric acid lone lydrochloric acid		
j         Drive           j         Meth.           j         Sulfa           i         HACI           i         Lead           j         VPH           j         EPH           j         PAHs           j         Total	S Metals	(3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V (1) 500ml p	OA mber glass mber glass OA OA	H H N N N N	lydrochloric acid lone lydrochloric acid lydrochloric acid litricacid		
J         Meth.           J         Sulfa           J         HACI           J         Lead           J         VPH           J         PAHs           J         VOC'           J         Total           J	i S Metals	(3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V (1) 500ml p	OA mber glass mber glass OA ooly	H H Z H Z	lydrochloric acid lydrochloric acid lydrochloric acid litricacid		
J         Meth.           J         Sulfa           J         HACI           J         Lead           J         Lead           J         EPH           J         PAHs           J         VOC'           J         Total           J	; S Metals  [] Arvada, CO, [] Aus	(3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V (1) 500ml p 	OA mber glass mber glass OA coly 	ester-Energy	lydrochloric acid lone lydrochloric acid litricacid	  Custody: [⊁Yes, [] No	
J         Meth.           J         Sulfa           J         HACI           J         Lead           J         Lead           J         EPH           J         PAHs           J         VOC'           J         Total           J	; S Metals 	(3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V (1) 500ml p 	on pression mber glass mber glass OA OA malytical Other <u>bane</u> on Date	ester-Energy	lydrochloric acid lone lydrochloric acid litricacid M Chain-of- Decontar	 Custody: [∦Yes, []No nination	
J         Drive           J         Meth.           J         Sulfa           J         HAC!           J         Lead           J         VPH           J         PAHs           J         VOC'           J         Total           J         Total           J	S Metals [] Arvada, CO, [] Aus <u>Serial No.</u> ] ] M ID N 99	(3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V (1) 500ml p 	on Date on Date on Date	Botable Weta	lydrochloric acid lone lydrochloric acid litricacid M Chain-of- <u>Decontar</u>	 Custody: [∦Yes, [] No nination	And the second
J         Drive           J         Meth.           J         Sulfa           J         HACI           J         Lead           J         Lead           J         Lead           J         Lead           J         PAHs           J         PAHs           J         VOC'           J         Total           J	S Metals [] Arvada, CO, [] Aus <u>Serial No.</u> [] <u>M ID [) 99</u>	(3) 40 ml V (3) 40 ml V (2) 1-liter a (3) 40 ml V (1) 500ml p 	on Date - 1 0 - 1 6	H H N Aster- Ener Potable Wate	lydrochloric acid lone lydrochloric acid litricacid	Custody: [ Yes, [ ] No nination Nitric Acid: Yes [	T No[]

Comments: \_\_\_\_

ersonnel:	Im BQ	)	Weather:	loudy	wind	y cool	
asing Diamet	r/Type: 2 " F	OVC	Measuring Point De	escription:	TOC North Side	/	
Vell Denth (fee	t below measuring poin	. 43	Denth	to Water	41.11	ft wate	-
creen.	. Delow measuring point	y	Deptin	to Product		II wale	I
	 				· · · · · · · · · · · · · · · · · · ·		
			WELL EVA	CUATION	/		
tethod: []Me	hanical Bailer, [] Galva	anized Baller, [] PVC	Bailer, [] Disp. Poly	ethylene Bailer, [	SST Bailer, [}Subm 🥱	ersible Pump, [] Low	Flow
<u>~/ (0</u>	gal./ft * = one	casing volume	gals. x 3 = purg	je volume	gals.		
CH 40 Pipe	$2^{\circ}$ well = 0.163 gal./ff.	4" well = 0.663 gal./	lt. 6" weli = 1,469	gai./it. 8" well =	= 2.611 gal./ft. Any	Well C feet in diameter	•= 5.875 x C
TART HME:				1 pm		SET PUMP: 7.2	
			EVACUAT	<u>ON DATA</u>			
<u>Time</u>		<u>DO</u>	Temp	<u>ORP</u> ライ //	<u>SC</u>		DTW
<u>1401</u>		7.69	9,00	36.8			
140.0	Q,84	10.0+	10,00	08.1	400	-	
1912	- 0.63	10,00	10,28	<u>40.0</u>	<i>404</i>		
14]8		5.86	10,50	71.0	404		
OTAL GALLO	vs: ad						
							·····
			WELL SA	MPLING			
ampling Meth	d: [] Disposable Poly F	Bailer. [] Submersible	Pump, [] Low Flov	v, [] Other: <u>Peri P</u>	ump_Sample Type: 🕽	Natural, [] Duplicate	, [ ] Field Bla
<u>Pa</u>	ameter	Sample Co	ntainer	:	Preservative		
BT	ve coc	(2) 40 ml V	DA		Hydrochloric acid		
MT GE	3E O as Gasoline	Extracted fr	om BTEX VOA		Hydrochloric acid		
DF	D as Diesel	(2) 1-liter al	mber glass		Sulfuric acid		
	hane late	(1) 40 mi V (1) 250 ml j	DA poly plastic		Hydrochloric acid None		
Me Su	CH Id	(1) 1-liter p (1) 125 ml /	oly plastic		None Nitric acid	Filtered: [] Ves. []]	No
Me Su HA	4	(3) 40 ml V	DA		Hydrochloric acid		
Me Su HA Le VP		(2) 1-liter al (2) 1-liter al	nber glass nber glass		Hydrochioric acid None		
Me Su HA Le VP EP PA	-  - s	(3) 40 ml Vi	DA olv		Hydrochloric acid Nitricacid		
Me Su HA Le VP EP PA VC To	ન નંડ ટ`S ર્શ Metals	(1) 500ml o			_	×	
Me Su HA Lea VP EP PA VC To	H Hs C'S al Metals	(1) 500ml p					
Me Su HA Le VP EP PA VC To	H Hs C'S al Metals	(1) 500ml p		and Eman		Oustadus (1965 - 1991	
Me Su HA Lei VP PA VC To To aboratory: <u>ST</u>	H Hs C'S al Metals .: [] Arvada, CO, [] Au	(1) 500ml p	nalytical Other Lan	enster Energ	Chain-of-	Custody: [+*Yes, [] No	)
Me Su HA Le VP EP PA VC To aboratory: <u>ST</u>	H Hs C'S al Metals 	(1) 500ml p  istin, TX, [] Northern A <u>Calibrati</u>	nalytical Other Las	easter Energ	Chain-of-o	 Custody: [♣¥es, [] No <u>hination</u>	)
Me Su HA Lei PP PA VC To To aboratory: <u>ST</u> <u>Aeter</u>	H Hs C'S al Metals : [] Arvada, CO, [] Au <u>Serial No.</u> / <u>[M 10 D 96</u> )	(1) 500ml p	nalytical Other Las	Potable Wate	Chain-of- <u>Decontan</u> er: Yes [ 7 No [ ]	 Custody: [→Yes, [] No nination Nitric Acld: Yes [	-} No[]
Me   Su   HA   Le.   VP   PA   VC   To 	H Hs C'S al Metals .: [] Arvada, CO, [] Au <u>Serial No.</u> / / <u>M [D D 9</u> 	(1) 500ml p	nalytical Other Land	Potable Wate Liquinox:	Chain-of-C Decontar er: Yes [ + No [ ] Yes [ + No [ ]	 Custody: [-→Yes, [] No <u>nination</u> Nitric Acid: Yes [ DI Water: Yes [	-} No[] -} No[]

	utte area -	L Sample Dat	3-10.	16 1	rime: 1510	Well ID: R	PS II
Personnel:	DM BQ		Weather:	usy w	indy ce	-l	
Casing Diamet	ar/Type: 2"P	VC	Measuring Point De	scription: 1	FOC North Side		
Well Denth (fee	t below measuring point	67	_mousting / on est	n Water	2.64'	/ ft:	vator
Screen:	k below measuring point,	•	Depth 1	o Product			Valei
			•				·····
			WELL EVAC	<u>SUATION</u>			
Method: [] Me	chanical Bailer, [] Galva	nized Bailer, [] PVC	Bailer, [] Disp. Polye	thylene Bailer, []	SST Bailer, [ /Submo	ersible Pump, []	Low Flow
	gai./π <sup>-</sup> ≈ one (	Al well = 0.052 est /	gais. x 3 = purg	e volume	gais.		
	1446	4" weil = 0.653 gai./i	π. 6" well = 1.469 γ	20 9 <i>J N</i>	12.613 gal./π. Απγι 1	Well C feet in diam	20
START HME:	1(,0				v	SET PUMP:	
			EVACUATIO				
	<u> 単</u> 一 つ ^ ^		Temp		<u>SC</u>	TURBIDITY	
17130	1 1- 00		10.23	<u>60</u> .	860		
145-4	$- \frac{\varphi_{,3}}{1}$	10.42	10,04	101.5	150		
<u>1500</u>	0,50	0.43	10,84	101.7	195		
CIU CIU	125	0.37	10,07	103.7	052		
[517	6,35	0.95	10,00	105.7	1955		
	31)		I			I	ļ
FOTAL GALLO	NS:						
FOTAL GALLO	NS:		WELL SA	<u>IPLING</u>			
FOTAL GALLO	od: []Disposable_Poly B	ailer, [ <b>X</b> Submersible	WELL SA	<u>/IPLING</u> , [ ] Other: <u>Peri P</u> i	ump_Sample Type: [4	Natural, [] Dupli	cate, [] Field Bla
Sampling Meth	ns:	ailer, [ <b>/</b> Submersible <u>Sample Co</u>	WELL SAM	<u>APLING</u> , { ] Other: <u>Peri Pi</u> E	ump_Sample Type: [4 2reservative	Natural, [] Dupli	cate, [ ] Field Bla
GALLO	ns:	ailer, [XSubmersible <u>Sample Co</u> (2) 40 ml V(	WELL SAM Pump, [] Low Flow ntainer DA	<u>APLING</u> , [ ] Other: <u>Peri Pu</u> <u>F</u> +	ump_Sample Type: (¿ Preservative Avdrochloric acid	Natural, [] Dupli	cate, [] Field Bla
OTAL GALLO Sampling Meth پر Pa ) BT ] M1	NS: Dd: [] Disposable Poly B ALCOC EX BE IC as Gasoline	ailer, [XSubmersible <u>Sample Co</u> (2) 40 ml V( Extracted fr (2) 40 ml V(	WELL SAN Pump, [] Low Flow Intainer DA On BTEX VOA DA	<u>APLING</u> , { ] Other: <u>Peri P</u> i <u>F</u> + +	ump_Sample Type: [4 <u>Preservative</u> Hydrochloric acid Hydrochloric acid	Natural, [] Dupli	cate, [ ] Field Bla
Coral Gallo	NS:	ailer, [XSubmersible Sample Co (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-ilter ar	WELL SAM Pump, [] Low Flow ntainer OA om BTEX VOA DA DA	<u>APLING</u> , [ ] Other: <u>Peri Pu</u> <u>F</u> + + + S	ump_Sample Type: [/ Preservative 4ydrochloric acid 4ydrochloric acid 4ydrochloric acid 4ydrochloric acid	Matural, [] Dupli	cate, [ ] Field Bla
OTAL GALLO Sampling Meth بر Pa ) BT ] M1 ] GF ] DF ] DF ] Su	NS: pd: [] Disposable Poly E Parameter EX BE RO as Gasoline IO as Diesel Ithane Ifate	ailer, [XSubmersible Sample Co. (2) 40 ml V Extracted fr (2) 40 ml V (2) 1-liter au (1) 40 ml V (1) 250 ml p	WELL SAT Pump, [] Low Flow ntainer DA om BTEX VOA DA nber glass DA poly plastic	<u>APLING</u> , { ] Other: <u>Peri Pr</u> <u>F</u> H H H N N	ump_Sample Type: [4 Preservative Hydrochloric acid Hydrochloric acid Hydrochloric acid Sulfuric acid Hydrochloric acid Hydrochloric acid None	Natural, [] Dupli	cate, [ ] Field Bla
Corral Gallo Sampling Meth Pa B B B B M G F C M G F C M C S U D F C S U D F C C C C C C C C C C C C C C C C C C	NS: pd: [] Disposable Poly E PUCCOC EX BE RO as Gasoline RO as Diesel tithane Ifate CH ad	ailer, [X Submersible Sample Co (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter p (1) 125 ml p (1) 125 ml p	WELL SAN Pump, [] Low Flow ntainer OA om BTEX VOA OA nber glass OA ooly plastic oly plastic oly plastic	<u>APLING</u> , [ ] Other: <u>Peri Pri</u> <u>F</u> + + + S - - - - - - - - - - - - - - - -	ump_Sample Type: [ Preservative Hydrochloric acid Hydrochloric acid Hydrochloric acid Sulfuric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid	Filtered: []Yes	cate, [] Fíeld Bla
Cotal Gallo Sampling Meth 2 2 3 3 3 3 3 3 3 4 4 3 3 4 4 3 4 4 3 4 4 4 5 5 5 5	NS:	ailer, [XSubmersible Sample Co. (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter au (1) 40 ml V( (1) 250 ml p (1) 1-liter p (1) 125 ml p (3) 40 ml V( (2) 1-liter au	WELL SAN Pump, [] Low Flow ntainer DA om BTEX VOA DA mber glass DA poly plastic Dy plastic DA noly plastic DA mber glass	<u>APLING</u> , { ] Other: <u>Peri Pr</u> F F F F N N N N	ump_Sample Type: [4 Preservative Hydrochloric acid Hydrochloric acid Hydrochloric acid Ufuric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid	Filtered: []Yes	cate, [] Field Bla
Corral GALLO Sampling Meth Pa Pa B B B B C C C C C C C C C C C C C C C	NS:	ailer, [Submersible Sample Co (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter po (1) 1-liter po (3) 40 ml V( (2) 1-liter ar (2) 1-liter ar (2) 1-liter ar	WELL SAN Pump, [] Low Flow ntainer DA om BTEX VOA DA nber glass DA bly plastic obly plastic obly plastic DA nber glass DA DA	<u>APLING</u> , { ] Other: <u>Peri Pi</u> <u>F</u> + + + 5 5 + + 5 5 5 5 1 1 1 1 1 1 1 1 1	ump_Sample Type: [ Preservative Hydrochloric acid Hydrochloric acid	Filtered: []Yes	cate, [] Fíeld Bla
Sampling Meth Pa Pa Pa Pa Pa Pa Pa Pa Pa Pa	NS: pd: [] Disposable Poly B Parameter EX BE RO as Gasoline IO as Diesel thane Ifate CH ad H H Hs IC'S tal Metals	ailer, [XSubmersible Sample Co (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter au (1) 40 ml V( (1) 250 ml p (1) 1-liter pu (1) 125 ml p (3) 40 ml V( (2) 1-liter au (2) 1-liter au (3) 40 ml V( (1) 500ml p	WELL SAN Pump, [] Low Flow Intainer DA om BTEX VOA DA mber glass DA poly plastic Dy plastic DA mber glass mber glass DA oly	<u>APLING</u> , { ] Other: <u>Peri Pr</u> <u>F</u> H H S H N N N N N N N N N N N N N N N N	ump_Sample Type: [ <u>Preservative</u> Hydrochloric acid Hydrochloric acid	Filtered: []Yes	cate, [] Field Bla
Sampling Meth Pa ] BT ] MT ] GF ] DF ] DF ] Su ] HA ] Le ] Su ] HA ] LE ] SU ] To ] To ]	NS:	ailer, [2 Submersible Sample Co (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter pr (1) 125 ml p (3) 40 ml V( (2) 1-liter ar (2) 1-liter ar (3) 40 ml V( (1) 500ml p	WELL SAN Pump, [] Low Flow ntainer DA om BTEX VOA DA DA DA Da Da Da Da Da Da Da Da Da Da	<u>APLING</u> , [ ] Other: <u>Peri Pi</u> ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;	ump_Sample Type: [ Preservative Hydrochloric acid Hydrochloric acid Sufuric acid Hydrochloric acid	Filtered: []Yes	cate, [] Fíeld Bla
Sampling Meth Sampling Meth Pa Pa BT BT BT BT Construction Cons	Dd: [] Disposable Poly B Let C O C EX BE RO as Gasoline IO as Diesel thane Ifate CH ad H H Hs IC'S Iai Metals L: [] Arvada, CO, [] Aus	ailer, [XSubmersible Sample Co. (2) 40 ml Vi Extracted fr (2) 40 ml Vi (2) 1-liter an (1) 40 ml Vi (1) 250 ml p (1) 1-liter pr (1) 125 ml p (3) 40 ml Vi (2) 1-liter an (3) 40 ml Vi (1) 500ml p	WELL SAN Pump, [] Low Flow ntainer DA om BTEX VOA DA mber glass DA poly plastic DA plastic DA mber glass mber glass DA oly mber glass DA nber glass DA nber glass DA nber glass DA nber glass DA nber glass DA nber glass	APLING ( ] Other: <u>Peri Pri</u>	ump_Sample Type: [4 Preservative Hydrochloric acid Hydrochloric acid	Filtered: []Yes	cate, [] Field Bla , [] No
Corral Gallo Sampling Meth Pa Pa BT BT BT BT BT BT BT Corrections Corre	NS: Dd: [] Disposable Poly B Dec O C FX BE RO as Gasoline IO as Diesel thane Ifate CH ad H H Hs SC'S tai Metals  L: [] Arvada, CO, [] Aus <u>Serial</u> No.	ailer, [2 Submersible Sample Co (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 25 ml p (1) 1-liter pr (1) 1-liter pr (2) 1-liter ar (2) 1-liter ar (3) 40 ml V( (1) 500ml p 	WELL SAM	APLING [] Other: <u>Peri Pi</u> F F F S F N N N N N N N N N N N N N	ump_Sample Type: [4 Preservative Hydrochloric acid Hydrochloric acid Hydrochloric acid Sulfuric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Chain-of-C Decontam	Filtered: [] Yes	cate, [] Fíeld Bla ;, [] No
Cotal Gallo Sampling Meth Pa Pa Pa Pa Pa Pa Pa Pa Pa Pa	NS:	ailer, [X Submersible <u>Sample Co</u> (2) 40 ml Vi Extracted fr (2) 40 ml Vi (2) 1-liter an (1) 40 ml Vi (1) 250 ml p (1) 1-liter pr (1) 125 ml p (3) 40 ml Vi (2) 1-liter an (3) 40 ml Vi (1) 500ml p 	WELL SAT         Pump, [] Low Flow         ntainer         DA         om BTEX VOA         DA         mber glass         DA         holy plastic         Dy plastic         DA         mber glass         DA         mber glass         DA         mber glass         DA         noly plastic         DA         mber glass         DA         nober glass         DA         noter glass         DA         ofy	APLING ( ] Other: <u>Peri Pri Pri Pri Pri Pri Pri Pri Pri Pri P</u>	ump_Sample Type: [ <u>Preservative</u> Hydrochloric acid Hydrochloric acid Hydrochloric acid Ulturic acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Ultricacid Hydrochloric acid Hydrochloric acid Hydrochl	Filtered: [] Yes	cate, [] Field Bla , [] No ] No
COTAL GALLO Sampling Meth Pa Pa BT BT BT BT BT PA CO Content Co	NS:	ailer, [ Submersible <u>Sample Co</u> (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter pr (3) 40 ml V( (2) 1-liter ar (3) 40 ml V( (1) 500ml p 	WELL SAM         Pump, [] Low Flow         niainer         DA         om BTEX VOA         DA         oher glass         DA         oly plastic         oly plastic         oly plastic         DA         mber glass         DA         nber glass         DA         nber glass         DA         oly plastic         DA         nber glass         DA         oly plastic         DA         nalytical Other         Image: Date         DA         DA	APLING ( ) Other: <u>Peri Pi</u> F F F S F F S F F S S F F S S S S S S S S S S S S S	ump_Sample Type: [ Preservative Hydrochloric acid Hydrochloric acid Hydrochloric acid Solfuric acid Hydrochloric acid Hy	Filtered: [] Yes	cate, [] Field Bla ;, [] No ] No 'es [ ] ~ No { ]
Corral Gallo Corral Gallo Campling Meth Pa Pa Pa Pa Pa Pa Pa Pa Pa Pa	NS:	ailer, [X Submersible <u>Sample Co</u> (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (2) 1-liter ar (3) 40 ml V( (1) 125 ml p (3) 40 ml V( (2) 1-liter ar (3) 40 ml V( (1) 500ml p 	WELL SAM         Pump, [] Low Flow         niainer         DA         om BTEX VOA         DA         om BTEX VOA         DA         obj plastic         Doly plastic         Doly plastic         DA         mber glass         DA         nber glass         DA         oly plastic         DA         nber glass         DA         oly         nalytical Other         Jane         D         D         D	APLING ( ] Other: Peri Pri F F F F F F F F F F F F F	ump_Sample Type: [ <u>Preservative</u> Hydrochloric acid Hydrochloric acid Hydrochloric acid Sone Sone Sone Vone Hydrochloric acid Hydrochloric acid Hydrochloric acid Hydrochloric acid Chain-of-C Decontam Mar: Yes [ No [ ] Yes [ No [ ]	Filtered: [] Yes Filtered: [] Yes Custody: [] Yes, [ <u>ination</u> Nitric Acid: Y DI Water: Y	cate, [] Field Bla , [] No ] No 'es [ ] ~ No [ ] 'es [ ] ~ No [ ]

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Project C	Butteria	1 Samole Dat	. 3-11	-16 -	me'	Well ID: M	1
	Dun RC	$\overline{\mathcal{P}}$	······································	2	and an		*
Personnel		$\overline{\mathbf{D}}$	Weather:	and p	un ano	w	
Casing Di	ameter/Type: <b>7</b>	PVC	_Measuring Point D	escription: <u>T</u>	C North Side		
Well Dept	h (feet below measuring point	): <u> </u>	Dept	h to Water	5.30	ft wate	
Screen: _		<u> </u>	Dept	h to Product			
			WELL EV	ACUATION			
Mathadı [	(1 Mechanical Bailer, 11 Colum	ningd Baller [1 BVO		uothulana Dallan ( ) (	ST Dallas (10)	<	<b>-</b> 1+
						ersiole Fullip, (] Low	FIOW
	gal./ft * = one	casing volume	gals. x 3 = pu	rge volume	gals.		
SCH 40 P	'ipe * 2* well = 0.163 gal./ft.	4* well = 0.653 gal./	ft. 6* well = 1.46	9 gal./ft. 8* well = 2	2.611 gal./ft. Any	Well C feet in diameter	= 5.875 x 0
START TI	ME:		PUBGE BATE:			SET PLIMP: 10	)
0						04.110m	
			EVACUAT	FION DATA			
<u>Ti</u>	me pH	DO	Temp	ORP	<u>sc</u>	TURBIDITY	DTM
			<u>"</u> ·				
					-		
				-			
L						<u> </u>	
TOTAL G	ALLONS:						
			WELL S	AMPLING		,	
Sampling	Method: () Disposable Poly E	Bailer, Jo Submersible	Pump, [] Low Flo	w, [] Other: Peri Pu	mp_Sample Type: [/	Natural, [] Duplicate	[] Field Bl
	Demonstra	0					
	Parameter	Sample Co	ntainer	<u>P</u>	eservative		
[]	BTEX	(2) 40 ml V	0A	H	vdrochloric acid		
[] []	MTBE GBO as Gasoline	Extracted fr (2) 40 ml V	OM BTEX VOA	H	ydrochloric acid ydrochloric acid		
()	DRO as Diesel	(2) 1-liter a	mber glass	Si	ulfuric acid		
[]	Methane	(1) 40 mi V	OA	H	ydrochloric acid		
[] []	Sullate	(1) 250 ml ( (1) 1-liter n	ooy plastic	N	une Dné		
ij	Lead	(1) 125 mi (	oly plastic	N	tric acid	Filtered: []Yes, []	No
0	VPH	(3) 40 ml V	OA	H	ydrochloric acid		
[]	EPH	(2) 1-liter a	mber glass	H	ydrochloric acid		
נן רו	PAHS VOC'S	(2) 1-liter a	mber glass	N D	one udrachtoria acid		
ü	Total Metals	(1) 500ml p	oly	N	tricacid		
 []		(1) 500mr p		N	urcacio		
r i							

Laboratory: STL: [] Arvada, CO, [] Austin, TX, [] Northern Analytical Other Lancaster

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Meter	Serial No.	Decontamination					
рН	11 <u>m100991</u>	3-11-16	Potable Water:	Yes [ No [ ]	Nitric Acid:	Yes[_] No[]	
SC	<u> </u>		Liquinox:	Yes[ / No[ ]	DI Water:	Yes[No[]	
ORP	)		Methanol:	Yes[] No[	Steam:	Yes[] No []	
DO		C. C		1			
Comments:	olotrue	you in casm	<u>6 ≈ 3</u>				

Chain-of-Custody: [] Yes, [] No

	MA AQ	Sample Dat		*	Time: 0900		
ersonnel:	1" L	DITC	Weather:	way_			
asing Diameter/T	/pe:	81	_Measuring Point De	scription:	TOC North Side		
Vell Depth (feet be	low measuring point):	: <u> </u>	Depth I	o Water	10,00	ft water	
creen:		········	Depth	o Product			
			WELL EVAC	OUATION	/		
1ethod: [] Mechai	nical Bailer, [] Galvar	nized Bailer, [] PVC	Bailer, [] Disp. Polye	thylene Bailer, []	SST Bailer, [/Submo	ersible Pump, [] Low	Flow
*/63	gal./ft * = one c	asing volume <u>/ (</u>	gals. x 3 = purg	e volume	gals.		
CH 40 Pipe * 2* •	well = 0.163 gal./ft.	4" well = 0.653 gal./i	it. 6" well = 1.469 (	jal./ft. 8" weil =	2.611 gal./ft. Any 1	Nell C feet in diameter	= 5.875 x C
TART TIME: V	007		PURGE RATE: / /	<u>ao</u> 9 pm		SET PUMP: 0	
			EVAÇUATIO	<u>ON DATA</u>			
$\frac{\text{Time}}{2}$	<u>eH</u>	DQ	Temp	ORP (2) 77	<u>SC</u>		DTW
Q q q	9.14	4.84	9.09	<u>625</u>	-4,57		
<u>1244</u>	0.44	0,50	9.92	10.9	$-\frac{3}{2}$		
846	0.52	1.04	10.03	<u>(07. 1)</u>	410		
85t	0.50	1.32	10.65	55,0	8/2		
900	6.55	1.dd	10,00	51,0	8/3_		
OTAL GALLONS:							
	<u>.</u>	<u></u>					
			WELL SAM	<u>IPLING</u>			
ampling Method:	[] Disposable Poly Ba	ailer, [] Submersible	Pump, [] Low Flow	, [] Other: <u>Peri P</u>	<u>ump_</u> Sample Type: [	Natural, [] Duplicate,	[] Field Bla
Param	eter	Sample Cor	ntainer	ļ	Preșervative		
ھر	WE COL	(2) 40 ml V(	AC	1	Hydrochloric acid		
J BIEX	e Gasoline	Extracted fr	om BTEX VOA	1	Hydrochloric acid		
] MTBE	s Diesel	(2) 40 m v (2) 1-liter ar	nber glass	:	Sulfuric acid		
] BIEX ] MTBE ] GRO a ] DRO a		(1) 40 ml V(	A	1	Hydrochloric acid None		
] BTEX ] MTBE ] GRO a ] DRO a ] Methai ] Sulfate	1e	(1) 250 ml c	oly plastic		10110		
I BIEX MTBE GRO a DRO a Methau Sulfate HACH	ne F	(1) 250 ml p (1) 1-liter po (1) 105 ml a	ooly plastic bly plastic bly plastic	1	None	Filtered: (3)/co. (1)	1-
I BIEX MTBE GRO a DRO a DRO a Sulfate Sulfate HACH Lead	10 }	(1) 250 ml p (1) 1-liter po (1) 125 ml p (3) 40 ml V(	ooly plastic bly plastic boly plastic DA	i	None Nitric acid Hydrochloric acid	Filtered: []Yes, []N	No
BTEX   MTBE   GRO a   DRO a   Methau   Sulfate   HACH   Lead   VPH   EPH	ne ,	(1) 250 ml p (1) 1-liter po (1) 125 ml p (3) 40 ml V( (2) 1-liter ar (2) 1-liter ar	ooly plastic oly plastic ooly plastic OA nber glass nber glass		None Nitric acid Hydrochloric acid Hydrochloric acid None	Filtered: []Yes,[]1	No
BIEX       MTBE       GRO a       DRO a       Methan       Sulfate       HACH       Lead       VPH       EPH       PAHs       VOCS		(1) 250 ml p (1) 1-liter pp (1) 125 ml p (3) 40 ml V( (2) 1-liter ar (2) 1-liter ar (3) 40 ml V( (1) 202	ooly plastic oly plastic ooly plastic DA nber glass nber glass DA		None Nitric acid Hydrochloric acid Hydrochloric acid None Hydrochloric acid	Filtered: []Yes,[]1	No
I     BTEX       GRO a     GRO a       DRO a     Methaa       Methaa     Sulfate       HACH     Lead       VPH     EPH       PAHs     VOC'S       Total M	letals	(1) 250 ml g (1) 1-liter pp (1) 125 ml g (3) 40 ml VC (2) 1-liter ar (2) 1-liter ar (3) 40 ml VC (1) 500ml p	oly plastic oly plastic oly plastic OA mber glass mber glass OA OA		None Nitric acid Hydrochloric acid Hydrochloric acid None Hydrochloric acid Nitricacid	Filtered: []Yes, [] M	٧o
MTBE GRO a DRO a Methal Sulfate HACH Lead VPH EPH PAHs VOC'S Total M	ne 9 1etals	(1) 250 ml g (1) 1-litter pr (1) 125 ml g (3) 40 ml VC (2) 1-litter ar (2) 1-litter ar (3) 40 ml VC (1) 500ml p	oly plastic oly plastic Doly plastic DA mber glass mber glass DA Oly		None Nitric acid Hydrochloric acid Hydrochloric acid None Hydrochloric acid Nitricacid	Filtered: []Yes, [] M	ю
I         BTEX           I         MTBE           I         GRO a           I         DRO a           I         DRO a           I         Methan           I         Sulfate           I         HACH           I         Lead           VPH         EPH           I         PAHs           I         VOC'S           I         Total M           I	1etals 	(1) 250 ml ( (1) 1-iiter pr (1) 125 ml ( (3) 40 ml VC (2) 1-iiter ar (2) 1-iiter ar (3) 40 ml VC (1) 500ml p	oly plastic oly plastic oly plastic DA nber glass mber glass DA oly malytical Other Lanc	aster	None Nitric acid Hydrochloric acid Hydrochloric acid None Hydrochloric acid Nitricacid Chain-of-C	Filtered: []Yes, []f	Чо 1
I         BTEX           MTBE         GRO a           DRO a         DRO a           Methan         Sulfate           HACH         Lead           Lead         VPH           EPH         PAHs           VOC'S         Total M           J         Total M           J	1etals ] Arvada, CO, ( ] Aust Serial No.	(1) 250 ml g (1) 1-litter pr (1) 125 ml g (3) 40 ml Vt (2) 1-litter ar (2) 1-litter ar (3) 40 ml Vt (1) 500ml p 	oly plastic oly plastic oly plastic DA mber glass mber glass DA oly nalytical Other Lanc on Date	aster	None Nitric acid Hydrochloric acid Hydrochloric acid None Hydrochloric acid Nitricacid Chain-of-C Decontam	Filtered: []Yes, []N 	Νο ,
I         BTEX           MTBE         GRO a           DRO a         DRO a           Methan         Sulfate           HACH         Lead           VPH         EPH           PAHs         VOC'S           VOC'S         Total M           Methan            aboratory: <u>STL</u> :           Meter         H	1etals ] Arvada, CO, [] Aust <u>Serial No.</u> ] [] [] [] [] [] [] [] [] [] [] [] [] []	(1) 250 ml ( (1) 1-iiter pr (1) 125 ml ( (3) 40 ml VC (2) 1-iiter ar (3) 40 ml VC (1) 500ml p 	oly plastic oly plastic DA mber glass mber glass DA oly malytical Other Lanc on Date	aster Potable Wate	None Nitric acid Hydrochloric acid Hydrochloric acid None Hydrochloric acid Nitricacid Chain-of-C Decontam er: Yes [ No [ ]	Filtered: []Yes, []M 	No -↑ No[]
I         BTEX           MTBE         GRO a           DRO a         ORO a           Methal         Sulfate           HACH         HACH           Lead         VPH           EPH         PAHs           VOC'S         Total M           Total M            aboratory: <u>STL</u> : [           Meter            H	1etals ] Arvada, CO, [] Aust <u>Serial No.</u> [] [ <u>M. [0099</u> ]	(1) 250 ml g (1) 1-litter pr (1) 125 ml g (3) 40 ml Vt (2) 1-litter ar (2) 1-litter ar (3) 40 ml Vt (1) 500ml p 	oly plastic oly plastic DA mber glass mber glass DA oly malytical Other Lanc on Date	aster Potable Wate Liquinox:	None Nitric acid Hydrochloric acid Hydrochloric acid None Hydrochloric acid Nitricacid Chain-of-C Decontam er: Yes [ No [ ] Yes [ No [ ]	Filtered: []Yes, []M 	No[] → No[]

	DM BE	Sample Dati )	, <u> </u>	lenged y a	me: <u>011</u>	Well ID:	001
-ersonner:	$\frac{1}{2}$	AVC	weather:	<u>Annon C</u>			
Casing Diam	eter/Type:	117	_Measuring Point De	scription: <u>TC</u>	<u>DC North Side</u>	<u></u>	
Vell Depth (	eet below measuring poir	(1):/	Depth	to Water		ft water	r
			WELL EVA			×	
fethod: [] M	gal./ft * = one	anized Baller, [] PVC I a casing volume $5^{-1}$	Gals, x 3 = nurr	ethylene Bailer, []S	ST Bailer, & Subm	ersible Pump, [] Low	Flow
CH 40 Pipe	* 2* well = 0.163 gai./ft.	4" well = 0.653 gal./i	t. 6° well = 1.469	gal./ft. 8" well = 2	2.611 gal./ft. Any '	Well C feet in diameter	= 5.875 x C <sup>2</sup>
TART TIME	: 6924		PURGE RATE:	9 DM	- •	SET PUMP: 2	2
	V		EVACUATI	ON DATA			
Time	<u>pH</u>	DO	Temp	ORP	<u>sc</u>	TURBIDITY	DTW
_12	8 446	10,31	9.72	56,0	1010		
<u>930</u>	5 6.58	3,02	9.75	50.9	5193		
<u>935</u>	0,64	3.20	9,75	49.3	430		
<u>4 40</u>	0.00	3.09	9,75	4.18	457		1.00
			<u> </u>	·			
					1		
				J	1		
OTAL GALI	_ONS:						
			WELL SA	MPLING		/	
ampling Me	thod: [] Disposable Poly	Bailer, M Submersible	Pump, [] Low Flow	/, [] Other: <u>Peri Pur</u>	np_Sample Type: [*	Natural, [] Duplicate,	, [ ] Field Blank
	All COC	Sample Cor	<u>itainer</u>	<u>Pr</u>	<u>eservative</u>		
1	JTEX	(2) 40 ml V(			drochloric acid		
<u> </u> 	NIRF	Extracted fro	DI BIEX VOA	H) Hu	drochtoric acid		
<u> </u>     	MIBE 3RO as Gasoline	Extracted fr (2) 40 ml VC	OM BIEX VOA DA	Hy Hy Hy	drochloric acid		
<u>1</u>           	MTBE GRO as Gasoline DRO as Diesel Aethane	Extracted fr (2) 40 ml V( (2) 1-liter an (1) 40 ml V(	om BTEX VOA )A nber glass )A	H) Hy Hy St Hy	vdrochloric acid vdrochloric acid Ilfuric acid vdrochloric acid		
<u> </u>             	MIBE GRO as Gasoline DRO as Diesel Alethane Sulfate 1ACH	Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter po	om BTEX VOA DA nber glass DA oly plastic ly plastic	Hy Hy SL Hy No No	vdrochloric acid vdrochloric acid Ilfuric acid vdrochloric acid one		
1   	MIBE GRO as Gasoline DRO as Diesel Vethane Sulfate 1ACH .ead /PH	Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter po (1) 125 ml p (3) 40 ml V(	om BTEX VOA DA nber glass DA oly plastic oly plastic oly plastic DA	Hy Hy Su Hy Nc Ni Ui	vdrochloric acid vdrochloric acid ulfuric acid vdrochloric acid one tric acid vdrochloric acid	Filtered: []Yes, []1	No
	MIBE GRO as Gasoline DRO as Diesel Wethane Sulfate 1ACH .ead /PH IPH	Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter po (1) 1-liter po (3) 40 ml V( (2) 1-liter an	om BTEX VOA DA nber glass DA oly plastic oly plastic oly plastic DA tber glass	Hy Hy Su Na Na Ni Hy Hy	vdrochloric acid vdrochloric acid Ilfuric acid vdrochloric acid one ne tric acid vdrochloric acid vdrochloric acid	Filtered: []Yes, []1	Νο
1   	MIBE GRO as Gasoline DRO as Diesel Methane Sulfate HACH .ead /PH IPH 2AHs /OC'S	Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter pc (1) 125 ml p (3) 40 ml V( (2) 1-liter an (2) 1-liter an (3) 40 ml V(	om BTEX VOA DA nober glass DA loly plastic ly plastic oly plastic DA nober glass ther glass DA	Hy Hy Su Hy Na Na Ni Hy Hy Hy Na Hy	vdrochloric acid vdrochloric acid ilfuric acid vdrochloric acid one tric acid vdrochloric acid vdrochloric acid one vdrochloric acid	Filtered: []Yes,[]f	٧٥
	MIBE GRO as Gasoline DRO as Diesel Methane Sulfate HACH .ead /PH PH PH PH PAHs /OC'S Total Metals	Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter pc (1) 125 ml p (3) 40 ml V( (2) 1-liter an (3) 40 ml V( (1) 500ml pc	om BTEX VOA DA mber glass DA oly plastic oly plastic oly plastic JA nber glass nber glass DA JA	Hy Hy Su Hy Ne Na Ni Hy Hy Na Ni	rdrochloric acid rdrochloric acid Ilfuric acid rdrochloric acid one tric acid rdrochloric acid rdrochloric acid rdrochloric acid rdrochloric acid tricacid	Filtered: []Yes,[]1	Νο
	MIBE GRO as Gasoline DRO as Diesel Vethane Sulfate HACH Lead /PH PH PH PH PAHs /OC'S Fotal Metals	Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter pc (1) 150 ml p (3) 40 ml V( (2) 1-liter an (3) 40 ml V( (1) 500ml pc	om BTEX VOA DA mber glass DA oby plastic oly plastic oly plastic DA nber glass nber glass DA oly	Hy Hy Su Hy Na Ni Hy Ni Hy Ni	vdrochloric acid vdrochloric acid ulfuric acid vdrochloric acid one ne tric acid vdrochloric acid vdrochloric acid vdrochloric acid tricacid	Filtered: [] Yes, []	۷o
i boratory:	MIBE GRO as Gasoline DRO as Diesel Vethane Sulfate HACH Lead /PH PH PH PH PH PH PH PH PH PH PH PH PH P	Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter pc (1) 125 ml p (3) 40 ml V( (2) 1-liter ar (2) 1-liter ar (3) 40 ml V( (1) 500ml pc 	on BTEX VOA DA nober glass DA oby plastic oly plastic oly plastic DA nober glass nober glass DA nober glass DA nober glass DA nober glass DA nober glass	Hy Hy Su No No No Hy Hy No No Hy No No Hy No No	rdrochloric acid rdrochloric acid lifuric acid rdrochloric acid one tric acid rdrochloric acid rdrochloric acid rdrochloric acid tricacid Chain-of-O	Filtered: []Yes, []1	No
aboratory:	MIBE GRO as Gasoline DRO as Diesel Methane Sulfate HACH Lead /PH PH PH ZAHS /OC'S Fotal Metals <u>STL</u> : [] Arvada, CO, [] At <u>Serial No.</u>	Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter pc (1) 125 ml p (3) 40 ml V( (2) 1-liter ar (2) 1-liter ar (3) 40 ml V( (1) 500ml pc 	nn BTEX VOA DA nober glass DA oly plastic oly plastic oly plastic DA nober glass nober glass DA oly 	Hy Hy Su No No No No Hy Hy No No No No No No No No No No No No No	rdrochloric acid rdrochloric acid ilfuric acid rdrochloric acid one tric acid rdrochloric acid rdrochloric acid tricacid Chain-of-C Decontarr	Filtered: []Yes, []f	No
1	MIBE GRO as Gasoline DRO as Diesel Methane Sulfate HACH ead /PH PH PAHs /OC'S Total Metals <u>STL</u> : [] Arvada, CO, [] An <u>Serial No.</u>	Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter pc (1) 125 ml p (3) 40 ml V( (2) 1-liter ar (2) 1-liter ar (3) 40 ml V( (1) 500ml pc 	In BLEX VOA DA nober glasss DA Noly plastic Ny plastic Oly plastic DA nober glass nober glass DA Jy malytical Other Lene n Date	Hy Hy Su Ni Ni Hy Ni <del>- </del>	rdrochloric acid rdrochloric acid ilfuric acid rdrochloric acid one tric acid rdrochloric acid rdrochloric acid tricacid Chain-of-C <u>Decontarr</u> Yes [ ] No [ ]	Filtered: []Yes, []f  Custody: [TYes, []No <u>bination</u> Nitric Acid: Yes [	No 7 No[]

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	A 7	Sample Dat	e J-//-	<u>/6</u> _Tir	ne:	_Well ID: / ////	W
Personnel:	DM BC	2	Weather:	aring +	cod		
Casing Diameter/	Гуре: /	IVC	_Measuring Point De	scription: <u>TC</u>	C North Side		
Well Depth (feet b	elow measuring point):	,	5 Depth	to Water d	6,14	ft wate	r
Screen:			Depth	to Product			
			WELL EVA	CUATION			
Method: []Mecha • [63	anical Bailer, [] Galvar	nized Bailer, [] PVC	Bailer, [] Disp. Poly gais. x 3 = purg	ethylene Bailer, [] S e volume	ST Bailer, H Subme	ersible Pump, [] Low	Flow
SCH 40 Pipe * 2*	well = 0.163 gal./ft.	4* well = 0.653 gal./	ft. 6" well = 1.469	gal./ft. 8" well = 2	.611 gal./ft. Any V	Vell C feet in diameter	- 5.8
START TIME:	010		PURGE RATE:	5 your		SET PUMP: "	2
			EVAÇUATI	ON DATA		·	
Time	рH	<u>D0</u>	Temp	ORP	<u>SC</u>	TURBIDITY	
1012	7.10	7.91	4.97	-44.5	422		
1014	727	1.104	6-15	-589	409	1	
1010							
1010	724	1.19	5.17	-585	413		
1020	7.23	110	617	23	412		
1000			3.17				
TOTAL GALLONS							
TOTAL GALLONS	<u> </u>						
TOTAL GALLONS	<u> </u>		WELLSA				
TOTAL GALLONS	 :		WELL SA	MPLING			
TOTAL GALLONS	: [] Disposable Poly B	ailer, [] Submersible	WELL SA	MPLING /, [] Other: <u>Peri Pur</u>	<u>np_</u> Sample Type: [#	Natural, [j]Duplicate	, [ ] Fie
TOTAL GALLONS	: [] Disposable Poly B	ailer, [] Submersible Samole Co	WELL SA Pump, [] Low Flow ntainer	MPLING /, [] Other: <u>Peri Pur</u> Pr	np_Sample Type: [#	Natural, [#Duplicate	, ( ) Fi
TOTAL GALLONS Sampling Method	: [] Disposable Poly B	ailer, [] Submersible	WELL SA	MPLING /, []Other: <u>Peri Pur</u> Pr	np_Sample Type: [4]	Natural, [#Duplicate	., [ ] Fit
TOTAL GALLONS Sampling Method	: [] Disposable Poly B meter ac COC	ailer, [] Submersible Sample Co (2) 40 ml V	WELL SA Pump, [] Low Flow Intainer OA	MPLING /, []Other: <u>Peri Pur</u> Pr Hy	np_Sample Type: (* eservative vdrochloric acid	Natural, [jjDuplicate	, ( ) Fi
TOTAL GALLONS Sampling Method: Parar [] BTE> [] MTBI [] GRO	: [] Disposable Poly B meter as Gasoline	ailer, [] Submersible <u>Sample Co</u> (2) 40 mi V Extracted fi (2) 40 mi V	WELL SA Pump, [] Low Flow Intainer OA rom BTEX VOA OA	MPLING /, []Other: <u>Peri Pur</u> /, []Hy Hy Hy	np_Sample Type: ( eservative vdrochloric acid vdrochloric acid vdrochloric acid	Natural, [jjDuplicate	, [ ] Fi
TOTAL GALLONS Sampling Method: Parar 1 BTE2 1 BTE2 1 GRO 1 DRO	: [] Disposable Poly B meter ee coc = as Gasoline as Diesel	ailer, [] Submersible Sample Co (2) 40 ml V Extracted fi (2) 40 ml V (2) 1-liter a	WELL SA Pump, [] Low Flow Intainer OA from BTEX VOA OA mber glass	MPLING /, []Other: <u>Peri Pur</u> Pr Hy Hy Hy St	np_Sample Type: [# eservative rdrochloric acid rdrochloric acid rdrochloric acid rdrochloric acid	Natural, [#Duplicate	, ( ) Fi
TOTAL GALLONS Sampling Method: Parat [] BTE> [] MTBI [] GRO [] DRO [] Methi [] Sulfa	: [] Disposable Poly B meter eccoc as Gasoline as Diesel ane te	ailer, [] Submersible Sample Co (2) 40 mi V Extracted fi (2) 40 mi V (2) 1-liter a (1) 40 mi V (1) 250 mi	WELL SA Pump, [] Low Flow ntainer OA rom BTEX VOA OA mber glass OA oolv plastic	MPLING /, []Other: <u>Peri Pur</u> Pr Hy Hy Hy Su Su Nr	mp_Sample Type: [# eservative /drochloric acid /drochloric acid /drochloric acid /drochloric acid /drochloric acid /drochloric acid /ne	Natural, [jjDuplicate	, [ ] Fi
TOTAL GALLONS Sampling Method: Parat [] BTE> [] MTBI [] GRO [] Methi [] Sulfa [] Sulfa [] HACI	: [] Disposable Poly B meter ee COC = as Gasoline as Diesel ane te	ailer, [] Submersible <u>Sample Co</u> (2) 40 ml V Extracted fi (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p	WELL SA Pump, [] Low Flow Intainer OA rom BTEX VOA OA mber glass OA poly plastic oly plastic	MPLING /, [] Other: <u>Peri Pur</u> // Hy Hy Hy St St No No No	mp_Sample Type: [# eservative vdrochloric acid vdrochloric acid vdrochloric acid ulfuric acid ulfuric acid ne one	Natural, [#Duplicate	, ( ) Fi
TOTAL GALLONS Sampling Method: Parat [] BTE> [] MTBI [] GRO [] DRO [] Methi [] Sulfa [] HACI [] Lead	: [] Disposable Poly B meter de COC = as Gasoline as Diesel ane te	ailer, [] Submersible <u>Sample Co</u> (2) 40 ml V Extracted fi (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml	WELL SA Pump, [] Low Flow Intainer OA rom BTEX VOA OA OA poly plastic oly plastic poly plastic poly plastic	MPLING /, [] Other: <u>Peri Pur</u> /, [] Other: <u>Peri Pur</u> Hy Hy Hy Su Hy No No No No	mp_Sample Type: [# eservative vdrochloric acid vdrochloric acid vdrochloric acid ulfuric acid vdrochloric acid ne one tric acid	Natural, [JOuplicate	, ( ) Fi No
TOTAL GALLONS Sampling Method Parar Parar Diamond Sampling Method Sampling Method Sampling Method DRO DRO DRO DRO DRO DRO DRO DRO DRO DRO	: [] Disposable Poly B meter ee COC as Gasoline as Diesel ane te H	ailer, [] Submersible <u>Sample Co</u> (2) 40 mi V Extracted fi (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a	WELL SA Pump, [] Low Flow nlainer OA rom BTEX VOA OA DA poly plastic oly plastic oly plastic oly plastic DA poly plastic poly plastic	MPLING /, []Other: <u>Peri Pur</u> Hy Hy Su Hy Su Na Na Na Na Na Na Na Na Na Na Na Na Na	mp_Sample Type: [* eservative vdrochloric acid vdrochloric acid iduric acid iduric acid idrochloric acid one tric acid vdrochloric acid vdrochloric acid	Filtered: [] Yes, []	, ( ) Fi
TOTAL GALLONS Sampling Method: Parar 2 [] BTE> [] MTBI [] GRO [] DRO [] DRO [] Meth [] Sulfa [] HACI [] Lead [] VPH [] EPH	: [] Disposable Poly B meter ac COC as Gasoline as Diesel ane te H	ailer, [] Submersible <u>Sample Co</u> (2) 40 ml V Extracted fr (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (2) 1-liter a	WELL SA Pump, [] Low Flow ntainer OA rom BTEX VOA OA mber glass OA poly plastic oly plastic oly plastic OA mber glass mber glass	MPLING /, []Other: <u>Peri Pur</u> Hy Hy Hy Su Hy No Ni Hy No Ni	<u>mp</u> Sample Type: [# eservative vdrochloric acid vdrochloric acid ilfuric acid ilfuric acid vdrochloric acid one tric acid vdrochloric acid one sone tric acid vdrochloric acid one	Filtered: [] Yes, []	., [ ] Fi
TOTAL GALLONS Sampling Method: Parar () BTE> () MTBI () GRO () DRO () Methi () Sulfa () HACI () Lead () VPH () EPH () PAHs () VOC'	: [] Disposable Poly B meter e COC = as Gasoline as Diesel ane te - -	ailer, [] Submersible Sample Co (2) 40 ml V Extracted fr (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (3) 40 ml V (2) 1-liter a (3) 40 ml V	WELL SA Pump, [] Low Flow Intainer OA OA mber glass OA poly plastic oly plastic oly plastic OA mber glasss OA mber glasss OA	MPLING /, [] Other: <u>Peri Pur</u> Hy Hy Hy Su Hy No Ni Hy No Ni Hy No Ni	np_Sample Type: [* eservative vdrochloric acid vdrochloric acid ulfuric acid vdrochloric acid ulfuric acid vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid	Natural, [jDuplicate	, [ ] Fi
TOTAL GALLONS Sampling Method Parar () BTE> () MTBI () GRO () DRO () Metha () Sulfa () Sulfa () Lead () Lead () VPH () EPH () PAHs () VOC' () Total	: [] Disposable Poly B meter as Gasoline as Diesel ane te H	ailer, [] Submersible Sample Co (2) 40 ml V Extracted fr (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V (1) 500ml p	WELL SA Pump, [] Low Flow Intainer OA om BTEX VOA OA mber glass OA poly plastic oly plastic OA mber glass mber glass OA mber glass OA	MPLING /, []Other: <u>Peri Pur</u> /, []Other: <u>Peri Pur</u> Hy Hy Su Hy Su No Ni Ni Ni Ni	np_Sample Type: ( eservative vdrochloric acid vdrochloric acid vdrochloric acid ulfuric acid vdrochloric acid ulfuric acid vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid	Natural, [jDuplicate	, ( ) Fi
TOTAL GALLONS Sampling Method: Parar Sampling Method: Definition Sampling Method: Defi	: [] Disposable Poly B meter as Gasoline as Diesel ane te 1 S Metals	ailer, [] Submersible Sample Co (2) 40 ml V Extracted fi (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V (1) 500ml p	WELL SA Pump, [] Low Flow Intainer OA rom BTEX VOA OA mber glass OA poly plastic oly plastic oly plastic OA mber glass OA mber glass OA mber glass OA	MPLING /, []Other: <u>Peri Pur</u> /, []Other: <u>Peri Pur</u> Hy Hy St Hy St Hy No Ni Hy No Ni	np_Sample Type: ( eservative vdrochloric acid vdrochloric acid vdrochloric acid ulfuric acid vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid	Filtered: [] Yes, []	, [ ] Fi
TOTAL GALLONS Sampling Method: Parar	E [] Disposable Poly B meter ac COC as Gasoline as Diesel ane te te f	ailer, [] Submersible Sample Co (2) 40 mi V Extracted fi (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (3) 40 ml V (2) 1-liter a (3) 40 ml V (1) 500ml p 	WELL SA WELL SA Pump, [] Low Flow Intainer OA rom BTEX VOA OA poly plastic oly plastic oly plastic oly plastic oly plastic oly plastic oly plastic OA mber glass mber glass mber glass ober glas ober glass ober glass ober glass ober glass ober glas	MPLING (] Other: <u>Peri Pur</u> Hy Hy Hy Su Hy No No No No No No No No No No	mp_Sample Type: [# eservative vdrochloric acid vdrochloric acid	Filtered: [] Yes, []	, ( ) Fi
TOTAL GALLONS Sampling Method: Parat Parat I BTE> I MTBI I GRO I Metha I CRO I Metha I Lead I VPH I PAH I PAH	S:	ailer, [] Submersible Sample Co (2) 40 ml V Extracted fi (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 125 ml (1) 125 ml (3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V (1) 500ml p (1) 500ml p tin, TX, [] Northern A	WELL SA WELL SA Pump, [] Low Flow Intainer OA rom BTEX VOA OA mber glass OA poly plastic oly plastic oly plastic oly plastic oda mber glass mber glass oda beigging mber glass oda mber glass oda mber glass oda mber glass oda mber glass oda mber glass oda mber glass oda mber glass oda	MPLING /, [] Other: <u>Peri Pur</u> Pr Hy Hy Su Hy No No No No No No No No No No	mp_Sample Type: [4] eservative vdrochloric acid vdrochloric acid ufuric acid ufuric acid ufuric acid vdrochloric acid	Filtered: [] Yes, []	, [ ] Fi No
TOTAL GALLONS Sampling Method Parar () BTE> () BTE> () MTBI () GRO () Metha () DRO () Metha () Sulfa () HACI () Lead () VPH () EPH () PAHs () VOC' () Total () Total () Total () Laboratory: <u>STL</u> : <u>Meter</u> pH	: [] Disposable Poly B meter as Gasoline as Diesel ane te H S S Metals [] Arvada, CO, [] Aus Serial No. (] M. JUD P	ailer, [] Submersible <u>Sample Co</u> (2) 40 ml V Extracted fr (2) 40 ml V (2) 1-liter a (1) 40 ml V (2) 1-liter a (1) 125 ml (3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V (2) 1-liter a (3) 40 ml V (1) 500ml p 	WELL SA Pump, [] Low Flow Intainer OA rom BTEX VOA OA mber glass OA poly plastic oly plastic oly plastic OA mber glass OA mber glass OA Mathematical Other Law Mathematical Other Law	MPLING /, [] Other: <u>Peri Pur</u> Hy Hy Su Hy Su No No No No No No No No No No	np_Sample Type: ( eservative rdrochloric acid rdrochloric acid	Filtered: [] Yes, [] Custody: []-Yes, [] Nitric Acid: Yes	No
TOTAL GALLONS Sampling Method: Parar Parar Display Sectors Sampling Method: Parar Parar SC	: [] Disposable Poly B meter ac COC as Gasoline as Diesel ane te -1 S S Metals [] Arvada, CO, [] Aus <u>Serial No.</u> (] <u>M. IUO</u>	ailer, [] Submersible <u>Sample Co</u> (2) 40 ml V Extracted fr (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V (2) 1-liter a (3) 40 ml V (1) 500ml p 	WELL SA WELL SA Pump, [] Low Flow Intainer OA rom BTEX VOA OA mber glass OA poly plastic oly plastic oly plastic oly plastic oly plastic oly plastic oly plastic oly plastic OA mber glass mber glass OA mber glass OA DA mber glass OA DA DA DA DA DA DA DA DA DA D	MPLING MPLING ( ] Other: <u>Peri Pur</u> Hy Hy Su Hy Na Na Na Na Na Na Na Na Na Na	mp_Sample Type: [# eservative vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid ilfuric acid vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid vdrochloric acid tricacid vdrochloric acid vdrochloric acid vdro	Filtered: []Yes, [] Custody: []-Yes, []Nitric Acid: Yes [ DI Water: Yes [	, ( ) Fir
TOTAL GALLONS Sampling Method: Parar Para	: [] Disposable Poly B meter as Gasoline as Gasoline as Diesel ane te -1 S S Metals [] Arvada, CO, [] Aus Serial No. // M. / DU P	ailer, [] Submersible <u>Sample Co</u> (2) 40 ml V Extracted fr (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (3) 40 ml V (2) 1-liter a (3) 40 ml V (1) 500ml p  tin, TX, [] Northern A <u>Calibrati</u>	WELL SA WELL SA Pump, [] Low Flow Intainer OA rom BTEX VOA OA poly plastic oly plastic onber glass mber glass onber glass OA noiy malytical Other Lass on Date	MPLING MPLING ( ] Other: Peri Pur Pr Hy Hy Hy Su No No No No No No No No No No	mp_Sample Type: [* eservative vdrochloric acid vdrochloric acid	Filtered: []Yes, [] Custody: []-Yes, []Nu ination Nitric Acid: Yes [ DI Water: Yes [	No

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	Project: Dal	le Chea	Sample Date	<u>, 7-1/-</u>	-/ 4	me: <u>110</u>	Well ID:	MCZ
ş	Personnel:	<u> 1 11 / 11 / 11 / 11 / 11 / 11 / 11 / </u>	atel	Weather:C	learing &	- Corol		
(	Casing Diameter/Ty	ре:	Max 21	_Measuring Point De	scription: <u> </u>	C North Side		
١	Well Depth (feet bel	ow measuring point):		Depth t	to Water	<u>a,/s</u>	ft wat	er
:	Screen:			Depth	to Product			
				WELL EVAC	CUATION			
1	Method: []Mechani	cal Bailer, [] Galvan	ized Bailer, [] PVC   asing volume	Bailer, [] Disp. Polye	ethylene Bailer, []S	ST Bailer, [/Subme	ersible Pump, [] Lov	/ Flow
5	SCH 40 Pipe * 2* w	eli = 0.163 gal./ft.	4* well = 0.653 gal./f	t. 6* well = 1.469	gal./ft. 8* well = 2 ر	2,611 gal./ft. Any V	Vell C feet in diamete	$r = 5.875 \times C^2$
ş	START TIME: 19	<u>ک ک</u> ر		PURGE RATE: 4	Ngpm		SET PUMP;	9
				EVACUATIO	ON DATA			
	Time	<u>рН</u>	<u>00</u>	Temp	ORP	SC	TURBIDITY	<u>DTW</u>
-16	1559	8.13	1.68	7.80	-171,6	1102		
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$\hat{n}$	1055	6.99	3.9	7.00	-28	1500		
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-	TOTAL GALLONS:_	<u>~ 20 3</u>	-10 10	3-11				
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ş	Sampling Method: [	] Disposable Poly Ba	aller, M Submersible			<u>ounpio apporte</u>	fridania, [] Dopical	е, [ ] мею віапк
٤	Sampling Method: ( <u>Parame</u>	I Disposable Poly Ba	Sample Cor	ntainer	Pr	eservative		e, [] Pieło Blank
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: [ [	Sampling Method: [ Parame [] BTEX [] MTBE [] GRO as	I Disposable Poly B; ter See C C C Gasoline	(2) 40 ml VC (2) 40 ml VC Extracted fr (2) 40 ml VC	ntainer DA om BTEX VOA DA	Pr Hy Hy Hy	veservative vdrochloric acid vdrochloric acid vdrochloric acid	, nakina, (j bipnoa	e, [ ] meio Biank
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	Sampling Method: [ Parame ] BTEX ] MTBE ] GRO as ] DRO as ] DRO as ] DRO as ] URO AS	I Disposable Poly B; Ref See C C C s Gasoline s Diesel e etals	C Sample Co (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter pc (1) 125 ml p (3) 40 ml V( (2) 1-liter ar (3) 40 ml V( (1) 500ml p (3) 40 ml V( (1) 500ml p	ntainer DA om BTEX VOA DA nber glass DA Joly plastic oly plastic oly plastic DA nber glass nber glass DA JV	Pi Hy Hy St Hy No Hy Hy Hy No Hy No	vdrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid tricacid	Filtered: []Yes, []	e, [ ] meio Biank
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:   	Sampling Method:         Parame           Parame         Parame           I         BTEX           MTBE         GRO as           I         GRO as           I         DRO as           I         Sulfate           I         HACH           I         Lead           I         VPH           I         PAHs           I         VOC'S           I         Total M           I         Laboratory: STL:	I Disposable Poly B;  Refer See C C C  S Gasoline S Diesel e etals etals etals	C Sample Co (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter pc (1) 125 ml p (1) 1-liter ar (2) 1-liter ar (3) 40 ml V( (1) 500ml p (1) 1-liter ar (3) 40 ml V( (1) 500ml p	ntainer DA om BTEX VOA DA mber glass DA oly plastic voly plastic voly plastic DA mber glass DA oly 		reservative gdrochloric acid ydrochloric acid	Filtered: [] Yes, []	e, [ ] meio Biank
	Parame           Parame           []         BTEX           []         MTBE           []         GRO as           []         DRO as           []         HACH           []         Lead           []         VPH           []         PAHs           []         VOC'S           []         Total M           []         Laboratory:           STL:         []	I Disposable Poly B;  Atter See C C C  S Gasoline Diesel e etals I Arvada, CO, [] Aust Serial No	C Sample Co (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 40 ml V( (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter pr (3) 40 ml V( (2) 1-liter ar (3) 40 ml V( (1) 500ml p (1) 500ml p	ntainer DA om BTEX VOA DA nber glass DA Joly plastic Jy plastic DA nber glass nber glass DA nber glass DA nber glass DA nber glass DA nber glass DA Data	Pr Hy Hy St St No No No No No No No No No No No No No	vdrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid tricacid Chain-of-C	Filtered: [] Yes, []	e, [ ] meio Biank
	Parame           Parame           Parame           I           BTEX           MTBE           GRO as           DRO as           DRO as           Sulfate           HACH           Laboratory:           STL:	etals	C Sample Co (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter pc (1) 125 ml p (1) 1-liter pc (1) 125 ml p (1) 1-liter ar (2) 1-liter ar (3) 40 ml V( (2) 1-liter ar (3) 40 ml V( (1) 500ml p) (1) 500ml p (1) 500ml p (1	ntainer DA om BTEX VOA DA onber glass DA oly plastic voly plastic voly plastic DA oly plastic DA oly plasts DA oly class DA oly mober glass DA oly mober glass DA	Pr Hy Hy St St Hy No Ni Hy Hy Ni St Ni Ni Ni Ni Ni Ni Ni Ni Ni Ni Ni Ni Ni	vdrochloric acid ydrochloric acid	Filtered: [] Yes, [] Sustody: {] Yes, [] N ination	
	Sampling Method: [ Parame [] BTEX [] MTBE [] GRO as [] DRO as	I Disposable Poly B; Per See C C C s Gasoline s Diesel e etals Arvada, CO, [] Aust <u>Serial No.</u> ///// /	C Sample Co (2) 40 ml V( Extracted fr (2) 40 ml V( (2) 1-liter ar (1) 40 ml V( (1) 250 ml p (1) 1-liter pr (1) 125 ml p (3) 40 ml V( (2) 1-liter ar (3) 40 ml V( (2) 1-liter ar (3) 40 ml V( (1) 500ml p (1) 500ml p	ntainer DA om BTEX VOA DA nber glass DA Joly plastic Jy plastic DA nber glass DA nber glass DA nber glass DA oly malytical Other Lenc <u>In Date</u> <u>I - I b</u>	Pr Hy Hy St St No No No No No No No No No No No No No	reservative ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid tricacid Chain-of-C <u>Decontam</u> : Yes [-] No []	Filtered: [] Yes, [] 	No  o
	Sampling Method:         Parame           Parame         Parame           I         BTEX           I         MTBE           I         GRO as           I         DRO as           I         DRO as           I         Sulfate           I         HACH           I         Lead           I         VPH           I         PAHs           I         VOC'S           I         Total M           I	I Disposable Poly B; Peter See C C C s Gasoline s Diesel e etals Arvada, CO, [] Aust Serial No. ()) ()00 9 ()00 9	Sample Co: (2) 40 ml Vi Extracted fr (2) 40 ml Vi (2) 40 ml Vi (2) 40 ml Vi (2) 1-liter ar (1) 40 ml Vi (1) 250 ml p (1) 1-250 ml p (1) 1250 ml p (1) 1250 ml vi (2) 1-liter ar (3) 40 ml Vi (2) 1-liter ar (3) 40 ml Vi (1) 500ml p (1) 500ml p (1	ntainer DA om BTEX VOA DA mber glass DA ooly plastic ooly plastic ooly plastic DA nber glass DA oly malytical Other Lence <u>I - 1 6</u>	Pr Hy Hy St St St Hy Ni Ni Hy Ni Ni Potable Water Liquinox:	reservative ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid tricacid Chain-of-C <u>Decontam</u> : Yes [ ] No [ ]	Filtered: [] Yes, [] Dustody: {] Yes, [] N ination Nitric Acid: Yes DI Water: Yes	No  0  1  1 No [ ]  1 No [ ]
	Sampling Method: [ Parame Parame Data Second Parame Parame Parame Parame Parame Parame PARS	I Disposable Poly B; eter See C C C s Gasoline s Diesel e etals Arvada, CO, [] Aust <u>Serial No.</u> () () D 7 () () D 7 () () D 7 () () () () () () () () () () () () () (	C     Sample Co     (2) 40 ml V(     Extracted fr     (2) 40 ml V(     (2) 1-liter ar     (1) 40 ml V(     (1) 250 ml p     (1) 1-liter p     (1) 1-liter p     (1) 1-liter ar     (2) 1-liter ar     (3) 40 ml V(     (2) 1-liter ar     (3) 40 ml V(     (1) 500ml p   in, TX, [] Northern Ar     Calibratic     32-1	ntainer DA om BTEX VOA DA nber glass DA Doly plastic Jy plastic Jy plastic DA nber glass DA oly malytical Other Lene <u>In Date</u> <u>I - 1 6</u>	Pr Hy Hy St St St Hy No No No No No No No No No No No No No	ydrochloric acid ydrochloric acid tricacid Chain-of-C <u>Decontam</u> : Yes [ ] No [ ] Yes [ ] No [ ]	Filtered: []Yes, [] Dustody: {]Yes, []M ination Nitric Acid: Yes DI Water: Yes Steam: Yes	No  o [

Project: BT	C DPT (P)	CEO_Sample Da	⊫ <u> </u>	<b>^</b>	_Time:	Well ID:	DPT-C
Personnel:	-Reed		Weather: _SUN	ay, cle	ar		
Casing Diameter/	Гуре: <u>З/ц" Р</u>	<u>vc</u>	_Measuring Point De	scription:	TOC North Side		<b>-</b>
Well Depth (feet t	elow measuring point;	<u>    14.9'                                    </u>	Depth	to Water	5.4ft	ft wat	er
Screen:	<u>5.tt</u>		Depth	to Product			
		·	WELL EVA		<u> </u>		
Method: [] Mecha	anical Bailer, [] Galva	nized Bailer, [] PVC	Bailer, [] Disp. Polye	ethylene Bailer, [	] SST Bailer, [] Subr	nersible Pump, [] Lov	v Flow
	gal./ft * = one -	casing volume	gals. x 3 = purg	e volume	gals.		
SCH 40 Pipe * 2	well = 0.163 gal./ft.	4" well = 0.653 gal./	ft. 6* well = 1.469	gal./ft. 8" well :	= 2.611 gal./it. Any	v Well C feet in diamete	er = 5.875 x (
START TIME:	245		PURGE RATE:	O / L/MIN	,	SET PUMP:	
DEVELO	OMENT PU	rging	EVACUATIO	<u>ON DATA</u>		WL C /25	55 11.
Time	<u> </u>	DO	Temp	ORP	SC		
1310	9.05	5.06	9.46	32.2	/	clean	m.
13/5	6.(0	5.30	12.57	26.2	- 5	dear	DR
							<u> </u>
	<u> </u>						
TOTAL GALLONS	;				50	moled e	1835
			WELL SA	MPLING,		F	
Sampling Method	[] Disposable Poly E	ailer, [] Submersible	Pump, [] Low Flow	, [] Other: Peri I	Pump_Sample Type:	Natural, [] Duplica	te, [] Field Bl
Para	neter	Sample Co	ntainer	Υ·	Preservative		
[] BTE>	[	(2) 40 ml V	0A		Hydrochloric acid		
[] MTBI [] GRO	: as Gasoline	Extracted f (2) 40 ml V	rom BTEX VOA OA		Hydrochloric acid Hydrochloric acid		
[] DRO	as Diesel ane	(2) 1-liter a	mber glass OA		Sulfuric acid		
Sulfa	ie I	(1) 250 ml	poly plastic		None		
[] HACI	1	(1) 1-iiiei p (1) 125 ml	poly plastic		None Nitric acid	Filtered: [] Yes, [	] No
[] VPH		(3) 40 ml V (2) 1-liter a	OA mber glass		Hydrochloric acid Hydrochloric acid		
[] EPH	s S	(2) 1-liter a (3) 40 ml V	mber glass 'OA		None Hydrochloric acid		
[] EPH [] PAH: [] VOC		(1) 500mLp			Nitricacid	,	
[] EPH [] PAH: [] VOC [] Total	Metals	/// 20			·		
[] EPH [] PAH: [] VOC [] Total [] Total	Metals 5 netals 2015, ctc.	<u>(1) 28</u> 	2014				
[]         EPH           []         PAHs           []         VOC'           []         Total           []         Cotal           []         Cotal	Metals <u>Snefab</u> <u>2ns</u> , cfr. [] Arvada, CO, [] Aus	<u>(1) 29 (1)</u> معادر (1) Stin, TX, [] Northern	Analytical Other Land	aster	Chain-o	f-Custody: []Yes, []I	No
[]     EPH       []     PAH       []     VOC       []     Total       []     CL       Laboratory:     STL:       Meter	Metals <u>Source</u> <u>Metals</u> <u>Source</u> <u>Serial No.</u>	tin, TX, [] Northern A <u>Calibrati</u>	Analytical Other Land	aster	_ Chain-o	F-Custody: []Yes, []I	No
[] EPH [] PAH: [] VOC [] Total II cen- Laboratory: <u>STL</u> : <u>Meter</u> pH	Metals <u>Sous</u> cfr [] Arvada, CO, [] Aux <u>Serial No.</u>	(1) 28 stin, TX, [] Northern A <u>Calibrati</u>	Analytical Other Lang	easter Potable Wa	Chain-o Deconta ter: Yes [ ] No [ ]	f-Custody: []Yes, []  mination ] Nitric Acid: Yes	No s[] No[
[] EPH [] PAHs [] VOC [] Total [] ctu Laboratory: <u>STL</u> : <u>Meter</u> pH SC	Metals <u>5 Ne Jab</u> <u>5 Ne Jab</u> <u>1</u> Arvada, CO, [] Aus <u>Serial No.</u>	Stin, TX, [] Northern A <u>Calibrati</u>	2014	aster Potable Wa Liquinox:	Chain-o Deconta tter:Yes[]No[ Yes[]No[]	f-Custody: []Yes, []  I <u>mination</u> ] Nitric Acid: Yes   DI Water: Yes	No s[] No[ s[] No[]
[] EPH [] PAH: [] VOC [] Total [] cen. Laboratory: <u>STL</u> : <u>Meter</u> pH SC ORP	Metals <u>5 Ne fa</u> <u>1</u> Arvada, CO, [] Au: <u>Serial No.</u>	Stin, TX, [] Northern A Calibrati	2014 Analytical Other Land	<u>aster</u> Potable Wa Liquinox: Methanol:	Chain-or Deconta tter:Yes[]No[] Yes[]No[] Yes[]No[]	f-Custody: []Yes, []  I <u>mination</u> ] Nitric Acid: Yes ] DI Water: Yes ] Steam: Ye	No s[] No[ s[] No[] s[] No[]

Project:		Sample Date	<u> </u>	7Tîm	16: <u> </u>	_Well ID; _ <u>p/C</u> ;	PFL
Personnel: <u>R</u>	Keed	<u> </u>	Weather: _SUN	14, Clean	70		
Casing Diameter/T	rype: <u>3/4 /</u>	~~	Measuring Point De	scription: <u>TO</u>	C North Side		
Well Depth (feet b	elow measuring point):	13 Ft	Depth	to Water	<u>b3 BGS</u>	ft wa	ter
Saraan 87 9	5-13 Ft		Depth	to Product $N$	A		
			WELL_EVA	CUATION			
Method: [] Mecha	anical Bailer, [] Galvani	zed Bailer, [] PVC	Bailer, [] Disp. Poly	ethylene Bailer, []S	ST Bailer, [] Subme	ersible Pump, [] Lo	w Flow
·····	gal./ft * = one ca	ising volume	gals. x 3 = purg	ge volume	gals.		
SCH 40 Pipe * 2"	well = 0.163 gal./ft.	4" well = 0.653 gal./i	ft. 6" well = 1.469	gal./ft. 8" well = 2	.611 gal./ft. Any \	Vell C feet in diamet	ter = 5.875 x
START TIME:	150		PURGE RATE:	0.5 L/MIN	i	SET PUMP:	
start devi	clopment pum	ping	EVACUAT	ION DATA			
Time	<mark>рН</mark>	<u>D0</u>	Temp	ORP	<u>sc</u>		DT
1205	718	0,00	9.11°C	-10.1	312	clear	
1210	7.27	0.00	9.09	-28.1	326	deri	
615	7.90	0.00	9.32	-31.5	323	dear	
1270	7,77	0.00	9.35	-40.3	327	clear	
12.25	7.76	1.60	9.31	-2.2.1	323	dean	-
11,30	7.78	1.70	9.37	-16.6	325	alcus	
1000			<b>(</b> ``` '				
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			1	1			
TOTAL GALLON	S:				Sa	mpled i	2-30
TOTAL GALLON:	S:		WELLS		Sa	mpled i	2.30
TOTAL GALLON	S:	nilor (1 Submercible	WELL S	AMPLING	Sample Type: 1	mpled 1	2 <u>.30</u>
TOTAL GALLON:	S:	ailer, []Submersible	WELL S.	AMPLING w, [] Other: Peri Pu	<u>Sample Type:</u>	<u>Mp le cl 1</u>	2 <u>.30</u>
TOTAL GALLON: Sampling Method	S: t: [] Disposable Poly Ba meter	ailer, [] Submersible <u>Sample Cc</u>	WELL S. WELL S. Pump, [] Low Floo ontainer	AMPLING w, [] Other: Peri Pu Pr	Sample Type: (	Mp [ec] 1	2 <u>-30</u>
TOTAL GALLON: Sampling Method Para () BTE	S: I: [] Disposable Poly Ba meter X	ailer, [] Submersible Sample Co (2) 40 ml V Extracted f	WELL S. Pump, [] Low Floon Intainer /OA rom BTEX VOA	AMPLING w, []Other: <u>Peri Pu</u> Pi H H H	mp_Sample Type: ( reservative ydrochioric acid ydrochioric acid	<u>mp [ec[]</u>	2_30_
TOTAL GALLON: Sampling Method Para [] BTE [] MTB [] GRC	S: S: I: [] Disposable Poly B: meter X E D as Gasoline	ailer, [] Submersible <u>Sample Cc</u> (2) 40 ml V Extracted f (2) 40 ml V	WELL S. Pump, [] Low Floor ontainer /OA from BTEX VOA /OA	AMPLING w, [] Other: Peri Pu Pi H H H H	Sample Type: [ reservative ydrochloric acid ydrochloric acid ydrochloric acid	<u>mp [e c[ ]</u>	2 <u>.30</u>
TOTAL GALLON: Sampling Method Para [] BTE [] MTB [] GRC [] DRC [] DRC [] Meth	S: S: I: [] Disposable Poly Ba <u>meter</u> X E D as Gasoline D as Diesel nane	ailer, [] Submersible <u>Sample Cc</u> (2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter z (1) 40 ml V	WELL S. Pump, [] Low Floontainer /OA COA COA Wimber glass /OA	AMPLING w, [] Other: <u>Peri Pu</u> P H H H H S H	Sample Type: ( reservative ydrochloric acid ydrochloric acid ulfuric acid ulfuric acid ydrochloric acid	<u>тр [е с []</u> ] Natural, [] Duplic	2 <u>30</u>
TOTAL GALLON: Sampling Method Para [] BTE [] MTB [] GRC [] DRC [] DRC	S: S: I: [] Disposable Poly Bar meter X IE ) as Gasoline ) as Diesel vane ate <b>April 25 C</b>	ailer, [] Submersible Sample CC (2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter (1) (1) 1-liter (1) 1-liter (1) (1) 1-liter (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	WELL S. Pump, [] Low Floo ontainer /OA /OA /OA /OA /OA /OA /OA /OA	AMPLING w, [] Other: <u>Peri Pu</u> Pi H H H H S N N N	<u>mp</u> Sample Type: [ reservative ydrochloric acid ydrochloric acid ulfuric acid ulfuric acid ulfuric acid one lone	<u>mp [e c[ ]</u>	2-30
TOTAL GALLON: Sampling Method Para [] BTE [] MTB [] GRC [] DRC [] DRC [] HAC [] Lead	S: S: I: [] Disposable Poly B: meter X E D as Gasoline D as Gasoline D as Diesel hane Ate <u>Anthons etc</u> H	ailer, [] Submersible Sample Co (2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml	WELL S. Pe Pump, [] Low Flor ontainer (OA from BTEX VOA (OA (OA mber glass (OA poly plastic poly plastic poly plastic poly plastic	AMPLING w, []Other: <u>Peri Pu</u> Pi H H H H S N N N N N N N	mp_Sample Type: ( reservative ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid ulfuric acid ione itric acid	<u>mp [e c ] 1</u>	2_30 ate, [] Field
Sampling Method	S: S: I: [] Disposable Poly Ba <u>meter</u> X E D as Gasoline D as Diesel Nane ate <b>Anti-vas e</b> + <del>c</del> H	aller, [] Submersible Sample Cc (2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter p	WELL S. WELL S. Pump, [] Low Floor Intainer (OA rom BTEX VOA (OA unber glass (OA poly plastic poly plastic	AMPLING w, [] Other: <u>Peri Pu</u> H H H H N N N N N N N N H	Sample Type: ( reservative ydrochioric acid ydrochioric acid ydrochioric acid ydrochioric acid ydrochioric acid lone litric acid lydrochioric acid lydrochioric acid	Mp [e c ] 1 ] Natural, [] Duplic Filtered: [] Yes,	2_30 ate, [] Field
TOTAL GALLON: Sampling Method Para [] BTE [] MTB [] GRC [] DRC [] DRC [] HAC [] Lead [] VPH [] EPH [] PAH	S: S: I: [] Disposable Poly Ba meter X E D as Gasoline D as Diesel hane ate <b>Anitoto Set</b> hane te <b>Anitoto Set</b> hane	ailer, [] Submersible <u>Sample Cc</u> (2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (2) 1-liter a	WELL S. WELL S. Pump, [] Low Floor Datainer VOA Trom BTEX VOA VOA Without glass VOA poly plastic poly plastic poly plastic VOA mober glass amber glass	AMPLING w, [] Other: Peri Pu H H H H N N N N N N N N N N N N N N N	Sample Type: ( reservative ydrochloric acid ydrochloric acid ydrochloric acid ydrochloric acid lone litric acid lydrochloric acid lydrochloric acid lydrochloric acid lydrochloric acid lone	Mp [e c ] 1	2 <u>.30</u> ate, [] Field
TOTAL GALLON: Sampling Method Para [] BTE [] MTB [] GRC [] DRC Method Sulfa [] HAC [] Lead [] Lead [] EPH [] PAH [] VOC	S: S: I: [] Disposable Poly B: <u>meter</u> X E D as Gasoline D as Diesel hane ate <b>Anima of C</b> H I I I S S	ailer, [] Submersible <u>Sample CC</u> (2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter g (1) 125 ml (1) 1-liter p (1) 125 ml (3) 40 ml V (2) 1-liter a (2) 1-liter a (3) 40 ml V	WELL S. WELL S. Pump, [] Low Floor Dontainer YOA Trom BTEX VOA YOA Trom BTEX Trom BTEX Trom BTEX Trom BTEX Trom BTEX Trom BTEX Trom BTEX	AMPLING w, [] Other: Peri Pu H H H S S H N N N N H H H H H H H	Sample Type: ( reservative ydrochloric acid ydrochloric acid ulfuric acid ulfuric acid ulfuric acid lydrochloric acid lone litric acid ydrochloric acid lydrochloric acid lydrochloric acid lydrochloric acid lydrochloric acid lydrochloric acid	<u>Mp [e c i</u> ] ] Natural, [] Duplic Filtered: [] Yes,	2 <u>.30</u> ate, [] Field
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TOTAL GALLON: Sampling Method Para I BTE I MTB I GRC I DRC Method I Lead I PAH I PAH I PAH I VOC I Tota I AD I Cota I DRC I D	S: S: meter X E D as Gasoline D as Diesel hane ate <i>Antons etc</i> H d Metals <i>S</i> , <i>metals</i> <i>fons g f C</i> : [] Arvada, CO, [] Aus <u>Serial No.</u>	ailer, [] Submersible <u>Sample Cc</u> (2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter g (1) 1250 ml (1) 1250 ml (1) 1250 ml (2) 1-liter g (2) 1-liter g (3) 40 ml V (2) 1-liter g (3) 40 ml V (1) 500ml (2) 2-22 (3) 40 ml V (1) 500ml (2) 2-22 (3) 40 ml V (2) 1-liter g (3) 40 ml V (2) 1-liter g (3) 40 ml V (2) 1-liter g (3) 40 ml V (1) 500ml (1) 500ml (1) 500ml (1) 2-22 (2) 1-liter g (3) 40 ml V (2) 1-liter g (3) 40 ml V (2) 1-liter g (3) 40 ml V (2) 1-liter g (3) 40 ml V (1) 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10	WELL S. WELL S. Pump, [] Low Floor Datainer YOA Trom BTEX VOA YOA Trom BTEX Trom Trom Trom Trom Trom Trom Trom Trom	AMPLING w, [] Other: Peri Pu H H H H N N N N H H N N N H H H N N H H H S S H H H H H S S H H H H H H H H H H H H H	Sa mp_Sample Type: ( reservative ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid ulfuric acid ydrochloric acid	<u>mplecli</u> ] Natural, [] Duplic Filtered: [] Yes, — -Custody: [¶Yes, [ mination ₩A	2_30 ate, [] Field . [] No
TOTAL GALLON: Sampling Method Para [] BTE [] MTB [] GRC [] DRC [] DRC [] HAC [] Lead [] HAC [] Lead [] PAH [] VOC [] PAH [] VOC [] Tota [] CALLEN [] Meter PH	S: S: meter X E D as Gasoline D as Diesel hane ate <b>Antons etc</b> S I Metals <b>SS</b> I Metals <b>SS</b> <b>I</b> Metals	ailer, [] Submersible <u>Sample Cc</u> (2) 40 ml V Extracted (2) 40 ml V (2) 1-liter a (1) 40 ml V (1) 250 ml (1) 125 ml (3) 40 ml V (2) 1-liter a (3) 40 ml V (2) 1-liter a (3) 40 ml V (1) 125 ml (3) 40 ml V (2) 1-liter a (3) 40 ml V (1) 500ml (1) 125ml (1) 12	WELL S. Pump, [] Low Floor pontainer YOA YOA YOA YOA YOA YOA YOA YOA	AMPLING w, [] Other: <u>Peri Pu</u> Pi H H H S H N N N N N N N N N N H H H H S S H H H H S S H H H H S S H H H H H H H H H H H H H	<u>Sa</u> <u>mp</u> Sample Type: [ <u>reservative</u> ydrochloric acid ydrochloric acid ydrochloric acid ulfuric acid ydrochloric acid lydrochloric acid lydrochloric acid lydrochloric acid lydrochloric acid lydrochloric acid <u>ydrochloric acid</u> <u>ydrochloric acid</u> <u>yd</u>	<u>mp [e c ] 1</u> ] Natural, [] Duplic Filtered: [] Yes, Gustody: [¶ Yes, [ mination № ¶   Nitric Acid: Y	2_36 ate, [] Field .[] No ] No res[] No
TOTAL GALLON: Sampling Method Para I BTE I MTB I GRC I DRC Method I HAC I Lead I PAH I COC I PAH I COC I Tota I AC I PAH I COC I COC I DRC I DRCC I DRCC I DRC I DRC I DRC I DRC I DRC I DRC I DRC I	S: S: meter X E D as Gasoline D as Diesel hane ate <i>Anious ofc</i> H d Metals <i>Sy. metals</i> <i>Sy. Metals</i>	ailer, [] Submersible <u>Sample Cc</u> (2) 40 ml V Extracted f (2) 40 ml V (2) 1-liter g (1) 125 ml (1) 1-liter p (1) 125 ml (2) 1-liter a (2) 1-liter a (2) 1-liter a (2) 1-liter a (3) 40 ml V (2) 1-liter a (3) 40 ml V (1) 500ml (2) 2.52 (3) 40 ml V (1) 500ml (2) 2.52 (3) 40 ml V (1) 500ml (3) 2.52 (3) 40 ml V (1) 500ml (1) 500ml (1) 500ml (1) 500ml (1) 500ml (2) 2.52 (3) 40 ml V (1) 500ml (2) 2.52 (3) 40 ml V (1) 500ml (2) 2.52 (3) 40 ml V (1) 500ml (1) 500ml (2) 2.52 (3) 40 ml V (1) 500ml (2) 2.52 (3) 40 ml V (1) 500ml (2) 2.52 (3) 40 ml V (1) 500ml (1) 500ml (1) 500ml (1) 500ml (2) 2.52 (3) 40 ml V (1) 500ml (2) 2.52 (3) 40 ml V (1) 500ml (1) 500ml (1) 500ml (2) 2.52 (3) 40 ml V (1) 500ml (1) 500ml (1) 500ml (1) 500ml (1) 500ml (1) 500ml (2) 2.52 (2) 2.52 (3) 40 ml V (1) 500ml (2) 2.52 (3) 40 ml V (1) 500ml (2) 2.52 (3) 40 ml V (1) 500ml (2) 2.52 (3) 40 ml V (2) 2.52 (3) 40 ml V (3) 40 ml V (3) 40 ml V (4) 500ml (4)	WELL S. WELL S. Pump, [] Low Floor Datainer YOA from BTEX VOA YOA mber glass YOA poly plastic poly plastic poly plastic poly plastic poly plastic YOA amber glass amber glass Amber glass YOA Analytical Other tion Date	AMPLING w, [] Other: Peri Pu Pi H H H S H N N N H H N N H H N N H H N N N H H N N N H H N N N N N N N N N N N N N	<u>samp</u> Sample Type: [ reservative ydrochloric acid ydrochloric acid ulfuric acid ulfuric acid ulfuric acid luforchloric acid lone litric acid ydrochloric acid lone sydrochloric acid lone sydrochloric acid litricacid nifac; acid ydrochloric	Filtered: []Yes, Custody: [Yes, [ Matural, []Duplic	2.30 ate, [] Field .[] No

GROUNI	DWATER SAMPLING LOG	i ·	
Project: <u>Sample Date:</u>	4-8-16 Sample Time: 11.3D	Well ID/Sample ID: BTC-D	<u>)PT-</u>
Personnel: D.M. RE	Weather <u>Clemn</u> t	Uram	•
Casing Diameter/Type: 2" PVC 3/4	Measuring Point Descrip	tion:TOC - North	
Well Depth (feet below measuring point):	Depth to Water	ft water	
Screen:	Depth to Product <u>N/A</u>	· · ·	
	WELL EVACUATION		
Method;, ['] QED Low Flow, [ x] Other: <u>Peristattic Purr</u>	np low flow	(	
Start Time: 1100	urge Rate: 355ml 40 pec	Pump Depth:	

#### EVACUATION DATA

TIME	рН	ТЕМР	DO	ORP	US/cm	TURBIDITY	DTW	CUMM. PURGE VOLUME
UNITS			A					
j   15	6.71	Tile	0	127,8	738			
1120	6.72	7,41	Ø	640	6-33			
1125	6.76	7.5	D	44.0	1031			
11:30	6.76	7.4	D	43.D	6-31			
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						· ·		

Amount Purged:

Sampled 1170

WELL SAMPLING

Sampling Method: [[QED Low Flow, [x] Other: Peristallic Pump Sample Type: []Natural, { ] Duplicate, [] Field Blank [] MS/MSD

Calibration

Date

Parameter	Method	Sample Container	Preservative
X 8 RCRA Metals + Cu, Zn	6020/7471	1 – 500 ml HDPE	Nitric acid
X SVOCs	82700	2 – 1 L Amber glass	None
X PCP	8321A	2 – 40 mL VOA	None

Laboratory:

Test America\_

Model No.

2100P

Meter

∙ Hanna Turbidity

	Deconta	amination		
Yes[x]	No[]	10% Nitric Acid:	Yes [X ]	No [ ]
Yes[x]	No[].	DI Water:	Yes[x]	No[]
Yes [ x]	No[]	Steam	Yes[]	No [ x ]
	Yes[x] Yes[x] Yes[x]	Yes[x]         No[]           Yes[x]         No[].           Yes[x]         No[]	Ves[x]     No[]     10% Nitric       Yes[x]     No[]     Acid:       Yes[x]     No[]     DI Water:       Yes[x]     No[]     Steam	Decontamination         Yes [x]       No []       10% Nitric Acid:       Yes [X]         Yes [x]       No []       DI Water:       Yes [x]         Yes [x]       No []       Steam       Yes []

Comments:



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(J1 Address 2525 Palmer Site 2 Name Tetra Tech Phone 406-543-3045 Project Builde Area One Blackfuil Creek + Silverbow Creek - DEFYING MOTHER NATURE -Missoula MT 59808 Comboors Area Study te in the **RiteintheRain.com** の間の家 MADE IN TACOMA - 9120 220 ----17.201 1. 6 B ......

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1615 1500 1430 1335 45 1230 1600 1730 1655 545 1365 1300 3/7/16 SBC-SS-01 (0.12") Minimal recovery control -SBC-SS-01 (217.36") unable to got recovery Don + Brooks off to Sample GW off sive Arrive SBC-01 near asphase plant Transfor cystpment, go through bottles Arrive Buble Visitor Centrer SBC-SW-61 Surface water Safety meeting + SAP briefing Weather : sunny, si, breeze - 40°F Wet Slag Conjon Done w/prep. - move to 1st site Back as truck to filter sw sample Ted Duaine arrive followed by nest of Grow Ted Duaime mama Rhianna, Nutrlie, Dan, Connor, Blacks -Tt Jeremy - MBMG on site for SAP review Silver Bow Creek + Black toit Creak allele allek Cur 5660 550/ 0925 0910 0845 0530 0730 0840 0730 DE STAR - OUBVERSH, -28"F, lagut wind Silver Bow Creek + Blacktoil Coverte Calibration meter & decon Annue Slaywood General and Collect SBC-SW-03 left msg for Pet/DOJ to call Taked to Bill Craig rei project, earss (alled SEC - 55-03 (0-12) Talked to Wenda at lab - Shipping Russman of side Skipping Storoz Grabu + Finishing a BC-cl etc. Try lackton May Shay Will Connor onsite cless to truck Metals bettes feet sul and more CRP = 221.3 Chain of Cushday mak receivery in tubes = 6"-R", & drive attempts DO = 16.53 MS/L. PH = 5:03 PH prob may not be reading area = 2. 50= 283 justime T= 2.23 °C - Elt probe in op - won't calibrate. setting one shipped for delivery tomorrow ABA/SPLF \* Mill I. a Por 3/8/40

DO= 5.69 m5/L DRP= 6.88 DRP= -61.4		
DC = 5.69 ms/L	Dame Salmphiling - decare	1250
		•
St = 400 , Ms/cm	at 1-3" deptenteurs a comple last how slag bank	
T= 3,41°C	No part water on South side but to refusal	1
Cullect BTC-SPW -01"(\$2")	1500	
	6 k P : 14 3. 7	
for 14 toz	pH = 6.61 S.v	
but mostly <3". & denuct to get enough	Do = 2.8 m/12	
still limited recovery between 5-6" mux	SC = 1062 /42/cm2	
5 Colldet BTC-55-01 (0-12")	T= 5.57°4   144	
Tachard to Pat - DNRC -reinceess	No 36° pore water lue to vefishe 1430	
	Collect SBC SPW-03 (12") Pore water	220
6210 = 131.8		
ρΗ = 7,03 su	Leftbank water deptn = 14"	
Do 18.65 m/2	Plicht bank wher deptn = "10"	
Sc = 277 ps/cm2	Stream curter byoth = 13.5 "	
T- 2191 °C	Stream width = 13.9"	
Callect BTC-SW-01		
At BTC -ol Juss east of Confirme	Press for pore water 13 46	5 5
	brites lukoh break + Overcast, light move, 28°E light wind	is .
- scory - ditic terety in/ sampling	Decon	10
by dell	including decon	
Talked to Levery Armstron y - LEVI message	Done sediment sampling - took 1. Thours 1260	15
I ser Bon Creek & Aledistail Creek 3/24/6	8/14 S; ) wer Bon brech + Birkhard L. Creeke 5.	3/8

10 Alton Ma	ble der 918/2011		
	dag	Dane for	1800
interval		ton Bingt	
so Start pumping at 36" - pressible Sa	lers - Rhianna to de liver to Energy 09:	Pack Coo	1730
Sc = 103e jus/cm	rc - 55 - 02 (0-12")	Cillect St	1715
De = 0,77 .5/1	to okectis to sor slike hanner fixed	Rhlanna	
020 = - 88, 7 ml	Brc- Sew- 02(12")	Cellect	1650
2H = 6.95	mover breken collect sample upbicetust	Slide ha	
2° 45' 2 = 4	tion 110 en staff gage	C-ige Sta	
BTC-SPW-02\$ (12") field Rummer	= 32, o	020	1011 <b>-</b> 1111
tubing - sutrens of moder incider	7,12	= 114	
more muchy water whichs of bubbles in	17.31 m3/2	D. :	· · ·
pumping as well as yesterday - getting	280 15 Km2	Sc =	
Pere worth station BTC-sew-czs not	3.63 °C	7=	
	SM-02	BTC	
o Jim Ford off side	SUI Samp 12 2	Collect S	1610
15 Jim Ford on site	37C-02 by gaze station _ 109	station B	605
need to get Reid parameters	- thay serves	tubing	
- battery van chad on Pentruchie -	ity much coming out of purstalthe	Just 51	
pere water at 5 side (Lside)	6" probe the is in in - he baseter	pumple 3	545
D. Back TD BTC - 2 lo cation to fuish	280 is proceed proved in the states of the states	Advance	1535
or Den. Rhuman en site	sut bank else = 5" (~ Portivation ) 080	NR	
50 NMERPEN + Bioclasenside	m with = 23'	Stream	
We bow (see + 1) lactife, / Greek 3/7/11	121 Dow Creek + Blackteril Creek 5.	11C 6	3/8/17

normal second	Mary Jones - 1	
a.dvanica		
15 Trited 36" on such side - unable to	(1.4)	
T=4.92%	-Stream width at South pure location =	
3 c = 3885 ms/cm	South bank = 22.2'	
Do = 0, 64 mg/L	-Stream with at North por location to	
ORA76,247	Stay / doit Samp 1749 12" pote water	1025
pH=7.14		1
et Collect SBC-SAWtols(12")	Water depth B" at sample pc. rd	
to benk (Island = 9 wide) N	t= 4.20°C	a far shellin e a Parate Martin gapar
18' Shream width the Istan & 7 town 15'	SC = 1080 uS/cm	
Waster depter = 7 "	1.84 m/c	n and the second second second
55 SBC-Spw "OIS(12") South bank	02P=-72.7	
	0# = 7,19	and a subsection of the second se
40 Meet w/Brall Holman	BTC-SPW-02N(12")	and a second
* BT L- SPW-02N (36) Weines only y	12" - Location Stightly upstream tion S bank	
12 party. Artil 12+ Sattle and filler for met	Installing pere Sampler and Nerth bank at	2460
00 obtained + 1/4 likes of water-sections "		
5 trund T= 8.40 °C	T= 4,37 °C	Service 1
5C = 859 115/cm	5c = 670 , 15/cm	na na mana na
1 20 - 0.00 mg/2 - flood ing	10 - 2 0.eo	the state , where the a sume that we prove the
/ brep = -181. 3 mV	0RP 307 mV	
	pH = 6.96	· · · · · · · · · · · · · · · · · · ·
50 BTC- 59W-02N(36")	Collect BTC-SAW-025 (86")	22600
71 Wer Son Creek + Bluck full Creeke 3/9/16	4 S: men Bow Creek & Blockie," Could	3/9/1

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i s

	oll & F. C.	T = 4,99 °C hill 3/1/10
		SC = 5961, islcm
T = 5,26 °C		Do = 0.31 m5/1
SC = 5362 Justom		GRP = 119.2 MV
De = 0.86 ms/c		pH = 5.03
6RD = 8,6 MV		(leut 5BC-SPW-02N (12")
pH = 7.16		
Net 5BC-Spw-02 \$ (36")	1405 6	T= 4.96 °C
7=4.75 &		SL = 594 Justem
Sc = 5267 ms/cm		$D_0 = 4_1 q_1 \frac{m5}{k}$
Do + 097 mg/2		ORP = 71,9 Justices
bab = 5.1  mV		pH = Ziles my bridge to aspinite plant
\$0.4 = trd		lees SBC-SW-02 slag well conyon & of
Callet + SBE-SPW-028 (12")	1350 (	
2049/5 = 1		SSC Spor SBC-02 in Canyon
SC = 4655 pustom		
Do = 0.82 ms/L		at SBC-cl, too recky
NW 5.48 = 020	•	10 advancement to 34" on Nsite
p# = 552		t= 3,95°C
Collect SBC - SPW- C2N (36	1405	5¢ = 1270 US/cm
Scibe depter 6" depter		20 = 2.39 mg/L
NSIDE winth & deep wi	•	0RP=-84,7 MV
Channel width = 19"		pH= 7.45
Course Sand Lew Silt		BBC-Spin-OIN (12") of washerd joh
Cylicht 580-55-02 (0-12	1330	STATE STATES
Bon Creek + Sheetteril Creak. 3/91	Solver	Silver Bon Creak + Black #il Creak

TC - 0.3 $U = 0.3$ $S.7 °C$ $S.7 ~M (12")$ $S.7 ~M (12$	FC - 03 $S - 7 - C$ $S - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 -$
30° F, (njunt winn?	1710 1710
	1730 170 170 170 170 170 170 170 170 170 17



alley la ser	one - 107. 4 MV	5925 water quelity peakind ter Son oys(3.") T= 6.95 - 0 BIT Son oys(3.")	without pimping. Water depth 4"	0922 Amping BIZ-oy from 36" (Seside)	1915 Sample BTZ-SPW-04S(12") disc metals on 12	a: 665 instan	010 -24.7 AV	T: 5.96 °C	ogyo Collect BTC-SS-a4 (0-12") water depth 2.5"	16 3/10/16 Silver Son Coule & Black fail Grace 0339 Attempted por Ne water from north side at 36° - no water
All mater super = 1" Rome in them	11dd Chillet GG-SPW-01W(0-12") * Dissolvationly-reasured -100 mc *	56 = 788 WS/cm (Blue 100 00)	PH=7.37 02P=79.2 ~~	1035 Set up at Go-Ol Grove Cylch	1020 Lewington Avenue: Checking access for GC + SC stutions	031016-F3	bettle - to tal metals	0955 Collect Field blank - Pore water -	Problet this tilled water this used where a distilled water this build where a solution of the	Silver Bow Greek & Black fail Creek 3/10/16 53 Sample BIZ- 5-PW-045/36") 0950 Collect Rinsare blank- Port wards

Alter a	The second secon
Conf Col 8 WS	South side of Gode Wars
* PO 116 115/L	1200 Mon equipment to Sand Lauck chirest
1 011 27.8 MV	
N. 2.10	1135 Samale GG-SPW-01 E (12")
T: 1.23 oc	
Water Quality parameters	T H.SOOL
1245 Attempting 36" Sample	ond theft 583mS
Sample SC-SPW-DIE(12")	D0- 0.86 ms/L
1, 202 , 1	VM H, 24- JAG
5m 11/E 7m2	ott + 10.90
1 00 0.35 mg/L	Water Qual, Parameters
	1130 Philling water from 12.4
Br. Z. 13	
Dom Gast hank: 12", depth 3"	1120 Sample GG-SPW-01E/36")
1240 Dre dater sample pumping	T= 4.98 4.
1935 Sample SC-35-@1(0-12m)	60 45
1225 Sample SC-SW-01	Do = 0.14 matc
location in pestive mean	VM P. 79 900
T: 7.02°C	0H 6.88
(m): (367 m)	1119 water Qual. Parameters
7164 05-2 :09	Stream width (6')
dep: \$513 MV	120 Collect GG-SS-01(0-12") - Loguer Black
	GG-SPW-DIE(36") Waterdahn=4"
lady water quality parameters	115 nove to E beaut for 36" due to sitistands
	3/10/10 Silver Bow Greak & Blackter Greak

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$ \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c}$	13	allaite all
$ \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c}$		end: 546 m2
$ \begin{array}{c} 310016  Sriver Bare Gales Blackhill (resk) \\ 1255  Senaple  Sc-Selw-OIE (Z6") \\ Bre Wadde Gastrag 10 out of sempler \\ chanded Gastrag 10 out of sempler \\ red Gastrag 10 $		10RP 74.4 N 60 1.83 Mdr
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Black Stilling sand why away is drygenics	pH 7.43 T: 9.53°c
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	BTC-05 Station	1430 MANANA BIC-SPW-05N(36")
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Small champel wishift gage near	(1900) Suplicate oblogio-Dup
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	opportunity sediments a mple	1425 Celled BTC- 55-05(0-12") Silly Sinchandy Sill
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1550 Collect BTC-055 -01 (0-12")	il side bank to very sitty - sitt flat
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		7 = 8.34 °C
$ \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \end{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array} \\ \end{array} \\ \end{array}$	white Depth - S.S." channel with 4221	sc = 579 uslem .
$\frac{1250}{1250} Sample SC-SPW-OIE (36") Graphel Graphell Graph Red Walter establishing out of sample (36") Graphel SC-SPW-OIE (36") Graphel ($	1520 Sample Birct SAM + 055(36")	. De = 2.27 ho/c
$\frac{1}{250} = 3/10/16 = 5/104 \text{ Barr} (autu + Blauthill Crush)}{3/10/16} = 5/104 \text{ Barr} (3.64) (c.u.h)}$ $\frac{1}{1250} = 5 \text{ Rample} = 5C-5P \text{ W} - 01E (3.64) (c.u.h)}{1250} = 5 \text{ Rample} = 5C-5P \text{ W} - 01E (3.64) (c.u.h)}{1450} = 16 + 100 \text{ Rample} = 100 \text{ Rample} = 5C-5P \text{ W} - 01E (3.64) (c.u.h)}{1450} = 16 + 100 \text{ Rample} = 100  $	1 10: 0.32 mg/c	012 = 59, 6 mV
and     3/10/16     Silver Boni Grawh Blanchall Grawh       12:55     Sample     SC-SPW-DIE (36")       Bre Waller     Sc-SPW-DIE (36")       Bre Waller     Sc-SPW-DIE (36")       Image: Bre-Blands     Sc-SPW-DIE (37")       Image: Bre-Blands     Sc-S	0H: 712 dand 352 us	pH = 7.69
1255 Sample SC-SPW-OLE (36") Pre Wale eaching so of of sampler Channel width : P.S.Ft 1455 ealler by 100 from phr SFt 1455 ealler by 100 from phr SFt 1455 sample strong side 1455 sample strong side 1513 phr strong strong side 1513 phr strong strong strong strong side 1513 phr strong	1=606°C ORP -96.3 NV	1420 Sample BTC-SPW-OGNCIZE
20 1 210/16 Silver Boni Greek Bluekhill Greek 2-10-16 Silver Bon Greek & Breakhil Greek 2-20 - 05 (12 - 20) - 0	medan material	lifts pumping 12" pone water
20 12 3/10/16 Silver Boni Greated Blandehill Created 12:50 Sample SC-SPW-01E (36") Red Woole Centring out of sample (36") Channel width: 9:5ft 1440 Sample BTC-SPW-05W (36") 1440 Sample BTC-SPW-05W (36") 1555 Sample DTC-SPW-05S (18") 1505 Sample DTC-SPW-05S (18")	1513 PUMANA ALC-SPW-055/34"	and: 576 25
3/10/16 Silver Boni Greated Blindehall Greate 1250 Sample SC-SPW-OIE (36") Bre Waller earthy 3001 of sampler channel width: 7:5 ft 11/105 Celler BTC-BW-055 11 11/105 Celler BTC-SPW-055 (13.") 11/105 Celler BTC-SPW-055 (13.") 11/105 Celler BTC-SPW-055 (13.")	Say 20, 12 Say	DO : 5.67 molu
3/10/16 Silver Boni Guelet Bluedetail Greek 1250 Sample SC-SPW-OIE (26") Bre Wale earched to sample T - SPW-OIE (26") Channel width: 9:5 Ft 1440 Sample Strong Boni Guelet (26") 1440 Sample Strong Boni Guelet (26") 1455 Angle Strong Boni Guelet (26") 1455 Sample Boni Guelet (26") 1555 Sample Boni Guelet (26") 1555 Sample Boni Guelet (26") 1555 Sample Boni Guelet (26") 1555 Sample Boni Guelet (26")	0H: 6.67 . DRP -16.4 MU	BLP: 61.2 mV
1250 Sample SC-SPW-OLE (36") 1250 Sample SC-SPW-OLE (36") Rev Wale/ earthor soit of sample (36") 1250 Sample SC-SPW-OLE (36") Rev Wale/ earthor soit of sample (36") 1440 Sample STC-SPW-OSN (36") 1440 Sample STC-SPW-OSN (36") 1453 Allengether soil of sample (36") 1455 Sample (36") 1555 Sample (36") 1	T= 5:50 °C 100: 0.50 ~512	T: 6.41°C
1250 Sample SC-SPW-DIE (36") 1250 Sample SC-SPW-DIE (36") Bre Wale/ controls of sampler Channel width: 9.5ft 1440 Sample St-Spw-osw (36") 1440 Sample St-Spw-osw (36") 1453 Allerthy 16" point St-Spw-osw (36") 155 Channel width (15" point St-Spw-osw (36") 156 Channel width (15" point St-Spw-osw (36") 157 Channel width (15" point St-Spw-osw (36") 158 Channel width (15" point St-Spw-osw (36") 159 Channel width (15" point St-Spw-osw (36") 159 Channel width (15" point St-Spw-osw (36") 150 Channel width (15" point	1505 Sample BIC-SPN-055(12")	pH: 8-94
20 3/10/16 Silver Boni Great Blackhall Great 3-10-16 Silver Bon Great Blackhal Great 1250 Sample SC-SPW-DIE (36") Pre Wale employing out of sampler 1440 Simple BTC-SPW-DSN (36") Pre Wale employing out of sampler 1440 High Simple BTC-SPW-DSN (36") Channel width: 7.5 Ft 1440 High Simple BTC-SPW-DSN (36") 1440 Simple BTC-SPW-DSN (36") 1453 Allen Area on Area of the simple Strand Silver Bon Great Allen Strand S		1405 Collect BTC- 5W-05 1/
20 3/10/16 Silver Bril Great Blandtall Creat 3-10-16 Silver Bru Great Blandtal Creat 3-10-16 Silver Bru Great Blandtar Creat 1250 Sample SC-SPW-OIE (36") Pre Wale control of sampler 1440 Sample BTC-SPW-OSN (36") Pre Wale control of sampler 1440 Sample BTC-SPW-OSN (36") 1440 Sample BTC-SPW-OSN (36") 1453 Aller 1440 Sample BTC-SPW-OSN (36")	Bank on Reekson tide	
1250 Sample SC-SPW-OLE (36") Re Wale control of sampler 1052 Allow MM MD. in or on the local		Channel width: 9.5ft
1250 Sample SC-SPW-DIE (36") I wantel 1940 Sample BTC-SPW-DSN/724"	Contraction of the state of the	are water comments out of sampler
3/10/16 Silver Bon Great Blacktall Great 3-10-16 Silver Bow Great & Blacktail Great	1440 Sample BTC-SPW-05N/724"	1250 Sample SC-SPW-OIE (36")
	3-10-16 Silver Bow Greak & Brackfail Great	3/10/16 Silver Boni Great & Bluckhall Creat

2. 22 1625 1630 1615 1635 1 Attempt to collect BTC-SPW- OSS (36") DRO PH: 227 10-16 Siver Breed Creek & Buckhand Greak 50. and: 552 6 Pumping Collect BTC-SW-06 Collect BTC- SPLW-06 N(0-12") ZOR Collact BTC-55-06 (0-12") -87.8 mJ outs make 0RP = 23,3 MV 52 259 5C = 555 ps/cm 10 = 3 80 M5/L p(+=7,31 020 = -- 24.5 Do = 2:034 -5/L 7=6,29°C No water, tes Silty pit - 7-32 7.43 T=5.17°C ·BT2-SPW-065(12.1), that statis stepth SII 91 Joile Red ١, njork Bu 0081 1730 He he 1245 3-10-1700 1653 channel width offsite Back at trailer 0 Sample 010-Spw -065(36") HC D0= 2 444- +0N a man CH3=PWD AT on ote Silver Bon creek + Olach hail Creek . ] 4 0 10---BIC \*\*\*\* à 132 A 2. 757690-mds -200-065(12" depth : 1" Reterin the Rain-1 23

								54,80						000	1020						00800		0730	3/11/180
			Sc.+	00 =	0262	PH=	· W/44	BTC-SPW		7	5 C E	00	ont -	D H U	Brc-Sw.	Stream	Sign	Putte	up i o r	bowst	Arrive B	Weather .	Both crows	Silver Bon
		2,95°C	611 mske	142 mg/1	Shi3 mV	7,65	er depter =	-07 N (		00 %	535 mS/c	3.79 -1/	111.9 m	7,23	-07 Sa	m width		MIPIIM	wetland,	tam et	10-07	overcast,	on site	J Creek 4
			3				l	12") 4			\$	4			male	1 = 24		e and B	Near re	chande	states	~ 30°F	-lordin	Blacktail
					ŀ			40								,		ird Sond	ed root	1 from	bre o		1 tructors	Creek
I THE MAY														•	1			Hany		2			•	
6	1					· · · · ·			   .	1							•	·		-	1		y.€ .	
An			1		0442				-  -				•	0925		0.900							0855	Silver 6
		6	depty	henk	No P		SAM	buch	both	agai	Slide	-No re	~	Colle	\$	Collec	+-	-1	Sc	00	DAP	He	dellect	Sow Creek
		Locaded	ic j no	( highane	DEC PURC		pie	ut met	derive bi	after	hennes	covery h	eve	BTC-	and	BIC		7,230	1 465 -	0.53	w 1.5h	7.24	BTC-SPI	+ Bluele
		Sample	Sectimen	side) fi		Con ite	-	red to g	HS) Bad	got here	hetrod n	or 24-30		VIDASS		32-07(			Stelen	614			W-OTN (3	tan Creek
			of por	12		5		er 5201	k to 51	, top an	ot woo	"Samp		(0-12"	-	0-(2 /	3		1				6.0	in the second se
Res			weith	ma 56				ment	novel +	d thred	4 Jong ( two	6				-							water to	3/11/16
e .				1						·	e c	-								-		<u></u>	2	-

a intertury	a-12" adj. to BTC-SPW-08N	tetto
TTO FIELD ALGINE - SCATALCIN	T=7,2,7 °C	
03///&~/RB	SC= 473 25/cm	
Cor Collection Sediment	De=0.79 Agic	
1135 Rinsoute bite mele - Shover used	ORA = - 104,5 mV	
	04 = 7,31	9
· bonting 120 Sample ATC Spill-053(36")	Collect BTC- SQW -08 N (36") 2" With	5201.
1-2 6.85 °C		
COMUT SAND	T= 5.95	
202		
or :- 22 1 multi 4" walder deplan	. Do = 6.27	
	0,20-30-5 -4/5.6	
115 7 many BZ-Sew-085(36)	pH= 7.40-	
12" act. to 12TC-Stut-08S(12")	probe set between 12-15" -was muddy right	
oth (10 Spanple BTE-55-DER O-12) Naterit	Collect BTC-SPW-08N(12") 2" water &	1020
from middle of dhannel could have		-
105 Sample 672-55-08 (0-121)	T= 3.45 °C	
100 Sample BTC-SPW-DOS(12")	sc = 528 AS/Em	
C= 5.95	bo = 4,48 mg/r	
Con 822: pro	026 - 124.1 mV	
DO = 2.30 Molu	pH = 7.07	
3' 10101 = -20:1 ~ ~	Collect Brc-sw-08 channelwidth=	1010
1050 Punping BTC-50-028(12")	AT BTC-08 station .	1000
Silver Bow Creat + Blackfar / Creak 3/11/10	Silver bow Greekt Blacktan Creek	3/11/16

						1450 OFFSTE TO HELENA ENERGY LASS.	ISIS PACK SAMPLES FOR LAB DELIVERY	1300 GPS locations. Head to trailed.	collected from prominsula of pand.	layo sediment sample BIC-PS-D3 0-122	ATC-PD-03 collected	1225 Surface watersample		could be collected due to flows	wound bank of pand is sample	an several on multiple locations	1220 Pare water samples attempted	127.37 °C	64P= 57.4 ml cond= 828 NS .	0H= 7,39 DO= 711 moll =	cide of poold (station BTC-PD-03)	1215 Surface water readings on E	and E of Lexington the	1200 set up at pand area N of BIC	3-11-16 Silver Bon Creek + Bluekter Creek	
He Reed 3-14-16 Roman han	1185 conset Atc-sep-698(36") 2"septh	PH= 7.21, T= 6.06 oc 000 = - 740 mV	INO SAMPLE BIC-SPW-295(12")	(130 conect BTC-55-09(0-12"), 4" dago	1125 Unable to advance to 36 "	DO = 1.08 m9/c, cond = 573 mS	0H= 7.38, T= 4.34°C, 000= 108.2 ~V	e 7" depth . WQ PARAMETERS	1120 QUECT BTC-SPW-09N(12")	00= 2.71 mg 11 cond : 530 ms, T= 2.60°C	04=6.90, 010= 13714 mV	BTC-SW-D9 MARAMETERS	100 COLLECT SURFACE WATER SAMPLE	person avereness.	1030 ANSLITE AT ISTC-09, CAST OP	REFIDCH SUPPLIES	ogha onshe e ratiled. UNIONS +	Annerono	PERSONVICL: Races, C. Mattheils Jean	HIGH 36 0F	NEATHER - SNOW, WIERMITMNT	SURFACE WATER + SEDMENT SAMPLING	PRJECTIVE = GNTIN VE POLE WATER,	Garly more Part low	3-14-16 She Bas creek Black Tail Creek Data	299

3-14-16 wa phatmeters . T= 6.71°C, pH= 7.06 ORP= 9.8 mV, 00= 1.46 ms/L, cond= 1198 hs 30 1405 WILLER BAC-SPW- 10 N/26" 1350 laus. 1 03 11 5 00 K 1330 couser BIT-SPU-105(36") wa enframeters ton sta-sew-ors(26") WO PARAMETERS: TE SIGOC, PH= 7:30 Wa MAMPRERS: T= 450°C, pH= 6.99 ORP= 49.9 mV, 10= 1.52 ~ 1/cm = 898 - 5 OLD = 36.6 mV, DO: 1.72 mg/4, con 2 = 861 mg 1250 WR PARAMETERS: 1-3.46 °C, PH= 7.35 1225 Channal width > 3284 PH= 7.21, T= 6.06 - 000= -74.3 MV 1255 whet Bre-spin-105(12"), 1" day # CHANNEL WIDTH : 29 FT + 031416- DUPA (1800 00= 0.46 mol -, cand = 758 ~S OLD= 50.2 ml bos 1,60 mol, and = 675 ms EAST OF FENCE 031416-DUP Collect BTC-Sew-IGN(IR"), depth 7" SAMPLE SUDEALE WATER BILLSW-10 when set sample are-ss-10(0-12") ONS TE C DIC SOC DATA GAP INVESTIGATION SA-Read 3-14-16 のこうれの BTC-10, samplate Just C 2000 ł ORP= 012= 30-5 ml, 00= 1.03 m3/L, and = 672 45 UQ PARAMETERS - T- 3.87°C, PH= 6.72 bep= 1520 Chandel worth : DRP= KSAV WA MRAMETERS : I= 4.06 °C , PH= 7.26 1515 3-14-16 NOL PARAMETERS: 0015= 1156 " A DOP 4-28 WOLL 1500 Dap= 0 OF 1550 WA PARAMETERS: T= 4.66 C, pH=7.02 1535 Electo 16to conter Bresew- IN(36") (730 WQ PADAMETERS : 100 OFFSITE COLLECT COLLECT ATC-SPW-PHEAMETERS -45.6 mV, DB= 0.61 ma/2, con1= 600 RIVISATE BLANK STORE SAMPLES, UNPACIE TRUCK Jer. K. W NW 18 Guert ATC, SEC, DATA GAP INVESTIGATION Hered -arant るよう日 + DO= 200 45/L , cond= 1383 45 0= a.1 ms/L, and = 975 20= 2.02 m3/c BTC-SPW-11N(12") 031416-FB COLLECTED BTC- 5W-1 10-57-115 (36" 3-14-16 211-10-11(m-12") 1= 5.41 °C , 0H= 7.18 4.58 °C 1=3.67°C - WS (12 ...) 031416-RB Sr 369- Pup , and - 52 0H+7.2 0H=7.28 al deep Ţ Beather un + 5PL7 \* ふ +5 3

WAR 5-15-14	1010 COLLECT BIT-SPW-125(12) 8° deep	200 100 = - 60.6 mV, 00 = 0.17 mg -, canda 1304 ms	WO MAGMETERS: 3.45°C, PH=7.10,	1005 PUMPING BIT-SOW-LAS(12")	0950 REFUSAL AT 26", NO SAMPLE	031516- JUE - 0400	8930 WEGT BTC-55-12(8-12") 4	Der 99.9 ml. DO- 1.83 maily cand = baz ms	WO PARAMETERS: T= 3.25°C, pH 7.39,	+ 03 1516-DUP @ 855 \$50	0915 COLLECT 3TC- SPU- 12N(12")	Cond = 477 ms , T= 1.43°C	PH: 7.17. ORP: 119. YNV, DO= 4.35 Mell	AT 1235. WO PARAMETERS:	0840 COLLECT &TC-SW-12 + 031516-DUP	0878 SET OP an BTC-12	8500 DARITE C PATHER SHEEHAN PARK	FOR SAMPLING	0730 ONSITE AT TRAILER, PACK UP	PERCONNEL: RACED, C. Manger J. ARMSTRONG	YOR CHANCE OF SNOW	WEATHER - 24 0F, PARTALLY CLOUDY,	AND SEDIMENT SAMPLING	ORVECTIVE CONTINUE CREEK SAMPLING	5-15-16 BIC, SBC DATA GAPS INVESTIGATION	32
SALA 3-15-16 Attantion	pH= 7:42 00: 8.75, 00.1 27, 8:00 10, 190 MV	istig comet we previous T: 2.54°C	Po= 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	wa reamerens: 1=5.35 °C, pH=	1435 SAMPLE POND #2. BTC-TD-03 (Surt work)	ILAS CALIBRATE YSI	1410 CHANGE AH/DR. PODEE ON YSI 556	1405 031516-FB + 031516-RB TAKEN.	121516-010 C 1215	HITH (240) 802-585-09 (0-12) WITH	1340 COLLECT GTC-SdS-027 WIRHE (0-13-)	1335 COLLECT 1612-585 000(0-12)	13 10 COLLECT &IZ- 508-06N (0-12)	CD1-01-01-01-010-10-000 0001	+ 031516-DUP 10 1857	1250 BUCCT BIC-SHS-05 >(0-12-1)	120 RE COLLECT BTC-SBS-OHN/ 0-12"	supplies J. Alastrons Ricking up Suppores	JADO ONSITE @ TOMULAR STOCILING UP ON	1055 COLLECT 031516-143	1055 COLLECT 0315/6-FB	and: 521 -5 20: 0.16000, 000: 1-2-1 1-2	Wa phanetzies: 1= 3,45 °C, pin tak	1030 COLLIGET STZ-ST-UNX 20 ), Channel : 5-60	3-15-16 BR, SAC DATA CAPS WYGETIGATION	

() () 大 3-15-16 34 220 1695 1613 WO PARAMETERS: T= 1.98 °C. 1020 cond = 446 -S 1653 pH: 7.05, cand: 985 45, arp: 117.6 mV WQ PARAMETERS: 7=2-56°C, pH=7-06. 5191 1535 Do= D.94 m/ Oul : 129. 4 mV Wa Mangrans: T= 545°C, pt=6.15 15 55 SAMPLE BIT-WARN-02/26") 1730 SAMPLE BTC-SPW-135(12") 5.5" deep We eard meters: To Sys , pH= 7.38 Wa PARAMETERS: T= 2.380, pH= 7 5121 18 of channel with the ORP = 253.6 NV, 20= 1.6/m/, and : 416 45 300 BRP= 277 .3, con1 = 235 ~5, DO= 277 "31 SAMPLE BTC-SW-13 COLLECT BIC-WPPW-02(12") 031516-R.B. COLLECTED 031516- FB COLLECTED SAMPLE BITE- & SPW- 13N (36") SAMPLE BTC-55-13 + SPUE not MSITE & FATHER SHEAHAN PARK, BICH3 SAWPLE PUMPING BTC-WPW-02(26") BTC-PS-D2 (12") concerts BIC, SUC WITH CAP INVESTIGATION Halud . RTC- COW-ABN(12") 000- 2627 4V, DO= 5025 3-15-16 7/64 66 0 -00 depth 14 5" dago 3-15-16 1750 20 GAD 268 mS, 00: 0/25 mole she 194 500 1890 FINISHED UNIONSING TRUCKS, PACKING SAMPLES ON ILE. ALC OFFICITE PARAMETERS : Filer, pH: 2.05 SAMPLE ATE-SPLA-135(26" BIZ, SAL WIT BAP INVESTIGATION Alhian Red 3-15-16 Com. the Parce • 00 01

36 wa phanesters: 0.97°C+ pH= 7.02 8-16-16 1130 SAMPLE BIC- PS-01612" OGYO ONSITE AT POND # 1, ASSESS OBJECTIVE - COLLECT OPPORTUNITY + LAST COND: 431 mg, DO \$ 26.69 llao 1005 SAMPLE BTC-PD-01, SURFACE WATER Wa PANAMETERS: T= 0.88 pH= 9.18 WETLAND ICE, SAFETY CALIBRATE 451 56 0930 COLLECT BANK SAMPLE WEATHER: PARTIALLY CLOUDY, COLD 200 1055 SAMPLE STC- WARDW-01 (MID") OF 40 COLLECT SBC-DSBS-DI IN SLAG cand: 1346 mg, Do= 1.19 mall, oup= -26.2 m 0730 WSITE @ TRAILER, LOAD SOPELLES WQ PAPAMETERS: PH: 6.80, T=1.6°C 0900 CONFER ON LOCATIONS FOR PERSONNEL: R. RED, C. MCHUGH, J. ADMSTRONG 20= 4143 mg/L, Lond: 252 MS, Old: 273.2. GG- 0565-01 ADJACENT TO GG-94-01 WALL CANYON BANK SAMPLE SAMPLES PORE/SEDIMENT SAMPLES sample SAMPLE ATE- PS-01 (24-36" SOC, BIC DATA GAPS INVESTIGATION Stan 3/16/16 15TC-WPPW-01/36" ORP: 240.2 MV 1477 3-16-16 SAC. YHON Y 1310 1330 1520 DELSITE WHEATD SUPPLIES, PACE SAMPLES & TRAILER . 1355 BACK AT TRAILER, SIMPLE BTZ - dses-ol ( b-12") SAMPLE BIT-0595-02 (0-12" Auleed 3-16-16 BIC MATA GAPS INVESTI GATION Renardan -37

MONTANA WELL LOG REPORT	Other Options					
This well log reports the activities of a licensed Montana well serves as the official record of work done within the borehole casing, and describes the amount of water encountered. This compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring w is the well owner's responsibility and is NOT accomplished by of this report.	Bell driller,       Return to menu         ble and       Plot this site in State Library Digital Atlass         nis report is       Plot this site in Google Maps         ater       View hydrograph for this site         g water rights       View field visits for this site         by the filing       View scanned well log (11/1/2011 3:28:22 PM					
Site Name: ANACONDA MINERALS CO * AMC-23	Section 7: Well Test Data					
Section 1: Well Owner(s) 1) ANACONDA MINERALS COMPANY (MAIL) N/A BUTTE MT 59701 [10/06/1982]	Total Depth: 33.5 Static Water Level: 3 Water Temperature: Bailer Test *					
Section 2: Location Township Range Section Quarter Sections 03N 08W 24 NE¼ NE¼ SE¼ County Geocode SILVER BOW	<u>10</u> gpm with _ feet of drawdown after _ hours. Time of recovery _ hours. Recovery water level _ feet. Pumping water level <u>20</u> feet.					
LatitudeLongitudeGeomethodDatum45.996141351112.530120068SUR-GPSNAD83Ground Surface AltitudeMethodDatumDate5448.26	* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.					
Measuring Point AltitudeMethodDatumDate Applies5448.261/1/1983AdditionBlockLot	Section 8: Remarks 2 FOOT SAND PLUG IN BOTTOM OF CASING					
Section 3: Proposed Use of Water MONITORING (1)	Section 9: Well Log Geologic Source 110ALVM - ALLUVIUM (QUATERNARY)					
Section 4: Type of Work Drilling Method: CABLE TOOL Status: NEW WELL	From     To     Description       0     1     TOPSOIL       1     6     RED SAND WITH CLAY       6     14     BLACK SWAMP MUD AND SAND       14     20     SAND AND CLAY					
Date well completed: Wednesday, October 06, 1982	20     23 SAND AND GRAVEL WITH CLAY       23     26 FINE SAND					
Section 6: Well Construction Details Borehole dimensions From To Diameter 0 31 6 Casing	26     31     SAND AND GRAVELWATER					
From     To     Diameter     Wall     Pressure       0     33.5     6     0.25     STEEL						
From To Diameter Openings     Size of Openings       19     29     6       Annular Space (Seal/Grout/Packer)	Driller Certification All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.					
There are no annular space records assigned to this well.	Name: W. F. KENTFIELD Company: OKEEFE DRILLING CO License No: WWC-459					

Date 10/6/1982 Completed: O'KEEFE DRILLING COMPANY P.O. BOX 3810 - 4 MILE ROAD BUTTE, HONTANA 59702 494-3310

03N 08W 24 DAD

4	NAME		ANAC	ONDA MINERALS	s compan	y.			
	WELL N WELL L LEGAL	IUMBER: OCATION: DESCRIPTION:	24 But SW_1	te, Montana SW j SW j	 	24, RANGE		, TOWNSHIP_	<u> </u>
Mi: 5034 0311 08W 24	DATE: DATE: DIAMET DEPTH CASING PLASTI DRIVE PERFOR WELL S GALLON STATIC PUMPIN	STARTED COMPLETED G 5/8" x .250 C LINER SHOE VATIONS CREEN IS PER MINUTE WATER LEVEL IG LEVEL	10/	5/82 5/82 FROM 0' FROM FROM 13' FROM 13'  40 61' 15'		DRILLER: DRILL RI METHOD: BITS: TO TO TO	G: Buc Peru 28'  23'	F. KENTFIELD yrus-Erie ?? cussion cabl	<u>U</u> <u>e tool</u>
								And in case of the local division of the loc	

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·FROM

**REWARKS**: .

. '

:

TO FORMATION

SUL

M: 5034

			•	
0	10.	Old dump, fill		
10'	15'	Black swamp and sand	Water	
15'	20'	Red sand and clay		
20'	25'	Sand and gravel	Water	
• 1				
•				
			يور - بر -	
		•		
•	·		<b># 11</b>	
			· · ·	
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				7
· ·	:		a a a anno ann ann ann ann ann ann ann a	
		and a second		·
			، من محمد به من	
,				
VELOPE	D BY:- •	- bailing	••	÷ ;*
LUME H	ELD BY BAT	LER: 15 gallons	<b>.</b> /	
EPTH TO	WATER WHI	LE BAILING: 61 Keet		•

61 feet · 15 gallons VOLUME OF WATER BAILED: 40 gallons-per-minute 2' sand plug in bottom of casing PRODUCTION RATE:

6.24

# **Buckley**, Luke

From:SmiSent:TueTo:BuoCc:TueSubject:NewAttachments:BPS

Smith, Garrett Tuesday, August 24, 2010 3:51 PM Buckley, Luke Tucci, Nicholas New Well Logs BPS New Well Logs.pdf

Hi Luke-

I have some new well logs that need to be entered into GWIC (see attached pdf). I have included the GWIC numbers below, as well as the total depth, screen interval, and the elevations are converted to NGVD29 (since they're NAVD88 on the logs). Thanks

#### Garrett

		NGVD29			
Well		TOO Flow	Cround Flow		Saraan Int (ft)
Name	GWICID	TOC Elev	Ground Elev	1D (11)	Screen Int. (It)
AMC-24C	255974	5450.417	5448.47	83.5	69-79
AMW-13C BPS07-	255975	5449.958	5448.338	84	60-70
21C	257404	5452.471	5452.801	87	65-80
BPS07-24	257403	5451.721	5450.331	71	58-68

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**Quarter Sections** 

NW1/4 SW1/4 NE1/4 SE1/4

# Page 1 of 1

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Other Options

#### Section 7: Well Test Data

Total Depth: 16 Static Water Level: 10.4 Water Temperature:

\* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

#### Section 8: Remarks

CASING ELEVATION: 5450.39' LOGGED BY: RICHARD GRAF MSPC N741488.51149 / E1229400.09438

#### Section 9: Well Log

#### **Geologic Source**

#### 111FILL - HOLOCENE MAN-DEPOSITED FILL MATERIALS

From	То	Description
0	0.5	SANDY SILT DARK BROWN (10YR 3/3) 55% FINES 40% FINE SAND 5% MED SAND SOFT LOW PLASTICITY MOIST ROOTLETS FILL
0.5	2.5	SILTY SAND BROWN (10YR 5/3) 40% FINES 30% FINE SAND 15% MED SAND 10% COARSE SAND TRACE FINE GRAVEL LOOSE MOIST FILL MATERIAL (CHARCOAL GLASS WOOD TAILINGS?) OXIDATION ZONES IN COARSE FRACTION. FILL
2.5	3	NO RECOVERY
3	5.2	SILTY SAND AS ABOVE FILL
5.2	16	NO RECOVERY SOIL TOO LOOSE TO STAY IN SAMPLER RESIDUE ON SAMPLER INDICATES FINE BLACK SOIL WITH "REDUCING" ODOR
16	20	FROM CUTTINGS OF AUGER FLIGHTS: SILTY CLAY BLACK (10YR 2/1) 755 FINES 10% FINE SAND 5% MED TO COARSE SAND VERY SOFT WET IN REDUCING IN ODOR HIGH ORGANIC CONTENT 10% FIBERIOUS PLANT MATERIAL
	L	

#### **Driller Certification**

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: Company: OKEEFE DRILLING CO License No: -Date Completed: 8/25/1993

County Geocode SILVER BOW I atitude Longitude Geomethod Datum 45.993589459 112.533094451 SUR-GPS NAD83 Ground Surface Altitude Method Datum Date 5454.97 SUR-GPS NGVD29 3/8/2005 **Measuring Point Altitude** Method Datum **Date Applies** 5450.39 3/4/1994 Addition Block Lot Section 3: Proposed Use of Water MONITORING (1) Section 4: Type of Work Drilling Method: HOLLOWSTEM AUGER Status: NEW WELL

Section

24

#### Section 5: Well Completion Date

4

Site Name: ARCO \* AMW-13

Section 1: Well Owner(s)

N/A N/A N/A [08/25/1993]

Range

08W

Section 2: Location

Township

03N

GWIC ld: 137597

1) ARCO (MAIL)

N/A

Date well completed: Wednesday, August 25, 1993

#### Section 6: Well Construction Details

### Borehole dimensions

From To Diameter

# 0 16

Casing	Jasing									
From	То	Diameter	Wall Thickness	Pressure Rating	Joint	Туре				
-2.5	2	0				STEEL				
-2	15.5	4				PVC				

Completion (Perf/Screen)

From	То	Diameter	# of Openings	Size of Openings	Description
5	15	4		0.010 IN	SCREEN-CONTINUOUS-PVC
15	15.5	4			BOTTOM CAP

Annular Space (Seal/Grout/Packer)

From	То	Description				
0	3	BENTONITE				
3	3.5	100 MESH COLORADO SILICA SAND				
3.5	16	16/30 COLORADO SILICA SAND				

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

# Site Name: ATLANTIC RICHFIELD \* AMW-13B GWIC Id: 240863

#### Section 1: Well Owner(s)

1) ATLANTIC RICHFIELD (MAIL) 317 ANACODA RD BUTTE MT 59701 [12/07/2007]

#### Section 2: Location

Township	Range	Section	on	Quarter S	ections		
03N	08W	24		SW1/4 SW1/4 NE1/4 SE1/4			
	County			Geo	ocode		
SILVER BOW							
Latitude		Longitu	ongitude Geomethod I				
45.993623385	1	12.53313	533136476 SUR-GPS				
Ground Surf	ace Altitu	de	Method	Datum	Date		
5449	9.44		SUR-GPS	NGVD29	11/17/2008		
Measuring P	oint Altitu	de	Method	Datum	Date Applies		
5450	0.79		MAP	NGVD29	11/17/2008		
Addition			Block		Lot		

#### Section 3: Proposed Use of Water MONITORING (1)

#### Section 4: Type of Work

Drilling Method: ROTARY Status: NEW WELL

#### Section 5: Well Completion Date

Date well completed: Friday, December 07, 2007

## Section 6: Well Construction Details

### Borehole dimensions

 From
 To
 Diameter

 0
 40
 7

Casing	

			Wall	Pressure		
From	То	Diameter	Thickness	Rating	Joint	Туре
0	27	2	0.154		FLUSH THREAD	PVC

Completion (Perf/Screen)

	# of	Size of	
--	------	---------	--

 From
 To
 Diameter
 Openings
 Openings
 Description

 27
 28.5
 2
 0.020 IN
 SCREEN-CONTINUOUS-PVC

		· ·	•	1	0	, í
Annul	ar S	Space	(Seal	/Gr	out/P	acker)
27	28.	52				0.02

				Cont.
	From	То	Description	Fed?
	0	25	BENTOINTE	
ĺ	25	40	SILICA SAND	

### Section 7: Well Test Data

Total Depth: 40 Static Water Level: 10 Water Temperature:

\* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

#### Section 8: Remarks

#### Section 9: Well Log

#### **Geologic Source**

111SNGR - SAND AND GRAVEL (HOLOCENE)

From	То	Description
0	7	SAND AND SILT
7	22	CLAY AND SILT
22	25	GRAVEL
25	35	GRAVEL WITH SAND AND SILT
35	40	MEDIUM GRAVEL

#### **Driller Certification**

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: CLAY PARSONS Company: PARSONS DRILLING License No: MWC-362 Date Completed: 12/7/2007

#### Other Options

Return to menu Plot this site in State Library Digital Atlas Plot this site in Google Maps View hydrograph for this site View field visits for this site View water quality for this site

MONTANA WELL LOG REPORT							Other Options			
This well log re the official reco the amount of the contents of site. Acquiring accomplished	This well log reports the activities of a licensed Montana well driller, see the official record of work done within the borehole and casing, and de the amount of water encountered. This report is compiled electronicall the contents of the Ground Water Information Center (GWIC) databas site. Acquiring water rights is the well owner's responsibility and is NC accomplished by the filing of this report.								Return to menu Plot this site in State Library Digital Atlas Plot this site in Google Maps View hydrograph for this site View field visits for this site View water quality for this site View scanned well log (11/1/2011 3:29:57 PM)	
							V	/iev	v scanned update/correction (11/1/2011 3:30:35 PM)	
Site Name: AT		RICHFIELD BF	SOU * AMV	V-13C		Sectio	n 7:	We	ell Test Data	
GWIC Id: 255975 Section 1: Well Owner(s) 1) ATLANTIC RICHFIELD (MAIL) N/A N/A N/A N/A [No Date]						Total Depth: 84 Static Water Level: 10.42 Water Temperature:				
Section 2. Loc	ation					possib	le. Ti	his	rate may or may not be the sustainable yield of the well.	
Township	Range	Section	Quart	er Sectio	ons	Sustai	nable	e yie	eld does not include the reservoir of the well casing.	
03N	08W County	24	NW <sup>1</sup> /4 SV	W <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub> Geocode	SE¼ e	Sectio	n 8:	Re	marks	
SILVER BOW		Longitude	Geom	ethod	Datum	Sectio	n 9:	We	ell Log	
45,99365490	2 1	12.533157883	SUR-	GPS	NAD83	Geolo	gic S	Sou	rce	
Ground	Surface A	ltitude	Method	Datun	n Date	Unassi	igneo	d		
	5452.547					From	То		Description	
Addition		Block		Lo	t	0		4	TOPSOIL, BLACK, DAMP	
						4		6	SAND AND SILT, FILL	
Section 3: Pro	posed Us	e of Water				6		14	GRAVEL, COBBLES, POOR RETURNS, FILL, TRASH, GLASS MINIMAL RETURNS	
MONITORING (1	)					14	1	5.5	ODOR	
Section 4: Typ	e of Work	(				15.5		19	NO RETURNS	
Drilling Method: H	HOLLOWST	EM AUGER				19		20	SPT SILT, SANDY, WET, BLACK ML	
Status: NEW WE	LL					20		21	SAND, MED, WET, OX, RED SP	
						21	ļ	24	NO RETURNS	
Section 5: Wel	I Complet	tion Date				24	2	5.5	SPT SAND, WELL GRADED SW	
Date well comple	ted: Wedne	esday, May 12, 2	.010			25.5		26	GRAVEL FRAGMENT AND SAND SP	
Section 6: Wel	ll Constru	ction Details				26		29	NU RETURNS	
Borehole dimens	sions	ction Details				29	' <b> </b>	31	SPT SAND, COARSE TO FINE LIGHT BROWN, ? HEAVE SP	
From To Diamet	ter					34	3	5 5	SPT SAND SLORAT, BLACK SWI	
0 84	8					35.5		36	GRAVEL IN SILTY MATRIX	
Casing						Driller	Cert	tific	cation	
		Wall	Pressure			All wor	k pe	rfor	med and reported in this well log is in compliance with	
From To D	lameter	Thickness	Rating	Joint	Туре	the Mo	ntan	a w	vell construction standards. This report is true to the best	
-1.6 /1./ 2					PVC	of my l	know	/led	ge.	
Completion (Per	# of	Size of						Na	me: STEVE MALKOVICH	
From To Diam	eter Openi	ngs Openings	Description				Cor	mpa	ny: OKEEFE DRILLING CO	
71.7 81.7 2		0.020 IN	SCREEN-CO	NTINUOL	JS-PVC		Licen	ise	No: MWC-380	
Annular Space (	Seal/Grout	/Packer)				Date	Com	plet	ed: 5/12/2010	
			Cont.							
From To Desc	ription		Fed?							
0 2 QUIC			╉━─┥							
2 67.8 GRO										
07.8 84 10-20		JU SILICA SAN	<u>-</u>							

Site Name	Site Name: ATLANTIC RICHEIELD BPSOL							
GWIC Id: 2	GWIC Id: 255975							
Additional	Additional Lithology Records							
From	То	Description						
36	39	NOTE: AUGER CHATTER 34' - 37'BGS GRAVEL OR COBBLES NO RETURNS						
39	41	SPT 39'-40'3" ?HEAVE/SLOUGH SAND WITH GRAVEL SP						
41	44	AUGER - MINIMAL RETURNS, SOME BLACK SLURRY						
44	47	SPT SAMPLES - HEAVE/SLOUGH 45'2"-46', GRAVEL AND SAND GP-SP, GRAVEL, SOME BROKEN SOME SUBROUNDED						
47	49	AUGER, 12 GALLONS SLURRY RETURNS						
49	51	SPT SAMPLES, HEAVE/SLOUGH 1.5' CLAY, DENSE COHESIVE, BROWN						
51	54	AUGER - NO RETURNS						
54	57	SPT CLAY, DENSE, COHESIVE BROWN, ORANGE STREAK AT 55' CL-CH						
57	59	AUGER 7 GALLONS SLURRY						
59	60	SPT CLAY, DENSE, COHESIVE						
60	61	SAND, SILTY SP-SM						
61	61.5	ROCK FRAGMENT WITH SILT						
61.5	64	AUGER 5 GALLONS SLURRY 61'5"-63' GRAVEL - RIG CHATTER						
64	66	SPT INTERBEDDED SANDY SILT AND CLAY ML-CL, DENSE BROWN						
66	68	SPT SILTY SAND TO SANDY SILT DENSE, BROWN, SLIGHTLY COHESIVE SM-ML						
68	69	AUGER 13 GALLONS SLURRY						
69	70.5	SPT SILT SANDY, DENSE, RED BROWN ML						
70.5	71	CLAY, DENSE, COHESIVE BROWN CL-CH						
71	71.5	SAND WITH SOME SILT SP						
71.5	72.5	SAND, SILTY SM-ML						
72.5	73	CLAY, DENSE, COHESIVE CL-CH						
73	74	AUGER						
74	75.4	CLAY, SANDY DENSE, COHESIVE CL. AUGER, HARDER DRILLING						
75.4	76	SAND, SILTY, MICA HIGHLY OXIDIZED. AUGER, HARDER DRILLING.						
76	76.2	SIH2 OXIDATION. AUGER, HARDER DRILLING						
76.2	76.5	SILT TO GRAVEL SIZE PARTICLES, CAN CRUSH WITH FINGERS. AUGER, HARDER DRILLING.						
76.5	79	AUGER, HARDER DRILLING.						
79	80.4	COARSE SAND AND FINE GRAVEL WITH SOME 1/2 INCH SW						
80.4	81.6	SAND, SP						
81.6	82.4	SILT, SANDY, DENSE, OXIDATION ML						
82.4	84	15 GALLONS SLURRY FROM 79-84						
84	85.7	SILT DENSE, OXIDIZED ML, ABUNDANT MICA						
85.7	87.2	ROCK FRAGMENTS, OXIDIZED MICA AND QUARTZ IN CRYSTALLINE MATRIX BEDROCK 86' BGS						

	MONT	ANA WEL	L LOG REPOR	T			Other Options
This well log reports the activities of a licensed Montana well as the official record of work done within the borehole and ca describes the amount of water encountered. This report is ca electronically from the contents of the Ground Water Informa (GWIC) database for this site. Acquiring water rights is the w responsibility and is NOT accomplished by the filing of this re				na well and cas ort is con nformat s the we f this re	driller, s sing, ar mpiled ion Cer ell owne port.	serves id iter er's	Return to menu Plot this site in State Library Digital Atlas Plot this site in Google Maps View hydrograph for this site View field visits for this site View water quality for this site
Site Name: ATL GWIC Id: 24085		IFIELD * A	MC-24B		Sectio	n 7: \	Well Test Data
Section 1: Well 1) ATLANTIC RI 317 ANACOND/ BUITE MT 597/	Owner(s) ICHFIELD (M A RD	AIL)			Total I Static Water	Depth: Water Temp	: 50.5 · Level: 8.9 perature:
BOTTE WIT 5970	01 [12/04/200	,,]			* Durir	ng the	well test the discharge rate shall be as uniform
Section 2: Loca	ation				as pos	SIDIE. Well	I his rate may or may not be the sustainable yield Sustainable vield does not include the reservoir of
Township 03N	Range Se	ection 24	Quarter Sectio	ons	the we	ll casi	ing.
C	ounty	27	Geocode		•		
SILVER BOW					Sectio	n 8: F	Remarks
Latitude 45.994440078 Ground Su	Longite 112.5296 <sup>-</sup> rface Altitude	ude 74107 Met	Geomethod I SUR-GPS N thod Datum	Datum NAD83 Date	Sectio	on 9: \ gic So	Nell Log ource SAND AND CRAVEL (HOLOCENE)
					Erom		SAND AND GRAVEL (HOLOCENE)
Addition		Block	Lot		From	10	
					15	1.5	
Section 3: Pror	hosed Use of	Wator			1.5	28	
MONITORING (1)		Water			28	50.5	COARSE SAND AND GRAVEL, OXIDIZED WET
Section 4: Type Drilling Method: R Status: NEW WEL	<b>e of Work</b> OTARY L						
Section 5: Well Date well complete	Completion ed: Tuesday, D	Date ecember 04	4, 2007				
Section 6: Well	Constructio	n Details					
Borehole dimens	ions						
From To Diame	eter						ļ
0 50.5	7					0	
Casing		2			Driller	Certi	fication
	Wall Thicknood	Pressure	loint	Turna	compli	к реп ance	with the Montana well construction standards.
		Rating			This re	port i	s true to the best of my knowledge.
Completion (Perf	(Screen)	l	I LUGH HIKLAD			Na	me: CLAY PARSONS
	# of S	ize of				compa	ny: PARSONS DRILLING
From To Diamete	er Openings C	penings D	escription		Lic	ense	No: MWC-362
39 49 2	0	.020 IN S	CREEN-CONTIN	UOUS-	C C	C molet	Date 12/4/2007
Annular Space (S	Seal/Grout/Pag	I⊏ ker)	vc			mpie	
	Cont.						
From To Descr	iption Fed?						
0 37 BENT 37 50.5 SILICA							

Montana's Ground-Water Information Center (G	GWIC)	Site Report	V.11.2016
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This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

#### Site Name: ATLANTIC RICHFIELD \* BPS07-08A GWIC Id: 240866

#### Section 1: Well Owner(s)

1) ATLANTIC RICHFIELD (MAIL) 317 ANACONDA RD BUTTE MT 59701 [01/07/2008]

#### Section 2: Location

Township	Range	Section	Quarter Sections		
03N	08W	24	SE1/4 NW1/4		
C	Geoco	de			
SILVER BOW					
Latitude	Lon	igitude	Geomethod	Datum	
45.996943507	112.540476327		SUR-GPS	NAD83	
Ground Surfac	ce Altitude	Method	Datum	Date	
5446.1	16	SUR-GPS	NGVD29	2/11/2008	
Addition		Block	L	ot	

# Section 3: Proposed Use of Water

MONITORING (1)

#### Section 4: Type of Work

Drilling Method: ROTARY Status: NEW WELL

#### Section 5: Well Completion Date

Date well completed: Monday, January 07, 2008

#### Section 6: Well Construction Details

Boreh	ole	dimensio	ns						
From	То	Diameter							
0	20	7							
Casin	g		•						
From	То	Diamete	er  1	Vall hickne	ss	Press Rating	ure g	Joint	Туре
0	7.5	5 2	C	).154				FLUSH THREAD	PVC
Comp	leti	on (Perf/S	cre	en)				,	
			# o	f	Size	e of			
From	То	Diameter	Ор	enings	Оре	enings	Des	cription	
7.5	17	2			.020	)	SCR	REEN-CONTINUOU	S-PVC
Annular Space (Seal/Grout/Packer)									
				Cont.					
From	То	Descripti	ion	Fed?					
0				Í	1				

0	7.5	BENTOINTE	
7.5	20	SILICA SAND	

### Section 7: Well Test Data

Total Depth: 20 Static Water Level: 10 Water Temperature:

\* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

#### Section 8: Remarks

#### Section 9: Well Log

#### **Geologic Source**

110SNGR - SAND AND GRAVEL (QUATERNARY)

From	То	Description
0	6.5	FILL, SAND, COBBLES ASPHALT,CONCRETE
6.5	15	COARSE SAND AND FINE GRAVEL,MOIST
15	20	NO RETURNS

#### **Driller Certification**

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: CLAY PARSONS Company: PARSONS DRILLING License No: MWC-362 Date Completed: 1/7/2008 Other Options

Return to menu Plot this site in State Library Digital Atlas Plot this site in Google Maps View hydrograph for this site View field visits for this site View water quality for this site

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Site Name: ATLANTIC RICHFIELD \* BPS07-14A GWIC ld: 248555

Section 1: Well Owner(s) 1) ATLANTIC RICHFIELD (MAIL) 317 ANACONDA RD BUTTE MT 59701 [06/11/2008]

#### Section 2: Location

Township	ip Range Section		Quarter Sections		
03N	08W	24		NE¼ NE¼	
	County			Geocode	
SILVER BOW					
Latitude		Longitude	Geom	ethod	Datum
45.996523731	11	2.542975733	SUR-	GPS	NAD83
Ground S	Surface Alt	itude	Method	Datum	Date

#### Addition Block

Section 3: Proposed Use of Water MONITORING (1)

#### Section 4: Type of Work

Drilling Method: ROTARY Status: NEW WELL

### Section 5: Well Completion Date

Date well completed: Wednesday, June 11, 2008

#### Section 6: Well Construction Details

#### **Borehole dimensions**

From To Diameter

0 31.5

Casing

			Wall	Pressure		
From	То	Diameter	Thickness	Rating	Joint	Туре
2	16	2	0.154		FLUSH THREAD	PVC-SDR 17
Completion (Perf/Screen)						
			# of	Size of		
From	То	Diameter	Openings	Openings	Description	
16	26	2		.020	SCREEN-CONTI	NUOUS-PVC

#### Annular Space (Seal/Grout/Packer)

From	То	Description	Cont. Fed?
2	14	BENTONITE	
14	26	SILICA SAND	

# Section 7: Well Test Data

Total Depth: 26 Static Water Level: 17.5 Water Temperature:

#### Air Test \*

5 gpm with drill stem set at 26 feet for \_ hours. Time of recovery \_ hours. Recovery water level \_ feet. Pumping water level \_ feet.

\* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

#### Section 8: Remarks

#### Section 9: Well Log

#### **Geologic Source**

Unassigned

Lot

	-	
From	То	Description
0	15	SLAG, BLACK TO DARK BROWN
15	20	SLAG BLACK
20	25	SLAG
25	31.5	MIXED SLAG AND SAND

#### **Driller Certification**

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: CLAY PARSONS **Company: PARSONS DRILLING** License No: MWC-362 Date Completed: 6/11/2008

Other Options

**Return to menu** Plot this site in State Library Digital Atlas Plot this site in Google Maps View hydrograph for this site

MONTANA WELL LOG REPORT	Other Options
This well log reports the activities of a licensed Montana w as the official record of work done within the borehole and describes the amount of water encountered. This report is electronically from the contents of the Ground Water Inforr (GWIC) database for this site. Acquiring water rights is the responsibility and is NOT accomplished by the filing of this	Return to menucasing, andcompilednation Centere well owner'scarport.Return to menuPlot this site in State Library Digital AtlasPlot this site in Google MapsView hydrograph for this siteView field visits for this siteView water quality for this site
Site Name: ATLANTIC RICHFIELD * BPS07-15A	Section 7: Well Test Data
GWIC Id: 248557 Section 1: Well Owner(s) 1) ATLANTIC RICHFIELD (MAIL) 317 ANACONDA RD BUITTE MT 59701 (06/13/2008)	Total Depth: 36 Static Water Level: 16 Water Temperature:
Section 2: Location       Quarter Sections         Township       Range       Section       Quarter Sections         03N       08W       24       NE¼ SW¼         County       Geocode         SILVER BOW       SILVER BOW	<u>5</u> gpm with drill stem set at <u>36</u> feet for _ hours. Time of recovery _ hours. Recovery water level _ feet. Pumping water level _ feet.
Latitude     Longitude     Geomethod     Datu       45.996255074     112.541749813     SUR-GPS     NADB       Ground Surface Altitude     Method     Datum     Datu       5455.07     SUR-GPS     NGVD29       Addition     Block     Lot	<ul> <li>* During the well test the discharge rate shall be as uniform</li> <li>as possible. This rate may or may not be the sustainable yield</li> <li>of the well. Sustainable yield does not include the reservoir of the well casing.</li> </ul>
	Section 8: Remarks
Section 3: Proposed Use of Water MONITORING (1) Section 4: Type of Work	Section 9: Well Log Geologic Source 111FILL - HOLOCENE MAN-DEPOSITED FILL MATERIALS From To Description
Drilling Method: ROTARY	0 10 NO RETURN
Sidius. NEW WELL	10 12 BLACK SLAG
Section 5: Well Completion Date	12 15 DARK GRAY SLAG
Date well completed: Friday, June 13, 2008	15 20 DARK GRAY SLAG
Section 6: Well Construction Details	30 34 GRAVELS
Borehole dimensions	
/Casing	
Wall Pressure	
From To Diameter Thickness Rating Joint Type	
-2 15 2 0.154 FLUSH PVC-SE THREAD 17	
Completion (Perf/Screen)	
From To Diamotor Openings Openings Description	Driller Certification
15 35 2 020 SCREEN-CONTINUOU	All work performed and reported in this well log is in IS- compliance with the Montana well construction standards.
Annular Space (Seal/Grout/Packer)	
Cont.	
From To Description Fed?	Company: PARSONS DRILLING
2 12 BENTONITE	License No: MWU-302
12 35 SIICA SAND	Completed: 6/13/2008

http://mbmggwic.mtech.edu/sqlserver/v11/reports/SiteSummary.asp?gwicid=248557&age... 1/28/2016

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#### Site Name: ATLANTIC RICHFIELD \* BPS07-21B GWIC Id: 253710

#### Section 1: Well Owner(s)

1) ATLANTIC RICHFIELD (MAIL) 307 ANACONDA RD BUUTE MT 59701 [12/18/2009]

#### Section 2: Location

Township	Township Range Section		Quarter Sections		ons
03N	08W	24	NW1/4 SE1/4		4
(	County		G	ieocode	
SILVER BOW					
Latitude	Lo	ongitude	Geome	thod	Datum
45.994844226	112.	533986415	SUR-C	SPS	NAD83
Ground Su	urface Alti	tude	Method	Datum	Date

Addition Block Lot

#### Section 3: Proposed Use of Water MONITORING (1)

#### Section 4: Type of Work

**Drilling Method: ROTARY** Status: NEW WELL

#### Section 5: Well Completion Date

Date well completed: Friday, December 18, 2009

#### Section 6: Well Construction Details **Borehole dimensions**

7

From To Diameter

# 0 47

0

Casing Wall Pressure Diameter Rating From To Thickness Joint Туре A53B 0 33 0.25 WELDED STEEL PVC-

# **Completion (Perf/Screen)**

35.5 0.8

From	то	Diameter	# of Openings	Size of Openings	Description
35.5	45.5	2		0.020 IN	SCREEN- CONTINUOUS-PVC

FLUSH

THREAD

SCHED

120

Annular Space (Seal/Grout/Packer)

			Cont.	
From	То	Description	Fed?	
0	33	BENTONITE		

SILICA SAND

# Section 7: Well Test Data

Total Depth: 47 Static Water Level: Water Temperature:

\* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

#### Section 8: Remarks

33 FT CASING LEFT IN THE GROUND BENTONITE CHIPS TO SURFACE AND OUTER ANNULAS OF CASING FLUSH MOUNT CEMENTED IN

#### Section 9: Well Log

# **Geologic Source**

Unassigned							
From	То	Description					
0	2	FILL LTERED QTZ MONZONITE TO 3					
2	7	FILL SAND AND GRAVEL,METAL,GLASS					
7	10	FILL,FINEGRAINED,LOOSE SOIL,BLACK,MOIST,MINOR PAPER DEBRIS					
10	15	ROCK FRAGMENTS,ANGULAR WITH SAND AND SILT,WET,BLACK SM WITH GRAVEL					
15	20	SILT AND SAND,WET BLACK ML					
20	25	SILT AND SAND,WET BLACK ML					
25	30	SILT AND SAND, WET BLACK SM-ML					
30	35	SILT,COHESIVE,WET BROWN ML-MH					
35	40	GRAVEL,SUB ROUNDED TO SUBGRANULAR,WET,BROWN SP					
40	45	SAND, FINE GRAINED WET, BROWN GP					
45	47	SAND WITH SOME SILT SP-ML					
Driller Certification							
All work performed and reported in this well log is in							
compliance with the Montana well construction standards.							
This report is true to the best of my knowledge.							

Name: CLAY PARSONS Company: PARSONS DRILLING License No: MWC-362 Date 12/18/2009

Completed:

**Other Options** 

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M: 257404

PIONEER TECHNOCUL SERVICES, DVC.

SOIL BORING LOG & WELL CONSTRUCTION DETAILS

Project: BPSOU Groundwater Deep Wells Soil Baring/Well Number: BPSD7-21C Location: \_\_\_\_\_ Date: \_\_\_\_ Time Start/Finish: \_\_\_\_\_ Driller: Steve Malkovich Drilling Company: O'Keete Drilling Drilling Method: Hallow Stem Auger with Split Spoon Sampler



2/3



313.

# **Buckley**, Luke

From: Sent: To: Cc: Subject: Attachments: Smith, Garrett Tuesday, August 24, 2010 3:51 PM Buckley, Luke Tucci, Nicholas New Well Logs BPS New Well Logs.pdf

Hi Luke-

I have some new well logs that need to be entered into GWIC (see attached pdf). I have included the GWIC numbers below, as well as the total depth, screen interval, and the elevations are converted to NGVD29 (since they're NAVD88 on the logs). Thanks

Garrett

		NGVD29				
Well						
Name	GWIC ID	TOC Elev	Ground Elev	TD (ft)	Screen Int. (ft)	
AMC-24C	255974	5450.417	5448.47	83.5	69-79	
AMW-13C BPS07-	255975	5449.958	5448.338	84	60-70	
21C	257404	5452.471	5452.801	87	65-80	
BPS07-24	257403	5451.721	5450.331	71	58-68	

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#### Site Name: ARCO \* AMW-11 GWIC Id: 161962

Section 1: Well Owner(s)

1) ARCO (MAIL) N/A BUTTE MT 59701 [09/14/1993]

#### Section 2: Location

Township	Range	Section		Quar	ter Sect	ions
03N	08W	24	5	SE¼ SI	E¼ NW1⁄	∕₄ SE¹⁄₄
	County				Geocod	le
SILVER BOW						
Latitude	I	Longitude	)	Geom	ethod	Datum
45.99403788	81 11	2.535129	29	SUR-	GPS	NAD83
Ground Su	Irface Altit	ude	Metho	d [	Datum	Date
54	49.81		SUR-G	PS		3/9/2005
Measuring	Point Altit	ude M	lethod	Datur	n Date	e Applies
544	45.14				7/:	30/2004
Addition		BI	ock		Lo	ot

#### Section 3: Proposed Use of Water

MONITORING (1)

3.5

#### Section 4: Type of Work

Drilling Method: HOLLOW STEM AUGER Status: NEW WELL

#### Section 5: Well Completion Date

Date well completed: Tuesday, September 14, 1993

# Section 6: Well Construction Details Borehole dimensions

	۱v	Ľ	Diamote							
0	15.	5		2						
Casin	g									
From	Т	o	Diamet	ter	Wall Thic	kness	Pre Rat	ssure ing	Joint	Туре
-2	1	4	2		Í				Í	PVC
Comp	leti	or	(Perf/S	creer	n)					
				# of		Size of	Т			
From	То	Di	ameter	Oper	nings	Opening	sDe	escriptio	n	
4	14	2				0.010 IN	SC P\	CREEN-0 /C	CONTIN	UOUS
Annu	lar \$	Sp	ace (Se	al/Gro	out/Pa	acker)				
		T						Cont.		
From	То		Descrip	tion				Fed?		
0	3		BENTO	NITE						
3	3.5		100 MES	SH SI	LICA	SAND				

15.5 16/30 COLORADO SILICA SAND

# Other Options

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#### Section 7: Well Test Data

Total Depth: 14 Static Water Level: 5.54 Water Temperature:

\* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

#### Section 8: Remarks

#### Section 9: Well Log

**Geologic Source** 

111SNGR - SAND AND GRAVEL (HOLOCENE)

s	From	То	Description
	0	1.2	SANDY SILT - DARK BROWN (10YR 4/3) 75% NONPLASTIC FINES 25% FINE TO COARSE ANGULAR SAND SOFT SLIGHTLY MOIST TO MOIST FILL
	1.2	1.8	SILTY CLAY - GRAYISH BROWN (10YR 5/2) 100% MODERATELY PLASTIC FINES SOFT MOIST TO WET MODERATELY OXIDIZED - FILL
	1.8	2	NO RECOVERY
	2	4	NO RECOVERY - OUTSIDE OF SPOON APPEARS TO BE SMEARED WITH CLAY
	4	4.8	SANDY SILT - DARK BROWN (10YR 4/3) 75% NONPLASTIC FINES 25% FINE TO COARSE ANGULAR SAND SOFT MOIST TO WET - FILL?
	4.8	5.9	CLAY - VERY DARK GRAY (10YR 3/1) 95% MODERATELY PLASTIC CLAY 5% FINE SAND ABUNDANT ORGANICS ALLUVIUM?
	5.9	6	SILT - GRAY (10YR 5/1) 95% NONPLASTIC FINES 5% FINE ANGULAR SAND SOFT WET ABUNDANT ORGANICS ALLUVIUM OR FILL?
	6	6.8	SAND - REDDISH BROWN 10% FINES 30% MEDIUM SUBANGULAR SAND 30% COARSE SUBANGULAR SAND WELL GRADED POORLY SORTED LOOSE WET FILL?
	6.8	7.5	SILT AND SLAG - DARK GRAY (10YR 4/1) 50% NONPLASTIC FINES 50% BROKEN SLAG FILL
	7.5	8	NO RECOVERY
6-	8	9	SILTY SAND - DARK GRAY (10YR 4/1) WITH REDDISH MOTTLING 25% FINES 40% FINE SUBANGULAR SAND 15% MEDIUM SUBROUND SAND 20% COARSE SUBROUND SAND WELL GRADED POORLY SORTED LOOSE WET - ALLUVIUM?
	9	12	NO RECOVERY
	12	12.3	SILTY SAND - DARK GRAYISH BROWN (10YR 5/2) 20% FINES 60% FINE ANGULAR SAND 10% MEDIUM SUBANGULAR SAND 10% COARSE SUBROUND SAND POORLY SORTED

		MODERATELY TO POORLY GRADED LOOSE WET - ALLUVIUM
12.3	14	NO RECOVERY
Drille	<sup>.</sup> Certi	fication

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: Company: OKEEFE DRILLING CO License No: -Date 9/14/1993 Completed:

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

# **Other Options**

Return to menu Plot this site in State Library Digital Atlas Plot this site in Google Maps View hydrograph for this site View field visits for this site View water quality for this site

Site Name: ATLANTIC RICHFIEL	D * BPS07-16A		Sectio	n 7: W	ell Test Data
Section 1: Well Owner(s) 1) ATLANTIC RICHFIELD (MAIL) 317 ANACONDA RD BUTTE MT 59701 106/17/20081			Total D Static V Water	epth: 2 Vater L Tempe st *	20 Level: 7.5 erature:
Section 2: Location			<u>2</u> gpm Time o	1 with C f recov	drill stem set at <u>20</u> feet for <u>hours</u> .
Township Range Sec	tion Quarter S	Sections	Recove	ery wat	ter level feet.
03N 07W 1	9 SW <sup>1</sup> / <sub>4</sub>	SW <sup>1</sup> /4	Pumpir	ng wate	er level _ feet.
	Geod	code			
Latitude Longitud	e Geomethod	d Datum	* Durin	a tha w	well test the discharge rate shall be as uniform as
45.992065694 112.525227	866 SUR-GPS	NAD83	possibl	e. This	s rate may or may not be the sustainable vield of the well.
Ground Surface Altitude	Method Da	atum Date	Sustair	able y	ield does not include the reservoir of the well casing.
Addition E	llock	Lot	Sectio	n 8: Re	emarks
			Sectio	n 9: W	'ell Log
Section 3: Proposed Use of Wate	r		Geolog	gic Sou	urce
MONITORING (1)			Unassi	gned	
Section 4: Type of Work			From	То	Description
Drilling Method: ROTARY			0	7	NO RETURNS
Status: NEW WELL			7	10	
			10	20	COARSE SAND
Section 5: Well Completion Date					
Date well completed: Thursday, June 1	9, 2008				
Section 6: Well Construction Det	aile				
Borehole dimensions					
From To Diameter					
0 24 7					
Casing					
Wall Pres	sure				
From To Diameter Thickness Rati	ng Joint	Туре			
	FLUSH THREAD	PVC-SDR 17	I		
Completion (Perf/Screen)	1		Drillor	Cortifi	instign
From To Diameter Openings Openin	as Description			certin k nerfo	reation
	SCREEN-CONTINUC	OUS-	the Mo	ntana v	well construction standards. This report is true to the best
10 20 2 0.020 M	STAINLESS		of my k	nowled	dge.
Annular Space (Seal/Grout/Packer)				Na	ame: CLAY PARSONS
Erom To Description Ead?				Comp	any: PARSONS DRILLING
From robescription Fed?					
			L	.icense	e No: MWC-362

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

#### Site Name: ATLANTIC RICHFIELD \* BPS07-16B GWIC Id: 248565

#### Section 1: Well Owner(s)

1) ATLANTIC RICHFIELD (MAIL) 317 ANACONDA RD BUTTE MT 59701 [06/16/2008]

## Section 2: Location

Township	Range	Section	Qua	arter Sectio	ons		
03N	07W	19	SW1⁄4 SW1⁄4				
	County			Geocode			
SILVER BOW							
Latitude	Lo	ongitude	Geom	ethod	Datum		
45.992109077	112.	525228459	SUR-	GPS	NAD83		
Ground St	urface Altitu	ıde	Method	Datum	Date		

Block

# Section 3: Proposed Use of Water

MONITORING (1)

Addition

#### Section 4: Type of Work

Drilling Method: ROTARY Status: NEW WELL

#### Section 5: Well Completion Date

Date well completed: Monday, June 16, 2008

#### Section 6: Well Construction Details

Boreh	ole	dimensio	ns			
From	То	Diameter				
0	40	7				
Casin	g					
From	То	Diameter	Wall Thickness	Pressure Rating	Joint	Туре
-2	30	2	0.154		FLUSH THREAD	PVC-SDR 17
Comp	leti	on (Perf/S	creen)			
			# of	Size of		
	Tal	Diamatar	Ononinge	Openings	Description	
From	10	Diameter	opennigs	e permige		
From 30	40	2	Openings	0.020 IN	SCREEN-CONTI	NUOUS-PVC
From 30 Annul	40 ar (	2 Space (Se	al/Grout/Pa	0.020 IN acker)	SCREEN-CONTI	NUOUS-PVC
From 30 Annul	40 ar (	2 Space (Se	al/Grout/Pa	0.020 IN acker)	SCREEN-CONTI	NUOUS-PVC
From 30 Annul From	40 ar S	2 Space (Se Description	al/Grout/Pa Cont. on Fed?	0.020 IN acker)	SCREEN-CONTI	NUOUS-PVC
From 30 Annul From -2	40 ar 9 To 28	2 Space (Se Description BRNTONI	al/Grout/Pa Cont. on Fed?	0.020 IN acker)	SCREEN-CONTI	NUOUS-PVC

## Section 7: Well Test Data

Total Depth: 40 Static Water Level: 7.15 Water Temperature:

#### Air Test \*

<u>5</u> gpm with drill stem set at <u>40</u> feet for \_ hours. Time of recovery \_ hours. Recovery water level \_ feet. Pumping water level \_ feet.

\* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

#### Section 8: Remarks

#### Section 9: Well Log Geologic Source

# Unassigned

Lot

From	То	Description
0	10	NO RETURN
10	15	COARSE AND FINE SAND
15	20	FINE GRAVEL AND SAND
20	30	FINE GRAVEL AND SAND
30	35	SANDY SILT
35	40	FINE GRAVEL AND FINE SAND

#### **Driller Certification**

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: CLAY PARSONS Company: PARSONS DRILLING License No: MWC-362 Date Completed: 6/16/2008

## Page 1 of 1

**Other Options** 

Return to menu Plot this site in State Library Digital Atlas Plot this site in Google Maps View hydrograph for this site View field visits for this site View water quality for this site This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

#### Site Name: BUTTE PRIORITY SOILS \* BPS07-24 GWIC Id: 257403

#### Section 1: Well Owner(s)

1) BUTTE PRIORITY SOILS OPERABLE UNIT (MAIL) N/A BUTTE MT N/A [No Date]

#### Section 2: Location

Township 03N	Range 07W	Section 19	Qua	arter Sectio	ons
0011	County	10		Geocode	
SILVER BOW					
Latitude	L	ongitude	Geom	ethod	Datum
45.995811629	112	.526570706	SUR	GPS	NAD83
Ground S	Surface Altitu	ude	Method	Datum	Date
5	5454.54				
Addition		Block		Lot	

#### Section 3: Proposed Use of Water

MONITORING (1)

#### Section 4: Type of Work

Drilling Method: HOLLOW STEM AUGER WITH SPLIT SPOON SAMPLER Status: NEW WELL

#### Section 5: Well Completion Date

Date well completed: Thursday, August 05, 2010

#### Section 6: Well Construction Details

#### **Borehole dimensions**

From To Diameter

0/1 0
-------

Casing

Erom	Т		Diam	ator	Wa	ll ioknooo	F	Pressure	)	loint	Tuna
FIOIII		<u> </u>	Diame	elei		ckness		caung		Joint	Type
-1.4	59	.4	2								PVC
Comp	completion (Perf/Screen)										
				# of		Size of					
From	То	Dia	meter	Openir	ngs	Openings	De	escriptio	n		
59.4	69.4	2				20	SC	CREEN-	CON	ITINUO	US-PVC
Annul	ar S	bace	e (Seal	/Grout/	Pac	ker)					
								Cont.			

From	То	Description	Fed?
0	2	CONCRETE	Ν
2	54.7	BENTONITE GROUT	Ν
54.7	71	COLORADO SILICA SAND / 10-20	Ν

# <u>View sc</u>

Section 7: Well Test Data

Total Depth: 71 Static Water Level: 6 Water Temperature:

\* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

#### Section 8: Remarks

#### Section 9: Well Log

#### **Geologic Source**

Unassigned From To Description WATER KNIFE - FILL SOIL, ROCK, CONCRETE, WOOD, 0 8.5 ASSORTED DEBRIS. PH 6.16, SC 2024, WL 6' BGS ORGANIC CLAY, COHESIVE, WET BLACK SANDY CLAY, 10.5 8.5 COHESIVE GREEN ABUNDANT MICA 10.5 13.5 NO AUGER RETURNS SAND, SILTY, WET, BLACK SIN SAND WITH SILT, SP-SM 13.5 15 LIGHT BROWN 15 18.5 PH 6.8, SC 916. NO AUGER RETURNS CLAY WITH SOME SAND, COHESIVE BLACK CH-, 0.1 18.5 20.5 FOOT SILTY SAND, HIGHLY OXIDIZED, NO PYRITE, MICA, RED BROWN 20.5 23.5 PH 6.41, SC 847, NO AUGER RETURNS SPT 1.4' RECOVERY, VERY LOOSE SAND - PROBABLE 23.5 24.5 HEAVE 0.1' SILTY SAND IN SITU RECOVERED 24.5 28.5 NO AUGER RETURNS SPT REFUSAL AT 30.2', 1.5' RECOVERY. SAND WITH 29 BROKEN GRAVEL, SP 28.5

29	33.5	PH 6.47, SC 960.6. NO AUGER RETURNS
33.5	33.8	SPT SAMPLE 24" RECOVERY 1.7' HEAVE SAND SW, MED- COARSE GRAVEL, BROKEN INTACT WELL-ROUNDED, GP. PH 6.3, SC 1634
33.8	38.3	NO AUGER RETURNS
38.3	39	SAND, SILTY, OXIDIZED SM

39 39 CLAY, DENSE, COHESIVE, GRAY CH-CL

#### Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: STEVE MALKOVICH Company: OKEEFE DRILLING CO License No: MWC-380 Date Completed: 8/5/2010

#### **Other Options**

Return to menu Plot this site in State Library Digital Atlas Plot this site in Google Maps View hydrograph for this site View field visits for this site View water quality for this site View scanned well log (8/27/2010 1:18:35 PM)

Site Name	SITE NAME: BUTTE PRIORITY SOILS							
Additional Lithology Records								
From	То	Description						
39	40	BROKEN LARGE GRAVEL						
40	43.5	PH 6.38, SC 1619 NO AUGER RETURNS						
43.5	44	SPT SAMPLE 0.4' HEAVE SAND, ANGULAR, STRONG, OXIDATION, RED BROWN						
44	44.5	SILT, SANDY, DENSE, NON-COHESIVE, ML						
44.5	48.5	PH 6.26, SC 1850, NO AUGER RETURNS						
48.5	50	LARGE SPT SAMPLE 0.8' CAVE, 1.2' NATIVE SOIL SILT WITH SAND, COHESIVE						
50	53.5	PH 6.36, SC 1719, NO AUGER RETURNS						
53.5	56.5	LARGE SPT AND SMALL SPT. SILT, SANDY, DENSE, COHESIVE, DRY IN CENTER, BROKEN, ML						
56.5	58.5	PH 6.36, SC 1650, NO AUGER RETURNS						
58.5	59.5	FINE SAND, SOME SILT, LOOSE SP						
59.5	60.5	SAND, SOME SILT, TRACE GRAVEL, DENSE, LIGHT BROWN, SW						
60.5	61.5	FINE SAND TO SILTY SAND, DENSE NON-COHESIVE, ML - SM						
61.5	63.5	@58.5, PH 6.37, SC 2025, NO AUGER RETURNS						
63.5	64	SAND, SILTY, MED DENSE, SM						
64	64.5	SAND WITH GRAVEL, SOME SILT, VERY DENSE SP						
64.5	65.6	SAND, SILTY TO SILT, SANDY DENSE, COHESIVE BROWN						
65.6	68.5	PH 6.5, SC 1845 @65.6' NO AUGER RETURNS						
68.5	69.6	FINE SAND WITH SILT, SM						
69.6	70.5	SILT AND FINE SAND, SLIGHTLY COHESIVE, MED DENSE ABUNDANT MICA, ML						
70.5	71	PH 6.44, SC 2006 @68.5' BGS. SAND, SILTY, DENSE, TRACE FINE GRAVEL, SUB ROUNDED SM-SP						
71	73.5	NO AUGER RETURNS						



M: 259208







No Core Recovery 2' to 7'



SCREEN WITH SAND PACK







Anoxic Samples Collected From 42' to 57' No Photo Taken





	МО	NTANA WELL	LOG REPORT	Other Options		
This well log reports the activities of a licensed Montana well driller, see the official record of work done within the borehole and casing, and de the amount of water encountered. This report is compiled electronical contents of the Ground Water Information Center (GWIC) database for Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.					erves as escribes ly from the or this site.	
Site Name: MB		OR WELL * BT	-98-01		Section 7: Well Test Data	
<b>GWIC Id: 1712</b> Section 1: Wel 1) MONTANA E N/A N/A N/A N/A [03	<b>95</b> I <b>I Owner(s)</b> BUREAU OF 8/11/1999]	MINES AND G	BEOLOGY (MAIL	Total Depth: 25 Static Water Level: Water Temperature:		
Section 2: Los	ation				possible. This rate may or may not be the sustainable yield of the well.	
Section 2: Loc	Bango	Section	Quarter Section	ne	Sustainable yield does not include the reservoir of the well casing.	
03N SILVER BOW	07W County	19	SE¼ SW¼ SE¼ Geocod	SW¼ e	Section 8: Remarks 4" PVC INSIDE 6" STEEL CONDUCTOR WITH LOCKING LID	
Latitude 45.98965999 Ground Su 54	L 5 112 Irface Altitude 45 99	ongitude .522459755 e Metho SUR-GI	Geomethod SUR-GPS d Datum	Datum NAD83 Date 5/3/2010	Section 9: Well Log Geologic Source Unassigned	
Measuring Po	oint Altitude	Method Date	um Date Ap	plies	From To Description	
5457	7.1		8/11/1999 1	:05:00 PM	0 5 FILL MATERIAL DARK BROWN SANDY	
Addition		Block	Lo	t	5 7BLACK SILT AND CLAY WITH ORGANIC DEBRIS	
					7 8 GRAVEL ROUGH DRILLING 8 10 BLACK SILT AND CLAY WITH ORGANIC DEBRIS	
Section 3: Pro	Section 3: Proposed Use of Water				10 25 SILT AND CLAY	
MONITORING (1	)					
Section 4: Typ	e of Work					
Drilling Method:						
Status. NEW WE	LL					
Section 5: Wel	I Completio	n Date				
Date well comple	ted: Monday, (	October 19, 1998				
• • • • • •						
Section 6: Wel	l Constructi	on Details				
From To Diamet	sions				Driller Certification	
0 25	10				All work performed and reported in this well log is in compliance with	
Casing					the Montana well construction standards. This report is true to the best	
	Wall	Pressure				
From To Diame	eter Thickne	ss Rating	Joint Type		Name:	
0 25 4			PVC-SCHEE	0 40	License No:-	
Completion (Per	f/Screen)	Cine of			Date Completed: 10/19/1998	
From To Diamet	# 01 ter Openings	Size of Openings Desci	ription			
15 25 4		20 SLOT SCRE	EN-CONTINUOUS	S-PVC		
Annular Space (	 Seal/Grout/Pa	acker)				
		Cont.				
From To Descri	ption	Fed?				
9 14 BENTC	NITE CHIPS					
14 25 10-20 8	SILICA SAND					

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

#### Site Name: ATLANTIC RICHFIELD \* BT-98-02B GWIC Id: 240865

#### Section 1: Well Owner(s)

1) ATLANTIC RICHFIELD (MAIL) 317 ANACONDA RD BUTTE MT 59701 [12/13/2007]

#### Section 2: Location

Township	Range	Section	Qua	arter Sectio	ons
03N	07W	19	1	NW1⁄4 SW1⁄4	
	County			Geocode	
SILVER BOW					
Latitude	Lo	ongitude	Geom	ethod	Datum
45.993388706	112.	525103946	SUR-	GPS	NAD83
Ground St	urface Altitu	Method	Datum	Date	

Block

# Section 3: Proposed Use of Water

MONITORING (1)

Addition

#### Section 4: Type of Work

Drilling Method: ROTARY Status: NEW WELL

#### Section 5: Well Completion Date

Date well completed: Thursday, December 13, 2007

#### Section 6: Well Construction Details

Borehole dimensions										
From To Diameter										
0	45		7							
Casin	g									
				V	Wall		Pressure			
From	То	)	Diamet	er 1	Thickn	ess	Rating		Joint	Туре
0	29	.5	2	C	).154				FLUSH THREAD	PVC
Comp	leti	or	n (Perf/S	cree	en)					
				# of		Size	of			
From	То	Di	iameter	Ope	nings	Ope	nings	Desc	cription	
29.5	39	2		Í		0.020	D IN	SCR	EEN-CONTINUOU	S-PVC
Annul	Annular Space (Seal/Grout/Packer)									
					Con	t.				
From	То		Descrip	tion	Fed	?				
0	29.	5	BENTOI	NTE						

-			
29.5	45	SILICA SAND	

#### Section 7: Well Test Data

Total Depth: 39 Static Water Level: 9.69 Water Temperature:

\* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

#### Section 8: Remarks

Section 9: Well Log

# Geologic Source

Unassigned

Lot

From	То	Description
0	14	WELL GRADED SAND, DAMP, TAN TO MOIST TO WET
14	18	FINE TO MEDIUM GRAVEL
18	20	COARSE SAND
20	30	CLEAN SAND AND FINE GRAVEL
30	40	SILTY SAND, SOME SILT
40	45	MEDIUM SAND CLEAN
	]	
	]	
	J	

#### **Driller Certification**

http://mbmggwic.mtech.edu/sqlserver/v11/reports/SiteSummary.asp?gwicid=240865&agency=mbmg&se... 2/23/2016

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: CLAY PARSONS Company: PARSONS DRILLING License No: MWC-362 Date Completed: 12/13/2007

#### Other Options

Return to menu Plot this site in State Library Digital Atlas Plot this site in Google Maps View hydrograph for this site View field visits for this site View water quality for this site

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

#### Site Name: MBMG MONITOR \* WELL BT-98-04 GWIC Id: 169068 DNRC Water Right:

#### Section 1: Well Owner(s)

#### Section 2: Location

Township Range		Section	Quarter Sections			
03N	07W	30	Ν	NE¼ NW¼ NE¼ NE¼		
	County			Geo	ocode	
SILVER BOW						
Latitude	Lon	ngitude	Ge	omethod	Datum	
45.987726	112.	520054		MAP	NAD83	
Ground Surface Altitude			Method	Datum	Date	
Ę	5465				10/27/1998	
Addition			ock		Lot	

#### Section 3: Proposed Use of Water

MONITORING (1)

#### Section 4: Type of Work

Drilling Method: HOLLOW STEM AUGER Status: NEW WELL

#### Section 5: Well Completion Date

Date well completed: N/A

## Section 6: Well Construction Details

#### Borehole dimensions

From	То	D	iameter						
0	15		10						
Casin	g								
				Wall		Pressure			
From	То	D	iameter	Th	ickness	Rati	ng	Joint	Туре
-2	15	4							PVC-SCHED40
Comp	leti	o	n (Perf/S	cre	en)				
	Т				# of		Size	of	
From	Т	0	Diamete	er	Openings Ope		Oper	nings	Description
10	15	5	4		0.		0.020	)	SCREEN
Annul	Annular Space (Seal/Grout/Packer)								
					Cont.				
From	То	D	escripti	on	Fed?				

FIOIII	10	Description	reur
0	1	CEMENT	
1	8	??	
8	9	BENTONITE	
9	15	10/20 SAND	

#### Section 7: Well Test Data

Total Depth: 15 Static Water Level: Water Temperature:

#### Unknown Test Method \*

Yield \_ gpm. Pumping water level \_ feet. Time of recovery \_ hours. Recovery water level \_ feet.

\* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

#### Section 8: Remarks

#### Section 9: Well Log Geologic Source

110ALVM - ALLUVIUM (QUATERNARY)

From	То	Description
0	3	SOIL - BACKFILL
3	5	BLACK ORGANIC SOIL - CREOSOTE SMELL
5	7	BACKFILL
7	8	BLACK CLAY - PEAT
8	11	BROWN CLAY WITH SAND
11	15	TAN CLAY WITH SAND
	]	

#### **Driller Certification**

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name:

Company:

License No: -

Date Completed:

Other Options

Return to menu <u>Plot this site in State Library Digital Atlas</u> <u>Plot this site in Google Maps</u> <u>View water quality for this site</u> <u>View scanned well log (5/25/2007 8:56:22 AM)</u> Γ

MONTANA WELL LOG REPORT					Other Options				
This well log rep the official recor- the amount of w contents of the Acquiring water accomplished b	This well log reports the activities of a licensed Montana well driller, s the official record of work done within the borehole and casing, and d the amount of water encountered. This report is compiled electronica contents of the Ground Water Information Center (GWIC) database f Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.				erves as escribes Ily from tr or this site	ne e. Vi	Return to ment Plot this site in State Library Digital Atlas Plot this site in Google Maps View hydrograph for this site View field visits for this site View water quality for this site View scanned well log (9/20/2011 7:41:33 AM		
Site Name: MBI					Sactio	<u>vi</u> n 7: W	ew scanned published report (9/20/2011 7:41:42 AM		
GWIC Id: 17128	8		51-90-05		Sectio	n /: w	en Test Data		
Section 1: Well 1) MONTANA B N/A N/A N/A N/A I03	<b>Owner(s</b> UREAU ( /11/1999]	) DF MINES AND	) GEOLOGY (MAII	L)	Total D Static \ Water	epth: ´ Vater I Tempe	19 _evel: prature:		
					* Durin	g the v	vell test the discharge rate shall be as uniform as		
Section 2: Loca	tion				possibi Sustair	le. This nable v	s rate may or may not be the sustainable yield of the well yield does not include the reservoir of the well casing		
Township 03N SILVER BOW	Range 07W County	Section 19	Quarter Secti SW¼ SW¼ SE½ Geoco	ions 4 SW <sup>1</sup> /4 de	Sustair Sectio MONITO CONDL	n 8: Re DR WE	emarks LL FOR BASEMENT FLOODING. 4" PVC INSIDE 6" STEEL WITH LOCKING CAP DRILLED SUMMER 1998		
45 98977324	11	2 522453857	SUR-GPS		Centie	- 0. W			
Ground Sur	face Altitu	ide Met	hod Datum	Date	Section 9: Well Log				
544	46.1	SUR-	-GPS NGVD29	5/3/2010	110AL	/M - A			
Measuring Poi	nt Altitude	e Method D	atum Date A	Applies	From	Πο			
5455.	.8		8/11/1999	1:00:00 PM	0	5	SANDY FILL		
Addition		Block	L	ot	5	20	BLACK SILT AND CLAY WITH ORGANIC MATERIAL		
					20	25	SILTY MEDIUM TO COARSE SAND; HEAVING		
Section 3: Prop MONITORING (1)	osed Us	e of Water							
						<u> </u>			
Section 4: Type	of Work	Ι.							
Drilling Method:						<u> </u>			
Status: NEW WEL	L					ļ			
Section 5: Well	Complet	tion Date							
Date well complete	ed: Friday,	November 06, 19	998						
	-								
Section 6: Well	Constru	ction Details							
Borehole dimens	ions								
	er o				Driller	Certifi	cation		
	0				All wor	k perfo	rmed and reported in this well log is in compliance with		
	Wall	Pressure			the Mo	ntana v	well construction standards. This report is true to the beside		
From To Diame	ter Thick	ness Rating	Joint Type				uge.		
0 15 4			PVC-SCHE	D 40		Na	ame:		
Completion (Perf	/Screen)					iconso			
	# of	Size of			Date	Comple	ated: 11/6/1998		
From To Diamete	orOpening	gs Openings De	scription		Duto	- on pic			
15 25 4		20 SLOT SC	REEN-CONTINUOU	IS-PVC					
Annular Space (S	eal/Grout	Cont							
From To Descrip	tion	Fed?							
6 10 BENTO		rs in the second se							

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

#### Site Name: MBMG MONITOR \* WELL BT-99-01 GWIC ld: 171289 **DNRC Water Right:**

## Section 1: Well Owner(s)

1) WILEY, ROBIN (MAIL) 1440 EVANS BUTTE MT N/A [08/11/1999]

#### Section 2: Location

Townshin	Range	• •			
rownsnip	runge	Section		Quarter Sect	ions
03N	07W	30	N	W¼ NW¼ SW	¼ NE¼
	County			Geoco	ode
SILVER BOW					
Latitude	I	Longitude		Geomethod	Datum
45.9855702	15 11	2.51737791		SUR-GPS	NAD83
Ground Su	rface Altitud	e Me	ethod	Datum	Date
54	54.64	SU	R-GPS	NGVD29	4/21/2010
Measuring P	oint Altitude	Method	Datum	n Date /	Applies
545	8.6			6/10/1999	2:45:00 PM
Addition		Bloc	k	L	.ot

#### Section 3: Proposed Use of Water MONITORING (1)

Section 4: Type of Work

Drilling Method: Status: NEW WELL

# Section 5: Well Completion Date

Date well completed: Thursday, April 08, 1999

# Section 6: Well Construction Details

**Borehole dimensions** 

From To Diameter 10

0 12.5

Casing	3		-			
			Wall	Pressure		
From	То	Diameter	Thickness	Rating	Joint	Туре

Comp		Peri/SC	reen)		1
Comr	lotion	+ (Porf/Sc	roon)		FVC-SCHED40

			# 01	SIZE OI	
From	То	Diameter	Openings	Openings	Description
7.5	12.5	4		0.020	SCREEN
Annula	ar Spa	ace (Seal/Gr	out/Packer)		
			Cont		

From	То	Description	Cont. Fed?
5.5	6.5	BENTONITE CHIPS	
6.5	12.5	10-20 SILICA SAND	

# Section 7: Well Test Data

Total Depth: 12.5 Static Water Level: Water Temperature:

## **Unknown Test Method \***

Yield \_ gpm. Pumping water level \_ feet. Time of recovery \_ hours. Recovery water level \_ feet.

\* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

#### Section 8: Remarks

4" PVC INSIDE 6" STEEL WITH LOCKING CAP. MONITOR WELL FOR BASEMENT FLOODING.

#### Section 9: Well Log

#### **Geologic Source**

110ALVM - ALLUVIUM (QUATERNARY)

From	То	Description
0	1	SOIL
1	6	SANDY SILT
6	11.5	SILTY SAND
11.5	12.5	SILT

#### **Driller Certification**

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: Company: License No: -Date Completed: 4/8/1999 Other Options

**Return to menu** Plot this site in State Library Digital Atlas Plot this site in Google Maps View hydrograph for this site View field visits for this site View water quality for this site View scanned well log (5/25/2007 8:57:28 AM)

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options **Return to menu** Plot this site in State Library Digital Atlas

Plot this site in Google Maps View hydrograph for this site View field visits for this site View water quality for this site

Site Name: FP98-1 GWIC Id: 249081				Section 7: Well Test Data
Section 1: Well Own 1) FP98-1 (MAIL) N/A	er(s)			Total Depth: Static Water Level: Water Temperature:
BUTTE MT 59701 [02	/09/2009]			* During the well test the discharge rate shall be as uniform as
Section 2: Location Township Ra	nge Section	Quarter Secti	ons	possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.
Cour	ity	Geocode		Section 8: Remarks
SILVER BOW Latitude 45.995581741 Ground Surfac	Longitude 112.5446298 e Altitude	Geomethod SUR-GPS Method Datum	Datum NAD83 Date	Section 9: Well Log Geologic Source Unassigned Lithology Data
Addition	Block	Lot		There are no lithologic details assigned to this well. Driller Certification
Section 3: Proposed MONITORING (1)	Use of Water			All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.
Section 4: Type of W Drilling Method: Status: NEW WELL	ork			Name: Company: License No: - Date Completed: 2/9/2009

#### Section 5: Well Completion Date

Date well completed: Monday, February 09, 2009

#### **Section 6: Well Construction Details**

There are no borehole dimensions assigned to this well. There are no casing strings assigned to this well. There are no completion records assigned to this well. Annular Space (Seal/Grout/Packer)

There are no annular space records assigned to this well.



-	$\sim$	$\sim \sim$	~	W	ell Log		Well Na	ame: FP98-01B	X	RF Data F	rom Colle	cted Core		
	DI	ONE	FR	Project: 2011 E	BPSOU MWIP		Location	n: Butte, Montana		Cd *	★ Zn ⊕—			
1	TECHN	ICAL SERV.	ICES, INC.	Well Owner: Atla	ntic Richfield Co.	Depth to \	Water: 23.7	'8 ft Date: 2/14/2012 Time: 14:01		Ni ×	× Ca 🛏			
Drille	ed by: Envi	ronmental Wes	st Silica Sa	nd Size: 10-20	Casing Type/Dia: F	PVC/2.0"		Screen Slot Size: 0.020"		Mn +	♦ К▲			
Drilli	ing Method	: Roto-Sonic	Bentonit	e Seal: 3/8" chips	Screen Type/Lengt	th: PVC Mach	nine Slot/10'	Borehole Dia: 6.0"		Cu *	★ Fe ●-			
Depth (ft)	Elevation (NGVD 29)	Lithology Log	Litholo	ogy Description	TO	Well C Elevation	Construct n: 5456.98 5461.34 f	t <b>ion</b> ft (NGVD 29) t (NAVD 88)	t 111111	5 5		10000	1 1 1 1 1	= 100000
55—			WEATHERED BEI PREDOMINANTLY	DROCK, LIGHT GRAY, CORE Y QUARTZ WITH TRACE MIC	E SAMPLE SANDY, A			3/8" Bentonite Chips (Hole Plug) TD: 57'						

.

Concrete Collar Elevation: 5454.58 ft. (NGVD 29)	Well Construction Key	101100		Lithold	pāk		
5458.94 ft. (NAVD 88)	Bentonite	Ash	Clayey silt	Sand	Sand, some gravel oxidized	Silt, oxidized	Silty
Well Completion Date: 11/30/2011	Riser	Asphalt	Fill	Sand, oxidized	Sandy clay	Silty Clay	Slag
Screen Interval: 37-47 ft. Filter Pack Interval: 36-48 f	Slough	Clay	Granite	Sand and gravel	Sandy silt	Silty Clay, oxidized	Tailin
Driller: I.B. Cantrell Monitoring Well License: #	51 Steel Casing	Clayey gravel	No Recovery	Sand and gravel, oxidized	Sandy silt, some gravel	Silty Clay, some gravel	· Tops
Cignoture	Filter Pack	Clayey sand	Organic silt	<ul> <li>Sand, some gravel</li> </ul>	Silt	··- Silty sand	· · Weat
	Screen	Clayey Sand, some gravel	Residual weathered granite				

Gravel, Gravel, Gravel,	Particle Size Distribution         1"=30%         Coarse       Sand, Coarse         Sand, Coarse       Sand, Fine         Coarse       Sand, Medium         Sand, Medium       Silt         Percent (%)       Percent (%)	lepth (ft)
		-
	5	
y Sand some gravel Ig Ilings psoil	Latitude (NAD83):45.9956952 (Dec. Degrees) Longitude (NAD83):-112.54437903 (Dec. Degree Northing (SP-N83):651511.01 ft. (IF) Easting (SP-N83):1195275.21 ft. (IF) T3N R8W S24	s)
Pg. 2 of 2	GWIC ID # 264095	



FP98-IB

No Core Recovery 10' to 12'















Butte	3NOBW24 DBB SILVER BON
·	TEST HOLE LOG 086420
	Hole Name State: <u>Montana</u> County: <u>Silver Bow</u> Project: <u>SBC CERCLA</u> or Number: <u>AI-GS-GW-29S</u>
	Legal Descriptive Location: T <u>_3N</u> R <u>_8W_</u> Sec <u>_24_</u> Tract <u>DBB</u> Location: <u>_70' N of MSD: 100' E of RR bridge over MSD</u>
	Recorded Hole Started: Hole Completed: Drilling By: <u>ME</u> Time: <u>1530</u> Date: <u>07/07/89</u> Time: <u>Date: 07/08/89</u> Driller: <u>Butch</u> Company: <u>CNI</u>
	Drill Drilling Pilot Hole Reamed Hole Method: <u>Auger</u> Fluids Used: <u>N/A</u> Diameter: <u>9"</u> Diameter: <u>N/A</u>
	Total Depth       Total Depth       Diameter and         Drilled:       13.5'       Reamed:       N/A       Cased Below G.S.:       13'       Type of Casing:       2"         Flush Threaded PVC       Flush Threaded PVC       Flush Threaded PVC       Flush Threaded PVC       Flush Threaded PVC
	Weight or Interval Perforated Target Packer Type and Gage of Casing: <u>Sch. 40</u> or Screened Below G.S.: <u>8.0-13.0'</u> Aquifer: <u>Alluvium</u> Depth Below G.S.: <u>N/A</u>
DUR] Well Wate Mate E-Lo Stat	ING INSTALLATION WAS:       YES       NO       Method Perforated or Screened         Developed?
Meas Desc	uring Point MP Height Above (+/-) ription/Elevation: Top of steel (N side) 5443.26' or Below G.S.: + 2.29'
Well Comp	Annulus letion Description: <u>10-20 Colorado Silica Sand 6,5-13,5'; 1/4" Bentonite pellets 5,5-6,5'; Pure</u>
<u>Go</u> Remai	Id grout U-5.5 : concrete with locked steel well head protector
<u> </u>	To <u>DRILLING LOG</u> <u>Geological. Drilling. and Water Conditions and Sampling</u>
	75 7 Minor clay, silty sand, Dark gray, Water at 6'.
	13.5 Minor clayey, silty, sandy, cobbley fill; Dark gray fines; <200 - 30%

•

# **PA** Mil2615+

# 03N 07W 19 CB

03N 07W 19 CBBA MF-8 CALIFORNIA & SILVER BOW CREEK 4700
0-3 FILL, SANDY
3-5.5 ORGANIC CLAY
5.5-6.5 SAND, SATURATED
6.5-8 SILTY CLAY, SATURATED
8-13 WATER, CLAY (ORGANIC)
13-18 SAND, GRAVEL (1")
TD-14' 9-14' PERFORATED
OBN OTW 19 CABB
4692
U-3 SAND, GRAVEL
J-J SILTI CLAI
P-13 CAND WATTER
13-19 DECOMPOSED CONVERT
13-10 DECONFOSED GRANTIE
TD-16' 11-16' PERFORATED
03NI 07W 19 CB
MF-10 44.95
1015
0-3 FILL, SILT & SAND
3-6 SAND
6-8 SAND
8-13 SAND, SATURATED, 12' HARD DRILLING
13-16 SAND, SATURATED, 16' SOFT
16-18 CLAY
18-23 CLAY, SAND
TU-17' 12-17' PERFORATED

03N 07W 19 BOCD HF-11 4687

.. ..

.. ..

0-3 FILL MATERIAL (BLACK DIRT) 3-8 ORGANIC MATERIAL (PEAT) 8-13 CLAY, SATURATED, 1' OUT OF PEAT 13-18 SAND

TD-15.5' 10.5-15.5' PERFORATED

Montana's Ground-Water Information Center (	GWIC)	Site Report	V.11.2016
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Page 1 of 1 MONTANA WELL LOG REPORT Other Options This well log reports the activities of a licensed Montana well driller, serves as the official **Return to menu** record of work done within the borehole and casing, and describes the amount of water Plot this site in State Library Digital Atlas Plot this site in Google Maps encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's View hydrograph for this site responsibility and is NOT accomplished by the filing of this report. View field visits for this site View water quality for this site Site Name: MBMG MONITORING WELL \* MT98-05 Section 7: Well Test Data GWIC Id: 261583 Total Depth: 13 Section 1: Well Owner(s) Static Water Level: Water Temperature: Section 2: Location Township Section **Quarter Sections** Range \* During the well test the discharge rate shall be as uniform as 03N 07W 19 possible. This rate may or may not be the sustainable yield of the well. County Geocode Sustainable yield does not include the reservoir of the well casing. SILVER BOW Latitude Longitude Geomethod Datum Section 8: Remarks 45.989552 112.52254 NAV-GPS NAD83 **Ground Surface Altitude** Method Datum Date Section 9: Well Log **Geologic Source** Addition Block Lot Unassigned From To Description 0 10 BROWN-BLACK CLAY WITH MEDIUM SAND Section 3: Proposed Use of Water 10 12 BROWN WET CLAY WITH SAND There are no uses assigned to this well. 12 13 BLACK CLAY Section 4: Type of Work Drilling Method: Status: NEW WELL Section 5: Well Completion Date Date well completed: N/A Section 6: Well Construction Details There are no borehole dimensions assigned to this well. There are no casing strings assigned to this well. There are no completion records assigned to this well. Annular Space (Seal/Grout/Packer) There are no annular space records assigned to this well. **Driller Certification** All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge. Name: Company:

License No: -Date Completed:

Montana's Ground-Water Information Center (GWIC) | Site Report | V.11.2016 Page 1 of 1 MONTANA WELL LOG REPORT Other Options This well log reports the activities of a licensed Montana well driller, serves as the official **Return to menu** record of work done within the borehole and casing, and describes the amount of water Plot this site in State Library Digital Atlas Plot this site in Google Maps encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's View hydrograph for this site responsibility and is NOT accomplished by the filing of this report. View field visits for this site View water quality for this site Site Name: MT98-06 Section 7: Well Test Data GWIC Id: 260255 Total Depth: 13 Section 1: Well Owner(s) Static Water Level: Water Temperature: Section 2: Location Township Section **Quarter Sections** Range \* During the well test the discharge rate shall be as uniform as 03N 07W 19 possible. This rate may or may not be the sustainable yield of the well. County Geocode Sustainable yield does not include the reservoir of the well casing. SILVER BOW Latitude Longitude Geomethod Datum Section 8: Remarks 45.989444 112.522563 NAV-GPS NAD83 **Ground Surface Altitude** Method Datum Date Section 9: Well Log Geologic Source Addition Block Lot Unassigned From To Description 0 **3 DARK BROWN SILTY CLAY** Section 3: Proposed Use of Water 3 11 LIGHT BROWN MEDIUM SAND WITH GRAVEL There are no uses assigned to this well. 11 13 TAN GRAVEL WITH CLAY Section 4: Type of Work Drilling Method: Status: NEW WELL Section 5: Well Completion Date Date well completed: N/A Section 6: Well Construction Details There are no borehole dimensions assigned to this well. There are no casing strings assigned to this well. There are no completion records assigned to this well. Annular Space (Seal/Grout/Packer) There are no annular space records assigned to this well. **Driller Certification** All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge. Name: Company: License No: -

Date Completed:

# APPENDIX C TABLES

Table 1Floodplain Soils and Mine Wastes Sampling Analytical Results

		Sample	Total Metals (mg/kg)												
Sample ID		Date	Arseni	c	Cadmium	Chromium	Copper	Iron		Lead		Manganese	Mercury	Zinc	
Screen	ning	g Criteria a	200		20	NE	1,000	NE		1,000		NE	10	1,000	
BTC-TP-01 (3-4)-OB N	J	4/12/2016	94	d	8.3	21	517	36200		1620	d	5080	1	2700	
BTC-TP-01 (6.75-8.5)-BC N	J	4/12/2016	246	d	8.5	20	1750	32100		347	d	1740	0.59	1940	
BTC-TP-01 (8.5-9.5)-BT N	J	4/12/2016	148	d	18.7	5	851	14100		478	d	3910	1.5	6570	
BTC-TP-01 (10-11.5)-AL N	J	4/12/2016	1080	d	70.2	10	20400	32900		3570 d		957	27	6810	
BTC-TP-02 (0-1)-OB N	J	4/12/2016	90	d	14.2	52	888	41600		1570	d	4480	0.97	6170	
BTC-TP-02 (1.5-2)-YT N	J	4/12/2016	999	d	6	8	1400	38300		2610	d	297	12	2360	
BTC-TP-02 (2-3)-BC N	J	4/12/2016	312	d	2.9	21	1270	60300	d	495	d	321	0.84	1240	
BTC-TP-02 (3-4)-AL N	J	4/12/2016	181	d	60.4	4	1260	14200		949 d		4110	1.8	22000	
BTC-TP-03 (0-1)-OB N	J	4/13/2016	231	d	14.2	31	933	32300		603 d		3180	3.2	2940	
BTC-TP-03 (1.5-2)-BC N	J	4/13/2016	264	d	13.9	40	991	40900		312	d	2350	2	6210	
BTC-TP-03 (1-1.5)-YT N	J	4/13/2016	297	d	11.4	20	1850	36400		761	d	891	5.4	2980	
BTC-TP-03 (3-3.5)-AL N	J	4/13/2016	276	d	28.3	29	1170	28000		413	d	1260	0.77	6610	
BTC-TP-04 (1-2)-OB N	J	4/12/2016	38		3.7	35	290	47600		348	d	960	< 0.5	541	
BTC-TP-04 (2.5-3)-YT N	J	4/12/2016	316	d	6.7	113	1190 d	185000	d	1020	d	1460	5.1	6440 d	
BTC-TP-04 (3-3.5)-BC N	J	4/12/2016	333	d	11.9	23	1500	35000		475	d	1770	2.2	5040	
BTC-TP-05 (3-4)-BC N	J	4/12/2016	117	d	3.7	49	652	33500		183	d	753	< 0.5	718	
BTC-TP-06 (0-1)-OB N	J	4/13/2016	309	d	5.4	24	1290	34500		599	d	1900	6.1	1710	
BTC-TP-06 (1-1.8)-YT N	J	4/13/2016	531	d	7.4	8	740	26000		1110	d	677	2.3	2330	
BTC-TP-06 (1.7-2)-BC N	J	4/13/2016	261	d	9	41	1020	36800		255	d	1420	0.78	2950	
BTC-TP-06 (2-2.5)-AL N	J	4/13/2016	339	d	37.4	11	1940	21500		629	d	2650	0.72	12900	
BTC-TP-07 (1-2)-OB N	J	4/13/2016	46	d	3.1	25	308	33300		548	d	2200	< 0.5	944	
BTC-TP-07 (4-4.5)-AL N	J	4/13/2016	430	d	6.3	25	977	43700		365	d	4570	0.72	1340	
BTC-TP-07 (4.5-5)-AL N	J	4/13/2016	411	d	62.5	5	2840	13500		1430 d		5010	3.7	20800	
BTC-TP-07 (4.5-5)-AL D	)	4/13/2016	259	d	54.9	3	1820	9780		973	d	6200	1.9	18700	
BTC-TP-07 (5-5.5)-AL N	J	4/13/2016	371	d	23.9	18	2090	34500		678	d	1410	2.3	6620	

mg/kg - Milligrams per kilogram

a - Screening Criteria utilized in site investigations from Field Screen Criteria and Procedures Phase 7 and 8 Remedial Action, SST OU Subarea 4, Reaches R and S (Pioneer 2011)

NE - Not established

-- - Sample not collected / analyzed

< - Parameter not detected at or above the laboratory practical quantitation limit

N - Natural sample

D - Duplicate sample

d - Reporting limit increased due to sample matrix.

- Value exceeds screening criteria

Page1of3

Table 1Floodplain Soils and Mine Wastes Sampling Analytical Results

		Sampla					Tot	al Metals (mg/	kg)					
Sample ID		Date	Arsen	ic	Cadmium	Chromium	Copper	Iron	Lead		Manganese	Mercury	Zinc	
Scre	enin	g Criteria a	200		20	NE	1,000	NE	1,000		NE	10	1,000	
BTC-TP-08 (1-2)-OB	Ν	4/13/2016	167	d	4.6	23	1240	25700	490	d	636	2	972	
BTC-TP-08 (2-2.5)-BC	Ν	4/13/2016	300	d	10.5	22	1410	38400	389	d	459	0.8	3000	
BTC-TP-08 (3-5)-AL	Ν	4/13/2016	205	d	45.6	4	1360	13600	747	d	4220	1.3	15600	
BTC-TP-09 (2-2.5)-OB	Ν	4/12/2016	391	d	15	17	1740	35200	680 r		1050	2.2	5490	
BTC-TP-09 (3-3.5)-YT	Ν	4/13/2016	219	d	60.6	4	1290	19100	820	d	5540	1.4	20600	
BTC-TP-09 (4-4.5)-BC	Ν	4/12/2016	514	d	17.6	18	2490	36500	800	d	1700	7.6	4360	
BTC-TP-10 (1-2)-OB	Ν	4/13/2016	44	d	3.2	43	385	41900	1020	d	825	< 0.5	1500	
BTC-TP-10 (4-5)-AL	Ν	4/13/2016	152	d	6.4	26	762	36600	712	d	573	1.2	2180	
BTC-TP-10 (4-5)-AL	D	4/13/2016	016 271		7.2	24	1140	39100	375	d	821	0.77	1690	
BTC-TP-11 (1-2)-OB	Ν	4/13/2016	490 d		8.4	38	941	79100 d	487	d	260	< 0.5	3270	
BTC-TP-11 (5-6)-OB	Ν	4/13/2016	450		40.8	47	7640 d	127000 d	660	d	2770	< 0.5	9410 d	
BTC-TP-11 (6.5-7)-BC	Ν	4/13/2016	163	d	4.2	28	547	36300	164	d	1310	< 0.5	682	
BTC-TP-12 (0-1)-OB	Ν	4/13/2016	57	d	1.7	24	207	33800	99	d	1070	< 0.5	365	
BTC-TP-12 (1.3-2)-AL	Ν	4/13/2016	37	d	1.7	22	184	21100	84	d	525	< 0.5	367	
BTC-TP-13 (0-1)-OB	Ν	4/12/2016	69	d	2.3	24	266	32600	114	d	1400	< 0.5	420	
BTC-TP-13 (1.5-2)-YT	Ν	4/12/2016	69	d	2.7	25	131	35500	110	d	3140	< 0.5	440	
BTC-TP-13 (3-3.5)-BC	Ν	4/12/2016	10		<0.5	33	62	41000	18		393	0.79	89	
BTC-TP-13 (4-4.5)-AL	Ν	4/12/2016	104	d	2.7	15	871	25600	93	d	554	< 0.5	523	
BTC-TP-14 (1-2)-OB	Ν	4/12/2016	70	d	2.3	25	330	23500	139	d	838	< 0.5	364	
BTC-TP-14 (2-3)-BC	Ν	4/12/2016	255	d	4.5	16	1900	30400	330	d	820	0.53	991	
BTC-TP-14 (2-3)-BC	D	4/12/2016	65	d	2.1	25	302	21300	127	d	670	< 0.5	351	
BTC-TP-15 (1-2)-OB	Ν	4/12/2016	73	d	3.6	25	376	24200	170	d	1330	< 0.5	882	
BTC-TP-15 (2-3)-BC	Ν	4/12/2016	25	1.9 24		24	172	21500	71 d		444	< 0.5	393	
BTC-TP-15 (3-3.5)-AL	Ν	4/12/2016	15		1.1	16	93	17500	44	d	237	< 0.5	276	
BTC-TP-16 (1-2)-OB	Ν	4/13/2016	33	d	1.6	25	186	33900	344	d	1000	< 0.5	394	

mg/kg - Milligrams per kilogram

a - Screening Criteria utilized in site investigations from Field Screen Criteria and Procedures Phase 7 and 8 Remedial Action, SST OU Subarea 4, Reaches R and S (Pioneer 2011)

NE - Not established

-- - Sample not collected / analyzed

< - Parameter not detected at or above the laboratory practical quantitation limit

N - Natural sample

D - Duplicate sample

d - Reporting limit increased due to sample matrix.

- Value exceeds screening criteria

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Table 1Floodplain Soils and Mine Wastes Sampling Analytical Results

		Sample								Tot	al Metals (	(mg/l	(g)					
Sample ID		Date	Arsenic		Cadmium Chromium		Coppe	er	Iron		Lead		Manganese	Mercury	Zinc			
Screenin		g Criteria a	200		20	20 NE		1,000	1,000			1,000		NE	10	1,000		
BTC-TP-16 (6-7)-BC	Ν	4/13/2016	58	d	1.5		21		386		26100		100	d	489	< 0.5	327	
BTC-TP-17 (1-2)-OB	Ν	4/13/2016	80	d	2.6		15		425		17700		193	d	239	< 0.5	791	
BTC-TP-17 (2.5-3.5)-GC	Ν	4/13/2016	333	d	8.1		17		3000		26800		1540	d	552	23	3510	
BTC-TP-17 (3.5-4.5)-BC	Ν	4/13/2016	182	d	6.6		25		880		36500		562	d	562	0.84	2010	
BTC-WS-01 (2.5-4)-OB	Ν	4/7/2016	189	d	7.4		20		1210		28300		453	d	966	9.9	1730	
BTC-WS-01 (6-8)-OB	Ν	4/7/2016	438	d	23.4		14		2880		30500		649	d	1100	1.6	7930	
BTC-WS-01 (12.5-15)-BC	Ν	4/7/2016	24		1.1	d	18	d	273	d	23000		64	d	471	< 0.5	597	d
BTC-WS-01 (18-20)-AL	Ν	4/7/2016	21		2	d	26	d	351	d	22600		15		114	< 0.5	273	d
BTC-WS-02 (0-2.5)-OB	Ν	4/7/2016	82		4.6	d	32	d	444	d	35800		630	d	1990	< 0.5	1060	d
BTC-WS-02 (5-11)-BC	Ν	4/7/2016	181		6.8	d	20	d	1690	d	29600		279	d	635	1.5	1690	d
BTC-WS-02 (11-17.0)-AL	Ν	4/7/2016	17		2.7	d	24	d	80	d	14500		9		99	< 0.5	219	d
BTC-WS-02 (11-17.0)-AL	D	4/7/2016	28	d	2.7		30		115		22700		8		114	< 0.5	218	
BTC-WS-03 (2-5)-BT	Ν	4/8/2016	18		<0.5		43		55		58500	d	26		308	< 0.5	89	d
BTC-WS-03 (5-7.5)-BC	Ν	4/8/2016	10		<0.5		24	d	36	d	28300		16		461	< 0.5	93	d
BTC-WS-03 (12.5-15)-YT	Ν	4/8/2016	7		0.6		22	d	37	d	27600		12		297	< 0.5	78	d

mg/kg - Milligrams per kilogram

a - Screening Criteria utilized in site investigations from Field Screen Criteria and Procedures Phase 7 and 8 Remedial Action, SST OU Subarea 4, Reaches R and S (Pioneer 2011)

NE - Not established

-- - Sample not collected / analyzed

< - Parameter not detected at or above the laboratory practical quantitation limit

N - Natural sample

D - Duplicate sample

d - Reporting limit increased due to sample matrix.

- Value exceeds screening criteria

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Table 2Bank and Opportunity Soils Metals Analytical Results

		Samnle					Tot	al Metals (mg	′kg)				
Sample ID		Date	Arsen	ic	Cadmium	Chromium	Copper	Iron	Lead		Manganese	Mercury	Zinc
Screening E		Benchmarks 9.8			0.99	43.4	31.6	20,000	35.8		460	460 0.18	
BTC-OSBS-01 (0-12")	Ν	3/16/2016	237		10.6	32	1400	33900	393		1110	0.94	1840
BTC-OSBS-02 (0-12")	Ν	3/16/2016	78		1.8	27	449	31300	287		701	< 0.5	415
BTC-OSBS-03 (24-36")	Ν	4/13/2016	356	d	69.8	6	1520	26100	1170	d	3840	0.69	21700
BTC-SBS-01N (0-12")	Ν	3/9/2016	111	d	6.7	27	988	28200	1290	d	2060	2.5	2060
BTC-SBS-02S (0-12")	Ν	3/9/2016	108	d	9.6	21	2390	26300	365	d	2130	0.98	3120
BTC-SBS-03S (0-12")	Ν	3/9/2016	51 d		3	17	393	19100	117	d	571	< 0.5	903
BTC-SBS-04N (0-12")	Ν	3/15/2016	70		3.9	25	376	24000	215		883	< 0.5	1140
BTC-SBS-04N (0-12")	D	3/15/2016	14		1.3	14	106	15400	47		291	< 0.5	314
BTC-SBS-05S (0-12")	Ν	3/15/2016	15		1.1	18	107	18600	38		316	< 0.5	306
BTC-SBS-06N (0-12")	Ν	3/15/2016	51		1.6	24	238	29000	94		1110	< 0.5	358
BTC-SBS-07S (0-12")	Ν	3/15/2016	59		1.5	24	215	31100	97		686	< 0.5	389
BTC-SBS-08S (0-12")	Ν	3/15/2016	66		3.2	22	368	25400	112		658	< 0.5	445
BTC-SBS-09N (0-12")	Ν	3/15/2016	54		2.7	23	293	25400	126		775	< 0.5	658
BTC-SBS-09N (0-12")	D	3/15/2016	47		2.6	35	258	26000	103	d	734	< 0.5	532
GG-OSBS-01 (0-12")	Ν	3/16/2016	10		<0.5	32	49	52000 d	20		385	< 0.5	84
SBC-OSBS-01 (0-12")	Ν	3/16/2016	85		6.8	34	618	28000	348		1970	< 0.5	1740

mg/kg - Milligrams per kilogram

EPA Region III BTAG Freshwater Sediment Screening Benchmarks 8/2006

Hierarchy for Selection of Freshwater Sediment Benchmarks

• Preference was given to benchmarks based on chronic direct exposure, non-lethal endpoint studies designed to be protective of sensitive species

- · Values derived by statistical- or consensus-based evaluation of multiple studies were given first priority
- Equilibrium partitioning values were selected for contaminants with 2.0< log Kow <6.0 if empirical values based on multiple studies were not available
- Absent consensus or equilibrium partitioning values, single study toxicity values were selected

NE - Not established

- -- Sample not collected / analyzed
- < Parameter not detected at or above the laboratory practical quantitation limit

N - Natural sample

D - Duplicate sample

d - Reporting limit increased due to sample matrix.

- Value exceeds screening criteria

BTC - Blacktail Creek GG - Grove Gulch SBS - Silver Bow Creek

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	Table 3	
	Floodplain Soils and Mine Wastes	
XR	F and Laboratory Analytical Results for Selected Parameters	

		1			Arsenic (mg/kg)			Ca	admium (mg/	kg)		Copper (mg/kg	g)		Lead (mg/kg)			Zinc (mg/kg)	
XRF Sample Designation	Lithology Comment	Sample Date	Laboratory Sample Designation	Lab Sample Date	XRF	Laboratory	RPD %	XRF	Laboratory	RPD %	XRF	Laboratory	RPD %	XRF	Laboratory	RPD %	XRF	Laboratory	RPD %
						TEST PITS	5												
BTC-TP-01 (3-4)	OB	4/12/2016	BTC-TP-01 (3-4)-OB	4/12/2016	26.15	94	113	<lod< td=""><td>8</td><td>28</td><td>463</td><td>517</td><td>11</td><td>1,239</td><td>1,620</td><td>27</td><td>2,230</td><td>2,700</td><td>19</td></lod<>	8	28	463	517	11	1,239	1,620	27	2,230	2,700	19
BTC-TP-01 (8.5-9.5)	BT	4/12/2016	BTC-TP-01 (8.5-9.5)-BT	4/12/2016	70.06	246	111	<lod< td=""><td>9</td><td>26</td><td>460</td><td>1.750</td><td>117</td><td>490</td><td>347</td><td>34</td><td>5.169</td><td>1.940</td><td>91</td></lod<>	9	26	460	1.750	117	490	347	34	5.169	1.940	91
BTC-TP-01 (9-11)	BC	4/12/2016		, ,	169.09	-		<lod< td=""><td></td><td></td><td>1.085</td><td>,</td><td></td><td>116</td><td>-</td><td></td><td>988</td><td></td><td></td></lod<>			1.085	,		116	-		988		
BTC-TP-01 (10-11.5)	AL	4/12/2016	BTC-TP-01 (10-11.5)-AL	4/12/2016	203.44	1.080	137	<lod< td=""><td>70</td><td>146</td><td>4.384</td><td>20.400</td><td>129</td><td>1.012</td><td>3.570</td><td>112</td><td>2.587</td><td>6.810</td><td>90</td></lod<>	70	146	4.384	20.400	129	1.012	3.570	112	2.587	6.810	90
BTC-TP-02 (1.5-2)	YT	4/12/2016	BTC-TP-02 (1.5-2)-YT	4/12/2016	400.4	999	86	<lod< td=""><td>6</td><td>59</td><td>840</td><td>1.400</td><td>50</td><td>1.733</td><td>2,610</td><td>40</td><td>1.523</td><td>2,360</td><td>43</td></lod<>	6	59	840	1.400	50	1.733	2,610	40	1.523	2,360	43
BTC-TP-02 (2-3)	BC	4/12/2016	BTC-TP-02 (2-3)-BC	4/12/2016	192.38	312	47	<lod< td=""><td>3</td><td>117</td><td>717</td><td>1,270</td><td>56</td><td>310</td><td>495</td><td>46</td><td>498</td><td>1,240</td><td>85</td></lod<>	3	117	717	1,270	56	310	495	46	498	1,240	85
BTC-TP-02 (3-4)	AI	4/12/2016	BTC-TP-02 (3-4)-AI	4/12/2016	78.76	181	79	<1.0D	60	138	548	1 260	79	417	949	78	7 903	22,000	94
BTC-TP-03 (0-1)	OB	4/13/2016	BTC-TP-03 (0-1)-OB	4/13/2016	51 24	231	127	<100	14	25	316	933	99	152	603	120	783	2 940	116
BTC-TP-03 (1-1.5)	YT	4/13/2016	BTC-TP-03 (1-1.5)-YT	4/13/2016	121.64	297	84	<lod< td=""><td>11</td><td>4</td><td>849</td><td>1.850</td><td>74</td><td>251</td><td>761</td><td>101</td><td>955</td><td>2,980</td><td>103</td></lod<>	11	4	849	1.850	74	251	761	101	955	2,980	103
BTC-TP-03 (1.5-2)	BC	4/13/2016	BTC-TP-03 (1.5-2)-BC	4/13/2016	122.65	264	73	19	14	33	534	991	60	175	312	56	3.690	6,210	51
BTC-TP-03 (3-3 5)	AI	4/13/2016	BTC-TP-03 (3-3 5)-AI	4/13/2016	120.25	276	79	<1.0D	28	88	734	1 170	46	350	413	17	2 812	6 610	81
BTC-TP-04 (1-2)	OB	4/12/2016	BTC-TP-04 (1-2)-OB	4/12/2016	33.83	38	12	<100	4	99	185	290	44	186	348	61	328	541	49
BTC-TP-04 (2 5-3)	YT	4/12/2016	BTC-TP-04 (2 5-3)-YT	4/12/2016	229.04	316	32	<100	. 7	49	271	1 190	126	165	1 020	144	2 875	6 4 4 0	77
BTC-TP-05 (1-1 5)	OB	1/12/2016	51011 01(215 5) 11	1/12/2010	60.59	510	52	<100		.5	448	1,150	120	469	2,020		1 267	0,110	
BTC-TP-05 (1 5-2)	VT	4/12/2016			67.35						580			669			2 913		
BTC-TP-05 (3-4)	BC	4/12/2016	BTC-TP-05 (3-4)-BC	4/12/2016	55.88	117	71		4	90	355	652	59	107	183	53	367	718	65
BTC-TP-06 (0-1)	OB	4/13/2016	BTC-TP-06 (0-1)-OB	4/13/2016	202.52	309	/12		5	68	757	1 290	52	1 105	599	59	976	1 710	55
BTC-TP-06 (1-1.8)	YT U	4/13/2016	BTC-TP-06 (1-1 8)-YT	4/13/2016	165.96	531	105	<lod< td=""><td>7</td><td>39</td><td>283</td><td>740</td><td>89</td><td>457</td><td>1 110</td><td>83</td><td>750</td><td>2 330</td><td>103</td></lod<>	7	39	283	740	89	457	1 110	83	750	2 330	103
BTC-TP-06 (1 7-2)	BC	4/13/2016	BTC-TP-06 (1 7-2)-BC	4/13/2016	145 14	261	57	<100	9	20	544	1 020	61	127	255	67	805	2,950	114
BTC-TP-06 (2-2 5)	AL	4/13/2016	BTC-TP-06 (2-2 5)-AI	4/13/2016	109.74	339	102		37	109	671	1,020	97	250	629	86	2 707	12,900	131
BTC-TP-07 (1-2)	OB	4/13/2016	BTC-TP-07 (1-2)-OB	4/13/2016	23.4	46	65		3	112	163	308	62	190	548	97	396	944	82
BTC-TP-07 (4 0-4 5)	BC	4/13/2016	BTC-TP-07 (4 0-4 5)-AI	4/13/2016	2/2/19	40	56		6	54	404	977	83	186	365	65	735	1 3/0	58
BTC TP 07 (4.5 5.0)	AL	4/12/2016	PTC TP 07 (4.5 5.0) AL	4/12/2016	260.00	411	45	40	62	44	2.005	2.840	20	002	1 420	26	17 290	20,800	19
BTC TR 07 (5 5 5)	AL	4/13/2010	PTC TD 07 (5.5.5) AI	4/13/2010	200.05	271	4J 52	<1.00	24	74	1 272	2,840	45	240	679	50	2 204	6 6 20	10
BTC TR 08 (1.2)	OP	4/13/2010	BTC-TP-07 (3-3.5)-AL	4/13/2010	70.99	167	91		5	92	702	1 240	45	210	490	76	410	0,020	70
PTC TP 08 (2.2.5)	DD DC	4/13/2010	BTC TD 09 (2.2.5) BC	4/13/2010	225 12	200	24		11	5	676	1,240	70	160	280	94	1 470	200	122
BTC-TP-08 (2-2.5)	AL	4/13/2010	BTC-TP-08 (2-2.5)-BC	4/13/2010	106 57	205	63		11	122	872	1,410	10	396	747	62	7 11/	15 600	75
BTC-TP-09 (0-1)	OB	4/12/2016	BIC 11 00 (5 5) AL	4/15/2010	83.25	205	05		40	122	39/	1,500		369	,4,	02	1 398	15,000	
BTC-TP-09 (2-2 5)	BC	4/12/2016	BTC-TP-09 (2-2 5)-OB	4/12/2016	286.88	391	31		15	31	989	1 740	55	124	680	46	2 683	5 / 90	69
BTC TR 00 (2.2.5)	VT	4/12/2016	BTC TD 00 (2.2.5) VT	4/12/2010	104 21	210	71		61	120	402	1,740	80	426	820	62	6,006	20,600	100
BTC-TP-09 (3 5-4)	BC	4/12/2016	51011 05 (5 5.5) 11	4/12/2010	254.45	215	/1		01	155	1 254	1,250	05	39/	020	05	1 939	20,000	100
BTC-TP-09 (4-4 5)	BC	4/12/2016	BTC-TP-09 (4-4 5)-BC	4/12/2016	185.99	514	9/		18	46	1,234	2 / 90	79	354	800	77	4.037	4 360	8
BTC TP 10 (1.2)	OR	4/12/2010	BTC TR 10 (1 2) OR	4/12/2010	21.94	44	27		2	110	425	2,450	12	600	1.020	20	1 27/	1,500	
PTC TP 10 (2.5.4)	OB	4/13/2010	BIC-11-10 (1-2)-0B	4/13/2010	15 50	44	32		5	110	102	385	12	174	1,020	35	210	1,500	
PTC TP 10 (3.3-4)	OB	4/13/2010			<100						102			272			540		1
BTC-TP-10 (3-4)	ΔI	4/13/2010	BTC-TP-10 (4-5)-AI	4/13/2016	33 39	152	178		6	53	175	762	125	139	712	135	/3/	2 180	13/
510 11 10 (4 5)	AL	4/15/2010	BTC-TP-10 (4-5)-AL (DUP)	4/13/2016	55.55	271	156	100	7	12	1/5	1 140	147	155	375	100	434	1 690	118
BTC-TP-11 (1-2)	VT	4/13/2016	BTC-TP-11 (1-2)-OB	4/13/2016	20/ 80	490	50	<1.0D	8	27	386	9/1	8/	168	487	98	1 170	3 270	95
BTC-TP-11 (5-6)	VT	4/13/2016	BTC-TP-11 (5-6)-OB	4/13/2016	190.08	450	81		41	115	1 279	7.640	56	2/13	660	92	2 939	9,410	105
BTC-TP-11 (6 5-7)	BC	4/13/2016	BTC-TP-11 (6 5-7)-BC	4/13/2016	134 55	163	19		41	80	613	547	11	173	164	6	799	682	16
BTC-TP-12 (0-1)	OB	4/13/2016	BTC-TP-12 (0.1)-OB	4/13/2016	23.9	57	82		2	146	125	207	10	/1	99	82	238	365	10
PTC TP 12 (0-1)	05	4/13/2010	PTC TP 12 (1 5 2) AI	4/13/2010	23.5	27	15		2	140	120	194	29	62	94	21	230	267	20
BTC TP 12 (0.1)	OP	4/13/2010	BTC-TP-12 (1.3-2)-AL	4/13/2010	12.26	60	15		2	121	106	266	20	60	114	10	240	420	52
PTC TP 12 (1 1 5)	OB	4/12/2010	BIC-11-13 (0-1)-0B	4/12/2010	43.20	05	40		2	131	122	200	30	40	114	43	247	420	52
BTC-TP-13 (1 5-2)	VT	4/12/2010	BTC-TP-13 (1 5-2)-VT	4/12/2016	3/ /1	69	67		3	121	132	131	1	65	110	52	210	440	12
BTC-TP-13 (2-3)	RC	4/12/2016	51011 15(1.5 2) 11	7/12/2010	117.32	05	07		5	141	469	151	-	144	110	52	284	440	72
BTC-TP-13 (2-4)	BC	1/12/2016	BTC-TP-13 (3-3 5)-BC	4/12/2016	103 72	10	165	CLOD	<0.5		993	62	176	139	18	154	706	89	155
BTC-TP-13 (J-5)		4/12/2010	BTC-TP-13 (4-4 5)-60	4/12/2010	6.12	104	178		3	121	555	871	175	15	10	1/5	37	523	173
BTC_TP_14 (1-2)		1/12/2010	BTC-TP-1/ (1-2) OP	4/12/2010	12.49	70	120		2	121	20	320	115	27	120	124	57	364	120
PTC TP 14 (2.2)	DC DC	4/12/2016	DTC TD 14 (2 2) DC	4/12/2010	116.25	255	75		5	24	1 146	1,000	50	27	220	20	112	001	76
DIC-1P-14 (2-3)	DU	4/12/2010	BTC TD 14 (2-3) BC (DUD )	4/12/2010	110.55	255	57	CLOD	2	126	1,140	202	117	127	127	59	445	251	26
PTC TP 15 (1.2)	OP	4/12/2016	DTC TD 15 (1 2) OP	4/12/2010	49.19	72	57	<100	2	101	259	276	27	102	127	40	510	892	52
DIC-1P-13 (1-2)	DD DC	4/12/2010	DIC-18-13 (1-2)-00	4/12/2010	40.18	25	41 94		4	101	230	172	57	105	71	49	202	202	55
BTC_TP_15 (2.3-3)		4/12/2010	BTC-TP-15 (2.3-5)-DC	4/12/2010	10.24 <1.0D	25	04 40		2	141	20	02	22	45	11	129	205	276	147
BIC-18-10 (2-2.2)	AL	4/12/2010	DIC-18-13 (2-2.3)-ML	4/12/2010	CLOD	15	40	CLOD	1	104	59	95	65	10	44	120	42	270	147
Table 3																			
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Floodplain Soils and Mine Wastes																			
XRF and Laboratory Analytical Results for Selected Parameters																			

		1				Arsenic (mg/kg	)	Ca	dmium (mg/	kg)		Copper (mg/kg	.)		Lead (mg/kg)			Zinc (mg/kg)	
XRF Sample Designation	Lithology Comment	Sample Date	Laboratory Sample Designation	Lab Sample Date	XRF	Laboratory	RPD %	XRF	Laboratory	RPD %	XRF	Laboratory	RPD %	XRF	Laboratory	RPD %	XRF	Laboratory	RPD %
BTC-TP-15 (6-7)	AL	4/13/2016			35.03			<lod< td=""><td></td><td></td><td>238</td><td></td><td></td><td>65</td><td></td><td></td><td>297</td><td></td><td></td></lod<>			238			65			297		
BTC-TP-16 (1-2)	OB	4/13/2016	BTC-TP-16 (1-2)-OB	4/13/2016	27	33	20	<lod< td=""><td>2</td><td>149</td><td>137</td><td>186</td><td>30</td><td>152</td><td>344</td><td>77</td><td>315</td><td>394</td><td>22</td></lod<>	2	149	137	186	30	152	344	77	315	394	22
BTC-TP-16 (6-7)	BC	4/13/2016	BTC-TP-16 (6-7)-BC	4/13/2016	35	58	49	<lod< td=""><td>2</td><td>152</td><td>238</td><td>386</td><td>47</td><td>65</td><td>100</td><td>42</td><td>297</td><td>327</td><td>10</td></lod<>	2	152	238	386	47	65	100	42	297	327	10
BTC-TP-17 (0.5-1)	BT	4/13/2016			93			<lod< td=""><td></td><td></td><td>451</td><td></td><td></td><td>323</td><td></td><td></td><td>2,150</td><td></td><td></td></lod<>			451			323			2,150		
BTC-TP-17 (1-2)	OB	4/13/2016	BTC-TP-17 (1-2)-OB	4/13/2016	23	80	111	<lod< td=""><td>3</td><td>124</td><td>294</td><td>425</td><td>36</td><td>52</td><td>193</td><td>115</td><td>282</td><td>791</td><td>95</td></lod<>	3	124	294	425	36	52	193	115	282	791	95
BTC-TP-17 (2.5-3.5)	GC	4/13/2016	BTC-TP-17 (2.5-3.5)-GC	4/13/2016	263	333	23	<lod< td=""><td>8</td><td>30</td><td>1,361</td><td>3,000</td><td>75</td><td>410</td><td>1,540</td><td>116</td><td>1,397</td><td>3,510</td><td>86</td></lod<>	8	30	1,361	3,000	75	410	1,540	116	1,397	3,510	86
BTC-17-17 (3.5-4.5)	BC	4/13/2016	BTC-17-17 (3.5-4.5)-BC	4/13/2016	124	182	38	<lod< td=""><td>7</td><td>50</td><td>948</td><td>880</td><td>7</td><td>318</td><td>562</td><td>55</td><td>2,774</td><td>2,010</td><td>32</td></lod<>	7	50	948	880	7	318	562	55	2,774	2,010	32
						DPT BOREHO	DLES												
BTC-DPT-01 (0-2.5)	OB	4/20/2016			123		I	<lod< td=""><td>1</td><td></td><td>653</td><td></td><td></td><td>389</td><td></td><td>I</td><td>947</td><td></td><td></td></lod<>	1		653			389		I	947		
BTC-DPT-01 (2.5-4)	OB	4/20/2016	BTC-WS-01 (2.5-4)-OB	4/7/2016	68	189	94	<lod< td=""><td>7.4</td><td>39</td><td>534</td><td>1,210</td><td>78</td><td>146</td><td>453</td><td>103</td><td>544</td><td>1,730</td><td>104</td></lod<>	7.4	39	534	1,210	78	146	453	103	544	1,730	104
BTC-DPT-01 (4-6)	OB	4/20/2016			245			<lod< td=""><td></td><td></td><td>1279</td><td></td><td></td><td>516</td><td></td><td></td><td>1776</td><td></td><td></td></lod<>			1279			516			1776		
BTC-DPT-01 (6-8)	OB	4/20/2016	BTC-WS-01 (6-8)-OB	4/7/2016	213	438	69	<lod< td=""><td>23.4</td><td>72</td><td>1070</td><td>2,880</td><td>92</td><td>359</td><td>649</td><td>58</td><td>3261</td><td>7,930</td><td>83</td></lod<>	23.4	72	1070	2,880	92	359	649	58	3261	7,930	83
BTC-DPT-01 (8-10)	OB	4/20/2016			872			<lod< td=""><td></td><td></td><td>4145</td><td></td><td></td><td>537</td><td></td><td></td><td>1771</td><td></td><td></td></lod<>			4145			537			1771		
BTC-DPT-01 (10-11)	OB	4/20/2016			154			<lod< td=""><td></td><td></td><td>3071</td><td></td><td></td><td>280</td><td></td><td></td><td>1059</td><td></td><td></td></lod<>			3071			280			1059		
BTC-DPT-01 (11-12.5)	OB	4/20/2016			176			<lod< td=""><td></td><td></td><td>3338</td><td></td><td></td><td>298</td><td></td><td></td><td>2817</td><td></td><td></td></lod<>			3338			298			2817		
BTC-DPT-01 (12.5-15)	BC	4/20/2016	BTC-WS-01 (12.5-15)-BC	4/7/2016	119	24	133	<lod< td=""><td>1.1</td><td>164</td><td>1772</td><td>273</td><td>147</td><td>1175</td><td>64</td><td>179</td><td>1374</td><td>597</td><td>79</td></lod<>	1.1	164	1772	273	147	1175	64	179	1374	597	79
BTC-DPT-01 (15-18)	GT	4/20/2016			15			<lod< td=""><td></td><td></td><td>244</td><td></td><td></td><td>30</td><td></td><td></td><td>175</td><td></td><td></td></lod<>			244			30			175		
BTC-DPT-01 (18-20)	AL	4/20/2016	BTC-WS-01 (18-20)-AL	4/7/2016	<lod< td=""><td>21</td><td>52</td><td><lod< td=""><td>2</td><td>138</td><td>53</td><td>351</td><td>100</td><td>15</td><td>15</td><td>100</td><td>52</td><td>273</td><td>100</td></lod<></td></lod<>	21	52	<lod< td=""><td>2</td><td>138</td><td>53</td><td>351</td><td>100</td><td>15</td><td>15</td><td>100</td><td>52</td><td>273</td><td>100</td></lod<>	2	138	53	351	100	15	15	100	52	273	100
BTC-DPT-02 (0-2.5)	OB	4/18/2016	BTC-WS-02 (0-2.5)-OB	4/7/2016	37	82	76	<lod< td=""><td>4.6</td><td>82</td><td>263</td><td>444</td><td>51</td><td>251</td><td>630</td><td>86</td><td>650</td><td>1,060</td><td>48</td></lod<>	4.6	82	263	444	51	251	630	86	650	1,060	48
BTC-DPT-02 (5-11)	BC	4/18/2016	BTC-WS-02 (5-11)-BC	4/7/2016	136	181	28	<lod< td=""><td>6.8</td><td>47</td><td>363</td><td>1,690</td><td>129</td><td>166</td><td>279</td><td>51</td><td>634</td><td>1,690</td><td>91</td></lod<>	6.8	47	363	1,690	129	166	279	51	634	1,690	91
BTC-DPT-02 (11-17)	AL	4/18/2016	BTC-WS-02 (11-17)-AL	4/7/2016	4	17	124	<lod< td=""><td>2.7</td><td>121</td><td>44</td><td>80</td><td>58</td><td>13</td><td>9</td><td>36</td><td>81</td><td>219</td><td>92</td></lod<>	2.7	121	44	80	58	13	9	36	81	219	92
	AL		BTC-WS-02 (11-17)-AL (DUP.)	4/7/2016		28	150		2.7	121		115	89		8	48		218	92
BTC-DPT-03 (0-2.5)	GT	4/18/2016	BTC-WS-03 (2-5)-BT	4/8/2016	<lod< td=""><td>18</td><td>57</td><td><lod< td=""><td>&lt;0.5</td><td>NA</td><td>35</td><td>55</td><td>157</td><td>17</td><td>26</td><td>153</td><td>29</td><td>89</td><td>307</td></lod<></td></lod<>	18	57	<lod< td=""><td>&lt;0.5</td><td>NA</td><td>35</td><td>55</td><td>157</td><td>17</td><td>26</td><td>153</td><td>29</td><td>89</td><td>307</td></lod<>	<0.5	NA	35	55	157	17	26	153	29	89	307
BTC-DPT-03 (5-11)	BC	4/18/2016	BTC-WS-03 (5-7.5)-BC	4/8/2016	15	10	40	<lod< td=""><td>&lt;0.5</td><td>NA</td><td>51</td><td>36</td><td>34</td><td>16</td><td>16</td><td>0</td><td>69</td><td>93</td><td>30</td></lod<>	<0.5	NA	51	36	34	16	16	0	69	93	30
BTC-DPT-03 (11-17)	AL	4/18/2016	BTC-WS-03 (12.5-15)-YT	4/8/2016	<lod< td=""><td>7</td><td>35</td><td><lod< td=""><td>0.6</td><td>179</td><td>23</td><td>37</td><td>161</td><td>19</td><td>12</td><td>63</td><td>44</td><td>78</td><td>177</td></lod<></td></lod<>	7	35	<lod< td=""><td>0.6</td><td>179</td><td>23</td><td>37</td><td>161</td><td>19</td><td>12</td><td>63</td><td>44</td><td>78</td><td>177</td></lod<>	0.6	179	23	37	161	19	12	63	44	78	177
						Mean RPD (%	74			89			74			75			82

All sample results in mg/kg

OB-overburden, GC- gray clay, BC- black clay, GT- gray tailings, BT- black tailings, YT- yellow tailings, AL - alluvium RPD% - Relative Percent Difference

Blank cell indicates analysis not conducted

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Table 4

Floodplain Soils and Mine Wastes Physical and Chemical Characteristics, Nutrients, Acid Base Accounting and SPLP Analytical Results

		Physica	l and Chemi	cal Characte	eristics	Nutrients				Aci	d - Base Accou	Inting						1	Synthetic Preci	ipitation Leach	ing Procedure			
			Saturated	NAG			Sulfur, Hot	Sulfur, HCI	Sulfur, HNO3	Sulfur,	Neutral	Acid Base	Acid Base	Acid	Acid									
	Sample	sc	Paste pH	pН	тос	Nitrate as N	Water Extracable	Extractable	Extractable	Residual	Potential	Potential	Potential Pvritic	Potential	Potential Pvritic	Arsenic	Cadmium	Chromium	Copper	Iron*	Lead	Manganese*	Mercury	Zinc
Sample ID	Date	(µmhos/cm)	(s.u.)	(s.u.)	(%)	(mg/L)	(%)	(%)	(%)	(%)	(t/kt)	(t/kt)	(t/kt)	(t/kt)	(t/kt)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
DEQ-7 Surface V	Nater HHS <sup>C</sup>	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	0.010	0.005	0.10	1.3	140	0.015	4.3	0.002	2.0
BTC-TP-01 (10-11.5)-AL N	4/12/2016	1.3	7.4	·	0.7	< 1																		
BTC-TP-01 (3-4)-OB N	4/12/2016	3.1	7.5		1.1	8																		
BTC-TP-01 (6.75-8.5)-BC N	4/12/2016	1.4	6.8		1.9	< 1																		
BTC-TP-01 (8.5-9.5)-BT N	4/12/2016	0.8	6.3	5.3	0.6	1.6	0.01	0.05	0.27	0.11	12	-1	4	14	8.3	0.702	0.0125	0.01	2.57	34.1	1.52	0.7	0.00133	2.33
BTC-TP-02 (0-1)-OB N	4/12/2016	4.2	7.5		1.8	7.3																		
BTC-TP-02 (1.5-2)-YT N	4/12/2016	2.1	7.5		0.6	7.7																		
BTC-TP-02 (2-3)-BC N	4/12/2016	1.4	5.7		2.4	< 1																		
BTC-TP-02 (3-4)-AL N	4/12/2016	1.2	7.3		0.2	< 1																		
BTC-TP-03 (0-1)-OB N	4/13/2016	1.7	7.2		6.2	9.5																		
BTC-TP-03 (1.5-2)-BC N	4/13/2016	2.8	6		1.9	< 1																		
BTC-TP-03 (1-1.5)-YT N	4/13/2016	1.5	7		1	< 1																		
BTC-TP-03 (3-3.5)-AL N	4/13/2016	1.1	6.5		1.4	< 1																		
BTC-TP-04 (1-2)-OB N	4/12/2016	5.1	7.3		0.4	16																		
BTC-TP-04 (2.5-3)-YT N	4/12/2016	1.2	7.6		7.4	1																		
BTC-TP-04 (3-3.5)-BC N	4/12/2016	2	7		2.1	< 1																		
BTC-TP-05 (3-4)-BC N	4/12/2016	2.4	6.9		2.5	< 1																		
BTC-TP-06 (0-1)-OB N	4/13/2016	1.7	7.3		4.1	2.5																		
BTC-TP-06 (1.7-2)-BC N	4/13/2016	1.5	6.3		2.9	< 1																		
BTC-TP-06 (1-1.8)-YT N	4/13/2016	2.5	7.1		0.6	< 1																		
BTC-TP-06 (2-2.5)-AL N	4/13/2016	0.9	6.3		0.3	< 1																		
BTC-TP-07 (1-2)-OB N	4/13/2016	3.2	8.1		1.1	< 1																		
BTC-TP-07 (4.5-5)-AL N	4/13/2016	0.8	5.8	4.9	0.5	< 1	< 0.01	0.02	0.98	0.42	11	-33	-19	45	31	0.062	0.00062	< 0.01	0.255	1.61	0.13	0.03	0.00008	0.185
BTC-TP-07 (4.5-5)-AL D	4/13/2016	1.2	6.2	4.2	0.2	< 1	0.08	0.22	0.63	0.25	13	-24	-7	37	20	0.089	0.00109	< 0.01	0.475	2.8	0.256	0.06	0.00014	0.312
BTC-TP-07 (4-4.5)-AL N	4/13/2016	2.8	6.4		3.9	< 1																		
BTC-TP-07 (5-5.5)-AL N	4/13/2016	1.2	5.7		2.6	< 1																		
BTC-TP-08 (1-2)-OB N	4/13/2016	4.4	7.3		1.1	1.3																		
BTC-TP-08 (2-2.5)-BC N	4/13/2016	1	5.6		2.6	< 1																		
BTC-TP-08 (3-5)-AL N	4/13/2016	0.9	6.8		1.2	< 1																		
BTC-TP-09 (2-2.5)-OB N	4/12/2016	1.5	7.1		2.2	< 1																		
BTC-TP-09 (3-3.5)-YT N	4/13/2016	1.1	7.5		0.2	< 1																		
BTC-TP-09 (4-4.5)-BC N	4/12/2016	2.4	7.1		1.9	< 1																		
BTC-TP-10 (1-2)-OB N	4/13/2016	3.4	7.7		7.8	< 1																		
BTC-TP-10 (4-5)-AL N	4/13/2016	2.7	7		8.4	< 1																		
BTC-TP-10 (4-5)-AL D	4/13/2016	1	5.6		3	< 1																		
BTC-TP-11 (1-2)-OB N	4/13/2016	0.9	3.8		0.2	1.9																		

### Notes:

SC - Specific Conductance

- NAG Net Acid Generation
- TOC Total Organic Carbon
- µmhos/cm Micromhos per centimeter
- S.U. Standard Units
- % Percent
- t/kt Tons per kiloton
- mg/L Milligrams per liter

- NE Not established
- N Natural sample
- D Duplicate sample
- ---- Sample not collected / analyzed
- d RL increased due to sample matrix
- L Lowest available reporting limit for the analytical method
- < Parameter not detected at or above the laboratory practical quantitation limit
  - Value exceeds water quality standard

**C**assification Potentally Acid Generating Uncertain Acid Generation Potential Unlikely to Generate Acid

Criteria for Classification NP:AP <1 and NNP < -20 t/kt NP:AP between 1 and 3 and/or NNP between -20 and +20 t/kt NP:AP > 3 and NNP < +20 t/kt

- a NP = Neutralization Potential, AP = Acidification Potential, NNP = Net Neutralizaiton Potential
- <sup>b</sup> From BLM (1996) and EPA (1994)
- <sup>c</sup> Surface Water Human Health standards based on Circular DEQ-7 Montana Numeric Water Quality Standards (October 2012)

\*Iron and manganese SPLP Leachate Criterion for soil were calculated based on a DAF 1 and their respective EPA Tap Water standards. The SPLP Leachate Criterion for Soil for the remaining metals were calculated based on a DAF 1 and their respective DEQ-7 water quality standards (see Section 4 of RI report).

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BTC - Blacktail Creek

Table 4

Floodplain Soils and Mine Wastes Physical and Chemical Characteristics, Nutrients, Acid Base Accounting and SPLP Analytical Results

		Physica	l and Chemi	ical Characte	eristics	Nutrients				Acio	I - Base Accou	nting						S	ynthetic Preci	pitation Leachi	ing Procedure			
	Sample	SC	Saturated Paste pH	NAG pH	тос	Nitrate as N	Sulfur, Hot Water Extracable	Sulfur, HCl Extractable	Sulfur, HNO3 Extractable	Sulfur, Residual	Neutral Potential	Acid Base Potential	Acid Base Potential Pyritic	Acid Potential	Acid Potential Pyritic	Arsenic	Cadmium	Chromium	Copper	Iron*	Lead	Manganese*	Mercury	Zinc
Sample ID	Date	(µmhos/cm)	(s.u.)	(s.u.)	(%)	(mg/L)	(%)	(%)	(%)	(%)	(t/kt)	(t/kt)	(t/kt)	(t/kt)	(t/kt)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
DEQ-7 Surface	Water HHS	<sup>C</sup> NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	0.010	0.005	0.10	1.3	140	0.015	4.3	0.002	2.0
BTC-TP-11 (5-6)-OB N	V 4/13/201	5 1	7.4		0.4	< 1																		
BTC-TP-11 (6.5-7)-BC	4/13/201	5 1.2	6.6		4	< 1																		
BTC-TP-12 (0-1)-OB N	4/13/201	5 1.9	7.8		0.8	< 1																		
BTC-TP-12 (1.3-2)-AL N	N 4/13/201	5 1.6	6.7		1.4	< 1																		
BTC-TP-13 (0-1)-OB N	4/12/201	5 0.8	8.1		1	1.8																		
BTC-TP-13 (1.5-2)-YT N	N 4/12/201	5 1.2	7.8		0.3	< 1																		
BTC-TP-13 (3-3.5)-BC N	4/12/201	5 1.6	7		2.6	< 1																		
BTC-TP-13 (4-4.5)-AL N	4/12/201	5 1.4	7.1		1.2	< 1																		
BTC-TP-14 (1-2)-OB N	4/12/201	5 2.9	7.6		0.6	< 1																		
BTC-TP-14 (2-3)-BC	4/12/201	5 3	6.2		1.6	< 1																		
ВТС-ТР-14 (2-3)-ВС С	4/12/201	5 1.3	7.5		0.5	< 1																		
BTC-TP-15 (1-2)-OB N	4/12/201	5 3	7.6		1.7	2.6																		
BTC-TP-15 (2-3)-BC N	4/12/201	5 2.8	5.8		1.7	< 1																		
BTC-TP-15 (3-3.5)-AL N	4/12/201	5 0.8	6.1		0.1	< 1																		
BTC-TP-16 (1-2)-OB N	4/13/201	5 1.5	7.7		0.8	1.2																		
BTC-TP-16 (6-7)-BC	4/13/201	5 1.6	7.7		0.5	< 1																		
BTC-TP-17 (1-2)-OB N	4/13/201	6 4.9	5		0.9	< 1																		
BTC-TP-17 (2.5-3.5)-GC N	4/13/201	5 4.7	6.9	7	0.9	< 1	< 0.01	0.05	0.1	0.07	8	0	5	6.8	3.1	0.02	0.00016	< 0.01	0.148	1.83	0.0908	< 0.02	0.00253	0.156
BTC-TP-17 (3.5-4.5)-BC N	4/13/201	5 2.7	6.9		7.4	< 1																		
BTC-WS-01 (12.5-15)-BC N	A 4/7/2016	1.8	6.8		1.7	< 1																		
BTC-WS-01 (18-20)-AL N	4/7/2016	0.7	6.8		0.1	< 1																		
BTC-WS-01 (2.5-4)-OB N	A 4/7/2016	3.2	6.3		0.8	17																		
BTC-WS-01 (6-8)-OB N	4/7/2016	1.2	6		1.4	< 1																		
BTC-WS-02 (0-2.5)-OB N	A 4/7/2016	3.8	7.6		2.3	14																		
BTC-WS-02 (11-17.0)-AL N	4/7/2016	0.3	7.3		< 0.1	< 1																		
BTC-WS-02 (11-17.0)-AL	4/7/2016	0.3	7.3		< 0.1	< 1																		
BTC-WS-02 (5-11)-BC N	4/7/2016	3	6.4	3.9	1.9	< 1	0.02	0.03	0.23	0.22	12	-4	5	16	7	0.086	0.00232	< 0.01	0.415	4.84	0.1	0.06	0.00013	1.43
BTC-WS-03 (12.5-15)-YT N	4/8/2016	0.3	7.3		0.1	1.3																		
BTC-WS-03 (2-5)-BT N	4/8/2016	0.5	7.8		< 0.1	< 1																		
BTC-WS-03 (5-7.5)-BC N	4/8/2010	0.4	7.3		0.1	< 1																		

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- S.U. Standard Units
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Criteria for Classification NP:AP <1 and NNP < -20 t/kt NP:AP between 1 and 3 and/or NNP between -20 and +20 t/kt NP:AP > 3 and NNP < +20 t/kt

- a NP = Neutralization Potential, AP = Acidification Potential, NNP = Net Neutralizaiton Potential
- <sup>b</sup> From BLM (1996) and EPA (1994)
- <sup>c</sup> Surface Water Human Health standards based on Circular DEQ-7 Montana Numeric Water Quality Standards (October 2012)

\*Iron and manganese SPLP Leachate Criterion for soil were calculated based on a DAF 1 and their respective EPA Tap Water standards. The SPLP Leachate Criterion for Soil for the remaining metals were calculated based on a DAF 1 and their respective DEQ-7 water quality standards (see Section 4 of RI report).

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# Table 5 Bank and Opportunity Soil Physical and Chemical Characteristics, Nutrients, Acid Base Accounting and SPLP Analytical Results

		Physical	and Chemic	cal Characte	ristics	Nutrients				Acid	l - Base Accou	nting							Synthetic Pred	cipitation Leac	ning Procedure	e		
	Sample	SC	Saturated Paste pH	NAG pH	тос	Nitrate as N	Sulfur, Hot Water Extracable	Sulfur, HCl Extractable	Sulfur, HNO3 Extractable	Sulfur, Residual	Neutral Potential	Acid Base Potential	Acid Base Potential Pyritic	Acid Potential	Acid Potential Pyritic	Arsenic	Cadmium	Chromium	Copper	Iron*	Lead	Manganese*	Mercury	Zinc
Sample ID	Date	(µmhos/cm)	(s.u.)	(s.u.)	(%)	(mg/L)	(%)	(%)	(%)	(%)	(t/kt)	(t/kt)	(t/kt)	(t/kt)	(t/kt)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
DEQ-7 Surface \	Water HHS <sup>c</sup>	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	0.010	0.005	0.10	1.3	140	0.015	4.3	0.002	2.0
BTC-OSBS-01 (0-12") N	3/16/2016	0.8	6.2		1.3	< 1																		
BTC-OSBS-02 (0-12") N	3/16/2016	3.1	7.8		2.6	6.8																		
BTC-OSBS-03 (24-36") N	4/13/2016	0.8	6.4		0.2	< 1																		
BTC-SBS-01N (0-12") N	3/9/2016	1.8	7.7		3.8	11																		
BTC-SBS-02S (0-12") N	3/9/2016	0.8	7	7.5	2.5	1.4	0.01	< 0.01	0.04	0.04	12	9	11	2.9	1.2	0.082	0.00268 L	0.02	1.26	6.14	0.201	0.18	######	0.96
BTC-SBS-03S (0-12") N	3/9/2016	0.9	5.9		0.7	< 1																		
BTC-SBS-04N (0-12") N	3/15/2016	2.2	7.4		2.5	3.5																		
BTC-SBS-04N (0-12") D	3/15/2016	1.3	7.2		0.4	< 1																		
BTC-SBS-05S (0-12") N	3/15/2016	1.3	7.2		0.4	< 1																		
BTC-SBS-06N (0-12") N	3/15/2016	1.5	7.5		1.8	< 1																		
BTC-SBS-07S (0-12") N	3/15/2016	1.1	7.2		2.3	5.4																		
BTC-SBS-08S (0-12") N	3/15/2016	1.5	7.6		1.3	1.4																		
BTC-SBS-09N (0-12") N	3/15/2016	1.2	7.2		1.9	1																		
BTC-SBS-09N (0-12") D	3/15/2016	1.2	7.2		2	< 1																		
GG-OSBS-01 (0-12") N	3/16/2016	0.3	7.6	9.4	0.2	< 1	< 0.01	< 0.01	< 0.01	0.01	64	63	64	0.23	< 0.01	0.013 d	0.00014 L	< 0.01	0.011	2.76	0.0045	0.06	< ######	0.022
SBC-OSBS-01 (0-12") N	3/16/2016	0.8	7.4		3.4	3.1																		

Notes:

- SC Specific Conductance
- NAG Net Acid Generation
- TOC Total Organic Carbon
- µmhos/cm Micromhos per centimeter
- S.U. Standard Units
- % Percent
- t/kt Tons per kiloton
- mg/L Milligrams per liter

- NE Not established
- N Natural sample
- D Duplicate sample
- -- Sample not collected / analyzed
- d RL increased due to sample matrix
- L Lowest available reporting limit for the analytical method
- < Parameter not detected at or above the laboratory practical quantitation limit
  - Value exceeds water quality standard

Chassification Potentally Acid Generating Uncertain Acid Generation Potential Unlikely to Generate Acid

Criteria for Classification NP:AP <1 and NNP < -20 t/kt NP:AP between 1 and 3 and/or NNP between -20 and +20 t/kt NP:AP > 3 and NNP < +20 t/kt

- a NP = Neutralization Potential, AP = Acidification Potential, NNP = Net Neutralization Potential
- <sup>b</sup> From BLM (1996) and EPA (1994)

<sup>c</sup> Surface Water Human Health standards based on Circular DEQ-7 Montana Numeric Water Quality Standards (October 2012)

\*Iron and manganese SPLP Leachate Criterion for soil were calculated based on a DAF 1 and their respective EPA Tap Water standards. The SPLP Leachate Criterion for Soil for the remaining metals were calculated based on a DAF 1 and their respective DEQ-7 water quality standards (see Section 4 of RI report).

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BTC - Blacktail Creek GG - Grove Gulch SBC - Silver Bow Creek

 Table 6

 In-Stream and Pond Sediment Metals Analytical Results

		Sample					Tot	al Metals (mg/	kg)					
Sample ID		Date	Arsenie	C	Cadmium	Chromium	Copper	Iron	Lead		Manganese	Mercury	Zinc	
Freshwate Screening E	er Se Benc	diment hmarks <sup>a</sup>	9.8		0.99	43.4	31.6	20,000	35.8		460	0.18	121	
BTC-OSS-01 (0-12")	N 3	3/10/2016	125	d	7	27	978	32600	184	d	500	< 0.5	1370	
SBC-SS-01 (0-12")	N O	03/07/2016	698	d	11.4	28	10500	42000	1010	d	1770	5.1	3920	
SBC-SS-02 (0-12")	N O	03/09/2016	4410	d	26	78	3670	69300	1150	d	3820	< 0.5	4490	
SBC-SS-03 (0-12")	N O	03/08/2016	488	d	10.3	137	7470	90000	1200	d	2490	< 0.5	3010	
BTC-PS-01 (0-12")	N O	03/16/2016	324		21.8	31	4920	34800	1240	d	729	6	3630	
BTC-PS-01 (24-36")	N O	03/16/2016	347		23.2	33	2870	35100	1150	d	776	2.5	6510	
BTC-PS-02 (0-12")	N O	03/15/2016	86		2	42	503	29700	243		632	< 0.5	388	d
BTC-PS-03 (0-12")	N O	03/11/2016	227	d	9.2	47	917	46700	703	d	998	< 0.5	2040	
BTC-SS-01 (0-12")	N O	03/08/2016	666	d	14.1	31	5890	45800	896	d	1350	0.99	3650	
BTC-SS-02 (0-12")	N O	03/08/2016	125	d	6	39	784	36700	322	d	850	< 0.5	1860	
BTC-SS-03 (0-12")	N O	03/09/2016	166	d	7.4	63	1420	47100	473	d	2010	< 0.5	2260	
BTC-SS-04 (0-12")	N O	03/10/2016	103	d	8.3	65	549	43900	263	d	514	< 0.5	1700	
BTC-SS-05 (0-12")	N O	03/10/2016	28		4.9	54	359	32600	173	d	253	< 0.5	1040	
BTC-SS-05 (0-12")	D 0	03/10/2016	46		6.5	60	425	38000	213	d	247	< 0.5	1180	
BTC-SS-06 (0-12")	N O	03/10/2016	28		3.3	40	324	29700	125	d	656	< 0.5	630	
BTC-SS-07 (0-12")	N O	03/11/2016	33		2.4	59	389	37900	268	d	340	< 0.5	563	
BTC-SS-07N (0-12")	N O	03/11/2016	40		2.8	43	334	27700	177	d	318	< 0.5	503	
BTC-SS-08 (0-12")	N O	03/11/2016	22		1	50	303	32200	170	d	322	< 0.5	317	
BTC-SS-08N (0-12")	N O	03/11/2016	55		3.1	47	451	35300	247	d	335	< 0.5	535	
BTC-SS-08S (0-12")	N O	03/11/2016	66	d	1.8	30	301	25800	144	d	263	< 0.5	482	
BTC-SS-09 (0-12")	N O	03/14/2016	49		2.2	106	404	43100	579		675	< 0.5	418	d

mg/kg - Milligrams per kilogram

a - EPA Region III BTAG Freshwater Sediment Screening Benchmarks 8/2006

Hierarchy for Selection of Freshwater Sediment Benchmarks

- Preference was given to benchmarks based on chronic direct exposure, non-lethal endpoint studies designed to be protective of sensitive species
- Values derived by statistical- or consensus-based evaluation of multiple studies were given first priority
- Equilibrium partitioning values were selected for contaminants with 2.0< log Kow <6.0 if empirical values based on multiple studies were not available
- Absent consensus or equilibrium partitioning values, single study toxicity values were selected

NE - Not established

- -- Sample not collected / analyzed
- < Parameter not detected at or above the laboratory practical quantitation limit
- N Natural sample

D - Duplicate sample

d - Reporting limit increased due to sample matrix.

- Value exceeds screening criteria

BTC - Blacktail Creek GG - Grove Gulch SBC - Silver Bow Creek SC - Sand Creek

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 Table 6

 In-Stream and Pond Sediment Metals Analytical Results

		Sample				To	tal Metals (mg/	'kg)				
Sample ID		Date	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Zinc	
Freshv Screeni	Freshwater Sediment           Screening Benchmarks           BTC-SS-10 (0-12")         N         03/14/201		9.8	0.99	43.4	31.6	20,000	35.8	460	0.18	121	
BTC-SS-10 (0-12")	Ν	03/14/2016	54	1.4	64	383	48700	216	3330	< 0.5	305	d
BTC-SS-11 (0-12")	Ν	03/14/2016	64	2	77	389	47500	410	551	< 0.5	582	d
BTC-SS-12 (0-12")	Ν	03/15/2016	39	1	62	194	51000	196	2730	< 0.5	232	d
BTC-SS-12 (0-12")	D	03/15/2016	56	1.2	86	296	69400	283	4370	< 0.5	291	d
BTC-SS-13 (0-12")	Ν	03/15/2016	39	2	66	216	47600	140	1690	< 0.5	316	d
GG-SS-01 (0-12")	Ν	03/10/2016	596 d	12.9	24	1190	53900	1420 d	4410	0.62	3840	
SC-SS-01 (0-12")	Ν	03/10/2016	63	1.1	51	842	49400	283 d	508	< 0.5	334	

mg/kg - Milligrams per kilogram

a - EPA Region III BTAG Freshwater Sediment Screening Benchmarks 8/2006

Hierarchy for Selection of Freshwater Sediment Benchmarks

• Preference was given to benchmarks based on chronic direct exposure, non-lethal endpoint studies designed to be protective of sensitive species

- Values derived by statistical- or consensus-based evaluation of multiple studies were given first priority
- Equilibrium partitioning values were selected for contaminants with 2.0< log Kow <6.0 if empirical values based on multiple studies were not available
- Absent consensus or equilibrium partitioning values, single study toxicity values were selected

NE - Not established

- --- Sample not collected / analyzed
- < Parameter not detected at or above the laboratory practical quantitation limit
- N Natural sample
- D Duplicate sample
- d Reporting limit increased due to sample matrix.

- Value exceeds screening criteria

BTC - Blacktail Creek GG - Grove Gulch SBC - Silver Bow Creek SC - Sand Creek

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# Table 7 In-Stream and Pond Sediment Physical and Chemical Characteristics, Nutrients, Acid Base Accounting and SPLP Analytical Results

		Physical	and Chemic	al Characte	ristics	Nutrients				Acio	l - Base Accour	nting							Synthetic Pred	ipitation Leach	ning Procedur	e		
			Saturated Paste	NAG	70.0		Sulfur, Hot Water	Sulfur, HCl	Sulfur, HNO3	Sulfur,	Neutral	Acid Base	Acid Base Potential	Acid	Acid Potential		Contract on	Characteristics						
Sample ID	Sample Date		рн	рн / \	100	Nitrate as N	Extracable	Extractable	Extractable	Residual	Potential	Potential	Pyritic	Potential	Pyritic	Arsenic	Cadmium	Chromium	Copper	Iron*	Lead	Ivianganese*	wiercury	Zinc
DEO 7 Surfa	o Water HHS C	(µmhos/cm)	(s.u.)	(s.u.)	(%)	(mg/L)	(%) NE	(%) NE	(%) NE	(%) NE	(t/kt)	(t/kt)	(t/kt)	(t/kt)	(t/kt)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
DEQ-7 Surfac		INC	INE	INE	INC			INE	INE	INE	INC			INE	INC	0.010	0.005	0.10	1.5	140	0.015	4.5	0.002	2.0
BTC-OSS-01 (0-12") N	3/10/2016	1.3	6.2		1.2	< 1																		
SBC-SS-01 (0-12") N	03/07/2016	1.1	7.4		0.5	< 1																		
SBC-SS-02 (0-12") N	03/09/2016	0.9	7.2	5.6	0.8	1.6	0.06	0.05	0.23	0.2	21	4	14	17	7.1	0.242	0.00162 L	< 0.01	0.235	5.35	0.129	0.59	0.00006	0.328
SBC-SS-03 (0-12") N	03/08/2016	0.9	7.5	4.4	0.3	1.1	1.3	0.76	10	0.47	15	-380	-300	390	320	0.031	0.00047 L	< 0.01	0.25	2.87	0.119	0.18	0.00009	0.144
BTC-PS-01 (0-12") N	03/16/2016	0.5	6.3		1.6	< 1																		
BTC-PS-01 (24-36") N	03/16/2016	1	5.8		0.7	< 1																		
BTC-PS-02 (0-12") N	03/15/2016	0.8	7		0.9	< 1																		
BTC-PS-03 (0-12") N	03/11/2016	1.1	7.2		0.3	< 1																		
BTC-SS-01 (0-12") N	03/08/2016	0.6	6.5		0.5	< 1																		
BTC-SS-02 (0-12") N	03/08/2016	0.8	6.7		0.6	< 1																		
BTC-SS-03 (0-12") N	03/09/2016	0.7	6.6		0.5	< 1																		
BTC-SS-04 (0-12") N	03/10/2016	0.9	6.9		0.4	< 1																		
BTC-SS-05 (0-12") N	03/10/2016	0.5	6.7		1.1	< 1																		
BTC-SS-05 (0-12") D	03/10/2016	0.5	6.7		1.3	< 1																		
BTC-SS-06 (0-12") N	03/10/2016	0.4	6.9		0.4	< 1																		
BTC-SS-07 (0-12") N	03/11/2016	0.3	7.3		0.2	< 1																		
BTC-SS-07N (0-12") N	03/11/2016	0.4	6.6		4.2	< 1																		
BTC-SS-08 (0-12") N	03/11/2016	0.2	7.2		0.2	< 1																		
BTC-SS-08N (0-12") N	03/11/2016	0.7	7		1.9	< 1																		
BTC-SS-08S (0-12") N	03/11/2016	0.7	6.4	6.5	1	< 1	0.02	< 0.01	0.04	0.03	8	5	7	3.4	1.3	0.079	0.00136 L	< 0.01	0.179	7.97	0.0487	0.04	0.0001	0.146
BTC-SS-09 (0-12") N	03/14/2016	0.7	6.7		0.2	< 1																		
BTC-SS-10 (0-12") N	03/14/2016	0.2	7.3		0.2	1.2																		
BTC-SS-11 (0-12") N	03/14/2016	0.5	7	5	0.2	< 1	< 0.01	< 0.01	< 0.01	0.01	4	3	3	0.96	0.21	0.009 d	0.00039 L	< 0.01	0.06	3.31	0.0154	0.02	< 0.00005	0.085
BTC-SS-12 (0-12") N	03/15/2016	0.2	7.2		0.2	1																		
BTC-SS-12 (0-12") D	03/15/2016	0.2	7.3		0.1	1.1																		
BTC-SS-13 (0-12") N	03/15/2016	0.6	6.5	5.9	0.4	< 1	0.02	< 0.01	0.01	0.01	4	2	4	1.5	0.37	b 800.0	0.00011	< 0.01	0.01	4.33	0.0052	0.09	< 0.00005	0.02
GG-SS-01 (0-12") N	03/10/2016	0.9	6.9		2	< 1																		
SC-SS-01 (0-12") N	03/10/2016	0.3	7.2		- 0.5	< 1																		

Notes:

SC - Specific Conductance NAG - Net Acid Generation TOC - Total Organic Carbon

µmhos/cm - Micromhos per centimeter

S.U. - Standard Units

% - Percent

t/kt - Tons per kiloton

mg/L - Milligrams per liter

NE - Not established

N - Natural sample

D - Duplicate sample

-- - Sample not collected / analyzed

d - RL increased due to sample matrix

L - Lowest available reporting limit for the analytical method

< - Parameter not detected at or above the laboratory practical quantitation limit

- Value exceeds water quality standard

Chassification Potentially Acid Generating Uncertain Acid Generation Potential Unlikely to Generate Acid

Criteria for Classification NP:AP <1 and NNP < -20 t/kt NP:AP between 1 and 3 and/or NNP between -20 and +20 t/kt NP:AP > 3 and NNP < +20 t/kt

<sup>a</sup> NP = Neutralization Potential, AP = Acidification Potential, NNP = Net Neutralization Potential

<sup>b</sup> From BLM (1996) and EPA (1994)

<sup>c</sup> Surface Water Human Health standards based on Circular DEQ-7 Montana Numeric Water Quality Standards (October 2012)

\*Iron and manganese SPLP Leachate Criterion for soil were calculated based on a DAF 1 and their respective EPA Tap Water standards. The SPLP Leachate Criterion for Soil for the remaining metals were calculated based on a DAF 1 and their respective DEQ-7 water quality standards (see Section 4 of RI report).

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BTC - Blacktail Creek GG - Grove Gulch SBC - Silver Bow Creek SC - Sand Creek

 Table 8

 Surface Water Field and General Chemistry Analytical Results

				Fi	eld Paramet	ers					Physiochemi	cal				Commo	n Anions			Commor	Cations		Nutrients
										Hardness as	Acidity as	Alkalinity as	Total Diss.	Total Susp.		Bicarb as	Carbonate						Nitrate +
			SC	pH <sup>a</sup>	Temp.	ORP	DO	SC	рН <sup>а</sup>	CaCO3	CaCO3	CaCO3	Solids	Solids	Sulfate	HCO3	as CO3	Chloride	Calcium	Magnesium	Potassium	Sodium	Nitrite as N
Sample ID		Sample Date	(µmhos/L)	(s.u.)	(ºC)	(mV)	(mg/L)	(µmhos/L)	(s.u.)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
DEQ-7		Acute	NE	NE	NE	NE	4.0 - 8.0	NE	6.5 - 9.5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Surface Water	r	Chronic	NE	NE	NE	NE	4.0 - 8.0	NE	6.5 - 9.5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Standards <sup>1</sup>		Human Health	NE	NE	NE	NE	NE	NE	6.5 - 9.5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	10
BTC-PD-01	Ν	3/16/2016	431	9.18	0.88	240.2	26.69	310	8.7 H	106	< 4	82	188	< 10	18	97	< 4	35	27	9	5	15	< 0.01
BTC-PD-02	Ν	3/15/2016	334		5.35	334.8	9.88	320	8 H	117	< 4	110	206	40	50	130	< 4	6	34	7	3	17	0.09
BTC-PD-03	Ν	3/11/2016	828	7.39	7.49	51.4	7.11	425	7.8 H	163	< 4	120	267	13	64	150	< 4	14	48	11	3	19	2.37 d
BTC-SW-01	Ν	3/8/2016	277	7.03	2.97	131.8	18.65	305	7.8 H	119	< 4	91	217	< 10	33	110	< 4	15	34	8	4	13	0.91 d
BTC-SW-02	Ν	3/8/2016	280	7.12	3.36	32	17.31	311	7.8 H	122	< 4	92	215	< 10	33	110	< 4	16	34	9	4	14	0.81
BTC-SW-03	Ν	3/9/2016	560	7.77	5.7	78.8	4.3	309	7.9 H	118	< 4	93	196	< 10	34	110	< 4	15	34	8	4	13	0.8
BTC-SW-04	Ν	3/10/2016	587	7.28	3.58	135.3	3.52	316	7.6 H	120	< 4	94	198	< 10	35	110	< 4	15	34	9	3	13	0.98
BTC-SW-05	Ν	3/10/2016	596	8.04	6.41	61.2	5.67	313	7.9 H	118	< 4	94	193	< 10	33	110	< 4	16	33	8	3	13	0.96
BTC-SW-06	Ν	3/10/2016	555	7.31	6.29	23.3	3.8	306	7.8 H	116	< 4	91	194	< 10	32	110	< 4	16	33	8	3	13	0.95
BTC-SW-07	Ν	3/11/2016	535	7.23	3.08	111.9	3.79	288	7.6 H	107	< 4	83	183	< 10	32	100	< 4	15	30	8	3	12	0.82
BTC-SW-08	Ν	3/11/2016	528	7.07	3.45	124.1	4.48	285	7.6 H	107	< 4	82	179	< 10	31	99	< 4	14	30	8	3	11	0.84
BTC-SW-09	Ν	3/14/2016	550	6.9	2.6	137.4	2.71	306	7.5 H	110	< 4	74	203	12	29	90	< 4	28	28	10	3	12	0.61
BTC-SW-10	Ν	3/14/2016	675	7.35	3.46	50.2	4.6	350	7.6 H	134	< 4	72	209	19	28	87	< 4	46	27	16	3	13	0.52
BTC-SW-10	D	3/14/2016	675	7.35	3.46	50.2	4.6	352	7.6 H	134	< 4	72	210	15	29	88	< 4	47	27	16	3	13	0.52
BTC-SW-11	Ν	3/14/2016	521	7.28	3.67	45.6	4.58	277	7.6 H	103	< 4	74	177	< 10	28	89	< 4	21	26	9	3	11	0.51
BTC-SW-12	Ν	3/15/2016	477	7.17	1.43	119.4	4.35	252	7.5 H	95	< 4	77	169	< 10	30	94	< 4	11	27	7	3	10	0.56
BTC-SW-12	D	3/15/2016	477	7.17	1.43	119.4	4.35	253	7.5 H	95	< 4	77	166	< 10	30	93	< 4	11	27	7	3	10	0.56
BTC-SW-13	Ν	3/15/2016	235	7.64	2.38	277.3	8.97	246	7.5 H	89	< 4	66	162	11	30	79	< 4	14	25	6	3	11	0.49
GG-SW-01	Ν	3/10/2016	738	7.37	2.38	79.2	3.68	390	7.7 H	142	< 4	120	246	< 10	56	140	< 4	15	40	10	6	19	0.12
SBC-SW-01	Ν	3/7/2016	711	7.43	8.05	17.3	0.35	326	7.9 H	126	< 4	94	217	14	35	110	< 4	19	35	9	4	15	0.75
SBC-SW-02	Ν	3/9/2016	594	7.63	4.96	71.9	4.91	320	7.8 H	121	< 4	92	200	< 10	35	110	< 4	18	34	9	4	14	0.8
SBC-SW-03	Ν	3/8/2016	283	4.52	2.23	221.3	16.53	310	7.7 H	120	< 4	90	205	< 10	34	110	< 4	16	34	9	4	14	0.88
SC-SW-01	Ν	3/10/2016	711	7.43	8.05	17.3	0.35	773	7.4 H	277	< 4	210	467	< 10	56	250	< 4	91	73	23	7	41	0.41

SC - Specific Conductance Temp. - Temperature ORP - Oxygen Reduction Potential DO - Dissolved Oxygen µmhos/L - Micromhos per liter S.U. - Standard Units °C - Degrees centigrade mV - Millivolts mg/L - Milligrams per liter NE - Not established 1 - Montana Department of Environmental Quality (MDEQ) Human Health Standard from Circular DEQ-7, Montana Water Quality Standards (October 2012).

a - Per Administrative Rules of Montana (ARM) 17.30.028 for Silver Bow Creek, Stream Class I

N - Natural sample

D - Duplicate sample

-- - Sample not collected / analyzed

< - Parameter not detected at or above the laboratory practical quantitation limit

H - Analysis performed past recommended holding time

d - Reporting limit increased due to sample matrix.

- Value exceeds water quality standard

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## Table 9 Surface Water Total Metals Analytical Results

														1	Total Met	tals (m	g/L)										ruge 10j 1
				Arsenio	c.	Ca	dmium			Chromiu	n		Conner			Iron			Lead		Manganese	M	ercury			Zinc	
		Total	Lab	Δαμα	tic Lifo	Lab Results	Δαμαί	tic Life	Lah	Δαμαί	 tic Life	Lah	Δαμα	tic Life	Lah	Δαυ	atic Life	Lah	Aquat	ic Life	Lab Results	Lab Results	Aquat	ic Life	Lah	Aquat	ic Life
	Sample	Hard-	Results	Star	ndard	Lab Results	Star	ndard	Results	Star	dard	Results	Star	dard	Results	Sta	andard	Results	Stan	dard	Lab Results	Lab Results	Stan	dard	Results	Stan	dard
Sample ID	Date	ness		Acutod	Chronic	4	Acutoa	Chronich		Acutoa	Chronich		Acutoa	Chronich	-	Acute	Chronich		Acutoa	Chronich	-		Acutod	Chronicd		Acutoa	Chronich
		(mg/L)		Acute	Chronic		Acutea	Chronic		Acutea	Chronic	, 	Acutea	Chronic		Acute		0.047	Acutea	Chronic	,		Acute	Chronica		Acutea	Chronic <sup>5</sup>
DEQ	·/ Surface wa	ter HHS	0.01	1	1	0.005			0.1		1	1.3			NE		1	0.015	-		NE	0.00005	l	1	2.0		
BTC-PD-01	3/16/2016	106	0.021	0.34	0.15	0.00008	0.00226	0.00028	< 0.01	1.89118	0.09039	0.018	0.01479	0.00981	0.43		1.0	0.0049	0.08793	0.00343	0.31	< 0.00005	1.7	0.91	0.021	0.12588	0.12588
BTC-PD-02	3/15/2016	117	0.012	0.34	0.15	0.00067	0.00250	0.00030	< 0.01	2.05046	0.09801	0.021	0.01623	0.01067	1.55		1.0	0.0104	0.09971	0.00389	0.31	< 0.00005	1.7	0.91	0.105	0.13686	0.13686
BTC-PD-03	3/11/2016	163	0.003	0.34	0.15	0.00004	0.00351	0.00039	< 0.01	2.69023	0.12858	0.003	0.02218	0.01416	0.25		1.0	0.0014	0.15207	0.00593	0.05	< 0.00005	1.7	0.91	0.013	0.18126	0.18126
BTC-SW-01	3/8/2016	119	0.005	0.34	0.15	0.00004	0.00255	0.00031	< 0.01	2.07912	0.09938	0.005	0.01649	0.01082	0.62		1.0	0.0009	0.10188	0.00397	0.10	< 0.00005	1.7	0.91	0.012	0.13884	0.13884
BTC-SW-02	3/8/2016	122	0.005	0.34	0.15	0.00005	0.00261	0.00031	< 0.01	2.12196	0.10142	0.005	0.01688	0.01106	0.66		1.0	0.001	0.10516	0.00410	0.10	< 0.00005	1.7	0.91	0.012	0.14180	0.14180
BTC-SW-03	3/9/2016	118	0.004	0.34	0.15	0.00005	0.00252	0.00031	< 0.01	2.06480	0.09869	0.005	0.01636	0.01075	0.63		1.0	0.001	0.10079	0.00393	0.08	< 0.00005	1.7	0.91	0.011	0.13785	0.13785
BTC-SW-04	3/10/2016	120	0.004	0.34	0.15	0.00005	0.00257	0.00031	< 0.01	2.09342	0.10006	0.004	0.01662	0.01090	0.55		1.0	0.0006	0.10297	0.00401	0.08	< 0.00005	1.7	0.91	0.012	0.13983	0.13983
BTC-SW-05	3/10/2016	118	0.004	0.34	0.15	< 0.00003	0.00252	0.00031	< 0.01	2.06480	0.09869	0.004	0.01636	0.01075	0.48		1.0	0.0004	0.10079	0.00393	0.06	< 0.00005	1.7	0.91	< 0.008	0.13785	0.13785
BTC-SW-06	3/10/2016	116	0.003	0.34	0.15	0.00003	0.00248	0.00030	< 0.01	2.03610	0.09732	0.004	0.01610	0.01059	0.53		1.0	0.0004	0.09862	0.00384	0.06	< 0.00005	1.7	0.91	< 0.008	0.13587	0.13587
BTC-SW-07	3/11/2016	107	0.004	0.34	0.15	0.00003	0.00229	0.00028	< 0.01	1.90578	0.09109	0.005	0.01492	0.00988	0.74		1.0	0.0008	0.08899	0.00347	0.11	< 0.00005	1.7	0.91	< 0.008	0.12689	0.12689
BTC-SW-08	3/11/2016	107	0.004	0.34	0.15	0.00004	0.00229	0.00028	< 0.01	1.90578	0.09109	0.005	0.01492	0.00988	0.67		1.0	0.0007	0.08899	0.00347	0.10	< 0.00005	1.7	0.91	< 0.008	0.12689	0.12689
BIC-SW-09	3/14/2016	110	0.005	0.34	0.15	0.00005	0.00235	0.00029	< 0.01	1.94943	0.09318	0.009	0.01531	0.01012	1.09		1.0	0.0018	0.09218	0.00359	0.13	< 0.00005	1./	0.91	0.012	0.12989	0.12989
BIC-SW-10	3/14/2016	134	0.005	0.34	0.15	0.00005	0.00287	0.00034	< 0.01	2.29143	0.10952	0.010	0.01844	0.01198	1.43		1.0	0.0022	0.11850	0.00462	0.15	< 0.00005	1.7	0.91	0.014	0.15354	0.15354
BIC-SW-10 L	3/14/2016	134	0.005	0.34	0.15	0.00006	0.00287	0.00034	< 0.01	2.29143	0.10952	0.010	0.01844	0.01198	1.41		1.0	0.0022	0.11850	0.00462	0.15	< 0.00005	1.7	0.91	0.015	0.15354	0.15354
BIC-SW-11	3/14/2016	103	0.005	0.34	0.15	0.00004	0.00220	0.00028	< 0.01	1.84723	0.08829	0.007	0.01439	0.00957	1.03		1.0	0.0011	0.08478	0.00330	0.13	< 0.00005	1.7	0.91	0.009	0.12286	0.12286
BIC-SW-12	3/15/2016	95	0.004	0.34	0.15	0.00003	0.00202	0.00026	< 0.01	1.72887	0.08263	0.006	0.01334	0.00893	0.85		1.0	0.0008	0.07648	0.00298	0.09	< 0.00005	1.7	0.91	< 0.008	0.11472	0.11472
BTC-SW-12	3/15/2016	95	0.004	0.34	0.15	0.00003	0.00202	0.00026	< 0.01	1.72887	0.08263	0.005	0.01334	0.00893	0.85		1.0	0.0008	0.07648	0.00298	0.09	< 0.00005	1.7	0.91	< 0.008	0.11472	0.114/2
GC SW 01	3/15/2016	142	0.005	0.34	0.15	0.00005	0.00189	0.00025	< 0.01	1.03892	0.07833	0.008	0.01254	0.00844	1.55		1.0	0.0016	0.07039	0.00274	0.18	< 0.00005	1.7	0.91	0.008	0.10855	0.10855
GG-SW-01	3/10/2016	142	0.008	0.34	0.15	0.00004	0.00305	0.00035	< 0.01	2.40288	0.11485	0.000	0.01948	0.01259	0.48		1.0	0.0016	0.12758	0.00497	0.12	< 0.00005	1.7	0.91	0.024	0.10127	0.10127
SBC-SW-01	3/7/2016	120	0.007	0.34	0.15	0.00009	0.00270	0.00032	< 0.01	2.1/8//	0.10414	0.007	0.01/40	0.01137	0.09		1.0	0.0010	0.10957	0.00427	0.12	< 0.00005	1.7	0.91	0.020	0.14573	0.14573
SBC-SW-02	3/9/2016	121	0.006	0.34	0.15	0.0001	0.00259	0.00031	< 0.01	2.10770	0.10074	0.008	0.01662	0.01098	0.75		1.0	0.0019	0.10407	0.00406	0.10	< 0.00005	1.7	0.91	0.019	0.12082	0.12082
SC SW 01	2/10/2016	277	0.005	0.34	0.15	< 0.00008	0.00257	0.00031	< 0.01	2.09342 4.15225	0.10000	0.007	0.02656	0.01090	1.20		1.0	0.0010	0.10297	0.00401	1.28	< 0.00005	1.7	0.91	0.021	0.15983	0.15983
2C-2AA-OT	5/10/2016	2//	0.008	0.34	0.15	< 0.00003	0.00001	0.00058	< 0.01	4.10335	0.19925	0.003	0.03030	0.02228	1.30		1.0	0.0007	0.29808	0.01104	1.20	< 0.00005	1./	0.91	0.012	0.28407	0.28407

Notes:

mg/L - milligrams per Liter

a, b - Calculated Acute and Chronic aquatic life standards based on total hardness CaCO3 and as per Circular DEQ-7 (October 2012) and compared to total metals sample results

c - Surface Water Human Health standards based on Circular DEQ-7 Montana Numeric Water Quality Standards (October 2012) and compared to total metals sample results

d - Surface Water Acute and Chronic Standard based on Circular DEQ-7 (October, 2012) and compared to total metals sample results

- NE Not established
- N Natural Sample
- D Duplicate Sample
- -- indicates sample not collected/analyzed
- Not detected above laboratory analytical method reporting limit

- Value exceeds water quality standard

- 1 - 6 4

Table 10Surface Water Dissolved Metals Analytical Results

		Sample				Diss	olved Metals (n	ng/L)			
Sample ID		Date	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Zinc
BTC-PD-01	Ν	3/16/2016	0.017	< 0.00003	< 0.01	0.011	0.03	0.0007	0.27	< 0.00005	< 0.008
BTC-PD-02	Ν	3/15/2016	0.007	0.00003	< 0.01	0.004	< 0.02	0.0004	0.24	< 0.00005	< 0.008
BTC-PD-03	Ν	3/11/2016	0.002	<0.00003	< 0.01	0.005	0.02	0.0004	0.04	< 0.00005	0.01
BTC-SW-01	Ν	3/8/2016	0.003	<0.00003	< 0.01	0.003	0.1	< 0.0003	0.09	< 0.00005	< 0.008
BTC-SW-02	Ν	3/8/2016	0.003	<0.00003	< 0.01	0.004	0.08	< 0.0003	0.09	< 0.00005	< 0.008
BTC-SW-03	Ν	3/9/2016	0.003	<0.00003	< 0.01	0.007	0.08	< 0.0003	0.08	< 0.00005	< 0.008
BTC-SW-04	Ν	3/10/2016	0.002	<0.00003	< 0.01	0.006	0.1	< 0.0003	0.07	< 0.00005	0.009
BTC-SW-05	Ν	3/10/2016	0.003	<0.00003	< 0.01	0.006	0.07	< 0.0003	0.06	< 0.00005	< 0.008
BTC-SW-06	Ν	3/10/2016	0.002	<0.00003	< 0.01	0.003	0.06	< 0.0003	0.05	< 0.00005	< 0.008
BTC-SW-07	Ν	3/11/2016	0.002	<0.00003	< 0.01	0.004	0.11	< 0.0003	0.09	< 0.00005	< 0.008
BTC-SW-08	Ν	3/11/2016	0.002	<0.00003	< 0.01	0.006	0.12	< 0.0003	0.08	< 0.00005	< 0.008
BTC-SW-09	Ν	3/14/2016	0.003	<0.00003	< 0.01	0.008	0.11	0.0004	0.1	< 0.00005	< 0.008
BTC-SW-10	Ν	3/14/2016	0.003	<0.00003	< 0.01	0.003	0.09	< 0.0003	0.11	< 0.00005	< 0.008
BTC-SW-10	D	3/14/2016	0.003	<0.00003	< 0.01	0.007	0.09	0.0004	0.11	< 0.00005	< 0.008
BTC-SW-11	Ν	3/14/2016	0.002	<0.00003	< 0.01	0.004	0.12	< 0.0003	0.1	< 0.00005	< 0.008
BTC-SW-12	Ν	3/15/2016	0.002	<0.00003	< 0.01	0.004	0.14	< 0.0003	0.07	< 0.00005	< 0.008
BTC-SW-12	D	3/15/2016	0.002	<0.00003	< 0.01	0.003	0.14	< 0.0003	0.07	< 0.00005	< 0.008
BTC-SW-13	Ν	3/15/2016	0.002	<0.00003	< 0.01	0.007	0.13	0.0004	0.11	< 0.00005	< 0.008
GG-SW-01	Ν	3/10/2016	0.006	<0.00003	< 0.01	0.004	0.1	< 0.0003	0.16	< 0.00005	0.016
SBC-SW-01	Ν	3/7/2016	0.005	0.00003	< 0.01	0.007	0.08	< 0.0003	0.11	< 0.00005	0.011
SBC-SW-02	Ν	3/9/2016	0.003	<0.00003	< 0.01	0.005	0.1	< 0.0003	0.09	< 0.00005	0.009
SBC-SW-03	Ν	3/8/2016	0.003	<0.00003	< 0.01	0.002	0.13	< 0.0003	0.11	< 0.00005	0.01
SC-SW-01	Ν	3/10/2016	0.005	< 0.00003	< 0.01	0.005	0.22	< 0.0003	1.2	< 0.00005	0.011

mg/L - Milligrams per liter

< - Parameter not detected at or above the laboratory practical quantitation limit

N - Natural sample

D - Duplicate sample

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# Table 11 In-Stream and Pond Sediment Pore Water Field and General Chemistry Analytical Results

	_																						Fuge 10j 2
				Fie	eld Paramet	ers					Physiochemic	cal				Commor	n Anions			Commoi	n Cations		Nutrients
										Hardness as	Acidity as	Alkalinity as	Total Diss.	Total Susp.		Bicarb as	Carbonate						Nitrate +
			SC	pH <sup>a</sup>	Temp.	ORP	DO	SC	рН <sup>а</sup>	CaCO3	CaCO3	CaCO3	Solids	Solids	Sulfate	HCO3	as CO3	Chloride	Calcium	Magnesium	Potassium	Sodium	Nitrite as N
Sample ID		Sample Date	(µmhos/L)	(s.u.)	(ºC)	(mV)	(mg/L)	(µmhos/L)	(s.u.)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
DEQ-7		Acute	NE	6.5 - 9.5	NE	NE	4.0 - 8.0	NE	6.5 - 9.5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Surface Water		Chronic	NE	6.5 - 9.5	NE	NE	4.0 - 8.0	NE	6.5 - 9.5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Standards <sup>1</sup>		Human Health	NE	6.5 - 9.5	NE	NE	NE	NE	6.5 - 9.5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	10
BTC-SPW-01N (12")	Ν	3/8/2016	400	6.88	3.41	-61.4	5.69	438	7.1 H	149	< 4	180	277	50	7	220	< 4	20	44	10	5	20	0.03
BTC-SPW-02N (12")	Ν	3/9/2016	1080	7.19	4.2	-72.7	1.84	518	7.2 H	198	< 4	250	280 d	345 d	< 1	310	< 4 d	15	54	15	5	27	0.03
BTC-SPW-02N (36")	Ν	3/9/2016	859	7.71	8.4	-181.3	0.00			163									45	12	6	25	
BTC-SPW-02S (12")	Ν	3/8/2016	1038	6.95	2.99	88.7	0.77	372	7.3 H	134	< 4	140	242	92	29	160	< 4	16	38	9	4	23	< 0.01
BTC-SPW-02S (36")	Ν	3/9/2016	670	6.96	4.37	30.7	0.00	361	7.3 H	127	< 4	110	220	< 10	47	130	< 4	15	36	9	4	22	0.63
BTC-SPW-03N (12")	Ν	3/9/2016	2455	7.00	4.15	-4.4	0.57	1470	7.2 H	740	< 4	620	1010	55	254	750	< 4	12	188	65	33	42	0.02
BTC-SPW-03S (12")	Ν	3/9/2016	2383	6.92	4.09	-74.2	0.38	1150	6.8 H	418	< 4	350	650 d	152 d	2	430	< 4 d	154	108	36	12	56	0.03
BTC-SPW-03S (36")	Ν	3/9/2016	1253	7.77	7.36	-151.1	0.00			234									68	15	7	31	
BTC-SPW-04N (12")	Ν	3/10/2016	2373	7.24	4.37	-40.1	0.62	1150	7.2 H	480	< 4	600	694	33	21	730	< 4	27	132	36	6	54	0.01
BTC-SPW-04N (12")	D	3/10/2016	2373	7.24	4.37	-40.1	0.62	1120	7.2 H	500	< 4	580	686	34	21	710	< 4	26	137	38	6	56	0.01
BTC-SPW-04S (12")	Ν	3/10/2016	665	7.94	5.96	-24.9	0.84			114									33	8	4	19	
BTC-SPW-04S (36")	Ν	3/10/2016	568	7.41	6.95	-107.4	0.00	291	7.3 H	104	< 4	130	184	10	15	150	< 4	6	30	7	3	19	< 0.01
BTC-SPW-05N (12")	Ν	3/10/2016	579	7.69	8.34	59.6	2.27	302	7.2 H	110	< 4	89	193	< 10	47	110	< 4	6	32	7	3	17	0.88
BTC-SPW-05N (36")	Ν	3/10/2016	546	7.43	9.53	74.4	1.83	301	7.2 H	110	< 4	90	191	87	47	110	< 4	7	32	7	3	17	0.85
BTC-SPW-05S (12")	Ν	3/10/2016	1745	6.67	5.5	-16.4	0.50	754	6.7 H	252	< 4	150	448	124	13	190	< 4	139	73	17	4	24	0.19
BTC-SPW-05S (36")	Ν	3/10/2016	356	7.12	6.06	-96.3	0.32	282	7.0 H	105	< 4	140	166	482	< 1	170	< 4	6	31	7	3	13	< 0.01
BTC-SPW-06N (12")	Ν	3/10/2016	1945	7.43	5.17	-38.5	2.05	738	7.0 H	332	< 4	320	490	47	75	390	< 4	14	99	21	2	29	0.01
BTC-SPW-06S (12")	Ν	3/10/2016	850	7.27	5.5	-87.8	0.45	416	7.0 H	164	< 4	160	249	52	27	200	< 4	21	45	13	4	20	0.01
BTC-SPW-06S (36")	Ν	3/10/2016	840	7.11	6.61	-94.4	0.00	438	7.2 H	176	< 4	160	268	43	38	190	< 4	21	50	13	4	19	0.01
BTC-SPW-07N (12")	Ν	3/11/2016	611	7.65	5.95	86.3	1.42	328	7.1 H	123	< 4	88	213	< 10	62	110	< 4	6	35	8	3	16	1.6
BTC-SPW-07N (36")	Ν	3/11/2016	594	7.24	7.23	95.4	0.53	327	7.2 H	121	< 4	86	211	< 10	61	100	< 4	6	35	8	3	16	2.12 d
BTC-SPW-08N (12")	Ν	3/11/2016	493	7.40	5.95	-45.6	1.27	228	7.1 H	91	< 4	100	135	243	11	120	< 4	4	25	7	3	10	0.01
BTC-SPW-08N (36")	Ν	3/11/2016	473	7.37	7.27	-104.5	0.79	247	7.3 H	97	< 4	96	146	< 10	20	120	< 4	4	27	7	3	10	0.65
BTC-SPW-08S (12")	Ν	3/11/2016	528	6.88	5.95	-20.1	2.30	270	7.2 H	108	< 4	110	155	< 10	20	130	< 4	7	30	8	3	11	0.02
BTC-SPW-08S (36")	Ν	3/11/2016	507	7.18	6.85	-58.1	0.00	276	7.2 H	110	< 4	130	154	< 10	< 1	160	< 4	8	31	8	3	11	< 0.01
BTC-SPW-09N (12")	Ν	3/14/2016	573	7.38	4.34	108.2	1.08	292	7.2 H	117	< 4	99	189	< 10	31	120	< 4	7	33	9	3	12	1.35
BTC-SPW-09S (12")	Ν	3/14/2016		7.21	6.06	-74		979	7.0 H	394	< 4	300	595	56	10	360	< 4	140	110	29	5	44	0.07
BTC-SPW-09S (36")	Ν	3/14/2016	758	7.21	6.06	-74	0.46	374	7.2 H	158	< 4	120	244	< 10	36	140	< 4	19	45	11	4	13	1.32
BTC-SPW-10N (12")	Ν	3/14/2016	1198	6.99	4.52	9.8	1.46	641	7.0 H	277	< 4	230	405	31	68	270	< 4	28	79	19	4	27	0.07
BTC-SPW-10N (36")	Ν	3/14/2016	602	7.02	4.66	-45.6	0.61	466	7.1 H	190	< 4	160	298	< 10	50	190	< 4	18	54	13	3	22	1.06
BTC-SPW-10S (12")	Ν	3/14/2016	961	7.30	5.56	36.6	1.72	486	7.0 H	200	< 4	130	301	< 10	46	160	< 4	40	58	14	5	16	1.36
BTC-SPW-10S (12")	D	3/14/2016	961	7.30	5.56	36.6	1.72	486	6.9 H	200	< 4	130	299	< 10	46	160	< 4	40	58	14	5	16	1.35
BTC-SPW-10S (36")	Ν	3/14/2016	898	7.06	6.71	49.9	1.52	459	7.0 H	189	< 4	130	288	19	40	150	< 4	32	55	13	4	14	3.59 d
BTC-SPW-11N (12")	Ν	3/14/2016	698	7.26	4.06	16.5	2.02	359	7.0 H	152	< 4	110	235	< 10	53	130	< 4	11	45	10	3	10	0.06
BTC-SPW-11N (36")	Ν	3/14/2016	673	6.72	3.87	30.5	1.03	351	7.1 H	148	< 4	100	229	< 10	50	120	< 4	11	42	11	4	10	1.8

Notes:

SC - Specific Conductance

Temp. - Temperature

ORP - Oxygen Reduction Potential

DO - Dissolved Oxygen

µmhos/L - Micromhos per liter

S.U. - Standard Units

<sup>o</sup>C - Degrees centigrade

mV - Millivolts

mg/L - Milligrams per liter

NE - Not established

1 - Montana Department of Environmental Quality (MDEQ) Human Health Standard from Circular DEQ-7, Montana Water Quality Standards (October 2012).

a - Per Administrative Rules of Montana (ARM) 17.30.028 for Silver Bow Creek, Stream Class I

N - Natural sample

D - Duplicate sample

---- Sample not collected / analyzed

- Parameter not detected at or above the laboratory practical quantitation limit

H - Analysis performed past recommended holding time

d - Reporting limit increased due to sample matrix.

- Value meets or exceeds surface water standard

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# Table 11 In-Stream and Pond Sediment Pore Water Field and General Chemistry Analytical Results

															•								Fuge 2 0j 2
				Fi	eld Parame	ters					Physiochemi	cal				Commo	n Anions			Commo	n Cations		Nutrients
			sc	pH <sup>a</sup>	Temp.	ORP	DO	SC	рН <sup>а</sup>	Hardness as CaCO3	Acidity as CaCO3	Alkalinity as CaCO3	Total Diss. Solids	Total Susp. Solids	Sulfate	Bicarb as HCO3	Carbonate as CO3	Chloride	Calcium	Magnesium	Potassium	Sodium	Nitrate + Nitrite as N
Sample ID		Sample Date	(umhos/L)	(s.u.)	(ºC)	(mV)	(mg/L)	(umhos/L)	(s.u.)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
DEQ-7		Acute	NE NE	6.5 - 9.5	NE	NE	4.0 - 8.0	NE	6.5 - 9.5	NE NE	NE	NE NE	NE	NE NE	NE NE	NE	NE	NE	NE	NE NE	NE	NE	NE
Surface Water		Chronic	NE	6.5 - 9.5	NE	NE	4.0 - 8.0	NE	6.5 - 9.5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Standards <sup>1</sup>		Human Health	NE	6.5 - 9.5	NE	NE	NE	NE	6.5 - 9.5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	10
BTC-SPW-11S (12")	N	3/14/2016	1333	7.21	4.58	18.1	1.96	679	7.0 H	261	< 4	210	416	14	27	250	< 4	77	73	19	6	32	0.17
BTC-SPW-11S (36")	N	3/14/2016	975	7.18	5.41	14.4	2.18	498	7.1 H	192	< 4	140	312	< 10	29	180	< 4	48	54	14	5	21	1.03 d
BTC-SPW-12N (12")	Ν	3/15/2016	1032	7.39	3.78	99.9	1.83	527	7.2 H	241	< 4	200	333	< 10	44	240	< 4	18	71	15	3	18	2.05 d
BTC-SPW-12N (12")	D	3/15/2016	1032	7.39	3.78	99.9	1.83	528	7.2 H	236	< 4	200	336	< 10	44	240	< 4	18	70	15	3	19	2.17 d
BTC-SPW-12S (12")	Ν	3/15/2016	1204	7.10	3.45	-60.6	0.17	643	7.0 H	267	< 4	200	403	14	18	250	< 4	71	75	19	5	19	0.04
BTC-SPW-12S (36")	N	3/15/2016	521	7.26	3.43	105.4	0.16	524	7.0 H	215	< 4	160	330	20	25	200	< 4	50	61	16	4	17	0.04
BTC-SPW-13N (12")	Ν	3/15/2016	446	6.15	5.45	262.7	5.25	448	7.3 H	190	< 4	150	297	< 10	55	180	< 4	11	55	13	2	18	0.76
BTC-SPW-13N (36")	Ν	3/15/2016	416	7.38	5.45	253.6	1.61	422	7.4 H	172	< 4	140	280	< 10	55	160	< 4	9	50	11	2	18	3.95 d
BTC-SPW-13S (12")	Ν	3/15/2016		7.06	2.56	129.4	0.94	435	7.0 H	159	< 4	140	262	< 10	25	170	< 4	38	44	12	4	22	0.01
BTC-SPW-13S (36")	Ν	3/15/2016	268	7.05	4	194.9	0.95	312	7.0 H	124	< 4	110	195	< 10	33	130	< 4	10	35	9	3	12	0.27
BTC-WPPW-01 (12")	Ν	3/16/2016	252	6.80	1.6	273.2	1.14	276	6.8 H	82	< 4	48	189	26	20	58	< 4	35	19	8	9	12	< 0.01
BTC-WPPW-01 (36")	Ν	3/16/2016	1346	7.02	0.97	-26.2	1.19	1310	6.9 H	508	< 4	490	788	62	< 1	600	< 4	121	141	38	10	48	0.06
BTC-WPPW-02 (12")	Ν	3/15/2016	383	7.42	2.64	120	2.75	377	7.2 H	140	< 4	140	234 d	442 d	15	160	< 4 d	28	40	10	3	19	0.02
BTC-WPPW-02 (36")	Ν	3/15/2016	995	7.05	1.98	117.6	0.99	967	7.0 H	477	< 4	540	589	49	< 1	660	< 4	9	134	35	6	29	0.02
GG-SPW-01E (12")	Ν	3/10/2016	583	6.90	4.5	-75.4	0.86	305	7.2 H	121	< 4	110	182	< 10	26	140	< 4	10	34	9	3	14	0.18
GG-SPW-01E (36")	Ν	3/10/2016	560	6.88	4.98	-97.9	0.14	299	7.7 H	118	< 4	120	177	< 10	20	140	< 4	10	33	9	3	14	< 0.01
SBC-SPW-01N (12")	Ν	3/9/2016	1270	7.45	3.95	-84.7	1.66	686	7.2 H	326	< 4	310	420	33	39	380	< 4	20	93	23	4	16	< 0.01
SBC-SPW-01S (12")	Ν	3/9/2016	3885	7.14	4.92	-76.2	0.64	1850	7.2 H	685	< 4	300	1070	108	183	370	< 4	343	174	61	11	99	0.01
SBC-SPW-02N (12")	Ν	3/9/2016	5961	5.03	4.99	119.2	0.31	2980	4.2 H	702	1400	< 4	3560	198	2220	< 4	< 4	19	246	22	30	20	< 0.01
SBC-SPW-02N (36")	Ν	3/9/2016	4655	5.52	5.67	89.5	0.82	2440	4.6 H	740	840	< 4	2590	57	1630	< 4	< 4	47	251	28	23	35	0.02
SBC-SPW-02S (12")	Ν	3/9/2016	5267	7.04	4.75	5.1	0.97	2580	7.4 H	469	< 4	200	1430	28	56	240	< 4	685	138	30	11	313	0.01
SBC-SPW-02S (36")	Ν	3/9/2016	5362	7.16	5.26	8.6	0.86	2630	7.1 H	469	< 4	180	1470	34	44	220	< 4	736	137	31	10	323	0.02
SBC-SPW-03N (12")	Ν	3/8/2016	1062	6.61	5.57	143.7	2.80	1180	7.2 H	456	< 4	220	814	75	353	270	< 4	39	129	33	10	77	0.44
SC-SPW-01E (12")	Ν	3/10/2016	711	7.43	8.05	17.3	0.35	374	7.3 H	151	< 4	130	216	< 10	34	150	< 4	16	43	11	4	15	1.75
SC-SPW-01E (36")	Ν	3/10/2016	698	7.30	5.23	27.8	1.36	363	7.3 H	147	< 4	120	212	< 10	33	150	< 4	15	42	10	4	14	1.76

Notes:

SC - Specific Conductance Temp. - Temperature ORP - Oxygen Reduction Potential DO - Dissolved Oxygen µmhos/L - Micromhos per liter S.U. - Standard Units °C - Degrees centigrade mV - Millivolts mg/L - Milligrams per liter NE - Not established 1 - Montana Department of Environmental Quality (MDEQ) Human Health Standard from Circular DEQ-7, Montana Water Quality Standards (October 2012).

a - Per Administrative Rules of Montana (ARM) 17.30.028 for Silver Bow Creek, Stream Class I

N - Natural sample

D - Duplicate sample

--- - Sample not collected / analyzed

< - Parameter not detected at or above the laboratory practical quantitation limit

H - Analysis performed past recommended holding time

d - Reporting limit increased due to sample matrix.

- Value meets or exceeds surface water standard

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 TABLE 12

 In-Stream and Pond Sediment Pore Water Dissolved Metals Analytical Results

														Dis	solved M	letals (m	g/L)										rage roj z
				Arsenic		Ca	admium			Chromiu	m		Copper			Iron			Lead		Manganese	М	ercury			Zinc	
		Total Hard-	Lab	Aquati	c Life	Lab Results	Aquat	tic Life	Lab	Aquat	tic Life	Lab	Aquat	tic Life	Lab	Aquat	ic Life	Lab	Aquat	ic Life	Lab Results	Lab Results	Aquat	tic Life	Lab	Aquat	ic Life
Sample ID	Sample	ness	Results	Stand	ara	_	Star	idard	Results	Star	idard	Results	Star	laard	Results	Stan	dard	Results	Stan	dard	-		Stan	idard	Results	Stan	
Sample ID	Date	(mg/L)		Acute <sup>e</sup>	Chronice		Acutea	Chronicb		Acutea	Chronic	)	Acutea	<b>Chronic</b> <sup>b</sup>		Acutea	Chronicb		Acutea	Chronic	)		Acutee	Chronice		Acutea	Chronicb
DEQ-7	Surface Wat	er HHS ်	0.01	I		0.005		1	0.1		1	1.3		1	NE		1	0.015			NE	0.00005			2.0		
BTC-SPW-01N (12") N	3/8/2016	149	0.028	0.34	0.15	< 0.00003	0.00255	0.00031	< 0.01	2.07912	0.09938	< 0.002	0.01649	0.01082	12.1		1.0	< 0.0003	0.10188	0.00397	1.59	< 0.00005	1.7	0.91	< 0.008	0.13884	0.13884
BTC-SPW-02N (12") N	3/9/2016	198	0.033	0.34	0.15	< 0.00003	0.00261	0.00031	< 0.01	2.12196	0.10142	< 0.002	0.01688	0.01106	18.2		1.0	< 0.0003	0.10516	0.00410	2.36	< 0.00005	1.7	0.91	< 0.008	0.14180	0.14180
BTC-SPW-02N (36") N	3/9/2016	163	0.044	0.34	0.15	< 0.00003	0.00261	0.00031	< 0.01	2.12196	0.10142	0.004	0.01688	0.01106	1.12		1.0	0.0003	0.10516	0.00410	1.50	< 0.00005	1.7	0.91	< 0.008	0.14180	0.14180
BTC-SPW-02S (12") N	3/8/2016	134	0.003	0.34	0.15	< 0.00003	0.00261	0.00031	< 0.01	2.12196	0.10142	< 0.002	0.01688	0.01106	2.56		1.0	< 0.0003	0.10516	0.00410	0.63	< 0.00005	1.7	0.91	< 0.008	0.14180	0.14180
BTC-SPW-02S (36") N	3/9/2016	127	0.013	0.34	0.15	0.00398	0.00261	0.00031	< 0.01	2.12196	0.10142	0.604	0.01688	0.01106	< 0.02		1.0	0.0017	0.10516	0.00410	0.11	< 0.00005	1.7	0.91	0.506	0.14180	0.14180
BTC-SPW-03N (12") N	3/9/2016	740	0.070	0.34	0.15	< 0.00003	0.00252	0.00031	< 0.01	2.06480	0.09869	< 0.002	0.01636	0.01075	17.6		1.0	< 0.0003	0.10079	0.00393	2.71	< 0.00005	1.7	0.91	< 0.008	0.13785	0.13785
BTC-SPW-03S (12") N	3/9/2016	418	0.198	0.34	0.15	< 0.00003	0.00252	0.00031	< 0.01	2.06480	0.09869	< 0.002	0.01636	0.01075	71.5		1.0	< 0.0003	0.10079	0.00393	6.06	< 0.00005	1.7	0.91	< 0.008	0.13785	0.13785
BTC-SPW-03S (36") N	3/9/2016	234	0.028	0.34	0.15	< 0.00003	0.00252	0.00031	< 0.01	2.06480	0.09869	0.005	0.01636	0.01075	5.36		1.0	0.0009	0.10079	0.00393	2.48	< 0.00005	1.7	0.91	< 0.008	0.13785	0.13785
BTC-SPW-04N (12") N	3/10/2016	480	0.002	0.34	0.15	< 0.00003	0.00257	0.00031	< 0.01	2.09342	0.10006	< 0.002	0.01662	0.01090	11		1.0	< 0.0003	0.10297	0.00401	4.30	< 0.00005	1.7	0.91	< 0.008	0.13983	0.13983
BTC-SPW-04N (12") D	3/10/2016	500	0.001	0.34	0.15	< 0.00003	0.00257	0.00031	< 0.01	2.09342	0.10006	< 0.002	0.01662	0.01090	11.5		1.0	< 0.0003	0.10297	0.00401	4.47	< 0.00005	1.7	0.91	< 0.008	0.13983	0.13983
BTC-SPW-04S (12") N	3/10/2016	114	0.018	0.34	0.15	< 0.00003	0.00257	0.00031	< 0.01	2.09342	0.10006	0.003	0.01662	0.01090	0.72		1.0	0.0007	0.10297	0.00401	0.40	< 0.00005	1.7	0.91	< 0.008	0.13983	0.13983
BTC-SPW-04S (36") N	3/10/2016	104	0.004	0.34	0.15	< 0.00003	0.00257	0.00031	< 0.01	2.09342	0.10006	< 0.002	0.01662	0.01090	3.72		1.0	< 0.0003	0.10297	0.00401	0.41	< 0.00005	1.7	0.91	< 0.008	0.13983	0.13983
BTC-SPW-05N (12") N	3/10/2016	110	0.002	0.34	0.15	0.00047	0.00252	0.00031	< 0.01	2.06480	0.09869	< 0.002	0.01636	0.01075	< 0.02		1.0	< 0.0003	0.10079	0.00393	< 0.02	< 0.00005	1.7	0.91	0.095	0.13785	0.13785
BTC-SPW-05N (36") N	3/10/2016	110	0.002	0.34	0.15	0.0004	0.00252	0.00031	< 0.01	2.06480	0.09869	0.004	0.01636	0.01075	< 0.02		1.0	< 0.0003	0.10079	0.00393	< 0.02	< 0.00005	1.7	0.91	0.091	0.13785	0.13785
BTC-SPW-05S (12") N	3/10/2016	252	0.026	0.34	0.15	< 0.00003	0.00252	0.00031	< 0.01	2.06480	0.09869	< 0.002	0.01636	0.01075	25.9		1.0	< 0.0003	0.10079	0.00393	5.07	< 0.00005	1.7	0.91	< 0.008	0.13785	0.13785
BTC-SPW-05S (36") N	3/10/2016	105	0.009	0.34	0.15	< 0.00003	0.00252	0.00031	< 0.01	2.06480	0.09869	< 0.002	0.01636	0.01075	11.5		1.0	< 0.0003	0.10079	0.00393	1.08	< 0.00005	1.7	0.91	< 0.008	0.13785	0.13785
BTC-SPW-06N (12") N	3/10/2016	332	0.056	0.34	0.15	< 0.00003	0.00248	0.00030	< 0.01	2.03610	0.09732	0.004	0.01610	0.01059	10		1.0	< 0.0003	0.09862	0.00384	4.94	< 0.00005	1.7	0.91	< 0.008	0.13587	0.13587
BTC-SPW-06S (12") N	3/10/2016	164	0.005	0.34	0.15	< 0.00003	0.00248	0.00030	< 0.01	2.03610	0.09732	< 0.002	0.01610	0.01059	7.84		1.0	< 0.0003	0.09862	0.00384	0.83	< 0.00005	1.7	0.91	< 0.008	0.13587	0.13587
BTC-SPW-06S (36") N	3/10/2016	176	0.007	0.34	0.15	< 0.00003	0.00248	0.00030	< 0.01	2.03610	0.09732	0.002	0.01610	0.01059	2.57		1.0	< 0.0003	0.09862	0.00384	0.20	< 0.00005	1.7	0.91	< 0.008	0.13587	0.13587
BTC-SPW-07N (12") N	3/11/2016	123	0.002	0.34	0.15	0.00033	0.00229	0.00028	< 0.01	1.90578	0.09109	< 0.002	0.01492	0.00988	< 0.02		1.0	< 0.0003	0.08899	0.00347	< 0.02	< 0.00005	1.7	0.91	0.121	0.12689	0.12689
BTC-SPW-07N (36") N	3/11/2016	121	< 0.001	0.34	0.15	0.00025	0.00229	0.00028	< 0.01	1.90578	0.09109	0.003	0.01492	0.00988	< 0.02		1.0	< 0.0003	0.08899	0.00347	< 0.02	< 0.00005	1.7	0.91	0.097	0.12689	0.12689
BTC-SPW-08N (12") N	3/11/2016	91	0.008	0.34	0.15	< 0.00003	0.00229	0.00028	< 0.01	1.90578	0.09109	< 0.002	0.01492	0.00988	9.13		1.0	< 0.0003	0.08899	0.00347	0.06	< 0.00005	1.7	0.91	< 0.008	0.12689	0.12689
BTC-SPW-08N (36") N	3/11/2016	97	< 0.001	0.34	0.15	< 0.00003	0.00229	0.00028	< 0.01	1.90578	0.09109	0.003	0.01492	0.00988	< 0.02		1.0	< 0.0003	0.08899	0.00347	< 0.02	< 0.00005	1.7	0.91	< 0.008	0.12689	0.12689
BTC-SPW-08S (12") N	3/11/2016	108	0.001	0.34	0.15	< 0.00003	0.00229	0.00028	< 0.01	1.90578	0.09109	< 0.002	0.01492	0.00988	1.17		1.0	< 0.0003	0.08899	0.00347	0.03	< 0.00005	1.7	0.91	< 0.008	0.12689	0.12689
BTC-SPW-08S (36") N	3/11/2016	110	< 0.001	0.34	0.15	< 0.00003	0.00229	0.00028	< 0.01	1.90578	0.09109	< 0.002	0.01492	0.00988	1.81		1.0	< 0.0003	0.08899	0.00347	0.04	< 0.00005	1.7	0.91	< 0.008	0.12689	0.12689
BTC-SPW-09N (12") N	3/14/2016	117	0.002	0.34	0.15	< 0.00003	0.00235	0.00029	< 0.01	1.94943	0.09318	0.004	0.01531	0.01012	< 0.02		1.0	< 0.0003	0.09218	0.00359	< 0.02	< 0.00005	1.7	0.91	< 0.008	0.12989	0.12989
BTC-SPW-09S (12") N	3/14/2016	394	0.029	0.34	0.15	< 0.00003	0.00235	0.00029	< 0.01	1.94943	0.09318	< 0.002	0.01531	0.01012	14.3		1.0	< 0.0003	0.09218	0.00359	1.32	< 0.00005	1.7	0.91	< 0.008	0.12989	0.12989
BTC-SPW-09S (36") N	3/14/2016	158	< 0.001	0.34	0.15	< 0.00003	0.00235	0.00029	< 0.01	1.94943	0.09318	0.003	0.01531	0.01012	< 0.02		1.0	< 0.0003	0.09218	0.00359	< 0.02	< 0.00005	1.7	0.91	< 0.008	0.12989	0.12989
BTC-SPW-10N (12") N	3/14/2016	277	0.014	0.34	0.15	< 0.00003	0.00287	0.00034	< 0.01	2.29143	0.10952	0.002	0.01844	0.01198	18.5		1.0	< 0.0003	0.11850	0.00462	0.54	< 0.00005	1.7	0.91	< 0.008	0.15354	0.15354
BTC-SPW-10N (36") N	3/14/2016	190	0.001	0.34	0.15	< 0.00003	0.00287	0.00034	< 0.01	2.29143	0.10952	0.006	0.01844	0.01198	< 0.02		1.0	0.0003	0.11850	0.00462	0.03	< 0.00005	1.7	0.91	< 0.008	0.15354	0.15354
BTC-SPW-10S (12") N	3/14/2016	200	< 0.001	0.34	0.15	< 0.00003	0.00287	0.00034	< 0.01	2.29143	0.10952	0.003	0.01844	0.01198	< 0.02		1.0	< 0.0003	0.11850	0.00462	< 0.02	< 0.00005	1.7	0.91	< 0.008	0.15354	0.15354
BTC-SPW-105 (12")	3/14/2016	200	< 0.001	0.34	0.15	< 0.00003	0.00287	0.00034	< 0.01	2.29143	0.10952	0.002	0.01844	0.01198	< 0.02		1.0	< 0.0003	0.11850	0.00462	< 0.02	< 0.00005	1.7	0.91	< 0.008	0.15354	0.15354
BTC-SPW-105 (36") N	3/14/2016	189	0.002	0.34	0.15	< 0.00003	0.00287	0.00034	< 0.01	2 29143	0.10952	0.002	0.01844	0.01198	< 0.02		1.0	0.0003	0.11850	0.00462	< 0.02	< 0.00005	1.7	0.91	< 0.008	0 15354	0.15354
BTC-SPW-11N (12")	3/14/2016	152	0.002	0.34	0.15	< 0.00003	0.00207	0.00034	< 0.01	1 8/1722	0.08820	< 0.000	0.01/120	0.00057	2 98	_	1.0	< 0.0003	0.08479	0.00402	0.44	< 0.00005	1.7	0.91	0.015	0 12286	0.12286
BTC-SPW-11N (26") N	3/14/2010	1/12	0.002	0.34	0.15	0.00003	0.00220	0.00028	< 0.01	1.8/1722	0.08820	0.002	0.01/130	0.00957	< 0.02		1.0	< 0.0003	0.08478	0.00330	< 0.02	< 0.00005	1.7	0.91	0.019	0.12286	0.12286
BTC-SDW-116 (12") N	3/14/2010	261	0.003	0.34	0.15	< 0.00007	0.00220	0.00028	< 0.01	1.8/722	0.08829	0.014	0.01439	0.00957	1 21		1.0	< 0.0003	0.00470	0.00330	1 21	< 0.00005	1.7	0.91	< 0.010	0.12200	0.12280
DIC-3PW-113 (12 ) N	5/14/2010	201	0.003	0.54	0.15	< 0.00003	0.00220	0.00028	< 0.01	1.04/23	0.08829	0.005	0.01439	0.00957	1.51		1.0	< 0.0003	0.08478	0.00330	1.21	< 0.00005	1./	0.91	< 0.008	0.12280	0.12280

mg/L - milligrams per Liter

a, b - Calculated Acute and Chronic aquatic life standards based on total hardness CaCO3 from the nearest corresponding surface water sample location and results and as per Circular DEQ-7 (October 2012)

c - Surface Water Human Health standards based on Circular DEQ-7 Montana Numeric Water Quality Standards (October 2012)

e - Surface Water Acute and Chronic Standard based on Circular DEQ-7 (October, 2012)

NE - Not established

N - Natural Sample

D - Duplicate Sample

-- - indicates no sample not collected/analyzed

< - Not detected above laboratory analytical method reporting limit</p>

d Reporting limit increased due to sample matrix.

Meets or exceeds Circular DEQ-7, Montana Numeric Water Quality Standards (October 2012)

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 TABLE 12

 In-Stream and Pond Sediment Pore Water Dissolved Metals Analytical Results

														Dis	solved M	etals (m	g/L)										
				Arsenic		Ca	admium			Chromiu	n		Copper			Iron			Lead		Manganese	Me	ercury			Zinc	
	Sample	Total Hard- ness	Lab Results	Aquat Stan	ic Life dard	Lab Results	Aqua Star	tic Life Idard	Lab Results	Aquat Stan	tic Life Idard	Lab Results	Aquat Stan	tic Life Idard	Lab Results	Aquat Star	tic Life ndard	Lab Results	Aquat Stan	ic Life dard	Lab Results	Lab Results	Aquat Stan	ic Life dard	Lab Results	Aquati Stan	ic Life dard
Sample ID	Date	(mg/L)		Acutee	<b>Chronic</b> <sup>e</sup>		Acutea	<b>Chronic</b> <sup>b</sup>		Acutea	<b>Chronic</b> <sup>b</sup>		<b>Acute</b> <sup>a</sup>	<b>Chronic</b> <sup>b</sup>		Acutea	<b>Chronic</b> <sup>b</sup>		Acutea	<b>Chronic</b> <sup>b</sup>			Acutee	Chronic <sup>e</sup>		Acutea	<b>Chronic</b> <sup>b</sup>
DEQ-7 S	Surface Wate	er HHS <sup>C</sup>	0.01			0.005			0.1			1.3			NE			0.015			NE	0.00005			2.0		
BTC-SPW-11S (36") N	3/14/2016	192	< 0.001	0.34	0.15	< 0.00003	0.00220	0.00028	< 0.01	1.84723	0.08829	0.005	0.01439	0.00957	< 0.02		1.0	< 0.0003	0.08478	0.00330	< 0.02	< 0.00005	1.7	0.91	< 0.008	0.12286	0.12286
BTC-SPW-12N (12") N	3/15/2016	241	< 0.001	0.34	0.15	< 0.00003	0.00202	0.00026	< 0.01	1.72887	0.08263	0.005	0.01334	0.00893	< 0.02		1.0	< 0.0003	0.07648	0.00298	< 0.02	< 0.00005	1.7	0.91	< 0.008	0.11472	0.11472
BTC-SPW-12N (12") D	3/15/2016	236	0.001	0.34	0.15	< 0.00003	0.00202	0.00026	< 0.01	1.72887	0.08263	< 0.002	0.01334	0.00893	< 0.02		1.0	< 0.0003	0.07648	0.00298	< 0.02	< 0.00005	1.7	0.91	< 0.008	0.11472	0.11472
BTC-SPW-12S (12") N	3/15/2016	267	0.002	0.34	0.15	< 0.00003	0.00202	0.00026	< 0.01	1.72887	0.08263	0.002	0.01334	0.00893	10.7		1.0	< 0.0003	0.07648	0.00298	0.52	< 0.00005	1.7	0.91	< 0.008	0.11472	0.11472
BTC-SPW-12S (36") N	3/15/2016	215	0.004	0.34	0.15	< 0.00003	0.00202	0.00026	< 0.01	1.72887	0.08263	0.004	0.01334	0.00893	8.45		1.0	< 0.0003	0.07648	0.00298	0.34	< 0.00005	1.7	0.91	< 0.008	0.11472	0.11472
BTC-SPW-13N (12") N	3/15/2016	190	< 0.001	0.34	0.15	< 0.00003	0.00189	0.00025	< 0.01	1.63892	0.07833	0.004	0.01254	0.00844	< 0.02		1.0	< 0.0003	0.07039	0.00274	< 0.02	< 0.00005	1.7	0.91	< 0.008	0.10855	0.10855
BTC-SPW-13N (36") N	3/15/2016	172	< 0.001	0.34	0.15	< 0.00003	0.00189	0.00025	< 0.01	1.63892	0.07833	0.003	0.01254	0.00844	< 0.02		1.0	< 0.0003	0.07039	0.00274	< 0.02	< 0.00005	1.7	0.91	< 0.008	0.10855	0.10855
BTC-SPW-13S (12") N	3/15/2016	159	< 0.001	0.34	0.15	< 0.00003	0.00189	0.00025	< 0.01	1.63892	0.07833	0.004	0.01254	0.00844	0.88		1.0	0.0003	0.07039	0.00274	0.20	< 0.00005	1.7	0.91	< 0.008	0.10855	0.10855
BTC-SPW-13S (36") N	3/15/2016	124	< 0.001	0.34	0.15	< 0.00003	0.00189	0.00025	< 0.01	1.63892	0.07833	0.005	0.01254	0.00844	< 0.02		1.0	< 0.0003	0.07039	0.00274	0.07	< 0.00005	1.7	0.91	< 0.008	0.10855	0.10855
BTC-WPPW-01 (12") N	3/16/2016	82	0.016	0.34	0.15	0.00913	0.00226	0.00028	< 0.01	1.89118	0.09039	0.915	0.01479	0.00981	0.04		1.0	0.0044	0.08793	0.00343	0.92	0.00037	1.7	0.91	1.210	0.12588	0.12588
BTC-WPPW-01 (36") N	3/16/2016	508	0.215	0.34	0.15	< 0.00003	0.00226	0.00028	< 0.01	1.89118	0.09039	0.002	0.01479	0.00981	66.2		1.0	< 0.0003	0.08793	0.00343	5.79	< 0.00005	1.7	0.91	< 0.008	0.12588	0.12588
BTC-WPPW-02 (12") N	3/15/2016	140	0.009	0.34	0.15	< 0.00003	0.00250	0.00030	< 0.01	2.05046	0.09801	< 0.002	0.01623	0.01067	2.9		1.0	< 0.0003	0.09971	0.00389	0.62	< 0.00005	1.7	0.91	< 0.008	0.13686	0.13686
BTC-WPPW-02 (36") N	3/15/2016	477	< 0.001	0.34	0.15	< 0.00003	0.00250	0.00030	< 0.01	2.05046	0.09801	< 0.002	0.01623	0.01067	3.67		1.0	< 0.0003	0.09971	0.00389	3.56	< 0.00005	1.7	0.91	< 0.008	0.13686	0.13686
GG-SPW-01E (12") N	3/10/2016	121	0.006	0.34	0.15	< 0.00003	0.00305	0.00035	< 0.01	2.40288	0.11485	< 0.002	0.01948	0.01259	0.64		1.0	< 0.0003	0.12758	0.00497	0.05	< 0.00005	1.7	0.91	< 0.008	0.16127	0.16127
GG-SPW-01E (36") N	3/10/2016	118	0.001	0.34	0.15	< 0.00003	0.00305	0.00035	< 0.01	2.40288	0.11485	< 0.002	0.01948	0.01259	0.51		1.0	< 0.0003	0.12758	0.00497	0.03	< 0.00005	1.7	0.91	< 0.008	0.16127	0.16127
SBC-SPW-01N (12") N	3/9/2016	326	0.055	0.34	0.15	< 0.00003	0.00270	0.00032	< 0.01	2.17877	0.10414	< 0.002	0.01740	0.01137	4.95		1.0	< 0.0003	0.10957	0.00427	7.06	< 0.00005	1.7	0.91	< 0.008	0.14573	0.14573
SBC-SPW-01S (12") N	3/9/2016	685	0.937	0.34	0.15	< 0.00003	0.00270	0.00032	< 0.01	2.17877	0.10414	< 0.002	0.01740	0.01137	7.87		1.0	< 0.0003	0.10957	0.00427	8.34	< 0.00005	1.7	0.91	< 0.008	0.14573	0.14573
SBC-SPW-02N (12") N	3/9/2016	702	d 5.100	0.34	0.15	0.155	0.00259	0.00031	< 0.01	2.10770	0.10074	d 39.7	0.01675	0.01098	d 633		1.0	0.001	0.10407	0.00406	14.50	< 0.00005	1./	0.91	95.000	0.14082	0.14082
SBC-SPW-02N (36") N	3/9/2016	740	d 3.300	0.34	0.15	0.109	0.00259	0.00031	< 0.01	2.10770	0.10074	d 29.9	0.01675	0.01098	d 361		1.0	0.0096	0.10407	0.00406	17.60	< 0.00005	1./	0.91	54.800	0.14082	0.14082
SBC-SPW-025 (12") N	3/9/2016	469	d 0.324	0.34	0.15	< 0.00003	0.00259	0.00031	< 0.01	2.10770	0.10074	0.003	0.01675	0.01098	10.5		1.0	0.0005	0.10407	0.00406	8.08	< 0.00005	1.7	0.91	0.023	0.14082	0.14082
SBC-SPW-U25 (36") N	3/9/2016	469	0.328	0.34	0.15	< 0.00003	0.00259	0.00031	< 0.01	2.10770	0.10074	< 0.002	0.01675	0.01098	13.2		1.0	< 0.0003	0.10407	0.00406	0.71	< 0.00005	1./	0.91	0.015	0.14082	0.14082
SBC-SPW-U3N (12") N	3/8/2016	456	0.005	0.34	0.15	0.00179	0.00257	0.00031	< 0.01	2.09342	0.10006	0.064	0.01662	0.01090	0.02		1.0	0.0013	0.10297	0.00401	0.71	< 0.00005	1./	0.91	0.148	0.13983	0.13983
SC-SPW-U1E (12") N	3/10/2016	151	0.002	0.34	0.15	0.00006	0.00601	0.00058	< 0.01	4.15335	0.19852	0.007	0.03656	0.02228	< 0.02		1.0	0.0003	0.29868	0.01164	< 0.02	< 0.00005	1./	0.91	0.011	0.28407	0.28407
SC-SPW-UIE (36") N	3/10/2016	147	< 0.001	0.34	0.15	< 0.00003	0.00601	0.00058	< 0.01	4.15335	0.19852	0.003	0.03656	0.02228	< 0.02		1.0	< 0.0003	0.29868	0.01164	< 0.02	< 0.00005	1./	0.91	< 0.008	0.28407	0.28407

mg/L - milligrams per Liter

a, b - Calculated Acute and Chronic aquatic life standards based on total hardness CaCO3 from the nearest corresponding surface water sample location and results and as per Circular DEQ-7 (October 2012)

- c Surface Water Human Health standards based on Circular DEQ-7 Montana Numeric Water Quality Standards (October 2012)
- e Surface Water Acute and Chronic Standard based on Circular DEQ-7 (October, 2012)
- NE Not established
- N Natural Sample
- D Duplicate Sample
- -- indicates no sample not collected/analyzed
- $\,<\,$  Not detected above laboratory analytical method reporting limit
- d Reporting limit increased due to sample matrix.
  - Meets or exceeds Circular DEQ-7, Montana Numeric Water Quality Standards (October 2012)

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Table 13 **Groundwater Field and General Chemistry Analytical Results** 

		Survey Data Field Parameters												Physio	chemical					Commor	n Anions			Common	Cations	1 uge 1 0/ 2	
															Hardness as	Acidity as		Total Diss.	Total Susp.		Bicarb as	Carbonate					
			MPF	DTW	GWF	sc	nH	Temn	ORP	DO	sc	nH	Turbid	itv	CaCO3	£03c3	Alkalinity	Solids	Solids	Sulfate	нсоз	as (03	Chloride	Calcium	Magnesium	Potassium	Sodium
Sample ID		Sample		(#)										,			, including	Solids		Junite			enioride		in agricolari	, otassiani	
Creareductor	Chand	Date	(ft AMSL)	(11)	(ft AMSL)	(µmhos/L)	(s.u.)	(ºC)	(mV)	(mg/L)	(µmhos/L)	(s.u.)	(NTU	)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
MDEQ 2012	a	aros				NE	NE	NE	NE	NE	NE	6.5 - 8.5	NE		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
AMC-23	N	3/11/2016	5452.52	8.15	5444.37	1498	6.9	9.2	-21.8	7.1	1480	7.1 H	144	н	609	< 4	210	1060	45	476	260	< 4	79	175	42	11	77
AMC-24	Ν	3/8/2016	5456.29	10.65	5445.64	515	6.5	9.9	15.3	2.2	500	6.6 H	9.2	н	194	< 4	77	366	< 10	123	94	< 4	21	54	15	5	22
AMC-24B	Ν	3/8/2016	5455.94	10.31	5445.63	1330	6.4	9.0	-20.25	0.3	1310	6.4 H	0.7	н	548	< 4	55	1100	< 10	641	67	< 4	21	159	37	13	85
AMC-24C	Ν	3/8/2016	5454.63	8.91	5445.72	1166	6.3	9.6	76	0.3	1120	6.6 H	0.3	н	416	< 4	72	898	< 10	509	87	< 4	20	126	25	13	86
AMW-11	Ν	3/11/2016	5445.24	6.14	5439.1	412	7.2	5.2	-58.3	1.2	405	7.4 H	27.1	н	153	< 4	150	246	11	29	190	< 4	17	45	10	4	22
AMW-11	D	3/11/2016	5445.24	6.14	5439.1	412	7.2	5.2	-58.3	1.2	405	7.4 H	24.2	н	153	< 4	150	253	10	28	190	< 4	17	45	10	4	22
AMW-13A	Ν	3/7/2016	5454.99	11.3	5443.69	1004	6.6	8.0	-7.6	3.0	1140	6.7 H	92.6	н	560	< 4	320	852	23	320	390	< 4	10	182	25	18	23
AMW-13A*	Ν	3/7/2016		11.3			6.6	8.0	-7.6	3.0					522.01									166.83	25.89	17.33	20.85
AMW-13B	Ν	3/8/2016	5454.97	10.43	5444.54	315	7.1	9.5	25.6	58.4	309	7.4 H	14.4	н	92	< 4	90	228	30	52	110	< 4	5	26	6	3	28
AMW-13B*	Ν	3/8/2016					7.1	9.5	25.6	584.0					94.6									25.82	7.32	3.65	30.03
AMW-13B2	Ν	3/8/2016	5451.76	11.55	5440.21	329	7.0	9.7	31	2.8	328	7.4 H	0.3	н	95	< 4	89	229	< 10	59	110	< 4	5	27	6	3	29
AMW-13B2*	Ν	3/8/2016					7.0	9.7	31	2.8					95.13									26.79	6.86	3.42	27.34
AMW-13C	Ν	3/8/2016	5449.81	9.63	5440.18	769	6.6	9.9	26.8	1.2	747	6.8 H	1.5	н	274	< 4	57	570	< 10	312	69	< 4	6	79	18	9	49
AMW-13C*	Ν	3/8/2016					6.6	9.9	26.8	1.2					276.61									77.76	20.03	8.78	47.45
BPS07-08A	Ν	3/9/2016		10.13		2693	6.6	10.0	116.9	0.3	2690	7.1 H	1.4	н	1110	< 4	470	1690	< 10	405	570	< 4	372	292	93	52	90
BPS07-08A	D	3/9/2016		19.61		21.33	6.6	10.0	63.7	2.9	2680	7.1 H	1	Н	1140	< 4	480	1700	< 10	405	580	< 4	372	299	95	52	89
BPS07-14A	Ν	3/9/2016		20.85		1217	6.8	9.1	-41.1	21.1	1190	6.9 H	130	н	385	< 4	150	712	24	190	180	< 4	158	116	23	10	78
BPS07-15A	N	3/9/2016		19.61		21.33	6.6	10.0	63.7	2.9	2130	7.1 H	7.2	н	288	< 4	140	1150	12	96	170	< 4	513	86	18	7	292
BPS07-16A	N	3/10/2016		7.52		462	6.1	6.6	96.2	1.9	450	6.5 H	2.3	н	165	< 4	77	287	< 10	80	93	< 4	28	46	12	4	25
BPS07-16B	N	3/10/2016	5452.17	7.41	5444.76	279	7.0	10.4	45.3	5.4	278	7.4 H	16.5	Н	100	< 4	86	192	15	43	100	< 4	4	30	6	2	16
BPS07-21B	N	3/11/2016		13.45		457	6.7	9.8	47.8	3.1	444	7.1 H	1	н	130	< 4	77	292	< 10	128	93	< 4	7	38	9	6	33
BPS07-21C	N	3/11/2016		12.66		813	6.6	10.1	51	1.2	804	6.9 H	0.2	н	271	< 4	63	575	< 10	328	77	< 4	7	80	18	9	57
BPS07-24	N	3/8/2016		7.81		2332	6.1	9.4	91.6	0.3	2230	6.5 H	0.4	н	1180	< 4	140	2050	< 10	1220	1/0	< 4	30	355	/1	20	100
BPS07-25	N	3/9/2016		10.77		1237	6.9	9.9	91.2	0.6	1230	7.4 H	3.3	н	519	< 4	290	789	< 10	208	350	< 4	99	145	38	9	59
BPS11-19A2	N N	3/10/2016	5445.62	4.11	5441.51	464	0.0	10.4	/1.0	5.9	465	6.9 H	0.2	н	101	< 4	5/	316	< 10	149	69	< 4	8	40	11	6	25
BPS11-19B	N	3/10/2016	5445.62	2.64	5442.98	953	6.4 2.0	10.2	71.0	0.4	938	0.8 H	0.6	н	379	< 4	55	149	< 10	407	67	< 4	12	25	25	3	47
B150-01 BT08-01*	N	3/10/2010		0.92		230	5.0	10.1	71.9	3.0	232	7.5 П	0.4	п	07 87 75	< 4	92	140	< 10	15	110	< 4	4	23	6.88	2	12.49
B198-01	N	3/10/2010	5456.65	0.9	5446.85	668	6.4	10.1	71.9	0.4		 67 H		ц	07.75 277									23.0	0.00	2.05	13.40
B198-02B	N	3/10/2010	5450.05	9.0	5440.65	222	6.8	10.3	79.2	0.4	222	0.7 H	0.4	п	125	< 4	96	215	< 10	237	120	< 4	7	26	2	2	16
BT98-05*	N	3/10/2010		8.9		522	6.8	10.3	71	4.4		7.2 11	0.2		118 11			215	< 10	45	120		,	35 73	8 7 02	2 12	12.06
BT99-01	N	3/10/2010		5.54		513	6.8	7 5	63.5	3.0	511	70 H	0.3	н	218	< 4	150	317	< 10	47	180	< 4	27	67	12	6	13
BT-99-01*	N	3/10/2016		5 54			6.8	7.5	63.5	3.0					207.93									66 41	10.23	4 68	9.67
BT99-04	N	3/10/2016		11 32		577	7.2	7.3	55.9	6.8	575	7.4 H	6.8	н	242	< 4	170	364	< 10	47	210	< 4	28	73	15	3	19
BT-99-04*	N	3/10/2016		11 32			7.2	7.3	55.9	6.8					231.52									72.38	12.34	2.58	14.04
51 55 04		5, 10, 2010		11.52		1		,	55.5	0.0	1		1		231.32			1						, 2.30	12.34	2.30	14.04

MPE - Measuring Point Elevation, feet above mean sea level

DTW - Depth to Water

GWE - Groundwater Elevation, feet above mean sea level

SC - Specific Conductance

Temp. - Temperature

ORP - Oxygen Reduction Potential

DO - Dissolved Oxygen

µmhos/L - Micromhos per liter

S.U. - Standard Units

ºC - Degrees centigrade

mV - Millivolts

mg/L - Milligrams per liter

NE - Not established

a - Montana Department of Environmental Quality (MDEQ) Human Health Standard from Circular DEQ-7, Montana Water Quality Standards (October 2012).

-- - Sample not collected / analyzed

< - Parameter not detected at or above the laboratory practical quantitation limit

- N Natural sample
- D Duplicate sample

\* - Samples collected/analyzed by Montana Bureau of Mines and Geology

d - Reporting limit increased due to sample matrix.

H - Analysis performed past recommended holding time

- Value exceeds water quality standard

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Table 13 **Groundwater Field and General Chemistry Analytical Results** 

																							·			
			S	urvey Da	ta		Fie	eld Paramet	ers					Phy	siochemical					Commo	n Anions			Commor	Cations	
														Hardness a	s Acidity as		Total Diss.	Total Susp.		Bicarb as	Carbonate					
			MPE	DTW	GWE	SC	рН	Temp.	ORP	DO	SC	pН	Turbidity	CaCO3	CaCO3	Alkalinity	Solids	Solids	Sulfate	HCO3	as CO3	Chloride	Calcium	Magnesium	Potassium	Sodium
Sample ID		Sample Date	(ft AMSL)	(ft)	(ft AMSL)	(µmhos/L)	(s.u.)	(ºC)	(mV)	(mg/L)	(µmhos/L)	(s.u.)	(NTU)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Groundwate	Standa	ards																								
MDEQ 2012	а					NE	NE	NE	NE	NE	NE	6.5 - 8.5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
BTC-DPT-01	Ν	4/8/2016		5.4		5	8.1	12.6	26.2	5.3	1000	7 H	365 H	278	< 4	160	712 D	470 D	234	200	< 4 D	86	85	16	7	34
BTC-DPT-02	Ν	4/8/2016		1.03		325	7.8	9.4	-16.6	1.7	329	7.2 H	7 H	114	< 4	120	217	27	27	140	< 4	12	32	8	4	20
BTC-DPT-02	D	4/8/2016		1.03		325	7.8	9.4	-16.6	1.7	327	7.2 H	7 H	116	< 4	120	215	22	28	140	< 4	12	33	8	4	21
BTC-DPT-03	Ν	4/8/2016		1.7			6.8	430.0	631	0.0	609	7.3 H	45.5 H	251	< 4	230	378	151	33	280	< 4	33	72	18	5	27
FP98-1	Ν	3/9/2016	5438.15	6.26	5431.89	4131	6.0	3.4	142.3	0.6	4050	6.7 H	359 H	2260	< 4	250	3700 d	366 d	2090 d	300	< 4 d	262	666	145	14	99
FP98-1B	Ν	3/9/2016	5456.96	24.07	5432.89	675	6.7	10.5	59.8	2.1	681	7.1 H	0.3 H	254	< 4	150	415	< 10	90	180	< 4	56	76	16	5	32
GS-29D	Ν	3/9/2016	5443.64	5.8	5437.84	1490	7.5	10.6	23.5	2.1	1490	7.9 H	0.5 H	334	< 4	150	1030	< 10	605	180	< 4	12	73	37	11	195
GS-29D*	Ν	3/9/2016		5.8			7.5	10.6	23.5	2.1				350.09									68.88	43.27	11.94	207.79
GS-29SR	Ν	3/9/2016		6.65		435	6.3	7.8	131.8	0.4	434	7 H	1.1 H	145	< 4	100	269	< 10	62	130	< 4	24	45	8	6	26
GS-29SR*	Ν	3/9/2016		6.65			6.3	7.8	131.8	0.4				143.9									42.76	9.02	7.24	27.77
MF-10	Ν	3/8/2016	5452.12	9.23	5442.89	648	6.4	8.7	33.2	1.4	594	6.6 H	206 H	211	< 4	89	421	89	169	110	< 4	28	59	16	6	25
MT98-05	Ν	3/10/2016		4.18		401	6.8	7.7	96.8	3.8	402	7.1 H	0.6 H	156	< 4	120	250	< 10	55	140	< 4	12	46	10	3	20
MT98-05*	Ν	3/10/2016		4.18			6.8	7.7	96.8	3.8				158.51									43.42	12.17	3.27	23.12
MT98-06	Ν	3/10/2016		3.39		240	6.8	8.6	116.2	2.3	242	7.2 H	2.5 H	98	< 4	96	150	< 10	18	120	< 4	4	28	7	3	11
MT98-06*	Ν	3/10/2016		3.39			6.8	8.6	116.2	2.3				98.59									26.23	8.04	2.98	12.13

MPE - Measuring Point Elevation, feet above mean sea level DTW - Depth to Water GWE - Groundwater Elevation, feet above mean sea level SC - Specific Conductance Temp. - Temperature ORP - Oxygen Reduction Potential DO - Dissolved Oxygen µmhos/L - Micromhos per liter S.U. - Standard Units ºC - Degrees centigrade

mV - Millivolts

mg/L - Milligrams per liter

NE - Not established

- -- Sample not collected / analyzed
- < Parameter not detected at or above the laboratory practical quantitation limit
- N Natural sample
- D Duplicate sample
- \* Samples collected/analyzed by Montana Bureau of Mines and Geology
- d Reporting limit increased due to sample matrix.
- H Analysis performed past recommended holding time

- Value exceeds water quality standard

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a - Montana Department of Environmental Quality (MDEQ) Human Health Standard from Circular DEQ-7, Montana Water Quality Standards (October 2012).

						[	Dissolved Meta	s			
		Sample	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Zinc
Sample ID		Date	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Groundwate DEQ-7	er Sta ' a	andards	0.01	0.005	0.1	1.3	NE	0.015	NE	0.002	2
AMC-23	Ν	3/11/2016	< 0.001	0.00514	< 0.01	0.004	3.89	< 0.0003	0.3	< 0.00005	0.493
AMC-24	Ν	3/8/2016	< 0.001	0.00083	< 0.01	< 0.002	0.78	< 0.0003	0.07	< 0.00005	0.549
AMC-24B	Ν	3/8/2016	0.005	0.00646	< 0.01	0.12	< 0.02	< 0.0003	< 0.02	< 0.00005	1.28
AMC-24C	Ν	3/8/2016	0.008	0.00406	< 0.01	0.056	< 0.02	< 0.0003	< 0.02	< 0.00005	0.433
AMW-11	Ν	3/11/2016	0.013	0.00045	< 0.01	< 0.002	1.11	< 0.0003	1.47	< 0.00005	0.163
AMW-11	D	3/11/2016	0.014	0.00046	< 0.01	0.002	1.11	< 0.0003	1.47	< 0.00005	0.162
AMW-13A	Ν	3/7/2016	0.001	0.00174	< 0.01	0.01	17.5	< 0.0003	0.32	< 0.00005	0.388
AMW-13A*	Ν	3/7/2016	0.0011	0.0017	0.00059 J	0.01465	15.778	< 0.00015	0.276		0.36732
AMW-13B	Ν	3/8/2016	0.004	0.00032	< 0.01	< 0.002	< 0.02	< 0.0003	< 0.02	< 0.00005	0.026
AMW-13B*	Ν	3/8/2016	0.00327	0.00023 J	0.00084	0.00117 J	< 0.015	< 0.00006	< 0.002		0.02321
AMW-13B2	Ν	3/8/2016	0.005	0.00048	< 0.01	0.002	< 0.02	< 0.0003	< 0.02	< 0.00005	0.052
AMW-13B2*	Ν	3/8/2016	0.0046	0.00045	0.0005	0.00181 J	< 0.015	< 0.00006	< 0.002		0.04586
AMW-13C	Ν	3/8/2016	0.006	0.00219	< 0.01	< 0.002	< 0.02	< 0.0003	< 0.02	< 0.00005	0.197
AMW-13C*	Ν	3/8/2016	0.00478	0.00199	0.00029 J	0.0007 J	< 0.015	< 0.00006	< 0.002		0.17727
BPS07-08A	Ν	3/9/2016	0.092	0.00247	< 0.01	0.129	< 0.02	< 0.0003	13.1	< 0.00005	0.306
BPS07-08A	D	3/9/2016	0.089	0.0025	< 0.01	0.128	< 0.02	< 0.0003	13.3	< 0.00005	0.313
BPS07-14A	Ν	3/9/2016	0.123	0.00042	< 0.01	0.017	11	0.0013	2.2	< 0.00005	4.07
BPS07-15A	Ν	3/9/2016	0.302	0.00273	< 0.01	0.008	< 0.02	< 0.0003	0.03	< 0.00005	0.284
BPS07-16A	Ν	3/10/2016	< 0.001	0.00207	< 0.01	0.003	< 0.02	< 0.0003	< 0.02	< 0.00005	0.828
BPS07-16B	Ν	3/10/2016	0.001	0.00035	< 0.01	< 0.002	< 0.02	< 0.0003	< 0.02	< 0.00005	0.011
BPS07-21B	Ν	3/11/2016	0.007	0.002	< 0.01	< 0.002	< 0.02	< 0.0003	< 0.02	< 0.00005	0.221
BPS07-21C	Ν	3/11/2016	0.006	0.00251	< 0.01	< 0.002	< 0.02	< 0.0003	< 0.02	< 0.00005	0.208
BPS07-24	Ν	3/8/2016	0.01	0.0175	< 0.01	0.667	< 0.02	< 0.0003	< 0.02	< 0.00005	4.05
BPS07-25	Ν	3/9/2016	0.032	0.00203	< 0.01	0.086	< 0.02	< 0.0003	2.03	< 0.00005	0.34
BPS11-19A2	Ν	3/10/2016	0.001	0.00063	< 0.01	< 0.002	< 0.02	< 0.0003	< 0.02	< 0.00005	0.072
BPS11-19B	Ν	3/10/2016	0.005	0.00294	< 0.01	0.041	< 0.02	< 0.0003	< 0.02	< 0.00005	0.349

# Table 14 Groundwater Metals Analytical Results

### Notes:

Concentrations are presented as dissolved fraction. Samples were field filtered using a disposable 0.45 micro in-line filter

mg/L - Milligrams per liter

NE - Not established

a - Montana Department of Environmental Quality (MDEQ) Human Health Standard from Circular DEQ-7, Montana Water Quality Standards (October 2012).

-- - Sample not collected / analyzed

< - Parameter not detected at or above the laboratory practical quantitation limit

N - Natural sample

D - Duplicate sample

J - Estimated quantity above detection limit but below reporting limit

- Value meets or exceeds groundwater standard

\* - Samples collected/analyzed by Montana Beurea of Mines and Geology

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											Page 2 d
						Γ	Dissolved Metal	S			
Sample ID		Sample Date	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Zinc (mg/L)
Groundwat DEQ-7	er Sta 7 a	andards	0.01	0.005	0.1	1.3	NE	0.015	NE	0.002	2
BT98-01	Ν	3/10/2016	0.001	< 0.00003	< 0.01	< 0.002	< 0.02	< 0.0003	< 0.02	< 0.00005	< 0.008
BT98-01*	Ν	3/10/2016	0.00101	< 0.0001	0.00052	< 0.0005	< 0.015	< 0.00006	< 0.002		< 0.0005
BT98-02B	Ν	3/10/2016	< 0.001	0.00143	< 0.01	< 0.002	< 0.02	< 0.0003	< 0.02	< 0.00005	0.062
BT98-05	Ν	3/10/2016	0.001	< 0.00003	< 0.01	< 0.002	< 0.02	< 0.0003	< 0.02	< 0.00005	< 0.008
BT98-05*	Ν	3/10/2016	0.00088	< 0.0001	0.00047 J	< 0.0005	< 0.015	< 0.00006	< 0.002		< 0.0005
BT99-01	Ν	3/10/2016	0.003	< 0.00003	< 0.01	0.002	< 0.02	< 0.0003	< 0.02	< 0.00005	< 0.008
BT-99-01*	N	3/10/2016	0.00228	< 0.0001	0.00061	0.00178 J	< 0.015	< 0.00006	< 0.002		< 0.0005
BT99-04	Ν	3/10/2016	0.004	< 0.00003	< 0.01	0.002	< 0.02	< 0.0003	< 0.02	< 0.00005	< 0.008
BT-99-04*	N	3/10/2016	0.0036	< 0.0001	0.00111	0.00176	< 0.015	< 0.00006	< 0.002		< 0.0005
BTC-DPT-01	Ν	4/8/2016	0.062	0.00046	< 0.01	< 0.002	10.3	0.0005	2.7	< 0.00005	0.442
BTC-DPT-02	N	4/8/2016	0.004	0.00017	< 0.01	< 0.002	0.31	< 0.0003	0.53	< 0.00005	0.051
BTC-DPT-02	D	4/8/2016	0.003	0.00018	< 0.01	< 0.002	0.33	< 0.0003	0.54	< 0.00005	0.049
BTC-DPT-03	Ν	4/8/2016	0.005	0.00051	< 0.01	0.003	0.16	< 0.0003	1.34	< 0.00005	< 0.008
FP98-1	Ν	3/9/2016	0.087	0.037	< 0.01	0.531	16.4	< 0.0003	56.9	< 0.00005	24.1
FP98-1B	N	3/9/2016	0.001	0.00482	< 0.01	0.003	< 0.02	< 0.0003	1.11	< 0.00005	0.488
GS-29D	Ν	3/9/2016	0.025	0.00011	< 0.01	< 0.002	< 0.02	< 0.0003	< 0.02	< 0.00005	0.028
GS-29D*	N	3/9/2016	0.02063	< 0.00025	< 0.00025	0.00128	< 0.038	< 0.00015	< 0.005		0.02365
GS-29SR	Ν	3/9/2016	0.005	0.00861	< 0.01	0.505	< 0.02	< 0.0003	0.16	< 0.00005	1.83
GS-29SR*	N	3/9/2016	0.00415	0.00814	0.00042 J	0.54845	< 0.015	< 0.00006	0.152		1.67742
MF-10	Ν	3/8/2016	0.019	0.00487	< 0.01	0.042	2.06	< 0.0003	0.67	< 0.00005	16
MT98-05	N	3/10/2016	0.001	< 0.00003	< 0.01	< 0.002	< 0.02	< 0.0003	< 0.02	< 0.00005	< 0.008
MT98-05*	Ν	3/10/2016	0.00111	< 0.0001	0.00052	0.00113 J	< 0.015	< 0.00006	< 0.002		0.00641
MT98-06	N	3/10/2016	0.001	< 0.00003	< 0.01	0.003	< 0.02	< 0.0003	< 0.02	< 0.00005	< 0.008

0.00186

J

Table 14 **Groundwater Metals Analytical Results** 

Notes:

MT98-06\*

> Concentrations are presented as dissolved fraction. Samples were field filtered using a disposable 0.45 micro in-line filter

N 3/10/2016

mg/L - Milligrams per liter

NE - Not established

a - Montana Department of Environmental Quality (MDEQ) Human Health Standard from Circular DEQ-7, Montana Water Quality Standards (October 2012).

0.00089

< 0.0001

0.0004

-- - Sample not collected / analyzed

< 0.015

< - Parameter not detected at or above the laboratory practical quantitation limit

< 0.002

N - Natural sample

D - Duplicate sample

J - Estimated quantity above detection limit but below reporting limit

< 0.00006

- Value meets or exceeds groundwater standard

\* - Samples collected/analyzed by Montana Beurea of Mines and Geology

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0.00228

APPENDIX D AQUIFER TEST ANALYSIS OUTPUT FORMS









# APPENDIX E SITE PHOTOGRAPHS

## BUTTE AREA ONE DATA GAP INVESTIGATION SILVER BOW AND BLACKTAIL CREEK CORRIDORS TETRA TECH PROJECT 114-571057



## BUTTE AREA ONE DATA GAP INVESTIGATION SILVER BOW AND BLACKTAIL CREEK CORRIDORS TETRA TECH PROJECT 114-571057



## BUTTE AREA ONE DATA GAP INVESTIGATION SILVER BOW AND BLACKTAIL CREEK CORRIDORS TETRA TECH PROJECT 114-571057



# APPENDIX F DATABASE FILES