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A TETRA TECH COMPANY

ROSEMONT COPPER WORLD PROJECT

HYDROGEOLOGICAL CHARACTERIZATION



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LIST OF ABBREVIATIONS

ADWR	Arizona Department of Water Resources
AGS	Arizona Geological Survey
amsl	above mean sea level
ASTM	ASTM International
AWQS	Aquifer Water Quality Standards
cfs	cubic feet per second
DIA	Discharge Impact Area
EC	electrical conductivity
ESA	Endangered Species Act
°F	degrees Fahrenheit
ft	feet
ft/d	feet per day
GIS	geographic information system
gpm	gallons per minute
GMWL	Global Meteoric Water Line
GWSI	Groundwater Site Inventory
HLP	Heap Leach Pad
LMWL	Local Meteoric Water Line
NWIS	National Water Information System
ORP	oxidation-reduction potential
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
SVCO	semi-volatile organic compounds
TAMA	Tucson Active Management Area
TSF	Tailings Storage Facility
VOC	volatile organic compounds
VWP	vibrating wire piezometer
USCS	Unified Soil Classification System
USFS	United State Forest Service
USGS	United States Geological Survey
WRF	Waste Rock Facility
yr	year

EXECUTIVE SUMMARY

The hydrogeologic characterization for the Rosemont Copper World Project (the Project) evaluates the regional and area hydrogeology associated with the Project's main facilities which include: six open pits, two tailings storage facilities, one waste rock facility, one heap leach pad, and one plant processing facility. The Project is situated across the Santa Rita mountains on private land, with the Rosemont pit located east of the ridgeline, the Broadtop Butte pit straddling the ridgeline and the remaining facilities located to the west. Waste rock will backfill three of the open pits and be placed on both sides of the ridgeline. The mining sequence will run from west to east, beginning with the satellite pits (Peach, Elgin, Heavy Weight, Copper World, Broadtop Butte) and ending with the Rosemont Pit.

The climate in the Tucson area is of an arid continental desert. Summer high temperatures are above 90 degrees Fahrenheit with significant cooling at night. Late summer is characterized by occasional and scattered monsoonal rainstorms that are often short but of high intensity. Winter is dry and mild with overnight temperatures typically above freezing. The region receives between 16 and 22 inches of precipitation per year. Potential evaporation in the regional area is approximately 91 inches per year.

In the immediate vicinity of the Project area, the ground surface is cut by numerous ephemeral drainages that convey surface water runoff resulting from higher intensity precipitation events. They are dry almost year-round. The water table is generally too far beneath the surface to support riparian vegetation. Channel losses to bedrock are interpreted as extremely minor due to low permeability, steep topographic grade and infrequency of flow. Consequently, most precipitation quickly passes through the system and reports to the larger trunk streams further into the basins.

In the regional area, small springs that occur are due to localized storage or perched water. Some may be fed by more regional groundwater.

Pumping wells in the Project area produce very low quantities of water, owing to the low permeability of water bearing rocks and disconnected and compartmentalized nature of the groundwater system. None of the inventoried wells are within the Discharge Impact Area defined by the Project groundwater particle transport model (Piteau, 2022), except those located within Rosemont private land boundaries.

The Project area contains a sequence of Proterozoic metasediments and intrusive rocks overlain by Paleozoic carbonate rocks, quartz sandstone, siltstone, Mesozoic sedimentary and igneous rocks, and Cenozoic Basin-Fill formations and igneous rocks.

The structure of the Project area is very complex. Most of the host rocks at the Rosemont deposit dip steeply (approximately 55 to 65 degrees) to the east. The principal faults in the area include the nearly horizontal Flat fault and the younger north-striking Backbone fault system. The Flat fault places mostly Mesozoic sedimentary rocks over the older Paleozoic units. The post-mineral Backbone fault system defines the western boundary of the Rosemont Pit ore deposit and separates the mineralized, Paleozoic limestone units on the east from the Proterozoic granodiorite and lower Paleozoic quartzite on the west. The Peach-Elgin deposit is underlain by a thrust fault that juxtaposes Paleozoic and Mesozoic sediments and late-Cretaceous-Paleocene quartz-lattice porphyry over Precambrian granodiorite. The thrust fault has been largely or wholly eroded in the Heavy Weight, Copper World and Broadtop Butte deposit areas.

Many studies have been conducted in the Project vicinity to characterize geology, mineral resources and hydrogeology, including exploration drilling, field investigations and modeling studies. Piteau Associates conducted a study from March 3 through November 15, 2021, to characterize the hydrogeology of the proposed west side satellite pits and facilities. The study consisted of 30 characterization boreholes, hydraulics testing, vibrating wire piezometer and open standpipe completions, water level monitoring, groundwater sampling, test pit infiltration testing, and seep and spring surveys.

Hydraulic testing was conducted during the 2021 hydrogeologic characterization program within each borehole using constant head injection-recovery and packer testing methods. Twelve injection-recovery tests and 45 packer tests were performed and analyzed. The test results collectively demonstrate and confirm the very low hydraulic conductivity ranges in bedrock across the Project area, with hydraulic conductivities ranging between $1.5\text{E-}03$ and $1.4\text{E-}00$ ft/d.

Water quality sampling was conducted at 2021 hydrogeologic characterization program OSP groundwater monitoring. The groundwater samples were tested for major ions and general chemistry parameters, dissolved metals, total recoverable metals, radiochemicals, stable isotopes, volatile organic compounds, semi-volatile organic compounds. The results indicate generally good water quality.

The description of groundwater conditions is based on, and supported by, the previous and the 2021 field programs including borehole lithology, hydraulic testing and piezometric data. It is further supported by the geologic and structural mapping and modeling of the area. Overall, the groundwater system in the Project area is limited and discontinuous. There is minimal storage due to the low porosity ranges of the geologic units and no significant groundwater flow or movement over significant distances due to the lack of established interconnected fracture networks. The complex geologic framework and geometry of contacts, fault traces and intrusive features create significant additional discontinuity in the bedrock system which further limits groundwater

movement. The steep topography, low annual rainfall total and flashy nature of monsoon rains, in combination with the bedrock hydraulics, means that groundwater recharge is limited. Hence, the broad scale groundwater flux across the Project area is extremely small. This is further supported by the often elevated piezometric levels and strong hydraulic gradients that demonstrate lack of groundwater movement or ability for the bedrock compartments to drain. Any locally encountered pockets of groundwater are associated with storage in local fracture zones. Groundwater resources in the bedrock system are therefore not sustainable as reflected in the lack of pre-existing development in the area.

For the mining areas west of the ridgeline, which include the Peach, Elgin and Heavy Weight pits, there is very minimal bedrock groundwater. Proactive dewatering measures are not anticipated to support dewatering mining operations. Very small rates of pit seepage may occur as the excavations approach ultimate limits but will likely be unnoticed due to evaporative consumption. The bedrock system in each case has negligible storage, very low bulk hydraulic conductivity and geologic structures/contacts that create system boundaries and limits at local scales. There is currently an inferred bedrock hydraulic gradient toward the northwest; however, bedrock groundwater flux across the area is small.

1 INTRODUCTION

1.1 Report Purpose

This Rosemont Copper World Project Hydrogeological Characterization (Report) presents a description of known hydrogeologic conditions in the Rosemont Copper World Project (the Project) area and the broader region. The initial sections of the Report provide general overview of regional and local conditions based on prior studies and literature. The later sections of the Report focus on the specific hydrogeologic conditions associated with each of the proposed mining areas and facilities that comprise the Project, supported by prior and recently completed site characterization field programs. This Report is organized as follows:

- Section 1 provides a brief history of mining and development in the Helvetia and Rosemont mining districts and the plan for the Project.
- Section 2 provides a general narrative of the components and conditions that contribute to surface and groundwater hydrology of the broad regional system surrounding the Project area.
- Section 3 summarizes prior field investigations and results of the additional field investigation completed in 2021 that contribute to understanding of Project area-specific hydrogeologic conditions.
- Section 4 presents focused discussions of the hydrogeologic conditions in the Project area, including all open pit mining areas and facilities.
- Section 5 presents a summary of the conceptual hydrogeologic model of the Project area.

1.2 Site Location

The Project is located on private land, approximately 12 miles southeast of Sahuarita, Arizona, in Pima County (Figure 1.1). The Project will consist of six open pits, distributed in the Santa Rita Mountain Range, two tailings storage facilities (TSFs), a heap leach pad (HLP), a waste rock storage facility (WRF), a processing facility, and ancillary facilities to support the operation (Figure 1.2).

1.3 Project Description

The Project will be developed as a conventional truck and shovel operation with both a milling and processing plant for sulfide ore, a HLP and associated solvent-extraction and electrowinning plant for oxide ore, and a copper concentrate leach circuit. Six open pits (one primary pit and five satellite pits) will be mined in a general west to east progression. From west to east, the open pit mining areas include Peach, Elgin, Heavy Weight, Copper World, Broadtop Butte and Rosemont. The

associated processing facilities will be located on the west side of the Santa Rita Mountains along with two conventional tailings facilities and the HLP. Waste rock storage will occur on both sides of the range. Utilities (power and water lines) will come from the west to service the Project. Fresh water for the Project will come from well fields located near the Town of Sahuarita and planned onsite production wells. The operational life of the Project is about 15 years.

1.4 Site and Mining History

The first recorded mining activity in the Helvetia-Rosemont mining district occurred in 1875, and the mining district was officially established in 1878. Production from mines on both sides of the Santa Rita ridgeline supported the construction and operation of two smelters. Copper production from the district ceased in 1951 after the production of about 227,300 tons of ore.

By the late 1950s, the Banner Mining Company (Banner) had acquired most of the claims in the area and had drilled the discovery hole into the Rosemont deposit on the east side of the ridge. In 1963, Anaconda Mining Co. acquired options to lease the Banner holdings. Over the next ten years, Anaconda carried out an extensive drilling program on both sides of the ridgeline.

In 1973, the Anaconda Mining Co. and Amax Inc. formed a 50/50 partnership (Anamax Mining Co. [Anamax]) to develop the property. In 1985, Anamax ceased operations and liquidated their assets. ASARCO Inc. (Asarco) purchased the patented and unpatented mining claims from Anamax's real estate interests in August 1988 and renewed exploration and engineering studies. In 1999, Grupo Mexico acquired the Helvetia-Rosemont property through a merger with Asarco. In 2004, Grupo Mexico sold the property to a Tucson real estate developer.

In April 2005, Augusta Resources purchased the property from Triangle Ventures LLC and initiated a series of extensive drill programs on the property known as the Rosemont Copper Project, owned and operated by Rosemont Copper Company. Hudbay Minerals acquired Rosemont Copper Company, and its parent company Augusta Resources, in 2014.

2 GENERAL OVERVIEW

2.1 Hydrographic Setting

The Project area occupies range front to rugged mountainous topography in the northeastern and northwestern flanks of the Santa Rita Mountains (Figures 1.1 and 1.2). The Project area is part of the Basin and Range physiographic province characterized by high mountain ranges adjacent to alluvial filled basins (M3 Engineering, 2007). The terrain is mountainous and rugged at the higher elevations and ranges from 3,600 to 6,300 feet above mean sea level (ft amsl). Alluvial terraces and fans generally occur at elevations less than 4,250 ft amsl in the Project area.

Project area soils range from residual soils formed on granite or limestone in higher elevation mountainous terrain to soils formed in transported alluvial sediments that occur on the piedmont slopes flanking the Santa Rita Mountains (Batchily et al., 2003) (Figure 2.1). There are also areas of soils formed in basin floor areas, stream terraces, and flood plains. The soils range in age from recent depositions to soil material one to two million years of age.

2.1.1 Topography

West Side

On the west slope of the Project area, mountainous and rugged terrain occurs at elevations that range from approximately 3,600 ft to 6,300 ft amsl. Starting at approximately 4,250 ft amsl, the landscape transitions to alluvial fans and terraces on a northwest gradient down to approximately 2,800 ft amsl near the Santa Cruz River.

There are three main contributing basins on the west slope of the Project area, which include Sycamore, Box and Sawmill Canyons. These basins generally drain to the northwest.

East Side

The east slope of the Project area is comprised mainly of rugged mountainous terrain at elevations that range from approximately 5,000 to 6,300 ft amsl.

There are three main contributing basins on the east side of the Project area, which include Barrel, Wasp, and McCleary Canyons. A network of small arroyos from Wasp and McCleary Canyons feed the main Barrel Canyon drainage, which drains to Davidson Canyon. The basins primarily drain to the north and east.

2.1.2 Vegetation

West Side

Vegetation on the west slope beyond the Project catchment area is Madrean evergreen woodlands, particularly at the higher elevations with rugged mountainous terrain. The west slope has expansive semi-desert grassland associated with alluvium fans and terraces that extend west from the higher elevation mountainous terrain to the Santa Cruz River.

East Side

Vegetation on the east slope beyond the Project catchment area generally consists of Madrean evergreen woodlands with oaks and junipers interspersed with grasses, shrubs and forbes on the higher elevation portions. Semi-desert grasslands are primarily located in the lower elevations and are characterized as open grasslands with widely scattered shrubs and cactuses.

2.1.3 Soils

West Side

Soils on the west slope are formed on granite or limestone at higher elevations with mountainous terrain and are mainly assigned to hydrologic group D (Figure 2.1). The group D soils in this area are interspersed with group C soils, which have a slow rate of infiltration rate when thoroughly wet and generally have a restrictive layer that impedes the downward movement of water at a depth greater than 20 inches from the soil surface.

At an elevation of approximately 4,250 ft amsl, soils transition to alluvial fans and terraces and are assigned to hydrologic group A. Group A soils on the west slope are also interspersed with hydrologic group C soils. Layers of hard caliche are common and can limit percolation through the soil profile.

East Side

East slope soils are primarily residual soils formed on granite associated with mountainous terrain and are assigned to hydrologic group D (Figure 2.1).

2.2 Climate

Climatological data from stations representative of the Project area are summarized in Table 2.1. The period of record for the stations ranges from 1916 through 2007 and includes precipitation, temperature, and pan evaporation rates (WRCC, 2021). Data used to support technical studies for

the Project include precipitation and temperature data from the Helvetia monitoring station for the period 1916-1950 and pan evaporation data from the Nogales monitoring station for the period 1952-2007.

Other stations within an approximate 30-mile radius of the Project and for various time periods include Canelo 1 NW (1910-2007), Santa Rita Experimental Range (1950-2005), Tucson International Airport (TIA) (1948-2016), Tucson U of A (1894-2007), and Rosemont (2006-2008) (WRCC, 2021).

2.2.1 Precipitation

The monthly average precipitation for the Project site from the Helvetia monitoring station is summarized in Table 2.1 and shown on Figure 2.2. The minimum monthly average precipitation is 0.28 inches in May, the maximum monthly average precipitation is 4.15 inches in August, and the total annual average precipitation is 19.73 inches.

Table 2.1: Monthly Precipitation, Temperatures and Evaporation

Month	Precipitation ¹ (inches)	High ¹ (°F)	Low ¹ (°F)	Pan Evaporation ² (inches)
January	1.58	57.9	35.9	3.59
February	1.72	61.1	38.2	4.46
March	1.14	66.4	42.4	7.01
April	0.52	74.8	49.4	9.35
May	0.28	82.9	56	11.91
June	0.67	92.1	64.4	13.31
July	4.05	91.3	67.6	10
August	4.15	87.9	65.8	8.28
September	2.19	86.5	63.4	8.06
October	0.68	78.3	54.5	7.17
November	1.22	67.8	43.6	4.49
December	1.52	60.5	38.3	3.57
Total/Annual Average	19.73	75.6	51.6	91.2

Notes: Total presented for precipitation and pan evaporation, annual average presented for high and low temperatures.

1 – Helvetia, 2 - Nogales

2.2.2 Temperature

The monthly average high and low temperatures for the Helvetia monitoring station are summarized in Table 2.1 and shown on Figure 2.2. The maximum average high temperature is 92.1 °F in June, and the minimum average low temperature is 35.9 °F in January.

2.2.3 Evaporation

The average monthly evaporation for the Project site from the Nogales monitoring station is summarized in Table 2.1 and shown on Figure 2.2. The minimum average pan evaporation is 3.57 inches in December, and the maximum average pan evaporation is 13.31 inches in June.

2.3 Surface Water

2.3.1 Regional Surface Water

All of the Project mining areas and facilities are in the upper reaches of minor tributaries. There is very minimal contributing catchments up-slope of the site.

At a broader regional level, the Project area general sits within two 8th-order stream basins: the Rillito Basin to the east and the Upper Santa Cruz Basin to the west (Figure 2.3). The crest of the Santa Rita Mountains is the dividing line between these two basins. Within these basins, the principal surface drainages are the Santa Cruz River, Davidson Canyon Wash and Cienega Creek (Figure 2.3).

Stream flows in the region are mostly limited to rainfall runoff and are extremely variable. They range from zero during dry periods to short peaks of several tens of thousands of cubic feet per second (cfs) during monsoon events. The variability in stream flow coincides with the range of weather systems that occur in southern Arizona, including intense short-duration summer monsoonal storms, early fall cyclonic storms with wide-spread, high-intensity precipitation events, winter frontal storms that deliver lower intensity, long-duration precipitation events, and runoff of winter snow melt.

Concentrated runoff and flow in the channels can contribute to groundwater system recharge where the underlying ground is permeable. Most local recharge is into valley floor gravels and is consumed by evapotranspiration from phreatophytes. Recharge to bedrock in the mountains is extremely small due to the low permeability, lack of soil and high runoff. Discharge of local groundwater to surface stream channels in the smaller tributaries is low.

Santa Cruz River

The Santa Cruz River is located about 10 miles west of the Project area. It courses to the north through Green Valley and Sahuarita in the Upper Santa Cruz Basin. In this vicinity, the river is an ephemeral feature that is usually dry and flows only locally during significant rainfall runoff events.

The United States Geological Survey (USGS) has operated a gage station on the Santa Cruz River at Continental (station No. 09482000) since May 5, 1940. The mean annual flow ranges from 0.261 cfs to 206 cfs, and the mean daily flow ranges from 0 cfs to 17,800 cfs. The maximum discharge of 45,000 cfs was recorded on Oct. 2, 1983. There is no flow for most of each year.

Davidson Canyon

There are no perennial surface-water reaches within the Davidson Canyon watershed. Davidson Canyon Wash flows periodically in response to stormwater runoff.

The USGS has operated a gage on Barrel Canyon, a tributary of Davidson Creek near Sonoita, AZ, (station No. 09484580) since January 23, 2009. The mean annual flow ranges from 0.036 cfs to 0.580 cfs, and the mean daily flow ranges from 0 cfs to 72.5 cfs. The maximum discharge of 1,780 cfs was recorded on September 9, 2011. There is no flow for most of each year.

A discontinued USGS station on Davidson Canyon Wash near Vail, AZ (station No. 09484590) was in operation between February 1, 1968, and September 29, 1975. The mean annual flow ranges from 0.001 cfs to 1.44 cfs, and the mean daily flow ranges from 0 cfs to 35 cfs. The maximum discharge of 6,880 cfs was recorded on July 20, 1970. There is no flow for most of each year. For the period of record (2,798 days), only about 780 days had recorded flows, an average of about 100 days of flow per year.

Cienega Creek

Cienega Creek is located about 10 miles east of the Project area. It courses to the north through the Rillito Basin and then towards the northwest and Tucson. Cienega Creek can be divided into two reaches: 1) an upper reach that drains the central valley; and 2) a lower reach that flows through a narrow valley and empties into Pantano Wash. The upper reach is ephemeral and flows only in response to storm events during the summer monsoon season. The upper and lower reaches are separated by bedrock outcrops that form a feature generally known as the "Narrows". Bedrock at the Narrows forces groundwater into Cienega Creek's alluvial streambed creating short perennial reaches. Most of Cienega Creek is characterized by ephemeral runoff from local storm events.

The USGS has operated a gage station on Cienega Creek near Sonoita, AZ (station No. 09484550) since August 18, 2001. The mean annual flow ranges from 0.661 cfs to 3.86 cfs, and the mean

daily flow ranges from 0 cfs to 534 cfs. The maximum estimated discharge of 4,720 cfs was recorded on July 28, 2007. There is no flow for most of each year. The baseflow estimates are evident during May and June, which are the driest months of the year. The lowest average monthly Cienega Creek flow data at Sonoita is during June. Although zero flow was observed in June, the Sonoita gage typically indicates streamflow at this location. The mean June streamflow is 0.23 cfs (water year 2020). However, variable June streamflow shows that precipitation and stormwater runoff may be influencing these measurements.

A discontinued USGS station on Cienega Creek near Pantano, AZ (station No. 09484560) operated between March 1, 1968, and September 29, 1975. The mean annual flow ranges from 0.543 cfs to 6.21 cfs, and the mean daily flow ranges from 0 cfs to 54 cfs. There is no flow for most of each year. For the period of record (2,768 days), only about 170 days had recorded flows, an average of about 22 days per year.

2.3.2 Local Surface Water

In the immediate vicinity of the Project area, the ground surface is cut by numerous named and unnamed dry washes, arroyos, gulches, and small canyons (Figure 2.4). Despite the variety of words used to describe these features, they all are ephemeral drainages that convey surface water runoff resulting from higher intensity precipitation events. They are dry almost year-round. The water table is generally too far beneath the surface to support riparian vegetation. Channel losses to bedrock are interpreted as extremely minor due to low permeability, steep topographic grade and infrequency of flow. Consequently, most precipitation quickly passes through the system and reports to the larger trunk streams further into the basins.

The topographic limits of the ephemeral drainages are generally high along the crest of the Santa Rita Mountains. They form dendritic patterns that may reach the regional streams discussed in Section 2.3.1 under large flow event conditions.

On the west side of the Santa Rita Mountains, the Project area sits in portions of the Sycamore Canyon and Box Canyon Wash 12th-order basins. Near the range's crest, the dry drainages are underlain by crystalline rocks, mostly Precambrian and Tertiary intrusives. Further west, the drainages are underlain by variably consolidated Cenozoic sediments dominated by alluvial fans that coalesce into a bajada/bolson plain. Consequently, there are differences in the geometry of the dry drainages between the hard and soft bedrock areas.

The bajada/bolson surface slope decreases with increasing distance from the mountains. The dry drainages that dissect this surface are oriented more-or-less parallel with the surface slope, generally oriented towards the northwest. The dry drainages and arroyos often cut 10 to 100 feet

into the ground surface (Schrader, 1915). In places, they bifurcate and coalesce as they make their way towards the Santa Cruz River.

Most of the dry drainages in the vicinity of the Project area west of the ridge crest are underlain by Active Tributary Channel Alluvium and Early to Late Holocene Alluvium (Ferguson et al., 2009). These units consist of unconsolidated to very weakly consolidated, very poorly sorted, silt, sand and fine gravel, with some pebbles, cobbles and boulders. Soil development is absent in the youngest deposits and incipient to weak in the older deposits. These tributaries are almost always dry, flowing only during intense, summer monsoon rain events.

East of the Santa Rita ridgeline, the Project area sits in the up-gradient portion of the Davidson Canyon 12th-order basin, a tributary to Cienega Creek. In the Cienega Creek Basin, dry drainages dissect the highly folded and faulted Paleozoic close to the crest of the range and the gently warped Cenozoic and Mesozoic sediments that underlie the basin further east. This gives rise to differences in the geometry of the dry drainages. Cienega Creek and its tributaries have down cut substantially into the Tertiary and Quaternary deposits of Cienega Valley during the past several million years. This left behind the high ridges and deep valleys characteristic of much of the valley seen today (Spencer et al., 2001). These tributaries are dry during most of the year, flowing only during intense, summer monsoon rain events.

2.3.3 Springs

In the regional area, small springs that occur are due to localized storage or perched water. Some may be fed by more regional groundwater.

Springs in the Project area have been monitored periodically since late 2006. WestLand (2012) surveyed seeps and springs in the vicinity of the Project area and identified 104 features including dams, adits, aboveground stock drinkers, natural springs, and seeps. Many had no measurable flow. Subsequent monitoring focused on 25 sites near the Project area (Rosemont, 2014; Rosemont, 2021). The United States Forest Service (USFS) chose these sites for Mitigation Measure FS-SSR-02 based on their location relative to the previous Rosemont Copper Project (Rosemont, 2018). A summary of key spring and seep sites is provided in Appendix A, and the locations of spring sites in the Project area are shown on Figure 2.5.

There are two broad categories of springs:

- Springs that receive water from shallow, local, or perched groundwater sources. These features are not connected to the regional groundwater system and thus, would not be expected to be impacted by mine-related activities. Almost all springs are interpreted to be in this category.

- Springs that receive water from bedrock sources connected to the bedrock groundwater system. Mine-related activities could potentially impact these features if they cause the potentiometric surface to move. Less than ten springs are interpreted to be in this category.

Field observations of the 25 sites included flow conditions and water quality if sufficient flow was present (Rosemont, 2021). Only two of the 25 sites were observed to be flowing on all visits (Helvetia and Deering) and three sites have a possible perennial, but limited, groundwater source indicated by minor flow or wet soil (Appendix A). Sixteen of the 25 spring sites are likely related to local or perched water conditions. These sites have varying flow conditions, from dry to minimal flow, which indicates that water is not present or insufficient to dampen soils. These seeps may only flow in response to the infrequent precipitation events. Persistent dry conditions were observed at the remaining four sites (Appendix A).

2.4 Well Inventory

An inventory of exempt and non-exempt wells was prepared, excluding environmental wells and piezometers, within two miles of the Project area limits, or within the predicted 200-year, 10 ft drawdown isopleth of the Project groundwater model (Piteau, 2022) (Figure 2.6).

Overall, pumping wells in the Project area produce very low quantities of water, owing to the low permeability of water bearing rocks and disconnected and compartmentalized nature of the groundwater system. None of the inventoried wells are within the Discharge Impact Area (DIA) defined by the Project groundwater particle transport model (Piteau, 2022), except those located within Rosemont private land boundaries.

Ninety-two wells were identified by registry ID in the Arizona Department of Water Resources (ADWR) Wells 55 database on November 15, 2021. Many of the registry IDs are co-located, inferring that the total number of wells by registry ID within the area of interest is less than 92.

The wells are shown on Figure 2.6 (by cadastral location), and summarized in Appendix B.

- Seventy-eight of the inventoried wells are classified as Exempt, indicating a capacity of less than 35 gallons per minute (gpm); only 14 of the Exempt wells have tested pumping rates.
 - Two wells indicate 1 gpm capacity
 - One well indicates 3 gpm capacity
 - Five wells indicate 5 gpm capacity
 - Five wells indicate 10 gpm capacity
 - One well indicates 25 gpm capacity
- Eight wells are classified as Non-exempt, indicating an intended capacity of more than 35 gpm.

- Only one Non-exempt well indicates a tested capacity (64 gpm)
- Six wells are classified as Non-exempt Stock wells.
 - Four wells indicate a tested capacity of 1 or less gpm
 - One well indicates a capacity of 5 gpm
 - One well indicates a capacity of 9 gpm

Seventy-seven of the inventoried wells are within the predicted 200-yr, 10 ft drawdown isopleth.

Fifty-seven of the inventoried wells are within the Tucson Active Management Area (TAMA).

2.5 Geology

The geology of the Project and surrounding areas has been well documented in numerous public and private reports, books, maps, and papers. Key sources on the geology of the area include Schrader (1915), Darton (1925), Hays (1969), Drewes (1971a, 1971b, 1972a, 1972b), Anderson (1987), Ferguson et al. (2001), Ferguson et al. (2009), Johnson, et al. (2016), Cook and Ferguson (2019). Regional and Project scale geologic maps are shown in Figures 2.7 through 2.9.

One of the earliest studies was done by Schrader (1915), establishing the general geologic framework at the regional and local scales.

In the 1960s, 1970s and 1980s three key regional-scale USGS publications were produced (Drewes 1971a, 1971b; Drewes 1972a; Drewes 1972b), a number of 15-minute geologic maps, and numerous private reports concerned with defining the copper resource were developed. Also, regional-scale geologic investigations of Late Quaternary faulting and seismic hazards (Pearthree, 1986) and the nature of the Basin-Fill deposits as they relate to water resources (Anderson, 1987) were developed.

A focused study of the ore deposits of the Helvetia mining district was the subject of a paper by Anzalone (1995). Other studies in the 1990s investigated the nature of copper porphyry deposits in the context of plate tectonics.

In the 2000s, several geologic maps were published for the Rosemont mining district by the Arizona Geological Survey (AGS) (Ferguson et al. 2001; Ferguson et al. 2009; Johnson et al. 2016; Cook and Ferguson 2019). Finally, summaries of geology at the local scale are available through various company reports (Mosher, 2005; Rose, 2007).

2.5.1 Geologic History

The Project area contains a sequence of Proterozoic metasediments and intrusive rocks overlain by Paleozoic carbonate rocks, quartz sandstone, siltstone, Mesozoic sedimentary and igneous rocks, and Cenozoic Basin-Fill formations and igneous rocks.

The oldest rocks in the region are Precambrian metasediments (locally Pinal Schist) (Mosher, 2005) by Precambrian granitic batholiths (locally Continental Granodiorite) (Drewes, 1972a).

In the region surrounding the Project area, most of the Paleozoic Era was characterized by deposition in shallow marine seas (Hayes, 1969). Several times during the Paleozoic, marine waters advanced across much of Arizona leaving extensive limestone, dolomite, sandstone, and shale deposits. The Paleozoic section in southeast Arizona is characterized by a basal quartzite, overlain by a sequence dominated by carbonate lithologies with lesser amounts of sandstone, siltstone, and shale.

Sedimentary deposition ceased for a time during uplift and development of a widespread unconformity during the early Mesozoic time. Sedimentation resumed during the late Jurassic and early Cretaceous Periods with the deposition of continental and shallow marine sediments of the Bisbee Group. These Lower Cretaceous strata, which may exceed 10,000 feet in thickness in some areas (Hayes, 1969), locally include volcanic rock but are largely made up of sandstone, siltstone, and mudstone.

During the late Cretaceous and Cenozoic, Arizona was the scene of much faulting, folding, and volcanism and the Cenozoic rocks and sediments strongly reflect that activity. Granitic intrusive and felsic volcanic activity dominated the late Cretaceous and early Eocene period, corresponding to the Laramide Orogeny. Most of the porphyry copper deposits of this region were formed at this time. Compressional tectonics created both low-angle thrust faults and high-angle strike-slip faults and extensive development of folds. Northeast-directed over-thrusting along near-horizontal thrust planes displaced several thin sheets of Precambrian to Mesozoic-age rocks (Mosher, 2005). Intrusive rocks of middle Tertiary and Late Cretaceous-early Tertiary age are present in the region.

Extensional deformation followed the Laramide Orogeny in Middle and Late Cenozoic time. This resulted in large-scale block faulting that produced the present Basin and Range Province characterized by down-dropped basins and uplifted mountain blocks. Terrestrial sediments, commonly several thousands of feet thick, accumulated in the subsiding basins (Anderson, 1987). Granitic intrusions were accompanied by voluminous felsic volcanic eruptions that produced widespread dacitic, andesitic, and rhyolitic flows and tuffs (Hayes, 1969). Basaltic volcanism also occurred throughout the Basin and Range province (Mosher, 2005).

The Upper Santa Cruz Basin is a subsiding basin situated between the Santa Rita Mountains and the Sierrita Mountains. The Tertiary to Quaternary sedimentary deposits that fill this basin are collectively termed Basin-Fill deposits (Mason and Bota, 2006). The Basin-Fill deposits are composed of variously consolidated sediments consisting of gravel, sand, silt, and clay with minor amounts of gypsiferous and anhydrous sediments as well as volcanic deposits. Generally, the Basin-Fill sediments are coarse-grained along the basin margins, and grade into finer-grained and evaporitic deposits in the central parts of the basins.

Post-mineralization, low angle extensional faulting has been significant throughout this region. For example, the Rosemont deposit has been rotated and dismembered by post-mineral low angle detachment faulting, almost entirely obliterating the structural relationship between the mineralized hosts and the mineralizing stock.

Geologic formations that crop out in the Project area include rocks from Proterozoic age through Recent include:

- Alluvial deposits along the ephemeral wash channels
- Quaternary to Tertiary Basin-Fill deposits
- Tertiary rhyolite and andesite
- Tertiary/Mesozoic intrusive granitic rocks
- Mesozoic sedimentary rocks
- Paleozoic sedimentary rocks
- Precambrian quartz monzonite

Quartz monzonite of Precambrian age is exposed west of the Santa Rita ridgeline and extends beneath the Paleozoic rocks towards the east.

Sedimentary rock strata of Paleozoic age are generally exposed in the Project area near the ridgeline of the Santa Rita Mountains. The Paleozoic rocks include limestones, dolomites, and quartzites which were uplifted, faulted, and intruded by granitic rocks during the Laramide orogeny (Hargis and Harshbarger, 1976). Within the Paleozoic section, the Devonian to Permian sequence is comprised of the Martin, Escabrosa, Horquilla, Earp, Colina, Epitaph and Concha Formations. Limestone is the predominant rock type in these formations, with subordinate dolomite, siltstone, sandstone and shale. The Escabrosa, Horquilla, Earp and Colina Formations are the principal hosts of copper mineralization in the Project area (Mosher, 2005). Limestones in contact with Cretaceous-Tertiary intrusive rocks have been metasomatically altered to lime-silicate skarn (Mosher, 2005).

East of the Santa Rita ridgeline, the steeply dipping Paleozoic rocks are overlain by the more gently dipping Mesozoic rock units. Rocks of Mesozoic age include volcanic rocks and well-lithified

conglomerates, sandstones, and mudstones. The Mesozoic rock units have been cut by complex faulting and fracture systems that generally trend northwest and northeast.

Two Paleocene intrusives cut the Paleozoic-Mesozoic rocks: a quartz-monzonite (QM) stock and a quartz-late porphyry (QLP). The QM stock is found mostly west of the Santa Rita ridgeline. The QLP is moderately to strongly altered. It is associated with copper mineralization when adjacent to Paleozoic limestones; the QLP metasomatically alters the limestones to lime-silicate skarns (Anzalone, 1995).

Cenozoic rocks in the Santa Rita region consist of volcanic and sedimentary rocks, and small intrusive bodies found both east and west of the Santa Rita ridgeline.

2.5.2 Geologic Units

The principal geologic units in the Project area are shown on Figures 2.7 through 2.9, and described as follows:

- Younger Alluvium of Holocene age which occurs as unconsolidated sediments along the floodplains of the ephemeral washes that are actively being incised.
- Older Alluvium of Late Pleistocene age which occurs as weakly consolidated gravel terraces consisting of medium- to thick-bedded, sandy, pebble-cobble gravel with rare boulders.
- Gila Conglomerate of Pliocene-Miocene age which occurs as medium- to thick-bedded, conglomerate, pebbly sandstone, and sandstone with a calcareous matrix. The clasts consist of granitic rocks, quartzite, limestone, argillite, and rhyolite ash-flow tuff.
- Basin-Fill deposits of Quaternary and Tertiary age, which are poorly permeable in the Project area and moderately permeable toward the deeper parts of the Cienega and Upper Santa Cruz basins. The Basin-Fill deposits of the Upper Santa Cruz Basin are subdivided into lower and upper Basin-Fill units (Mason & Bota, 2006).
 - Upper Basin-Fill deposits consisting of
 - Fort Lowell Formation (Pleistocene) consisting of unconsolidated to moderately consolidated sediments that grade from a silty gravel near the edges of the basin to a sandy silt and clayey silt that is up to 400 feet in the center of the Santa Cruz Basin (Travers and Mock, 1984).
 - The upper beds of the Tinaja Formation (Pliocene) consisting of grey to greyish-brown sandy gravels ranging in thickness to more than 2,000 feet in the center of the Santa Cruz Basin (Travers and Mock, 1984).
 - Lower Basin-Fill deposits formed during the first phase of block faulting (Mason & Bota, 2006) consisting of
 - Lower and middle Tinaja Formation (Miocene) consisting of sandy gravels to gypsiferous clayey silt and mudstone.

- Pantano Formation (Oligocene) consisting of poorly permeable mudflow deposits, sandstone, and gravel. Near Davidson Canyon, the Pantano Formation is at least 6,400 feet thick (Travers and Mock, 1984).
- Paleogene to Upper Cretaceous Intrusive and Extrusive Rocks
 - Helvetia Granite (Paleocene) consisting of medium- to coarse-grained quartz diorite and medium- to coarse-grained granodiorite to quartz monzonite composition stocks.
 - Quartz-feldspar porphyry (Upper Cretaceous to Paleogene) consisting of felsic porphyry dikes and stocks.
 - Andesite Porphyry (Upper Cretaceous to Paleogene) consisting of strongly altered, fragmental, fine-grained plagioclase porphyritic andesite or intrusive porphyry.
 - Mount Fagan Rhyolite (Upper Cretaceous) consisting of, up to, at least 5,000 feet thickness of rhyolite ash-flow tuff containing phenocrysts of K-feldspar, plagioclase, quartz, and biotite.
 - Mount Fagan Rhyolite megabreccia (Upper Cretaceous) consisting of up to 3,000-foot blocks and avalanche breccia blocks of fractured Bisbee Group, Fort Crittenden Formation, and andesite lava rocks.
 - Andesite lava (Upper Cretaceous) consisting of up to 800-feet thick andesite lava flows.
- Mesozoic (Cretaceous) sedimentary rocks. The Cretaceous sedimentary rocks unconformably overly Paleozoic rocks on “an irregularly eroded surface” (Darton, 1925).
 - Salero Canyon Formation consisting chiefly of poorly permeable, well-cemented conglomerate and mudstone.
 - Turney Ranch Formation consisting of poorly permeable quartzitic sandstone and red siltstone.
 - Shellenberger Canyon Formation consisting of poorly permeable sandstone, arkosic sandstone, limestone, and siltstone.
 - Bisbee Group, Lower Cretaceous.
 - Apache Canyon Formation consisting of poorly permeable silty limestone, shale, siltstone, and arkosic sandstone.
 - Willow Canyon Formation consisting chiefly of poorly permeable felspathic sandstones and arkosic conglomerate with minor mudstone, silty limestone strata, and andesite flows.
 - Mafic Lava. A series of mafic lava flows within the Willow Canyon Formation and the Glance Conglomerate.
 - Glance Conglomerate consisting of a pebble to boulder conglomerate, locally containing marble and quartzite.

- Paleozoic sedimentary rocks, including:
 - Naco Group, Upper Pennsylvanian to Permian
 - Rainvalley Formation (Permian) consisting of gray, medium- to thick bedded limestone with minor sandstone and siltstone.
 - Concha Limestone (Permian) consisting of medium- to thick-bedded, massive to planar-laminated, amalgamated limestone, and cherty limestone, grading to sandy and dolomitic near the base of the formation.
 - Sherrer Formation (Permian) consisting chiefly of light gray to pink, fine-grained, massive, silty quartzose sandstone with rare laminations.
 - Epitaph Formation (Permian) consisting of a mixed siliciclastic-carbonate unit. The carbonates consist chiefly of limestone, marble, dolomite with local gypsum or anhydrite. The siliciclastic units are thin- to medium-bedded siltstone and silty mudstone, and fine-grained, laminated sandstone.
 - Colina Limestone (Permian) consisting of medium- to thick bedded limestone, marble, dolomite originally consisting of micritic and skeletal wackestone.
 - Earp Formation (Permian-Pennsylvanian) A mixed siliciclastic-carbonate unit consisting of thin- to medium-bedded, planar-laminated siltstone, silty mudstone, and very fine-grained sandstone that is intercalated with light gray to pinkish gray, thick-bedded, micritic limestone and skeletal wackestone.
 - Horquilla Limestone (Pennsylvanian) consisting of thin- to thick-bedded silty limestone and dolomite with shale interbeds more abundant higher in the section.
 - Escabrosa Limestone (Mississippian) consisting of medium- to thick-bedded marble with dolomitic limestone present in the lower portion.
 - Martin Limestone (Devonian) consisting of dolomitic marble, tan sandstone, and shale.
 - Abrigo Formation (Cambrian) consisting of thin- to medium-bedded laminated limestone with siltstone interbeds. Locally, the unit has partly been metamorphosed to calc-silicate hornfels that form resistant outcrops with recessive thin beds, lenses, and laminations (Darton, 1925).
 - Bolsa Quartzite (Cambrian) consisting of medium- to fine-grained, thick- to medium-bedded quartzite or quartzose sandstone, arkosic sandstone, and quartzose conglomerate.
- Precambrian granitic intrusives including the Continental Granodiorite (local in the Project area) consisting of extensive masses of coarse-grained and porphyritic alkali granite, quartz monzonite, or granodiorite.

- Pinal Schist (Precambrian) consisting of gneiss and migmatite. Present as inclusions, roof pendants, and remnants of wall rock adjacent to granitic intrusions.

2.5.3 Structural Geology

Folding and faulting occurred in several intervals of geological time, and most were often concurrent with episodes of igneous activity. Three important periods of tectonic activity affected the modern landscape of southern Arizona, including the Project area, as follows: (i) the Laramide Orogeny (mountain-building event), approximately 80 million to 45 million years ago; (ii) the initial Basin and Range event, perhaps 30 or 25 million to 16 million years ago; and (iii) the later Basin and Range Orogeny, which lasted until about 5 million years ago (Armstrong and Ward, 1991).

The Laramide Orogeny was a time of regional volcanic and intrusive activity, with complex folding and thrust faulting. Large, disseminated copper deposits in central and southern Arizona were emplaced with the intrusion of granitic rocks during the Laramide Orogeny. Laramide structural features include both northwest-trending folds and various types of faults including large thrust faults. This deformation was accompanied by widespread volcanic and intrusive igneous activity throughout much of the Basin and Range.

Tertiary extension of the crust produced high-angle faulting that characterized the Basin and Range orogenic phase. The crustal extension was often accompanied by volcanism. The steeply dipping, mountain range bounding faults formed the valleys and mountains of the Basin and Range province seen today.

The structure of the Project area is very complex. Most of the host rocks at the Rosemont deposit dip steeply (approximately 55 to 65 degrees) to the east. The principal faults in the area include the nearly horizontal Flat fault and the younger north-striking Backbone fault system. The Flat fault places mostly Mesozoic sedimentary rocks over the older Paleozoic units. The post-mineral Backbone fault system defines the western boundary of the Rosemont ore deposit and separates the mineralized, Paleozoic limestone units on the east from the Proterozoic granodiorite and lower Paleozoic quartzite on the west. The Peach-Elgin deposit is underlain by a thrust fault that juxtaposes Paleozoic and Mesozoic sediments and late-Cretaceous-Paleocene quartz-late porphyry over Precambrian granodiorite (Anzalone, 1995). The thrust fault has been largely or wholly eroded in the Heavy Weight, Copper World and Broadtop Butte deposits' areas.

No evidence exists in the Project area of recent fault activity that cross cuts Quaternary or Holocene talus, colluvium, alluvial fan, or terrace gravels; these alluvial formations typically mask the underlying, older fault contacts where faults are present (Ferguson et al., 2009).

2.5.4 Economic Geology

The Project area deposits are primarily a garnet-diopside skarn of the type that formed in Paleozoic sedimentary rocks of Cambrian, Devonian, Mississippian, Pennsylvanian, and Permian age. The deposit formed in response to emplacement of quartz latite to quartz monzonite stocks approximately 56 million years ago during the Laramide Orogeny. Marble was formed from the purer carbonate rock types, while the more siliceous, silty rocks were altered to hornfels.

The Flat fault separates the upper weakly mineralized oxide zone from the underlying strongly mineralized sulfide zone. Oxidized and supergene copper mineralization above the Flat fault are well developed in the Mesozoic-age andesitic rocks (Huss, 2009).

Mineralization from the Laramide Orogeny is typically associated with intrusions of granite-like rocks, although it also occurs less frequently in adjacent, older sedimentary rocks. Unlike most other porphyry copper deposits in the area, the Project area mineralization occurred primarily in metamorphosed limestone (skarn) and other sedimentary rocks, rather than in a granitic or related intrusive rock. Most of the oxide mineralization occurs in the Mesozoic sedimentary and volcanic rocks.

3 PROJECT AREA CHARACTERIZATION PROGRAMS

3.1 Previous Investigations

Many studies have been conducted in the Project vicinity to characterize geology, mineral resources and hydrogeology, including exploration drilling, field investigations and modeling studies as summarized below.

More than 900 boreholes have been advanced by various mining companies (Lewisohn Copper Corp., Banner, Anaconda, Asarco, Augusta and Rosemont) for mineral resource exploration in the Rosemont and Helvetia mining districts between 1956 and 2021. The locations of exploration boreholes are shown on Figure 3.1, and the boreholes are summarized in Appendix C. The data from these exploration studies have been used by Rosemont to develop the Project geological model.

Harshbarger and Associates conducted studies to inventory and monitor baseline environmental conditions in the Empire Ranch development and Rosemont mining district from 1975 through 1981 (Harshbarger and Associates, 1975, 1976, 1980 and 1981). The studies included:

- Summary of precipitation and temperature data; estimation of evapotranspiration, runoff and soil moisture
- Analysis of surface water drainage
- Measurement of water levels in (46) drillholes and (3) wells
- Measurement of discharge from selected springs
- Sampling of five springs and three wells for elemental chemistry
- Development of geologic and hydrologic framework

Montgomery & Associates conducted field investigations and studies from 2007 through 2010 to characterize the Rosemont mining district water resources and analyze potential impacts from planned mining operations associated with the Rosemont Copper Project (Montgomery & Associates, 2007, 2009a, 2009b, 2009c, 2009d, 2009e, 2010a and 2010b). The studies included:

- Drilling, construction, and testing of well E-1 to characterize water resources in the Sahuarita area
- Using the TAMA model to predict the impact of water resource development in the Sahuarita area
- Drilling and testing four wells to characterize the hydrogeology of the Rosemont Pit area
- Development of a groundwater flow model to analyze dewatering and closure of the Rosemont Pit

- Drilling and testing of (27) wells and (3) multi-level piezometers to further characterize the Rosemont Pit area hydrogeology
- Drilling and testing well RC-2 to further characterize water resources in the Sahuarita area
- Conducting long term pumping tests to further characterize the Rosemont Pit area hydrogeology

Tetra Tech conducted studies and provided support documentation from 2010 through 2017 to refine the Rosemont Pit area conceptual hydrogeology and assess potential mining environmental impacts (Tetra Tech, 2010a, 2010b, 2010c, 2012, 2017). The studies included:

- Developing a hydrogeologic conceptual model of Davidson Canyon area to understand groundwater-surface water interactions
- Developing a regional groundwater flow model to predict mining impacts
- Developing a predictive particle tracking model to analyze the discharge impact area
- Runoff and infiltration estimates for groundwater model updates

WestLand Resources conducted a seep and spring inventory on 104 natural and man-made features in the Rosemont and Helvetia mining district areas and surrounding region. Their work in 2011 and 2012 included surveys of 82 features (Westland Resources, 2012).

Hydro-Logic, LLC, performed drilling, testing and well completion activities in 2013 (Hydro-Logic, 2013a and 2013b). The studies included:

- Installation of monitoring stations in Barrel and Davidson Canyons to monitor groundwater levels, soil parameters, stormwater stages and precipitation rates
- Drilling and testing a well (HC-6) to define the nature of the Backbone Fault in the Rosemont Pit area

BasinWells Associates conducted drilling, well completion and testing activities in 2016 to assess the water production potential at a site near Sahuarita (BasinWells Associates, 2016). The study included:

- Drilling and testing water supply well (SS-1) to further characterize water resource development in the Sahuarita area

Neirbo Hydrogeology conducted a field investigation and groundwater modeling studies in 2016 and 2019 to assess the impacts of mining in the Rosemont district (Neirbo Hydrogeology, 2016, 2019). The studies included:

- Conducting borehole flow surveys at four locations in the Rosemont Pit area
- Updating and refining the geologic model of the Rosemont Pit area

- Developing a pre-feasibility dewatering plan using the Tetra Tech (2010) groundwater flow model

Project data obtained from previous studies are described in further detail in Section 4.1.1.

3.2 2021 Hydrogeological Investigation

Piteau Associates conducted a study from March 3 through November 15, 2021, to characterize the hydrogeology of the proposed west side satellite pits and facilities. The west side satellite pits and facilities are shown in Figure 1.2 and include:

- Peach and Elgin Pits
- Heavy Weight Pit
- Copper World Pit
- Broadtop Butte Pit
- Waste Rock Facility
- Process Plant Area
- Heap Leach Pad
- Tailings Storage Facilities 1 and 2

The study consisted of (i) borehole drilling, (ii) hydraulics testing, (iii) vibrating wire piezometer (VWP) and open standpipe (OSP) completions, (iv) water level monitoring, (v) groundwater sampling, (vi) test pit infiltration testing, and (vii) seep and spring surveys. The characterization program results are described below.

3.2.1 Borehole Drilling and Lithologic Logging

Thirty (30) boreholes were drilled and tested during the 2021 hydrogeological characterization program. The boreholes were drilled by National EWP using a C-14C core rig and HQ (3.8 in O.D.) drilling rods. Lithologic logging of the core material was conducted by Rosemont.

The locations of the 2021 hydrogeologic characterization boreholes are shown on Figure 3.2, and a summary of the borehole collars is provided in Table 3.1.

Table 3.1: 2021 Hydrogeologic Characterization Boreholes

Hole ID	Area	Easting (UTM-ft)	Northing (UTM-ft)	Elevation (ft amsl)	Depth (ft bgs)
RNW-HB-091	HW-CW-WRF	1709636	11563904	4562	600
RNW-HB-096	HW-CW-WRF	1711293	11566086	4731	500
RNW-HB-105	HW-CW-WRF	1711050	11565653	4695	500
RNW-HB-108	HW-CW-WRF	1710630	11565046	4640	425
RNW-HB-152	P-E	1705335	11564416	4280	278
RNW-HB-154	P-E	1705686	11564298	4275	200
RNW-HB-168	P-E	1705915	11564045	4320	600
RNW-HB-169	P-E	1707027	11564088	4391	200
G&H2021-01	TSF1	1701945	11575285	3645	95
G&H2021-02	TSF1	1702966	11575302	3675	308
G&H2021-07	TSF1	1700833	11570771	3834	400
G&H2021-09	TSF1	1701998	11568487	3953	300
G&H2021-10	TSF1	1701099	11567296	4005	300
G&H2021-11	TSF-2-HLP	1703104	11563658	4164	300
G&H2021-13	TSF-2-HLP	1704541	11563684	4240	300
G&H2021-17	TSF-2-HLP	1700850	11560476	4150	300
G&H2021-22	TSF-2-HLP	1705400	11561420	4421	300
G&H2021-23	TSF-2-HLP	1706988	11561998	4426	300
G&H2021-24	TSF-2-HLP	1708373	11562182	4488	300
G&H2021-25	TSF-2-HLP	1709783	11562290	4637	300
G&H2021-26	WRF	1707277	11565636	4477	400
G&H2021-28	HW	1708612	11566106	4559	410
G&H2021-30	CW	1713081	11563907	5025	640
Pit2021-02	P-E	1704229	11565298	4343	486
Pit2021-03	P-E	1704885	11566233	4441	603
Pit2021-04	P-E	1704977	11565354	4389	520
Pit2021-06	HW	1709600	11565718	4755	605
Pit2021-07	CW	1712907	11565269	5103	678
Pit2021-08	BB	1715764	11562333	5604	720
Pit2021-09	BB	1714432	11560797	5656	730

Notes: HW is Heavy Weight; CW is Copper World; WRF is Waste Rock Facility; P-E is Peach-Elgin; TSF is tailings storage facility; HLP is heap leach pad; BB is Broadtop Butte; Coordinate system is Bureau of Land Management (BLM) Zone 12N (US ft), North American Datum (NAD) 83. All boreholes were drilled at 0° azimuth and 90° angle.

3.2.2 Borehole Hydraulics Testing

Hydraulic testing was conducted within each borehole using constant head injection-recovery and packer testing methods. Upon completion of drilling at each borehole and/or test interval, the borehole was flushed of drilling fluids by circulating fresh water until the returns were visually clear.

Constant head injection-recovery testing was performed on select boreholes using water level monitoring equipment and water truck support. A static water level was measured using a handheld water level meter, and a VWP was installed into the open borehole below the static water level. The VWP was connected to a data logger programmed to measure water levels at 1-minute intervals. Water was injected into the borehole from the water truck by gravity until a relatively steady head was developed, and flow rates were measured using a calibrated flow totalizing meter. Water was injected for up to 30 minutes, or until the water supply was exhausted. Following the injection portion of the test, the water level was allowed to recover. Water levels were measured until at least 37% of water level recovery had been recorded. The injection-recovery testing data were analyzed using the Bower and Rice (1976) and Hvorslev (1951) methods.

Packer testing was also performed during borehole drilling at select borehole depth intervals using an inflatable single packer assembly and water truck support. At the selected interval within a borehole, the drill rods were tripped out and the packer assembly was tripped into the borehole to the top of the selected test interval; the bottom of the borehole defined the bottom of the test interval. The packer was inflated to the pressure required to seal against the borehole. Packer testing was conducted at five pressure steps (20, 40, 80, 40 and 20 psi) for each test, or was conducted until a pressure step was unable to be completed. Fresh water was injected into the testing interval at an increasing rate until the desired pressure was achieved, and total water volume was recorded once per minute for 10 minutes at each pressure step. The packer testing data were analyzed using the methods of Houlby (1976, 1990).

3.2.3 Borehole Completions

The hydrogeologic characterization boreholes were completed as multi-level piezometers and open standpipes. The VWP completions were used to monitor piezometric levels and to characterize lateral and vertical groundwater gradients. The OSP completions were used to monitor composite groundwater levels and water quality at the water table.

VWP completions were accomplished by installing Geokon™ VWP sensors on 1 ½ inch polyvinyl chloride (PVC) guide pipes at selected intervals based on the Project geological model and borehole lithologies. The guide pipes were tripped into the borehole inside the HQ drill rods. After tripping the drill rods up about 400 ft, the grout was placed initially through the guide pipe (as a

tremie pipe). Additional stages of grouting were accomplished through the drill rods after tripping up further, as needed. The VWP cables were wired to Geokon™ data loggers.

OSP completions were accomplished by installing 2-inch Sch. 40 PVC well casing into the borehole, with typically 60 ft sections of 0.020-inch factory slotted well screen placed at a depth appropriate to keep the water table within the screened interval.

VWP and OSP completions were finished with a 6-inch-thick concrete pad and steel monument with locking cap. VWP and OSP as-built logs are provided in Appendix D.

3.2.4 Water Level Monitoring

Water level and piezometric pressure monitoring were conducted using a combination of water level meters and VWPs. Water levels were monitored in OSPs using a water level meter weekly following OSP completions, and during groundwater quality sampling as discussed below. Piezometric pressures were monitored in multi-level piezometers on a daily basis following VWP completions.

3.2.5 Groundwater Quality Monitoring

Water quality sampling was conducted at OSP groundwater monitoring locations using dedicated QED Micropurge™ groundwater sampling systems. Sampling was conducted in October and November 2021 at OSP locations equipped with dedicated sampling pumps. At the time of the groundwater sampling events, dedicated sampling pumps had not been installed at OSP locations G&H2021-17, Pit2021-07, Pit2021-08 and RNW-HB-168. Open standpipe G&H2021-02 is dry by design.

Prior to collection of groundwater samplings, each OSP was purged at low flow rates of approximately 0.2 gpm. Purge parameters, including depth to water, pH, temperature, electrical conductivity (EC) and oxidation-reduction potential (ORP) were monitored on 5-minute intervals. Following stabilization of purge parameters, groundwater samples were collected in pre-preserved (as appropriate for each suite of analyses) laboratory-provided sample containers. The containers were labeled and placed in coolers on ice pending delivery to an analytical laboratory.

The groundwater samples were delivered to Turner Laboratories, Inc., in Tucson, Arizona, an Arizona-licensed analytical laboratory. The initial sample from each location was tested for the following suites of analytes:

- Major ions and general chemistry parameters
- Dissolved metals

- Total recoverable metals
- Radiochemicals
- Stable isotopes
- Volatile organic compounds (VOC)
- Semi-volatile organic compounds (SVOC)

The analyses were conducted using appropriate methods for each suite as noted on the laboratory analytical reports. The secondary sample from each location was tested only for major ions and general chemistry parameters and dissolved and recoverable metals.

3.2.6 Test Pit Infiltration Testing

Test pit infiltration testing was conducted at five locations in alluvium materials to characterize the hydraulic conductivity of shallow subsurface materials beneath the planned TSF-1 and the HLP. The locations were on the edge of the drill pads as shown on Figure 3.1:

- G&H2021-01
- G&H2021-10
- G&H2021-22
- G&H2021-24
- G&H2021-25

The test pits were excavated to lateral dimensions of approximately 12 ft by 6 ft, with a total depth of approximately 6 ft bgs. The approximate volume of each trench was 576 cubic feet (4,300 gallons equivalent). Excavated soils were stockpiled for backfilling of the trenches following completion of the infiltration testing. The as-built trench dimensions were measured for infiltration testing analysis. The trench walls were logged for soil classification using the ASTM International (ASTM) Unified Soil Classification System (USCS) (ASTM, 2017a and 2017b).

Each test pit was instrumented with a standpipe and data logging pressure transducers to monitor water levels during infiltration testing. Standpipes consisting of nominal 2 in diameter Sch 40 PVC pipe with a 2 ft factory slotted (0.010 in) section of well screen were installed to the bottom of the open trench. The standpipes were instrumented with non-vented In-Situ LevelTROLL 700™ data logging pressure transducers rated at 30 psi with an accuracy of 0.05% full scale (about 0.01 ft).

The infiltration testing was conducted in accordance with ASTM standards (2016, 2020). The infiltration testing was conducted following three basic steps:

1. Pre-wet and drain trench

2. Fill trench, maintain the constant-head water level and record flow rate
3. Drain trench and record falling-head water levels

The testing water was supplied to the trench using a 4,000-gallon water truck and pump system. The constant-head water levels in the test pits were maintained approximately 6 inches below the ground surface to avoid entraining fines from the topsoil layer during the infiltration tests and to avoid excessive sloughing from the sides of the test pits.

Pressure transducers were programmed to record water levels at 10 second intervals. A calibrated totalizing flow meter was used to measure discharge flow rates and volumes. The constant-head stage of the infiltration testing was initiated by opening a ball valve from the Baker Tank to fill the trench. Water was delivered to the trench by gravity flow. The ball valve was used to maintain the water level within the trench once the level had reached the constant-head target. Constant-head conditions were maintained for up to 30 minutes, or as long as the water supply permitted.

The falling-head stage of the infiltration testing was conducted by shutting discharge to the trench and allowing the trench to drain. The infiltration tests were completed after all charged water had drained from the trenches and water level data was downloaded from the pressure transducers for analysis. Following completion of the infiltration testing, each trench was abandoned by backfilling with the soil stockpile to the original grade.

3.2.7 Seep and Spring Survey

Seep and spring surveying was conducted at select monitoring locations from 2006 to 2021. Seep and spring monitoring activities include the following collected collection:

- Measurement location and photo points
- Overall condition of the monitoring location
- Presence/absence of water
- Riparian vegetation; and
- Miscellaneous site information.

Each spring, seep, or constructed/enhanced water location selected for monitoring has a designated measurement location to ensure consistent, reliable, and reproducible data (Appendix A).

Photo points (viewpoints) are established for photographing the spring, seep, and constructed/enhanced water location. Discharge measurements are obtained at the designated discharge measurement point (as practicable and accessible). Hydrologic conditions recorded at the monitoring locations are described as (i) dry, (ii) moist soil, (iii) ponded water or (iv) flowing.

Where flow is measurable from the source, a flow rate is estimated in gallons per minute (gpm) or measured using the length of time required to fill a container of a known volume. In addition to ponded or flowing water, evidence of sub-surface water is also noted by evidence of damp soils or riparian vegetation.

4 HYDROGEOLOGIC CHARACTERIZATION

4.1 Project Hydrogeological Data

4.1.1 Previous Investigations Data

The geology and hydrogeology of the Project area and beyond has been studied since 1915 and this has generated a considerable amount of data and information. These studies have been conducted by a number of entities for a number of reasons. They fall into five broad categories:

- Project specific data. These data are presented in many reports and files; some of which were summarized in Section 3.1. Project specific reports and other files, totaling more than 5,500 in number, are included in this category.
- ADWR databases. Data was downloaded from ADWR databases in 2021 for a very broad area centered on the Project area. This included the Wells 55 registry database (with over 20,000 records), the Groundwater Site Inventory (GWSI) database (with 214,000 water levels from 4,300 locations) and the pumping data (from almost 700 locations).
- ADWR Active Management Area studies. The ADWR has published a number of reports and models on the TAMA that contains important data and information on the geology and hydrogeology of the Santa Cruz Basin.
- USGS National Water Information System (NWIS) data. The NWIS provided location and water level data for several locations not already included in the ADWR databases, including key surface water staff gages.
- USGS and AGS maps and reports. The USGS and AGS have published numerous geologic maps of the area at a variety of scales.
- GIS information. This included public domain GIS vector and raster files that had information of a general nature included and in addition to the sources listed above.

An initial bibliography with over 400 references on the hydrology, hydrogeology and geology of the Project area and region was compiled.

Data from all of the sources listed above were reviewed and data within an area of interest were compiled into a database that included locations, water levels, pumping records, hydraulic properties, spring flows, and other hydrogeologic information. The location table contains records for almost 2,600 locations and includes Project area wells, piezometers, borings, springs, GWSI and Wells 55 database locations, USGS locations, staff gages, and any other relevant point data related to the hydrogeology of the project. The water level table contains records for almost 368,000 water levels collected from October 1909 to November 2021. These data were subjected to quality-assurance/quality control (QA/QC) to the extent possible.

These data and other types of information were used to develop the conceptual model report presented herein. The conceptual model consists of several components including.

- **Geologic Framework.** The three-dimensional distribution of geological units and structures is essential for providing the context for the conceptual model. In the Rosemont Copper World Project setting, the geologic framework defines the extents and limitations of groundwater movement and connection.
- **Environmental Data** includes information on precipitation and evapotranspiration but could also include temperature, solar radiation, wind speed, soil moisture, infiltration capacity, runoff characteristics and a host of other properties.
- **Water Levels** provide the basic data for the hydrologic system. They inform the conceptual model as to the direction (horizontal and vertical) of flow and the degree of resistance that the flow is experiencing. They are the basic observations against which groundwater models are calibrated.
- **Seeps and Springs** can be indicators of the presence of a shallow groundwater table and can provide insights into the configuration of the potentiometric surface provided that the seep or spring is not part of a perched groundwater table subject to seasonal precipitation.
- **Surface Water** and groundwater are often intimately connected. Data on surface water flows and in particular, base flow, often provide insights into the configuration of the potentiometric surface as well as a target for groundwater models.
- **Groundwater System Properties** are properties that are related to the occurrence and movement of groundwater such as hydraulic conductivity and storage properties. It includes a discussion of the primary properties and when relevant, the secondary properties which involves processes that enhance or reduce a rock's ability to store and transmit water. Faulting, alteration and fracture fill materials can limit or improve groundwater occurrence and movement.
- **Groundwater models.** Strictly speaking, groundwater models are not data, but they rely heavily on data during their setup and calibration. Furthermore, a groundwater model is a numerical representation of a conceptual model and thus, it is prudent to always consider previous models when evaluating and revising a conceptual model.

Given the extensive volume of previous work, what follows presents selected key documents by type and source, in generally chronological order.

- Schrader 1915 is the earliest known geological assessment of the region.
- Travers and Mock (1984) compiled water levels and aquifer properties for the Basin-Fill Deposits in the Santa Cruz Basin and used this information to construct one the earliest numerical groundwater models in the region.
- Drewes 1971a, 1971b, 1972a, and 1972b. This series of reports from the USGS discussed the Mesozoic and Cenozoic stratigraphy and structural geology of the Santa Rita Mountains

and produced a geologic map of the Sahuarita 15-minute quadrangle. These studies were not done specifically for the Project, but they included the Project area and the broader region.

- Other important geologic maps for the Project and the surrounding area include Spencer et al, 2001, Ferguson et al, 2001, Ferguson et al, 2009, Johnson et al, 2016, and Cook et al, 2019.
- Harshbarger and Associates (1975, 1976, 1980 and 1981) prepared the earliest conceptual model that pertained specifically to the general Project area. They provided a summary of precipitation and temperature data, evapotranspiration, runoff and soil moisture. They included tables of water levels from 46 drillholes and 3 wells and presents measurements of discharge from selected springs. They also provided an analysis of surface water drainage. Water from five springs and three wells were analyzed for elemental chemistry.
- Mason & Bota (2006) and Mason and Hipke (2013) published groundwater models of the TAMA for the purposes of providing a tool for predicting future water supplies.
- Montgomery and Associates was involved with the Project from 2007 through 2011. Much of their work involved in collecting field data, drilling and testing exploration water wells, updating and revising the conceptual model, and preparing groundwater models for both the Rosemont Copper Project area and for the Sanrita well fields near Sahuarita. Some of their notable projects include:
 - Preparing a conceptual model of the Project Area (Montgomery & Associates 2007, 2009b).
 - Drilling and testing four wells to characterize the hydrogeology of the Rosemont Pit area (Montgomery & Associates 2009d).
 - Drilling, construction, and testing well E-1 to characterize water resources in the Sahuarita area (Montgomery & Associates 2007b).
 - Drilling and testing of (27) wells and (3) multi-level piezometers to further characterize the Rosemont Pit area hydrogeology (Montgomery & Associates 2009c).
 - Drilling and testing well RC-2 to further characterize water resources in the Sahuarita area (Montgomery & Associates 2009f).
 - Conducting long term pumping tests to further characterize the Rosemont Pit area hydrogeology (Montgomery & Associates 2009c).
 - Constructing and calibration a groundwater flow model of the Project area (Montgomery & Associates 2009a, 2009e, 2010a, 2010b).
 - Constructing and calibrating a flow model of the Sanrita well field (Montgomery & Associates 2009e, 20010b).
- Similarly, Tetra Tech was involved at the site during 2010 to 2012, primarily engaged to analyze field data collected by Montgomery & Associates, to revise the conceptual model

report, and to construct and calibrate a groundwater model of the Project area. Some of their notable projects include:

- Prepared a conceptual model of the Rosemont Copper Project area (Tetra Tech 2010c).
- Developed a hydrogeologic conceptual model of Davidson Canyon area to understand groundwater-surface water interactions (Tetra Tech 2010b)
- Constructed and calibrated a groundwater flow model of the Rosemont Copper Project area (Tetra Tech 2010a, 2010c, 2012).
- Constructed and calibrated a fate and transport model including particle tracking and Discharge Impact Analysis (Tetra Tech 2010a, 2012).
- Compiled and summarize hydraulic properties (Tetra Tech 2010d).
- WestLand Resources (2012) conducted a seep and spring inventory on 104 natural and man-made features in the Rosemont and Helvetia mining district area and surrounding region. Their field study in 2011 and 2012 included surveys of 82 features.
- Hydro-Logic (2013a) installed monitoring stations in Barrel and Davidson Canyons to monitor groundwater levels, soil parameters, stormwater stages and precipitation rates. They also described the results of drilling and testing a well (HC-6) to define the nature of the Backbone Fault in the Rosemont Pit area (Hydrologic, 2013b).
- BasinWells Associates (2016) reported on the drilling and testing of a water supply well (SS-1) to further characterize water resource development in the Sahuarita area.
- Neirbo Hydrogeology updated and refined the geologic model of the Rosemont pit area, conducted borehole flow surveys at four locations in the Rosemont pit area, and prepared an update to the Tetra Tech (2010c) groundwater flow model of the Rosemont Copper Project area (Neirbo Hydrogeology, 2016, 2019).

Key data by type and source are listed in Table 4.1.

Table 4.1: Previous Investigation Data by Source

Document	Key Data Type	Location ¹
Schrader, 1915	Geologic assessment Mining districts	Pages 44-87 Pages 91-152
Travers and Mock, 1984	Pumpage Measured water level elevations	Tables 2 and 2A Table 4
Drewes 1971a, 1971b, 1972a, and 1972b	Geologic assessment	Geologic maps
Harshbarger and Associates, 1975	Test wells	Pages 1-2, 12-18
Harshbarger and Associates, 1976	Drillhole and well inventory	Table C-3

Document	Key Data Type	Location ¹
	Spring inventory Water chemical analysis	Table C-4, Table C-5, Figure C-5
Harshbarger and Associates, 1980	Water levels Hydrographs	Tables 1-2 Appendices A-C
Harshbarger and Associates, 1981	Water levels Hydrographs	Tables 1-6 Appendices A-C
Mason & Bota, 2006	Groundwater model Hydrographs	Chapters 4–7, Appendices A-B Appendix C
Montgomery & Associates, 2007a	Groundwater levels Spring data Water chemical analysis	Table 1 Table 2 Tables 3-5
Montgomery & Associates, 2007b	Borehole data	Tables 1-2, Figures 2-4, Appendix A
Montgomery & Associates, 2009a	Hydraulic parameters Groundwater model Construction details Well inventory	Section 6 Sections 7–8, Tables 4-5, and Figures 25-51 Table 2 Table 3
Montgomery & Associates, 2009b	Borehole details Pumping tests Water chemical analysis Groundwater monitoring Spring monitoring	Tables 1-3, Appendices A and C Table 4-5, Appendix D Tables 6-9, 12-13 Table 10, Appendix B Table 11
Montgomery & Associates, 2009c	Hydrologic data Monitoring data for wells/springs Water chemical analysis Hydrographs	Tables 1-3 Tables 4-8 Tables 9-11 Figure 3, Appendix A
Montgomery & Associates, 2009d	Borehole details Pumping data Water chemical analysis	Table 1, Figures 2-5, Appendix A Tables 2-3, Appendix B Tables 4-7
Montgomery & Associates, 2009e	Groundwater model Well inventory Hydrographs	Section 7, Figures 21-36 Table 1 Figures 8-15, 17-18
Montgomery & Associates, 2009f	Pumping data Water chemical analysis Borehole Data	Tables 1-2 Table 3, Appendix B Figures 2-4, Appendix A
Montgomery & Associates, 2010a	Groundwater model Borehole details Well inventory	Section 7, Figures 80-113, 116- 119 Table 1 Table 2

Document	Key Data Type	Location ¹
Montgomery & Associates, 2010a	Hydraulic conductivity Hydrographs	Table 5 Figures 32-79, 114-115
Montgomery & Associates, 2010b	Groundwater model	Figures A2-A6
Tetra Tech, 2010a	Groundwater model	Section 5
Tetra Tech, 2010b	Davidson Canyon Area Hydrogeologic Conceptual Model	Section 2
Tetra Tech, 2010c	Conceptual model	Section 2
Tetra Tech, 2010d	Compiled hydraulic properties	Tables 1-4
Tetra Tech, 2012	Groundwater model Fate and transport model construction	Section 5, Section 6
WestLand Resources, 2012	Seeps and springs	Tables 1
Hydro-Logic, 2013a	Borehole data	Tables 1-3, Figures 3-5, 9-11
Hydro-Logic, 2013b	Borehole data Hydraulic conductivity Water chemical analysis	Tables 3-4, Figures 3-5 Tables 2, Figures 2 Tables 5-6, Figures 6
Mason and Hipke, 2013	Groundwater model Gage data	Sections 3-4, Appendices C-E Appendix A
BasinWells Associates, 2016	Borehole data Hydraulic testing Water chemical analysis	Appendices B-D and G Appendix E Appendix H, Tables 4-6
Neirbo Hydrogeology, 2016	Geomechanical data Groundwater model Hydraulic conductivity Well summary	Appendix C Section 5 Tables 3-2 Tables 5-1 and 5-2
Neirbo Hydrogeology, 2019	Water chemical analysis	Tables 4.1 and 4.2

¹ Location refers to source document and not this report.

Key wells and piezometers from previous hydrogeologic investigations of the Project area are shown on Figure 4.1 and their completions and groundwater hydraulics data (where available) are summarized in Appendix E. The most recent regional piezometric contours and Project area piezometric elevations and contours are shown in Figures 4.2 and 4.3, respectively.

4.1.2 2021 Investigation Data

Borehole Hydraulics Data

Borehole constant head injection-recovery and packer testing data and analyses from the 2021 hydrogeologic characterization are provided in Appendices F and G, respectively, and the results are summarized in Appendix H.

Altogether, twelve injection-recovery tests and 45 packer tests were performed and analyzed. The test results collectively demonstrate and confirm the very low hydraulic conductivity ranges in bedrock across the Project area.

Injection-recovery tests analyzed using the Bower and Rice method yielded hydraulic conductivities ranging from 2.07E-03 to 1.74E-02 feet per day (ft/d), with a geometric mean of 7.68E-03 ft/d. Injection-recovery tests analyzed using the Hvorslev method yielded hydraulic conductivities ranging from 1.5E-03 to 1.59E-02 ft/d, with a geometric mean of 6.85E-03 ft/d. Packer tests analyzed using the Housby method yielded hydraulic conductivities ranging from 2.50E-05 to 1.4E-00 ft/d, with a geometric mean of 9.89E-03 ft/d.

A plot of hydraulic conductivity ranges by geologic unit (lithology) has been developed from the test data and is presented in Figure 4.4. Some key observations are as follows:

- The average measured hydraulic conductivity for each bedrock unit is low and below normal thresholds for groundwater resource development. The average values are in the ranges for aquitards.
- The lower bound measured conductivity for all bedrock units is extremely low, beneath the thresholds for any substantial active groundwater movement.
- The upper bound thresholds for all bedrock units are due to minor local increases in conductive fracturing. However, the upper bound values are also low and the lack of frequency across the site demonstrates the lack of interconnected fracture systems at larger scales.
- As expected, the intrusive rock units have lower average hydraulic conductivity values than the sedimentary bedrock. The lower bound intrusive rock values are extremely low and are typical for these rock types in the region.

Piezometric Level Data

This section of the report provides a factual description of groundwater levels measured in the piezometers installed in the footprint and proximity of each proposed mining area and facility. This information is incorporated into the conceptual hydrogeologic model for the site, each mining area and facility, as discussed in Section 4.3.

VWP and OSP hydrogeologic and construction logs from the 2021 hydrogeologic characterization program are provided in Appendix D. VWP and OSP piezometric levels from the 2021 hydrogeologic characterization program are summarized in Appendices I and J, respectively. VWP and OSP hydrographs are provided in Appendix K.

The most recent Project area piezometric elevations and contours from the 2021 hydrogeologic characterization program, and from previous hydrogeologic investigation locations, are shown in Figure 4.3 and Figures 4.5 through 4.13.

Peach-Elgin Area Hydrographs

Five multi-level VWPs and one OSP were installed in the Peach and Elgin pits area (Figure 4.5):

- Pit2021-02 – Five VWP sensors are installed in skarn, granodiorite, and granite, reporting piezometric elevations of 4,107 to 4,116 ft amsl; the upper three sensors are dry. These results indicate a 0.06 ft/ft downward vertical component of the hydraulic gradient.
- Pit2021-03 – Two VWP sensors are installed in skarn and granite, reporting piezometric elevations of 4,208 and 4,213 ft amsl. These results indicate a 0.02 ft/ft downward vertical component of the hydraulic gradient.
- Pit2021-04 – Four VWP sensors are installed in skarn and granite, reporting piezometric elevation of 4,181 to 4,184 ft amsl; the upper sensor is dry. These results indicate essentially no vertical component of the hydraulic gradient.
- RNW-HB-152 – Three VWP sensors are installed in limestone, skarn and granite, reporting piezometric elevations of 4,138 to 4,183 ft amsl. These results indicate a 0.28 ft/ft downward vertical component of the hydraulic gradient.
- RNW-HB-168 – An OSP is installed with a screened interval from 80 to 140 ft bgs in granite; the static water level is 4,214 ft amsl.
- RNW-HB-169 – Two VWP sensors are installed in granite, reporting piezometric elevations of 4,316 and 4,318 ft amsl. These results indicate essentially no vertical component of the hydraulic gradient.

The Peach and Elgin pits area hydrographs indicate steady state conditions with no significant short-term trends. Vertically downward components of the hydraulic gradient ranging from 0.02 to 0.28 ft/ft are present in three multi-level VWPs (Pit2021-2, Pit2021-03, and RNW-HB-152) located in the southwest and northeast sectors of Peach pit, and the southwest sector of Elgin pit, respectively. The remaining two multi-level VWPs (Pit2021-04 and RNW-HB-154) indicate no substantial vertical component of the hydraulic gradient in the southeast sector of Peach pit and the south area of Elgin pit. Piezometric elevation contours (Figures 4.3 and 4.5) indicate groundwater levels decreasing towards the west and northwest through the Peach and Elgin pits areas.

Heavy Weight-Copper World-WRF Area Hydrographs

Five multi-level VWP and three OSPs were installed in the Heavy Weight and Copper World pits and WRF area (Figures 4.6 and 4.9):

- RNW-HB-091 – An OSP is installed with a screened interval from 30 to 90 ft bgs in granite and granodiorite; the static water level is 4,531 ft amsl.
- RNW-HB-096 – Two VWP sensors are installed in granodiorite and marble, reporting piezometric elevations of 4,542 and 4,547 ft amsl. These results indicate a 0.03 ft/ft downward vertical component of the hydraulic gradient at this location.
- RNW-HB-105 – Two VWP sensors are installed in granodiorite and siltstone, reporting piezometric elevations of 4,581 and 4,626 ft amsl. These results indicate a 0.22 ft/ft downward vertical component of the hydraulic gradient at this location.
- RNW-HB-108 – An OSP is installed with a screened interval from 30 to 100 ft bgs in hornfels and granodiorite; the static water level is 4,592 ft amsl.
- G&H2021-26 – Three VWP sensors are installed in quartz monzonite porphyry and granite, reporting piezometric elevations of 4,331 to 4,431 ft amsl. These results indicate a 0.31 ft/ft downward vertical component of the hydraulic gradient at this location.
- G&H2021-30 – Two VWP sensors are installed in skarn and quartzite; the upper sensor is dry, and the lower sensor is reporting a piezometric elevation of 4,663 ft amsl.
- Pit2021-06 – Three VWP sensors are installed in granite, reporting piezometric elevations of 4,592 to 4,619 ft amsl. These results indicate a 0.06 ft/ft downward vertical component of the hydraulic gradient at this location.
- Pit2021-07 – An OSP is installed with a screened interval from 410 to 510 ft bgs in limestone and quartzite; the static water level is 4,682 ft amsl.

The Heavy Weight and Copper World pits and WRF area hydrographs indicate steady-state conditions with no significant short-term trends. Vertically downward components of the hydraulic gradient ranging from 0.03 to 0.31 ft/ft are present in four of the multi-level VWPs (RNW-HB-096, RNW-HB-105, G&H2021-26 and Pit2021-06) located in the central area of the WRF between Heavy Weight and Copper World pits and the northern sector of Heavy Weight pit, respectively. Piezometric elevation contours (Figures 4.3, 4.6 and 4.9) indicate the Heavy Weight pit area representing a local groundwater compartment. Groundwater levels are comparatively lower towards the southwest, the northwest and the northeast.

Broadtop Butte-WRF Area Hydrographs

One multi-level VWP and one OSP were installed in the Broadtop Butte Pit and WRF area (Figures 4.7 and 4.9):

- Pit2021-08 – An OSP is installed with a screened interval from 180 to 280 ft bgs in quartz monzonite porphyry; the static water level is 5,409 ft amsl.
- Pit2021-09 – Three VWP sensors are installed in quartz monzonite porphyry, reporting piezometric elevations of 5,143 to 5,296 ft amsl. These results indicate a 0.50 ft/ft downward vertical component of the hydraulic gradient at this location.

The Broadtop Butte Pit and WRF area hydrographs indicate steady-state conditions with no significant short-term trends. A vertically downward component of the hydraulic gradient of 0.50 ft/ft is present in Pit2021-09, located in the central sector of Broadtop Butte pit. Piezometric elevation contours (Figures 4.3, 4.7 and 4.9) indicate the Broadtop Butte Pit area representing a Project area piezometric high with groundwater gradients decreasing radially away in all directions.

TSF-1 Area Hydrographs

One multi-level VWP and four OSPs were installed in the TSF-1 area (Figure 4.12):

- G&H2021-01 – An OSP is installed with a screened interval from 40 to 100 ft bgs in granite; the static water level is 3,582 ft amsl.
- G&H2021-02 – An OSP is installed with a screened interval from 13 to 33 ft bgs in alluvium; this well is dry.
- G&H2021-07 – An OSP is installed with a screened interval from 40 to 100 ft bgs in limestone; the static water level is 3,764 ft amsl.
- G&H2021-09 – Two VWP sensors are installed in granodiorite, reporting piezometric elevations of 3,867 and 3,880 ft amsl. These results indicate a 0.22 ft/ft downward vertical component of the hydraulic gradient at this location.
- G&H2021-10 – An OSP is installed with a screened interval from 70 to 130 ft bgs in granodiorite and conglomerate; the static water level is 3,926 ft amsl.

The TSF-1 area hydrographs indicate steady-state conditions with no significant short-term trends. A vertically downward component of the hydraulic gradient of 0.22 ft/ft is present in G&H2021-09, located in the southern portion of the TSF-1 area, northwest of Peach pit. Piezometric elevation contours (Figures 4.3 and 4.12) indicate groundwater gradients decreasing towards the northwest throughout the TSF-1 area.

TSF-2-HLP Area Hydrographs

Three multi-level VWP and four OSPs were installed in the TSF-2 and HLP area (Figures 4.11 and 4.13):

- G&H2021-11 – An OSP is installed with a screened interval from 40 to 100 ft bgs in granodiorite; the static water level is 4,066 ft amsl.

- G&H2021-13 – Two VWP sensors are installed in gravel and granite; the upper sensor is dry and the lower sensor is reporting a piezometric elevation of 4,117 ft amsl.
- G&H2021-17 – An OSP is installed with a screened interval from 120 to 180 ft bgs in granite; the static water level is 4,018 ft amsl.
- G&H2021-22 – An OSP is installed with a screened interval from 100 to 160 ft bgs in granite; the static water level is 4,282 ft amsl.
- G&H2021-23 – Two VWP sensors are installed in granite; the upper sensor is dry and the lower sensor is reporting a piezometric elevation of 4,322 ft amsl.
- G&H2021-24 – Two VWP sensors are installed in granite, reporting piezometric elevations of 4,374 and 4,375 ft amsl. These results indicate essentially no vertical component of the hydraulic gradient at this location.
- G&H2021-25 – An OSP is installed with a screened interval from 30 to 90 ft bgs in granodiorite; the static water level is 4,589 ft amsl.

The TSF-2 and HLP area hydrographs indicate steady-state conditions with no significant short-term trends. Piezometric elevation contours (Figures 4.3, 4.11 and 4.13) indicate groundwater gradients decreasing towards the northwest throughout the TSF-2 and HLP area.

Water Quality Data

Chains-of-custody and laboratory analytical reports for groundwater samples collected during the 2021 hydrogeologic characterization are provided in Appendix L. Summaries of groundwater analytical results are provided in Appendix M and Tables 4.2, 4.3, and 4.4.

Major and Trace Ions and Routine Parameters

Groundwater sample major and trace ions and routine parameters for groundwater samples collected during the 2021 hydrogeologic characterization are summarized in Appendix M. The results indicate generally good quality and meet all Aquifer Water Quality Standards (AWQS). All samples have circum-neutral pH, with values ranging between 7.1 to 8.3 s.u.

A Piper diagram for groundwater samples collected during the 2021 hydrogeologic characterization is presented in Figure 4.14. Groundwater in the Project area ranges between Ca-SO₄ and Ca-HCO₃ type. Dominant cations are mainly calcium and magnesium, which are aligned with the limestone / skarn bedrock aquifers found throughout the Project area. Anions are mainly composed of sulfate and bicarbonate which span a wide range of rock compositions. Very little sodic groundwater is found in the Project area.

Radiochemicals

Groundwater radiochemical analytical results for groundwater samples collected during the 2021 hydrogeologic characterization are summarized in Table 4.2.

Table 4.2: Groundwater Sample Analytical Results: Radiochemicals

Sample ID	Gross Alpha Activity	Uranium Activity	Adjusted Gross Alpha	Gross Beta Activity	Radium 226 Activity	Radium 228 Activity	Total Radium
MCL			15	4			5
RNW-HB-108	18.0±1.3	13.8±1.3	4.2±1.8	17.9±2.1	0.5±0.2	3.1±0.4	3.6±0.4
RNW-HB-168	7.1±0.9	4.0±0.7	3.1±1.1	9.3±1.5	1.1±0.2	1.6±0.3	2.7±0.4
G&H2021-01	18.0±1.4	15.9±1.4	2.1±2.0	10.1±1.7	1.9±0.3	1.1±0.5	3.0±0.6
G&H2021-07	4.2±0.8	3.7±0.7	0.5±1.1	<2.8	0.6±0.2	<0.6	0.6±0.2
G&H2021-10	12.3±1.9	3.7±0.6	8.6±2.0	9.4±1.7	0.5±0.2	1.9±0.4	2.4±0.4
G&H2021-11	38.1±2.2	35.1±2.1	3.0±3.0	15.5±1.8	0.9±0.2	<0.6	0.9±0.2
G&H2021-22	11.7±1.2	4.7±0.7	7.0±1.4	7.1±1.6	1.9±0.3	1.3±0.3	3.2±0.4
G&H2021-25	8.0±1.0	4.6±0.7	3.4±1.2	<2.7	0.7±0.2	<0.6	0.7±0.2

Note: All units in pCi/L, except Gross Beta Activity in millirems/yr

Adjusted Gross Alpha and Total Radium concentrations do not exceed the AQWS for any of the groundwater samples. Gross Beta Activity exceeds the numerical AWQS for samples collected from RNW-HB-108, RNW-HB-168, G&H2021-01, G&H2021-10 and G&H2021-11 G&H2021-22 of 4 millirems/yr. However, this standard only applies to man-made radionuclides, which are not present in the Project area.

Isotopes

Stable isotope concentrations for groundwater samples collected during the 2021 hydrogeologic characterization are summarized in Table 4.3 and plotted against the Global and Local Meteoric Water Lines (GMWL and LMWL) (Craig, 1961; Montgomery and Associates, 2009b) on Figure 4.15. The GMWL and LMWL describe the global and local annual average relationships between hydrogen and oxygen isotope ratios in natural meteoric waters relative to mean sea waters.

Table 4.3: 2021 Hydrogeologic Characterization Groundwater Stable Isotopes

Location ID	Date	$^{18}\text{O}/^{16}\text{O}$ (permil)	$^2\text{H}/^1\text{H}$ (permil)
RNW-HB-091	10/21/2021	-8.50	-60.7
RNW-HB-108	10/21/2021	-8.02	-57.9
G&H2021-01	10/21/2021	-8.02	-57.9
G&H2021-07	10/21/2021	-8.38	-60.0
G&H2021-10	11/5/2021	-8.44	-59.6
G&H2021-11	10/21/2021	-8.82	-61.6
G&H2021-22	10/21/2021	-8.75	-60.9
G&H2021-25	10/21/2021	-8.41	-59.1

The stable isotope signatures for all samples plot to the right of the GMWL, and generally coincident with the LMWL, indicating enrichment relative to global mean ocean water consistent with expectations in an arid southwest region environment.

VOC and SVOC

VOC and SVOC concentrations for groundwater samples collected during the 2021 hydrogeologic characterization are summarized in Table 4.4.

Table 4.4: 2021 Hydrogeologic Characterization Groundwater VOCs and SVOCs

Location ID	Date	VOCs (mg/L)	SVOCs (mg/L)
G&H2021-10	10/12/2021	Toluene = 0.00081	Benzo(a)pyrene = 0.0000439 ¹
G&H2021-25	10/10/2021	Toluene = 0.00054	ND

Note: ND is not detected at the reporting limit; ¹ Concentration estimated, detected below reporting limit.

Groundwater sample VOC and SVOC concentrations are not detected above the reporting limit for almost all samples and constituents. Relatively low concentrations of specific constituents are described below:

- Toluene concentrations were reported at 0.00081 and 0.00054 mg/L for samples collected from G&H2021-10 and G&H2021-25, respectively. The AWQS for toluene is 0.001 mg/L. Toluene is a common laboratory contaminant and is not expected to be present in Project area groundwater.
- Benzo(a)pyrene was reported at 0.0000439 ug/L for the sample collected from G&H2021-10, far below the AWQS of 0.0002 mg/L. Benzo(a)pyrene is commonly associated with the combustion of organic material.

Test Pit Infiltration Data

Test pit infiltration testing data from the 2021 hydrogeological investigation are provided in Appendix N, and the results are summarized in Table 4.5.

Table 4.5: 2021 Hydrogeologic Characterization Test Pit Infiltration Data

Location ID	Test Pit Dimensions			CH-CR Test Results		FH Test Results
	Length (ft)	Width (ft)	Area (ft ²)	Q (gpm)	K (ft/d)	K (ft/d)
G&H2021-01 #1	15	4	60	12	38	30
G&H2021-01 #2	15	4	60	9	29	42
G&H2021-10 #1	12	6	72	57	153	164
G&H2021-10 #2	12	6	72	45	120	196
G&H2021-22	12	6	72	10	27	172
G&H2021-24	12	7	84	45	103	176
G&H2021-25	16	6	96	40	80	178

Notes: CH-CR is constant-head constant-rate test; FH is falling head test.

Hydraulic conductivity estimates from the constant head-constant rate infiltration testing ranged from 24 to 153 ft/d at the TSF-1 area test pits (G&H2021-01, G&H2021-05 and G&H2021-10). Hydraulic conductivity estimates from the falling head infiltration testing ranged from 30 to 196 ft/d. For the TSF-1 rea infiltration testing, hydraulic conductivity estimates between the two testing and analysis methods were in good agreement, and within the expected ranges for alluvium materials. Hydraulic conductivity estimates between the initial and duplicate tests for G&H2021-01 and G&H2021-10 also showed good agreement, lending a measure of validity to the testing and analysis methods.

Hydraulic conductivity estimates from the constant head-constant rate infiltration testing ranged from 27 to 103 ft/d at the TSF-2 and HLP area test pits (G&H2021-22, G&H2021-24 and G&H2021-25). Hydraulic conductivity estimates from the falling head infiltration testing ranged from 172 to 178 ft/d. For the TSF-2 and HLP area infiltration testing, hydraulic conductivity estimates between the two testing and analysis methods were in general agreement, and also within the expected ranges for alluvium materials.

Seep and Spring Data

Over the monitoring period from 2006 through 2021, a total of 1,793 observations were made at the 25 springs (Rosemont, 2021) (Appendix A). Of these, 1,174 observations recorded no flow, 13 observations recorded flows too low to measure, 438 observations were less than 1 gpm and 168 were greater than 1 gpm. Most routinely monitored spring and seep sites had either wet, moist, or dry soils with no visible flow, which indicates that groundwater availability is limited, and that recent precipitation may be a significant water source. The maximum observed flow was 36.1 gpm at Reach 2 Spring however, this flow is likely related to surface runoff and not to spring flow. The most reliable maximum flows were observed at Helvetia Spring (6 gpm) and Sycamore Spring (6.5 gpm).

Hydroriparian vegetation is an indication of persistent, shallow groundwater that is accessible at plant root depths. A lack of significant riparian vegetation supports the hypothesis that groundwater availability is limited. Well-developed riparian vegetation communities were observed at Helvetia Spring, Sycamore Spring, Upper Empire Gulch Spring, and Zackendorf Spring (WestLand Resources, 2012). Limited riparian vegetation was observed at 71 springs surveyed by WestLand Resources (2012).

Radiocarbon isotope (^{14}C) age dating analyses have been conducted on eleven of the spring sites. The results indicate groundwater ages range from modern (after 1950) to over 11,000 years old (Rosemont, 2014). Old spring-water ages were detected at Upper Empire Gulch, Fig Tree, Helvetia, Zackendorf, Questa, Sycamore, and Rosemont springs (Appendix A) meaning that for these springs, regional bedrock groundwater is the source. Furthermore, groundwater ages that range from hundreds to thousands of years indicate that travel times are slow. Conversely, springs with recent water ages are likely sourced by recent precipitation or mixing with older groundwater. Springs with relatively young radiocarbon ages may indicate that periodic recent precipitation results in intermittent or ephemeral spring discharge.

An overall conclusion of the observed low spring discharge, limited riparian vegetation, and old groundwater ages is that the bedrock transmissivity within the Project area is low and that the hydraulic connection over large areas is limited.

4.2 Characteristics of the Principal Hydrogeologic Units

Groundwater is well understood at both the regional and Project scales. Detailed descriptions of the hydrogeologic units, their characteristics, and the occurrence and movement of groundwater has been documented in a number of publications including Hargis and Harshbarger (1976), Travers & Mock (1984), Hanson et al. (1990), Mason & Bota (2006), Montgomery & Associates (2007, 2009c, 2009d, 2009e, 2010a, 2010b), Neirbo Hydrogeology (2019), and Tetra Tech (2010c, 2012).

With respect to the mine site hydrogeologic performance, the bedrock geologic framework, associated contacts, deformation and faulting are the dominant controls. All of the bedrock geologic units are poorly conductive and have low porosity. As such they are generally classified as aquitards. The contacts, deformation and faulting collectively combine to create additional discontinuity and compartmentalization of the bedrock system. The bedrock recharge regime is also very limited due to high runoff and very low infiltration capacity. Hence, the bedrock hydraulics in combination with low recharge results in limited bedrock groundwater. In the project area there are local stringers of alluvium in the bases of the canyons. At the range front beyond the Project limits the Basin-Fill geology sequences gradually covers the bedrock and gradually thickens. The degree of interaction between bedrock and Basin-Fill is very small due to the limitations within the bedrock system described above.

Geologic formations that crop out in the Project area include Alluvial deposits, Basin-Fill deposits, Cretaceous to Tertiary extrusive and sedimentary rocks, Cretaceous to Tertiary intrusive granitic rocks, Mesozoic and Paleozoic sedimentary rocks, and Precambrian granitic rocks.

In localized zones of bedrock modest amounts of production in the Project area are occasionally experienced due to local conductive fractures that are open. These generally coincide with geologic contacts, deformation zones or faults. However, site hydraulic testing and the piezometer data collectively show that any conductive fracturing is localized and discontinuous.

General geologic information on these units was presented in Section 2.5, including Figures 2.7 through 2.9. In addition to these units, there are many faults that affect the hydrogeology at the local scale.

The remainder of Section 4.2 provides a general description of the geologic units that appear in the Project and broader far-field domain including distant basins. In Section 4.3, a focused discussion of the hydrogeologic conditions of each mining area and facility is presented.

4.2.1 Alluvium

The Younger and Older Alluvium in the Project area generally consists of unconsolidated sand and gravel deposits along the ephemeral wash channels. In general, groundwater in the shallow alluvium along the ephemeral wash channels occurs temporarily during or following substantial and prolonged storm events. When groundwater is present in these deposits, it occurs under unconfined conditions. Groundwater that is intermittently present in these deposits provides short-term storage of water that infiltrates following runoff from storm events. The stored water provides a temporary source of water to floodplain vegetation. The groundwater not consumed by evapotranspiration gradually dissipates by infiltrating downward to recharge the underlying bedrock units and by flowing laterally downgradient in the alluvium.

Groundwater occurs in the Recent alluvium along much of upper Cienega Creek. In this area, it is an important aquifer and has relatively high hydraulic conductivity. Along the perennial reaches of Cienega Creek, groundwater is generally always present in the Recent alluvium. Where and when saturated, groundwater occurs under unconfined conditions and locally provides water supply to floodplain vegetation (Montgomery and Associates, 2009a). Along Cienega Creek, wells completed in the Recent alluvium yield about 10 to 400 gpm (Montgomery and Associates, 2009a).

Thickness of the alluvium located along Scholefield and Barrel Canyon washes are believed to range from a few feet to several tens of feet, generally increasing in the downstream direction. Because the amount of water stored in the alluvium is both limited and temporally variable, it does not provide a substantial or reliable source of water supply to wells. Even wells that penetrate both Holocene alluvium and underlying bedrock obtain most of their yield from the bedrock (Hargis and Harshbarger, 1976). There may be some areas locally along Davidson Canyon where groundwater is present in the Recent alluvium on a relatively permanent basis (Montgomery and Associates, 2009a).

Alluvium along the Santa Cruz River is very permeable and ranges from 40 to 100 feet thick (Mason and Bota, 2006). Hydraulic conductivity ranges from 50 to 100 ft/d in the river gravels of the alluvium that underlie the channel of the Santa Cruz River (Hanson et al., 1990). Specific yield is as high as 0.25 but averages around 0.15 (Mason & Bota, 2006). Localized groundwater pumpage has caused water level declines in much of the Alluvium along the Santa Cruz River and its tributaries. However, this unit remains hydrological important because it serves as a conduit for flood flow recharge that infiltrates into the underlying regional aquifer (Mason & Bota, 2006).

4.2.2 Basin-Fill Deposits

Basin-Fill deposits are present east and west of the Project area. Groundwater occurs in the Quaternary to Tertiary Basin-Fill deposits (Gila Conglomerate and Pantano Formation) in the southern part of the study area. Hargis and Harshbarger (1976) speculated that wells completed in these deposits might be capable of producing up to 100 gallons per minute (gpm). However, wells PC-4, AH-8, and PC-3 located in the southern part of the proposed Rosemont Pit area and penetrate the full thickness of the Basin-Fill deposits, have sustained yields of 1 to 2.5 gpm or less. These very small yields show that the Basin-Fill deposits near the mine are well-cemented and poorly permeable. This is consistent with other pumping test results (Montgomery & Associates, 2007) which indicate that these deposit's transmissivity and hydraulic conductivity are very small. Therefore, potential well production or pit inflow from this unit is expected to be low.

Basin-Fill deposits are moderately permeable toward the deeper parts of the Cienega basin farther beyond the east of the Project area. These sediments are highly variable in their aquifer hydraulic parameters but permeability ranges within the Basin-Fill deposits tends to be the largest in the

younger, shallower sediments, and tends to decrease with depth (Montgomery and Associates, 2009a). Consequently, relative more groundwater occurs in these units. Records of reported well yields from wells penetrating the Basin-Fill deposits south and east of the Project area are very limited but suggest sustainable pumping rates may be in the range of 1 to 15 gpm (Montgomery and Associates, 2007) to as much as several hundred gpm (Montgomery and Associates, 2009a).

Basin-Fill Deposits in the Santa Cruz Basin (Pantano, Tinaja, and Ft. Lowell Formations) are saturated at depth. Groundwater generally occurs in a mostly unconfined state to depths of 1,000 feet or more. Localized confining conditions occur in areas where fine-grained materials in the Basin-Fill sediments exist.

Permeability of the units in the Santa Cruz Basin beyond the west of the Project area range from 2 to 255 ft/d based on aquifer-test data from several sources (Hanson et al., 1990). Hydraulic conductivity ranges from 20 to 50 ft/d in the lower Basin-Fill and 30 to 40 ft/d in most of the upper Basin-Fill (Hanson et al., 1990). Estimates of specific yield in the upper part of the aquifer system average about 0.15. Storage coefficients of the aquifers below 1,000 ft probably average about 1E-4.

Water resource development along the Santa Cruz River has been widespread since the 1940s for agricultural, municipal, and industrial purposes (Mason & Bota, 2006). Large-diameter wells completed in the Santa Cruz Basin in Pantano Formation yield from a few hundred to over 5,000 gpm (Travers and Mock, 1984). Wells in the coarser-grained parts of the Tinaja Formation may yield up to 600 gpm. Wells in the Ft. Lowell Formation may yield 500 to 1,500 gpm. Montgomery and Associates (2009e) summarize aquifer test parameters in the vicinity of the proposed Sanrita well field. Hydraulic conductivity of the Basin-Fill deposits (mostly Tinaja and Ft. Lowell Formations) ranges from 1.7 to 100 ft/d.

4.2.3 Cretaceous-Tertiary Extrusive and Sedimentary Rocks

The Upper Cretaceous volcanic and sedimentary rocks are found in the northeast part of the Santa Rita Mountains but they are relatively uncommon in other parts of the Project area. They are well-lithified and have little or no primary porosity or permeability, except where fractured or faulted (Montgomery and Associates, 2009a). Well yields from wells that penetrate these rock units range from less than 1 to occasionally more than 50 gpm.

4.2.4 Cretaceous-Tertiary Intrusive Rocks

The Upper Cretaceous and Early Tertiary intrusive rocks are located in the northern Santa Rita and Empire Mountains. These units have no primary porosity or permeability and at broad scale contain no significant groundwater. Where locally fractured or faulted these units can store and transmit

small quantities of water (Montgomery and Associates, 2009a). Very few wells in the Project area are completed in these rock units and reported well yields range from near zero to a few gpm. Except for a few limited local fracture zones, these rock units are expected to act as aquitards and limitations to groundwater flow in the Project area.

Davidson Canyon Dike

Numerous northwest-striking quartz-porphyry dikes are formed in the Empire Mountains and Mount Fagan areas (Tetra Tech, 2010c). Some of these dikes appear to have been formed by intrusion into older previously existing faults (Drewes, 1972b). The dikes are younger than the host bedrock. There is the potential that the dikes may create barriers to groundwater flow. However, the host rock is also poorly conductive. Therefore, the dikes would only further reduce already minor groundwater movement across the alignment of these features.

One of the longest and most continuous of the dikes is perpendicular to Davidson Canyon. The Davidson Canyon quartz-porphyry dike is located approximately 5 miles northeast of the proposed Rosemont Pit and trends roughly perpendicular to Davidson Canyon Wash. This Tertiary age geologic feature is described in Ferguson et al. (2009) as:

“felsic porphyry containing 10- 30% quartz and feldspar phenocrysts (1-3 mm) and sparse biotite in a fine-grained light-colored matrix, locally flow-foliated. Forms dikes and sills, and a plug-like stock in the northwest corner of the map area.”

This quartz-porphyry dike strikes sub-perpendicular to groundwater flow in the Davidson Canyon area, is over four (4) miles long, and based on a field investigation, has a low fracture density and a thickness generally greater than 100 feet (Tetra Tech, 2010c). There has been no testing of this dike to characterize its hydraulic properties and confirm its influence on the groundwater flow system. The cross-cutting nature, width, and length of this dike, combined with its physical description, suggest that it would limit groundwater and act as a barrier relative to host rock.

4.2.5 Mesozoic Sedimentary Rocks

The Bisbee Group rocks outcrop extensively along the eastern and northern slopes of the Santa Rita Mountains and cover a large area around the Empire Mountains and the west-central part of the Whetstone Mountains. Bisbee Group rocks are known to underlie the Basin-Fill deposits in much of the upper Cienega Creek. Bisbee Group rocks are deformed over much of the Project area and tend to have very low primary porosity and conductivity (Montgomery and Associates, 2009a). In some areas they are locally fractured.

The horizontal hydraulic conductivity of the Willow Canyon Formation ranges from 2E-4 ft/d to 0.25 ft/d, the vertical hydraulic conductivity ranges from 5E-4 ft/d to 2.8 ft/d, and specific storage ranges

from $7\text{E-}7 \text{ ft}^{-1}$ to $3.3\text{E-}4 \text{ ft}^{-1}$ (Tetra Tech 2010d). The hydraulic conductivity of the Glance Conglomerate is 0.06 ft/d horizontal and 0.002 vertical with specific storage of $1\text{E-}6 \text{ ft}^{-1}$ (Tetra Tech 2010d). All of these property ranges are very small.

Groundwater in the Mesozoic sedimentary rocks can only occur where there is secondary permeability due to open joints or fractures. An exception is the Glance Conglomerate, which locally appears to have moderate primary permeability (Montgomery and Associates, 2007). Any limited groundwater in the Mesozoic rocks probably occurs under semi-confined to confined conditions.

Most of the private domestic and stock wells east of the Project area produce groundwater from Mesozoic sedimentary units, but well yields are extremely minor, typically in the less than 1 to a few gpm (Montgomery and Associates, 2007). This demonstrates the lack of significant groundwater in the system. The wells that produce the upper bound flow, either now or in the past, likely did so due to the presence of local fractures or due to being screened in the Glance Conglomerate.

4.2.6 Paleozoic Sedimentary Rocks

Paleozoic rocks occur in the Project area mostly along the eastern slopes of the Santa Rita Mountains. Paleozoic rocks are also abundant in the Empire, Whetstone, and Mustang Mountains, and in the northern part of the Canelo Hills. The Paleozoic rocks include limestones, dolomites, and quartzites which were uplifted, faulted, and intruded by granitic rocks during the Laramide orogeny. These units have little to no primary porosity and conductivity.

Tetra Tech (2010d) re-analyzed several previous aquifer tests in the vicinity of the proposed Rosemont Pit that included Paleozoic sedimentary units (Concha Limestone, Scherrer Formation, Epitaph Limestone, and Colina Limestone). It determined that horizontal hydraulic conductivity ranged from 0.00017 ft/d to 0.57 ft/d, vertical hydraulic conductivity ranged from $4.7\text{E-}3 \text{ ft/d}$ to 0.35 ft/d, and specific storage ranged from $1.5\text{E-}7$ to 0.004 ft^{-1} . The range of parameters is consistent with a variably bedrock system that has poor characteristics, occasional local scale fractures and no potential for water resource development.

Groundwater in the Paleozoic rocks probably occurs chiefly under confined conditions. Yields from wells that penetrate these rock units range from typically less than 1 to occasionally more than 50 gpm where local fractures are encountered.

4.2.7 Precambrian Rocks

Granitic intrusive rocks of Precambrian age occur west of the crest of the Santa Rita Mountains and extend beneath the Paleozoic rocks to the east. The Continental Granodiorite also outcrops in

the pediment area north of the Empire Mountains and Whetstone Mountains' northern part. Towards the west of the Project area, the Precambrian rocks are juxtaposed against Basin-Fill deposits by Tertiary Basin and Range faulting. The Pinal Schist is present in small areas on the west side of the Santa Rita Mountains, the Whetstone Mountains, and the northern part of the Empire Mountains.

There is no significant groundwater in the Precambrian rocks. Small amount of water occurs locally within open joint or fractures. There is no primary porosity or permeability (Montgomery and Associates, 2009a). Very few wells in the Project area are completed in these rock units, reflecting its aquitard character. Reported well yields range from near zero to a few gpm. At a broad scale these rock units act as aquitards and barriers to groundwater flow in the Project area. Consequently, this unit has very low hydraulic conductivity, on the order of $5E-4$ to $1E-3$ ft/d (Neirbo Hydrogeology, 2019).

4.2.8 Faults

Previous geologic investigations by the AGS, the USGS, academia, and private entities have identified many geologic structure and faults in and around the Project area. Very minimal groundwater occurs in the various consolidated, lithified and crystalline basement rocks from the Precambrian through the Tertiary Basin-Fill. Fracturing associated with the faults can sometimes create local increase in groundwater occurrence compared to the neighboring in-situ rocks, in situations where the fractures remain open and are not filled with minerals or gouge. On the other hand, faults may also compartmentalize adjacent geologic units into isolated blocks. Oftentimes, gouge and infill materials will render the faults less conductive than the host rocks. In-situ stresses will often close and seal any open fractures.

Faults can affect groundwater movement in two ways, (i) by juxtaposing units with different hydrologic properties; and (ii) by exhibiting characteristics that are different from surrounding unfaulted rocks. Faults can therefore act as relative barriers to groundwater movement and/or can cause relatively more movement along the direction of strike. If the fault zone material is filled with gouge or secondary minerals, it can act as a barrier to flow (barrier faults). Alteration and mineral precipitation can also decrease the hydraulic conductivity by occluding pore spaces and filling connected fractures. It's common that fault properties will change along strike or that pinch and swell will occur.

The role of faults in the Rosemont Copper World Project area become diminished because most of the bedrock units are poorly conductive and in many cases are aquitards. Barrier faults will further limit the already very low groundwater movement. Any local fracturing will produce minimal and unstained flow due to the lack of recharge or water availability from the surrounding rock.

Hydraulic testing and measured groundwater levels can be used to determine whether faulting in an area acts as substantial barriers or conduits for groundwater movement. Mapping of fault physical properties can also help infer the hydrogeologic role of faults. Early characterization studies (Montgomery and Associates, 2009a, 2010a) concluded that specific identification and characterization of individual faults and their influence on groundwater movement could not be established based on the available data. Generally, there was an apparent direct correlation between hydraulic conductivity and fracture intensity. However, the continuity of fracturing over significant strike length or the correlation of conductive fractures to specific faults is not apparent. The groundwater characterization work completed in 2021 indicates discontinuity in the bedrock groundwater system some of which may be attributed to faults although there are no direct correlations of consistent and continuous conditions on specific faults. The work completed in 2021 generally agrees with the assessment that faults in the Project area don't have consistent properties along strike.

Key faults in the Project area are described below.

Backbone Fault

The Backbone Fault is a high-angle faulted zone in the Paleozoic units along the Santa Rita crestline is a structural feature which exerts a substantial degree of control over movement of groundwater in the Project area. The Backbone Fault is a complex structural assemblage of thrust faults, high angle normal faults and tear faults that forms the western edge of the east dipping block of Paleozoic sediments including the Rosemont copper deposit (Anzalone, 1995). The faults dip in an easterly direction at variable angles up to 90 degrees.

It's important to consider that the fault is not characterized over significant strike distance. Moreover, the rock units on each side are extremely poorly conductive. Therefore, even if the fault has locally increased fractures conductive to water, there is minimal opportunity for water to move along strike due to the limited groundwater movement within the surrounding rock. It's considered highly unlikely that there is significant groundwater movement along the strike of this fault.

Flat Fault

The Flat Fault is a low-angle fault between the Willow Canyon Formation and the underlying Paleozoic units with a substantial degree of control over groundwater movement in the Project area (Montgomery and Associates, 2010a). The Flat Fault originated as a large displacement normal fault. Subsequent tilting of the strata in the area rotated this fault to a low angle, giving it the appearance of a low angle thrust fault. The fault is present on the surface, at the contact between the Willow Canyon and the Paleozoic units. The fault dips in an easterly direction at variable angles

up to about 20 degrees and may facilitate groundwater movement east from the Santa Rita Mountains.

Portions of the Flat Fault are considered to have relatively increased hydraulic conductivity compared to the surrounding rock formation, making it a relative conduit over local strike length. The Flat Fault intersects the Backbone Fault and groundwater data indicate a hydraulic connection between the faults (Montgomery and Associates, 2010a).

The Willow Canyon Formation, which overlies the fault, has a lower average hydraulic conductivity than the fault and acts as a confining unit and limiting recharge and groundwater availability to the fault. Artesian conditions are present in two wells (PC-2 and PC-5) which are screened across the fault (Montgomery and Associates, 2010a). Based on previous work the fault is considered to be a locally limited feature. Conclusions about the extent of the Flat Fault zone of relatively higher conductivity are as follows (Montgomery and Associates, 2010a):

- Based on results of aquifer testing, this low-angle fault forms an apparent zone of increased hydraulic conductivity local to the northern half of the Rosemont Pit area.
- In the south portion of the Rosemont Pit, lack of response to the PC-5 long-term pumping test in observation wells PC-3 and PC-4, as well as results of groundwater model calibration to pumping tests, indicate that the hydraulic influence of the Flat Fault does not extend substantially to the south. Therefore, its properties have limited continuity along strike.
- In the north portion of the Rosemont Pit, response to PC-5 pumping observed in well PC-6 indicates higher hydraulic conductivity associated with the Flat Fault. Lack of response in observation well HC-5B prior to pumping in well HC-5A indicated a lack of connection between PC-5 and HC-5B.
- East of the Rosemont Pit, the hydraulic conductivity of the Flat Fault is unknown. Measured groundwater levels and steep hydraulic gradients in the pit area do not support the concept that the Flat Fault acts as a higher conductivity drain extending substantially to the east from the pit area. The Flat Fault is believed to decrease in conductivity east from the Rosemont Pit, with depth. This is consistent with the concept that the Flat Fault is more conductive in vicinity of the faulting along the east side of the Santa Rita Mountains. It is also consistent with the typical behavior of faults where properties change along significant strike distances especially when the nature of the host rock also changes.

Davidson Canyon Fault

The Davidson Canyon fault zone extends through the Davidson Canyon area and separates the Santa Rita from the Empire Mountains (Montgomery and Associates, 2009a). The fault zone occurs northeast of the Project area, trending north along Davidson Canyon. It consists of at least two major faults in which the west side is down relative to the east side by as much as 9,800 feet near Interstate-10 (Montgomery and Associates, 2010a). The eastern fault can be traced south across

the northern and western pediment of the Empire Mountains, approximately 1 mile east of Davidson Canyon. The western faults trace is concealed by alluvium. Based on an interpretation of groundwater levels and geologic data, the Davidson Canyon fault was determined to represent a relatively higher hydraulic conductivity zone relative to the surrounding rock formations (Montgomery and Associates, 2010a).

The hydraulic properties of the Davidson Canyon fault zone have not been tested (Tetra Tech, 2010c). The faults are inferred over much of their extent, making field observations of properties (e.g., aperture, open versus closed, degree of fine-grained material, etc.) difficult to determine. There may also be considerable lateral and vertical variability in the hydraulic properties of the fault zone. However, the orientation of the Davidson Canyon fault zone and the surface water drainage direction are roughly parallel to the groundwater gradient, suggesting that there is some potential for relatively more groundwater movement along this zone. However, the fault may be a zone of weaker rock which is much less conductive than the host rocks. There is no conclusive evidence that groundwater flow along the fault zone is discharging at an unnamed spring in the lower reaches of Davidson Canyon (Tetra Tech, 2010c). The low discharge at this spring, combined with the lack of any high discharge, perennial springs in Davidson Canyon, suggests that the Davidson Canyon fault zone is not acting as regional scale groundwater drain.

NW-Trending Faults

Davidson Canyon is separated from the Project area by a series of northwest trending faults in the Upper Cretaceous Volcanics (Tetra Tech, 2010c). The effect that these faults would have on the propagation of drawdown from dewatering the Rosemont Pit, in the direction of Davidson Canyon, depends on the hydraulic properties of the faults. The occurrence of numerous springs along the northwest trending faults in the Upper Cretaceous Volcanics suggest that some faults act as barriers to groundwater flow (Tetra Tech, 2010c). These faults are roughly perpendicular to groundwater flow and as barriers, these faults can result in groundwater being forced to the surface.

Santa Cruz Fault

Published geologic maps and studies of the Basin-Fill in the Santa Cruz Basin have shown the presence of several high-angle normal faults. These faults were forming during faulting Basin and Range faulting. One of the more significant faults is the Santa Cruz Fault. This fault, and others of similar nature, is believed to have occurred during the Tertiary age of the Tinaja beds deposition, which predates the Quaternary age deposition of the Fort Lowell Formation. Anderson (1987) indicates vertical displacement along the fault resulted in a thicker deposition of the upper Tinaja beds on the east side of the fault relative to the west side of the fault. However, despite this fault's demonstrable relationship with Basin-Fill processes, the Santa Cruz fault is not considered a hydraulic barrier or conduit (Montgomery and Associates, 2010b).

4.3 Pit and Facility Hydrogeology

The hydrogeology of the Project area is described below in order of the mine plan sequence, from west to east, followed by key facilities. Hydrogeological maps for Project pits and facility areas are presented in Figures 4.5 through 4.13. Hydrogeological cross sections are presented in Figures 4.16 through 4.20.

The description of groundwater conditions is based on, and supported by, the previous and the 2021 field programs including borehole lithology, hydraulic testing and piezometric data. It is further supported by the geologic and structural mapping and modeling of the area. Overall, the groundwater system in the Project area is limited and discontinuous. There is minimal storage due to the low porosity ranges of the geologic units and no significant groundwater flow or movement over significant distances due to the lack of established interconnected fracture networks. The complex geologic framework and geometry of contacts, fault traces and intrusive features create significant additional discontinuity in the bedrock system which further limits groundwater movement. The steep topography, low annual rainfall total and flashy nature of monsoon rains, in combination with the bedrock hydraulics, means that groundwater recharge is limited. Hence, the broad scale groundwater flux across the Project area is extremely small. This is further supported by the often elevated piezometric levels and strong hydraulic gradients that demonstrate lack of groundwater movement or ability for the bedrock compartments to drain. Any locally encountered pockets of groundwater are associated with storage in local fracture zones. Groundwater resources in the bedrock system are therefore not sustainable as reflected in the lack of pre-existing development in the area.

Underground workings exist from previous mining operations, extending beneath the water table in bedrock (Creasy and Quick, 1955; Westland Resources, 2013). There is limited historical record of underground mine groundwater inflows or dewatering. In 1900, groundwater was encountered at depth in the Isle Royal shaft, providing operational water supplies to the district and smelter for a few years (Westland Resources, 2013). While not conclusive, the limited evidence of groundwater inflows indicates that previous underground mining operations were generally not impacted by water management issues, owing to and confirming the low conductivity aquitard nature of the bedrock system.

4.3.1 Peach and Elgin Pits

The field investigation data combined with geologic and structural modeling show that there is no significant groundwater in the Peach and Elgin open pit areas. The combination of geologic complexity, poor rock mass hydraulics and lack of recharge, means there is no significant groundwater system continuity in the area. A significant proportion of planned mining is above measured piezometric levels. It's unlikely that any groundwater control measures will be needed to

support proposed mining. The bedrock system contains no significant storage or conductivity. Recharge is very low. Geologic structures and the general fabric of the district will limit any groundwater movement from up-gradient areas. These characteristics are well supported by the hydraulic testing and data from the piezometers installed during 2021.

The rocks in the vicinity of the Peach and Elgin pits include Precambrian intrusive, Paleozoic sedimentary, and Tertiary Intrusive units. Tertiary sedimentary units are present just west of each pit but are not expected to be exposed in the pit walls (Figures 4.5, 4.16 and 4.17).

Precambrian Continental Granodiorite will be exposed in the bottom portion of Peach Pit in the southern portion of Elgin Pit. The Paleozoic sedimentary rocks that will be intercepted by the pit include Bolsa, Abrigio, Martin, Escabrosa, Horquilla, Epitaph, and Concha Formations. These will be present in the walls of both pits. The units dip eastward. The eastern part of the Elgin Pit will encounter Tertiary Quartz Monzonite Porphyry intruding the Paleozoic section. None of the geologic units are not expected to produce significant groundwater during proposed mining.

The Flat Fault intersects the west pit wall in Peach Pit between an elevation of 3,975 feet amsl and 4,321 ft amsl. At Elgin Pit, the fault intersects the south pit wall between 4,075 feet amsl and 4,350 ft amsl. Portions of the Flat Fault may potentially have relatively increased hydraulic conductivity although there is limited evidence for this. Where present beneath pre-existing groundwater levels it may exhibit minor seepage when exposed in the proposed pit walls. However, the surrounding low conductivity rock mass will be a limiting factor for groundwater movement.

In addition to the Flat Fault, several unnamed lower order faults are found within the Peach and Elgin pit areas. Any local scale groundwater occurrence would most likely coincide with some of these.

The proposed final floor of the Peach Pit is 3,950 ft amsl and the proposed bottom of the Elgin Pit is 4,050 ft amsl. The depth to groundwater measured at 20 monitoring locations in the Peach-Elgin area ranges from 59 feet to 236 ft bgs, and the potentiometric surface elevation ranges from 4,107 to 4,324 ft amsl. It's evident from the piezometer data that some of these levels are locally perched, decoupled and poorly interconnected. Groundwater gradients across the two pit areas is in the west-southwest to northwest direction. Horizontal gradients vary from 0.05 to 0.11 ft/ft. Vertical gradients range from essentially zero to 0.33 ft/ft directed downward. The variable piezometric levels and gradients reflect discontinuity, perched and de-coupled groundwater, compartmentalization, and lack of active groundwater movement in the system.

4.3.2 Heavy Weight Pit

The Heavy Weight Pit geology is relatively simple, consisting of Precambrian Continental Granodiorite in the bottom and southeast half of the pit and Tertiary Quartz Monzonite Porphyry in the northwest half of the pit (Figures 4.6, 4.16 and 4.18). The Quartz Monzonite Porphyry intrudes the other units. A thin sliver of Paleozoic (Permian) Concha Limestone sits between the Precambrian Continental Granodiorite and the Tertiary Quartz Monzonite Porphyry.

The geologic units occupying and surrounding the pit all have very low storage and low to very low bulk hydraulic conductivity. None are expected to produce significant groundwater during proposed mining. Active groundwater control measures will not be needed to support proposed open pit mining.

The Flat Fault intersects the Heavy Weight Pit. However, given its local geometry and elevation, it's not expected to be a hydrogeologic feature of importance during mining. Several lower order faults also intersect the pit area and small amounts of local storage may drain when these are intersected by mining. However, no significant groundwater inflow is expected.

The proposed final floor of the Heavy Weight Pit is 4,350 ft amsl. As expected, groundwater levels vary across the site reflecting the topographic grade and low bulk hydraulic conductivity of the system. Piezometer data indicate groundwater levels ranging from 4,626 ft amsl in up-gradient areas to 4,430 ft amsl in the local down-gradient areas toward the east. Horizontal gradients vary from essentially hydrostatic at the potentiometric high on the north side of Heavy Weight Pit to 0.25 ft/ft on the west side of the Copper World Pit. Vertical gradients range from 0.03 ft/ft to 0.35 ft/ft directed downward. As with other parts of the site, the variable gradients reflect discontinuity, compartmentalization, low bulk scale conductivity and district topography.

4.3.3 Copper World Pit

The Copper World Pit footprint is in an up-gradient hydrogeologic position near the basin divide. The geologic units collectively have low bulk conductivity and extremely low storage. They are configured into a complex set of steep geometries and faulted offsets. The combination of bulk hydraulic parameters, strong discontinuity in geology, lack of up-gradient catchment or recharge, collectively combine to limit the groundwater system. There is very limited continuity or groundwater flux across this area. It's not expected that groundwater controls will be necessary during proposed mining.

The units exposed in the Copper World Pit include Precambrian and Paleozoic sedimentary rocks (Figures 4.6, 4.16 and 4.18). Precambrian Continental Granodiorite will be exposed in the bottom and west wall of the Copper World Pit. This unit underlies the Paleozoic units that locally include

Bolsa, Abrigo, Martin, Horquilla, Earp, Epitaph Formations. These are present in the east wall of the proposed pit.

The two major structures present in the Copper World Pit include the Leader Fault and the Backbone Fault. The dip and strike of these faults combined with the bedding geometry will greatly limit any connection toward the East or West. It is expected that any productive fracturing along the Backbone Fault zone if present, would be locally limited. However, if any connection along strike were present then a gradient toward the Rosemont pit area may develop in the longer term.

The proposed final floor elevation of the Copper World Pit is 4,450 feet amsl to the north and 4,500 ft amsl to the south. The depth to water measured at 18 monitoring locations in and around the Copper World Pit and surrounding WRF area ranges from 31 feet to 422 ft bgs. The potentiometric surface elevation ranges from 4,331 to 4,740 ft amsl. Groundwater levels show discontinuity and are influenced by topographic grades, sub-vertical geologic fabric, associated barriers, low bulk conductivity and lack of recharge. The inferred gradient across the Copper World Pit is mainly toward the northwest. Horizontal gradients range from essentially zero at the potentiometric high on the north side of Heavy Weight Pit to 0.25 ft/ft on the west side of Copper World Pit. Vertical gradients range from 0.03 ft/ft to 0.35 ft/ft directed downward, again, influenced by topography, the elevated position of the mining area and geologic fabric.

4.3.4 Broadtop Butte Pit

The Broadtop Butte Pit area is further up the ridgeline above the Copper World Pit and to the north of Rosemont Pit. Similar to the Copper World Pit, the location contains no hydrologic catchment. The bulk rock properties involve low hydraulic conductivity and storage. The geologic contacts and geometries, in conjunction with faults, create significant discontinuity and compartmentalization. These factors together with extremely low recharge conditions create limited opportunity for groundwater occurrence or movement at the site. As such, no proactive dewatering measures will be needed during mining.

The Broadtop Butte Pit complex consists of a deeper northern pit and a north-south elongated, shallower southern extension.

The rock units exposed in the Broadtop Butte Pit include Precambrian intrusive rocks, Paleozoic sedimentary rocks, Mesozoic sedimentary rocks, and Tertiary intrusive rocks (Figures 4.7, 4.16 and 4.18).

Precambrian Continental Granodiorite will be exposed in the bottom and west wall of the southern extensions of the Broadtop Butte Pit. This unit underlies the Paleozoic units. The Paleozoic sedimentary rocks that will be exposed in the pit include Bolsa, Abrigo, Escabrosa, Epitaph, and

Scherrer Formations. These are present in the east wall of the southern pit and portions of the northern pit. These units dip steeply eastward.

Tertiary-aged Quartz Monzonite Porphyry is the dominant unit in the north extension of the Broadtop Butte Pit. It intrudes all other units. It is not present in the bottom of the pit. Mesozoic sedimentary rocks including the Cretaceous Willow Formation and the Glance Conglomerate, are found in the southern and eastern portion of the northern pit. These units dip moderately steeply eastward.

Several major structures are associated with the Broadtop Butte Pit area and are summarized as follows:

- Gunsight Notch Fault (Drewes, 1972b) strikes northwest and intersects the Broadtop Butte Pit at Gunsight Pass, a prominent topographic notch at the crest of the Santa Rita Mountains. It roughly demarcates the dividing line between the north and south pits.
- The steeply dipping Backbone Fault intersects the southern pit and is coincident with the long axis of the pit. It also intersects the Gunsight Notch Fault at Gunsight Pass.
- The steeply dipping South Broadtop Fault is a west-southwest trending fault that intersects the southern portion of the northern pit. It also passes through Gunsight Pass.
- The Graben Fault is a near-vertical fault that strikes north-northwest. It is present in the eastern wall of the northern pit.
- Broadtop Footwall Thrust Fault is a low angle thrust fault that intercepts the northern pit around 5,000 to 5,300 ft amsl and is mapped on the east wall of the southern pit at around 5,300 ft amsl. It is not known if this fault continues further west across the southern Broadtop Butte Pit.

The faults, in combination with the geologic units present in the area, will impart significant discontinuity in the bedrock system. If the Backbone Fault contains any hydraulic continuity along a strike, a gradient may develop from Broadtop Butte toward the Rosemont Pit once developed.

The floor of the proposed Broadtop Butte Pit is 4,850 ft amsl in the north, and 5,200 ft amsl in the south. The depth to water measured at seven monitoring locations in the Broadtop Butte Pit and surrounding WRF reflects the abrupt and steep topography, low bulk conductivity of the geologic units and the strong discontinuity created by the framework of contacts and faults. The range of groundwater levels illustrates the lack of connection and ability for groundwater movement or drainage in the area.

Depth to groundwater measured in the installed piezometers ranges from 61 to 513 ft bgs. The potentiometric surface elevation ranges from 5,016 to 5,409 ft amsl. The upper ranges appear perched and de-coupled, based on comparison to deeper nearby piezometers. This is expected for

the location. The more elevated groundwater levels to the north also appear to reflect an isolated and de-coupled compartment.

Horizontal gradients in the Broadtop Butte Pit and WRF area reflect the above-described conditions. They range from essentially zero at the groundwater high in the north end of the pit to 0.23 ft/ft. Vertical gradients range from 0.30 to 0.76 ft/ft directed downward.

4.3.5 Rosemont Pit

The Rosemont Pit is located immediately East of the topographic divide and Santa Rita ridgeline. Due to its up-gradient position there is a limited hydrologic catchment associated with the mining area. The open pit has more significant extents than the satellite pit areas described above. It is hosted by bedrock that includes intrusive sequences and sedimentary units, further described below. Groundwater levels across the planned mining area are strongly variable at localized scales and reflect the topographic grade, complex geology, compartmentalization, and discontinuity within the system. Due to the proposed rate and ultimate depth of excavation and presence of more porous Willow Canyon Formation in some sectors, relatively low amounts of groundwater inflow to the operations can be expected during the mine life. This may require some local pit scale dewatering and water control measures, mainly to reduce pore pressures and support highwall safety. Most groundwater inflow will be generated via storage removal from local bedrock fractures within the open pit shells and more granular Willow Canyon Formation. The geologic framework of the open pit area and low bulk conductivity ranges will limit any connections to the broader system. The lack of up-gradient catchment and low rates of recharge will limit groundwater flow in the area.

The principal rock units in and surrounding the Rosemont Pit area are illustrated in Figures 4.8, 4.16 and 4.19 and are summarized below as follows:

- Heavily folded and offset Paleozoic sedimentary rocks including Bolsa, Abrigio, Martin, Escabrosa, Horquilla, Earp, Colina, Epitaph, Scherrer, Concha and Rainvalley Formations.
- Mesozoic sedimentary rocks including the Willow Canyon Formation and the Glance Conglomerate.
- Tertiary andesite and Quartz Monzonite Porphyry underneath and intruding the Willow Canyon Formation and upper Paleozoic section.
- Gila Conglomerate, mainly in the shallower parts of the southeast pit sectors.

The major structures in the Rosemont Pit area are illustrated in plan in Figure 4.8. Geologic structure is dominated by the steep dipping Backbone Fault complex which forms a series of northwest striking features. A set of secondary major faults strike northeast and appear truncated by a strong set of east-west faults toward the north limits of the pit area. As illustrated in Figure 4.8

the northwest, northeast and east-west striking faults combine to create a strong set of bounding features at the margins of the open pit.

Hydraulic testing in the proposed Rosemont Pit area (Montgomery and Associates, 2007, 2009a) indicate generally low bulk hydraulic conductivity and minimal fracturing or interconnection over significant distance. The Willow Creek formation potentially has relatively increased storage and any local fracturing may produce low but more sustained flow as a consequence. The major bounding structures and the complex geometry of steep dipping geologic contacts within the mining footprint, will create strong compartmentalization and domain limitations, within the immediate open pit area. The structural system and broader geologic framework will further limit interconnection to the broader system.

The Rosemont Pit is much larger in extent and depth compared to the west side mining areas. Given the proposed mining rate and depth, relatively low rates of groundwater inflow to the open pit and operating areas can be expected. This is mainly due to the release of minor amounts of groundwater in local bedrock fractures. These local bedrock fractures are within the pit shells as the pit floor deepens and expands. The Willow Creek formation may also produce minor amounts of groundwater as it is exposed in the southeast sectors.

The proposed final floor elevation for the Rosemont Pit is 3,650 ft amsl. Depth to groundwater measured at 16 monitoring locations in the proposed pit vicinity range from 11 to 338 ft bgs and the potentiometric surface elevation ranges from 5,017 to 5,179 ft amsl. Groundwater level variability reflects strong topographic grades, bedrock compartmentalization and low bulk hydraulic conductivity. Groundwater gradients across the site are generally toward the east and west reflecting the lack of hydrogeologic catchment associated with the site and presence of a natural divide. Horizontal gradients in the pit area range from 0.21 ft/ft on the southwest side and essentially zero on the north side. The horizontal gradients away from the pit range from 0.07 ft/ft towards the northwest and 0.06 ft/ft towards the east. The gradients reflect significant discontinuity in the groundwater system in the open pit area.

Confining conditions are indicated in the deeper Paleozoic rocks in and near the proposed Rosemont pit area (Montgomery and Associates, 2007, 2009a). The elevated hydraulic heads in the Paleozoic rocks are a result of their high western elevations along the Santa Rita ridgeline and low conductivity associated with the overlying geologic sequence.

For Rosemont pit implementation, it will potentially be necessary to operate small pit scale groundwater control measures. These measures would be needed to i) remove accumulated water in pit sumps, and ii) to depressurize slope sectors that are very poorly conductive and have geotechnical design sensitivity to pore pressure. Due to the low bulk conductivity, limited interconnection, and strongly compartmentalized system, any pit area groundwater controls would

need to be within the final pit footprint and may include low flow horizontal drains or small sector scale short term dewatering wells.

4.3.6 Waste Rock Facility

The Waste Rock Facility (WRF) will include material placed within and around the Heavy Weight, Copper World, and Broadtop Butte pits (Figures 4.9, 4.16, 4.18 and 4.20). The preceding sections discuss groundwater conditions in these areas. In addition to back filling, waste rock will also be placed on areas of native ground surrounding the pit crest areas, and other areas such as a foundation for the HLP. Bedrock includes Precambrian intrusive, Paleozoic sedimentary, Cretaceous sedimentary, and Tertiary intrusive rocks. Additional detail is as follows:

- Precambrian Continental Granodiorite outcrops between the Heavy Weight and Copper World pits.
- Paleozoic sedimentary rocks in several areas within the WRF footprint. They are found west of Heavy Weight Pit (Concha Limestone), east and north of Copper World Pit (Bolsa Quartzite, Abrigo Formation, Martin Formation, Horquilla Limestone, Epitaph Limestone, and Scherrer Limestone), and north and east of Broadtop Butte Pit (Earp Formation, Epitaph Dolomite, Scherrer Limestone, Concha Limestone, and Rainvalley Formation).
- Mesozoic sedimentary rocks (Willow Canyon Formation) outcrop southwest of the Heavy Weight Pit and east of Broadtop Butte Pit.
- Tertiary-aged Quartz Monzonite Porphyry is present west of Heavy Weight Pit. It intrudes all other units. This unit is not expected to yield substantial quantities of groundwater due to the generally low hydraulic conductivity of the rock matrix and it will be expected to act as a barrier to flow.

Several faults are present in the WRF footprint, shown in plan view in Figure 4.9. The most important include:

- Portions of the Flat Fault
- Leader Fault
- The Backbone Fault system
- Gunsight Notch Fault
- South Broadtop Fault
- The Graben Fault
- Broadtop Footwall Thrust Fault

The depth to water measured at 20 monitoring locations in the Heavy Weight Pit, Copper World Pit and WRF area ranges from 31 to 422 ft bgs and the potentiometric surface elevation ranges from 4,331 to 4,740 ft amsl from 18 locations.

The depth to water measured at four monitoring locations in the Broadtop Butte Pit and WRF area ranges from 194 to 513 ft bgs and the potentiometric surface elevation ranges from 5,143 to 5,409 ft amsl.

As previously discussed, the groundwater system in the area is compartmentalized and disrupted by complex geologic contacts and discontinuities. The system is further limited by the low bulk hydraulic conductivity ranges of the geologic units that are present and the lack of significant recharge. Once a facility is placed on the bedrock surface, any minor recharge will become even further reduced and limited due to the porous dump materials and propensity for precipitation to either shed or store and evaporate within the near surface material.

The geologic orientations and major structures create a fabric that will further limit any groundwater movement in east and west directions. While current groundwater levels may infer gradients in these directions the limitations created by geologic contacts, structures and bulk conductivity will inhibit and groundwater movement. The available hydrogeologic data indicate there is only local fracture conductivity in the faults, including Backbone Fault. However, if there were minor conductivity increase along strike, gradients would be established toward the Rosemont Pit area once mining was implemented. However, this may also be limited by cross cutting east-west structures.

4.3.7 Process Plant Area

This facility is mostly underlain by a thin Piedmont Alluvium suite consisting of Holocene alluvium and Late Pleistocene alluvial fan and terrace deposits (Figures 4.10). The thickness of this section varies but is no more than 200 feet thick. Just west of this facility, the Alluvium is underlain by Basin-Fill deposits which thicken rapidly towards the Santa Cruz River.

The Alluvial sequence overlies Precambrian Continental Granodiorite in the western part of the facility. It has been intruded by Tertiary Helvetia Granite in the eastern part of the facility. These units are also present in small outcrops within the footprints of the facilities.

There are no faults mapped within the footprint of this facility, but the underlying intrusive rocks likely contain unmapped fractures and joints.

The Alluvium units have high hydraulic conductivity and storage characteristics. However, in their natural state, they are unsaturated. Significant groundwater is not expected to occur in the underlying Precambrian and Tertiary intrusive units due to their aquitard properties.

The depth to groundwater measured at three monitoring locations at the Process Plant area ranges from 59 to 84 ft bgs, and the potentiometric surface elevation ranges from 4,061 to 4,143 ft amsl. The groundwater gradient in the locality is toward the west-northwest similar to topographic grade. Due to the low bulk hydraulic properties, and low recharge setting, there is not expected to be a significant bedrock groundwater flux across the area.

4.3.8 Heap Leach Pad

This proposed HLP facility footprint is mostly underlain by a thin Piedmont Alluvium suite consisting of Holocene alluvium and Late Pleistocene alluvial fan and terrace deposits (Figure 4.11). The thickness of this section varies but is no more than 100 feet, possibly thickening towards the west. Just west of this facility, the Alluvium is underlain by Basin-Fill deposits which thicken rapidly towards the Santa Cruz River.

The Alluvial sequence overlies mostly Tertiary Helvetia Granite, but a small area of Precambrian Continental Granodiorite is present on the eastern edge and within the footprint of the facility.

There are no faults mapped within the footprint of the HLP, but the underlying intrusive rocks likely contain unmapped structures.

The Alluvium units have high hydraulic conductivity and storage characteristics. However, in their natural state, they are unsaturated. The bedrock units beneath the site have low hydraulic conductivity and storage and they are categorized as aquitards.

The depth to water measured at two monitoring locations at the HLP ranges from 59 to 141 ft bgs and the potentiometric surface elevation ranges from 4,282 to 4,589 ft amsl. The bedrock hydraulic gradient across the area is toward the northwest. However, there is not expected to be any significant bedrock flux due to low bulk conductivity and lack of recharge.

4.3.9 Tailings Storage Facilities 1 and 2

These facilities are mostly underlain by a thin Piedmont Alluvium suite consisting of Holocene alluvium and Late Pleistocene alluvial fan and terrace deposits (Figures 4.12 and 4.13). The thickness of this section varies but is no more than 400 feet thick. Just west of these facilities, the Alluvium is underlain by Basin-Fill Deposits which thicken rapidly westward into the Santa Cruz basin.

The Alluvial sequence overlies Precambrian Continental Granodiorite, intruded by Tertiary Helvetia Granite. These units are also present in small outcrops within the footprints of the facilities.

A variety of unnamed, low-angle bedrock thrust faults, near vertical normal faults, and near vertical strike slip faults have been mapped at and near the facilities (Drewes 1971b, Drewes 1972b). A thin structural plate is found on the west-central edge of TSF-1. It is possibly the same structure as the Helvetia klippe and consists of a thin sequence of Pennsylvanian Horquilla Limestone and Mississippian Escabrosa Limestone.

The Alluvium units have high hydraulic conductivity and storage characteristics. However, in their natural state, they are unsaturated. The underlying bedrock is categorized as an aquitard due to the low bulk hydraulic parameter ranges. The mapped faults may have some local scale fracturing, however, hydraulic continuity for significant strike length is not plausible given fault fill, orientations and overburden stresses.

The depth to water measured at six monitoring locations at TSF-1 ranges from 20 to 90 ft bgs, and the potentiometric surface elevation ranges from 3,582 to 3,926 ft amsl.

The depth to water measured at three monitoring locations at TSF-2 ranges from 48 to 272 ft bgs, and the potentiometric surface elevation ranges from 3,911 to 4,275 ft amsl. Groundwater gradients are indicated as northwest across both facilities, as expected. However, bedrock flux rates will be very small given bulk system parameters and very low recharge.

5 HYDROGEOLOGICAL CONCEPTUAL MODEL SUMMARY

The groundwater system associated with the Rosemont Copper World Project area is well understood on the basis of previous field investigations and study, new field characterization implemented during 2021, Project specific geologic modeling, and broader regional studies. There is a high degree of confidence in the conceptual model of hydrogeology. Overall, there is very limited groundwater in the Project area. Any residual uncertainties can be managed with monitoring and infill characterization during proposed mine plan implementation.

A summary of the Project area conceptual hydrogeologic model is provided in the following sections.

5.1 Regional Overview

The Project area is situated in rugged upland topography formed by the northern extension of the Santa Rita Mountains. The proposed mining areas and facilities are situated mostly on bedrock outcrops straddling the east and west sides of the north trending ridgeline. The mountain areas hosting the Project descend toward the Santa Rita Basin to the west and Rillito Basin to the east.

Bedrock geology involves Precambrian and Tertiary intrusive batholiths, heavily folded sedimentary bedrock sequences and several generations of faulting. At the east and west Project margins, the bedrock becomes covered by sequences of porous Basin-Fill materials that gradually thicken into the Santa Cruz and Rillito Basins. At distances of several miles from the Project, the Santa Cruz Basin is developed for agricultural and domestic water supply.

Climate is southwest semi-arid with low annual precipitation, flashy monsoon rain storms and high evaporation. Due to the physical location of the Project, there is limited surface or groundwater catchment area up-gradient of the proposed open pits or facilities. Bedrock hydraulics involve low to very low hydraulic conductivity, very low storage coefficients and strong compartmentalization imparted by the complex folding, faulting and intrusive system geometries. Occasional productive fracture zones are encountered but are bounded and limited in extent. As such the bedrock system is a series of compartmentalized aquitards. The bedrock hydraulics, combined with a low recharge setting and lack of contributing catchment areas, mean that bedrock groundwater movement is minimal. The bedrock system has never been developed for water resource purposes, which reflects the ambient conditions. Occasional stock wells are present, and their flow rates are low.

The Basin-Fill deposits in the Santa Cruz Basin have comparatively much higher porosity than the bedrock and relatively increased hydraulic conductivity. However, aside the corridor along the Santa Cruz River, the hydraulic conductivity ranges are modest. As such most of the basin water resource development is close to the river corridor.

Groundwater levels in the region are influenced by topography as normal. The highest groundwater levels occur within the mountain bedrock domains and in the Project area are up to 5,500 ft amsl. Groundwater levels reduce toward the surrounding basins and are 2,500 ft amsl near the Santa Cruz River to the west, and a similar elevation in the Rillito valley floor to the east. While the regional gradient is from the upland mountain blocks toward the basins, the variability in measured piezometric levels and vertical gradients confirm significant de-coupling and discontinuity in the bedrock system. While the groundwater levels infer a gradient, there is very limited continuity between the mountain bedrock blocks and the basins.

Groundwater recharge in the bedrock system is limited to minor amounts of infiltration into locally fractured bedrock. Due to general exposed bedrock weathering and the presence of discontinuity, some of the recharge will locally emerge as small seeps perched up above regional groundwater levels. Most rainfall in the mountains rapidly runs off toward the deeply incised channels and canyons. Relatively more recharge may occur in the canyon floors and where the topography transitions to the range front and basin margin areas. Small amounts of groundwater discharge occur at lower elevations in the canyons and where geologic barriers favorably coincide with topography, impeding local groundwater movement and creating small surface seepages.

5.2 Project Area and Facility Scale Conceptual Hydrogeologic Model

The hydrogeologic conditions at the proposed open pit mining areas are well characterized by previous and recent investigations and study. In general, conditions are comparable in each proposed mining area.

For the mining areas west of the ridgeline, including Peach, Elgin and Heavy Weight pits, there is very minimal bedrock groundwater. Proactive dewatering measures are not anticipated to support mining operations. Very small rates of pit seepage may occur as the excavations approach ultimate limits but will likely be unnoticed due to evaporative consumption. The bedrock system in each case has negligible storage, very low bulk hydraulic conductivity and geologic structures/contacts that create system boundaries and limits at local scales. There is currently an inferred bedrock hydraulic gradient toward the northwest, however, bedrock groundwater flux across the area is small.

The Copper World and Broadtop Butte pit areas are closer to the mountain ridge – Broadtop Butte straddles the topographic divide. Again, the groundwater system is very limited by low bulk conductivity and storage, discontinuity and boundaries imparted by geologic contacts and structures. Steeply dipping bedding and major faulting will impart strong east-west limits to the system. Any locally developed continuity along the Backbone Fault will either create a gradient south toward the Rosemont Pit during mining or will be limited by cross-cutting east-west faults. Again, hydraulic gradients infer groundwater movement consistent with topography, but the data demonstrate decoupling and discontinuity. The lack of any natural recharge, combined with the

bedrock hydraulics, will greatly limit any groundwater flux in the area. No significant groundwater inflows are expected during mining and proactive dewatering measures will not be needed during operations.

The Rosemont Pit is immediately east of the mountain ridge and as such it involves no significant up-gradient surface or groundwater catchment. It is the largest and deepest of the proposed mining areas. The mine area is hosted by intrusive sequences and sedimentary bedrock. A package of Willow Creek Formation occupies the upper southeast sector of planned mining. The Backbone Fault strikes northwest through the pit. It combines with prominent northeast striking major structures and cross-cutting east-west faults to the north, to create a strongly bounded geologic framework. The bulk scale properties of the intrusive and sedimentary bedrock sequences involve low hydraulic conductivity and low storage. There are some local scale productive fractures that are characterized as discontinuous.

During mining, relatively low amounts of groundwater inflow into the Rosemont Pit will occur due to the rate of excavation combined with drainage of storage in local fractures and potentially minor amounts of groundwater occurrence in the Willow Creek Formation. It is expected that localized pit scale controls (i.e., dewatering) will be needed to create depressurized conditions in slope sectors that are sensitive to pore pressure. The dewatering measures will include limited numbers of temporary low flow in-pit wells and horizontal drains. There is limited connection between the pit area and surrounding bedrock groundwater and groundwater controls beyond the pit area will not be needed to support mining.

The proposed TSF-1, TSF-2, HLP and Plant Site facilities are located to the west near the transition zone between the steeper mountain terrain and range front. A thin layer of Piedmont Alluvium is present and overlies bedrock comprised of massive intrusive batholith and sedimentary lithologies. The alluvium is porous and has relatively increased hydraulic conductivity compared to bedrock. However, it is unsaturated. The bedrock units have low hydraulic conductivity and low storage. Groundwater gradients are generally toward the northwest. Rates of bedrock groundwater movement beneath the facility areas will be very limited due to the low bulk conductivity ranges, compartmentalized nature of the system and low amounts of recharge.

6 REFERENCES

- Anderson, S.R., 1987, Cenozoic stratigraphy and geologic history of the Tucson basin, Pima County, Arizona: U.S. Geological Survey Water-Resources Investigations Report 87-4190, p. 20.
- Anzalone, S.A., 1995. The Helvetia Area Porphyry Systems, Pima County, Arizona: Porphyry Copper Deposits of the American Cordillera: F. W. Pierce and J. G. Bolm (eds.), Arizona Geological Society Digest, n. 20, p. 436-441.
- Armstrong, R.L., and Ward, P. 1991. Evolving geographic patterns of Cenozoic magmatism in the North American cordillera: the temporal and spatial association of magmatism and metamorphic core complexes. *Journal of Geophysical Research* 96(B8): 13,201–224.
- ASTM, 2016. D5126-16e1, Standard Guide for Comparison of Field Methods for Determining Hydraulic Conductivity in Vadose Zone.
- ASTM, 2017a. D2487-17, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
- ASTM, 2017b. D2488-17e1, Standard Practice for Description and Identification of Soils (Visual-Manual Procedures).
- ASTM, 2020. D6391-11, Standard Test Method for Field Measurement of Hydraulic Conductivity Using Borehole Infiltration.
- BasinWells Associates, 2016. Completion Report for the Installation and Testing of Rosemont Copper Project Sanrita South No. 1 Water Supply Well (SS-1). Prepared for Hudbay. March 18, 2016.
- Batchily, A.K., D.F. Post, R.B. Bryant, D.J. Breckenfeld, 2003. Spectral Reflectance and Soil Morphology Characteristics of Santa Rita Experiment Range Soils, USDA Forest Service Proceedings RMRS-P-30, 2003.
- Bouwer, H. and Rice, R.C., 1976. A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, *Water Resources Research*, vol. 12, no. 3, p. 423-428.
- Bowman Consulting Group, 2022. Copper World Project, Baseline and Final Facility Configuration Hydrology Modeling Report, Revision 3. Prepared for Piteau Associates. August 18, 2022.

- Cook, J.P., and Ferguson, C.A., 2019, Geologic Map of Empire Ranch 7.5' Quadrangle, Pima County, Arizona. Arizona Geological Survey Digital Geologic Maps, DGM 143, 1 map sheet, map scale 1:24,000.
- Craig, H., 1961. Isotopic Variations in Meteoric Waters. *Science*, 133, 1702-1703.
- Creasy, S.C., and Quick, G.L., 1955. Copper Deposits of Part of Helvetia Mining District, Pima County, Arizona. U.S. Geological Survey Bulletin 1027-F.
- Darton, N. H., 1925. A Resumé of Arizona Geology. University of Arizona Bulletin 119, College of Mines and Engineering, Arizona Bureau of Mines, p. 298.
- Drewes, H., 1971a. Mesozoic Stratigraphy of the Santa Rita Mountains, Southeast of Tucson, Arizona, Mesozoic Stratigraphy in South-eastern Arizona. Washington, D.C.: U.S. Geological Survey Professional Paper 658-C.
- Drewes, H., 1971b, Geologic map of the Sahuarita quadrangle, southeast of Tucson, Santa Cruz and Pima Counties, Arizona: U.S. Geological Survey Miscellaneous Investigations Series Map 1-613, scale 1:48,000.
- Drewes, H., 1972a. Cenozoic Rocks of the Santa Rita Mountains, Southeast of Tucson, Arizona: U.S. Geological Survey Professional Paper 746, p. 66.
- Drewes, H., 1972b. Structural Geology of the Santa Rita Mountains, Southeast of Tucson, Arizona. U.S. Geological Survey Professional Paper 748. 35 p. Drewes 1972 Structural geology of Santa Ritas.
- Ferguson, C.A., Youberg, A., Gilbert, W.G., Orr, T.R., Richard, S.M., and Spencer, J.E., 2001. Geologic map of the Mount Fagan 7.5' quadrangle, eastern Pima County, Arizona. Digital Geologic Map 11. Scale 1:24,000. Tucson, Arizona: Arizona Geological Survey.
- Ferguson, C.A. Johnson, B.J., Pearthree, P.A., Spencer, J.E., Shipman, T.C., and Cook, J.P., 2009. Geologic Map of the Helvetia 7.5' Quadrangle, Eastern Pima County, Arizona: Arizona Geological Survey Open-File Report 09-06 (OFR 09-06), September 2009.
- Hanson, R.T., Anderson, S.R., and Pool, D.R., 1990, Simulation of ground-water flow and potential land subsidence, Avra Valley, Arizona: U.S. Geological Survey Water-Resources Investigations Report 90-4178, p. 4.

- Hargis, D.R., and Harshbarger, J.W., 1976, Hydrology of the Rosemont area, Pima County, Arizona: Preliminary Draft of Part 1, prepared for Anamax Mining Company, October 15, 1976.
- Harshbarger and Associates, 1975. Analysis of Groundwater Development Program in the Empire Ranch Area: preliminary draft report. Prepared for Anamax Mining Company, July 7, 1975.
- Harshbarger and Associates, 1976. An Environmental Inventory of the Rosemont Area in Southern Arizona. Volume I: The Present Environment.
- Harshbarger and Associates, 1980, Summary of Hydrologic Monitoring Program, Empire Ranch and Rosemont Areas, Arizona: Annual report, AR-192/194-80-1, prepared for Anamax Mining Company, March 18, 1980.
- Harshbarger and Associates, 1981. Summary of Hydrologic Monitoring Data Empire Ranch and Rosemont Areas, Arizona. Annual Report AR-192/4-81-1. Report prepared for Anamax Mining Company, February 3, 1981.
- Hayes, P. T., 1969. Geology and Topography *in* Geology and Mineral Resources of Arizona, Arizona Bureau of Mines (currently Arizona Geological Survey). Bulletin 180, p. 467.
- Houlsby, A.C., 1976. Routine Interpretation of the Lugeon Water-Test. Quarterly Journal of Engineering Geology, 9:303-313.
- Houlsby, A.C., 1990. Construction and Design of Cement Grouting: A guide to grouting in Rock Foundations. Volume 67 of Wiley Series of Practical Construction Guides, ISSN 0271-6011, John Wiley & Sons, Inc., p. 442.
- Huss, C., 2009. Rosemont Copper Project Updated Feasibility Study, Vol. 1: NI 43-101 Technical Report. Project No. M3-PN08036. Prepared for Augusta Resource Corporation. Tucson, Arizona: M3 Engineering and Technology Corporation. January 14.
- Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, p. 1-50.
- Hydro-Logic, LLC., 2013a. Groundwater Monitoring Well Installation, Barrel Canyon and Davidson Canyon, December 2012. Prepared for Rosemont Copper. March 23, 2013.
- Hydro-Logic, LLC., 2013b. Well HC-6 Site Selection, Drilling and Testing. Prepared for Rosemont Copper. March 2013.

- Johnson, B.J., Pearthree, P. A., and Ferguson, C. A., 2016. Geologic map of the Corona de Tucson 7 1/2' Quadrangle, Pima County, Arizona. Arizona Geological Survey, Digital Geologic map 115 (DGM-115).
- M3 Engineering & Technology Corp., 2007. Rosemont Copper Project Feasibility Study Volume 1 NI 43-101 Technical Report. Prepared for Augusta Resource Corporation. Report Dated August 2007.
- Mason, D.A., and Bota, L., 2006. Regional Groundwater Flow Model of the Tucson Active Management Area, Tucson, Arizona: Simulation and Application. Modelling Report No. 13. Phoenix, Arizona: Arizona Department of Water Resources, Hydrology Division.
- Mason, D. and Hipke, W., 2013. Regional Groundwater Flow Model of the Tucson Active Management Area, Tucson, Arizona: Model Update and Calibration. Modeling Report No. 24. Phoenix, Arizona: Arizona Department of Water Resources, Hydrology Division.
- Montgomery and Associates, 2007. Conceptual Groundwater Model, Rosemont Project. Technical Memorandum to Janine Derby, U.S. Forest Service from James S. Davis. November 30.
- Montgomery and Associates, 2009a. Groundwater Flow Modeling Conducted for Simulation of Proposed Rosemont Pit Dewatering and Post-Closure. Prepared for Rosemont Copper Company. Report Dated October 28, 2009.
- Montgomery and Associates, 2009b. Results of Phase 2 Hydrogeologic Investigations and Monitoring Program, Rosemont Project, Pima County, Arizona, Volumes I and II. Prepared for Rosemont Copper by Errol L. Montgomery & Associates, Inc., February 26, 2009.
- Montgomery and Associates, 2009c. Analysis of Long-Term, Multi-Well Aquifer Test During the Period November 2008 through January 2009, Rosemont Project, Pima County, Arizona. Report prepared for Rosemont Copper by Errol L. Montgomery & Associates, Inc., May 21, 2009.
- Montgomery and Associates, 2009d. Results of Drilling, Construction, and Testing of Four Pit Characterization Wells, Rosemont Project. Prepared for Rosemont Copper Company. Report dated August 7, 2009.
- Montgomery and Associates, 2009e. Groundwater Flow Modeling Conducted for Simulation of Rosemont Copper's Proposed Mine Supply Pumping, Sahuarita, Arizona. Prepared for Rosemont Copper Company. Report dated April 30, 2009.

- Montgomery and Associates, 2009f. Results of Construction, Development, and Testing for Production Water Well (D-17-14)21add[RC-2] Pima County, Arizona. Prepared for Rosemont Copper Company. Report dated April 24, 2009.
- Montgomery and Associates, 2010a. Revised Groundwater Flow Modeling Conducted for Simulation of Proposed Rosemont Pit Dewatering and Post-Closure, Volume 1 (Text and Tables) and Volume 2 (Figures). Prepared for Rosemont Copper Company. Report Dated August 30, 2010.
- Montgomery and Associates, 2010b. Addendum to Groundwater Flow Modeling Conducted for Simulation of Rosemont Copper's Proposed Mine Supply Pumping Sahuarita, Arizona. Prepared for Rosemont Copper. November 11, 2010.
- Mosher, G.Z., 2005. Technical Report on the Rosemont Property, Pima County, Arizona. Report by Wardrop for Augusta Resources, Vancouver, British Columbia, Canada. June 3, 2005. p. 145.
- Neirbo Hydrogeology, 2016. Prefeasibility Dewatering Plan and Analysis. Prepared for Hudbay Rosemont Copper Company. May 2016.
- Neirbo Hydrogeology, 2019. Groundwater Flow Model, Rosemont Copper Project. Prepared for Hudbay Rosemont Copper Company. October 2019.
- Pearthree, P.A., 1986. Late Quaternary Faulting and Seismic Hazard in South-eastern Arizona and Adjacent Portions of New Mexico and Sonora, Mexico. Arizona Geological Survey, Open-File Report 86-8.
- Piteau Associates, 2022. Rosemont Copper World Project, Water Quantity Impacts Assessment. Prepared for Rosemont Copper Company, May 2022.
- Rose, W. L., 2007. Mineral Resource Update for the Rosemont Project, Pima County, Arizona, USA. Report prepared by WLR Consulting for Augusta Resources, Denver, Colorado. April 26, 2007, p. 91.
- Rosemont Copper Company, 2014. Supplemental Water Quality and Isotope Data for Wells and Springs in the Rosemont Area. Technical Memorandum to Jim Upchurch, U.S. Forest Service, June 27.
- Rosemont Copper Company, 2018. Spring Flow Monitoring Plan (as required by Mitigation Measure FS-SSR-02). June 2018.

- Rosemont Copper Company, 2021. Manual Water-Level and Spring Flow Data and Observations, Routine Project Measurements on Select Springs through March 2021. Excel File "Spring Flow Data thru 2021Q1.xlsx"
- Schrader, F.C. 1915. Mineral Deposits of the Santa Rita and Patagonia Mountains, Arizona. Bulletin No. 582. Washington, D.C.: U.S. Geological Survey.
- Spencer, J. E., Ferguson, C.A., Richard, S.M., Orr, T.R., Pearthree, P.A., Gilbert, W.G., and Krantz, R.W., 2001 (Revised 2020). Geologic Map of The Narrows 71/2 Minute Quadrangle and the Southern Part of the Rincon Peak 71/2 Minute Quadrangle, Eastern Pima County, Arizona. Digital Geologic Map 10, one sheet, scale 1:24,000. Arizona Geological Survey, Tucson.
- Tetra Tech, 2010a. Rosemont Area-Wide Fate and Transport and DIA Assessment. August 31, 2010.
- Tetra Tech, 2010b. Davidson Canyon Hydrogeologic Conceptual Model and Assessment of Spring Impacts, Rosemont Copper Project. Prepared for Rosemont Copper Company, July 2010.
- Tetra Tech, 2010c. Regional Groundwater Flow Model, Rosemont Copper Project. Prepared for Rosemont Copper. November 2010.
- Tetra Tech, 2010d. Hydraulic Property Estimates. Prepared for Rosemont Copper Company. Technical Memorandum dated July 9, 2010.
- Tetra Tech, 2012. Infiltration, Seepage, Fate and Transport Modeling Report, Revision 2, Rosemont Copper Project. Report Dated June 2012.
- Tetra Tech, 2017. Rosemont Post-Mining Runoff and Infiltration Analysis - Revision 1. Technical Memorandum to David Krizek (Rosemont Copper Company – Hudbay Minerals, Inc.), from Ronson Chee, dated November 2017.
- Travers, B.C. and Mock, P.A., 1984, Groundwater modelling study of the upper Santa Cruz basin and Avra Valley in Pima and Santa Cruz Counties, Southeastern Arizona: Arizona Department of Water Resources, Hydrology Division, Unnumbered Modeling Report, 2 v.
- Western Regional Climate Center (WRCC), 2021. Cooperative Climatological Data Summaries. Retrieved from <http://wrcc.dri.edu/climatedata/climsum/>.

WestLand Resources Inc., 2012. Rosemont Copper Project: Seeps and Springs Survey, 2011-2012. Project No. 1049.14. Prepared for Rosemont Copper Company. Tucson, AZ: WestLand Resources, Inc. July 11.

WestLand Resources Inc., 2013. A History of Helvetia. Cultural Resource Report 2013-28, May 17, 2013, Project No. 1049.47, 68 p.

7 LIMITATIONS

Piteau Associates has exercised reasonable skill, care and diligence in obtaining, reviewing, analyzing and interpreting the information acquired during this study, but makes no guarantees or warranties, expressed or implied, as to the completeness of the information contained in this report. Conclusions and recommendations provided in this report are based on the information available at the time of this assessment.

In preparing the recommendations contained herein, Piteau Associates has relied on information and interpretations provided by others. Piteau Associates is not responsible for any errors or omissions in this information. This report is comprised of text, tables, figures, photos and appendices, and all components must be read and interpreted in the context of the whole report. The report has been prepared for the sole use of Rosemont Copper Company, and no representation of any kind is made to any other party.

Respectfully submitted,

PITEAU ASSOCIATES USA LTD.

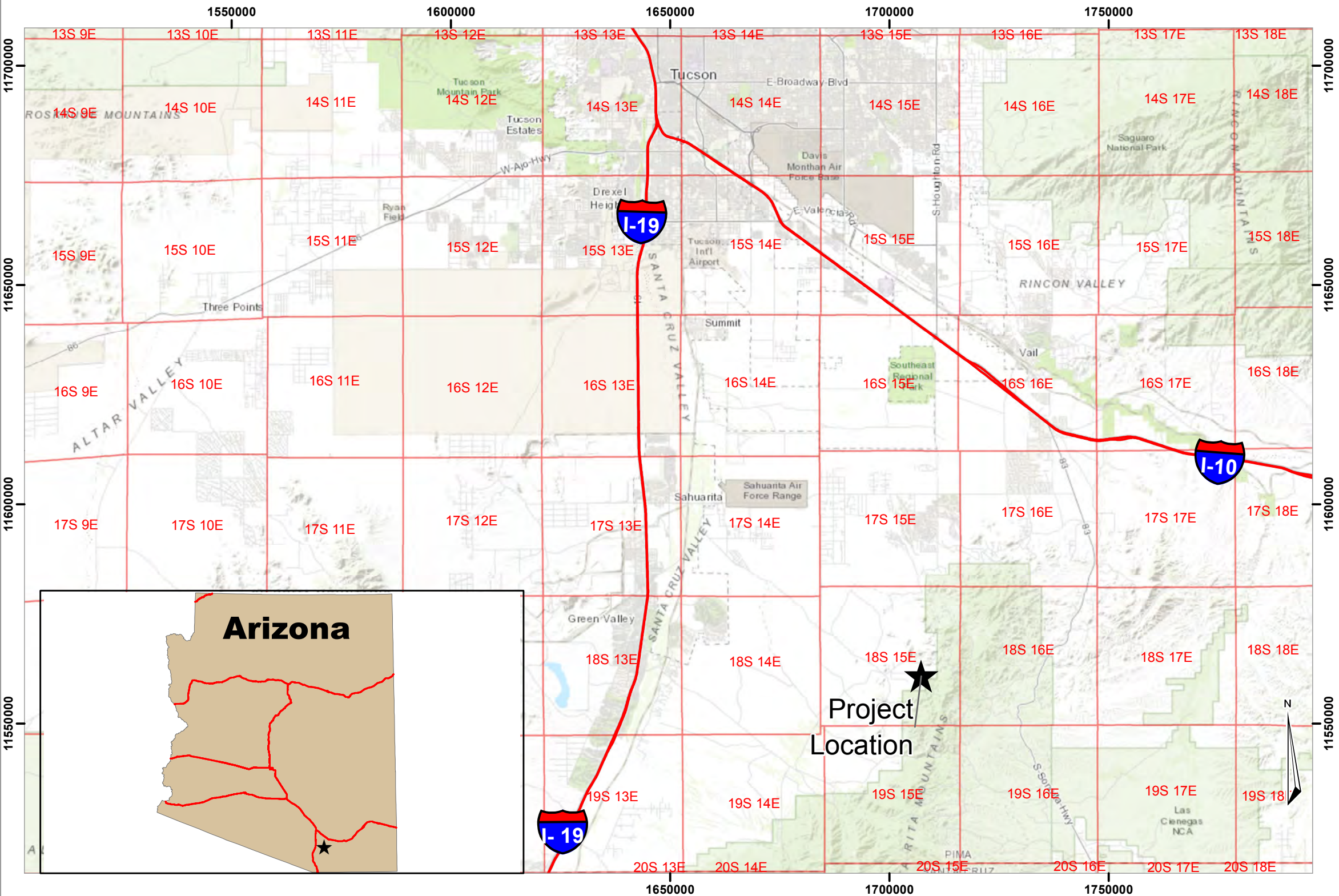


Brian Giroux, PG
Senior Hydrogeologist



Dwaine Eddington, PhD
Senior Hydrogeologist

FIGURES



- ★ Project Location
- Interstate
- PLSS Township

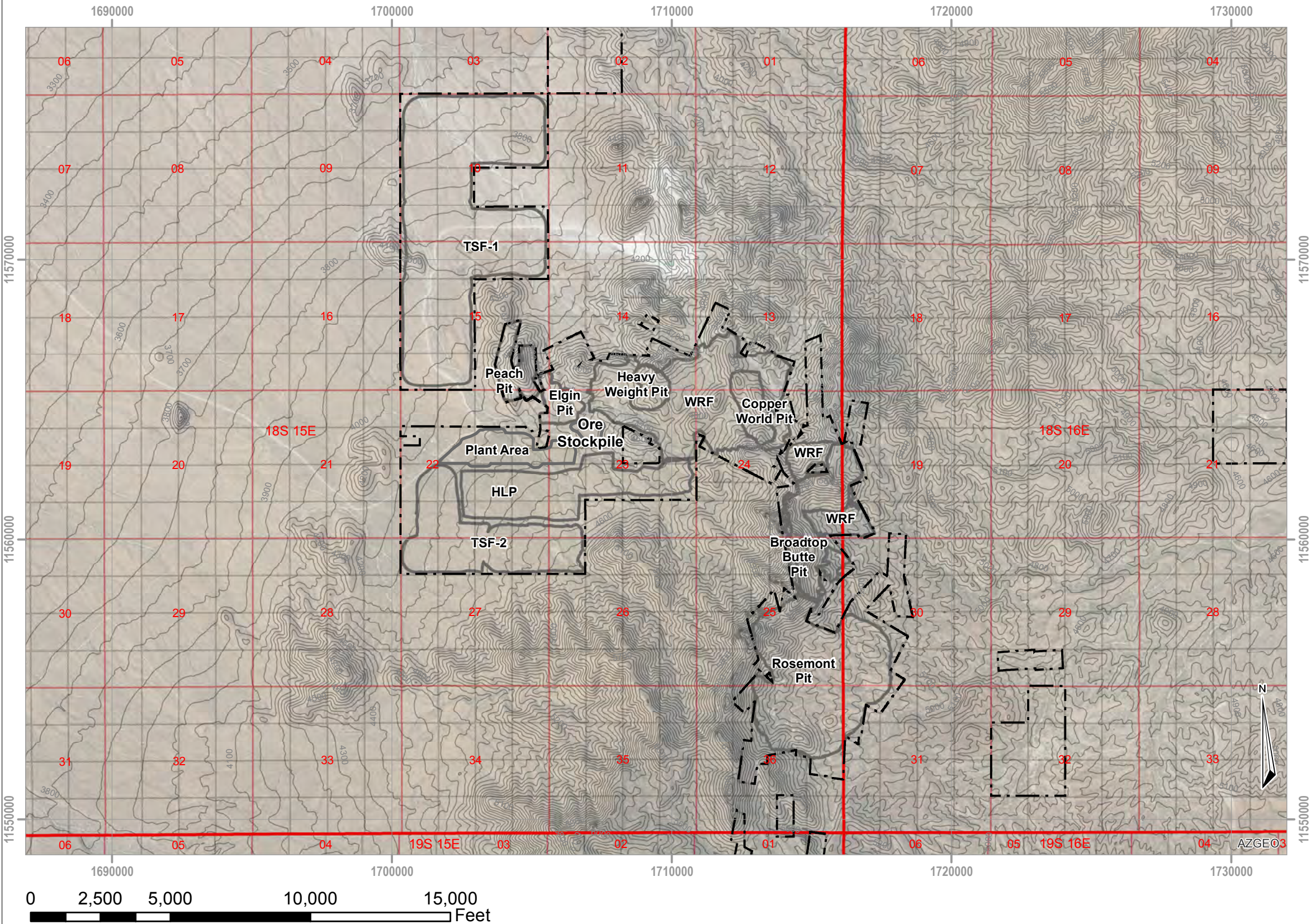
Project Location



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	WT/AP	CHECKED:	BG
DATE:	May 2022		
FIGURE:	1.1		



Coordinate system: NAD 1983 BLM Zone 12



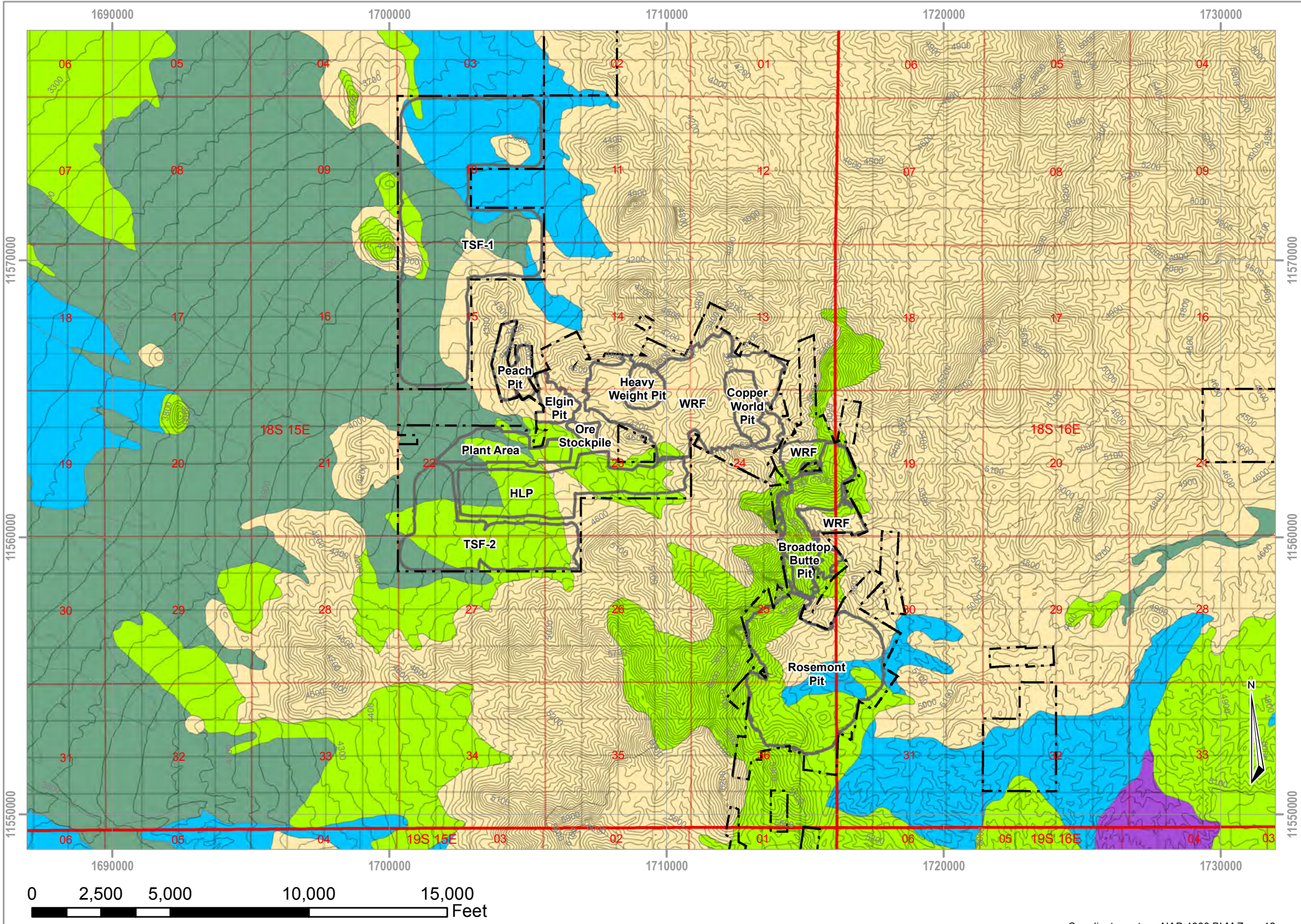
- Facility Outlines
- Private Land Boundaries
- Topographic Elevation Contours
- PLSS Township
- PLSS Sections
- PLSS Second Division

Rosemont Copper World Project
Facilities



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	SM	CHECKED:	BG
DATE:	May 2022		
FIGURE:	1.2		

Coordinate system: NAD 1983 BLM Zone 12



Facility Outlines

- - -

Private Land Boundaries

Topographic Elevation Contours

PLSS Township

PLSS Sections

PLSS Second Division

Hydrologic Group

Mixed

A

B

C

D

Source: Bowman Consulting Group, August 2022

Project Area Soils

PITEAU ASSOCIATES

GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS

A TETRA TECH COMPANY

CLIENT: Rosemont Copper Company

PROJECT: Rosemont Copper World Project

JOB: 4286

DRAWN: SM/AP

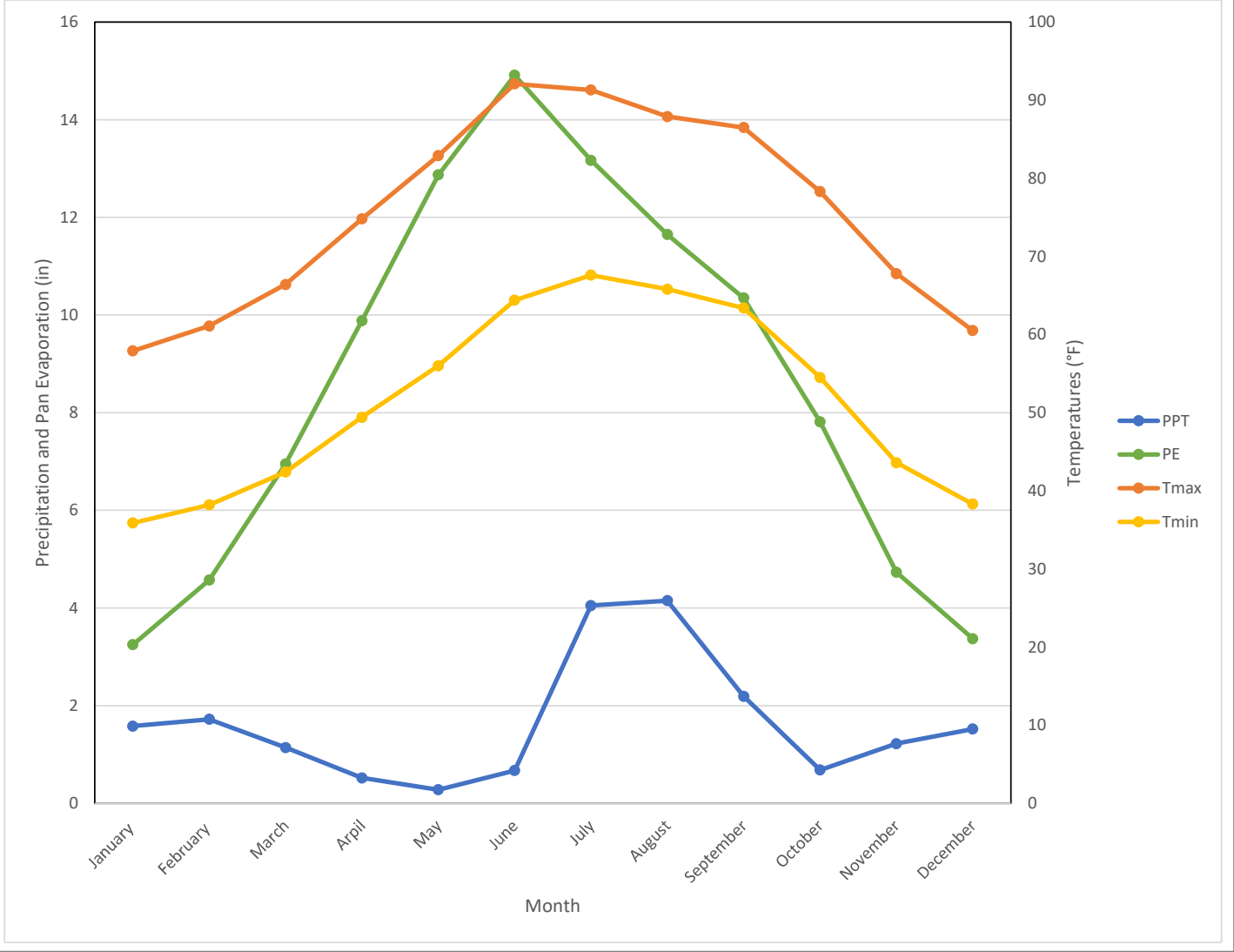
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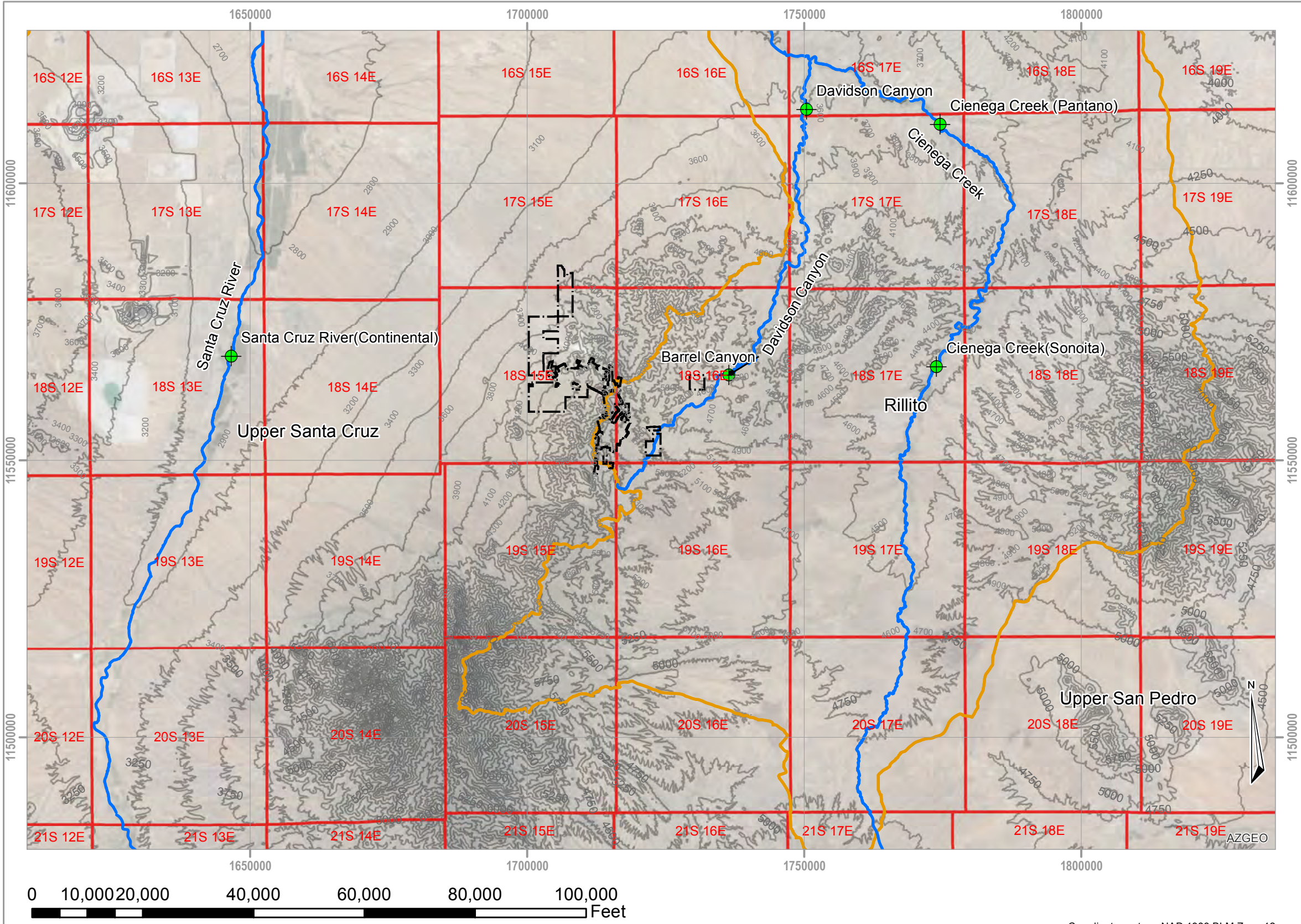
DATE: May 2022

FIGURE: 2.1

Coordinate system: NAD 1983 BLM Zone 12

Monthly Precipitation, Pan Evaporation, and Minimum and Maximum Temperatures			
CLIENT:	Rosemont Copper Company	PROJECT:	Rosemont Copper World Project
JOB #:	4286	DRAWN:	KL
DATE:	May 2022	CHECKED:	BG
FIGURE:	2.2		





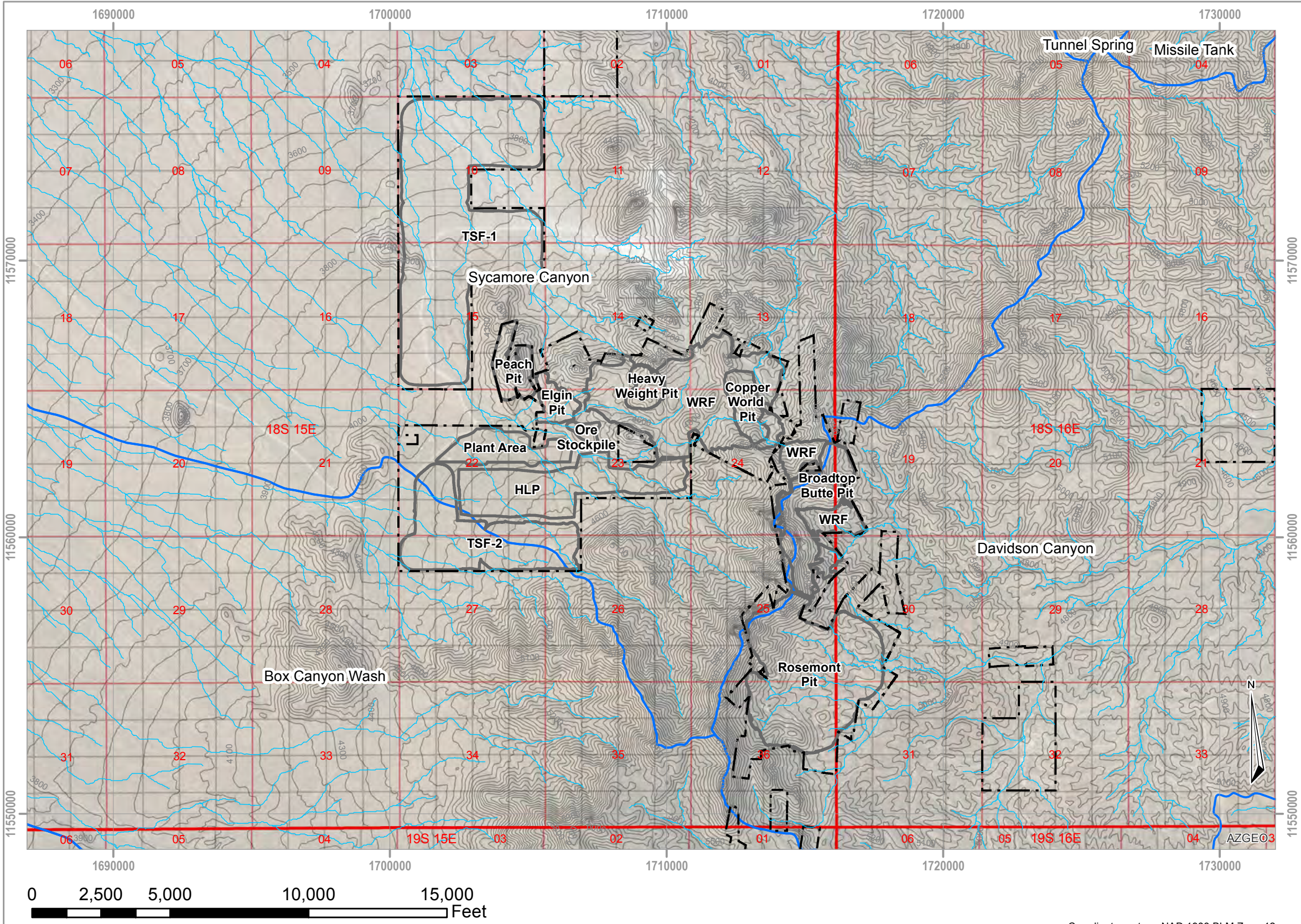
- Gage Stations
- Private Land Boundaries
- Topographic Elevation Contours
- Key Streams
- 8th Order Basin Divides
- PLSS Township

Regional Surface Water Features



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	SM	CHECKED:	BG
DATE:	May 2022		
FIGURE:	2.3		

Coordinate system: NAD 1983 BLM Zone 12

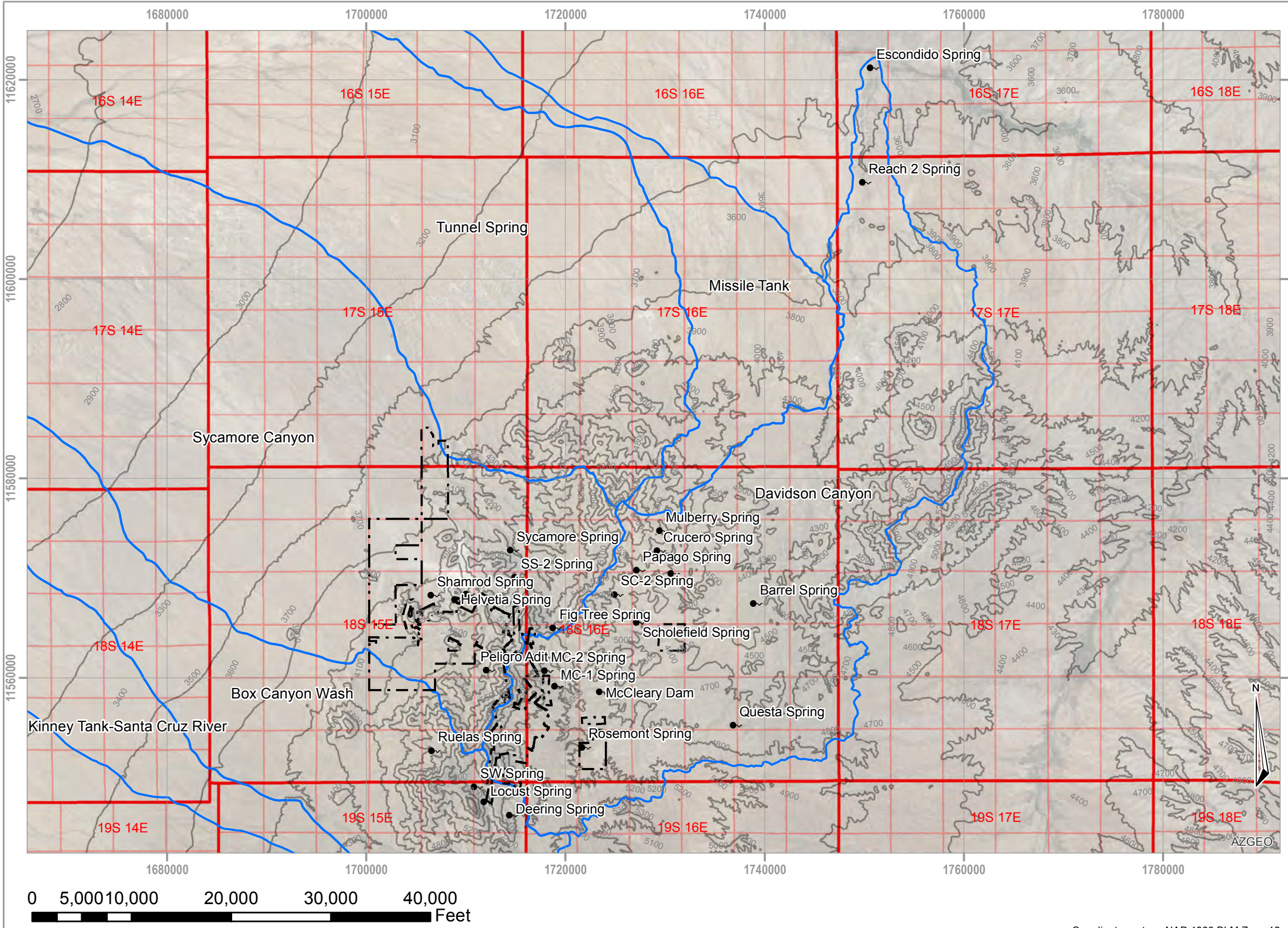


- Facility Outlines
- Private Land Boundaries
- Pima County Floodplain
- 12th Order Basin Divide
- Topographic Elevation Contours
- PLSS Township
- PLSS Sections
- PLSS Second Division

Project Area Surface Water Features



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	SM	CHECKED:	BG
DATE:	May 2022		
FIGURE:	2.4		

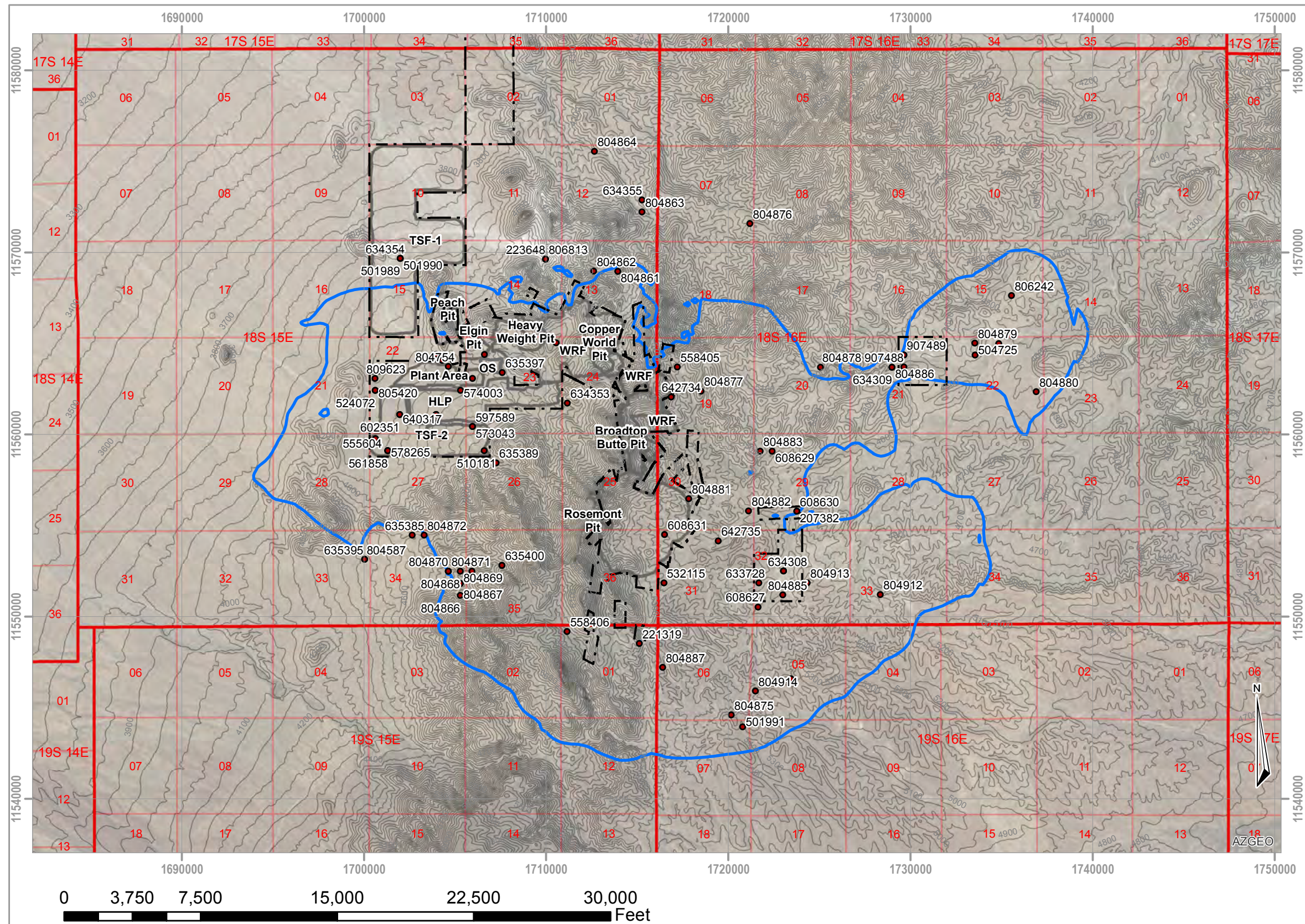


- Springs
- - - Private Land Boundaries
- 12th Order Basin Divide
- Topographic Elevation Contours
- PLSS Township
- PLSS Sections

Project Area Spring Locations



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	SM	CHECKED:	BG
DATE:	May 2022		
FIGURE:	2.5		



Wells downloaded November 15, 2021
with cadastral locations from
ADWR Wells 55 database

Well Inventory



PITEAU ASSOCIATES
 GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS
 A TETRA TECH COMPANY

CLIENT: Rosemont Copper Company

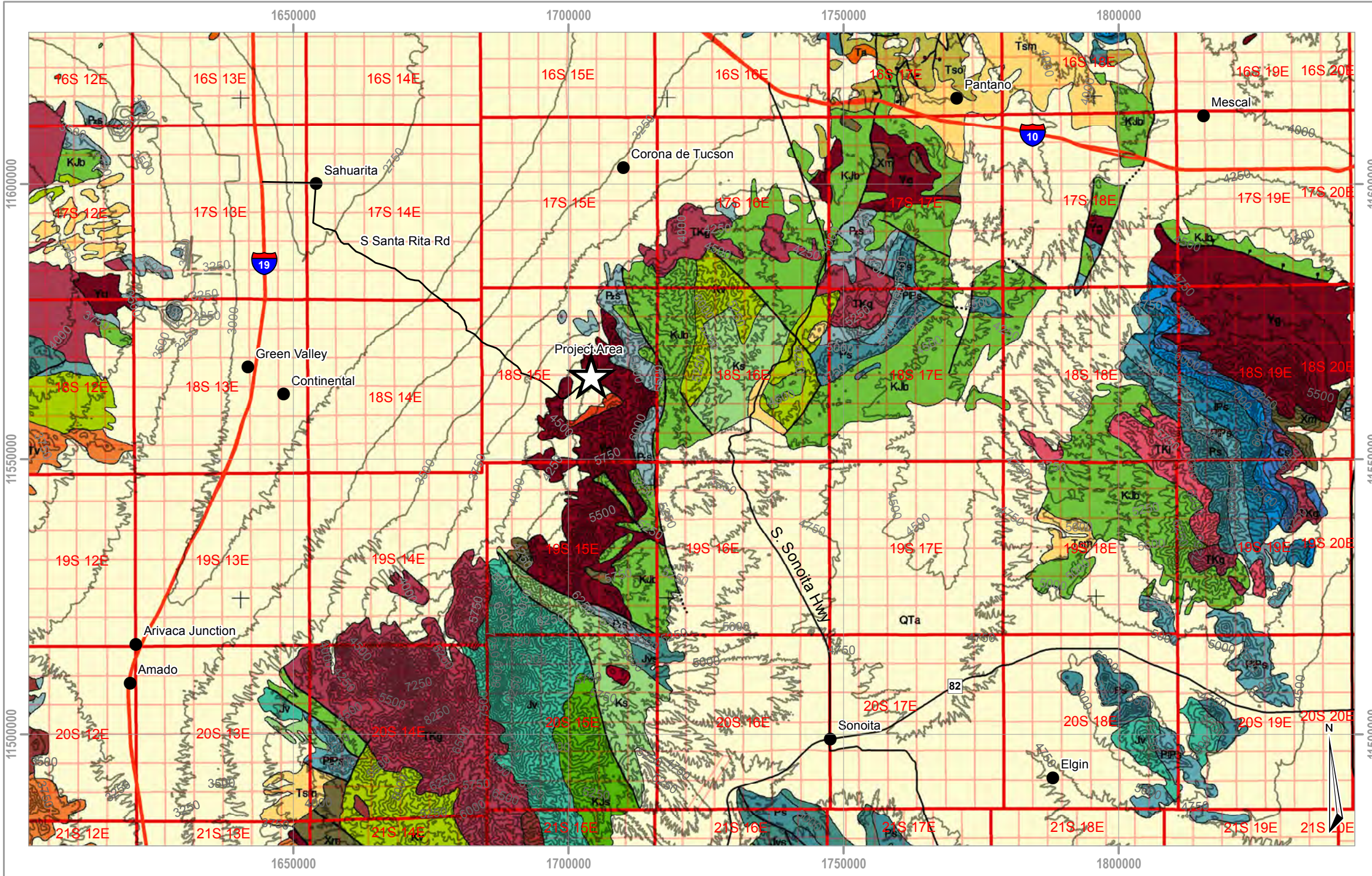
PROJECT:	Rosemont Copper World Project
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JOB: 4286

DRAWN: SM

DATE: May 2022

FIGURE: 2.6



- Towns
- Topographic Elevation Contours
- Roads
- Highways
- Interstates
- ▭ PLSS Township
- ▭ PLSS Sections

SOURCE: Peterson, J. A., et al., 2001.

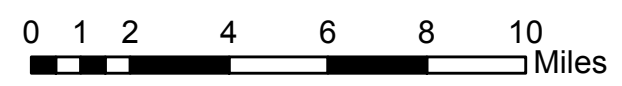
Regional Geology

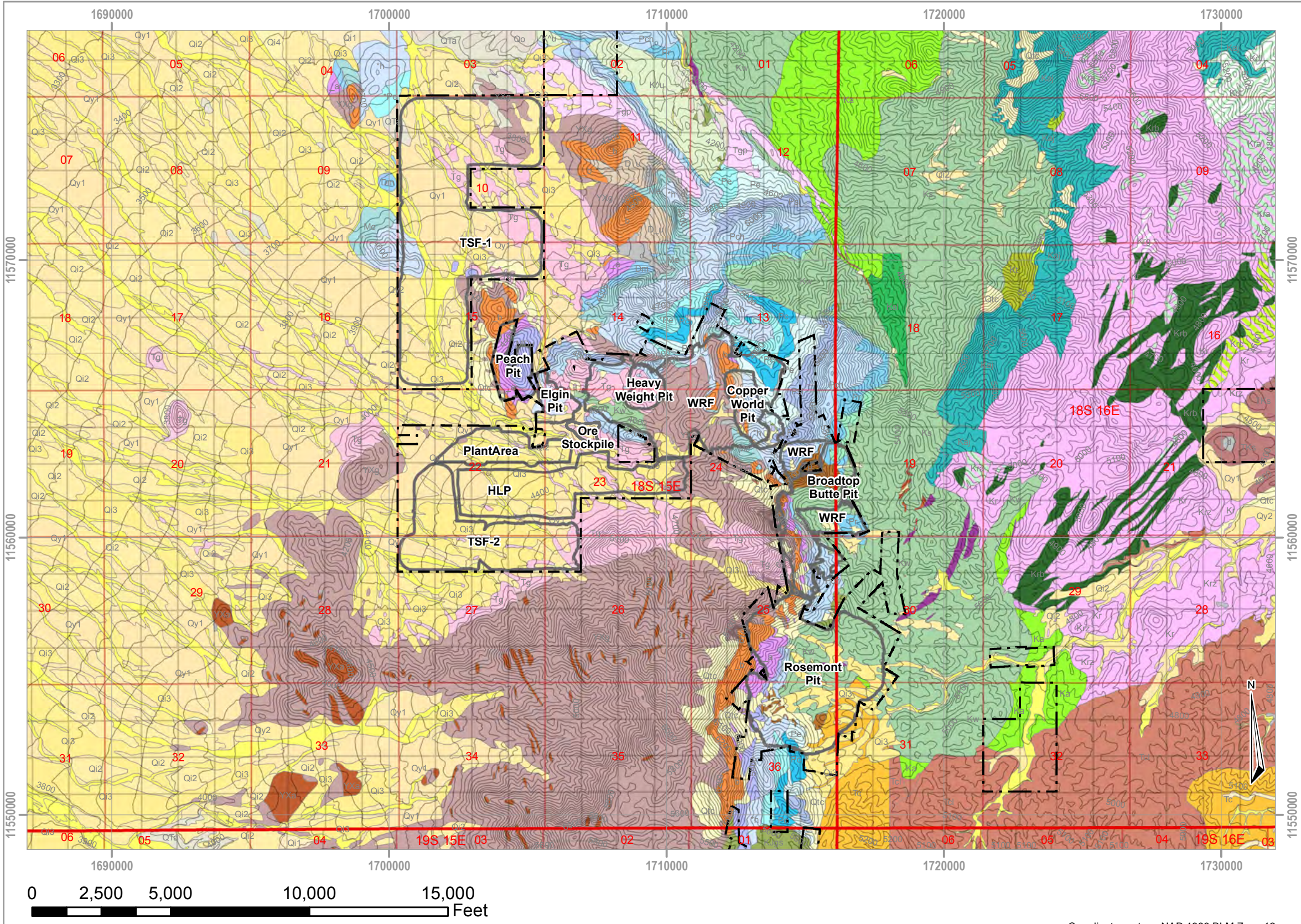


CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	MB/SM	CHECKED:	BG
DATE:	May 2022		
FIGURE:	2.7		

- | | | | | |
|------------------------------------|-----------------------------|------------------------------------|--|--|
| QTa Alluvium and sedimentary rocks | TKg Granitoid rocks | KJs Sedimentary rocks, undiv. | PJs Sedimentary rocks (Naco Group, undiv.) | MDs Sedimentary rocks (Escabrosa and Martin Fm.) |
| Tsm Sedimentary rocks | TKi Intrusive rocks, undiv. | Jvs Volcanic and sedimentary rocks | Ps Sedimentary rocks (Upper Naco Group) | Yg Granite |
| Ta Andesitic volcanic rocks | Ks Sedimentary rocks | Jv Volcanic rocks | Js Sedimentary rocks (Lower Naco Group) | Xm Metamorphic rock, undiv. |
| Tso Sedimentary rocks | KJb Bisbee Group rocks | Pzs Sedimentary rocks, undiv. | | |

Coordinate system: NAD 1983 BLM Zone 12





- Facility Outlines
- Private Land Boundaries
- Topographic Elevation Contours
- PLSS Township
- PLSS Sections
- PLSS Second Division

Project Area Geology



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	SM	CHECKED:	BG
DATE:	May 2022		
FIGURE:	2.8		

Coordinate system: NAD 1983 BLM Zone 12

d Disturbed Ground

Surficial Deposits

Qtc	Talus and Colluvium
Qy3	Deposits in active channels
Qy2	Deposits in low terraces and active fans
Qy1	Deposits in low terraces and young fans
Qy	Young alluvial deposits, undivided
Qyx	Eroded fine deposits
Qi4	Deposits in young intermediate deposits and alluvial fans
Qi3	Deposits in intermediate terrances and relic alluvial fans
Qi2	Deposits in higher intermediate fans and terraces
Qi1	Deposits in highest intermediate fans and terraces
Qo	Deposits in highest preserved alluvial fans
QTa	Old alluvial fan deposits

Bedrock Units

Tc	Gila Conglomerate (Miocene)
Tcl	Unit of Adobe Tank (Gila Group)
Tp	Pantano Formation (Oligocene to Miocene)
TKs	Lower Pantano megabreccia (U. Cretaceous - Oligocene)
Tgp	Porphyritic granite of Sycamore Canyon
Tg	Helvetia granite
TKp	Fine grained felsic porphyry (Tertiary - U. Cretaceous)
Kr	Rhyolite of Mt. Fagan
Krz	Heterolithic mesobreccia
Krg	Heterolithic megabreccia
Kra	Andesite megabreccia
Krb	Bisbee group megabreccia
Krc	Well-rounded conglomerate megabreccia
Kaj	Andesitic lava
Kai	Andesitic porpyry
Kd	Crystal-rich dacite ash-flow tuff
Kdl	Dacitic lava
Kfc	Fort Crittenden Formation
Kfcv	Fort Crittenden Formation, volcanic facies
KJr	Rhyolite Intrusions

Bisbee Group

Kt	Turney Formation
Ks	Shellenburg Formation
Ksl	Lower Shellenburg Formation
Ka	Apache Canyon Formation
Kw	Willow Canyon Formation
Kwm	Willow Canyon Formation, mafic lava
KJg	Glance Conglomerate
KJgs	Glance Conglomerate (quartz sandstone-carbonate dominant)
KJgg	Glance Conglomerate (granite dominant)
K^u	Undifferentiated Mesozoic clastic rocks
J^g	Gardner Canyon Formation
JPs	Quartz sandstone

Naco Group

Pr	Rainvalley Formation
Pch	Concha Limestone
Psu	Sherrer Formation, upper division
Psi	Sherrer Formation, lower division
Pe	Epitaph Formation, undivided
Pc	Colina Limestone
*Pe	Earp Formation
*h	Horquilla Limestone

Me	Escabrosa Limestone
MDu	Escabrosa Limestone and Martin Limestone, undifferentiated
Dm	Martin Formation
D_u	Martin Limestone and Abrigo Formation, undifferentiated
Pz	Marble, hornfels and skarn
_a	Abrigo Formation
_b	Bolsa quartzite
YXa	Megacrystic granite
YXg	Continental Granodiorite

Geologic Sources:

Johnson, B.J., Pearthree, P.A., and Ferguson, C.A., 2016, Geologic map of the Corona de Tucson 7 ½' Quadrangle, Pima County, Arizona: Arizona Geological Survey Digital Geologic Map DGM-115, scale 1:24,000.

Ferguson, C.A., Youberg, A., Gilbert, W.G., Orr, T.R., Richard, S.M., and Spencer, J.E., 2019, Geologic Map of the Mount Fagan 7.5' Quadrangle, Eastern Pima County, Arizona: Arizona Geological Survey Digital Geologic Map DGM-11, version 2.0, map scale 1:24,000

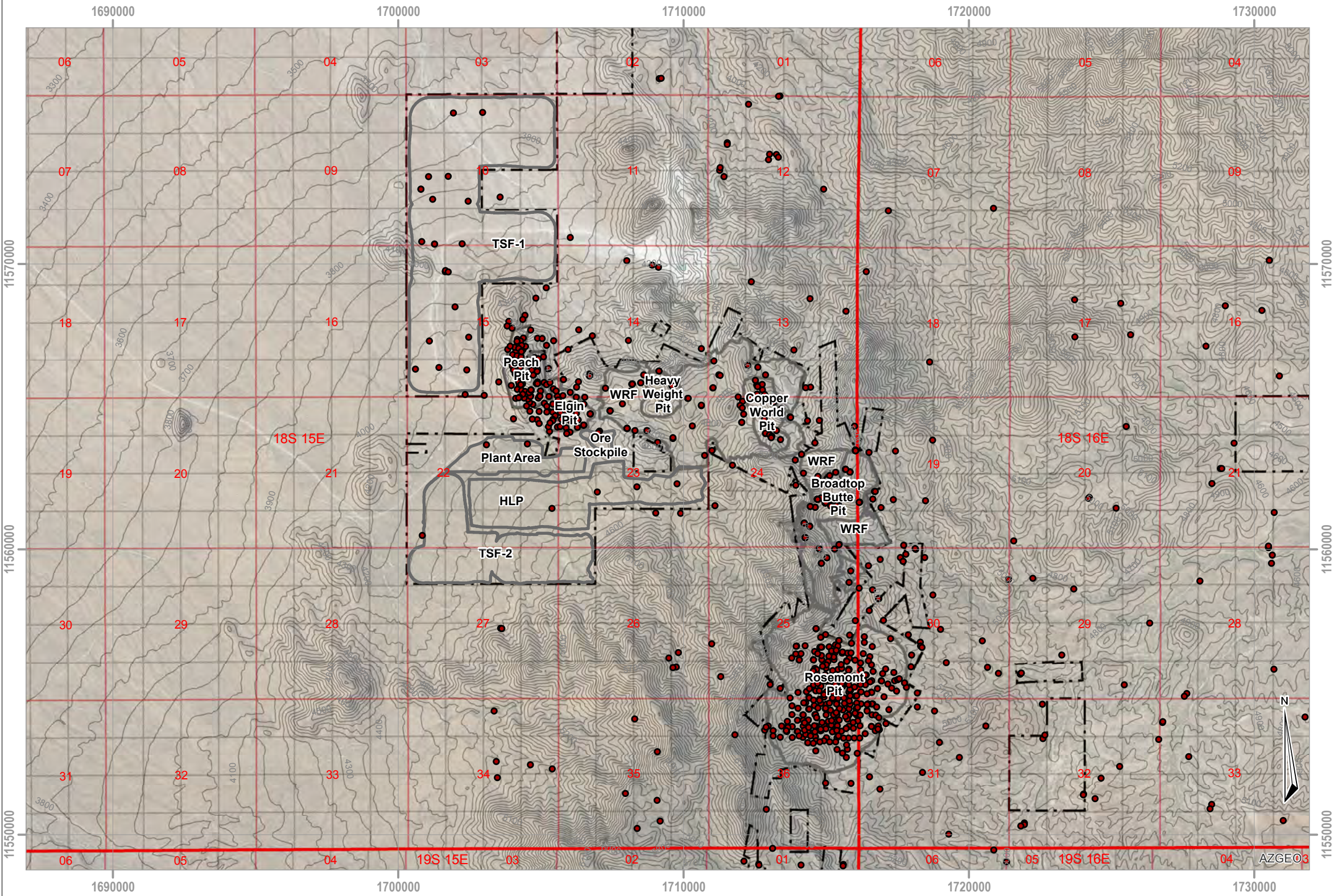
Ferguson, C.A., Johnson, B.J., Pearthree, P.A., Spencer, J.E., Shipman, T.C., and Cook, J.P., 2019, Geologic Map of the Helvetia 7.5' Quadrangle, Pima County, Arizona. Arizona Geological Survey Digital Geologic Maps, DGM-144, 1 map sheet, map scale 1:24,000.

Cook, J.P., Ferguson, C.A., 2019, Geologic Map of Empire Ranch 7.5' Quadrangle, Pima County, Arizona Arizona Geological Survey Digital Geologic Maps, DGM 143, 1 map sheet, map scale 1:24,000.

Project Area Geology Map Key



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	MB	CHECKED:	BG
DATE:	May 2022		
FIGURE:	2.9		



- Borehole Collars
- Facility Outlines
- - - Private Land Boundaries
- Topographic Elevation Contours
- PLSS Township
- PLSS Sections
- PLSS Second Division

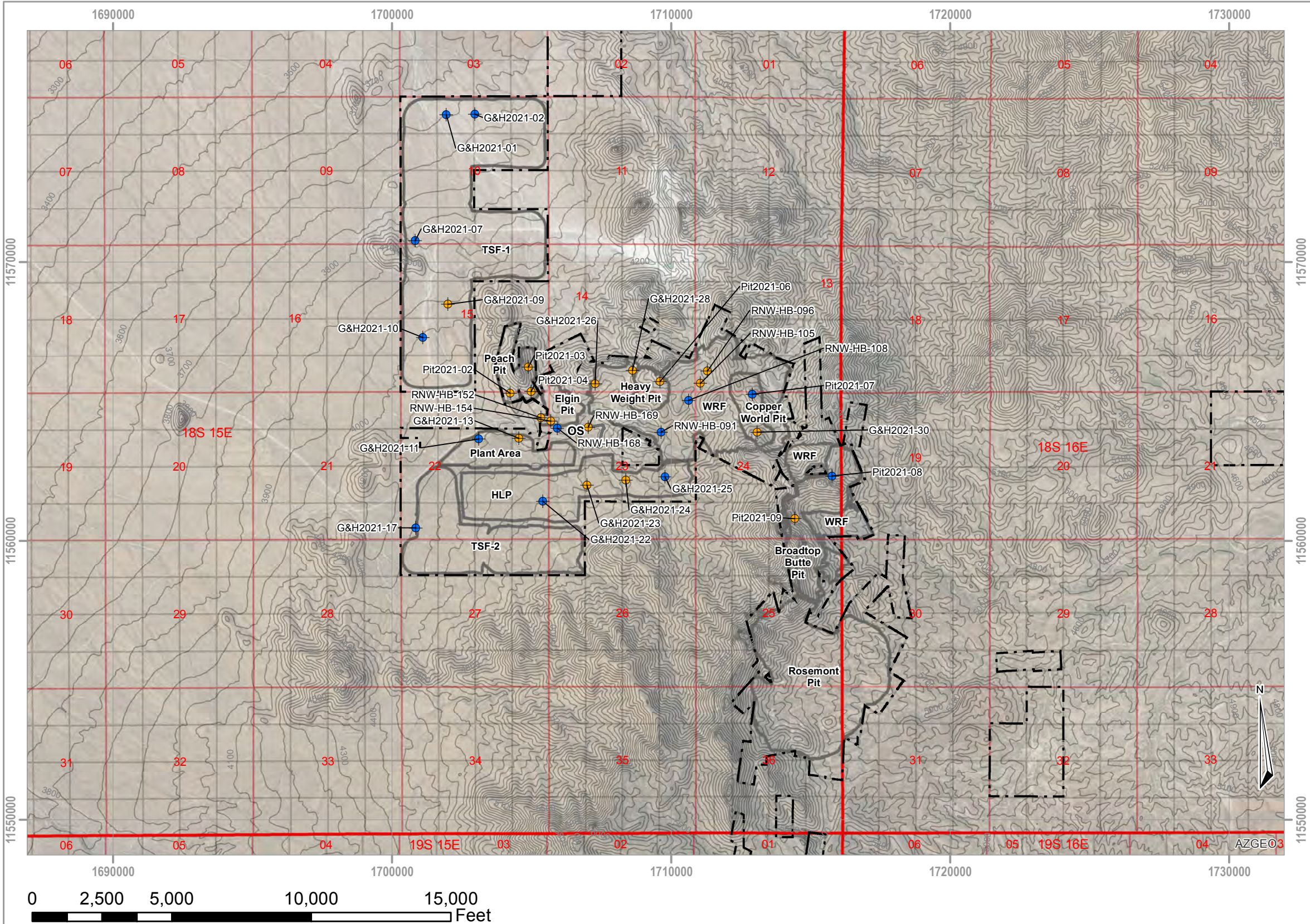
Site Exploration Boreholes



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	SM	CHECKED:	BG
DATE:	May 2022		
FIGURE:	3.1		

0 2,500 5,000 10,000 15,000 Feet

Coordinate system: NAD 1983 BLM Zone 12



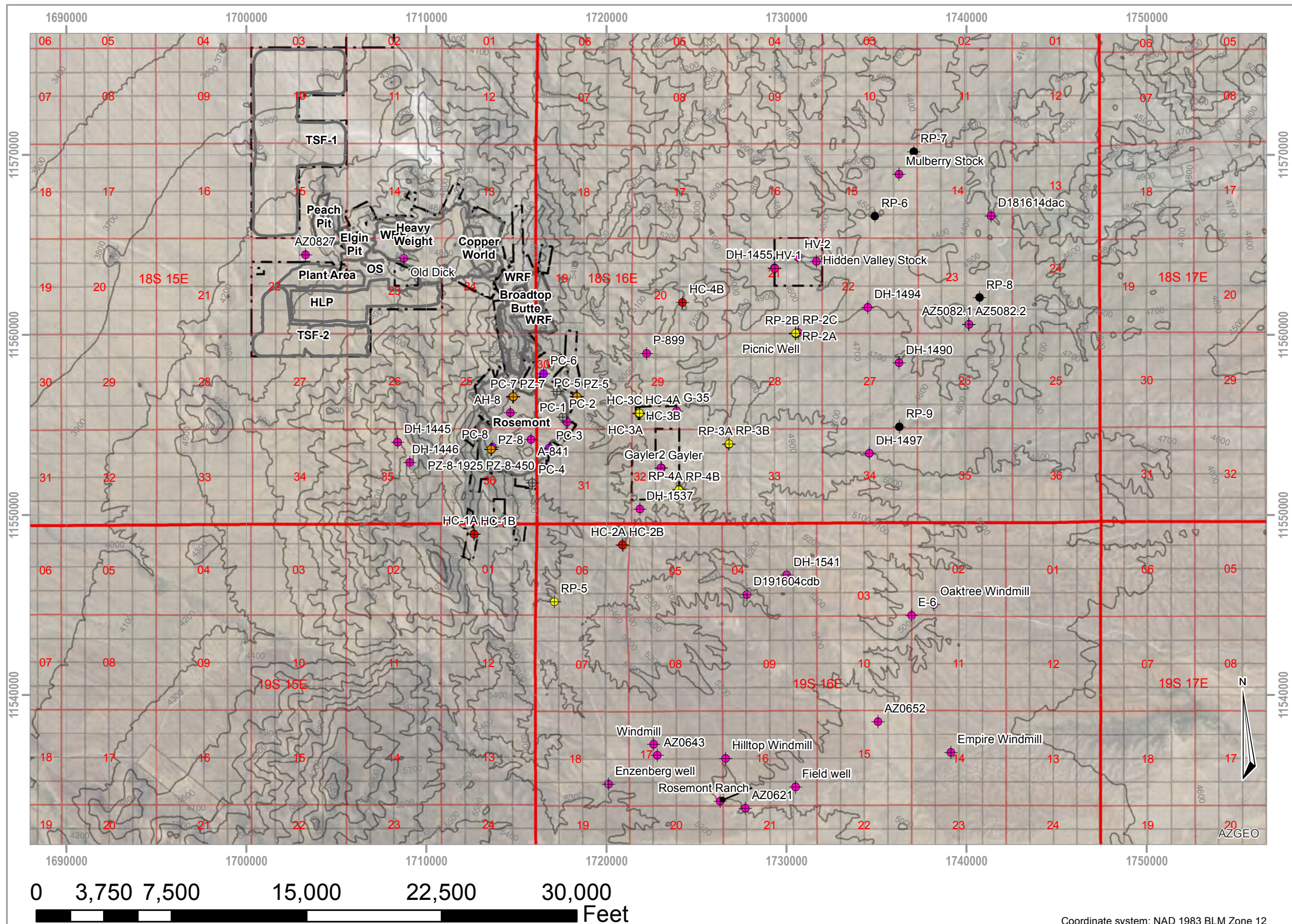
- VWPs
- OSPs and Monitoring Wells
- Facility Outlines
- Private Land Boundaries
- Topographic Elevation Contours
- PLSS Township
- PLSS Sections
- PLSS Second Division

2021 Hydrogeologic Investigation Boreholes



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	SM	CHECKED:	BG
DATE:	May 2022		
FIGURE:	3.2		

Coordinate system: NAD 1983 BLM Zone 12



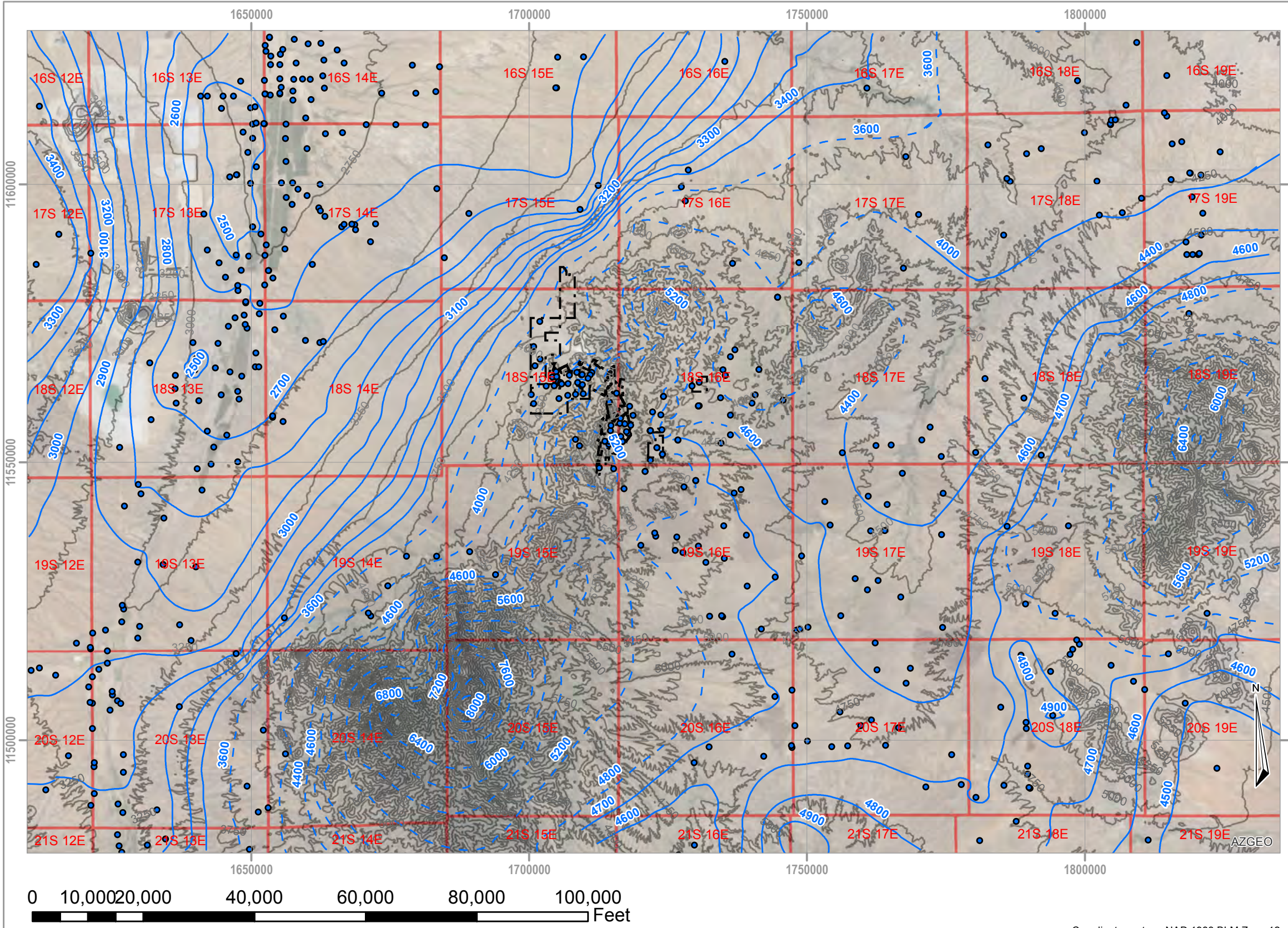
- Alluvium Characterization Well
- Deep Characterization Well
- Intermediate Characterization Well
- Multi-level Piezometer
- Other Piezometer
- Other Water Well
- Pit Characterization Well
- Rosemont Mine Water Supply Well
- Shallow Characterization Well
- Facility Outlines
- Private Land Boundaries
- Topographic Elevation Contours
- PLSS Township
- PLSS Sections
- PLSS Second Division

Existing Hydrogeologic Investigation Locations

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CLIENT:	Rosemont Copper Company	
PROJECT:	Rosemont Copper World Project	
JOB:	4286	
DRAWN:	SM	CHECKED: BG
DATE:	May 2022	
FIGURE:	4.1	

Coordinate system: NAD 1983 BLM Zone 12



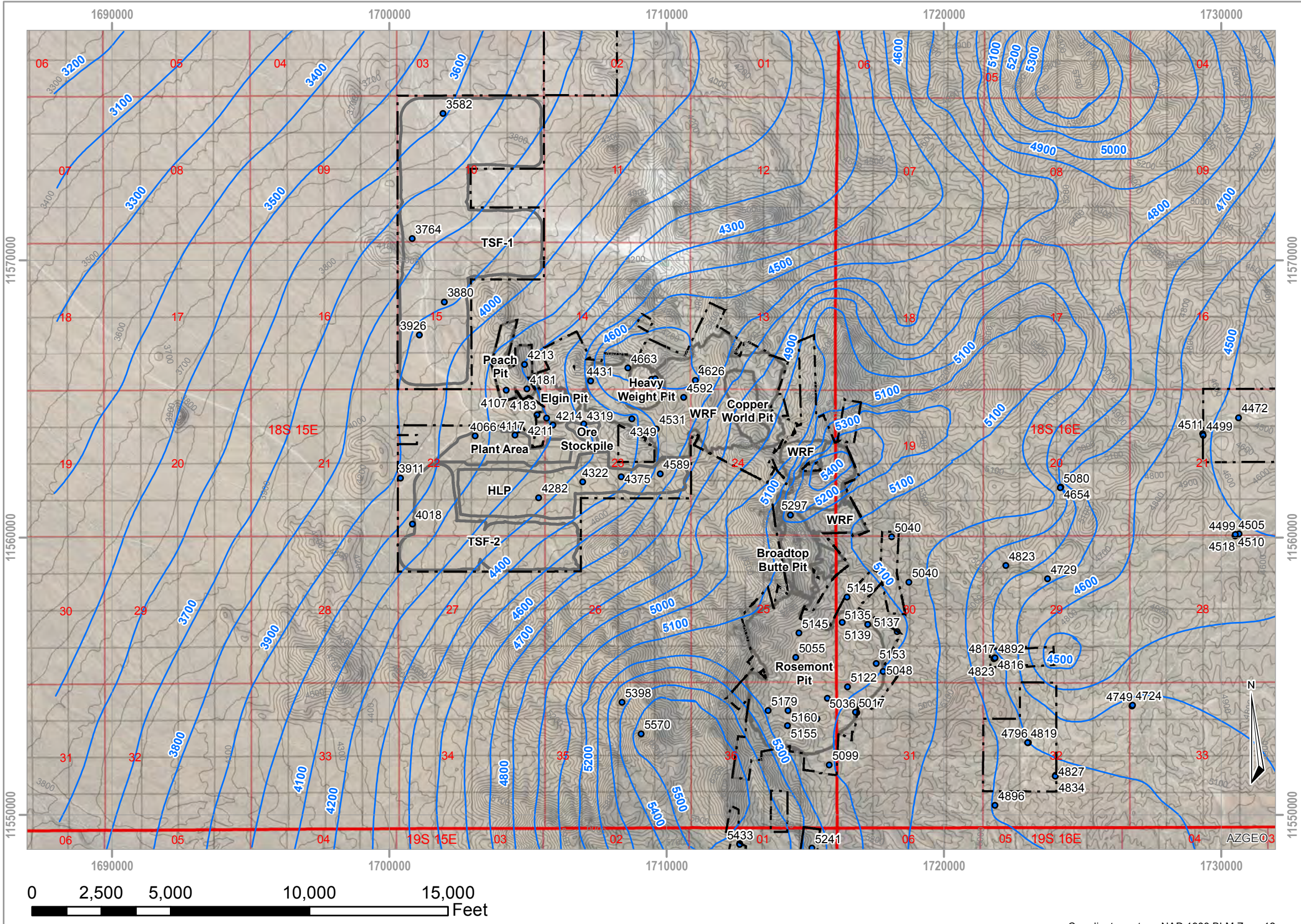
- Groundwater Location Elevation
- Private Land Boundaries
- Alluvial Groundwater Elevation Contours
- Bedrock Groundwater Elevation Contours
- Topographic Elevation Contours
- PLSS Township

Regional Potentiometric Surface



CLIENT:	Rosemont Copper Company	
PROJECT:	Rosemont Copper World Project	
JOB:	4286	
DRAWN:	SM/AP	CHECKED: BG
DATE:	May 2022	
FIGURE:	4.2	

Coordinate system: NAD 1983 BLM Zone 12



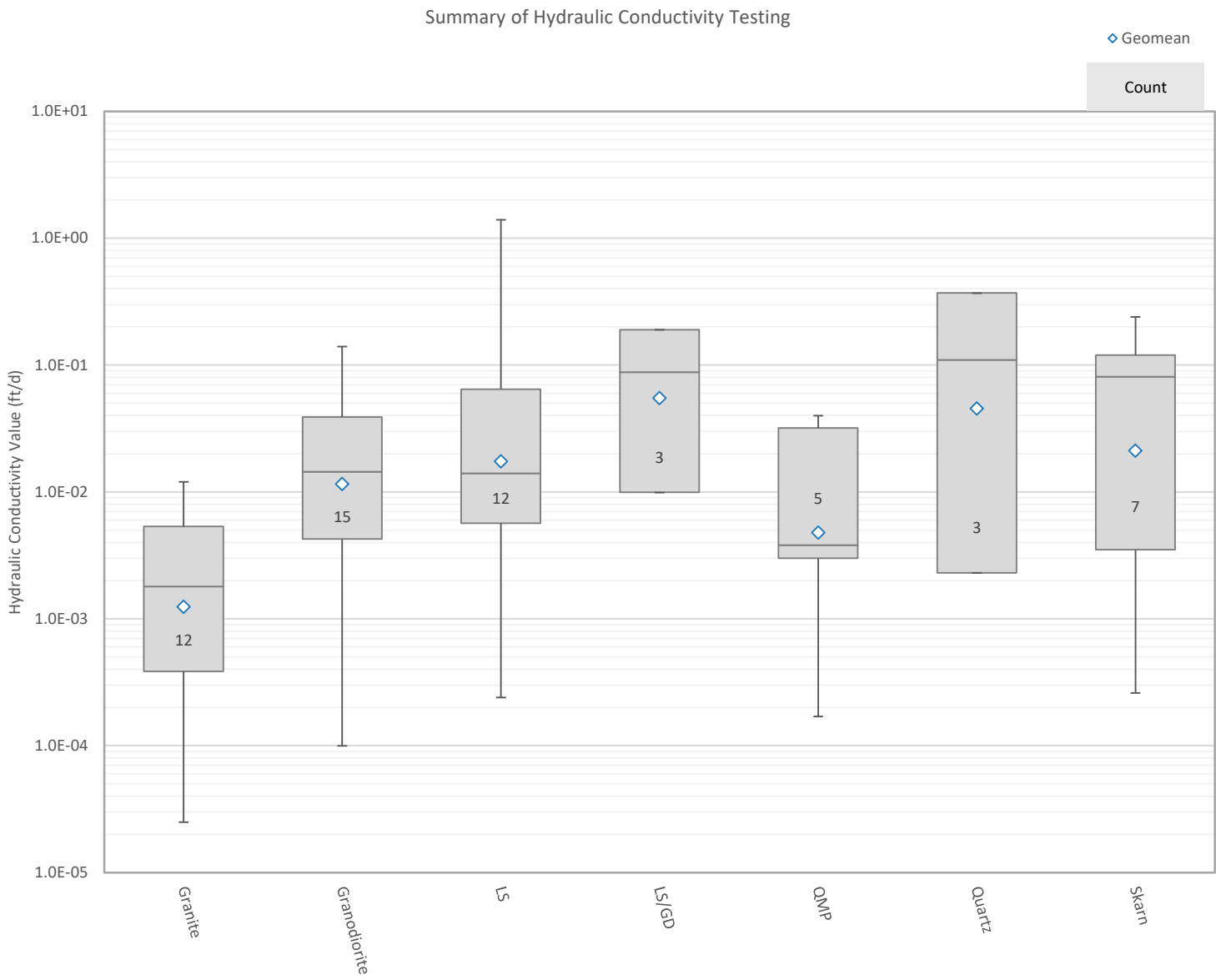
- Groundwater Elevation Locations
- Local Groundwater Elevation Contours
- Facility Outlines
- Private Land Boundaries
- PLSS Township
- PLSS Sections
- PLSS Second Division

Project Area Potentiometric Surface



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	SM/AP	CHECKED:	BG
DATE:	May 2022		
FIGURE:	4.3		

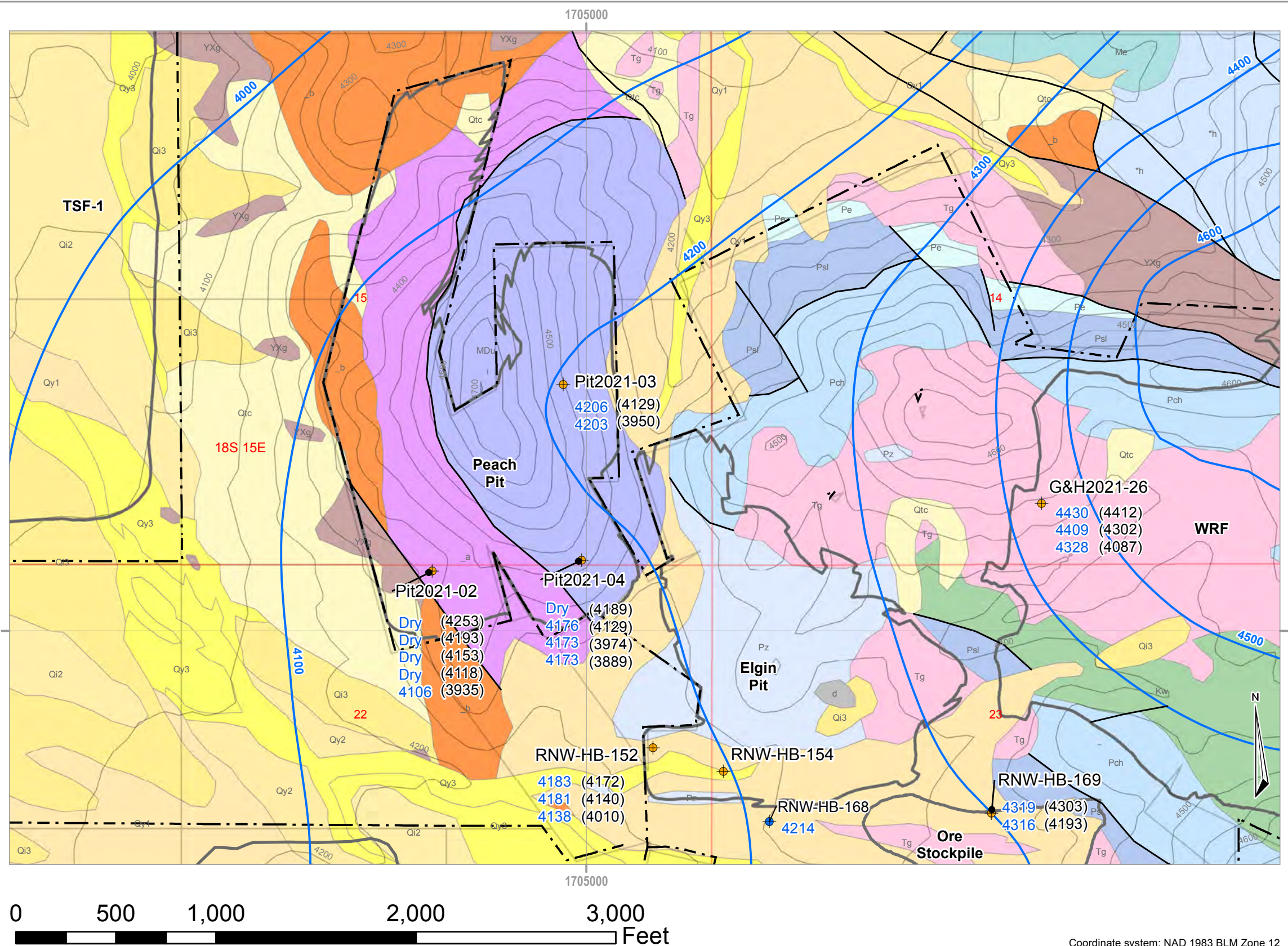
Coordinate system: NAD 1983 BLM Zone 12



2021 Borehole Hydraulic Testing Statistics



CLIENT:	Rosemont Copper Company		PROJECT:	Rosemont Copper World Project	
JOB #:	4286		DRAWN:	SM	CHECKED: BG
DATE:	May 2022		FIGURE:	4.4	



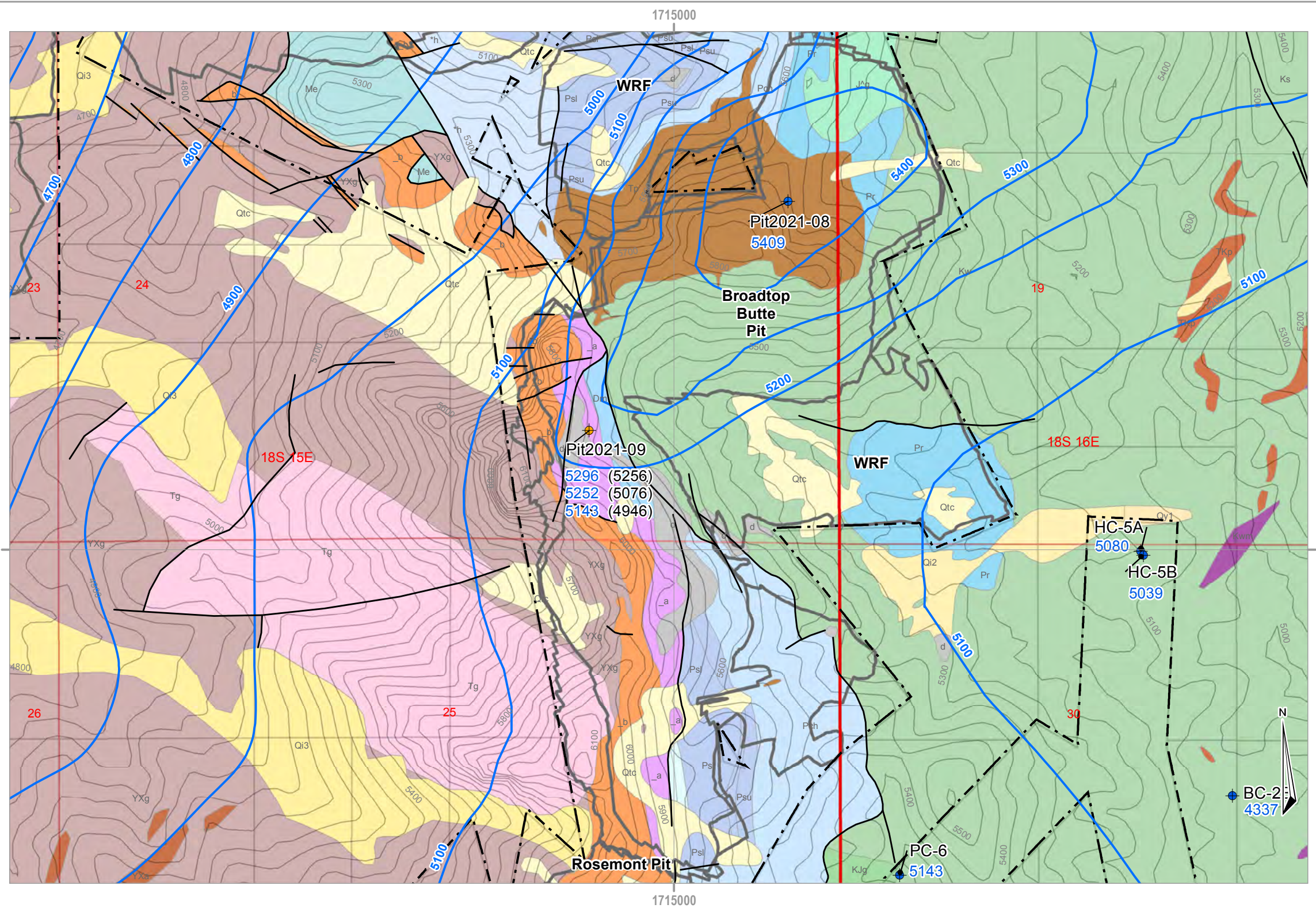
- OSP and Monitoring Wells
- VWPs
- 3000 Piezometric Elevation (ft amsl)
- (3000) Sensor Elevation (ft amsl)
- Facility Outlines
- Private Land Boundaries
- Faults
- Local Groundwater Elevation Contours
- Topographic Elevation Contours
- PLSS Township
- PLSS Sections
- PLSS Second Division

Geology legend and references on Figure 2.9

Peach and Elgin Pits Hydrogeology



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	SM	CHECKED:	BG
DATE:	May 2022		
FIGURE:	4.5		



Coordinate system: NAD 1983 BLM Zone 12

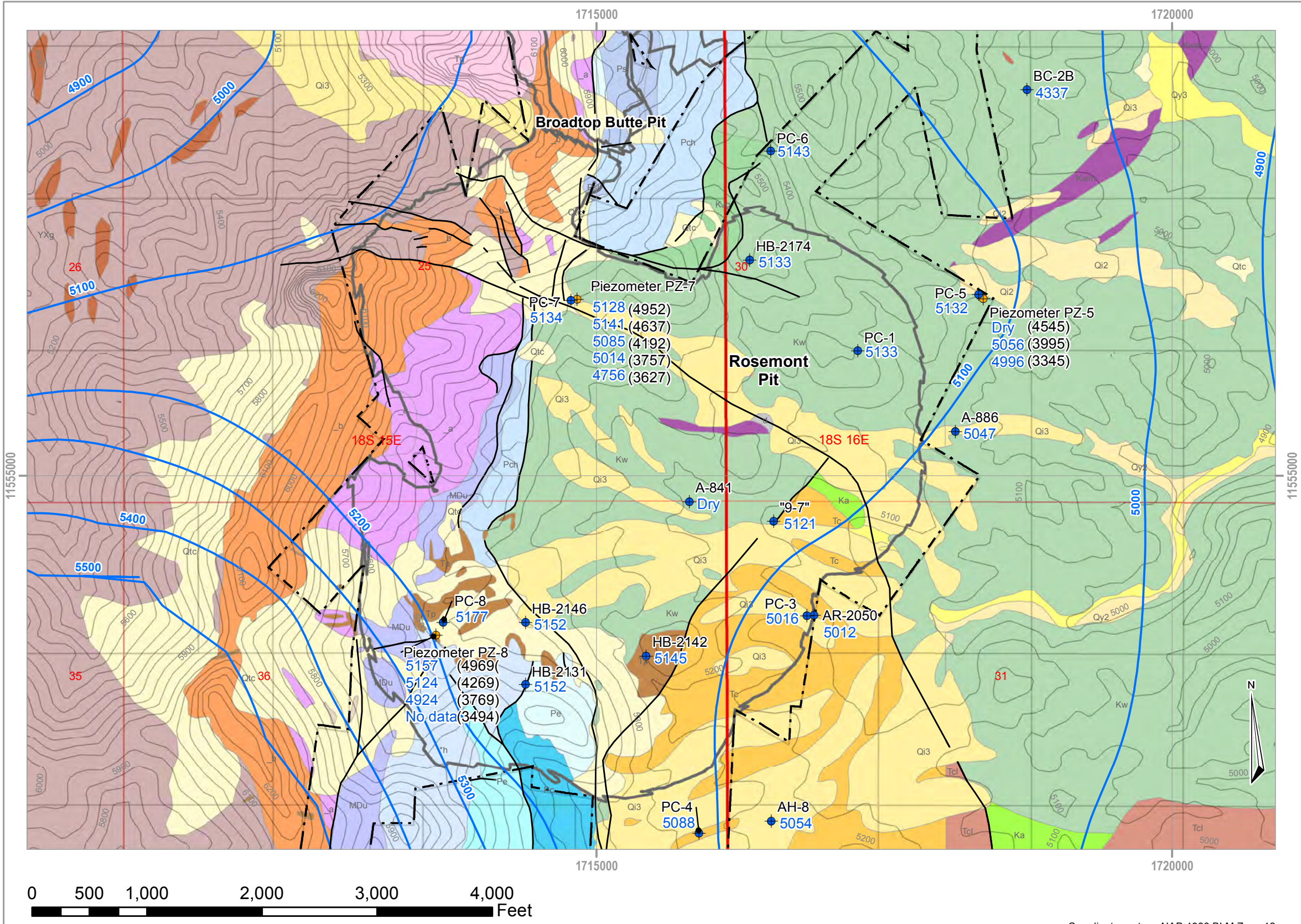
- OSP and Monitoring Wells
- VWPs
- Piezometric Elevation (ft amsl)
- (3000) Sensor Elevation (ft amsl)
- Facility Outlines
- Private Land Boundaries
- Faults
- Local Groundwater Elevation Contours
- Topographic Elevation Contours
- PLSS Township
- PLSS Sections
- PLSS Second Division

Geology legend and references on Figure 2.9

Broadtop Butte Pit Hydrogeology




CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	SM	CHECKED:	BG
DATE:	May 2022		
FIGURE:	4.7		



- OSP and Monitoring Wells
- VWPs
- 3000 Piezometric Elevation (ft amsl)
- (3000) Sensor Elevation (ft amsl)
- Facility Outlines
- Private Land Boundaries
- Faults
- Local Groundwater Elevation Contours
- Topographic Elevation Contours
- PLSS Township
- PLSS Sections
- PLSS Second Division

Geology legend and references on Figure 2.9

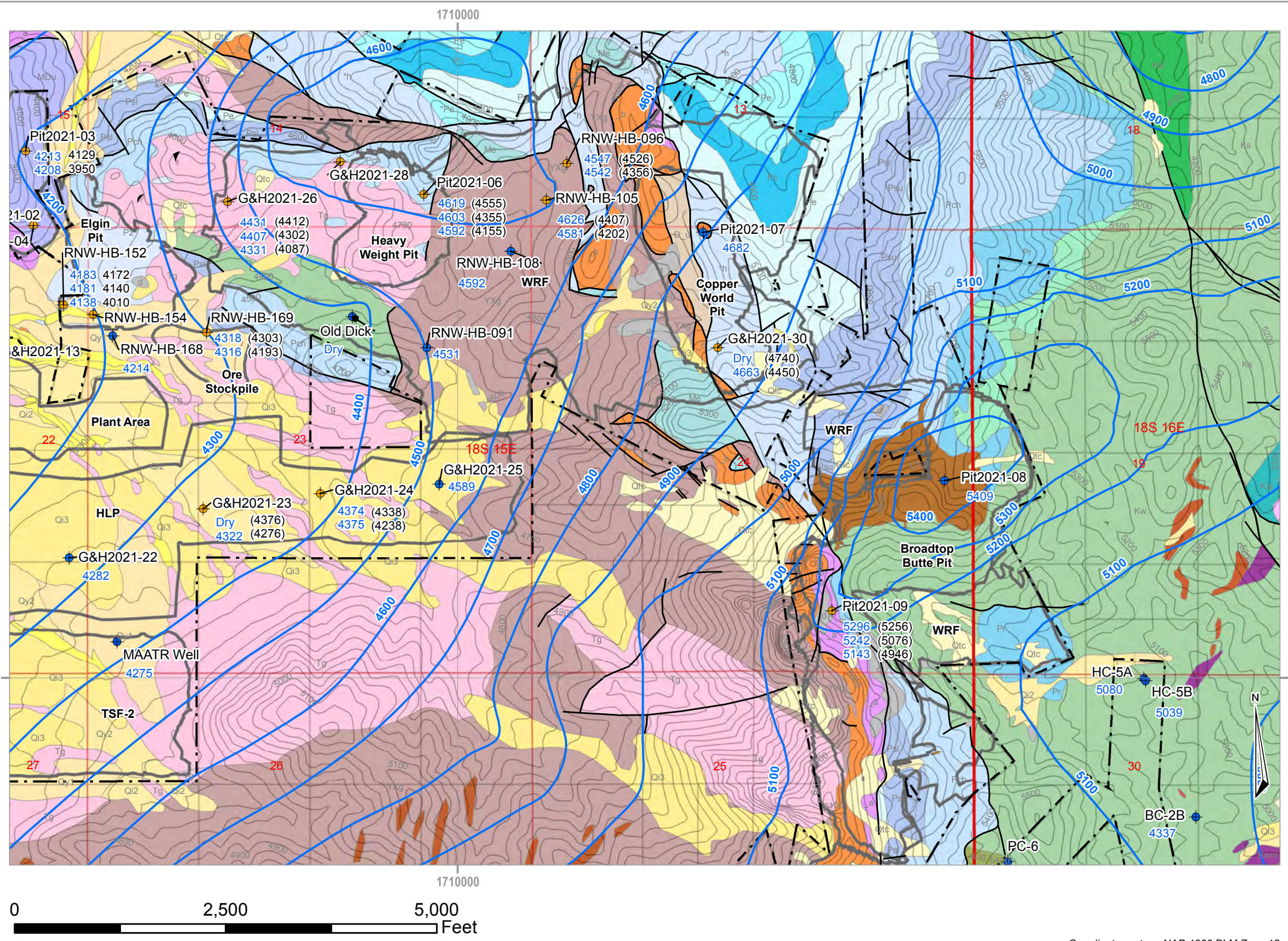
Rosemont Pit Hydrogeology



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CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	SM	CHECKED:	BG
DATE:	May 2022		
FIGURE:	4.8		

Coordinate system: NAD 1983 BLM Zone 12



- OSP and Monitoring Wells
- VWPs
- Piezometric Elevation (ft amsl)
- Sensor Elevation (ft amsl)
- Facility Outlines
- Private Land Boundaries
- Faults
- Local Groundwater Elevation Contours
- Topographic Elevation Contours
- PLSS Township
- PLSS Sections
- PLSS Second Division

Waste Rock Facility (WRF)
Hydrogeology

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A TETRA TECH COMPANY

CLIENT: Rosemont Copper Company

PROJECT: Rosemont Copper World Project

JOB: 4286

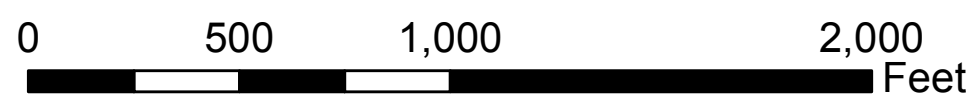
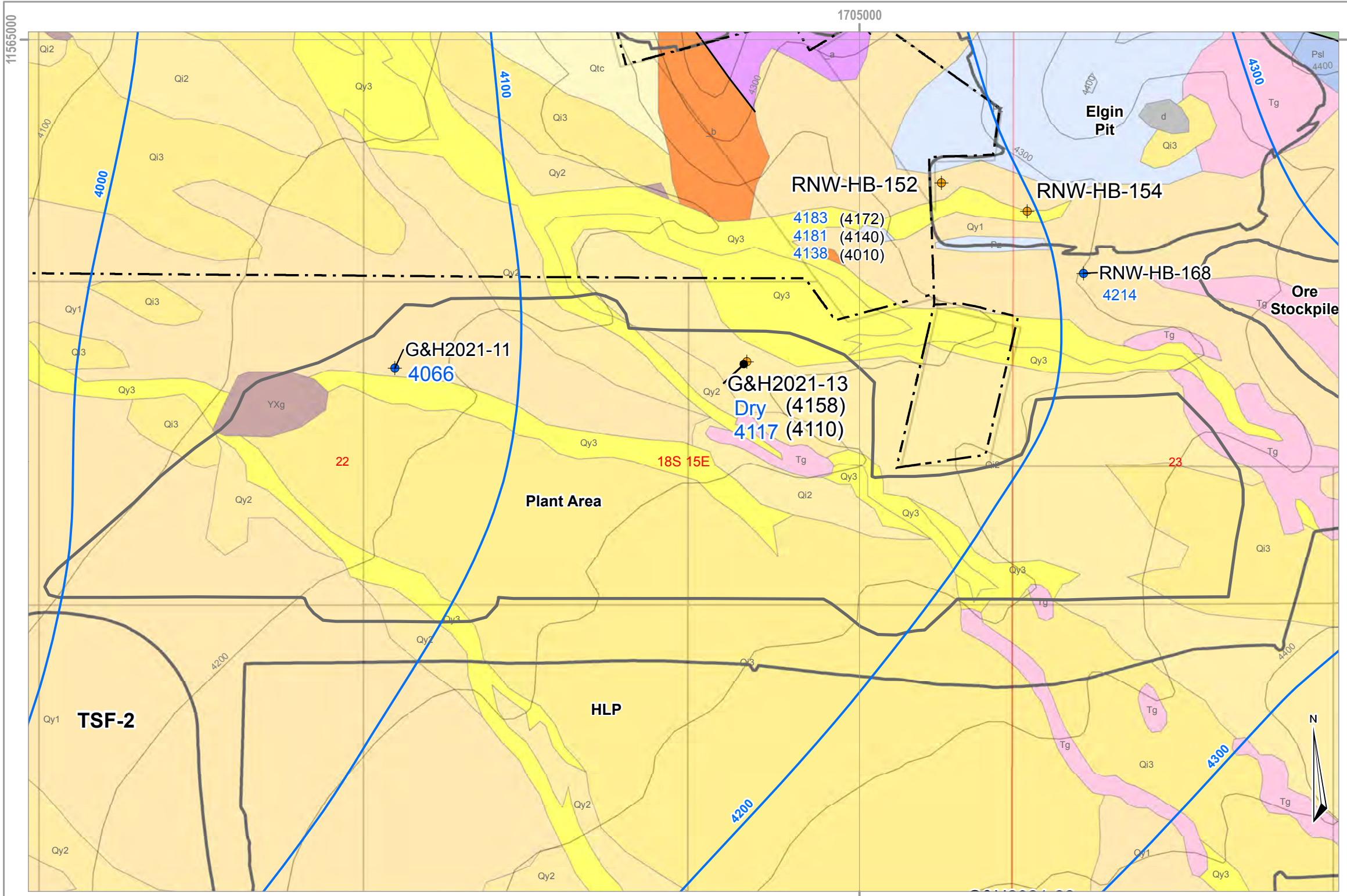
DRAWN: SM

CHECKED: BG

DATE: May 2022

FIGURE: 4.9

Coordinate system: NAD 1983 BLM Zone 12



Coordinate system: NAD 1983 BLM Zone 12

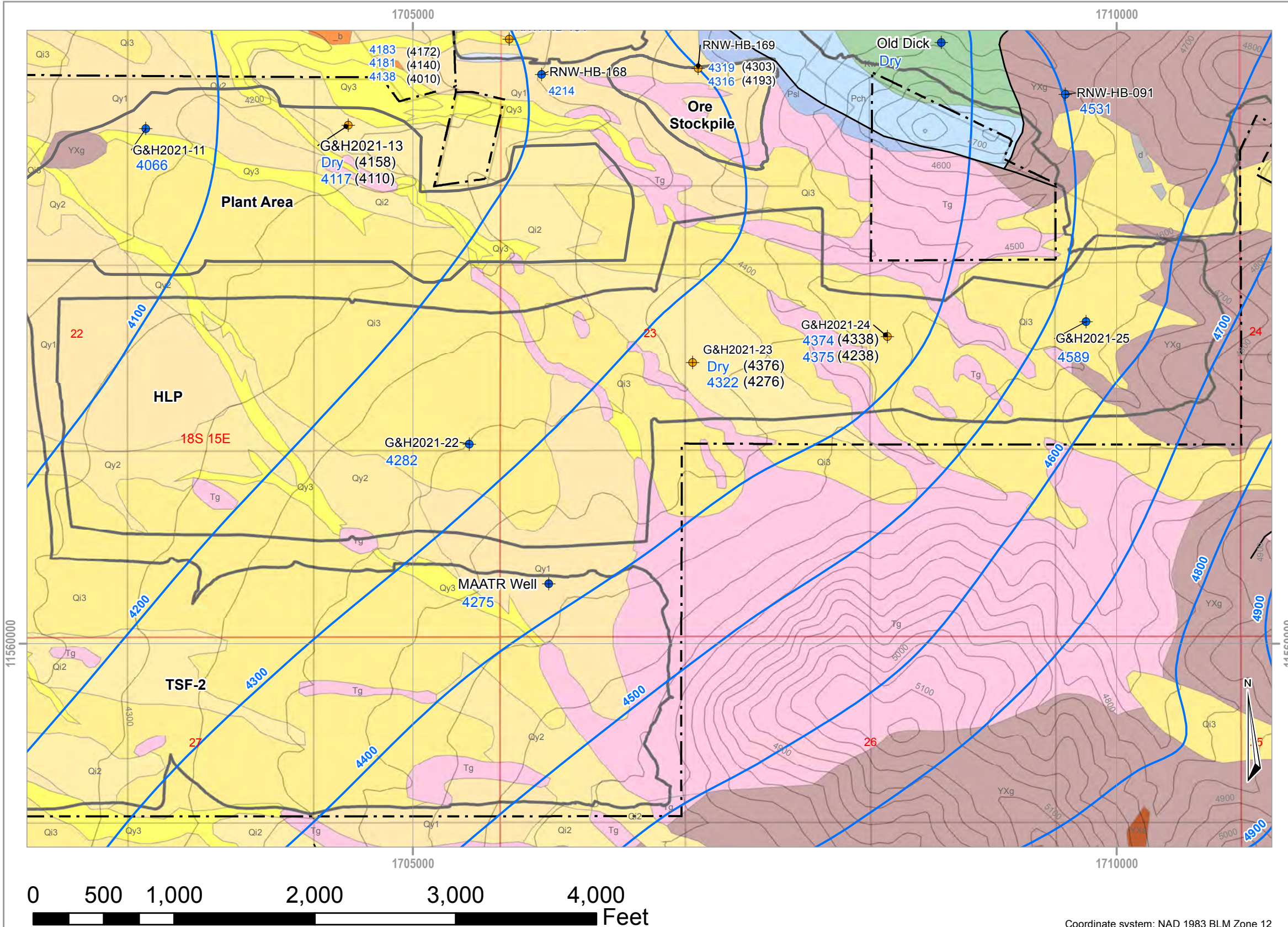
- OSP and Monitoring Wells
- VWPs
- Piezometric Elevation (ft amsl)
- (3000) Sensor Elevation (ft amsl)
- Facility Outlines
- Private Land Boundaries
- Faults
- Local Groundwater Elevation Contours
- Topographic Elevation Contours
- PLSS Township
- PLSS Sections
- PLSS Second Division

Geology legend and references on Figure 2.9

Plant Area Hydrogeology



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	SM	CHECKED:	BG
DATE:	May 2022		
FIGURE:	4.10		



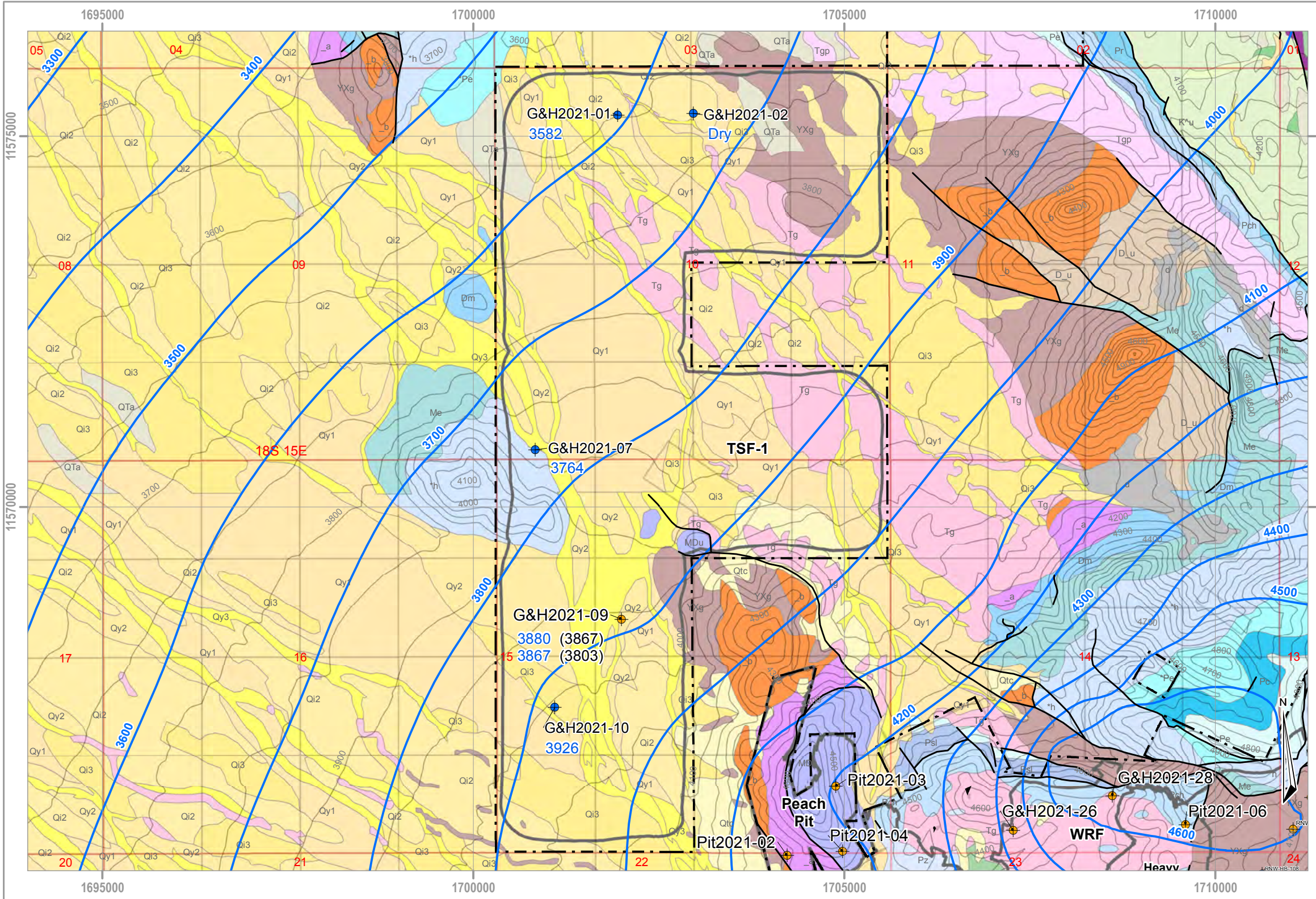
- OSP and Monitoring Wells
- VWPs
- 3000 Piezometric Elevation (ft amsl)
- (3000) Sensor Elevation (ft amsl)
- Facility Outlines
- Private Land Boundaries
- Faults
- Local Groundwater Elevation Contours
- Topographic Elevation Contours
- PLSS Township
- PLSS Sections
- PLSS Second Division

Geology legend and references on Figure 2.9

Heap Leach Pad (HLP) Hydrogeology



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	SM	CHECKED:	BG
DATE:	May 2022		
FIGURE:	4.11		



- OSP and Monitoring Wells
- VWPs
- 3000 Piezometric Elevation (ft amsl)
- (3000) Sensor Elevation (ft amsl)
- Facility Outlines
- Private Land Boundaries
- Faults
- Local Groundwater Elevation Contours
- Topographic Elevation Contours
- PLSS Township
- PLSS Sections
- PLSS Second Division

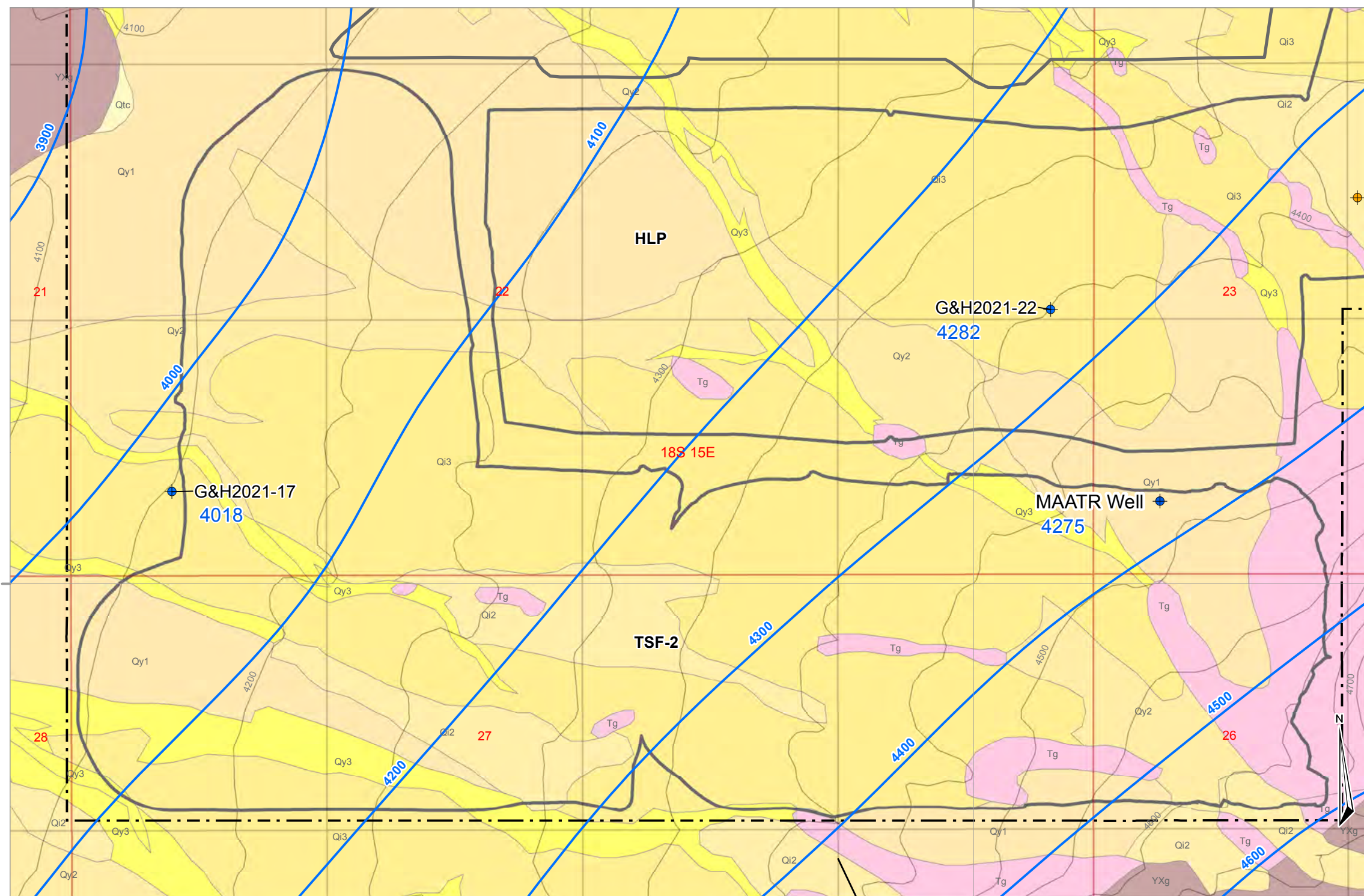
Geology legend and references on Figure 2.9

Tailings Storage Facility 1 (TSF-1) Hydrogeology



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	SM	CHECKED:	BG
DATE:	May 2022		
FIGURE:	4.12		

Coordinate system: NAD 1983 BLM Zone 12



Coordinate system: NAD 1983 BLM Zone 12

- OSP and Monitoring Wells
- VWPs
- 3000 Piezometric Elevation (ft amsl)
- (3000) Sensor Elevation (ft amsl)
- Facility Outlines
- Private Land Boundaries
- Faults
- Local Groundwater Elevation Contours
- Topographic Elevation Contours
- PLSS Township
- PLSS Sections
- PLSS Second Division

Geology legend and references on Figure 2.9

Tailings Storage Facility 2 (TSF-2) Hydrogeology



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	SM	CHECKED:	BG
DATE:	May 2022		
FIGURE:	4.13		

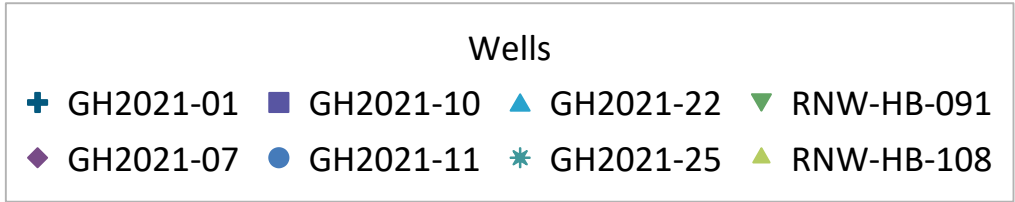
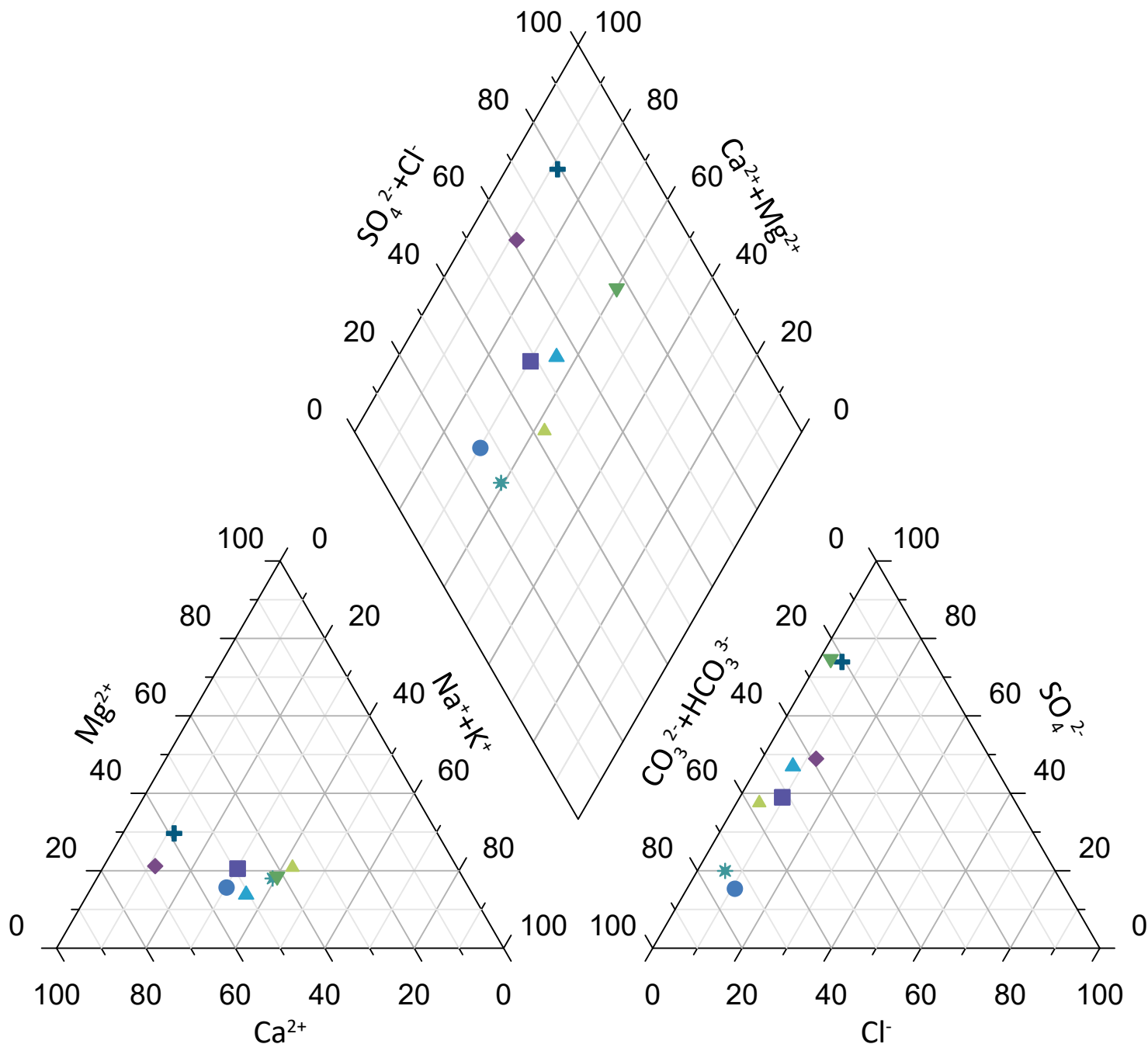
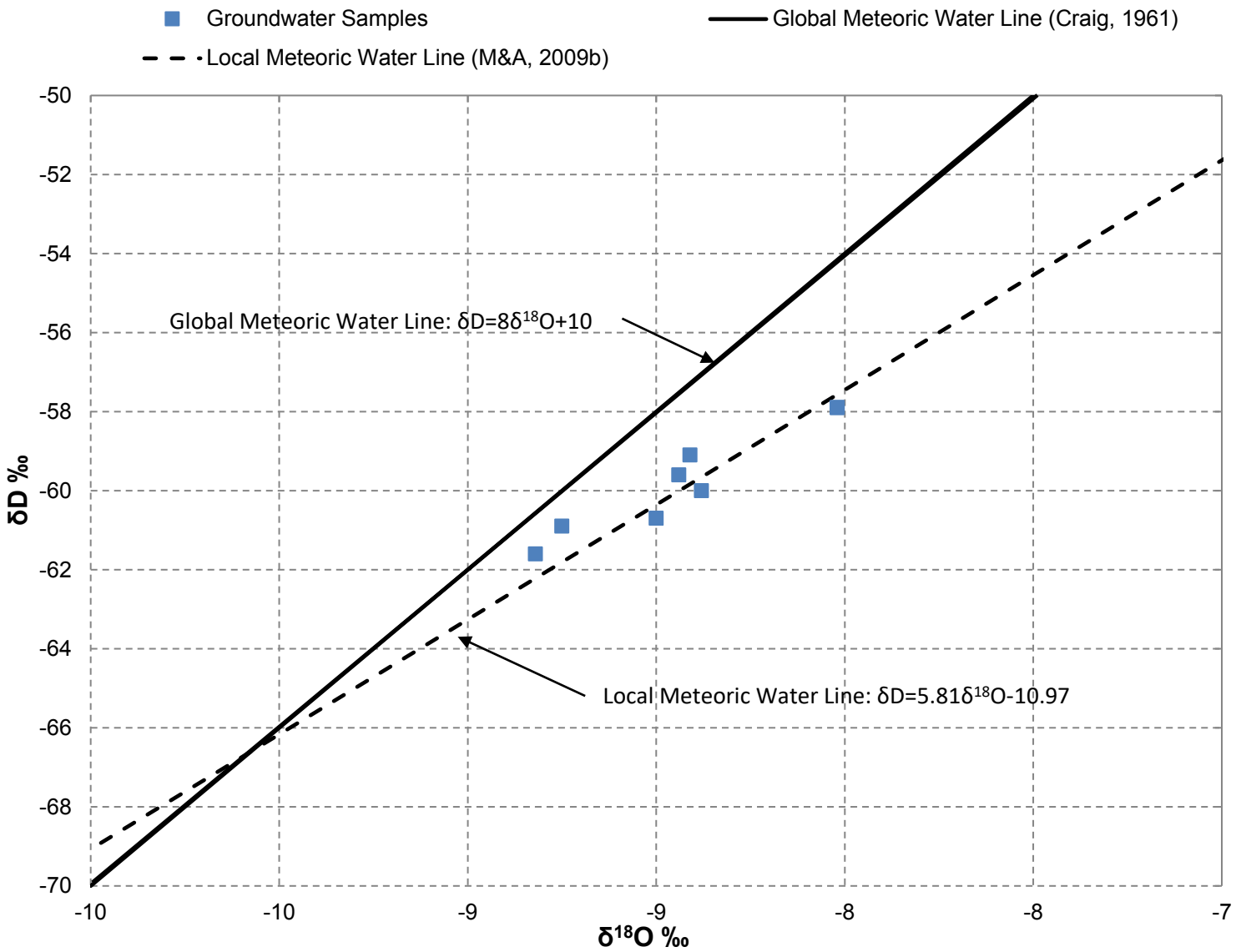
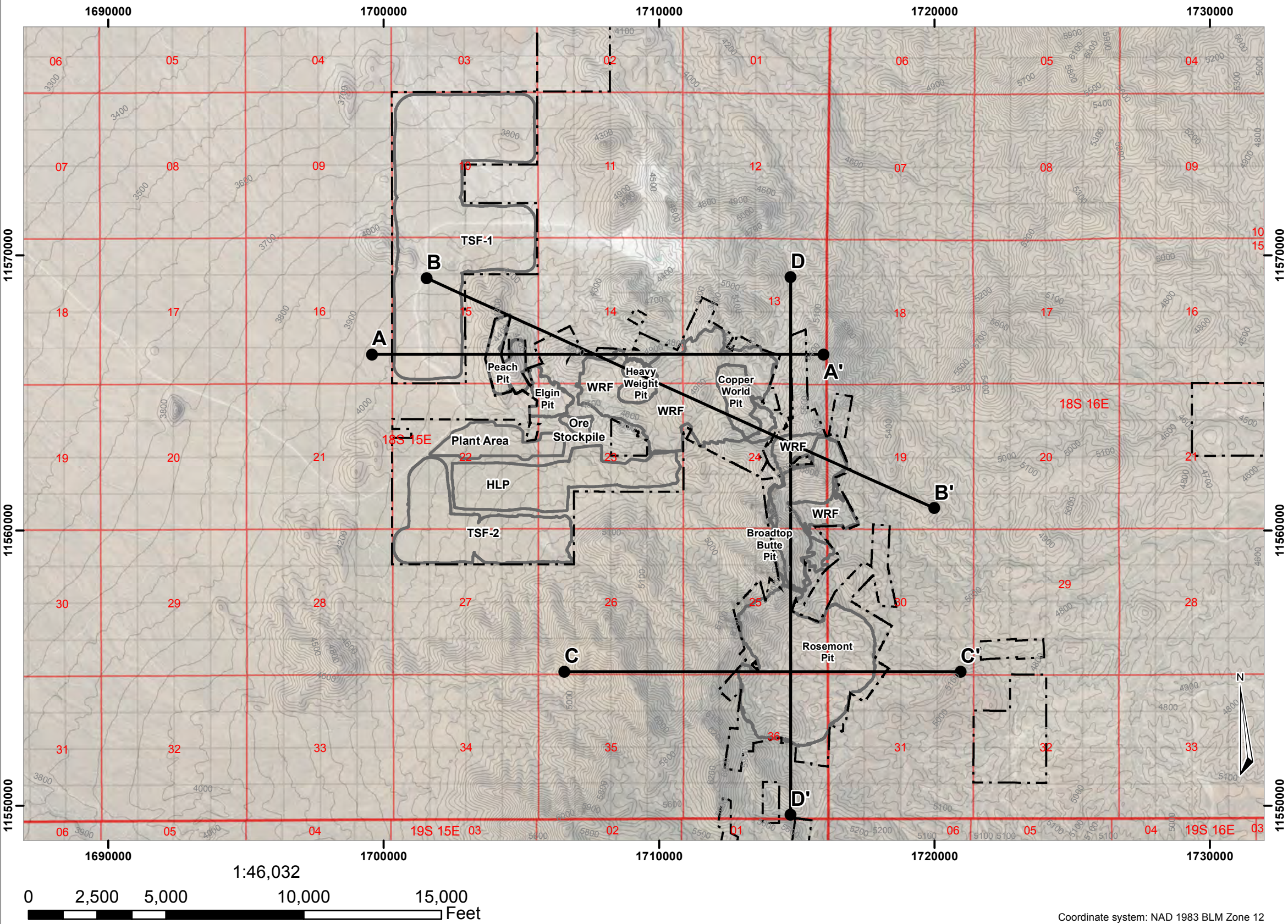


Figure 4.14: 2021 Hydrogeologic Characterization
Groundwater Piper Diagram
Rosemont Copper Company
Rosemont Copper World Project



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- Cross Section Endpoints
- Cross Section Trace
- ▭ Facility Outlines
- - - Private Land Boundaries
- Topographic Elevation Contours
- ▭ PLSS Township
- ▭ PLSS Sections
- ▭ PLSS Second Division

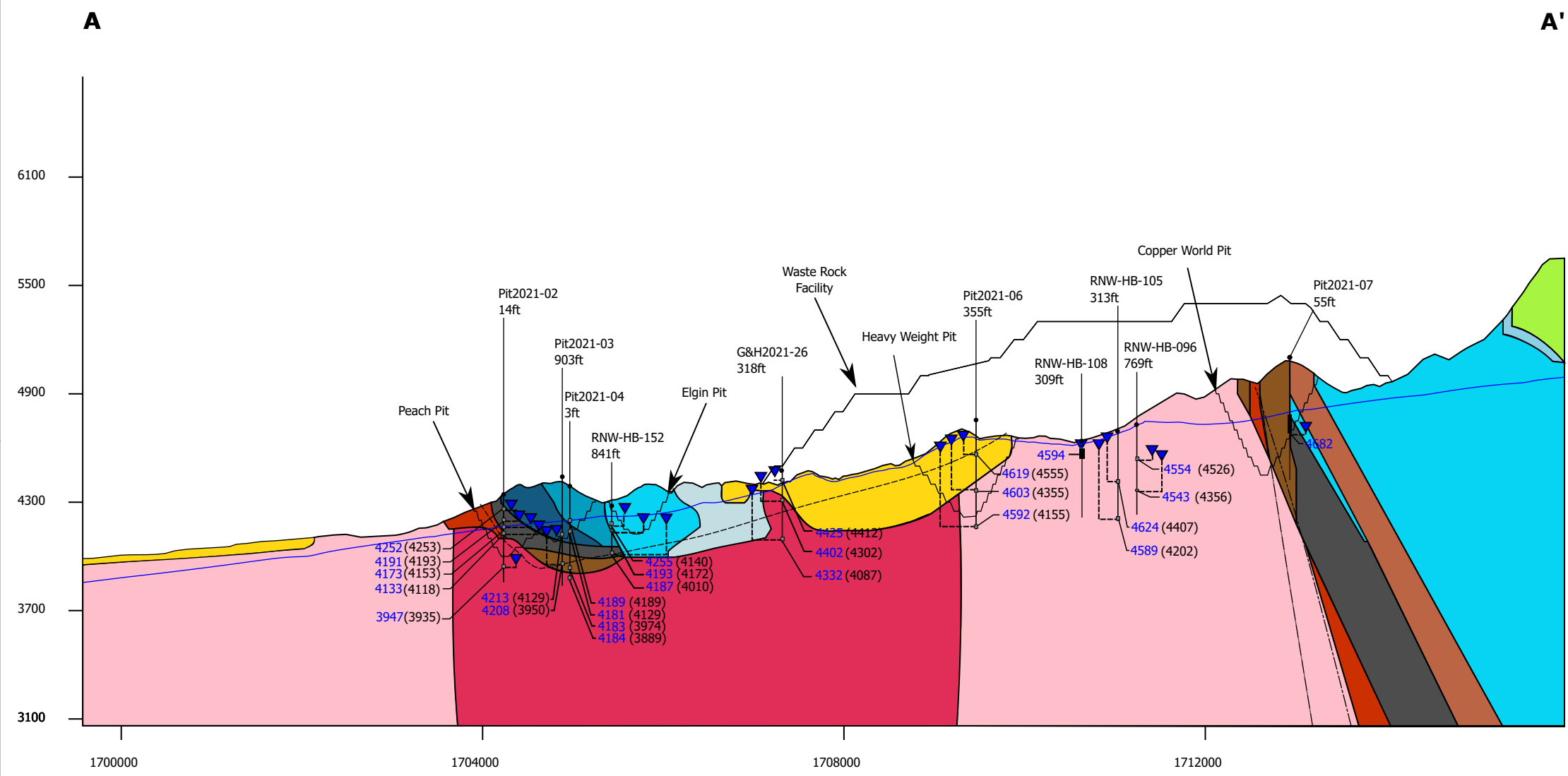
Project Area Hydrogeologic Cross
Section Locations



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	SM	CHECKED:	BG
DATE:	May 2022		
FIGURE:	4.16		

Coordinate system: NAD 1983 BLM Zone 12

Peach and Northern WRF Hydrogeologic Cross Section



Lithology

- ABRIGO
- ANDESITE
- ARKOSE
- BOLSA
- CONCHA
- EARP
- EPITAPH
- ESCABROSA
- GILA
- GLANCE
- GRANODIORITE 1
- GRANODIORITE 2
- HORQUILLA
- MARTIN
- QMP
- SCHERRER

Section End Points

A : 1699573, 11565337
A': 1715979, 11565337

Peach and Northern WRF Hydrogeologic Cross Section



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	AP	CHECKED:	BG
DATE:	May 2022		
FIGURE:	4.17		

Screened Interval

- Monitoring Well
- Piezometric Level
- Grouted VWP

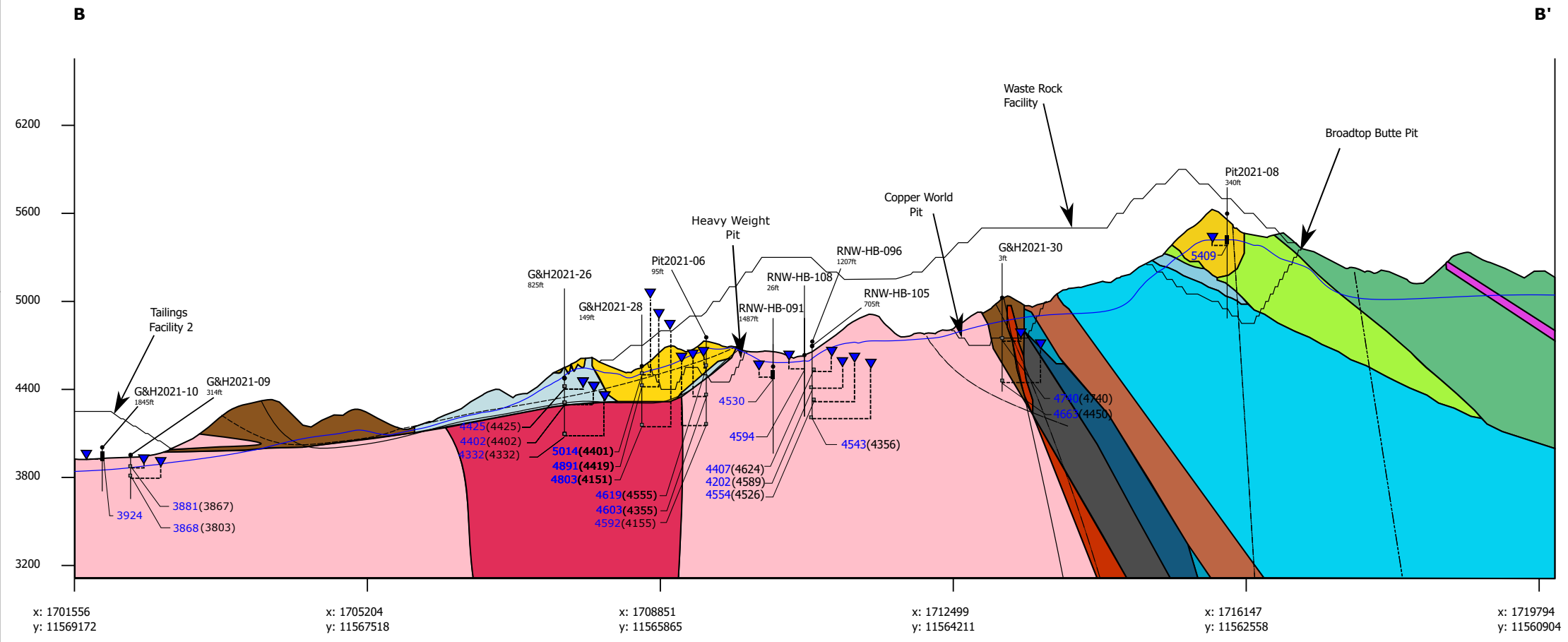
Hole ID
Distance from section (ft)
Piezometric level (ft amsl)
[Sensor Elevation (ft amsl)]

Scale: 1:16,000
Vertical exaggeration: 2x
Coordinate system: NAD 83 BLM Zone 12

Faults/Surfaces

- Back Bone North Fault Trace
- Back Bone North Narraganset
- Helvetia Fault Trace
- Piezometric Surface

Heavy Weight, Copper World, Broadtop Butte and Central WRF Hydrogeologic Cross Section



Lithology

- ABRIGO
- ANDESITE
- ARKOSE
- BOLSA
- CONCHA
- EARP
- EPITAPH
- ESCABROSA
- GILA
- GLANCE
- GRANODIORITE 1
- GRANODIORITE 2
- HORQUILLA
- MARTIN
- QMP
- SCHERRER

Section End Points

B: 1701556, 11569172
B' : 1719991, 11560815

Heavy Weight, Copper World,
Broadtop Butte and Central WRF
Hydrogeologic Cross Section



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	AP	CHECKED:	BG
DATE:	May 2022		
FIGURE:	4.18		

Screened Interval

- Monitoring Well
- Piezometric Level
- Grouted VWP

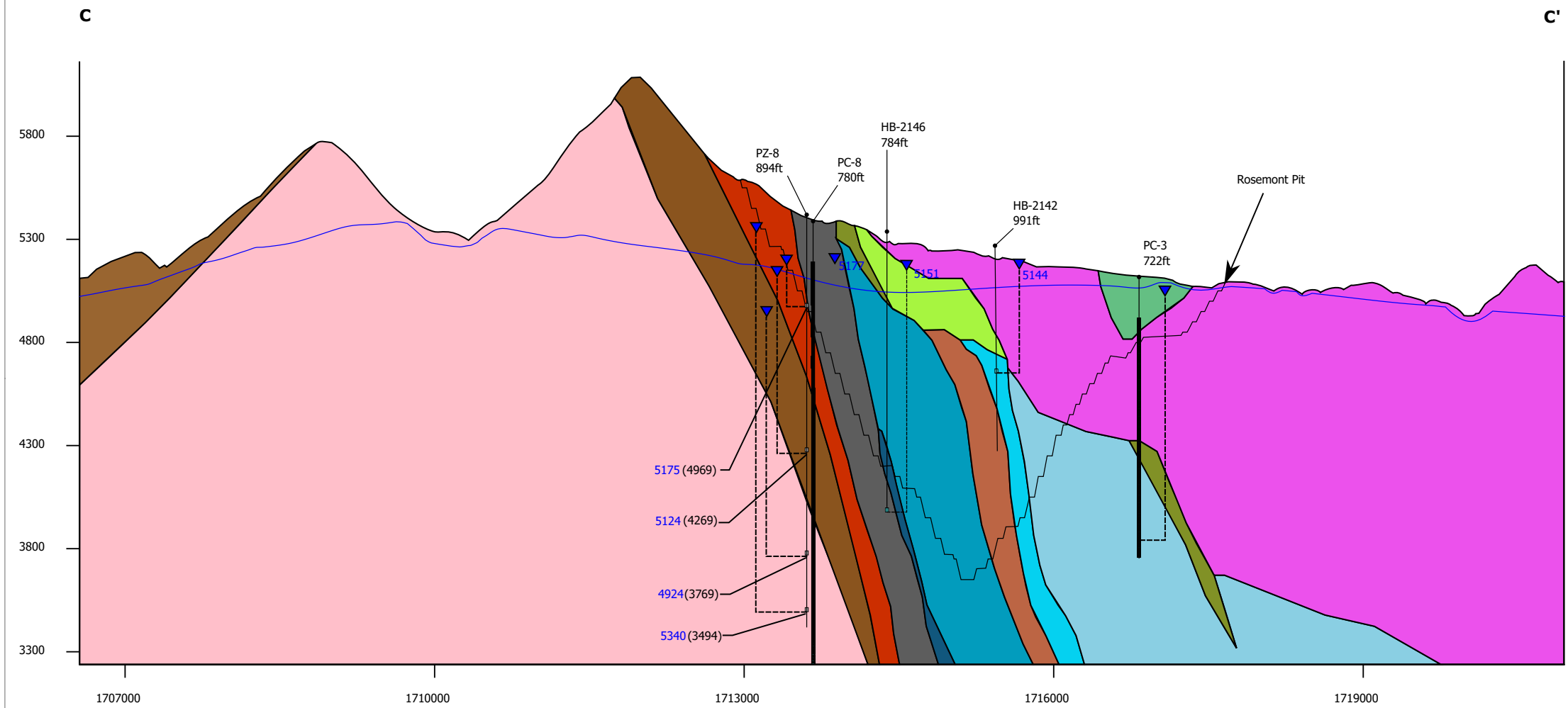
Hole ID
Distance from section (ft)
Piezometric level (ft amsl)
[Sensor Elevation (ft amsl)]

Scale: 1:18,000
Vertical exaggeration: 2x
Coordinate system: NAD 83, BLM Zone 12

Faults/Surfaces

- Graben Fault
- Back Bone North
- Back Bone North CW
- WE BT Fault
- Helvetia Fault
- Piezometric Surface

Rosemont Hydrogeologic Cross Section



Lithology

- ABRIGO
- ANDESITE
- ARKOSE
- BOLSA
- CONCHA
- EARP
- EPITAPH
- ESCABROSA
- GILA
- GLANCE
- GRANODIORITE 1
- GRANODIORITE 2
- HORQUILLA
- MARTIN
- QMP
- SCHERRER

Section End Points

C: 1706558, 11554506
C' : 1720954, 11554506

Rosemont Hydrogeologic Cross Section



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	AP	CHECKED:	BG
DATE:	May 2022		
FIGURE:	4.19		

Screened Interval

- Monitoring Well
- Piezometric Level
- Grouted VWP

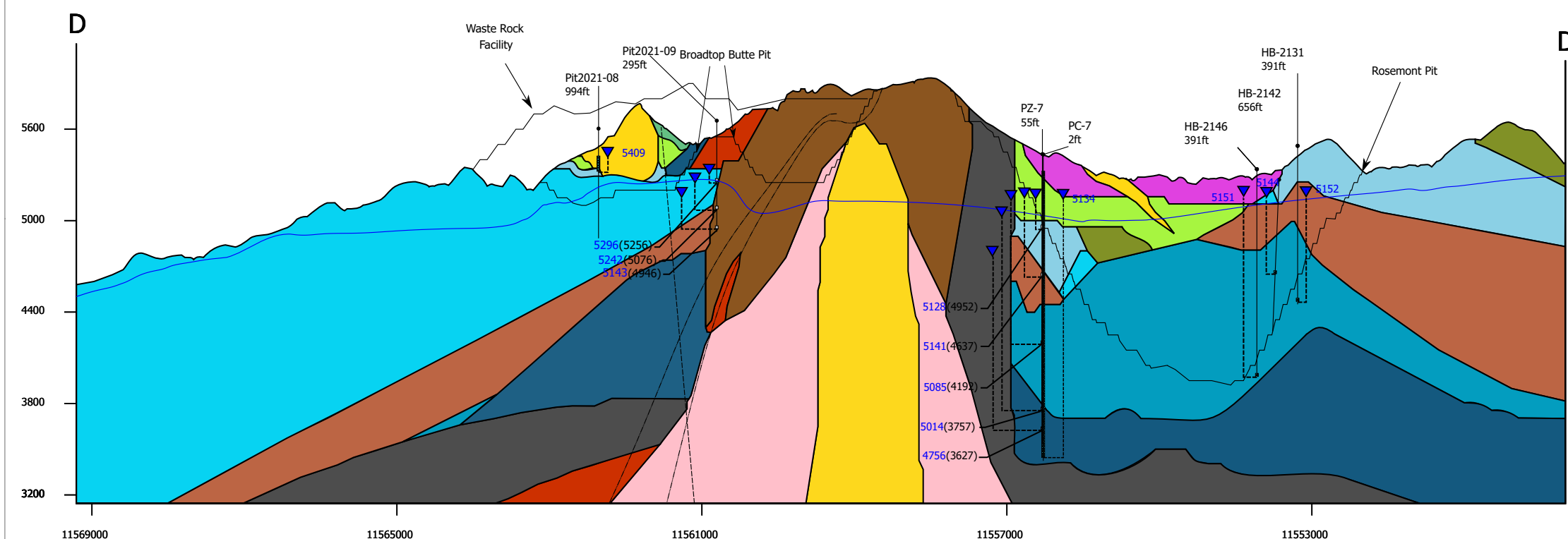
Hole ID
Distance from section (ft)
Piezometric level (ft amsl)
[Sensor Elevation (ft amsl)]

Scale: 1:13,000
Vertical exaggeration: 2x
0ft 3000ft
Coordinate system: NAD 83 BLM Zone 12

Faults/Surfaces

Piezometric Surface

WRF, Broadtop Butte, and Rosemont Hydrogeologic Cross Section



Screened Interval

- Monitoring Well
- Piezometric Level
- Grouted VWP

Hole ID
Distance from section (ft)

Piezometric level (ft amsl)
[Sensor Elevation (ft amsl)]

Scale: 1:16,000

Vertical exaggeration: 2x

0ft 4000ft

Coordinate system: NAD 83, BLM Zone 12

Faults/Surfaces

- Backbone North CW
- Backbone North
- WE BT
- Piezometric Surface

Lithology

- ABRIGO
- ANDESITE
- ARKOSE
- BOLSA
- CONCHA
- EARP
- EPITAPH
- ESCABROSA
- GILA
- GLANCE
- GRANODIORITE 1
- GRANODIORITE 2
- HORQUILLA
- MARTIN
- QMP
- SCHERRER

Section End Points

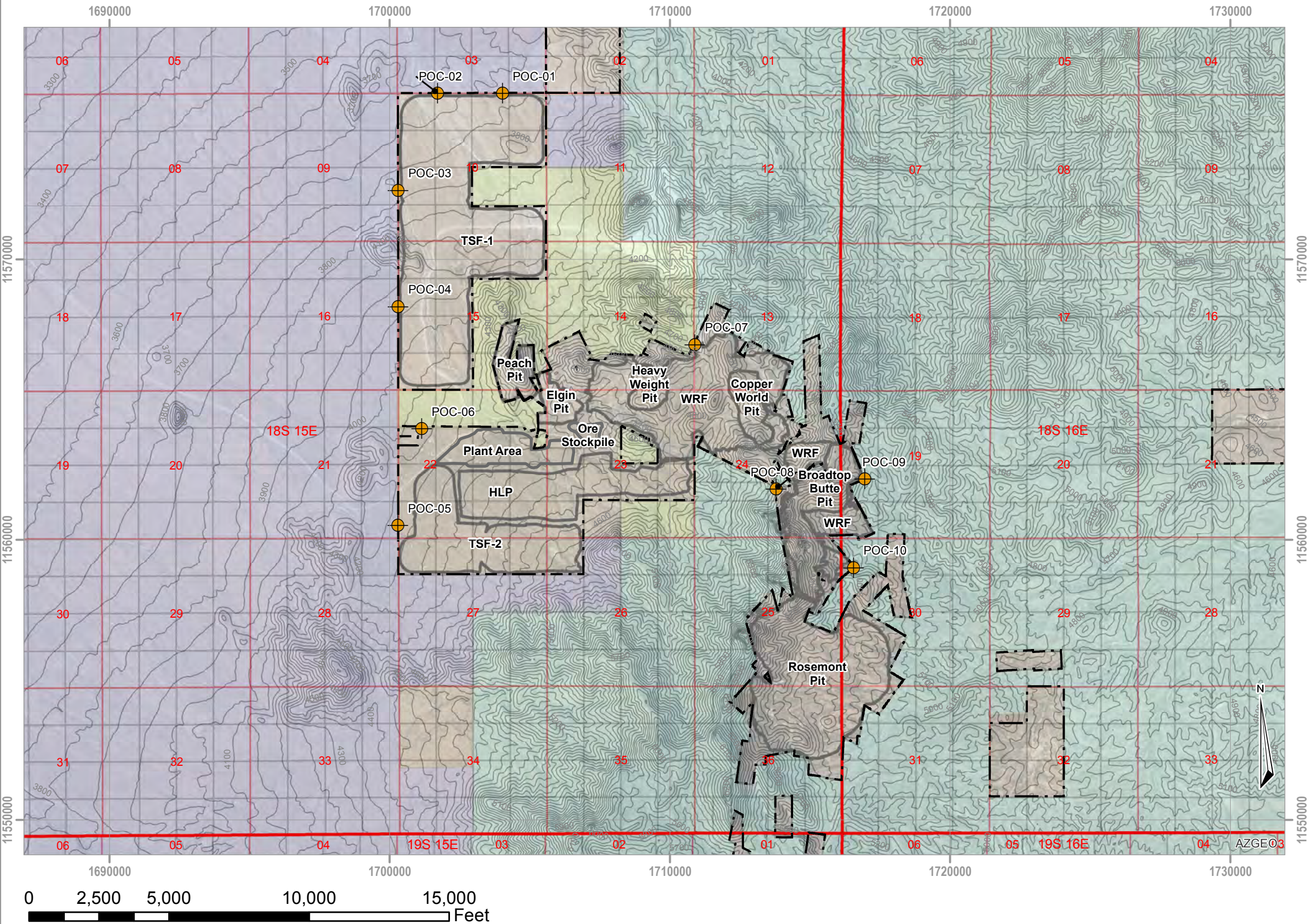
D: 1714775, 11569205

D': 1714775, 11549675

WRF, Broadtop Butte, and Rosemont Hydrogeologic Cross Section



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	AP	CHECKED:	BG
DATE:	May 2022		
FIGURE:	4.20		



- Proposed POC Locations
- Facility Outlines
- Private Land Boundaries and PMA
- Topographic Elevation Contours
- PLSS Township
- PLSS Sections
- PLSS Second Division
- BLM
- Private
- State
- USFS

PMA and Proposed Point of Compliance (POC) Wells



CLIENT:	Rosemont Copper Company		
PROJECT:	Rosemont Copper World Project		
JOB:	4286		
DRAWN:	SM	CHECKED:	BG
DATE:	May 2022		
FIGURE:	6.1		

Coordinate system: NAD 1983 BLM Zone 12

APPENDIX A

Springs Data

Appendix A - Spring Data Summary

Spring	FirstDate	LastDate	Easting (ft)	Northing (ft)	Elevation (ft amsl)	Number of site Visits	Maximum Observed Flow (gpm)	Percent of Time Flowing	Groundwater Age (years before present)	Riparian Vegetation
Barrel Spring	11/1/2007	4/6/2020	1739192.72	11567434.20	4278	82	25	3.7%		No
Crucero Spring	7/28/2008	4/28/2020	1729520.84	11572722.92	4800	73	2	24.7%		-
Deering Spring	4/28/2008	2/1/2021	1714688.34	11546182.58	5243	82	2.5	84.1%	Modern, 62-63 years	Yes
Escondido Spring	4/14/2010	4/6/2020	1750911.86	11621170.98	3363	41	5	4.9%	59-331 years	Yes
Fig Tree Spring	1/17/2008	2/22/2021	1719070.52	11564979.99	5098	84	0.48	22.6%	575-700 years	Yes
Helvetia Spring	1/9/2009	1/19/2021	1709169.98	11567832.84	4508	70	6.02	97.1%	586-1145 years	Yes
Locust Spring	6/20/2008	10/13/2020	1712138.96	11547545.81	5468	79	0	0.0%		Yes
Lower Mulberry Spring	5/2/2008	4/28/2020	1730889.16	11570450.94	4659	78	0.08	7.7%		Yes
MC-1 Spring	11/16/2006	3/18/2021	1719208.44	11559133.80	4998	88	2	33.0%		No
MC-2 Spring	11/15/2006	3/18/2021	1718225.20	11560696.14	5102	89	4.09	56.2%		No
McCleary Dam	9/4/2008	3/18/2021	1723726.87	11558602.21	4761	82	15	75.6%		-
Mulberry Spring	5/2/2008	3/19/2021	1729753.75	11574730.79	4927	83	1.03	43.4%		Yes
Papago Spring	5/2/2008	4/28/2020	1727460.45	11570770.82	4800	78	3.57	37.2%		Yes
Peligro Adit	6/25/2008	4/16/2020	1712365.36	11560731.47	5010	75	5	60.0%		No
Questa Spring	10/31/2007	2/18/2021	1737134.82	11555228.00	2605	85	1	52.9%	10,112-11,810 years	No
Reach 2 Spring	4/20/2010	10/8/2020	1750132.69	11609680.85	3538	41	36.1	9.8%		Yes
Rosemont Spring	10/31/2007	3/18/2021	1721994.79	11553010.00	4915	88	2	81.8%	274-1417 years	Yes
Ruelas Spring	4/28/2008	4/22/2020	1706892.90	11552693.45	5029	78	0.5	1.3%		Yes
SC-2 Spring	11/1/2007	6/4/2020	1725229.48	11568352.84	4883	82	1.3	4.9%		Yes
Scholefield Spring	6/25/2007	10/15/2020	1727427.65	11565570.68	4731	86	0	0.0%	Modern, 1-64 years	Yes
Shamrod Spring	4/29/2014	4/16/2020	1706791.21	11568270.83	4122	24	0	0.0%		Yes
SS-2 Spring	1/17/2008	4/23/2020	1715236.09	11570062.17	4470	35	1	8.6%		No
SW Spring	2/13/2008	4/22/2020	1711138.30	11549054.98	5540	80	0.04	1.3%		No
Sycamore Spring	1/17/2008	3/19/2021	1714783.32	11572781.97	4190	86	6.5	27.9%	668-725 years	Yes
Zackendorf Spring	4/29/2014	4/16/2020	1710341.23	11568387.30	4531	24	1.8	66.7%	1408-1601 years	Yes

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Barrel Spring	1739193	11567434	4278	11/1/2007	0.00	Ground wet for about 15'-20' from source
Barrel Spring	1739193	11567434	4278	1/18/2008	0.00	Ground wet for about 15'-20' from source
Barrel Spring	1739193	11567434	4278	2/14/2008	0.00	
Barrel Spring	1739193	11567434	4278	3/18/2008	0.00	
Barrel Spring	1739193	11567434	4278	4/24/2008	0.00	
Barrel Spring	1739193	11567434	4278	5/20/2008	0.00	
Barrel Spring	1739193	11567434	4278	6/19/2008	0.00	
Barrel Spring	1739193	11567434	4278	7/24/2008	Stream flowing	Could not distinguish flow from spring/stream
Barrel Spring	1739193	11567434	4278	8/28/2008	Stream flowing	Could not distinguish flow from spring/stream
Barrel Spring	1739193	11567434	4278	9/29/2008	Stream flowing	Could not distinguish flow from spring/stream
Barrel Spring	1739193	11567434	4278	10/23/2008	Stream flowing	Could not distinguish flow from spring/stream
Barrel Spring	1739193	11567434	4278	11/18/2008	Stream flowing 1 cfs	Could not distinguish flow from spring/stream
Barrel Spring	1739193	11567434	4278	12/17/2008	Spring Flowing ~0.2 gpm	6' long basin - Barrel Creek flowing west of spring
Barrel Spring	1739193	11567434	4278	1/22/2009	No Flow	5' long basin
Barrel Spring	1739193	11567434	4278	2/25/2009	Dry	
Barrel Spring	1739193	11567434	4278	3/17/2009	Dry at normal location	Flowing 0.79 gpm downstream, pH=6.45, K=638, T=10.6
Barrel Spring	1739193	11567434	4278	4/8/2009	Dry	
Barrel Spring	1739193	11567434	4278	5/11/2009	Dry	
Barrel Spring	1739193	11567434	4278	6/29/2009	Dry	
Barrel Spring	1739193	11567434	4278	7/21/2009	Dry	
Barrel Spring	1739193	11567434	4278	8/27/2009	Dry	
Barrel Spring	1739193	11567434	4278	9/28/2009	Dry	
Barrel Spring	1739193	11567434	4278	10/27/2009	Dry	
Barrel Spring	1739193	11567434	4278	11/18/2009	Dry	
Barrel Spring	1739193	11567434	4278	12/11/2009	Dry	
Barrel Spring	1739193	11567434	4278	1/29/2010	Stream Flowing	Could not distinguish flow from spring/stream
Barrel Spring	1739193	11567434	4278	2/23/2010	Dry	
Barrel Spring	1739193	11567434	4278	3/19/2010	Dry	
Barrel Spring	1739193	11567434	4278	4/19/2010	Stream Flowing	pH=7.50, K=695, T=17.3
Barrel Spring	1739193	11567434	4278	5/25/2010	Damp stream bed, otherwise dry	
Barrel Spring	1739193	11567434	4278	6/18/2010	Dry	
Barrel Spring	1739193	11567434	4278	7/29/2010	Dry	
Barrel Spring	1739193	11567434	4278	8/25/2010	Stream Flowing over MP	
Barrel Spring	1739193	11567434	4278	9/28/2010	Dry	
Barrel Spring	1739193	11567434	4278	11/1/2010	Dry	
Barrel Spring	1739193	11567434	4278	12/2/2010	Dry	
Barrel Spring	1739193	11567434	4278	12/22/2010	Dry	
Barrel Spring	1739193	11567434	4278	2/1/2011	Dry	
Barrel Spring	1739193	11567434	4278	2/28/2011	Dry	
Barrel Spring	1739193	11567434	4278	4/4/2011	Dry	
Barrel Spring	1739193	11567434	4278	5/2/2011	Dry	
Barrel Spring	1739193	11567434	4278	6/2/2011	Dry	
Barrel Spring	1739193	11567434	4278	7/26/2011	Dry	
Barrel Spring	1739193	11567434	4278	8/29/2011	Dry	
Barrel Spring	1739193	11567434	4278	9/21/2011	Dry	
Barrel Spring	1739193	11567434	4278	10/28/2011	Dry	
Barrel Spring	1739193	11567434	4278	12/1/2011	Dry	
Barrel Spring	1739193	11567434	4278	12/28/2011	Dry	
Barrel Spring	1739193	11567434	4278	1/31/2012	Dry	
Barrel Spring	1739193	11567434	4278	2/29/2012	Dry	
Barrel Spring	1739193	11567434	4278	3/22/2012	Dry	
Barrel Spring	1739193	11567434	4278	6/22/2012	Dry	
Barrel Spring	1739193	11567434	4278	11/30/2012	Dry	
Barrel Spring	1739193	11567434	4278	2/25/2013	Dry	
Barrel Spring	1739193	11567434	4278	8/13/2013	Dry	
Barrel Spring	1739193	11567434	4278	11/12/2013	Dry	
Barrel Spring	1739193	11567434	4278	1/23/2014	Dry	
Barrel Spring	1739193	11567434	4278	4/21/2014	Dry	
Barrel Spring	1739193	11567434	4278	7/15/2014	Dry	
Barrel Spring	1739193	11567434	4278	10/6/2014	Dry	
Barrel Spring	1739193	11567434	4278	1/8/2015	Dry	
Barrel Spring	1739193	11567434	4278	5/4/2015	Pool at confluence	Sampled: pH= 7.59; K=635; T=20.3
Barrel Spring	1739193	11567434	4278	8/3/2015	Dry	
Barrel Spring	1739193	11567434	4278	11/20/2015	Small stagnant pool	No sample collected
Barrel Spring	1739193	11567434	4278	1/29/2016	Pooled; no flow	No sample collected
Barrel Spring	1739193	11567434	4278	5/3/2016	Flowing; 25 gpm	"likely surface flow, taken at base of rock fragment" - later (7-19-16) determined not to be historical Barrel Spring location
Barrel Spring	1739193	11567434	4278	7/19/2016	Dry	
Barrel Spring	1739193	11567434	4278	9/26/2016	Dry	
Barrel Spring	1739193	11567434	4278	12/12/2016	Dry	
Barrel Spring	1739193	11567434	4278	1/17/2017	Flowing; approx. 0.1 gpm	Sampled: pH=7.26; K=621; T=12.6
Barrel Spring	1739193	11567434	4278	5/15/2017	0.00	
Barrel Spring	1739193	11567434	4278	6/30/2017	nm	
Barrel Spring	1739193	11567434	4278	8/9/2017	0.00	
Barrel Spring	1739193	11567434	4278	10/18/2017	0.00	
Barrel Spring	1739193	11567434	4278	2/2/2018	0.00	
Barrel Spring	1739193	11567434	4278	5/3/2018	0.00	

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Barrel Spring	1739193	11567434	4278	7/18/2018	0.00	
Barrel Spring	1739193	11567434	4278	10/9/2018	0.00	
Barrel Spring	1739193	11567434	4278	1/17/2019	0.00	
Barrel Spring	1739193	11567434	4278	4/2/2019	0.00	
Barrel Spring	1739193	11567434	4278	7/12/2019	0.00	
Barrel Spring	1739193	11567434	4278	10/21/2019	0.00	Dry
Barrel Spring	1739193	11567434	4278	4/6/2020	0.00	Dry
Crucero Spring	1739193	11567434	4278	7/28/2008	Stream Flowing	Could not distinguish flow from spring/stream
Crucero Spring	1739193	11567434	4278	8/22/2008	Seepage Along Stream	Stream flowing in places downstream from spring at ~0.5 gpm
Crucero Spring	1739193	11567434	4278	9/25/2008	Trickle	2' long basin -- New location (dry at old location)
Crucero Spring	1739193	11567434	4278	10/20/2008	Dry	
Crucero Spring	1739193	11567434	4278	11/17/2008	Dry	
Crucero Spring	1739193	11567434	4278	12/16/2008	No flow	Stream bed wet
Crucero Spring	1739193	11567434	4278	1/23/2009	0.61 gpm	
Crucero Spring	1739193	11567434	4278	2/26/2009	0.29 gpm	Sample ID: JRK22602, pH=7.72, K=782, T=17.6
Crucero Spring	1739193	11567434	4278	3/16/2009	0.05 gpm	pH=8.31, K=460, T=16.1
Crucero Spring	1739193	11567434	4278	4/20/2009	Dry	
Crucero Spring	1739193	11567434	4278	5/11/2009	Dry	
Crucero Spring	1739193	11567434	4278	6/24/2009	Dry	
Crucero Spring	1739193	11567434	4278	7/23/2009	Dry	
Crucero Spring	1739193	11567434	4278	8/24/2009	Dry	
Crucero Spring	1739193	11567434	4278	9/22/2009	Dry	
Crucero Spring	1739193	11567434	4278	10/22/2009	Dry	
Crucero Spring	1739193	11567434	4278	11/19/2009	Dry	
Crucero Spring	1739193	11567434	4278	12/17/2009	20' pool: No Visible Flow	pH=9.06, K=940, T=8.3
Crucero Spring	1739193	11567434	4278	1/29/2010	Stream Flowing, Storm Runoff?, 1.32 gpm	pH=7.67, K=591, T=10.7
Crucero Spring	1739193	11567434	4278	2/25/2010	Stream Flowing	pH=7.8, K=551, T=15.7
Crucero Spring	1739193	11567434	4278	3/25/2010	Stream Flowing 0.8 gpm	pH=8.03, K=621, T=19.2
Crucero Spring	1739193	11567434	4278	5/4/2010	Pooling: No Visible Flow	pH=7.36, K=745, T=25.2
Crucero Spring	1739193	11567434	4278	5/26/2010	Dry	
Crucero Spring	1739193	11567434	4278	6/15/2010	Dry	
Crucero Spring	1739193	11567434	4278	7/30/2010	Stream Flowing: 1.6 gpm	pH=7.89, K=871, T=23.2
Crucero Spring	1739193	11567434	4278	8/31/2010	Stream Flowing, 0.11 gpm	pH=7.75, K=790, T=21.2
Crucero Spring	1739193	11567434	4278	9/30/2010	Dry	
Crucero Spring	1739193	11567434	4278	10/27/2010	Dry	
Crucero Spring	1739193	11567434	4278	11/17/2010	Damp, no flow	
Crucero Spring	1739193	11567434	4278	1/4/2011	0.16 gpm	pH=7.09, K=879, T=12.9
Crucero Spring	1739193	11567434	4278	2/1/2011	0.08 gpm	pH=6.85, K=758, T=12.6
Crucero Spring	1739193	11567434	4278	2/25/2011	0.16 gpm	pH=7.43, K=730, T=12.5
Crucero Spring	1739193	11567434	4278	4/4/2011	0.11 gpm	pH=7.08, K=668, T=24.3
Crucero Spring	1739193	11567434	4278	5/2/2011	Muddy, stagnate water, cattle	
Crucero Spring	1739193	11567434	4278	5/26/2011	Dry	
Crucero Spring	1739193	11567434	4278	8/1/2011	Dry	
Crucero Spring	1739193	11567434	4278	8/30/2011	Dry	
Crucero Spring	1739193	11567434	4278	10/10/2011	Stream Flowing	pH=7.62; K=893; T=12.6
Crucero Spring	1739193	11567434	4278	11/3/2011	Dry	
Crucero Spring	1739193	11567434	4278	12/7/2011	Stagnant pool	
Crucero Spring	1739193	11567434	4278	12/30/2011	nm	pH=8.08; K=694; T=14.4
Crucero Spring	1739193	11567434	4278	1/30/2012	Very slow flow	pH=7.69; K=744; T=9.9
Crucero Spring	1739193	11567434	4278	3/5/2012	UTM - Small flow	pH=7.66; K=760; T=10.6
Crucero Spring	1739193	11567434	4278	3/26/2012	Stagnant pooling; no flow	
Crucero Spring	1739193	11567434	4278	6/27/2012	Dry	
Crucero Spring	1739193	11567434	4278	11/27/2012	Dry/ mud	
Crucero Spring	1739193	11567434	4278	2/27/2013	2.0 lpm [0.528 gpm]	pH=8.62; K=756; T=10.7
Crucero Spring	1739193	11567434	4278	5/9/2013	Dry	
Crucero Spring	1739193	11567434	4278	8/14/2013	Small stagnant pool	
Crucero Spring	1739193	11567434	4278	11/12/2013	Dry	
Crucero Spring	1739193	11567434	4278	1/24/2014	0.5 gpm	sampled; pH 8.52; K=737; T=8.4
Crucero Spring	1739193	11567434	4278	5/6/2014	Dry	
Crucero Spring	1739193	11567434	4278	7/15/2014	Damp; no flow	
Crucero Spring	1739193	11567434	4278	10/8/2014	Dry. Not sampled	
Crucero Spring	1739193	11567434	4278	1/6/2015	approx. 2 gpm	Sampled; pH 8.49; K=573; T=9.7
Crucero Spring	1739193	11567434	4278	4/27/2015	Dry	
Crucero Spring	1739193	11567434	4278	8/25/2015	Small pools; no flow; no sample	
Crucero Spring	1739193	11567434	4278	11/30/2015	Dry	
Crucero Spring	1739193	11567434	4278	2/9/2016	Pooled; no flow	no sample
Crucero Spring	1739193	11567434	4278	4/11/2016	Very small trickle; < 0.1 gpm	"very small trickle flowing from rock into small pool; no flow elsewhere"
Crucero Spring	1739193	11567434	4278	9/28/2016	Dry	
Crucero Spring	1739193	11567434	4278	12/13/2016	Dry	
Crucero Spring	1739193	11567434	4278	1/25/2017	Flowing from run-off	no sample, could not differentiate between run-off and spring flow
Crucero Spring	1739193	11567434	4278	5/3/2017	0.00	
Crucero Spring	1739193	11567434	4278	8/28/2017	0.00	
Crucero Spring	1739193	11567434	4278	10/23/2017	0.00	
Crucero Spring	1739193	11567434	4278	3/8/2018	0.00	
Crucero Spring	1739193	11567434	4278	4/18/2018	0.00	
Crucero Spring	1739193	11567434	4278	7/19/2018	0.00	

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Crucero Spring	1739193	11567434	4278	10/25/2018	0.48	
Crucero Spring	1739193	11567434	4278	3/7/2019	0.65	
Crucero Spring	1739193	11567434	4278	4/10/2019	0.09	
Crucero Spring	1739193	11567434	4278	7/9/2019	0.00	
Crucero Spring	1739193	11567434	4278	12/19/2019	nm	Utd
Crucero Spring	1739193	11567434	4278	4/28/2020	0.00	Ponded
Deering Spring	1714688	11546183	5229	4/28/2008	Flowing ~0.1 gpm	Sample ID: MEW04290801
Deering Spring	1714688	11546183	5229	4/29/2008	nm	
Deering Spring	1714688	11546183	5229	5/20/2008	Flowing ~0.1 gpm	
Deering Spring	1714688	11546183	5229	6/17/2008	Flowing ~0.1 gpm	
Deering Spring	1714688	11546183	5229	7/29/2008	Flowing ~0.1 gpm	Sample ID: JRK7291
Deering Spring	1714688	11546183	5229	8/22/2008	Flowing ~0.1 gpm	
Deering Spring	1714688	11546183	5229	9/26/2008	Flowing 0.75 gpm	Noticeably greater flow than previously observed.
Deering Spring	1714688	11546183	5229	10/21/2008	Flow <1 gpm	Sample ID: mew10212
Deering Spring	1714688	11546183	5229	11/18/2008	Flow ~1 gpm	
Deering Spring	1714688	11546183	5229	12/10/2008	Flow > 1 gpm	Tank is full
Deering Spring	1714688	11546183	5229	1/21/2009	0.63 gpm	
Deering Spring	1714688	11546183	5229	2/24/2009	0.79 gpm	Sample ID: jrk22401, pH=7.12, K=671, T=21.2
Deering Spring	1714688	11546183	5229	3/17/2009	0.71 gpm	pH=6.99, K=533, T=10.4
Deering Spring	1714688	11546183	5229	4/21/2009	0.63 gpm	pH=7.27, K=481, T=17.6
Deering Spring	1714688	11546183	5229	5/12/2009	0.6 gpm	pH=6.94, K=378, T=21.3
Deering Spring	1714688	11546183	5229	6/26/2009	Tank full - No flow measurement	Discharge pipe submerged; pH=6.96, K=380, T=22.3
Deering Spring	1714688	11546183	5229	7/21/2009	Tank full - No flow measurement	Discharge pipe submerged; pH=7.61, K=390, T=25.9
Deering Spring	1714688	11546183	5229	8/25/2009	Tank full - No flow measurement	Discharge pipe submerged; pH=7.98, K=501, T=24.1
Deering Spring	1714688	11546183	5229	9/24/2009	Tank full - No flow measurement	Discharge pipe submerged; pH=7.42, K=499, T=20.8
Deering Spring	1714688	11546183	5229	10/27/2009	0.37 gpm	pH=7.73, K=643, T=22.0
Deering Spring	1714688	11546183	5229	11/18/2009	0.42 gpm	pH=7.6, K=644, T=21.3
Deering Spring	1714688	11546183	5229	1/26/2010	0.56 gpm	pH=6.85, K=660, T=14.2
Deering Spring	1714688	11546183	5229	2/15/2010	0.79 gpm	pH=6.25, K=645, T=15.5
Deering Spring	1714688	11546183	5229	3/23/2010	1.06 gpm	pH=7.63, K=653, T=15.8
Deering Spring	1714688	11546183	5229	5/3/2010	1.59 gpm	pH=7.19, K=632, T=20.6
Deering Spring	1714688	11546183	5229	5/25/2010	1.59 gpm	pH=7.27, K=637, T=20.9
Deering Spring	1714688	11546183	5229	6/22/2010	1.11 gpm	pH=7.34, K=639, T=25.4
Deering Spring	1714688	11546183	5229	8/2/2010	1.11 gpm	pH=7.79, K=642, T=22.3
Deering Spring	1714688	11546183	5229	8/25/2010	1.43 gpm	pH=7.95, K=640, T=21.3
Deering Spring	1714688	11546183	5229	9/28/2010	1.0 gpm	pH=7.30, K=571, T=21.1
Deering Spring	1714688	11546183	5229	10/25/2010	0.92 gpm	pH=7.18, K=565, T=18.2
Deering Spring	1714688	11546183	5229	12/1/2010	1.06 gpm	pH=7.74, K=651, T=17.9
Deering Spring	1714688	11546183	5229	12/28/2010	Tank full - No flow measurement	Discharge pipe submerged; pH=7.82, K=615, T=7.7
Deering Spring	1714688	11546183	5229	1/20/2011	0.85 gpm	pH=7.50, K=620, T=7.4
Deering Spring	1714688	11546183	5229	2/23/2011	Tank full - No flow measurement	Discharge pipe submerged; pH=7.07, K=592, T=9.4
Deering Spring	1714688	11546183	5229	3/31/2011	0.63 gpm	pH=6.62, K=567, T=26.5
Deering Spring	1714688	11546183	5229	4/25/2011	0.66 gpm	pH=7.48, K=588, T=25.0
Deering Spring	1714688	11546183	5229	5/25/2011	0.66 gpm	pH=7.13; K=646; T=24.9
Deering Spring	1714688	11546183	5229	7/28/2011	0.53 gpm	pH=6.94; K=652; T=26.5
Deering Spring	1714688	11546183	5229	9/1/2011	0.48 gpm	pH=6.75; K=633; T=28.1
Deering Spring	1714688	11546183	5229	9/21/2011	0.53 gpm	pH=7.73; K=484; T=20.8
Deering Spring	1714688	11546183	5229	11/1/2011	0.53 gpm	pH=7.70; K=499; T=20.3
Deering Spring	1714688	11546183	5229	12/6/2011	Tank full - No flow measurement	Discharge pipe submerged; pH=7.61; K=592; T=5.1
Deering Spring	1714688	11546183	5229	12/27/2011	1/2-inch of ice	pH=7.62; K=621; T=4.8
Deering Spring	1714688	11546183	5229	1/26/2012	Tank full	pH=7.52; K=685; T=7.7
Deering Spring	1714688	11546183	5229	2/27/2012	Influent underwater	pH=7.10; K=660; T=9.1
Deering Spring	1714688	11546183	5229	3/26/2012	Tank full	pH=7.61; K=651; T=16.6
Deering Spring	1714688	11546183	5229	6/28/2012	1.51 gpm	pH=7.02; K=659; T=20.1
Deering Spring	1714688	11546183	5229	11/29/2012	Tank full	pH=7.17; K=500; T=9.5
Deering Spring	1714688	11546183	5229	2/26/2013	2.5 lpm from pipe [converts to 0.66 gpm]	pH=7.9; K=754; T=11.8
Deering Spring	1714688	11546183	5229	5/8/2013	Tank full	pH=7.31; K=597; T=18.4
Deering Spring	1714688	11546183	5229	8/12/2013	Flow at approximately 1 gpm	pH=6.40; K= 826; T=19.6
Deering Spring	1714688	11546183	5229	11/13/2013	Less than 1 gpm; trickle; sampled	pH=7.50; K= 535; T=11.3
Deering Spring	1714688	11546183	5229	1/17/2014	~ 0.1 gpm	Sampled, plus duplicate; pH=7.49; K=540; T=12.3
Deering Spring	1714688	11546183	5229	5/5/2014	< 0.1 gpm	Sampled; pH=7.90; K=605; T=22.0
Deering Spring	1714688	11546183	5229	7/8/2014	~ 0.1 gpm	Sampled; pH=8.09; K=863; T=26.3
Deering Spring	1714688	11546183	5229	10/6/2014	nm	
Deering Spring	1714688	11546183	5229	10/7/2014	1 gpm	Sampled; pH=7.55; K=575; T= 19.5
Deering Spring	1714688	11546183	5229	1/7/2015	Approx. 1 gpm	Sampled; pH=7.33; K=661; T=9.5
Deering Spring	1714688	11546183	5229	4/28/2015	~ 0.2 gpm	Sampled; pH=7.82; K=553; T=18.2
Deering Spring	1714688	11546183	5229	8/4/2015	Less than 1 gpm	Sampled; pH=7.28; K=700; T=28.9
Deering Spring	1714688	11546183	5229	12/10/2015	Flowing; approx. 0.5 gpm	Sampled; pH=7.64; K=660; T=7.9
Deering Spring	1714688	11546183	5229	1/29/2016	Flowing; approx. 1 gpm	Sampled; pH=7.74; K=658; T=6.3
Deering Spring	1714688	11546183	5229	5/3/2016	Flowing, 0.5 gpm	
Deering Spring	1714688	11546183	5229	7/25/2016	0.37 gpm	Sampled: pH=7.53; K=502; T=26.8
Deering Spring	1714688	11546183	5229	12/20/2016	Flowing; approx. 2.5 gpm	Sampled: pH=7.02; K=620; T=8.0
Deering Spring	1714688	11546183	5229	1/18/2017	Flowing; approx. 0.55 gpm	Tank full, overflowing; Sampled: pH=6.73; K=539; T=6.7
Deering Spring	1714688	11546183	5229	5/17/2017	0.61	
Deering Spring	1714688	11546183	5229	8/10/2017	1.17	
Deering Spring	1714688	11546183	5229	10/19/2017	2.00	

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Deering Spring	1714688	11546183	5229	1/31/2018	0.73	
Deering Spring	1714688	11546183	5229	5/13/2018	0.33	
Deering Spring	1714688	11546183	5229	7/17/2018	0.51	
Deering Spring	1714688	11546183	5229	10/11/2018	0.53	
Deering Spring	1714688	11546183	5229	1/30/2019	0.69	
Deering Spring	1714688	11546183	5229	4/11/2019	0.92	
Deering Spring	1714688	11546183	5229	7/1/2019	0.61	
Deering Spring	1714688	11546183	5229	10/29/2019	0.55	Flowing
Deering Spring	1714688	11546183	5229	2/19/2020	0.75	Flowing
Deering Spring	1714688	11546183	5229	4/21/2020	0.65	Flowing
Deering Spring	1714688	11546183	5229	8/3/2020	0.42	Flowing
Deering Spring	1714688	11546183	5229	10/13/2020	0.42	Flowing
Deering Spring	1714688	11546183	5229	2/1/2021	0.55	Flowing
Escondido Spring	1750912	11621171	3340	4/14/2010	Dry	
Escondido Spring	1750912	11621171	3340	5/19/2010	Dry	
Escondido Spring	1750912	11621171	3340	6/18/2010	Dry	
Escondido Spring	1750912	11621171	3340	11/1/2010	Dry	
Escondido Spring	1750912	11621171	3340	12/28/2010	Dry	
Escondido Spring	1750912	11621171	3340	5/19/2011	Dry	
Escondido Spring	1750912	11621171	3340	8/23/2011	Dry	
Escondido Spring	1750912	11621171	3340	11/30/2011	Dry	
Escondido Spring	1750912	11621171	3340	2/29/2012	Dry	
Escondido Spring	1750912	11621171	3340	3/20/2012	Dry	
Escondido Spring	1750912	11621171	3340	6/26/2012	Dry	
Escondido Spring	1750912	11621171	3340	11/21/2012	Dry	
Escondido Spring	1750912	11621171	3340	2/25/2013	Dry	
Escondido Spring	1750912	11621171	3340	5/7/2013	Dry	
Escondido Spring	1750912	11621171	3340	8/13/2013	Dry	
Escondido Spring	1750912	11621171	3340	11/16/2013	Dry	
Escondido Spring	1750912	11621171	3340	1/23/2014	Dry	
Escondido Spring	1750912	11621171	3340	5/7/2014	Dry	
Escondido Spring	1750912	11621171	3340	7/13/2014	Dry	
Escondido Spring	1750912	11621171	3340	10/6/2014	Dry	
Escondido Spring	1750912	11621171	3340	1/8/2015	Flowing; approx. 5 gpm	Sampled; pH=7.83; SC=761; T=14.7
Escondido Spring	1750912	11621171	3340	5/4/2015	Dry	
Escondido Spring	1750912	11621171	3340	8/25/2015	Dry	
Escondido Spring	1750912	11621171	3340	11/20/2015	Dry	
Escondido Spring	1750912	11621171	3340	2/2/2016	Dry	
Escondido Spring	1750912	11621171	3340	4/7/2016	Flowing; 4.7 gpm	
Escondido Spring	1750912	11621171	3340	7/29/2016	Dry	
Escondido Spring	1750912	11621171	3340	12/12/2016	Dry	
Escondido Spring	1750912	11621171	3340	1/10/2017	Dry	Soil damp, no surface flow
Escondido Spring	1750912	11621171	3340	4/25/2017	0.00	
Escondido Spring	1750912	11621171	3340	8/9/2017	0.00	
Escondido Spring	1750912	11621171	3340	10/9/2017	0.00	
Escondido Spring	1750912	11621171	3340	10/18/2017	0.00	
Escondido Spring	1750912	11621171	3340	2/2/2018	0.00	
Escondido Spring	1750912	11621171	3340	4/11/2018	0.00	
Escondido Spring	1750912	11621171	3340	7/18/2018	0.00	
Escondido Spring	1750912	11621171	3340	1/17/2019	0.00	
Escondido Spring	1750912	11621171	3340	4/2/2019	0.00	
Escondido Spring	1750912	11621171	3340	7/12/2019	0.00	
Escondido Spring	1750912	11621171	3340	10/21/2019	0.00	Dry
Escondido Spring	1750912	11621171	3340	4/6/2020	0.00	Dry
Fig Tree Spring	1719071	11564980	5119	1/17/2008	No flow - Soil moist	
Fig Tree Spring	1719071	11564980	5119	2/13/2008	No flow - Soil moist	
Fig Tree Spring	1719071	11564980	5119	3/19/2008	Dry	
Fig Tree Spring	1719071	11564980	5119	4/22/2008	Dry	
Fig Tree Spring	1719071	11564980	5119	5/20/2008	Dry	
Fig Tree Spring	1719071	11564980	5119	6/19/2008	Dry	
Fig Tree Spring	1719071	11564980	5119	7/30/2008	Slight seep	
Fig Tree Spring	1719071	11564980	5119	8/25/2008	Moist - Wet ground	Slow rain at the time
Fig Tree Spring	1719071	11564980	5119	9/26/2008	Dry	
Fig Tree Spring	1719071	11564980	5119	10/21/2008	Dry	
Fig Tree Spring	1719071	11564980	5119	11/12/2008	Drip - one drip per 20 sec	
Fig Tree Spring	1719071	11564980	5119	12/19/2008	Drip - one drip per 20 sec	3' long basin
Fig Tree Spring	1719071	11564980	5119	1/22/2009	Flowing 0.1 gpm	
Fig Tree Spring	1719071	11564980	5119	2/25/2009	Drip - one drip per 5 sec	Dry in upper section
Fig Tree Spring	1719071	11564980	5119	3/18/2009	No flow	Ponded water: pH=6.85, K=509, T=17.3
Fig Tree Spring	1719071	11564980	5119	4/21/2009	No flow	Ponded water: pH=6.83, K=511, T=17.8
Fig Tree Spring	1719071	11564980	5119	5/12/2009	No flow	pH=6.90, K=523, T=19.2 - Shallow basin, approx. 2' long
Fig Tree Spring	1719071	11564980	5119	6/25/2009	No Flow	
Fig Tree Spring	1719071	11564980	5119	7/28/2009	Damp	
Fig Tree Spring	1719071	11564980	5119	8/25/2009	Dry	
Fig Tree Spring	1719071	11564980	5119	9/28/2009	Damp	
Fig Tree Spring	1719071	11564980	5119	10/22/2009	Damp	

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Fig Tree Spring	1719071	11564980	5119	11/17/2009	Damp	
Fig Tree Spring	1719071	11564980	5119	12/15/2009	Damp	
Fig Tree Spring	1719071	11564980	5119	2/2/2010	Damp	
Fig Tree Spring	1719071	11564980	5119	2/24/2010	Damp	
Fig Tree Spring	1719071	11564980	5119	3/29/2010	Damp	
Fig Tree Spring	1719071	11564980	5119	5/6/2010	Damp	
Fig Tree Spring	1719071	11564980	5119	5/26/2010	Damp	
Fig Tree Spring	1719071	11564980	5119	6/30/2010	Damp	
Fig Tree Spring	1719071	11564980	5119	8/2/2010	Damp	
Fig Tree Spring	1719071	11564980	5119	8/31/2010	Damp	
Fig Tree Spring	1719071	11564980	5119	9/29/2010	Damp	
Fig Tree Spring	1719071	11564980	5119	11/1/2010	Damp	
Fig Tree Spring	1719071	11564980	5119	12/2/2010	Damp	
Fig Tree Spring	1719071	11564980	5119	1/7/2011	Damp	
Fig Tree Spring	1719071	11564980	5119	1/28/2011	Damp	
Fig Tree Spring	1719071	11564980	5119	2/28/2011	Damp, icy	
Fig Tree Spring	1719071	11564980	5119	3/31/2011	Damp/Slow drip from pipe	
Fig Tree Spring	1719071	11564980	5119	5/3/2011	Damp/Slow drip from pipe	
Fig Tree Spring	1719071	11564980	5119	6/3/2011	Dry	
Fig Tree Spring	1719071	11564980	5119	8/2/2011	Dripping from pipe	
Fig Tree Spring	1719071	11564980	5119	9/12/2011	Dripping from pipe	
Fig Tree Spring	1719071	11564980	5119	10/11/2011	Slow drip from pipe	
Fig Tree Spring	1719071	11564980	5119	11/4/2011	Slow drip from pipe	
Fig Tree Spring	1719071	11564980	5119	12/9/2011	Slow drip from pipe	
Fig Tree Spring	1719071	11564980	5119	1/6/2012	Slow drip from pipe	
Fig Tree Spring	1719071	11564980	5119	2/2/2012	Slow drip from pipe	
Fig Tree Spring	1719071	11564980	5119	3/6/2012	???	
Fig Tree Spring	1719071	11564980	5119	3/29/2012	Slow drip from pipe	
Fig Tree Spring	1719071	11564980	5119	7/2/2012	Drip from pipe	
Fig Tree Spring	1719071	11564980	5119	12/6/2012	Slow drip from pipe	
Fig Tree Spring	1719071	11564980	5119	2/28/2013	Slow drip from pipe	
Fig Tree Spring	1719071	11564980	5119	5/7/2013	Very slow drip from pipe	
Fig Tree Spring	1719071	11564980	5119	8/15/2013	Slight drip	
Fig Tree Spring	1719071	11564980	5119	11/14/2013	Seep, dripping - not sampled	
Fig Tree Spring	1719071	11564980	5119	1/23/2014	small basin, no flow	not sampled
Fig Tree Spring	1719071	11564980	5119	5/7/2014	Drip	
Fig Tree Spring	1719071	11564980	5119	7/16/2014	Trickle	
Fig Tree Spring	1719071	11564980	5119	10/8/2014	No flow; not sampled	
Fig Tree Spring	1719071	11564980	5119	1/7/2015	No flow; puddle	
Fig Tree Spring	1719071	11564980	5119	4/29/2015	Dry	
Fig Tree Spring	1719071	11564980	5119	8/3/2015	Dry	
Fig Tree Spring	1719071	11564980	5119	11/24/2015	Slight drip	No sample
Fig Tree Spring	1719071	11564980	5119	2/5/2016	Slight flow; approx. 0.3 gpm	pH=7.05, K=604, T=11.7
Fig Tree Spring	1719071	11564980	5119	4/28/2016	Slight flow; 0.1 - 0.2 gpm	
Fig Tree Spring	1719071	11564980	5119	9/21/2016	Not inspected	inaccessible due to road conditions
Fig Tree Spring	1719071	11564980	5119	12/20/2016	Puddle, not flowing	
Fig Tree Spring	1719071	11564980	5119	2/6/2017	Slight flow; approx. 0.21 gpm	Sampled: pH=6.63; K=767; T=12.3
Fig Tree Spring	1719071	11564980	5119	5/17/2017	0.12	
Fig Tree Spring	1719071	11564980	5119	8/22/2017	0.48	
Fig Tree Spring	1719071	11564980	5119	10/19/2017	0.00	
Fig Tree Spring	1719071	11564980	5119	2/14/2018	0.15	
Fig Tree Spring	1719071	11564980	5119	4/19/2018	0.01	
Fig Tree Spring	1719071	11564980	5119	7/24/2018	0.01	
Fig Tree Spring	1719071	11564980	5119	10/17/2018	0.13	
Fig Tree Spring	1719071	11564980	5119	1/30/2019	0.02	
Fig Tree Spring	1719071	11564980	5119	4/8/2019	0.01	
Fig Tree Spring	1719071	11564980	5119	7/18/2019	0.01	
Fig Tree Spring	1719071	11564980	5119	11/11/2019	0.12	Flowing
Fig Tree Spring	1719071	11564980	5119	3/5/2020	0.01	Flowing
Fig Tree Spring	1719071	11564980	5119	4/23/2020	0.01	Flowing
Fig Tree Spring	1719071	11564980	5119	8/3/2020	0.01	Flowing
Fig Tree Spring	1719071	11564980	5119	10/13/2020	0.01	Flowing
Fig Tree Spring	1719071	11564980	5119	2/22/2021	0.01	Flowing
Helvetia Spring	1709170	11567833	4514	1/9/2009	~ 1 gpm	
Helvetia Spring	1709170	11567833	4514	2/26/2009	1.58 gpm	Sample ID: gf22691& gf22692, pH=7.93, K=1520, T=11.7
Helvetia Spring	1709170	11567833	4514	3/17/2009	0.95 gpm	pH=6.99, K=1308, T=14.2
Helvetia Spring	1709170	11567833	4514	4/21/2009	0.18 gpm	pH=6.73, K=1364, T=15.3
Helvetia Spring	1709170	11567833	4514	5/13/2009	0.19 gpm	pH=7.77, K=1315, T=17.2
Helvetia Spring	1709170	11567833	4514	6/26/2009	1.27 gpm	pH=7.14, K=1163, T=19.7
Helvetia Spring	1709170	11567833	4514	7/28/2009	1.22 gpm	pH=7.21, K=1170, T=20.3
Helvetia Spring	1709170	11567833	4514	8/20/2009	1.59 gpm	pH=7.0, K=1113, T=20.0
Helvetia Spring	1709170	11567833	4514	9/22/2009	1.59 gpm	pH=7.16, K=1270, T=20.5
Helvetia Spring	1709170	11567833	4514	10/18/2009	1.59 gpm	pH=7.0, K=1160, T=18.3
Helvetia Spring	1709170	11567833	4514	11/18/2009	1.59 gpm	pH=7.18, K=1153, T=16.2
Helvetia Spring	1709170	11567833	4514	12/16/2009	1.59 gpm	pH=7.0, K=1175, T=12.2
Helvetia Spring	1709170	11567833	4514	2/1/2010	1.59 gpm	pH=7.2, K=1180, T=12.8

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Helvetia Spring	1709170	11567833	4514	2/20/2010	1.59 gpm	pH=7.6, K=1200, T=11.5
Helvetia Spring	1709170	11567833	4514	3/27/2010	1.59 gpm	pH=8.03, K=1302, T=17.4
Helvetia Spring	1709170	11567833	4514	5/6/2010	0.53 gpm	pH=7.76, K=1386, T=19.3
Helvetia Spring	1709170	11567833	4514	5/24/2010	0.53 gpm	pH=7.6, K=1430, T=16.8
Helvetia Spring	1709170	11567833	4514	6/28/2010	0.95 gpm	pH=7.62, K=1489, T=19.0
Helvetia Spring	1709170	11567833	4514	7/23/2010	1.11 gpm	pH=8.18, K=1465, T=21.9
Helvetia Spring	1709170	11567833	4514	9/1/2010	1.32 gpm	pH=8.10, K=1250, T=19.5
Helvetia Spring	1709170	11567833	4514	9/24/2010	0.66 gpm	pH=7.16, K=1247, T=19.8
Helvetia Spring	1709170	11567833	4514	11/2/2010	2.86 gpm	pH=7.89, K=1210, T=13.9
Helvetia Spring	1709170	11567833	4514	11/18/2010	2.12 gpm	pH=7.44, K=1391, T=13.8
Helvetia Spring	1709170	11567833	4514	1/3/2011	3.7 gpm	pH=7.46, K=1368, T=9.5
Helvetia Spring	1709170	11567833	4514	1/30/2011	3.7 gpm	pH=6.97, K=1245, T=13.2
Helvetia Spring	1709170	11567833	4514	3/1/2011	3.43 gpm	pH=7.01, K=1157, T=14.8
Helvetia Spring	1709170	11567833	4514	4/5/2011	3.43 gpm	pH=7.00, K=1150, T=14.6
Helvetia Spring	1709170	11567833	4514	4/28/2011	3.70 gpm	pH=8.42, K=1246, T=19.1
Helvetia Spring	1709170	11567833	4514	5/31/2011	1.85 gpm	pH=6.82, K=1431, T=19.3
Helvetia Spring	1709170	11567833	4514	7/19/2011	1.90 gpm	pH=7.18; K=1445; T=20.6
Helvetia Spring	1709170	11567833	4514	9/9/2011	1.59 gpm	pH=7.97; K=1381; T=19.1
Helvetia Spring	1709170	11567833	4514	10/4/2011	2.64 gpm	pH=7.21; K=1440; T=18.0
Helvetia Spring	1709170	11567833	4514	10/31/2011	???	pH=7.66; K=1390; T=19.1
Helvetia Spring	1709170	11567833	4514	12/5/2011	???	pH=8.04; K=1340; T=9.9
Helvetia Spring	1709170	11567833	4514	1/4/2012	???	pH=7.97; K=1468; T=11.2
Helvetia Spring	1709170	11567833	4514	2/1/2012	2.38 gpm	pH=7.79; K=1401; T=6.8
Helvetia Spring	1709170	11567833	4514	3/1/2012	2.11 gpm	pH=7.88; K=1377; T=10.3
Helvetia Spring	1709170	11567833	4514	3/27/2012	2.11 gpm	pH=8.06; K=1448; T=14.1
Helvetia Spring	1709170	11567833	4514	6/28/2012	4.0 gpm	pH=7.90; K=1407; T=20.3
Helvetia Spring	1709170	11567833	4514	11/27/2012	6.02 gpm	pH=7.46; K=1322; T=14.7
Helvetia Spring	1709170	11567833	4514	2/27/2013	10.0 lpm [2.64 gpm]	pH=8.51; K=1563; T=8.9
Helvetia Spring	1709170	11567833	4514	5/8/2013	3.0 lpm [0.792 gpm]	pH=7.91; K=1427; T=20.5
Helvetia Spring	1709170	11567833	4514	8/16/2013	1 gpm	pH=7.47; K=1412; T=22.1
Helvetia Spring	1709170	11567833	4514	11/18/2013	approx. 0.1 gpm - sampled	pH=7.14; K=1559; T=18.9
Helvetia Spring	1709170	11567833	4514	1/20/2014	~ 1 gpm	pH=7.20; K=1600; T=18.5
Helvetia Spring	1709170	11567833	4514	4/24/2014	0.1 gpm	pH=7.30; K=1720; T=19.0
Helvetia Spring	1709170	11567833	4514	7/17/2014	2 gpm	pH=6.94; K=2360; T=21.2
Helvetia Spring	1709170	11567833	4514	10/6/2014	0.1 gpm; sampled	pH=7.10; K=2540; T=20.7
Helvetia Spring	1709170	11567833	4514	1/5/2015	Flowing; approx. 5 gpm	Sampled; pH=7.34; K=1514; T=15.4
Helvetia Spring	1709170	11567833	4514	5/14/2015	Flowing; approx. 0.3 gpm	Sampled; pH=8.03; K=1254; T=17.8
Helvetia Spring	1709170	11567833	4514	8/24/2015	less than 1 gpm	Sampled; pH=8.13; K=1776; T=20.3
Helvetia Spring	1709170	11567833	4514	12/22/2015	Flowing; approx. 3 gpm	Sampled; pH=7.74; K=1510; T=8.7
Helvetia Spring	1709170	11567833	4514	2/8/2016	Flowing; approx. 3 gpm	Sampled; pH=7.56; K=1610; T=15.5
Helvetia Spring	1709170	11567833	4514	4/29/2016	Flowing; 0.5 gpm	
Helvetia Spring	1709170	11567833	4514	9/22/2016	Flowing; approx. 4 gpm	Sampled; pH=8.08; K=1410; T=18.8
Helvetia Spring	1709170	11567833	4514	12/21/2016	Flowing; approx. 3 gpm	Sampled; pH=6.94; K=1407; T=16.5
Helvetia Spring	1709170	11567833	4514	1/31/2017	Flowing; approx. 1.6 gpm	Sampled; pH=7.59; K=1776; T=13.8
Helvetia Spring	1709170	11567833	4514	8/29/2017	0.97	
Helvetia Spring	1709170	11567833	4514	10/24/2017	0.00	
Helvetia Spring	1709170	11567833	4514	3/7/2018	0.00	
Helvetia Spring	1709170	11567833	4514	4/17/2018	0.41	
Helvetia Spring	1709170	11567833	4514	8/7/2018	0.63	
Helvetia Spring	1709170	11567833	4514	10/30/2018	0.89	
Helvetia Spring	1709170	11567833	4514	2/13/2019	0.45	
Helvetia Spring	1709170	11567833	4514	4/9/2019	0.97	
Helvetia Spring	1709170	11567833	4514	8/13/2019	0.64	
Helvetia Spring	1709170	11567833	4514	11/19/2019	0.72	Flowing
Helvetia Spring	1709170	11567833	4514	2/18/2020	0.84	Flowing
Helvetia Spring	1709170	11567833	4514	4/16/2020	0.91	Flowing
Helvetia Spring	1709170	11567833	4514	8/12/2020	0.81	Flowing
Helvetia Spring	1709170	11567833	4514	10/14/2020	0.95	Flowing
Helvetia Spring	1709170	11567833	4514	1/19/2021	0.45	Flowing
Helvetia Spring	1709170	11567833	4514	9/1/2021	0.75	Flowing
Locust Spring	1712139	11547546	5446	6/20/2008	Dry	
Locust Spring	1712139	11547546	5446	7/31/2008	Dry	
Locust Spring	1712139	11547546	5446	8/22/2008	Moist spot - No flow	
Locust Spring	1712139	11547546	5446	9/26/2008	Dry	
Locust Spring	1712139	11547546	5446	10/20/2008	Damp	
Locust Spring	1712139	11547546	5446	11/18/2008	No flow - 1' diam pool	
Locust Spring	1712139	11547546	5446	12/10/2008	Stream flowing from HC-1B pump test	
Locust Spring	1712139	11547546	5446	1/21/2009	Damp - No flow	
Locust Spring	1712139	11547546	5446	2/24/2009	Dry	
Locust Spring	1712139	11547546	5446	3/18/2009	Dry	
Locust Spring	1712139	11547546	5446	4/2/2009	Dry	
Locust Spring	1712139	11547546	5446	5/12/2009	Dry	
Locust Spring	1712139	11547546	5446	6/25/2009	Dry	
Locust Spring	1712139	11547546	5446	7/28/2009	Dry	
Locust Spring	1712139	11547546	5446	8/25/2009	Dry	
Locust Spring	1712139	11547546	5446	9/24/2009	Dry	

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Locust Spring	1712139	11547546	5446	10/27/2009	Dry	
Locust Spring	1712139	11547546	5446	11/18/2009	Dry	
Locust Spring	1712139	11547546	5446	12/15/2009	Dry	
Locust Spring	1712139	11547546	5446	1/27/2010	Stream Running, Flowing Over MP, Runoff	
Locust Spring	1712139	11547546	5446	2/26/2010	Stream Running, Flowing Over MP, Runoff	
Locust Spring	1712139	11547546	5446	3/23/2010	Dry	
Locust Spring	1712139	11547546	5446	4/23/2010	Dry	
Locust Spring	1712139	11547546	5446	5/20/2010	Dry	
Locust Spring	1712139	11547546	5446	6/30/2010	Dry	
Locust Spring	1712139	11547546	5446	7/20/2010	Dry	
Locust Spring	1712139	11547546	5446	8/17/2010	Stream Flowing over MP	
Locust Spring	1712139	11547546	5446	9/29/2010	Dry	
Locust Spring	1712139	11547546	5446	10/25/2010	Dry	
Locust Spring	1712139	11547546	5446	12/1/2010	Dry	
Locust Spring	1712139	11547546	5446	1/3/2011	No access because of snow	
Locust Spring	1712139	11547546	5446	1/20/2011	Dry	
Locust Spring	1712139	11547546	5446	2/23/2011	Dry	
Locust Spring	1712139	11547546	5446	3/23/2011	Dry	
Locust Spring	1712139	11547546	5446	4/25/2011	Dry	
Locust Spring	1712139	11547546	5446	5/23/2011	Dry	
Locust Spring	1712139	11547546	5446	7/28/2011	Dry	
Locust Spring	1712139	11547546	5446	8/29/2011	Dry	
Locust Spring	1712139	11547546	5446	9/21/2011	Dry	
Locust Spring	1712139	11547546	5446	11/1/2011	Dry	
Locust Spring	1712139	11547546	5446	12/6/2011	No access because of snow	
Locust Spring	1712139	11547546	5446	12/28/2011	Dry	
Locust Spring	1712139	11547546	5446	1/26/2012	Dry	
Locust Spring	1712139	11547546	5446	2/27/2012	Dry	
Locust Spring	1712139	11547546	5446	3/21/2012	Dry	
Locust Spring	1712139	11547546	5446	6/22/2012	Dry	
Locust Spring	1712139	11547546	5446	11/21/2012	Dry	
Locust Spring	1712139	11547546	5446	2/25/2013	Dry	
Locust Spring	1712139	11547546	5446	5/8/2013	Dry	
Locust Spring	1712139	11547546	5446	8/12/2013	Dry	
Locust Spring	1712139	11547546	5446	11/13/2013	Dry	
Locust Spring	1712139	11547546	5446	2/3/2014	Dry	
Locust Spring	1712139	11547546	5446	5/5/2014	Dry	
Locust Spring	1712139	11547546	5446	7/10/2014	Dry	
Locust Spring	1712139	11547546	5446	12/8/2014	Dry	
Locust Spring	1712139	11547546	5446	1/8/2015	Dry	
Locust Spring	1712139	11547546	5446	5/3/2015	Dry	
Locust Spring	1712139	11547546	5446	8/4/2015	Dry	
Locust Spring	1712139	11547546	5446	12/1/2015	Dry	
Locust Spring	1712139	11547546	5446	3/15/2016	Dry	
Locust Spring	1712139	11547546	5446	5/6/2016	Dry	"Note: cottonwoods downstream, willows present at top of (assumed) source"
Locust Spring	1712139	11547546	5446	9/29/2016	Dry	
Locust Spring	1712139	11547546	5446	12/22/2016	Dry	
Locust Spring	1712139	11547546	5446	1/18/2017	Dry	
Locust Spring	1712139	11547546	5446	5/17/2017	0.00	
Locust Spring	1712139	11547546	5446	8/30/2017	0.00	
Locust Spring	1712139	11547546	5446	10/26/2017	0.00	
Locust Spring	1712139	11547546	5446	2/16/2018	0.00	
Locust Spring	1712139	11547546	5446	4/25/2018	0.00	
Locust Spring	1712139	11547546	5446	7/25/2018	0.00	
Locust Spring	1712139	11547546	5446	10/18/2018	0.00	
Locust Spring	1712139	11547546	5446	1/29/2019	0.00	
Locust Spring	1712139	11547546	5446	4/22/2019	0.00	
Locust Spring	1712139	11547546	5446	8/6/2019	0.00	
Locust Spring	1712139	11547546	5446	12/5/2019	0.00	Dry
Locust Spring	1712139	11547546	5446	3/3/2020	0.00	Dry
Locust Spring	1712139	11547546	5446	4/22/2020	0.00	Dry
Locust Spring	1712139	11547546	5446	8/3/2020	0.00	Dry
Locust Spring	1712139	11547546	5446	10/13/2020	nm	No Flow
Lower Mulberry Spring	1730889	11570451	4637	5/2/2008	No flow - Small puddle approx. 2' diam	
Lower Mulberry Spring	1730889	11570451	4637	5/19/2008	Moist spot	
Lower Mulberry Spring	1730889	11570451	4637	6/18/2008	Moist spot	
Lower Mulberry Spring	1730889	11570451	4637	7/28/2008	Stream flowing	Could not distinguish flow from spring/stream
Lower Mulberry Spring	1730889	11570451	4637	8/22/2008	Trickle	Small pond 1' long
Lower Mulberry Spring	1730889	11570451	4637	9/25/2008	Seep	1' diam basin
Lower Mulberry Spring	1730889	11570451	4637	10/20/2008	Seep	Wet spot
Lower Mulberry Spring	1730889	11570451	4637	11/17/2008	Seep	Wet spot, no pool
Lower Mulberry Spring	1730889	11570451	4637	12/16/2008	No flow	Wet spot, no pool
Lower Mulberry Spring	1730889	11570451	4637	1/23/2009	0.08 gpm	
Lower Mulberry Spring	1730889	11570451	4637	2/26/2009	Wet - No flow	Insufficient water to sample
Lower Mulberry Spring	1730889	11570451	4637	3/16/2009	Damp - No flow	
Lower Mulberry Spring	1730889	11570451	4637	4/20/2009	Damp - No flow	

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Lower Mulberry Spring	1730889	11570451	4637	5/11/2009	Damp - No flow	
Lower Mulberry Spring	1730889	11570451	4637	6/24/2009	Damp - No flow	
Lower Mulberry Spring	1730889	11570451	4637	7/23/2009	Damp - No flow	
Lower Mulberry Spring	1730889	11570451	4637	8/24/2009	Damp - No flow	
Lower Mulberry Spring	1730889	11570451	4637	9/22/2009	Small Seep	
Lower Mulberry Spring	1730889	11570451	4637	10/22/2009	8" pool - No Flow	pH=6.63, K=626, T=19.7
Lower Mulberry Spring	1730889	11570451	4637	11/19/2009	6" pool - No Flow	pH=9.28, K=606, T=17.9
Lower Mulberry Spring	1730889	11570451	4637	12/17/2009	6" pool - No Flow	pH=9.75, K=619, T=14.4
Lower Mulberry Spring	1730889	11570451	4637	1/29/2010	6" pool - No Flow	pH=7.26, K=649, T=13.1
Lower Mulberry Spring	1730889	11570451	4637	2/25/2010	6" pool - No Flow	pH=7.58, K=485, T=17.1
Lower Mulberry Spring	1730889	11570451	4637	3/25/2010	6" pool - No Flow	pH=7.69, K=630, T=17.1
Lower Mulberry Spring	1730889	11570451	4637	5/4/2010	6" pool - No Flow	pH=7.32, K=671, T=21.4
Lower Mulberry Spring	1730889	11570451	4637	5/26/2010	6" pool - No Flow	pH=7.15, K=675, T=19.9
Lower Mulberry Spring	1730889	11570451	4637	6/15/2010	Damp - No flow	
Lower Mulberry Spring	1730889	11570451	4637	7/30/2010	4" pool - No Flow	pH=7.73, K=805, T=22.8
Lower Mulberry Spring	1730889	11570451	4637	8/31/2010	6" pool - No Flow	pH=7.51, K=532, T=21.0
Lower Mulberry Spring	1730889	11570451	4637	9/30/2010	Damp Soil	pH=7.35, K=556, T=18.8
Lower Mulberry Spring	1730889	11570451	4637	10/27/2010	Two 6" pools	
Lower Mulberry Spring	1730889	11570451	4637	11/17/2010	6" pool - No Flow	pH=7.92, K=650, T=18.8
Lower Mulberry Spring	1730889	11570451	4637	1/21/2011	6" pool - No Flow	pH=7.08, K=601, T=12.9
Lower Mulberry Spring	1730889	11570451	4637	2/1/2011	6" pool	pH=6.95, K=570, T=14.5
Lower Mulberry Spring	1730889	11570451	4637	2/25/2011	6" pool	pH=7.44, K=566, T=15.8
Lower Mulberry Spring	1730889	11570451	4637	4/4/2011	6" pool	pH=7.29, K=568, T=20.3
Lower Mulberry Spring	1730889	11570451	4637	5/2/2011	6" pool	pH=8.00, K=576, T=16.8
Lower Mulberry Spring	1730889	11570451	4637	5/26/2011	6" pool	pH=7.40, K=585, T=18.0
Lower Mulberry Spring	1730889	11570451	4637	8/1/2011	6" pool	pH=7.03; K=590; T=21.1
Lower Mulberry Spring	1730889	11570451	4637	8/30/2011	6" pool	pH=7.26; K=585; T=22.5
Lower Mulberry Spring	1730889	11570451	4637	10/10/2011	6" pool	pH=7.29; K=590; T=18.1
Lower Mulberry Spring	1730889	11570451	4637	11/3/2011	6" pool	pH=7.31; K=590; T=18.0
Lower Mulberry Spring	1730889	11570451	4637	12/7/2011	6" pool	pH=7.37; K=567; T=13.9
Lower Mulberry Spring	1730889	11570451	4637	12/30/2011	6" pool	
Lower Mulberry Spring	1730889	11570451	4637	1/30/2012	6" pool	pH=7.29; K=601; T=13.9
Lower Mulberry Spring	1730889	11570451	4637	3/5/2012	6" pool; no flow	pH=7.39; K=628; T=15.1
Lower Mulberry Spring	1730889	11570451	4637	3/26/2012	6" pool	
Lower Mulberry Spring	1730889	11570451	4637	6/27/2012	8" pool	pH=7.22; K=778; T=20.3
Lower Mulberry Spring	1730889	11570451	4637	11/27/2012	4" pool	
Lower Mulberry Spring	1730889	11570451	4637	2/25/2013	small pool of mud	
Lower Mulberry Spring	1730889	11570451	4637	5/9/2013	3" pool; no flow	
Lower Mulberry Spring	1730889	11570451	4637	8/14/2013	Dry	
Lower Mulberry Spring	1730889	11570451	4637	11/12/2013	Dry; approx. 1 sq ft puddle - no sample	
Lower Mulberry Spring	1730889	11570451	4637	1/24/2014	Damp soil	Not sampled
Lower Mulberry Spring	1730889	11570451	4637	5/6/2014	Dry	
Lower Mulberry Spring	1730889	11570451	4637	7/15/2014	No flow	
Lower Mulberry Spring	1730889	11570451	4637	10/8/2014	Dry. Not sampled	
Lower Mulberry Spring	1730889	11570451	4637	1/6/2015	Dry	
Lower Mulberry Spring	1730889	11570451	4637	4/27/2015	Dry	
Lower Mulberry Spring	1730889	11570451	4637	8/25/2015	Standing water; no flow	
Lower Mulberry Spring	1730889	11570451	4637	11/30/2015	Dry	
Lower Mulberry Spring	1730889	11570451	4637	2/9/2016	Dry	
Lower Mulberry Spring	1730889	11570451	4637	4/11/2016	Dry	
Lower Mulberry Spring	1730889	11570451	4637	9/28/2016	Dry	
Lower Mulberry Spring	1730889	11570451	4637	12/13/2016	Dry	
Lower Mulberry Spring	1730889	11570451	4637	1/25/2017	Dry	
Lower Mulberry Spring	1730889	11570451	4637	8/28/2017	0.00	
Lower Mulberry Spring	1730889	11570451	4637	10/23/2017	0.00	
Lower Mulberry Spring	1730889	11570451	4637	3/8/2018	0.00	
Lower Mulberry Spring	1730889	11570451	4637	4/18/2018	0.00	
Lower Mulberry Spring	1730889	11570451	4637	7/19/2018	0.00	
Lower Mulberry Spring	1730889	11570451	4637	10/25/2018	0.00	
Lower Mulberry Spring	1730889	11570451	4637	3/7/2019	0.03	
Lower Mulberry Spring	1730889	11570451	4637	4/10/2019	0.05	
Lower Mulberry Spring	1730889	11570451	4637	7/9/2019	0.00	
Lower Mulberry Spring	1730889	11570451	4637	12/19/2019	0.01	Flowing
Lower Mulberry Spring	1730889	11570451	4637	4/28/2020	0.05	Flowing
MC-1 Spring	1719208	11559134	5001	11/16/2006	Flowing - Trickle	
MC-1 Spring	1719208	11559134	5001	12/7/2006	Dry - Small seep	
MC-1 Spring	1719208	11559134	5001	6/25/2007	Dry	
MC-1 Spring	1719208	11559134	5001	10/31/2007	Small seep	
MC-1 Spring	1719208	11559134	5001	1/17/2008	Dry	
MC-1 Spring	1719208	11559134	5001	2/13/2008	Dry	
MC-1 Spring	1719208	11559134	5001	3/19/2008	Dry	
MC-1 Spring	1719208	11559134	5001	4/21/2008	Dry	
MC-1 Spring	1719208	11559134	5001	5/16/2008	Dry	
MC-1 Spring	1719208	11559134	5001	6/17/2008	Dry	
MC-1 Spring	1719208	11559134	5001	7/23/2008	Flowing ~ 1 gpm	Sample ID: JRK7231
MC-1 Spring	1719208	11559134	5001	8/22/2008	Flowing ~ 1 gpm	

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
MC-1 Spring	1719208	11559134	5001	9/26/2008	Flowing ~ 1 gpm	
MC-1 Spring	1719208	11559134	5001	10/21/2008	Flowing - Cattle Trough is full	Pool under tree - Sample ID mew10292
MC-1 Spring	1719208	11559134	5001	11/12/2008	Flowing ~0.1 gpm	Pool extends ~8' from tree
MC-1 Spring	1719208	11559134	5001	12/17/2008	Flowing ~0.1 gpm	Pool extends ~8' from tree
MC-1 Spring	1719208	11559134	5001	1/21/2009	0.34 gpm	
MC-1 Spring	1719208	11559134	5001	2/25/2009	Dry	
MC-1 Spring	1719208	11559134	5001	3/17/2009	Flowing 0.18 gpm	pH=6.85, K=577, T=12.9
MC-1 Spring	1719208	11559134	5001	4/21/2009	Flowing 0.13 gpm	pH=6.97, K=562, T=17.9
MC-1 Spring	1719208	11559134	5001	5/12/2009	No Flow at trough	pH=7.43, K=501, T=23 -- Trough near full, damp at surface
MC-1 Spring	1719208	11559134	5001	6/25/2009	Ground wet - No flow	Mud present
MC-1 Spring	1719208	11559134	5001	7/28/2009	No Flow	pH=7.57, K=571, T=24.7
MC-1 Spring	1719208	11559134	5001	8/25/2009	No Flow	pH=7.43, K=730, T=22.20
MC-1 Spring	1719208	11559134	5001	9/25/2009	No Flow	pH=8.24, K=703, T=28.6
MC-1 Spring	1719208	11559134	5001	10/27/2009	No Flow	pH=9.00, K=726, T=17.4
MC-1 Spring	1719208	11559134	5001	11/17/2009	Dry	
MC-1 Spring	1719208	11559134	5001	12/15/2009	Dry	
MC-1 Spring	1719208	11559134	5001	2/2/2010	Dry	
MC-1 Spring	1719208	11559134	5001	2/26/2010	Dry	
MC-1 Spring	1719208	11559134	5001	3/29/2010	Dry/ Mud	
MC-1 Spring	1719208	11559134	5001	5/3/2010	Dry/ Mud	
MC-1 Spring	1719208	11559134	5001	5/24/2010	Dry/ Mud	
MC-1 Spring	1719208	11559134	5001	6/23/2010	Dry/ Mud	
MC-1 Spring	1719208	11559134	5001	7/29/2010	2' Pool	pH=7.94, K=830, T=22.2
MC-1 Spring	1719208	11559134	5001	8/31/2010	4' Pool	pH=7.32, K=624, T=20.1
MC-1 Spring	1719208	11559134	5001	9/28/2010	Moist / Mud	pH=7.51, K=673, T=16.0
MC-1 Spring	1719208	11559134	5001	10/26/2010	Pooling	
MC-1 Spring	1719208	11559134	5001	12/2/2010	Mud	
MC-1 Spring	1719208	11559134	5001	12/22/2010	Mud	
MC-1 Spring	1719208	11559134	5001	1/21/2011	Dry	
MC-1 Spring	1719208	11559134	5001	2/22/2011	Dry	
MC-1 Spring	1719208	11559134	5001	3/29/2011	Dry	
MC-1 Spring	1719208	11559134	5001	4/25/2011	Dry	
MC-1 Spring	1719208	11559134	5001	5/24/2011	Dry	
MC-1 Spring	1719208	11559134	5001	7/27/2011	2' Pool	pH=7.20; K=830; T=22.9
MC-1 Spring	1719208	11559134	5001	9/1/2011	3' Pool	pH=7.08; K=613; T=23.0
MC-1 Spring	1719208	11559134	5001	10/11/2011	6' Pool	pH=7.37; K=695; T=23.2
MC-1 Spring	1719208	11559134	5001	11/4/2011	Mud	
MC-1 Spring	1719208	11559134	5001	11/28/2011	Dry/ Mud	
MC-1 Spring	1719208	11559134	5001	1/3/2012	Dry	
MC-1 Spring	1719208	11559134	5001	2/2/2012	Dry/ Mud	
MC-1 Spring	1719208	11559134	5001	2/27/2012	Dry	
MC-1 Spring	1719208	11559134	5001	3/20/2012	Dry	
MC-1 Spring	1719208	11559134	5001	6/22/2012	Dry	
MC-1 Spring	1719208	11559134	5001	11/27/2012	Mud	
MC-1 Spring	1719208	11559134	5001	2/26/2013	Dry	
MC-1 Spring	1719208	11559134	5001	5/7/2013	Mud/dry	
MC-1 Spring	1719208	11559134	5001	8/13/2013	Small puddle, no flow	
MC-1 Spring	1719208	11559134	5001	11/14/2013	Seep - trough filled, no flow	
MC-1 Spring	1719208	11559134	5001	1/21/2014	< 0.1 gpm	not sampled
MC-1 Spring	1719208	11559134	5001	5/7/2014	Drip	not sampled
MC-1 Spring	1719208	11559134	5001	7/9/2014	Dry	
MC-1 Spring	1719208	11559134	5001	10/8/2014	Seep	not sampled
MC-1 Spring	1719208	11559134	5001	1/7/2015	No flow; moist soil	
MC-1 Spring	1719208	11559134	5001	4/29/2015	~ 0.5 gpm overflow from tank	Sampled; pH=7.56; K=658; T=18.0
MC-1 Spring	1719208	11559134	5001	8/3/2015	Dry	
MC-1 Spring	1719208	11559134	5001	11/24/2015	Flowing; approx. 1 gpm	Sampled; pH=7.40; K=693; T=16.4
MC-1 Spring	1719208	11559134	5001	2/2/2016	Flowing; approx. 2 gpm	Sampled; pH=8.25; K=701; T=6.9
MC-1 Spring	1719208	11559134	5001	4/15/2016	Flowing, 0.3 gpm	
MC-1 Spring	1719208	11559134	5001	7/25/2016	0.11 gpm	Sampled; pH=7.55; K=693; T=24.3
MC-1 Spring	1719208	11559134	5001	12/12/2016	Flowing; approx. 1.0 gpm	Sampled; pH=6.92; K=682; T=10.7
MC-1 Spring	1719208	11559134	5001	1/10/2017	Flowing; approx. 0.33 gpm	Sampled; pH=7.45; K=725; T=11.0
Mc-1 Spring	1719208	11559134	5001	7/6/2017	0.00	
Mc-1 Spring	1719208	11559134	5001	10/18/2017	0.25	
Mc-1 Spring	1719208	11559134	5001	11/14/2017	nm	
Mc-1 Spring	1719208	11559134	5001	1/31/2018	0.18	
Mc-1 Spring	1719208	11559134	5001	4/19/2018	0.15	
Mc-1 Spring	1719208	11559134	5001	7/17/2018	0.24	
Mc-1 Spring	1719208	11559134	5001	12/3/2018	0.55	
Mc-1 Spring	1719208	11559134	5001	1/24/2019	0.18	
Mc-1 Spring	1719208	11559134	5001	4/3/2019	0.21	
Mc-1 Spring	1719208	11559134	5001	7/31/2019	0.02	
Mc-1 Spring	1719208	11559134	5001	11/12/2019	nm	Flowing
Mc-1 Spring	1719208	11559134	5001	2/25/2020	0.40	Flowing
Mc-1 Spring	1719208	11559134	5001	4/22/2020	0.35	Flowing
Mc-1 Spring	1719208	11559134	5001	7/30/2020	0.01	Flowing
Mc-1 Spring	1719208	11559134	5001	10/9/2020	nm	No Flow

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Mc-1 Spring	1719208	11559134	5001	3/18/2021	0.21	Flowing
MC-2 Spring	1718225	11560696	5075	11/15/2006	No flow - Ground moist	
MC-2 Spring	1718225	11560696	5075	6/25/2007	No flow - Ground moist	
MC-2 Spring	1718225	11560696	5075	10/31/2007	Very low flow - Dry within 15'	
MC-2 Spring	1718225	11560696	5075	1/17/2008	Very low flow - Dry within 20'	
MC-2 Spring	1718225	11560696	5075	2/13/2008	Very low flow - Dry within 20'	
MC-2 Spring	1718225	11560696	5075	3/19/2008	Low flow - Dry within 50'	
MC-2 Spring	1718225	11560696	5075	4/22/2008	Ponded and low flow ~0.1 gpm	Sample ID: GF04220802
MC-2 Spring	1718225	11560696	5075	5/16/2008	Ponded and very low flow <0.1 gpm	
MC-2 Spring	1718225	11560696	5075	6/17/2008	No flow	1' diam puddle
MC-2 Spring	1718225	11560696	5075	7/23/2008	Ponded and very low flow <0.1 gpm	Sample ID: JRK7232, Stream is flowing
MC-2 Spring	1718225	11560696	5075	8/22/2008	No flow	1-2' diam puddle
MC-2 Spring	1718225	11560696	5075	9/26/2008	No flow	1' diam puddle
MC-2 Spring	1718225	11560696	5075	10/21/2008	Flowing	Multiple pools, sample ID mew10293
Mc-2 Spring	1718225	11560696	5075	10/29/2008	nm	
Mc-2 Spring	1718225	11560696	5075	11/12/2008	0.00	
MC-2 Spring	1718225	11560696	5075	11/12/2008	No flow - Ground damp	Adjacent stream flowing
MC-2 Spring	1718225	11560696	5075	12/17/2008	No flow - Ground damp	Stream no longer flowing
MC-2 Spring	1718225	11560696	5075	1/21/2009	0.48 gpm	
MC-2 Spring	1718225	11560696	5075	2/25/2009	0.74 gpm	Sample ID: JRK22502, pH=7.19, K=1057, T=14.3
MC-2 Spring	1718225	11560696	5075	3/17/2009	0.74 gpm	pH=6.82, K=835, T=13.5
MC-2 Spring	1718225	11560696	5075	4/21/2009	0.11 gpm	pH=7.05, K=820, T=17.3
MC-2 Spring	1718225	11560696	5075	5/12/2009	0.32 gpm	pH=7.44, K=713, T=17.7, flow extends ~50' downstream
MC-2 Spring	1718225	11560696	5075	6/25/2009	0.21 gpm	pH=7.45, K =720, T=19.3
MC-2 Spring	1718225	11560696	5075	7/28/2009	0.26 gpm	pH=7.42, K =809, T=29.6
MC-2 Spring	1718225	11560696	5075	8/25/2009	0.13 gpm	pH=7.37, K =998, T=23.2
MC-2 Spring	1718225	11560696	5075	9/28/2009	0.11 gpm	pH=8.27, K =998, T=24.7
MC-2 Spring	1718225	11560696	5075	10/27/2009	No Flow	pH=9.32, K =979, T=17.7
MC-2 Spring	1718225	11560696	5075	11/17/2009	0.04 gpm	pH=6.55,27, K =1035, T=13.6
MC-2 Spring	1718225	11560696	5075	12/15/2009	0.15 gpm	pH=9.73, K =1043, T=10.8
MC-2 Spring	1718225	11560696	5075	2/2/2010	0.95 gpm	pH=7.59, K =1056, T=10.3
MC-2 Spring	1718225	11560696	5075	2/26/2010	2.6 gpm	pH=7.72, K =864, T=12.9
MC-2 Spring	1718225	11560696	5075	3/29/2010	3.7 gpm	pH=7.80, K =809, T=16.8
MC-2 Spring	1718225	11560696	5075	5/3/2010	1.6 gpm	pH=7.32, K =855, T=19.4
MC-2 Spring	1718225	11560696	5075	5/26/2010	Pooling, No Visible flow	pH=7.28, K =873, T=21.5
MC-2 Spring	1718225	11560696	5075	6/23/2010	0.05 gpm	pH=7.42, K =910, T=24.9
MC-2 Spring	1718225	11560696	5075	8/2/2010	0.4 gpm	pH=7.98, K=1241, T=23.9
MC-2 Spring	1718225	11560696	5075	8/31/2010	0.4 gpm	pH=7.68, K=863, T=23.3
MC-2 Spring	1718225	11560696	5075	9/29/2010	Stagnant water present	Streambed disrupted by cattle
MC-2 Spring	1718225	11560696	5075	11/1/2010	Stagnant water present	Streambed disrupted by cattle
MC-2 Spring	1718225	11560696	5075	12/2/2010	0.34 gpm	pH=7.60, K=1001, T=8.6
MC-2 Spring	1718225	11560696	5075	12/28/2010	0.13 gpm	pH=7.27, K=1058, T=9.4
MC-2 Spring	1718225	11560696	5075	1/28/2011	0.18 gpm	pH=7.60, K=984, T=9.3
MC-2 Spring	1718225	11560696	5075	2/28/2011	0.40 gpm	pH=7.42, K=886, T=13.8
MC-2 Spring	1718225	11560696	5075	3/31/2011	0.13 gpm	pH=7.06, K=900, T=25.7
MC-2 Spring	1718225	11560696	5075	5/3/2011	0.19 gpm	pH=7.59, K=953, T=26.1
MC-2 Spring	1718225	11560696	5075	5/25/2011	Mud - No flow	
MC-2 Spring	1718225	11560696	5075	8/2/2011	No visible flow	
MC-2 Spring	1718225	11560696	5075	9/1/2011	Mud - No flow	Stagnant mud
MC-2 Spring	1718225	11560696	5075	10/11/2011	4.09 gpm	pH=7.70, K=932, T=18.4
MC-2 Spring	1718225	11560696	5075	11/4/2011	1.32 gpm	pH=7.61, K=901, T=16.3
MC-2 Spring	1718225	11560696	5075	12/1/2011	1.59 gpm	pH=7.55, K=862, T=12.1
MC-2 Spring	1718225	11560696	5075	1/6/2012	Mud - No flow	
MC-2 Spring	1718225	11560696	5075	2/2/2012	Mud; some flow - 0.40 gpm	pH=7.48, K=915, T=11.3
MC-2 Spring	1718225	11560696	5075	3/6/2012	0.66 gpm	pH=7.60, K=922, T=15.0
MC-2 Spring	1718225	11560696	5075	3/26/2012	0.79 gpm	pH=7.51, K=910, T=14.6
MC-2 Spring	1718225	11560696	5075	6/22/2012	Dry	
MC-2 Spring	1718225	11560696	5075	11/29/2012	Mud but no visible flow	
MC-2 Spring	1718225	11560696	5075	2/26/2013	Very slow flow - not enough to grab sample	
MC-2 Spring	1718225	11560696	5075	5/7/2013	Mud	
MC-2 Spring	1718225	11560696	5075	8/13/2013	Muddy swamp/pool; no flow	
MC-2 Spring	1718225	11560696	5075	11/14/2013	Seep, small potholes filled - no sample	
MC-2 Spring	1718225	11560696	5075	1/23/2014	< 0.1 gpm	not sampled
MC-2 Spring	1718225	11560696	5075	5/7/2014	Wet spot; no flow	not sampled
MC-2 Spring	1718225	11560696	5075	7/16/2014	Wet from precipitation, not flowing	
MC-2 Spring	1718225	11560696	5075	10/8/2014	No flow; not sampled	
MC-2 Spring	1718225	11560696	5075	1/7/2015	No flow; puddle	
MC-2 Spring	1718225	11560696	5075	4/29/2015	Mud; stagnant pool	No sample
MC-2 Spring	1718225	11560696	5075	8/3/2015	Stagnant pool; no sample	
MC-2 Spring	1718225	11560696	5075	11/24/2015	Flowing, approx. 2 gpm	Sampled; pH=7.37; K=901; T=16.7
MC-2 Spring	1718225	11560696	5075	2/2/2016	Flowing; approx. 3 gpm	Sampled; pH=7.96; K=775; T=7.7
MC-2 Spring	1718225	11560696	5075	4/15/2016	Flowing, 0.6 gpm	flow rate taken at top of rock outcrop
MC-2 Spring	1718225	11560696	5075	7/25/2016	Dry	"Cement spring box located, no flow observed. Stagnant pools present."
MC-2 Spring	1718225	11560696	5075	12/12/2016	Flowing; approx. 0.7 gpm	Sampled; pH=6.70; K=828; T=11.3
MC-2 Spring	1718225	11560696	5075	1/10/2017	Flowing; approx. 0.38 gpm	Sampled; pH=7.18; K=914; T=11.5
Mc-2 Spring	1718225	11560696	5075	4/10/2017	0.30	

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Mc-2 Spring	1718225	11560696	5075	7/6/2017	0.00	
Mc-2 Spring	1718225	11560696	5075	10/18/2017	0.00	
Mc-2 Spring	1718225	11560696	5075	1/31/2018	0.10	
Mc-2 Spring	1718225	11560696	5075	4/19/2018	0.04	
Mc-2 Spring	1718225	11560696	5075	7/17/2018	0.06	
Mc-2 Spring	1718225	11560696	5075	12/3/2018	0.23	
Mc-2 Spring	1718225	11560696	5075	1/24/2019	0.52	
Mc-2 Spring	1718225	11560696	5075	4/8/2019	-999.00	
Mc-2 Spring	1718225	11560696	5075	6/13/2019	0.04	
Mc-2 Spring	1718225	11560696	5075	7/31/2019	0.00	
Mc-2 Spring	1718225	11560696	5075	11/11/2019	0.17	Flowing
Mc-2 Spring	1718225	11560696	5075	2/25/2020	1.80	Flowing
Mc-2 Spring	1718225	11560696	5075	4/22/2020	1.24	Flowing
Mc-2 Spring	1718225	11560696	5075	7/30/2020	0.00	Dry
Mc-2 Spring	1718225	11560696	5075	10/13/2020	nm	No Flow
Mc-2 Spring	1718225	11560696	5075	3/18/2021	0.03	Flowing
McCleary Dam	1723727	11558602	4761	9/4/2008	Flow under & over dam - Est. 10-20 gpm	Flow probably affected by recent rainfall/runoff
McCleary Dam	1723727	11558602	4761	9/29/2008	Flow under dam 2-3 gpm	
McCleary Dam	1723727	11558602	4761	10/30/2008	Flow under dam 2-3 gpm	Sample ID: GF10301
McCleary Dam	1723727	11558602	4761	11/12/2008	Flow under dam ~2 gpm	pH=7, EC=1,100, T=21.9°C
McCleary Dam	1723727	11558602	4761	12/17/2008	Flow under dam ~2 gpm	pH=6.84, EC=1,061, T=10.2°C
McCleary Dam	1723727	11558602	4761	1/21/2009	0.79 gpm	pH=7.6, EC=1,104, T=8.4°C
McCleary Dam	1723727	11558602	4761	2/25/2009	1.85 gpm	sample id: JRK22503, pH 7.16, K 1298, T 14.0
McCleary Dam	1723727	11558602	4761	3/17/2009	1.64 gpm	pH=6.64, K=1035, T=15.1
McCleary Dam	1723727	11558602	4761	4/21/2009	1.58 gpm	pH=6.77, K=1364, T=15.3
McCleary Dam	1723727	11558602	4761	5/11/2009	0.54 gpm	pH=6.99, K=890, T=18.9
McCleary Dam	1723727	11558602	4761	6/25/2009	0.03 gpm	pH=7.02, K=900, T=21.3
McCleary Dam	1723727	11558602	4761	7/28/2009	1.58 gpm	pH=6.9, K=847, T=23.7
McCleary Dam	1723727	11558602	4761	8/25/2009	0.13 gpm	pH=7.06, K=1236, T=25.3
McCleary Dam	1723727	11558602	4761	9/28/2009	1.45 gpm	pH=8.04, K=1002, T=23.9
McCleary Dam	1723727	11558602	4761	10/27/2009	0.07 gpm	pH=8.23, K=1133, T= 22.2
McCleary Dam	1723727	11558602	4761	11/17/2009	0.03 gpm	pH=6.31, K=1146, T=19.9
McCleary Dam	1723727	11558602	4761	12/15/2009	0.03 gpm	pH=9.06, K=1071, T=15.8
McCleary Dam	1723727	11558602	4761	1/27/2010	3.17 gpm	pH=6.45, K=598, T=12.9
McCleary Dam	1723727	11558602	4761	2/26/2010	3.17 gpm	pH=7.45, K=691, T=13.3
McCleary Dam	1723727	11558602	4761	4/1/2010	2.51 gpm	pH=7.68, K=1037, T=13.1
McCleary Dam	1723727	11558602	4761	5/3/2010	2.25 gpm	pH=6.89, K=1155, T=16.7
McCleary Dam	1723727	11558602	4761	5/25/2010	2.51 gpm	pH=7.17, K=1222, T=17.9
McCleary Dam	1723727	11558602	4761	6/23/2010	1.27 gpm	pH=7.12, K=1308, T=20.5
McCleary Dam	1723727	11558602	4761	7/29/2010	---	UTM - Pipe installed to feed cattle tanks
McCleary Dam	1723727	11558602	4761	8/27/2010	2.91 gpm	pH=7.82, K=966, T=22.8
McCleary Dam	1723727	11558602	4761	9/28/2010	0.92 gpm	pH=7.09, K=977, T=22.6
McCleary Dam	1723727	11558602	4761	10/26/2010	0.04 gpm	pH=7.12, K=945, T=21.7
McCleary Dam	1723727	11558602	4761	11/23/2010	0.03 gpm	pH=7.11, K=1014, T=16.7
McCleary Dam	1723727	11558602	4761	12/28/2010	0.008 gpm	pH=7.18, K=978, T=11.2
McCleary Dam	1723727	11558602	4761	1/21/2011	0.013 gpm	pH=7.81, K=985, T=15.8
McCleary Dam	1723727	11558602	4761	2/22/2011	0.024 gpm	pH=7.25, K=933, T=15.9
McCleary Dam	1723727	11558602	4761	3/31/2011	0.26 gpm	pH=7.40, K=1042, T=19.5
McCleary Dam	1723727	11558602	4761	4/27/2011	0.21 gpm	pH=8.35, K=1145, T=18.7
McCleary Dam	1723727	11558602	4761	5/25/2011	0.011 gpm	pH=7.04, K=1122, T=22.4
McCleary Dam	1723727	11558602	4761	7/27/2011	Dripping slowly; no ponded water	
McCleary Dam	1723727	11558602	4761	8/24/2011	Dry	
McCleary Dam	1723727	11558602	4761	9/26/2011	7.93 gpm	pH=7.22, K=883, T=21.5
McCleary Dam	1723727	11558602	4761	11/2/2011	4.76 gpm	pH=7.14, K=1111, T=19.9
McCleary Dam	1723727	11558602	4761	12/1/2011	3.96 gpm	pH=8.04, K=1340, T=18.5
McCleary Dam	1723727	11558602	4761	1/3/2012	3.96 gpm	pH=7.32, K=1032, T=15.3
McCleary Dam	1723727	11558602	4761	1/31/2012	5.28 gpm	pH=7.15, K=1208, T=12.2
McCleary Dam	1723727	11558602	4761	2/27/2012	7.93 gpm	pH=6.95, K=1157, T=13.8
McCleary Dam	1723727	11558602	4761	3/26/2012	4.23 gpm	pH=7.15, K=1202, T=15.5
McCleary Dam	1723727	11558602	4761	6/22/2012	Drip from pipe	
McCleary Dam	1723727	11558602	4761	11/29/2012	0.03 gpm; slow drip	
McCleary Dam	1723727	11558602	4761	2/26/2013	4.0 lpm [1.05 gpm]	pH=7.84, K=1556, T=14.0
McCleary Dam	1723727	11558602	4761	5/7/2013	Flowing; 0.6 lpm [0.16 gpm]	pH=6.93, K=1434, T=18.4
McCleary Dam	1723727	11558602	4761	8/13/2013	Dry	
McCleary Dam	1723727	11558602	4761	11/14/2013	Trickle; much less than 1 gpm; no sample	
McCleary Dam	1723727	11558602	4761	1/21/2014	< 0.1 gpm	not sampled
McCleary Dam	1723727	11558602	4761	4/22/2014	Drip.	not sampled
McCleary Dam	1723727	11558602	4761	7/9/2014	Dry	
McCleary Dam	1723727	11558602	4761	10/8/2014	Damp, no flow; not sampled	
McCleary Dam	1723727	11558602	4761	1/7/2015	Moist soil; no flow	
McCleary Dam	1723727	11558602	4761	4/29/2015	0.3 gpm	Sampled; pH=7.12; K=1291; T=18.9
McCleary Dam	1723727	11558602	4761	8/3/2015	Dry	
McCleary Dam	1723727	11558602	4761	11/24/2015	Dam overflowing	Sampled; pH=7.89; K=1126; T=17.5
McCleary Dam	1723727	11558602	4761	2/2/2016	Flowing; approx. 2.5 gpm	Sampled; pH=7.44;K=967;T=11.6
McCleary Dam	1723727	11558602	4761	4/15/2016	Flowing, 1.9 gpm	
McCleary Dam	1723727	11558602	4761	7/25/2016	0.01 gpm	No sample collected.

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
McCleary Dam	1723727	11558602	4761	12/12/2016	Flowing; approx. 2.0 gpm	Sampled: pH=6.86; K=1000; T=17.2
McCleary Dam	1723727	11558602	4761	1/10/2017	Flowing; approx. 0.96 gpm	Sampled: pH=7.33; K=1128; T=13.4
Mccleary Dam	1723727	11558602	4761	7/6/2017	0.00	
Mccleary Dam	1723727	11558602	4761	10/18/2017	0.70	
Mccleary Dam	1723727	11558602	4761	11/14/2017	nm	
Mccleary Dam	1723727	11558602	4761	1/31/2018	0.05	
Mccleary Dam	1723727	11558602	4761	4/19/2018	0.51	
Mccleary Dam	1723727	11558602	4761	7/17/2018	0.00	
Mccleary Dam	1723727	11558602	4761	12/3/2018	1.44	
Mccleary Dam	1723727	11558602	4761	1/24/2019	1.18	
Mccleary Dam	1723727	11558602	4761	4/8/2019	-999.00	
Mccleary Dam	1723727	11558602	4761	6/13/2019	0.66	
Mccleary Dam	1723727	11558602	4761	7/2/2019	0.24	
Mccleary Dam	1723727	11558602	4761	11/12/2019	0.32	Flowing
Mccleary Dam	1723727	11558602	4761	3/11/2020	2.93	Flowing
Mccleary Dam	1723727	11558602	4761	4/22/2020	2.61	Flowing
Mccleary Dam	1723727	11558602	4761	7/30/2020	-999.00	Flowing
Mccleary Dam	1723727	11558602	4761	10/19/2020	nm	No Flow
Mccleary Dam	1723727	11558602	4761	2/10/2021	0.00	Dry
Mccleary Dam	1723727	11558602	4761	3/18/2021	0.00	Dry
Mulberry Spring	1729754	11574731	4917	5/2/2008	No flow - Small puddle approx 5' long	
Mulberry Spring	1729754	11574731	4917	5/19/2008	No flow - Small puddle approx 1' long	
Mulberry Spring	1729754	11574731	4917	6/18/2008	Slight trickle to puddle	
Mulberry Spring	1729754	11574731	4917	7/28/2008	Stream flowing	Could not distinguish flow from spring/stream
Mulberry Spring	1729754	11574731	4917	8/22/2008	Trickle	Small puddle approx. 1' long
Mulberry Spring	1729754	11574731	4917	9/25/2008	Trickle	2' diam basin
Mulberry Spring	1729754	11574731	4917	10/20/2008	Seep	2' long basin
Mulberry Spring	1729754	11574731	4917	11/17/2008	Seep	2' long basin
Mulberry Spring	1729754	11574731	4917	12/16/2008	Seep	1' diam basin
Mulberry Spring	1729754	11574731	4917	1/23/2009	0.03 gpm	
Mulberry Spring	1729754	11574731	4917	2/26/2009	<0.03 gpm	Drip - Small shallow algal pool - Insufficient to sample
Mulberry Spring	1729754	11574731	4917	3/16/2009	0.08 gpm	pH=6.93, K=523, T=18.6
Mulberry Spring	1729754	11574731	4917	4/20/2009	0.02 gpm	pH=6.47, K=419, T=16.1
Mulberry Spring	1729754	11574731	4917	5/11/2009	No Flow	pH=6.51, K=425, T=19.1
Mulberry Spring	1729754	11574731	4917	6/24/2009	No Flow - Pool 1' x 2'	pH=6.68, K=430, T=21.1
Mulberry Spring	1729754	11574731	4917	7/23/2009	0.01 gpm	pH=8.01, K=477, T=21.8
Mulberry Spring	1729754	11574731	4917	8/24/2009	Small pool, no flow	pH=7.54, K=987, T=23.3
Mulberry Spring	1729754	11574731	4917	9/22/2009	Dry	
Mulberry Spring	1729754	11574731	4917	10/22/2009	Dry	
Mulberry Spring	1729754	11574731	4917	11/19/2009	Damp Soil	
Mulberry Spring	1729754	11574731	4917	12/17/2009	Damp Soil	
Mulberry Spring	1729754	11574731	4917	1/29/2010	Damp Soil	
Mulberry Spring	1729754	11574731	4917	2/25/2010	Flow from Rocks 0.03 gpm	pH=7.42, K=511 T=14.4
Mulberry Spring	1729754	11574731	4917	3/25/2010	0.26 gpm	pH=8.27, K=752 T=14.6
Mulberry Spring	1729754	11574731	4917	5/4/2010	1' pool; No Flow	pH=7.68, K=694 T=16.3
Mulberry Spring	1729754	11574731	4917	5/26/2010	2' pool; No Flow	pH=7.55, K=685 T=16.6
Mulberry Spring	1729754	11574731	4917	6/15/2010	1' pool; No Flow	pH=7.74, K=691 T=18.4
Mulberry Spring	1729754	11574731	4917	7/30/2010	0.21 gpm	pH=21.6=8.04, K=942, T=21.6
Mulberry Spring	1729754	11574731	4917	8/31/2010	3' pool	pH=8.10, K=618, T=20.5
Mulberry Spring	1729754	11574731	4917	9/30/2010	2' pool	pH=8.15, K=550, T=18.0
Mulberry Spring	1729754	11574731	4917	10/27/2010	2' pool	pH=7.77, K=603, T=13.2
Mulberry Spring	1729754	11574731	4917	11/17/2010	2' pool	pH=7.53, K=660, T=11.2
Mulberry Spring	1729754	11574731	4917	1/2/2011	2' pool	pH=7.60, K=690, T=7.8
Mulberry Spring	1729754	11574731	4917	2/1/2011	2' pool	pH=7.09, K=620, T=7.4
Mulberry Spring	1729754	11574731	4917	2/25/2011	2' pool	pH=7.29, K=593, T=8.4
Mulberry Spring	1729754	11574731	4917	4/4/2011	2' pool	pH=6.89, K=549, T=18.8
Mulberry Spring	1729754	11574731	4917	5/2/2011	2' pool	pH=8.15, K=556, T=15.4
Mulberry Spring	1729754	11574731	4917	5/26/2011	2' pool; shallower than usual	Water stagnant; cattle dung present
Mulberry Spring	1729754	11574731	4917	8/1/2011	Smaller pool than normal; sulfur smell	pH=7.47; K=627; T=19.9
Mulberry Spring	1729754	11574731	4917	8/30/2011	Very low flow	pH=7.64; K=608; T=21.8
Mulberry Spring	1729754	11574731	4917	10/10/2011	Very low flow	pH=7.67; K=632; T=12.5
Mulberry Spring	1729754	11574731	4917	11/3/2011	Very low flow	pH=7.65; K=629; T=14.6
Mulberry Spring	1729754	11574731	4917	12/7/2011	1' Pool	pH=7.60; K=615; T=12.1
Mulberry Spring	1729754	11574731	4917	12/30/2011	1' Pool	
Mulberry Spring	1729754	11574731	4917	1/30/2012	Mud	
Mulberry Spring	1729754	11574731	4917	3/5/2012	Mud	
Mulberry Spring	1729754	11574731	4917	3/26/2012	Stagnant pool; no flow	
Mulberry Spring	1729754	11574731	4917	6/27/2012	Mud	
Mulberry Spring	1729754	11574731	4917	11/27/2012	Mud	
Mulberry Spring	1729754	11574731	4917	2/27/2013	1" deep pool of mud	
Mulberry Spring	1729754	11574731	4917	5/9/2013	UTM; mostly mud; not able to find a good spot for flow measurement.	pH=7.65; K=623; T=13.8; "Someone has dug into the dirt and installed a 1.5 ft x 2 ft plastic basin, approx 5" deep to catch the small amount of water coming down the dirt wall above."
Mulberry Spring	1729754	11574731	4917	8/14/2013	Steady drip to pool	pH=7.43; K=575; T=21.9
Mulberry Spring	1729754	11574731	4917	11/12/2013	Basin full; flowing approx. 1 gpm; sampled	pH=7.45; K=638; T=13.1
Mulberry Spring	1729754	11574731	4917	1/24/2014	0.5 gpm	Sampled. pH=7.46; K=662; T=9.6
Mulberry Spring	1729754	11574731	4917	5/6/2014	< 0.01 gpm	Sampled. pH=8.26; K=646; T=15.5
Mulberry Spring	1729754	11574731	4917	7/15/2014	< 0.1 gpm; basin full	Sampled. pH=7.28; K=709; T=24.3

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Mulberry Spring	1729754	11574731	4917	10/8/2014	0.1 gpm	Sampled; pH=7.15; K=673; T=18.1
Mulberry Spring	1729754	11574731	4917	1/6/2015	approx 1 gpm	Sampled; pH=7.93; K=668; T=10.8
Mulberry Spring	1729754	11574731	4917	4/27/2015	0.1 gpm	Sampled; pH=8.16; K=617; T=15.4
Mulberry Spring	1729754	11574731	4917	8/25/2015	Small pool	Sampled; pH=7.83; K=608; T=20.6 ; sulphur odor
Mulberry Spring	1729754	11574731	4917	11/30/2015	Pool w/ trickle	Sampled; pH=8.12; K=653; T=12.7
Mulberry Spring	1729754	11574731	4917	2/9/2016	Flowing; approx. 0.3 gpm	Sampled; pH=8.04; K=662; T=14.3
Mulberry Spring	1729754	11574731	4917	4/11/2016	Flowing; 0.4 gpm	
Mulberry Spring	1729754	11574731	4917	9/28/2016	Flowing, approx. 1 gpm	Sampled: pH=8.14; K=613; 19.1
Mulberry Spring	1729754	11574731	4917	12/13/2016	Flowing; approx. 1.0 gpm	Sampled; pH=7.78; K=618; T=14.5
Mulberry Spring	1729754	11574731	4917	1/25/2017	Flowing; approx. 0.65 gpm	Sampled: pH=7.63; K=485; T=8.71
Mulberry Spring	1729754	11574731	4917	5/3/2017	0.18	
Mulberry Spring	1729754	11574731	4917	8/28/2017	1.03	
Mulberry Spring	1729754	11574731	4917	10/23/2017	0.75	
Mulberry Spring	1729754	11574731	4917	3/8/2018	0.26	
Mulberry Spring	1729754	11574731	4917	4/18/2018	0.19	
Mulberry Spring	1729754	11574731	4917	7/19/2018	0.06	
Mulberry Spring	1729754	11574731	4917	10/25/2018	0.08	
Mulberry Spring	1729754	11574731	4917	3/7/2019	0.28	
Mulberry Spring	1729754	11574731	4917	4/10/2019	0.26	
Mulberry Spring	1729754	11574731	4917	7/9/2019	0.04	
Mulberry Spring	1729754	11574731	4917	12/19/2019	0.17	Flowing
Mulberry Spring	1729754	11574731	4917	3/10/2020	0.31	Flowing
Mulberry Spring	1729754	11574731	4917	4/28/2020	0.20	Flowing
Mulberry Spring	1729754	11574731	4917	8/6/2020	0.20	Flowing
Mulberry Spring	1729754	11574731	4917	10/15/2020	0.16	Flowing
Mulberry Spring	1729754	11574731	4917	3/19/2021	0.25	Flowing
Papago Spring	1727460	11570771	4783	5/2/2008	No flow - Small puddle approx. 2' diam	
Papago Spring	1727460	11570771	4783	5/19/2008	Moist spot	
Papago Spring	1727460	11570771	4783	6/18/2008	Dry	
Papago Spring	1727460	11570771	4783	7/28/2008	Stream flowing	Could not distinguish flow from spring/stream
Papago Spring	1727460	11570771	4783	8/22/2008	Flowing 0.1 gpm	Stream seems to originate at spring
Papago Spring	1727460	11570771	4783	9/25/2008	Trickle	1' diam basin
Papago Spring	1727460	11570771	4783	10/20/2008	Seep	1' diam basin
Papago Spring	1727460	11570771	4783	11/17/2008	Seep	1' diam basin
Papago Spring	1727460	11570771	4783	12/16/2008	No flow - Damp spot	
Papago Spring	1727460	11570771	4783	1/23/2009	1.7 gpm	
Papago Spring	1727460	11570771	4783	2/26/2009	0.84 gpm	Sample ID: JRK22601, pH=7.87, K=622, T=19.0
Papago Spring	1727460	11570771	4783	3/16/2009	0.37 gpm	pH=7.11, K=557, T=19.6
Papago Spring	1727460	11570771	4783	4/20/2009	0.03 gpm	pH=7.01, K=654, T=24.1 - Heavy impact by cattle
Papago Spring	1727460	11570771	4783	5/11/2009	No flow	pH 7.00 K 660 T 25.2 - 1-ft long pool
Papago Spring	1727460	11570771	4783	6/24/2009	Dry	
Papago Spring	1727460	11570771	4783	7/23/2009	Dry	
Papago Spring	1727460	11570771	4783	8/24/2009	Dry	
Papago Spring	1727460	11570771	4783	9/22/2009	Dry	
Papago Spring	1727460	11570771	4783	10/22/2009	Dry	
Papago Spring	1727460	11570771	4783	11/19/2009	Dry	
Papago Spring	1727460	11570771	4783	12/17/2009	Pool without any flow	pH=10.05, K=1327, T=11.2
Papago Spring	1727460	11570771	4783	1/29/2010	Stream Flowing 3.57 gpm	pH=6.93, K=528, T=9.8
Papago Spring	1727460	11570771	4783	2/25/2010	Stream Flowing 3.43 gpm	pH=7.05, K=493, T=15.7
Papago Spring	1727460	11570771	4783	3/25/2010	Stream Flowing 2.38 gpm	pH=8.26, K=613, T=18.5
Papago Spring	1727460	11570771	4783	5/4/2010	Stream Flowing 0.37 gpm	pH=7.37, K=687, T=24.5
Papago Spring	1727460	11570771	4783	5/26/2010	Dry	
Papago Spring	1727460	11570771	4783	6/15/2010	Dry	
Papago Spring	1727460	11570771	4783	7/30/2010	0.8 gpm	pH=7.83, K=1497, T=26.3
Papago Spring	1727460	11570771	4783	8/31/2010	Sitting Water	pH=7.45, K=931, T=23.9
Papago Spring	1727460	11570771	4783	9/30/2010	Dry	
Papago Spring	1727460	11570771	4783	10/27/2010	Dry	
Papago Spring	1727460	11570771	4783	11/17/2010	Dry	
Papago Spring	1727460	11570771	4783	1/4/2011	Sitting water. Likely snowmelt	
Papago Spring	1727460	11570771	4783	2/1/2011	Stagnate pooling water	
Papago Spring	1727460	11570771	4783	2/25/2011	0.03 gpm	pH=7.80, K=723, T=17.0
Papago Spring	1727460	11570771	4783	4/4/2011	Dry	
Papago Spring	1727460	11570771	4783	5/2/2011	Dry	
Papago Spring	1727460	11570771	4783	5/26/2011	Dry	
Papago Spring	1727460	11570771	4783	8/1/2011	Dry	
Papago Spring	1727460	11570771	4783	8/30/2011	Dry	
Papago Spring	1727460	11570771	4783	10/10/2011	0.05 gpm	pH=8.18, K=929, T=14.1
Papago Spring	1727460	11570771	4783	11/3/2011	Dry	
Papago Spring	1727460	11570771	4783	11/30/2011	0.05 gpm	pH=7.99, K=805, T=23.0
Papago Spring	1727460	11570771	4783	12/30/2011	0.66 gpm	pH=8.04, K=642, T=13.2
Papago Spring	1727460	11570771	4783	1/30/2012	0.79 gpm	pH=7.91, K=697, T=11.1
Papago Spring	1727460	11570771	4783	3/5/2012	0.53 gpm	pH=7.83, K=716, T=10.9
Papago Spring	1727460	11570771	4783	3/26/2012	0.58 gpm	pH=7.51, K=725, T=14.9
Papago Spring	1727460	11570771	4783	6/27/2012	Dry	
Papago Spring	1727460	11570771	4783	11/26/2012	Dry	
Papago Spring	1727460	11570771	4783	2/27/2013	10.0 lpm [converts to 2.64 gpm]	pH=8.38, K=595, T=11.3

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Papago Spring	1727460	11570771	4783	5/9/2013	Dry	
Papago Spring	1727460	11570771	4783	8/14/2013	Damp soil	
Papago Spring	1727460	11570771	4783	11/12/2013	Damp	
Papago Spring	1727460	11570771	4783	1/24/2014	Wet soil	Not sampled
Papago Spring	1727460	11570771	4783	5/6/2014	Wet soil	Not sampled
Papago Spring	1727460	11570771	4783	7/15/2014	Damp, no flow	
Papago Spring	1727460	11570771	4783	10/8/2014	Trickle; <= 0.1 gpm; sampled	sampled; pH=7.45; K=680; T=22.1
Papago Spring	1727460	11570771	4783	1/6/2015	Approx. 2 gpm	sampled; pH=8.28; K=628; T=4.3
Papago Spring	1727460	11570771	4783	4/27/2015	Small stagnant pools	No sample
Papago Spring	1727460	11570771	4783	8/25/2015	Dry	
Papago Spring	1727460	11570771	4783	11/30/2015	Flowing; approx. 1 gpm	Sampled; pH=8.38; K=770; T=4.8
Papago Spring	1727460	11570771	4783	2/11/2016	Flowing; approx. 2 gpm	Sampled; pH=8.07; K=644; T=12.3
Papago Spring	1727460	11570771	4783	4/11/2016	Flowing; 0.2 gpm	
Papago Spring	1727460	11570771	4783	9/28/2016	Flowing; approx. 1 gpm	Sampled; pH=7.76; K=720; T=21.1
Papago Spring	1727460	11570771	4783	12/13/2016	Flowing; approx. 1.0 gpm	Sampled; pH=7.16; K=663; T=13.9
Papago Spring	1727460	11570771	4783	1/25/2017	Flowing from run-off	No sample, could not differentiate between run-off and spring flow
Papago Spring	1727460	11570771	4783	5/3/2017	0.00	
Papago Spring	1727460	11570771	4783	8/28/2017	1.94	
Papago Spring	1727460	11570771	4783	10/23/2017	0.00	
Papago Spring	1727460	11570771	4783	3/8/2018	0.70	
Papago Spring	1727460	11570771	4783	4/18/2018	0.01	
Papago Spring	1727460	11570771	4783	7/19/2018	0.00	
Papago Spring	1727460	11570771	4783	10/25/2018	0.00	
Papago Spring	1727460	11570771	4783	3/13/2019	-999.00	
Papago Spring	1727460	11570771	4783	4/10/2019	-999.00	
Papago Spring	1727460	11570771	4783	7/9/2019	0.00	
Papago Spring	1727460	11570771	4783	12/19/2019	nm	Utd
Papago Spring	1727460	11570771	4783	4/28/2020	0.14	Flowing
Peligro Adit	1712365	11560731	5010	6/25/2008	~0.1 gpm	Seep - Gravity-fed to stock tank via PVC pipe
Peligro Adit	1712365	11560731	5010	7/23/2008	Seep	Seep - Gravity-fed to stock tank via PVC pipe
Peligro Adit	1712365	11560731	5010	8/29/2008	Seep	Seep - Gravity-fed to stock tank via PVC pipe
Peligro Adit	1712365	11560731	5010	9/23/2008	Drip	Seep - Gravity-fed to stock tank via PVC pipe
Peligro Adit	1712365	11560731	5010	10/17/2008	Drip	Seep - Gravity-fed to stock tank via PVC pipe
Peligro Adit	1712365	11560731	5010	11/12/2008	Drip	Seep - Gravity-fed to stock tank via PVC pipe
Peligro Adit	1712365	11560731	5010	12/12/2008	Drip	Seep - Gravity-fed to stock tank via PVC pipe
Peligro Adit	1712365	11560731	5010	1/12/2009	8-10 drips/sec	No photo
Peligro Adit	1712365	11560731	5010	2/26/2009	Flowing 0.05 gpm	
Peligro Adit	1712365	11560731	5010	3/17/2009	Flowing 0.05 gpm	pH=6.34, K=219, T=14.1
Peligro Adit	1712365	11560731	5010	4/21/2009	Flowing 0.04 gpm	pH=7.51, K=271, T=16.1
Peligro Adit	1712365	11560731	5010	5/13/2009	Flowing; approx. 0.3 gpm	pH=8.31, K=210, T=25.4
Peligro Adit	1712365	11560731	5010	6/26/2009	Flowing; approx. 0.3 gpm	pH=8.38, K=230, T=25.9
Peligro Adit	1712365	11560731	5010	7/28/2009	Flowing; approx. 0.3 gpm	pH=8.42, K=250, T=26.1
Peligro Adit	1712365	11560731	5010	8/20/2009	Flowing; approx. 0.01 gpm	pH=6.93, K=223, T=28.0
Peligro Adit	1712365	11560731	5010	9/22/2009	Flowing; approx. 0.01 gpm	pH=7.01, K=240, T=28.0
Peligro Adit	1712365	11560731	5010	9/28/2009	Flowing; approx. 0.01 gpm	pH=7.52, K=250, T=28.0
Peligro Adit	1712365	11560731	5010	10/18/2009	Flowing; approx. 0.01 gpm	pH=7.00, K=250, T=22.0
Peligro Adit	1712365	11560731	5010	11/18/2009	Flowing; approx. 0.01 gpm	pH=7.48, K=300, T=18.0
Peligro Adit	1712365	11560731	5010	12/16/2009	Flowing; approx. 0.01 gpm	pH=7.5, K=280, T=14
Peligro Adit	1712365	11560731	5010	2/1/2010	0.008 gpm	pH=7.0, K=290, T=14
Peligro Adit	1712365	11560731	5010	2/20/2010	0.008 gpm	pH=7.8, K=265, T=13.7
Peligro Adit	1712365	11560731	5010	4/2/2010	0.008 gpm	pH=8.34, K=260, T=11.4
Peligro Adit	1712365	11560731	5010	5/6/2010	0.008 gpm	pH=8.18, K=252, T=26.6
Peligro Adit	1712365	11560731	5010	5/24/2010	0.008 gpm	pH=8.08, K=257, T=21.6
Peligro Adit	1712365	11560731	5010	6/28/2010	0.003 gpm	pH=8.15, K=263, T=28.6
Peligro Adit	1712365	11560731	5010	7/23/2010	0.008 gpm	pH=8.67, K=271, T=28.8
Peligro Adit	1712365	11560731	5010	9/1/2010	0.008 gpm	pH= 9.32, K=287, T=24.3
Peligro Adit	1712365	11560731	5010	9/24/2010	Dry	
Peligro Adit	1712365	11560731	5010	11/2/2010	Dry	
Peligro Adit	1712365	11560731	5010	11/18/2010	Dry	
Peligro Adit	1712365	11560731	5010	1/3/2011	Dry	
Peligro Adit	1712365	11560731	5010	1/30/2011	Dry	
Peligro Adit	1712365	11560731	5010	3/1/2011	Dry	
Peligro Adit	1712365	11560731	5010	4/5/2011	Dry	
Peligro Adit	1712365	11560731	5010	4/28/2011	Dry	
Peligro Adit	1712365	11560731	5010	5/31/2011	Dry	
Peligro Adit	1712365	11560731	5010	7/18/2011	Dripping very slowly	
Peligro Adit	1712365	11560731	5010	9/9/2011	Dripping slowly	
Peligro Adit	1712365	11560731	5010	10/4/2011	Dripping slowly	
Peligro Adit	1712365	11560731	5010	10/31/2011	Dry	
Peligro Adit	1712365	11560731	5010	12/5/2011	Dry	
Peligro Adit	1712365	11560731	5010	1/4/2012	Dry	

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Peligro Adit	1712365	11560731	5010	2/1/2012	Dry	
Peligro Adit	1712365	11560731	5010	3/1/2012	Dry	
Peligro Adit	1712365	11560731	5010	3/26/2012	Dry	
Peligro Adit	1712365	11560731	5010	6/27/2012	UTM - no access; bad road	
Peligro Adit	1712365	11560731	5010	11/27/2012	UTM - no access; bad road	
Peligro Adit	1712365	11560731	5010	2/26/2013	UTM - no access; bad road	
Peligro Adit	1712365	11560731	5010	9/4/2013	< 1 gpm flow	No sample; pH= 7.26; K=241; T=23.0
Peligro Adit	1712365	11560731	5010	11/18/2013	Iron pipe: dry; PVC pipe: trickle. No sample	
Peligro Adit	1712365	11560731	5010	1/20/2014	< 0.1 gpm	not sampled
Peligro Adit	1712365	11560731	5010	7/17/2014	< 0.1 gpm	
Peligro Adit	1712365	11560731	5010	10/6/2014	Trickle, < 0.1 gpm	not sampled
Peligro Adit	1712365	11560731	5010	1/5/2015	seep	
Peligro Adit	1712365	11560731	5010	5/14/2015	1 gpm from broken PVC pipe	Sampled; pH=8.43; K=278; T=22.0
Peligro Adit	1712365	11560731	5010	8/24/2015	Flowing; approx. 2 gpm	Sampled; pH=8.12; K=297; T=21.4
Peligro Adit	1712365	11560731	5010	12/22/2015	Flowing; approx. 2 gpm	Sampled; pH=8.31; K=258; T=14.9
Peligro Adit	1712365	11560731	5010	2/8/2016	Flowing; approx. 2 gpm	Sampled: pH=8.26; K=316; T=18.4
Peligro Adit	1712365	11560731	5010	5/6/2016	Flowing; 0.55 gpm	
Peligro Adit	1712365	11560731	5010	9/22/2016	Flowing; approx. 5 gpm	Sampled: pH=8.20; K=293; T=21.8
Peligro Adit	1712365	11560731	5010	12/21/2016	Flowing; approx. 5 gpm	Sampled: pH=7.27; K=280; T=17.9
Peligro Adit	1712365	11560731	5010	1/31/2017	Flowing; approx. 0.7 gpm	Sampled: pH=7.50; K=328; T=14.0
Peligro Adit	1712365	11560731	5010	8/29/2017	0.66	
Peligro Adit	1712365	11560731	5010	10/25/2017	1.50	
Peligro Adit	1712365	11560731	5010	3/7/2018	0.61	
Peligro Adit	1712365	11560731	5010	4/17/2018	0.57	
Peligro Adit	1712365	11560731	5010	8/7/2018	0.54	
Peligro Adit	1712365	11560731	5010	12/18/2018	0.53	
Peligro Adit	1712365	11560731	5010	2/13/2019	0.58	
Peligro Adit	1712365	11560731	5010	4/9/2019	0.76	
Peligro Adit	1712365	11560731	5010	7/30/2019	0.07	
Peligro Adit	1712365	11560731	5010	12/11/2019	0.07	Flowing
Peligro Adit	1712365	11560731	5010	4/16/2020	0.05	Flowing
Peligro Adit	1712365	11560731	5010	9/1/2021	1.00	Flowing
Questa Spring	1737135	11555228	4607	10/31/2007	Ponded and flowing	
Questa Spring	1737135	11555228	4607	1/18/2008	Ponded and frozen around area	
Questa Spring	1737135	11555228	4607	2/12/2008	Ponded and low flow	
Questa Spring	1737135	11555228	4607	3/17/2008	Ponded and low flow	
Questa Spring	1737135	11555228	4607	4/23/2008	Ponded and low flow ~0.1 gpm	Sample ID: GF04230801
Questa Spring	1737135	11555228	4607	5/16/2008	Ponded and low flow ~0.1 gpm	
Questa Spring	1737135	11555228	4607	6/18/2008	Dry at surface	Trickle flowing from sump
Questa Spring	1737135	11555228	4607	7/29/2008	Dry at surface	Trickle flowing from sump. Sample ID: JRK7293
Questa Spring	1737135	11555228	4607	8/28/2008	Wet at surface	Trickle flowing from sump
Questa Spring	1737135	11555228	4607	9/29/2008	Dry at surface	Trickle flowing from sump
Questa Spring	1737135	11555228	4607	10/21/2008	Seep	Trickle flowing from sump. Sample ID: GF10212
Questa Spring	1737135	11555228	4607	11/13/2008	Seep	Trickle flowing from sump
Questa Spring	1737135	11555228	4607	12/15/2008	Seep	Trickle flowing from sump
Questa Spring	1737135	11555228	4607	1/23/2009	0.1 gpm	
Questa Spring	1737135	11555228	4607	2/26/2009	Seep	Sample ID: JRK22603, pH=8.74, K=397, T=16.9, No Photo
Questa Spring	1737135	11555228	4607	3/17/2009	0.32 gpm	pH=6.77, K=339, T=10.7
Questa Spring	1737135	11555228	4607	4/8/2009	No flow	Sump water: pH=7.69, K=315, T=14.5
Questa Spring	1737135	11555228	4607	5/11/2009	0.21 gpm	pH=8.71, K=380, T=23.1 -- Dry at land surface; flowing via pipe
Questa Spring	1737135	11555228	4607	6/23/2009	No flow, tank level low	pH=8.81, K=400, T=24.1
Questa Spring	1737135	11555228	4607	7/23/2009	No flow, tank level low	pH=8.6, K=380, T=24.7
Questa Spring	1737135	11555228	4607	8/24/2009	No flow, tank level low	pH=8.51, K=400, T=26.3
Questa Spring	1737135	11555228	4607	9/21/2009	0.05 gpm	pH=8.42, K=399, T=25.0
Questa Spring	1737135	11555228	4607	10/28/2009	0.05 gpm	pH=8.49, K=410, T=23.0
Questa Spring	1737135	11555228	4607	11/23/2009	0.11 gpm	pH=7.68, K=323, T=15.0
Questa Spring	1737135	11555228	4607	12/11/2009	0.05 gpm	pH=10.7, K=349, T=10.6
Questa Spring	1737135	11555228	4607	1/29/2010	0.03 gpm	pH=8.53, K=473, T=13.0
Questa Spring	1737135	11555228	4607	2/23/2010	0.05 gpm	pH=10.07, K=492, T=12.1
Questa Spring	1737135	11555228	4607	3/22/2010	0.13 gpm	pH=8.65, K=449, T=17.6
Questa Spring	1737135	11555228	4607	4/19/2010	Flowing - Not Measured	pH=7.89, K=432, T=16.2
Questa Spring	1737135	11555228	4607	5/27/2010	Dry	
Questa Spring	1737135	11555228	4607	6/18/2010	Dry	
Questa Spring	1737135	11555228	4607	7/21/2010	Tank half full	pH=8.22, K=438, T=26.5
Questa Spring	1737135	11555228	4607	8/30/2010	0.09 gpm	pH=8.16, K=338, T=25.4
Questa Spring	1737135	11555228	4607	9/30/2010	0.07 gpm	pH=8.23, K=326, T=26.5
Questa Spring	1737135	11555228	4607	10/26/2010	0.01 gpm	pH=8.32, K=318, T=20.7
Questa Spring	1737135	11555228	4607	11/16/2010	0.01 gpm	pH=7.83, K=359, T=18.7
Questa Spring	1737135	11555228	4607	12/28/2010	0.09 gpm	pH=7.63, K=373, T=13.9
Questa Spring	1737135	11555228	4607	1/27/2011	0.08 gpm	pH=7.54, K=352, T=14.4
Questa Spring	1737135	11555228	4607	2/28/2011	Tank nearly full	pH=7.49, K=329, T=15.0
Questa Spring	1737135	11555228	4607	3/30/2011	Tank nearly full	pH=7.61, K=330, T=17.2
Questa Spring	1737135	11555228	4607	5/2/2011	Tank full	pH=8.0, K=319, T=20.5
Questa Spring	1737135	11555228	4607	5/25/2011	0.05 gpm	pH=7.69, K=362, T=24.4
Questa Spring	1737135	11555228	4607	7/26/2011	0.03 gpm	pH=7.25; K=384; T=27.3
Questa Spring	1737135	11555228	4607	9/1/2011	No flow	Tank nearly full

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Questa Spring	1737135	11555228	4607	9/21/2011	nm	
Questa Spring	1737135	11555228	4607	10/28/2011	nm	
Questa Spring	1737135	11555228	4607	12/1/2011	nm	
Questa Spring	1737135	11555228	4607	1/5/2012	0.02 gpm over tank	pH=8.29; K=484; T=13.2
Questa Spring	1737135	11555228	4607	1/27/2012	0.13 gpm	pH=7.98; K=480; T=11.1
Questa Spring	1737135	11555228	4607	2/29/2012	???	pH=7.90; K=434; T=12.6
Questa Spring	1737135	11555228	4607	3/26/2012	No flow; Tank nearly full	pH=8.40; K=425; T=17.4
Questa Spring	1737135	11555228	4607	6/28/2012	Dry	
Questa Spring	1737135	11555228	4607	11/30/2012	Tank full	pH= 7.28; K=402; T=17.4
Questa Spring	1737135	11555228	4607	2/27/2013	Tank full	pH=8.42; K=522; T=9.8
Questa Spring	1737135	11555228	4607	5/7/2013	Full tank	pH=8.57; K=378; T=21.9
Questa Spring	1737135	11555228	4607	8/13/2013	Full tank and overflowing	pH=7.05; K=377; T=26.7
Questa Spring	1737135	11555228	4607	11/13/2013	< 1 gpm (trickle) - sampled	pH=7.96; K=377; T=13.4
Questa Spring	1737135	11555228	4607	1/21/2014	~ 1 gpm	pH=7.90; K=385; T=12.1
Questa Spring	1737135	11555228	4607	4/23/2014	Flow: < .1 gpm	Sampled, with duplicate. pH=8.98; K=463; T=20.0
Questa Spring	1737135	11555228	4607	7/14/2014	Trickle; < 0.1 gpm	Sampled; pH=9.41;K=431;T=27.2
Questa Spring	1737135	11555228	4607	10/7/2014	0.1 gpm	Sampled; pH=8.47; K=411; T=20.5
Questa Spring	1737135	11555228	4607	1/7/2015	Approx. 1 gpm	Sampled; pH=8.57; K=433; T=13.7
Questa Spring	1737135	11555228	4607	4/28/2015	Stock tank full	Sampled; pH=8.81; K=377; T=20.3
Questa Spring	1737135	11555228	4607	8/4/2015	> 0.2 gpm	Sampled; pH=8.71; K=396 T=28.5
Questa Spring	1737135	11555228	4607	11/20/2015	tank overflowing; ~0.2 gpm	Sampled; ph=8.11; K=480; T=15.1
Questa Spring	1737135	11555228	4607	2/2/2016	Flowing; approx. 0.75 gpm	Sampled; pH=8.86;K=418; T=4.3
Questa Spring	1737135	11555228	4607	5/3/2016	Flowing, 0.07 gpm	
Questa Spring	1737135	11555228	4607	7/25/2016	Dry	"Tank nearly empty; no flow."
Questa Spring	1737135	11555228	4607	12/20/2016	Flowing; approx. 0.5 gpm	Sampled: pH=7.90; K=388; T=13.7
Questa Spring	1737135	11555228	4607	1/17/2017	Flowing; > 0.1 gpm, slight trickle overflowing from tank	Sampled: pH=8.50; K=378; T=6.3
Questa Spring	1737135	11555228	4607	8/9/2017	0.00	
Questa Spring	1737135	11555228	4607	10/19/2017	0.00	
Questa Spring	1737135	11555228	4607	3/9/2018	0.00	
Questa Spring	1737135	11555228	4607	5/13/2018	0.09	
Questa Spring	1737135	11555228	4607	7/18/2018	0.05	
Questa Spring	1737135	11555228	4607	10/10/2018	0.08	
Questa Spring	1737135	11555228	4607	1/17/2019	0.01	
Questa Spring	1737135	11555228	4607	4/11/2019	0.11	
Questa Spring	1737135	11555228	4607	7/1/2019	0.03	
Questa Spring	1737135	11555228	4607	10/29/2019	0.09	Flowing
Questa Spring	1737135	11555228	4607	2/24/2020	0.15	Flowing
Questa Spring	1737135	11555228	4607	4/6/2020	0.13	Flowing
Questa Spring	1737135	11555228	4607	8/26/2020	nm	No Flow
Questa Spring	1737135	11555228	4607	10/16/2020	nm	No Flow
Questa Spring	1737135	11555228	4607	2/18/2021	0.10	Flowing
Reach 2 Spring	1750133	11609681	3545	4/20/2010	Damp Surface	Dug hole to sample; pH=7.80, K=1,016, T=19.1
Reach 2 Spring	1750133	11609681	3545	5/19/2010	Dry	
Reach 2 Spring	1750133	11609681	3545	6/18/2010	Dry	
Reach 2 Spring	1750133	11609681	3545	11/1/2010	0.44 gpm	Large pool; pH=7.26, K=655, T=17.7
Reach 2 Spring	1750133	11609681	3545	12/28/2010	Dry	
Reach 2 Spring	1750133	11609681	3545	6/3/2011	Dry	
Reach 2 Spring	1750133	11609681	3545	9/8/2011	Dry	
Reach 2 Spring	1750133	11609681	3545	2/29/2012	Dry	
Reach 2 Spring	1750133	11609681	3545	3/27/2012	Dry	
Reach 2 Spring	1750133	11609681	3545	2/25/2013	Dry	
Reach 2 Spring	1750133	11609681	3545	5/7/2013	Dry	
Reach 2 Spring	1750133	11609681	3545	8/13/2013	Dry	
Reach 2 Spring	1750133	11609681	3545	11/14/2013	Dry	
Reach 2 Spring	1750133	11609681	3545	1/23/2014	Dry	
Reach 2 Spring	1750133	11609681	3545	5/7/2014	Dry	
Reach 2 Spring	1750133	11609681	3545	7/13/2014	Dry	
Reach 2 Spring	1750133	11609681	3545	12/8/2014	Dry	
Reach 2 Spring	1750133	11609681	3545	1/8/2015	Dry	
Reach 2 Spring	1750133	11609681	3545	5/3/2015	Dry	
Reach 2 Spring	1750133	11609681	3545	8/3/2015	Dry	
Reach 2 Spring	1750133	11609681	3545	11/20/2015	Dry	(video shows damp sands in shaded area)
Reach 2 Spring	1750133	11609681	3545	1/29/2016	Dry	
Reach 2 Spring	1750133	11609681	3545	4/7/2016	Dry	
Reach 2 Spring	1750133	11609681	3545	7/21/2016	Dry	
Reach 2 Spring	1750133	11609681	3545	12/12/2016	Dry	
Reach 2 Spring	1750133	11609681	3545	1/10/2017	Flowing; approx. 3.5 gpm	Most likely run-off from upstream of spring
Reach 2 Spring	1750133	11609681	3545	4/12/2017	0.00	
Reach 2 Spring	1750133	11609681	3545	8/9/2017	0.00	
Reach 2 Spring	1750133	11609681	3545	10/18/2017	0.00	
Reach 2 Spring	1750133	11609681	3545	3/9/2018	0.00	
Reach 2 Spring	1750133	11609681	3545	5/3/2018	36.10	
Reach 2 Spring	1750133	11609681	3545	7/18/2018	0.00	
Reach 2 Spring	1750133	11609681	3545	10/9/2018	0.00	
Reach 2 Spring	1750133	11609681	3545	1/17/2019	0.00	
Reach 2 Spring	1750133	11609681	3545	4/2/2019	0.00	
Reach 2 Spring	1750133	11609681	3545	7/2/2019	0.00	
Reach 2 Spring	1750133	11609681	3545	10/10/2019	6.76	Flowing
Reach 2 Spring	1750133	11609681	3545	2/18/2020	0.00	Dry

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Reach 2 Spring	1750133	11609681	3545	4/6/2020	0.00	Dry
Reach 2 Spring	1750133	11609681	3545	7/27/2020	0.00	Dry
Reach 2 Spring	1750133	11609681	3545	10/8/2020	nm	No Flow
Rosemont Spring	1721995	11553010	4900	10/31/2007	Flowing	
Rosemont Spring	1721995	11553010	4900	1/18/2008	Ponded and stagnant - Some low flow	
Rosemont Spring	1721995	11553010	4900	2/13/2008	Ponded and stagnant - Some low flow	
Rosemont Spring	1721995	11553010	4900	3/17/2008	Ponded and low flow	
Rosemont Spring	1721995	11553010	4900	4/23/2008	Ponded and low flow ~0.1 gpm	Sample ID: GF04230802
Rosemont Spring	1721995	11553010	4900	5/20/2008	Ponded and low flow ~0.1 gpm	
Rosemont Spring	1721995	11553010	4900	6/16/2008	No flow, 6' long damp spot	
Rosemont Spring	1721995	11553010	4900	7/29/2008	Flowing ~0.5 gpm	Sample ID: JRK7292
Rosemont Spring	1721995	11553010	4900	8/22/2008	Flowing <0.5 gpm	Flow slightly smaller than in July 2008
Rosemont Spring	1721995	11553010	4900	9/29/2008	Flowing <0.5 gpm	
Rosemont Spring	1721995	11553010	4900	10/20/2008	Flowing 0.1 gpm	Sample ID: mew10213
Rosemont Spring	1721995	11553010	4900	11/11/2008	Flowing 0.1 gpm	Photo taken 11/12/08
Rosemont Spring	1721995	11553010	4900	12/10/2008	<1 gpm	
Rosemont Spring	1721995	11553010	4900	1/22/2009	0.69 gpm	
Rosemont Spring	1721995	11553010	4900	2/24/2009	0.42 gpm	Sample ID: JRK22402, pH=7.82, K=487, T=18.2
Rosemont Spring	1721995	11553010	4900	3/17/2009	0.37 gpm	pH=6.97, K=332, T=18.3
Rosemont Spring	1721995	11553010	4900	4/21/2009	0.15 gpm	pH=7.43, K=243, T=30.4
Rosemont Spring	1721995	11553010	4900	5/12/2009	0.15 gpm	pH=6.85, K=277, T=22
Rosemont Spring	1721995	11553010	4900	6/23/2009	0.01 gpm	pH=6.80, K=300, T=23
Rosemont Spring	1721995	11553010	4900	7/21/2009	0.08 gpm	pH=7.82, K=428, T=29.6
Rosemont Spring	1721995	11553010	4900	8/26/2009	0.08 gpm	pH=8.21, K=490, T=29
Rosemont Spring	1721995	11553010	4900	9/24/2009	0.09 gpm	pH=6.92, K=489, T=25.2
Rosemont Spring	1721995	11553010	4900	10/19/2009	0.07 gpm	pH=6.22, K=460, T=27.7
Rosemont Spring	1721995	11553010	4900	11/18/2009	0.21 gpm	pH=8.62, K=480, T=16.7
Rosemont Spring	1721995	11553010	4900	12/11/2009	0.37gpm	pH=8.97, K=494, T=13.0
Rosemont Spring	1721995	11553010	4900	1/26/2010	0.79 gpm	pH=6.68, K=1033, T=9.3
Rosemont Spring	1721995	11553010	4900	2/24/2010	0.79 gpm	pH=11.28, K=480, T=13.4
Rosemont Spring	1721995	11553010	4900	3/22/2010	0.58 gpm	pH=7.91, K=549, T=23.0
Rosemont Spring	1721995	11553010	4900	4/14/2010	0.26 gpm	pH=8.44, K=479, T=25.2
Rosemont Spring	1721995	11553010	4900	5/25/2010	0.09 gpm	pH=7.81, K=402, T=28.0
Rosemont Spring	1721995	11553010	4900	6/22/2010	0.02 gpm	pH=8.37, K=523, T=29.7
Rosemont Spring	1721995	11553010	4900	7/20/2010	0.32 gpm	pH=7.63, K=623, T=26.5
Rosemont Spring	1721995	11553010	4900	8/25/2010	0.21 gpm	pH=8.25, K=576, T=23.4
Rosemont Spring	1721995	11553010	4900	9/28/2010	0.18 gpm	pH=7.97, K=455, T=19.7
Rosemont Spring	1721995	11553010	4900	10/25/2010	0.13 gpm	pH=7.86, K=438, T=14.0
Rosemont Spring	1721995	11553010	4900	11/22/2010	0.05 gpm	pH=7.96, K=517, T=15.3
Rosemont Spring	1721995	11553010	4900	12/28/2010	0.29 gpm	pH=8.00, K=492, T=14.4
Rosemont Spring	1721995	11553010	4900	1/21/2011	0.26 gpm	pH=8.08, K=451, T=13.0
Rosemont Spring	1721995	11553010	4900	2/21/2011	0.13 gpm	pH=8.10, K=442, T=14.7
Rosemont Spring	1721995	11553010	4900	3/31/2011	0.13 gpm	pH=8.00, K=440, T=20.5
Rosemont Spring	1721995	11553010	4900	4/25/2011	0.13 gpm	pH=7.90, K=420, T=27.2
Rosemont Spring	1721995	11553010	4900	5/25/2011	Stagnant pools - No flow	
Rosemont Spring	1721995	11553010	4900	7/27/2011	0.11 gpm	pH=7.06; K=781; T=26.7
Rosemont Spring	1721995	11553010	4900	9/1/2011	No flow; some stagnant water	
Rosemont Spring	1721995	11553010	4900	9/20/2011	0.21 gpm	pH=7.60; K=560; T=27.1
Rosemont Spring	1721995	11553010	4900	10/27/2011	0.13 gpm	pH=7.27; K=535; T=20.7
Rosemont Spring	1721995	11553010	4900	12/6/2011	0.13 gpm	pH=8.23; K=499; T=7.2
Rosemont Spring	1721995	11553010	4900	12/27/2011	0.16 gpm	pH=7.92; K=509; T=12.8
Rosemont Spring	1721995	11553010	4900	1/26/2012	0.34 gpm	pH=7.30; K=533; T=12.7
Rosemont Spring	1721995	11553010	4900	2/28/2012	0.37 gpm	pH=7.03; K=538; T=16.0
Rosemont Spring	1721995	11553010	4900	3/26/2012	0.26 gpm	pH=7.87; K=502; T=20.5
Rosemont Spring	1721995	11553010	4900	6/22/2012	Dry	
Rosemont Spring	1721995	11553010	4900	8/28/2012	No visible flow but damp rock	
Rosemont Spring	1721995	11553010	4900	11/28/2012	0.38 gpm	pH=6.75; K=867; T=17.0
Rosemont Spring	1721995	11553010	4900	2/26/2013	1.0 lpm [converts to 0.26 gpm]	pH=8.13, K=638, T=13.2
Rosemont Spring	1721995	11553010	4900	5/7/2013	0.5 lpm [0.13 gpm]	pH=7.47, K=549, T=21.9
Rosemont Spring	1721995	11553010	4900	8/12/2013	2 gpm	pH=6.54, K=765, T=26.7
Rosemont Spring	1721995	11553010	4900	11/13/2013	Less than 1 gpm; trickle - sampled	pH=7.44, K=488, T=18.0
Rosemont Spring	1721995	11553010	4900	1/21/2014	Flowing; approx. 1 gpm	sampled; pH=7.89; K=583; T=12.8
Rosemont Spring	1721995	11553010	4900	5/5/2014	Damp soil; no flow	no sample
Rosemont Spring	1721995	11553010	4900	7/9/2014	Dry	
Rosemont Spring	1721995	11553010	4900	10/7/2014	0.1 gpm	Sampled; pH=8.14; K=684; T=21.0
Rosemont Spring	1721995	11553010	4900	1/7/2015	Flowing; approx. 0.5 gpm	Sampled; pH=8.07; K=465; T=15.2
Rosemont Spring	1721995	11553010	4900	5/3/2015	0.2 gpm	Sampled; pH=7.54; K=545; T=18.7
Rosemont Spring	1721995	11553010	4900	8/3/2015	Wet sand; no flow; no sample	
Rosemont Spring	1721995	11553010	4900	12/9/2015	Flowing; approx. 0.5 gpm	Sampled; pH=7.76; K=505; T=14.8
Rosemont Spring	1721995	11553010	4900	3/15/2016	Flowing; approx. 1.5 gpm	Sampled; pH=7.83; K=546; T=20.4; slight sulfur odor, orange color
Rosemont Spring	1721995	11553010	4900	4/28/2016	Flowing, 0.02 gpm	
Rosemont Spring	1721995	11553010	4900	7/25/2016	Flowing, 0.06 gpm	Sampled; pH=7.41; K=706; T=22.3; "very slight trickle"
Rosemont Spring	1721995	11553010	4900	12/27/2016	Flowing; approx. 1.0 gpm	Sampled; pH=6.96; K=554; T=12.7
Rosemont Spring	1721995	11553010	4900	1/17/2017	Flowing; approx. 0.58 gpm	Sampled; pH=7.86; K=446; T=10.3
Rosemont Spring	1721995	11553010	4900	4/11/2017	0.07	
Rosemont Spring	1721995	11553010	4900	8/10/2017	0.07	
Rosemont Spring	1721995	11553010	4900	10/26/2017	0.00	
Rosemont Spring	1721995	11553010	4900	2/12/2018	0.06	
Rosemont Spring	1721995	11553010	4900	5/3/2018	0.04	

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Rosemont Spring	1721995	11553010	4900	7/17/2018	0.00	
Rosemont Spring	1721995	11553010	4900	12/3/2018	0.10	
Rosemont Spring	1721995	11553010	4900	1/24/2019	0.13	
Rosemont Spring	1721995	11553010	4900	4/11/2019	0.11	
Rosemont Spring	1721995	11553010	4900	7/1/2019	0.00	
Rosemont Spring	1721995	11553010	4900	11/4/2019	0.05	Flowing
Rosemont Spring	1721995	11553010	4900	2/17/2020	0.18	Flowing
Rosemont Spring	1721995	11553010	4900	4/21/2020	0.05	Flowing
Rosemont Spring	1721995	11553010	4900	7/30/2020	0.00	Dry
Rosemont Spring	1721995	11553010	4900	10/13/2020	nm	No Flow
Rosemont Spring	1721995	11553010	4900	1/28/2021	0.50	Flowing
Rosemont Spring	1721995	11553010	4900	2/10/2021	0.16	Flowing
Rosemont Spring	1721995	11553010	4900	3/18/2021	0.04	Flowing
Ruelas Spring	1706893	11552693	5036	4/28/2008	Dry	Could not find water, although healthy stand of willow is present
Ruelas Spring	1706893	11552693	5036	5/22/2008	Dry	
Ruelas Spring	1706893	11552693	5036	6/20/2008	Dry	
Ruelas Spring	1706893	11552693	5036	7/28/2008	Dry	
Ruelas Spring	1706893	11552693	5036	8/22/2008	Low flow at slopes - Ponding in places	Stream starts very close to spring and flows for ~30 feet
Ruelas Spring	1706893	11552693	5036	9/26/2008	Dry	
Ruelas Spring	1706893	11552693	5036	10/20/2008	Flowing	Three small pools present, Sample ID: mew10271
Ruelas Spring	1706893	11552693	5036	11/14/2008	Damp - No flow	
Ruelas Spring	1706893	11552693	5036	12/10/2008	Dry	
Ruelas Spring	1706893	11552693	5036	1/21/2009	Damp - No flow	
Ruelas Spring	1706893	11552693	5036	2/24/2009	Dry	
Ruelas Spring	1706893	11552693	5036	3/18/2009	Damp - No flow	
Ruelas Spring	1706893	11552693	5036	4/2/2009	Dry	
Ruelas Spring	1706893	11552693	5036	5/12/2009	Dry	
Ruelas Spring	1706893	11552693	5036	6/23/2009	Dry	
Ruelas Spring	1706893	11552693	5036	7/28/2009	Dry	
Ruelas Spring	1706893	11552693	5036	8/25/2009	Dry	
Ruelas Spring	1706893	11552693	5036	9/24/2009	Dry	
Ruelas Spring	1706893	11552693	5036	10/27/2009	Dry	
Ruelas Spring	1706893	11552693	5036	11/18/2009	Dry	
Ruelas Spring	1706893	11552693	5036	12/15/2009	Dry	
Ruelas Spring	1706893	11552693	5036	1/27/2010	Dry	
Ruelas Spring	1706893	11552693	5036	2/26/2010	Wet Puddle - No Flow 1' diameter	
Ruelas Spring	1706893	11552693	5036	3/23/2010	Dry	
Ruelas Spring	1706893	11552693	5036	4/23/2010	Dry	
Ruelas Spring	1706893	11552693	5036	5/25/2010	Dry	
Ruelas Spring	1706893	11552693	5036	6/30/2010	Dry	
Ruelas Spring	1706893	11552693	5036	7/20/2010	Dry	
Ruelas Spring	1706893	11552693	5036	8/17/2010	Dry	
Ruelas Spring	1706893	11552693	5036	9/29/2010	Dry	
Ruelas Spring	1706893	11552693	5036	10/25/2010	Dry	
Ruelas Spring	1706893	11552693	5036	12/1/2010	Dry	
Ruelas Spring	1706893	11552693	5036	1/3/2011	No access due to snow	
Ruelas Spring	1706893	11552693	5036	1/20/2011	Dry	
Ruelas Spring	1706893	11552693	5036	2/23/2011	Dry	
Ruelas Spring	1706893	11552693	5036	3/23/2011	Dry	
Ruelas Spring	1706893	11552693	5036	4/25/2011	Dry	
Ruelas Spring	1706893	11552693	5036	5/23/2011	Dry	
Ruelas Spring	1706893	11552693	5036	7/28/2011	Dry	
Ruelas Spring	1706893	11552693	5036	8/29/2011	Dry	
Ruelas Spring	1706893	11552693	5036	9/21/2011	Dry	
Ruelas Spring	1706893	11552693	5036	11/1/2011	Dry	
Ruelas Spring	1706893	11552693	5036	12/6/2011	No access due to snow / ice	
Ruelas Spring	1706893	11552693	5036	1/26/2012	Dry	
Ruelas Spring	1706893	11552693	5036	2/27/2012	Dry	
Ruelas Spring	1706893	11552693	5036	3/21/2012	Dry	
Ruelas Spring	1706893	11552693	5036	6/26/2012	UTM - bad road	
Ruelas Spring	1706893	11552693	5036	11/21/2012	UTM - bad road	
Ruelas Spring	1706893	11552693	5036	12/28/2012	Dry	
Ruelas Spring	1706893	11552693	5036	2/25/2013	UTM - no access [road]	
Ruelas Spring	1706893	11552693	5036	8/12/2013	Dry	
Ruelas Spring	1706893	11552693	5036	11/13/2013	Dry	
Ruelas Spring	1706893	11552693	5036	2/3/2014	Dry	
Ruelas Spring	1706893	11552693	5036	5/5/2014	Dry	
Ruelas Spring	1706893	11552693	5036	7/10/2014	Dry	
Ruelas Spring	1706893	11552693	5036	12/8/2014	Damp - No flow	Not sampled
Ruelas Spring	1706893	11552693	5036	1/8/2015	Moist soil; no flow	
Ruelas Spring	1706893	11552693	5036	5/3/2015	Dry	
Ruelas Spring	1706893	11552693	5036	8/4/2015	Dry	
Ruelas Spring	1706893	11552693	5036	12/1/2015	Dry	
Ruelas Spring	1706893	11552693	5036	3/15/2016	Dry	
Ruelas Spring	1706893	11552693	5036	5/6/2016	Dry	
Ruelas Spring	1706893	11552693	5036	9/29/2016	Flowing, approx. 0.5 gpm	Sampled: pH=6.97; K=707; T=20.7; "30 feet west of GPS mark"
Ruelas Spring	1706893	11552693	5036	12/22/2016	Standing puddle, no sample	
Ruelas Spring	1706893	11552693	5036	1/18/2017	Dry	
Ruelas Spring	1706893	11552693	5036	5/17/2017	0.00	

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Ruelas Spring	1706893	11552693	5036	8/30/2017	0.00	
Ruelas Spring	1706893	11552693	5036	10/26/2017	0.00	
Ruelas Spring	1706893	11552693	5036	2/16/2018	0.00	
Ruelas Spring	1706893	11552693	5036	4/25/2018	0.00	
Ruelas Spring	1706893	11552693	5036	7/25/2018	0.00	
Ruelas Spring	1706893	11552693	5036	12/19/2018	0.00	
Ruelas Spring	1706893	11552693	5036	1/29/2019	0.00	
Ruelas Spring	1706893	11552693	5036	4/22/2019	0.00	
Ruelas Spring	1706893	11552693	5036	8/6/2019	0.00	
Ruelas Spring	1706893	11552693	5036	12/5/2019	0.00	Dry
Ruelas Spring	1706893	11552693	5036	4/22/2020	0.00	Dry
SC-2 Spring	1725229	11568353	4882	11/1/2007	No Flow - Moist wet ground	
SC-2 Spring	1725229	11568353	4882	1/18/2008	No Flow - Small puddle	
SC-2 Spring	1725229	11568353	4882	2/14/2008	No Flow - Small puddle	Found second small area of standing water downstream
SC-2 Spring	1725229	11568353	4882	3/18/2008	Dry	
SC-2 Spring	1725229	11568353	4882	5/2/2008	Dry	
SC-2 Spring	1725229	11568353	4882	5/19/2008	Dry	
SC-2 Spring	1725229	11568353	4882	6/18/2008	Dry	
SC-2 Spring	1725229	11568353	4882	7/29/2008	Stream flowing	Could not distinguish flow from spring/stream
SC-2 Spring	1725229	11568353	4882	8/22/2008	No visible flow	10' long ponded area
SC-2 Spring	1725229	11568353	4882	9/25/2008	Dry	
SC-2 Spring	1725229	11568353	4882	10/20/2008	Dry	
SC-2 Spring	1725229	11568353	4882	11/17/2008	Dry	
SC-2 Spring	1725229	11568353	4882	12/16/2008	Dry	
SC-2 Spring	1725229	11568353	4882	1/23/2009	Dry - No flow	Puddles present from recent rain
SC-2 Spring	1725229	11568353	4882	2/26/2009	Dry	
SC-2 Spring	1725229	11568353	4882	3/16/2009	Dry	
SC-2 Spring	1725229	11568353	4882	4/20/2009	Dry	
SC-2 Spring	1725229	11568353	4882	5/11/2009	Dry	
SC-2 Spring	1725229	11568353	4882	6/24/2009	Dry	
SC-2 Spring	1725229	11568353	4882	7/23/2009	Dry	
SC-2 Spring	1725229	11568353	4882	8/22/2009	Dry	
SC-2 Spring	1725229	11568353	4882	8/24/2009	Dry	
SC-2 Spring	1725229	11568353	4882	10/22/2009	Dry	
SC-2 Spring	1725229	11568353	4882	11/19/2009	Dry	
SC-2 Spring	1725229	11568353	4882	12/17/2009	Dry	
SC-2 Spring	1725229	11568353	4882	1/29/2010	Stream flowing @ approx. 1.3 gpm	pH=7.95, K=356, T=8.5
SC-2 Spring	1725229	11568353	4882	2/25/2010	Stream flowing @ 0.66 gpm	pH=8.02, K=560, T=11.5
SC-2 Spring	1725229	11568353	4882	3/25/2010	Stream flowing @ 0.55 gpm	pH=8.49, K=506, T=15.8
SC-2 Spring	1725229	11568353	4882	5/4/2010	Standing water with algae	
SC-2 Spring	1725229	11568353	4882	5/26/2010	Dry	
SC-2 Spring	1725229	11568353	4882	6/15/2010	Dry	
SC-2 Spring	1725229	11568353	4882	7/30/2010	Stream flowing over MP	
SC-2 Spring	1725229	11568353	4882	8/31/2010	Dry	
SC-2 Spring	1725229	11568353	4882	9/30/2010	Dry	
SC-2 Spring	1725229	11568353	4882	10/27/2010	Dry	
SC-2 Spring	1725229	11568353	4882	11/17/2010	Dry	
SC-2 Spring	1725229	11568353	4882	1/7/2011	Stagnate pools from snow melt	
SC-2 Spring	1725229	11568353	4882	2/1/2011	Dry	
SC-2 Spring	1725229	11568353	4882	2/25/2011	Dry	
SC-2 Spring	1725229	11568353	4882	4/4/2011	Dry	
SC-2 Spring	1725229	11568353	4882	5/2/2011	Dry	
SC-2 Spring	1725229	11568353	4882	5/26/2011	Dry	
SC-2 Spring	1725229	11568353	4882	8/1/2011	Dry	
SC-2 Spring	1725229	11568353	4882	8/30/2011	Dry	
SC-2 Spring	1725229	11568353	4882	10/10/2011	Dry	
SC-2 Spring	1725229	11568353	4882	11/3/2011	Dry	
SC-2 Spring	1725229	11568353	4882	11/30/2011	Dry	
SC-2 Spring	1725229	11568353	4882	12/30/2011	Sitting Water	
SC-2 Spring	1725229	11568353	4882	1/30/2012	Dry	
SC-2 Spring	1725229	11568353	4882	3/5/2012	Dry	
SC-2 Spring	1725229	11568353	4882	3/22/2012	Dry	
SC-2 Spring	1725229	11568353	4882	6/27/2012	Dry	
SC-2 Spring	1725229	11568353	4882	11/26/2012	Dry	
SC-2 Spring	1725229	11568353	4882	2/25/2013	Dry	
SC-2 Spring	1725229	11568353	4882	5/9/2013	Dry	
SC-2 Spring	1725229	11568353	4882	8/15/2013	Dry	
SC-2 Spring	1725229	11568353	4882	11/12/2013	Dry	
SC-2 Spring	1725229	11568353	4882	1/24/2014	Damp, No accumulation or flow	
SC-2 Spring	1725229	11568353	4882	5/6/2014	Dry	
SC-2 Spring	1725229	11568353	4882	7/15/2014	Damp from precipitation, not flowing	
SC-2 Spring	1725229	11568353	4882	10/8/2014	Dry	
SC-2 Spring	1725229	11568353	4882	1/6/2015	No flow; frozen puddle	
SC-2 Spring	1725229	11568353	4882	4/28/2015	Moist sand	No sample
SC-2 Spring	1725229	11568353	4882	8/25/2015	Dry	
SC-2 Spring	1725229	11568353	4882	11/30/2015	Dry	
SC-2 Spring	1725229	11568353	4882	2/11/2016	Dry	
SC-2 Spring	1725229	11568353	4882	5/3/2016	Small pool, very small flow; < 0.1 gpm	"UTM flow, rock outcrop above cottonwood"; Sample collected
SC-2 Spring	1725229	11568353	4882	9/21/2016	Dry	

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
SC-2 Spring	1725229	11568353	4882	12/13/2016	Dry	
SC-2 Spring	1725229	11568353	4882	2/1/2017	Dry	
Sc-2 Spring	1725229	11568353	4882	8/22/2017	0.00	Run off present from multiple drainages upstream, no flow from spring source
Sc-2 Spring	1725229	11568353	4882	10/23/2017	0.00	
Sc-2 Spring	1725229	11568353	4882	2/12/2018	0.00	
Sc-2 Spring	1725229	11568353	4882	4/18/2018	0.00	
Sc-2 Spring	1725229	11568353	4882	7/19/2018	0.00	
Sc-2 Spring	1725229	11568353	4882	12/18/2018	0.00	
Sc-2 Spring	1725229	11568353	4882	3/6/2019	0.00	
Sc-2 Spring	1725229	11568353	4882	4/22/2019	0.00	
Sc-2 Spring	1725229	11568353	4882	7/25/2019	0.00	
Sc-2 Spring	1725229	11568353	4882	11/7/2019	0.00	Dry
Sc-2 Spring	1725229	11568353	4882	6/4/2020	0.00	Dry
Scholefield Spring (SC-1)	1727428	11565571	4747	6/25/2007	No Flow	
Scholefield Spring (SC-1)	1727428	11565571	4747	11/1/2007	No Flow	
Scholefield Spring (SC-1)	1727428	11565571	4747	1/18/2008	No Flow	
Scholefield Spring (SC-1)	1727428	11565571	4747	2/14/2008	No Flow	Spring area appears drier than previously - no standing water.
Scholefield Spring (SC-1)	1727428	11565571	4747	3/18/2008	No Flow	
Scholefield Spring (SC-1)	1727428	11565571	4747	5/2/2008	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	5/19/2008	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	6/18/2008	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	7/29/2008	No Flow	Small puddle approx. 1' diameter
Scholefield Spring (SC-1)	1727428	11565571	4747	8/22/2008	No Flow	Small puddle approx. 1' diameter
Scholefield Spring (SC-1)	1727428	11565571	4747	9/25/2008	No Flow	5' long basin
Scholefield Spring (SC-1)	1727428	11565571	4747	10/20/2008	No Flow	Small puddle approx. 3' ft long
Scholefield Spring (SC-1)	1727428	11565571	4747	11/17/2008	No Flow	Small puddle approx. 3' ft long
Scholefield Spring (SC-1)	1727428	11565571	4747	12/19/2008	No Flow	Small puddle approx. 3' ft long
Scholefield Spring (SC-1)	1727428	11565571	4747	1/23/2009	No Flow	Small puddle approx. 3' ft long
Scholefield Spring (SC-1)	1727428	11565571	4747	2/26/2009	No Flow	
Scholefield Spring (SC-1)	1727428	11565571	4747	3/16/2009	No Flow	Ponded water: pH=6.85, K=796, T=10.6
Scholefield Spring (SC-1)	1727428	11565571	4747	4/20/2009	No Flow	Ponded water: pH=6.72, K=712, T=14.2
Scholefield Spring (SC-1)	1727428	11565571	4747	5/11/2009	No Flow	pH=7.07, K=982, T=18.8 - Approx. 1' diameter puddle
Scholefield Spring (SC-1)	1727428	11565571	4747	6/24/2009	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	7/23/2009	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	8/24/2009	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	9/22/2009	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	10/22/2009	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	11/19/2009	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	12/17/2009	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	1/29/2010	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	2/25/2010	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	3/25/2010	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	5/4/2010	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	5/26/2010	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	6/15/2010	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	7/30/2010	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	8/31/2010	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	9/30/2010	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	10/27/2010	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	11/17/2010	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	1/7/2011	Snow on ground	
Scholefield Spring (SC-1)	1727428	11565571	4747	2/1/2011	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	2/25/2011	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	4/4/2011	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	5/2/2011	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	5/26/2011	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	8/1/2011	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	8/30/2011	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	10/10/2011	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	11/3/2011	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	11/30/2011	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	12/30/2011	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	1/30/2012	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	3/5/2012	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	3/22/2012	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	6/27/2012	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	11/26/2012	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	2/25/2013	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	5/9/2013	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	8/15/2013	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	11/12/2013	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	5/6/2014	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	7/15/2014	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	10/8/2014	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	1/6/2015	No flow; frozen puddle	
Scholefield Spring (SC-1)	1727428	11565571	4747	1/24/2015	Damp, no puddle, no flow	
Scholefield Spring (SC-1)	1727428	11565571	4747	4/28/2015	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	8/25/2015	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	11/30/2015	Dry	

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Scholefield Spring (SC-1)	1727428	11565571	4747	2/11/2016	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	5/3/2016	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	9/21/2016	Dry	small pool; no flow
Scholefield Spring (SC-1)	1727428	11565571	4747	12/13/2016	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	2/1/2017	Dry	
Scholefield Spring (SC-1)	1727428	11565571	4747	8/22/2017	0.00	Small puddle, standing-no flow
Scholefield Spring (SC-1)	1727428	11565571	4747	10/23/2017	0.00	
Scholefield Spring (SC-1)	1727428	11565571	4747	2/12/2018	0.00	
Scholefield Spring (SC-1)	1727428	11565571	4747	4/18/2018	0.00	
Scholefield Spring (SC-1)	1727428	11565571	4747	7/19/2018	0.00	
Scholefield Spring (SC-1)	1727428	11565571	4747	12/18/2018	nm	
Scholefield Spring (SC-1)	1727428	11565571	4747	3/6/2019	0.00	
Scholefield Spring (SC-1)	1727428	11565571	4747	4/22/2019	-999.00	
Scholefield Spring (SC-1)	1727428	11565571	4747	7/25/2019	0.00	
Scholefield Spring (SC-1)	1727428	11565571	4747	11/7/2019	0.00	Ponded
Scholefield Spring (SC-1)	1727428	11565571	4747	2/17/2020	0.00	Ponded
Scholefield Spring (SC-1)	1727428	11565571	4747	6/4/2020	0.00	Ponded
Scholefield Spring (SC-1)	1727428	11565571	4747	8/6/2020	0.00	Ponded
Scholefield Spring (SC-1)	1727428	11565571	4747	10/15/2020	nm	No Flow
Shamrod Spring	1706791	11568271	4123	4/29/2014	Dry	
Shamrod Spring	1706791	11568271	4123	7/17/2014	Dry	
Shamrod Spring	1706791	11568271	4123	10/6/2014	Dry	
Shamrod Spring	1706791	11568271	4123	1/5/2015	Dry	
Shamrod Spring	1706791	11568271	4123	5/14/2015	Dry	
Shamrod Spring	1706791	11568271	4123	8/24/2015	Dry	
Shamrod Spring	1706791	11568271	4123	12/22/2015	Dry	
Shamrod Spring	1706791	11568271	4123	2/8/2016	Dry	
Shamrod Spring	1706791	11568271	4123	4/29/2016	Dry	
Shamrod Spring	1706791	11568271	4123	9/22/2016	Dry	
Shamrod Spring	1706791	11568271	4123	12/21/2016	Dry	
Shamrod Spring	1706791	11568271	4123	1/31/2017	Dry	
Shamrod Spring	1706791	11568271	4123	5/10/2017	0.00	
Shamrod Spring	1706791	11568271	4123	8/29/2017	0.00	
Shamrod Spring	1706791	11568271	4123	10/24/2017	0.00	
Shamrod Spring	1706791	11568271	4123	3/7/2018	0.00	
Shamrod Spring	1706791	11568271	4123	4/17/2018	0.00	
Shamrod Spring	1706791	11568271	4123	8/7/2018	0.00	
Shamrod Spring	1706791	11568271	4123	10/30/2018	0.00	
Shamrod Spring	1706791	11568271	4123	2/13/2019	0.00	
Shamrod Spring	1706791	11568271	4123	4/9/2019	0.00	
Shamrod Spring	1706791	11568271	4123	7/30/2019	0.00	
Shamrod Spring	1706791	11568271	4123	11/19/2019	0.00	Dry
Shamrod Spring	1706791	11568271	4123	4/16/2020	0.00	Dry
Shamrod Spring	1706791	11568271	4123	9/1/2021	0.00	Dry
SS-2 (Casita Spring)	1715236	11570062	4474	1/17/2008	Dry	Could not find water
SS-2 (Casita Spring)	1715236	11570062	4474	3/19/2008	Dry	Could not find water
SS-2 (Casita Spring)	1715236	11570062	4474	4/22/2008	Dry	Could not find water
SS-2 (Casita Spring)	1715236	11570062	4474	5/20/2008	Dry	Could not find water
SS-2 (Casita Spring)	1715236	11570062	4474	6/19/2008	Dry	Could not find water
SS-2 (Casita Spring)	1715236	11570062	4474	7/30/2008	Dry	Could not find water
SS-2 (Casita Spring)	1715236	11570062	4474	8/25/2008	---	Not visited - No visible evidence of spring or seep
SS-2 (Casita Spring)	1715236	11570062	4474	5/7/2013	Dry	"M. Point is in wash - which is always dry."
SS-2 (Casita Spring)	1715236	11570062	4474	8/13/2013	Dry	
SS-2 (Casita Spring)	1715236	11570062	4474	10/14/2013	Dry	
SS-2 (Casita Spring)	1715236	11570062	4474	1/23/2014	Dry	
SS-2 (Casita Spring)	1715236	11570062	4474	5/7/2014	Dry	
SS-2 (Casita Spring)	1715236	11570062	4474	7/16/2014	Dry	
SS-2 (Casita Spring)	1715236	11570062	4474	10/8/2014	Dry	
SS-2 (Casita Spring)	1715236	11570062	4474	1/7/2015	Dry	
SS-2 (Casita Spring)	1715236	11570062	4474	4/28/2015	Dry	
SS-2 (Casita Spring)	1715236	11570062	4474	4/29/2015	~ 0.2 gpm	Sampled; pH=8.07, K=801; T=18.2
SS-2 (Casita Spring)	1715236	11570062	4474	8/3/2015	Dry	
SS-2 (Casita Spring)	1715236	11570062	4474	11/24/2015	Flowing, 0.5 gpm	Sampled; pH=7.70, K=822; T=14.4
SS-2 (Casita Spring)	1715236	11570062	4474	2/5/2016	Flowing; approx. 1 gpm	Sampled; pH=7.99, K=655; T=9.6
SS-2 (Casita Spring)	1715236	11570062	4474	9/2/2016	Not checked	Inaccessible due to road conditions
SS-2 (Casita Spring)	1715236	11570062	4474	12/20/2016	Dry	
SS-2 (Casita Spring)	1715236	11570062	4474	3/14/2017	Dry	
SS-2 (Casita Spring)	1715236	11570062	4474	5/17/2017	0.00	
SS-2 (Casita Spring)	1715236	11570062	4474	8/22/2017	0.00	
SS-2 (Casita Spring)	1715236	11570062	4474	10/19/2017	0.00	
SS-2 (Casita Spring)	1715236	11570062	4474	2/14/2018	0.00	
SS-2 (Casita Spring)	1715236	11570062	4474	4/19/2018	0.00	
SS-2 (Casita Spring)	1715236	11570062	4474	7/24/2018	0.00	
SS-2 (Casita Spring)	1715236	11570062	4474	10/17/2018	0.00	
SS-2 (Casita Spring)	1715236	11570062	4474	2/7/2019	0.00	
SS-2 (Casita Spring)	1715236	11570062	4474	5/29/2019	0.00	
SS-2 (Casita Spring)	1715236	11570062	4474	7/18/2019	0.00	
SS-2 (Casita Spring)	1715236	11570062	4474	11/11/2019	0.00	Dry

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
SS-2 (Casita Spring)	1715236	11570062	4474	4/23/2020	0.00	Dry
SW	1711138	11549055	5505	2/13/2008	No flow - Soil is moist	
SW	1711138	11549055	5505	3/19/2008	No flow - Soil is moist	
SW	1711138	11549055	5505	4/28/2008	No flow - Soil is dry	
SW	1711138	11549055	5505	5/22/2008	No flow - Soil is dry	
SW	1711138	11549055	5505	6/20/2008	Dry	
SW	1711138	11549055	5505	7/28/2008	Dry	
SW	1711138	11549055	5505	8/22/2008	Dry	
SW	1711138	11549055	5505	9/26/2008	Seep	4" diam seep at bottom base of casing or barrel
SW	1711138	11549055	5505	10/20/2008	Seep	Damp spot
SW	1711138	11549055	5505	11/18/2008	Dry	
SW	1711138	11549055	5505	12/10/2008	Dry	
SW	1711138	11549055	5505	1/21/2009	Damp - No flow	
SW	1711138	11549055	5505	2/24/2009	Damp - No flow	
SW	1711138	11549055	5505	3/18/2009	Dry	
SW	1711138	11549055	5505	4/2/2009	Dry	
SW	1711138	11549055	5505	5/12/2009	Dry	
SW	1711138	11549055	5505	6/25/2009	Dry	
SW	1711138	11549055	5505	7/28/2009	Dry	
SW	1711138	11549055	5505	8/25/2009	Dry	
SW	1711138	11549055	5505	9/24/2009	Dry	
SW	1711138	11549055	5505	10/27/2009	Dry	
SW	1711138	11549055	5505	11/18/2009	Dry	
SW	1711138	11549055	5505	12/15/2009	Dry	
SW	1711138	11549055	5505	1/27/2010	Dry	
SW	1711138	11549055	5505	2/26/2010	Stream flowing over MP	
SW	1711138	11549055	5505	3/23/2010	Stream trickling over MP	
SW	1711138	11549055	5505	4/23/2010	2" pool	pH=7.45, K=509, T=11.9
SW	1711138	11549055	5505	5/25/2010	Dry	
SW	1711138	11549055	5505	6/30/2010	Dry	
SW	1711138	11549055	5505	7/20/2010	Dry	
SW	1711138	11549055	5505	8/17/2010	Stream flowing over MP	
SW	1711138	11549055	5505	9/29/2010	Damp, No water	
SW	1711138	11549055	5505	10/25/2010	Dry	
SW	1711138	11549055	5505	12/1/2010	Dry	
SW	1711138	11549055	5505	1/3/2011	No access. Road covered with snow	
SW	1711138	11549055	5505	1/20/2011	Dry	
SW	1711138	11549055	5505	2/23/2011	Dry	
SW	1711138	11549055	5505	3/23/2011	Dry	
SW	1711138	11549055	5505	4/25/2011	Dry	
SW	1711138	11549055	5505	5/23/2011	Dry	
SW	1711138	11549055	5505	7/28/2011	Dry	
SW	1711138	11549055	5505	8/29/2011	Dry	
SW	1711138	11549055	5505	9/21/2011	Dry	
SW	1711138	11549055	5505	11/1/2011	Dry	
SW	1711138	11549055	5505	12/6/2011	No access. Road covered with snow	
SW	1711138	11549055	5505	1/26/2012	Dry	
SW	1711138	11549055	5505	2/27/2012	Dry	
SW	1711138	11549055	5505	3/21/2012	Dry	
SW	1711138	11549055	5505	6/22/2012	Dry	
SW	1711138	11549055	5505	11/23/2012	Dry	
SW	1711138	11549055	5505	12/28/2012	Dry	
SW	1711138	11549055	5505	2/25/2013	Dry	
SW	1711138	11549055	5505	5/8/2013	Dry	
SW	1711138	11549055	5505	8/12/2013	Dry	
SW	1711138	11549055	5505	11/13/2013	Dry	
SW	1711138	11549055	5505	2/3/2014	Dry	
SW	1711138	11549055	5505	5/5/2014	Dry	
SW	1711138	11549055	5505	7/10/2014	Dry	
SW	1711138	11549055	5505	12/8/2014	Dry	
SW	1711138	11549055	5505	1/8/2015	Dry	
SW	1711138	11549055	5505	5/3/2015	Dry	
SW	1711138	11549055	5505	8/4/2015	Dry	
SW	1711138	11549055	5505	12/11/2015	Dry	
SW	1711138	11549055	5505	3/15/2016	Dry	
SW	1711138	11549055	5505	5/6/2016	Dry	
SW	1711138	11549055	5505	9/29/2016	Dry	
SW	1711138	11549055	5505	12/22/2016	Dry	
SW	1711138	11549055	5505	1/18/2017	Dry	
Sw Spring	1711138	11549055	5505	5/17/2017	0.00	
Sw Spring	1711138	11549055	5505	8/30/2017	0.00	
Sw Spring	1711138	11549055	5505	10/26/2017	0.00	
Sw Spring	1711138	11549055	5505	2/16/2018	0.00	
Sw Spring	1711138	11549055	5505	4/25/2018	0.00	
Sw Spring	1711138	11549055	5505	7/25/2018	0.00	
Sw Spring	1711138	11549055	5505	10/18/2018	0.00	
Sw Spring	1711138	11549055	5505	1/29/2019	0.00	
Sw Spring	1711138	11549055	5505	4/22/2019	0.04	
Sw Spring	1711138	11549055	5505	8/6/2019	0.00	

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Sw Spring	1711138	11549055	5505	12/5/2019	0.00	None, Dry
Sw Spring	1711138	11549055	5505	4/22/2020	0.00	Dry
Sycamore Spring	1714783	11572782	4193	1/17/2008	Dry	Could not find water
Sycamore Spring	1714783	11572782	4193	3/19/2008	Dry	Located spring site, but dry.
Sycamore Spring	1714783	11572782	4193	4/22/2008	Dry	
Sycamore Spring	1714783	11572782	4193	5/20/2008	---	
Sycamore Spring	1714783	11572782	4193	6/19/2008	Dry at surface, but dug sump is full	Wet - Seep Puddle downstream from dug sump
Sycamore Spring	1714783	11572782	4193	7/30/2008	Flowing 1 gpm	Creek flowing also. Sample ID: GF7301 & GF7302
Sycamore Spring	1714783	11572782	4193	8/25/2008	Flowing 1 gpm	Creek flowing, starting near spring
Sycamore Spring	1714783	11572782	4193	9/26/2008	Flowing 1 gpm	Creek flowing
Sycamore Spring	1714783	11572782	4193	10/21/2008	Dug sump is full	Damp spots downstream from box, Sample ID: mew10211
Sycamore Spring	1714783	11572782	4193	11/12/2008	Dug sump is full	No flow
Sycamore Spring	1714783	11572782	4193	12/17/2008	Flowing 0.2 gpm	
Sycamore Spring	1714783	11572782	4193	1/22/2009	0.85 gpm	
Sycamore Spring	1714783	11572782	4193	2/25/2009	Sump is full, damp ground below	Sample ID: JRK22501, pH=7.26, K= 679, T=16.3
Sycamore Spring	1714783	11572782	4193	3/18/2009	Flowing 0.32 gpm	pH=6.99, K=565, T=17.4
Sycamore Spring	1714783	11572782	4193	4/21/2009	Water in sump	No flow, Sump water: pH=7.19, K=539 T=18.8
Sycamore Spring	1714783	11572782	4193	5/12/2009	No Flow	Water in sump; pH=7.34, K=474, T=18.6
Sycamore Spring	1714783	11572782	4193	6/25/2009	No Flow	Sump about half full; pH=7.36, K=480, T=19.3
Sycamore Spring	1714783	11572782	4193	7/28/2009	No Flow	Sump about 1/4 full; pH=7.6, K=517, T=24
Sycamore Spring	1714783	11572782	4193	8/25/2009	No Flow	Sump about 1/4 full; pH=7.53, K=656, T=23.6
Sycamore Spring	1714783	11572782	4193	9/28/2009	No Flow	Sump about 1/4 full; pH=8.15, K=666, T=22.7
Sycamore Spring	1714783	11572782	4193	10/27/2009	No Flow	Sump about 1/4 full; pH=9.41, K=653, T=15.3
Sycamore Spring	1714783	11572782	4193	11/17/2009	No Flow	Sump about 1/4 full; pH=7.48, K=651, T=14.6
Sycamore Spring	1714783	11572782	4193	12/15/2009	No Flow	Sump about 1/4 full; pH=9.62, K=663, T=11.7
Sycamore Spring	1714783	11572782	4193	2/2/2010	Flowing - No Measurement	Sump full; pH=7.54, K=670, T=16.0
Sycamore Spring	1714783	11572782	4193	2/26/2010	0.78 gpm	Sump full; pH=7.65, K=668, T=17.0
Sycamore Spring	1714783	11572782	4193	3/29/2010	1.3 gpm	Sump full; pH=7.64, K=657, T=19.8
Sycamore Spring	1714783	11572782	4193	5/6/2010	0.29 gpm	Sump full; pH=7.44, K=658, T=20.6
Sycamore Spring	1714783	11572782	4193	5/26/2010	0.29 gpm	Sump full; pH=7.47, K=654, T=20.8
Sycamore Spring	1714783	11572782	4193	6/30/2010	No Flow	Sump full; pH=7.76, K=660, T=21.9
Sycamore Spring	1714783	11572782	4193	8/2/2010	Sump Full Overflowing	Sump full; pH=7.99, K=697, T=21.9
Sycamore Spring	1714783	11572782	4193	8/31/2010	Sump Full Overflowing	Sump full; pH=7.51, K=594, T=21.2
Sycamore Spring	1714783	11572782	4193	9/29/2010	Sump Full Overflowing	Sump full; pH=7.46, K=575, T=20.2
Sycamore Spring	1714783	11572782	4193	11/1/2010	Sump Full Overflowing	Sump full; pH=7.26, K=572, T=19.0
Sycamore Spring	1714783	11572782	4193	12/2/2010	Sump Full Overflowing	Sump full; pH=7.80, K=647, T=17.9
Sycamore Spring	1714783	11572782	4193	1/7/2011	Sump Full Overflowing	Sump full; pH=7.20, K=634, T=16.2
Sycamore Spring	1714783	11572782	4193	1/28/2011	Sump Full Overflowing	Sump full; pH=7.32, K=621, T=15.5
Sycamore Spring	1714783	11572782	4193	2/28/2011	Sump Full Overflowing	Sump full; pH=7.21, K=563, T=16.3
Sycamore Spring	1714783	11572782	4193	3/31/2011	Sump Full Overflowing	Sump full; pH=7.01, K=565, T=21.0
Sycamore Spring	1714783	11572782	4193	5/3/2011	Sump Full Overflowing	Sump full; pH=7.91, K=562, T=22.0
Sycamore Spring	1714783	11572782	4193	6/3/2011	Sump 1/2 full	pH=7.22, K=624, T=20.4
Sycamore Spring	1714783	11572782	4193	8/2/2011	Sump > 1/2 full	pH=7.53; K=742; T=22.4
Sycamore Spring	1714783	11572782	4193	9/12/2011	Sump Full	pH=7.51; K=705; T=21.4
Sycamore Spring	1714783	11572782	4193	10/11/2011	Sump Full	pH=7.45; K=601; T=20.2
Sycamore Spring	1714783	11572782	4193	11/4/2011	Sump Full	pH=7.41; K=651; T=17.5
Sycamore Spring	1714783	11572782	4193	12/9/2011	Sump Full	pH=7.42; K=642; T=17.1
Sycamore Spring	1714783	11572782	4193	1/6/2012	???	pH=6.88; K=680; T=15.6
Sycamore Spring	1714783	11572782	4193	2/2/2012	Sump 3/4 full	pH=6.91; K=666; T=15.9
Sycamore Spring	1714783	11572782	4193	3/6/2012	???	pH=6.84; K=670; T=18.5
Sycamore Spring	1714783	11572782	4193	3/29/2012	Sump 3/4 full	pH=6.95; K=668; T=18.9
Sycamore Spring	1714783	11572782	4193	7/2/2012	Sump nearly full	pH=7.63; K=705; T=22.0
Sycamore Spring	1714783	11572782	4193	2/28/2013	Sump box 1/2 full	pH= 8.31; K=746; T=7.4
Sycamore Spring	1714783	11572782	4193	5/7/2013	Sump box less than 1/2 full - no flow	pH=7.56; K=758; T=15.8
Sycamore Spring	1714783	11572782	4193	8/13/2013	Muddy puddle; no flow	
Sycamore Spring	1714783	11572782	4193	11/14/2013	Damp at box; seep at outflow; no sample	
Sycamore Spring	1714783	11572782	4193	1/23/2014	~ 1 gpm	pH=7.77; K=915; T=8.7
Sycamore Spring	1714783	11572782	4193	5/7/2014	0.1 gpm	pH=7.38; K=721; T=17.6
Sycamore Spring	1714783	11572782	4193	7/16/2014	< 0.1 gpm	pH=7.63; K=645; T=27.1
Sycamore Spring	1714783	11572782	4193	10/8/2014	1 gpm; basin full; sampled	pH=7.25; K=795; T=22.0
Sycamore Spring	1714783	11572782	4193	1/7/2015	Flowing; approx. 1 gpm	Sampled; pH=7.06; K=668; T=16.2
Sycamore Spring	1714783	11572782	4193	4/29/2015	~ 0.5 gpm into collection box	Sampled; pH=7.31; K=689; T=19.2
Sycamore Spring	1714783	11572782	4193	8/3/2015	Slight trickle	Sampled; pH=7.38; K=719; T=22.0
Sycamore Spring	1714783	11572782	4193	11/24/2015	Tank full	Sampled; pH=7.52; K=683; T=18.4
Sycamore Spring	1714783	11572782	4193	2/5/2016	Flowing; approx. 0.3 gpm	Sampled; pH=7.55; K=661; T=17.3
Sycamore Spring	1714783	11572782	4193	4/28/2016	Flowing; 0.21 gpm	
Sycamore Spring	1714783	11572782	4193	9/2/2016	Not checked	Inaccessible due to road conditions
Sycamore Spring	1714783	11572782	4193	12/20/2016	Flowing; approx. 1.0 gpm	Sampled; pH=6.92; K=643; T=15.4
Sycamore Spring	1714783	11572782	4193	3/14/2017	Flowing; approx. 6.5 gpm, sump 3/4 full-flowing in wash	Sampled; pH=7.11; K=574; T=16.0
Sycamore Spring	1714783	11572782	4193	5/17/2017	0.98	
Sycamore Spring	1714783	11572782	4193	8/22/2017	0.73	
Sycamore Spring	1714783	11572782	4193	10/19/2017	0.25	
Sycamore Spring	1714783	11572782	4193	2/14/2018	0.00	
Sycamore Spring	1714783	11572782	4193	4/19/2018	0.50	
Sycamore Spring	1714783	11572782	4193	7/24/2018	0.00	
Sycamore Spring	1714783	11572782	4193	10/17/2018	nm	
Sycamore Spring	1714783	11572782	4193	2/7/2019	nm	
Sycamore Spring	1714783	11572782	4193	4/8/2019	-999.00	
Sycamore Spring	1714783	11572782	4193	7/18/2019	-999.00	

Spring	Easting (ft)	Northing (ft)	Elevation (ft)	Date	Flow (gpm)	Remarks
Sycamore Spring	1714783	11572782	4193	11/11/2019	-999.00	Flowing
Sycamore Spring	1714783	11572782	4193	3/5/2020	-999.00	Flowing
Sycamore Spring	1714783	11572782	4193	4/23/2020	-999.00	Flowing
Sycamore Spring	1714783	11572782	4193	8/3/2020	-999.00	Flowing
Sycamore Spring	1714783	11572782	4193	10/13/2020	nm	No Flow
Sycamore Spring	1714783	11572782	4193	2/22/2021	0.00	No Flow
Sycamore Spring	1714783	11572782	4193	3/19/2021	nm	Wet
Sycamore Spring	1714783	11572782	4193	10/31/2022	10.00	Flowing
Zackendorf Spring	1710341	11568387	4538	4/29/2014	approx. 0.1 gpm	Sampled; pH=7.82; K=851; T=18.0
Zackendorf Spring	1710341	11568387	4538	7/17/2014	Trickle; ~ 0.1 gpm	Sampled; pH=6.94; K=1834; T=21.3
Zackendorf Spring	1710341	11568387	4538	10/6/2014	0.1 gpm	Sampled; pH=7.11; K=1770; T=20.1
Zackendorf Spring	1710341	11568387	4538	1/5/2015	approx. 0.2 gpm	Sampled; pH=7.56; J=1610; T=15.5
Zackendorf Spring	1710341	11568387	4538	5/14/2015	Dry	No sample
Zackendorf Spring	1710341	11568387	4538	8/24/2015	Dry	
Zackendorf Spring	1710341	11568387	4538	12/22/2015	Dry	
Zackendorf Spring	1710341	11568387	4538	2/8/2016	Dry	
Zackendorf Spring	1710341	11568387	4538	4/29/2016	Flowing; 1.8 gpm	
Zackendorf Spring	1710341	11568387	4538	9/22/2016	Small puddle, no flow	
Zackendorf Spring	1710341	11568387	4538	12/21/2016	Small puddle, not flowing	
Zackendorf Spring	1710341	11568387	4538	1/31/2017	Flowing; approx. 0.85 gpm	Sampled: pH=7.49; K=2000; T=13.3
Zackendorf Spring	1710341	11568387	4538	5/10/2017	0.81	
Zackendorf Spring	1710341	11568387	4538	8/29/2017	0.42	
Zackendorf Spring	1710341	11568387	4538	10/25/2017	0.00	
Zackendorf Spring	1710341	11568387	4538	3/7/2018	1.03	
Zackendorf Spring	1710341	11568387	4538	4/17/2018	1.05	
Zackendorf Spring	1710341	11568387	4538	8/7/2018	0.40	
Zackendorf Spring	1710341	11568387	4538	10/30/2018	0.96	
Zackendorf Spring	1710341	11568387	4538	2/13/2019	0.69	
Zackendorf Spring	1710341	11568387	4538	4/9/2019	0.88	
Zackendorf Spring	1710341	11568387	4538	7/30/2019	-999.00	
Zackendorf Spring	1710341	11568387	4538	11/19/2019	1.04	Flowing
Zackendorf Spring	1710341	11568387	4538	4/16/2020	0.65	Flowing
Zackendorf Spring	1710341	11568387	4538	8/28/2021	1.00	Flowing

APPENDIX B

Well Inventory

REGISTRY ID	UTM-E (ft)	UTM-N (ft)	OWNER NAME	WELL TYPE	APPLICATION	INSTALLED	WELL DEPTH	WATER LEVEL	CASING DEPTH	CASING DIAMETER	CASING TYPE	PUMP TYPE	PUMP POWER	PUMP RATE	TESTED RATE	DRAWDOWN	CADASTRAL	COUNTY
201898	1700654	11559760	SONORAN PROPERTY INVESTORS LLC	EXEMPT	2004-01-06	2004-02-16	400	0	400	7	PLASTIC OR PVC			0	0	0	D18015027BBB	PIMA
204292	1700654	11559760	WESTON & JESSICA LANSKY	EXEMPT	2004-07-12		0	0	0	0				0	0	0	D18015027BBB	PIMA
205052	1729646	11564354	ROSEMONT RANCH LLC	EXEMPT	2004-09-10		0	0	0	0				0	0	0	D18016021ABC	PIMA
207382	1723771	11555777	ROSEMONT RANCH LLC	EXEMPT	2005-04-11		0	0	0	0				0	0	0	D18016029CDA	PIMA
221319	1715123	11548517	ROSEMONT COPPER	NON-EXEMPT	2012-02-15	2012-04-23	1505	200	850	11	STEEL - PERFORATED OR SLOTTED CASING			0	0	0	D19015001AAC	PIMA
223648	1709976	11569616	U.S. BUREAU OF LAND MANAGEMENT	EXEMPT	2014-06-30		600	240	600	8	STEEL - PERFORATED OR SLOTTED CASING			0	0	0	D18015014AAC	PIMA
223809	1723042	11552493	ROSEMONT COPPER	NON-EXEMPT	2014-08-15		0	0	0	0				0	0	0	D18016032BDC	PIMA
235494	1710564	11565026	ROSEMONT COPPER COMPANY	NON-EXEMPT	2021-10-13		0	0	0	0				0	0	0	D18015023AAA	PIMA
501985	1705295	11551814	ASARCO INC.	EXEMPT	1982-02-01		350	0	20	7	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18015034DAA	PIMA
501987	1704640	11551811	ANAMAX MINING CO.	EXEMPT	1982-02-01	1987-01-07	360	0	20	7	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18015034DAB	PIMA
501989	1702000	11569655	LEBRECHT, ROYDEN,	EXEMPT	1982-02-03	1982-02-07	305	150	200	4	PLASTIC OR PVC	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18015015BAC	PIMA
501990	1702000	11569655	LEBRECHT, ROYDEN,	EXEMPT	1982-02-03	1982-02-10	185	140	173	4	PLASTIC OR PVC	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18015015BAC	PIMA
501991	1720804	11543930	ROSEMONT COPPER COMPANY	EXEMPT	1982-02-03	1982-02-18	905	700	904	4	PLASTIC OR PVC	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D19016007AAA	PIMA
504724	1734854	11564983	ANAMAX MINING CO.	EXEMPT	1983-01-31	1986-10-20	255	0	19	8	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18016022ABB	PIMA
504725	1733566	11564347	ROSEMONT COPPER COMPANY	EXEMPT	1983-01-31	1983-02-25	220	66	220	8	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18016022BAC	PIMA
510181	1706615	11559101	BIRKHOLZ,R	EXEMPT - DOMESTIC STOCK	1985-01-23	1985-02-06	970	0	20	8	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18015026BBD	PIMA
523832	1703974	11561086	SALIDO, RENE,C	EXEMPT - DOMESTIC STOCK	1989-03-13	1989-03-25	265	73	265	6	STEEL - PERFORATED OR SLOTTED CASING	SUBMERSIBLE	ELECTRIC MOTOR < 1 HP	22	1	250	D18015022DCA	PIMA
524072	1700628	11562405	ROSEMONT COPPER COMPANY	EXEMPT - DOMESTIC STOCK	1989-03-30	1989-04-04	680	600	21	8	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18015022CBB	PIMA
524634	1703974	11561086	AALIDO, RENE,C	EXEMPT - DOMESTIC STOCK	1989-05-23	1989-06-11	215	78	215	10	STEEL - PERFORATED OR SLOTTED CASING	SUBMERSIBLE	ELECTRIC MOTOR < 1 HP	25	1	210	D18015022DCA	PIMA
527979	1703974	11561086	SALIDO, RENE,C	EXEMPT - DOMESTIC STOCK	1990-04-26	1990-06-10	605	260	605	0	NO CASING CODE LISTED	SUBMERSIBLE	ELECTRIC MOTOR < 1 HP	8	5	420	D18015022DCA	PIMA
532115	1716477	11551834	ROSEMONT COPPER COMPANY	EXEMPT	1992-09-10	1991-08-21	700	120	700	4	STEEL - PERFORATED OR SLOTTED CASING	PISTON	OTHER	1	1	0	D18016031CBB	PIMA
532148	1705974	11563064	SONORAN PROPERTY INVESTORS LLC	EXEMPT - DOMESTIC STOCK	1991-06-12	1991-07-09	145	80	145	6	STEEL - PERFORATED OR SLOTTED CASING	SUBMERSIBLE	ELECTRIC MOTOR < 1 HP	5	9	0	D18015023BCC	PIMA
555604	1701321	11559101	BLANCO, JAVIER,	EXEMPT	1996-03-04	1996-08-15	600	125	0	0	NO CASING CODE LISTED	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18015027BBD	PIMA
558405	1717216	11563701	ROSEMONT COPPER COMPANY	EXEMPT	1996-06-17		0	0	0	0	NO CASING CODE LISTED	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18016019BCA	PIMA
558406	1711156	11549170	ROSEMONT COPPER COMPANY	EXEMPT	1996-06-17		0	0	0	0	NO CASING CODE LISTED	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D19015001BBB	PIMA
561858	1701321	11559101	DERRICK SINCLAIR SONORAN PROPERTY INVESTORS LLC	EXEMPT	1996-11-30	1997-01-08	600	0	600	8	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18015027BBD	PIMA
564306	1723042	11552493	ROSEMONT COPPER COMPANY	EXEMPT	1997-08-11	1998-01-17	560	62	560	5	PLASTIC OR PVC	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18016032BDC	PIMA
573043	1705967	11560426	ROSEMONT COPPER COMPANY	EXEMPT	1999-02-01	1999-03-05	0	0	750	8	STEEL - PERFORATED OR SLOTTED CASING			0	0	0	D18015023CCC	PIMA
574003	1705314	11562408	ROSEMONT COPPER COMPANY	EXEMPT	1999-03-23	1999-03-11	0	0	850	8	STEEL - PERFORATED OR SLOTTED CASING			0	0	0	D18015022DAA	PIMA
578265	1701321	11559101	JAVIER & LAURA BLANCO	EXEMPT	2000-01-18	2000-05-19	700	0	32	10	STEEL - PERFORATED OR SLOTTED CASING			0	0	0	D18015027BBD	PIMA
597589	1705967	11560426	ROSEMONT COPPER COMPANY	EXEMPT	2003-03-14	2003-06-30	990	0	20	9	STEEL - PERFORATED OR SLOTTED CASING			0	0	0	D18015023CCC	PIMA
602351	1701972	11561086	SNOW,J,B	EXEMPT	1982-02-09	1973-05-09	178	165	0	8	OTHER - BLACK STEEL - IRON - SEAMLESS	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18015022CDB	PIMA
608627	1721650	11550518	ROSEMONT COPPER COMPANY	NON-EXEMPT	1982-05-21	1978-01-31	1300	100	1287	9	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18016032CCB	PIMA
608629	1722426	11559075	ROSEMONT COPPER COMPANY	EXEMPT	1982-05-21	1976-01-01	3200	0	0	0	NO CASING CODE LISTED	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18016029BBD	PIMA
608630	1723771	11555777	ROSEMONT COPPER COMPANY	NON-EXEMPT	1982-05-21	1963-07-11	535	0	204	8	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	64	64	0	D18016029CDA	PIMA
608631	1716515	11554491	ROSEMONT COPPER COMPANY	NON-EXEMPT	1982-05-21	1976-04-07	2541	0	1300	2	PLASTIC OR PVC	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18016031BBB	PIMA
633728	1721691	11551834	YAYLER,A	EXEMPT	1982-05-17		500	300	500	6	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	5	5	0	D18016032CBB	PIMA
634283	1705295	11551814	LAZY Y-I RANCH LLC	EXEMPT	1982-05-21	1981-01-20	145	100	20	8	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	10	10	0	D18015034DAA	PIMA
634308	1723042	11552493	ROSEMONT COPPER COMPANY	EXEMPT	1982-05-21	1966-01-01	500	94	303	8	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	10	10	0	D18016032BDC	PIMA
634309	1729002	11563688	ROSEMONT COPPER COMPANY	EXEMPT	1982-05-21	1971-11-24	1000	54	10	8	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	10	10	0	D18016021BDA	PIMA
634353	1711179	11561719	ROSEMONT COPPER COMPANY	EXEMPT	1982-05-21	1982-02-17	315	20	20	8	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18015024CBC	PIMA
634354	1702000	11569655	LEBRECHT, ROYDEN,	EXEMPT	1982-05-21		0	0	0	0	NO CASING CODE LISTED	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18015015BAC	PIMA
634355	1715280	11572871	ROSEMONT COPPER COMPANY	EXEMPT	1982-05-21	1976-11-20	920	130	250	4	PLASTIC OR PVC	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18015012DAB	PIMA
635385	1702660	11554468	SANTA RITA RANCH INC,	EXEMPT	1982-06-09	1940-01-01	500	0	0	6	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	5	5	0	D18015034BAA	PIMA
635389	1707263	11558435	SANTA RITA RANCH INC,	EXEMPT	1982-06-09	1978-01-01	0	0	0	0	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18015026BDB	PIMA
635395	1700045	11553133	SANTA RITA RANCH INC,	EXEMPT	1982-06-09	1973-01-03	450	375	0	8	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	10	10	0	D18015033ADA	PIMA
635396	1703971	11564386	SANTA RITA RANCH INC,	EXEMPT	1982-06-09	1969-01-01	97	85	40	8	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	3	3	0	D18015022ABD	PIMA
635397	1707604	11563389	SANTA RITA RANCH INC,	EXEMPT	1982-06-09	1978-01-01	400	25	20	6	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	25	25	0	D18015023BD0	PIMA
635398	1706631	11564383	SANTA RITA RANCH INC,	EXEMPT	1982-06-09	1978-01-01	400	20	20	6	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	10	10	0	D18015023BBD	PIMA
635399	1707592	11552808	SANTA RITA RANCH INC,	EXEMPT	1982-06-09	1978-01-01	400	150	0	6	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	5	5	0	D18015035BD0	PIMA
635400	1707592	11552808	SANTA RITA RANCH INC,	EXEMPT	1982-06-09	1978-01-01	400	150	0	6	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	5	5	0	D18015035BD0	PIMA
640317	1701972	11561086	PALLANES,F,L	EXEMPT	1982-07-16	1977-01-01	600	90	600	8	PLASTIC OR PVC	NO PUMP CODE LISTED	NO POWER CODE LISTED	5	5	0	D18015022CDB	PIMA
641672	1704308	11564058	CORONADO NATL FOREST,	EXEMPT	1982-06-07		0	0	0	0	NO CASING CODE LISTED	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18015022A00	PIMA
642734	1716878	11562054	CORONADO NATL FOREST,	EXEMPT	1982-06-07		0	0	0	0	NO CASING CODE LISTED	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18016019CB0	PIMA
642735	1719462	11554137	CORONADO NATL FOREST,	EXEMPT	1982-06-07		0	0	0	0	NO CASING CODE LISTED	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18016031AB0	PIMA
804587	1700045	11553133	AZ STATE LAND DEPT,	EXEMPT	1987-04-02	1973-01-03	450	375	450	6	STEEL - PERFORATED OR SLOTTED CASING	NO PUMP CODE LISTED	NO POWER CODE LISTED	0	0	0	D18015033ADA	PIMA
804754	1704643	11563727	MOORE, ROYANNAL	EXEMPT	1987-07-09	1966-02-28	165	0	165	8	NO CASING CODE LISTED	NO PUMP CODE LISTED	NO POWER CODE LISTED	14	0	0	D18015022ADB	PIMA
804858	1701287	11563727	SONORAN PROPERTY INVESTORS LLC	EXEMPT	1987-07-29	1977-04-20	350	80	40	8	STEEL - PERFORATED OR SLOTTED CASING	SUBMERSIBLE	NO POWER CODE LISTED	5	0	0	D18015022BCA	PIMA
804861	1713940	11568950	CORONADO NATL FOREST,	EXEMPT	1987-07-30		0	0	0	0	NO CASING CODE LISTED	NO PUMP CODE LISTED	NO POWER CODE LISTED	35	0	0	D18015013ACB	PIMA
804862	1712618	11568953	CORONADO NATL FOREST,	EXEMPT	1987-07-30		0	0	0	0	NO CASING CODE LISTED	NO PUMP CODE LISTED	NO POWER CODE LISTED	35	0	0	D18015013BDB	PIMA
804863	1715277	11572218	CORONADO NATL FOREST,	EXEMPT	1987-07-30		0	0	0	0	NO CASING CODE LISTED	NO PUMP CODE LISTED	NO POWER CODE LISTED	35	0	0	D18015012DAC	PIMA
804864	1712666	11575541	CORONADO NATL FOREST,	EXEMPT	1987-07-30		0	0	0	0	NO CASING CODE LISTED	NO PUMP CODE LISTED	NO POWER CODE LISTED	35	0	0	D18015012BAB	PIMA
804865	1705948	11552477	CORONADO NATL FOREST,	EXEMPT	1987-07-30		0	0	0	0	NO CASING CODE LISTED	NO PUMP CODE LISTED	NO POWER CODE LISTED	35	0	0	D18015035BCC	PIMA
804866	1705297	11551148	CORONADO NATL FOREST,	EXEMPT	1987-07-30		0	0	0	0	NO CASING CODE LISTED	NO PUMP CODE LISTED	NO POWER CODE LISTED	35	0	0	D18015034DAD	PIMA
804867	1705295	11551814	CORONADO NATL FOREST,	EXEMPT	1987-07-30		0	0	0	0	NO CASING CODE LISTED	NO PUMP CODE LISTED	NO POWER CODE LISTED	35	0	0	D18015034DAA	PIMA
804868	1704637																	

[illegible]

APPENDIX C

Site Exploration Boreholes

Appendix C - Exploration Boreholes

Hole ID	UTM-E (ft)	UTM-N (ft)	Elevation (ft amsl)	Azimuth	Angle	Depth (ft bgs)	Year	Company
C-18	1704066	11566664	4428	0	-90	400	1956	Lewisohn Copper Corp.
C-20	1704398	11567400	4323	0	-90	410	1956	Lewisohn Copper Corp.
C-21	1704190	11567179	4331	0	-90	370	1956	Lewisohn Copper Corp.
C-25	1704276	11566882	4437	0	-90	445	1956	Lewisohn Copper Corp.
C-26	1704111	11566143	4505	0	-90	490	1956	Lewisohn Copper Corp.
C-27	1704129	11566922	4369	0	-90	400	1956	Lewisohn Copper Corp.
C-28	1704285	11565704	4461	0	-90	420	1956	Lewisohn Copper Corp.
C-30	1704187	11565597	4389	0	-90	170	1956	Lewisohn Copper Corp.
C-31	1704085	11567068	4306	0	-90	415	1956	Lewisohn Copper Corp.
C-32	1704176	11566002	4513	0	-90	350	1956	Lewisohn Copper Corp.
C-33	1704021	11566813	4370	0	-90	380	1956	Lewisohn Copper Corp.
C-34	1704377	11565431	4392	0	-90	335	1956	Lewisohn Copper Corp.
C-35	1704334	11565564	4413	0	-90	285	1956	Lewisohn Copper Corp.
C-36	1704007	11566414	4431	0	-90	185	1956	Lewisohn Copper Corp.
C-37	1704296	11567291	4361	0	-90	280	1956	Lewisohn Copper Corp.
C-38	1704508	11565010	4330	0	-90	285	1956	Lewisohn Copper Corp.
C-39	1704555	11565258	4349	0	-90	380	1956	Lewisohn Copper Corp.
C-40	1704464	11565521	4445	0	-90	460	1956	Lewisohn Copper Corp.
C-41	1703932	11567106	4250	0	-90	105	1956	Lewisohn Copper Corp.
C-42	1704380	11566991	4462	0	-90	460	1956	Lewisohn Copper Corp.
C-43	1704108	11566521	4476	0	-90	220	1956	Lewisohn Copper Corp.
C-44	1704170	11566773	4437	0	-90	345	1956	Lewisohn Copper Corp.
C-45	1704315	11566734	4517	0	-90	355	1956	Lewisohn Copper Corp.
C-46	1704949	11564402	4248	0	-90	170	1956	Lewisohn Copper Corp.
C-47	1704196	11566253	4555	0	-90	400	1957	Lewisohn Copper Corp.
C-48	1704367	11565791	4529	0	-90	450	1957	Lewisohn Copper Corp.
C-49	1704640	11565350	4397	0	-90	510	1957	Lewisohn Copper Corp.
C-50	1704391	11566066	4642	0	-90	505	1957	Lewisohn Copper Corp.
D-10	1704918	11565291	4385	0	-90	553	1957	Lewisohn Copper Corp.
D-11	1704993	11565537	4426	0	-90	650	1957	Lewisohn Copper Corp.
D-12	1705209	11565762	4355	0	-90	426	1957	Lewisohn Copper Corp.
D-13	1704421	11565293	4383	0	-90	335	1957	Lewisohn Copper Corp.
D-14	1705106	11566732	4313	0	-90	326	1957	Lewisohn Copper Corp.
D-15	1706027	11565077	4404	0	-90	270	1957	Lewisohn Copper Corp.
D-16	1704232	11565851	4494	0	-90	261	1957	Lewisohn Copper Corp.
D-17	1706148	11564813	4328	0	-90	296	1957	Lewisohn Copper Corp.
D-19	1705866	11564849	4394	0	-90	370	1957	Lewisohn Copper Corp.
D-22	1704474	11567099	4486	0	-90	486	1957	Lewisohn Copper Corp.
D-23	1704050	11566278	4469	0	-90	315	1957	Lewisohn Copper Corp.
D-24	1704252	11566108	4577	0	-90	585	1957	Lewisohn Copper Corp.
D-29	1704339	11567142	4416	0	-90	404	1957	Lewisohn Copper Corp.
D-49	1704378	11565423	4392	0	-90	1	1957	Lewisohn Copper Corp.
D-6	1704234	11567030	4372	0	-90	396	1957	Lewisohn Copper Corp.
D-7	1704358	11566588	4603	0	-90	566	1957	Lewisohn Copper Corp.
D-8	1704288	11566364	4608	0	-90	572	1957	Lewisohn Copper Corp.
D-9	1704596	11565483	4440	0	-90	565	1957	Lewisohn Copper Corp.
G-02	1701759	11569709	3890	0	-90	376	1961	Banner
G-04	1700802	11572613	3745	0	-90	358	1961	Banner
G-06	1717705	11559567	5156	0	-90	682	1961	Anaconda
G-21	1712573	11565748	4960	0	-90	446	1961	Banner
A-701	1704880	11564539	4260	0	-90	231	1963	Anaconda
A-702	1705697	11564784	4345	0	-90	326	1963	Anaconda
A-703	1704732	11565070	4318	0	-90	428	1963	Anaconda
A-704	1705783	11565377	4402	0	-90	409	1963	Anaconda
A-705	1704653	11565368	4414	0	-90	616	1963	Anaconda
A-706	1704126	11565283	4298	0	-90	205	1963	Anaconda
A-707	1703975	11565733	4373	0	-90	307	1963	Anaconda
A-708	1703851	11566999	4255	0	-90	396	1963	Anaconda
A-709	1704180	11567345	4311	0	-90	404	1963	Anaconda
A-710	1704250	11565748	4474	0	-90	424	1963	Anaconda
A-711	1704747	11566118	4544	0	-90	626	1963	Anaconda
A-712	1704850	11565797	4511	0	-90	576	1963	Anaconda
A-713	1704676	11565561	4509	0	-90	681	1963	Anaconda
A-714	1704307	11566914	4434	0	-90	501	1963	Anaconda
A-715	1704889	11566293	4431	0	-90	643	1963	Anaconda
A-716	1704454	11568187	4160	0	-90	423	1963	Anaconda
A-717	1704738	11566098	4554	0	-90	689	1963	Anaconda
A-718	1716893	11551589	5206	0	-90	2110	1963	Anaconda
A-723	1717705	11559567	5156	0	-90	682	1963	Anaconda
A-728	1700802	11572613	3745	0	-90	1077	1963	Anaconda
A-735	1718467	11559699	5090	0	-90	1482	1963	Anaconda
A-760	1721044	11555641	4915	0	-90	1545	1963	Anaconda
A-802	1714614	11555812	5347	0	-90	1347	1963	Anaconda
A-803	1714855	11556563	5433	0	-90	1889	1963	Anaconda
A-805	1715287	11556118	5366	0	-90	1526	1963	Anaconda
G-01	1705513	11564673	4303	0	-90	285	1963	Banner
G-05	1705216	11564802	4277	0	-90	278	1963	Banner
G-07	1706250	11565324	4414	0	-90	353	1963	Banner
G-08	1706415	11565039	4356	0	-90	312	1963	Banner

Appendix C - Exploration Boreholes

Hole ID	UTM-E (ft)	UTM-N (ft)	Elevation (ft amsl)	Azimuth	Angle	Depth (ft bgs)	Year	Company
G-09	1712078	11565177	4863	0	-90	284	1963	Banner
G-10	1706552	11565320	4401	0	-90	282	1963	Banner
G-11	1711994	11565038	4818	0	-90	1400	1963	Banner
G-12	1706320	11564525	4317	0	-90	165	1963	Banner
G-13	1706054	11564506	4296	0	-90	189	1963	Banner
G-14	1705736	11564550	4315	0	-90	200	1963	Banner
G-15	1705430	11564546	4286	0	-90	206	1963	Banner
G-16	1705275	11564282	4255	0	-90	120	1963	Banner
G-17	1705589	11564279	4274	0	-90	75	1963	Banner
G-18	1705895	11564251	4303	0	-90	90	1963	Banner
G-19	1706288	11564264	4329	0	-90	105	1963	Banner
G-20	1705731	11565045	4330	0	-90	330	1963	Banner
G-22	1705429	11565078	4307	0	-90	1	1963	Banner
G-23	1712779	11565579	4973	0	-90	460	1963	Banner
G-24	1705592	11565355	4344	0	-90	1	1963	Banner
G-25	1712582	11565425	4981	0	-90	335	1963	Banner
G-26	1705446	11565614	4334	0	-90	1	1963	Banner
G-27	1705290	11565350	4306	0	-90	1	1963	Banner
G-28	1712841	11564546	4922	0	-90	501	1963	Banner
G-29	1705130	11565109	4298	0	-90	1	1963	Banner
G-30	1704953	11564819	4264	0	-90	1	1963	Banner
G-31	1712728	11564828	4924	0	-90	264	1963	Banner
G-32	1704628	11564830	4273	0	-90	300	1963	Banner
G-33	1714714	11566337	5441	0	-90	2028	1963	Banner (Anaconda)
G-34	1714560	11566123	5398	257	-45	1015	1963	Banner (Anaconda)
G-36	1714565	11566110	5397	0	-90	1257	1963	Banner (Anaconda)
G-38	1705458	11567303	4163	0	-90	540	1963	Banner
A-719	1718976	11553227	5105	0	-90	1965	1964	Anaconda
A-720	1718806	11554323	5042	0	-90	1772	1964	Anaconda
A-721	1714129	11548923	5630	0	-90	628	1964	Anaconda
A-722	1718494	11561688	5141	0	-90	945	1964	Anaconda
A-724	1718737	11563813	5374	0	-90	905	1964	Anaconda
A-727	1705263	11566320	4274	0	-90	40	1964	Anaconda
A-730	1705425	11564797	4294	0	-90	202	1964	Anaconda
A-731	1704611	11565140	4330	0	-90	108	1964	Anaconda
A-734	1716928	11561456	5362	0	-90	997	1964	Anaconda
A-801	1714852	11566122	5401	0	-90	2579	1964	Anaconda
A-804	1714609	11555353	5322	0	-90	1550	1964	Anaconda
A-806	1715763	11555356	5244	0	-90	2057	1964	Anaconda
A-807	1716609	11555384	5187	0	-90	1630	1964	Anaconda
A-808	1715009	11555829	5305	0	-90	1631	1964	Anaconda
A-809	1714682	11554082	5294	0	-90	1606	1964	Anaconda
A-811	1715830	11556985	5331	0	-90	1807	1964	Anaconda
A-812	1714600	11554513	5288	0	-90	1249	1964	Anaconda
A-813	1715400	11553802	5206	0	-90	1803	1964	Anaconda
A-814	1714201	11554190	5349	0	-90	1370	1964	Anaconda
A-815	1715815	11555782	5263	0	-90	1550	1964	Anaconda
A-816	1717406	11555383	5121	0	-90	1476	1964	Anaconda
A-817	1715814	11554987	5198	0	-90	1652	1964	Anaconda
A-818	1713402	11553405	5475	0	-90	1100	1964	Anaconda
A-819	1715015	11553388	5281	0	-90	1470	1964	Anaconda
A-820	1718005	11556288	5138	0	-90	1442	1964	Anaconda
A-821	1716197	11553805	5181	0	-90	1736	1964	Anaconda
A-822	1715363	11555387	5236	0	-90	1906	1964	Anaconda
A-823	1715826	11554598	5168	0	-90	1569	1964	Anaconda
A-824	1716634	11558574	5505	0	-90	1456	1964	Anaconda
A-825	1717208	11554373	5099	0	-90	1891	1964	Anaconda
A-826	1716599	11553780	5142	0	-90	1997	1964	Anaconda
A-827	1715028	11554998	5274	0	-90	1649	1964	Anaconda
A-828	1716203	11554184	5144	0	-90	1976	1964	Anaconda
A-829	1716227	11554991	5244	0	-90	1742	1964	Anaconda
A-830	1716183	11553372	5187	0	-90	1529	1964	Anaconda
A-725	1717439	11563438	5265	0	-90	916	1965	Anaconda
A-726	1714292	11565652	4974	0	-90	394	1965	Anaconda
A-732	1704705	11564550	4242	0	-90	142	1965	Anaconda
A-733	1701283	11570692	3839	0	-90	507	1965	Anaconda
A-736	1716509	11563385	5410	0	-90	266	1965	Anaconda
A-737	1719016	11557181	5044	0	-90	300	1965	Anaconda
A-738	1720668	11558558	4956	0	-90	129	1965	Anaconda
A-739	1716856	11558257	5541	0	-90	49	1965	Anaconda
A-740	1716487	11559411	5304	0	-90	397	1965	Anaconda
A-741	1716902	11559635	5241	0	-90	165	1965	Anaconda
A-742	1716846	11558270	5542	0	-90	104	1965	Anaconda
A-744	1714986	11557001	5517	0	-90	1043	1965	Anaconda
A-745	1719218	11556020	5028	0	-90	136	1965	Anaconda
A-746	1718203	11554469	5061	0	-90	122	1965	Anaconda
A-747	1712978	11553793	5569	0	-90	232	1965	Anaconda
A-748	1711814	11553487	6018	0	-90	446	1965	Anaconda
A-749	1714148	11563324	5082	0	-90	102	1965	Anaconda

Appendix C - Exploration Boreholes

Hole ID	UTM-E (ft)	UTM-N (ft)	Elevation (ft amsl)	Azimuth	Angle	Depth (ft bgs)	Year	Company
A-750	1713929	11563123	5120	0	-90	122	1965	Anaconda
A-751	1713741	11564631	5009	0	-90	134	1965	Anaconda
A-752	1713877	11566975	4811	0	-90	353	1965	Anaconda
A-753	1713947	11562240	5479	0	-90	98	1965	Anaconda
A-754	1710637	11567026	4666	0	-90	513	1965	Anaconda
A-755	1706812	11567471	4180	0	-90	92	1965	Anaconda
A-756	1706335	11567688	4126	0	-90	389	1965	Anaconda
A-757	1706261	11565672	4445	0	-90	389	1965	Anaconda
A-758	1701441	11566367	4035	0	-90	531	1965	Anaconda
A-759	1705271	11566335	4268	0	-90	238	1965	Anaconda
A-831	1715391	11554591	5224	0	-90	1593	1965	Anaconda
A-832	1718388	11552171	5095	0	-90	1591	1965	Anaconda
A-833	1715411	11554958	5208	0	-90	1750	1965	Anaconda
A-834	1715386	11554202	5233	0	-90	1847	1965	Anaconda
A-835	1714976	11555373	5266	0	-90	1726	1965	Anaconda
A-836	1715021	11554559	5254	0	-90	1952	1965	Anaconda
A-837	1716229	11554575	5161	0	-90	1627	1965	Anaconda
A-838	1714647	11555033	5319	0	-90	1544	1965	Anaconda
A-839	1715389	11552975	5234	0	-90	1511	1965	Anaconda
A-840	1716208	11555379	5254	0	-90	1678	1965	Anaconda
A-841	1715810	11554191	5188	0	-90	1688	1965	Anaconda
A-842	1715395	11553384	5238	0	-90	1238	1965	Anaconda
A-843	1715417	11555778	5301	0	-90	1704	1965	Anaconda
A-844	1714227	11554608	5352	0	-90	1119	1965	Anaconda
A-845	1715008	11554191	5264	0	-90	1873	1965	Anaconda
A-846	1714602	11553793	5311	0	-90	1606	1965	Anaconda
A-847	1716612	11554187	5138	0	-90	1705	1965	Anaconda
A-848	1715809	11553785	5227	0	-90	1672	1965	Anaconda
A-849	1715000	11553698	5252	0	-90	1580	1965	Anaconda
A-850	1716619	11554573	5121	0	-90	1640	1965	Anaconda
A-851	1716602	11554977	5170	0	-90	1674	1965	Anaconda
A-852	1716221	11555771	5239	0	-90	1646	1965	Anaconda
A-853	1714627	11553425	5336	0	-90	1045	1965	Anaconda
A-854	1715793	11553375	5234	0	-90	1323	1965	Anaconda
A-855	1715826	11556182	5305	0	-90	1592	1965	Anaconda
A-856	1714320	11555007	5359	0	-90	1173	1965	Anaconda
G-03	1701283	11570692	3839	0	-90	400	1965	Anaconda
A-743	1713978	11556602	5576	0	-90	170	1966	Anaconda
A-762	1720611	11553796	5030	0	-90	772	1966	Anaconda
A-763	1716645	11561752	5426	0	-90	1291	1966	Anaconda
A-764	1702360	11565416	4110	0	-90	245	1966	Anaconda
A-765	1702413	11566275	4075	0	-90	237	1966	Anaconda
A-766	1702251	11570697	3845	0	-90	95	1966	Anaconda
A-767	1702463	11572194	3765	0	-90	179	1966	Anaconda
A-768	1701071	11573056	3710	0	-90	183	1966	Anaconda
A-857	1715418	11556593	5432	0	-90	1633	1966	Anaconda
A-858	1714205	11553801	5353	0	-90	1440	1966	Anaconda
A-859	1713817	11553776	5378	0	-90	789	1966	Anaconda
A-860	1716622	11556584	5309	0	-90	1545	1966	Anaconda
A-861	1715689	11554589	5179	270	-45	1497	1966	Anaconda
A-862	1714196	11553403	5412	0	-90	1028	1966	Anaconda
A-863	1714992	11551793	5319	0	-90	672	1966	Anaconda
A-864	1713814	11554199	5412	0	-90	791	1966	Anaconda
A-865	1716746	11554179	5139	270	-45	2114	1966	Anaconda
A-866	1714389	11554007	5319	0	-90	1384	1966	Anaconda
A-867	1714415	11554393	5307	0	-90	1415	1966	Anaconda
A-868	1714419	11554778	5310	0	-90	1168	1966	Anaconda
A-869	1714822	11555193	5278	0	-90	1562	1966	Anaconda
A-870	1716332	11555382	5242	271	-46	2180	1966	Anaconda
A-769	1715874	11559229	5444	0	-90	63	1967	Anaconda
A-770	1716164	11558632	5445	0	-90	34	1967	Anaconda
A-771	1714769	11564507	5236	0	-90	60	1967	Anaconda
A-772	1704648	11567678	4234	0	-90	231	1967	Anaconda
A-773	1711309	11555534	5584	0	-90	439	1967	Anaconda
A-774	1700614	11566310	4020	0	-90	419	1967	Anaconda
A-775	1703026	11565390	4118	0	-90	420	1967	Anaconda
A-776	1701656	11569718	3897	0	-90	62	1967	Anaconda
A-777	1701219	11572257	3760	0	-90	348	1967	Anaconda
A-778	1701762	11573061	3710	0	-90	360	1967	Anaconda
A-871	1714018	11554418	5355	0	-90	556	1967	Anaconda
A-872	1714400	11553597	5359	0	-90	1255	1967	Anaconda
A-873	1715261	11554192	5243	270	-47	1392	1967	Anaconda
A-874	1714003	11554000	5369	0	-90	798	1967	Anaconda
A-875	1714014	11553605	5387	0	-90	796	1967	Anaconda
A-876	1714864	11553920	5287	0	-90	1535	1967	Anaconda
A-877	1714830	11554596	5236	271	-45	876	1967	Anaconda
A-878	1715020	11554992	5274	271	-45	1190	1967	Anaconda
A-729	1702483	11567424	4026	0	-90	1265	1968	Anaconda
A-761	1719307	11550011	5173	0	-90	1235	1968	Anaconda

Appendix C - Exploration Boreholes

Hole ID	UTM-E (ft)	UTM-N (ft)	Elevation (ft amsl)	Azimuth	Angle	Depth (ft bgs)	Year	Company
A-780	1713403	11555120	5515	0	-90	500	1968	Anaconda
A-781	1717359	11561736	5285	0	-90	848	1968	Anaconda
A-782	1716006	11564301	5595	0	-90	32	1968	Anaconda
A-783	1718631	11566559	4795	0	-90	151	1968	Anaconda
A-784	1715346	11562688	5536	0	-90	75	1968	Anaconda
A-785	1710994	11556676	5370	0	-90	505	1968	Anaconda
A-786	1716417	11569721	4790	0	-90	360	1968	Anaconda
A-787	1715711	11568332	4990	0	-90	754	1968	Anaconda
A-788	1706708	11566126	4689	0	-90	17	1968	Anaconda
A-789	1706733	11566082	4700	0	-90	33	1968	Anaconda
A-790	1711007	11563455	4665	0	-90	1	1968	Anaconda
A-879	1715593	11555199	5212	0	-90	950	1968	Anaconda
A-880	1714829	11553630	5301	0	-90	134	1968	Anaconda
A-791	1701662	11569760	3940	0	-90	430	1969	Anaconda
A-792	1713761	11564613	5005	0	-90	765	1969	Anaconda
A-793	1705052	11567380	4311	0	-90	280	1969	Anaconda
A-794	1705310	11564120	4276	0	-90	120	1969	Anaconda
A-795	1705966	11566991	4225	0	-90	125	1969	Anaconda
A-796	1703529	11565857	4237	0	-90	112	1969	Anaconda
A-797	1705210	11567138	4282	0	-90	240	1969	Anaconda
A-798	1704003	11567737	4277	0	-90	170	1969	Anaconda
A-799	1704373	11568047	4192	0	-90	169	1969	Anaconda
A-810	1716031	11563471	5620	0	-90	1308	1969	Anaconda
A-881	1704839	11568794	4045	0	-90	97	1969	Anaconda
A-882	1717091	11555795	5173	0	-90	222	1969	Anaconda
A-883	1712883	11566106	4851	0	-90	704	1969	Anaconda
A-884	1713046	11555249	5656	0	-90	155	1969	Anaconda
A-888	1712386	11569370	4870	0	-90	1023	1969	Anaconda
AH-16	1708907	11569954	4141	0	-90	100	1969	Anaconda
AH-17	1708026	11570102	4082	0	-90	100	1969	Anaconda
AH-20	1703576	11572335	3798	0	-90	50	1969	Anaconda
1400	1723271	11556289	4875	0	-90	16	1970	Anamax
1401	1721956	11550397	4930	0	-90	145	1970	Anamax
1403	1722590	11554561	4895	0	-90	80	1970	Anamax
A-885	1715752	11552986	5162	0	-90	690	1970	Anaconda
A-886	1717820	11555158	5087	0	-90	1124	1970	Anaconda
A-887	1716031	11557488	5437	0	-90	133	1970	Anaconda
A-889	1713155	11553450	5519	175	-30	115	1970	Anaconda
A-890	1712853	11553654	5614	0	-90	267	1970	Anaconda
A-891	1714983	11554397	5261	271	-45	1112	1970	Anaconda
A-892	1713160	11565135	5072	0	-90	699	1970	Anaconda
A-893	1705197	11569156	3997	0	-90	39	1970	Anaconda
AH-13A	1709641	11555847	5186	0	-90	327	1970	Anaconda
AH-18	1711291	11573373	4335	0	-90	809	1970	Anaconda
AH-19	1706042	11570918	3911	0	-90	300	1970	Anaconda
AH-21	1709227	11576499	4062	0	-90	121	1970	Anaconda
1455	1729311	11563708	4552	0	-90	1000	1971	Anamax
A-894	1704925	11566669	4395	0	-90	553	1971	Anaconda
A-895	1708135	11565527	4460	0	-90	227	1971	Anaconda
A-896	1711727	11562938	4830	0	-90	28	1971	Anaconda
A-897	1712126	11549058	5680	0	-90	150	1971	Anaconda
A-898	1720486	11556781	4968	0	-90	37	1971	Anaconda
A-899	1722249	11558977	4800	0	-90	3200	1971	Anaconda
1428	1736127	11557514	5120	0	-90	807	1972	Anamax
1456	1717018	11557498	5330	0	-90	95	1972	Anamax
1458	1717886	11556998	5175	0	-90	204	1972	Anamax
1460	1718314	11556739	5134	0	-90	231	1972	Anamax
1461	1713155	11553636	5564	0	-90	210	1972	Anamax
1462	1715714	11552698	5224	0	-90	1050	1972	Anamax
1465	1717731	11560128	5150	0	-90	360	1972	Anamax
AH-23	1713271	11573824	4254	0	-90	990	1972	Anaconda
AH-24	1713331	11573728	4265	0	-90	209	1972	Anaconda
1402	1720880	11549451	4980	0	-90	16	1973	Anamax
1476	1719675	11552700	4997	0	-90	1988	1973	Anamax
1477	1704798	11566708	4455	0	-90	590	1973	Anamax
1483	1715571	11555231	5216	270	-50	1578	1973	Anamax
1485	1715239	11554749	5200	270	-50	1318	1974	Anamax
1502	1714961	11555393	5268	271	-56	1089	1974	Anamax
1503	1713646	11553782	5392	0	90	553	1974	Anamax
1504	1715813	11554985	5198	270	-47	1802	1974	Anamax
1505	1713817	11553392	5443	0	-90	425	1974	Anamax
1506	1714356	11553798	5337	271	-43	837	1974	Anamax
1507	1714617	11554196	5296	0	-90	1467	1974	Anamax
1508	1714952	11553793	5264	271	-46	1355	1974	Anamax
1509	1715804	11553780	5228	271	-47	1963	1974	Anamax
1510	1713634	11553601	5419	0	-90	784	1974	Anamax
1511	1713446	11553794	5427	0	-90	404	1974	Anamax
1526	1736425	11544081	4965	0	-90	120	1974	Anamax
1529	1715806	11555786	5264	269	-45	1834	1974	Anamax

Appendix C - Exploration Boreholes

Hole ID	UTM-E (ft)	UTM-N (ft)	Elevation (ft amsl)	Azimuth	Angle	Depth (ft bgs)	Year	Company
1527	1732994	11544866	5035	0	-90	120	1975	Anamax
1528	1716068	11554186	5160	270	-46	2267	1975	Anamax
1530	1715721	11556087	5300	271	-41	1549	1975	Anamax
1531	1714991	11561615	5605	34	-45	645	1975	Anamax
1532	1709192	11550463	5685	0	-90	502	1975	Anamax
1533	1704893	11565857	4485	0	-90	849	1975	Anamax
1534	1709750	11555868	5186	0	-90	500	1975	Anamax
1535	1716945	11555384	5159	272	-43	2370	1975	Anamax
1536	1711539	11574240	4140	0	-90	1000	1975	Anamax
1537	1721953	11550341	4930	0	-90	3475	1975	Anamax
1538	1716598	11553790	5143	271	-49	2400	1975	Anamax
1539	1711539	11574184	4192	0	-90	600	1975	Anamax
1542	1726347	11557401	4675	0	-90	500	1975	Anamax
1543	1723687	11558602	4740	0	-90	500	1975	Anamax
1544	1725526	11564297	4860	0	-90	2664	1975	Anamax
1546	1716825	11545997	5278	0	-90	1140	1975	Anamax
1547	1708385	11550211	5720	0	-90	475	1975	Anamax
1548	1714445	11568773	4690	0	-90	705	1975	Anamax
1549	1709490	11556179	5140	0	-90	400	1975	Anamax
1550	1705123	11565833	4377	0	-90	692	1975	Anamax
1551	1714973	11561623	5605	230	-45	650	1976	Anamax
1552	1716642	11554576	5121	272	-45	2541	1976	Anamax
1553	1716589	11554982	5171	272	-50	2407	1976	Anamax
1554	1714922	11572609	4220	0	-90	920	1976	Anamax
1555	1721651	11545843	5325	0	-90	2594	1976	Anamax
1556	1726665	11553330	4840	0	-90	2923	1976	Anamax
1557	1718621	11548318	5090	0	-90	1146	1976	Anamax
1558	1718346	11545914	5110	0	-90	300	1976	Anamax
1559	1713127	11549508	5635	0	-90	600	1976	Anamax
1560	1716871	11545981	5278	0	-90	275	1976	Anamax
1562	1715604	11548902	5440	0	-90	210	1976	Anamax
1563	1709908	11561251	4634	0	-90	1	1976	Anamax
1561	1713749	11554784	5431	271	-41	778	1977	Anamax
1564	1715000	11561621	5605	341	-45	657	1977	Anamax
1565	1715001	11561619	5605	342	-69	474	1977	Anamax
1566	1717612	11559704	5144	0	-90	139	1977	Anamax
1567	1717803	11559818	5126	0	-90	194	1977	Anamax
1568	1703636	11557218	5210	0	-90	213	1977	Anamax
1569	1716171	11561637	5598	271	-25	717	1977	Anamax
1570	1715378	11561538	5612	0	-85	401	1977	Anamax
1571	1715378	11561543	5612	0	-45	679	1977	Anamax
1572	1716184	11561641	5598	270	-80	617	1977	Anamax
1573	1715378	11561533	5612	180	-70	425	1977	Anamax
1574	1716727	11562016	5428	305	-25	1061	1977	Anamax
1575	1715168	11561539	5614	180	-70	297	1977	Anamax
1576	1715168	11561524	5613	0	-70	536	1977	Anamax
1577	1716318	11548288	5380	0	-90	190	1977	Anamax
1579	1709161	11576487	4045	0	-90	825	1977	Anamax
1578	1724641	11551969	5013	0	-90	1050	1978	Anamax
1580	1714631	11554197	5294	270	-59	958	1978	Anamax
1581	1735949	11565449	4372	0	-90	1	1978	Anamax
1582	1709827	11556376	5020	0	-90	825	1978	Anamax
1583	1714293	11554607	5324	270	-45	450	1978	Anamax
1584	1721835	11550290	4735	0	-90	1300	1978	Anamax
1585	1716169	11561637	5599	270	-45	906	1978	Anamax
1588	1703636	11557218	4470	0	-90	550	1979	Anamax
1589	1703372	11554327	4710	0	-90	550	1979	Anamax
1590	1714392	11554388	5309	271	-65	652	1979	Anamax
1591	1734490	11561529	4500	0	-90	200	1979	Anamax
1593	1714407	11554800	5311	271	-65	545	1979	Anamax
1594	1714404	11554800	5311	270	-40	432	1979	Anamax
1595	1717195	11571855	4410	0	-90	700	1979	Anamax
1596	1714808	11555193	5279	270	-65	927	1979	Anamax
1597	1714628	11561464	5628	0	-35	694	1979	Anamax
1598	1714628	11561459	5628	0	-63	471	1979	Anamax
1599	1715136	11562574	5551	0	-90	763	1979	Anamax
1900	1711116	11561525	4895	0	-90	378	1979	Anamax
1901	1712288	11575586	4040	0	-90	450	1980	Anamax
1902	1735273	11562824	4495	0	-90	292	1980	Anamax
1903	1733635	11555779	4725	0	-90	100	1980	Anamax
1904	1723796	11546709	5316	0	-90	860	1980	Anamax
1905	1704647	11552435	4830	0	-90	140	1980	Anamax
1906	1704713	11566300	4540	0	-90	741	1980	Anamax
1907	1705405	11552295	4930	0	-90	560	1980	Anamax
1908	1715759	11562349	5604	209	-45	767	1980	Anamax
1909	1715759	11562349	5604	104	-45	808	1980	Anamax
1910	1715694	11555543	5264	271	49	1769	1980	Anamax
1911	1720871	11571939	4635	0	-90	2884	1980	Anamax
1912	1714634	11553426	5335	271	-43	528	1980	Anamax

Appendix C - Exploration Boreholes

Hole ID	UTM-E (ft)	UTM-N (ft)	Elevation (ft amsl)	Azimuth	Angle	Depth (ft bgs)	Year	Company
1913	1714810	11553630	5302	271	-45	504	1980	Anamax
1914	1715379	11553801	5207	271	-43	579	1980	Anamax
1915	1714392	11553598	5359	269	-43	557	1980	Anamax
1916	1715371	11553802	5208	271	-49	1835	1980	Anamax
1917	1713994	11553603	5389	271	-45	525	1980	Anamax
1918	1714196	11553403	5412	270	-45	551	1980	Anamax
1919	1714642	11552927	5554	273	-46	578	1980	Anamax
1920	1715396	11553993	5242	269	-40	1609	1980	Anamax
1921	1714667	11553795	5295	274	-39	1161	1981	Anamax
1925	1714977	11555601	5279	272	-54	983	1981	Anamax
1926	1714190	11554187	5349	272	-68	888	1981	Anamax
1933	1715468	11554396	5229	270	-44	1680	1982	Anamax
1941	1715784	11554782	5157	272	-45	1831	1983	Anamax
AH-1	1715489	11554389	5228	0	-90	1701	1988	Asarco
AH-2	1715397	11555172	5228	0	-90	1422	1989	Asarco
AH-3	1715194	11555574	5267	0	-90	1230	1989	Asarco
AH-4	1714936	11554816	5275	0	-90	1450	1989	Asarco
AH-5	1733938	11555823	4482	0	-90	1399	1989	Asarco
AH-6	1715087	11553957	5269	0	-90	1382	1990	Asarco
AH-7	1715744	11554060	5205	0	-90	1200	1990	Asarco
AH-8	1714668	11555665	5318	0	-90	1400	1990	Asarco
AH-11	1712912	11550878	5722	0	-90	200	1991	Asarco
AH-9	1716525	11552019	5174	0	-90	700	1991	Asarco
AH-10	1717107	11553884	5106	0	-90	2500	1992	Asarco
AH-12	1716095	11552845	5184	0	-90	1510	1992	Asarco
AR-2000	1715164	11554350	5248	0	-90	1979	2005	Augusta
AR-2001	1716083	11554601	5147	132	-89	1600	2005	Augusta
AR-2002	1716040	11554239	5180	0	-90	1658	2005	Augusta
AR-2003	1716061	11554407	5180	0	-90	1758	2005	Augusta
AR-2004	1714986	11554417	5260	0	-90	1980	2005	Augusta
AR-2005	1716443	11554339	5168	95	-90	1995	2005	Augusta
AR-2006	1715265	11554940	5248	0	-90	1759	2005	Augusta
AR-2007	1715240	11554782	5205	0	-90	1979	2005	Augusta
AR-2008	1715253	11554936	5249	0	-80	1972	2005	Augusta
AR-2009	1716443	11554319	5169	186	-74	1955	2005	Augusta
AR-2010	1716470	11554568	5146	0	-90	1896	2005	Augusta
AR-2011	1716446	11554922	5191	0	-90	1997	2005	Augusta
AR-2012	1716470	11554567	5146	0	-80	1809	2005	Augusta
AR-2013	1716549	11555343	5205	0	-90	1600	2005	Augusta
AR-2014	1716233	11554991	5239	276	-80	1650	2005	Augusta
AR-2015	1715470	11554403	5230	0	-90	2209	2006	Augusta
AR-2016	1715813	11554403	5205	0	-90	1865	2006	Augusta
AR-2017	1715692	11555544	5264	0	-90	1988	2006	Augusta
AR-2018	1714632	11554200	5295	0	-90	727	2006	Augusta
AR-2019	1715653	11554587	5181	0	-90	2020	2006	Augusta
AR-2020	1715625	11554782	5209	0	-90	1833	2006	Augusta
AR-2021	1716412	11555584	5216	0	-90	2078	2006	Augusta
AR-2022	1716779	11554471	5125	0	-90	2000	2006	Augusta
AR-2023	1714565	11555245	5325	270	-55	1758	2006	Augusta
AR-2024	1715998	11555552	5239	0	-90	2013	2006	Augusta
AR-2025	1716652	11555714	5202	0	-90	1990	2006	Augusta
AR-2026	1715185	11553822	5253	0	-90	2029	2006	Augusta
AR-2027	1714569	11554709	5295	269	-50	1805	2006	Augusta
AR-2028B	1716005	11555163	5247	0	-90	2003	2006	Augusta
AR-2029	1715125	11555197	5222	308	-89	2005	2006	Augusta
AR-2030	1715197	11553987	5263	0	-90	1976	2006	Augusta
AR-2031	1715244	11553606	5236	0	-90	1999	2006	Augusta
AR-2032	1715584	11555219	5215	0	-90	1988	2006	Augusta
AR-2033	1714365	11553598	5360	270	-50	1557	2006	Augusta
AR-2034	1715545	11553614	5307	0	-90	2099	2006	Augusta
AR-2035	1715464	11554009	5232	0	-90	1925	2006	Augusta
AR-2036	1716211	11556012	5270	0	-90	1908	2006	Augusta
AR-2037	1715237	11555737	5271	0	-90	1998	2006	Augusta
AR-2038	1715751	11554034	5201	336	-90	1797	2006	Augusta
AR-2039	1715960	11553722	5195	0	-90	2169	2006	Augusta
AR-2040	1716115	11553974	5194	0	-90	2198	2006	Augusta
AR-2041	1715557	11555814	5326	0	-90	1707	2006	Augusta
AR-2042	1714619	11555728	5336	214	-90	2074	2006	Augusta
AR-2043	1716028	11554855	5180	0	-90	2198	2006	Augusta
AR-2044	1715115	11555196	5222	270	-50	1627	2006	Augusta
AR-2045	1714651	11557208	5660	0	-90	809	2006	Augusta
AR-2046B	1714822	11556909	5527	331	-51	657	2006	Augusta
AR-2047	1715597	11554360	5221	65	-50	813	2006	Augusta
AR-2048B	1717307	11555129	5157	65	-50	1750	2006	Augusta
AR-2049	1715751	11556353	5345	0	-50	1052	2006	Augusta
AR-2050	1716873	11553670	5113	0	-90	1318	2006	Augusta
AR-2051	1715473	11554408	5229	90	-53	2024	2006	Augusta
AR-2052	1715229	11553598	5236	180	-55	1587	2006	Augusta
AR-2053	1715239	11554788	5206	0	-90	324	2006	Augusta

Appendix C - Exploration Boreholes

Hole ID	UTM-E (ft)	UTM-N (ft)	Elevation (ft amsl)	Azimuth	Angle	Depth (ft bgs)	Year	Company
AR-2054	1715337	11556640	5438	350	-50	850	2006	Augusta
AR-2055	1715467	11560158	5444	270	-50	1496	2008	Augusta
AR-2056	1713954	11556594	5582	0	-90	842	2008	Augusta
AR-2057	1714272	11556608	5519	0	-90	184	2008	Augusta
AR-2058	1714607	11556415	5453	270	-50	876	2008	Augusta
AR-2059	1714677	11555779	5331	270	-45	1055	2008	Augusta
AR-2060	1714814	11556912	5527	310	-45	1213	2008	Augusta
AR-2061	1715460	11560152	5446	210	-45	1391	2008	Augusta
AR-2062	1715570	11556360	5340	0	-90	966	2008	Augusta
AR-2062A	1715576	11556357	5339	0	-90	102	2008	Augusta
AR-2063	1715115	11556572	5404	0	-90	1264	2008	Augusta
AR-2064	1715100	11556226	5374	0	-90	947	2008	Augusta
AR-2065	1718747	11558387	5077	0	-90	1462	2008	Augusta
AR-2066	1714125	11556334	5643	0	-90	904	2008	Augusta
AR-2067	1713941	11556320	5699	0	-90	877	2008	Augusta
AR-2068	1715312	11556363	5354	0	-90	567	2008	Augusta
AR-2069	1715424	11556598	5432	0	-90	537	2008	Augusta
AR-2070	1714847	11556265	5432	0	-90	457	2008	Augusta
AR-2071	1715073	11556058	5384	0	-90	500	2008	Augusta
AR-2072	1714061	11556115	5583	0	-90	916	2008	Augusta
AR-2073	1713802	11556178	5734	0	-90	967	2008	Augusta
HC-1A	1712647	11548956	5650	0	-90	440	2008	Augusta
HC-1B	1712650	11548926	5650	0	-90	1000	2008	Augusta
HC-2A	1720921	11548313	5000	0	-90	740	2008	Augusta
HC-2B	1720888	11548324	5001	0	-90	1000	2008	Augusta
HC-3A	1721810	11555619	4843	0	-90	53	2008	Augusta
HC-3B	1721831	11555644	4842	0	-90	94	2008	Augusta
HC-4A	1721848	11555650	4841	0	-90	1000	2008	Augusta
HC-4B	1724230	11561804	4973	0	-90	640	2008	Augusta
HC-5A	1724209	11561783	4974	0	-90	1020	2008	Augusta
HC-5B	1718130	11560014	5137	0	-90	540	2008	Augusta
PC-1	1717263	11556858	5275	0	-90	1021	2008	Augusta
PC-2	1717573	11555449	5123	0	-90	1506	2008	Augusta
PC-3	1716822	11553690	5119	0	-90	1365	2008	Augusta
PC-4	1715879	11551787	5233	0	-90	1510	2008	Augusta
PC-5	1718324	11556597	5144	0	-90	2010	2008	Augusta
PC-6	1716516	11557841	5357	0	-90	2010	2008	Augusta
PC-7	1714783	11556550	5435	0	-90	2010	2008	Augusta
PC-8	1713673	11553748	5390	0	-90	2220	2008	Augusta
PZ-5	1718368	11556555	5145	0	-90	1900	2008	Augusta
PZ-7	1714834	11556559	5437	0	-90	1900	2008	Augusta
PZ-8	1713610	11553636	5419	0	-90	2220	2008	Augusta
RP-2A	1730511	11560043	4540	0	-90	30	2008	Augusta
RP-2B	1730510	11560074	4540	0	-90	200	2008	Augusta
RP-2C	1730517	11560106	4539	0	-90	520	2008	Augusta
RP-3A	1726798	11553917	4821	0	-90	440	2008	Augusta
RP-3B	1726812	11553946	4822	0	-90	600	2008	Augusta
RP-4A	1724035	11551415	5021	0	-90	550	2008	Augusta
RP-4B	1724028	11551385	5021	0	-90	1000	2008	Augusta
RP-5A	1717112	11545177	5230	0	-90	600	2008	Augusta
RP-6	1734904	11566585	4461	0	-90	380	2008	Augusta
RP-7	1737073	11570174	4286	0	-90	262	2008	Augusta
RP-8	1740731	11562055	4376	0	-90	262	2008	Augusta
RP-9	1736270	11554885	4644	0	-90	262	2008	Augusta
AR-2074	1717754	11555307	5105	0	-90	3498	2011	Augusta
AR-2075	1715373	11554573	5226	0	-90	1598	2011	Augusta
AR-2076	1714673	11554097	5293	0	-90	1130	2011	Augusta
AR-2077	1716446	11554558	5146	0	-90	1320	2011	Augusta
AR-2078	1715792	11554189	5190	0	-90	1350	2011	Augusta
AR-2079	1715849	11554567	5160	0	-90	1490	2011	Augusta
AR-2081	1717980	11555869	5110	0	-90	754	2011	Augusta
AR-2082	1714599	11553805	5312	0	-90	810	2011	Augusta
AR-2080	1718202	11554958	5076	0	-90	1988	2012	Augusta
AR-2083	1717175	11555268	5153	0	-90	1523	2012	Augusta
AR-2084	1716811	11555105	5169	0	-90	1540	2012	Augusta
AR-2085	1716600	11555944	5212	0	-90	1648	2012	Augusta
HC-06	1718147	11559987	5137	0	-90	1510	2012	Augusta
HB-2086A	1715276	11556218	5351	0	-90	2566	2014	Hudbay
HB-2087	1716543	11556225	5240	0	-90	1944	2014	Hudbay
HB-2088	1715018	11555944	5351	0	-90	2341	2014	Hudbay
HB-2089	1716987	11555638	5167	0	-90	1656	2014	Hudbay
HB-2090	1715863	11555042	5206	0	-90	3248	2014	Hudbay
HB-2091A	1716382	11555245	5221	0	-90	2507	2014	Hudbay
HB-2092	1716953	11555376	5158	0	-90	1828	2014	Hudbay
HB-2093	1715430	11554772	5218	0	-90	2225	2014	Hudbay
HB-2094	1715821	11554680	5181	0	-90	2424	2014	Hudbay
HB-2095	1716076	11554862	5180	0	-90	3314	2014	Hudbay
HB-2096	1716105	11554445	5174	0	-90	2507	2014	Hudbay
HB-2097	1716856	11554092	5129	0	-90	2243	2014	Hudbay

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Hole ID	UTM-E (ft)	UTM-N (ft)	Elevation (ft amsl)	Azimuth	Angle	Depth (ft bgs)	Year	Company
HB-2098	1716375	11553529	5172	0	-90	2211	2014	Hudbay
HB-2099	1716734	11553633	5104	0	-90	2303	2014	Hudbay
HB-2100	1716833	11553795	5125	0	-90	2312	2014	Hudbay
HB-2101	1715620	11553378	5271	0	-90	2261	2014	Hudbay
HB-2102	1715993	11553377	5200	0	-90	2232	2014	Hudbay
HB-2103	1715901	11556695	5323	0	-90	2547	2014	Hudbay
HB-2104	1715578	11556391	5357	0	-90	2341	2014	Hudbay
HB-2105	1715734	11556069	5298	0	-90	2759	2014	Hudbay
HB-2106	1715883	11556365	5318	0	-90	2304	2014	Hudbay
HB-2107	1716022	11556108	5292	0	-90	2008	2014	Hudbay
HB-2108	1716314	11556336	5256	0	-90	2152	2014	Hudbay
HB-2109	1716494	11556085	5228	0	-90	1923	2014	Hudbay
HB-2110	1717379	11555672	5161	0	-90	1517	2014	Hudbay
HB-2111	1715119	11554605	5241	0	-90	2367	2014	Hudbay
HB-2112	1717039	11554821	5127	0	-90	1863	2014	Hudbay
HB-2113	1715364	11554270	5231	0	-90	2386	2014	Hudbay
HB-2114	1715691	11554130	5208	0	-90	2527	2014	Hudbay
HB-2115	1715717	11553718	5255	0	-90	2357	2014	Hudbay
HB-2116A	1714935	11553281	5328	0	-90	1438	2014	Hudbay
HB-2117	1716349	11556724	5339	0	-90	1600	2014	Hudbay
HB-2118A	1715195	11556429	5369	0	-90	2368	2014	Hudbay
HB-2119	1717513	11555429	5121	0	-90	220	2014	Hudbay
HB-2119A	1717513	11555429	5121	0	-90	1413	2014	Hudbay
HB-2120	1714770	11555034	5296	0	-90	2055	2014	Hudbay
HB-2121	1715320	11555247	5239	0	-90	2337	2014	Hudbay
HB-2122	1717478	11555026	5134	0	-90	1305	2014	Hudbay
HB-2123	1714780	11554740	5279	0	-90	2027	2014	Hudbay
HB-2124	1714722	11554433	5284	0	-90	2011	2014	Hudbay
HB-2125	1715952	11553925	5204	0	-90	2444	2014	Hudbay
HB-2126	1714815	11553681	5297	0	-90	1998	2014	Hudbay
HB-2127	1714656	11553276	5396	0	-90	1527	2014	Hudbay
HB-2128	1714560	11555726	5340	270	-65	1207	2014	Hudbay
HB-2129A	1715587	11552854	5191	0	-90	1800	2015	Hudbay
HB-2130	1714367	11553209	5491	266	-68	2000	2015	Hudbay
HB-2131	1714369	11553209	5491	0	-90	1100	2015	Hudbay
HB-2132	1714558	11553189	5466	0	-90	1200	2015	Hudbay
HB-2133	1714790	11553238	5397	0	-90	1300	2015	Hudbay
HB-2134	1715130	11553243	5276	0	-90	925	2015	Hudbay
HB-2135	1715343	11553244	5207	0	-90	1950	2015	Hudbay
HB-2136	1715729	11553132	5189	0	-90	2273	2015	Hudbay
HB-2137	1714057	11553456	5414	0	-90	1000	2015	Hudbay
HB-2138	1714292	11553504	5384	0	-90	1150	2015	Hudbay
HB-2139	1714456	11553457	5385	0	-90	1200	2015	Hudbay
HB-2140	1714459	11553457	5386	90	-68	1100	2015	Hudbay
HB-2141	1715429	11553459	5269	270	-64	1000	2015	Hudbay
HB-2142	1715435	11553452	5269	15	-85	1000	2015	Hudbay
HB-2143	1714256	11553649	5357	0	-90	1300	2015	Hudbay
HB-2144	1714616	11553600	5341	0	-90	900	2015	Hudbay
HB-2145	1715382	11553640	5257	270	-59	1400	2015	Hudbay
HB-2146	1714391	11553748	5338	0	-90	1400	2015	Hudbay
HB-2148	1713645	11553957	5441	294	-61	1069	2015	Hudbay
HB-2149	1714205	11553998	5337	0	-90	1295	2015	Hudbay
HB-2150	1714256	11553910	5321	0	-90	1500	2015	Hudbay
HB-2151	1715709	11553707	5255	288	-77	2200	2015	Hudbay
HB-2152	1716024	11554250	5179	283	-60	2710	2015	Hudbay
HB-2153	1714780	11554695	5275	270	-69	1459	2015	Hudbay
HB-2154	1714027	11554975	5465	278	-61	1178	2015	Hudbay
HB-2155	1714934	11554894	5277	270	-66	1848	2015	Hudbay
HB-2156	1715850	11554856	5170	270	-85	1500	2015	Hudbay
HB-2157	1714426	11555111	5341	270	-65	1600	2015	Hudbay
HB-2158	1714710	11555289	5290	270	-65	1477	2015	Hudbay
HB-2159	1715845	11555083	5209	270	-85	1600	2015	Hudbay
HB-2160	1715559	11555285	5222	0	-90	1000	2015	Hudbay
HB-2161	1715805	11555246	5230	0	-90	1420	2015	Hudbay
HB-2162	1716211	11555253	5273	0	-90	2800	2015	Hudbay
HB-2163	1714927	11555483	5276	270	-76	2000	2015	Hudbay
HB-2164	1715236	11555489	5257	270	-80	2300	2015	Hudbay
HB-2165	1716391	11555585	5214	264	-70	2659	2015	Hudbay
HB-2166	1714560	11555720	5340	289	-48	1031	2015	Hudbay
HB-2167	1715794	11555750	5268	0	-90	2500	2015	Hudbay
HB-2168	1714879	11555897	5321	270	-63	1400	2015	Hudbay
HB-2169	1715535	11555953	5313	0	-90	2707	2015	Hudbay
HB-2170A	1715100	11556245	5375	270	-66	1522	2015	Hudbay
HB-2171	1715364	11556444	5368	270	-66	1900	2015	Hudbay
HB-2172	1715460	11556793	5496	297	-64	1275	2015	Hudbay
HB-2173	1715461	11556791	5497	0	-90	2600	2015	Hudbay
HB-2174	1716343	11556929	5384	0	-90	2500	2015	Hudbay
HB-2175	1715458	11556791	5496	270	-67	2117	2015	Hudbay
RNW-HB-001	1712054	11564442	4781	240	-60	468	2020	Hudbay

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Hole ID	UTM-E (ft)	UTM-N (ft)	Elevation (ft amsl)	Azimuth	Angle	Depth (ft bgs)	Year	Company
RNW-HB-001A	1712054	11564442	4781	240	-60	716	2020	Hudbay
RNW-HB-002	1714210	11562659	5321	0	-90	680	2020	Hudbay
RNW-HB-003	1712880	11564050	4913	240	-60	926	2020	Hudbay
RNW-HB-004	1713405	11563835	4960	270	-65	414	2020	Hudbay
RNW-HB-005	1714722	11562538	5416	0	-90	280	2020	Hudbay
RNW-HB-006	1714722	11562538	5416	120	-45	467	2020	Hudbay
RNW-HB-007	1715169	11561514	5609	0	-45	786	2020	Hudbay
RNW-HB-008	1714457	11561497	5666	0	-45	588	2020	Hudbay
RNW-HB-009	1715169	11561514	5609	180	-60	505	2020	Hudbay
RNW-HB-010	1714457	11561497	5666	30	-45	811	2020	Hudbay
RNW-HB-011	1715845	11562706	5592	240	-45	903	2020	Hudbay
RNW-HB-012	1714266	11560396	5898	255	-45	382	2020	Hudbay
RNW-HB-013	1714266	11560396	5898	0	-90	691	2020	Hudbay
RNW-HB-014	1715845	11562706	5592	185	-45	1038	2020	Hudbay
RNW-HB-015	1714238	11560902	5794	255	-45	333	2020	Hudbay
RNW-HB-016	1714983	11561612	5600	0	-45	798	2020	Hudbay
RNW-HB-017	1714838	11561786	5717	30	-45	971	2020	Hudbay
RNW-HB-018	1714983	11561612	5600	230	-45	595	2020	Hudbay
RNW-HB-019	1714838	11561786	5717	320	-45	695	2020	Hudbay
RNW-HB-020	1714983	11561612	5600	34	-45	598	2020	Hudbay
RNW-HB-021	1704256	11565321	4342	0	-90	325	2020	Hudbay
RNW-HB-022	1704256	11565321	4342	88	-45	301	2020	Hudbay
RNW-HB-023	1714838	11561786	5717	0	-90	550	2020	Hudbay
RNW-HB-024	1714703	11561748	5727	30	-45	128	2020	Hudbay
RNW-HB-024A	1714703	11561748	5727	30	-45	969	2020	Hudbay
RNW-HB-025	1703973	11566564	4405	97	-60	393	2020	Hudbay
RNW-HB-026	1703973	11566564	4405	0	-90	400	2020	Hudbay
RNW-HB-027	1714703	11561748	5727	300	-45	834	2020	Hudbay
RNW-HB-028	1705619	11565228	4336	0	-90	333	2020	Hudbay
RNW-HB-029	1704177	11567282	4327	112	-45	489	2020	Hudbay
RNW-HB-030	1705619	11565228	4336	151	-46	400	2020	Hudbay
RNW-HB-031	1704177	11567282	4327	0	-90	450	2020	Hudbay
RNW-HB-032	1714703	11561748	5727	0	-90	715	2020	Hudbay
RNW-HB-033	1705538	11565538	4340	270	-45	366	2020	Hudbay
RNW-HB-034	1714436	11560799	5671	260	-60	570	2020	Hudbay
RNW-HB-035	1704324	11566915	4427	275	-45	140	2020	Hudbay
RNW-HB-035A	1704324	11566915	4427	275	-60	541	2020	Hudbay
RNW-HB-036	1705538	11565538	4340	0	-90	398	2020	Hudbay
RNW-HB-037	1704968	11565363	4388	270	-45	621	2020	Hudbay
RNW-HB-038	1706741	11564738	4369	180	-45	305	2020	Hudbay
RNW-HB-039	1704324	11566915	4427	0	-90	519	2020	Hudbay
RNW-HB-040	1706741	11564738	4369	90	-45	383	2020	Hudbay
RNW-HB-041	1704885	11566271	4412	0	-90	488	2020	Hudbay
RNW-HB-042	1704968	11565363	4388	0	-90	525	2020	Hudbay
RNW-HB-043	1706741	11564738	4369	0	-90	311	2020	Hudbay
RNW-HB-044	1706741	11564738	4369	0	-45	343	2020	Hudbay
RNW-HB-045	1704885	11566271	4412	210	-45	750	2020	Hudbay
RNW-HB-046	1704691	11566281	4529	180	-45	808	2020	Hudbay
RNW-HB-047	1706741	11564738	4369	270	-45	343	2020	Hudbay
RNW-HB-048	1706164	11564567	4319	270	-45	336	2020	Hudbay
RNW-HB-049	1706164	11564567	4319	0	-90	258	2020	Hudbay
RNW-HB-050A	1704663	11565578	4514	255	-45	72	2020	Hudbay
RNW-HB-050B	1704663	11565578	4514	255	-45	614	2020	Hudbay
RNW-HB-051	1706248	11564755	4332	270	-45	415	2020	Hudbay
RNW-HB-052	1706248	11564755	4332	0	-90	322	2020	Hudbay
RNW-HB-053	1706021	11565023	4401	270	-45	551	2020	Hudbay
RNW-HB-054	1704303	11565761	4489	270	-45	400	2020	Hudbay
RNW-HB-055	1706021	11565023	4401	0	-90	411	2020	Hudbay
RNW-HB-056	1705941	11564086	4309	0	-45	162	2020	Hudbay
RNW-HB-057	1704663	11565578	4514	0	-90	517	2020	Hudbay
RNW-HB-058	1704303	11565761	4489	0	-90	529	2020	Hudbay
RNW-HB-059	1706506	11564346	4348	270	-45	204	2020	Hudbay
RNW-HB-060	1706506	11564346	4348	180	-45	138	2020	Hudbay
RNW-HB-061	1706506	11564346	4348	90	-45	151	2020	Hudbay
RNW-HB-062	1704150	11566150	4531	270	-60	334	2020	Hudbay
RNW-HB-063	1704895	11565803	4463	270	-45	327	2020	Hudbay
RNW-HB-064	1706506	11564346	4348	0	-45	247	2020	Hudbay
RNW-HB-065	1704150	11566150	4531	0	-90	188	2020	Hudbay
RNW-HB-066	1706506	11564346	4348	0	-90	150	2020	Hudbay
RNW-HB-058R	1704303	11565761	4489	360	-90	0	2020	Hudbay
GH2021-01	1701945	11575285	3645	0	90	95	2021	Hudbay
GH2021-02	1702966	11575302	3675	0	90	308	2021	Hudbay
GH2021-07	1700833	11570771	3834	0	90	400	2021	Hudbay
GH2021-09	1701998	11568487	3953	0	90	300	2021	Hudbay
GH2021-10	1701099	11567296	4005	0	90	300	2021	Hudbay
GH2021-11	1703104	11563658	4164	0	90	300	2021	Hudbay
GH2021-13	1704541	11563684	4240	0	90	300	2021	Hudbay
GH2021-17	1700850	11560476	4150	0	90	300	2021	Hudbay
GH2021-22	1705400	11561420	4421	0	90	300	2021	Hudbay

Appendix C - Exploration Boreholes

Hole ID	UTM-E (ft)	UTM-N (ft)	Elevation (ft amsl)	Azimuth	Angle	Depth (ft bgs)	Year	Company
GH2021-23	1706988	11561998	4426	0	90	300	2021	Hudbay
GH2021-24	1708373	11562182	4488	0	90	300	2021	Hudbay
GH2021-25	1709783	11562290	4637	0	90	300	2021	Hudbay
GH2021-26	1707277	11565636	4477	0	90	400	2021	Hudbay
GH2021-28	1708612	11566106	4559	0	90	410	2021	Hudbay
GH2021-30	1713081	11563907	5025	0	90	640	2021	Hudbay
Pit2021-02	1704229	11565298	4343	0	90	486	2021	Hudbay
Pit2021-03	1704885	11566233	4441	0	90	603	2021	Hudbay
Pit2021-04	1704977	11565354	4389	0	90	520	2021	Hudbay
Pit2021-06	1709600	11565718	4755	0	90	605	2021	Hudbay
Pit2021-07	1712907	11565269	5103	0	90	678	2021	Hudbay
Pit2021-08	1715764	11562333	5604	0	90	720	2021	Hudbay
Pit2021-09	1714432	11560797	5656	0	90	730	2021	Hudbay
RNW-HB-012R	1714272	11560397	5905	256	-45	380	2021	Hudbay
RNW-HB-013R	1714272	11560397	5905	256	-90	500	2021	Hudbay
RNW-HB-019R	1714838	11561786	5717	323	-45	700	2021	Hudbay
RNW-HB-023R	1714838	11561786	5717	323	-90	550	2021	Hudbay
RNW-HB-067	1706706	11566077	4704	120	-45	487	2021	Hudbay
RNW-HB-068	1706521	11565084	4346	0	-90	285	2021	Hudbay
RNW-HB-069	1715848	11562702	5590	260	-45	1087	2021	Hudbay
RNW-HB-070	1712582	11565425	4983	0	-90	499	2021	Hudbay
RNW-HB-071	1712850	11565420	5027	240	-70	600	2021	Hudbay
RNW-HB-072	1706706	11566077	4704	210	-45	602	2021	Hudbay
RNW-HB-073	1713444	11564753	5115	240	-70	954	2021	Hudbay
RNW-HB-074	1715845	11562702	5590	225	-45	900	2021	Hudbay
RNW-HB-075	1706325	11565861	4492	0	-90	330	2021	Hudbay
RNW-HB-076	1705797	11565944	4488	0	-90	289	2021	Hudbay
RNW-HB-077	1705797	11565944	4488	180	-45	679	2021	Hudbay
RNW-HB-078	1713446	11564749	5114	230	-55	856	2021	Hudbay
RNW-HB-079	1706042	11565495	4384	0	-90	300	2021	Hudbay
RNW-HB-080	1715692	11562789	5617	212	-48	831	2021	Hudbay
RNW-HB-081	1705330	11565838	4296	0	-90	306	2021	Hudbay
RNW-HB-082	1715692	11562789	5617	330	-45	488	2021	Hudbay
RNW-HB-083	1712950	11565288	5101	240	-70	604	2021	Hudbay
RNW-HB-084	1705221	11565008	4284	0	-90	310	2021	Hudbay
RNW-HB-085	1714708	11561742	5729	315	-20	783	2021	Hudbay
RNW-HB-086	1705694	11564782	4343	0	-90	301	2021	Hudbay
RNW-HB-087	1715692	11562789	5617	285	-45	600	2021	Hudbay
RNW-HB-088	1712766	11565767	4922	240	-70	600	2021	Hudbay
RNW-HB-089	1713132	11564797	5166	230	-50	750	2021	Hudbay
RNW-HB-090	1713434	11564916	5072	240	-70	610	2021	Hudbay
RNW-HB-091	1709641	11563874	4556	0	-90	1080	2021	Hudbay
RNW-HB-092	1715692	11562789	5617	308	-75	400	2021	Hudbay
RNW-HB-093	1713132	11564797	5164	290	-45	950	2021	Hudbay
RNW-HB-094	1715845	11562702	5590	0	-90	600	2021	Hudbay
RNW-HB-095	1709150	11566240	4722	90	-18	633	2021	Hudbay
RNW-HB-096	1711242	11566106	4726	0	-90	500	2021	Hudbay
RNW-HB-097	1714706	11561745	5744	30	-20	1038	2021	Hudbay
RNW-HB-098	1716038	11563450	5622	270	-45	218	2021	Hudbay
RNW-HB-098A	1716038	11563450	5622	270	-45	926	2021	Hudbay
RNW-HB-099	1712067	11564948	4805	260	-45	400	2021	Hudbay
RNW-HB-100	1710748	11563277	4629	45	-60	607	2021	Hudbay
RNW-HB-101	1711078	11566594	4769	0	-90	500	2021	Hudbay
RNW-HB-102	1716032	11563445	5623	330	-45	864	2021	Hudbay
RNW-HB-103	1712116	11564728	4793	260	-45	500	2021	Hudbay
RNW-HB-104	1708212	11565789	4492	0	-45	500	2021	Hudbay
RNW-HB-105	1711032	11565650	4697	0	-90	500	2021	Hudbay
RNW-HB-106	1712321	11565284	4967	260	-60	600	2021	Hudbay
RNW-HB-107	1708193	11565778	4491	270	-45	300	2021	Hudbay
RNW-HB-108	1710635	11565028	4634	0	-90	425	2021	Hudbay
RNW-HB-109	1707870	11565094	4427	0	-90	311	2021	Hudbay
RNW-HB-110	1710158	11565284	4660	20	-45	550	2021	Hudbay
RNW-HB-111	1712260	11566436	5001	260	-45	708	2021	Hudbay
RNW-HB-112	1709150	11566240	4722	90	-10	355	2021	Hudbay
RNW-HB-113	1708211	11565784	4491	135	-45	300	2021	Hudbay
RNW-HB-114	1708211	11565784	4491	45	-45	250	2021	Hudbay
RNW-HB-115	1710175	11565282	4659	180	-45	600	2021	Hudbay
RNW-HB-116	1708211	11565784	4491	330	-45	250	2021	Hudbay
RNW-HB-117	1715394	11561544	5617	75	-25	751	2021	Hudbay
RNW-HB-118	1712602	11565695	4938	270	-45	607	2021	Hudbay
RNW-HB-119	1708211	11565784	4491	0	-90	150	2021	Hudbay
RNW-HB-120	1707428	11564852	4386	315	-45	375	2021	Hudbay
RNW-HB-121	1709176	11565877	4723	70	-45	500	2021	Hudbay
RNW-HB-122	1715693	11562789	5636	308	-55	500	2021	Hudbay
RNW-HB-123	1714709	11561745	5730	355	-30	551	2021	Hudbay
RNW-HB-124	1709177	11565876	4723	360	-45	350	2021	Hudbay
RNW-HB-125	1709189	11565880	4725	280	-45	350	2021	Hudbay
RNW-HB-126	1709189	11565880	4725	0	-90	350	2021	Hudbay
RNW-HB-127	1707436	11564843	4386	180	-45	350	2021	Hudbay

Appendix C - Exploration Boreholes

Hole ID	UTM-E (ft)	UTM-N (ft)	Elevation (ft amsl)	Azimuth	Angle	Depth (ft bgs)	Year	Company
RNW-HB-128	1712533	11565912	4903	270	-45	528	2021	Hudbay
RNW-HB-129	1715760	11562327	5613	310	-50	654	2021	Hudbay
RNW-HB-130	1708304	11564148	4543	180	-45	386	2021	Hudbay
RNW-HB-131	1714707	11561742	5729	55	-5	593	2021	Hudbay
RNW-HB-132	1708028	11564226	4480	350	-45	428	2021	Hudbay
RNW-HB-133	1715760	11562327	5613	286	-53	701	2021	Hudbay
RNW-HB-134	1712616	11566374	4884	260	-45	896	2021	Hudbay
RNW-HB-135	1709210	11565081	4710	45	-45	600	2021	Hudbay
RNW-HB-136	1709208	11565080	4710	180	-45	578	2021	Hudbay
RNW-HB-137	1709204	11565077	4710	330	-45	600	2021	Hudbay
RNW-HB-138	1708028	11564226	4480	310	-45	496	2021	Hudbay
RNW-HB-139	1708726	11564154	4552	180	-45	494	2021	Hudbay
RNW-HB-140	1711927	11565334	4876	260	-60	350	2021	Hudbay
RNW-HB-141	1712887	11564057	4925	270	-45	883	2021	Hudbay
RNW-HB-142	1715376	11561538	5612	39	-15	550	2021	Hudbay
RNW-HB-143	1715760	11562327	5613	270	-45	857	2021	Hudbay
RNW-HB-144	1715000	11561626	5619	30	0	1050	2021	Hudbay
RNW-HB-145	1708508	11565832	4532	360	-45	228	2021	Hudbay
RNW-HB-146	1708508	11565832	4532	180	-45	193	2021	Hudbay
RNW-HB-147	1716037	11563449	5623	225	-45	908	2021	Hudbay
RNW-HB-148	1715373	11561527	5607	39	-13	900	2021	Hudbay
RNW-HB-149	1707902	11565485	4463	325	-45	324	2021	Hudbay
RNW-HB-150	1707902	11565485	4463	0	-90	264	2021	Hudbay
RNW-HB-151	1710321	11564316	4609	0	-90	608	2021	Hudbay
RNW-HB-152	1705429	11564496	4270	0	-90	278	2021	Hudbay
RNW-HB-153	1706037	11564505	4295	90	-45	225	2021	Hudbay
RNW-HB-154	1705689	11564296	4275	0	-90	200	2021	Hudbay
RNW-HB-155	1713107	11563953	5007	225	-45	1017	2021	Hudbay
RNW-HB-156	1713269	11564157	4911	250	-45	497	2021	Hudbay
RNW-HB-157	1713022	11564012	4960	250	-45	499	2021	Hudbay
RNW-HB-158	1713022	11564012	4960	295	-45	156	2021	Hudbay
RNW-HB-159	1713809	11554502	5379	270	-45	1003	2021	Hudbay
RNW-HB-160	1712901	11553760	5618	270	-45	0	2021	Hudbay
RNW-HB-161	1714073	11556110	5598	250	-45	848	2021	Hudbay
RNW-HB-162	1714246	11560907	5801	270	0	208	2021	Hudbay
RNW-HB-163	1714246	11560909	5801	225	-30	0	2021	Hudbay
RNW-HB-164	1714722	11562543	5424	100	-25	1103	2021	Hudbay
RNW-HB-165	1715036	11559688	5744	270	-45	637	2021	Hudbay
RNW-HB-166	1715303	11560000	5553	270	-45	757	2021	Hudbay
RNW-HB-167	1705689	11564296	4275	270	-45	127	2021	Hudbay
RNW-HB-168	1706030	11564099	4302	0	-90	163	2021	Hudbay
RNW-HB-169	1707066	11564138	4383	0	-90	200	2021	Hudbay
RNW-HB-170	1707436	11564843	4386	360	-90	296	2021	Hudbay
RNW-HB-171	1708028	11564226	4480	156	-45	200	2021	Hudbay
RNW-HB-172	1708028	11564226	4480	156	-90	141	2021	Hudbay
RNW-HB-173	1714833	11559500	5830	270	0	268	2021	Hudbay
RNW-HB-174	1714842	11559500	5827	270	-30	312	2021	Hudbay
RNW-HB-175	1713107	11563953	5007	180	-45	828	2021	Hudbay
RNW-HB-176	1709189	11565880	4725	180	-45	351	2021	Hudbay
RNW-HB-177	1714657	11557211	5681	315	-45	844	2021	Hudbay
RNW-HB-178	1713132	11564797	5166	270	-70	600	2021	Hudbay
RNW-HB-179	1714772	11560009	5738	270	0	466	2021	Hudbay
RNW-HB-180	1714772	11560009	5738	270	-45	272	2021	Hudbay
RNW-HB-181	1715815	11558828	5559	285	-45	0	2021	Hudbay
RNW-HB-182	1709207	11565078	4708	0	-90	0	2021	Hudbay
RNW-HB-183	1709207	11565078	4713	240	-45	0	2021	Hudbay
1404	1727720	11552723	4830	0	-90	170	NA	Anamax
1405	1727651	11554934	4870	0	-90	205	NA	Anamax
1406	1725300	11552380	4950	0	-90	215	NA	Anamax
1407	1724434	11551255	5305	0	-90	323	NA	Anamax
1408	1728824	11562827	4655	0	-90	145	NA	Anamax
1409	1730711	11561285	4560	0	-90	880	NA	Anamax
1410	1733139	11559357	4680	0	-90	195	NA	Anamax
1411	1733603	11560078	4610	0	-90	195	NA	Anamax
1412	1721404	11558938	4910	0	-90	40	NA	Anamax
1413	1722611	11553359	4920	0	-90	16	NA	Anamax
1414	1730616	11559504	4540	0	-90	195	NA	Anamax
1415	1728107	11558884	4630	0	-90	525	NA	Anamax
1416	1736198	11561391	4494	0	-90	600	NA	Anamax
1417	1725461	11555241	4740	0	-90	35	NA	Anamax
1418	1736696	11550924	4935	0	-90	172	NA	Anamax
1419	1733795	11551284	5010	0	-90	216	NA	Anamax
1420	1731028	11550483	5110	0	-90	216	NA	Anamax
1421	1728522	11551050	4990	0	-90	216	NA	Anamax
1422	1730702	11555790	4740	0	-90	216	NA	Anamax
1423	1731797	11554117	4775	0	-90	216	NA	Anamax
1424	1721579	11560288	4920	0	-90	54	NA	Anamax
1425	1733581	11554274	4715	0	-90	216	NA	Anamax
1426	1736530	11553799	4670	0	-90	195	NA	Anamax

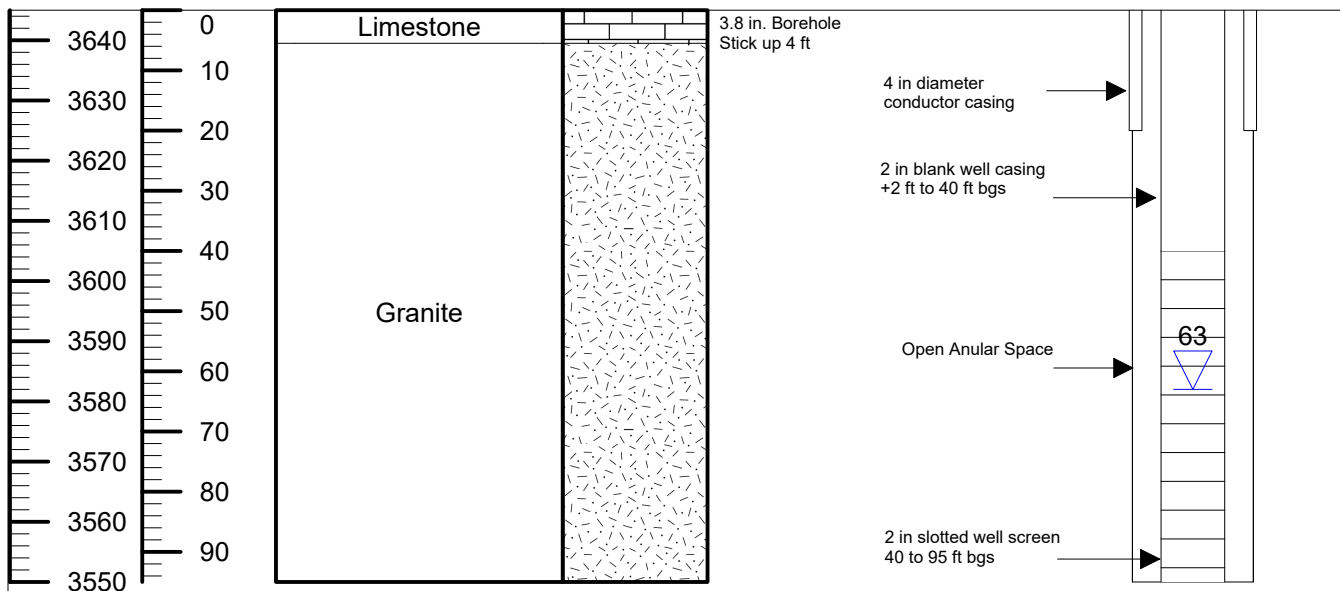
Appendix C - Exploration Boreholes

Hole ID	UTM-E (ft)	UTM-N (ft)	Elevation (ft amsl)	Azimuth	Angle	Depth (ft bgs)	Year	Company
1427	1735471	11555235	4660	0	-90	155	NA	Anamax
1429	1733689	11555762	4730	0	-90	154	NA	Anamax
1430	1736323	11563338	4430	0	-90	195	NA	Anamax
1431	1728536	11562299	4725	0	-90	195	NA	Anamax
1432	1728872	11562820	4650	0	-90	60	NA	Anamax
1433	1732804	11565596	4520	0	-90	195	NA	Anamax
1434	1732034	11565280	4510	0	-90	34	NA	Anamax
1435	1730899	11566071	4575	0	-90	404	NA	Anamax
1436	1728318	11567110	4630	0	-90	195	NA	Anamax
1437	1723723	11567440	5220	0	-90	1475	NA	Anamax
1438	1725675	11567510	4900	0	-90	195	NA	Anamax
1439	1732537	11564782	4530	0	-90	195	NA	Anamax
1440	1730282	11568360	4715	0	-90	195	NA	Anamax
1441	1723713	11568740	5010	0	-90	195	NA	Anamax
1442	1725338	11568615	4655	0	-90	146	NA	Anamax
1443	1728996	11568524	4790	0	-90	264	NA	Anamax
1444	1733327	11568350	4520	0	-90	143	NA	Anamax
1445	1708298	11554050	5530	0	-90	195	NA	Anamax
1446	1709098	11552894	5720	0	-90	195	NA	Anamax
1447	1707976	11551429	5670	0	-90	1465	NA	Anamax
1448	1709084	11551198	5685	0	-90	195	NA	Anamax
1449	1722675	11553485	4905	0	-90	20	NA	Anamax
1450	1703482	11551992	4710	0	-90	187	NA	Anamax
1451	1703447	11552552	4700	0	-90	152	NA	Anamax
1452	1703601	11557224	4470	0	-90	195	NA	Anamax
1453	1728463	11550898	5010	0	-90	1208	NA	Anamax
1454	1730539	11570120	4660	0	-90	308	NA	Anamax
1457	1730650	11559792	4535	0	-90	1000	NA	Anamax
1459	1704625	11565115	4322	0	-90	387	NA	Anamax
1463	1704053	11564560	4220	0	-90	75	NA	Anamax
1464	1703891	11567977	4298	0	-90	247	NA	Anamax
1466	1703826	11567815	4292	0	-90	179	NA	Anamax
1467	1709100	11563743	4690	0	-90	216	NA	Anamax
1468	1716702	11562021	5440	0	-90	300	NA	Anamax
1469	1714617	11563723	5180	0	-90	320	NA	Anamax
1470	1714354	11564495	5104	0	-90	100	NA	Anamax
1471	1714466	11565673	4993	0	-90	100	NA	Anamax
1472	1708080	11567309	4360	0	-90	561	NA	Anamax
1473	1713390	11575874	4200	0	-90	1106	NA	Anamax
1474	1736404	11561608	4495	0	-90	950	NA	Anamax
1475	1713344	11575862	4475	0	-90	935	NA	Anamax
1478	1733650	11555731	4730	0	-90	1000	NA	Anamax
1479	1727567	11554841	4870	0	-90	1000	NA	Anamax
1480	1715440	11561557	5616	0	-90	659	NA	Anamax
1481	1715346	11561543	5612	0	-90	344	NA	Anamax
1482	1709038	11561258	4570	0	-90	240	NA	Anamax
1484	1712768	11548496	5686	0	-90	293	NA	Anamax
1486	1730545	11570122	4660	0	-90	162	NA	Anamax
1487	1730544	11570119	5220	0	-90	137	NA	Anamax
1488	1711275	11573273	4619	0	-90	330	NA	Anamax
1490	1736281	11558410	4502	0	-90	730	NA	Anamax
1491	1735743	11561467	4480	0	-90	1	NA	Anamax
1492	1735907	11560847	4521	0	-90	1	NA	Anamax
1493	1711426	11573049	4380	0	-90	271	NA	Anamax
1497	1734597	11553444	4755	0	-90	1	NA	Anamax
1499	1704887	11567385	4369	0	-90	828	NA	Anamax
1500	1725169	11561430	5615	0	-90	300	NA	Anamax
1501	1709131	11569873	4217	0	-90	1	NA	Anamax
1512	1715609	11548943	5445	0	-90	125	NA	Anamax
1513	1716747	11545984	5278	0	-90	125	NA	Anamax
1514	1721332	11549040	5000	0	-90	110	NA	Anamax
1515	1719596	11547150	5055	0	-90	120	NA	Anamax
1516	1729671	11547478	5200	0	-90	892	NA	Anamax
1517	1730129	11546178	5102	0	-90	120	NA	Anamax
1518	1728910	11546252	5175	0	-90	120	NA	Anamax
1519	1728365	11547077	5175	0	-90	120	NA	Anamax
1520	1726438	11546853	5210	0	-90	120	NA	Anamax
1521	1725544	11544223	5175	0	-90	120	NA	Anamax
1522	1721982	11544565	5310	0	-90	120	NA	Anamax
1523	1720544	11544188	5350	0	-90	900	NA	Anamax
1524	1732649	11548588	5070	0	-90	120	NA	Anamax
1525	1735243	11547252	4975	0	-90	120	NA	Anamax
AH-22	1713028	11573841	4221	0	-90	1	NA	Anaconda
AH-25	1712984	11573650	4249	0	-90	1	NA	Anaconda

APPENDIX D

2021 Hydrogeologic Characterization VWP and OSP As-Built Logs

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 3675 ft	Azimuth: 0 Inclination: 90



TD: 95 ft
TD Elevation: 3550 ft

Drilling Contractor: National
Drilling Method: Core
Start Date: 7/18/2021
End Date: 7/21/2021
Geologist: Bill Goldsmith
Northing: 11575374
Easting: 1701781
Coordinate System:
NAD 83 BLM Zone 12

G&H2021-01
Well/Piezometer
Construction Diagram

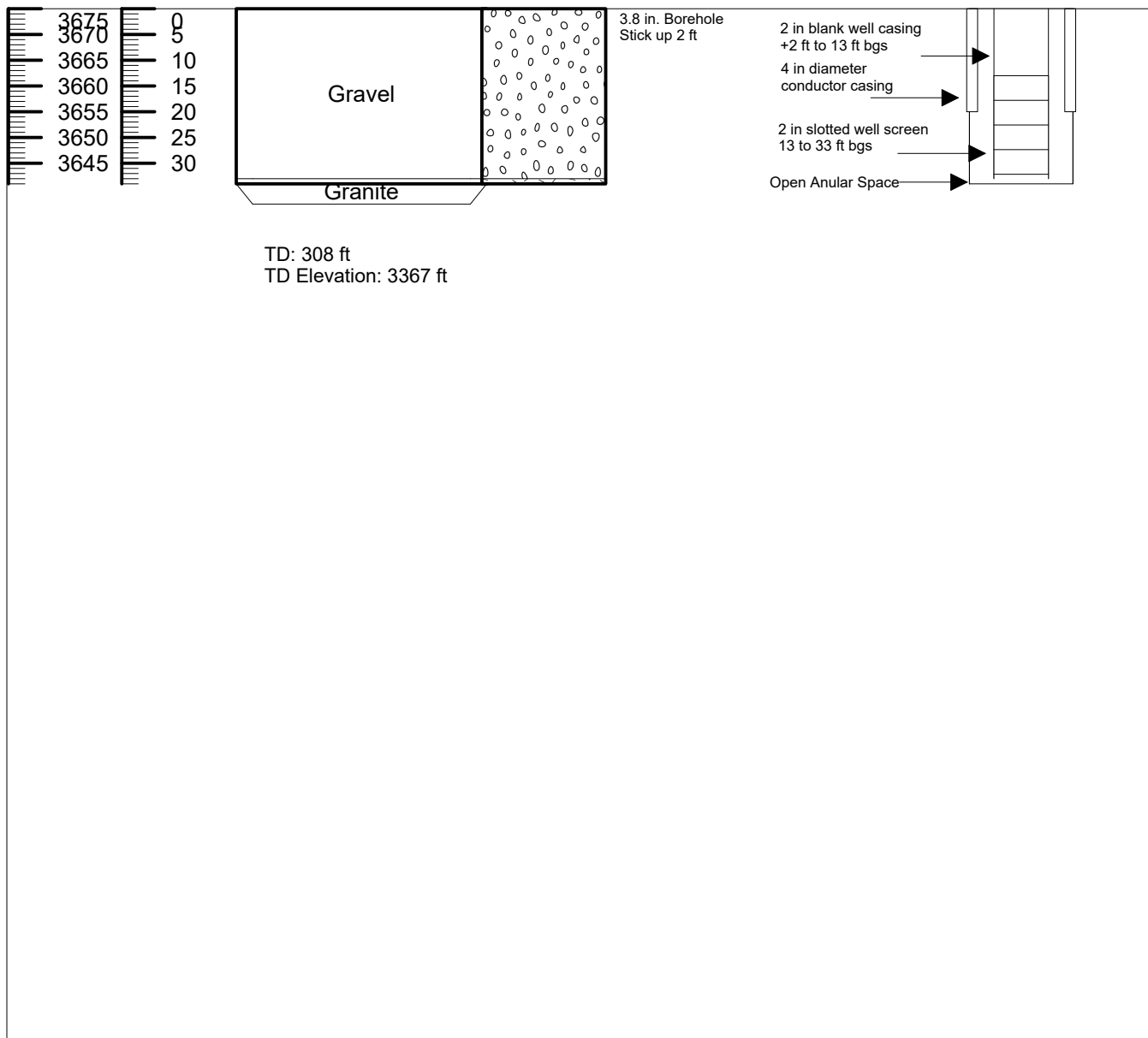


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GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS
A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

By: AP	Date: MAY 22
Approved: BG	Fig: 1

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 3675 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National
Drilling Method: Core
Start Date: 7/15/2021
End Date: 7/17/2021
Geologist: Bill Goldsmith
Northing: 11575426
Easting: 1702970

Coordinate System:
NAD 83 BLM Zone 12

G&H2021-02
Well/Piezometer
Construction Diagram

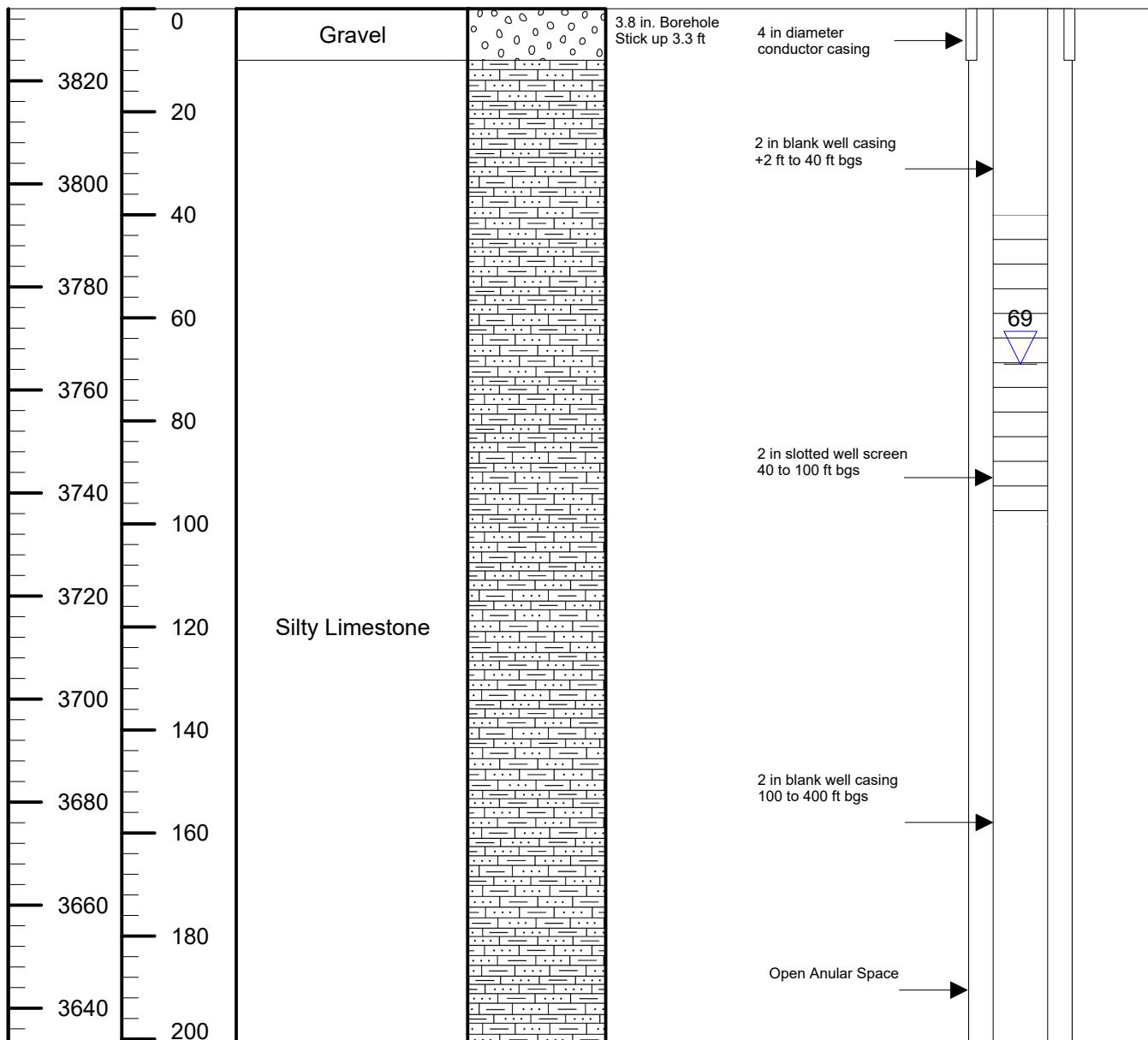


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A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

By: AP	Date: MAY 22
Approved: BG	Fig: 2

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 3834 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National
Drilling Method: Core
Start Date: 7/21/2021
End Date: 7/28/2021
Geologist: Simone Müller
Northing: 11570767
Easting: 1700757
Coordinate System:
NAD 83 BLM Zone 12

G&H2021-07
Well/Piezometer
Construction Diagram

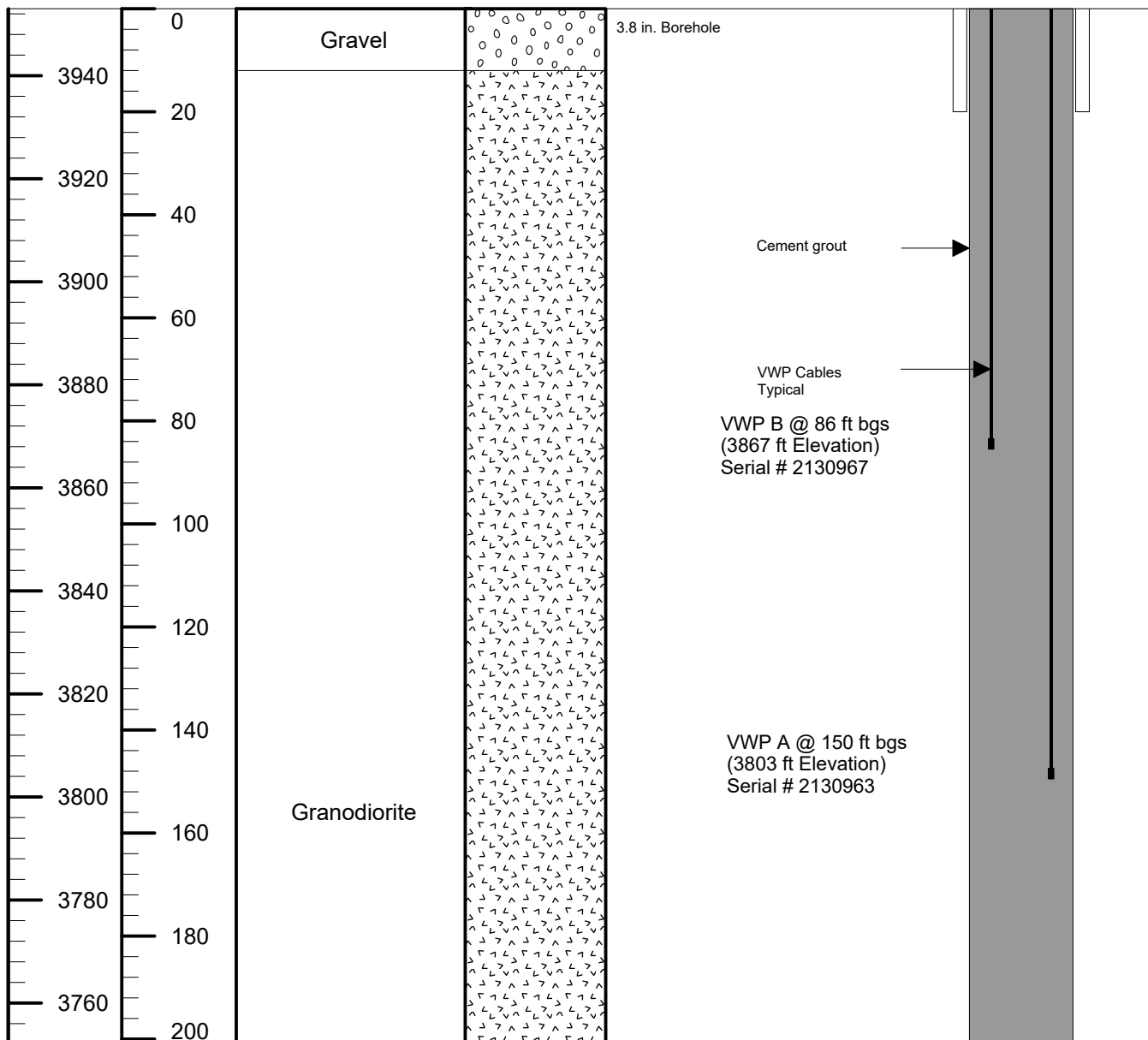


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GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS
A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

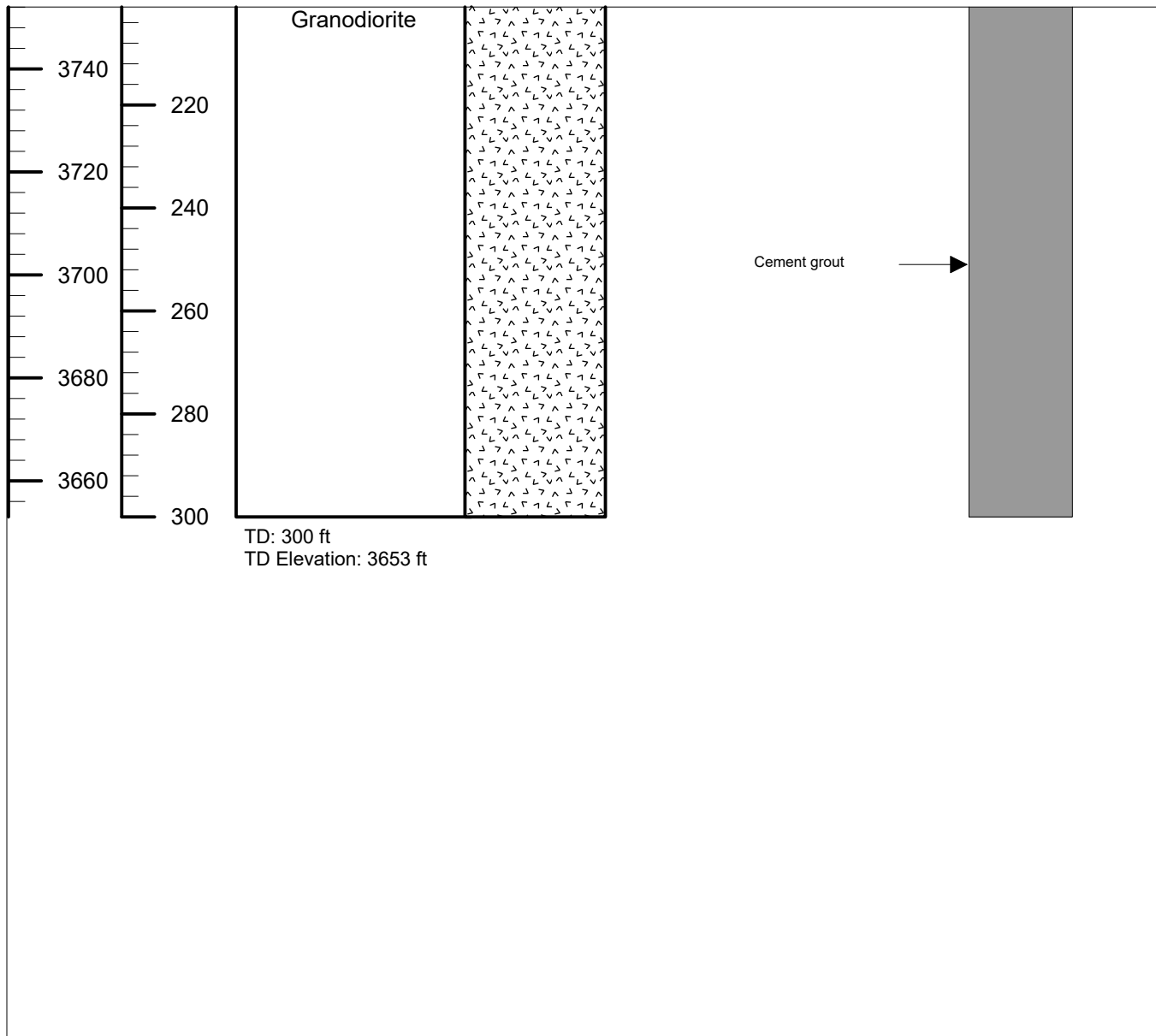
By: AP	Date: MAY 22
Approved: BG	Fig: 3


Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 3953 ft	Azimuth: 0 Inclination: 90

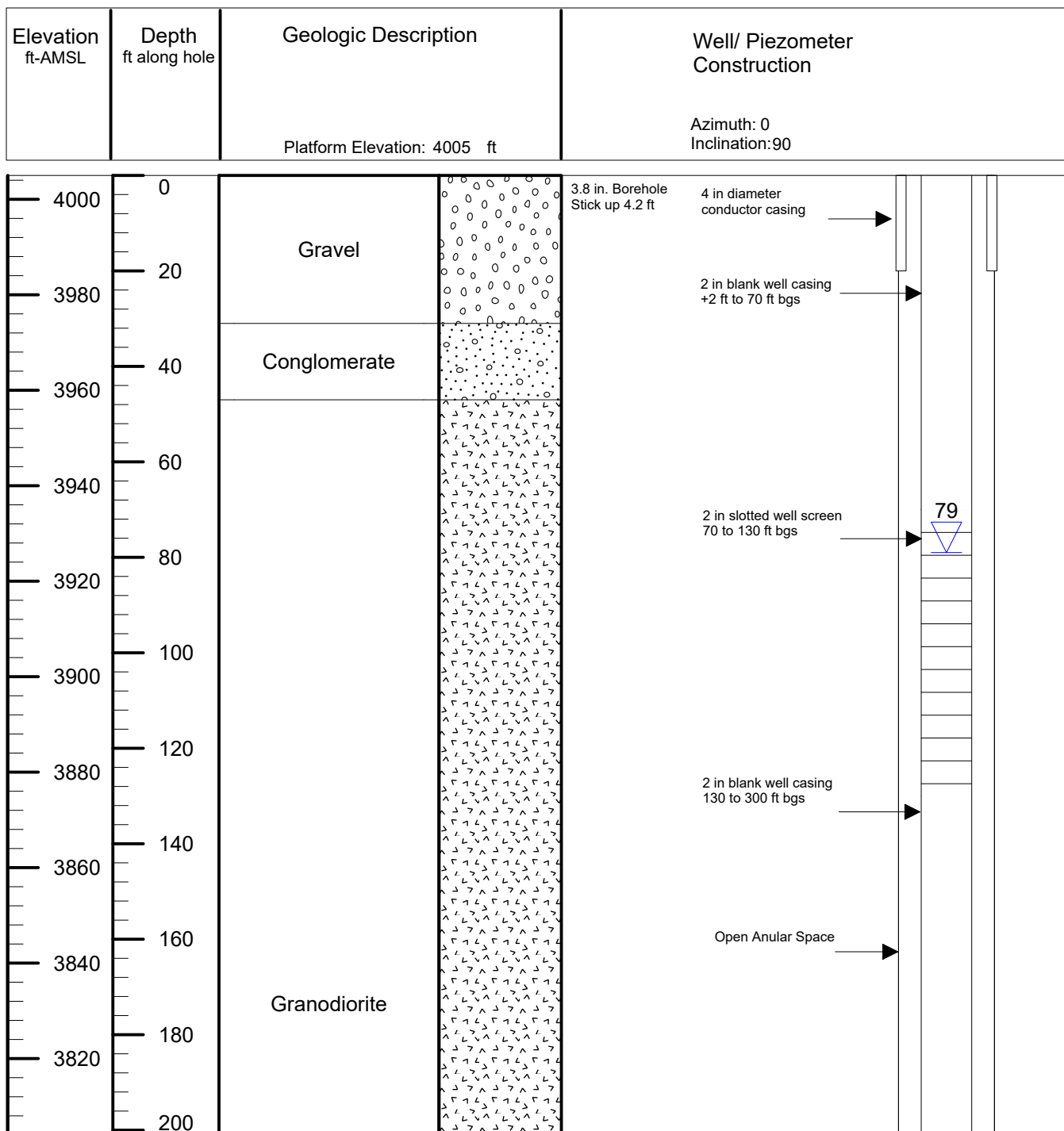


Drilling Contractor:National Drilling Method: Core Start Date: 8/1/2021 End Date: 8/3/2021 Geologist: Bill Goldsmith Northing: 11568569 Easting: 1702125 Coordinate System: NAD 83 BLM Zone 12	G&H2021-09 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY		
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
			Approved: BG	Fig: 4

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 3953 ft	Azimuth: 0 Inclination: 90



Drilling Contractor:National Drilling Method: Core Start Date: 8/1/2021 End Date: 8/3/2021 Geologist: Bill Goldsmith Northing: 11568569 Easting: 1702125 Coordinate System: NAD 83 BLM Zone 12	G&H2021-09 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ	By: AP	Date: MAY 22
		Approved: BG	Fig: 4



Drilling Contractor: National
Drilling Method: Core
Start Date: 7/28/2021
End Date: 8/1/2021
Geologist: Simone Müller
Northing: 11567335
Easting: 1701140
Coordinate System:
NAD 83 BLM Zone 12

G&H2021-10
Well/Piezometer
Construction Diagram

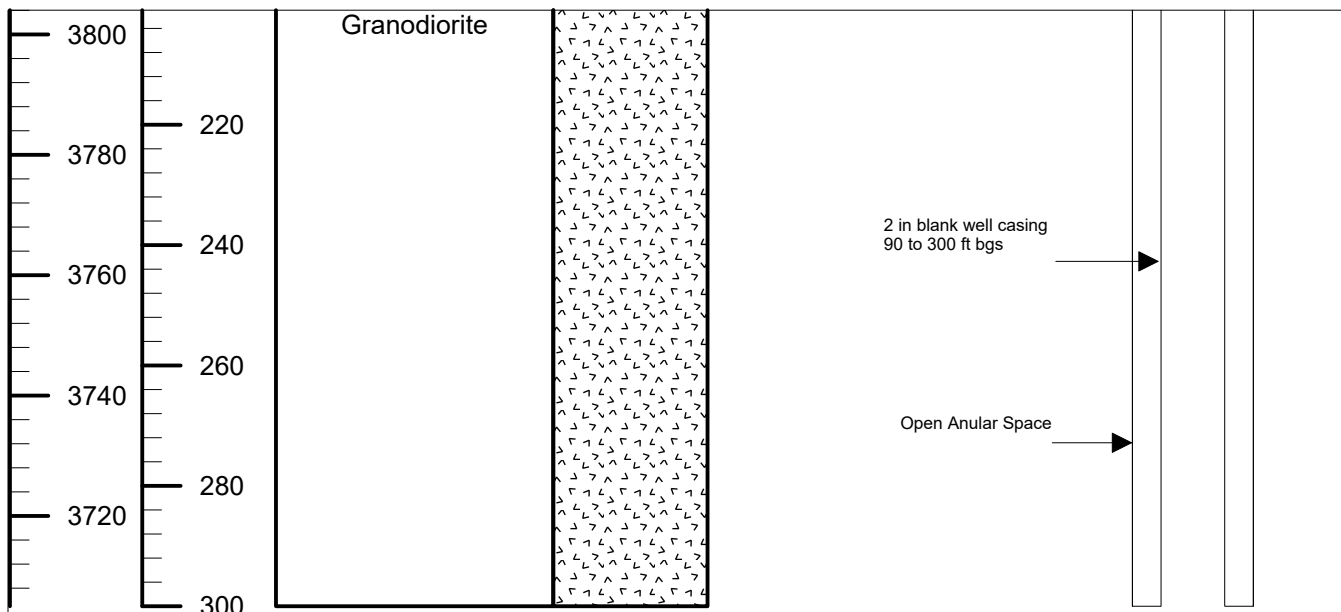


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A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

By: AP	Date: MAY 22
Approved: BG	Fig: 5

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4005 ft	Azimuth: 0 Inclination:90



TD: 300 ft
TD Elevation: 3705 ft

Drilling Contractor: National
Drilling Method: Core
Start Date: 7/28/2021
End Date: 8/1/2021
Geologist: Simone Müller
Northing: 11567335
Easting: 1701140

Coordinate System:
NAD 83 BLM Zone 12

G&H2021-10
Well/Piezometer
Construction Diagram

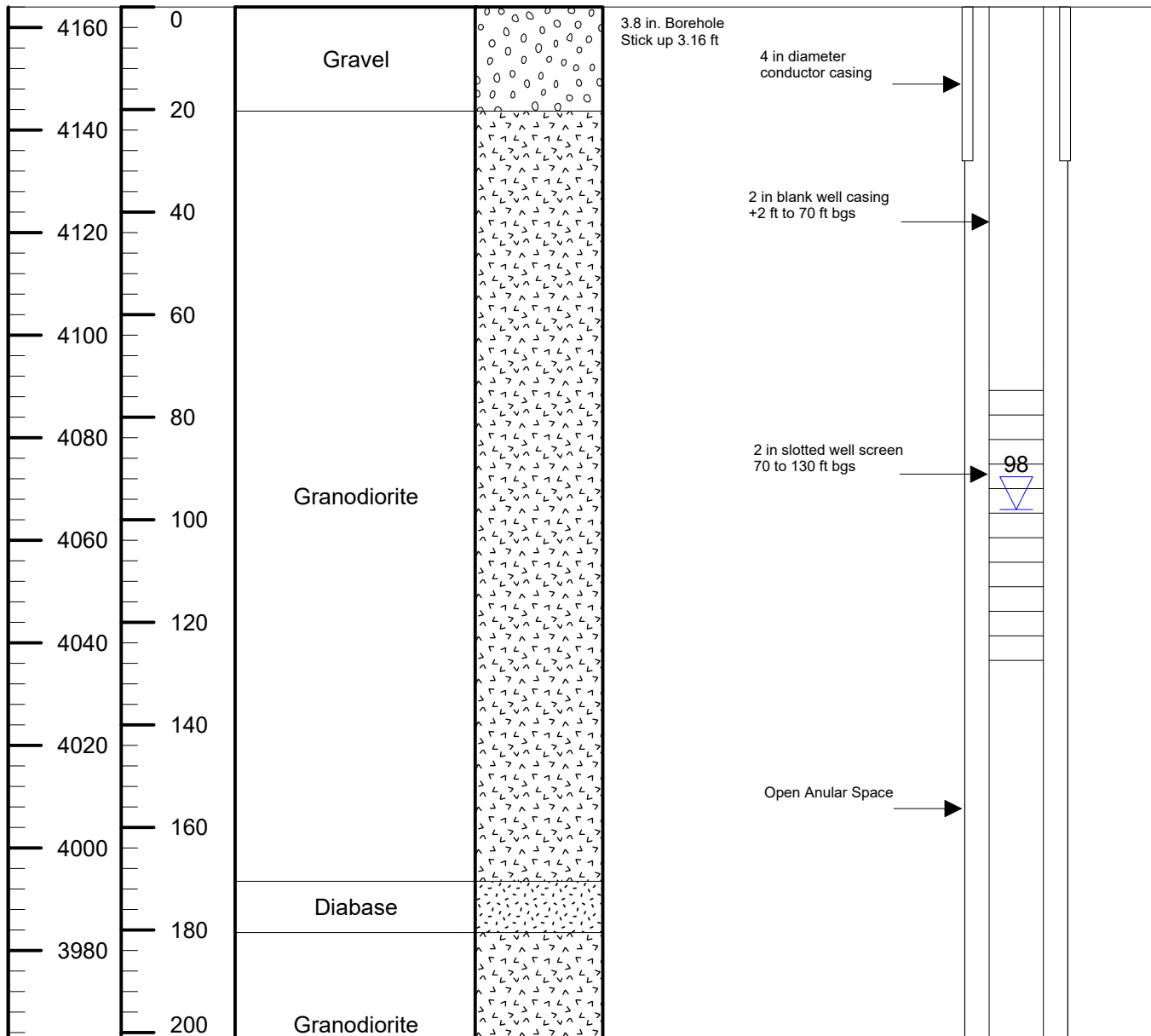


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A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

By:	AP	Date:	MAY 22
Approved:	BG	Fig:	5

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4164 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National
Drilling Method: Core
Start Date: 8/2/2021
End Date: 8/8/2021
Geologist: Bill Goldsmith
Northing: 11563613
Easting: 1702758

Coordinate System:
NAD 83 BLM Zone 12

G&H2021-11
Well/Piezometer
Construction Diagram

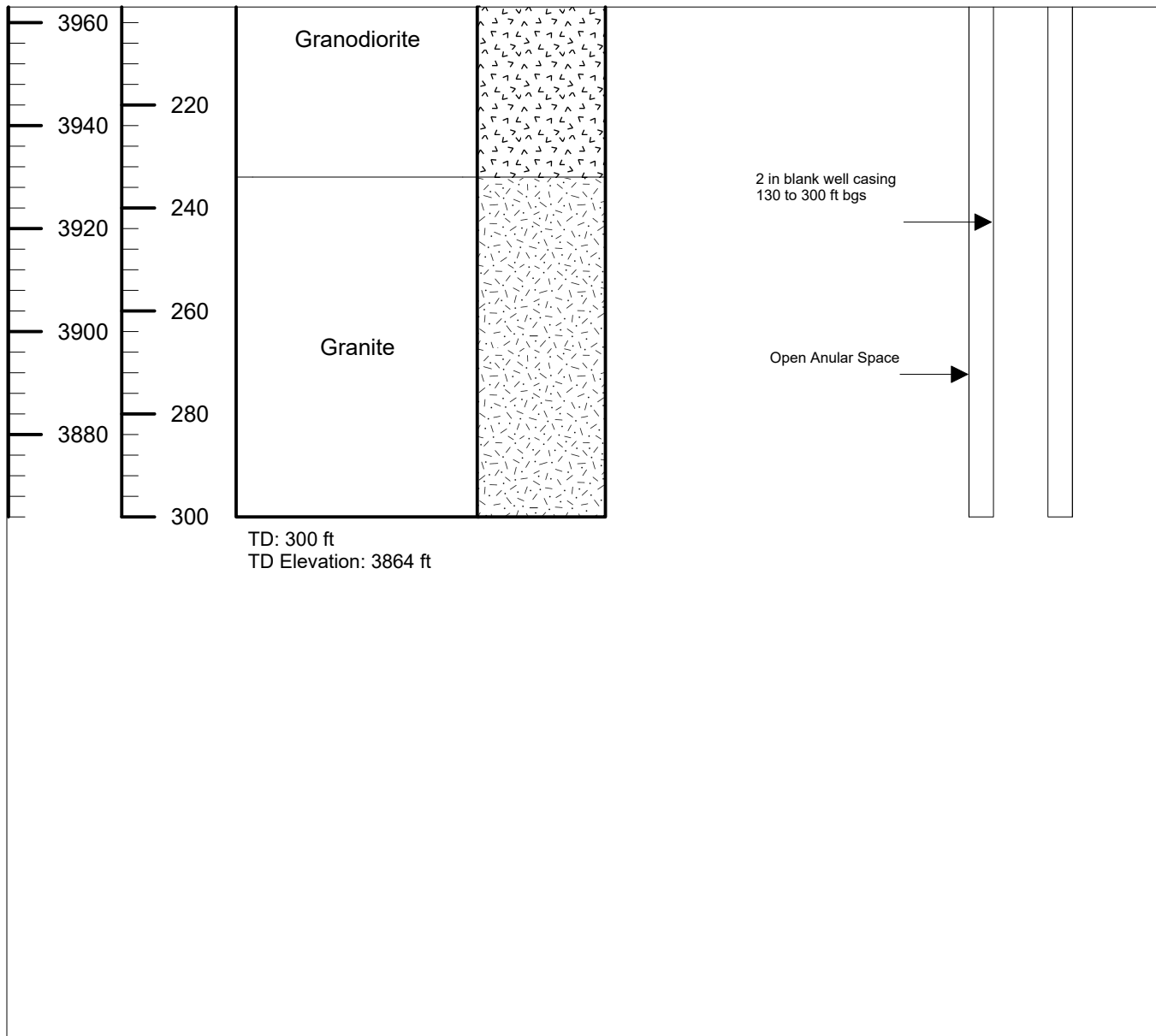


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A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

By: AP	Date: MAY 22
Approved: BG	Fig: 6

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4164 ft	Azimuth: 0 Inclination:90

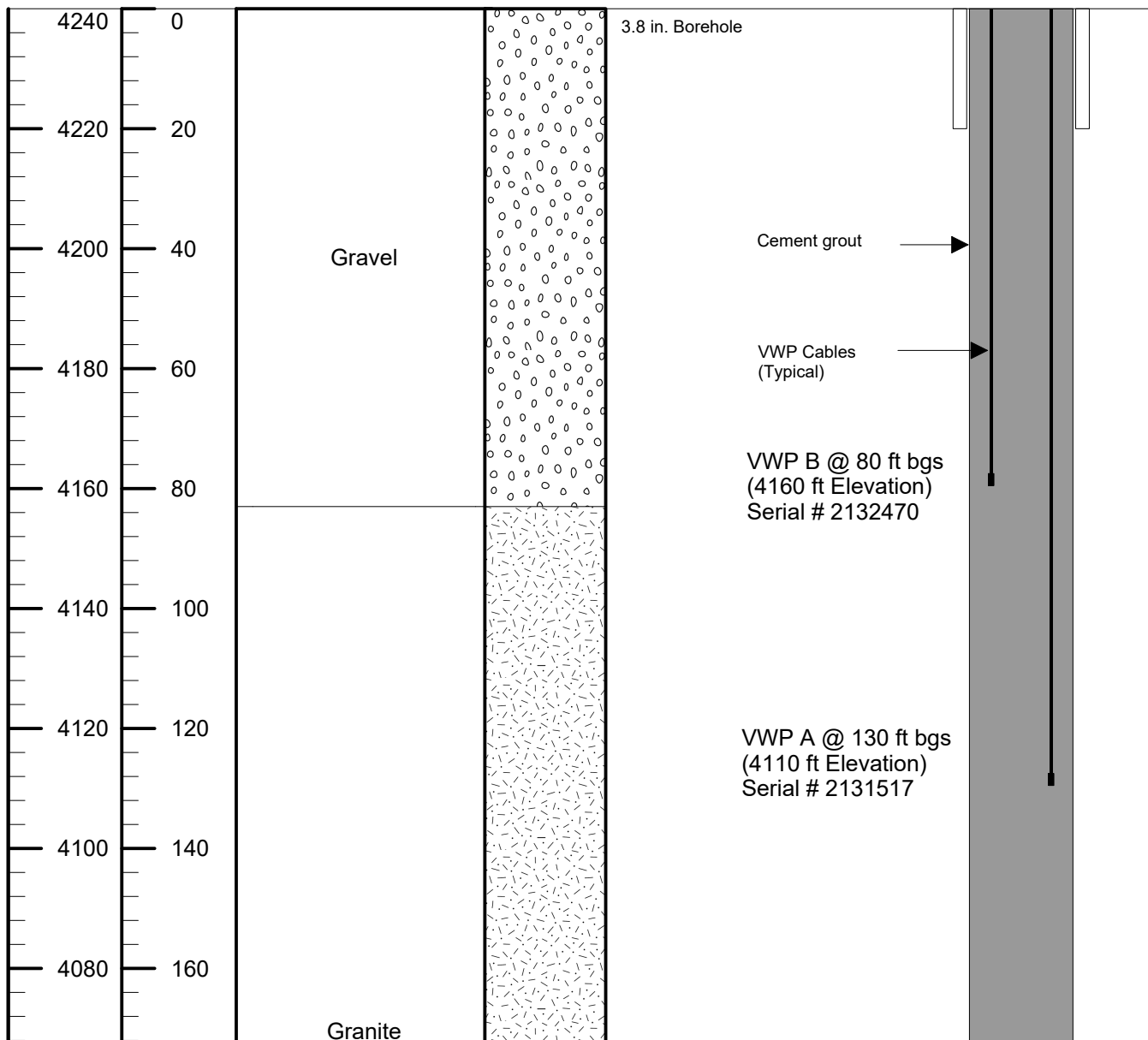


Drilling Contractor:National
Drilling Method:Core
Start Date: 8/2/2021
End Date: 8/8/2021
Geologist: Bill Goldsmith
Northing: 11563613
Easting: 1702758

Coordinate System:
NAD 83 BLM Zone 12

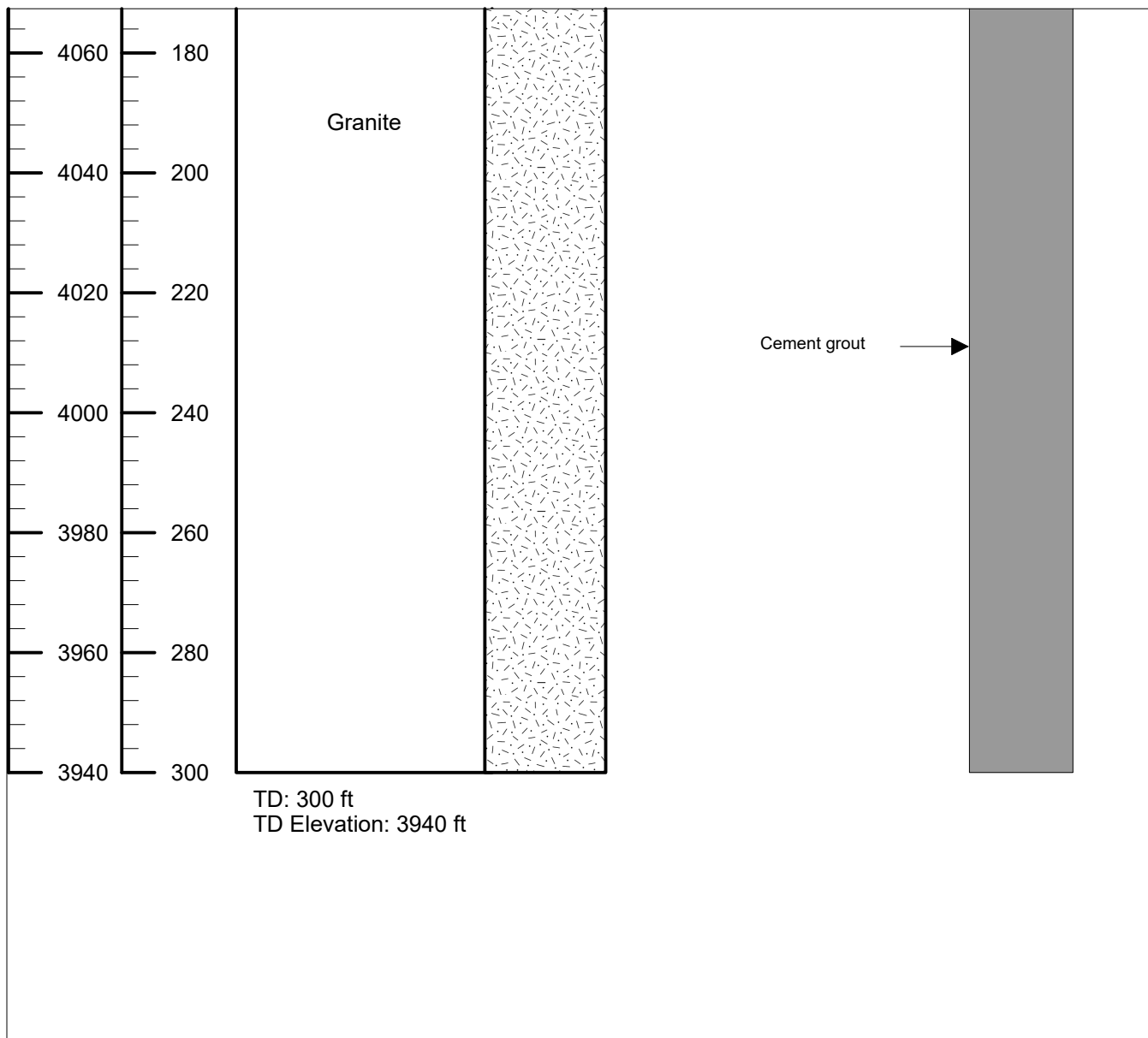
G&H2021-11 Well/Piezometer Construction Diagram		 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
		Approved: BG	Fig: 6

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4240 ft	Azimuth: 0 Inclination: 90



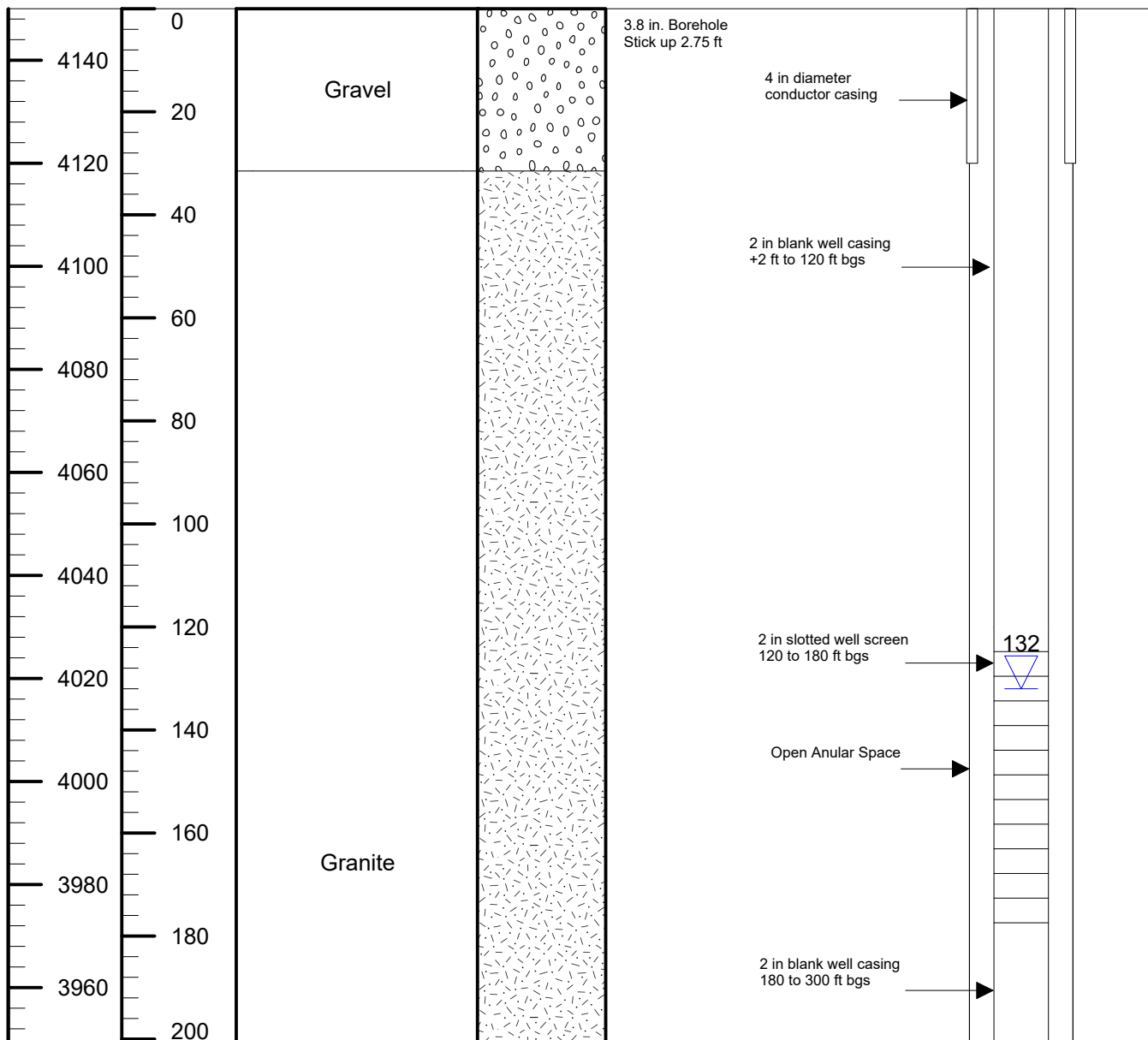
Drilling Contractor:National Drilling Method: Core Start Date: 8/28/2021 End Date: 8/31/2021 Geologist: Bill Goldsmith Northing: 11563844 Easting: 1704636 Coordinate System: NAD 83 BLM Zone 12	G&H2021-13 Well/Piezometer Construction Diagram			
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
			Approved: BG	Fig: 7

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4240 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National Drilling Method: Core Start Date: 8/28/2021 End Date: 8/31/2021 Geologist: Bill Goldsmith Northing: 11563844 Easting: 1704636 Coordinate System: NAD 83 BLM Zone 12			
G&H2021-13 Well/Piezometer Construction Diagram		 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
		Approved: BG	Fig: 7

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4150 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National
Drilling Method: Core
Start Date: 8/9/2021
End Date: 8/10/2021
Geologist: Bill Goldsmith
Northing: 11560544
Easting: 1700804
Coordinate System:
NAD 83 BLM Zone 12

G&H2021-17
Well/Piezometer
Construction Diagram

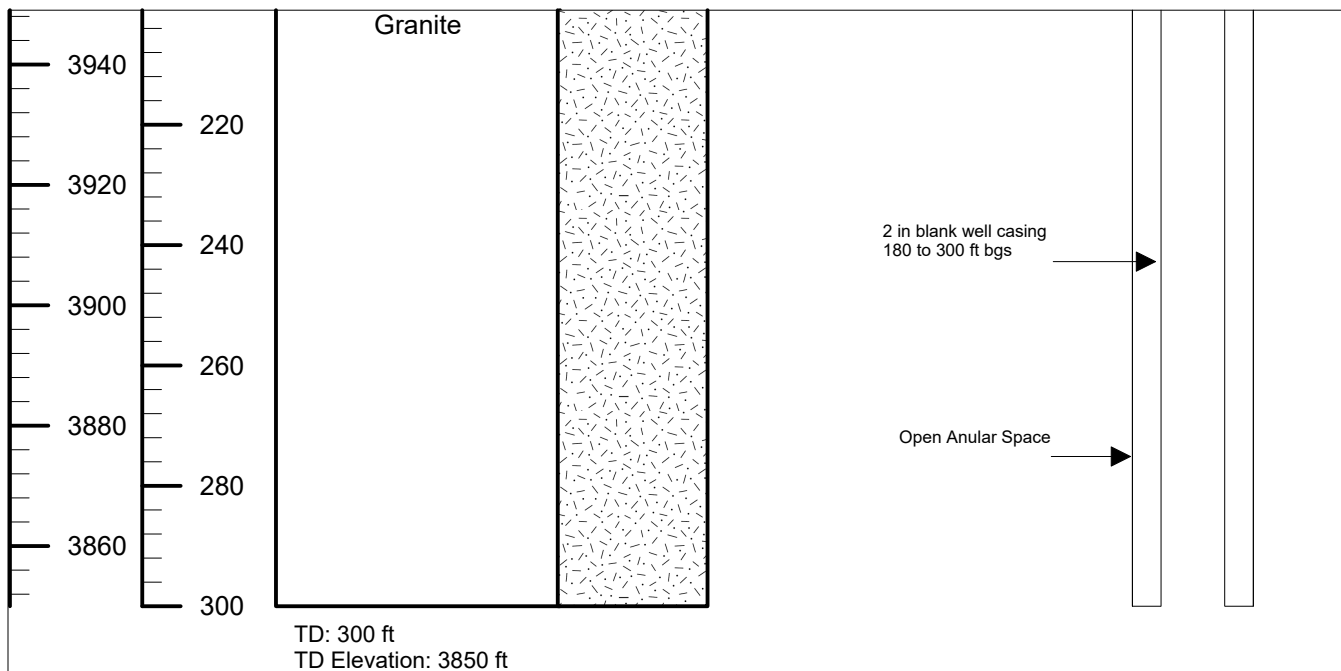


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A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

By: AP	Date: MAY 22
Approved: BG	Fig: 8

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4150 ft	Azimuth: 0 Inclination:90



Drilling Contractor:National
Drilling Method:Core
Start Date: 8/9/2021
End Date: 8/10/2021
Geologist: Bill Goldsmith
Northing: 11560544
Easting: 1700804
Coordinate System:
NAD 83 BLM Zone 12

G&H2021-17
Well/Piezometer
Construction Diagram

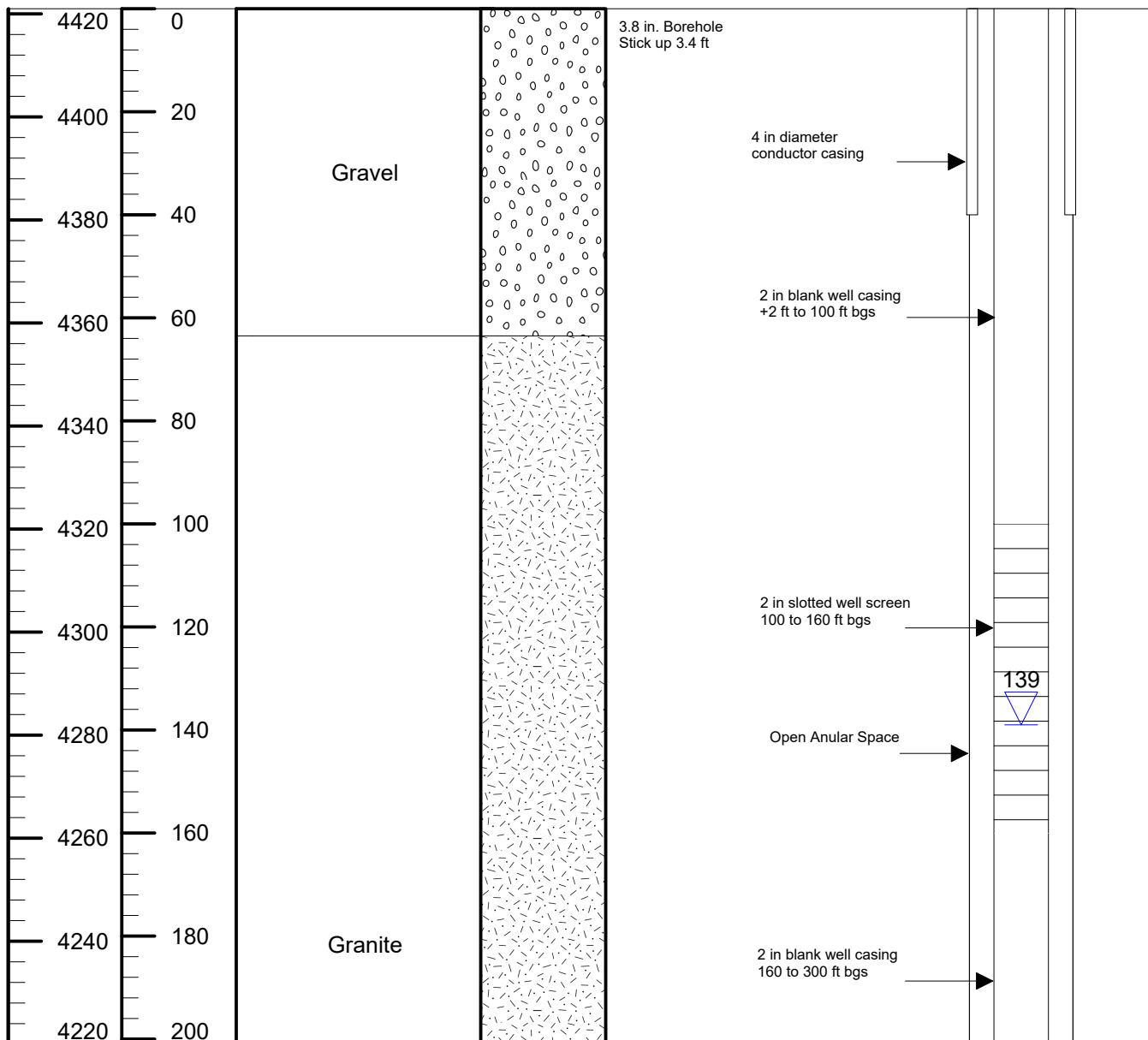


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Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

By: AP	Date: MAY 22
Approved: BG	Fig: 8

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4421 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National
Drilling Method: Core
Start Date: 8/11/2021
End Date: 8/13/2021
Geologist: Bill Goldsmith
Northing: 11561071
Easting: 1705289
Coordinate System:
NAD 83 BLM Zone 12

G&H2021-22
Well/Piezometer
Construction Diagram

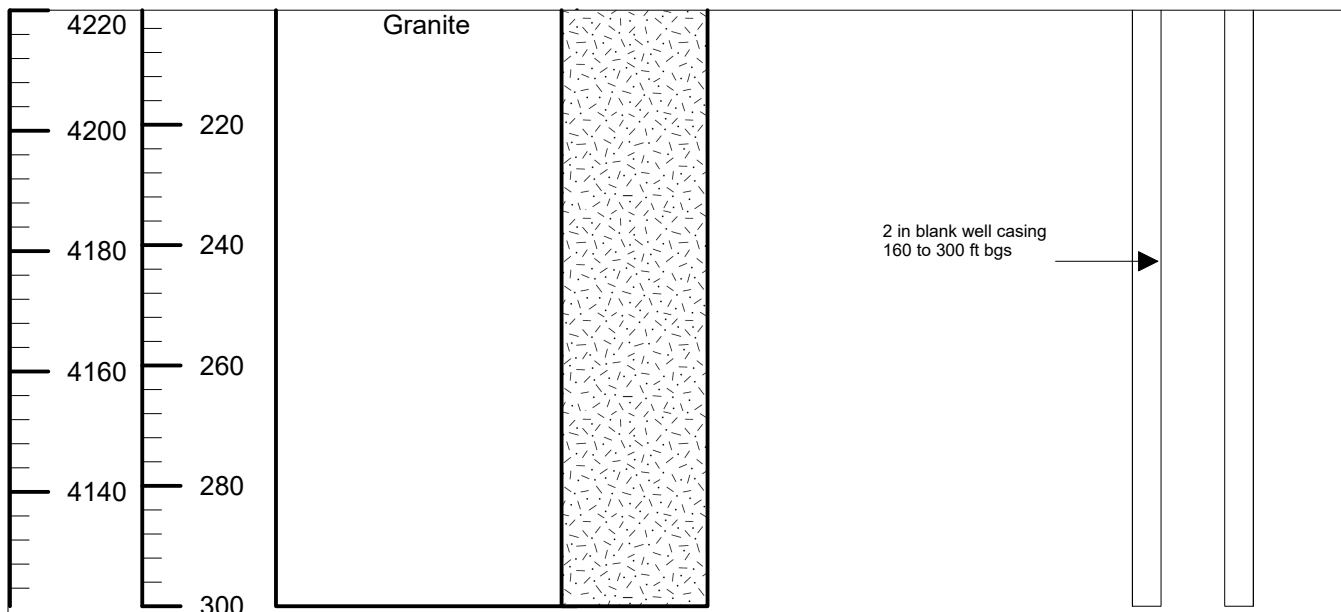


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A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

By: AP	Date: MAY 22
Approved: BG	Fig: 9

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4421 ft	Azimuth: 0 Inclination:90



TD: 300 ft
TD Elevation: 4121 ft

Drilling Contractor:National
Drilling Method:Core
Start Date: 8/11/2021
End Date: 8/13/2021
Geologist: Bill Goldsmith
Northing: 11561071
Easting: 1705289
Coordinate System:
NAD 83 BLM Zone 12

G&H2021-22
Well/Piezometer
Construction Diagram

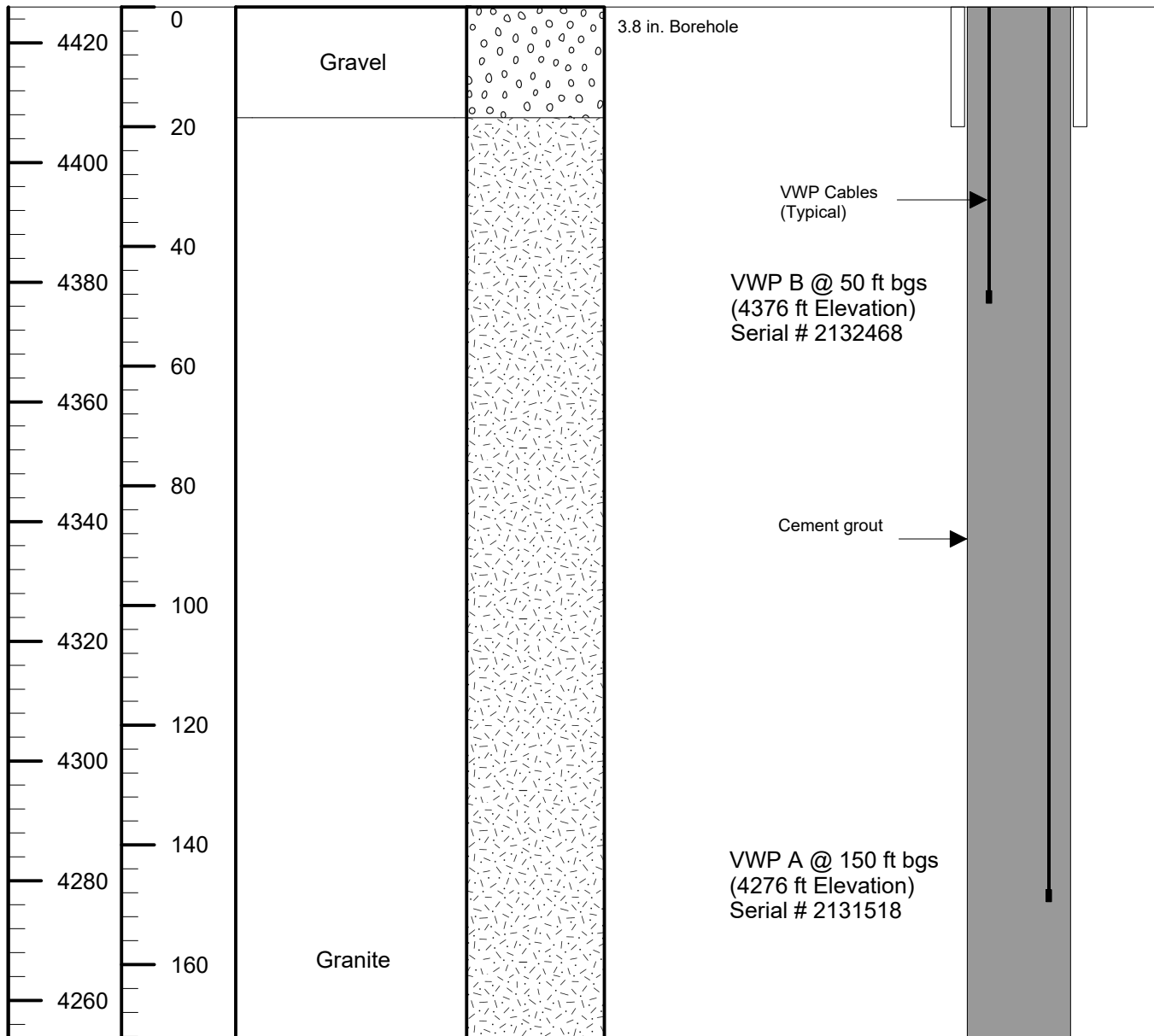



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GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS
A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

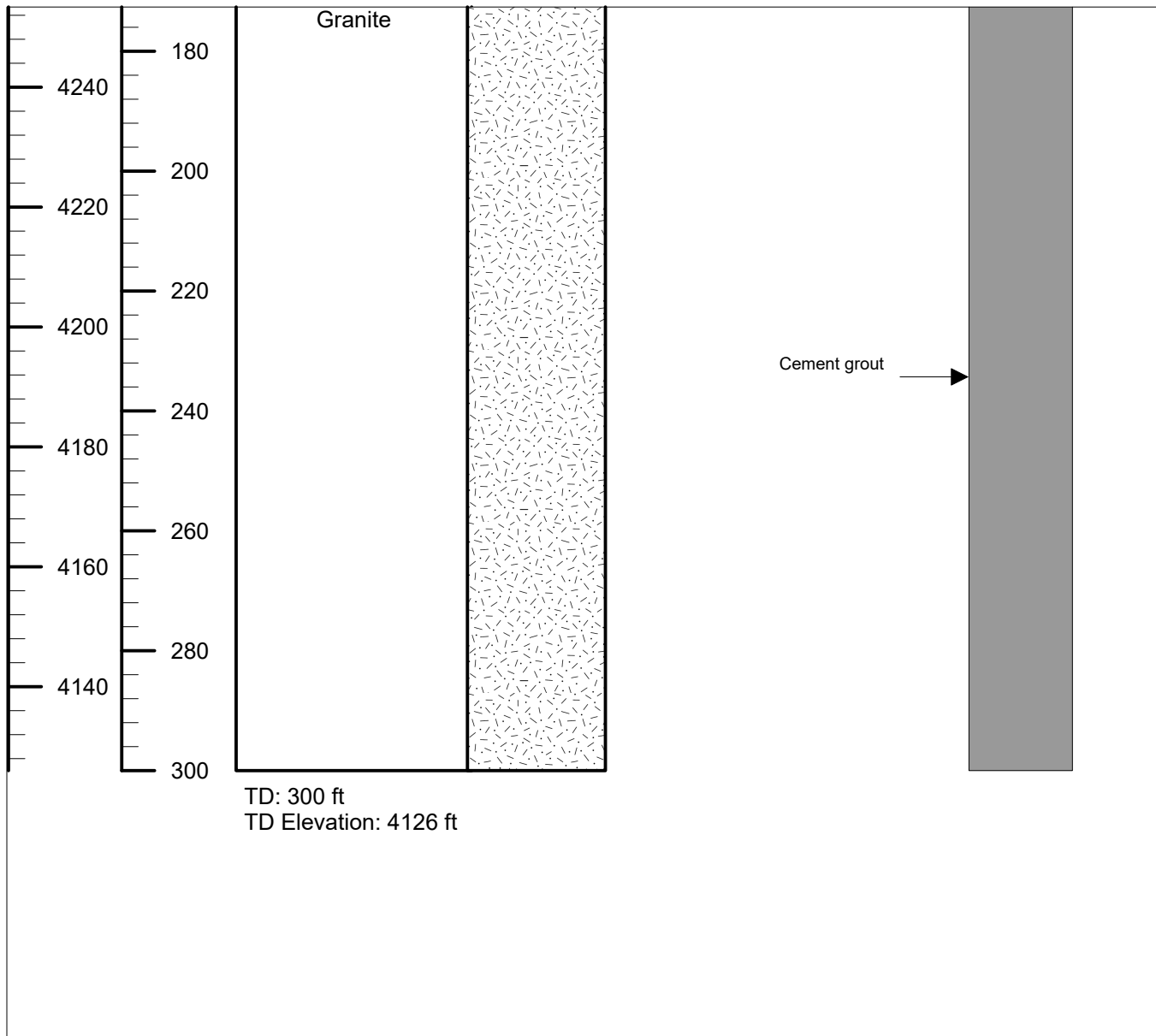
By: AP	Date: MAY 22
Approved: BG	Fig: 9


Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4426 ft	Azimuth: 0 Inclination: 90



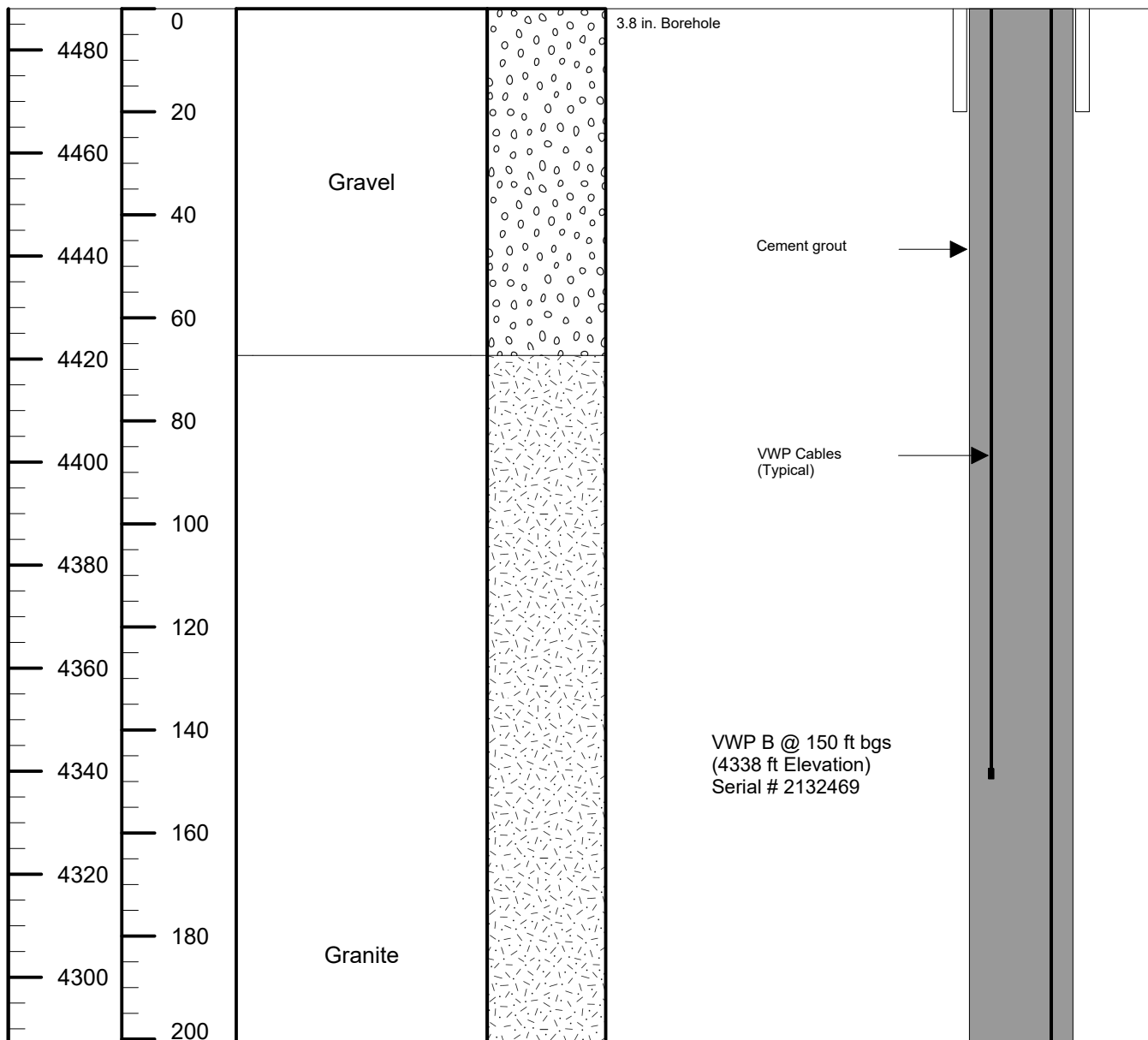
Drilling Contractor:National Drilling Method: Core Start Date: 8/24/2021 End Date: 8/27/2021 Geologist: Bill Goldsmith Northing: 11561993 Easting: 1706989 Coordinate System: NAD 83 BLM Zone 12	G&H2021-23 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ	By: AP	Date: MAY 22
		Approved: BG	Fig: 10

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4426 ft	Azimuth: 0 Inclination:90



Drilling Contractor:National Drilling Method: Core Start Date: 8/24/2021 End Date: 8/27/2021 Geologist: Bill Goldsmith Northing: 11561993 Easting: 1706989 Coordinate System: NAD 83 BLM Zone 12	G&H2021-23 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY		
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
			Approved: BG	Fig: 10

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4488 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National
Drilling Method: Core
Start Date: 8/16/2021
End Date: 8/18/2021
Geologist: Simone Müller
Northing: 11561990
Easting: 1708372
Coordinate System:
NAD 83 BLM Zone 12

G&H2021-24
Well/Piezometer
Construction Diagram

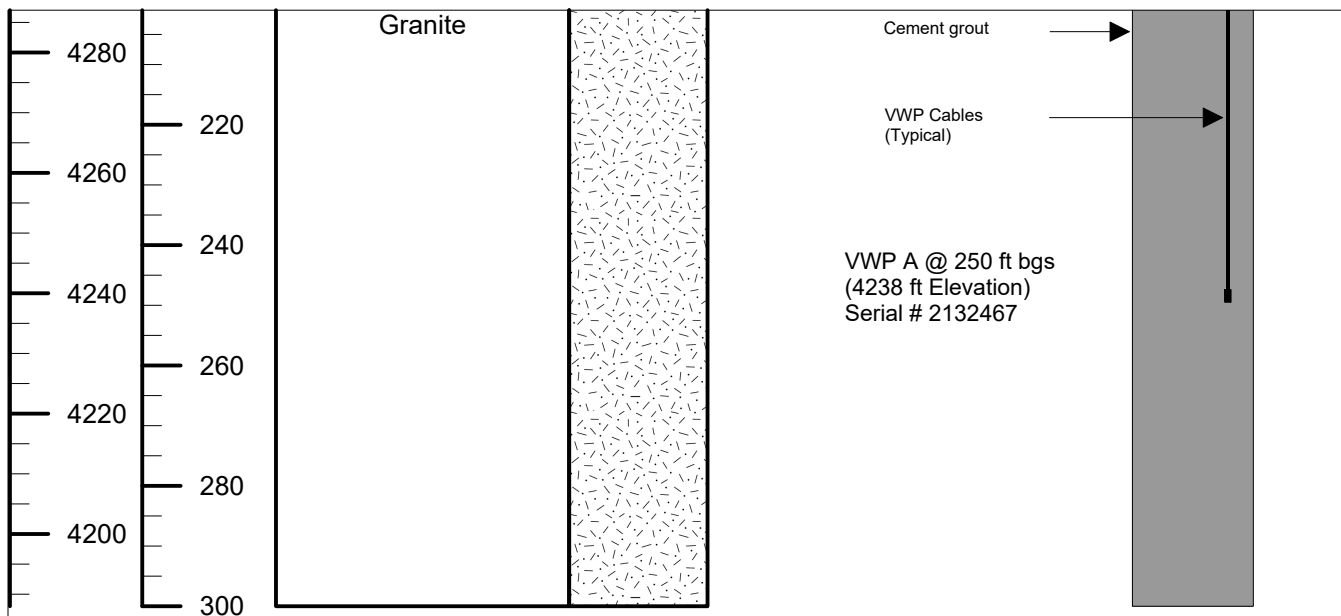


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GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS
A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

By: AP	Date: MAY 22
Approved: BG	Fig: 11

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4488 ft	Azimuth: 0 Inclination: 90



TD: 300 ft bgs
TD Elevation: 4188 ft

Drilling Contractor: National
Drilling Method: Core
Start Date: 8/16/2021
End Date: 8/18/2021
Geologist: Simone Müller
Northing: 11561990
Easting: 1708372
Coordinate System:
NAD 83 BLM Zone 12

G&H2021-24
Well/Piezometer
Construction Diagram

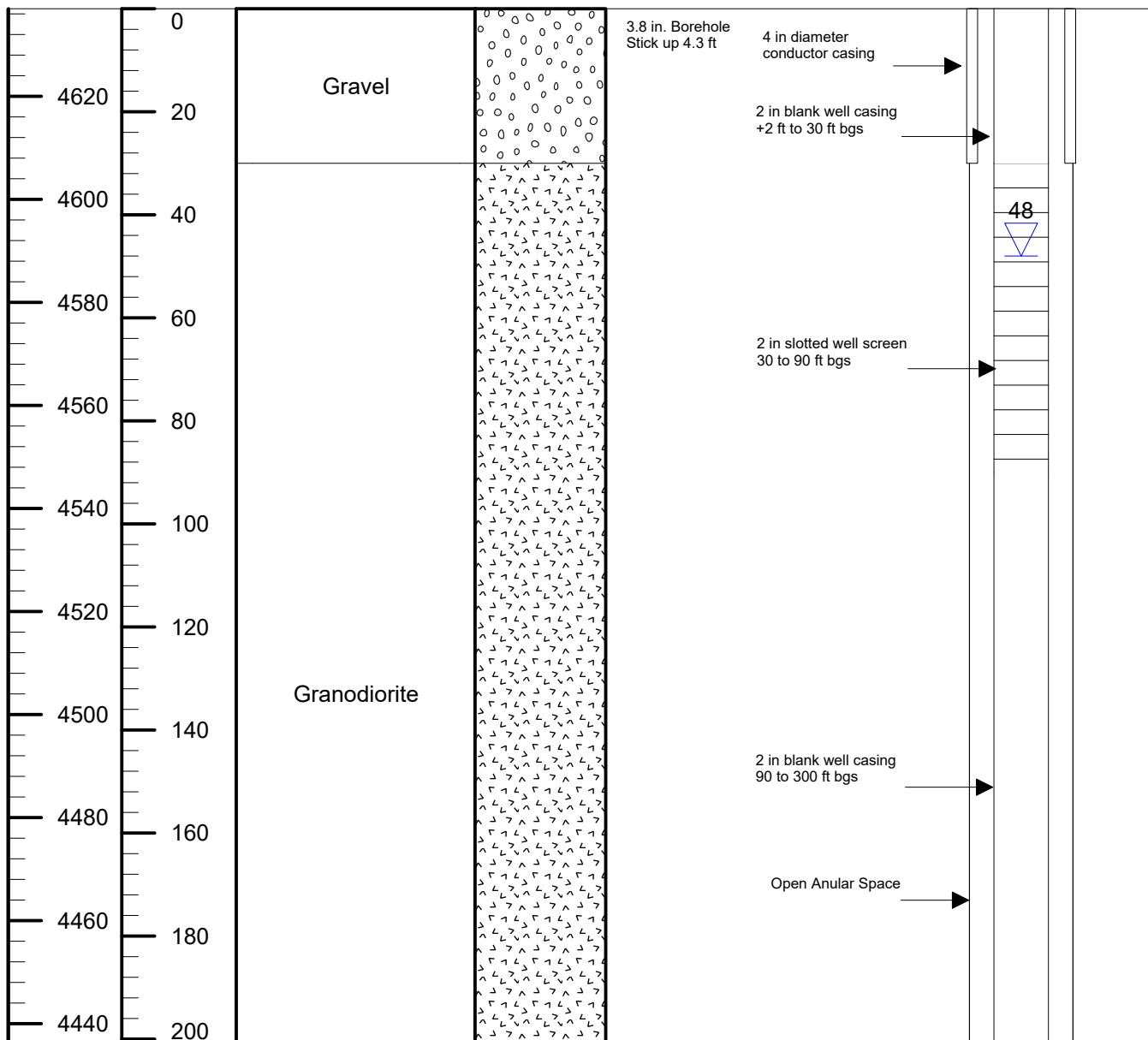


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A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

By:	AP	Date:	MAY 22
Approved:	BG	Fig:	11

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4637 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National
Drilling Method: Core
Start Date: 8/20/2021
End Date: 8/22/2021
Geologist: Simone Müller
Northing: 11562136
Easting: 1710099
Coordinate System:
NAD 83 BLM Zone 12

G&H2021-25
Well/Piezometer
Construction Diagram

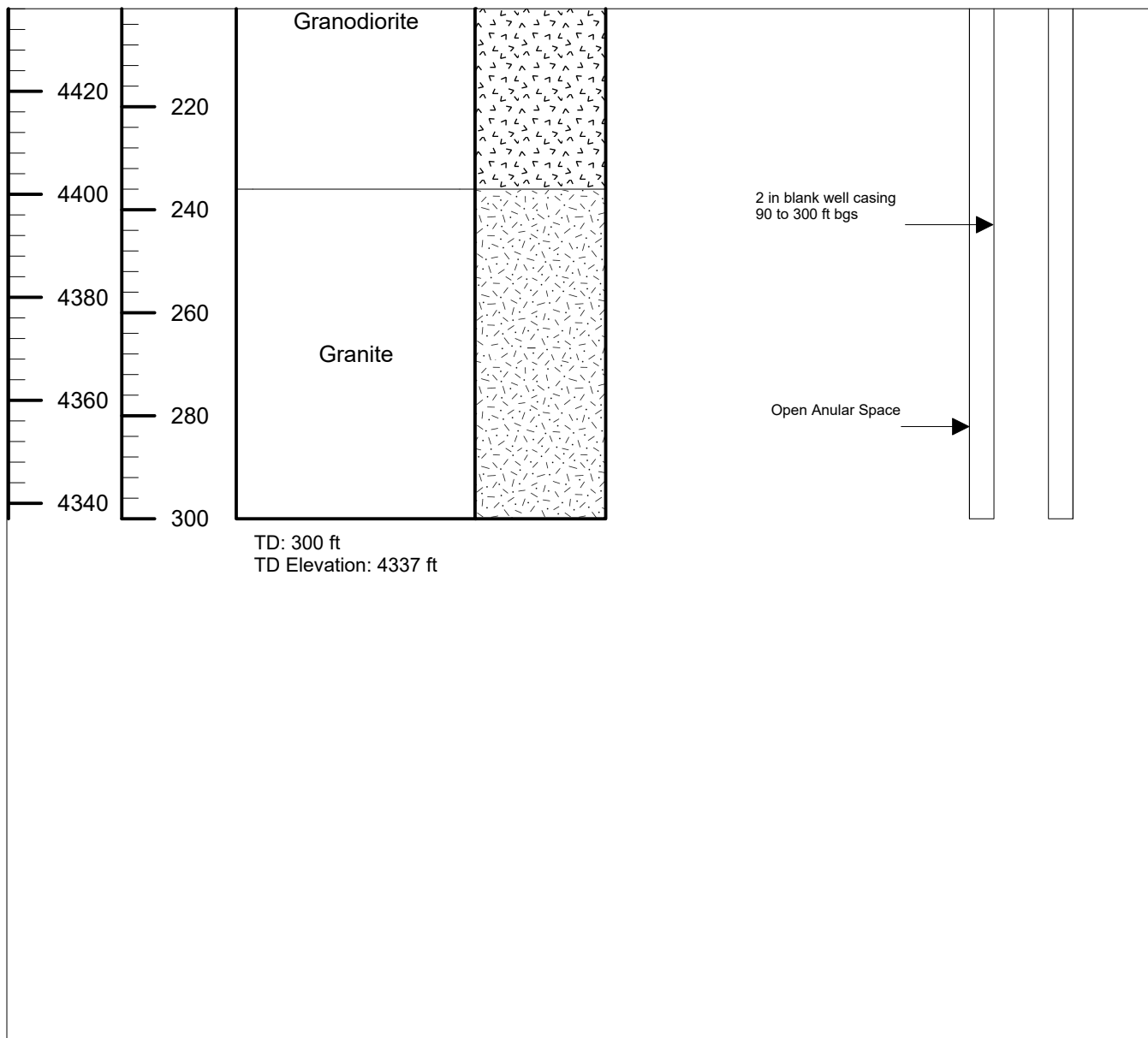


PITEAU ASSOCIATES
GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS
A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

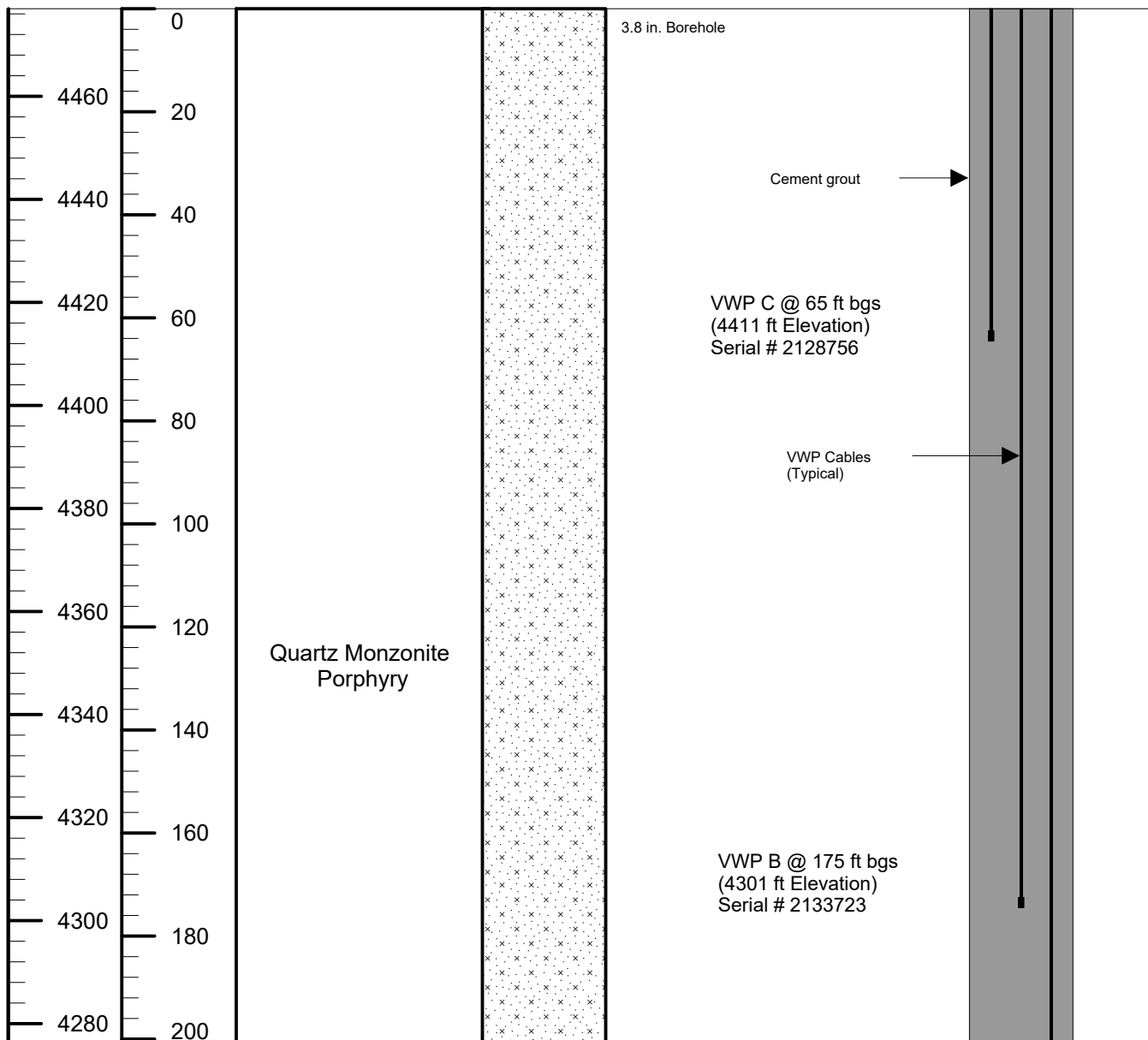
By: AP	Date: MAY 22
Approved: BG	Fig: 12


Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4637 ft	Azimuth: 0 Inclination:90

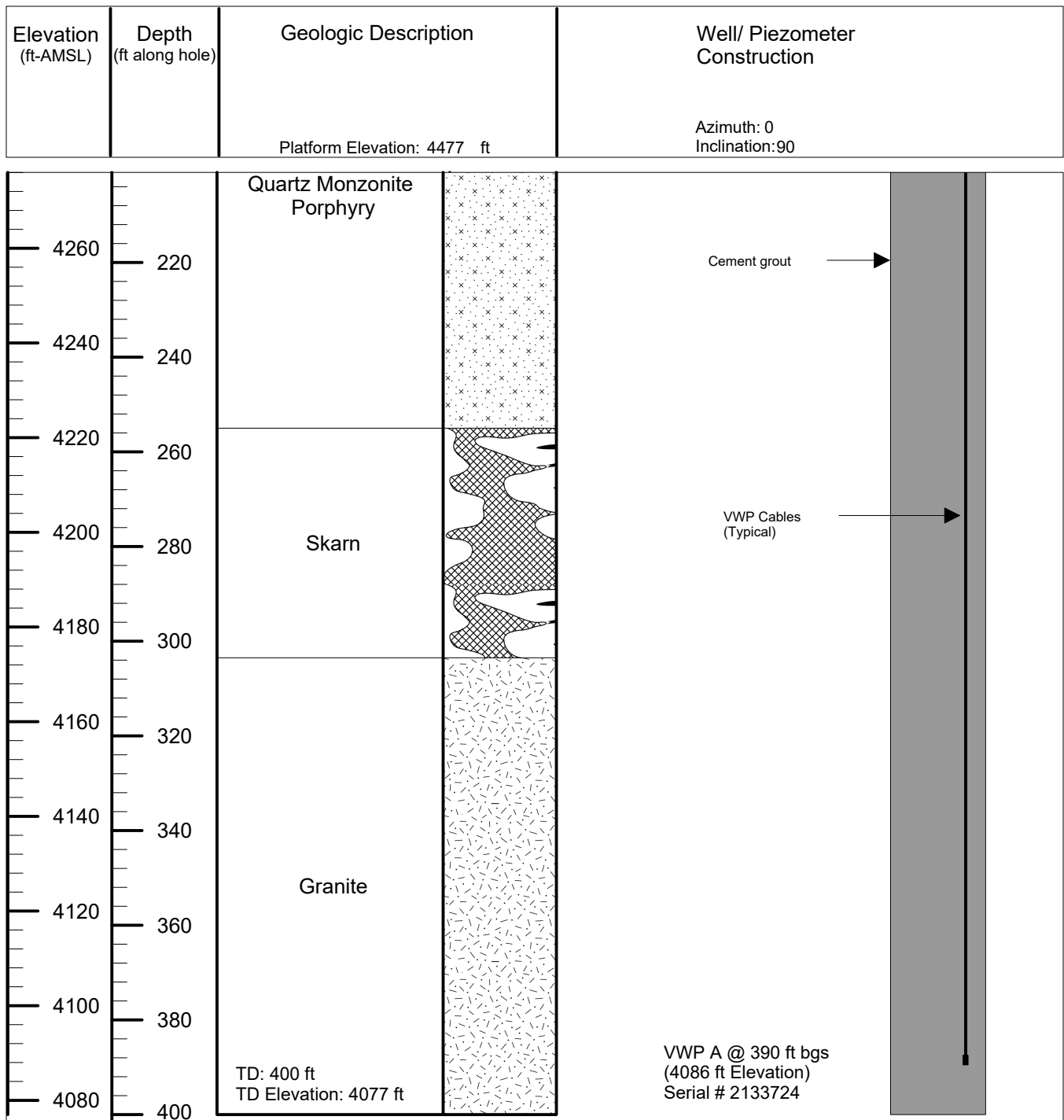



Drilling Contractor:National Drilling Method: Core Start Date: 8/20/2021 End Date: 8/22/2021 Geologist: Simone Müller Northing: 11562136 Easting: 1710099 Coordinate System: NAD 83 BLM Zone 12	G&H2021-25 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ	By: AP	Date: MAY 22
		Approved: BG	Fig: 12

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4477 ft	Azimuth: 0 Inclination: 90

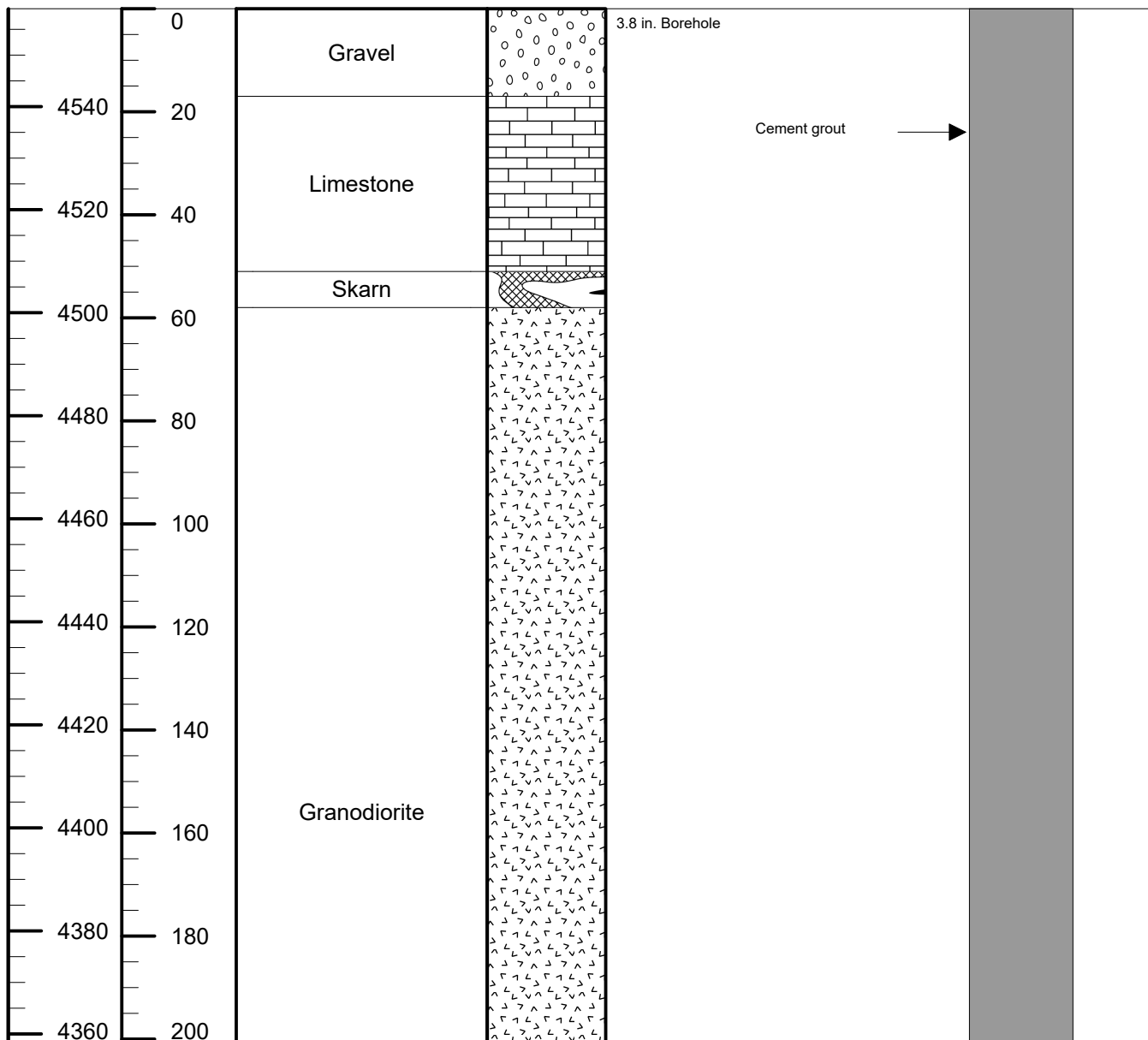



Drilling Contractor:National Drilling Method: Core Start Date: 9/1/2021 End Date: 9/4/2021 Geologist: Bill Goldsmith Northing: 11565655 Easting: 1707317 Coordinate System: NAD 83 BLM Zone 12	G&H2021-26 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetiaz, AZ	By: AP	Date: MAY 22
		Approved: BG	Fig: 13



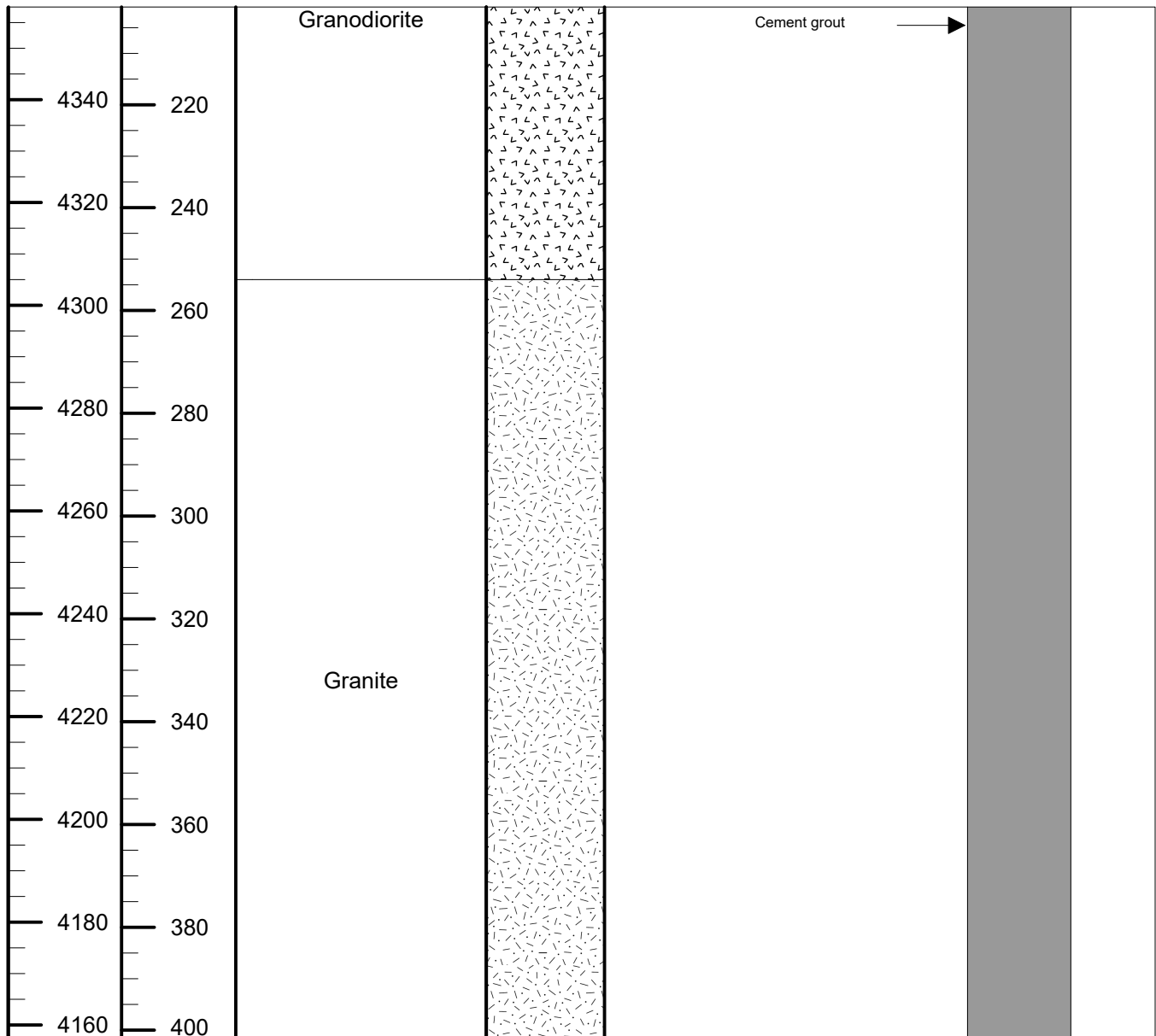
Drilling Contractor: National Drilling Method: Core Start Date: 9/1/2021 End Date: 9/4/2021 Geologist: Bill Goldsmith Northing: 11565655 Easting: 1707317 Coordinate System: NAD 83 BLM Zone 12	G&H2021-26 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetiaz, AZ		By: AP Approved: BG


Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4559 ft	Azimuth: 0 Inclination: 90





Drilling Contractor: National Drilling Method: Core Start Date: 9/25/2021 End Date: 9/27/2021 Geologist: Simone Müller Northing: 11566105 Easting: 1708682 Coordinate System: NAD 83 BLM Zone 12			
G&H2021-28 Well/Piezometer Construction Diagram		 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
		Approved: BG	Fig: 14

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4559 ft	Azimuth: 0 Inclination: 90



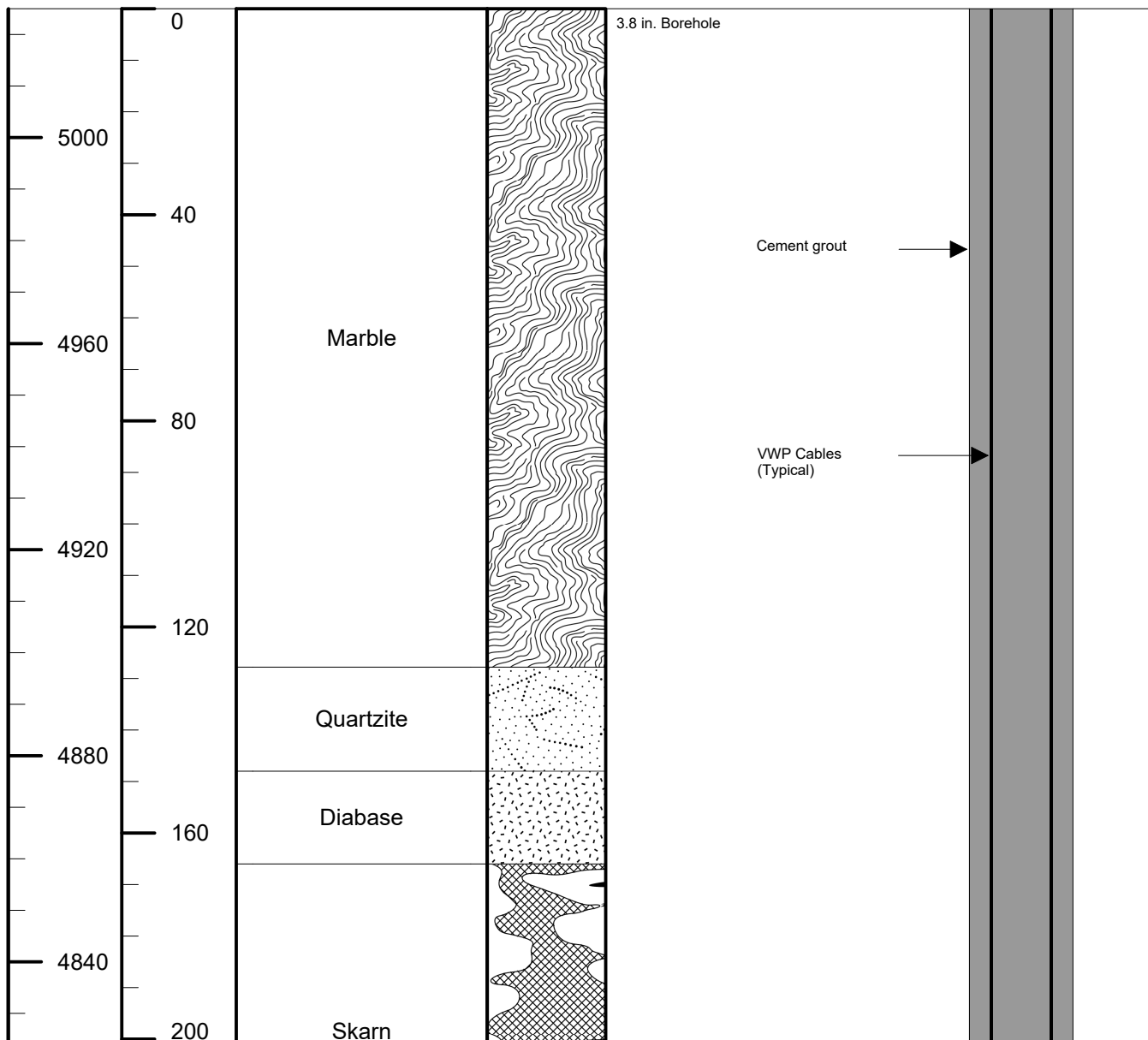
Drilling Contractor: National Drilling Method: Core Start Date: 9/25/2021 End Date: 9/27/2021 Geologist: Simone Müller Northing: 11566105 Easting: 1708682 Coordinate System: NAD 83 BLM Zone 12			
G&H2021-28 Well/Piezometer Construction Diagram		 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
		Approved: BG	Fig: 14

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4559 ft	Azimuth: 0 Inclination: 90

		Granite		
<p>TD: 410 ft bgs TD Elevation: 4149 ft</p>				

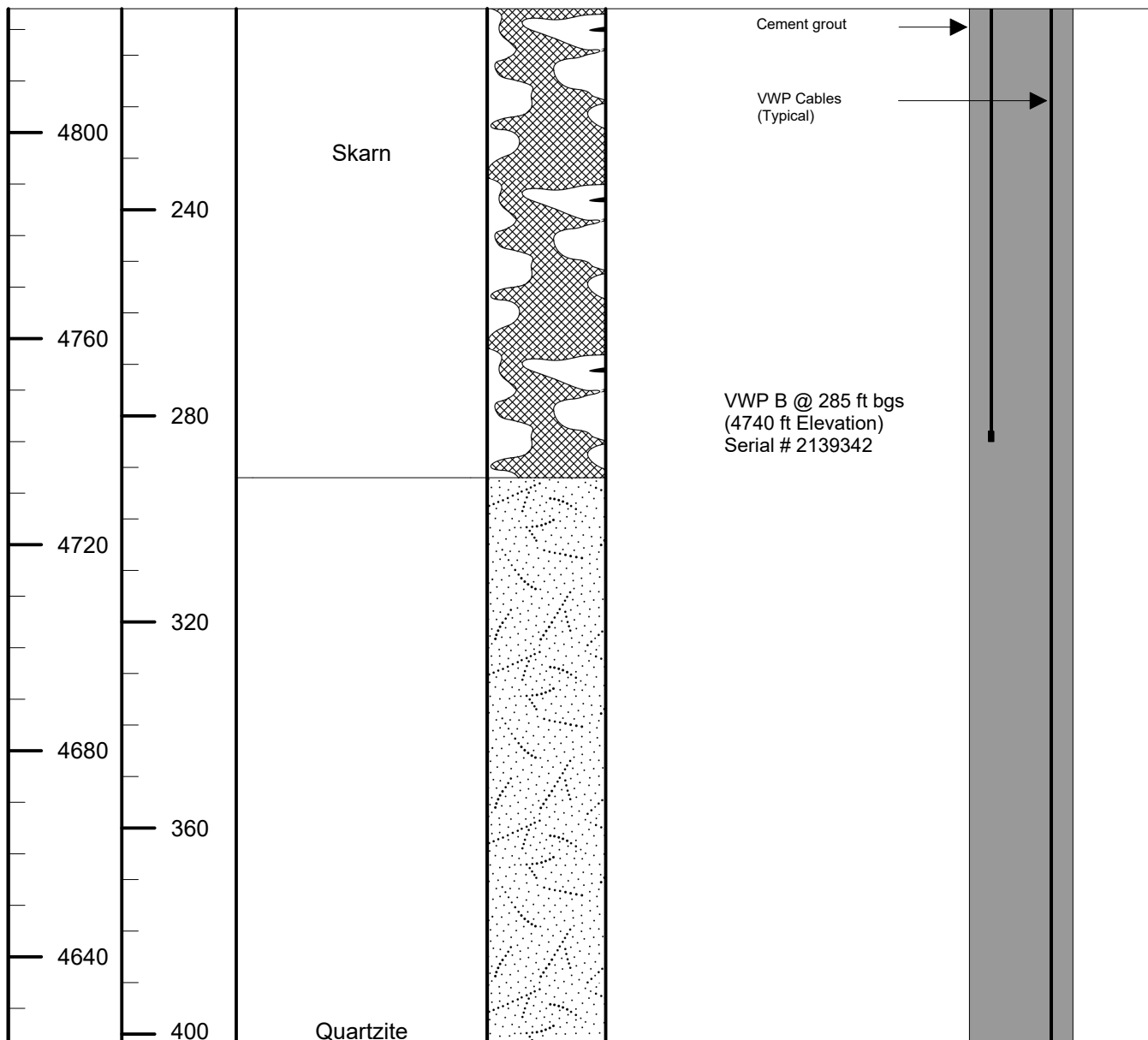
<p>Drilling Contractor: National Drilling Method: Core Start Date: 9/25/2021 End Date: 9/27/2021 Geologist: Simone Müller Northing: 11566105 Easting: 1708682 Coordinate System: NAD 83 BLM Zone 12</p>				
<p>G&H2021-28 Well/Piezometer Construction Diagram</p>		 <p>PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY</p>		
<p>Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ</p>			By: AP	Date: MAY 22
			Approved: BG	Fig: 14

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 5025 ft	Azimuth: 0 Inclination: 90



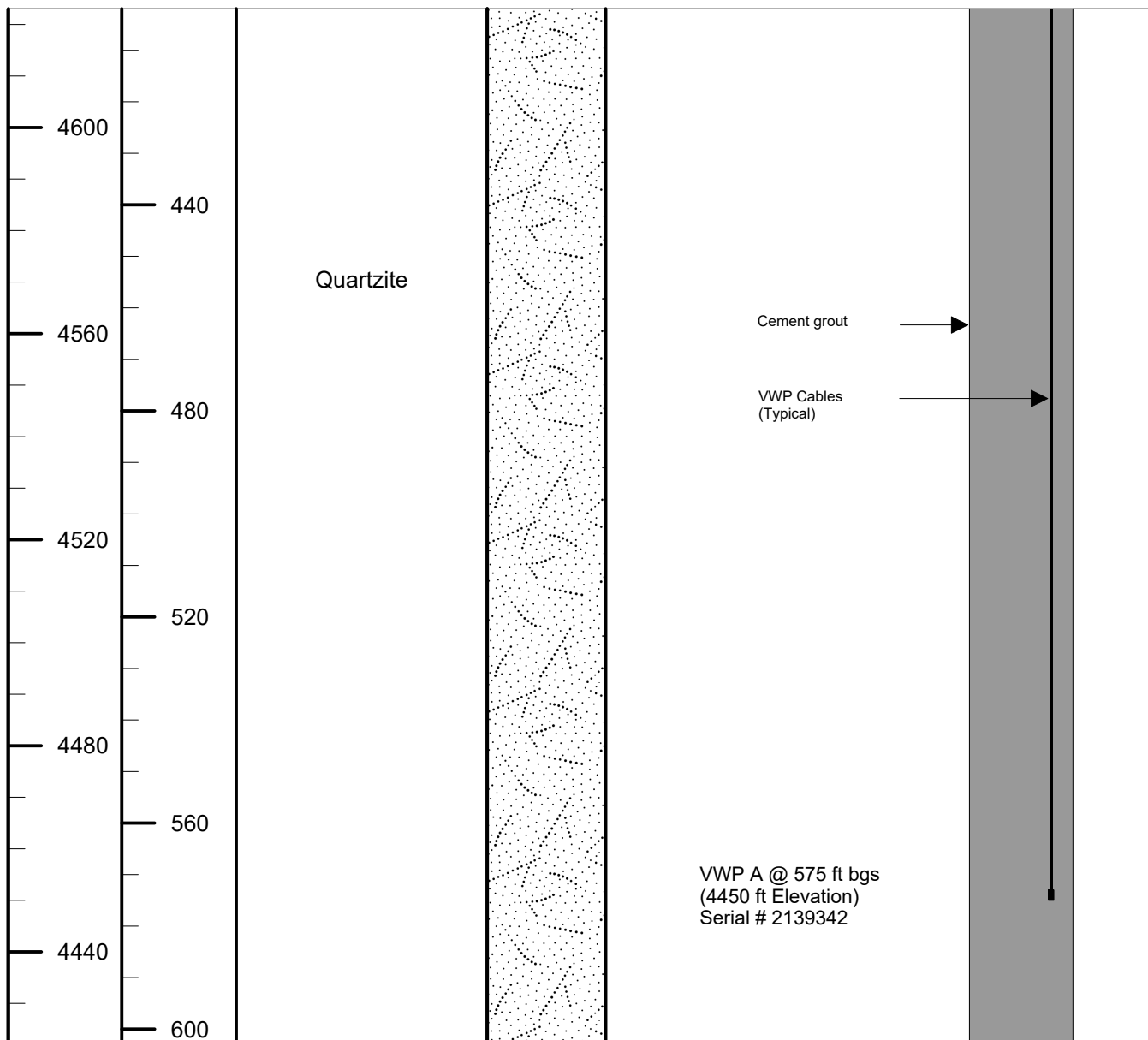
Drilling Contractor:National Drilling Method: Core Start Date: 9/28/2021 End Date: 4/10/2021 Geologist: Bill Goldsmith Northing: 11563933 Easting: 1713106 Coordinate System: NAD 83 BLM Zone 12	G&H2021-30 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ	By: AP	Date: MAY 22
		Approved: BG	Fig: 15

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 5025 ft	Azimuth: 0 Inclination: 90



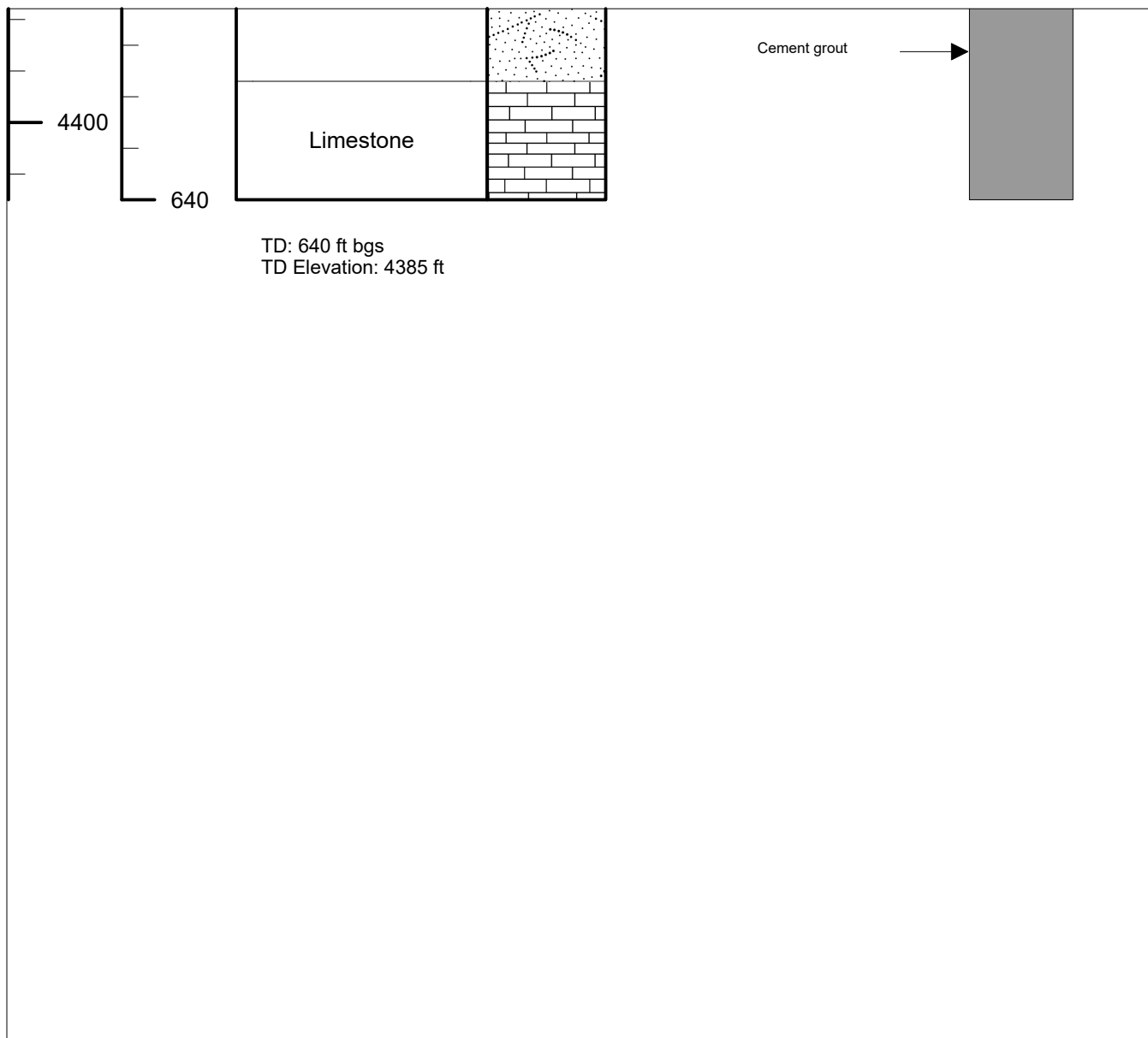
Drilling Contractor:National Drilling Method: Core Start Date: 9/28/2021 End Date: 4/10/2021 Geologist: Bill Goldsmith Northing: 11563933 Easting: 1713106 Coordinate System: NAD 83 BLM Zone 12	G&H2021-30 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ	By: AP	Date: MAY 22
		Approved: BG	Fig: 15

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 5025 ft	Azimuth: 0 Inclination: 90



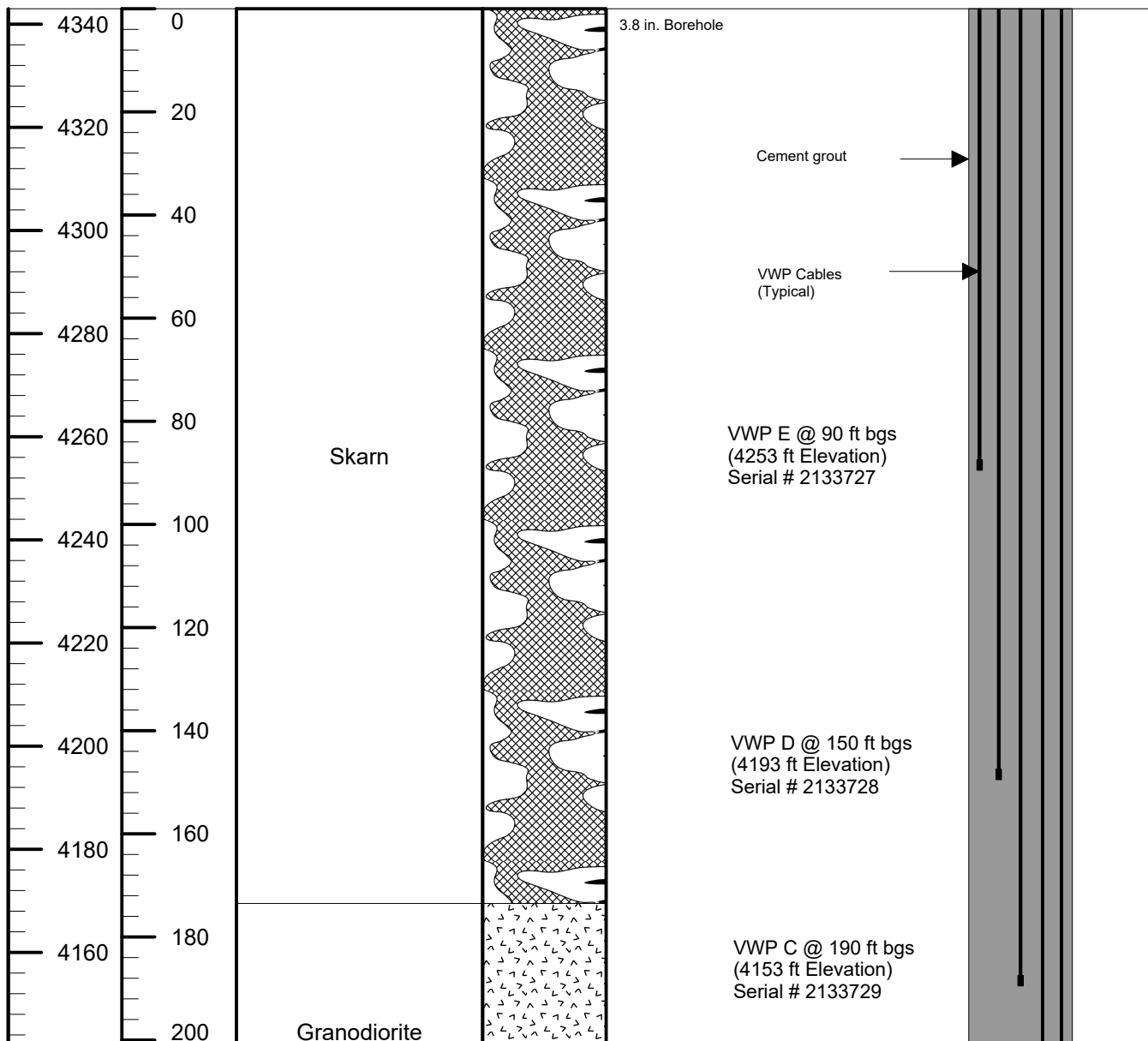
Drilling Contractor:National Drilling Method: Core Start Date: 9/28/2021 End Date: 4/10/2021 Geologist: Bill Goldsmith Northing: 11563933 Easting: 1713106 Coordinate System: NAD 83 BLM Zone 12	<div>G&H2021-30 Well/Piezometer Construction Diagram</div>	<div> PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY</div>		
			Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ	
			By: AP	Date: MAY 22
		Approved: BG	Fig: 15	


Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 5025 ft	Azimuth: 0 Inclination: 90



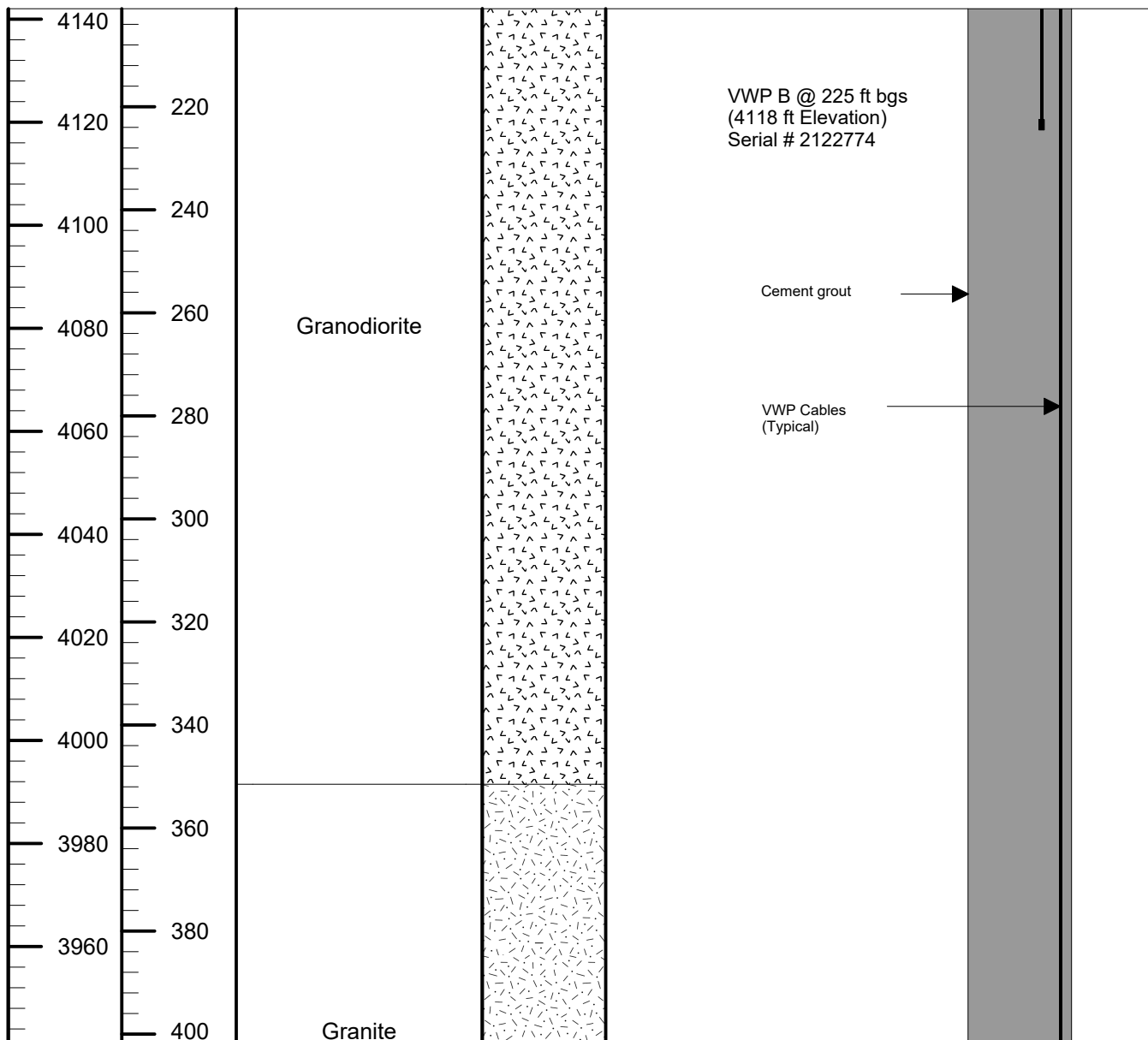
Drilling Contractor:National Drilling Method: Core Start Date: 9/28/2021 End Date: 4/10/2021 Geologist: Bill Goldsmith Northing: 11563933 Easting: 1713106 Coordinate System: NAD 83 BLM Zone 12	G&H2021-30 Well/Piezometer Construction Diagram			
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
			Approved: BG	Fig: 15


Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4343 ft	Azimuth: 0 Inclination: 90



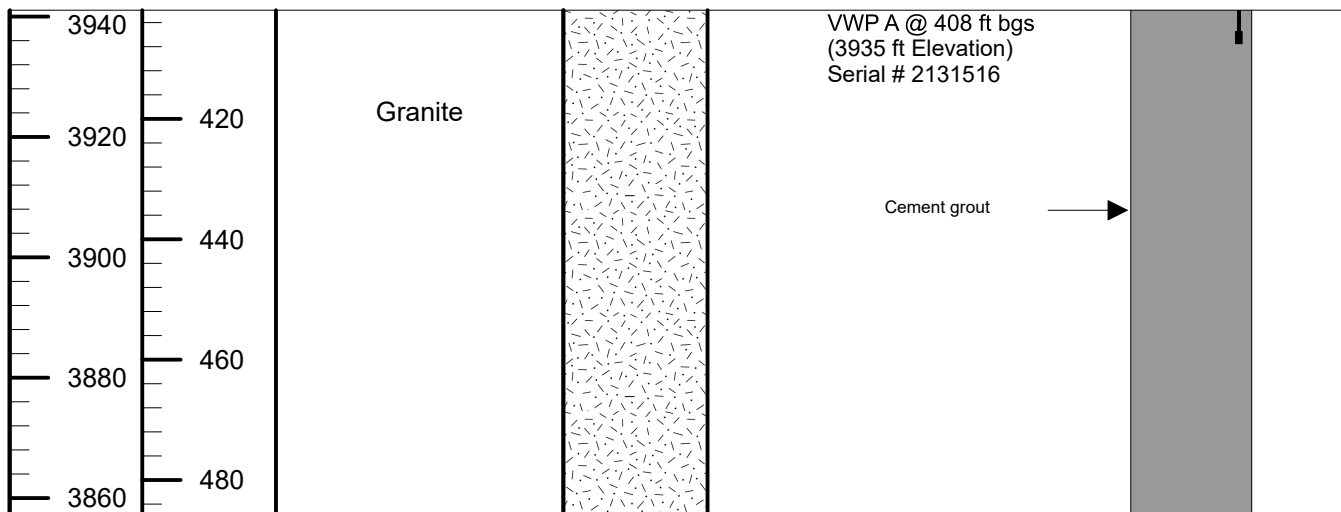
Drilling Contractor:National Drilling Method: Core Start Date: 9/6/2021 End Date: 9/10/2021 Geologist: Simone Müller Northing: 11565323 Easting: 1704233 Coordinate System: NAD 83 BLM Zone 12	Pit2021-02 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY		
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ	By: AP	Date: MAY 22	
		Approved: BG	Fig: 16	

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4343 ft	Azimuth: 0 Inclination: 90



Drilling Contractor:National Drilling Method: Core Start Date: 9/6/2021 End Date: 9/10/2021 Geologist: Simone Müller Northing: 11565323 Easting: 1704233 Coordinate System: NAD 83 BLM Zone 12	Pit2021-02 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY		
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ	By: AP	Date: MAY 22	
		Approved: BG	Fig: 16	

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4343 ft	Azimuth: 0 Inclination: 90



TD: 486 ft
TD Elevation: 3857 ft

Drilling Contractor: National
Drilling Method: Core
Start Date: 9/6/2021
End Date: 9/10/2021
Geologist: Simone Müller
Northing: 11565323
Easting: 1704233

Coordinate System:
NAD 83 BLM Zone 12

Pit2021-02
Well/Piezometer
Construction Diagram

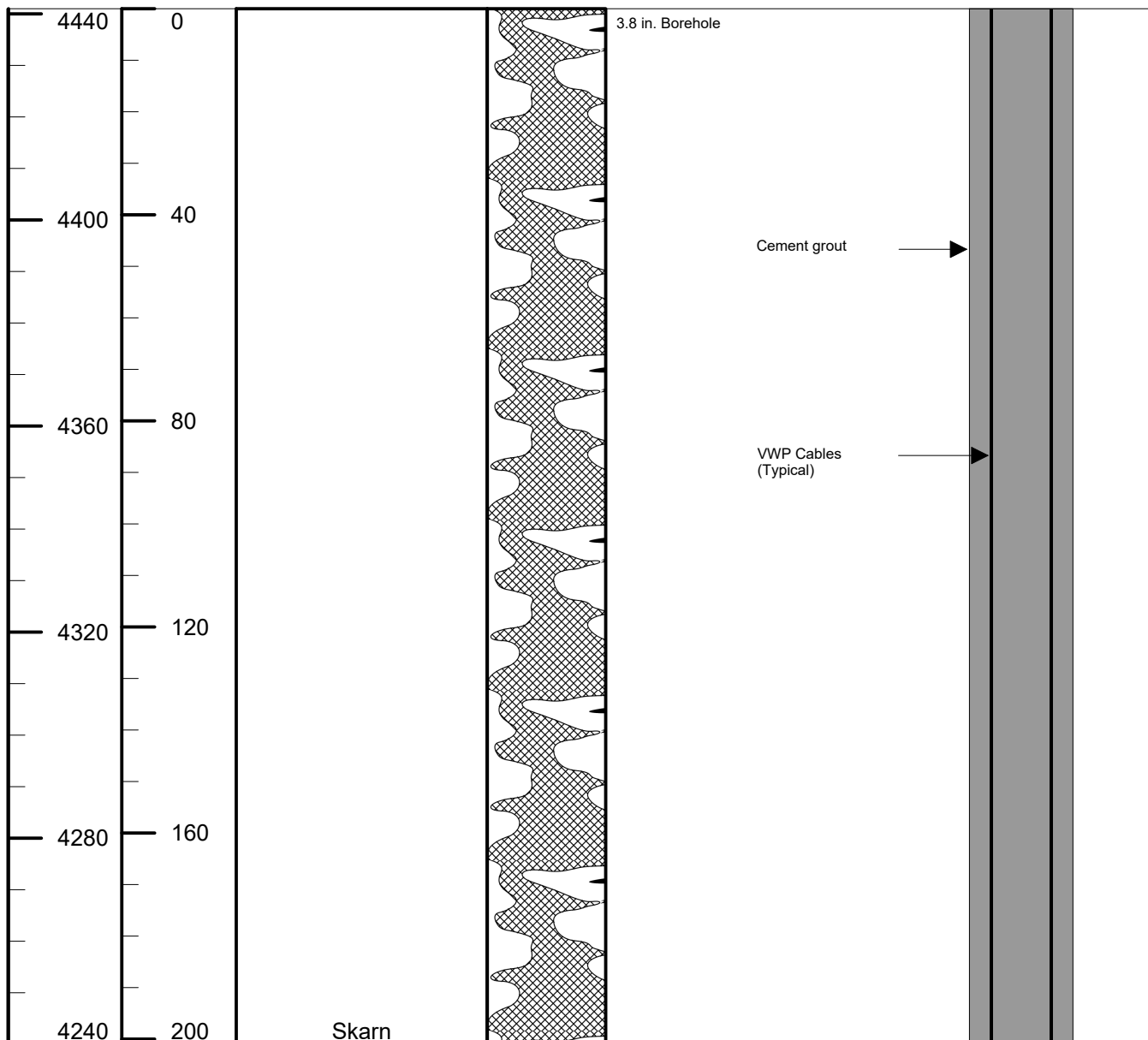


PITEAU ASSOCIATES
GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS
A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

By: AP	Date: MAY 22
Approved: BG	Fig: 16

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4441 ft	Azimuth: 0 Inclination: 90




Drilling Contractor:National Drilling Method: Core Start Date: 9/11/2021 End Date: 9/17/2021 Geologist: Bill Goldsmith Northing: 11566240 Easting: 1704882 Coordinate System: NAD 83 BLM Zone 12	<div>Pit2021-03 Well/Piezometer Construction Diagram</div>	<div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div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The diagram is a geological cross-section oriented vertically. On the left, there are two vertical scales for elevation in feet. The outer scale ranges from 3840 to 4000 in increments of 40. The inner scale ranges from 440 to 600 in increments of 40. The central part of the diagram shows a vertical column representing a geological unit, divided into three distinct lithological sections. The top section, between approximately 4000 and 4040 feet, is filled with a cross-hatch pattern. The middle section, between approximately 4040 and 4120 feet, is labeled 'Granodiorite' and contains a pattern of small, upward-pointing triangles. The bottom section, extending from approximately 4120 feet down to 600 feet, is labeled 'Granite' and contains a pattern of small, downward-pointing triangles. To the right of the lithological column, there is a text label: 'VWP A @ 491 ft bgs (3950 ft Elevation) Serial # 2133731'. Further to the right, there is a vertical grey bar representing a well casing, with a horizontal line indicating the well's location at an elevation of 3950 feet.

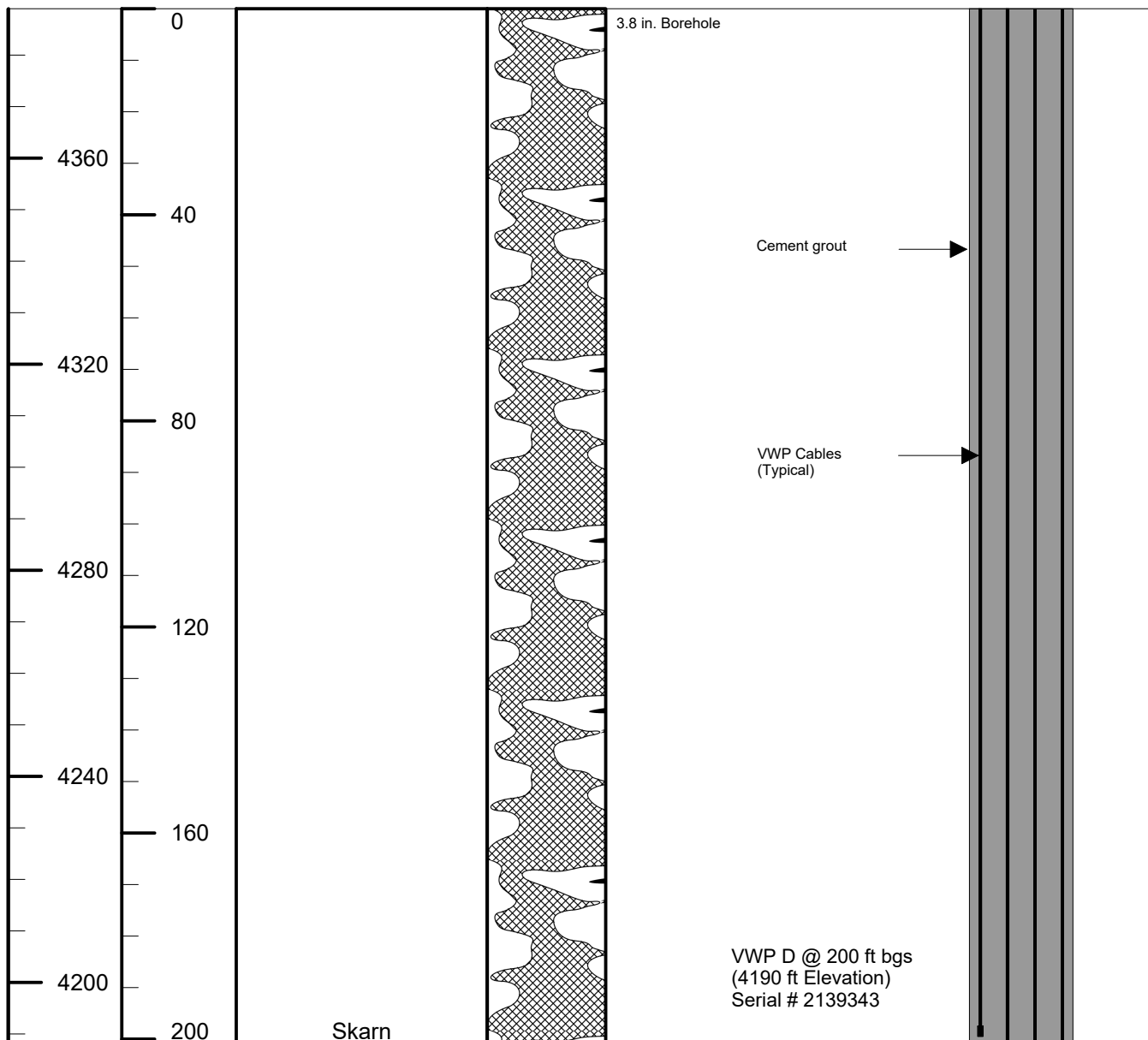
Fig:	17
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Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4441 ft	Azimuth: 0 Inclination:90

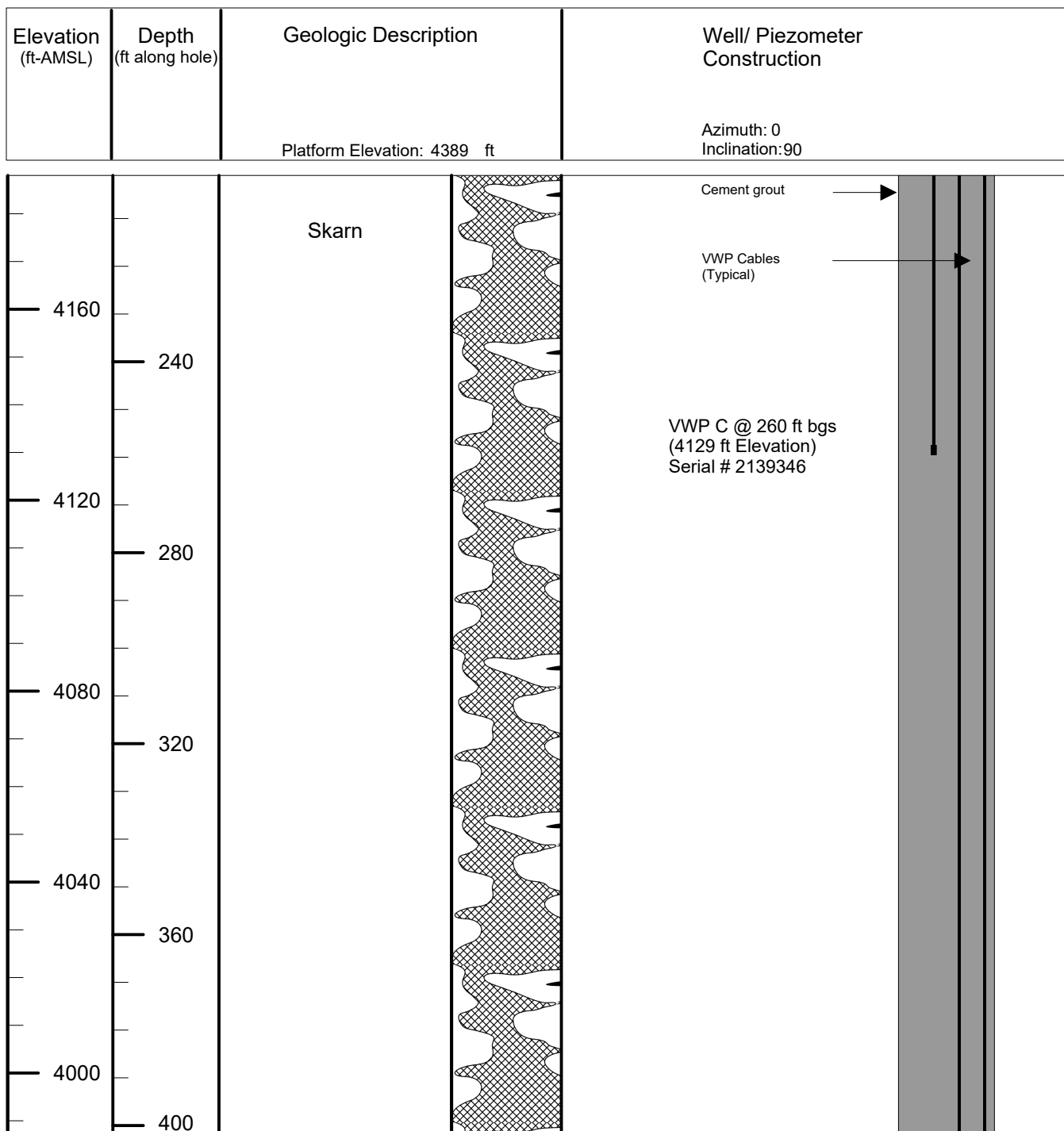
<p style="text-align: center;">Granite TD: 603 ft bgs TD Elevation: 3838 ft</p>			
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Drilling Contractor:National Drilling Method: Core Start Date: 9/11/2021 End Date: 9/17/2021 Geologist: Bill Goldsmith Northing: 11566240 Easting: 1704882 Coordinate System: NAD 83 BLM Zone 12			
Pit2021-03 Well/Piezometer Construction Diagram		 PITEAU ASSOCIATES <small>GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS</small> <small>A TETRA TECH COMPANY</small>	
Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
		Approved: BG	Fig: 17

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4389 ft	Azimuth: 0 Inclination: 90



Drilling Contractor:National Drilling Method: Core Start Date: 9/18/2021 End Date: 9/23/2021 Geologist: Bill Goldsmith Northing: 11565340 Easting: 1704965 Coordinate System: NAD 83 BLM Zone 12	Pit2021-04 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ	By: AP	Date: MAY 22
		Approved: BG	Fig: 18



Drilling Contractor: National
 Drilling Method: Core
 Start Date: 9/18/2021
 End Date: 9/23/2021
 Geologist: Bill Goldsmith
 Northing: 11565340
 Easting: 1704965
 Coordinate System:
 NAD 83 BLM Zone 12

Pit2021-04
 Well/Piezometer
 Construction Diagram

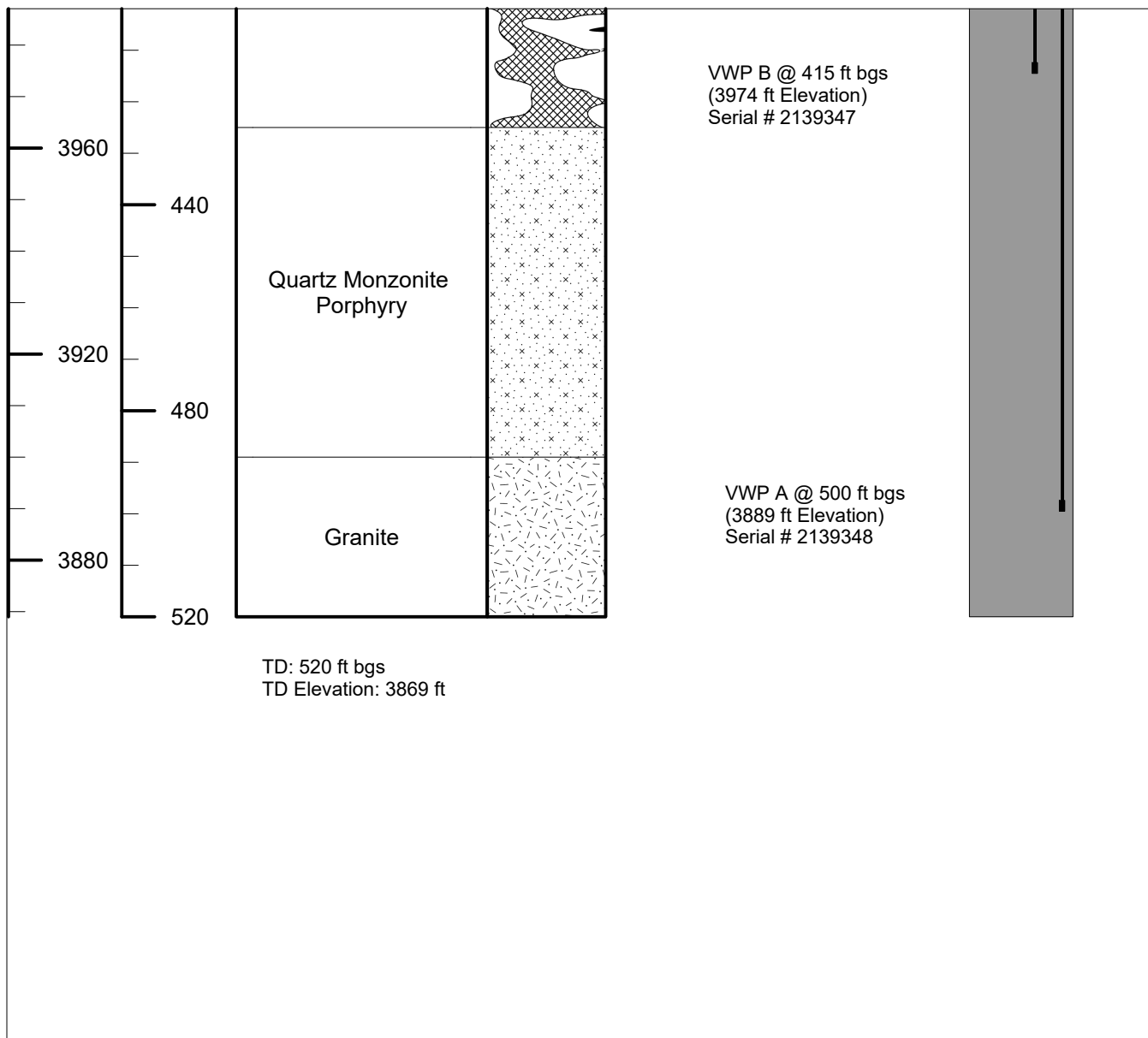



PITEAU ASSOCIATES
 GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS
 A TETRA TECH COMPANY

Client: Rosemont Copper Company
 Project: Rosemont Copper World Project
 Location: Helvetia, AZ

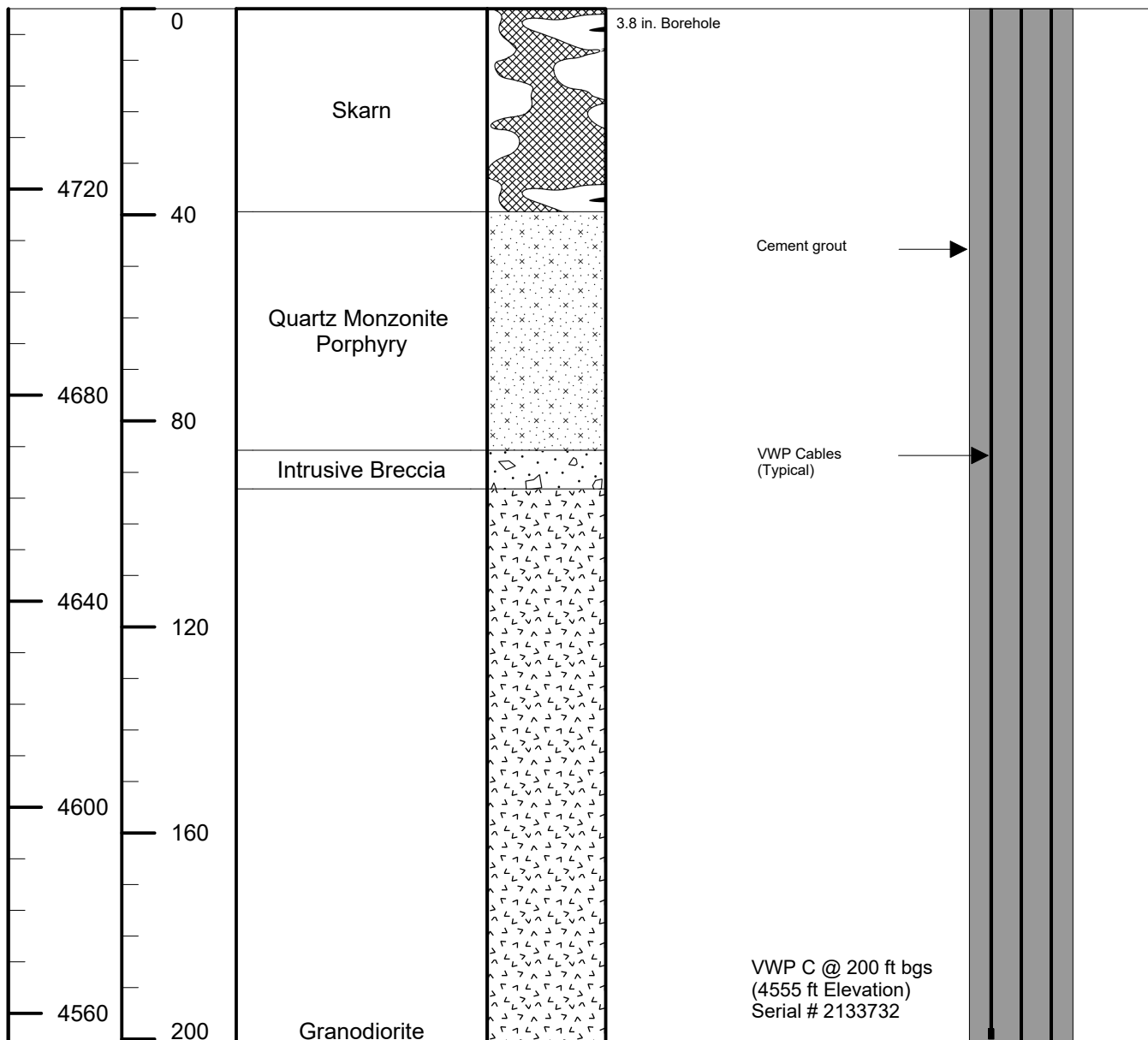
By: AP	Date: MAY 22
Approved: BG	Fig: 18


Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4389 ft	Azimuth: 0 Inclination: 90



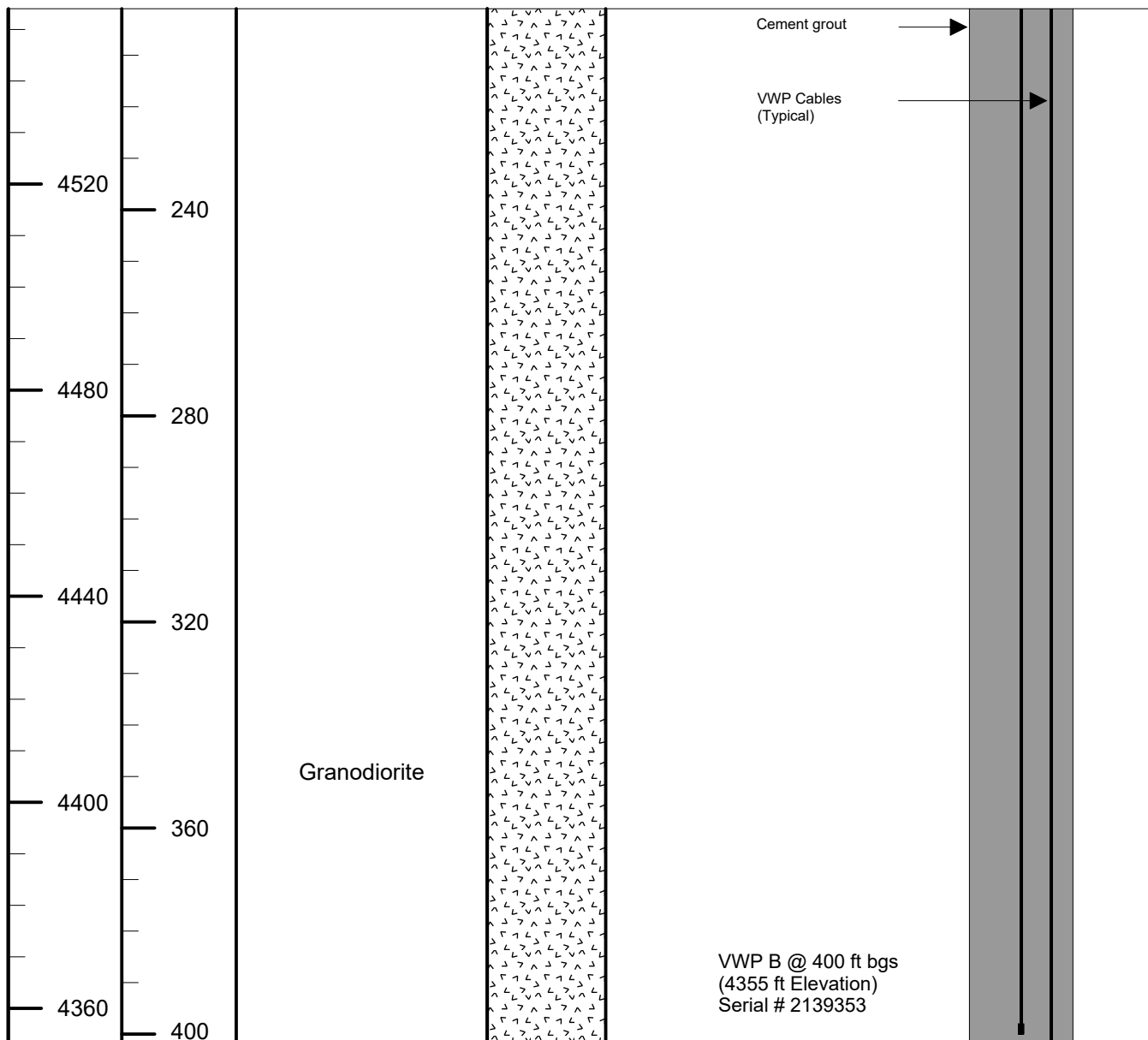
Drilling Contractor: National Drilling Method: Core Start Date: 9/18/2021 End Date: 9/23/2021 Geologist: Bill Goldsmith Northing: 11565340 Easting: 1704965 Coordinate System: NAD 83 BLM Zone 12	Pit2021-04 Well/Piezometer Construction Diagram		 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
			Approved: BG	Fig: 18


Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4755 ft	Azimuth: 0 Inclination: 90



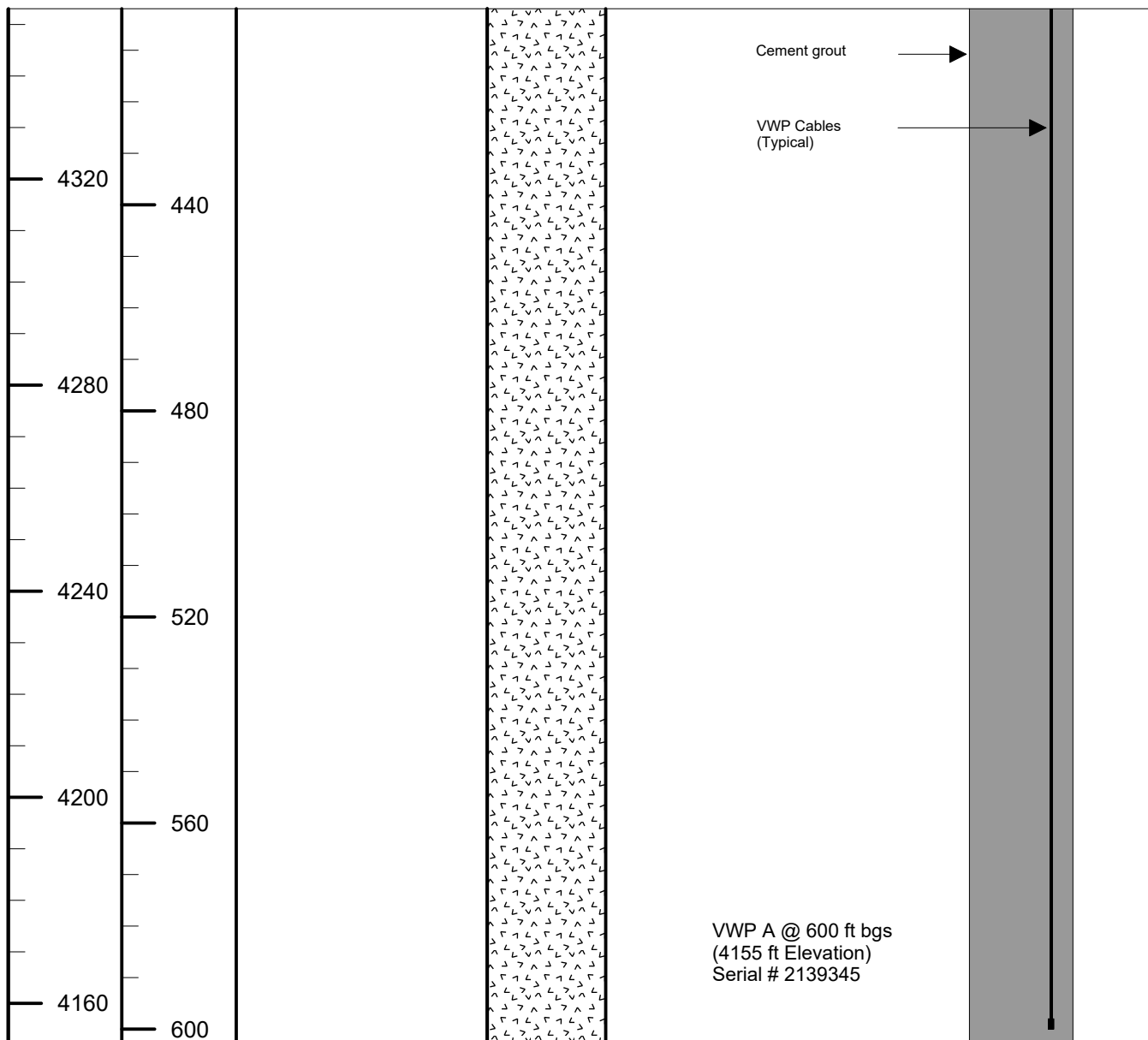
Drilling Contractor:National Drilling Method: Core Start Date: 3/11/2021 End Date: 5/11/2021 Geologist: Bill Goldsmith Northing: 11565692 Easting: 1709462 Coordinate System: NAD 83 BLM Zone 12	<div>Pit2021-06 Well/Piezometer Construction Diagram</div>	<div><div>PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY</div></div>			
		Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
				Approved: BG	Fig: 19


Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4755 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National Drilling Method: Core Start Date: 3/11/2021 End Date: 5/11/2021 Geologist: Bill Goldsmith Northing: 11565692 Easting: 1709462 Coordinate System: NAD 83 BLM Zone 12			
Pit2021-06 Well/Piezometer Construction Diagram		 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
		Approved: BG	Fig: 19

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4755 ft	Azimuth: 0 Inclination: 90



Drilling Contractor:National Drilling Method: Core Start Date: 3/11/2021 End Date: 5/11/2021 Geologist: Bill Goldsmith Northing: 11565692 Easting: 1709462 Coordinate System: NAD 83 BLM Zone 12	<div>Pit2021-06 Well/Piezometer Construction Diagram</div>	<div><div></div><div><div>PITEAU ASSOCIATES</div><div>GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS</div><div>A TETRA TECH COMPANY</div></div></div>			
		Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
				Approved: BG	Fig: 19

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4755 ft	Azimuth: 0 Inclination:90

TD: 605 ft bgs
TD Elevation: 4150 ft

Drilling Contractor:National
Drilling Method: Core
Start Date: 3/11/2021
End Date: 5/11/2021
Geologist: Bill Goldsmith
Northing: 11565692
Easting: 1709462

Coordinate System:
NAD 83 BLM Zone 12

Pit2021-06
Well/Piezometer
Construction Diagram



PITEAU ASSOCIATES
GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS
A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

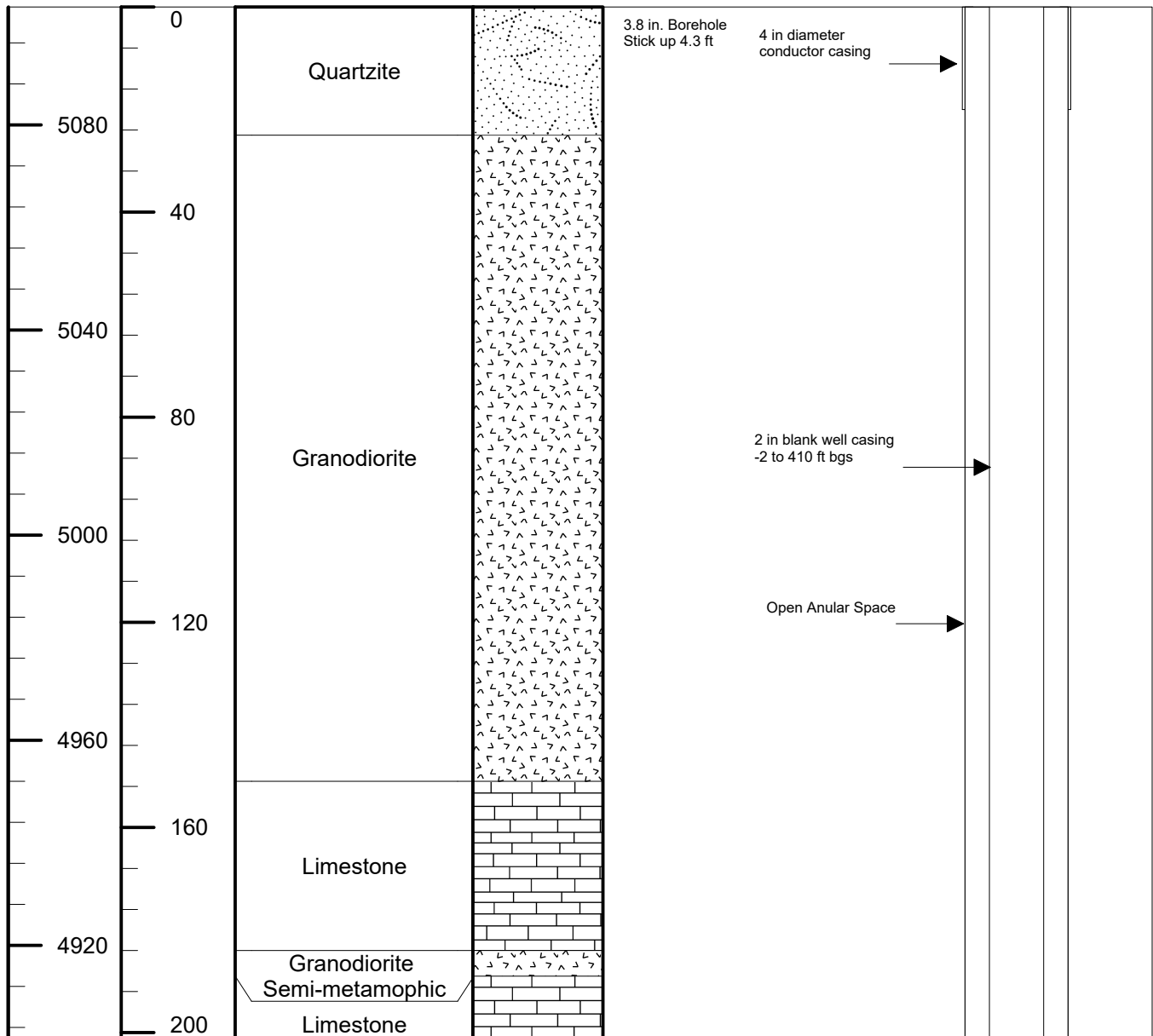
By:
AP

Date:
MAY 22

Approved:
BG

Fig:
19

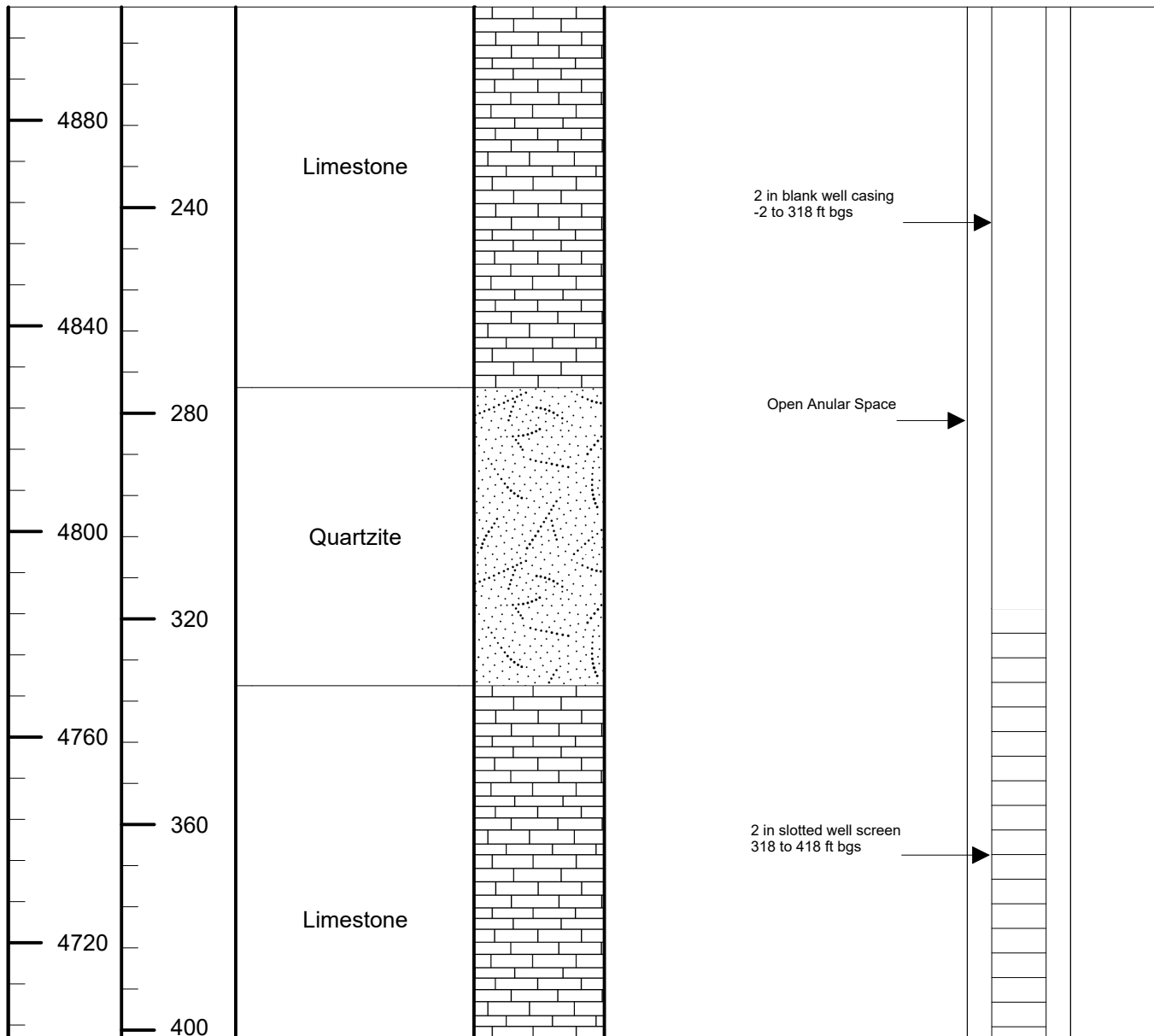
Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 5103 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National
Drilling Method: Core
Start Date: 10/6/2021
End Date: 10/13/2021
Geologist: Bill Goldsmith
Northing: 11565282
Easting: 1712937
Coordinate System:
NAD 83 BLM Zone 12

Pit2021-07 Well/Piezometer Construction Diagram		 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
		Approved: BG	Fig: 20

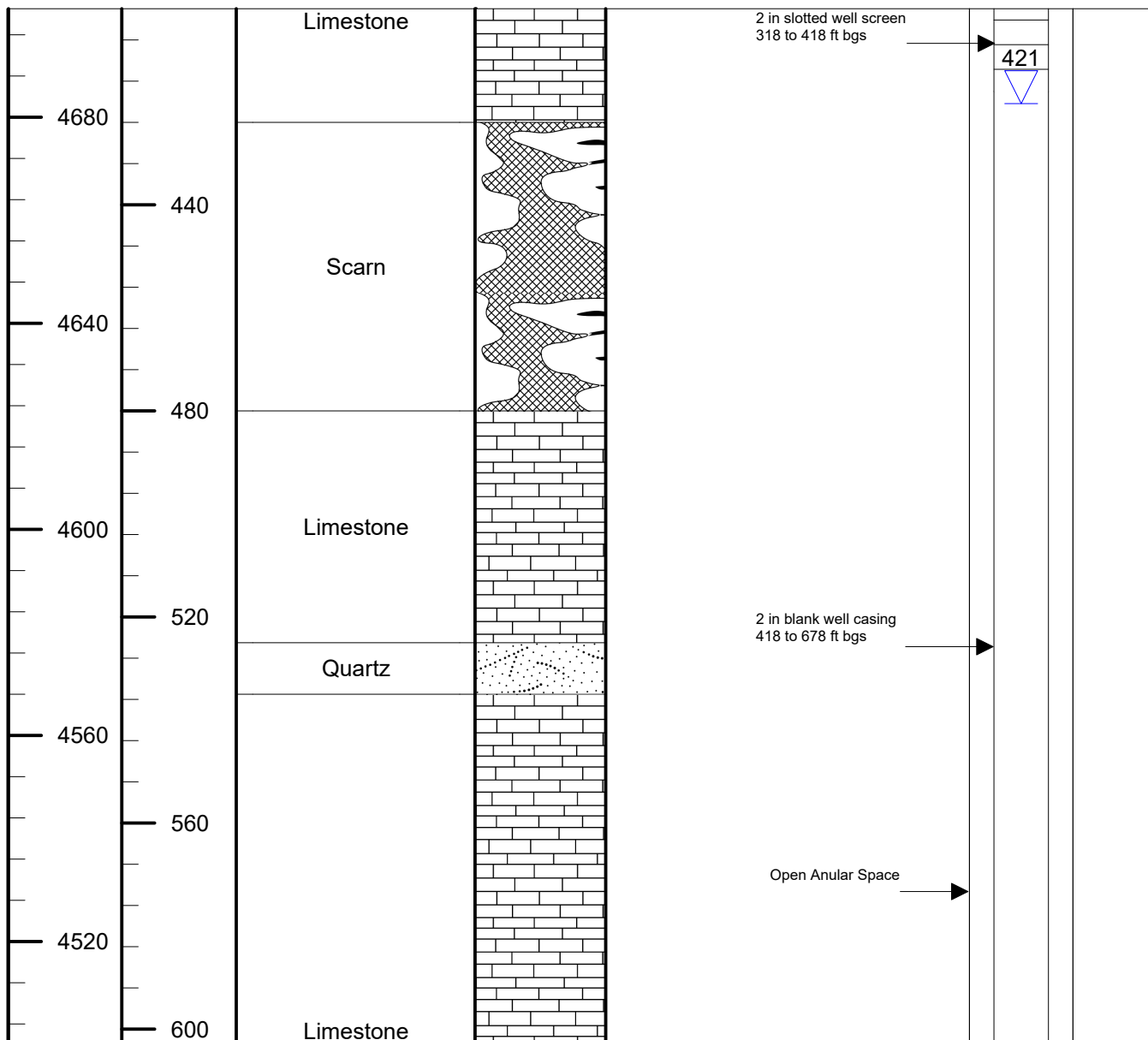
Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 5103 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National
Drilling Method: Core
Start Date: 10/6/2021
End Date: 10/13/2021
Geologist: Bill Goldsmith
Northing: 11565282
Easting: 1712937
Coordinate System:
NAD 83 BLM Zone 12

Pit2021-07 Well/Piezometer Construction Diagram		 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
		Approved: BG	Fig: 20

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 5103 ft	Azimuth: 0 Inclination:90



Drilling Contractor: National
 Drilling Method: Core
 Start Date: 10/6/2021
 End Date: 10/13/2021
 Geologist: Bill Goldsmith
 Northing: 11565282
 Easting: 1712937
 Coordinate System:
 NAD 83 BLM Zone 12

Pit2021-07
 Well/Piezometer
 Construction Diagram

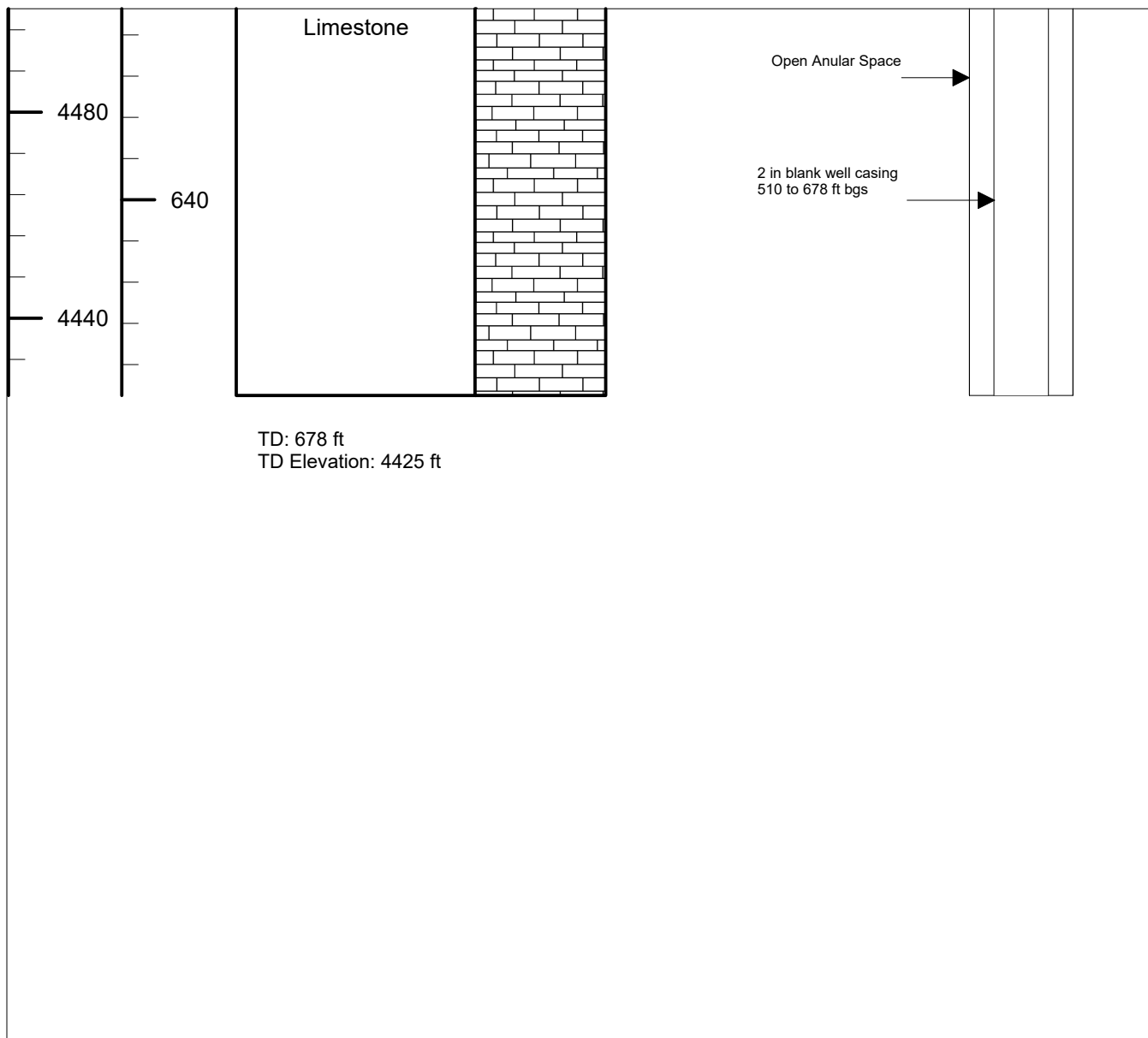


PITEAU ASSOCIATES
 GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS
 A TETRA TECH COMPANY

Client: Rosemont Copper Company
 Project: Rosemont Copper World Project
 Location: Helvetia, AZ

By: AP	Date: MAY 22
Approved: BG	Fig: 20

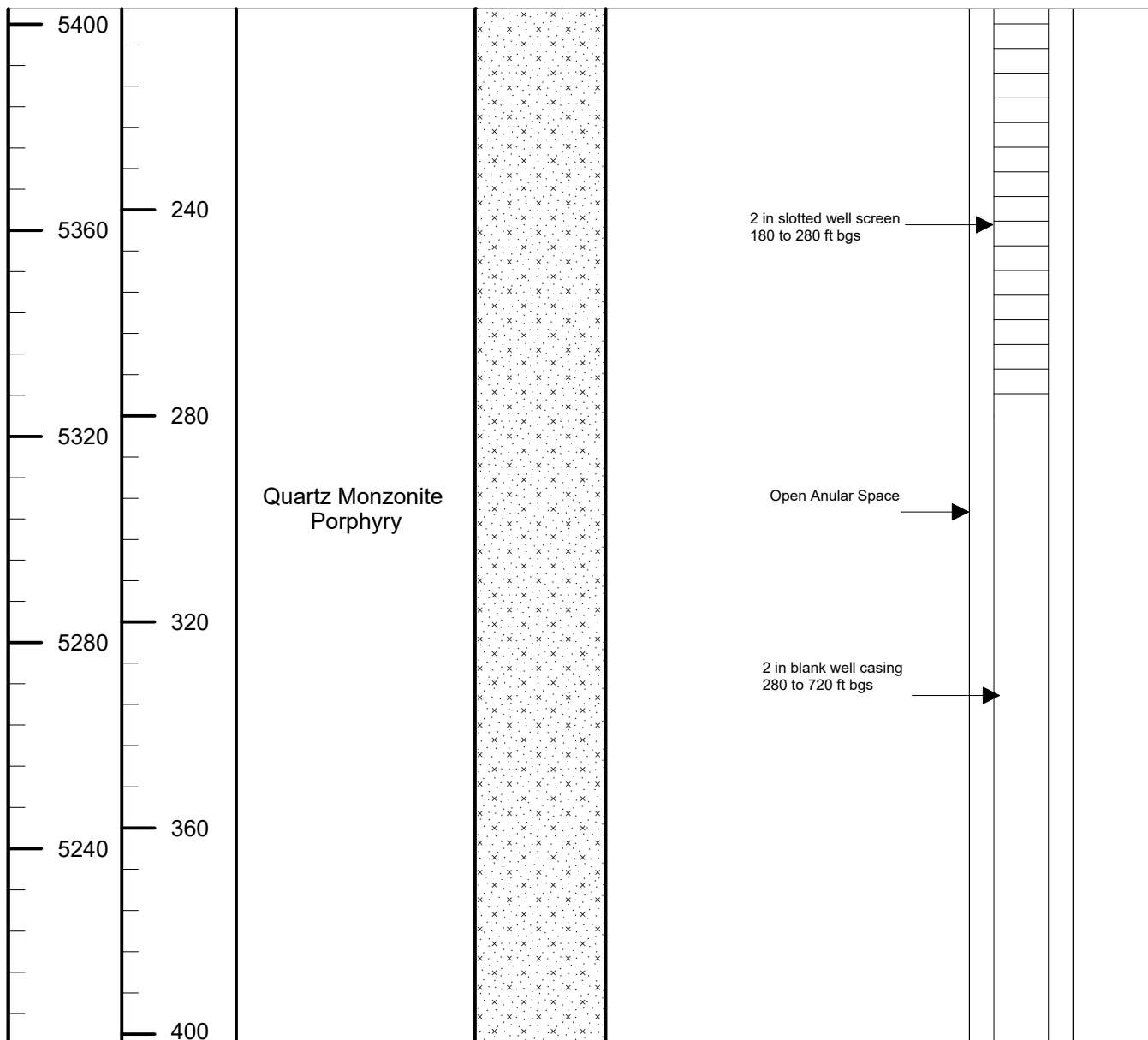
Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 5103 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National
 Drilling Method: Core
 Start Date: 10/6/2021
 End Date: 10/13/2021
 Geologist: Bill Goldsmith
 Northing: 11565282
 Easting: 1712937
 Coordinate System:
 NAD 83 BLM Zone 12

Pit2021-07 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ	By: AP Date: MAY 22 Approved: BG Fig: 20

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 5604 ft	Azimuth: 0 Inclination:90



Drilling Contractor:National
Drilling Method:Core
Start Date: 10/26/2021
End Date: 10/30/2021
Geologist: Bill Goldsmith
Northing: 11562356
Easting: 1715769
Coordinate System:
NAD 83 BLM Zone 12

Pit2021-08
Well/Piezometer
Construction Diagram

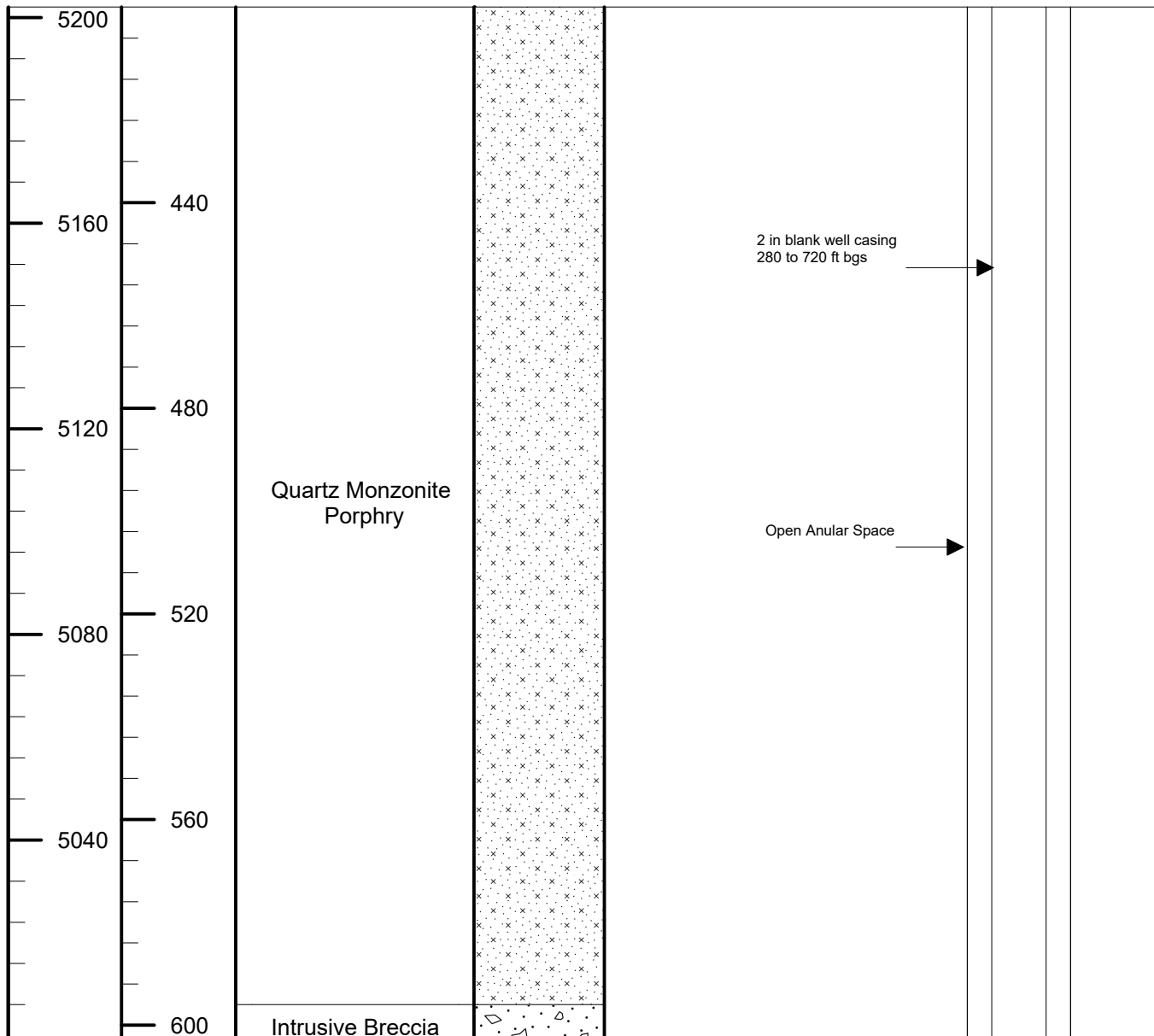


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GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS
A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

By: AP	Date: MAY 22
Approved: BG	Fig: 21

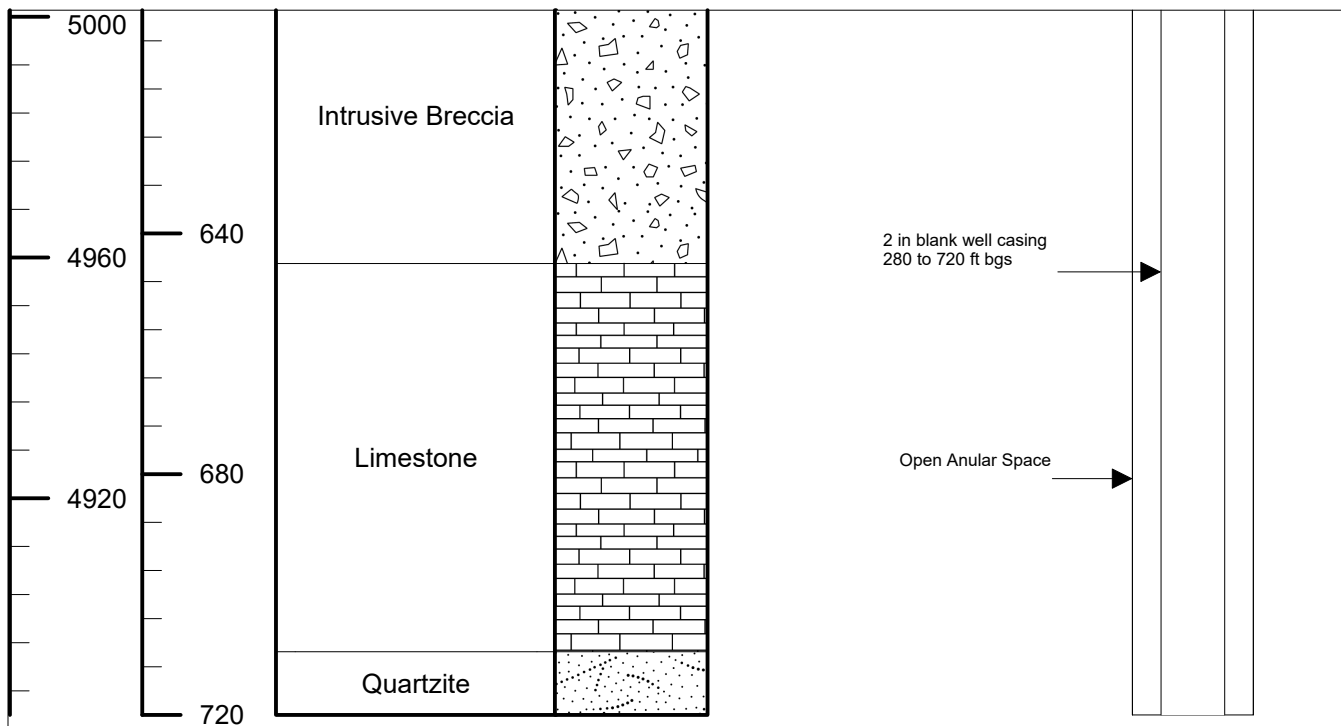
Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 5604 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National
 Drilling Method: Core
 Start Date: 10/26/2021
 End Date: 10/30/2021
 Geologist: Bill Goldsmith
 Northing: 11562356
 Easting: 1715769
 Coordinate System:
 NAD 83 BLM Zone 12

Pit2021-08 Well/Piezometer Construction Diagram	 <div>PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY</div>	
Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ	By: AP	Date: MAY 22
	Approved: BG	Fig: 21

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 5604 ft	Azimuth: 0 Inclination: 90



TD: 720 ft
TD Elevation: 4884 ft

Drilling Contractor: National
Drilling Method: Core
Start Date: 10/26/2021
End Date: 10/30/2021
Geologist: Bill Goldsmith
Northing: 11562356
Easting: 1715769
Coordinate System:
NAD 83 BLM Zone 12

Pit2021-08
Well/Piezometer
Construction Diagram

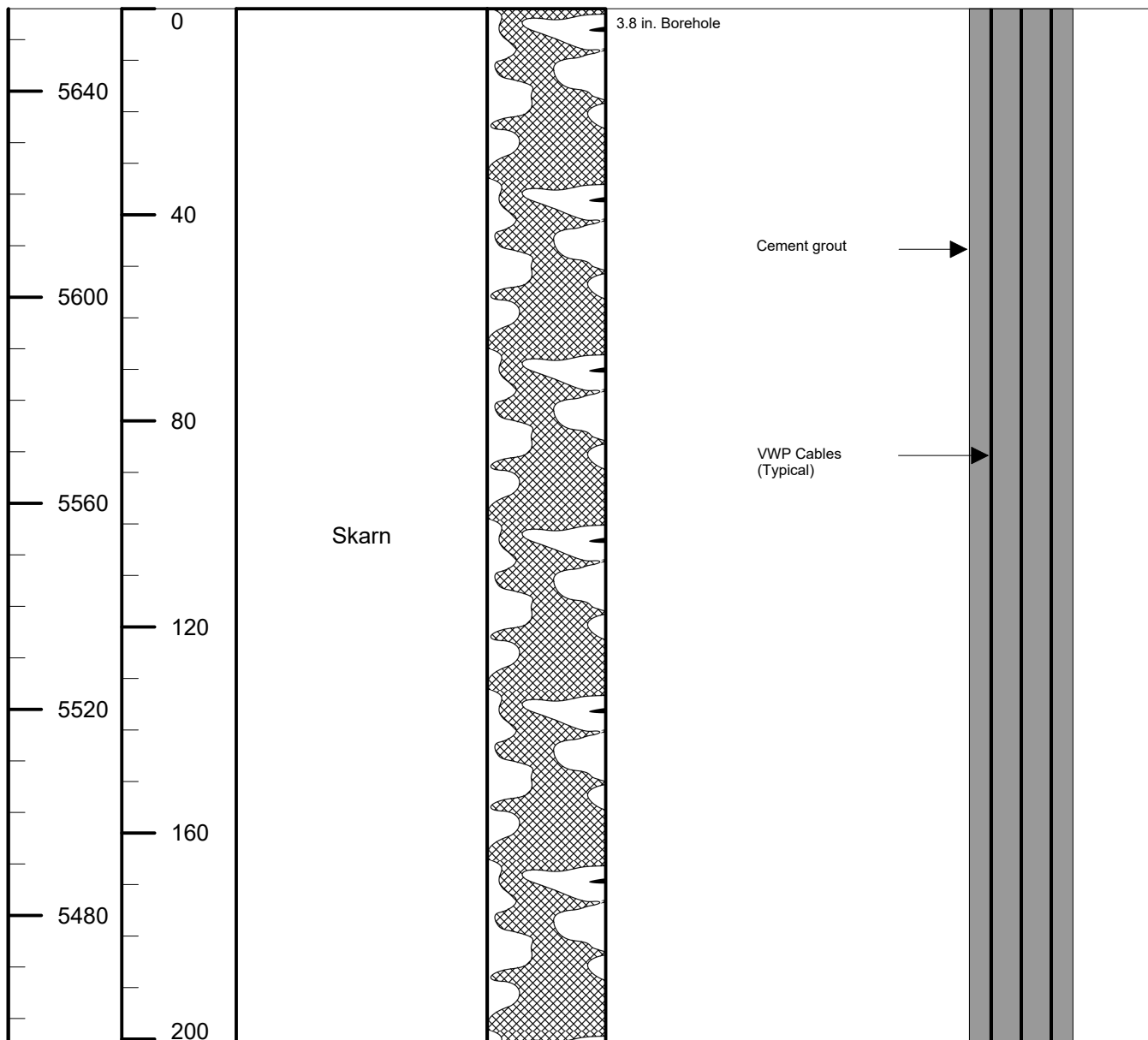



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A TETRA TECH COMPANY

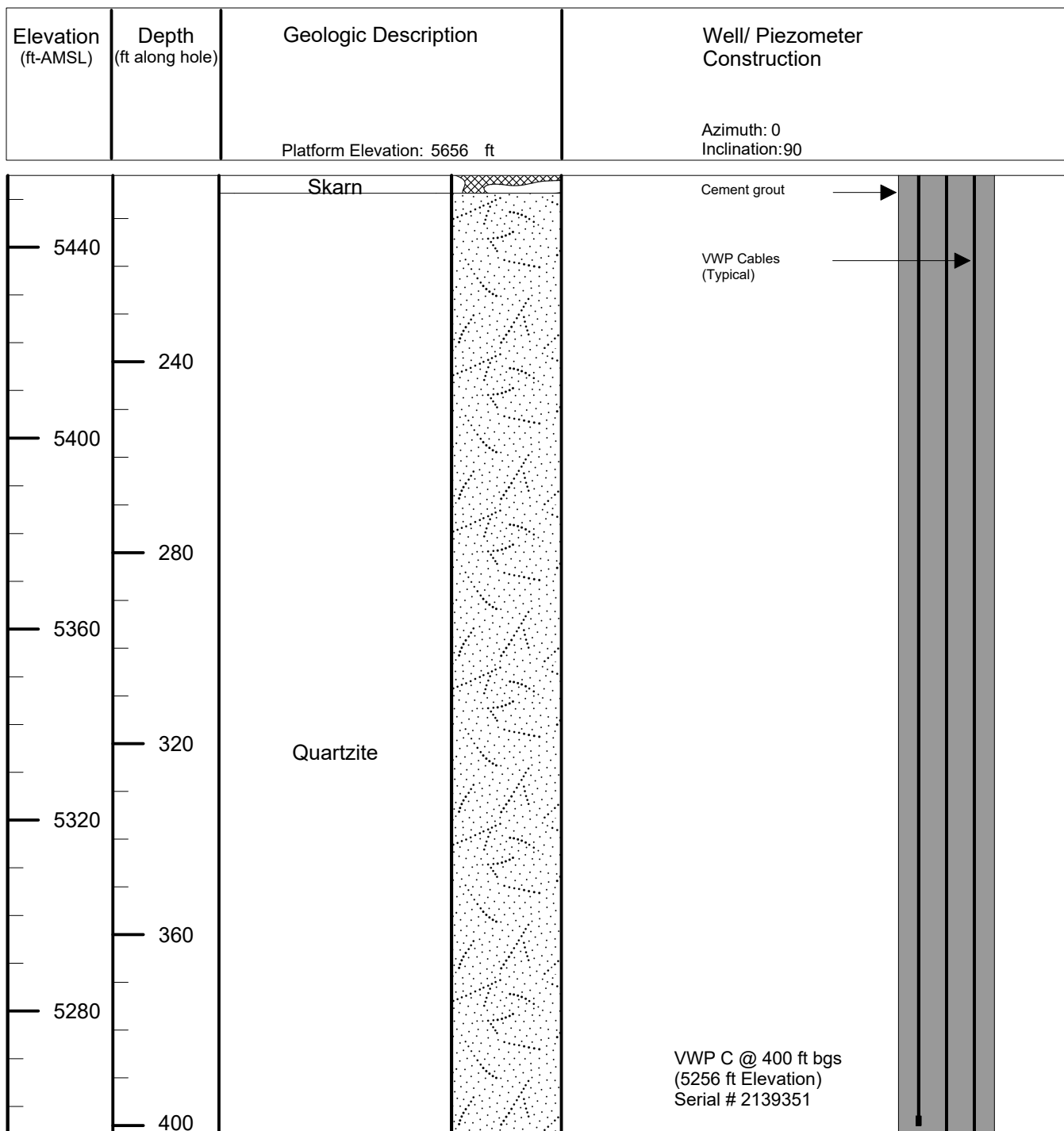
Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ


By:	AP	Date:	MAY 22
Approved:	BG	Fig:	21

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 5656 ft	Azimuth: 0 Inclination: 90

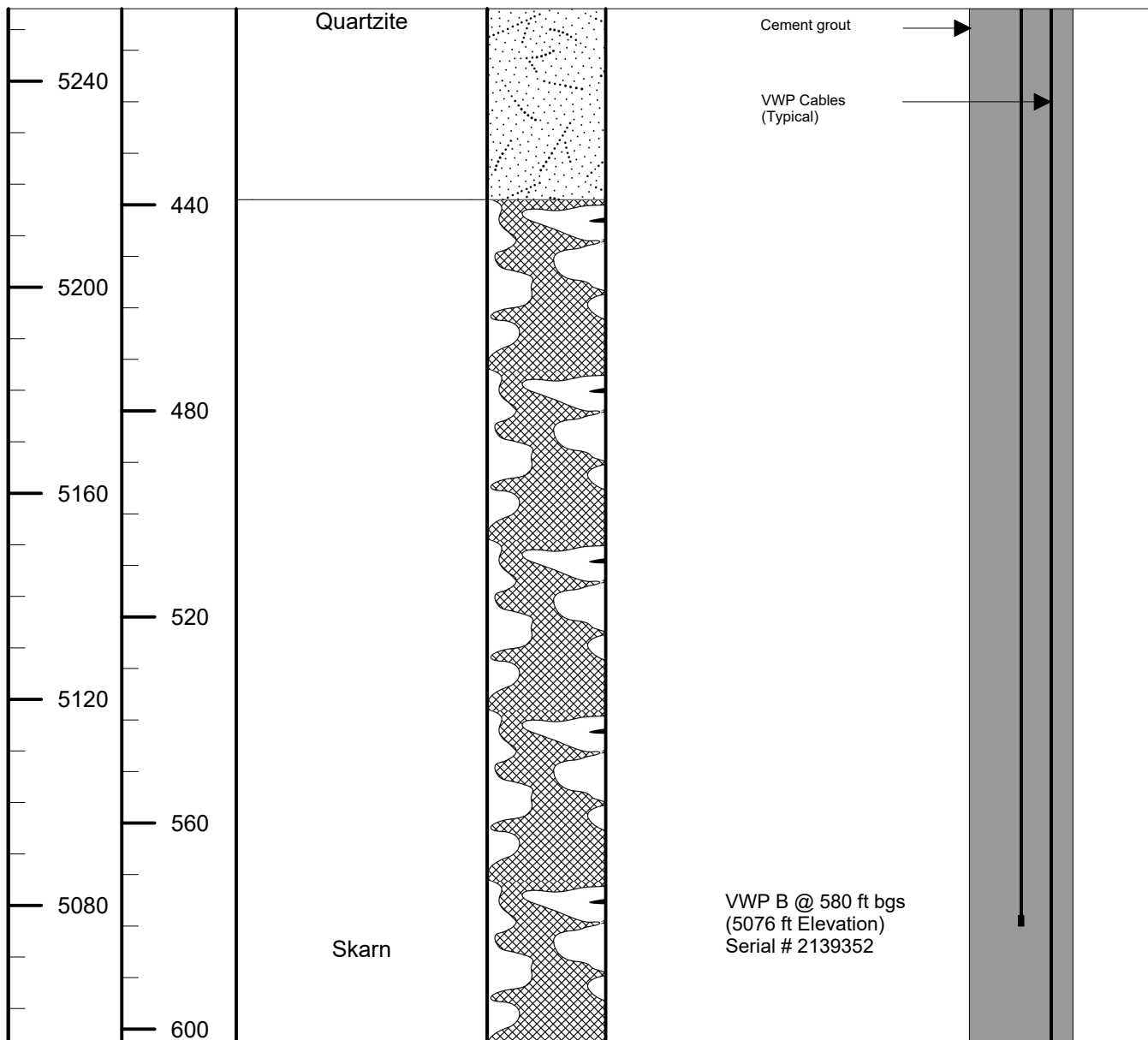



Drilling Contractor:National Drilling Method: Core Start Date: 10/16/2021 End Date: 2/11/2021 Geologist: Bill Goldsmith Northing: 11560805 Easting: 1714480 Coordinate System: NAD 83 BLM Zone 12	Pit2021-09 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY		
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ	By: AP	Date: MAY 22	
		Approved: BG	Fig: 22	



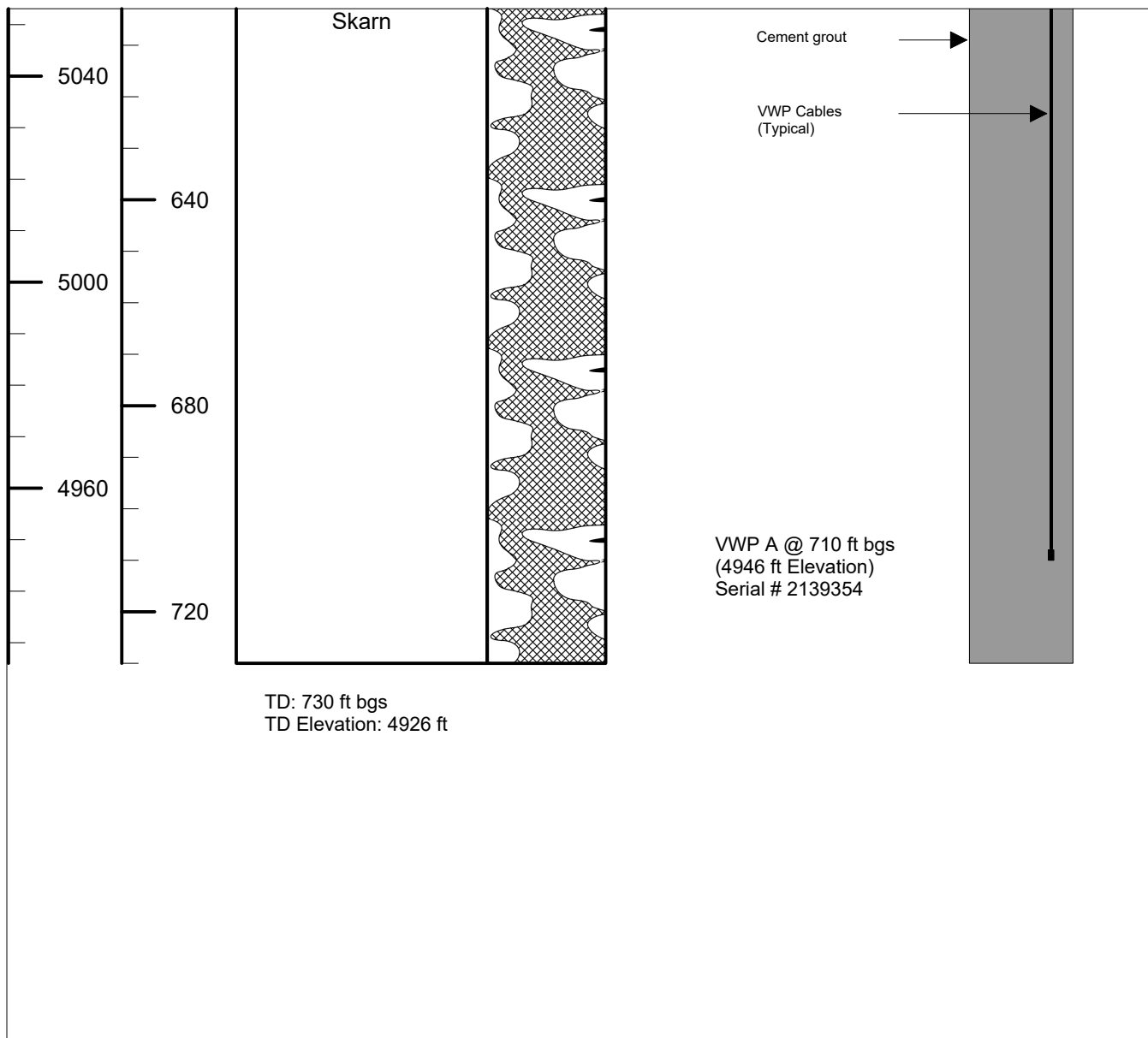
Drilling Contractor: National Drilling Method: Core Start Date: 10/16/2021 End Date: 2/11/2021 Geologist: Bill Goldsmith Northing: 11560805 Easting: 1714480 Coordinate System: NAD 83 BLM Zone 12	Pit2021-09 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP Approved: BG


Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 5656 ft	Azimuth: 0 Inclination: 90



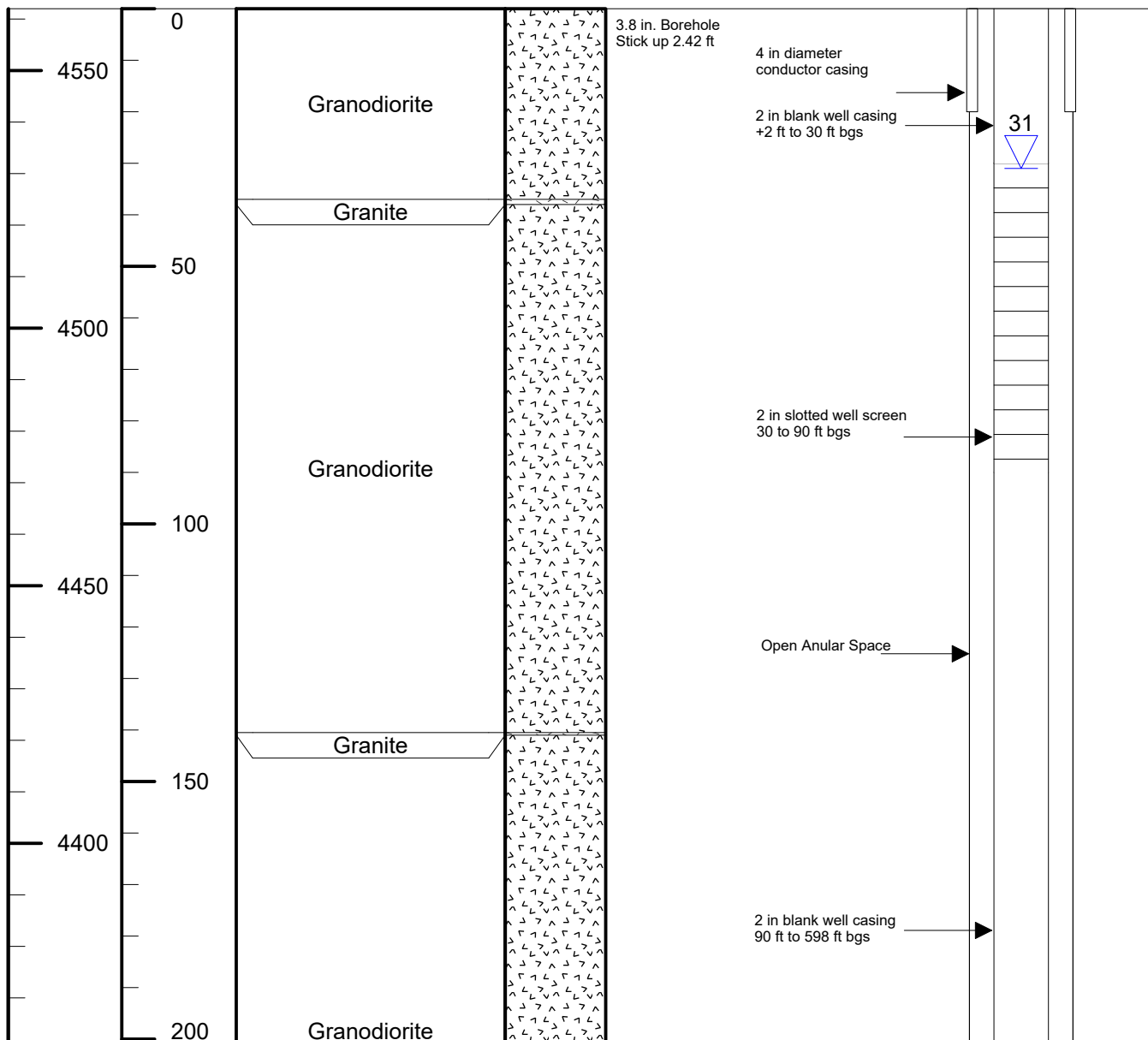
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Pit2021-09 Well/Piezometer Construction Diagram		 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
		Approved: BG	Fig: 22

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 5656 ft	Azimuth: 0 Inclination: 90



Drilling Contractor:National Drilling Method: Core Start Date: 10/16/2021 End Date: 2/11/2021 Geologist: Bill Goldsmith Northing: 11560805 Easting: 1714480 Coordinate System: NAD 83 BLM Zone 12	Pit2021-09 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY		
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ	By: AP	Date: MAY 22	
		Approved: BG	Fig: 22	

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4562 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National
Drilling Method: Core
Start Date: 7/4/2021
End Date: 7/9/2021
Geologist: Bill Goldsmith
Northing: 11563874
Easting: 1709641

Coordinate System:
NAD 83 BLM Zone 12

RNW-HB-091
Well/Piezometer
Construction Diagram

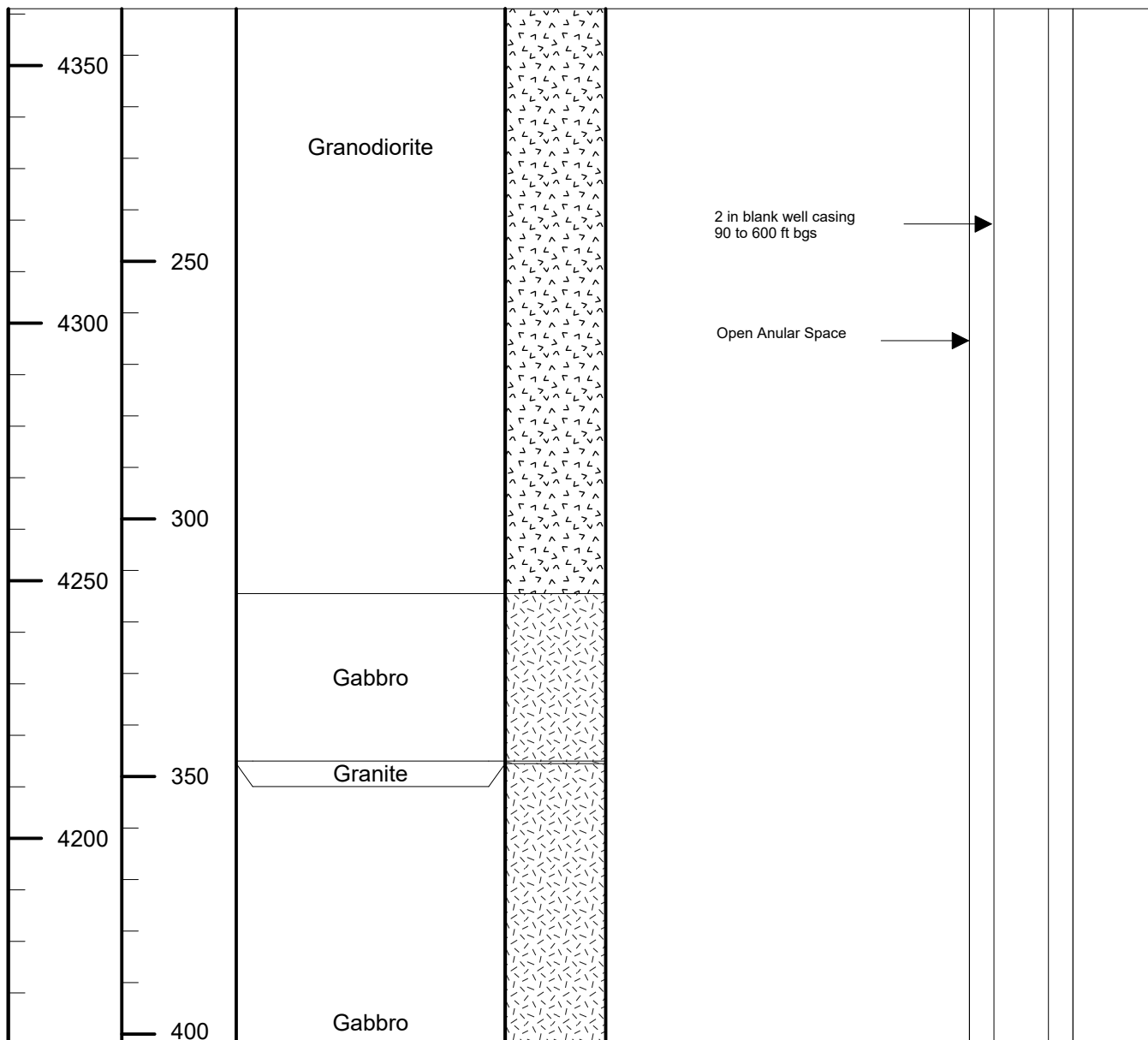


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GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS
A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

By:	SM	Date:	MAY 22
Approved:	BG	Fig:	23

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4562 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National
 Drilling Method: Core
 Start Date: 7/4/2021
 End Date: 7/9/2021
 Geologist: Bill Goldsmith
 Northing: 11563874
 Easting: 1709641

Coordinate System:
 NAD 83 BLM Zone 12

RNW-HB-091
 Well/Piezometer
 Construction Diagram

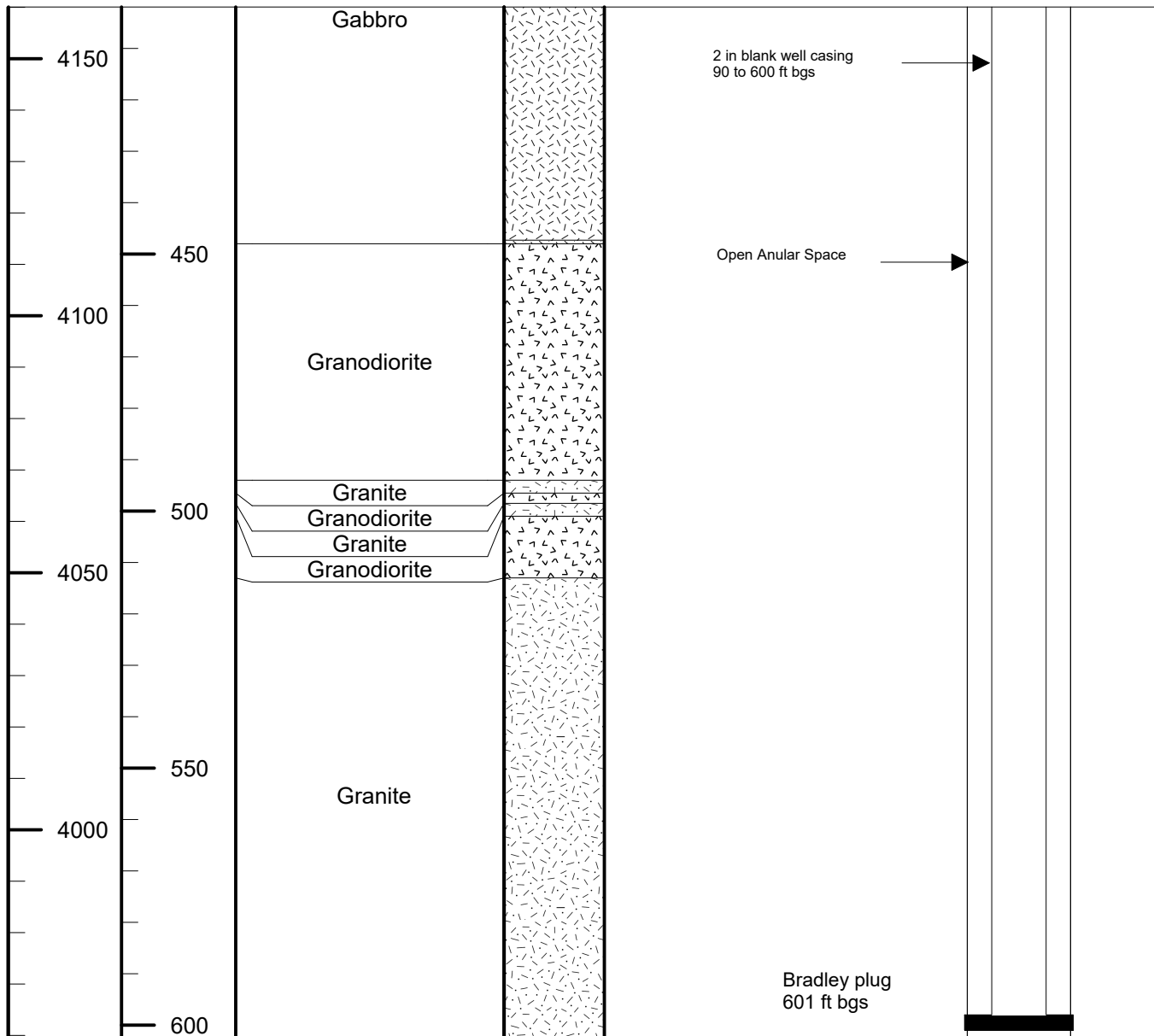


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 A TETRA TECH COMPANY

Client: Rosemont Copper Company
 Project: Rosemont Copper World Project
 Location: Helvetia, AZ

By:	SM	Date:	MAY 22
Approved:	BG	Fig:	23

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4562 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National
Drilling Method: Core
Start Date: 7/4/2021
End Date: 7/9/2021
Geologist: Bill Goldsmith
Northing: 11563874
Easting: 1709641

Coordinate System:
NAD 83 BLM Zone 12

RNW-HB-091
Well/Piezometer
Construction Diagram

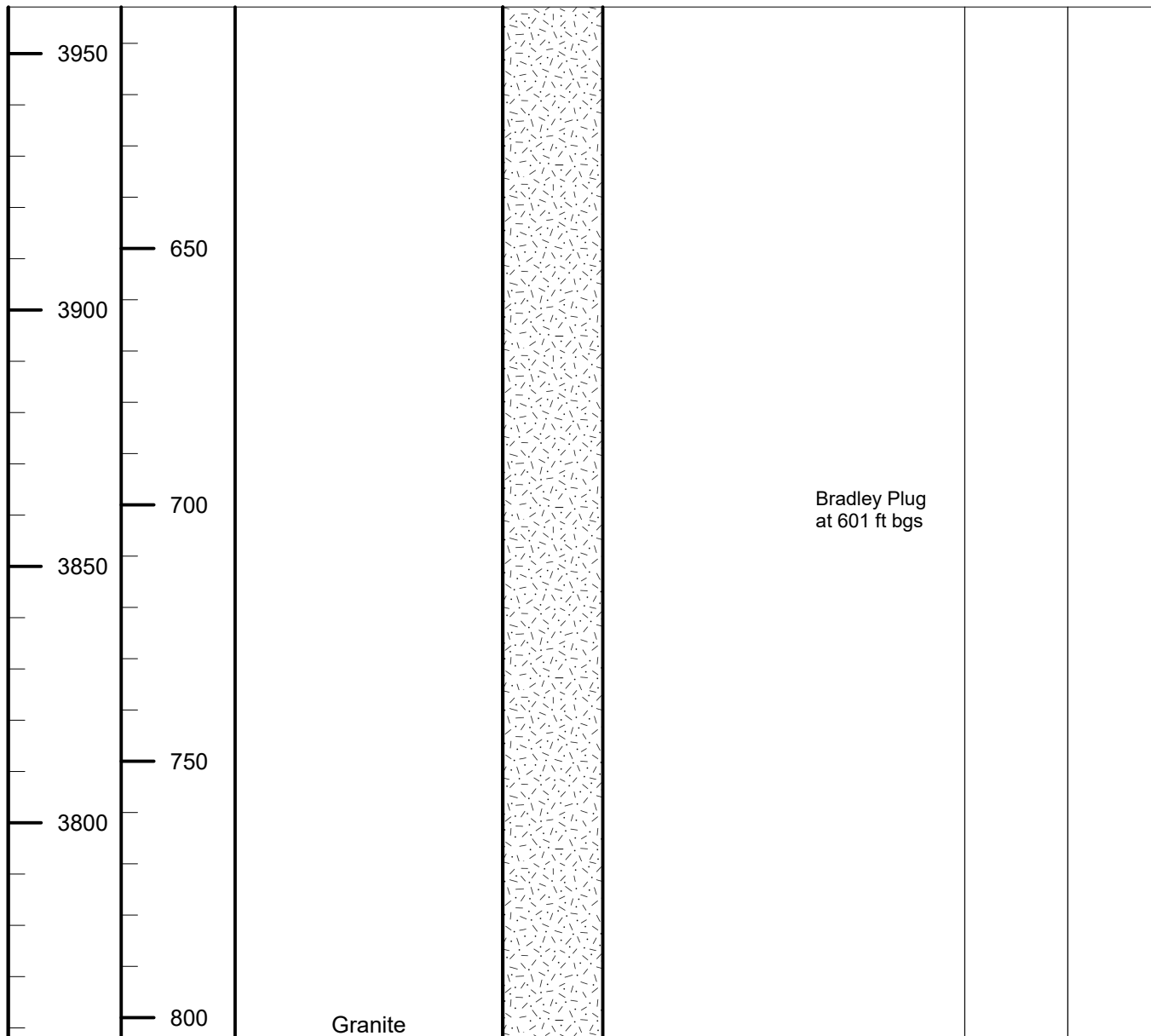


PITEAU ASSOCIATES
GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS
A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

By:	SM	Date:	MAY 22
Approved:	BG	Fig:	23

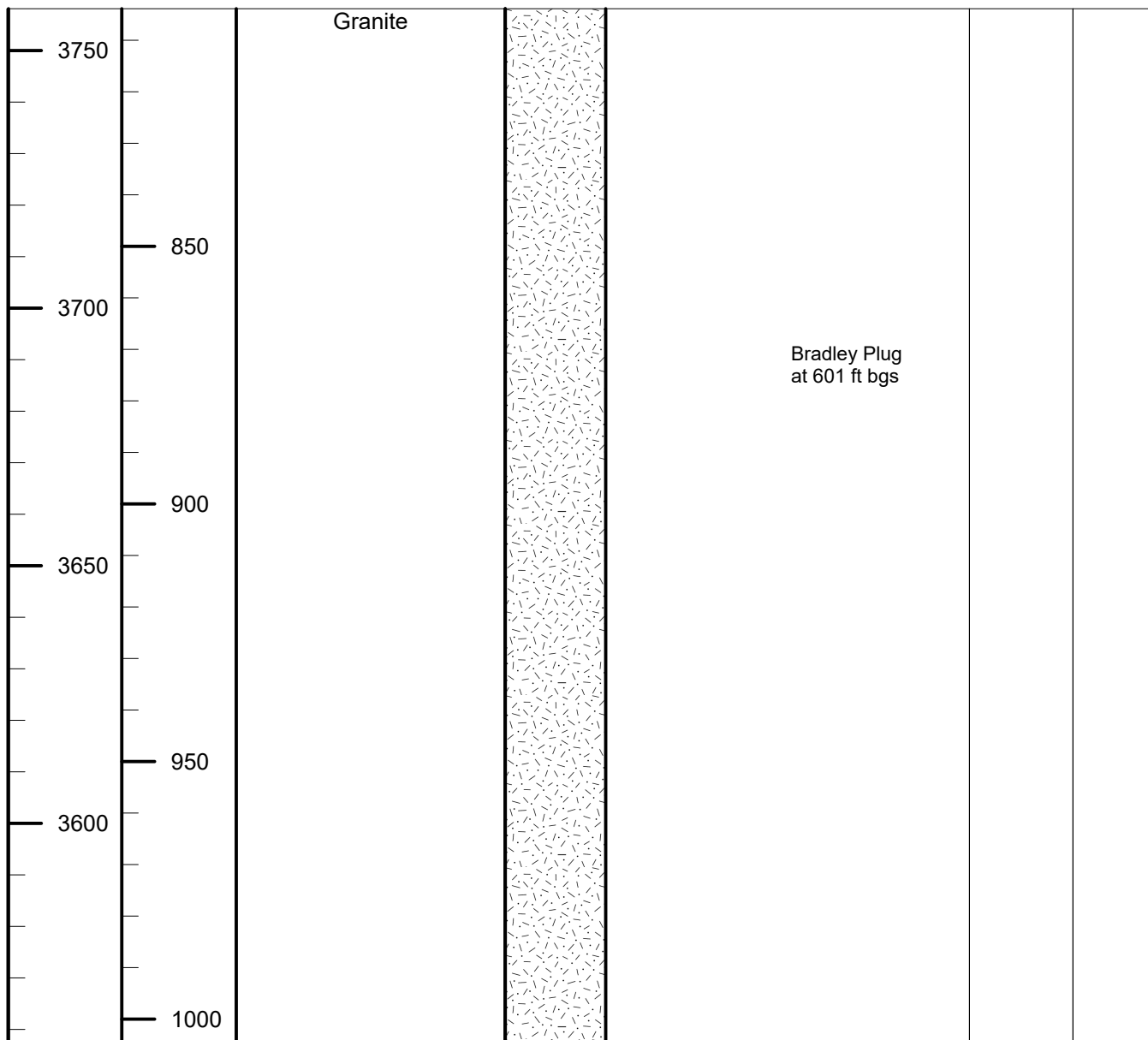
Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4562 ft	Azimuth: 0 Inclination:90



Drilling Contractor:National
 Drilling Method:Core
 Start Date: 7/4/2021
 End Date: 7/9/2021
 Geologist: Bill Goldsmith
 Northing: 11563874
 Easting: 1709641
 Coordinate System:
 NAD 83 BLM Zone 12

RNW-HB-091 Well/Piezometer Construction Diagram		 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: SM	Date: MAY 22
		Approved: BG	Fig: 23

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4562 ft	Azimuth: 0 Inclination:90



Drilling Contractor:National
 Drilling Method:Core
 Start Date: 7/4/2021
 End Date: 7/9/2021
 Geologist: Bill Goldsmith
 Northing: 11563874
 Easting: 1709641

Coordinate System:
 NAD 83 BLM Zone 12

RNW-HB-091
 Well/Piezometer
 Construction Diagram

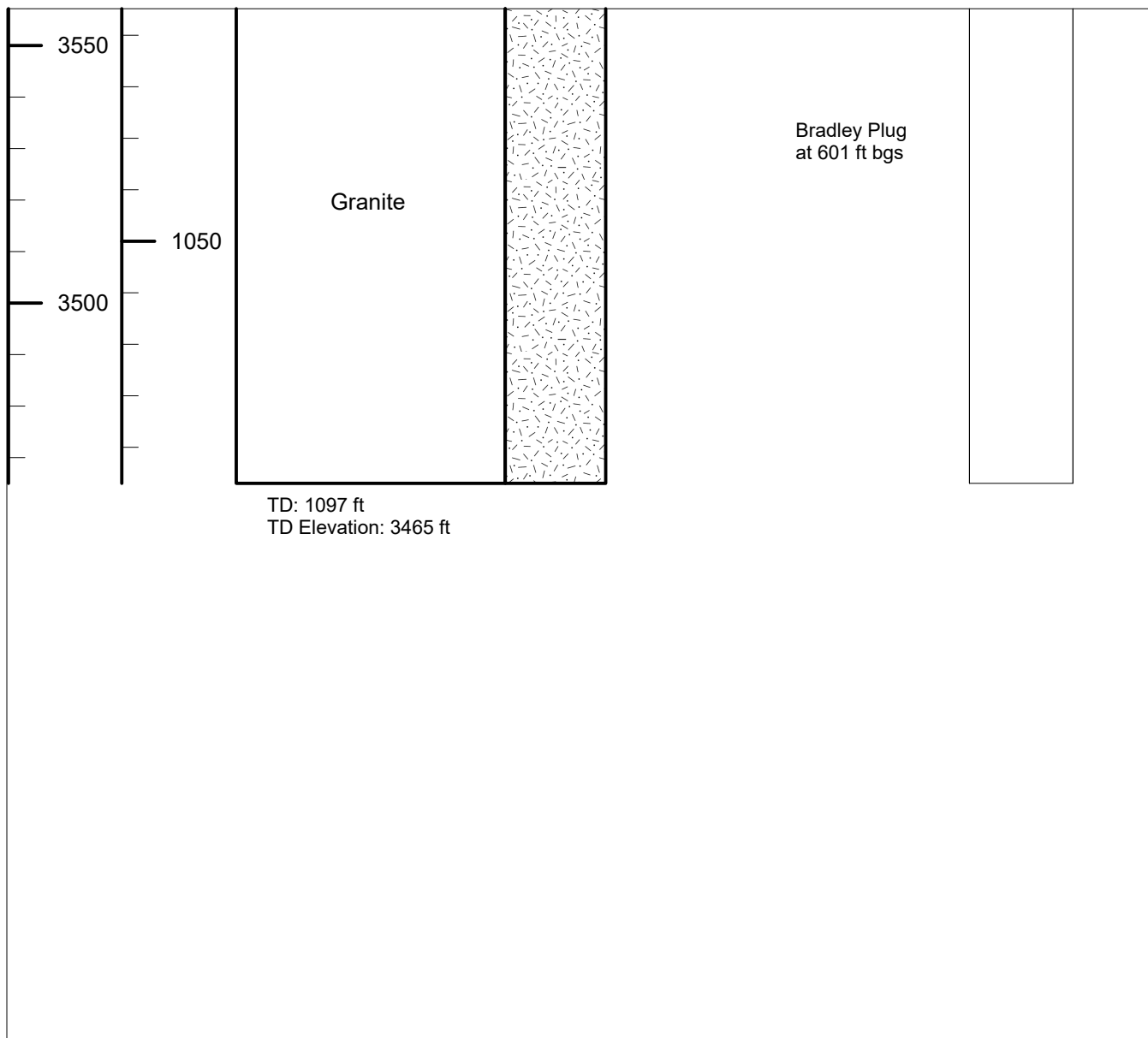


PITEAU ASSOCIATES
 GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS
 A TETRA TECH COMPANY

Client: Rosemont Copper Company
 Project: Rosemont Copper World Project
 Location: Helvetia, AZ

By:	SM	Date:	MAY 22
Approved:	BG	Fig:	23

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4562 ft	Azimuth: 0 Inclination:90



Drilling Contractor:National
Drilling Method:Core
Start Date: 7/4/2021
End Date: 7/9/2021
Geologist: Bill Goldsmith
Northing: 11563874
Easting: 1709641

Coordinate System:
NAD 83 BLM Zone 12

RNW-HB-091
Well/Piezometer
Construction Diagram

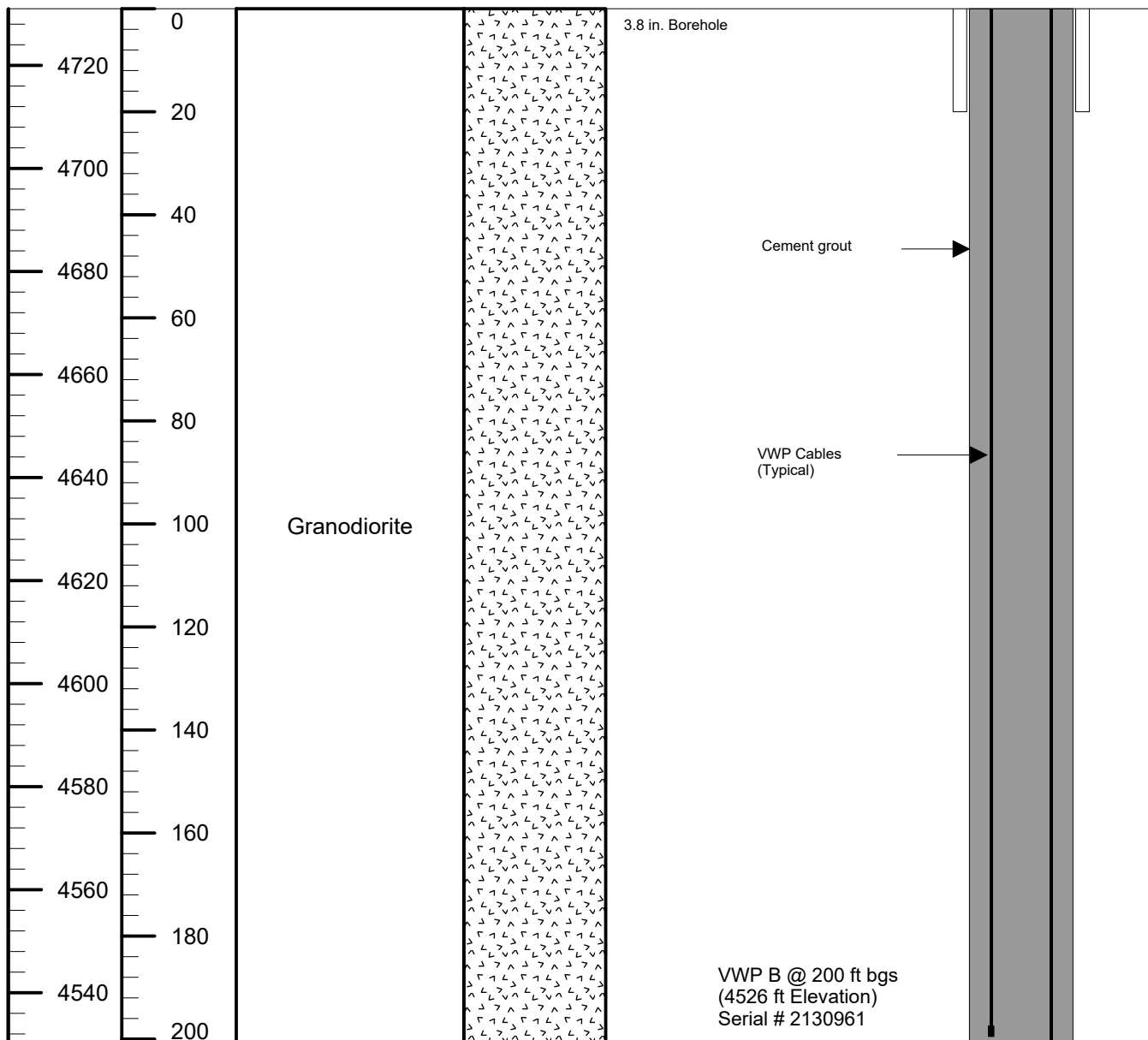


PITEAU ASSOCIATES
GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS
A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

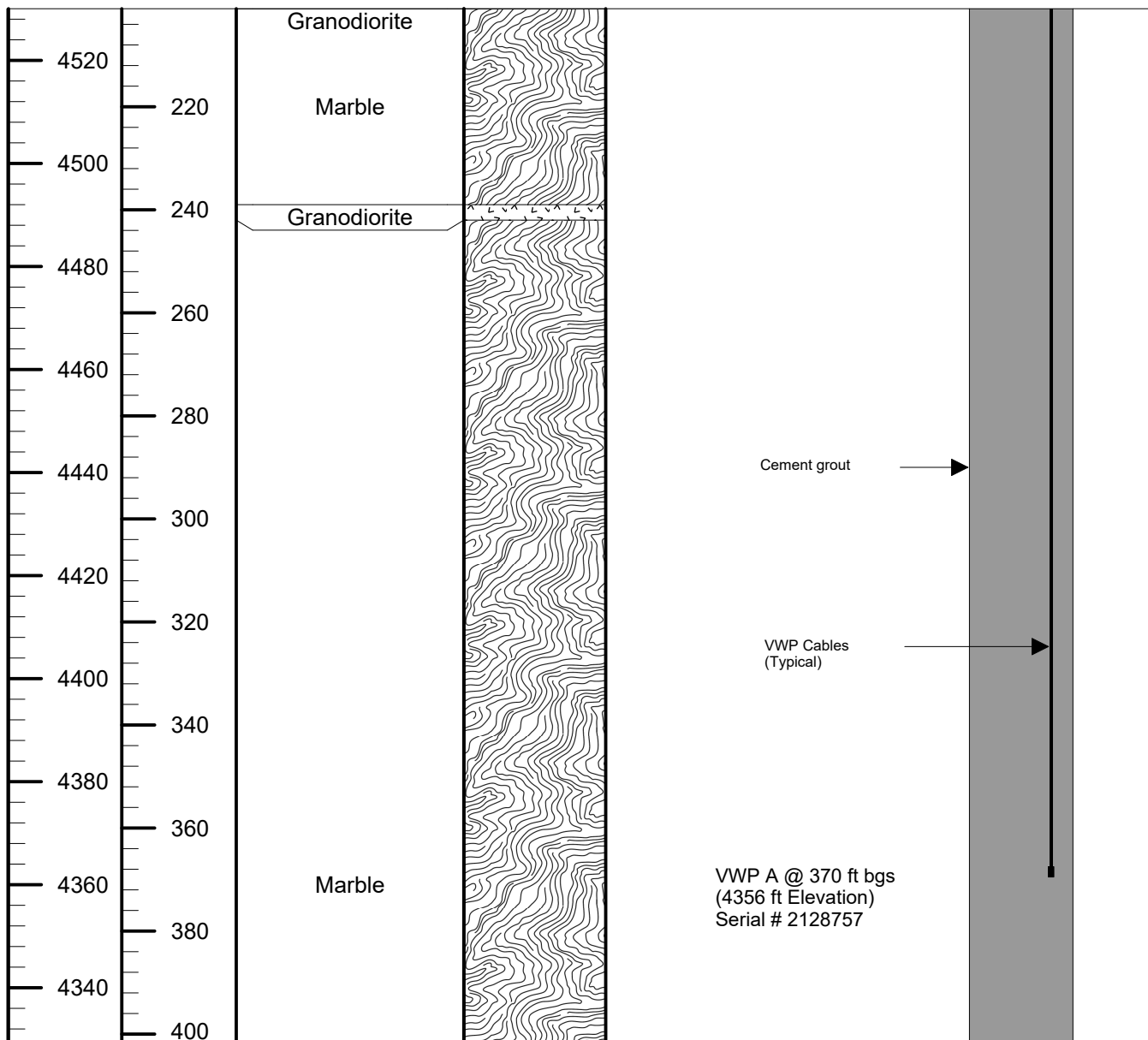
By:	SM	Date:	MAY 22
Approved:	BG	Fig:	23


Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4731 ft	Azimuth: 0 Inclination: 90



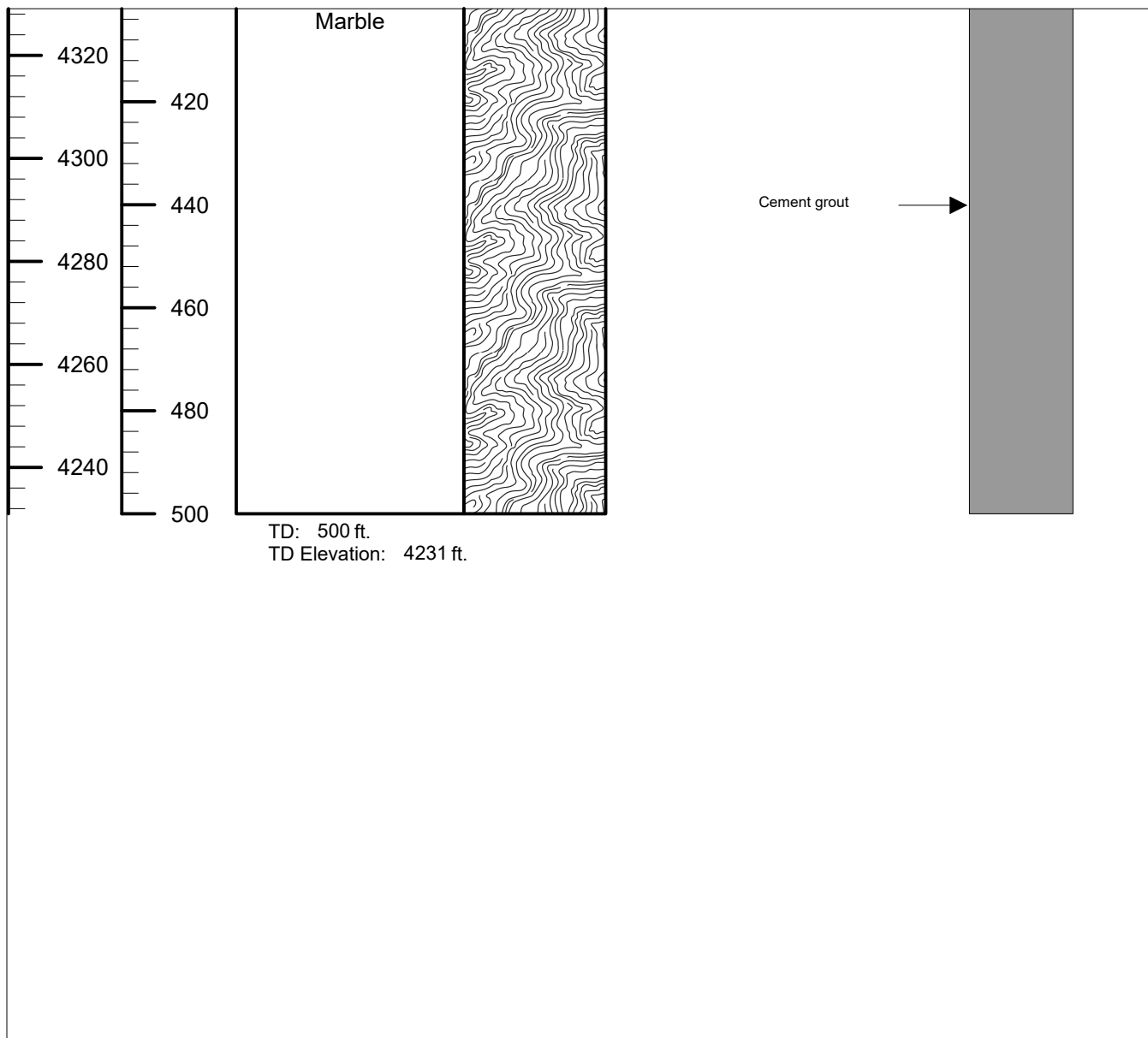
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	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ	By: AP	Date: MAY 22
		Approved: BG	Fig: 24


Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4731 ft	Azimuth: 0 Inclination: 90



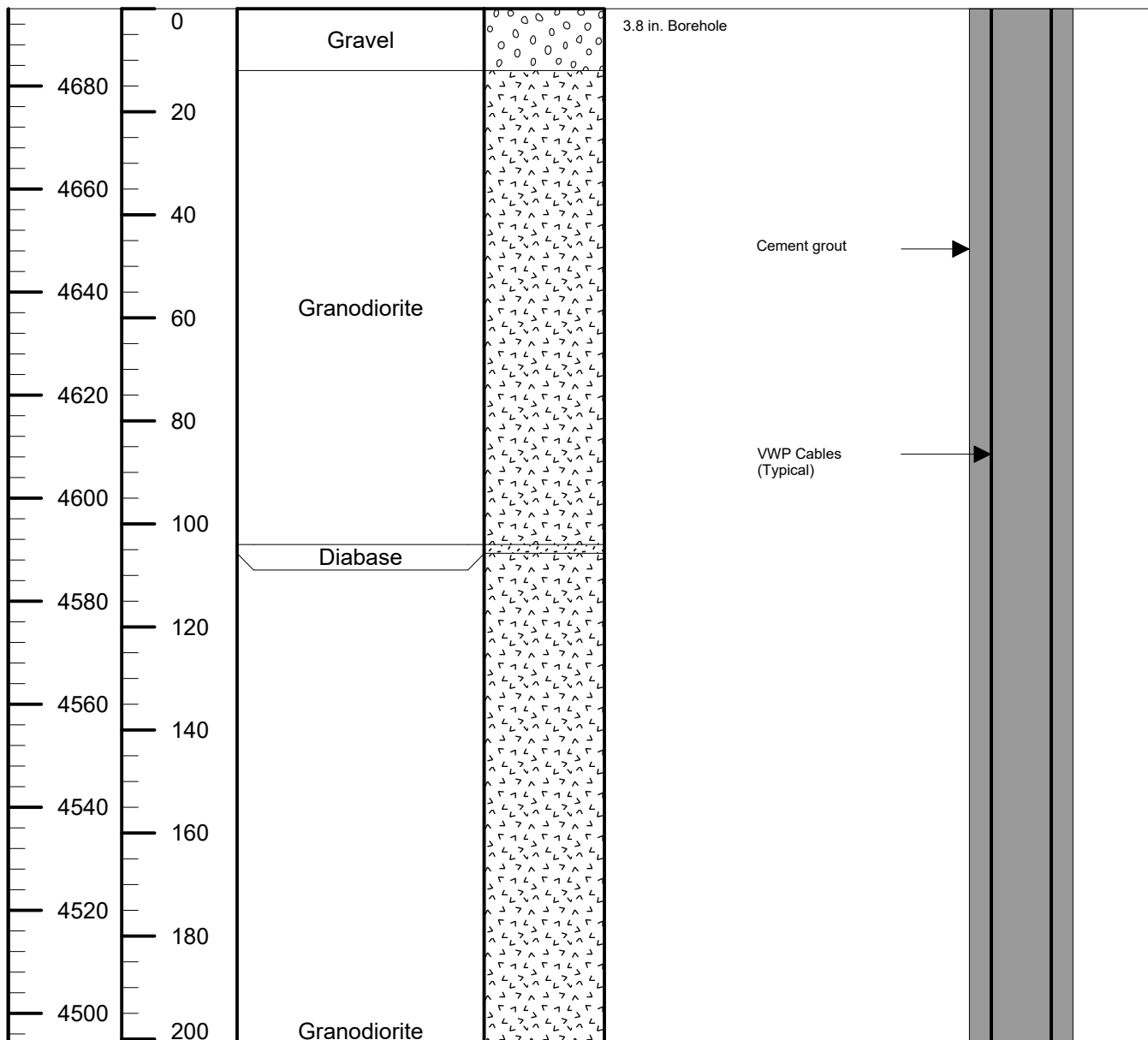
Drilling Contractor:National Drilling Method: Core Start Date: 7/11/2021 End Date: 7/11/2021 Geologist: Bill Goldsmith Northing: 11566106 Easting: 1711242 Coordinate System: NAD 83 BLM Zone 12	RNW-HB-096 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ	By: AP	Date: MAY 22
		Approved: BG	Fig: 24


Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4731 ft	Azimuth: 0 Inclination:90



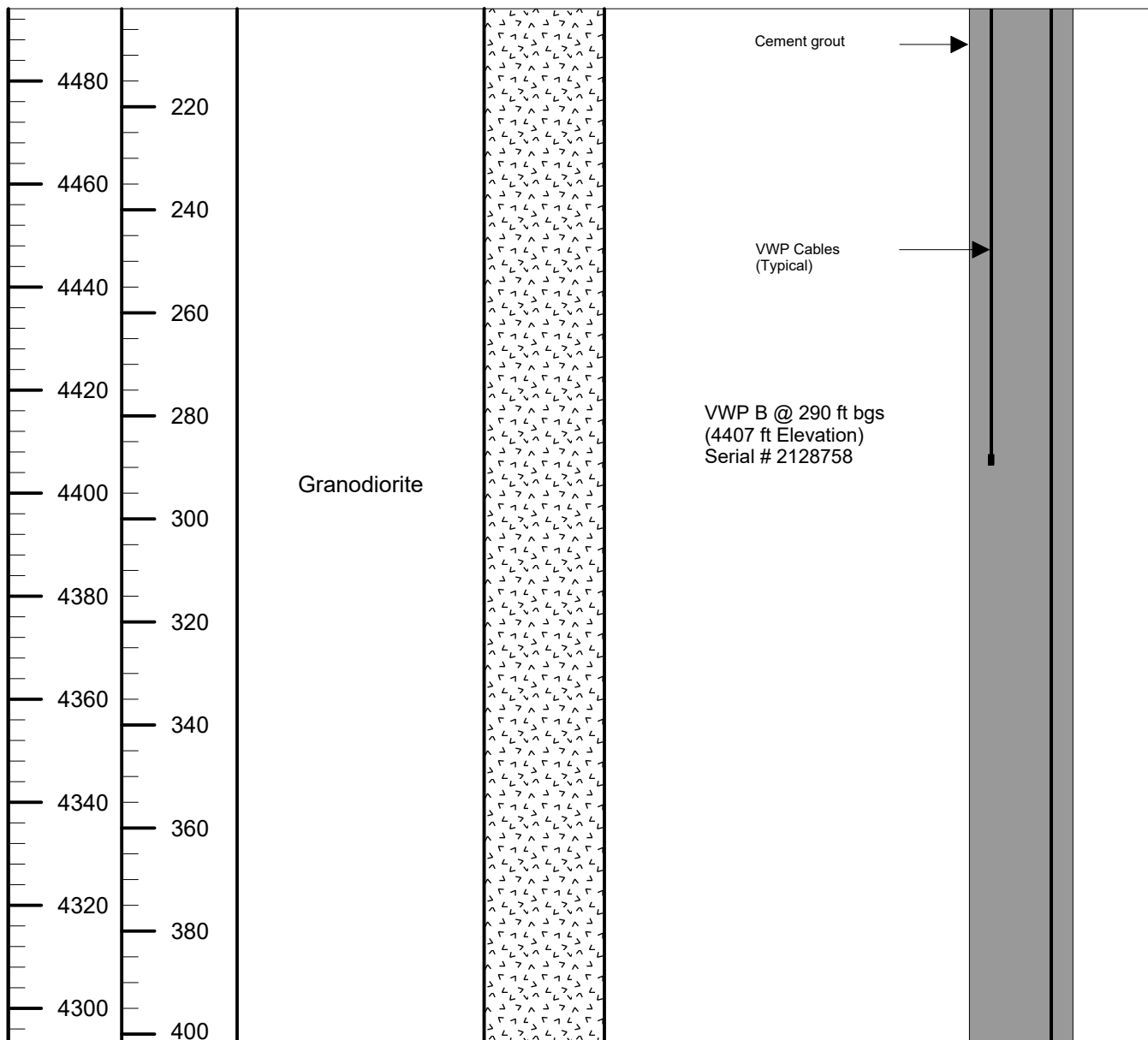
Drilling Contractor: National Drilling Method: Core Start Date: 7/11/2021 End Date: 7/11/2021 Geologist: Bill Goldsmith Northing: 11566106 Easting: 1711242 Coordinate System: NAD 83 BLM Zone 12			
RNW-HB-096 Well/Piezometer Construction Diagram		 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
		Approved: BG	Fig: 24


Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4695 ft	Azimuth: 0 Inclination: 90



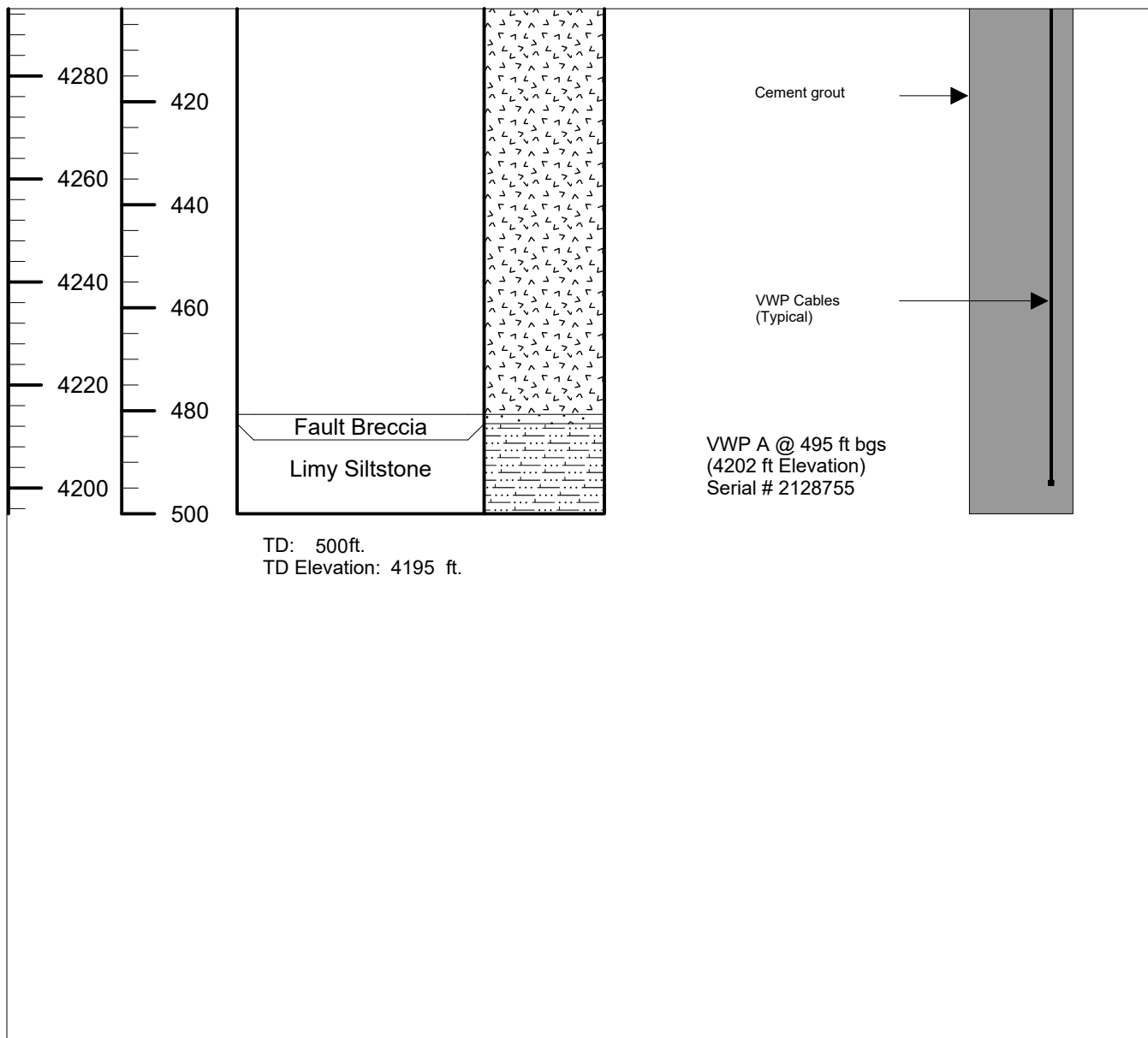
Drilling Contractor:National Drilling Method: Core Start Date: 7/10/2021 End Date: 7/10/2021 Geologist: Bill Goldsmith Northing: 11565650 Easting: 1711032 Coordinate System: NAD 83 BLM Zone 12	RNW-HB-105 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ	By: AP	Date: MAY 22
		Approved: BG	Fig: 25


Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4695 ft	Azimuth: 0 Inclination: 90



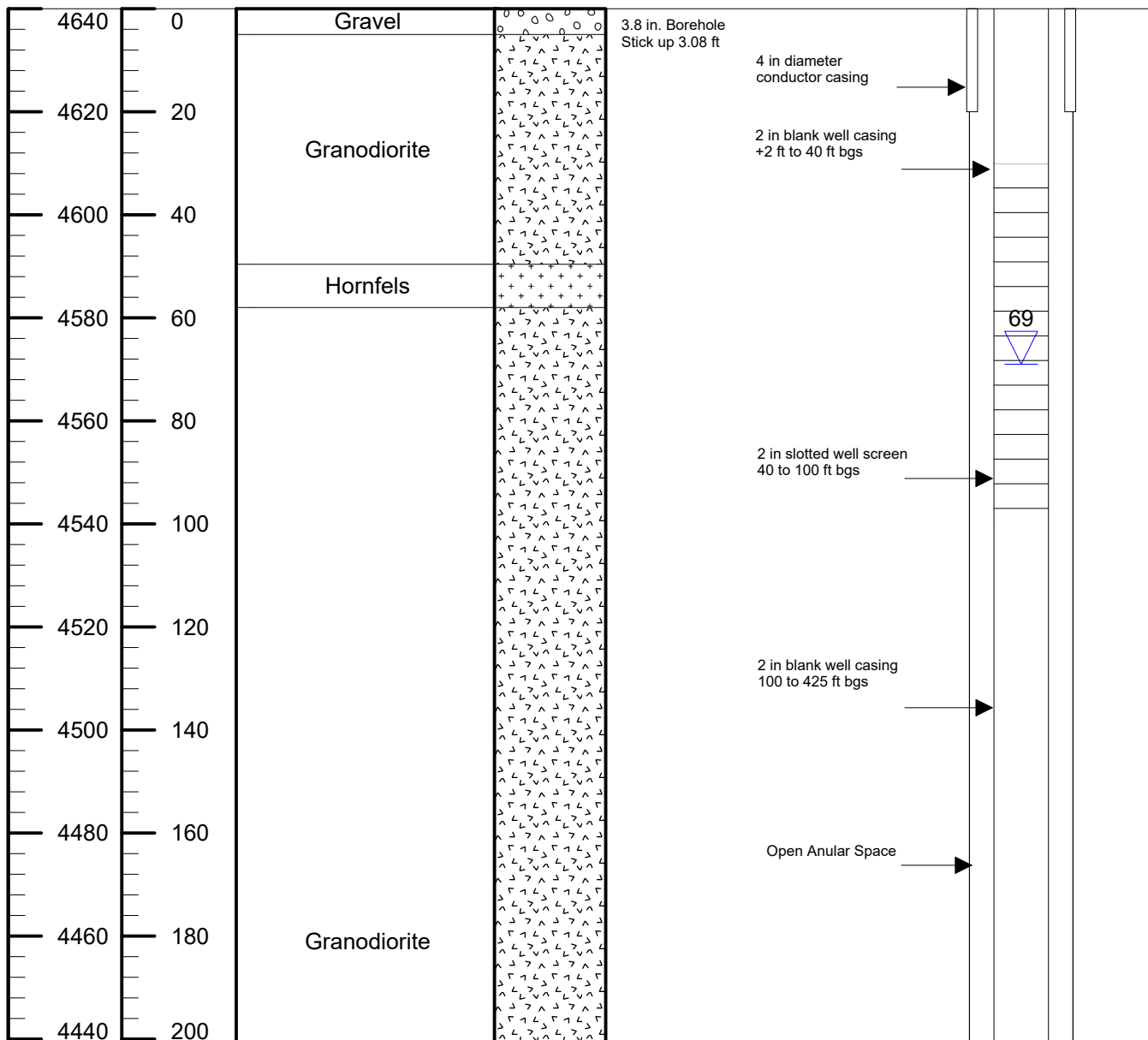
Drilling Contractor:National Drilling Method: Core Start Date: 7/10/2021 End Date: 7/10/2021 Geologist: Bill Goldsmith Northing: 11565650 Easting: 1711032 Coordinate System: NAD 83 BLM Zone 12	RNW-HB-105 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY		
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
			Approved: BG	Fig: 25

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4695 ft	Azimuth: 0 Inclination: 90



Drilling Contractor:National Drilling Method: Core Start Date: 7/10/2021 End Date: 7/10/2021 Geologist: Bill Goldsmith Northing: 11565650 Easting: 1711032 Coordinate System: NAD 83 BLM Zone 12	RNW-HB-105 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY		
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
			Approved: BG	Fig: 25

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4640 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National
 Drilling Method: Core
 Start Date: 7/10/2021
 End Date: 7/10/2021
 Geologist: Bill Goldsmith
 Northing: 11565028
 Easting: 1710635
 Coordinate System:
 NAD 83 BLM Zone 12

RNW-HB-108
 Well/Piezometer
 Construction Diagram

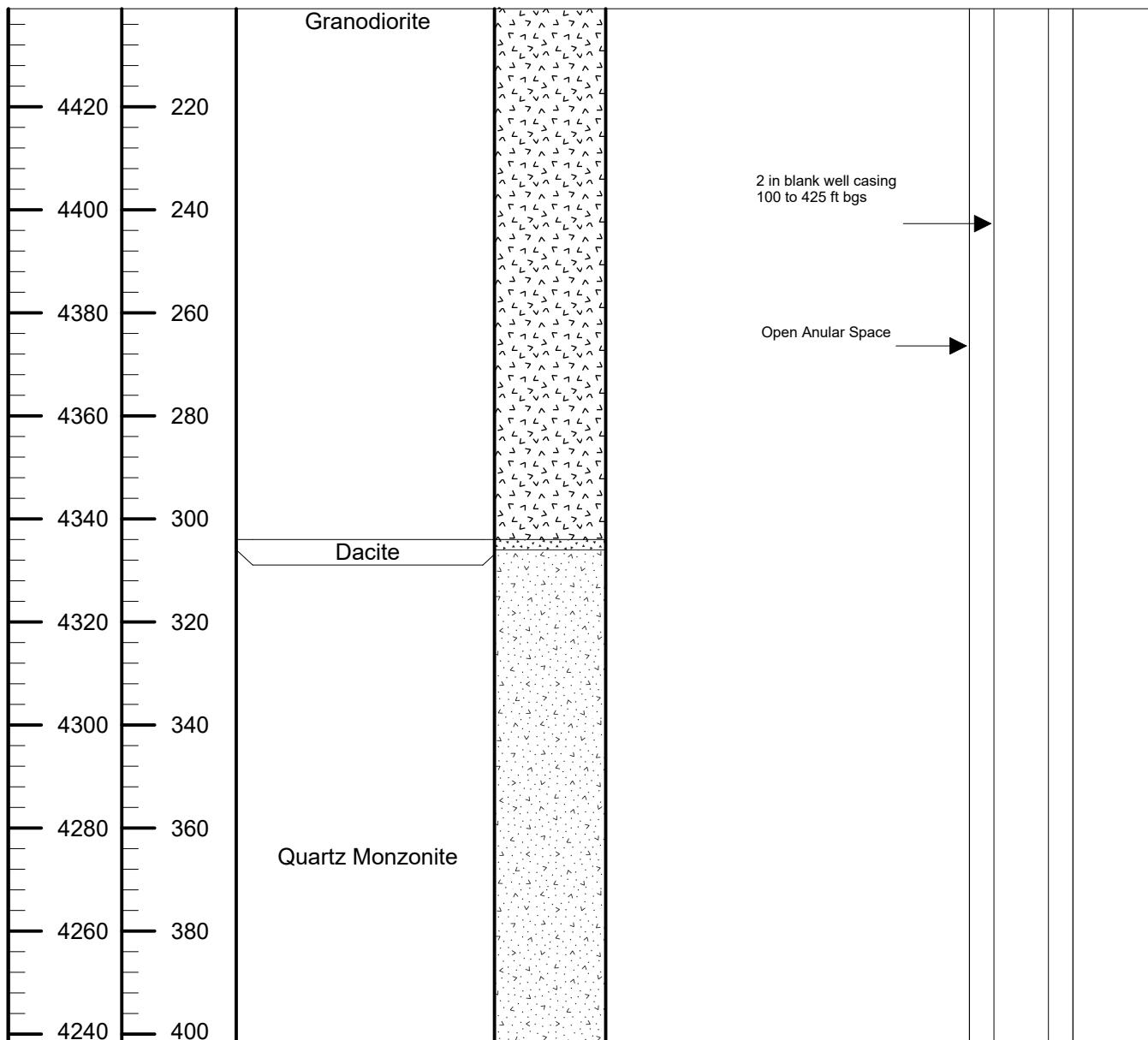


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 A TETRA TECH COMPANY

Client: Rosemont Copper Company
 Project: Rosemont-Copper World Project
 Location: Helvetia

By:	AP	Date:	MAY 22
Approved:	BG	Fig:	26

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4640 ft	Azimuth: 0 Inclination:90



Drilling Contractor:National
 Drilling Method:Core
 Start Date: 7/10/2021
 End Date: 7/10/2021
 Geologist: Bill Goldsmith
 Northing: 11565028
 Easting: 1710635
 Coordinate System:
 NAD 83 BLM Zone 12

RNW-HB-108
 Well/Piezometer
 Construction Diagram

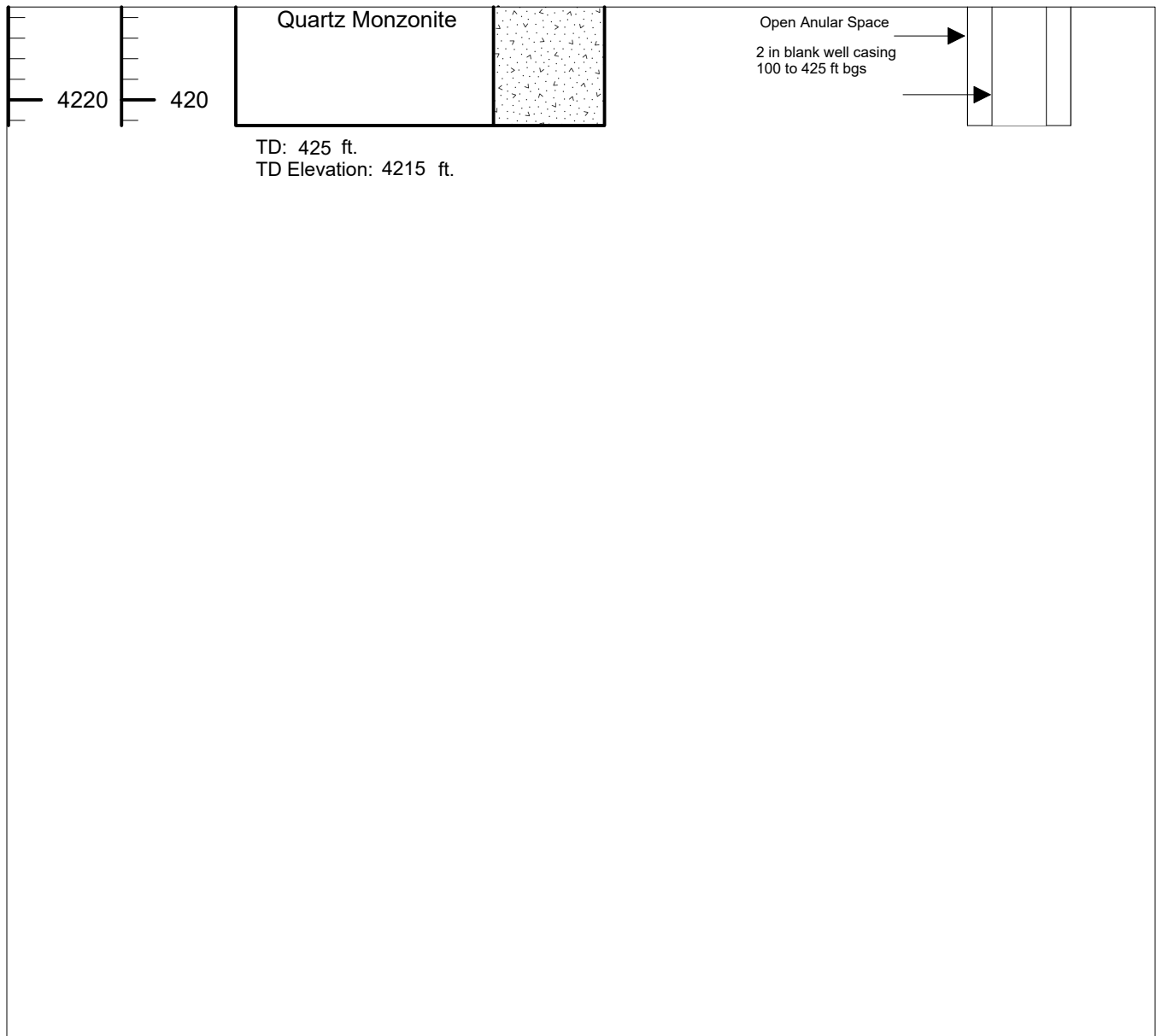


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 A TETRA TECH COMPANY

Client: Rosemont Copper Company
 Project: Rosemont-Copper World Project
 Location: Helvetia

By:	AP	Date:	MAY 22
Approved:	BG	Fig:	26

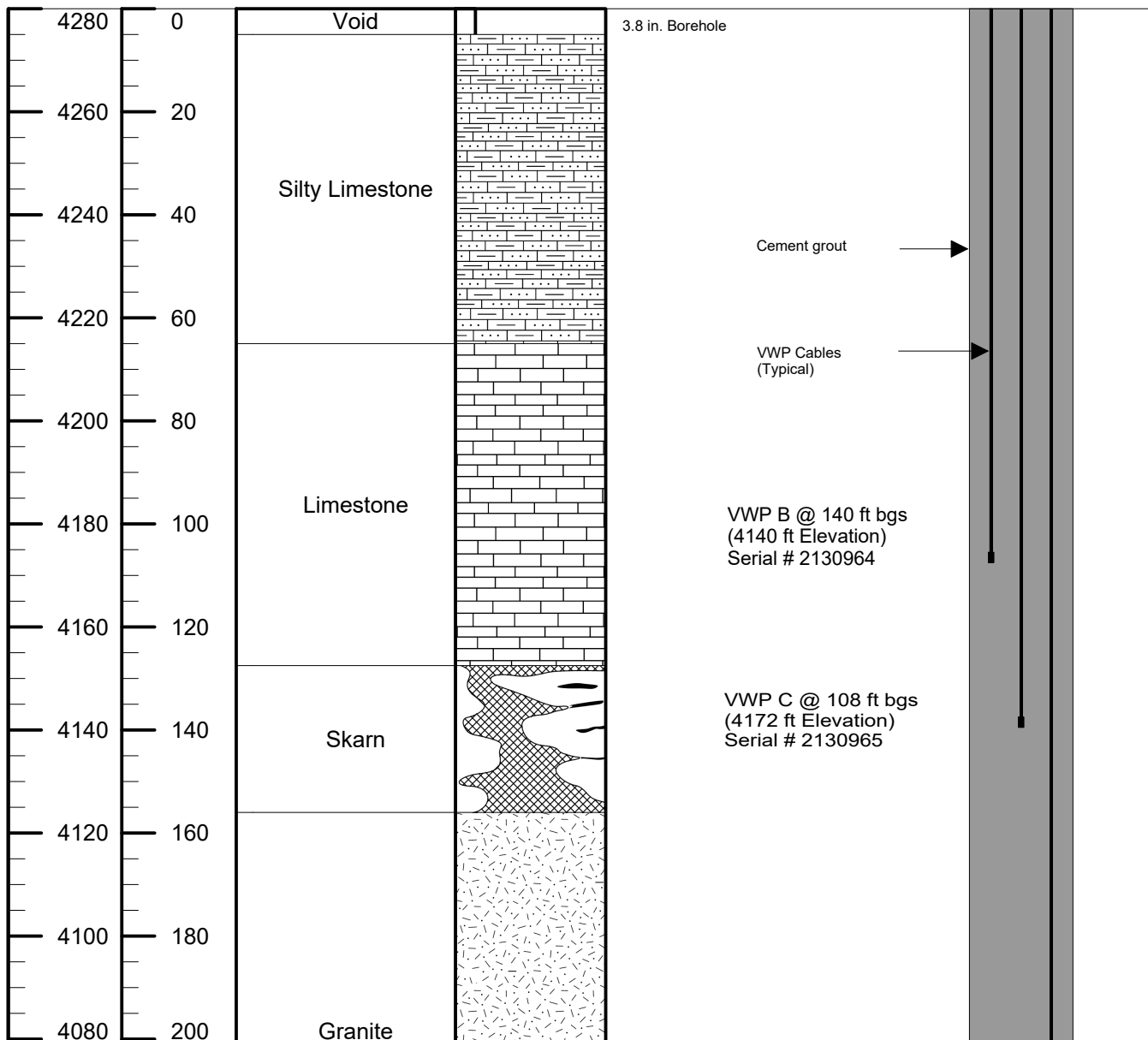
Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4640 ft	Azimuth: 0 Inclination:90




Drilling Contractor:National
 Drilling Method:Core
 Start Date: 7/10/2021
 End Date: 7/10/2021
 Geologist: Bill Goldsmith
 Northing: 11565028
 Easting: 1710635
 Coordinate System:
 NAD 83 BLM Zone 12

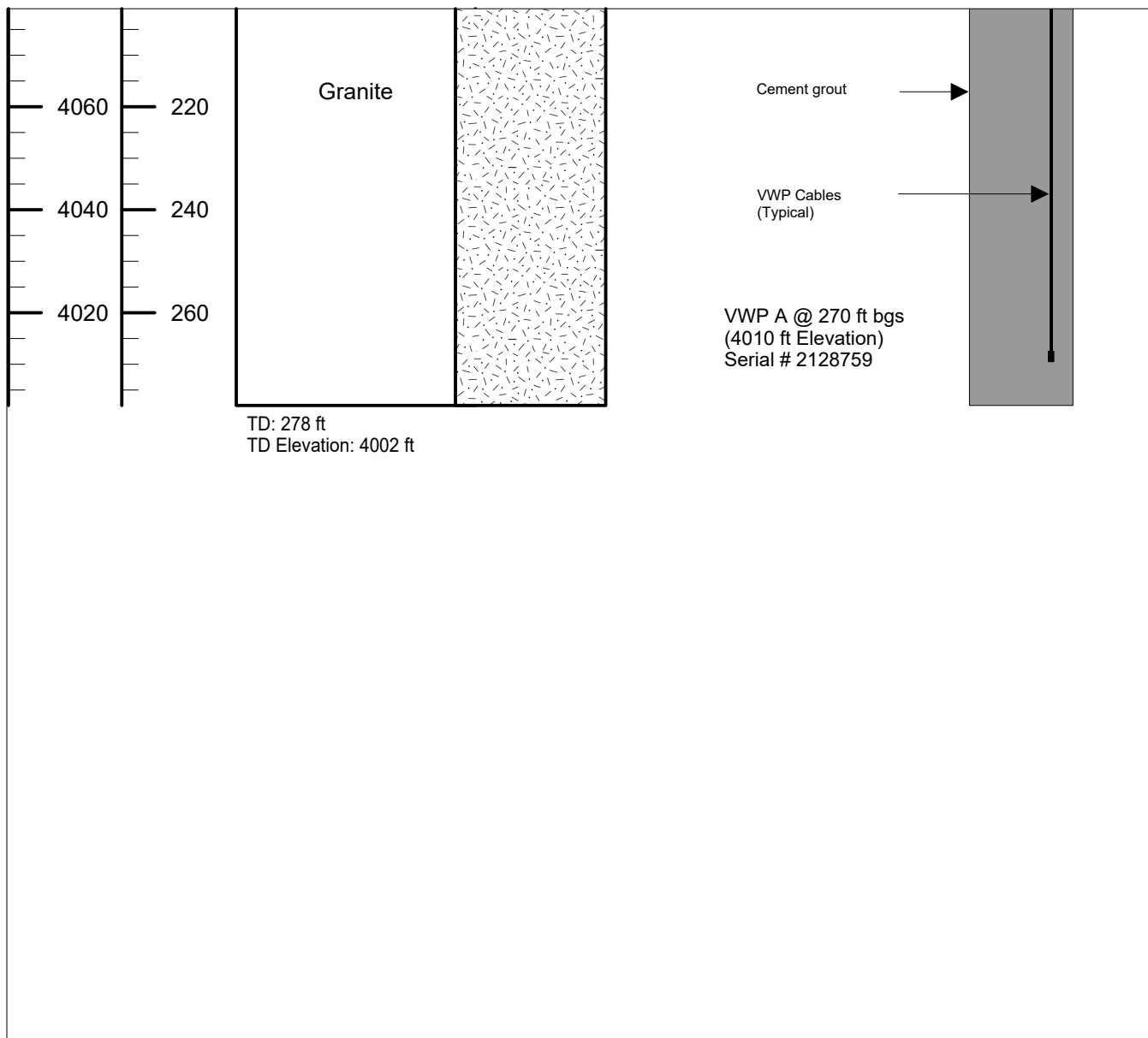
RNW-HB-108 Well/Piezometer Construction Diagram	PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
	Client: Rosemont Copper Company Project: Rosemont-Copper World Project Location: Helvetia	By: AP Date: MAY 22 Approved: BG Fig: 26


Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4280 ft	Azimuth: 0 Inclination: 90



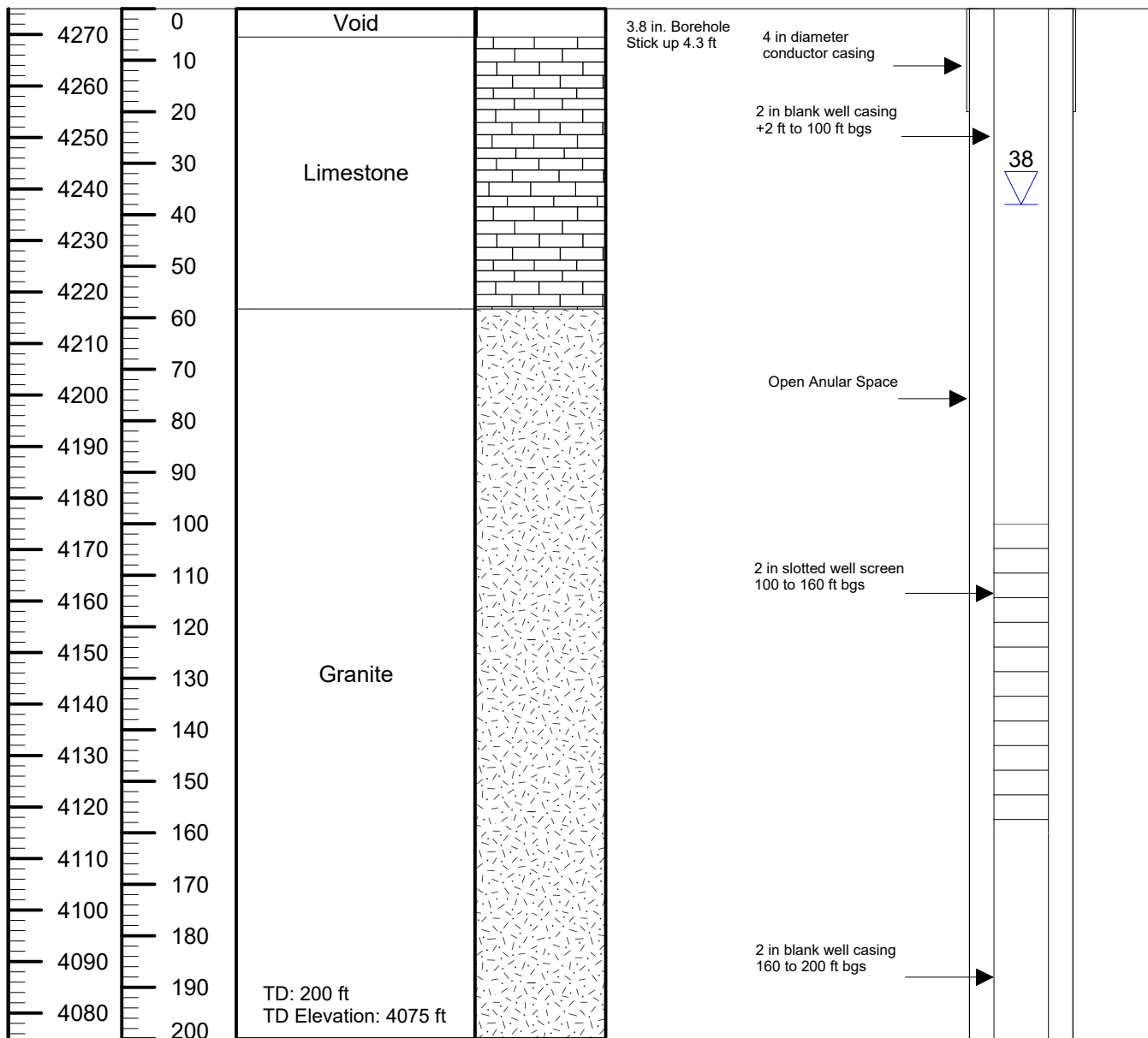
Drilling Contractor:National Drilling Method: Core Start Date: 7/12/2021 End Date: 7/13/2021 Geologist: Bill Goldsmith Northing: 11564496 Easting: 1705429 Coordinate System: NAD 83 BLM Zone 12	RNW-HB-152 Well/Piezometer Construction Diagram	 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ	By: AP	Date: MAY 22
		Approved: BG	Fig: 27

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4280 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National Drilling Method: Core Start Date: 7/12/2021 End Date: 7/13/2021 Geologist: Bill Goldsmith Northing: 11564496 Easting: 1705429 Coordinate System: NAD 83 BLM Zone 12	RNW-HB-152 Well/Piezometer Construction Diagram		 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
			Approved: BG	Fig: 27

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4275 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National
Drilling Method: Core
Start Date: 7/12/2021
End Date: 7/12/2021
Geologist: Bill Goldsmith
Northing: 11564296
Easting: 1705689

Coordinate System:
NAD 83 BLM Zone 12

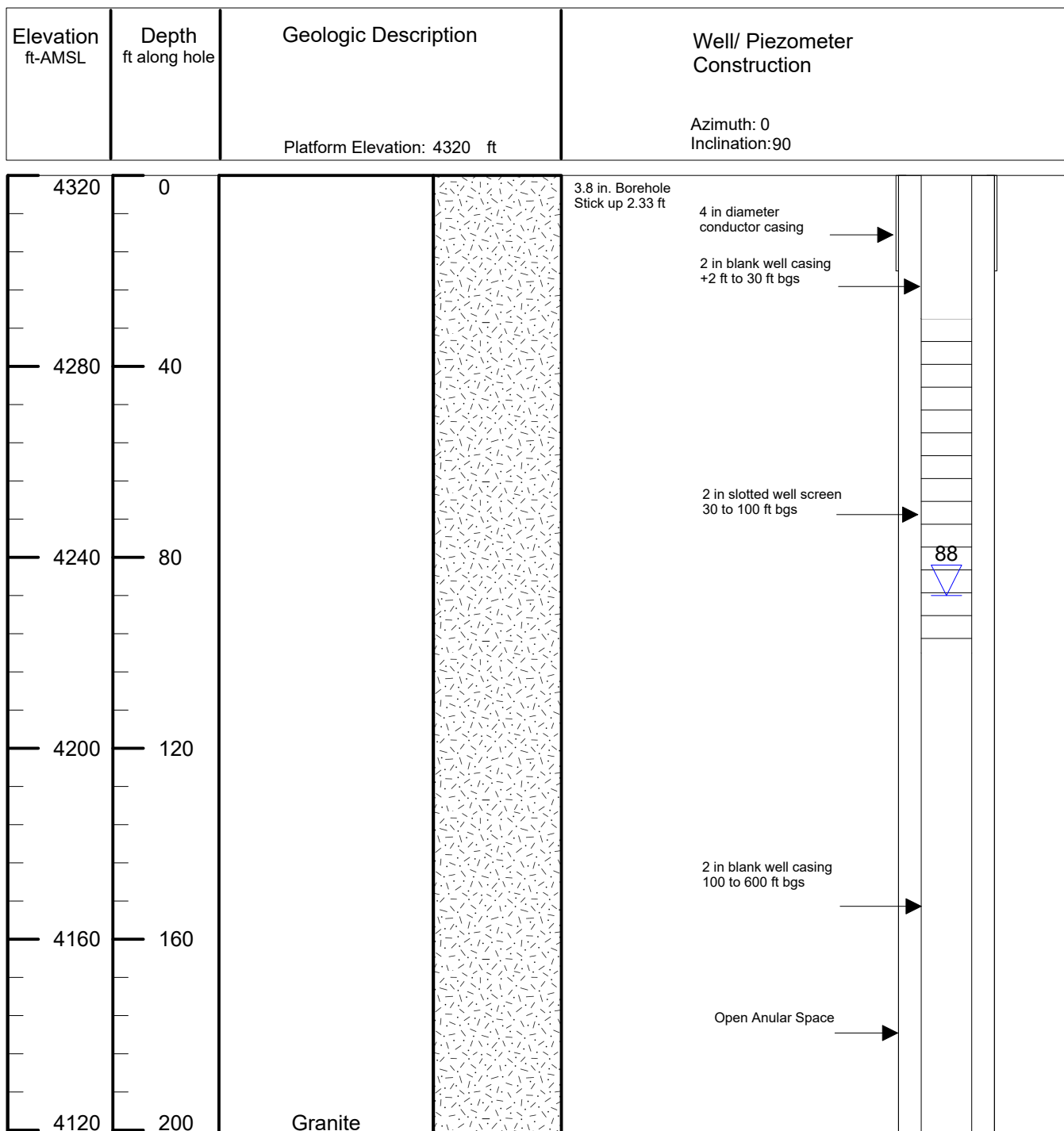
RNW-HB-154
Well/Piezometer
Construction Diagram



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A TETRA TECH COMPANY

Client: Rosemont Copper Company
Project: Rosemont Copper World Project
Location: Helvetia, AZ

By:	AP	Date:	MAY 22
Approved:	BG	Fig:	28



Drilling Contractor: National
 Drilling Method: Core
 Start Date: 7/7/2021
 End Date: 7/8/2021
 Geologist: Bill Goldsmith
 Northing: 11564099
 Easting: 1706030
 Coordinate System:
 NAD 83 BLM Zone 12

RNW-HB-168
 Well/Piezometer
 Construction Diagram

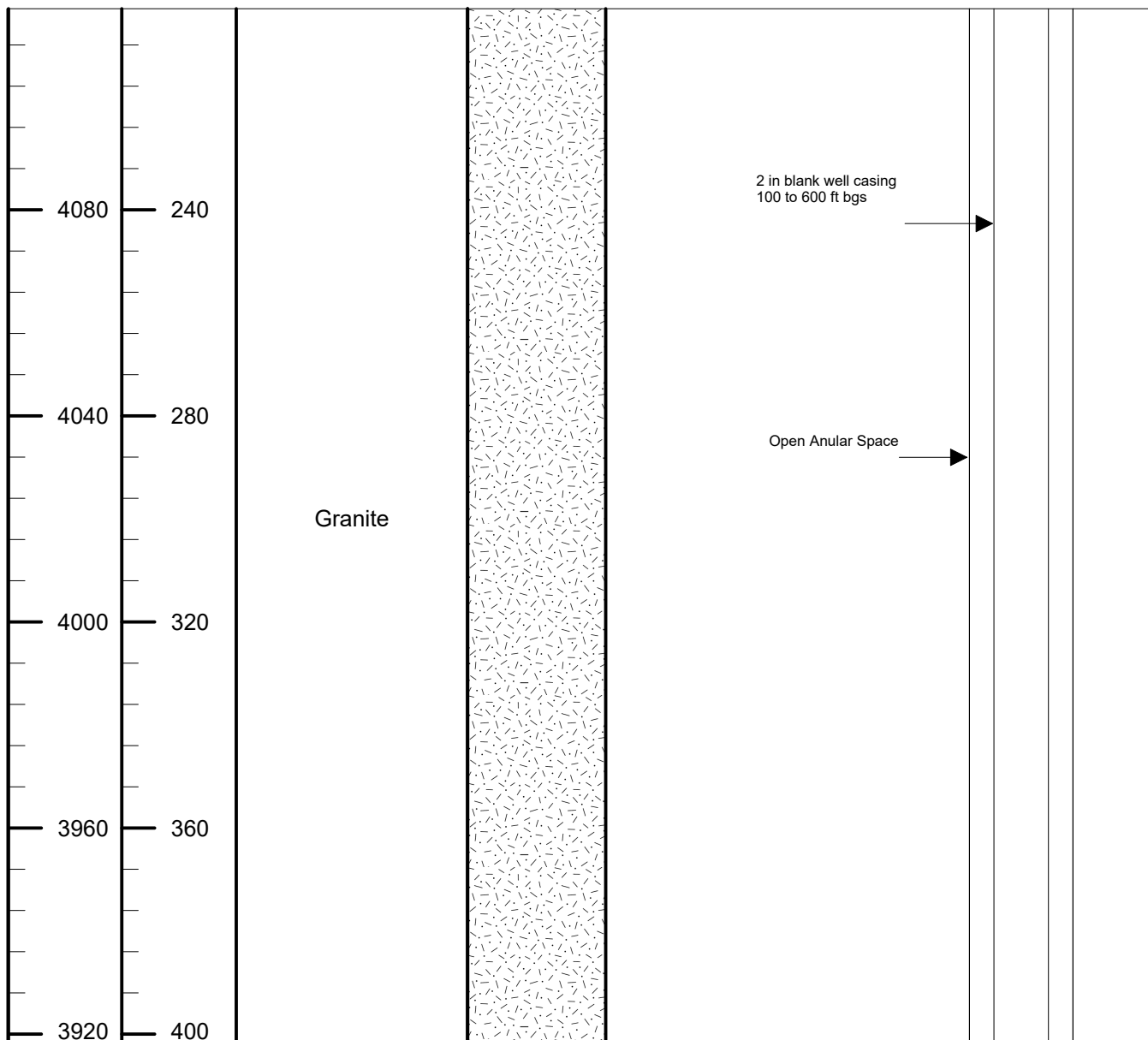


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Client: Rosemont Copper Company
 Project: Rosemont Copper World Project
 Location: Helvetia, AZ

By:	AP	Date:	MAY 22
Approved:	BG	Fig:	29

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4320 ft	Azimuth: 0 Inclination:90



Drilling Contractor:National
 Drilling Method:Core
 Start Date: 7/7/2021
 End Date: 7/8/2021
 Geologist: Bill Goldsmith
 Northing: 11564099
 Easting: 1706030
 Coordinate System:
 NAD 83 BLM Zone 12

RNW-HB-168
 Well/Piezometer
 Construction Diagram

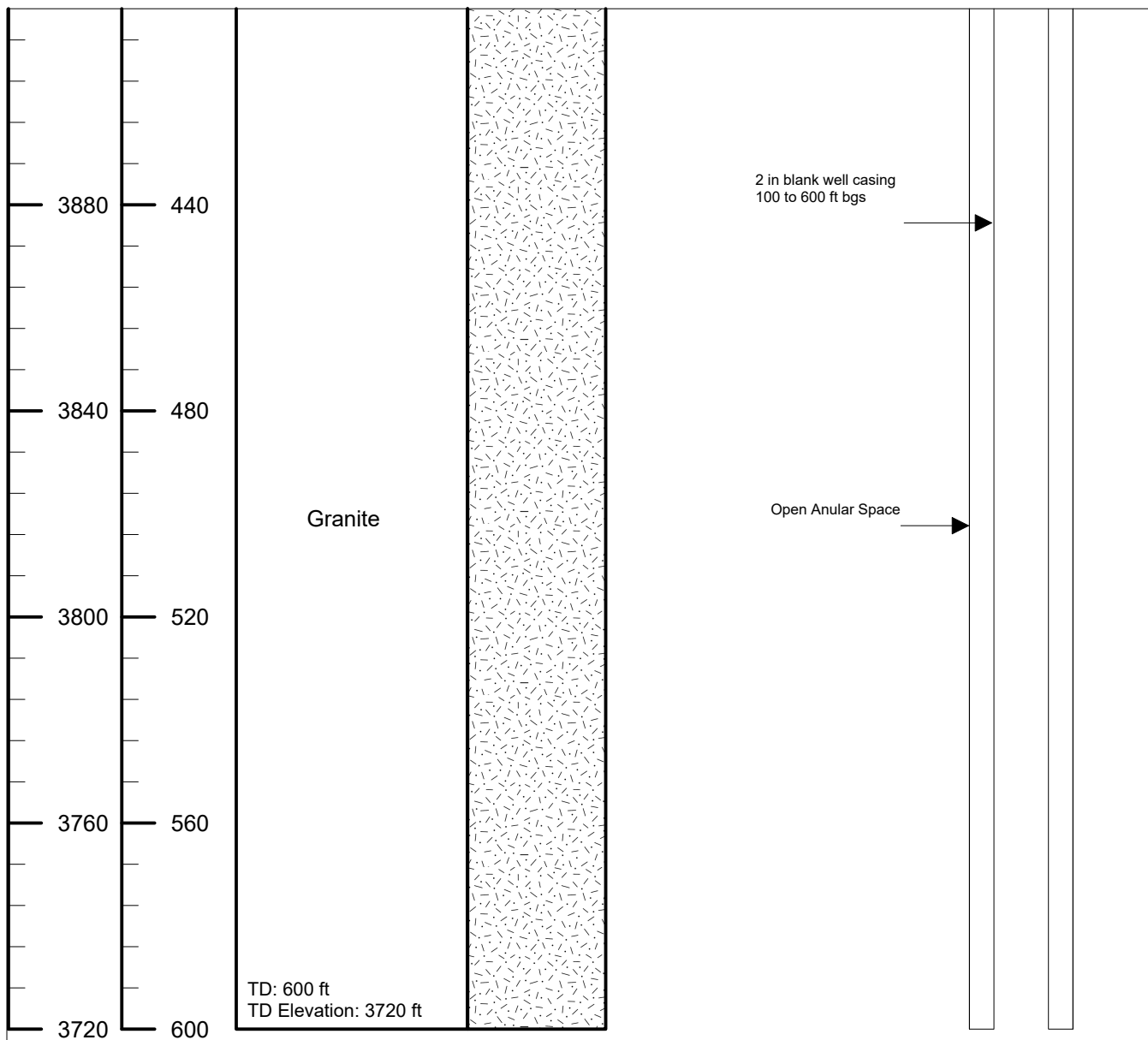


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 A TETRA TECH COMPANY

Client: Rosemont Copper Company
 Project: Rosemont Copper World Project
 Location: Helvetia, AZ

By: AP	Date: MAY 22
Approved: BG	Fig: 29

Elevation ft-AMSL	Depth ft along hole	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4320 ft	Azimuth: 0 Inclination: 90



Drilling Contractor: National
 Drilling Method: Core
 Start Date: 7/7/2021
 End Date: 7/8/2021
 Geologist: Bill Goldsmith
 Northing: 11564099
 Easting: 1706030
 Coordinate System:
 NAD 83 BLM Zone 12

RNW-HB-168
 Well/Piezometer
 Construction Diagram

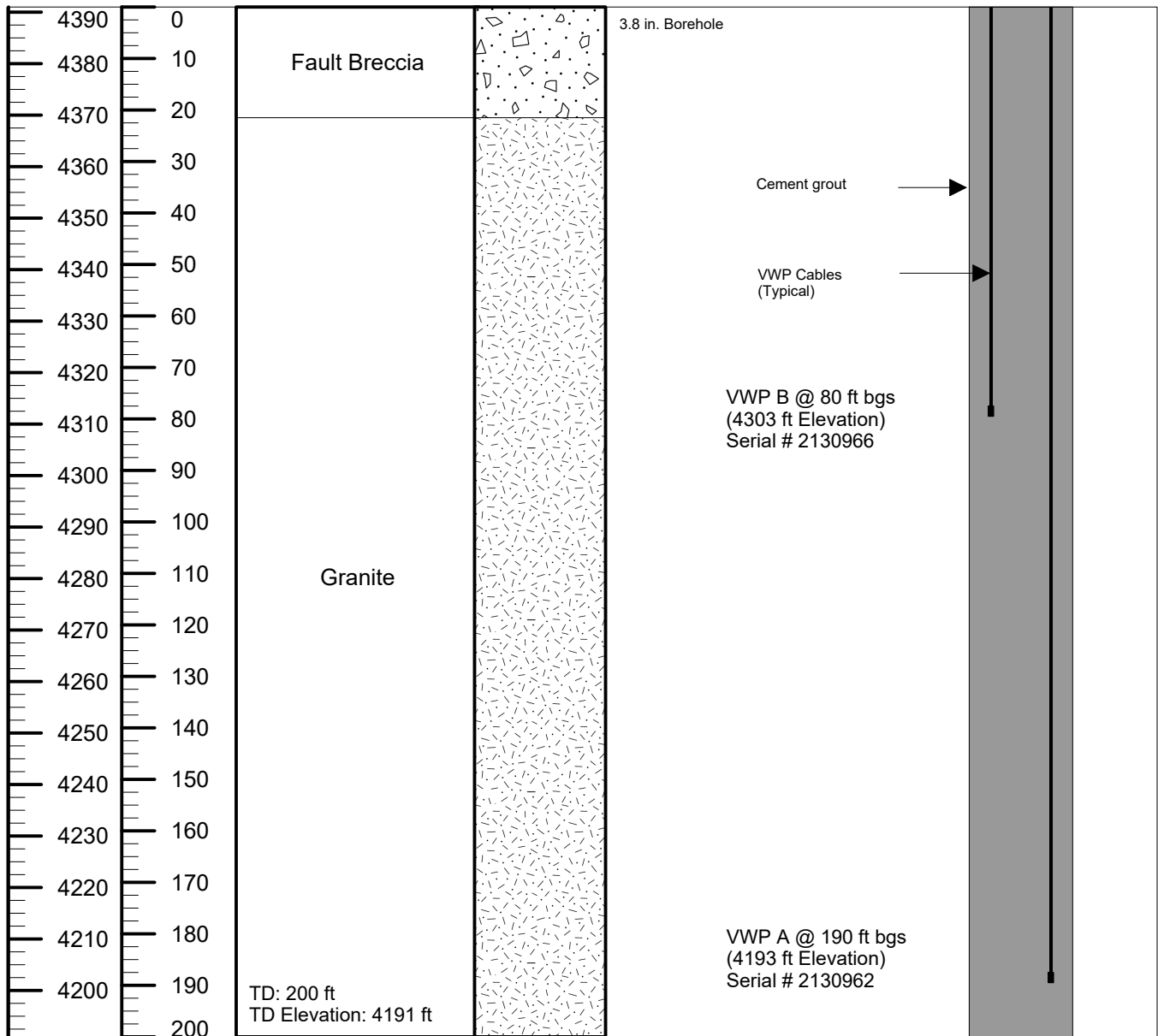



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 A TETRA TECH COMPANY

Client: Rosemont Copper Company
 Project: Rosemont Copper World Project
 Location: Helvetia, AZ

By: AP	Date: MAY 22
Approved: BG	Fig: 29

Elevation (ft-AMSL)	Depth (ft along hole)	Geologic Description	Well/ Piezometer Construction
		Platform Elevation: 4391 ft	Azimuth: 0 Inclination: 90



Drilling Contractor:National Drilling Method: Core Start Date: 7/14/2021 End Date: 7/14/2021 Geologist: Bill Goldsmith Northing: 11564138 Easting: 1707066 Coordinate System: NAD 83 BLM Zone 12	RNW-HB-169 Well/Piezometer Construction Diagram		 PITEAU ASSOCIATES GEOTECHNICAL AND WATER MANAGEMENT CONSULTANTS A TETRA TECH COMPANY	
	Client: Rosemont Copper Company Project: Rosemont Copper World Project Location: Helvetia, AZ		By: AP	Date: MAY 22
			Approved: BG	Fig: 30

APPENDIX E

Existing Hydrogeologic Characterization Boreholes

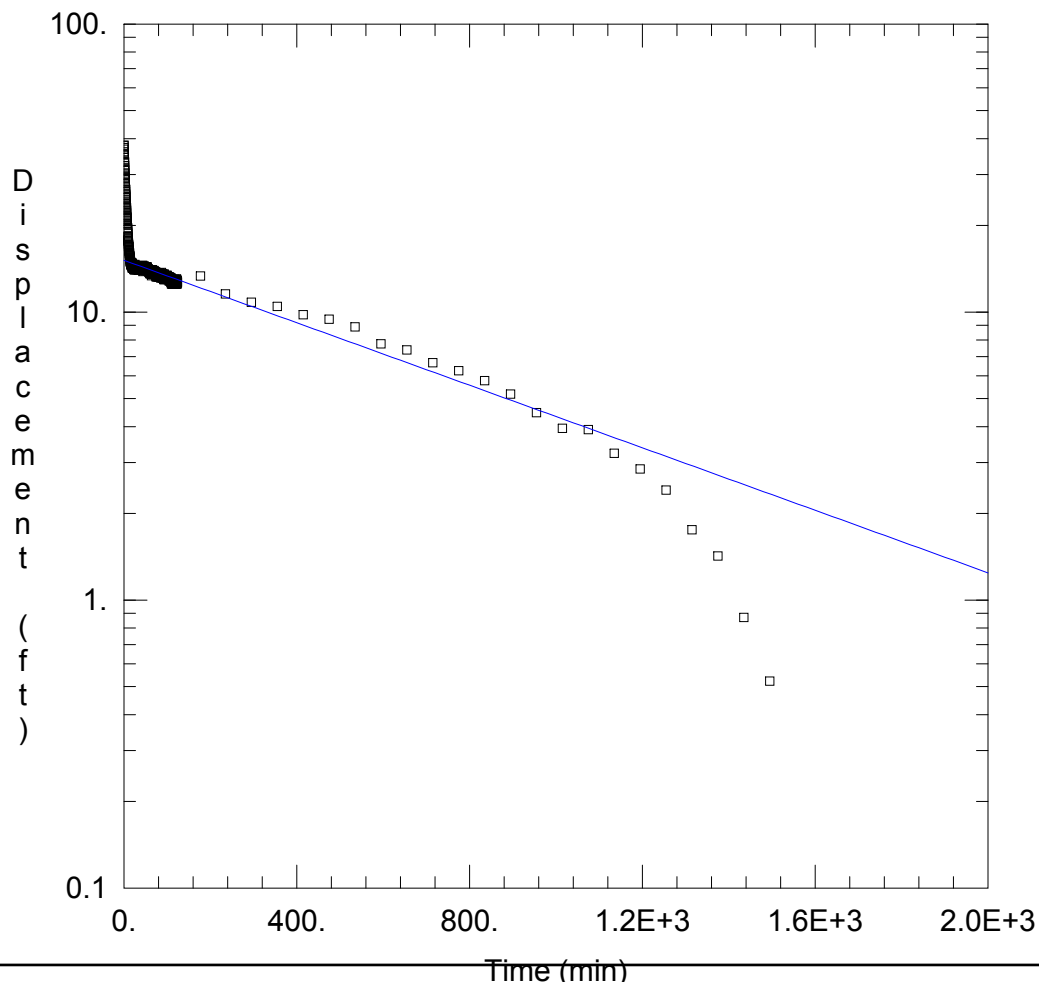
Location ID	Local ID	Type	UTM-E (ft)	UTM-N (ft)	Elevation (ft amsl)	Total Depth (ft bgs)	Screened Interval (ft bgs)	Measurement Date	Depth to Water (ft bgs)	Piezometric Level Elevation (ft amsl)	Hydraulic Conductivity (ft/day)	Geology
AZ 1129	(D-17-16) 16cba	GWSI	1727355.469	11599508	3685	NA	NA	1/30/2013	Dry	Dry		
AZ5034	(D-17-16) 34aac	TA	1736643.508	11585692	4162	205	NA	3/16/2020	14	4148		
AZ0997	(D-17-16) 35bba	GWSI	1738510.303	11586125	4162	NA	NA	11/29/2016	Dry	Dry		
AZ5038	(D-18-16) 24dca	TA	1745767.506	11561115	4440	NA	NA	3/26/2009	31	4409		
Well 9-7	(D-18-16) 31bbb	TA	1716538.562	11554603	5137	2541	NA	3/9/2021	16	5121		
A-841	(D-18-15) 36aaa	OW	1715810.2	11554191	5188	700	NA	3/26/2009	Dry	Dry		
A-886	(D-18-16) 30cdd	OW	1717819.6	11555158	5087	1124	NA	1/28/2021	29	5047		
AH-8	(D-18-16) 31cbb	OW	1714668.1	11555665	5318	700	NA	8/26/2010	106	5054		
AR-2050	(D-18-16) 31bbd	OP	1716873	11553670	5113	1318	NA	3/9/2021	74	5040		
AR-2065 (C-1)	(D-18-16) 30bda	TA	1734842.331	11565394	5073	1462	NA	1/28/2021	61	5012		
AZ0621 (Singing Valley Windmill)	(D-19-16) 21bab	OW	1727717.944	11533700	4985	375	NA	2/12/2009	281	4704		
AZ0643	(D-19-16) 17bdc	OW	1722826.25	11536638	5080	420	NA	2/17/2016	365	4715		
AZ0652	(D-19-16) 15aba	OW	1735082.63	11538528	4915	331	NA	1/9/2011	204	4696		
AZ0827	(D-18-15) 22abc	OW	1703282.175	11564444	4155	110	NA	2/7/2010	75	4081		
AZ5082.1	(D-18-16) 23dcc1	OW	1740127.954	11560591	4375	NA	NA	NA	NA	NA		
AZ5082.2	(D-18-16) 23dcc2	OW	1740127.954	11560591	4372	600	NA	2/18/2021	39	4333		
(D-18-16) 14dac	(D-18-16) 14dac	OW	1741374.475	11566611	4215	115	NA	2/18/2021	15	4201		
(D-19-16) 04cdb	(D-19-16) 04cdb	OW	1727808.067	11545573	5333	NA	NA	NA	NA	NA		
BC-2A	(D-18-16) 15dcc	TA	1734835.769	11565390	4388	10	5-10	4/25/2015	4	4383		Alluvium, volcanic bedrock
BC-2B	(D-18-16) 15dcc	TA	1718740.908	11558351	4384	121	100-120	7/17/2015	48	4337		Volcanic bedrock
C-13	(D-18-16) 29bda	TA	1723744.41	11558478	4738	NA	NA	8/27/2010	Blocked	Blocked		
DC-3A	(D-18-16) 01bda	TA	1744747.167	11579655	4015	30	20-30	6/15/2016	10	4006		Sand, volcanic bedrock
DC-3B	(D-18-16) 01bda	CC	1744740.605	11579652	4015	60	45-60	4/27/2015	11	4004		Volcanic bedrock
DC-3BR	(D-18-16) 01bda	TA	1744734.043	11579636	4015	60	45-60	1/12/2021	27	3988		
DH-1445	(D-18-15) 35abc	OW	1708402.23	11554045	5530	195	NA	2/24/2021	129	5401		Granodiorite
DH-1446	(D-18-15) 35aca	OW	1709091.073	11552907	5700	142	NA	3/21/2012	Dry	Dry		
DH-1455	(D-18-16) 21bda	OW	1729341.853	11563728	4546	1000	NA	10/20/2020	35	4511		
DH-1490	(D-18-16) 27adb	OW	1736259.851	11558432	4510	600	NA	2/18/2021	54	4456		
DH-1494	(D-18-16) 22dbc	OW	1734511.167	11561542	4507	600	NA	1/19/2021	87	4421		
DH-1497	(D-18-16) 34bda	OW	1734596.469	11553412	4775	850	NA	2/18/2021	133	4643		
DH-1537 (Gila Well)	(D-18-16) 32ccb	OW	1721856.304	11550335	4930	1300	387-1287	1/19/2021	37	4893		
DH-1541	(D-19-16) 04dbb	OW	1730019.706	11546660	5180	700	NA	3/4/2021	411	4769		
E-6	(D-19-16) 11bbb	OW	1736948.826	11544413	4942	1510	490-1510	10/20/2009	247	4695	2.10E-01	
E-7	(D-19-17) 09abb	TA	1761085.864	11543820	4440	1285	500-1285	2/25/2021	57	4383	4.00E+00	
Empire Windmill	(D-19-16) 14bdd	OW	1739133.861	11536818	4805	260	NA	12/10/2008	99	4706		Basin fill
Enzenberg Well	(D-19-16) 18ddb	OW	1720121.236	11535033	5180	1180	60-1180	2/8/2017	Blocked	Blocked	1.40E+01	Basin fill
Field Well	(D-19-16) 16ddb	OW	1730508.347	11534888	4931	260	NA	3/4/2021	233	4698		
G-35 (Rosemont Junction)	(D-18-16) 29cda	OW	1723912.73	11555784	4764	508	NA	2/18/2021	1	4764		
Gayler	(D-18-16) 32bdc2	OW	1723058.401	11552590	4861	500	NA	2/13/2009	Blocked	Blocked		
Gayler2	(D-18-16) 32bdc1	OW	1723024.937	11552595	4861	560	NA	1/19/2021	42	4819		Sand, gravel, breccia, limestone, siltstone
HB-2131	(D-18-15) 36aca	TA	1714383.912	11553187	5491	1040	1000-1020	03/11/2021	339	5152		Skarn, marble
HB-2142	(D-18-15) 36acb	TA	1715431.006	11553430	5269	1000	600-620	10/22/2020	124	5145		Andesite
HB-2146	(D-18-15) 36acc	TA	1714383.912	11553722	5338	1360	1340-1360	03/11/2021	186	5152		Marble
HB-2174	(D-18-15) 30cbb	TA	1716331.461	11556873	5384	920	860-880	01/28/2021	251	5133		Conglomerate
HC-1A	(D-19-16) 01bab1	IC	1712646.7	11548956	5650	440	260-440	2/24/2021	222	5428	1.00E+01	Conglomerate
HC-1B	(D-19-16) 01bab2	DC	1712650.4	11548926	5650	1000	480-700 / 760-980	2/24/2021	201	5449	1.60E+01	Conglomerate
HC-2A	(D-19-16) 06aad1	IC	1720920.8	11548313	5000	740	120-740	1/19/2021	52	4948	2.10E-01	Basin-fill deposits
HC-2B	(D-19-16) 06aad2	DC	1720887.7	11548324	5001	1000	780-1000	1/19/2021	117	4883	1.40E-01	Altered Tuff
HC-3A	(D-18-16) 29ccb1	AL	1721810.4	11555619	4843	53	10 - 50	1/19/2021	20	4823	2.10E+00	Alluvium, conglomerate, arkose, siltstone
HC-3B	(D-18-16) 29ccb2	IC	1721831.1	11555644	4842	394	180-380	1/19/2021	25	4817	6.00E-01	Conglomerate, arkose, siltstone
HC-3C	(D-18-16) 29ccb3	DC	1721848.167	11555650	4841	1000	440-620 / 700-1000	1/19/2021	23	4817	1.60E-01	Alluvium, conglomerate, arkose, siltstone
HC-4A	(D-18-16) 20dbc1	IC	1721848.2	11555650	4841	640	90-640	2/22/2021	68	4905	6.10E-01	Dacitic volcanic breccia
HC-4B	(D-18-16) 20dbc2	DC	1724230.2	11561804	4973	1000	680-1000	2/22/2021	319	4655	6.30E-03	Dacitic volcanic breccia
Hidden Valley Stock	(D-18-16) 21ada	OW	1731666.684	11564088	4472	50	NA	1/18/2008	Blocked	Blocked		
Hilltop Windmill	(D-19-16) 16cbb	OW	1726627.292	11536483	5050	472	NA	3/4/2021	364	4686		
HV-1	(D-18-16) 21acb	OW	1729363.539	11563675	4548	522	100-520	1/19/2021	51	4497		
HV-2	(D-18-16) 21abd	OW	1730636.47	11564311	4488	300	120-300	1/19/2021	42	4446		
Lorensten	(D-19-16) 22ccb	TA	1761093.975	11543816	5025	420	NA	7/9/2013	233	4792		
MAATR Well	(D-18-15) 23ccc	TA	1705965.599	11560426	4416	990	NA	2/12/2021	141	4275		
Mulberry Stock	(D-18-16) 15adb	OW	1736258.604	11568927	4347	NA	NA	1/25/2010	60	4288		
Munger Well	(D-19-16) 22abd	TA	1731873.437	11531939	4973	420	NA	3/16/2021	258	4715		
Oaktree Windmill	(D-19-16) 02ccd	OW	1738182.419	11545030	4890	262	NA	2/25/2021	206	4684	4.80E-01	Basin fill (?)
Old Dick	(D-18-15) 23abc	OW	1708753.279	11564272	4440	NA	NA	7/27/2012	Dry	Dry		
P-899	(D-18-16) 29bbd	OW	1722240.817	11558983	4822	3200	NA	2/22/2021	0	4822		
PC-1	(D-18-16) 30cba	RW	1717262.9	11556858	5275	1020	200-1020	1/28/2021	139	5133	3.30E+01	Conglomerate, arkose, siltstone
PC-2	(D-18-16) 30cdc	RW	1717573.3	11555449	5123	1503	200-1503	1/28/2021	0	5120	3.30E-01	Conglomerate, arkose, siltstone, limestone, dolomite, marble
PC-3	(D-18-16) 31bbc	PIT	1716821.5	11553690	5119	1365	200-1360	3/9/2021	101	5016	3.40E-02	Conglomerate, arkose, siltstone
PC-4	(D-18-15) 36daa	RW	1715878.9	11551787	5233	1510	200-1500	3/16/2021	142	5088	7.70E-03	Conglomerate, arkose, siltstone
PC-5	(D-18-16) 30cad1	PIT	1718323.7	11556597	5144	2010	109-2001	1/28/2021	11	5132	2.6E+00 (all zones)	Sandstone, siltstone, andesite, limestone, gypsum, quartzite, marble, skarn, quartz arenite,
PC-6	(D-18-16) 30bcc	PIT	1716515.8	11557841	5357	2010	220-2000	1/28/2011	212	5143	8.4E-01 (all zones)	Skarn, chert, marble, gypsum
PC-7	(D-18-15) 25dbd1	PIT	1714782.9	11556550	5435	2010	109-1986	10/22/2020	300	5134	5.3E-01 (all zones)	Marble, skarn, vein quartz, volcanics, sandstone, quartzite
PC-8	(D-18-15) 36abc1	PIT	1713672.6	11553748	5390	2220	197-2205	7/21/2015	211	5177	5.5E-01 (all zones)	Quartz, marble, calcite, limestone, skarn, quartzite, siltstone, soapstone, granodiorite
Picnic Well	(D-18-16) 21dcd	OW	1730653.235	11560125	4559	NA	NA	2/24/2021	42	4518		
PZ-5	(D-18-16) 30cad2	MLP	1718367.9	11556555	5145	1900	NA	10/23/2020	NA	NA	4.50E-01	
PZ-5-1800	(D-18-16) 30cad2	MLP	1718369.434	11556555	3345	1900	NA	10/23/2020	149	4996		Limestone, dolomite, marble, siltstone
PZ-5-1150	(D-18-16) 30cad2	MLP	1718369.434	11556555	3995	1900	NA	10/23/2020	88	5056		Quartzitic sandstone, dolomite
PZ-5-600	(D-18-16) 30cad2	MLP	1718369.434	11556555	4545	1900	NA	10/23/2020	Dry	Dry		Conglomerate, arkose, siltstone
PZ-7	(D-18-15) 25dbd2	MLP	1714833.5	11556559	5437	1900	NA	10/23/2020	NA	NA	8.50E-01	
PZ-7-1810	(D-18-15) 25dbd2	MLP	1714832.696	11556558	3627	1900	NA	10/23/2020	681	4756		Shale, quartzitic sandstone, limestone
PZ-7-1680	(D-18-15) 25dbd2	MLP	1714832.696	11556558	3757	1900	NA	10/23/2020	423	5014		Shale, quartzitic sandstone, limestone
PZ-7-1245	(D-18-15) 25dbd2	MLP	1714832.696	11556558	4192	1900	NA	10/23/2020	352	5085		Shale, quartzitic sandstone, limestone
PZ-7-800	(D-18-15) 25dbd2	MLP	1714832.696	11556558	4637	1900	NA	10/23/2020	296	5141		Shale, quartzitic sandstone, limestone
PZ-7-485	(D-18-15) 25dbd2	MLP	1714832.696	11556558	4951	1900	NA	10/23/2020	309	5128		Limestone
PZ-8	(D-18-15) 36abc2	MLP	1713610.1	11553636	5419	2001	NA	10/23/2020	NA	NA	7.50E-02	
PZ-8-1925	(D-18-15) 36abc2	MLP	1713608.912	11553635	3494	2001	NA	10/23/2020	NA	NA		Quartzite
PZ-8-1650	(D-18-15) 36abc2	MLP	1713608.912	11553635	3769	2001	NA	10/23/2020	496	4924		Marble
PZ-8-1150	(D-18-15) 36abc2	MLP	1713608.912	11553635	4269	2001	NA	10/23/2020	296	5124		Marble and shale
PZ-8-450	(D-18-15) 36abc2	MLP	1713608.912	11553635	4969	2001	NA	10/23/2020	244	5175		Marble
Rosemont Ranch	(D-19-16) 17ddd	OW	1726318.727	11534108	5005	301	NA	3/4/2021	300			

Location ID	Local ID	Type	UTM-E (ft)	UTM-N (ft)	Elevation (ft amsl)	Total Depth (ft bgs)	Screened Interval (ft bgs)	Measurement Date	Depth to Water (ft bgs)	Piezometric Level Elevation (ft amsl)	Hydraulic Conductivity (ft/day)	Geology
RP-6	(D-18-16) 15dbc	SC	1734903.9	11566585	4461	360	200-360	1/19/2021	121	4340	1.20E+01	Silty sandstone, vein quartz, mudstone
RP-7	(D-18-16) 15aaa	SC	1737073.2	11570174	4286	262	102-250	2/18/2021	40	4246	1.10E-01	Sandstone, siltstone
RP-8	(D-18-16) 23dba	SC	1740731	11562055	4376	262	102-250	2/18/2021	88	4288	6.80E-01	Siltstone, sandstone
RP-9	(D-18-16) 27ddc	SC	1736270.1	11554885	4644	262	102-250	2/18/2021	35	4609	1.70E+00	Gravely sand, tuff
Windmill	(D-19-16) 17bdb	OW	1722621.394	11537247	5102	NA	NA	7/14/2014	358	4722		

AL = Alluvium Characterization well
CC = Other Rosemont characterization well
DC = Deep Characterization well
IC = Intermediate Characterizations Well
MLP = Multi-level Piezometer
OP = Other piezometer
OW = Other water well
PIT = Pit characterization well
RW = Rosemont Mine Water Supply Well
SC = Shallow Characterization well
TA = Target

APPENDIX F

Borehole Injection-Recovery Testing Data and Analyses



WELL TEST ANALYSIS

Data Set: C:\...\G&H2021-1 Injection-Recovery 95 ft bgs BR_v2.aqt
 Date: 01/03/22 Time: 15:25:50

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: G&H2021-1
 Test Date: 7/18/2021

AQUIFER DATA

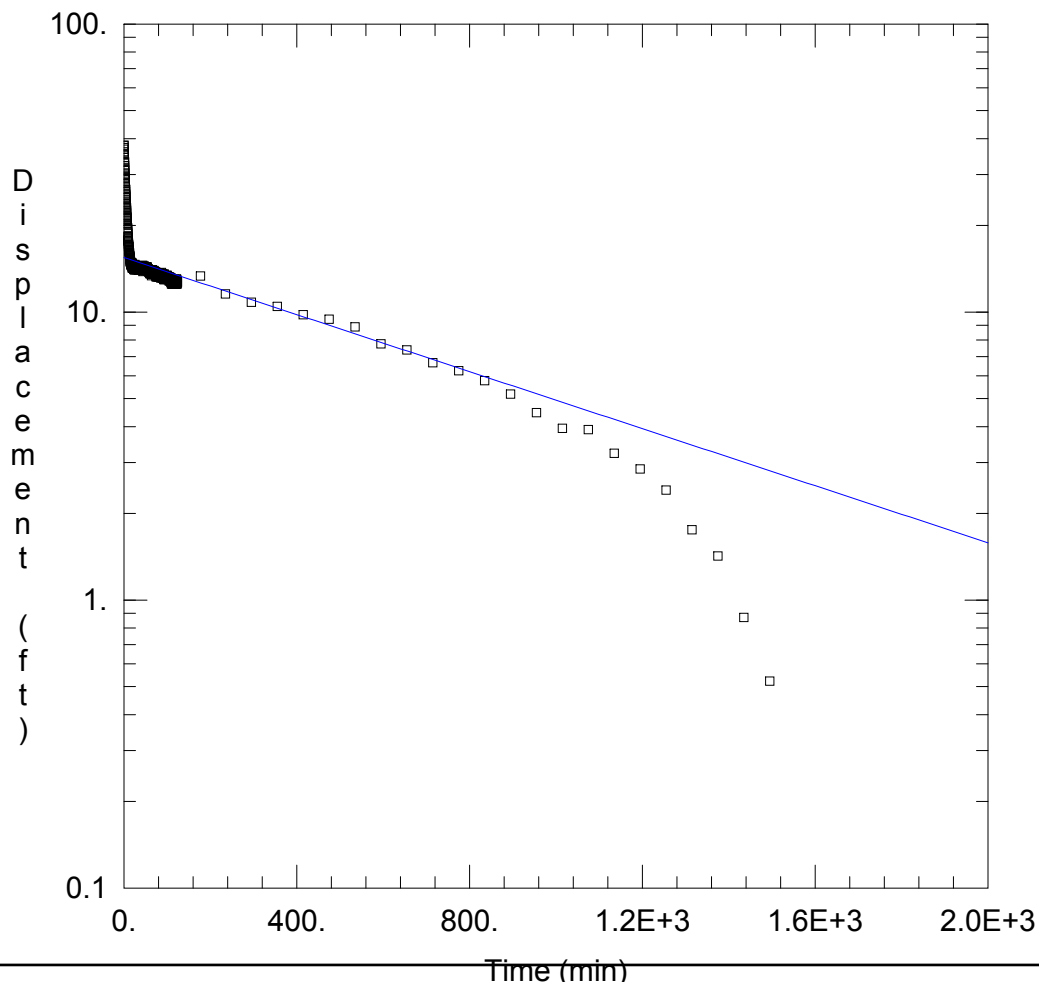
Saturated Thickness: 48.4 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (G&H2021-1)

Initial Displacement: <u>38. ft</u>	Static Water Column Height: <u>48.4 ft</u>
Total Well Penetration Depth: <u>48.4 ft</u>	Screen Length: <u>48.4 ft</u>
Casing Radius: <u>0.158 ft</u>	Well Radius: <u>0.158 ft</u>
	Gravel Pack Porosity: <u>0.</u>

SOLUTION

Aquifer Model: <u>Unconfined</u>	Solution Method: <u>Bouwer-Rice</u>
K = <u>7.423E-7 cm/sec</u>	y0 = <u>15.13 ft</u>



WELL TEST ANALYSIS

Data Set: C:\...\G&H2021-1 Injection-Recovery 95 ft bgs HV_v2.aqt
 Date: 01/03/22 Time: 15:26:49

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: G&H2021-1
 Test Date: 7/18/2021

AQUIFER DATA

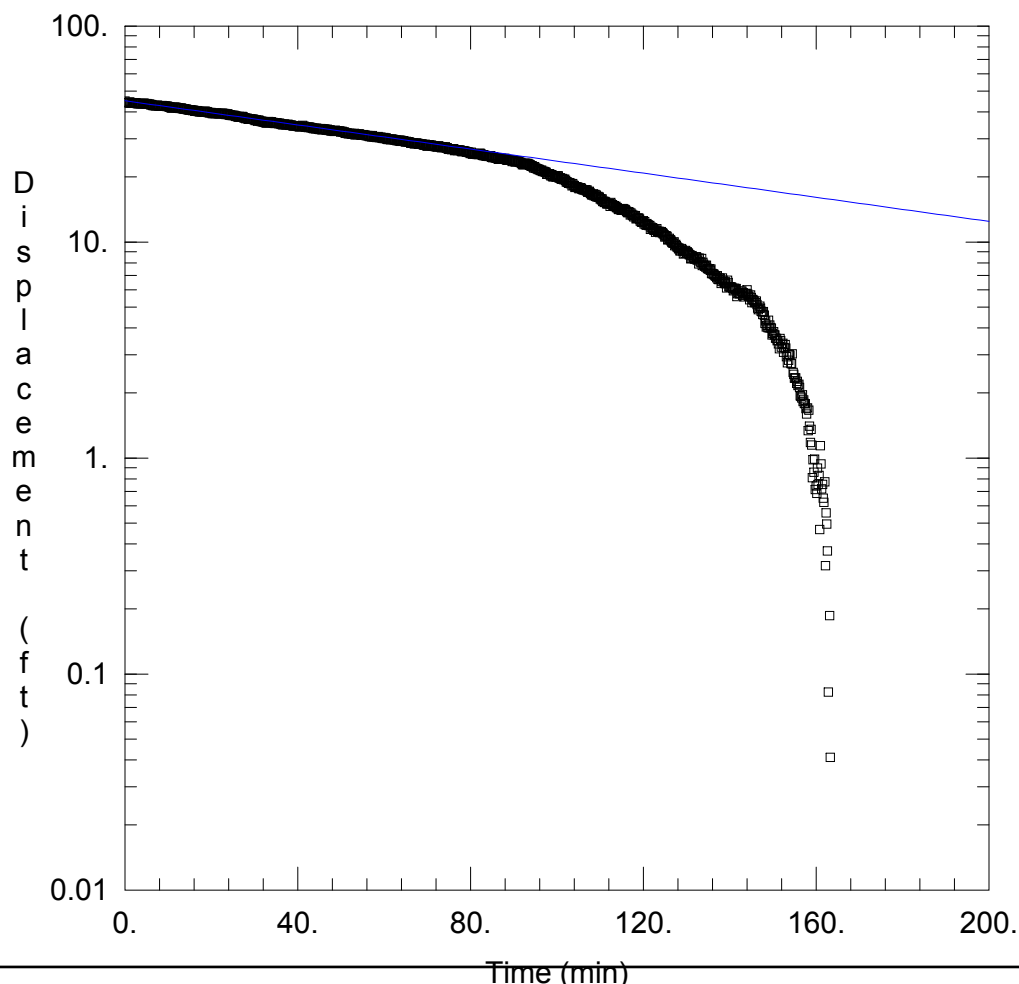
Saturated Thickness: 48.4 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (G&H2021-1)

Initial Displacement: 38. ft Static Water Column Height: 48.4 ft
 Total Well Penetration Depth: 48.4 ft Screen Length: 48.4 ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
 K = 7.915E-7 cm/sec y0 = 15.46 ft



WELL TEST ANALYSIS

Data Set: C:\...\G&H2021-09 Injection-Recovery 150 ft bgs BR_v2.aqt
 Date: 01/03/22 Time: 15:28:34

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: G&H2021-09
 Test Date: 8/2/2021

AQUIFER DATA

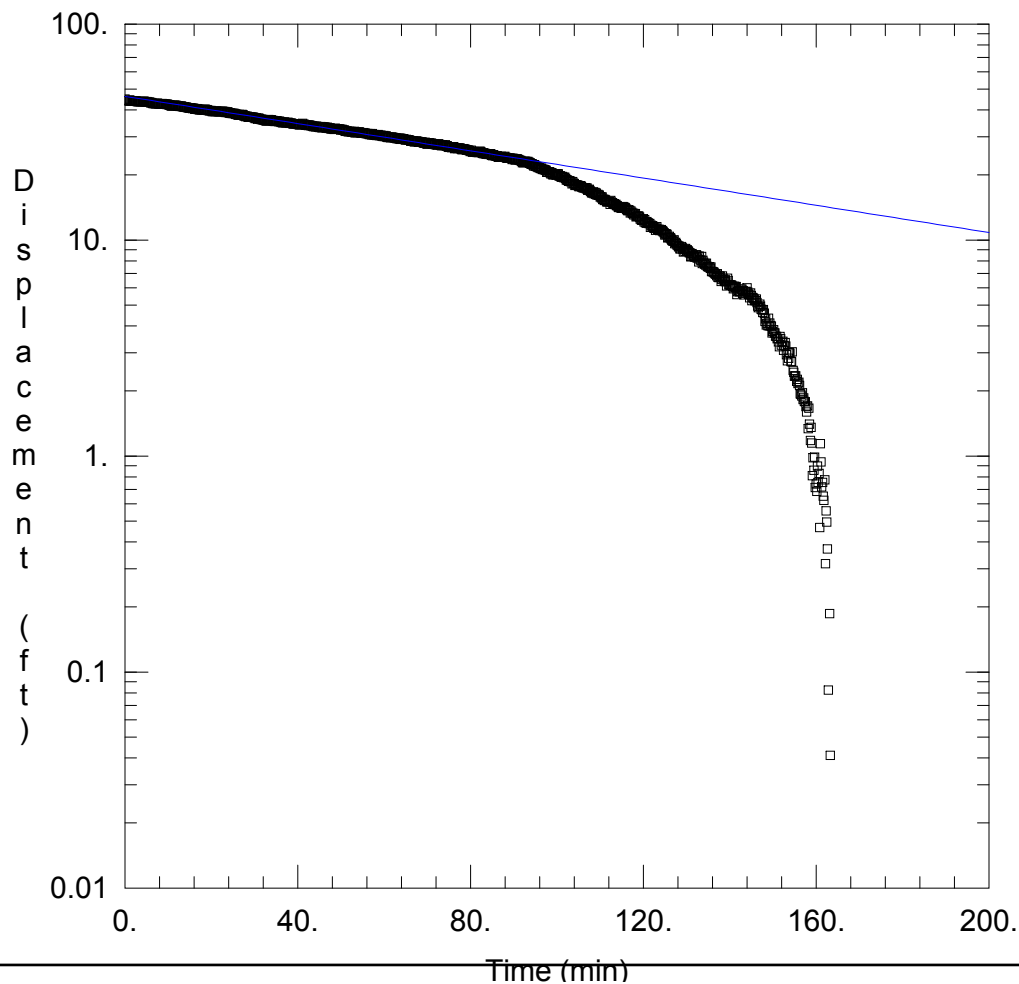
Saturated Thickness: 74.9 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (G&H2021-09)

Initial Displacement: 45. ft Static Water Column Height: 74.9 ft
 Total Well Penetration Depth: 74.9 ft Screen Length: 74.9 ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft
 Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
 $K = 2.715E-6$ cm/sec $y_0 = 45.04$ ft



WELL TEST ANALYSIS

Data Set: C:\...\G&H2021-09 Injection-Recovery 150 ft bgs HV_v2.aqt
 Date: 01/03/22 Time: 15:29:08

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: G&H2021-09
 Test Date: 8/2/2021

AQUIFER DATA

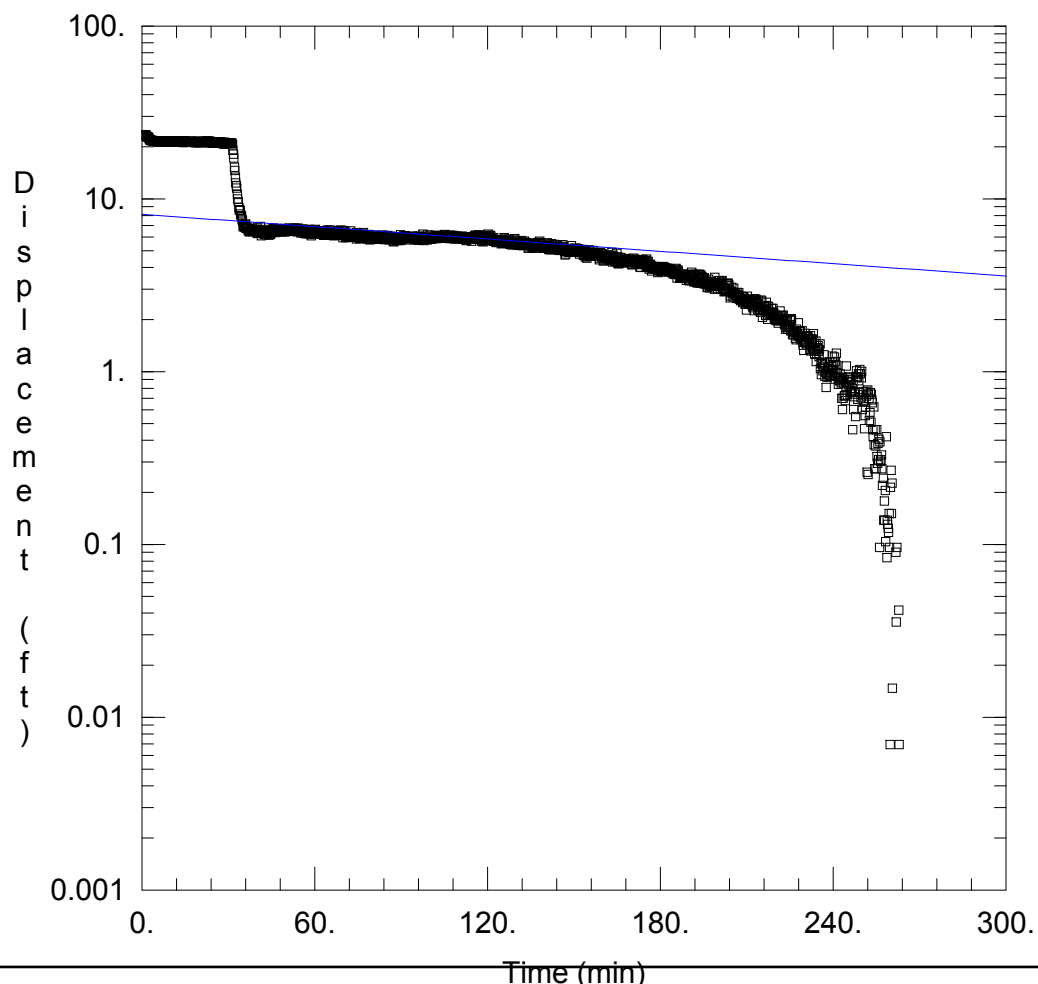
Saturated Thickness: 74.9 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (G&H2021-09)

Initial Displacement: 45. ft Static Water Column Height: 74.9 ft
 Total Well Penetration Depth: 74.9 ft Screen Length: 74.9 ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
 $K = 3.256E-6$ cm/sec $y_0 = 46.25$ ft



Time (min)
WELL TEST ANALYSIS

Data Set: C:\...\G&H2021-11 Injection-Recovery 150 ft bgs BR_v2.aqt
 Date: 01/03/22 Time: 15:30:29

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: G&H2021-11
 Test Date: 8/6/2021

AQUIFER DATA

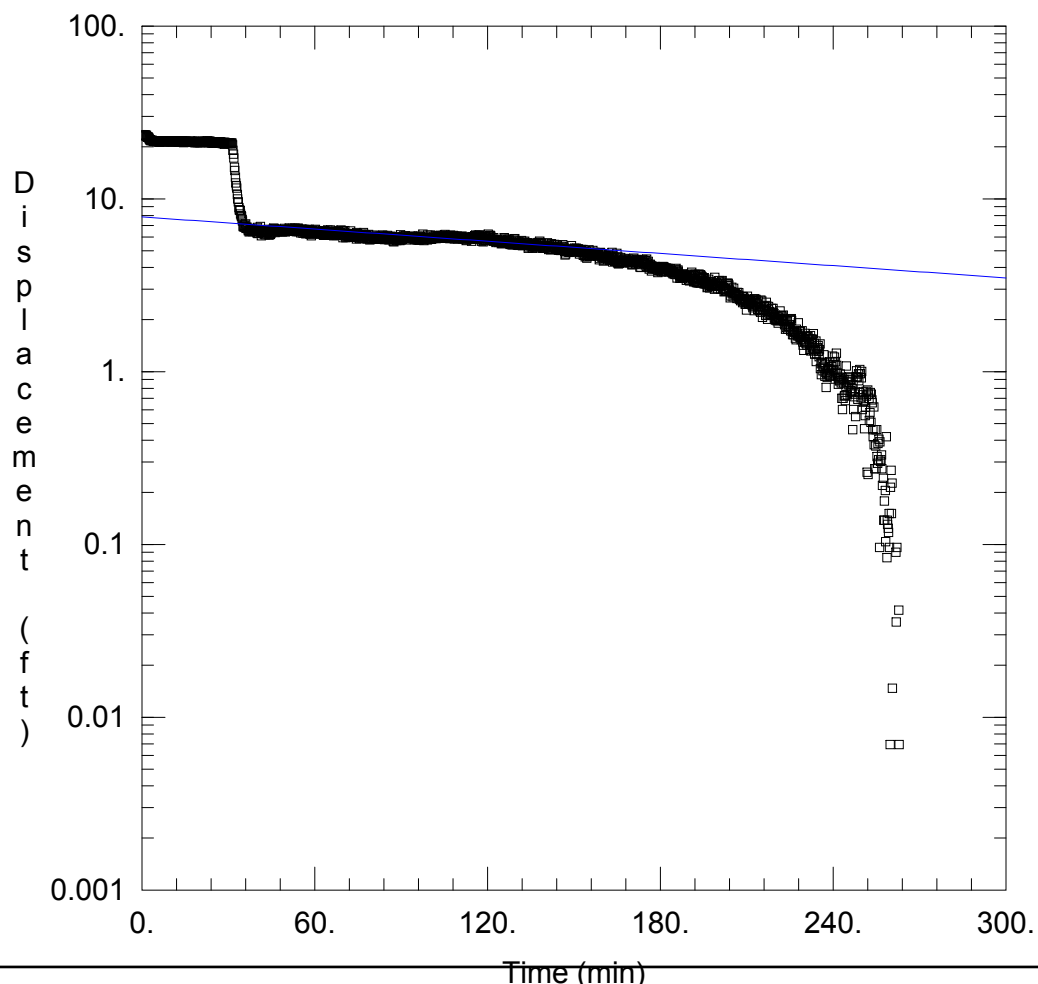
Saturated Thickness: 61.1 ft Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (G&H2021-11)

Initial Displacement: <u>23.5 ft</u>	Static Water Column Height: <u>61.1 ft</u>
Total Well Penetration Depth: <u>61.1 ft</u>	Screen Length: <u>61.1 ft</u>
Casing Radius: <u>0.158 ft</u>	Well Radius: <u>0.158 ft</u>
	Gravel Pack Porosity: <u>0.</u>

SOLUTION

Aquifer Model: <u>Unconfined</u>	Solution Method: <u>Bouwer-Rice</u>
$K = 1.355E-6$ cm/sec	$y_0 = 8.127$ ft



WELL TEST ANALYSIS

Data Set: C:\...\G&H2021-11 Injection-Recovery 150 ft bgs HV_v2.aqt
 Date: 01/03/22 Time: 15:31:20

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: G&H2021-11
 Test Date: 8/6/2021

AQUIFER DATA

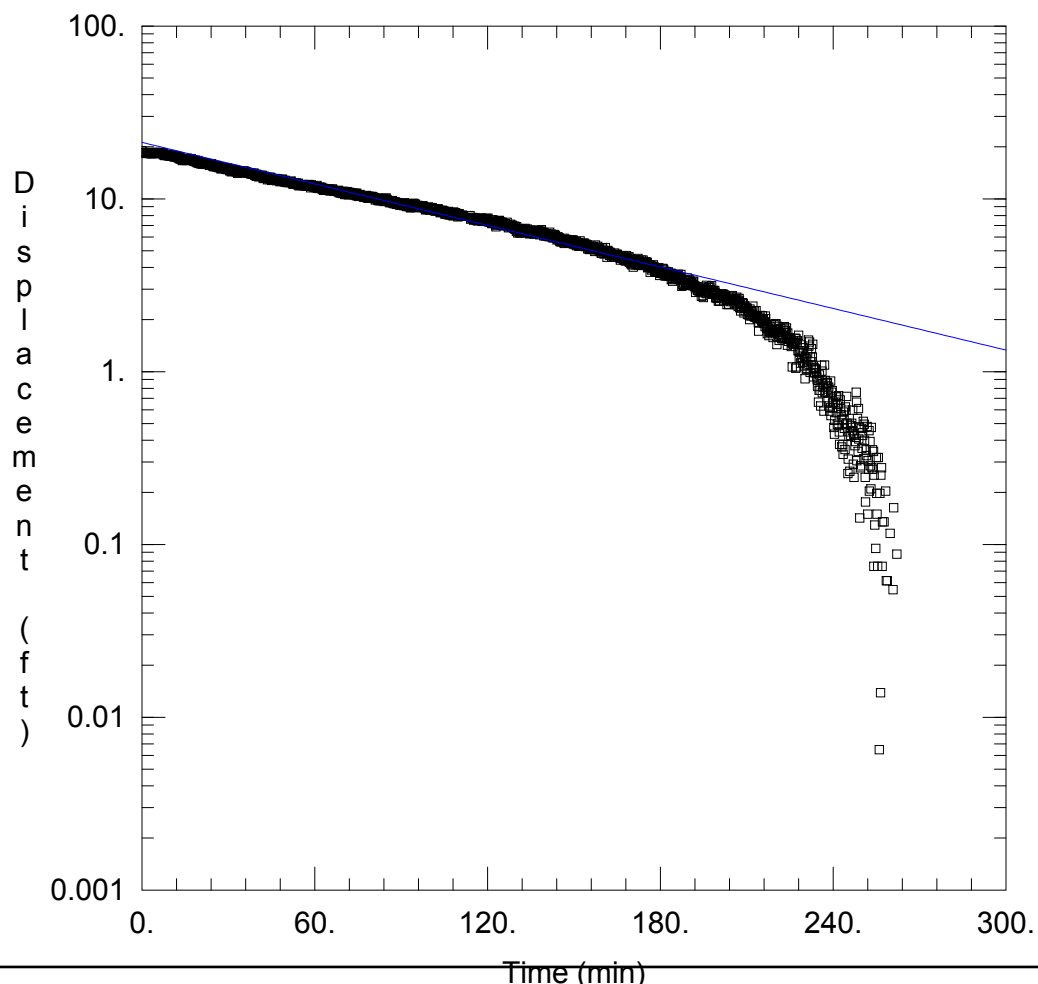
Saturated Thickness: 61.1 ft Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (G&H2021-11)

Initial Displacement: 23.5 ft Static Water Column Height: 61.1 ft
 Total Well Penetration Depth: 61.1 ft Screen Length: 61.1 ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
 $K = 1.49E-6$ cm/sec $y_0 = 7.86$ ft



WELL TEST ANALYSIS

Data Set: C:\...\G&H2021-17 Injection-Recovery 150 ft bgs BR_v2.aqt
 Date: 01/03/22 Time: 15:32:04

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: G&H2021-17
 Test Date: 8/9/2021

AQUIFER DATA

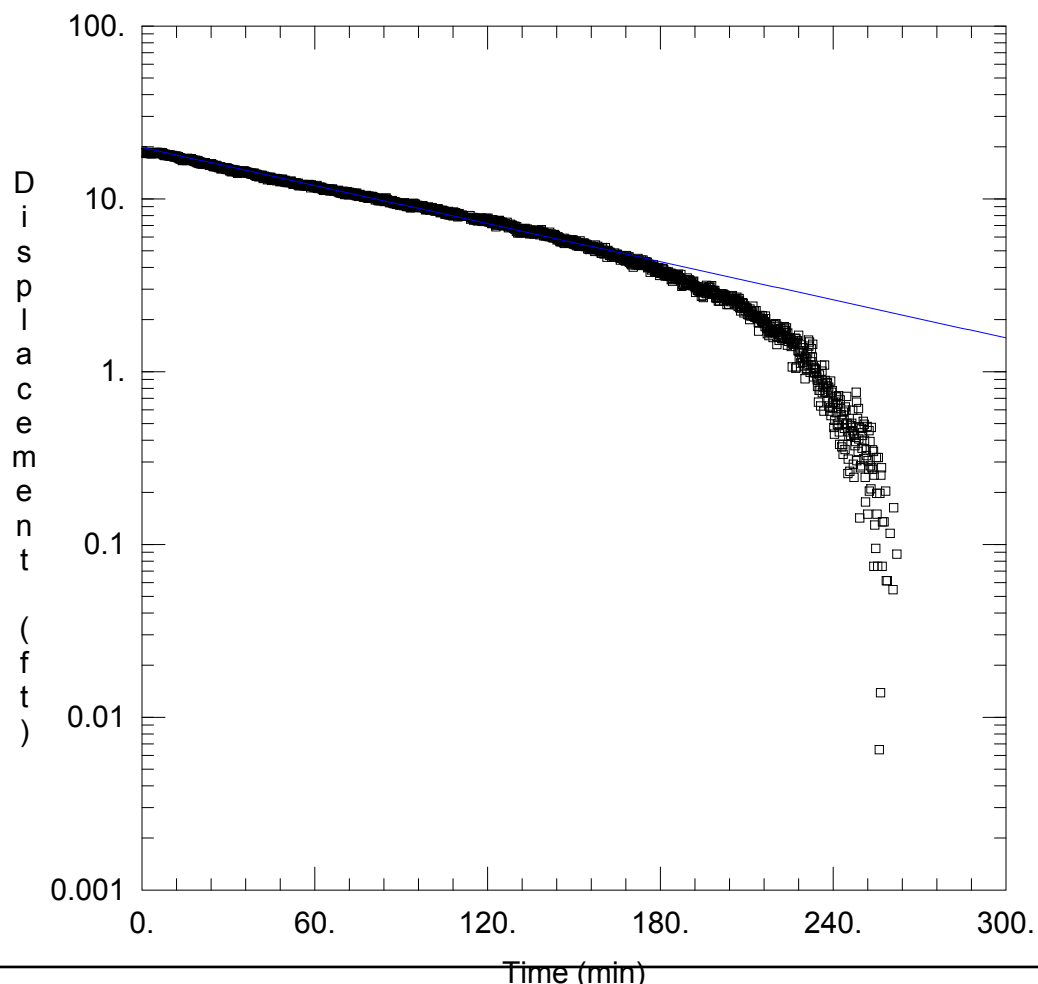
Saturated Thickness: 111.9 ft Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (G&H2021-17)

Initial Displacement: 19. ft Static Water Column Height: 111.9 ft
 Total Well Penetration Depth: 111.9 ft Screen Length: 111.9 ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft
 Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
 $K = 2.84E-6$ cm/sec $y_0 = 21.22$ ft



WELL TEST ANALYSIS

Data Set: C:\...\G&H2021-17 Injection-Recovery 150 ft bgs HV_v2.aqt
 Date: 01/03/22 Time: 15:32:38

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: G&H2021-17
 Test Date: 8/9/2021

AQUIFER DATA

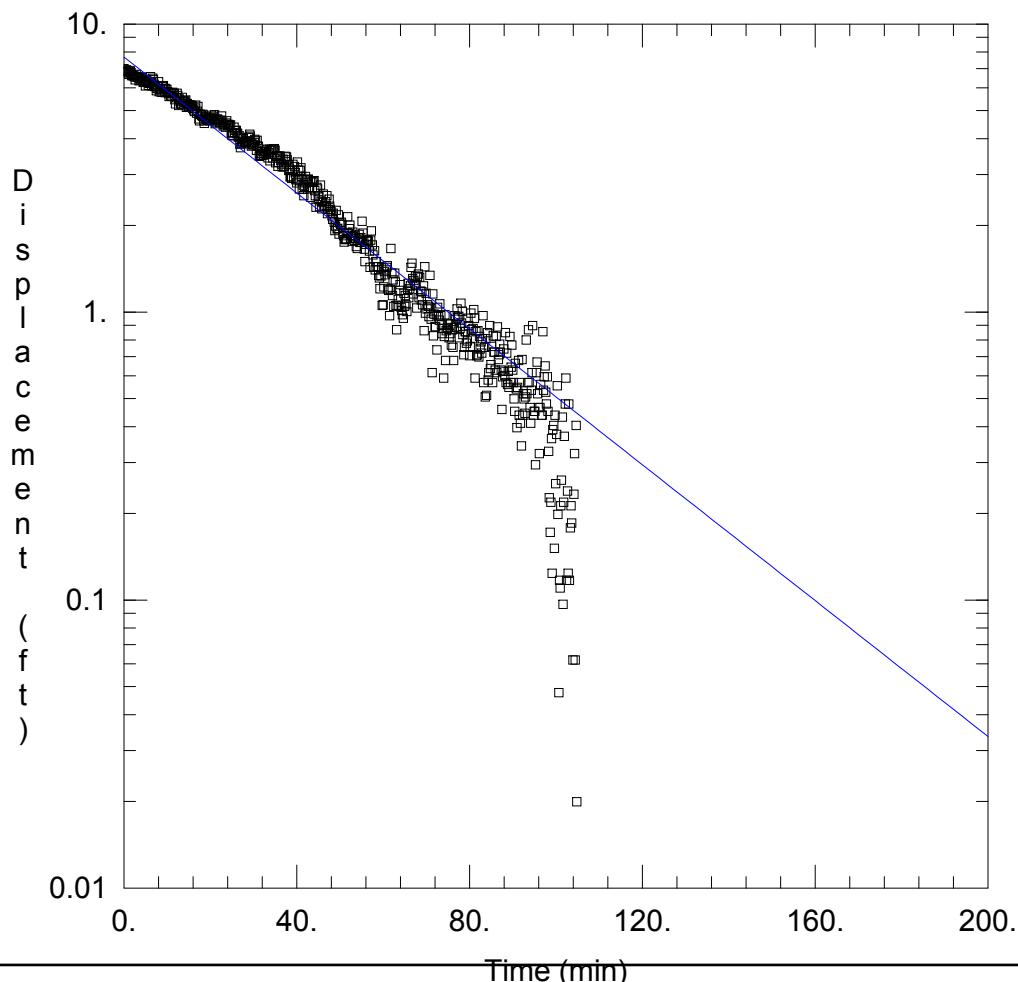
Saturated Thickness: 111.9 ft Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (G&H2021-17)

Initial Displacement: 19. ft Static Water Column Height: 111.9 ft
 Total Well Penetration Depth: 111.9 ft Screen Length: 111.9 ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
 $K = 2.541E-6$ cm/sec $y_0 = 19.84$ ft



WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-091 Constant Head-Recovery 600 ft bgs_BR_v2.aqt
 Date: 01/03/22 Time: 15:33:44

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-091
 Test Date: 7/9/2021

AQUIFER DATA

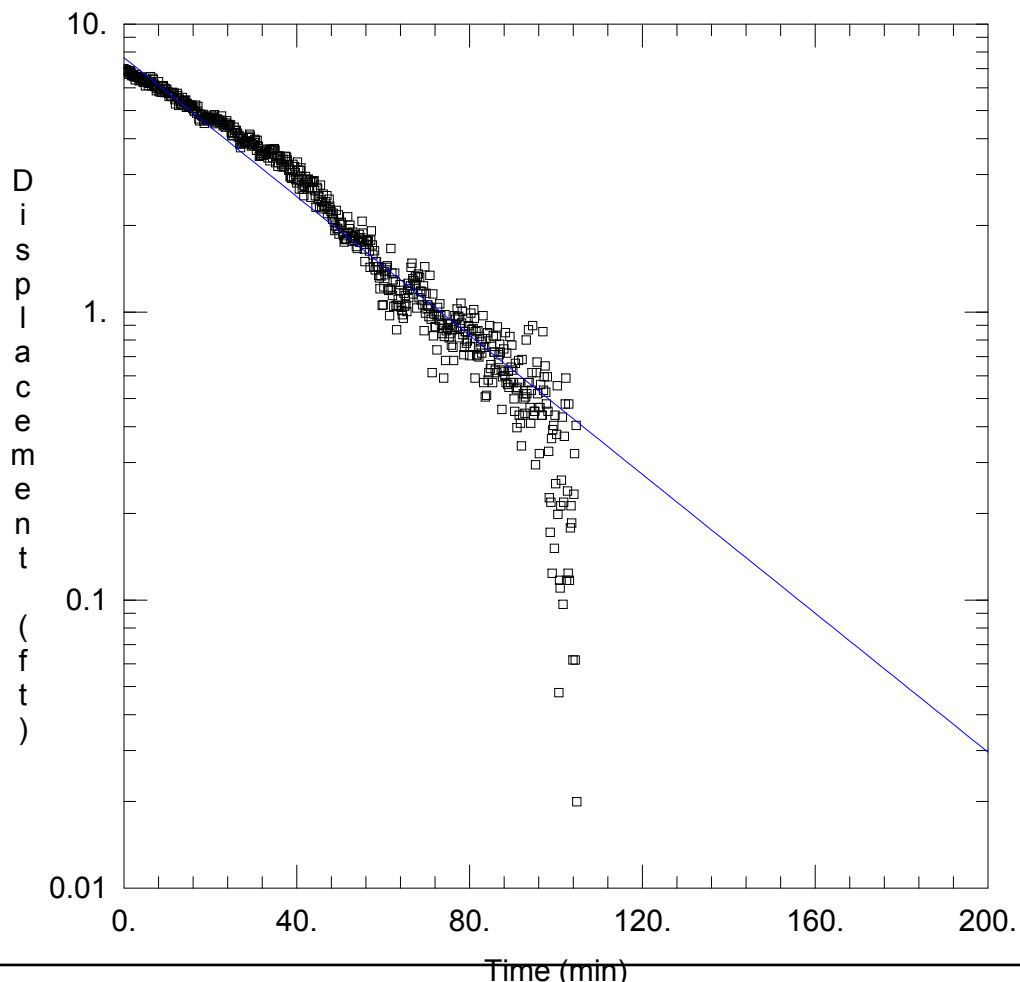
Saturated Thickness: 561.9 ft Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (RNW-HB-091)

Initial Displacement: <u>7. ft</u>	Static Water Column Height: <u>561.9 ft</u>
Total Well Penetration Depth: <u>561.9 ft</u>	Screen Length: <u>561.9 ft</u>
Casing Radius: <u>0.158 ft</u>	Well Radius: <u>0.158 ft</u>
	Gravel Pack Porosity: <u>0.</u>

SOLUTION

Aquifer Model: <u>Unconfined</u>	Solution Method: <u>Bouwer-Rice</u>
$K = 2.215E-6$ cm/sec	$y_0 = 7.674$ ft



WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-091 Constant Head-Recovery 600 ft bgs_HV_v2.aqt
 Date: 01/03/22 Time: 15:34:06

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-091
 Test Date: 7/9/2021

AQUIFER DATA

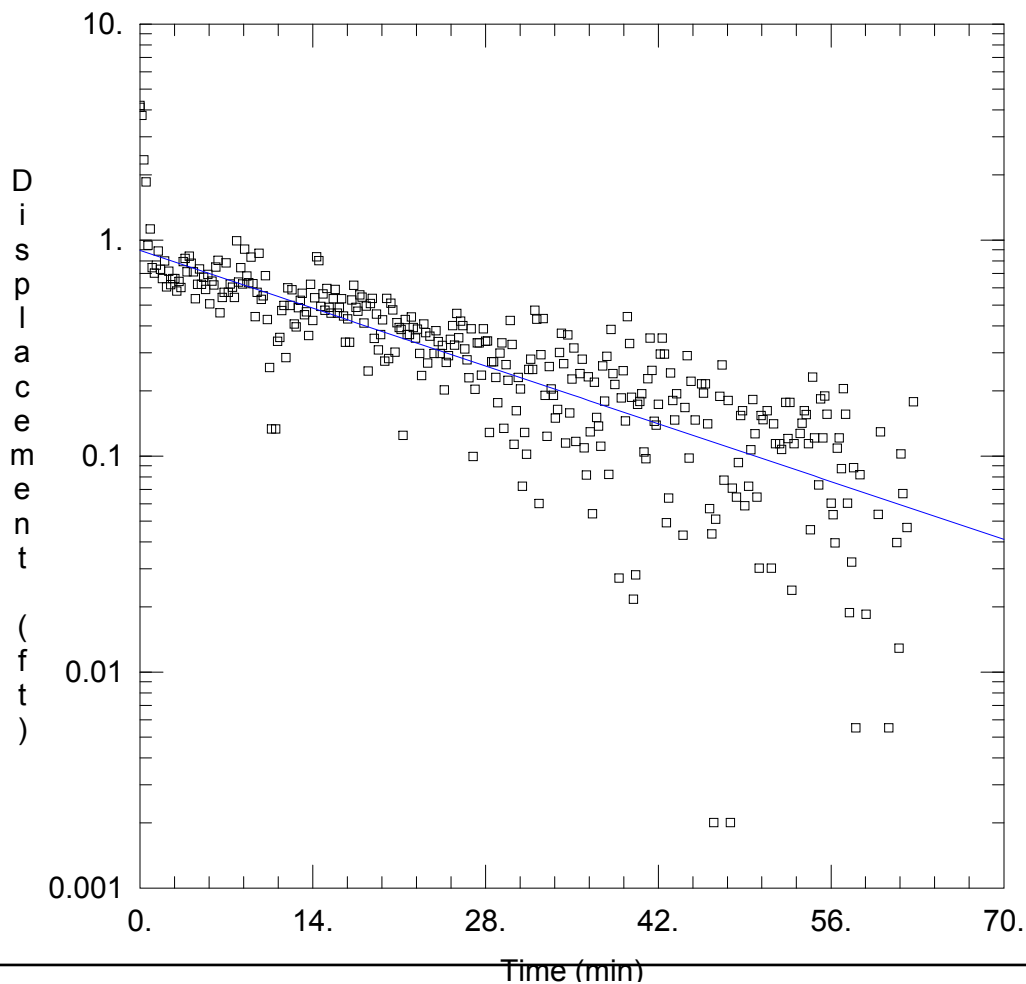
Saturated Thickness: 561.9 ft Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (RNW-HB-091)

Initial Displacement: 7. ft Static Water Column Height: 561.9 ft
 Total Well Penetration Depth: 561.9 ft Screen Length: 561.9 ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
 $K = 1.66E-6$ cm/sec $y_0 = 7.639$ ft



WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-096 Injection-Recovery 500 ft bgs_BR_v2.aqt
 Date: 01/03/22 Time: 15:35:05

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-096
 Test Date: 7/11/2021

AQUIFER DATA

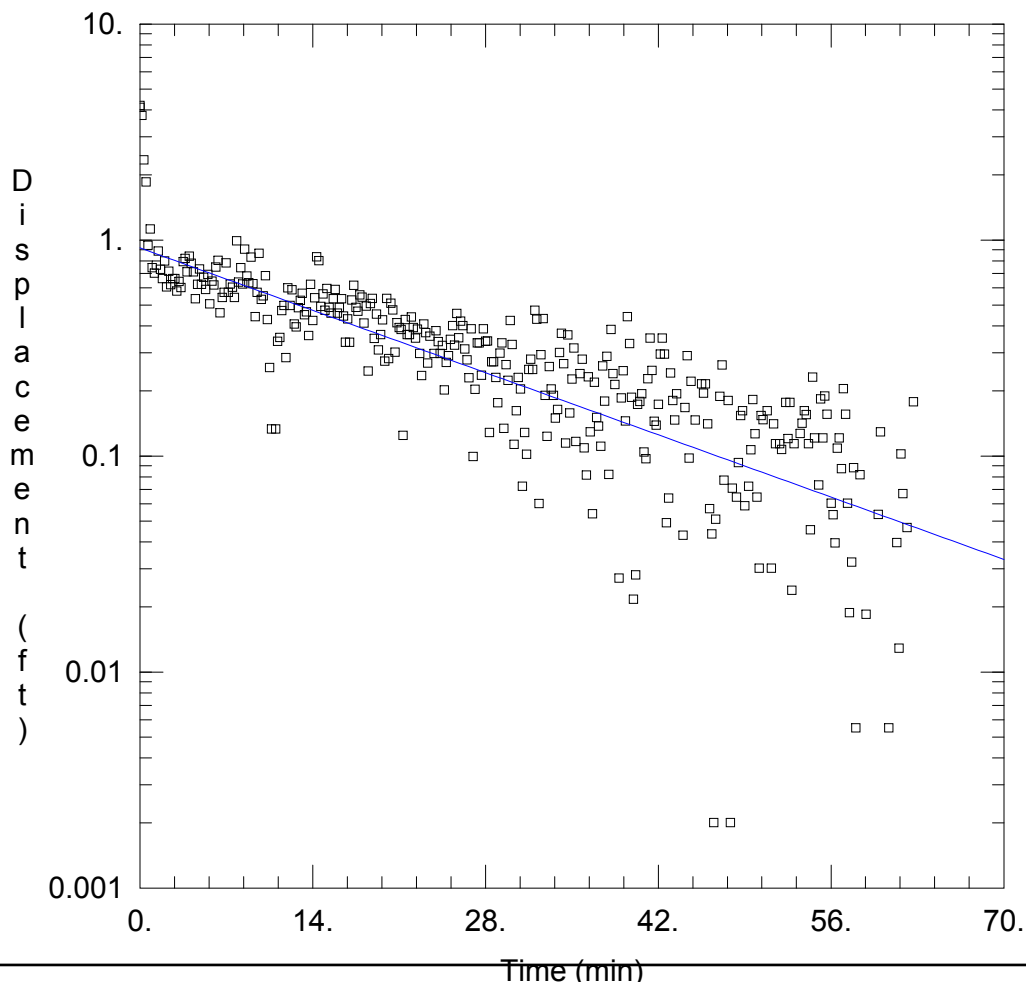
Saturated Thickness: 314.4 ft Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (RNW-HB-096)

Initial Displacement: 4.2 ft Static Water Column Height: 314.4 ft
 Total Well Penetration Depth: 314.4 ft Screen Length: 314.4 ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft
 Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
 $K = 5.869E-6$ cm/sec $y_0 = 0.8962$ ft



WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-096 Injection-Recovery 500 ft bgs_HV_v2.aqt
 Date: 01/03/22 Time: 15:35:31

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-096
 Test Date: 7/11/2021

AQUIFER DATA

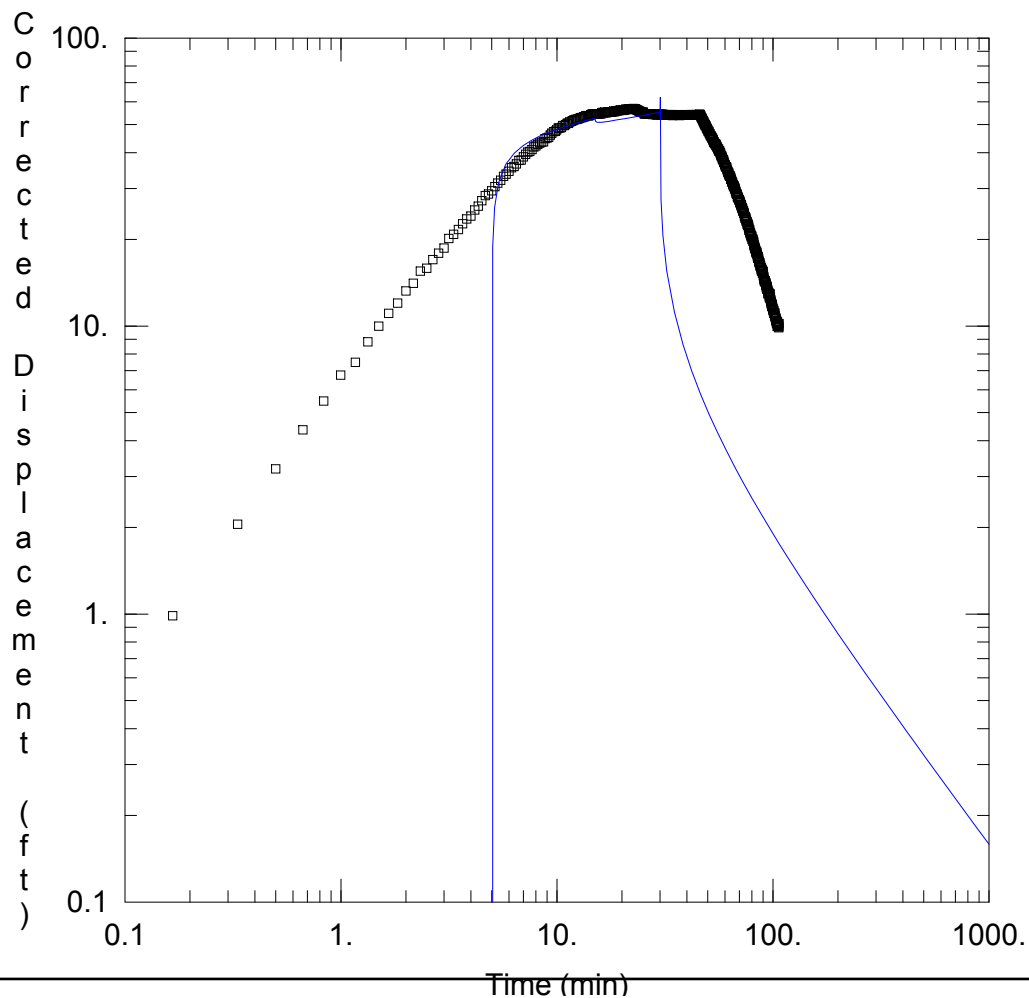
Saturated Thickness: 314.4 ft Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (RNW-HB-096)

Initial Displacement: 4.2 ft Static Water Column Height: 314.4 ft
 Total Well Penetration Depth: 314.4 ft Screen Length: 314.4 ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
 $K = 5.069E-6$ cm/sec $y_0 = 0.9185$ ft



Time (min)
WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-105 Injection 500 ft bgs_v2.aqt

Date: 01/03/22

Time: 15:39:27

PROJECT INFORMATION

Company: Piteau Associates

Client: CopperWorld

Project: 4286

Location: Rosemont

Test Well: RNW-HB-105

Test Date: 7/10/2021

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
RNW-HB-105	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
□ RNW-HB-105	0	0

SOLUTION

Aquifer Model: Unconfined

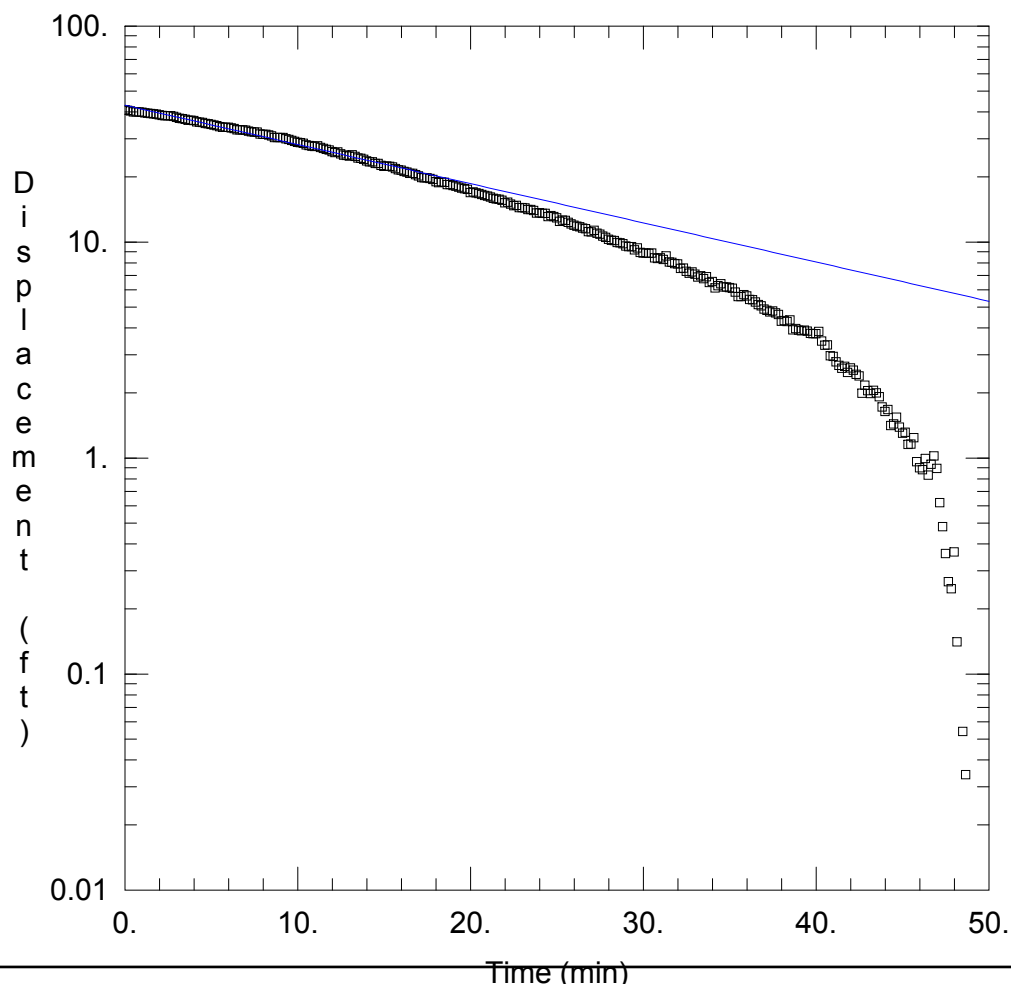
Solution Method: Theis

T = 0.0409 cm²/sec

S = 0.0006697

Kz/Kr = 1.

b = 427.6 ft



WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-105 Injection-Recovery 2 500 ft bgs BR_v2.aqt
 Date: 01/03/22 Time: 15:37:41

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-105
 Test Date: 7/10/2021

AQUIFER DATA

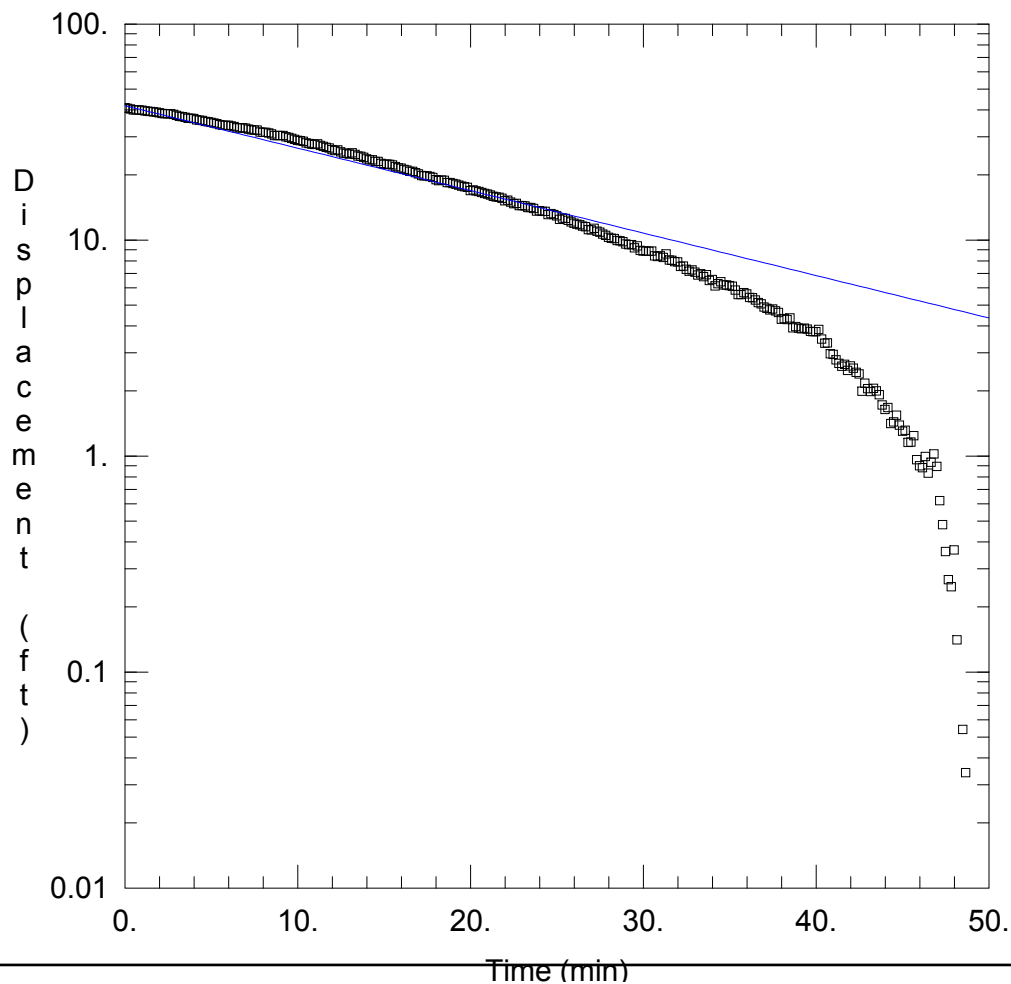
Saturated Thickness: 427.6 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RNW-HB-105)

Initial Displacement: 41. ft Static Water Column Height: 427.6 ft
 Total Well Penetration Depth: 427.6 ft Screen Length: 427.6 ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft
 Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
 $K = 4.301E-6$ cm/sec $y_0 = 42.94$ ft



WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-105 Injection-Recovery 2 500 ft bgs HV_v2.aqt
 Date: 01/03/22 Time: 15:38:01

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-105
 Test Date: 7/10/2021

AQUIFER DATA

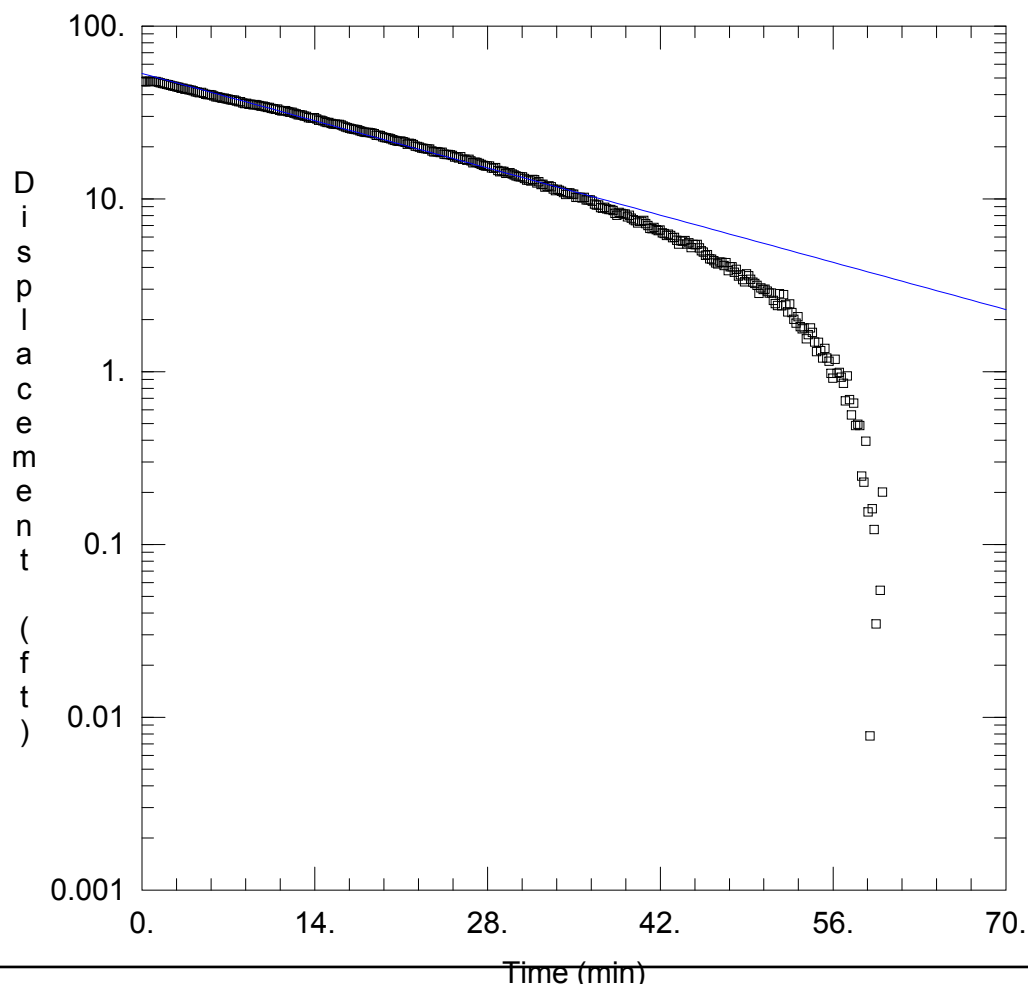
Saturated Thickness: 427.6 ft Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (RNW-HB-105)

Initial Displacement: 41. ft Static Water Column Height: 427.6 ft
 Total Well Penetration Depth: 427.6 ft Screen Length: 427.6 ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
 $K = 3.556E-6$ cm/sec $y_0 = 41.84$ ft



WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-105 Injection-Recovery 500 ft bgs BR_v2.aqt
 Date: 01/03/22 Time: 15:38:22

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-105
 Test Date: 7/10/2021

AQUIFER DATA

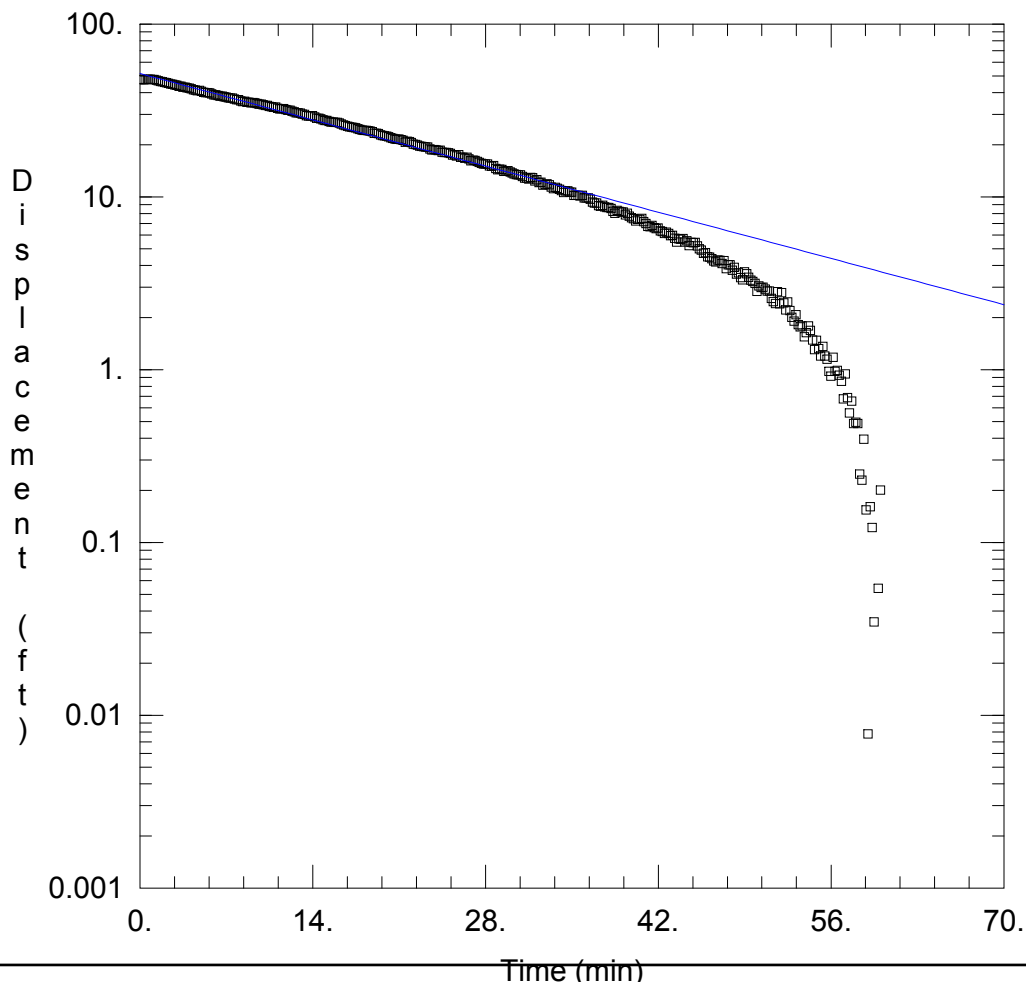
Saturated Thickness: 427.6 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RNW-HB-105)

Initial Displacement: 48. ft Static Water Column Height: 427.6 ft
 Total Well Penetration Depth: 427.6 ft Screen Length: 427.6 ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft
 Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
 $K = 4.628E-6$ cm/sec $y_0 = 53.13$ ft



WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-105 Injection-Recovery 500 ft bgs HV_v2.aqt
 Date: 01/03/22 Time: 15:38:48

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-105
 Test Date: 7/10/2021

AQUIFER DATA

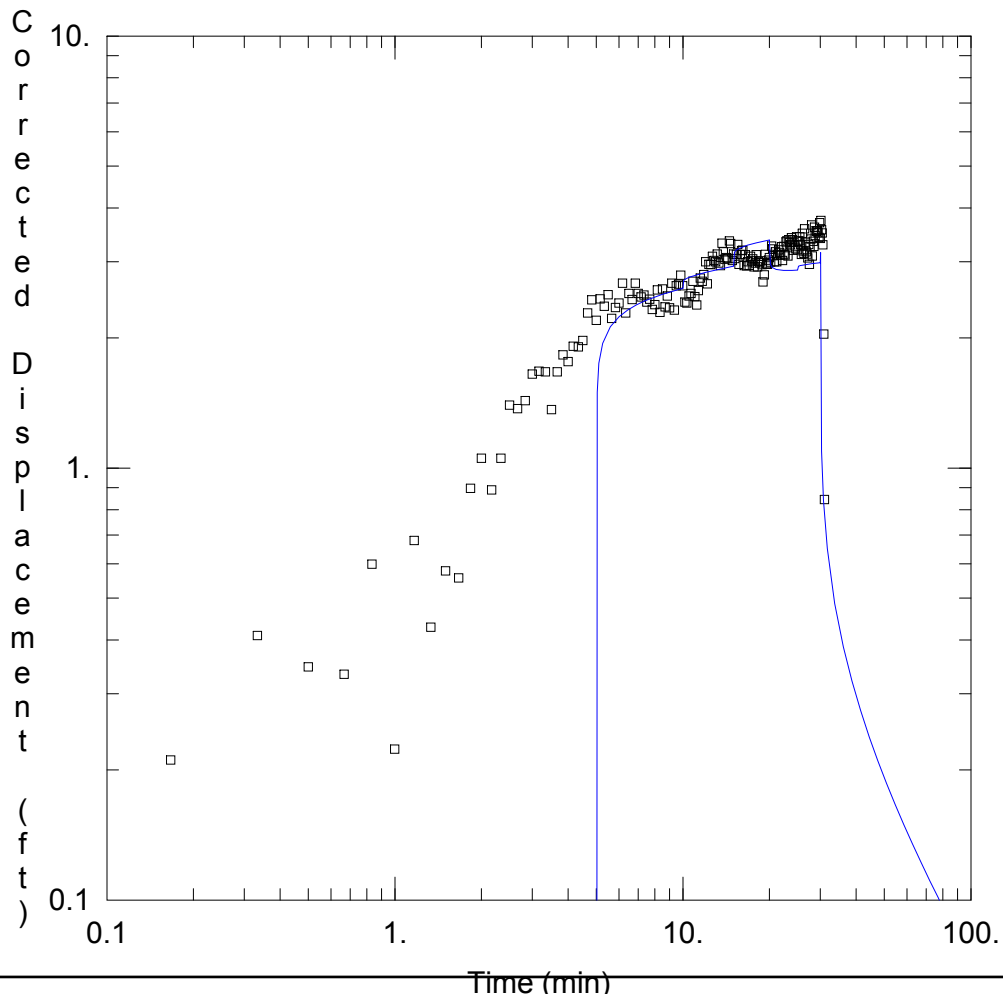
Saturated Thickness: 427.6 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RNW-HB-105)

Initial Displacement: 48. ft Static Water Column Height: 427.6 ft
 Total Well Penetration Depth: 427.6 ft Screen Length: 427.6 ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
 $K = 3.457E-6$ cm/sec $y_0 = 51.64$ ft



WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-108 Injection 425 ft bgs_v2.aqt

Date: 01/03/22

Time: 15:40:28

PROJECT INFORMATION

Company: Piteau Associates

Client: CopperWorld

Project: 4286

Location: Rosemont

Test Well: RNW-HB-108

Test Date: 7/10/2021

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
RNW-HB-108	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
□ RNW-HB-108	0	0

SOLUTION

Aquifer Model: Unconfined

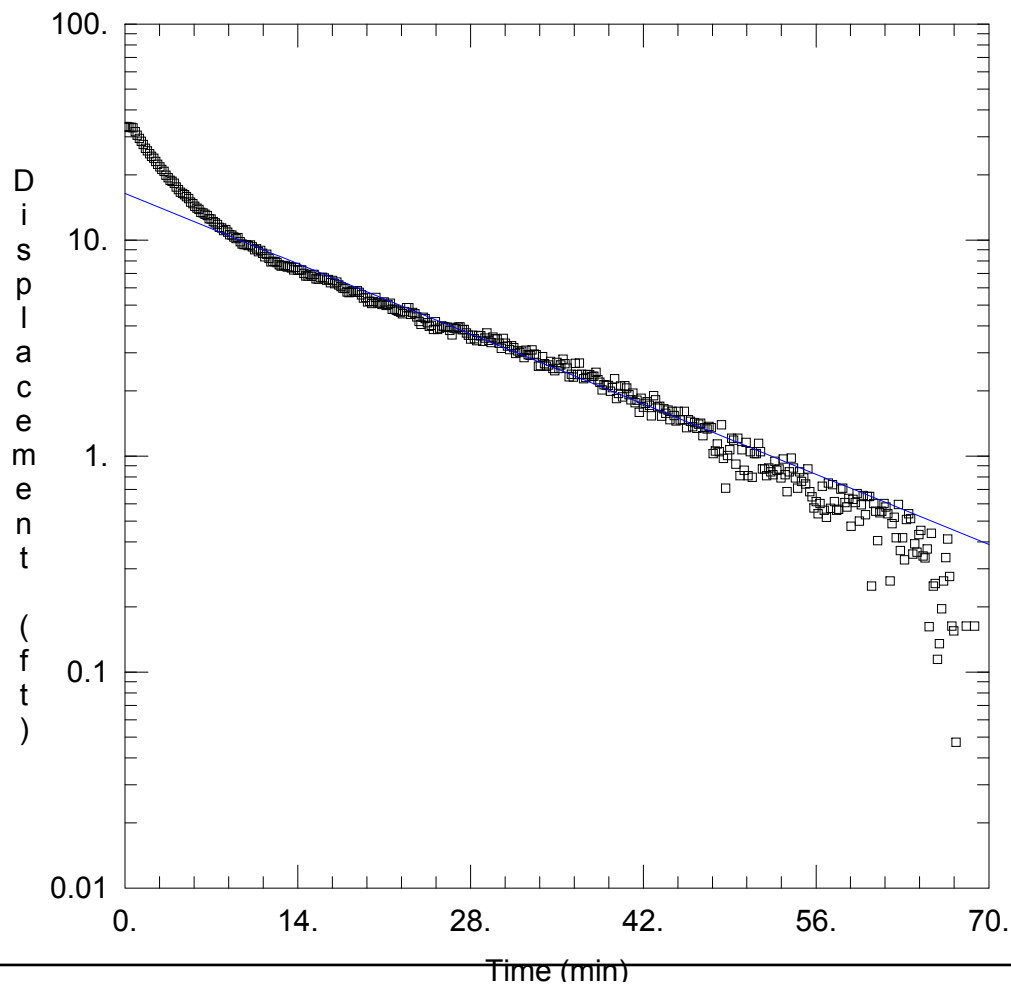
Solution Method: Theis

$T = 4.504 \text{ cm}^2/\text{sec}$

$S = 0.001339$

$Kz/Kr = 1.$

$b = 379.4 \text{ ft}$



WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-108 Injection-Recovery 425 ft bgs BR_v2.aqt
 Date: 01/03/22 Time: 15:41:02

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-108
 Test Date: 7/10/2021

AQUIFER DATA

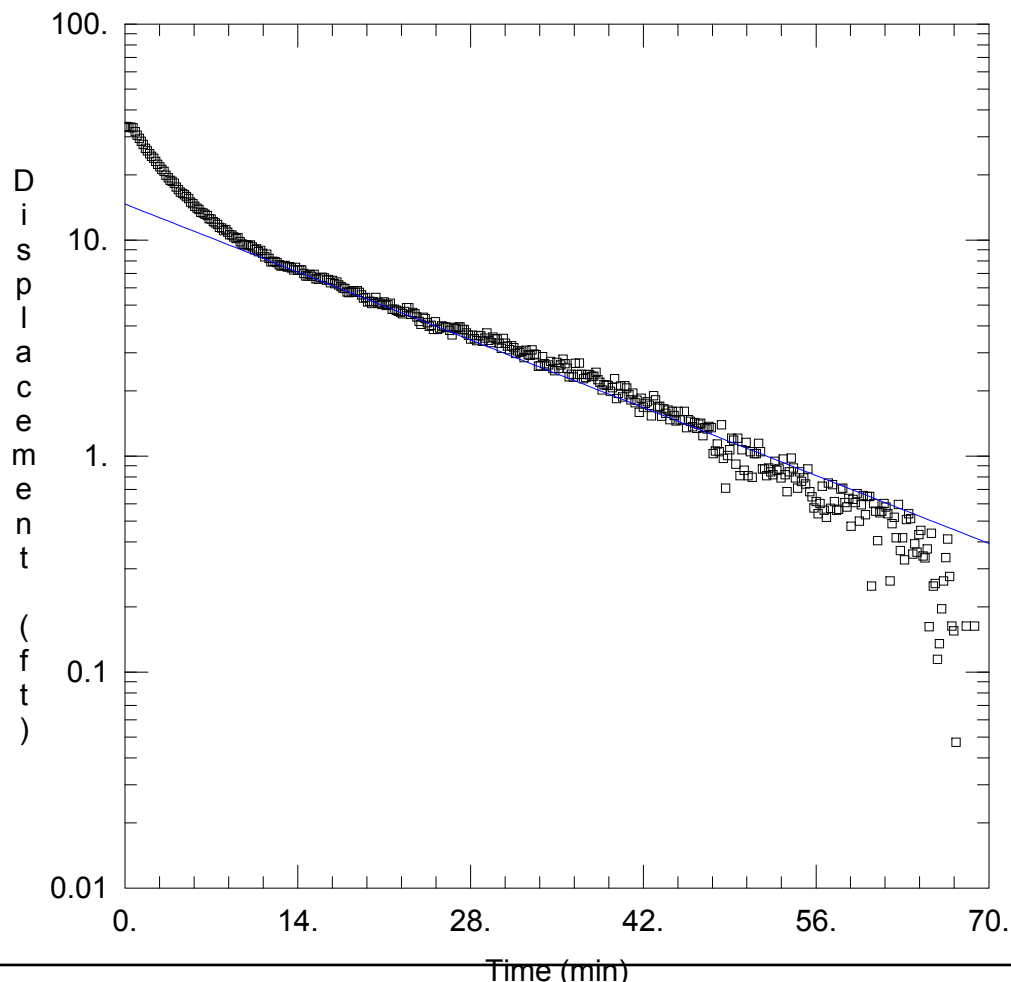
Saturated Thickness: 379.4 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RNW-HB-108)

Initial Displacement: 33.5 ft Static Water Column Height: 379.4 ft
 Total Well Penetration Depth: 379.4 ft Screen Length: 379.4 ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft
 Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
 $K = 6.088E-6$ cm/sec $y_0 = 16.42$ ft



Time (min) WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-108 Injection-Recovery 425 ft bgs HV_v2.aqt
 Date: 01/03/22 Time: 15:41:25

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-108
 Test Date: 7/10/2021

AQUIFER DATA

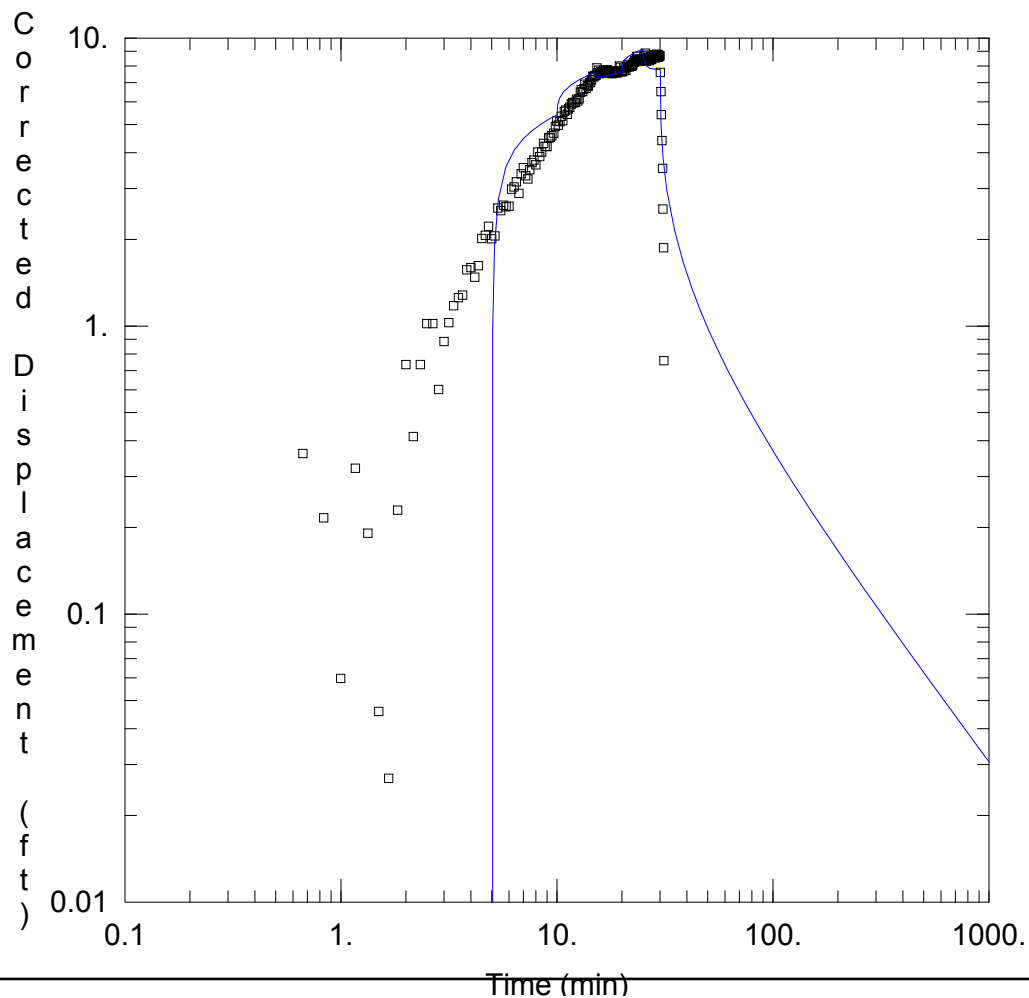
Saturated Thickness: 379.4 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RNW-HB-108)

Initial Displacement: 33.5 ft Static Water Column Height: 379.4 ft
 Total Well Penetration Depth: 379.4 ft Screen Length: 379.4 ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
 $K = 4.576E-6$ cm/sec $y_0 = 14.66$ ft



WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-152 Injection 278 ft bgs_v2.aqt

Date: 01/03/22

Time: 15:42:11

PROJECT INFORMATION

Company: Piteau Associates

Client: CopperWorld

Project: 4286

Location: Rosemont

Test Well: RNW-HB-152

Test Date: 7/13/2021

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
RNW-HB-152	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
□ RNW-HB-152	0	0

SOLUTION

Aquifer Model: Unconfined

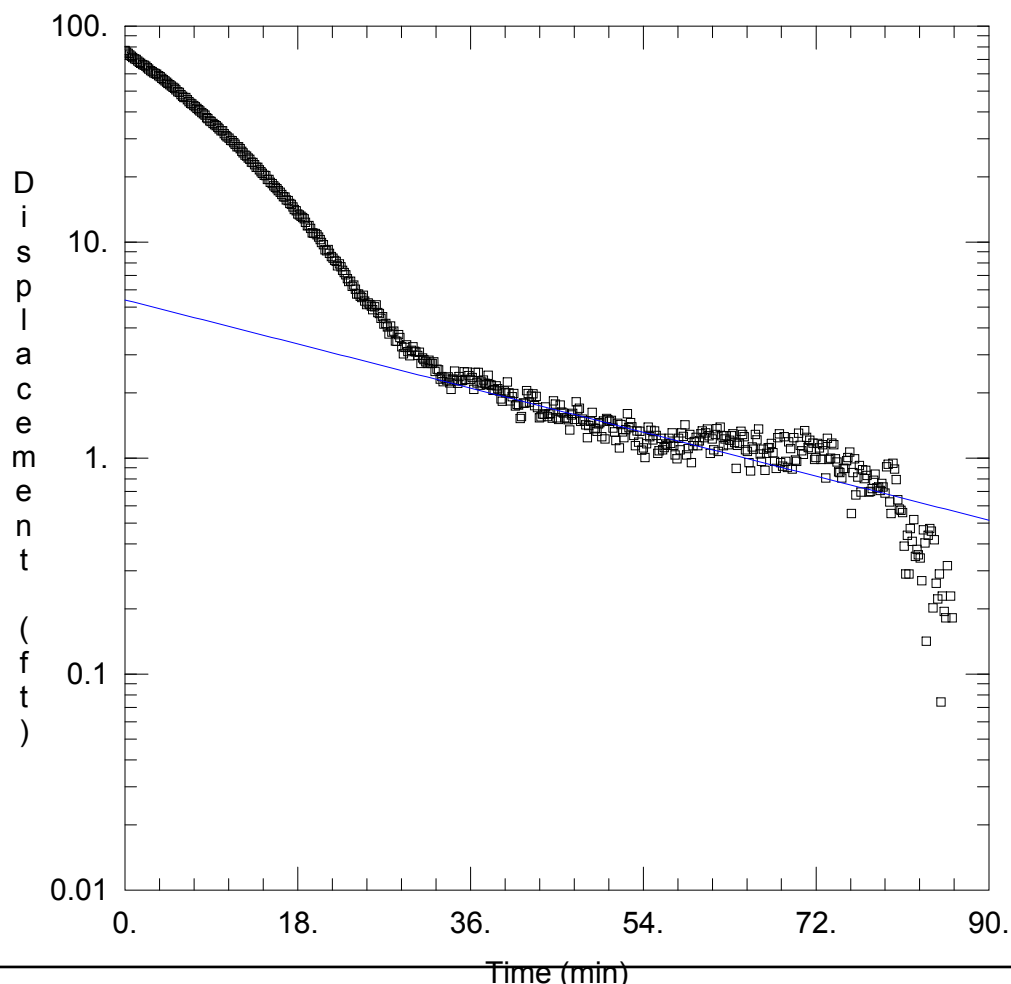
Solution Method: Theis

T = 0.5815 cm²/sec

S = 0.08499

Kz/Kr = 1.

b = 197. ft



Time (min) WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-152 Injection-Recovery 278 ft bgs BR_v2.aqt
 Date: 01/03/22 Time: 15:43:05

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-152
 Test Date: 7/13/2021

AQUIFER DATA

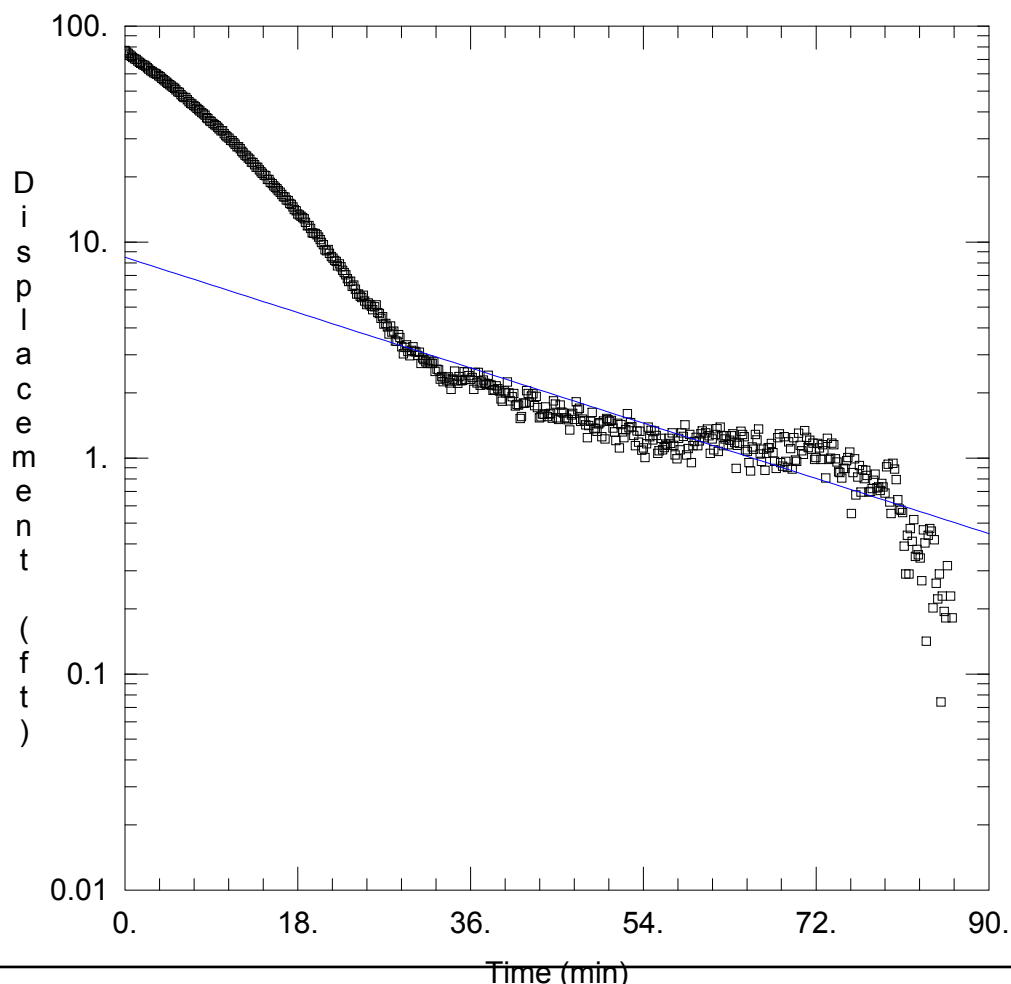
Saturated Thickness: 197. ft Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (RNW-HB-152)

Initial Displacement: 77. ft Static Water Column Height: 197. ft
 Total Well Penetration Depth: 197. ft Screen Length: 197. ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft
 Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
 $K = 5.105E-6$ cm/sec $y_0 = 5.392$ ft



WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-152 Injection-Recovery 278 ft bgs HV_v2.aqt
 Date: 01/03/22 Time: 15:43:25

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-152
 Test Date: 7/13/2021

AQUIFER DATA

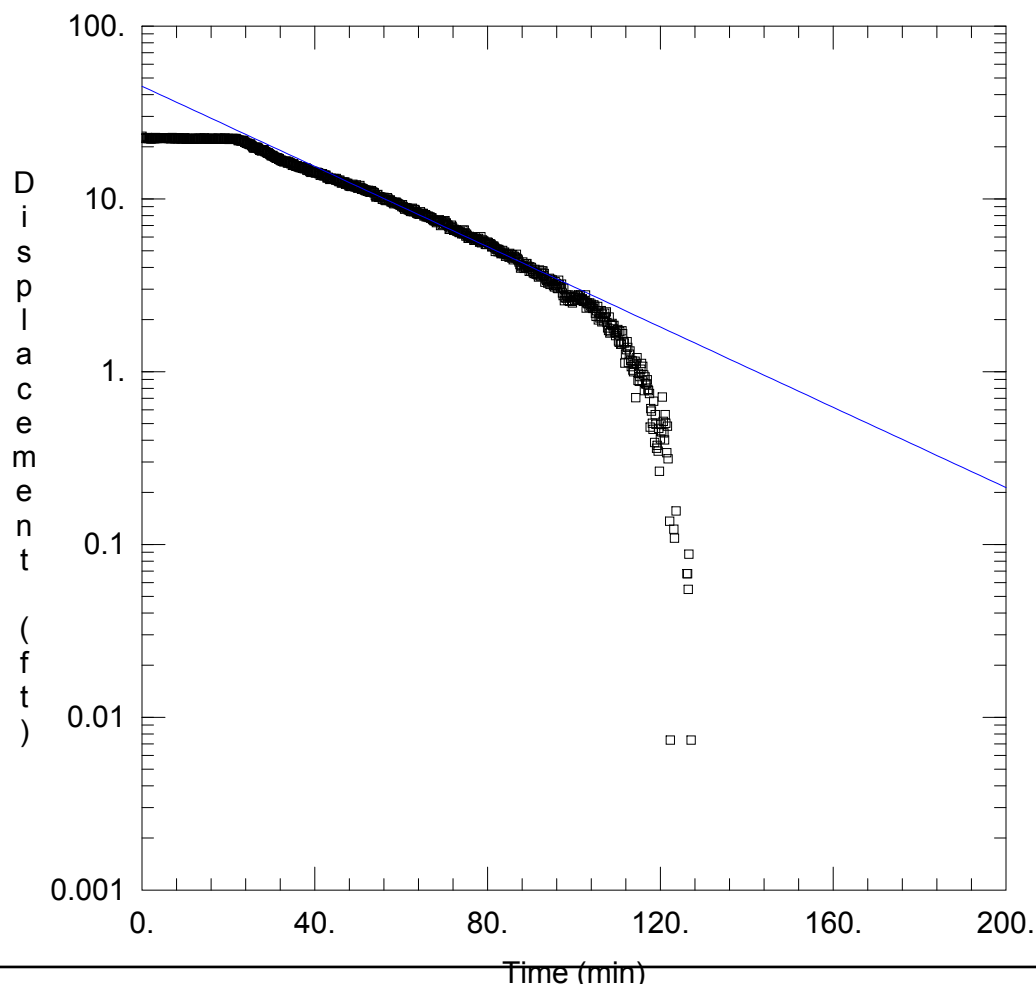
Saturated Thickness: 197. ft Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (RNW-HB-152)

Initial Displacement: 77. ft Static Water Column Height: 197. ft
 Total Well Penetration Depth: 197. ft Screen Length: 197. ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
 $K = 5.582E-6$ cm/sec $y_0 = 8.494$ ft



Time (min)
WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-154 Constant-Head Recovery 200 ft bgs BR_v2.aqt
 Date: 01/03/22 Time: 15:44:34

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-154
 Test Date: 7/12/2021

AQUIFER DATA

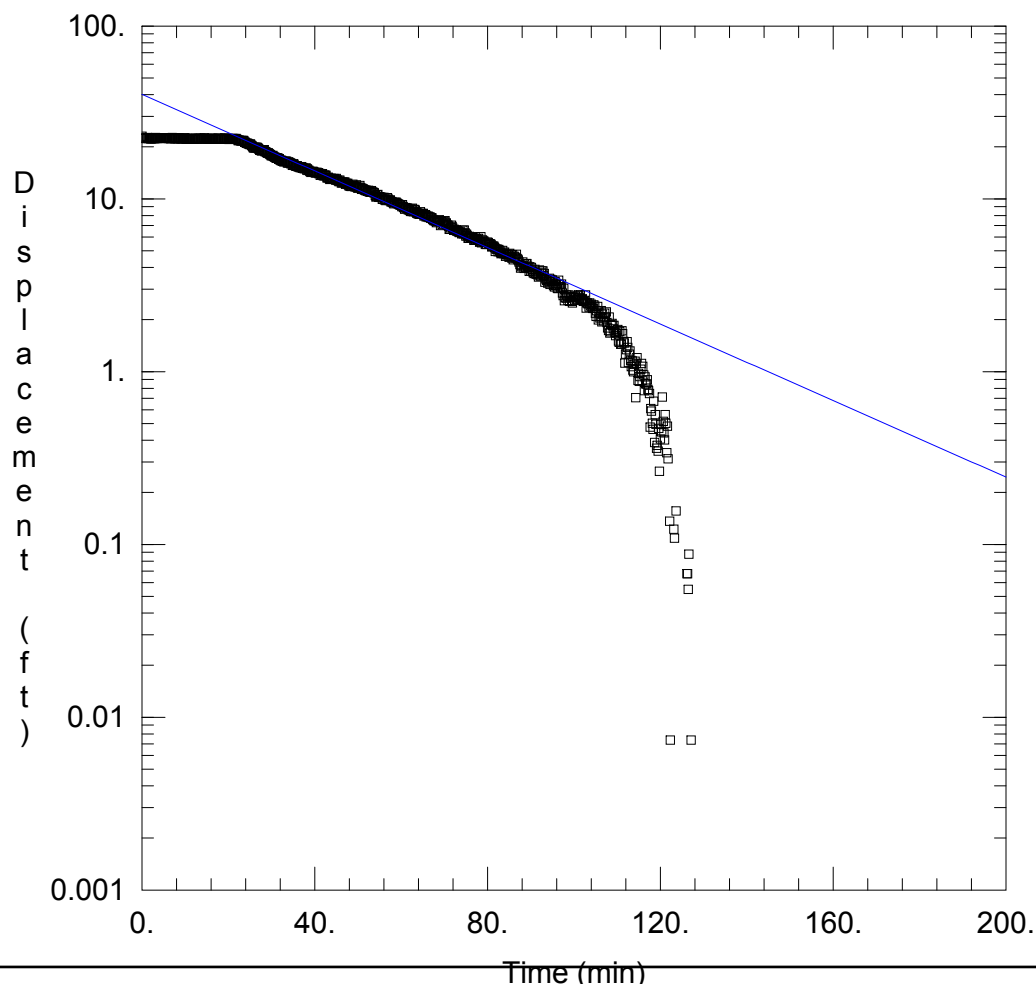
Saturated Thickness: 162. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RNW-HB-154)

Initial Displacement: <u>23. ft</u>	Static Water Column Height: <u>162. ft</u>
Total Well Penetration Depth: <u>162. ft</u>	Screen Length: <u>162. ft</u>
Casing Radius: <u>0.158 ft</u>	Well Radius: <u>0.158 ft</u>
	Gravel Pack Porosity: <u>0.</u>

SOLUTION

Aquifer Model: <u>Unconfined</u>	Solution Method: <u>Bouwer-Rice</u>
K = <u>6.13E-6 cm/sec</u>	y0 = <u>44.86 ft</u>



WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-154 Constant-Head Recovery 200 ft bgs HV_v2.aqt
 Date: 01/03/22 Time: 15:45:17

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-154
 Test Date: 7/12/2021

AQUIFER DATA

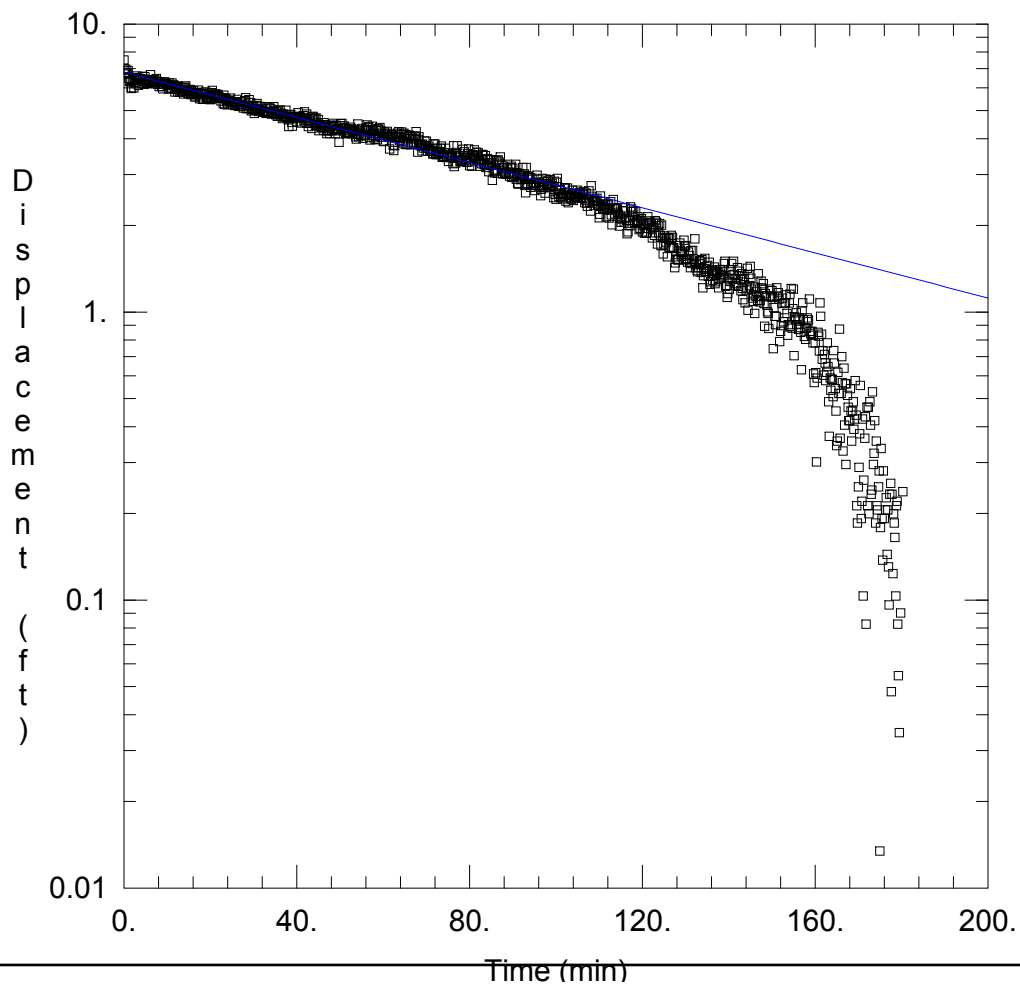
Saturated Thickness: 162. ft Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (RNW-HB-154)

Initial Displacement: 23. ft Static Water Column Height: 162. ft
 Total Well Penetration Depth: 162. ft Screen Length: 162. ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
 $K = 5.289E-6$ cm/sec $y_0 = 40.2$ ft



Time (min)
WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-168 Constant Head-Recovery 600 ft bgs BR_v2.aqt
 Date: 01/03/22 Time: 15:46:32

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-168
 Test Date: 7/8/2021

AQUIFER DATA

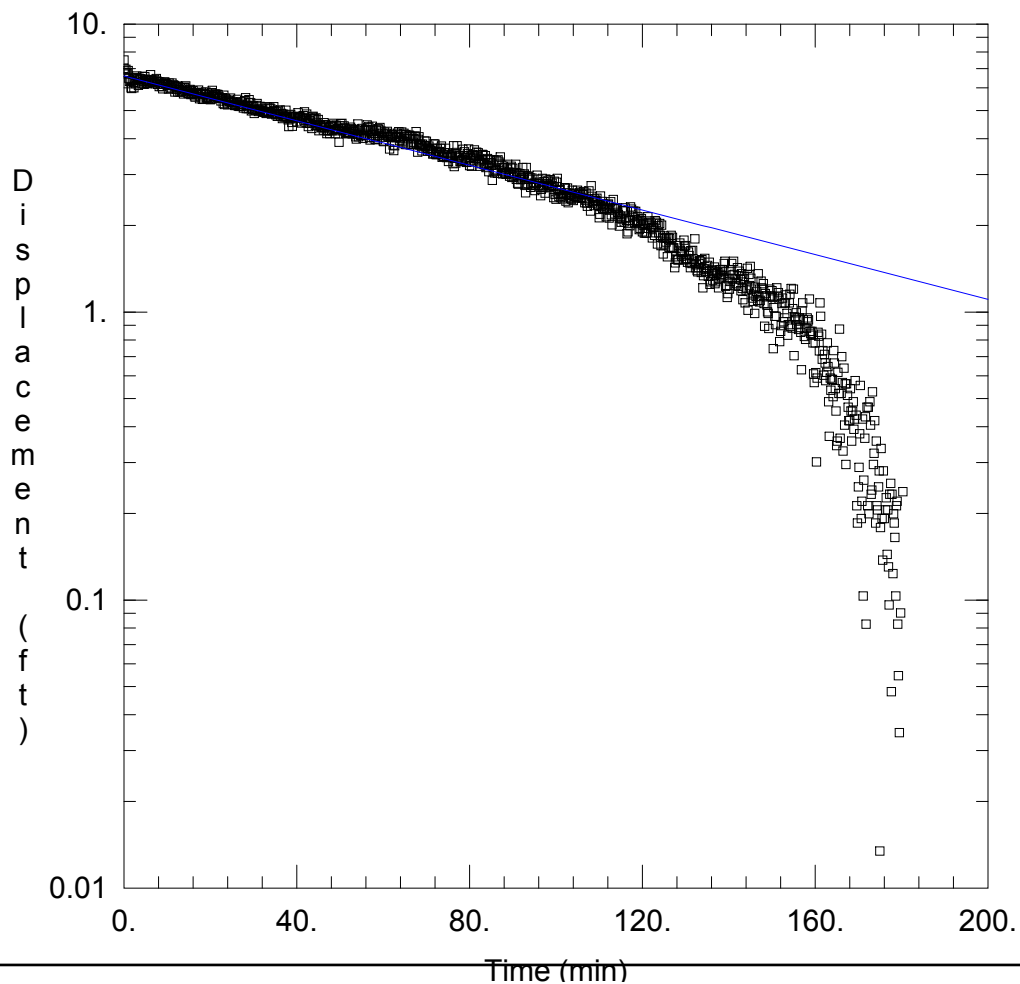
Saturated Thickness: 566. ft Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (RNW-HB-168)

Initial Displacement: <u>7.5 ft</u>	Static Water Column Height: <u>566. ft</u>
Total Well Penetration Depth: <u>566. ft</u>	Screen Length: <u>566. ft</u>
Casing Radius: <u>0.158 ft</u>	Well Radius: <u>0.158 ft</u>
	Gravel Pack Porosity: <u>0.</u>

SOLUTION

Aquifer Model: <u>Unconfined</u>	Solution Method: <u>Bouwer-Rice</u>
$K = $ <u>$7.315E-7$ cm/sec</u>	$y_0 = $ <u>6.797 ft</u>



Time (min)
WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-168 Constant Head-Recovery 600 ft bgs HV_v2.aqt
 Date: 01/03/22 Time: 15:46:56

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-168
 Test Date: 7/8/2021

AQUIFER DATA

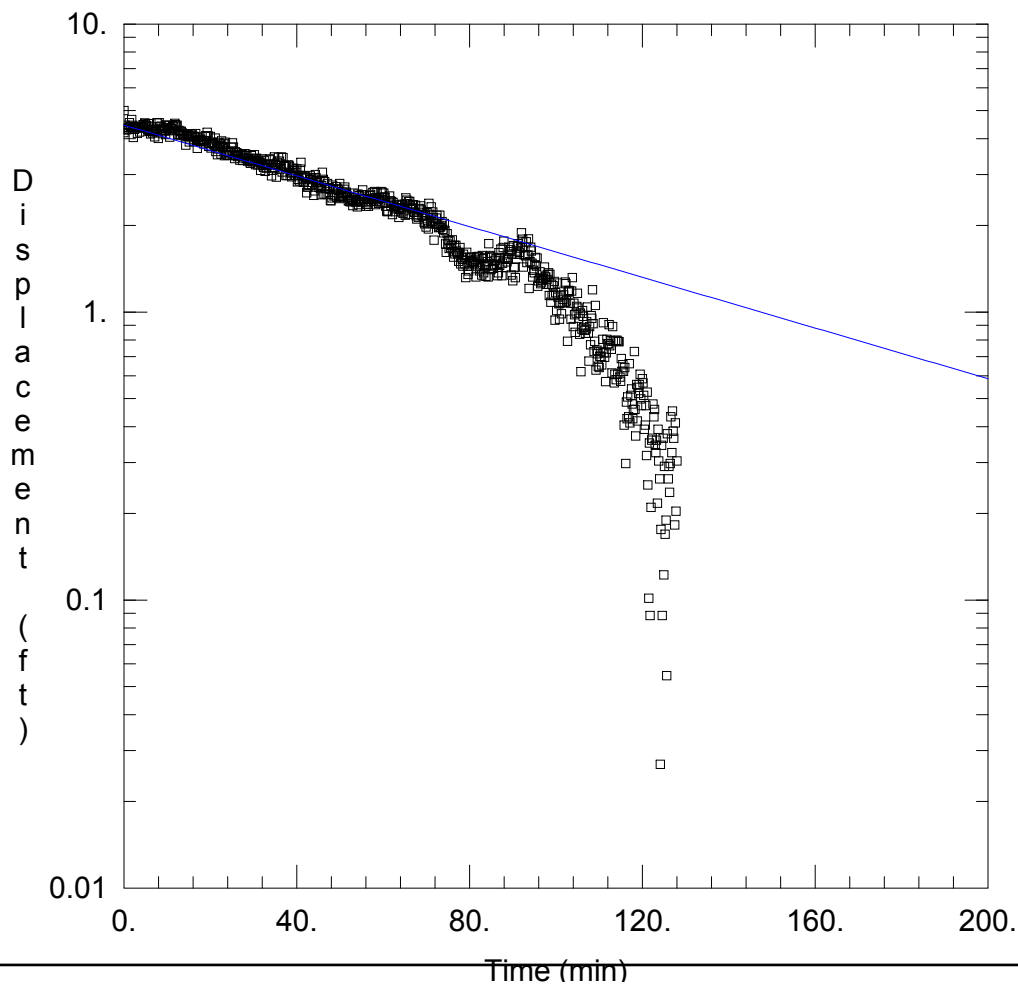
Saturated Thickness: 566. ft Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (RNW-HB-168)

Initial Displacement: 7.5 ft Static Water Column Height: 566. ft
 Total Well Penetration Depth: 566. ft Screen Length: 566. ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
 $K = 5.295E-7$ cm/sec $y_0 = 6.594$ ft



WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-169 Injection-Recovery 200 ft bgs BR_v2.aqt
 Date: 01/03/22 Time: 15:47:35

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-169
 Test Date: 7/14/2021

AQUIFER DATA

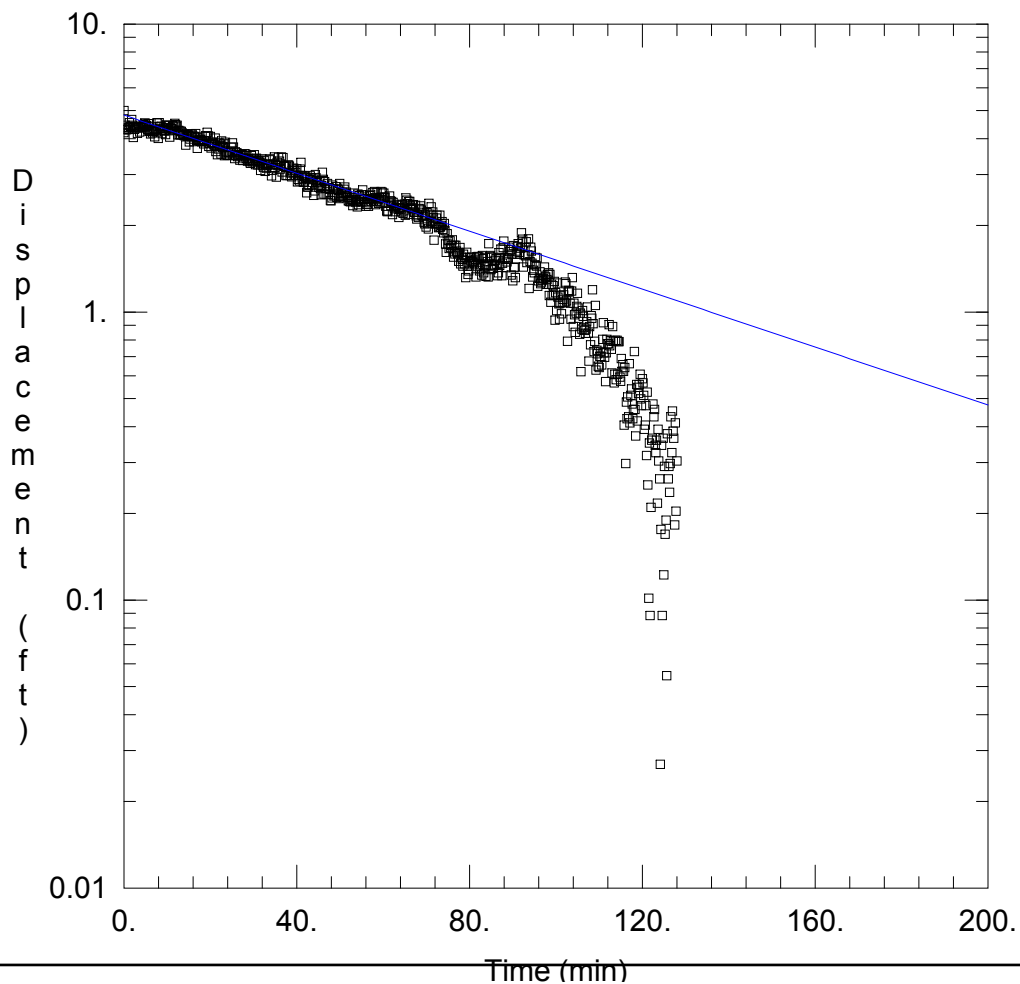
Saturated Thickness: 153.3 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RNW-HB-169)

Initial Displacement: 5. ft Static Water Column Height: 153.3 ft
 Total Well Penetration Depth: 153.3 ft Screen Length: 153.3 ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft
 Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
 $K = 2.428E-6$ cm/sec $y_0 = 4.454$ ft



WELL TEST ANALYSIS

Data Set: C:\...\RNW-HB-169 Injection-Recovery 200 ft bgs HV_v2.aqt
 Date: 01/03/22 Time: 15:47:58

PROJECT INFORMATION

Company: Piteau Associates
 Client: CopperWorld
 Project: 4286
 Location: Rosemont
 Test Well: RNW-HB-169
 Test Date: 7/14/2021

AQUIFER DATA

Saturated Thickness: 153.3 ft Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (RNW-HB-169)

Initial Displacement: 5. ft Static Water Column Height: 153.3 ft
 Total Well Penetration Depth: 153.3 ft Screen Length: 153.3 ft
 Casing Radius: 0.158 ft Well Radius: 0.158 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
 $K = 2.54E-6$ cm/sec $y_0 = 4.824$ ft

APPENDIX G

Borehole Packer Testing Data and Analyses

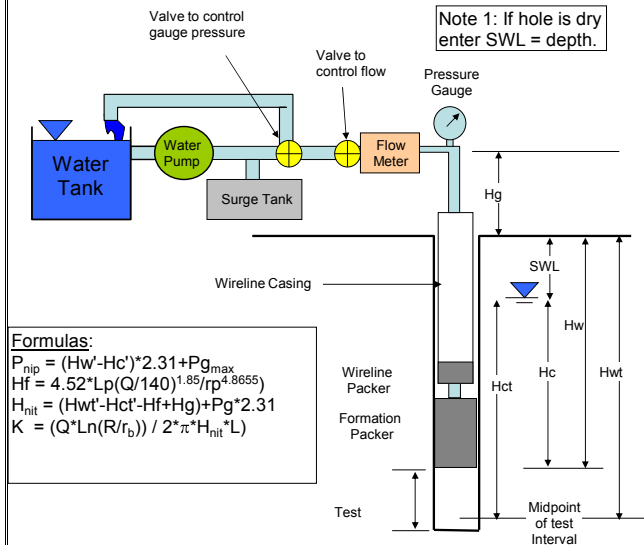


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 3,834
Coordinates: E1700833 N11570771

Depth of Test (ft): 50 to 150
Date: 23-Jul-21
Start: 17:12
Height of "T" (ft): 2
End: 18:02
Lithology: Silty limestone

Hole N°: G&H2021-07
Test N°: 1
Total Depth (m): 150
Engineer: SM



Formulas:

$$P_{nip} = (Hw' - Hc') * 2.31 + P_{gmax}$$

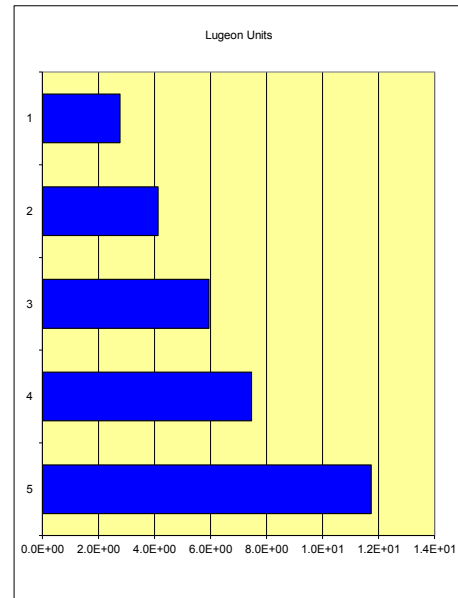
$$H_f = 4.52 * L_p (Q/140)^{1.85} / r_p^{4.8655}$$

$$H_{nit} = (Hwt' - Hct' - H_f + Hg) + P_{gmax} * 2.31$$

$$K = (Q * L_n (R/r_b)) / (2 * \pi * H_{nit} * L)$$

Hg	Gauge height	2 ft
Hw	Water column over packer	50 ft
Hwt	Water column over test midpoint	100 ft
SWL	Static water level (see note 1)	1 ft
Hc	Hydrostatic head on packer	49 ft
Hct	Hydrostatic head on test midpoint	99 ft
Hw'	Water column over packer (corrected)	50 ft
Hwt'	Water column over test midpoint (corrected)	100 ft
SWL'	Static water level (corrected)	1 ft
Hc'	Hydrostatic head on packer (corrected)	49 ft
Hct'	Hydrostatic head on test midpoint (corrected)	99 ft
β	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnip	Net injection pressure at packer	88 psi
	Packer Inflation Pressure Set	275 psi
rb	Borehole radius (in)	3.8 in
Rb	Borehole radius (ft)	0.317 ft
L	Length of test section	100 ft
Lp	Length of discharge pipe	52 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	60	40	20
1	19.0	17.0	76.6	42.1	34.4
2	6.6	22.8	43.5	40.3	32.3
3	7.3	21.2	42.3	38.9	32.7
4	7.2	20.7	42.0	38.5	29.9
5	7.6	21.2	41.9	41.2	33.3
6	7.7	13.2	43.6	36.3	31.4
7	7.9	32.5	42.6	39.3	31.7
8	7.6	23.3	43.6	38.5	32.1
9	7.4	23.5	45.3	39.0	30.8
10	7.5	23.2	43.4	39.5	30.8
Q _p (gal/min)	7.6	21.9	46.5	39.4	31.9
Q _p (ft ³ /day)	1466.9	4208.1	8947.4	7576.8	6148.5
H _f (ft)	0.04	0.28	1.14	0.84	0.57
H _{nit} (ft)	49.54	95.50	140.84	94.94	49.01
K (ft/day)	1.9E-01	2.8E-01	4.0E-01	5.0E-01	7.9E-01
K (cm/sec)	6.6E-05	9.8E-05	1.4E-04	1.8E-04	2.8E-04
Lugeon Unit	2.77	4.12	5.94	7.47	11.74

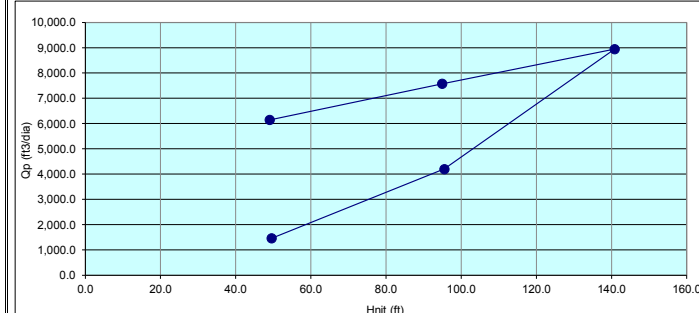


Field Observations

No noteable field observations.

Interpreted Results

Wash out - use the highest Lugeon value.



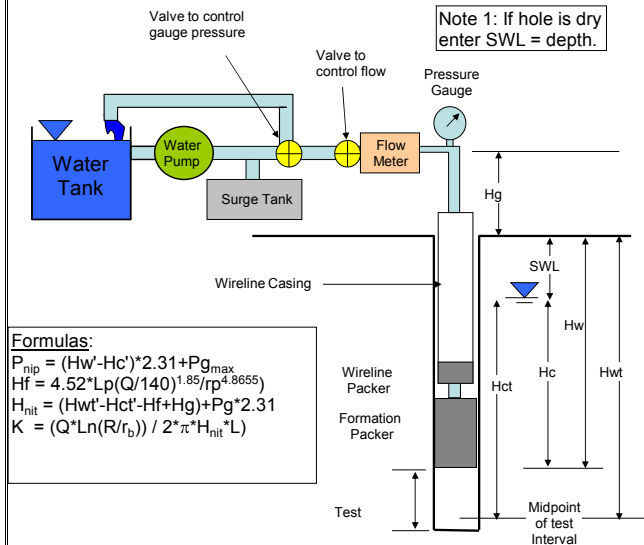


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 3,834
Coordinates: E1700833 N11570771

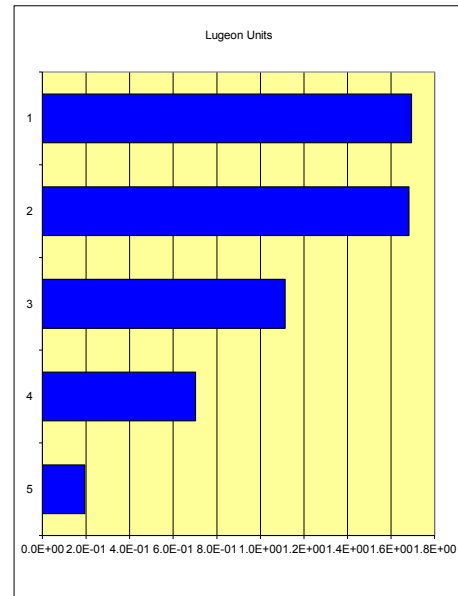
Depth of Test (ft): 150 to 300
Date: 24-Jul-21
Height of "T" (ft): 2
Lithology: Silty limestone/limestone

Hole N°: G&H2021-07
Test N°: 2
Total Depth (m): 300
Engineer: SM



Hg	Gauge height	2 ft
Hw	Water column over packer	150 ft
Hwt	Water column over test midpoint	225 ft
SWL	Static water level (see note 1)	16 ft
Hc	Hydrostatic head on packer	134 ft
Hct	Hydrostatic head on test midpoint	209 ft
Hw'	Water column over packer (corrected)	150 ft
Hwt'	Water column over test midpoint (corrected)	225 ft
SWL'	Static water level (corrected)	16 ft
Hc'	Hydrostatic head on packer (corrected)	134 ft
Hct'	Hydrostatic head on test midpoint (corrected)	209 ft
B	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnip	Net injection pressure at packer	123 psi
	Packer Inflation Pressure Set	275 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	150 ft
Lp	Length of discharge pipe	152 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	40.8	22.9	24.6	2.9	7.3
2	13.9	17.8	19.5	1.0	1.6
3	4.6	15.8	18.6	8.3	1.2
4	14.1	13.6	18.0	7.8	0.1
5	3.7	14.3	18.3	7.4	0.0
6	11.5	14.2	17.9	7.7	0.0
7	10.4	14.1	19.3	7.4	0.1
8	10.5	14.1	15.5	7.4	0.0
9	7.3	14.1	17.8	7.5	0.0
10	5.8	13.8	18.5	7.4	0.1
Q_p (gal/min)	9.1	15.5	18.8	6.5	1.0
Q_p (ft³/day)	1751.8	2978.0	3619.0	1247.4	201.2
H_f (ft)	0.16	0.43	0.62	0.09	0.00
H_{nit} (ft)	64.52	110.45	202.66	110.79	64.68
K (ft/day)	1.1E-01	1.1E-01	7.5E-02	4.7E-02	1.3E-02
K (cm/sec)	4.0E-05	4.0E-05	2.6E-05	1.7E-05	4.6E-06
Lugeon Unit	1.69	1.68	1.11	0.70	0.19

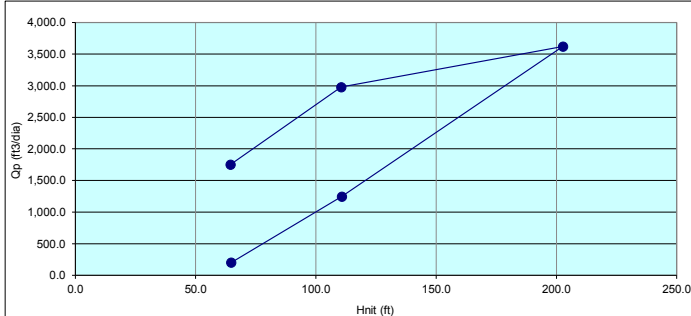


Field Observations

No noteable field observations.

Interpreted Results

Void filling - use the last Lugeon value.



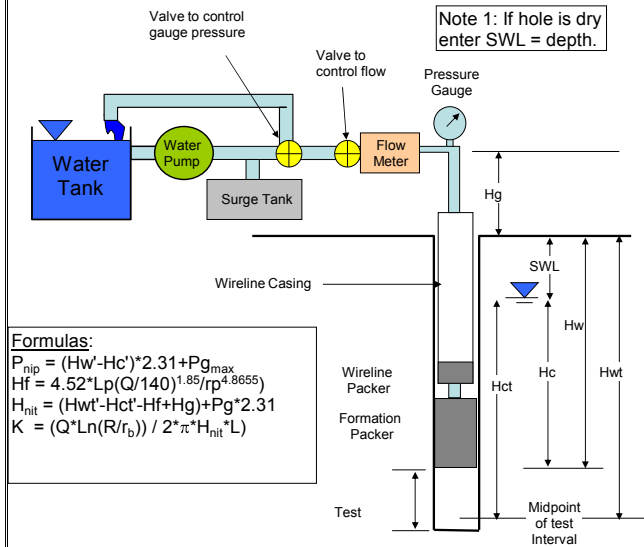


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 3,834
Coordinates: E1700833 N11570771

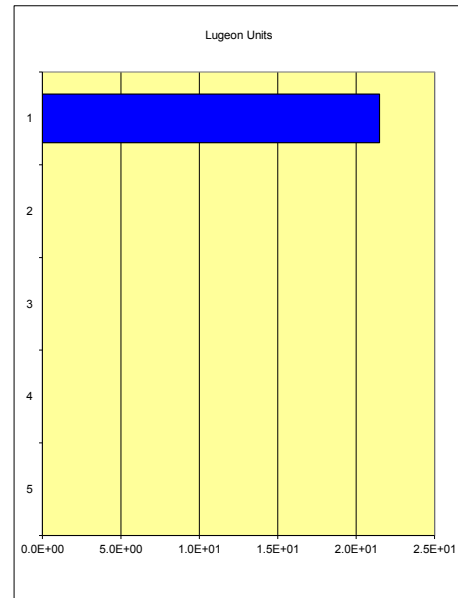
Depth of Test (ft): 300 to 400
Date: 27-Jul-21
Start: 10:50
End: 10:59
Height of "T" (ft): 2
Lithology: Limestone/fault breccia/granite

Hole N°: G&H2021-07
Test N°: 3
Total Depth (m): 400
Engineer: SM



Hg	Gauge height	2 ft
Hw	Water column over packer	300 ft
Hwt	Water column over test midpoint	350 ft
SWL	Static water level (see note 1)	53 ft
Hc	Hydrostatic head on packer	247 ft
Hct	Hydrostatic head on test midpoint	297 ft
Hw'	Water column over packer (corrected)	300 ft
Hwt'	Water column over test midpoint (corrected)	350 ft
SWL'	Static water level (corrected)	53 ft
Hc'	Hydrostatic head on packer (corrected)	247 ft
Hct'	Hydrostatic head on test midpoint (corrected)	297 ft
β	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnip	Net injection pressure at packer	206 psi
	Packer Inflation Pressure Set	275 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	100 ft
Lp	Length of discharge pipe	302 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20				
1	17.2				
2	93.8				
3	88.0				
4	93.8				
5	92.8				
6	91.4				
7	93.1				
8	91.7				
9	92.0				
10	93.5				
Q_p (gal/min)	92.3				
Q_p (ft³/day)	17775.5				
H_f (ft)	23.46				
H_{nit} (ft)	77.42				
K (ft/day)	1.4E+00				
K (cm/sec)	5.1E-04				
Lugeon Unit	21.48				

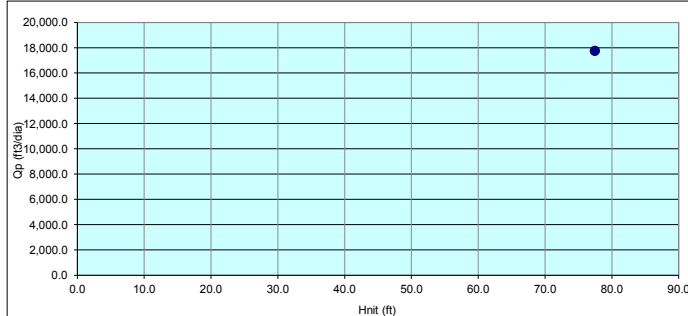


Field Observations

Unable to hold psi steady after 20 psi, bouncing between 20-60 psi.

Interpreted Results

Use the single Lugeon value.



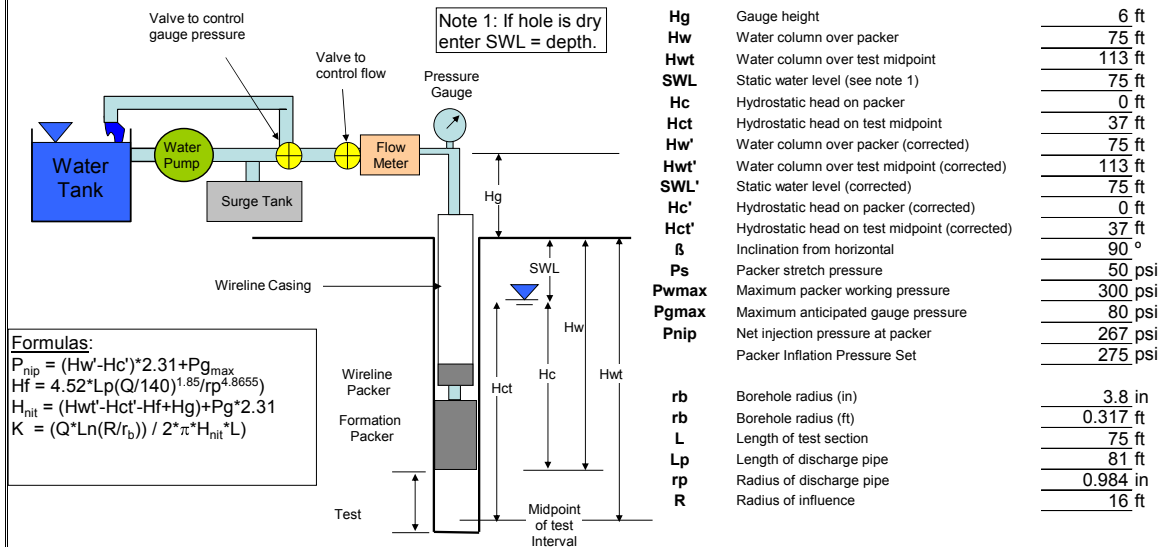


Packer Test

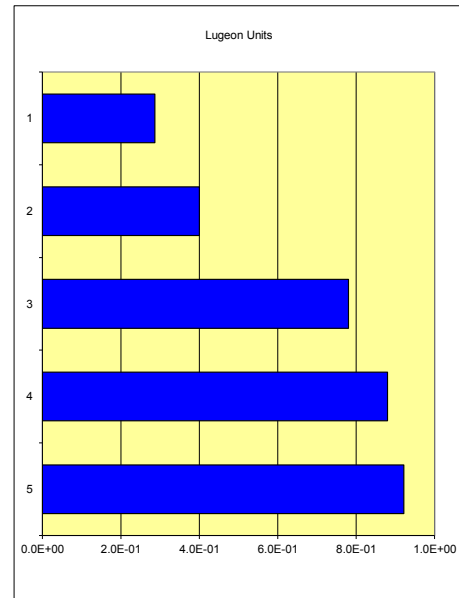
Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 3,953
Coordinates: E1701998 N11568487

Depth of Test (ft): 75 to 150
Date: 2-Aug-21
Start: 4:00
End: 4:50
Height of "T" (ft): 6
Lithology: Granodiorite

Hole N°: G&H2021-09
Test N°: 1
Total Depth (m): 150
Engineer: BAG



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	1.6	3.1	14.1	6.9	5.0
2	1.5	2.6	0.8	7.2	4.9
3	1.5	2.9	8.9	5.2	4.3
4	1.4	2.8	8.8	6.4	5.1
5	1.6	3.0	9.0	6.3	5.1
6	1.4	2.8	9.1	6.3	5.0
7	1.7	3.0	8.7	6.2	5.0
8	1.4	2.9	9.1	6.3	4.8
9	1.6	2.9	9.0	6.3	4.8
10	1.5	2.9	8.8	6.4	4.8
Q _p (gal/min)	1.5	2.9	8.6	6.4	4.9
Q _p (ft ³ /day)	292.6	556.3	1661.3	1222.4	939.4
H _f (ft)	0.00	0.01	0.08	0.04	0.03
H _{nit} (ft)	127.20	173.39	265.72	173.36	127.17
K (ft/day)	1.9E-02	2.7E-02	5.2E-02	5.9E-02	6.2E-02
K (cm/sec)	6.8E-06	9.5E-06	1.8E-05	2.1E-05	2.2E-05
Lugeon Unit	0.29	0.40	0.78	0.88	0.92

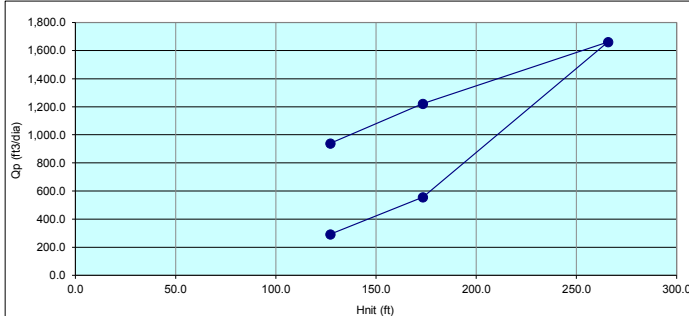


Field Observations

No noteable field observations.

Interpreted Results

Wash out - use the highest Lugeon value.



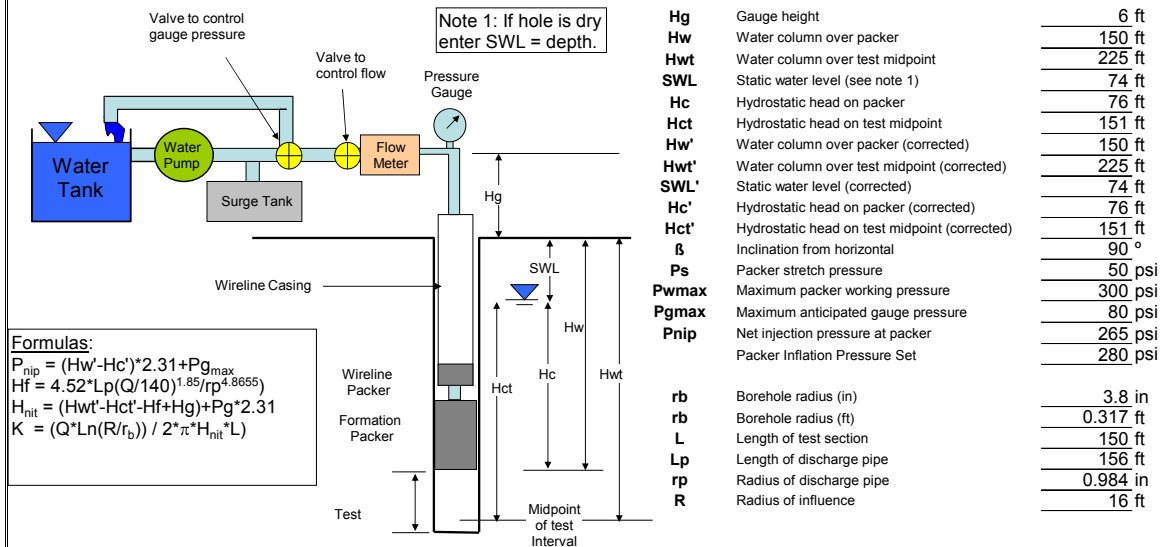


Packer Test

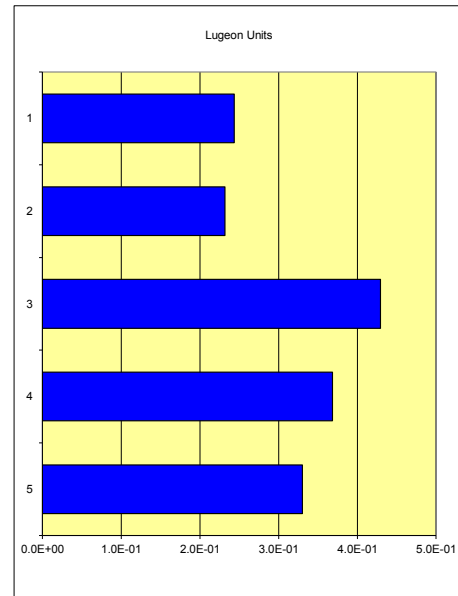
Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 3,953
Coordinates: E1701998 N11568487

Depth of Test (ft): 150 to 300
Date: 3-Aug-21
Height of "T" (ft): 6
Lithology: Granodiorite

Hole N°: G&H2021-09
Test N°: 2
Total Depth (m): 300
Engineer: BAG



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	3.3	4.4	7.4	7.0	3.8
2	3.2	3.5	8.3	6.0	3.4
3	3.1	3.4	10.0	5.4	3.6
4	3.1	3.4	10.0	5.2	3.4
5	3.1	3.2	10.2	5.0	3.4
6	2.6	3.2	10.2	4.9	3.5
7	2.6	3.0	9.6	4.9	3.4
8	2.6	3.1	9.8	4.9	3.4
9	2.5	3.1	10.0	4.8	3.4
10	2.5	3.0	9.1	4.8	3.4
Q _p (gal/min)	2.6	3.3	9.5	5.3	3.5
Q _p (ft ³ /day)	492.8	641.0	1821.1	1018.3	668.0
H _f (ft)	0.02	0.03	0.18	0.06	0.03
H _{nit} (ft)	126.18	172.37	264.62	172.34	126.17
K (ft/day)	1.6E-02	1.6E-02	2.9E-02	2.5E-02	2.2E-02
K (cm/sec)	5.8E-06	5.5E-06	1.0E-05	8.7E-06	7.8E-06
Lugeon Unit	0.24	0.23	0.43	0.37	0.33

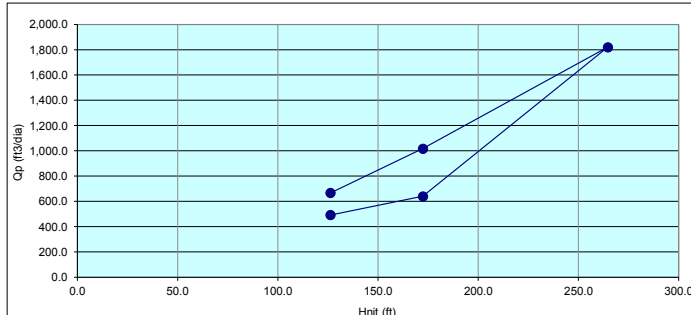


Field Observations

No noteable field observations.

Interpreted Results

Dilation - use the Lugeon value for the lowest pressures.



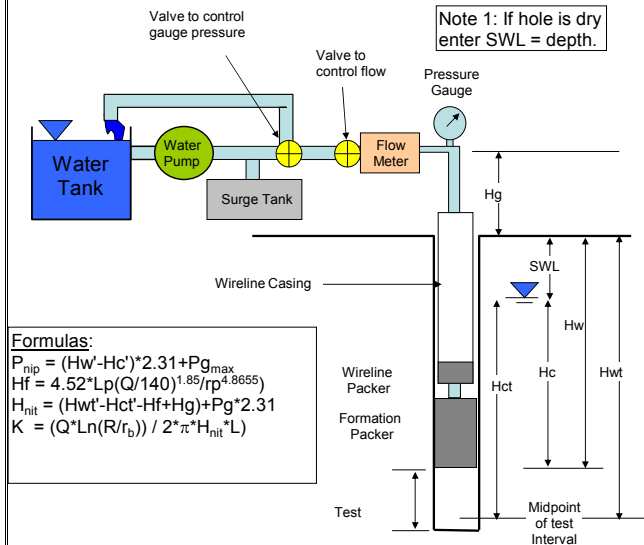


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,005
Coordinates: E 1701140 N 11567335

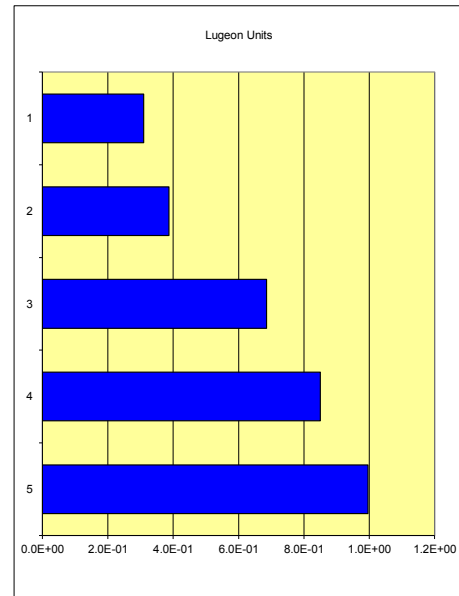
Depth of Test (ft): 50 to 150
Date: 29-Jul-21
Start: 17:45
End: 18:36
Height of "T" (ft): 2
Lithology: Conglomerate/granodiorite

Hole N°: G&H2021-10
Test N°: 1
Total Depth (m): 150
Engineer: SM



Hg	Gauge height	2 ft
Hw	Water column over packer	50 ft
Hwt	Water column over test midpoint	100 ft
SWL	Static water level (see note 1)	40 ft
Hc	Hydrostatic head on packer	10 ft
Hct	Hydrostatic head on test midpoint	60 ft
Hw'	Water column over packer (corrected)	50 ft
Hwt'	Water column over test midpoint (corrected)	100 ft
SWL'	Static water level (corrected)	40 ft
Hc'	Hydrostatic head on packer (corrected)	10 ft
Hct'	Hydrostatic head on test midpoint (corrected)	60 ft
B	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnip	Net injection pressure at packer	177 psi
	Packer Inflation Pressure Set	280 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	100 ft
Lp	Length of discharge pipe	52 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	1.6	3.1	14.1	6.9	5.0
2	1.5	2.6	0.8	7.2	4.9
3	1.5	2.9	8.9	5.2	4.3
4	1.4	2.8	8.8	6.4	5.1
5	1.6	3.0	9.0	6.3	5.1
6	1.4	2.8	9.1	6.3	5.0
7	1.7	3.0	8.7	6.2	5.0
8	1.4	2.9	9.1	6.3	4.8
9	1.6	2.9	9.0	6.3	4.8
10	1.5	2.9	8.8	6.4	4.8
Q_p (gal/min)	1.5	2.9	8.6	6.4	4.9
Q_p (ft³/day)	292.6	556.3	1661.3	1222.4	939.4
H_f (ft)	0.00	0.01	0.05	0.03	0.02
H_{nit} (ft)	88.30	134.49	226.85	134.47	88.28
K (ft/day)	2.1E-02	2.6E-02	4.6E-02	5.7E-02	6.7E-02
K (cm/sec)	7.3E-06	9.2E-06	1.6E-05	2.0E-05	2.4E-05
Lugeon Unit	0.31	0.39	0.69	0.85	1.00

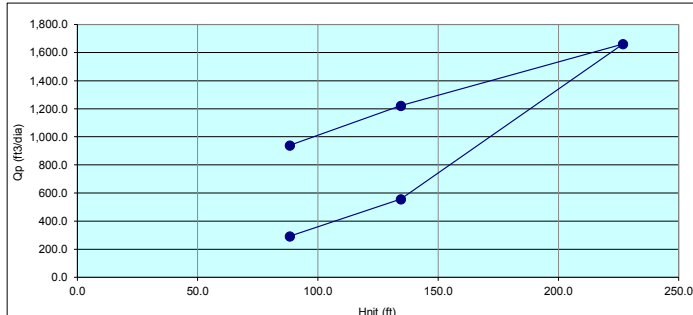


Field Observations

Test restarted after flow meter fixed.

Interpreted Results

Wash out - use the highest Lugeon value.



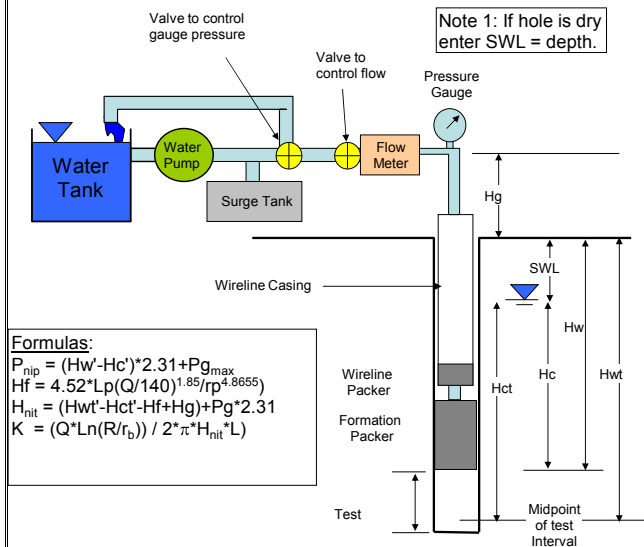


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,005
Coordinates: E 1701140 N 11567335

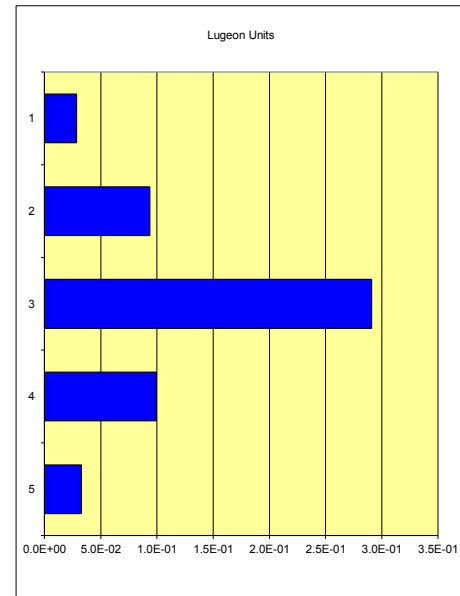
Depth of Test (ft): 150 to 300
Date: 31-Jul-21
Height of "T" (ft): 2
Lithology: Granodiorite

Hole N°: G&H2021-10
Test N°: 2
Total Depth (m): 300
Engineer: SM



Hg	Gauge height	2 ft
Hw	Water column over packer	150 ft
Hwt	Water column over test midpoint	225 ft
SWL	Static water level (see note 1)	39 ft
Hc	Hydrostatic head on packer	111 ft
Hct	Hydrostatic head on test midpoint	186 ft
Hw'	Water column over packer (corrected)	150 ft
Hwt'	Water column over test midpoint (corrected)	225 ft
SWL'	Static water level (corrected)	39 ft
Hc'	Hydrostatic head on packer (corrected)	111 ft
Hct'	Hydrostatic head on test midpoint (corrected)	186 ft
β	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnlp	Net injection pressure at packer	174 psi
	Packer Inflation Pressure Set	280 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	150 ft
Lp	Length of discharge pipe	152 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	0.2	4.7	7.4	2.9	0.9
2	0.1	0.6	5.1	0.9	0.2
3	0.1	0.5	5.3	1.9	0.2
4	0.1	0.6	5.1	0.7	0.1
5	0.5	0.5	5.1	0.8	0.1
6	0.2	0.8	5.1	0.9	0.2
7	0.2	0.5	5.1	0.7	0.2
8	0.3	0.7	5.3	1.0	0.3
9	0.2	0.9	5.3	0.6	0.2
10	0.2	0.6	5.8	0.6	0.1
Q_p (gal/min)	0.2	1.0	5.5	1.1	0.2
Q_p (ft³/day)	39.7	199.8	1051.1	211.8	45.6
H_f (ft)	0.00	0.00	0.06	0.00	0.00
H_{nit} (ft)	86.80	133.00	225.34	133.00	86.80
K (ft/day)	1.9E-03	6.3E-03	2.0E-02	6.7E-03	2.2E-03
K (cm/sec)	6.7E-07	2.2E-06	6.9E-06	2.4E-06	7.8E-07
Lugeon Unit	0.03	0.09	0.29	0.10	0.03

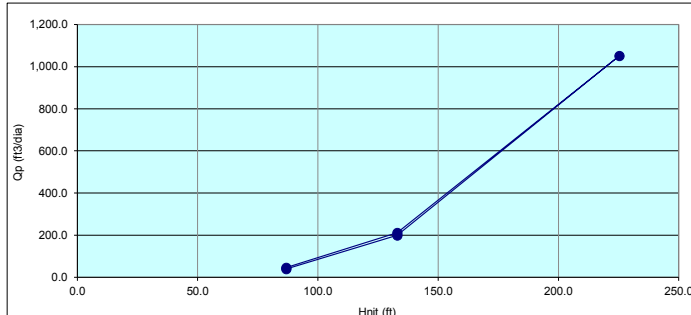


Field Observations

Cave in issues around 40', tripped packer out to clean out borehole before tripping back in.

Interpreted Results

Dilation - use the Lugeon values for the lowest pressures.



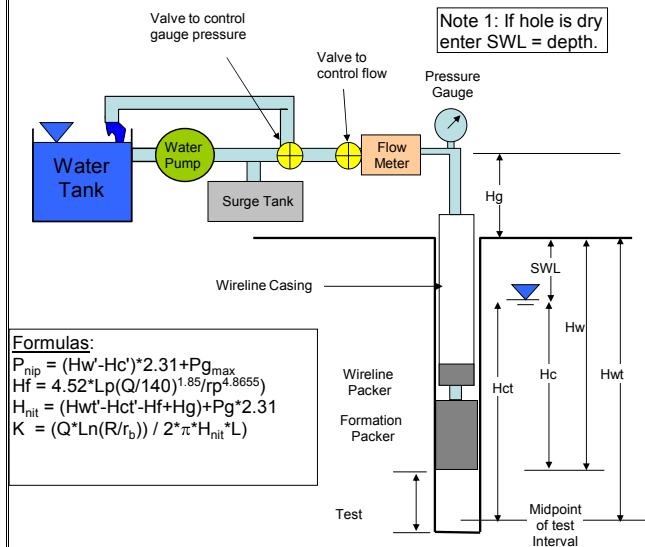


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,164
Coordinates: E1703104 N11563658

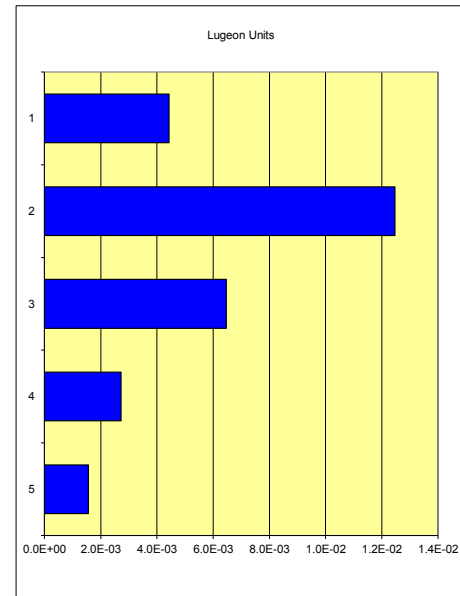
Depth of Test (ft): 150 to 300
Date: 7-Aug-21
Height of "T" (ft): 5
Lithology: Granodiorite/Diabase/Granite

Hole N°: G&H2021-11
Test N°: 1
Total Depth (m): 300
Engineer: BAG



Hg	Gauge height	5 ft
Hw	Water column over packer	150 ft
Hwt	Water column over test midpoint	225 ft
SWL	Static water level (see note 1)	76 ft
Hc	Hydrostatic head on packer	74 ft
Hct	Hydrostatic head on test midpoint	149 ft
Hw'	Water column over packer (corrected)	150 ft
Hwt'	Water column over test midpoint (corrected)	225 ft
SWL'	Static water level (corrected)	76 ft
Hc'	Hydrostatic head on packer (corrected)	74 ft
Hct'	Hydrostatic head on test midpoint (corrected)	149 ft
β	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnlp	Net injection pressure at packer	266 psi
	Packer Inflation Pressure Set	280 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	150 ft
Lp	Length of discharge pipe	155 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	0.0	0.5	0.1	0.0	0.1
2	0.0	0.7	0.1	0.0	0.0
3	0.0	0.3	0.2	0.0	0.0
4	0.1	0.0	0.1	0.0	0.0
5	0.1	0.0	0.1	0.0	0.0
6	0.0	0.1	0.1	0.0	0.0
7	0.1	0.1	0.2	0.1	0.0
8	0.0	0.0	0.1	0.1	0.0
9	0.0	0.1	0.2	0.1	0.0
10	0.1	0.0	0.2	0.1	0.0
Q _p (gal/min)	0.0	0.2	0.1	0.0	0.0
Q _p (ft ³ /day)	9.0	34.6	27.5	7.5	3.2
H _f (ft)	0.00	0.00	0.00	0.00	0.00
H _{nit} (ft)	126.80	173.00	265.40	173.00	126.80
K (ft/day)	3.0E-04	8.4E-04	4.3E-04	1.8E-04	1.0E-04
K (cm/sec)	1.0E-07	3.0E-07	1.5E-07	6.4E-08	3.7E-08
Lugeon Unit	0.00	0.01	0.01	0.00	0.00

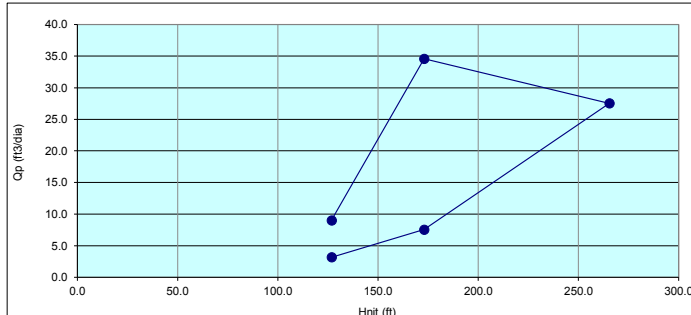


Field Observations

No noteable field observations.

Interpreted Results

Void filling - use the final Lugeon value.

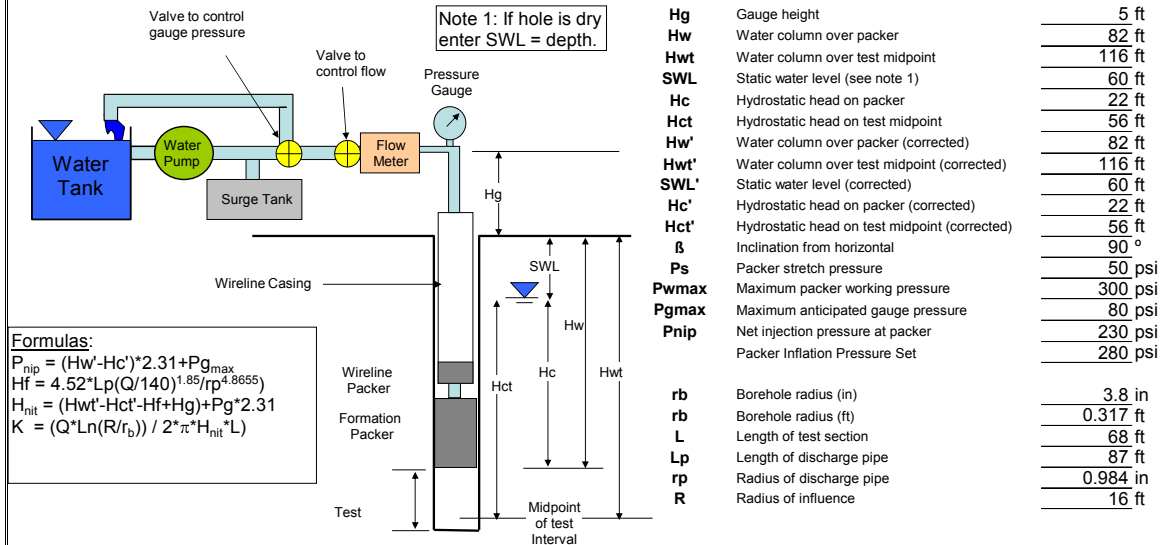


Packer Test

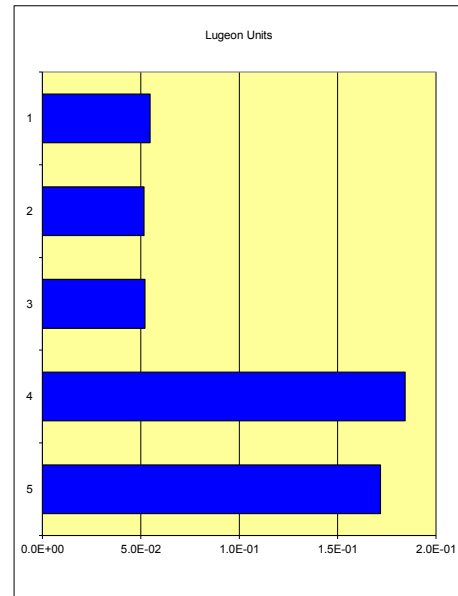
Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,240
Coordinates: E1704541 N11563684

Depth of Test (ft): 82 to 150
Date: 29-Aug-21
Height of "T" (ft): 5
Lithology: Granite

Hole N°: G&H2021-13
Test N°: 1
Total Depth (m): 150
Engineer: BAG



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	0.2	1.4	1.3	1.2	0.9
2	0.2	0.1	0.4	0.9	0.9
3	0.3	0.2	0.3	1.3	0.5
4	0.1	0.2	0.5	1.3	0.5
5	0.1	0.3	0.4	0.9	0.8
6	0.2	0.1	0.5	1.0	1.0
7	0.2	0.2	0.4	1.0	0.7
8	0.2	0.2	0.1	1.2	1.0
9	0.3	0.2	0.4	1.1	0.6
10	0.3	0.2	0.8	1.2	0.4
Q _p (gal/min)	0.2	0.3	0.5	1.1	0.7
Q _p (ft ³ /day)	44.2	59.1	94.7	210.8	138.8
H _f (ft)	0.00	0.00	0.00	0.00	0.00
H _{nit} (ft)	111.20	157.40	249.80	157.40	111.20
K (ft/day)	3.7E-03	3.5E-03	3.5E-03	1.2E-02	1.2E-02
K (cm/sec)	1.3E-06	1.2E-06	1.2E-06	4.4E-06	4.1E-06
Lugeon Unit	0.05	0.05	0.05	0.18	0.17

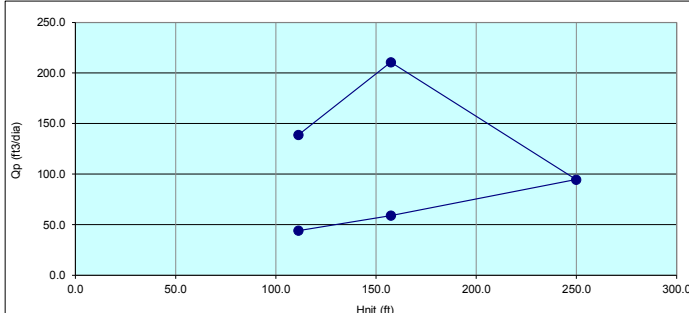


Field Observations

No noteable field observations.

Interpreted Results

Wash out - use the highest Lugeon value.



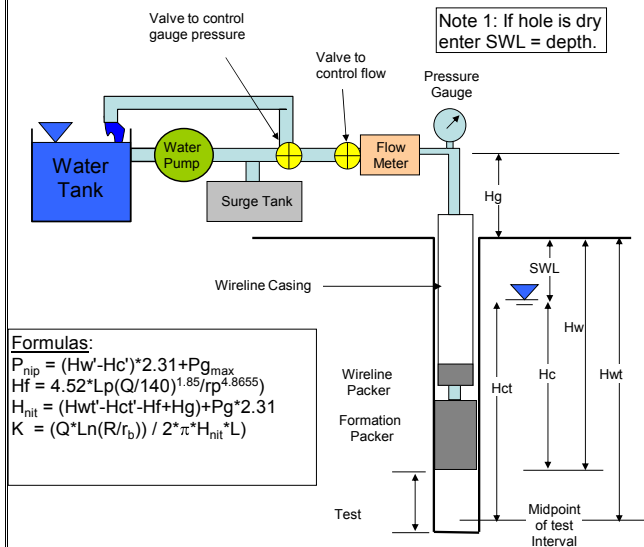


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,240
Coordinates: E1704541 N11563684

Depth of Test (ft): 150 to 300
Date: 31-Aug-21
Start: 9:30
End: 10:19
Height of "T" (ft): 5
Lithology: Granite

Hole N°: G&H2021-13
Test N°: 2
Total Depth (m): 300
Engineer: BAG



Formulas:

$$P_{nlp} = (H_w - H_c) * 2.31 + P_{gmax}$$

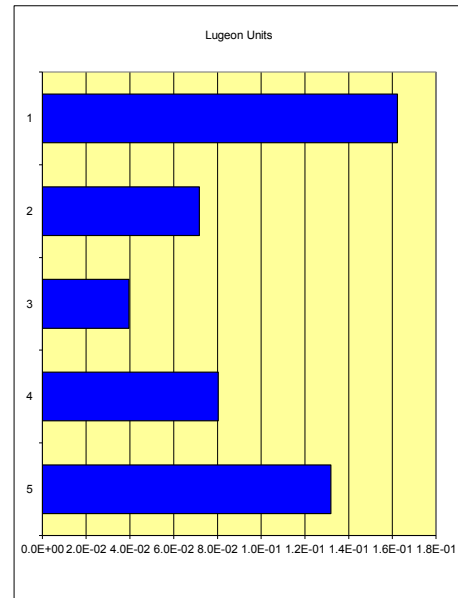
$$H_f = 4.52 * L_p (Q/140)^{1.85} / r_p^{4.8655}$$

$$H_{nit} = (H_w - H_c - H_f + H_g) + P_g * 2.31$$

$$K = (Q * \ln(R/r_b)) / (2 * \pi * H_{nit} * L)$$

Hg	Gauge height	5 ft
Hw	Water column over packer	150 ft
Hwt	Water column over test midpoint	225 ft
SWL	Static water level (see note 1)	55 ft
Hc	Hydrostatic head on packer	95 ft
Hct	Hydrostatic head on test midpoint	170 ft
Hw'	Water column over packer (corrected)	150 ft
Hwt'	Water column over test midpoint (corrected)	225 ft
SWL'	Static water level (corrected)	55 ft
Hc'	Hydrostatic head on packer (corrected)	95 ft
Hct'	Hydrostatic head on test midpoint (corrected)	170 ft
β	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnlp	Net injection pressure at packer	219 psi
	Packer Inflation Pressure Set	280 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	150 ft
Lp	Length of discharge pipe	155 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	1.2	1.4	0.9	1.1	1.0
2	1.5	0.8	0.6	1.1	1.3
3	1.0	0.9	1.2	1.1	1.2
4	1.3	0.7	0.5	1.1	0.9
5	1.3	0.9	0.6	1.1	1.0
6	1.5	1.0	0.8	1.0	1.2
7	1.3	0.8	0.8	0.8	1.4
8	1.7	0.9	0.5	1.0	1.3
9	1.5	0.8	0.8	0.8	1.2
10	1.3	0.9	1.3	1.1	1.2
Q_p (gal/min)	1.4	0.9	0.8	1.0	1.2
Q_p (ft³/day)	276.4	175.2	155.2	196.4	224.6
H_f (ft)	0.01	0.00	0.00	0.00	0.00
H_{nit} (ft)	106.19	152.40	244.80	152.40	106.20
K (ft/day)	1.1E-02	4.8E-03	2.7E-03	5.4E-03	8.9E-03
K (cm/sec)	3.8E-06	1.7E-06	9.4E-07	1.9E-06	3.1E-06
Lugeon Unit	0.16	0.07	0.04	0.08	0.13

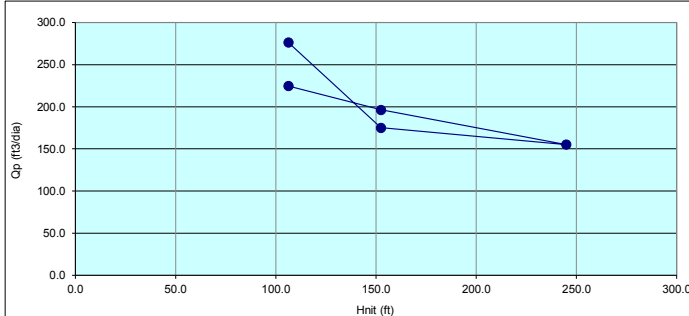


Field Observations

No noteable field observations.

Interpreted Results

Turbulent flow - use the Lugeon value for the highest pressure.



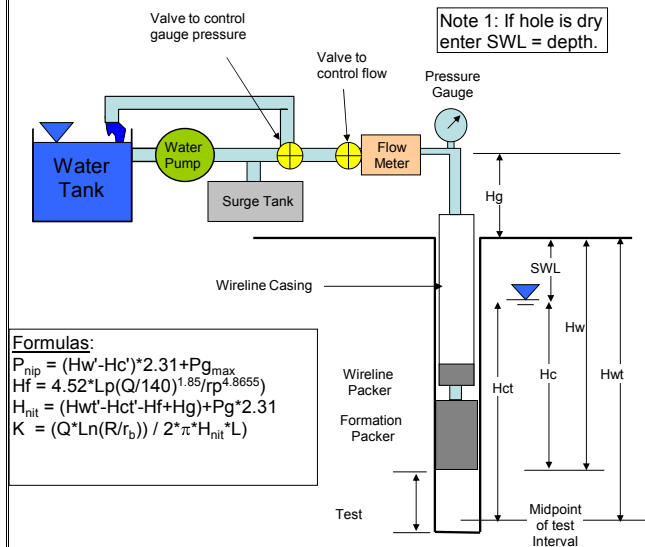


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,150
Coordinates: E1700850 N11560476

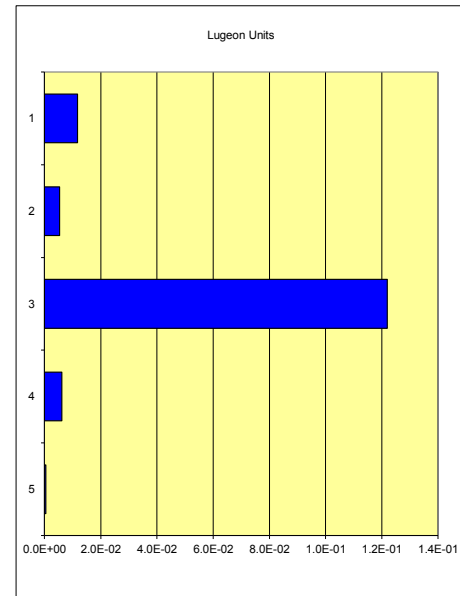
Depth of Test (ft): 80 to 150
Date: 9-Aug-21 **Start:** 15:05
Height of "T" (ft): 5 **End:** 15:54
Lithology: Granite

Hole N°: G&H2021-17
Test N°: 1
Total Depth (m): 150
Engineer: BAG



Hg	Gauge height	5 ft
Hw	Water column over packer	80 ft
Hwt	Water column over test midpoint	115 ft
SWL	Static water level (see note 1)	43 ft
Hc	Hydrostatic head on packer	37 ft
Hct	Hydrostatic head on test midpoint	72 ft
Hw'	Water column over packer (corrected)	80 ft
Hwt'	Water column over test midpoint (corrected)	115 ft
SWL'	Static water level (corrected)	43 ft
Hc'	Hydrostatic head on packer (corrected)	37 ft
Hct'	Hydrostatic head on test midpoint (corrected)	72 ft
β	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnip	Net injection pressure at packer	191 psi
	Packer Inflation Pressure Set	280 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	70 ft
Lp	Length of discharge pipe	85 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	0.1	0.0	0.9	0.2	0.0
2	0.1	0.1	1.1	0.0	0.0
3	0.1	0.0	1.1	0.0	0.0
4	0.2	0.0	1.2	0.0	0.0
5	0.0	0.0	1.1	0.0	0.0
6	0.0	0.0	1.2	0.0	0.0
7	0.1	0.0	1.1	0.0	0.0
8	0.0	0.0	1.2	0.0	0.0
9	0.0	0.0	1.1	0.0	0.0
10	0.0	0.0	1.1	0.0	0.0
Q_p (gal/min)	0.0	0.0	1.1	0.0	0.0
Q_p (ft³/day)	8.3	5.6	212.4	6.5	0.3
H_f (ft)	0.00	0.00	0.00	0.00	0.00
H_{nit} (ft)	94.30	140.50	232.90	140.50	94.30
K (ft/day)	7.9E-04	3.6E-04	8.2E-03	4.1E-04	2.9E-05
K (cm/sec)	2.8E-07	1.3E-07	2.9E-06	1.5E-07	1.0E-08
Lugeon Unit	0.01	0.01	0.12	0.01	0.00

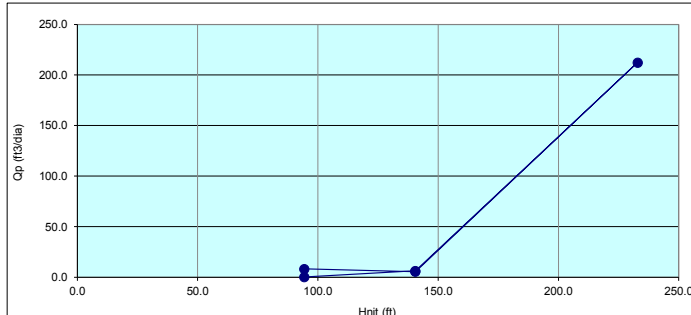


Field Observations

No noteable field observations.

Interpreted Results

Dilation - use the Lugeon value for the lowest pressures.



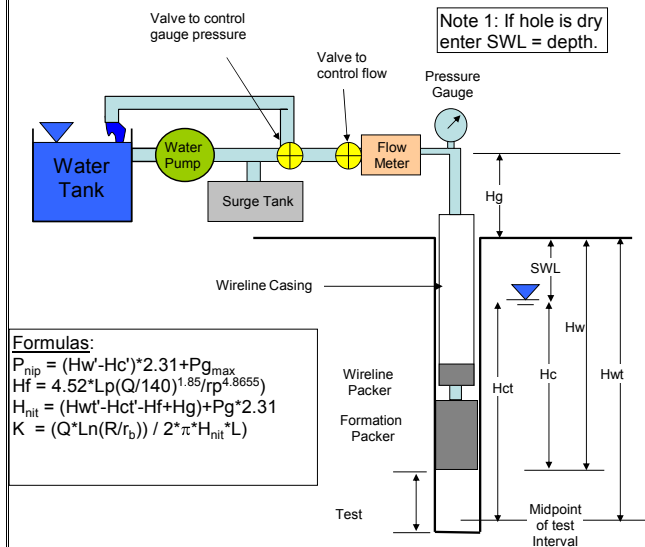


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,150
Coordinates: E1700850 N11560476

Depth of Test (ft): 150 to 300
Date: 10-Aug-21
Height of "T" (ft): 5
Lithology: Granite

Hole N°: G&H2021-17
Test N°: 2
Total Depth (m): 300
Engineer: BAG



Formulas:

$$P_{nlp} = (H_w - H_c) * 2.31 + P_{gmax}$$

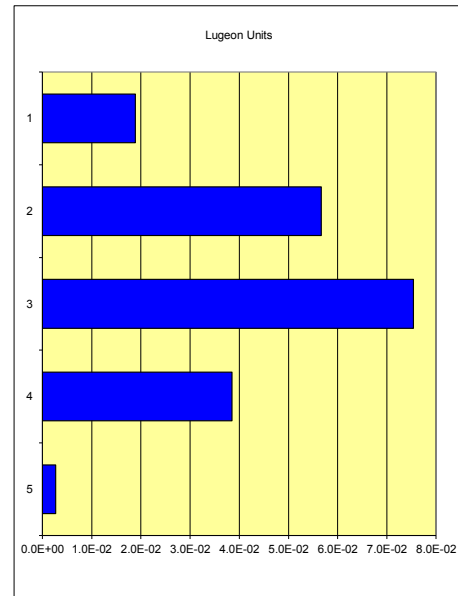
$$H_f = 4.52 * L_p (Q/140)^{1.85} / r_p^{4.8655}$$

$$H_{nit} = (H_w - H_c - H_f + H_g) + P_g * 2.31$$

$$K = (Q * L_n (R/r_b)) / (2 * \pi * H_{nit} * L)$$

Hg	Gauge height	5 ft
Hw	Water column over packer	150 ft
Hwt	Water column over test midpoint	225 ft
SWL	Static water level (see note 1)	43 ft
Hc	Hydrostatic head on packer	107 ft
Hct	Hydrostatic head on test midpoint	182 ft
Hw'	Water column over packer (corrected)	150 ft
Hwt'	Water column over test midpoint (corrected)	225 ft
SWL'	Static water level (corrected)	43 ft
Hc'	Hydrostatic head on packer (corrected)	107 ft
Hct'	Hydrostatic head on test midpoint (corrected)	182 ft
β	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnlp	Net injection pressure at packer	191 psi
	Packer Inflation Pressure Set	280 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	150 ft
Lp	Length of discharge pipe	155 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	0.1	1.8	2.2	1.1	0.2
2	0.2	0.6	1.4	0.4	0.0
3	0.1	0.7	1.4	0.4	0.0
4	0.2	0.5	1.2	0.4	0.0
5	0.1	0.5	1.1	0.4	0.0
6	0.1	0.5	1.3	0.5	0.0
7	0.2	0.5	1.4	0.4	0.0
8	0.1	0.4	1.7	0.4	0.0
9	0.1	0.6	1.5	0.3	0.0
10	0.1	0.5	1.4	0.3	0.0
Q_p (gal/min)	0.1	0.7	1.5	0.5	0.0
Q_p (ft³/day)	28.5	127.6	281.4	86.8	4.0
H_f (ft)	0.00	0.00	0.01	0.00	0.00
H_{nit} (ft)	94.30	140.50	232.89	140.50	94.30
K (ft/day)	1.3E-03	3.8E-03	5.1E-03	2.6E-03	1.8E-04
K (cm/sec)	4.5E-07	1.3E-06	1.8E-06	9.1E-07	6.3E-08
Lugeon Unit	0.02	0.06	0.08	0.04	0.00

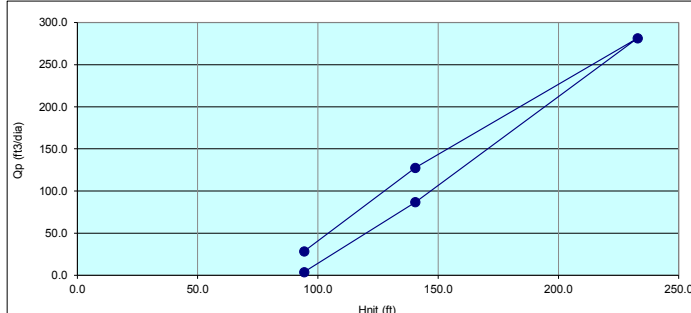


Field Observations

No noteable field observations.

Interpreted Results

Dilation - use the Lugeon value for the lowest pressures.



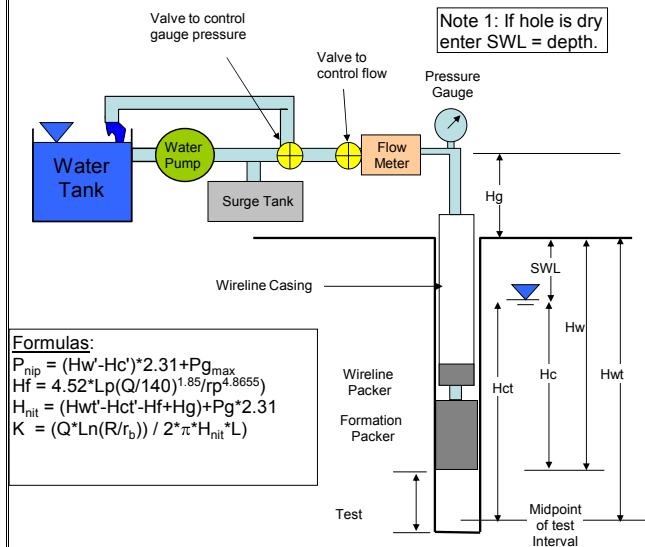


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,421
Coordinates: E1705400 N11561420

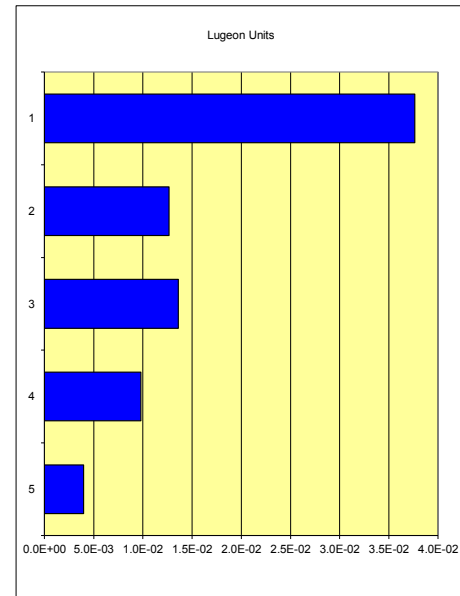
Depth of Test (ft): 150 to 300
Date: 9-Aug-21
Height of "T" (ft): 5
Lithology: Granite

Hole N°: G&H2021-22
Test N°: 1
Total Depth (m): 300
Engineer: BAG



Hg	Gauge height	5 ft
Hw	Water column over packer	150 ft
Hwt	Water column over test midpoint	225 ft
SWL	Static water level (see note 1)	100 ft
Hc	Hydrostatic head on packer	50 ft
Hct	Hydrostatic head on test midpoint	125 ft
Hw'	Water column over packer (corrected)	150 ft
Hwt'	Water column over test midpoint (corrected)	225 ft
SWL'	Static water level (corrected)	100 ft
Hc'	Hydrostatic head on packer (corrected)	50 ft
Hct'	Hydrostatic head on test midpoint (corrected)	125 ft
B	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnip	Net injection pressure at packer	323 psi
	Packer Inflation Pressure Set	280 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	150 ft
Lp	Length of discharge pipe	155 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	0.8	0.6	0.3	0.3	0.1
2	0.6	0.5	0.3	0.2	0.1
3	0.4	0.3	0.4	0.1	0.0
4	0.4	0.1	0.2	0.1	0.1
5	0.4	0.2	0.4	0.1	0.0
6	0.6	0.1	0.4	0.3	0.0
7	0.4	0.0	0.3	0.1	0.0
8	0.5	0.1	0.3	0.2	0.1
9	0.4	0.1	0.3	0.2	0.1
10	0.4	0.1	0.4	0.1	0.0
Q _p (gal/min)	0.5	0.2	0.3	0.2	0.1
Q _p (ft ³ /day)	91.2	40.0	63.1	31.0	9.6
H _f (ft)	0.00	0.00	0.00	0.00	0.00
H _{nit} (ft)	151.20	197.40	289.80	197.40	151.20
K (ft/day)	2.5E-03	8.5E-04	9.1E-04	6.6E-04	2.7E-04
K (cm/sec)	8.9E-07	3.0E-07	3.2E-07	2.3E-07	9.4E-08
Lugeon Unit	0.04	0.01	0.01	0.01	0.00

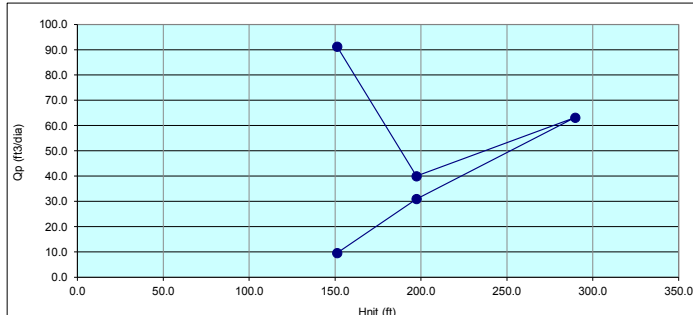


Field Observations

No noteable field observations.

Interpreted Results

Void filling - use the final Lugeon value.



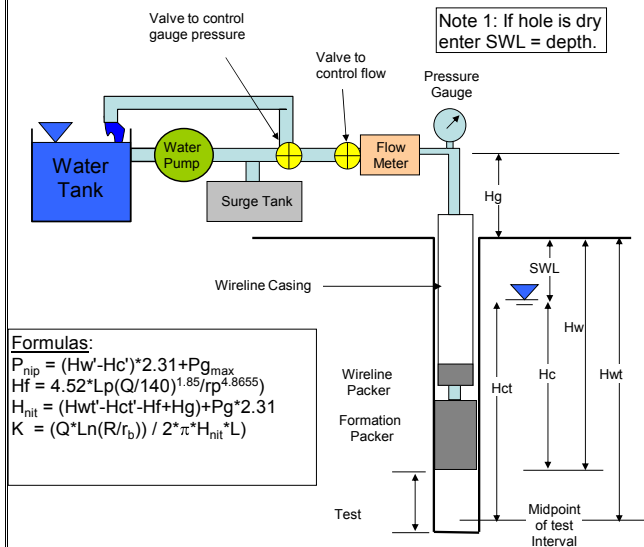


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,426
Coordinates: E1706988 N11561998

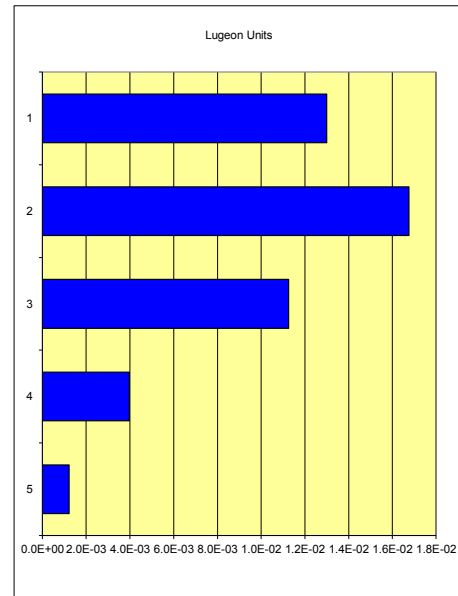
Depth of Test (ft): 150 to 300
Date: 27-Aug-21
Height of "T" (ft): 5
Lithology: Granite

Hole N°: G&H2021-23
Test N°: 1
Total Depth (m): 300
Engineer: BAG



Hg	Gauge height	5 ft
Hw	Water column over packer	150 ft
Hwt	Water column over test midpoint	225 ft
SWL	Static water level (see note 1)	100 ft
Hc	Hydrostatic head on packer	50 ft
Hct	Hydrostatic head on test midpoint	125 ft
Hw'	Water column over packer (corrected)	150 ft
Hwt'	Water column over test midpoint (corrected)	225 ft
SWL'	Static water level (corrected)	100 ft
Hc'	Hydrostatic head on packer (corrected)	50 ft
Hct'	Hydrostatic head on test midpoint (corrected)	125 ft
β	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnip	Net injection pressure at packer	323 psi
	Packer Inflation Pressure Set	280 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	150 ft
Lp	Length of discharge pipe	155 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	0.2	1.8	0.8	0.2	0.1
2	0.0	0.5	0.5	0.0	0.0
3	0.1	0.1	0.3	0.1	0.0
4	0.1	0.1	0.5	0.0	0.0
5	0.1	0.1	0.2	0.1	0.0
6	0.1	0.1	0.3	0.1	0.0
7	0.2	0.0	0.1	0.1	0.0
8	0.2	0.0	0.0	0.0	0.0
9	0.1	0.2	0.1	0.0	0.0
10	0.3	0.1	0.0	0.0	0.0
Q_p (gal/min)	0.2	0.3	0.3	0.1	0.0
Q_p (ft³/day)	31.5	53.1	52.3	12.6	3.0
H_f (ft)	0.00	0.00	0.00	0.00	0.00
H_{nit} (ft)	151.20	197.40	289.80	197.40	151.20
K (ft/day)	8.7E-04	1.1E-03	7.6E-04	2.7E-04	8.2E-05
K (cm/sec)	3.1E-07	4.0E-07	2.7E-07	9.4E-08	2.9E-08
Lugeon Unit	0.01	0.02	0.01	0.00	0.00

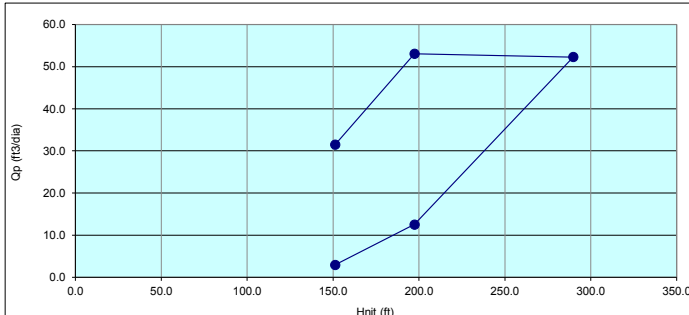


Field Observations

No noteable field observations.

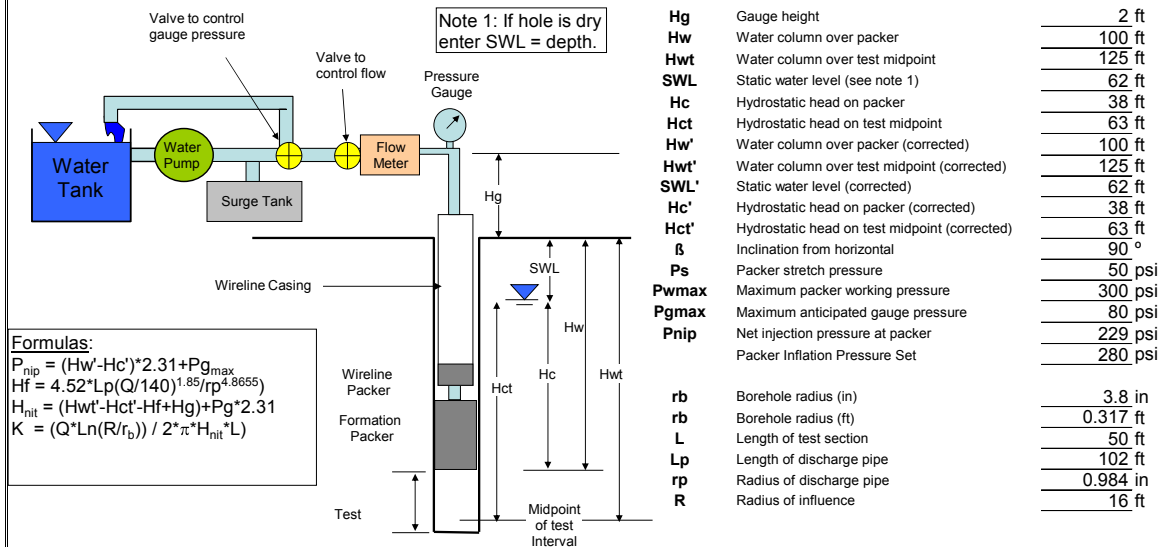
Interpreted Results

Void filling - use the final Lugeon value.

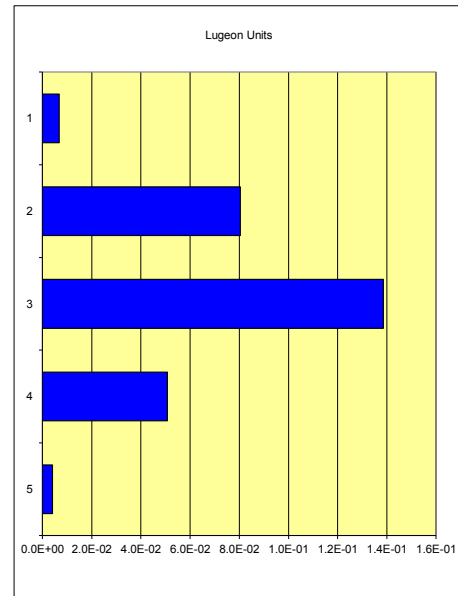


Packer Test

Client:	Rosemont Copper Company	Depth of Test (ft):	100	to	150	Hole N°:	G&H2021-24
Project:	Rosemont Copper World	Date:	17-Aug-21	Start:	15:13	Test N°:	1
Elevation (ft):	4,488	Height of "T" (ft):	2	End:	16:02	Total Depth (m):	150
Coordinates:	E1708373 N11562182	Lithology:	Granite			Engineer:	SM



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	0.0	2.4	1.9	0.3	0.0
2	0.0	0.2	0.9	0.1	0.0
3	0.0	0.3	0.8	0.3	0.0
4	0.0	0.0	1.1	0.3	0.0
5	0.0	0.1	0.6	0.2	0.0
6	0.0	0.0	0.9	0.3	0.0
7	0.0	0.0	0.8	0.2	0.0
8	0.0	0.2	0.9	0.2	0.0
9	0.0	0.1	0.7	0.1	0.0
10	0.0	0.2	0.9	0.1	0.0
Q _p (gal/min)	0.0	0.3	1.0	0.2	0.0
Q _p (ft ³ /day)	4.0	67.4	184.4	42.5	2.4
H _f (ft)	0.00	0.00	0.00	0.00	0.00
H _{nit} (ft)	110.50	156.70	249.10	156.70	110.50
K (ft/day)	4.6E-04	5.4E-03	9.3E-03	3.4E-03	2.7E-04
K (cm/sec)	1.6E-07	1.9E-06	3.3E-06	1.2E-06	9.6E-08
Lugeon Unit	0.01	0.08	0.14	0.05	0.00

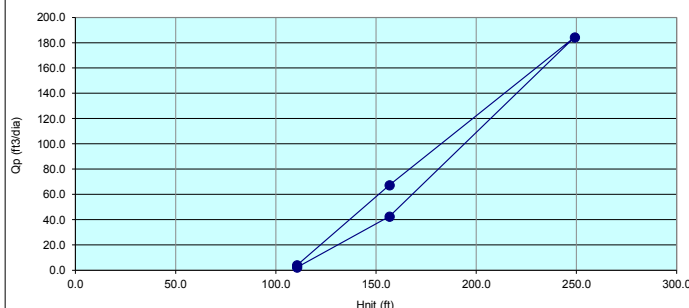


Field Observations

No noteable field observations.

Interpreted Results

Dilation - use the Lugeon value for the lowest pressures.



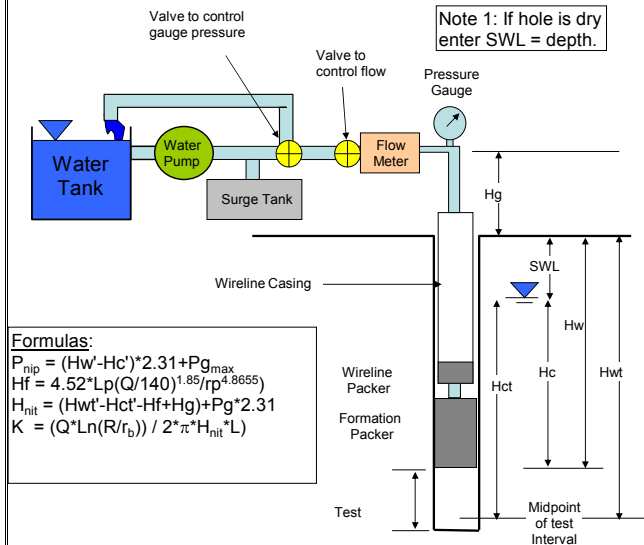


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,488
Coordinates: E1708373 N11562182

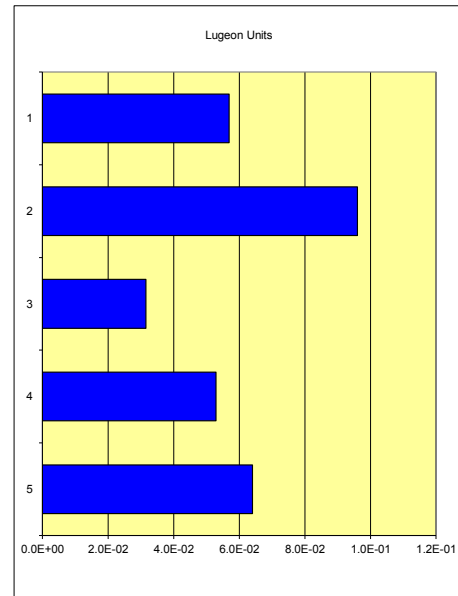
Depth of Test (ft): 150 to 300
Date: 18-Aug-21
Height of "T" (ft): 2
Lithology: Granite

Hole N°: G&H2021-24
Test N°: 2
Total Depth (m): 300
Engineer: SM



Hg	Gauge height	2 ft
Hw	Water column over packer	150 ft
Hwt	Water column over test midpoint	225 ft
SWL	Static water level (see note 1)	53 ft
Hc	Hydrostatic head on packer	97 ft
Hct	Hydrostatic head on test midpoint	172 ft
Hw'	Water column over packer (corrected)	150 ft
Hwt'	Water column over test midpoint (corrected)	225 ft
SWL'	Static water level (corrected)	53 ft
Hc'	Hydrostatic head on packer (corrected)	97 ft
Hct'	Hydrostatic head on test midpoint (corrected)	172 ft
β	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnlp	Net injection pressure at packer	207 psi
	Packer Inflation Pressure Set	280 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	150 ft
Lp	Length of discharge pipe	152 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	0.8	3.7	1.6	0.8	0.5
2	-0.5	0.9	0.6	0.6	1.1
3	1.2	0.8	0.6	0.5	0.5
4	0.5	0.8	0.5	0.2	0.2
5	0.9	1.0	0.5	1.1	0.6
6	0.4	0.8	0.4	0.7	0.4
7	0.5	1.0	0.6	0.8	0.4
8	0.6	0.9	0.5	0.5	0.4
9	0.4	0.8	0.5	0.6	0.6
10	0.5	1.1	0.5	0.7	0.7
Q_p (gal/min)	0.5	1.2	0.6	0.7	0.5
Q_p (ft³/day)	92.4	227.2	121.3	125.1	104.0
H_f (ft)	0.00	0.00	0.00	0.00	0.00
H_{nit} (ft)	101.30	147.50	239.90	147.50	101.30
K (ft/day)	3.8E-03	6.4E-03	2.1E-03	3.6E-03	4.3E-03
K (cm/sec)	1.3E-06	2.3E-06	7.5E-07	1.3E-06	1.5E-06
Lugeon Unit	0.06	0.10	0.03	0.05	0.06

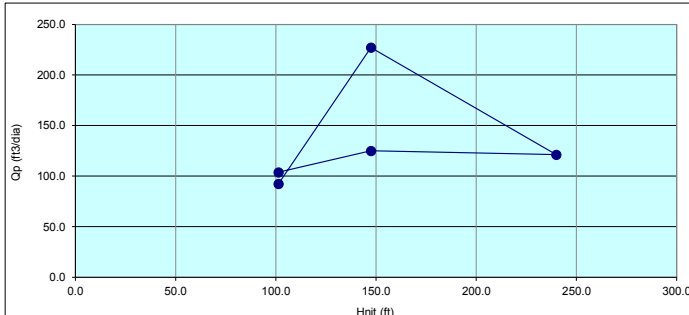


Field Observations

Constantly having to adjust flow to maintain steady psi.

Interpreted Results

Turbulent flow - use the Lugeon value for the highest pressure.



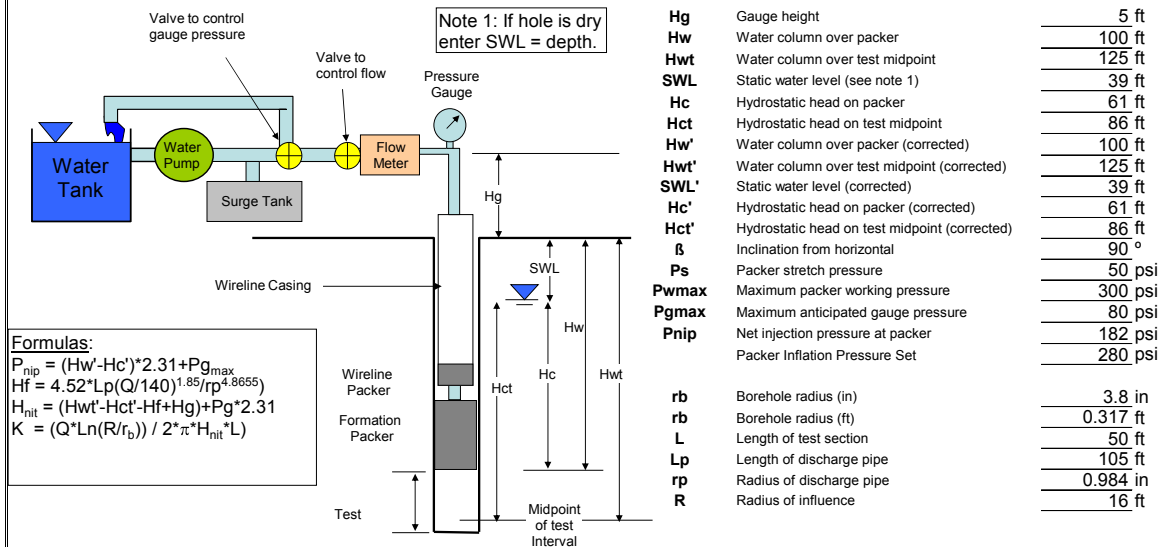


Packer Test

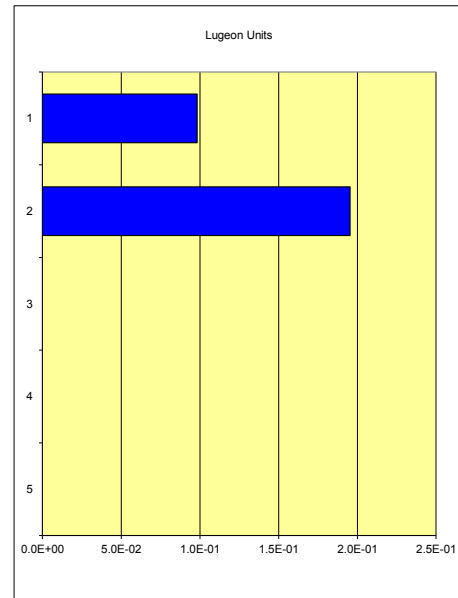
Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,637
Coordinates: E1709783 N11562290

Depth of Test (ft): 100 to 150
Date: 21-Aug-21
Height of "T" (ft): 5
Lithology: Granodiorite

Hole N°: G&H2021-25
Test N°: 1
Total Depth (m): 150
Engineer: SM



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40			
1	0.3	1.2			
2	0.2	0.9			
3	0.7	0.1			
4	0.5				
5	0.4				
6	0.3				
7	0.2				
8	0.4				
9	0.2				
10	0.2				
Q _p (gal/min)	0.2	0.7			
Q _p (ft ³ /day)	47.4	142.5			
H _f (ft)	0.00	0.00			
H _{nit} (ft)	90.20	136.40			
K (ft/day)	6.6E-03	1.3E-02			
K (cm/sec)	2.3E-06	4.6E-06			
Lugeon Unit	0.10	0.20			

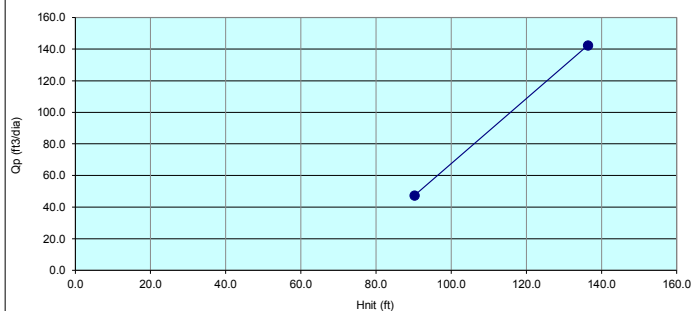


Field Observations

No flow at 40 psi, rock not taking water, end test early.

Interpreted Results

Wash out - use the highest Lugeon value.



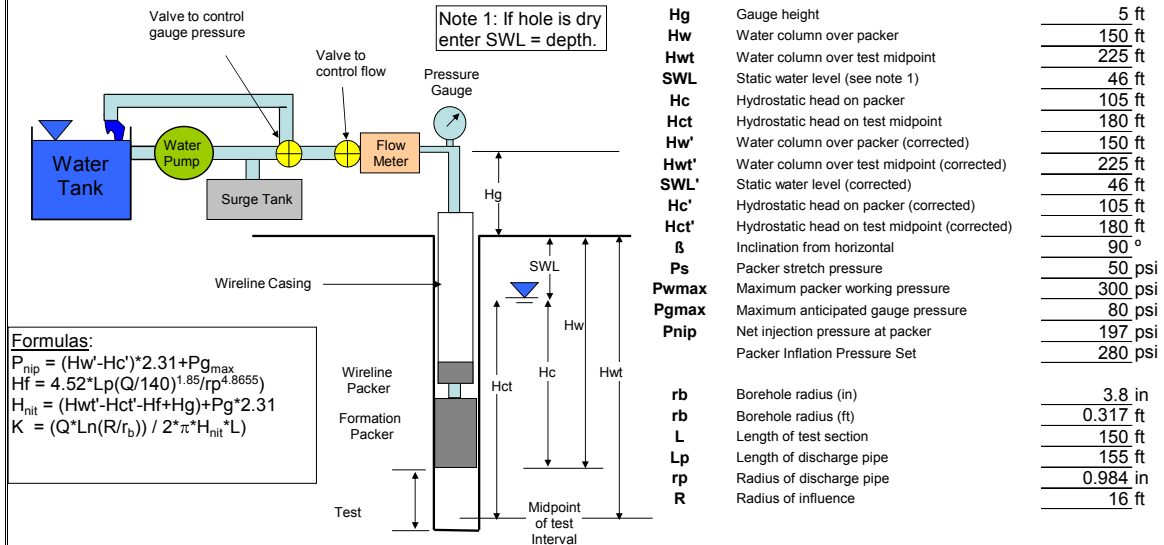


Packer Test

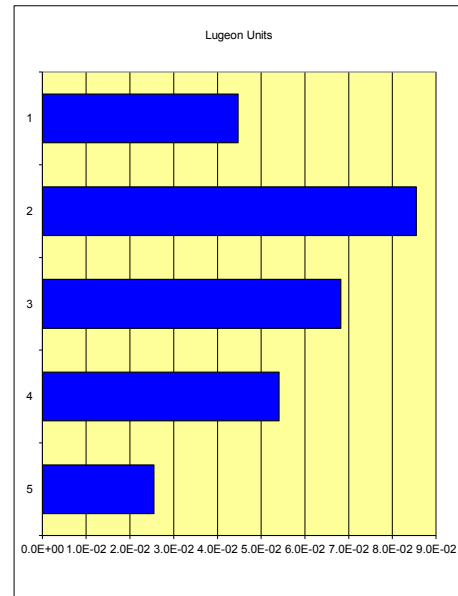
Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,637
Coordinates: E1709783 N11562290

Depth of Test (ft): 150 to 300
Date: 22-Aug-21
Height of "T" (ft): 5
Lithology: Granite/Granodiorite

Hole N°: G&H2021-25
Test N°: 2
Total Depth (m): 300
Engineer: SM



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	0.3	2.5	3.9	0.7	0.4
2	0.4	0.8	1.1	0.6	0.4
3	0.5	1.0	1.1	0.7	0.1
4	0.3	0.9	1.0	0.5	0.1
5	0.2	0.9	1.2	0.8	0.5
6	0.3	0.7	1.1	0.8	0.1
7	0.4	0.3	1.0	0.6	0.1
8	0.4	1.3	0.7	0.6	0.3
9	0.3	1.1	1.1	0.5	0.0
10	0.4	0.8	1.2	0.5	0.2
Q _p (gal/min)	0.4	1.0	1.3	0.6	0.2
Q _p (ft ³ /day)	69.3	195.8	257.2	124.0	39.5
H _f (ft)	0.00	0.00	0.00	0.00	0.00
H _{nit} (ft)	96.70	142.90	235.30	142.90	96.70
K (ft/day)	3.0E-03	5.7E-03	4.6E-03	3.6E-03	1.7E-03
K (cm/sec)	1.1E-06	2.0E-06	1.6E-06	1.3E-06	6.0E-07
Lugeon Unit	0.04	0.09	0.07	0.05	0.03

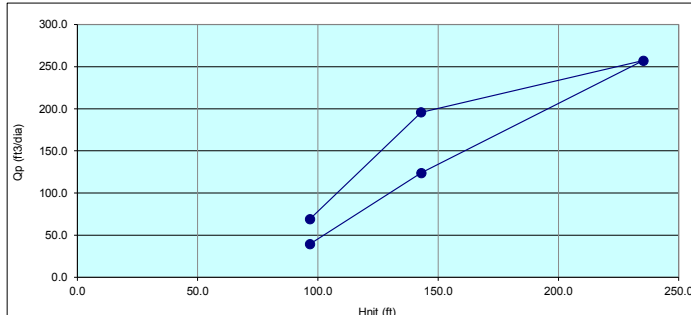


Field Observations

Constantly having to adjust flow to maintain steady psi.

Interpreted Results

Void filling - use the final Lugeon value.



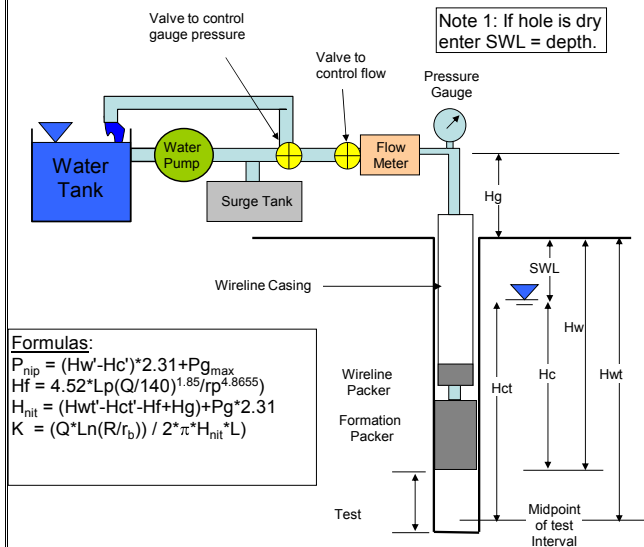


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,477
Coordinates: E1707317 N11565655

Depth of Test (ft): 50 to 150
Date: 25-Sep-21
Start: 23:35
Height of "T" (ft): 5
End: 0:24
Lithology: Quartz monzonite porphyry

Hole N°: G&H2021-26
Test N°: 1
Total Depth (m): 150
Engineer: BAG



Formulas:

$$P_{nlp} = (H_w - H_c) * 2.31 + P_{gmax}$$

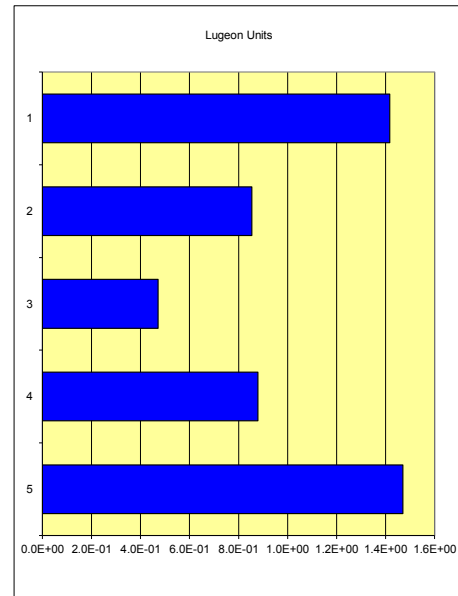
$$H_f = 4.52 * L_p (Q/140)^{1.85} / r_p^{4.8655}$$

$$H_{nit} = (H_w - H_c - H_f + H_g) + P_g * 2.31$$

$$K = (Q * \ln(R/r_b)) / (2 * \pi * H_{nit} * L)$$

Hg	Gauge height	5 ft
Hw	Water column over packer	50 ft
Hwt	Water column over test midpoint	100 ft
SWL	Static water level (see note 1)	20 ft
Hc	Hydrostatic head on packer	30 ft
Hct	Hydrostatic head on test midpoint	80 ft
Hw'	Water column over packer (corrected)	50 ft
Hwt'	Water column over test midpoint (corrected)	100 ft
SWL'	Static water level (corrected)	20 ft
Hc'	Hydrostatic head on packer (corrected)	30 ft
Hct'	Hydrostatic head on test midpoint (corrected)	80 ft
β	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnlp	Net injection pressure at packer	138 psi
	Packer Inflation Pressure Set	280 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	100 ft
Lp	Length of discharge pipe	55 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	5.7	5.4	5.6	5.6	5.8
2	5.7	5.5	5.6	5.6	5.9
3	5.5	5.7	5.2	5.8	6.0
4	5.6	5.8	5.3	5.9	6.0
5	5.5	5.5	5.7	5.6	5.8
6	5.7	5.5	5.5	5.7	5.6
7	6.1	5.7	5.4	5.7	5.8
8	5.0	5.5	5.5	5.9	6.0
9	5.4	5.5	5.7	5.8	5.5
10	5.8	5.6	5.4	5.7	5.7
Q_p (gal/min)	5.6	5.6	5.5	5.7	5.8
Q_p (ft³/day)	1078.0	1072.2	1056.8	1103.0	1118.4
H_f (ft)	0.02	0.02	0.02	0.02	0.03
H_{nit} (ft)	71.18	117.38	209.78	117.38	71.17
K (ft/day)	9.5E-02	5.7E-02	3.2E-02	5.9E-02	9.9E-02
K (cm/sec)	3.4E-05	2.0E-05	1.1E-05	2.1E-05	3.5E-05
Lugeon Unit	1.42	0.85	0.47	0.88	1.47

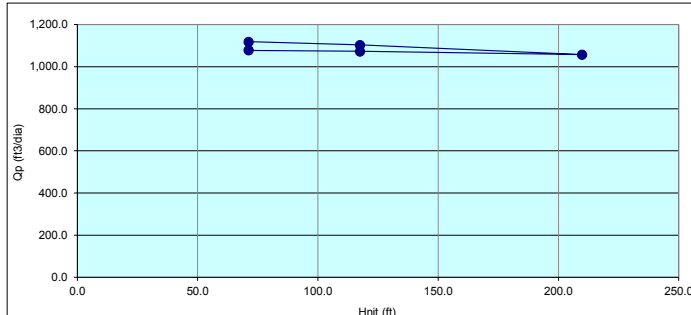


Field Observations

Difficult to get exact psi, bouncing between measurements.

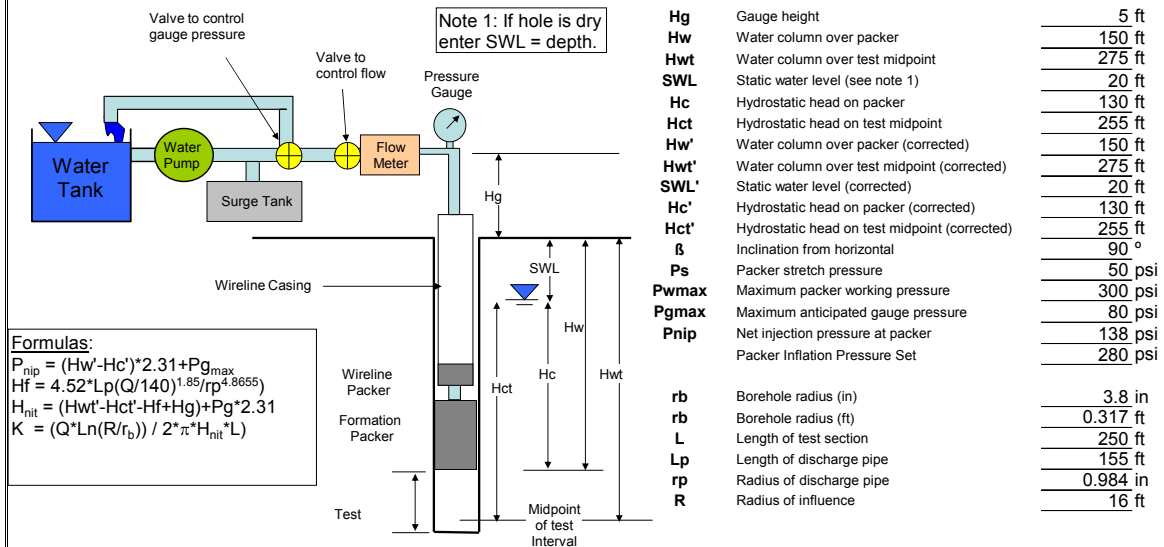
Interpreted Results

Turbulent flow - use the Lugeon value for the highest pressure.

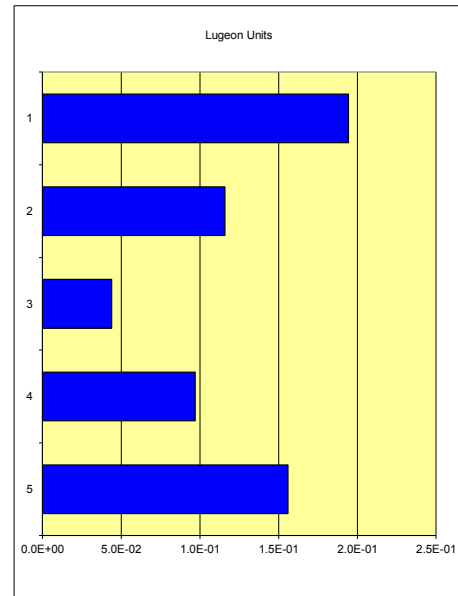


Packer Test

Client:	Rosemont Copper Company	Depth of Test (ft):	150	to	400	Hole N°:	G&H2021-26
Project:	Rosemont Copper World	Date:	25-Sep-21	Start:	1:08	Test N°:	2
Elevation (ft):	4,477	Height of "T" (ft):	5	End:	1:58	Total Depth (m):	400
Coordinates:	E1707317 N11565655	Lithology:	Quartz monzonite porphyry/skarn/granite			Engineer:	BAG



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	1.9	1.9	1.5	1.5	1.7
2	1.8	1.8	1.2	1.8	1.7
3	2.0	2.0	1.4	1.7	1.6
4	1.8	2.2	1.4	1.1	1.7
5	2.1	2.4	1.3	1.7	1.6
6	1.9	1.3	1.5	1.5	1.4
7	2.1	1.8	0.9	1.6	1.2
8	1.6	2.0	1.0	1.7	1.8
9	2.1	1.9	1.4	1.7	1.3
10	1.9	1.6	1.2	1.5	1.4
Q_p (gal/min)	1.9	1.9	1.3	1.6	1.5
Q_p (ft³/day)	369.6	363.8	246.4	304.2	296.5
H_f (ft)	0.01	0.01	0.00	0.01	0.01
H_{nit} (ft)	71.19	117.39	209.80	117.39	71.19
K (ft/day)	1.3E-02	7.8E-03	3.0E-03	6.5E-03	1.0E-02
K (cm/sec)	4.6E-06	2.7E-06	1.0E-06	2.3E-06	3.7E-06
Lugeon Unit	0.19	0.12	0.04	0.10	0.16

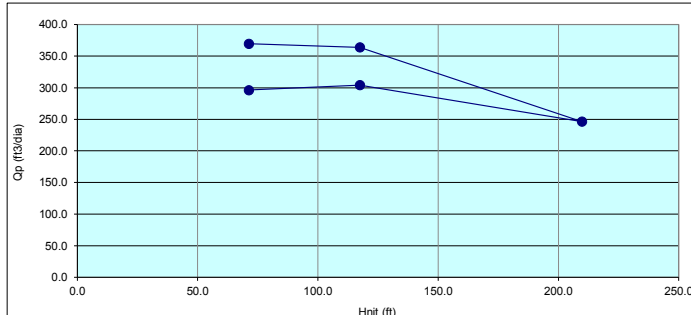


Field Observations

No noteable field observations.

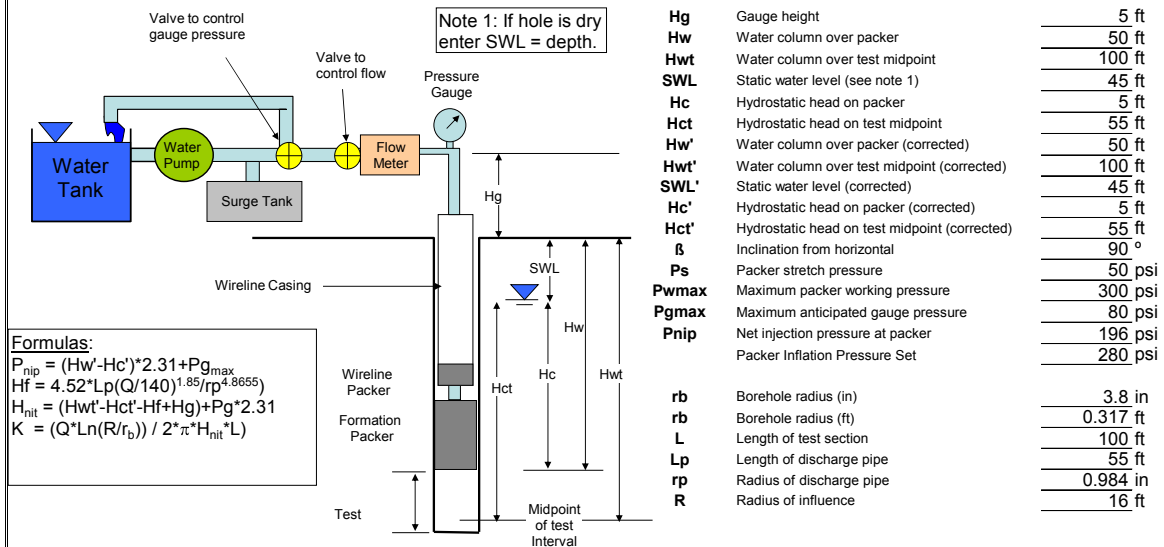
Interpreted Results

Turbulent flow - use the Lugeon value for the highest pressure.

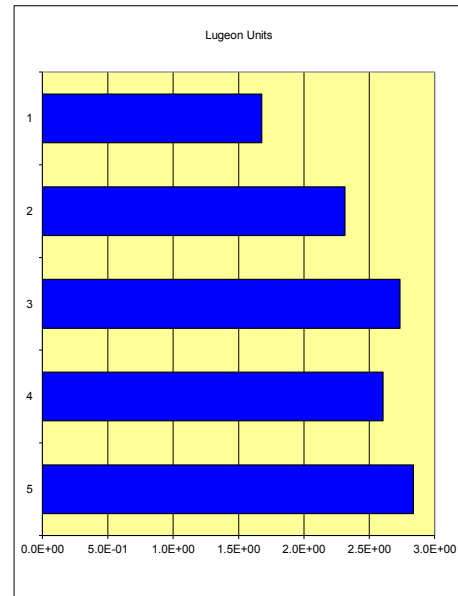


Packer Test

Client:	Rosemont Copper Company	Depth of Test (ft):	50	to	150	Hole N°:	G&H2021-28
Project:	Rosemont Copper World	Date:	25-Sep-21	Start:	8:58	Test N°:	1
Elevation (ft):	4,559	Height of "T" (ft):	5	End:	9:52	Total Depth (m):	150
Coordinates:	E1708612 N11566106	Lithology:	Limestone/skarn/granodiorite	Engineer: SM			



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	60	40	20
1	9.1	55.4	90.6	20.8	16.0
2	8.2	16.9	21.8	20.8	14.8
3	8.4	17.1	23.5	23.1	15.7
4	8.9	16.1	21.9	19.2	14.8
5	7.7	16.6	21.4	20.1	15.2
6	8.3	16.7	21.0	38.4	14.7
7	9.2	15.8	21.7	2.1	16.4
8	8.3	17.3	21.2	20.5	15.0
9	9.2	18.4	21.1	20.3	15.2
10	9.8	-7.7	21.4	20.3	13.5
Q _p (gal/min)	9.0	18.3	28.6	20.6	15.1
Q _p (ft ³ /day)	1724.8	3515.1	5497.8	3957.8	2912.5
H _f (ft)	0.06	0.21	0.49	0.27	0.15
H _{nit} (ft)	96.14	142.19	188.11	142.13	96.05
K (ft/day)	1.1E-01	1.6E-01	1.8E-01	1.7E-01	1.9E-01
K (cm/sec)	4.0E-05	5.5E-05	6.5E-05	6.2E-05	6.7E-05
Lugeon Unit	1.68	2.31	2.73	2.61	2.84

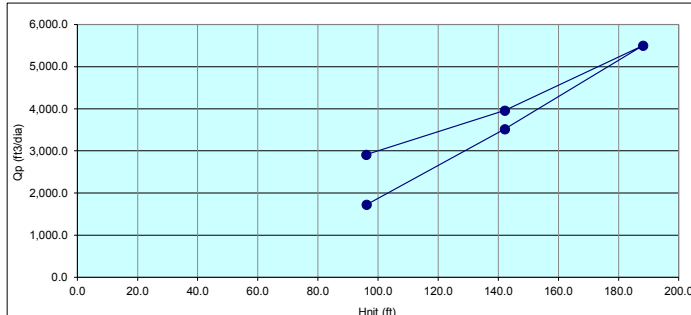


Field Observations

Difficult to get exact psi, bouncing between measurements.

Interpreted Results

Wash out - use the highest Lugeon value.



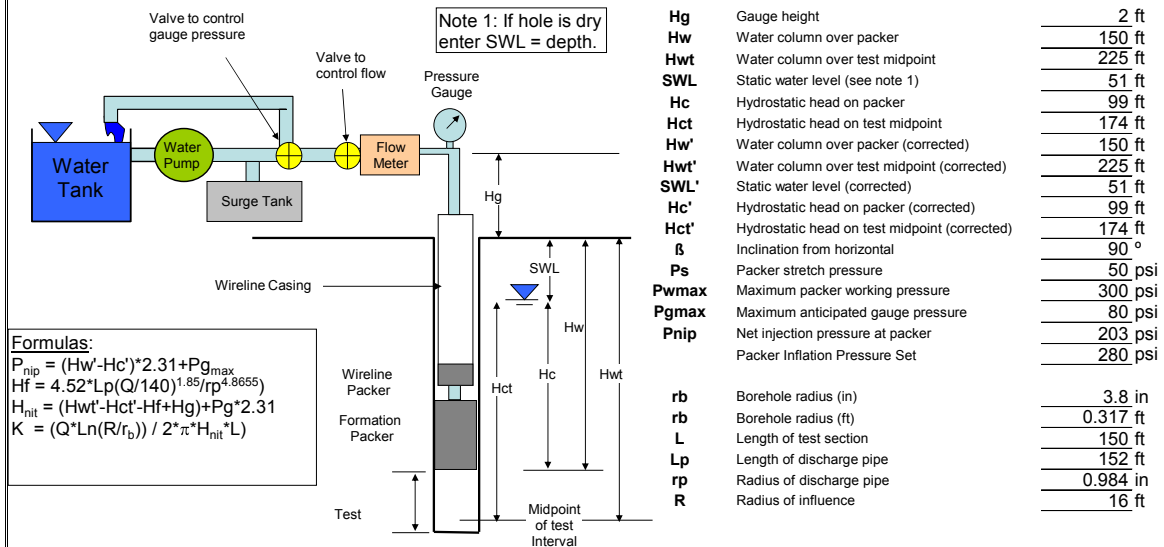


Packer Test

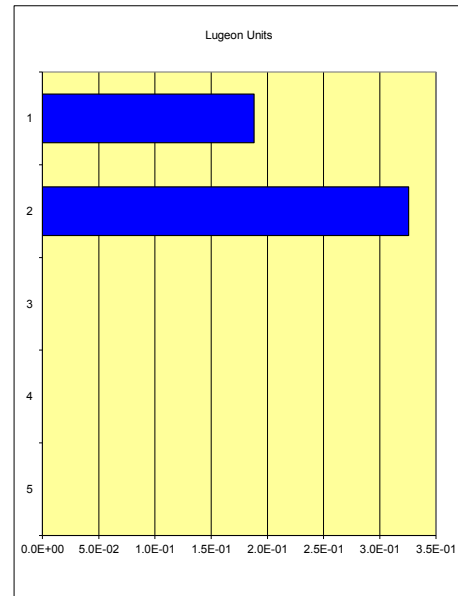
Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,559
Coordinates: E1708612 N11566106

Depth of Test (ft): 150 to 300
Date: 26-Sep-21
Height of "T" (ft): 2
Lithology: Granodiorite/granite

Hole N°: G&H2021-28
Test N°: 2
Total Depth (m): 300
Engineer: SM



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	20	0	0
1	1.3	3.4			
2	2.0	1.3			
3	1.8	4.9			
4	2.5	4.2			
5	2.4	4.2			
6	1.1	3.9			
7	1.7	4.5			
8	2.0	4.4			
9	2.2	4.6			
10	0.8	4.1			
Q _p (gal/min)	1.6	4.0			
Q _p (ft ³ /day)	300.3	760.4			
H _f (ft)	0.01	0.03			
H _{nit} (ft)	99.49	145.67			
K (ft/day)	1.3E-02	2.2E-02			
K (cm/sec)	4.5E-06	7.7E-06			
Lugeon Unit	0.19	0.33			

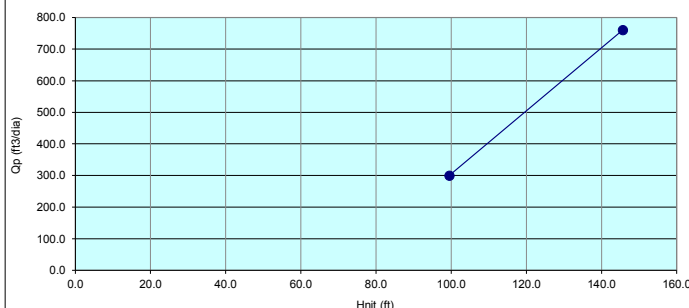


Field Observations

Unable to reach 80 psi, flow meter stopped and psi dropped after 20 minutes.

Interpreted Results

Wash out - use the highest Lugeon value.



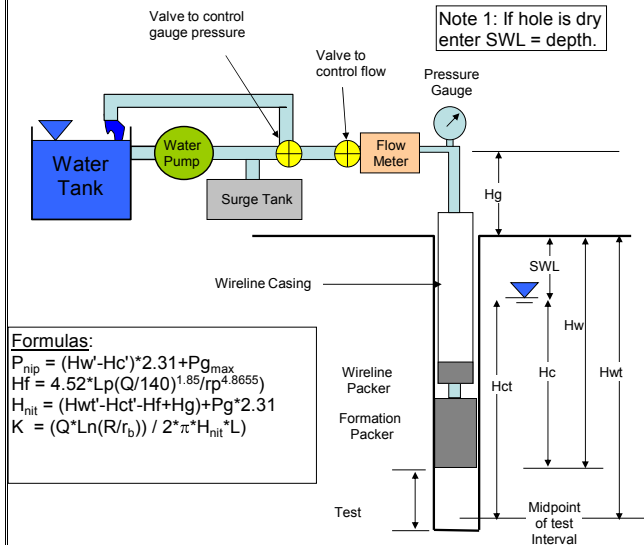


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,559
Coordinates: E1708612 N11566106

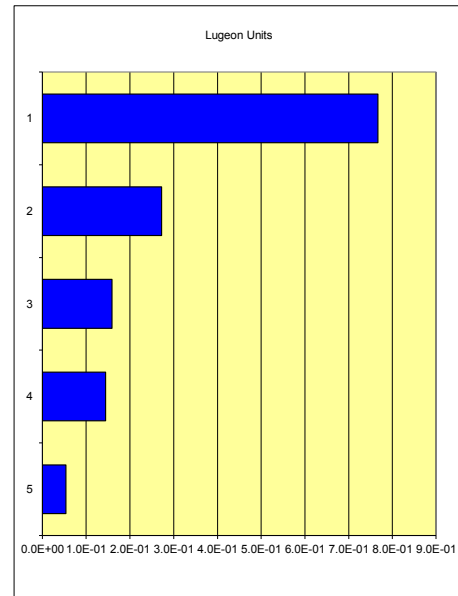
Depth of Test (ft): 300 to 410
Date: 26-Sep-21
Start: 22:31
End: 23:20
Height of "T" (ft): 2
Lithology: Granite

Hole N°: G&H2021-28
Test N°: 3
Total Depth (m): 410
Engineer: SM



Hg	Gauge height	2 ft
Hw	Water column over packer	300 ft
Hwt	Water column over test midpoint	355 ft
SWL	Static water level (see note 1)	45 ft
Hc	Hydrostatic head on packer	255 ft
Hct	Hydrostatic head on test midpoint	310 ft
Hw'	Water column over packer (corrected)	300 ft
Hwt'	Water column over test midpoint (corrected)	355 ft
SWL'	Static water level (corrected)	45 ft
Hc'	Hydrostatic head on packer (corrected)	255 ft
Hct'	Hydrostatic head on test midpoint (corrected)	310 ft
β	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnlp	Net injection pressure at packer	189 psi
	Packer Inflation Pressure Set	280 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	110 ft
Lp	Length of discharge pipe	302 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	3.2	4.6	1.8	1.2	0.4
2	4.0	3.2	2.4	1.6	0.3
3	4.6	2.3	2.0	1.3	0.3
4	4.6	2.0	2.3	1.2	0.3
5	4.1	1.8	2.2	1.2	0.3
6	4.7	1.8	2.4	1.2	0.3
7	4.4	1.9	2.3	1.3	0.3
8	4.1	2.0	2.3	1.1	0.3
9	4.4	1.8	2.5	1.1	0.3
10	4.2	1.8	2.3	1.1	0.3
Q_p (gal/min)	4.4	2.3	2.3	1.2	0.3
Q_p (ft³/day)	839.3	446.6	433.1	236.8	58.5
H_f (ft)	0.08	0.03	0.02	0.01	0.00
H_{nit} (ft)	93.12	139.37	231.78	139.39	93.20
K (ft/day)	5.1E-02	1.8E-02	1.1E-02	9.7E-03	3.6E-03
K (cm/sec)	1.8E-05	6.5E-06	3.8E-06	3.4E-06	1.3E-06
Lugeon Unit	0.77	0.27	0.16	0.14	0.05

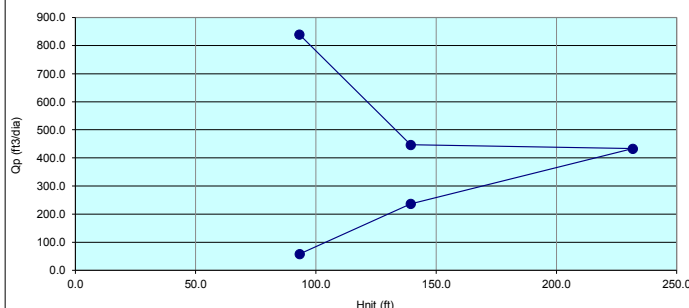


Field Observations

No noteable field observations.

Interpreted Results

Void filling - use the final Lugeon value.



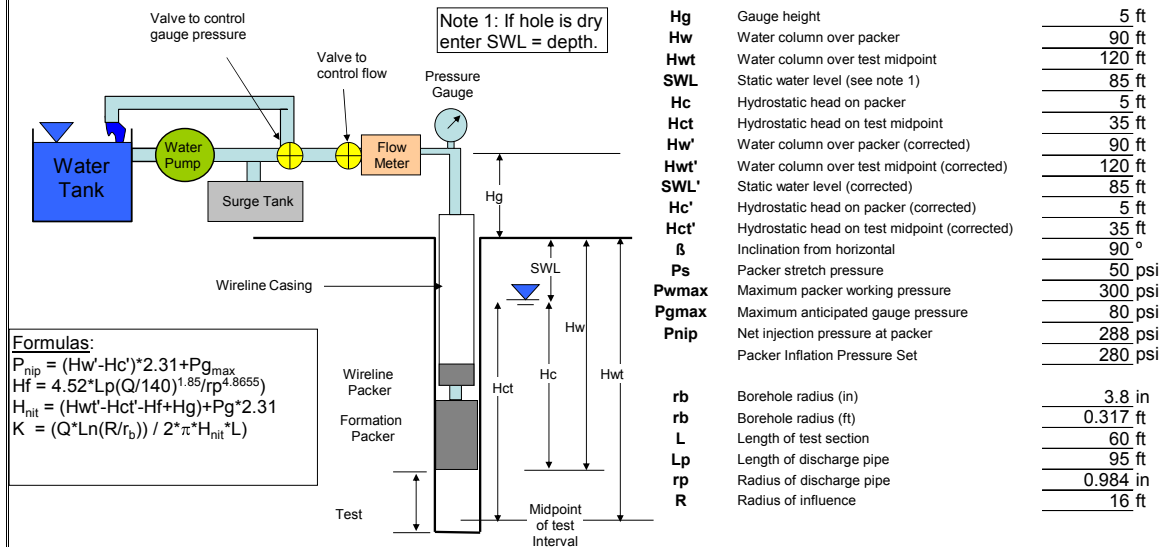


Packer Test

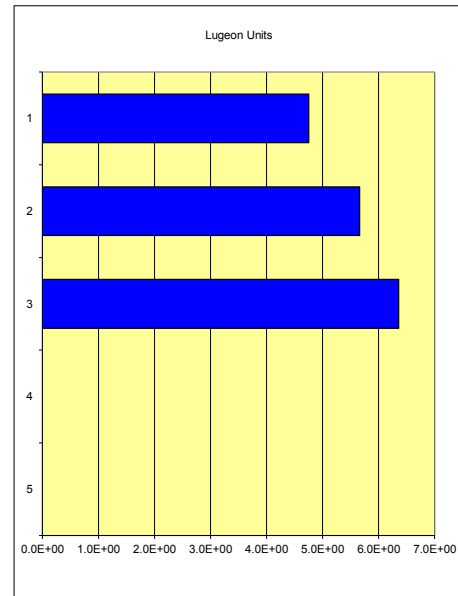
Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 5,025
Coordinates: E1713081 N11563907

Depth of Test (ft): 90 to 150
Date: 29-Sep-21
Start: 15:59
Height of "T" (ft): 5
End: 16:29
Lithology: Marble/quartzite

Hole N°: G&H2021-30
Test N°: 1
Total Depth (m): 150
Engineer: BAG



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	20	0	0
1	21.6	33.3	27.0		
2	20.7	34.6	28.0		
3	21.6	35.8	30.0		
4	21.1	34.0	29.0		
5	17.6	34.1	30.0		
6	25.3	34.1	29.0		
7	20.0	35.0	29.0		
8	21.0	34.0	29.0		
9	21.0	34.0	30.0		
10	20.2	33.0	26.0		
Q _p (gal/min)	21.5	34.2	28.7		
Q _p (ft ³ /day)	4138.8	6581.6	5524.8		
H _f (ft)	0.50	1.17	0.85		
H _{nit} (ft)	135.80	181.33	135.45		
K (ft/day)	3.2E-01	3.8E-01	4.3E-01		
K (cm/sec)	1.1E-04	1.3E-04	1.5E-04		
Lugeon Unit	4.75	5.66	6.36		

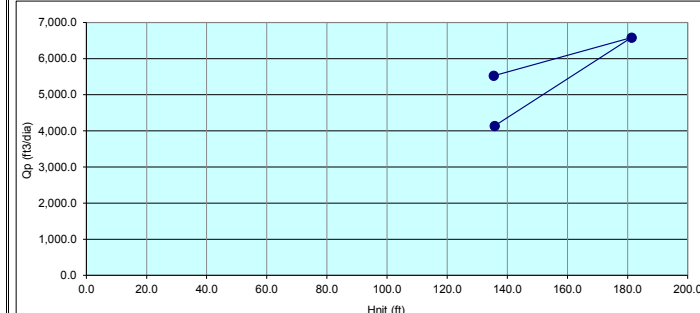


Field Observations

No noteable field observations.

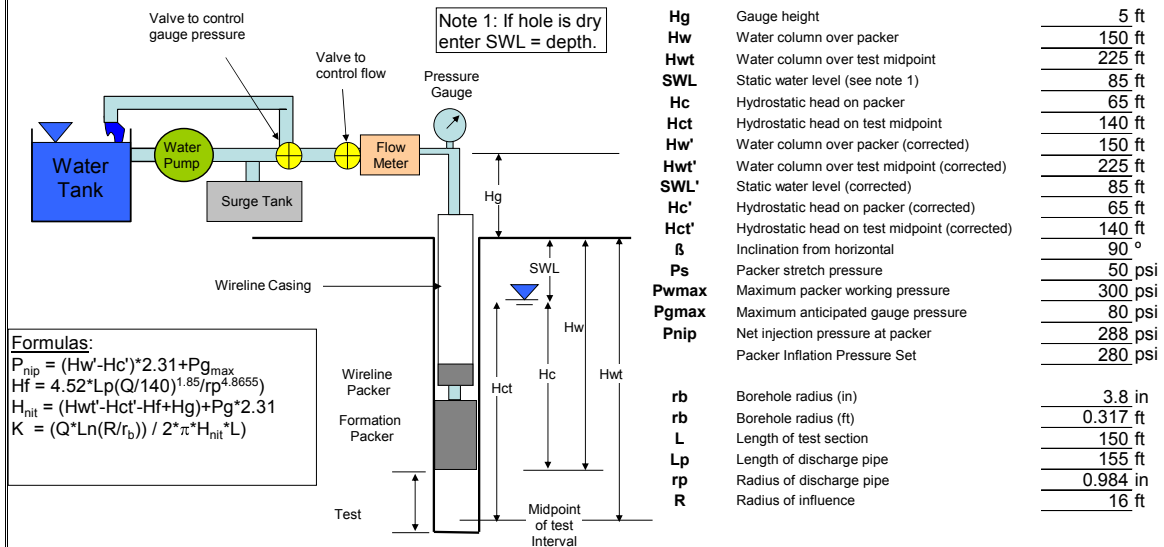
Interpreted Results

Dilation - use the Lugeon value for the lowest pressures.

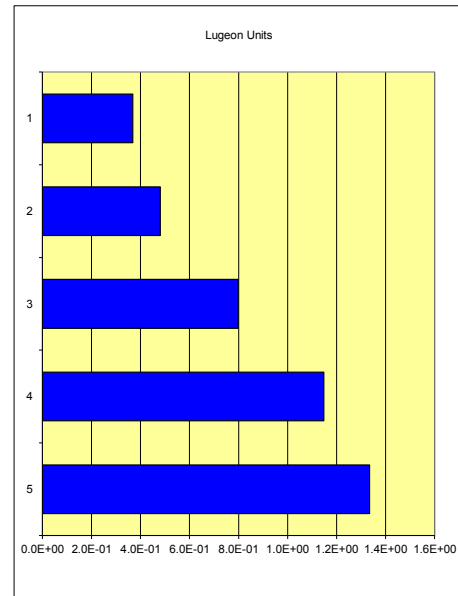


Packer Test

Client:	Rosemont Copper Company	Depth of Test (ft):	150	to	300	Hole N°:	G&H2021-30
Project:	Rosemont Copper World	Date:	30-Sep-21	Start:	15:34	Test N°:	2
Elevation (ft):	5,025	Height of "T" (ft):	5	End:	17:04	Total Depth (m):	300
Coordinates:	E1713081 N11563907	Lithology:	Diabase/skarn	Engineer: BAG			



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	70	40	20
1	5.1	8.2	11.1	26.0	15.0
2	3.9	7.6	14.3	17.0	15.0
3	2.8	7.2	15.6	16.0	15.0
4	5.9	6.8	17.8	16.0	15.0
5	2.4	6.9	18.2	17.0	16.0
6	4.9	7.3	17.0	16.0	15.0
7	3.7	7.5	19.0	17.0	21.0
8	4.5	7.2	18.0	16.0	9.0
9	3.8	7.2	18.0	17.0	15.0
10	4.0	7.1	18.0	16.0	15.0
Q _p (gal/min)	4.2	7.3	16.7	17.4	15.1
Q _p (ft ³ /day)	804.7	1405.3	3214.8	3349.5	2906.8
H _f (ft)	0.04	0.11	0.51	0.55	0.42
H _{nit} (ft)	136.26	182.39	251.29	181.95	135.88
K (ft/day)	2.5E-02	3.2E-02	5.4E-02	7.7E-02	9.0E-02
K (cm/sec)	8.7E-06	1.1E-05	1.9E-05	2.7E-05	3.2E-05
Lugeon Unit	0.37	0.48	0.80	1.15	1.33

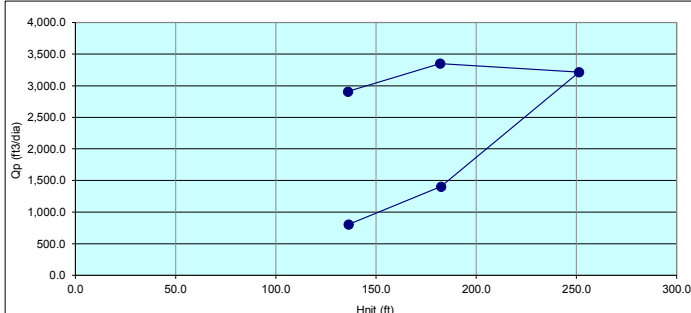


Field Observations

No noteable field observations.

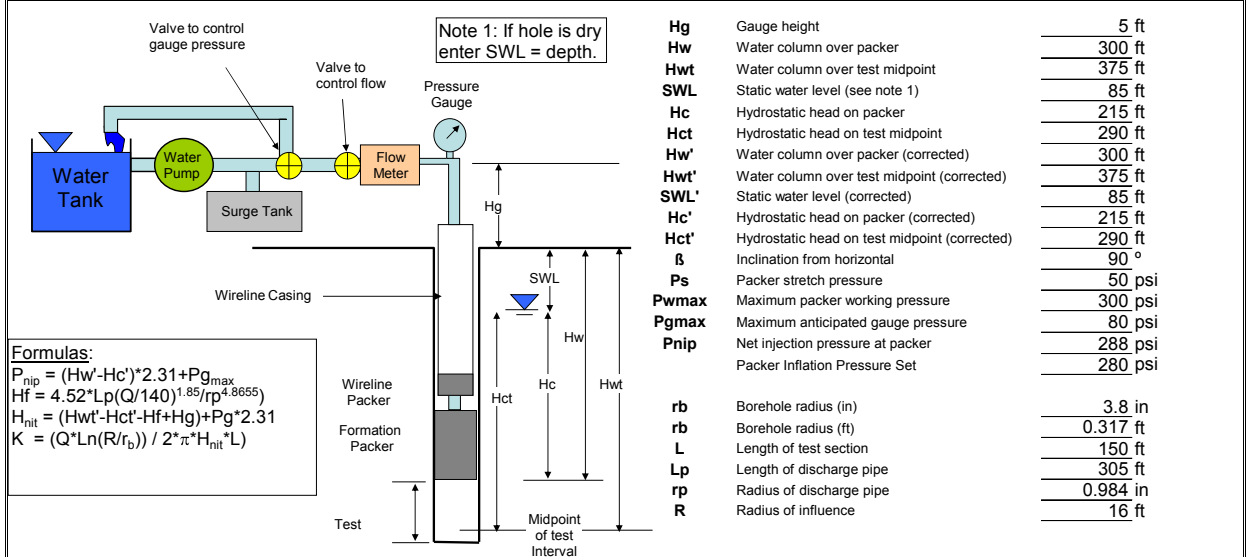
Interpreted Results

Wash out - use the highest Lugeon value.

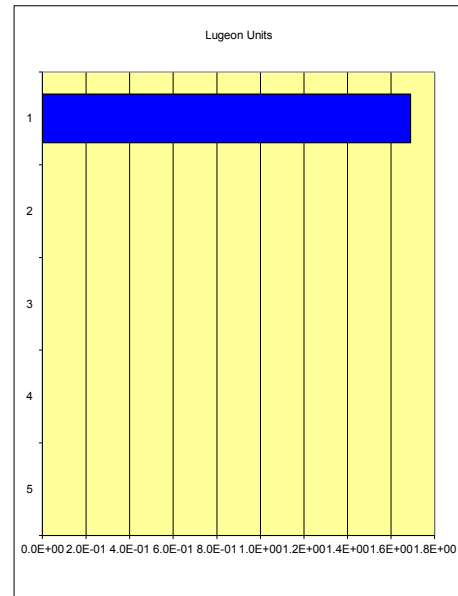


Packer Test

Client:	Rosemont Copper Company	Depth of Test (ft):	300	to	450	Hole N°:	G&H2021-30
Project:	Rosemont Copper World	Date:	2-Oct-21	Start:	12:35	Test N°:	3
Elevation (ft):	5,025	Height of "T" (ft):	5	End:	12:45	Total Depth (m):	450
Coordinates:	E1713081 N11563907	Lithology:	Quartzite	Engineer: BAG			



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20				
1	19.0				
2	19.2				
3	19.6				
4	19.2				
5	20.0				
6	19.0				
7	19.0				
8	19.0				
9	19.0				
10	19.0				
Q _p (gal/min)	19.0				
Q _p (ft ³ /day)	3657.5				
H _f (ft)	1.27				
H _{nit} (ft)	135.03				
K (ft/day)	1.1E-01				
K (cm/sec)	4.0E-05				
Lugeon Unit	1.69				

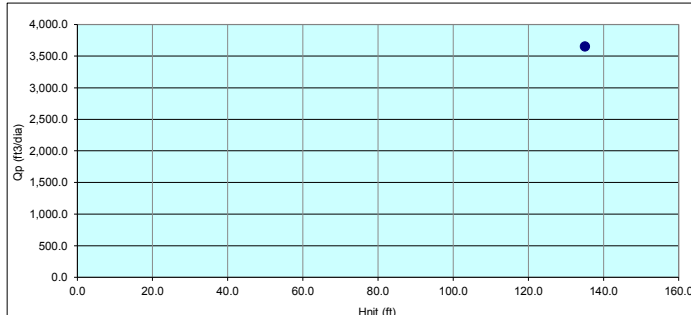


Field Observations

Could not build pressure above 20 psi.

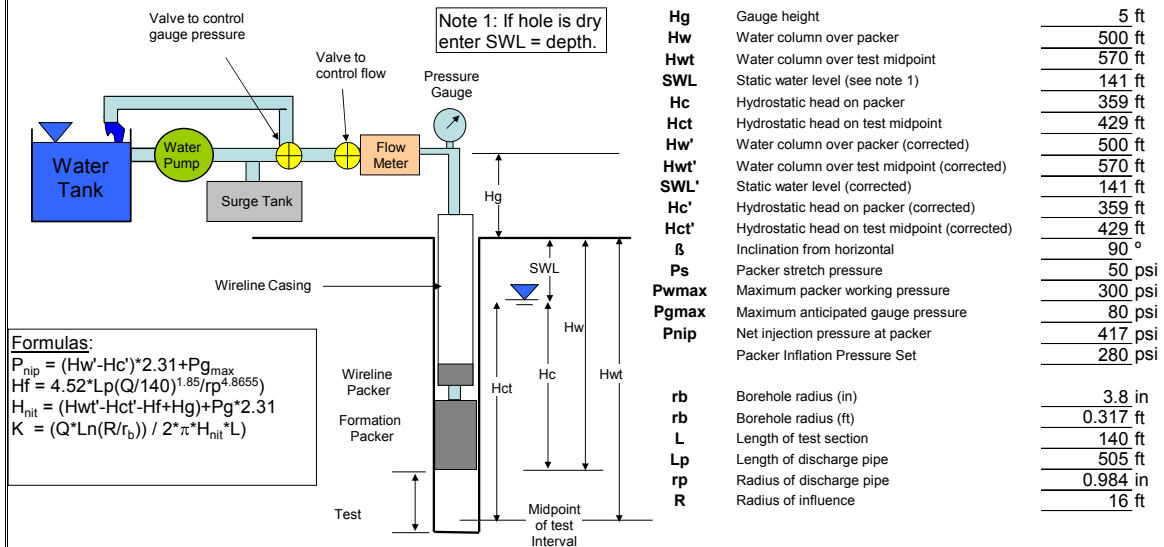
Interpreted Results

Use single Lugeon value.

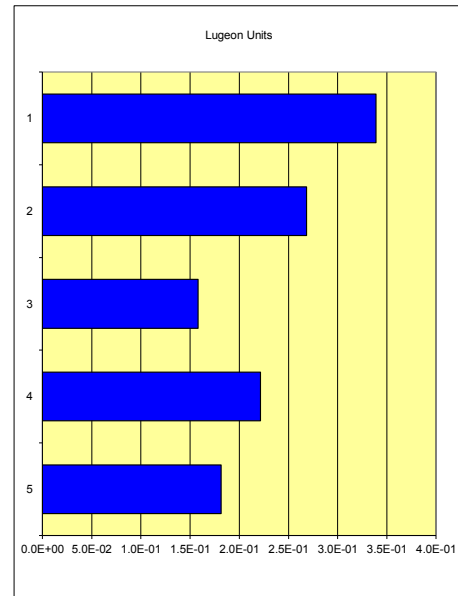


Packer Test

Client:	Rosemont Copper Company	Depth of Test (ft):	500	to	640	Hole N°:	G&H2021-30
Project:	Rosemont Copper World	Date:	4-Oct-21	Start:	14:34	Test N°:	4
Elevation (ft):	5,025	Height of "T" (ft):	5	End:	15:24	Total Depth (m):	640
Coordinates:	E1713081 N11563907	Lithology:	Quartzite/limestone	Engineer: BAG			



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	70	40	20
1	4.6	5.9	5.9	3.1	3.3
2	5.2	4.0	2.8	3.2	2.4
3	5.5	5.5	4.6	4.2	2.8
4	6.0	5.0	3.7	4.7	2.9
5	5.5	4.8	3.2	4.2	2.7
6	4.8	5.0	3.7	4.4	2.9
7	4.8	4.7	3.7	4.9	2.4
8	4.9	4.9	3.7	3.7	2.8
9	5.4	4.9	3.6	4.2	2.5
10	5.4	5.0	2.9	4.4	2.4
Q_p (gal/min)	5.1	5.0	3.8	4.1	2.7
Q_p (ft³/day)	974.1	956.7	727.7	789.3	521.7
H_f (ft)	0.18	0.18	0.11	0.12	0.06
H_{nit} (ft)	192.02	238.22	307.59	238.28	192.14
K (ft/day)	2.3E-02	1.8E-02	1.1E-02	1.5E-02	1.2E-02
K (cm/sec)	8.0E-06	6.4E-06	3.7E-06	5.2E-06	4.3E-06
Lugeon Unit	0.34	0.27	0.16	0.22	0.18

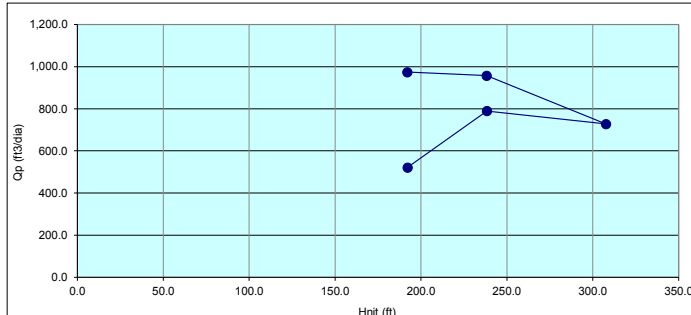


Field Observations

No noteable field observations.

Interpreted Results

Void filling - use the final Lugeon value.



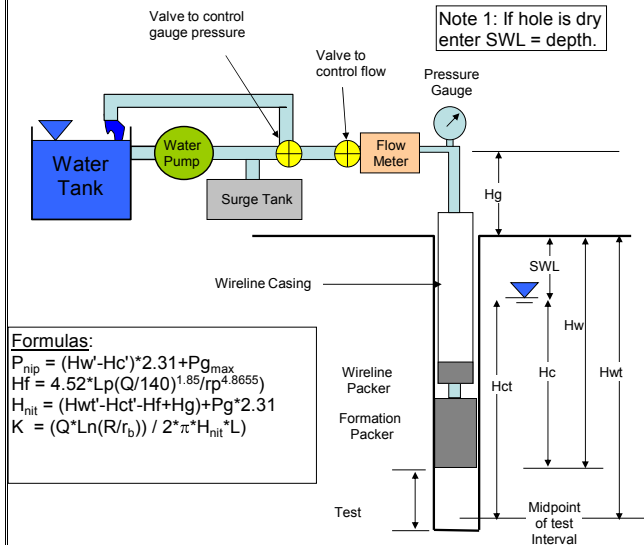


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,343
Coordinates: E1704229 N11565298

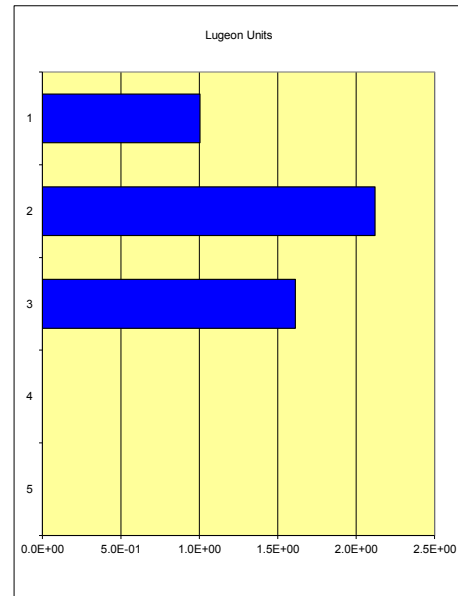
Depth of Test (ft): 80 to 230
Date: 7-Sep-21
Start: 19:45
Height of "T" (ft): 5
End: 20:21
Lithology: Skarn/granodiorite

Hole N°: Pit2021-02
Test N°: 1
Total Depth (m): 230
Engineer: SM



Hg	Gauge height	5 ft
Hw	Water column over packer	80 ft
Hwt	Water column over test midpoint	155 ft
SWL	Static water level (see note 1)	80 ft
Hc	Hydrostatic head on packer	0 ft
Hct	Hydrostatic head on test midpoint	75 ft
Hw'	Water column over packer (corrected)	80 ft
Hwt'	Water column over test midpoint (corrected)	155 ft
SWL'	Static water level (corrected)	80 ft
Hc'	Hydrostatic head on packer (corrected)	0 ft
Hct'	Hydrostatic head on test midpoint (corrected)	75 ft
β	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnip	Net injection pressure at packer	276 psi
	Packer Inflation Pressure Set	280 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	150 ft
Lp	Length of discharge pipe	85 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	20		
1	10.9	137.6	17.7		
2	11.0	19.0	17.1		
3	11.2	19.0	18.1		
4	12.1	19.7	18.0		
5	9.6	18.5	17.0		
6	10.7	20.1	17.7		
7	10.9	19.0	17.7		
8	11.2	19.9	17.8		
9	11.1	18.9	17.5		
10	10.9	20.0	17.2		
Q_p (gal/min)	11.0	31.2	17.6		
Q_p (ft³/day)	2109.8	6000.2	3384.2		
H_f (ft)	0.13	0.89	0.31		
H_{nit} (ft)	131.07	176.51	130.89		
K (ft/day)	6.7E-02	1.4E-01	1.1E-01		
K (cm/sec)	2.4E-05	5.0E-05	3.8E-05		
Lugeon Unit	1.00	2.12	1.61		

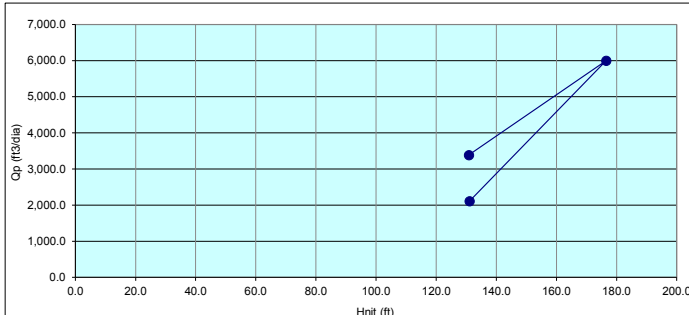


Field Observations

Unable to get to 80 psi, gage bouncing drastically at 40 psi.

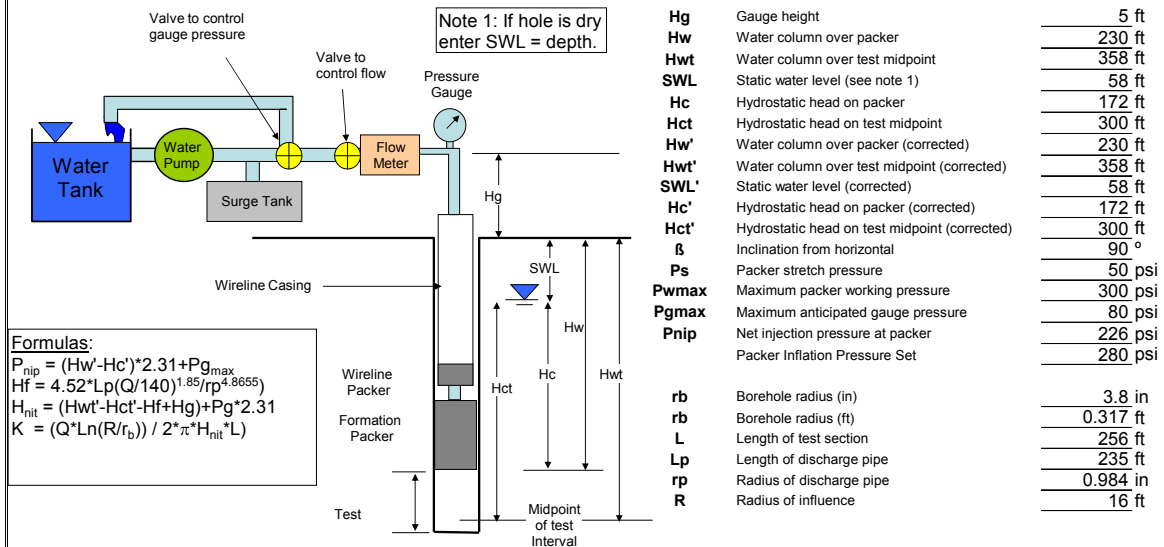
Interpreted Results

Turbulent flow - use the Lugeon value for the highest pressure.

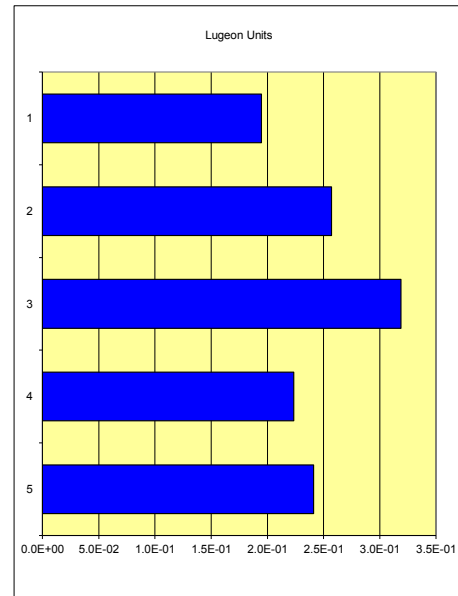


Packer Test

Client:	Rosemont Copper Company	Depth of Test (ft):	230	to	486	Hole N°:	Pit2021-02
Project:	Rosemont Copper World	Date:	10-Sep-21	Start:	11:23	Test N°:	2
Elevation (ft):	4,343	Height of "T" (ft):	5	End:	12:16	Total Depth (m):	486
Coordinates:	E1704229 N11565298	Lithology:	Granodiorite/granite			Engineer:	SM



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	3.1	24.1	34.5	2.8	1.4
2	3.0	3.8	10.3	5.4	3.1
3	3.0	3.6	7.8	4.9	3.3
4	2.6	3.8	8.6	5.0	3.6
5	2.7	3.5	8.9	5.5	4.5
6	3.0	3.6	8.5	4.9	4.3
7	2.8	3.5	8.1	5.0	4.6
8	3.1	3.6	8.0	5.1	4.2
9	3.0	3.3	7.1	5.4	4.3
10	3.2	3.9	10.3	5.3	4.2
Q _p (gal/min)	3.0	5.7	11.2	4.9	3.7
Q _p (ft ³ /day)	581.4	1091.5	2157.9	949.0	720.0
H _f (ft)	0.03	0.10	0.37	0.08	0.05
H _{nit} (ft)	109.17	155.30	247.43	155.32	109.15
K (ft/day)	1.3E-02	1.7E-02	2.1E-02	1.5E-02	1.6E-02
K (cm/sec)	4.6E-06	6.1E-06	7.5E-06	5.3E-06	5.7E-06
Lugeon Unit	0.19	0.26	0.32	0.22	0.24

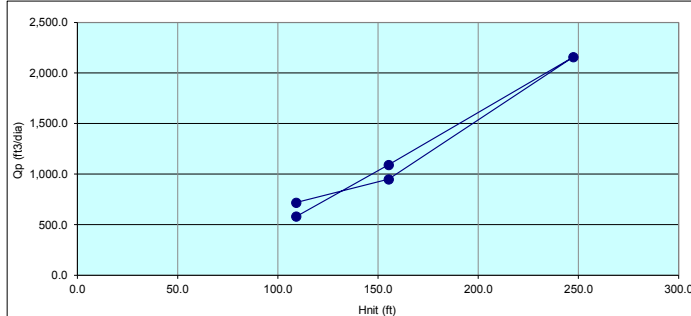


Field Observations

Difficult to get exact psi, bouncing between measurements.

Interpreted Results

Dilation - use the Lugeon value for the lowest pressures.

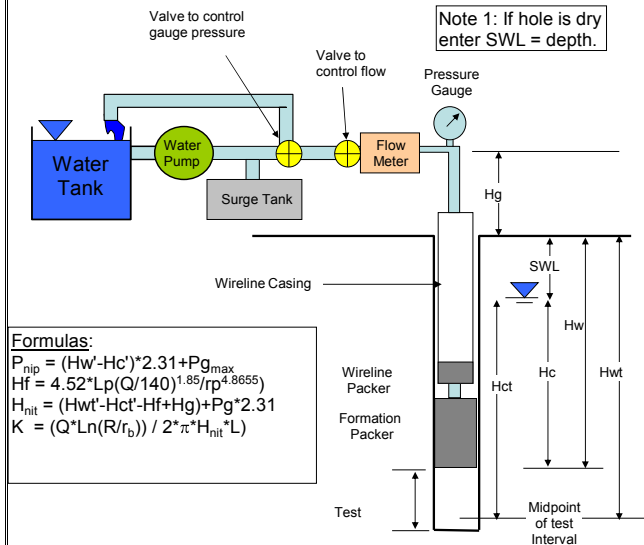


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,441
Coordinates: E1704885 N11566233

Depth of Test (ft): 60 to 150
Date: 14-Sep-21
Start: 8:20
End: 9:30
Height of "T" (ft): 5
Lithology: Skarn

Hole N°: Pit2021-03
Test N°: 1
Total Depth (m): 150
Engineer: BAG



Formulas:

$$P_{nip} = (H_w - H_c) * 2.31 + P_{gmax}$$

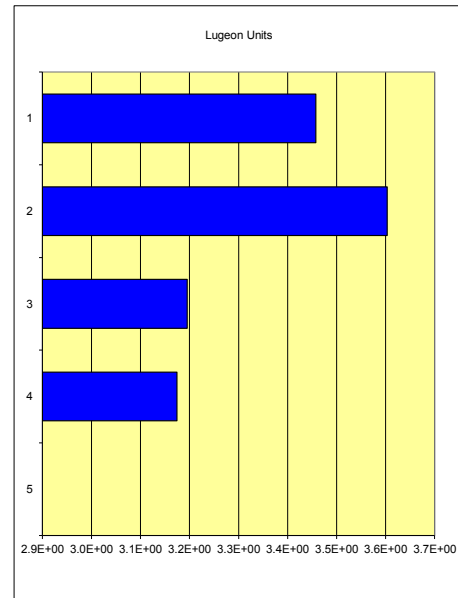
$$H_f = 4.52 * L_p (Q/140)^{1.85} / r_p^{4.8655}$$

$$H_{nit} = (H_w - H_c - H_f + H_g) + P_g * 2.31$$

$$K = (Q * L_n (R/r_b)) / (2 * \pi * H_{nit} * L)$$

Hg	Gauge height	5 ft
Hw	Water column over packer	60 ft
Hwt	Water column over test midpoint	105 ft
SWL	Static water level (see note 1)	51 ft
Hc	Hydrostatic head on packer	9 ft
Hct	Hydrostatic head on test midpoint	54 ft
Hw'	Water column over packer (corrected)	60 ft
Hwt'	Water column over test midpoint (corrected)	105 ft
SWL'	Static water level (corrected)	51 ft
Hc'	Hydrostatic head on packer (corrected)	9 ft
Hct'	Hydrostatic head on test midpoint (corrected)	54 ft
β	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnip	Net injection pressure at packer	209 psi
	Packer Inflation Pressure Set	280 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	90 ft
Lp	Length of discharge pipe	65 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	30	20	
1	18.1	22.2	22.7	17.8	
2	17.7	22.8	21.1	15.7	
3	18.1	23.1	20.0	16.2	
4	17.7	23.5	19.8	16.1	
5	17.6	21.2	19.2	16.4	
6	17.4	64.4	19.3	16.6	
7	17.5	22.2	19.7	16.3	
8	18.0	21.8	18.8	16.4	
9	17.2	22.7	19.4	15.7	
10	18.0	22.4	19.6	14.6	
Q_p (gal/min)	17.6	26.6	20.0	16.2	
Q_p (ft³/day)	3391.9	5126.3	3842.3	3114.7	
H_f (ft)	0.24	0.51	0.30	0.20	
H_{nit} (ft)	101.96	147.89	125.00	102.00	
K (ft/day)	2.3E-01	2.4E-01	2.1E-01	2.1E-01	
K (cm/sec)	8.2E-05	8.5E-05	7.6E-05	7.5E-05	
Lugeon Unit	3.46	3.60	3.20	3.17	

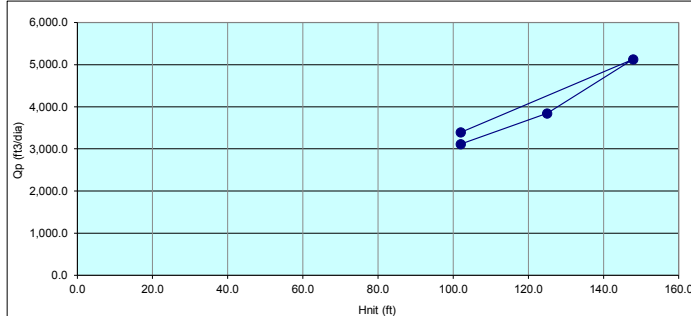


Field Observations

No noteable field observations.

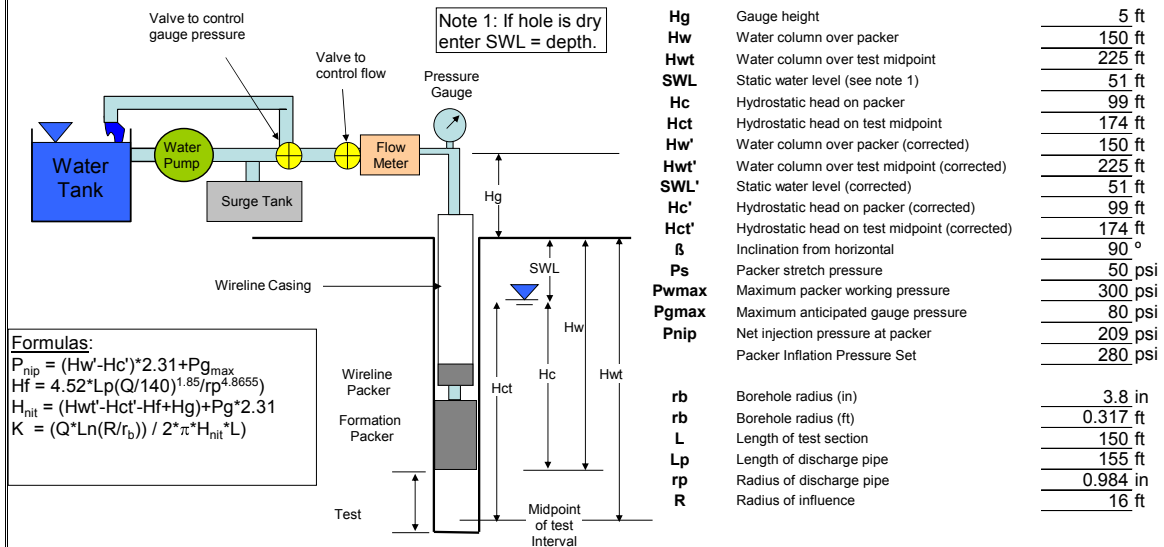
Interpreted Results

Turbulent flow - use the Lugeon value for the highest pressure.

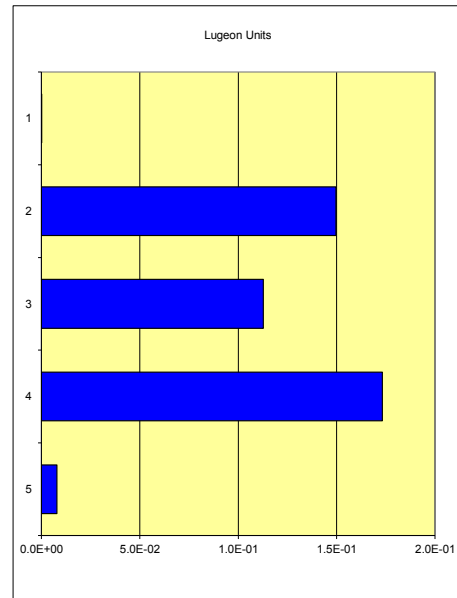


Packer Test

Client:	Rosemont Copper Company	Depth of Test (ft):	150	to	300	Hole N°:	Pit2021-03
Project:	Rosemont Copper World	Date:	15-Sep-21	Start:	5:29	Test N°:	2
Elevation (ft):	4,441	Height of "T" (ft):	5	End:	6:19	Total Depth (m):	300
Coordinates:	E1704885 N11566233	Lithology:	Skarn			Engineer:	BAG



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	0.0	2.1	2.8	2.0	0.6
2	0.0	2.2	2.4	2.8	0.1
3	0.0	1.4	2.3	2.2	0.0
4	0.0	1.7	2.3	2.2	0.0
5	0.0	1.9	2.1	1.9	0.0
6	0.0	1.9	2.1	2.0	0.0
7	0.0	1.9	2.2	2.3	0.0
8	0.0	1.8	2.0	1.9	0.0
9	0.0	1.7	2.2	1.9	0.0
10	0.0	2.0	2.2	2.2	0.0
Q _p (gal/min)	0.0	1.8	2.3	2.1	0.1
Q _p (ft ³ /day)	0.1	356.0	435.1	412.0	12.8
H _f (ft)	0.00	0.01	0.01	0.01	0.00
H _{nit} (ft)	102.20	148.39	240.79	148.39	102.20
K (ft/day)	3.2E-06	1.0E-02	7.6E-03	1.2E-02	5.3E-04
K (cm/sec)	1.1E-09	3.5E-06	2.7E-06	4.1E-06	1.9E-07
Lugeon Unit	0.00	0.15	0.11	0.17	0.01

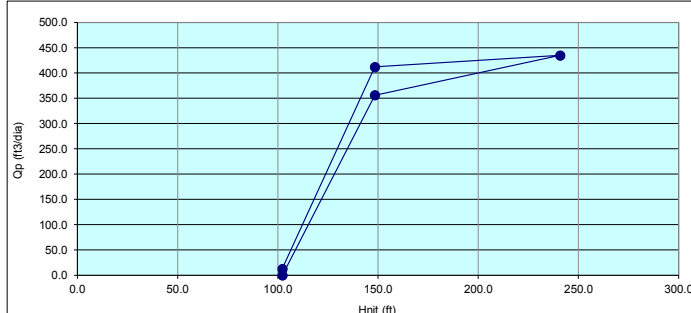


Field Observations

No noteable field observations.

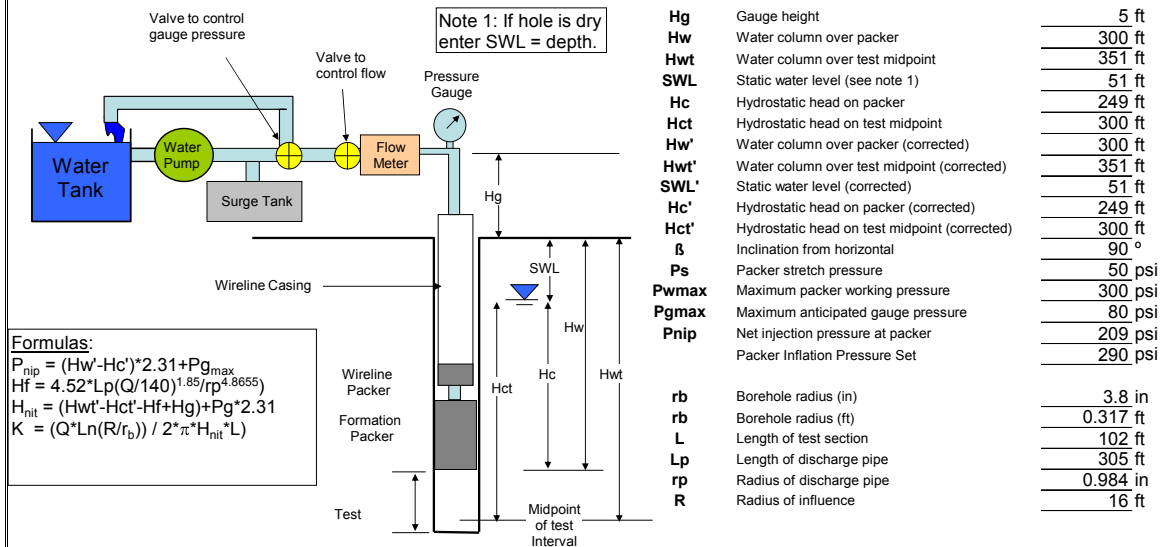
Interpreted Results

Dilation - use the Lugeon value for the lowest pressures.

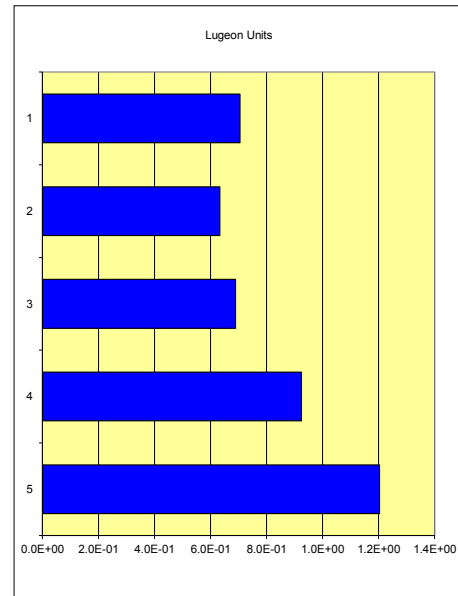


Packer Test

Client:	Rosemont Copper Company	Depth of Test (ft):	300	to	402	Hole N°:	Pit2021-03
Project:	Rosemont Copper World	Date:	15-Sep-21	Start:	21:34	Test N°:	3
Elevation (ft):	4,441	Height of "T" (ft):	5	End:	22:24	Total Depth (m):	402
Coordinates:	E1704885 N11566233	Lithology:	Skarn/granodiorite/granite		Engineer:	BAG	



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	3.7	6.8	7.4	9.1	7.0
2	4.4	4.5	9.8	8.0	6.7
3	4.7	4.8	9.4	7.8	6.9
4	4.5	5.4	9.6	7.5	6.8
5	4.5	4.4	9.4	7.4	7.2
6	4.1	5.1	9.0	7.8	7.1
7	3.3	5.5	10.5	7.4	6.9
8	4.1	5.7	9.4	7.4	7.0
9	5.1	5.5	9.5	7.6	7.1
10	3.8	5.5	9.8	7.6	6.8
Q _p (gal/min)	4.1	5.3	9.4	7.8	7.0
Q _p (ft ³ /day)	785.4	1024.1	1805.7	1493.8	1337.9
H _f (ft)	0.07	0.12	0.34	0.24	0.20
H _{nit} (ft)	102.13	148.28	240.46	148.16	102.00
K (ft/day)	4.7E-02	4.3E-02	4.6E-02	6.2E-02	8.1E-02
K (cm/sec)	1.7E-05	1.5E-05	1.6E-05	2.2E-05	2.8E-05
Lugeon Unit	0.71	0.63	0.69	0.92	1.20

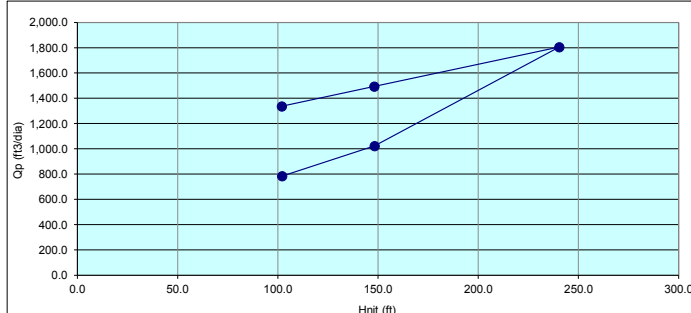


Field Observations

No noteable field observations.

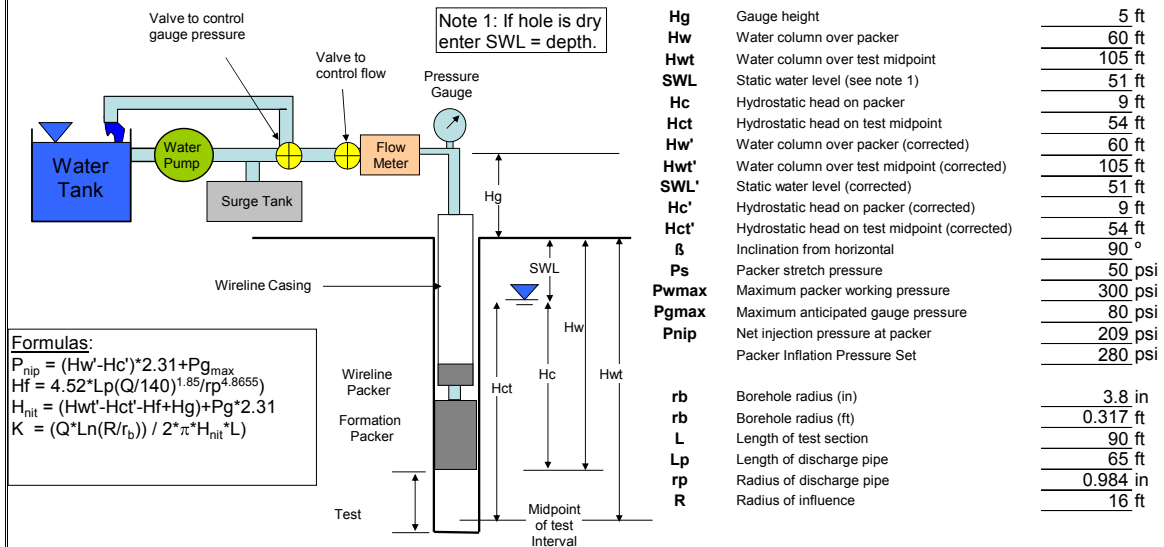
Interpreted Results

Wash out - use the highest Lugeon value.

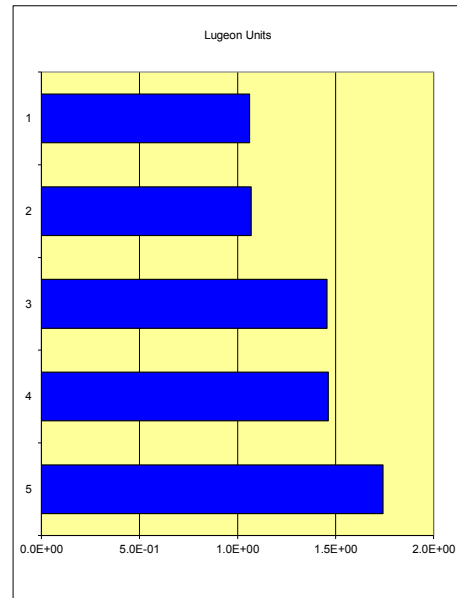


Packer Test

Client: Rosemont Copper Company **Depth of Test (ft):** 60 to 150 **Hole N°:** Pit2021-04
Project: Rosemont Copper World **Date:** 19-Sep-21 **Start:** 23:19 **Test N°:** 1
Elevation (ft): 4,389 **Height of "T" (ft):** 5 **End:** 23:59 **Total Depth (m):** 150
Coordinates: E1704977 N11565354 **Lithology:** Skarn **Engineer:** BAG



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	6.5	7.8	17.5	11.4	10.1
2	4.9	8.3	18.4	10.9	9.1
3	5.2	8.1	18.7	11.2	9.3
4	2.3	7.7	19.1	11.0	9.2
5	5.4	7.3	18.7	10.2	8.0
6	5.2	7.9	19.9	10.5	8.7
7	5.2	8.2	17.8	10.4	8.3
8	6.0	8.1	15.9	10.7	9.0
9	4.8	7.8	14.9	10.6	8.8
10	5.9	8.1	14.1	11.5	8.4
Q _p (gal/min)	5.4	7.9	17.5	10.8	8.9
Q _p (ft ³ /day)	1043.4	1526.5	3368.8	2086.7	1711.3
H _f (ft)	0.03	0.05	0.23	0.10	0.07
H _{nit} (ft)	102.17	148.35	240.57	148.30	102.13
K (ft/day)	7.1E-02	7.2E-02	9.8E-02	9.8E-02	1.2E-01
K (cm/sec)	2.5E-05	2.5E-05	3.4E-05	3.5E-05	4.1E-05
Lugeon Unit	1.06	1.07	1.46	1.46	1.74

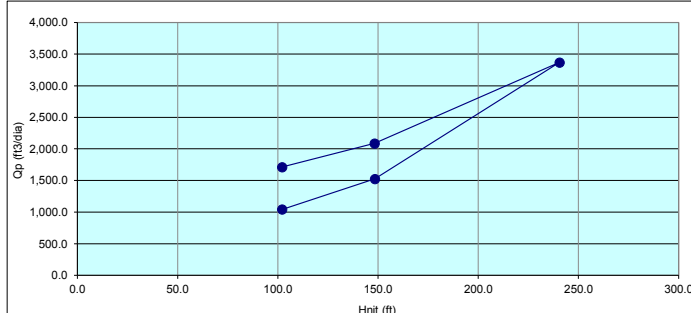


Field Observations

No noteable field observations.

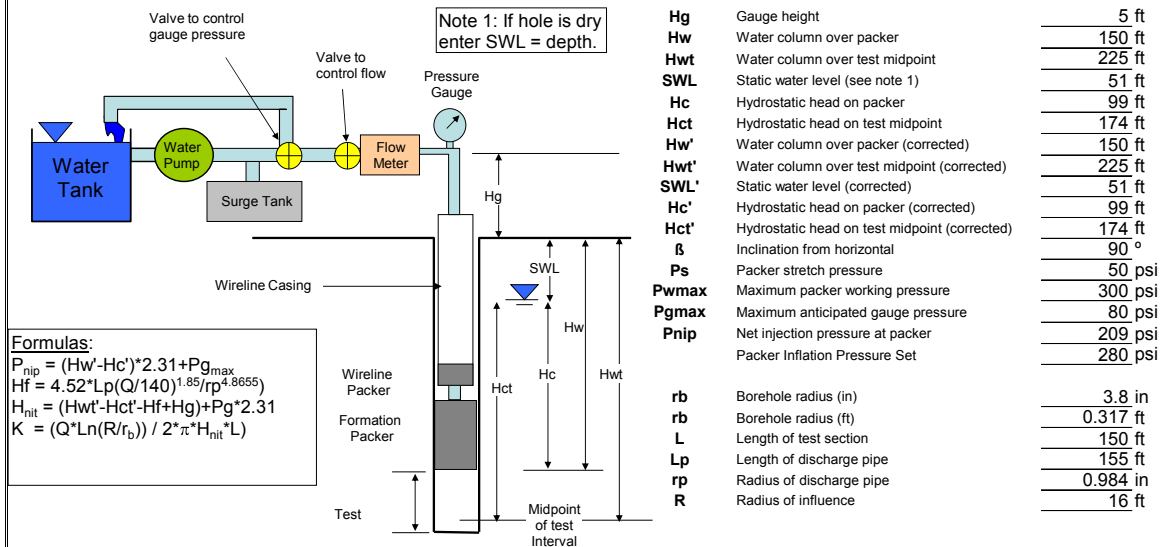
Interpreted Results

Wash out - use the highest Lugeon value.

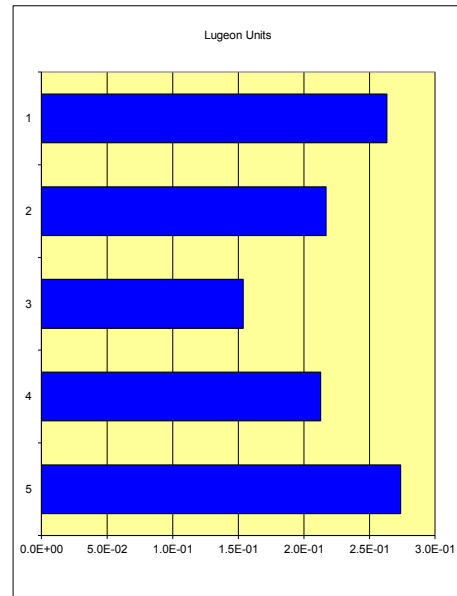


Packer Test

Client:	Rosemont Copper Company	Depth of Test (ft):	150	to	300	Hole N°:	Pit2021-04
Project:	Rosemont Copper World	Date:	21-Sep-21	Start:	1:30	Test N°:	2
Elevation (ft):	4,389	Height of "T" (ft):	5	End:	2:30	Total Depth (m):	300
Coordinates:	E1704977 N11565354	Lithology:	Skarn	Engineer: BAG			



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	2.4	3.3	3.9	2.7	2.0
2	2.6	2.9	3.0	2.6	2.6
3	2.4	2.8	2.6	2.9	2.2
4	2.7	2.5	3.2	2.9	2.3
5	2.1	2.7	2.9	1.9	3.1
6	2.5	2.5	3.0	2.8	2.1
7	2.1	2.7	2.3	2.7	1.8
8	2.3	2.3	3.7	2.5	2.3
9	2.0	2.8	3.2	2.7	2.5
10	2.3	2.3	3.0	2.6	2.4
Q _p (gal/min)	2.2	2.7	3.1	2.6	2.3
Q _p (ft ³ /day)	431.2	515.9	592.9	506.3	448.5
H _f (ft)	0.01	0.02	0.02	0.02	0.01
H _{nit} (ft)	102.19	148.38	240.78	148.38	102.19
K (ft/day)	1.8E-02	1.5E-02	1.0E-02	1.4E-02	1.8E-02
K (cm/sec)	6.2E-06	5.1E-06	3.6E-06	5.0E-06	6.5E-06
Lugeon Unit	0.26	0.22	0.15	0.21	0.27

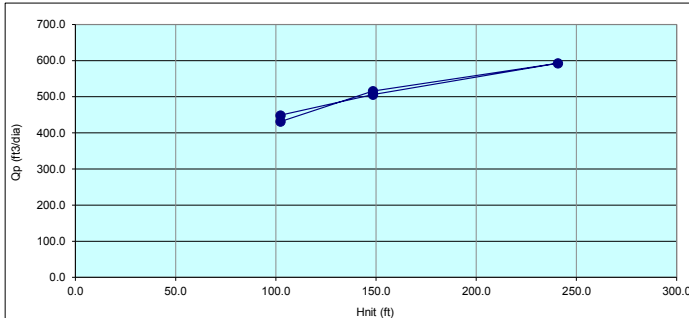


Field Observations

No noteable field observations.

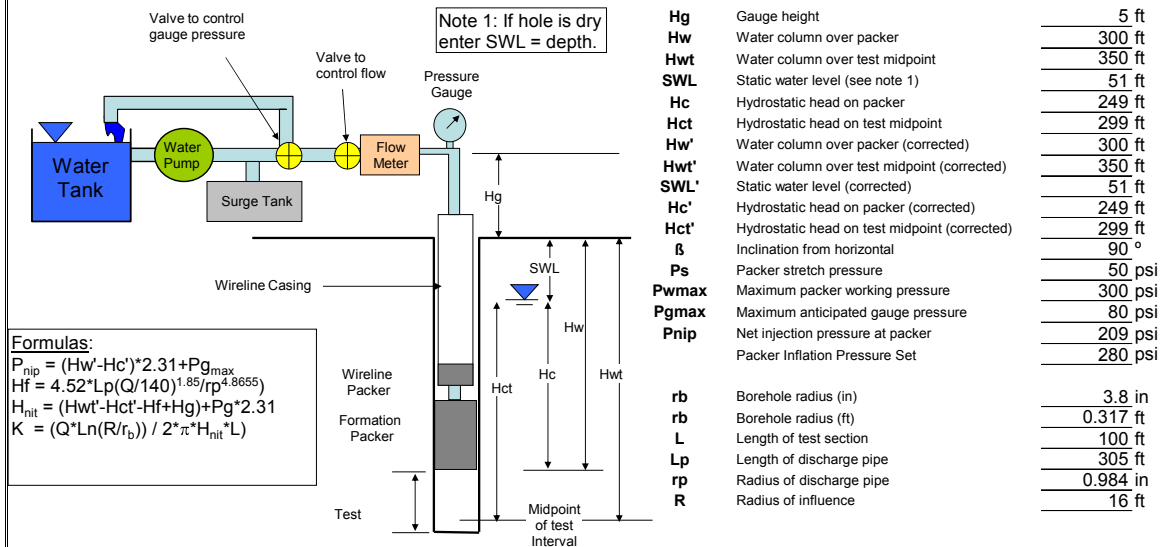
Interpreted Results

Turbulent flow - use the Lugeon value for the highest pressure.

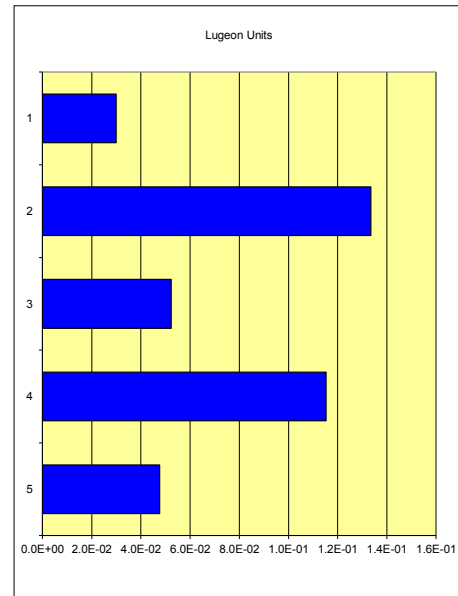


Packer Test

Client:	Rosemont Copper Company	Depth of Test (ft):	300	to	400	Hole N°:	Pit2021-04
Project:	Rosemont Copper World	Date:	22-Sep-21	Start:	15:34	Test N°:	3
Elevation (ft):	4,389	Height of "T" (ft):	5	End:	16:24	Total Depth (m):	400
Coordinates:	E1704977 N11565354	Lithology:	Limestone/skarn/granodiorite	Engineer: BAG			



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	0.6	1.7	0.7	1.0	0.4
2	0.2	1.9	0.7	0.9	0.4
3	0.2	1.7	0.8	0.9	0.2
4	0.1	0.8	0.7	0.7	0.3
5	0.1	0.9	0.6	1.1	0.2
6	0.2	0.7	0.7	0.9	0.2
7	0.2	1.0	0.6	1.1	0.3
8	0.2	0.7	0.6	0.9	0.2
9	0.1	0.8	0.9	1.1	0.2
10	0.2	0.8	0.7	0.9	0.3
Q _p (gal/min)	0.2	1.1	0.7	1.0	0.3
Q _p (ft ³ /day)	32.7	211.8	134.8	182.9	52.0
H _f (ft)	0.00	0.01	0.00	0.00	0.00
H _{nit} (ft)	102.20	148.39	240.80	148.40	102.20
K (ft/day)	2.0E-03	9.0E-03	3.5E-03	7.7E-03	3.2E-03
K (cm/sec)	7.1E-07	3.2E-06	1.2E-06	2.7E-06	1.1E-06
Lugeon Unit	0.03	0.13	0.05	0.12	0.05

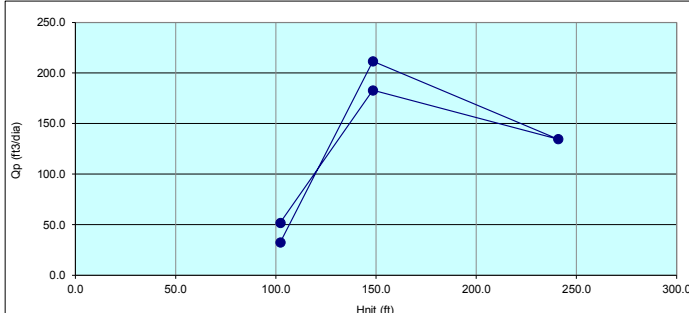


Field Observations

No noteable field observations.

Interpreted Results

Turbulent flow - use the Lugeon value for the highest pressure.

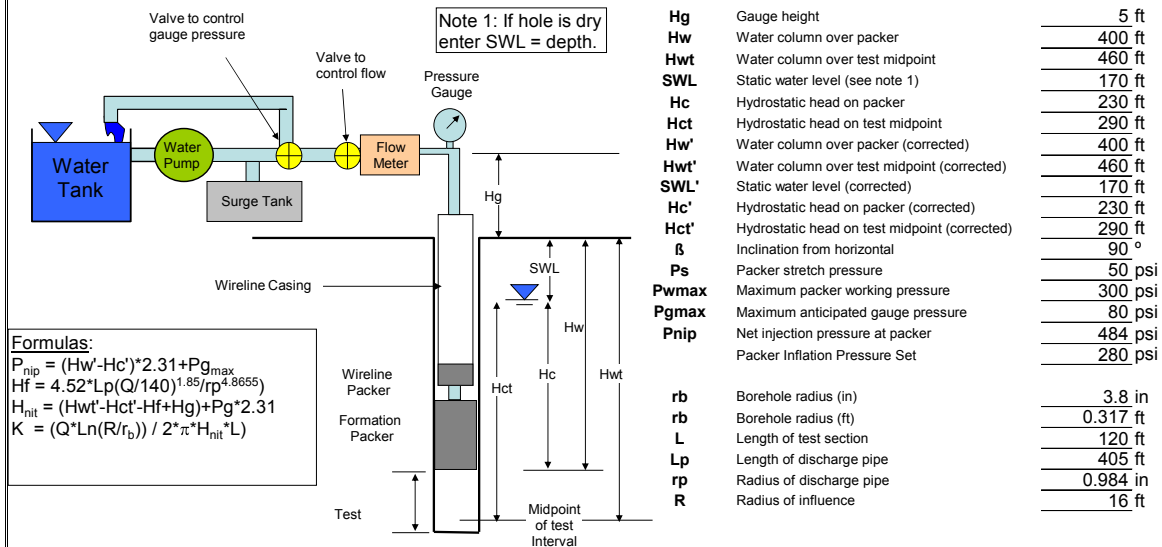


Packer Test

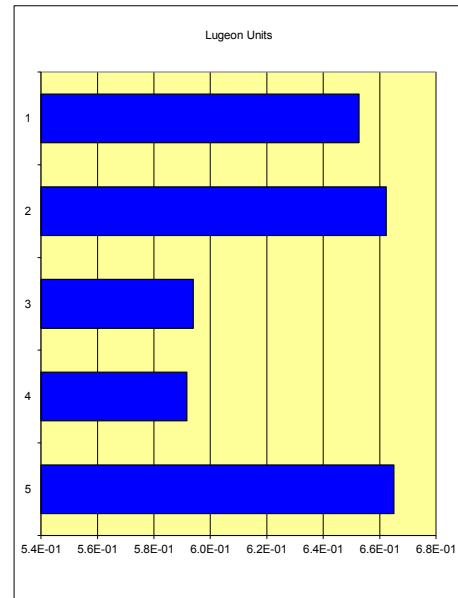
Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,389
Coordinates: E1704977 N11565354

Depth of Test (ft): 400 to 520
Date: 23-Sep-21
Height of "T" (ft): 5
Lithology: Skarn/quartz monzonite porphyry/granite

Hole N°: Pit2021-04
Test N°: 4
Total Depth (m): 520
Engineer: BAG



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	9.2	12.4	16.6	10.8	8.7
2	8.6	12.7	14.0	10.2	9.3
3	9.5	11.9	13.6	10.0	9.8
4	9.6	14.3	14.5	11.3	9.2
5	9.3	9.0	13.5	11.0	10.0
6	9.7	12.3	14.0	9.9	10.1
7	9.6	11.3	14.4	10.0	10.3
8	9.4	11.5	20.2	10.4	9.6
9	9.4	11.3	8.5	10.9	11.1
10	9.9	11.0	12.7	10.7	9.7
Q _p (gal/min)	9.6	11.8	14.2	10.5	9.8
Q _p (ft ³ /day)	1848.0	2265.7	2733.5	2025.1	1882.7
H _f (ft)	0.48	0.70	0.98	0.57	0.49
H _{nit} (ft)	220.72	266.70	358.82	266.83	220.71
K (ft/day)	4.4E-02	4.4E-02	4.0E-02	4.0E-02	4.5E-02
K (cm/sec)	1.5E-05	1.6E-05	1.4E-05	1.4E-05	1.6E-05
Lugeon Unit	0.65	0.66	0.59	0.59	0.67

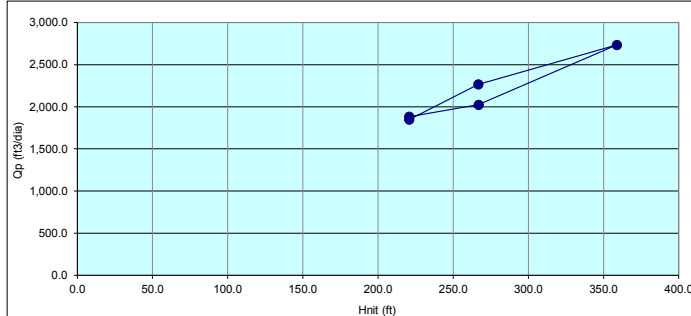


Field Observations

No noteable field observations.

Interpreted Results

Turbulent flow - use the Lugeon value for the highest pressure.



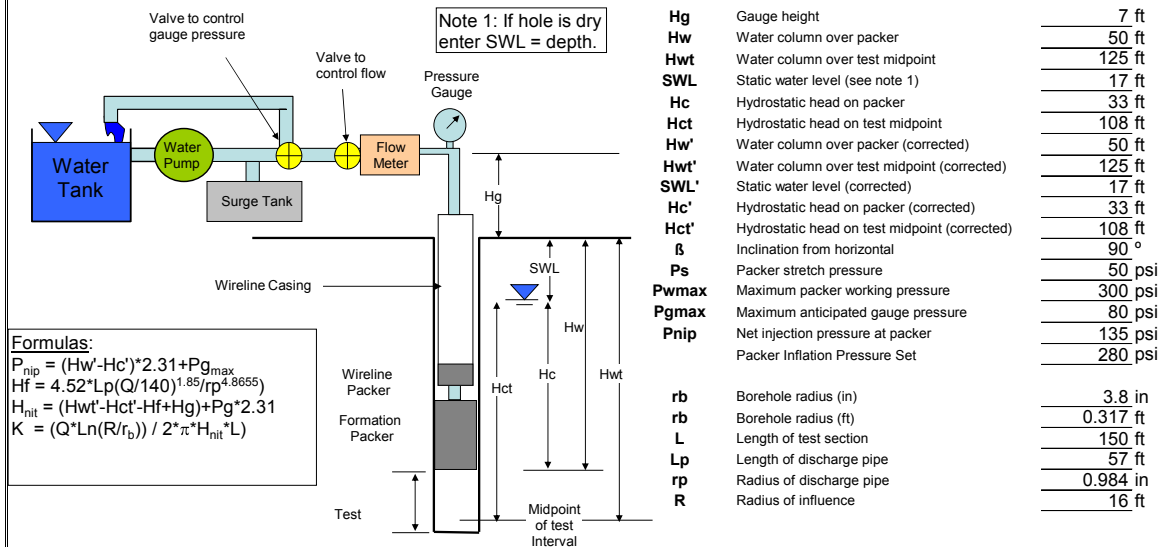


Packer Test

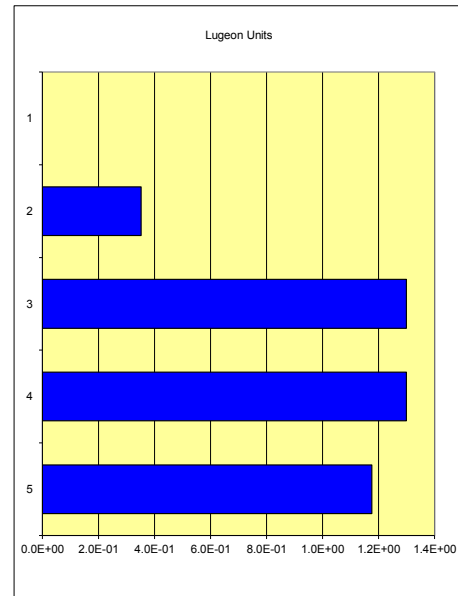
Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 4,755
Coordinates: E1709600 N11565718

Depth of Test (ft): 50 to 200
Date: 3-Nov-21
Start: 13:27
Height of "T" (ft): 7
End: 14:17
Lithology: Skarn/quartz monzonite porphyry/intrusive breccia/granodiorite

Hole N°: Pit2021-06
Test N°: 1
Total Depth (m): 200
Engineer: BAG



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	0.0	1.7	13.6	11.3	5.8
2	0.0	3.2	22.6	13.4	6.0
3	0.0	3.7	23.0	16.5	7.0
4	0.0	3.8	24.1	11.5	7.2
5	0.0	3.6	23.7	13.3	7.3
6	0.0	3.8	23.5	12.4	6.9
7	0.0	3.4	24.0	13.2	7.1
8	0.0	3.6	23.5	11.1	7.4
9	0.0	3.7	22.9	11.0	7.0
10	0.0	3.6	24.6	12.1	7.0
Q _p (gal/min)	0.0	3.4	22.6	12.6	6.9
Q _p (ft ³ /day)	0.0	657.4	4340.9	2421.7	1322.5
H _f (ft)	0.00	0.01	0.33	0.11	0.04
H _{nit} (ft)	70.20	116.39	208.47	116.29	70.16
K (ft/day)	0.0E+00	2.4E-02	8.7E-02	8.7E-02	7.9E-02
K (cm/sec)	0.0E+00	8.3E-06	3.1E-05	3.1E-05	2.8E-05
Lugeon Unit	0.00	0.35	1.30	1.30	1.18

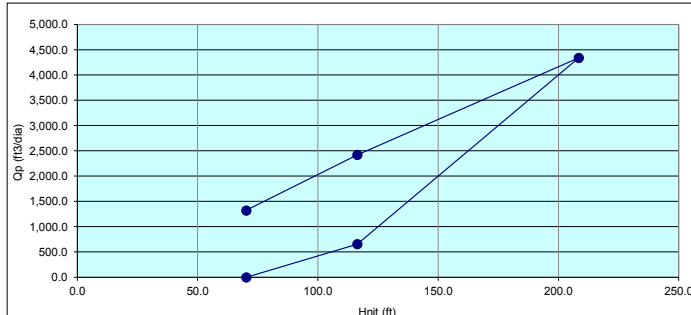


Field Observations

First pressure step produced very low injection rates.

Interpreted Results

Dilation - use the Lugeon value for the lowest pressure.



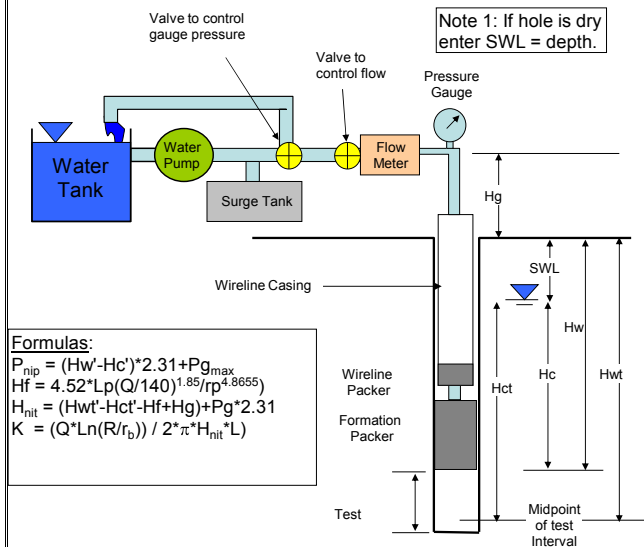


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 5,103
Coordinates: E1712907 N11565269

Depth of Test (ft): 50 to 150
Date: 7-Oct-21 **Start:** 18:54
Height of "T" (ft): 5 **End:** 19:44
Lithology: Granodiorite

Hole N°: Pit2021-07
Test N°: 1
Total Depth (m): 150
Engineer: BAG



Formulas:

$$P_{nlp} = (H_w - H_c) * 2.31 + P_{gmax}$$

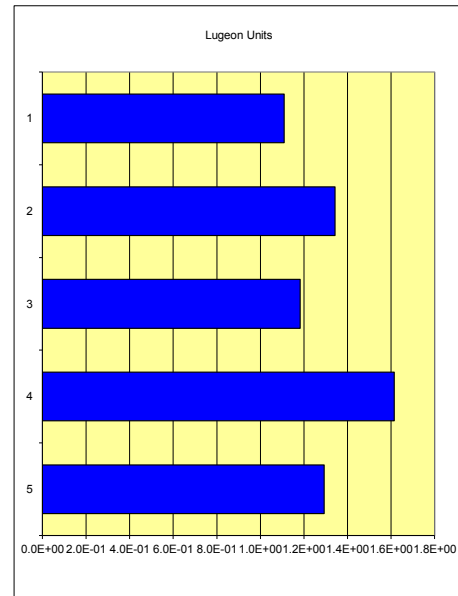
$$H_f = 4.52 * L_p (Q/140)^{1.85} / r_p^{4.8655}$$

$$H_{nit} = (H_w - H_c - H_f + H_g) + P_g * 2.31$$

$$K = (Q * \ln(R/r_b)) / (2 * \pi * H_{nit} * L)$$

Hg	Gauge height	5 ft
Hw	Water column over packer	50 ft
Hwt	Water column over test midpoint	100 ft
SWL	Static water level (see note 1)	32 ft
Hc	Hydrostatic head on packer	18 ft
Hct	Hydrostatic head on test midpoint	68 ft
Hw'	Water column over packer (corrected)	50 ft
Hwt'	Water column over test midpoint (corrected)	100 ft
SWL'	Static water level (corrected)	32 ft
Hc'	Hydrostatic head on packer (corrected)	18 ft
Hct'	Hydrostatic head on test midpoint (corrected)	68 ft
β	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnlp	Net injection pressure at packer	165 psi
	Packer Inflation Pressure Set	280 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	100 ft
Lp	Length of discharge pipe	55 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	5.4	9.1	15.0	13.0	6.8
2	5.6	9.5	12.0	12.2	7.4
3	5.5	9.9	14.4	11.7	5.9
4	5.4	9.9	14.8	12.2	5.9
5	6.0	9.3	14.4	11.0	5.6
6	4.8	11.1	15.1	12.0	5.8
7	5.2	8.0	15.1	11.4	5.9
8	5.1	10.0	15.4	10.9	5.9
9	5.3	9.4	15.2	10.5	5.9
10	5.2	10.2	14.1	11.0	4.6
Q_p (gal/min)	5.1	9.6	14.6	11.6	6.0
Q_p (ft³/day)	985.6	1855.7	2800.9	2231.1	1149.2
H_f (ft)	0.02	0.07	0.14	0.09	0.03
H_{nit} (ft)	83.18	129.33	221.66	129.31	83.17
K (ft/day)	7.4E-02	9.0E-02	7.9E-02	1.1E-01	8.7E-02
K (cm/sec)	2.6E-05	3.2E-05	2.8E-05	3.8E-05	3.1E-05
Lugeon Unit	1.11	1.34	1.18	1.61	1.29

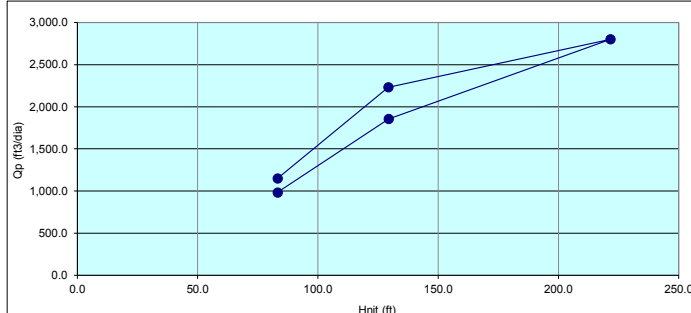


Field Observations

No noteable field observations.

Interpreted Results

Laminar flow - use the average Lugeon value.



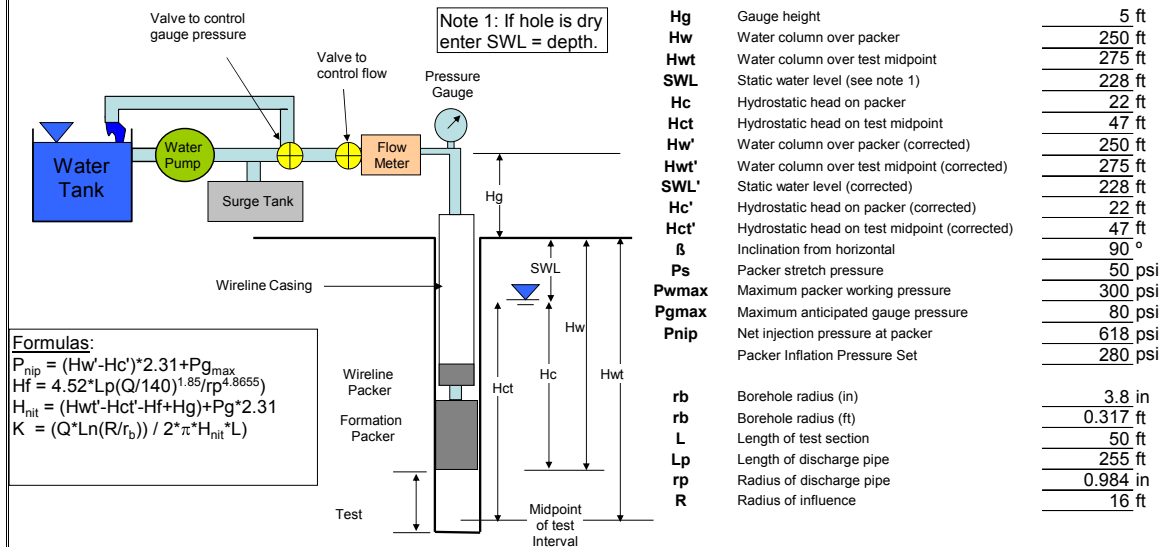


Packer Test

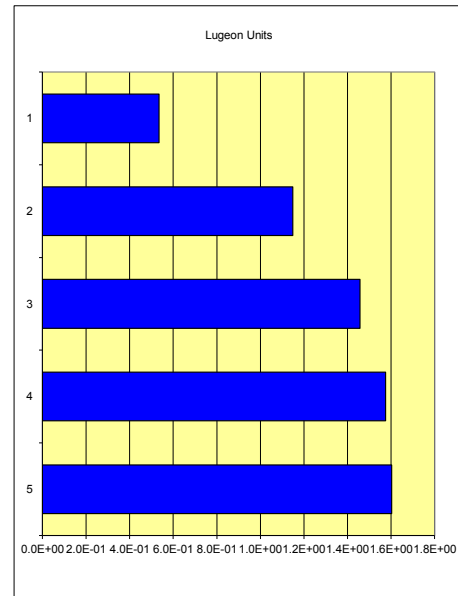
Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 5,103
Coordinates: E1712907 N11565269

Depth of Test (ft): 250 to 300
Date: 9-Oct-21
Start: 14:00
End: 14:50
Height of "T" (ft): 5
Lithology: Limestone/quartzite

Hole N°: Pit2021-07
Test N°: 2
Total Depth (m): 300
Engineer: BAG



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	60	40	20
1	7.1	12.1	14.1	15.0	12.0
2	5.8	6.7	15.0	15.0	13.0
3	7.0	14.0	15.0	13.0	12.0
4	6.6	11.0	16.0	14.0	13.0
5	6.0	13.0	16.0	16.0	13.0
6	3.7	8.0	14.0	13.0	11.0
7	3.7	7.0	16.0	14.0	15.0
8	4.3	10.8	14.0	14.0	12.0
9	3.9	11.3	15.0	14.0	11.0
10	5.1	9.8	15.0	14.0	12.0
Q _p (gal/min)	4.1	10.4	15.0	14.2	12.4
Q _p (ft ³ /day)	797.0	1996.2	2889.4	2733.5	2387.0
H _f (ft)	0.06	0.35	0.69	0.62	0.48
H _{nit} (ft)	279.14	325.05	370.91	324.78	278.72
K (ft/day)	3.6E-02	7.7E-02	9.8E-02	1.1E-01	1.1E-01
K (cm/sec)	1.3E-05	2.7E-05	3.5E-05	3.7E-05	3.8E-05
Lugeon Unit	0.53	1.15	1.46	1.57	1.60

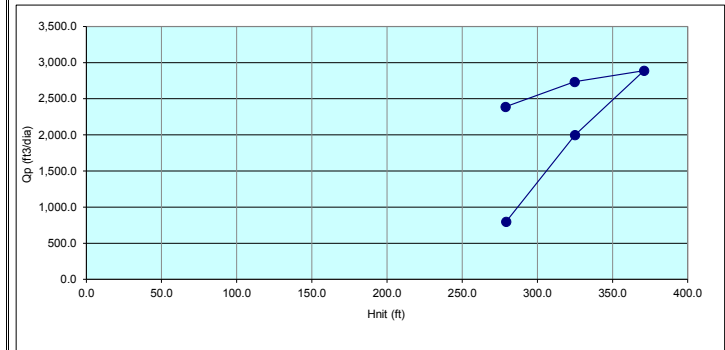


Field Observations

No noteable field observations.

Interpreted Results

Wash out - use the highest Lugeon value.



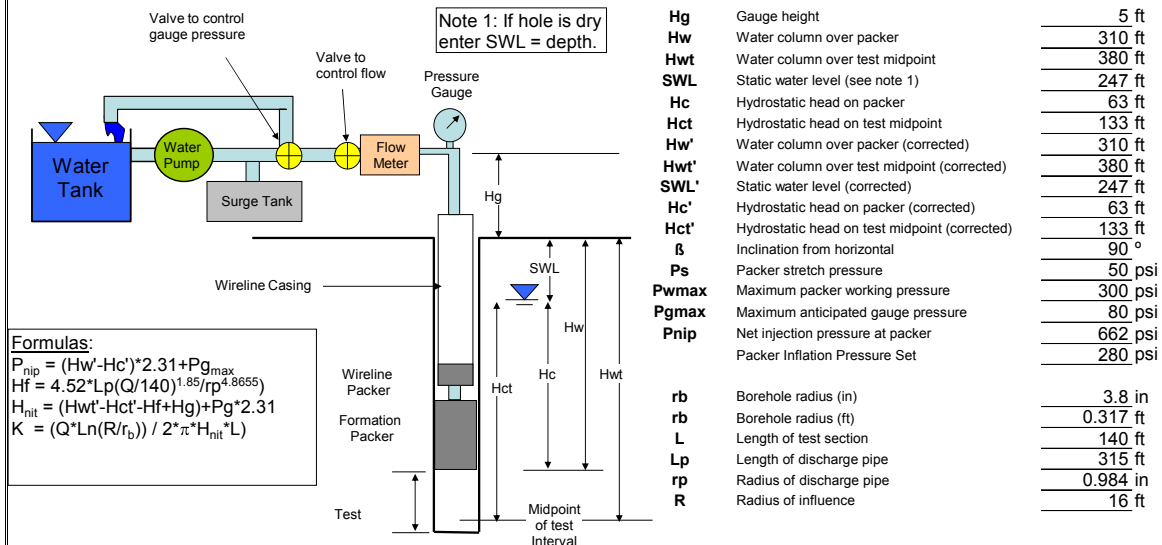


Packer Test

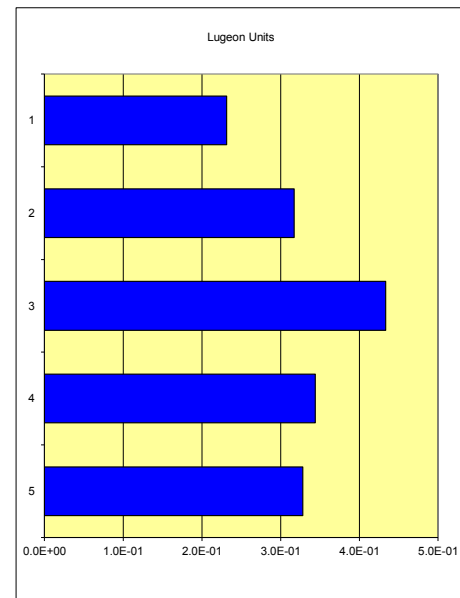
Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 5,103
Coordinates: E1712907 N11565269

Depth of Test (ft): 310 to 450
Date: 10-Oct-21
Height of "T" (ft): 5
Lithology: Quartzite/limestone/skarn

Hole N°: Pit2021-07
Test N°: 3
Total Depth (m): 450
Engineer: BAG



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	60	40	20
1	2.5	7.2	9.4	10.0	8.0
2	6.9	10.0	13.0	10.0	6.0
3	4.9	10.5	13.0	9.0	8.0
4	4.9	8.5	13.0	9.0	8.0
5	5.8	8.0	14.0	9.0	7.0
6	5.0	8.0	13.0	10.0	7.0
7	5.5	8.0	14.0	8.0	8.0
8	5.5	8.0	14.0	9.0	8.0
9	5.1	8.6	14.0	9.0	8.0
10	5.7	8.0	14.0	9.0	8.0
Q _p (gal/min)	5.4	8.5	13.1	9.2	7.6
Q _p (ft ³ /day)	1031.8	1632.4	2529.5	1771.0	1463.0
H _f (ft)	0.13	0.30	0.66	0.34	0.24
H _{nit} (ft)	298.07	344.10	389.94	344.06	297.96
K (ft/day)	1.6E-02	2.1E-02	2.9E-02	2.3E-02	2.2E-02
K (cm/sec)	5.5E-06	7.5E-06	1.0E-05	8.1E-06	7.8E-06
Lugeon Unit	0.23	0.32	0.43	0.34	0.33

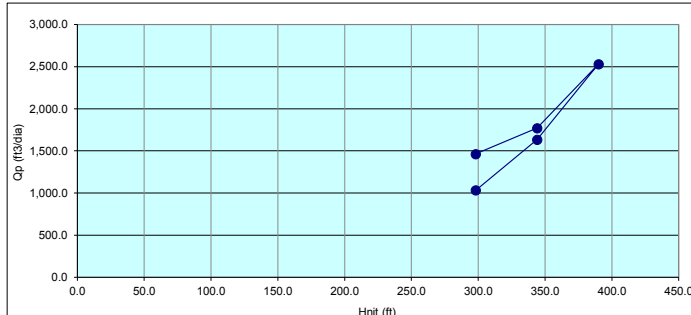


Field Observations

No noteable field observations.

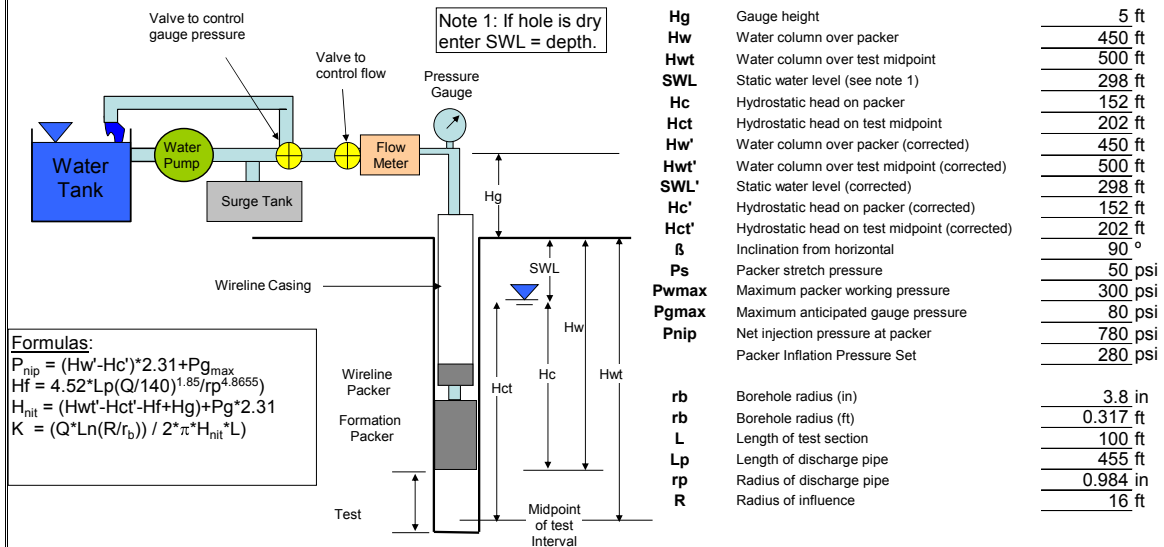
Interpreted Results

Dilation - use the Lugeon value for the lowest pressures.

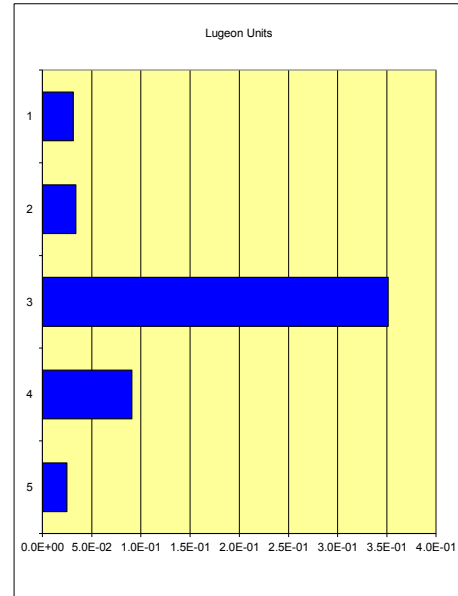


Packer Test

Client:	Rosemont Copper Company	Depth of Test (ft):	450	to	550	Hole N°:	Pit2021-07
Project:	Rosemont Copper World	Date:	11-Oct-21	Start:	12:24	Test N°:	4
Elevation (ft):	5,103	Height of "T" (ft):	5	End:	13:14	Total Depth (m):	550
Coordinates:	E1712907 N11565269	Lithology:	Skarn/limestone/quartz	Engineer: BAG			



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	0.8	3.0	4.1	3.7	1.9
2	0.5	1.9	7.1	1.6	0.7
3	0.6	0.3	9.9	1.7	0.5
4	0.7	0.3	10.0	1.7	0.2
5	0.6	0.4	10.6	1.8	0.2
6	0.6	0.3	11.0	1.9	0.3
7	0.6	0.3	10.6	1.8	0.2
8	0.5	0.3	10.6	1.9	0.3
9	1.0	0.3	10.6	1.9	0.3
10	0.2	0.3	10.6	1.9	0.2
Q_p (gal/min)	0.6	0.7	9.5	2.0	0.5
Q_p (ft³/day)	116.7	143.6	1830.1	383.1	92.0
H_f (ft)	0.00	0.00	0.53	0.03	0.00
H_{nit} (ft)	349.20	395.40	487.27	395.37	349.20
K (ft/day)	2.1E-03	2.3E-03	2.4E-02	6.1E-03	1.7E-03
K (cm/sec)	7.4E-07	8.0E-07	8.3E-06	2.1E-06	5.8E-07
Lugeon Unit	0.03	0.03	0.35	0.09	0.02

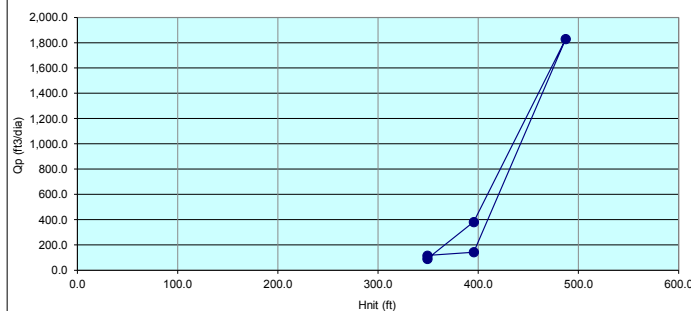


Field Observations

No noteable field observations.

Interpreted Results

Dilation - use the Lugeon value for the lowest pressures.



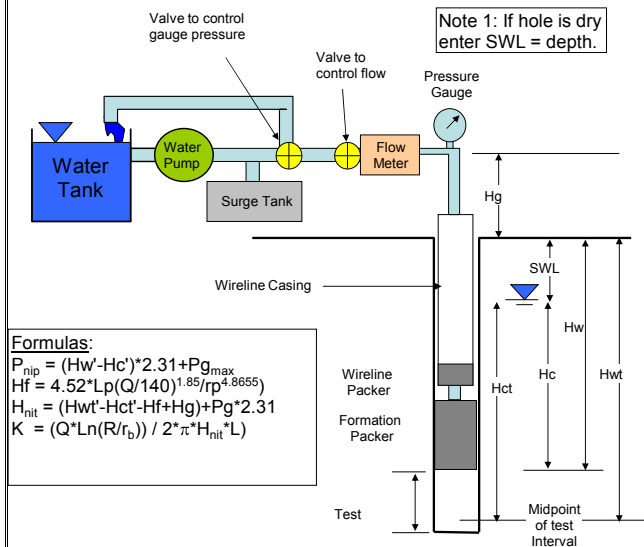


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 5,103
Coordinates: E1712907 N11565269

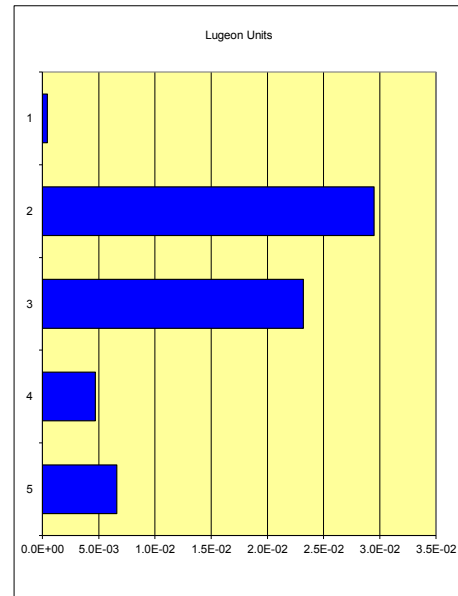
Depth of Test (ft): 550 to 650
Date: 12-Oct-21
Height of "T" (ft): 5
Lithology: Limestone

Hole N°: Pit2021-07
Test N°: 5
Total Depth (m): 650
Engineer: BAG



Hg	Gauge height	5 ft
Hw	Water column over packer	550 ft
Hwt	Water column over test midpoint	600 ft
SWL	Static water level (see note 1)	309 ft
Hc	Hydrostatic head on packer	241 ft
Hct	Hydrostatic head on test midpoint	291 ft
Hw'	Water column over packer (corrected)	550 ft
Hwt'	Water column over test midpoint (corrected)	600 ft
SWL'	Static water level (corrected)	309 ft
Hc'	Hydrostatic head on packer (corrected)	241 ft
Hct'	Hydrostatic head on test midpoint (corrected)	291 ft
β	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnlp	Net injection pressure at packer	805 psi
	Packer Inflation Pressure Set	280 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	100 ft
Lp	Length of discharge pipe	555 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	2.6	6.0	2.2	0.5	0.4
2	2.6	0.4	0.7	0.3	0.1
3	1.5	0.0	0.5	0.0	0.0
4	0.0	0.0	0.5	0.0	0.1
5	0.0	0.0	0.3	0.0	0.2
6	0.0	0.0	0.5	0.0	0.1
7	0.0	0.0	0.5	0.0	0.0
8	0.0	0.0	0.4	0.0	0.1
9	0.0	0.0	0.5	0.0	0.2
10	0.0	0.0	0.4	0.1	0.2
Q _p (gal/min)	0.0	0.7	0.6	0.1	0.1
Q _p (ft ³ /day)	1.7	128.1	123.6	20.4	25.4
H _f (ft)	0.00	0.00	0.00	0.00	0.00
H _{nit} (ft)	360.20	406.40	498.80	406.40	360.20
K (ft/day)	3.0E-05	2.0E-03	1.6E-03	3.2E-04	4.4E-04
K (cm/sec)	1.0E-08	7.0E-07	5.5E-07	1.1E-07	1.6E-07
Lugeon Unit	0.00	0.03	0.02	0.00	0.01

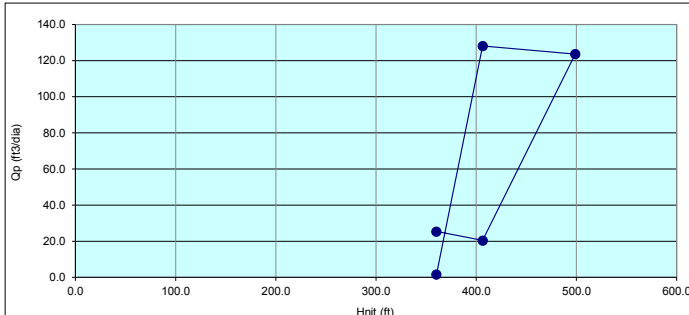


Field Observations

No noteable field observations.

Interpreted Results

Dilation - use the Lugeon value for the lowest pressures.



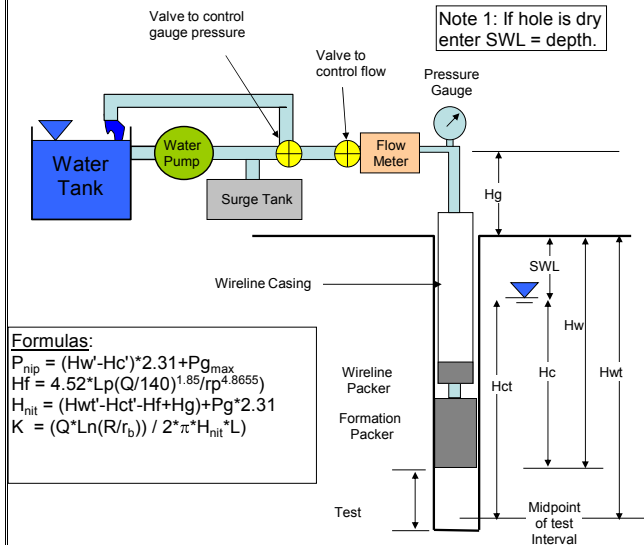


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 5,604
Coordinates: E1715764 N11562333

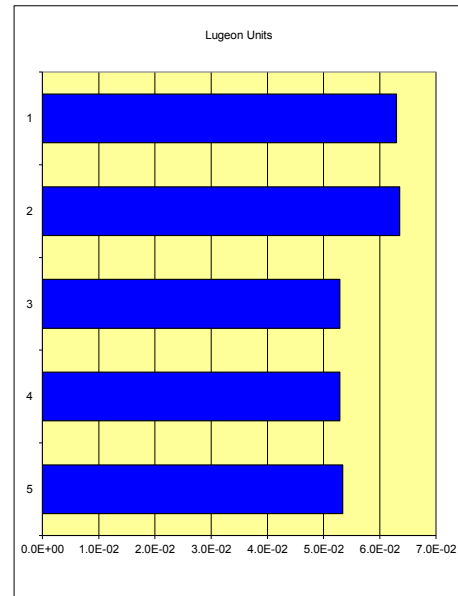
Depth of Test (ft): 220 to 460
Date: 27-Oct-21 **Start:** 23:14
Height of "T" (ft): 5 **End:** 0:04
Lithology: Quartz monzonite porphyry

Hole N°: Pit2021-08
Test N°: 1
Total Depth (m): 460
Engineer: BAG



Hg	Gauge height	5 ft
Hw	Water column over packer	220 ft
Hwt	Water column over test midpoint	340 ft
SWL	Static water level (see note 1)	192 ft
Hc	Hydrostatic head on packer	28 ft
Hct	Hydrostatic head on test midpoint	148 ft
Hw'	Water column over packer (corrected)	220 ft
Hwt'	Water column over test midpoint (corrected)	340 ft
SWL'	Static water level (corrected)	192 ft
Hc'	Hydrostatic head on packer (corrected)	28 ft
Hct'	Hydrostatic head on test midpoint (corrected)	148 ft
β	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnlp	Net injection pressure at packer	535 psi
	Packer Inflation Pressure Set	280 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	240 ft
Lp	Length of discharge pipe	225 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	2.4	4.4	3.7	2.2	1.7
2	3.6	1.6	2.5	2.3	1.7
3	2.2	2.5	2.6	2.0	2.1
4	4.1	2.4	2.5	2.2	1.8
5	1.4	2.4	2.8	2.2	1.8
6	1.3	2.1	2.5	2.0	1.7
7	1.9	2.2	2.7	2.1	1.8
8	2.5	2.4	2.5	1.6	1.8
9	2.3	2.1	2.6	1.8	1.4
10	2.2	2.4	2.5	2.0	1.5
Q_p (gal/min)	2.0	2.5	2.7	2.0	1.7
Q_p (ft³/day)	392.7	471.6	517.8	392.7	333.0
H_f (ft)	0.02	0.02	0.03	0.02	0.01
H_{nit} (ft)	243.18	289.38	381.77	289.38	243.19
K (ft/day)	4.2E-03	4.3E-03	3.5E-03	3.6E-03	3.6E-03
K (cm/sec)	1.5E-06	1.5E-06	1.3E-06	1.3E-06	1.3E-06
Lugeon Unit	0.06	0.06	0.05	0.05	0.05

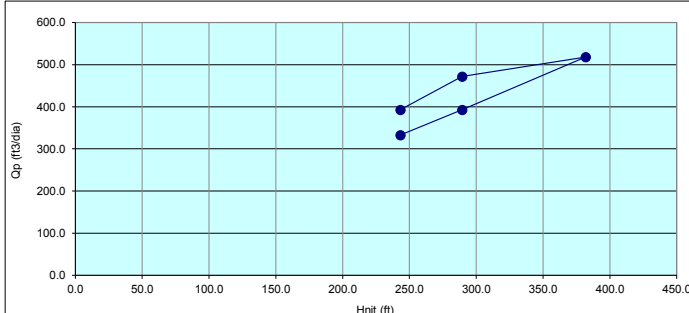


Field Observations

No noteable field observations.

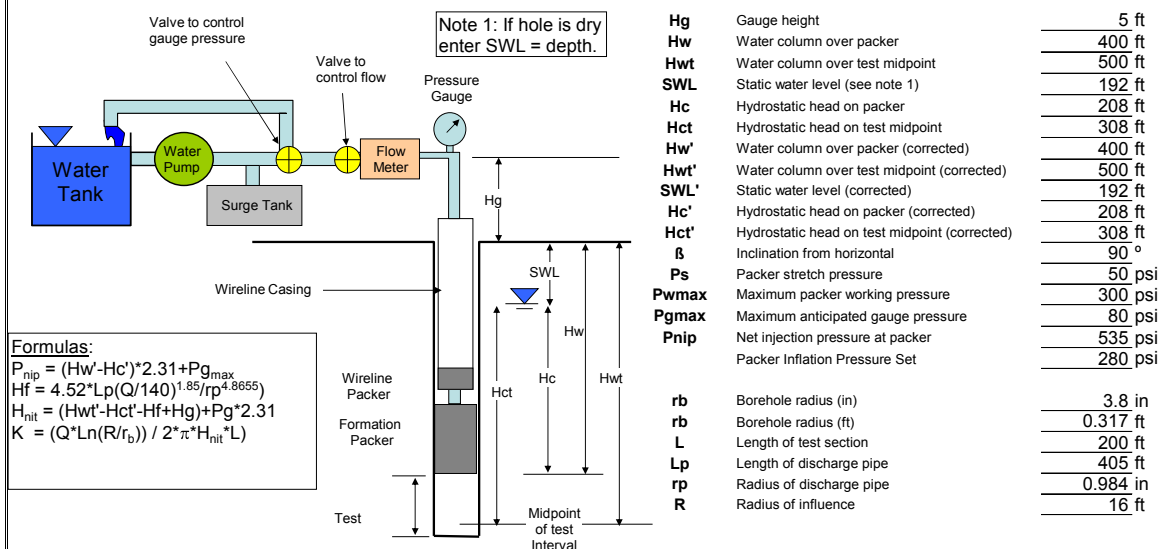
Interpreted Results

Laminar flow - use the average of the five Lugeons.

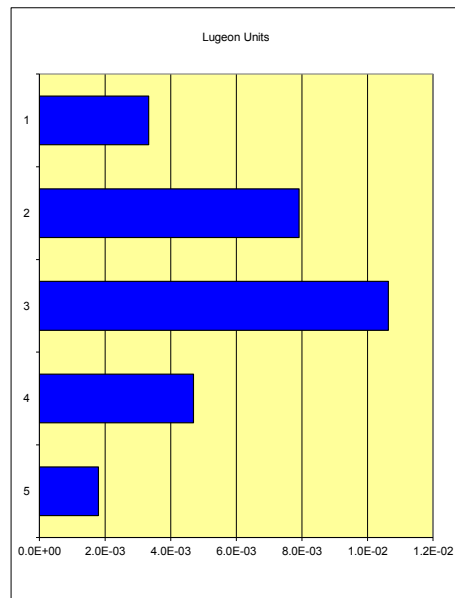


Packer Test

Client:	Rosemont Copper Company	Depth of Test (ft):	400	to	600	Hole N°:	Pit2021-08
Project:	Rosemont Copper World	Date:	29-Oct-21	Start:	8:49	Test N°:	2
Elevation (ft):	5,604	Height of "T" (ft):	5	End:	9:39	Total Depth (m):	600
Coordinates:	E1715764 N11562333	Lithology:	Quartz monzonite porphyry	Engineer: BAG			



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	0.7	0.3	0.7	0.4	0.1
2	-0.6	0.3	0.8	0.0	0.1
3	0.1	0.1	0.4	0.2	0.0
4	0.1	0.3	0.4	0.1	0.0
5	0.1	0.3	0.4	0.1	0.0
6	0.1	0.3	0.4	0.1	0.0
7	0.1	0.2	0.3	0.2	0.0
8	0.1	0.3	0.3	0.1	0.0
9	0.1	0.2	0.4	0.1	0.0
10	0.1	0.3	0.4	0.2	0.0
Q _p (gal/min)	0.1	0.3	0.5	0.2	0.0
Q _p (ft ³ /day)	17.3	48.9	86.8	29.0	9.3
H _f (ft)	0.00	0.00	0.00	0.00	0.00
H _{nit} (ft)	243.20	289.40	381.80	289.40	243.20
K (ft/day)	2.2E-04	5.3E-04	7.1E-04	3.1E-04	1.2E-04
K (cm/sec)	7.9E-08	1.9E-07	2.5E-07	1.1E-07	4.3E-08
Lugeon Unit	0.00	0.01	0.01	0.00	0.00

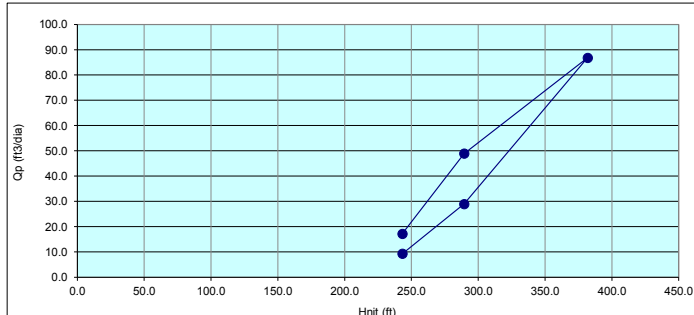


Field Observations

Swivel head was leaking enough to possibly amount to 9 gallons in the 50 min test. Could not stop the leak.

Interpreted Results

Dilation - use the Lugeon value for the lowest pressures.



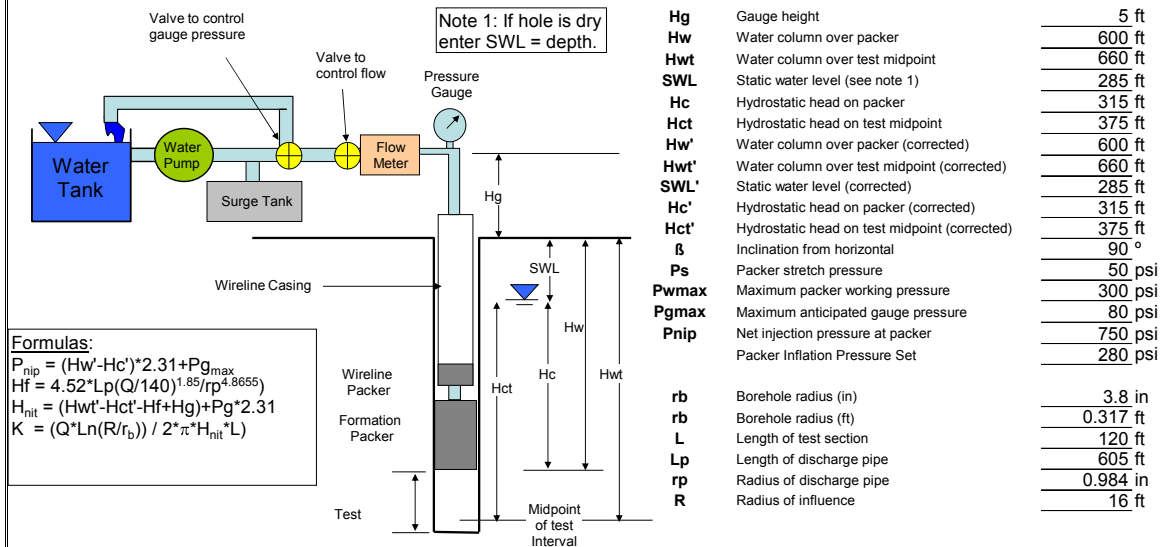


Packer Test

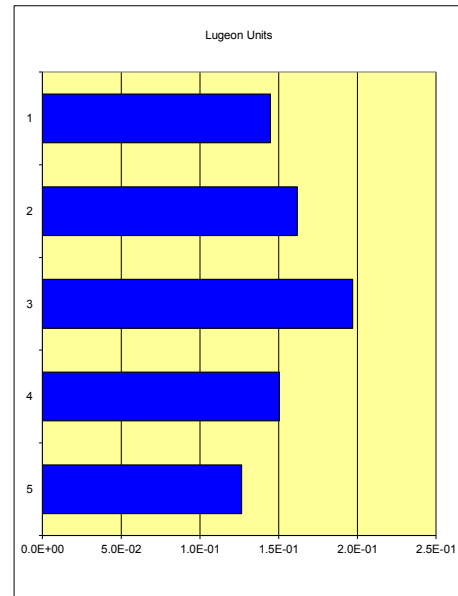
Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 5,604
Coordinates: E1715764 N11562333

Depth of Test (ft): 600 to 720
Date: 30-Oct-21
Start: 15:15
Height of "T" (ft): 5
End: 16:05
Lithology: Intrusive breccia/limestone/quartzite

Hole N°: Pit2021-08
Test N°: 3
Total Depth (m): 720
Engineer: BAG



Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	3.9	5.1	6.2	4.7	2.9
2	2.6	3.8	6.2	3.6	3.1
3	3.3	4.3	6.3	3.5	2.5
4	3.5	4.1	6.2	3.9	3.0
5	3.5	3.7	6.0	3.7	2.7
6	3.1	3.9	6.4	3.9	2.7
7	3.4	4.1	6.1	3.8	2.9
8	3.1	4.3	6.5	3.8	2.8
9	3.1	4.0	6.0	4.0	2.9
10	3.5	3.9	6.4	3.4	2.8
Q _p (gal/min)	3.2	4.1	6.2	3.8	2.8
Q _p (ft ³ /day)	623.7	793.1	1199.3	737.3	544.8
H _f (ft)	0.10	0.15	0.32	0.13	0.07
H _{nit} (ft)	336.10	382.25	474.48	382.27	336.13
K (ft/day)	9.7E-03	1.1E-02	1.3E-02	1.0E-02	8.5E-03
K (cm/sec)	3.4E-06	3.8E-06	4.7E-06	3.6E-06	3.0E-06
Lugeon Unit	0.14	0.16	0.20	0.15	0.13

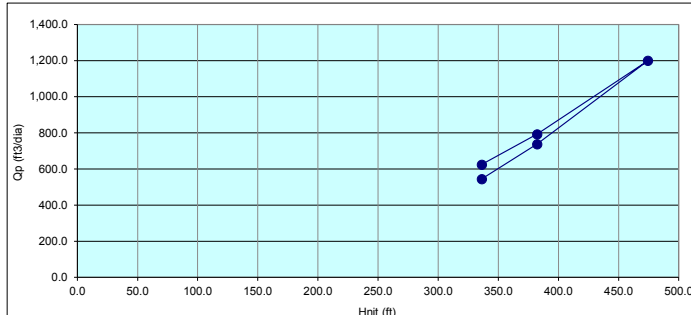


Field Observations

Swivel head was leaking enough to possibly amount to 9 gallons in the 50 min test. Could not stop the leak.

Interpreted Results

Dilation - use the Lugeon value for the lowest pressures.



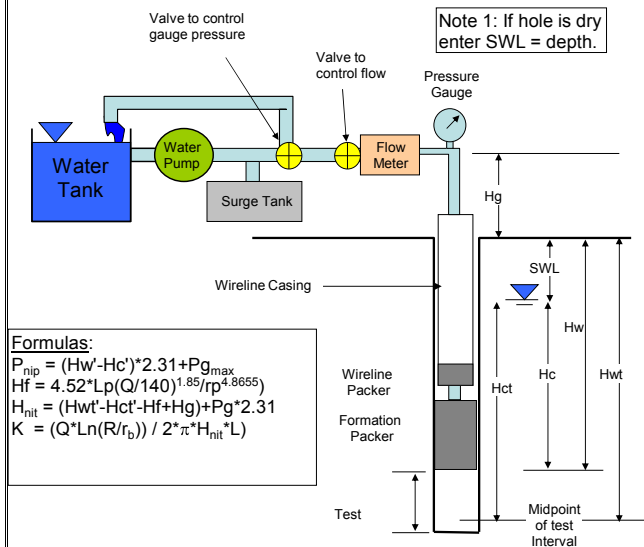


Packer Test

Client: Rosemont Copper Company
Project: Rosemont Copper World
Elevation (ft): 5,656
Coordinates: E1714432 N11560797

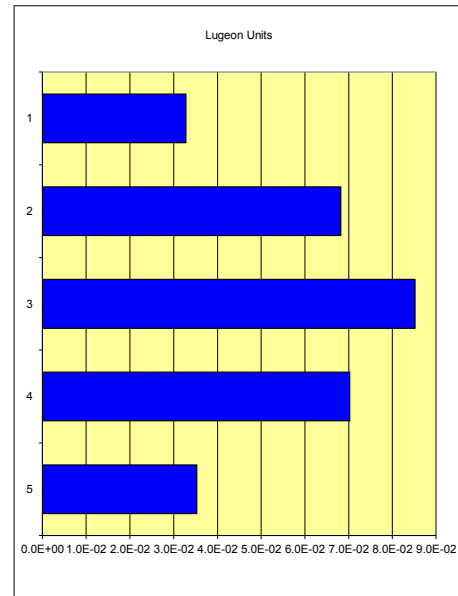
Depth of Test (ft): 375 to 730
Date: 1-Nov-21
Height of "T" (ft): 5
Lithology: Quartzite/skarn

Hole N°: Pit2021-09
Test N°: 1
Total Depth (m): 730
Engineer: BAG



Hg	Gauge height	5 ft
Hw	Water column over packer	375 ft
Hwt	Water column over test midpoint	553 ft
SWL	Static water level (see note 1)	373 ft
Hc	Hydrostatic head on packer	2 ft
Hct	Hydrostatic head on test midpoint	180 ft
Hw'	Water column over packer (corrected)	375 ft
Hwt'	Water column over test midpoint (corrected)	553 ft
SWL'	Static water level (corrected)	373 ft
Hc'	Hydrostatic head on packer (corrected)	2 ft
Hct'	Hydrostatic head on test midpoint (corrected)	180 ft
β	Inclination from horizontal	90 °
Ps	Packer stretch pressure	50 psi
Pwmax	Maximum packer working pressure	300 psi
Pgmax	Maximum anticipated gauge pressure	80 psi
Pnlp	Net injection pressure at packer	953 psi
	Packer Inflation Pressure Set	280 psi
rb	Borehole radius (in)	3.8 in
rb	Borehole radius (ft)	0.317 ft
L	Length of test section	355 ft
Lp	Length of discharge pipe	380 ft
rp	Radius of discharge pipe	0.984 in
R	Radius of influence	16 ft

Time (min)	Q (gal/min)				
	P _g (psi) Low	P _g (psi) Medium	P _g (psi) High	P _g (psi) Medium	P _g (psi) Low
	20	40	80	40	20
1	2.9	5.7	8.5	6.8	2.8
2	2.7	6.4	9.7	6.2	2.8
3	2.8	7.1	9.7	6.3	3.1
4	2.9	5.6	9.4	7.6	2.9
5	2.9	6.5	9.5	7.7	3.1
6	2.9	6.4	9.4	4.3	2.9
7	2.8	6.2	9.8	5.7	3.1
8	2.5	6.7	9.4	7.0	2.7
9	2.8	7.0	9.4	6.7	3.0
10	2.7	5.6	9.6	6.8	3.1
Q_p (gal/min)	2.7	6.3	9.4	6.5	3.0
Q_p (ft³/day)	527.5	1216.6	1817.2	1253.2	567.9
H_f (ft)	0.04	0.21	0.43	0.22	0.05
H_{nit} (ft)	424.16	470.19	562.37	470.18	424.15
K (ft/day)	2.2E-03	4.6E-03	5.7E-03	4.7E-03	2.4E-03
K (cm/sec)	7.8E-07	1.6E-06	2.0E-06	1.7E-06	8.4E-07
Lugeon Unit	0.03	0.07	0.09	0.07	0.04

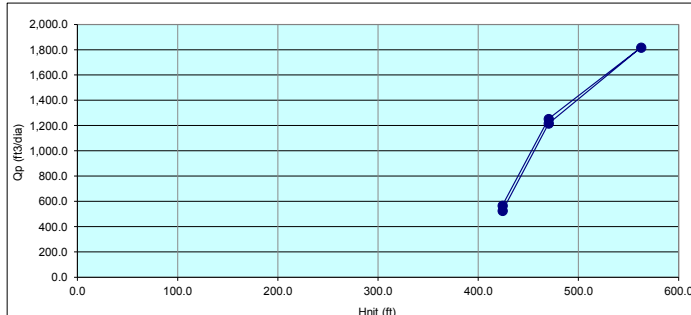


Field Observations

Swivel head was leaking enough to possibly amount to 9 gallons in the 50 min test. Could not stop the leak.

Interpreted Results

Dilation - use the Lugeon value for the lowest pressures.



APPENDIX H

2021 Hydrogeologic Characterization Borehole Hydraulics Testing Results

Appendix H - 2021 Hydrogeologic Characterization Borehole Hydraulics Testing Results

Hole ID	Test Interval (ft bgs)	Geology	Hydraulic Conductivity (ft/d)		
			Injection-Recovery		Packer
			Bower-Rice	Hvorslev	Lugeon
G&H2021-01	0-95	Limestone, granite	2.10E-03	2.24E-03	
G&H2021-07	300-400	Limestone, fault breccia, granite			1.40E+00
G&H2021-07	50-150	Silty limestone			7.90E-01
G&H2021-07	150-300	Silty limestone, limestone			1.30E-02
G&H2021-09	75-150	Granodiorite			6.20E-02
G&H2021-09	150-300	Granodiorite			1.90E-02
G&H2021-09	0-150	Gravel, granodiorite	7.65E-03	9.35E-03	
G&H2021-10	50-150	Conglomerate, granodiorite			6.70E-02
G&H2021-10	150-300	Granodiorite			2.10E-03
G&H2021-11	0-150	Gravel, granodiorite	3.97E-03	4.25E-03	
G&H2021-11	150-300	Granodiorite, diabase, granite			1.00E-04
G&H2021-13	82-150	Granite			1.20E-02
G&H2021-13	150-300	Granite			2.70E-03
G&H2021-17	0-150	Gravel, granite	7.94E-03	7.09E-03	
G&H2021-17	150-300	Granite			7.20E-04
G&H2021-17	80-150	Gravel, granite			4.10E-04
G&H2021-22	150-300	Granite			2.70E-04
G&H2021-23	150-300	Granite			2.50E-05
G&H2021-24	150-300	Granite			2.10E-03
G&H2021-24	100-150	Granite			3.60E-04
G&H2021-25	100-150	Granodiorite			1.30E-02
G&H2021-25	150-300	Granodiorite, granite			1.70E-03
G&H2021-26	50-150	Quartz monzonite porphyry			3.20E-02
G&H2021-26	150-400	Quartz monzonite porphyry, skarn, granite			3.00E-03
G&H2021-28	50-150	Limestone, skarn, granodiorite			1.90E-01
G&H2021-28	150-300	Granodiorite, granite			2.20E-02
G&H2021-28	300-410	Granite			3.60E-03
G&H2021-30	90-150	Marble, quartzite, diabase			3.70E-01
G&H2021-30	300-450	Quartzite			1.10E-01
G&H2021-30	150-300	Diabase, skarn			9.00E-02
G&H2021-30	500-640	Quartzite, limestone			1.20E-02
Pit2021-02	80-230	Skarn, granodiorite			1.40E-01
Pit2021-02	230-486	Granodiorite, granite			1.50E-02
Pit2021-03	60-150	Skarn			2.40E-01
Pit2021-03	300-402	Skarn			8.10E-02
Pit2021-03	150-300	Skarn			2.60E-04
Pit2021-04	60-150	Skarn			1.20E-01
Pit2021-04	400-520	Skarn, quartz monzonite porphyry, granite			4.00E-02
Pit2021-04	150-300	Skarn			1.00E-02
Pit2021-04	300-400	Skarn			3.50E-03
Pit2021-06	50-200	Quartz monzonite porphyry, intrusive breccia, granodiorite			3.90E-02
Pit2021-07	250-300	Limestone, quartzite			1.10E-01
Pit2021-07	50-150	Granodiorite, limestone			8.80E-02
Pit2021-07	310-450	Quartzite, limestone, skarn			1.90E-02
Pit2021-07	450-550	Skarn, limestone, quartz			1.90E-03
Pit2021-07	550-650	Limestone			2.40E-04
Pit2021-08	600-720	Intrusive breccia, limestone, quartzite			9.10E-03
Pit2021-08	220-460	Quartz monzonite porphyry			3.80E-03

Appendix H - 2021 Hydrogeologic Characterization Borehole Hydraulics Testing Results

Hole ID	Test Interval (ft bgs)	Geology	Hydraulic Conductivity (ft/d)		
			Injection-Recovery		Packer
			Bower-Rice	Hvorslev	Lugeon
Pit2021-08	400-600	Quartz monzonite porphyry			1.70E-04
Pit2021-09	375-730	Quartzite, skarn			2.30E-03
RNW-HB-091	0-600	Granodiorite, granite, gabbro	6.24E-03	3.40E-03	
RNW-HB-096	0-500	Granodiorite, marble	1.67E-02	1.45E-02	
RNW-HB-105	0-500	Gravel, granodiorite, diabase, fault breccia, silty limestone	1.30E-02	9.92E-03	
RNW-HB-108	0-425	Gravel, granodiorite, hornfels, dacite, quartz monzonite	1.73E-02	1.36E-02	
RNW-HB-152	0-278	Silty limestone, limestone, skarn, granite	1.45E-02	1.59E-02	
RNW-HB-154	0-200	Limestone, granite	1.74E-02	1.50E-02	
RNW-HB-168	0-600	Granite	2.07E-03	1.50E-03	
RNW-HB-169	0-200	Fault breccia, granite	6.80E-03	7.09E-03	

APPENDIX I

2021 Hydrogeologic Characterization VWP Completions and Piezometric Levels

Appendix I - 2021 Hydrogeologic Characterization VWP Completions and Piezometric Levels

Location ID	Collar Elevation (ft amsl)	Total Depth (ft bgs)	Sensor Depth (ft bgs)	Sensor Elevation (ft amsl)	Measurement Date	Piezometric Elevation (ft amsl)	Geology
G&H2021-09_3803	3953	300	150	3803	11/14/2021	3867	Granodiorite
G&H2021-09_3867	3953	300	86	3867	11/14/2021	3880	Granodiorite
G&H2021-13_4110	4240	300	130	4110	11/14/2021	4117	Granite
G&H2021-13_4158	4240	300	80	4158	11/14/2021	4157	Gravel
G&H2021-23_4276	4426	300	150	4276	11/14/2021	4322	Granite
G&H2021-23_4376	4426	300	50	4376	11/14/2021	4374	Granite
G&H2021-24_4238	4488	300	250	4238	11/14/2021	4374	Granite
G&H2021-24_4338	4488	300	150	4338	11/14/2021	4375	Granite
G&H2021-26_4087	4477	400	390	4087	11/14/2021	4331	Granite
G&H2021-26_4302	4477	400	175	4302	11/14/2021	4407	Quartz Monzonite Porphyry
G&H2021-26_4412	4477	400	65	4412	11/14/2021	4431	Quartz Monzonite Porphyry
G&H2021-30_4450	5025	640	575	4450	11/14/2021	4663	Quartzite
G&H2021-30_4740	5025	640	285	4740	11/14/2021	4740	Skarn
Pit2021-02_3935	4343	486	408	3935	11/14/2021	4107	Granite
Pit2021-02_4118	4343	486	225	4118	11/14/2021	4117	Granodiorite
Pit2021-02_4153	4343	486	190	4153	11/14/2021	4152	Granodiorite
Pit2021-02_4193	4343	486	150	4193	11/14/2021	4192	Skarn
Pit2021-02_4253	4343	486	90	4253	11/14/2021	4252	Skarn
Pit2021-03_3950	4441	603	491	3950	11/14/2021	4208	Granite
Pit2021-03_4129	4441	603	312	4129	11/14/2021	4213	Skarn
Pit2021-04_3889	4389	520	500	3889	11/14/2021	4184	Granite
Pit2021-04_3974	4389	520	415	3974	11/14/2021	4183	Skarn
Pit2021-04_4129	4389	520	260	4129	11/14/2021	4181	Skarn
Pit2021-04_4189	4389	520	200	4189	11/14/2021	4189	Skarn
Pit2021-06_4155	4755	605	600	4155	11/14/2021	4592	Granodiorite
Pit2021-06_4355	4755	605	400	4355	11/14/2021	4603	Granodiorite
Pit2021-06_4555	4755	605	200	4555	11/14/2021	4619	Granodiorite
Pit2021-09_4946	5656	730	710	4946	11/14/2021	5143	Skarn
Pit2021-09_5076	5656	730	580	5076	11/14/2021	5242	Skarn
Pit2021-09_5256	5656	730	400	5256	11/14/2021	5296	Quartzite
RNW-HB-096_4356	4726	500	370	4356	11/14/2021	4542	Marble
RNW-HB-096_4526	4726	500	200	4526	11/14/2021	4547	Granodiorite
RNW-HB-105_4202	4697	500	495	4202	11/14/2021	4581	Limey Siltstone
RNW-HB-105_4407	4697	500	290	4407	11/14/2021	4626	Granodiorite
RNW-HB-152_4010	4280	278	270	4010	11/14/2021	4138	Granite
RNW-HB-152_4140	4280	278	140	4140	11/14/2021	4181	Skarn
RNW-HB-152_4172	4280	278	108	4172	11/14/2021	4183	Limestone
RNW-HB-169_4193	4383	200	190	4193	11/14/2021	4316	Granite
RNW-HB-169_4303	4383	200	80	4303	11/14/2021	4318	Granite

APPENDIX J

2021 Hydrogeologic Characterization OSP Completions and Piezometric Levels

Appendix J - 2021 Hydrogeologic Characterization OSP Completions and Piezometric Levels

Location ID	Collar Elevation (ft amsl)	Total Depth (ft bgs)	Screened Interval (ft bgs)	Measurement Date	Depth to Water (ft bgs)	Piezometric Elevation (ft amsl)	Geology
G&H2021-01	3645	95	40-100	11/14/2021	63	3582	Granite
G&H2021-02	3675	308	13-33	11/14/2021	Dry	Dry	Alluvium
G&H2021-07	3834	400	40-100	11/14/2021	69	3764	Silty Limestone
G&H2021-10	4005	300	70-130	11/14/2021	79	3926	Conglomerate, granodiorite
G&H2021-11	4164	300	70-130	11/14/2021	98	4066	Granodiorite
G&H2021-17	4150	300	120-180	11/14/2021	132	4018	Granite
G&H2021-22	4421	300	100-160	11/14/2021	139	4282	Granite
G&H2021-25	4637	300	30-90	11/14/2021	48	4589	Granodiorite
Pit2021-07	5103	678	410-510	11/14/2021	421	4682	Quartzite, limestone
Pit2021-08	5604	720	180-280	11/14/2021	194	5409	Quatz monzonite porphyry
RNW-HB-091	4562	1097	30-90	11/14/2021	31	4531	Granodiorite, granite
RNW-HB-108	4634	425	30-100	11/11/2021	42	4592	Granodiorite, hornfels
RNW-HB-168	4302	600	80-140	11/14/2021	88	4214	Granite

APPENDIX K

VWP and OSP Hydrographs



PITEAU ASSOCIATES
Geotechnical and Water
Management Consultants
A TETRA TECH COMPANY

Piezometer Hydrograph: Pit2021-02

CLIENT: Rosemont Copper Company

JOB #: 4286

DATE: May 2022

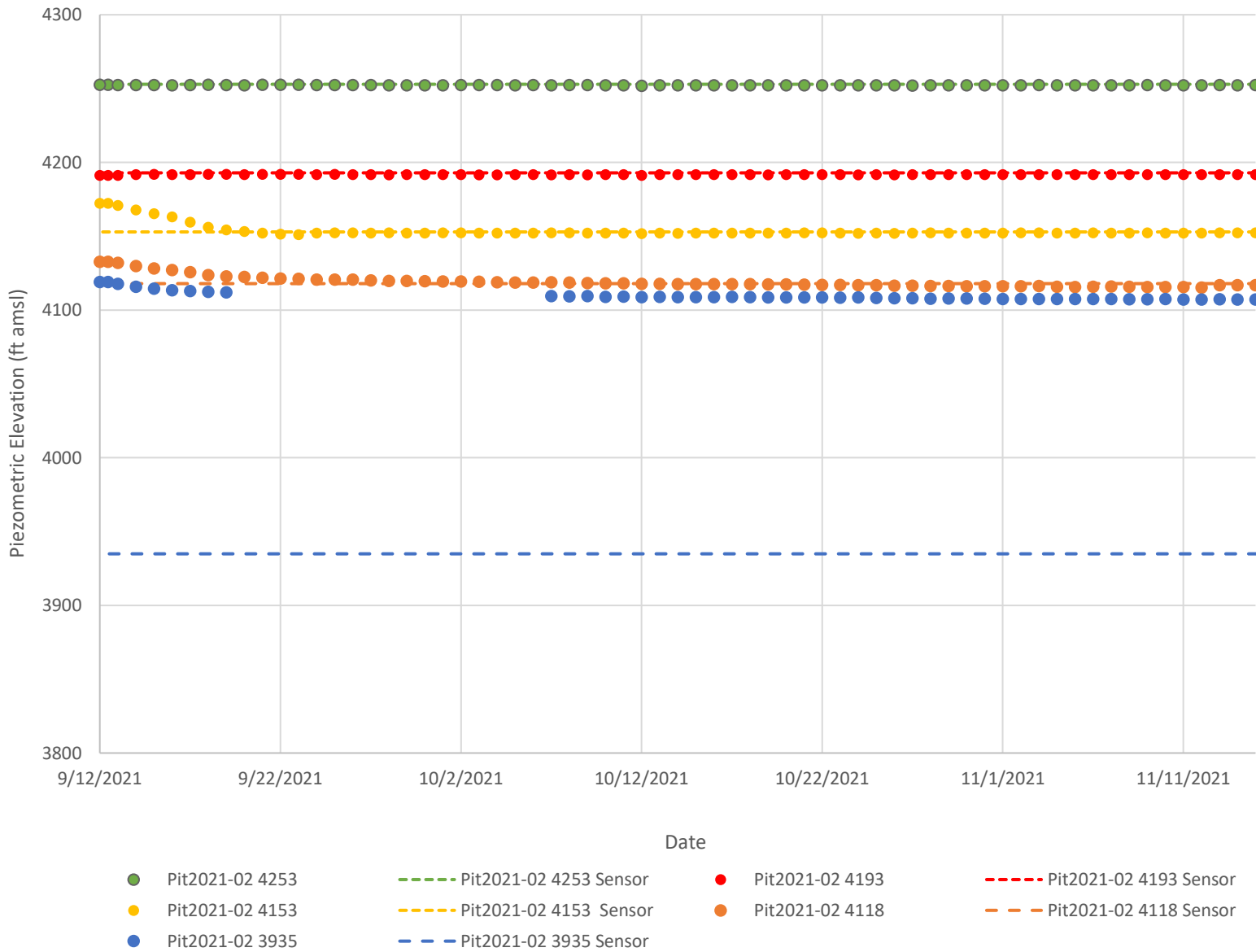
PROJECT: Rosemont Copper World Project

DRAWN: SM

CHECKED: BG

FIGURE: 1

Pit2021-02 Hydrograph



Piezometer Hydrograph: Pit2021-03

CLIENT: Rosemont Copper Company

JOB #: 4286

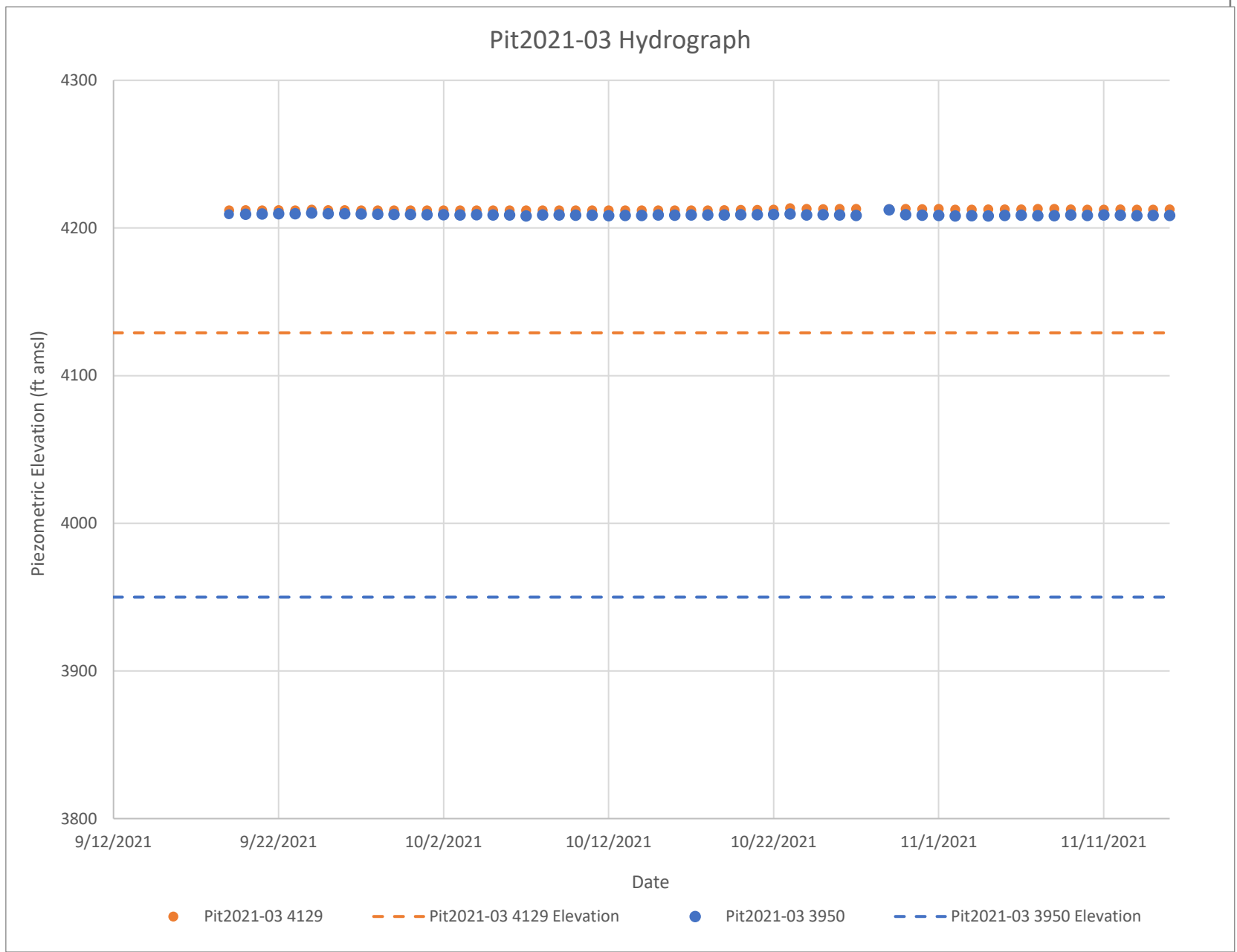
DATE: May 2022

PROJECT: Rosemont Copper World Project

DRAWN: SM

CHECKED: BG

FIGURE: 2





**PITEAU
ASSOCIATES**
Geotechnical and Water
Management Consultants
A TERRA TECH COMPANY

Piezometer Hydrograph: Pit2021-04

CLIENT: **Rosemont Copper Company**

JOB #: **4286**

DATE: **May 2022**

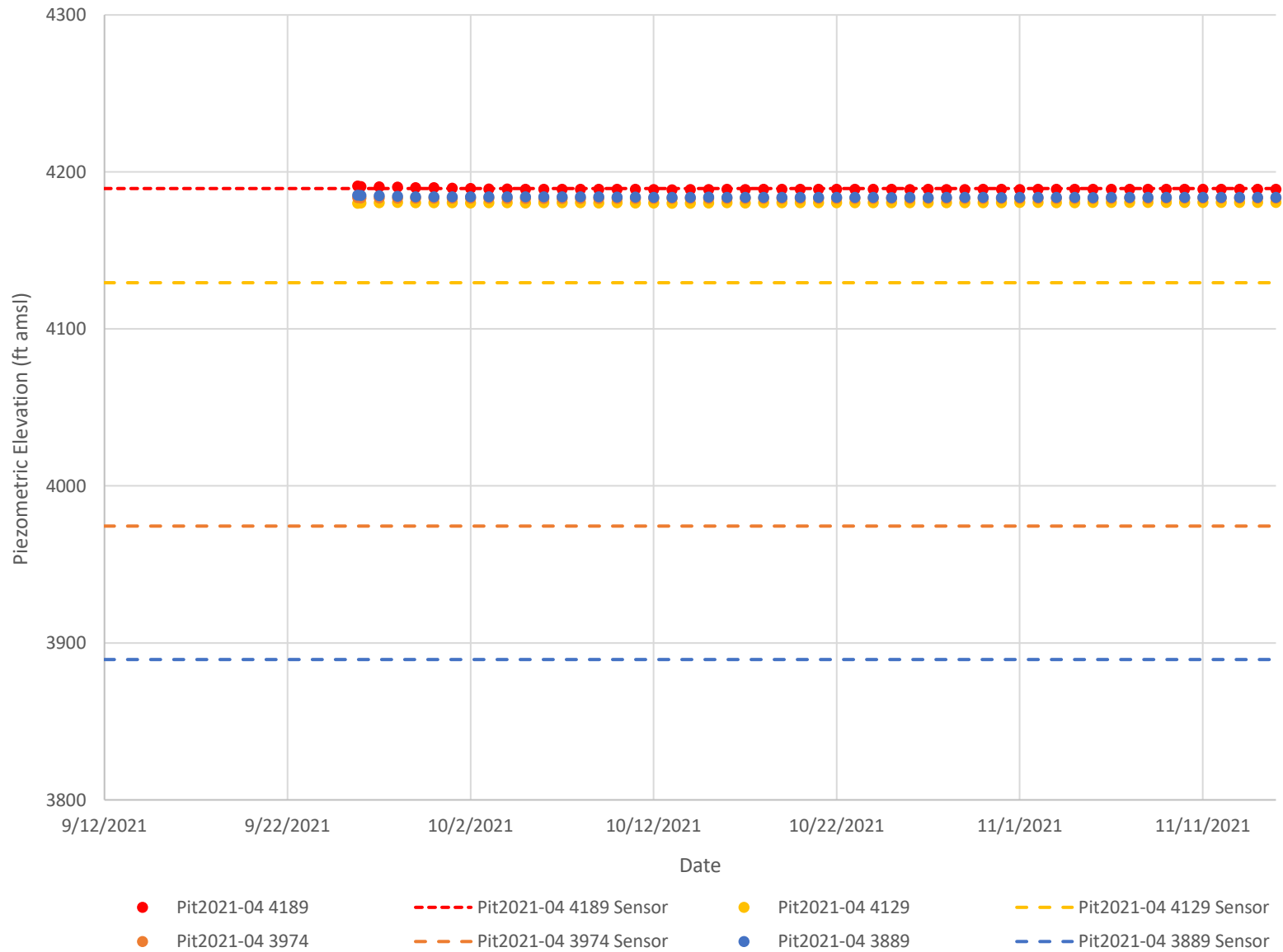
PROJECT: **Rosemont Copper World Project**

DRAWN: **SM**

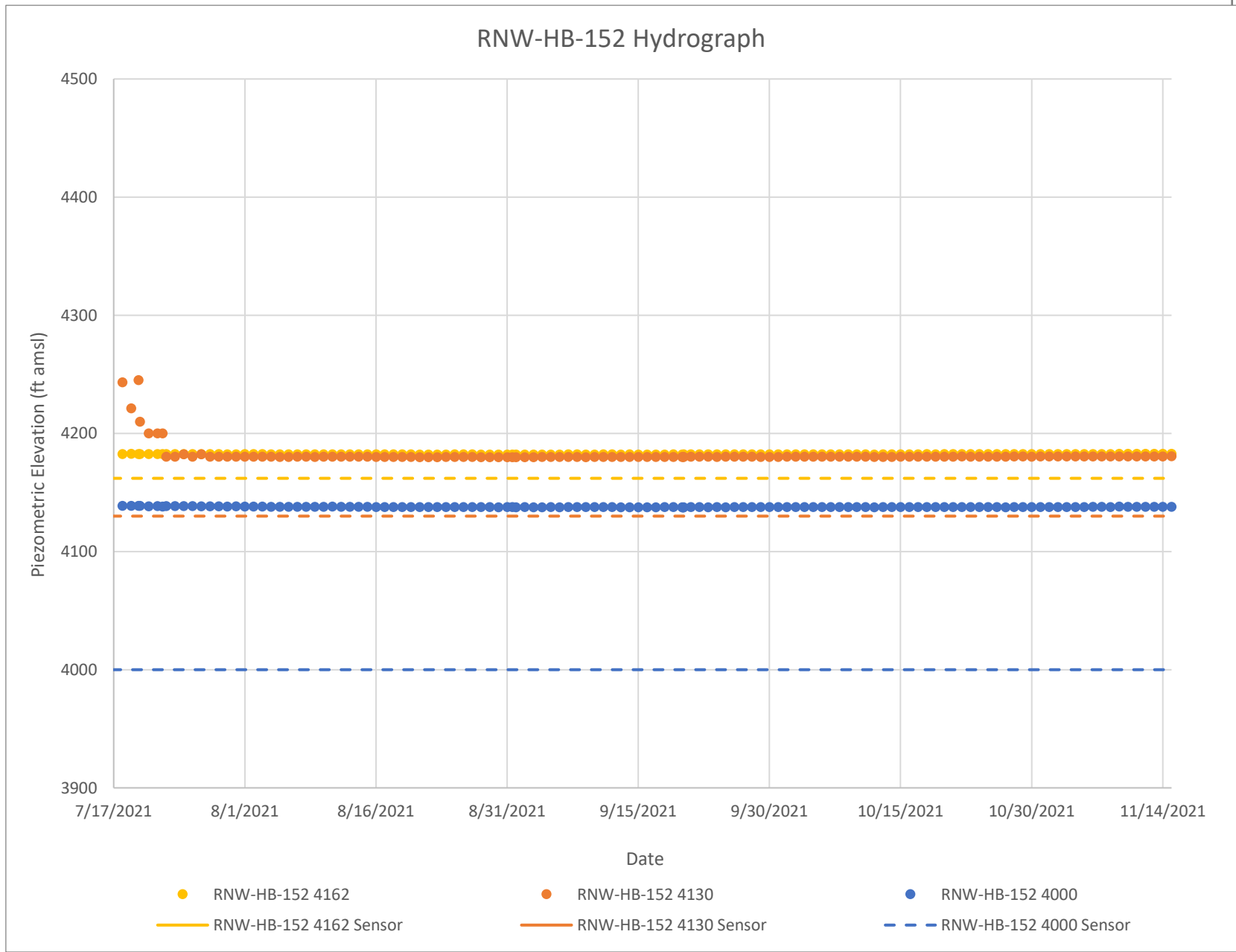
CHECKED: **BG**

FIGURE: **3**

Pit2021-04 Hydrograph



Piezometer Hydrograph: RNW-HB-152		
CLIENT:	Rosemont Copper Company	
JOB #:	4286	
DATE:	May 2022	
PROJECT:	Rosemont Copper World Project	
DRAWN:	SM	CHECKED: BG
FIGURE:	4	





**PITEAU
ASSOCIATES**
Geotechnical and Water
Management Consultants
A TETRA TECH COMPANY

OSP Hydrograph: RNW-HB-168

CLIENT: **Rosemont Copper Company**

PROJECT: **Rosemont Copper World Project**

JOB #: **4286**

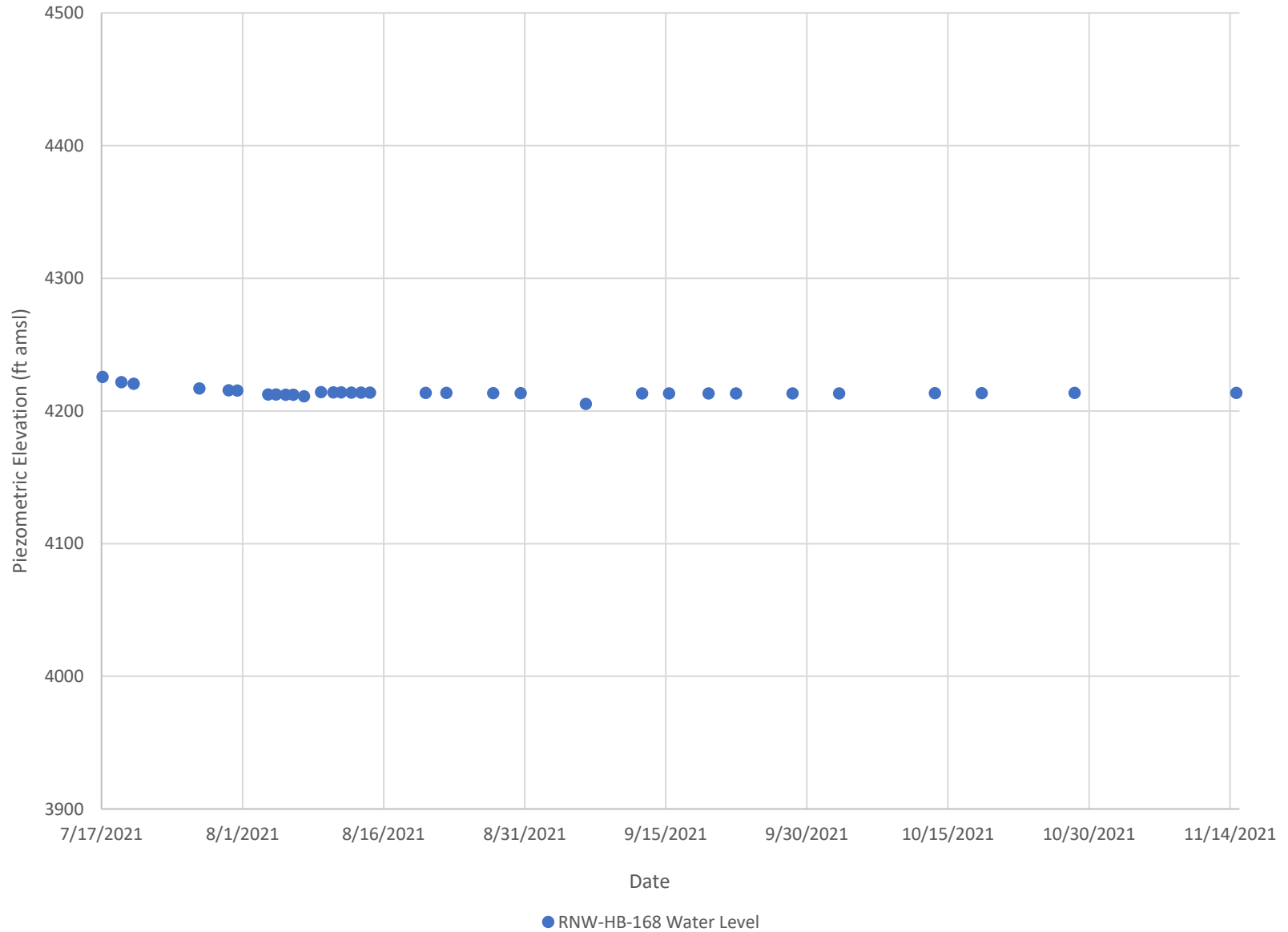
DRAWN: **SM**

CHECKED: **BG**

DATE: **May 2022**

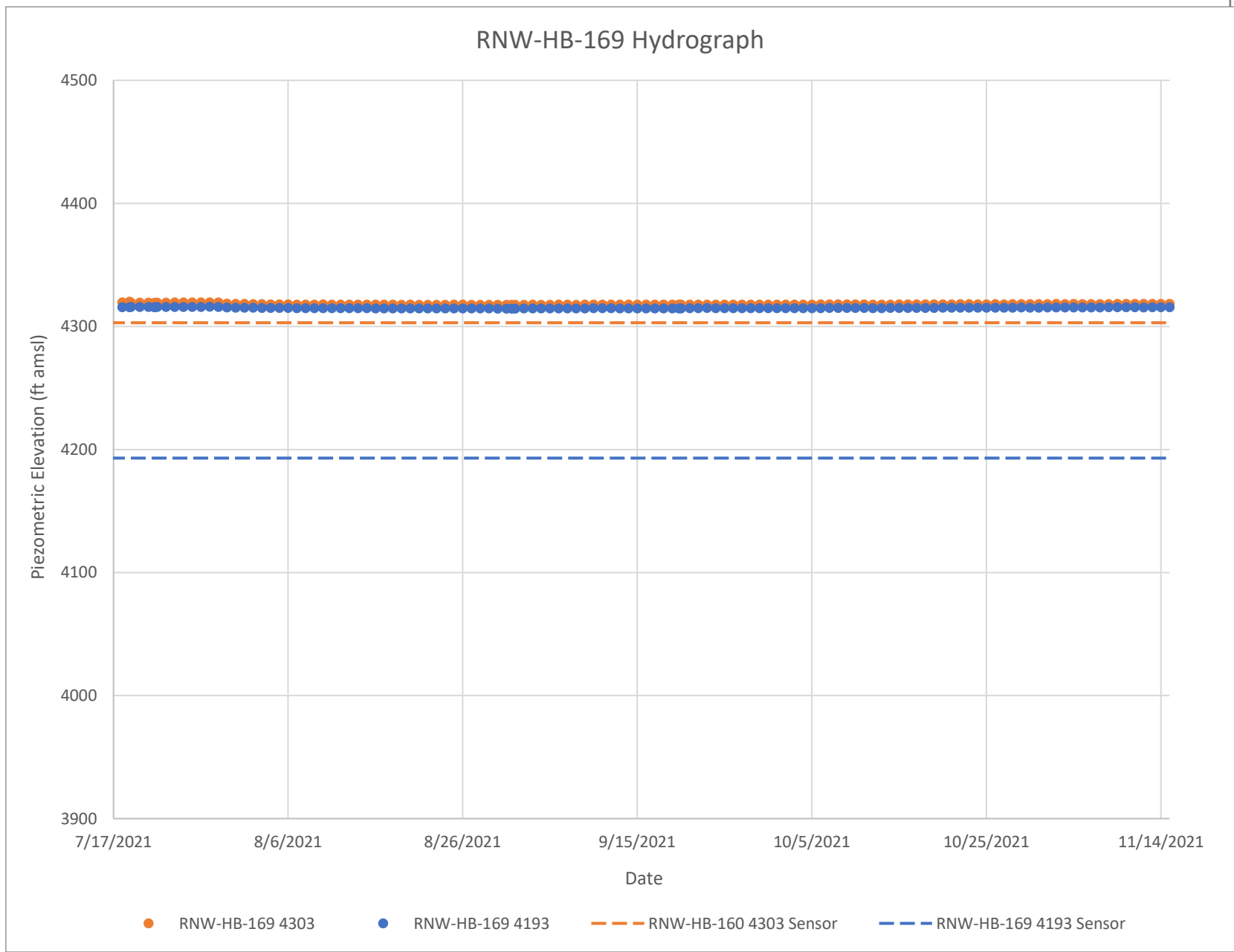
FIGURE: **5**

RNW-HB-168 Hydrograph





Piezometer Hydrograph: RNW-HB-169			
CLIENT:	Rosemont Copper Company		
JOB #:	4286		
DATE:	May 2022		
PROJECT:	Rosemont Copper World Project		
DRAWN:	SM		CHECKED:
FIGURE:	6		BG





**PITEAU
ASSOCIATES**
Geotechnical and Water
Management Consultants
A TERRA TECH COMPANY

OSP Hydrograph: RNW-HB-091

CLIENT: Rosemont Copper Company

JOB #: 4286

DATE: May 20222

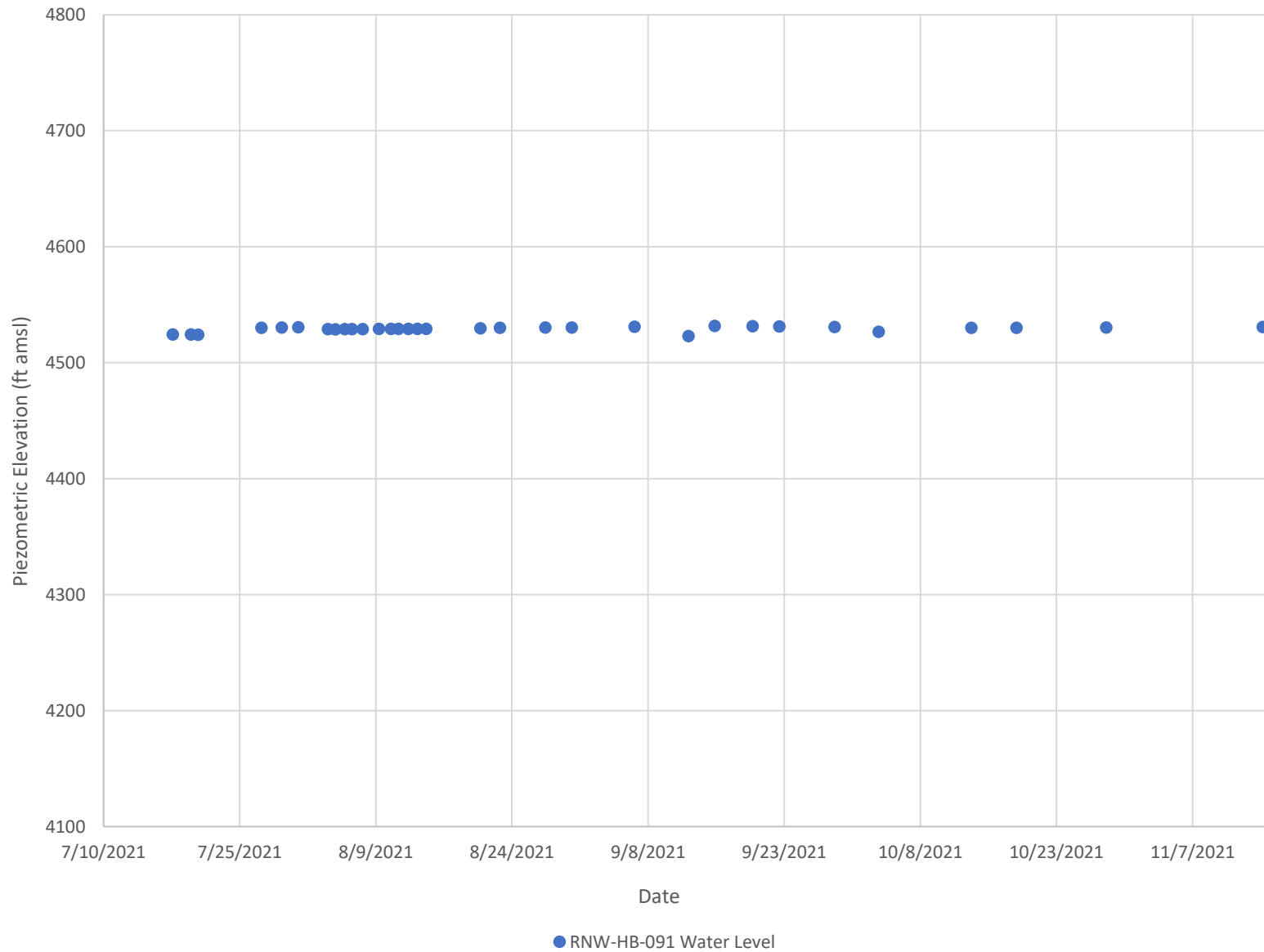
PROJECT: Rosemont Copper World Project

DRAWN: SM

CHECKED: BG

FIGURE: 7

RNW-HB-091 Hydrograph



Piezometer Hydrograph: RNW-HB-096

CLIENT: Rosemont Copper Company

JOB #: 4286

DATE: May 2022

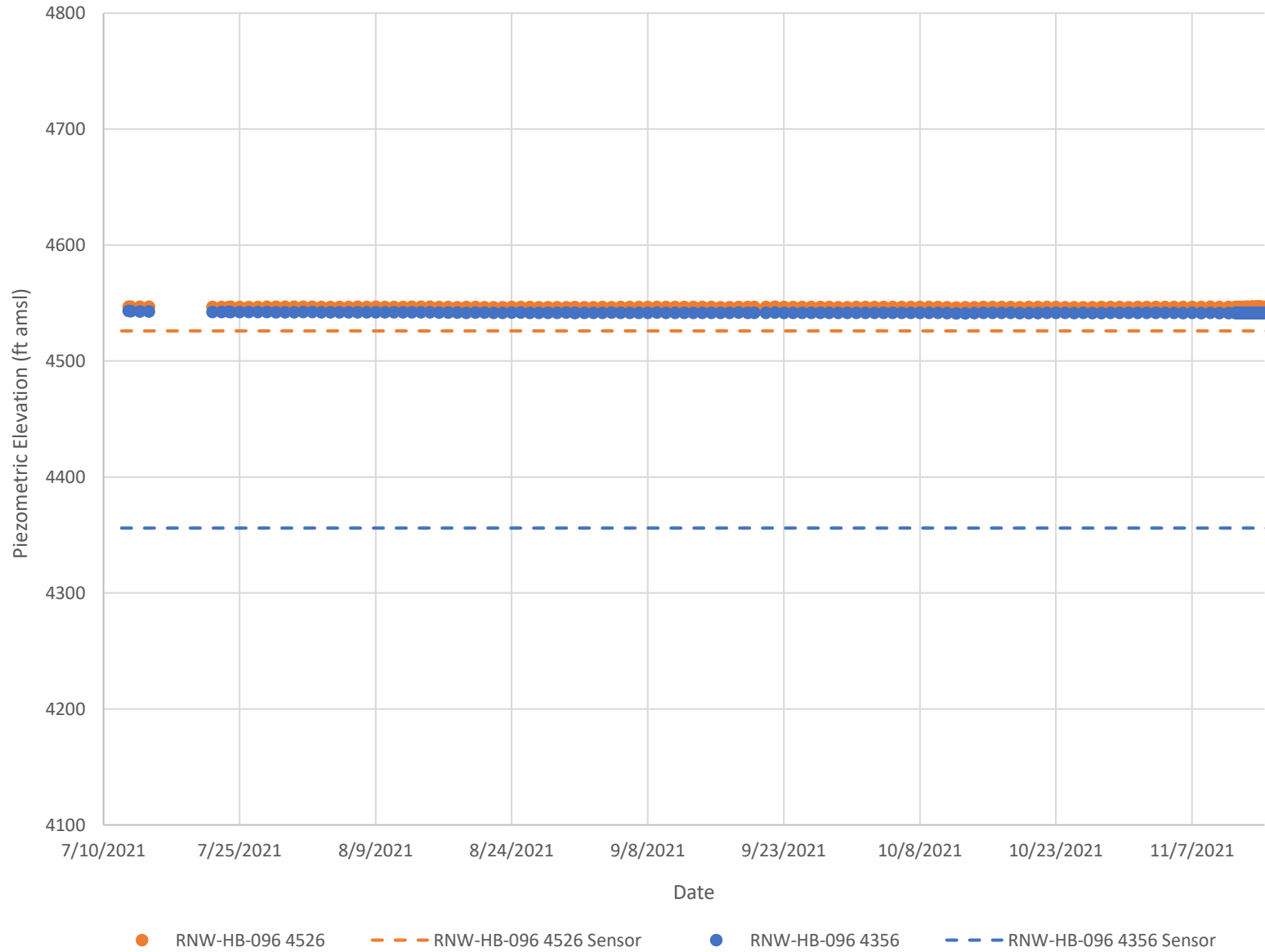
PROJECT: Rosemont Copper World Project

DRAWN: SM

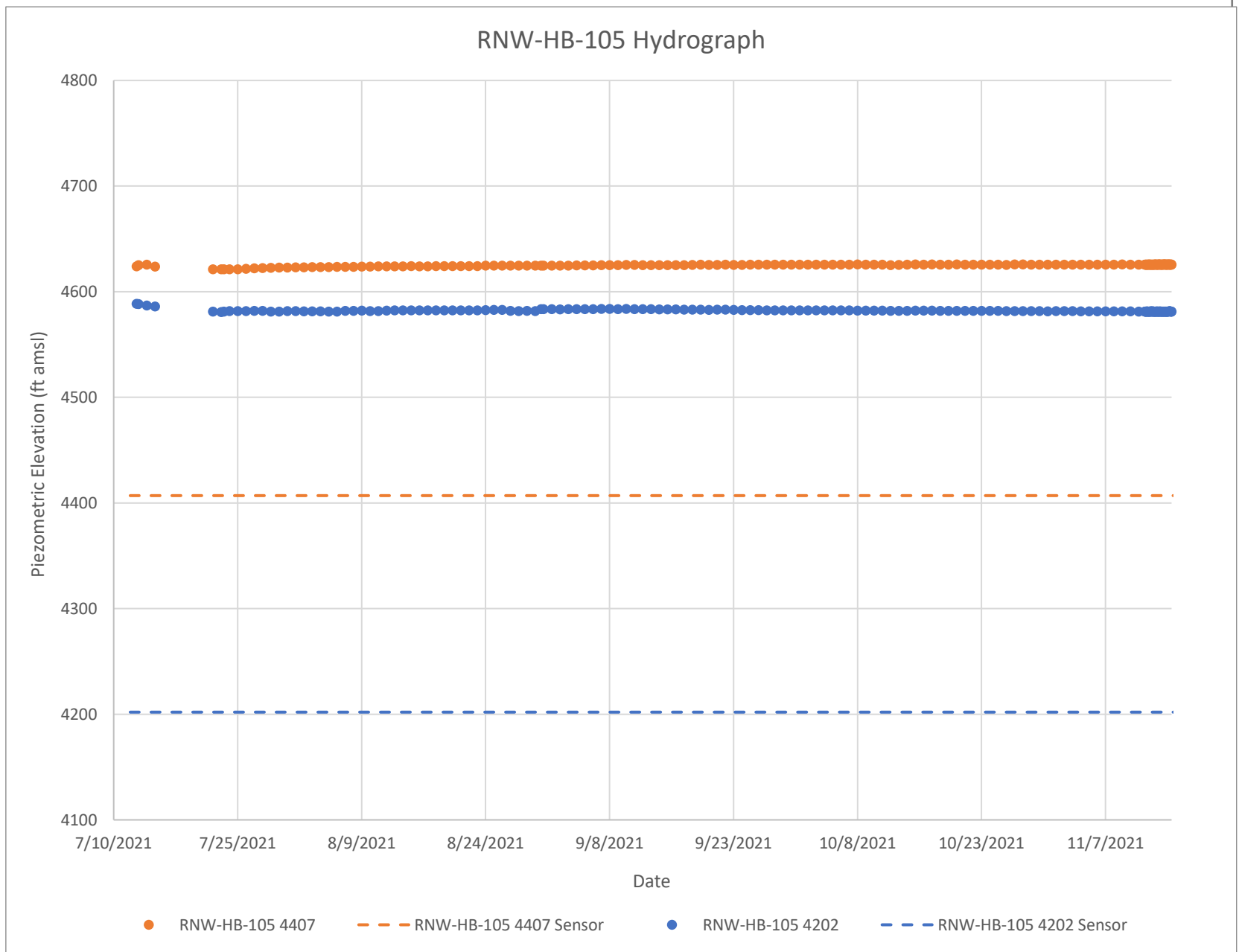
CHECKED: BG

FIGURE: 8

RNW-HB-096 Hydrograph



Piezometer Hydrograph: RNW-HB-105			
CLIENT:	Rosemont Copper Company		
JOB #:	4286		
DATE:	May 2022		
PROJECT:	Rosemont Copper World Project		
DRAWN:	SM		CHECKED:
FIGURE:	9		BG



OSP Hydrograph: RNW-HB-108

CLIENT: Rosemont Copper Company

JOB #: 4286

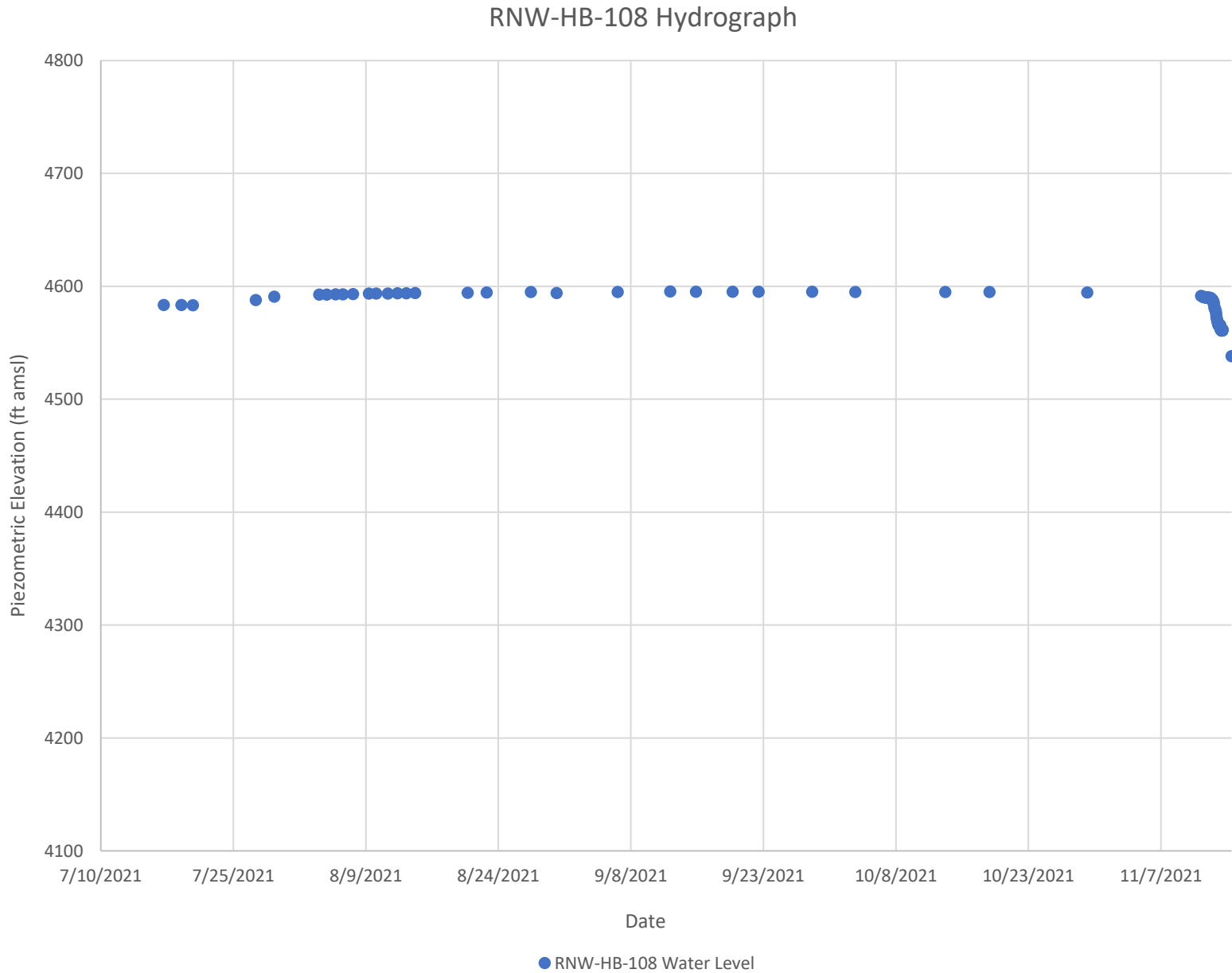
DATE: May 20222

PROJECT: Rosemont Copper World Project

DRAWN: SM

CHECKED: BG

FIGURE: 10





**PITEAU
ASSOCIATES**
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Management Consultants
A TERRA TECH COMPANY

Piezometer Hydrograph: G&H2021-26

CLIENT: Rosemont Copper Company

JOB #: 4286

DATE: May 2022

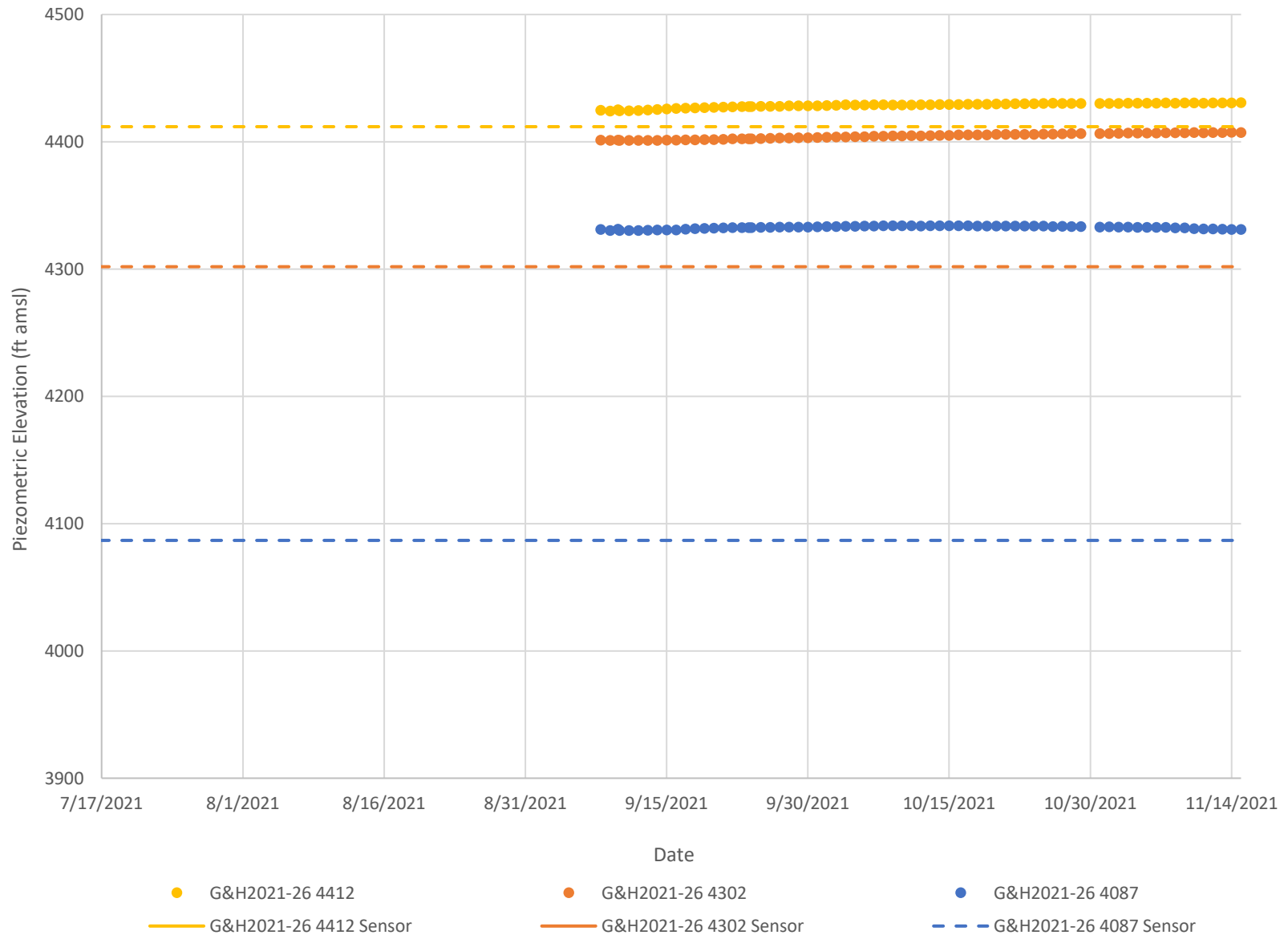
PROJECT: Rosemont Copper World Project

DRAWN: SM

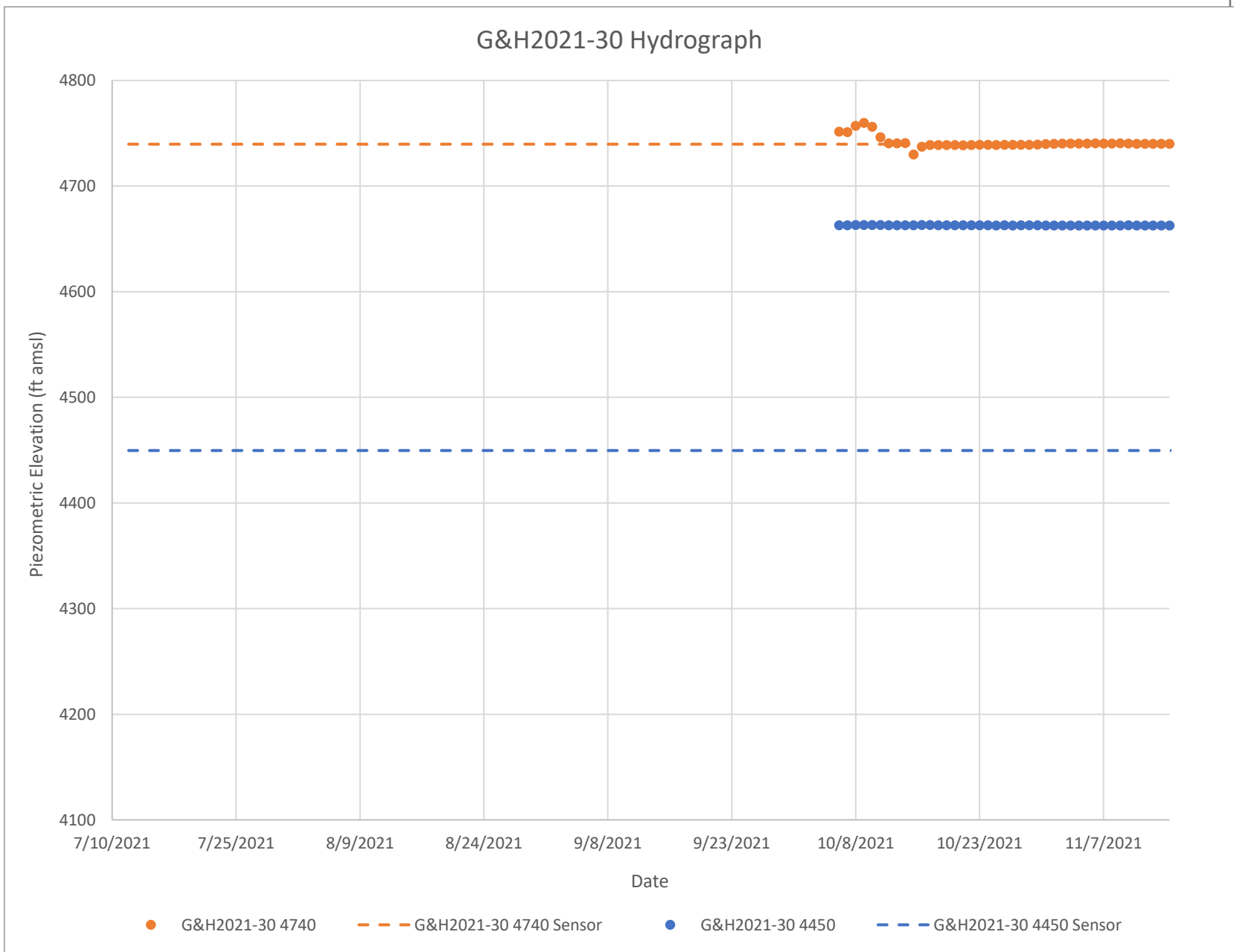
CHECKED: BG

FIGURE: 11

G&H2021-26 Hydrograph



Piezometer Hydrograph: G&H2021-30			
CLIENT:	Rosemont Copper Company		
JOB #:	4286		
DATE:	May 2022		
PROJECT:	Rosemont Copper World Project		
DRAWN:	SM	CHECKED:	BG
FIGURE:	12		





**PITEAU
ASSOCIATES**
Geotechnical and Water
Management Consultants
A TETRA TECH COMPANY

Piezometer Hydrograph: Pit2021-06

CLIENT: **Rosemont Copper Company**

JOB #: **4286**

DATE: **May 2022**

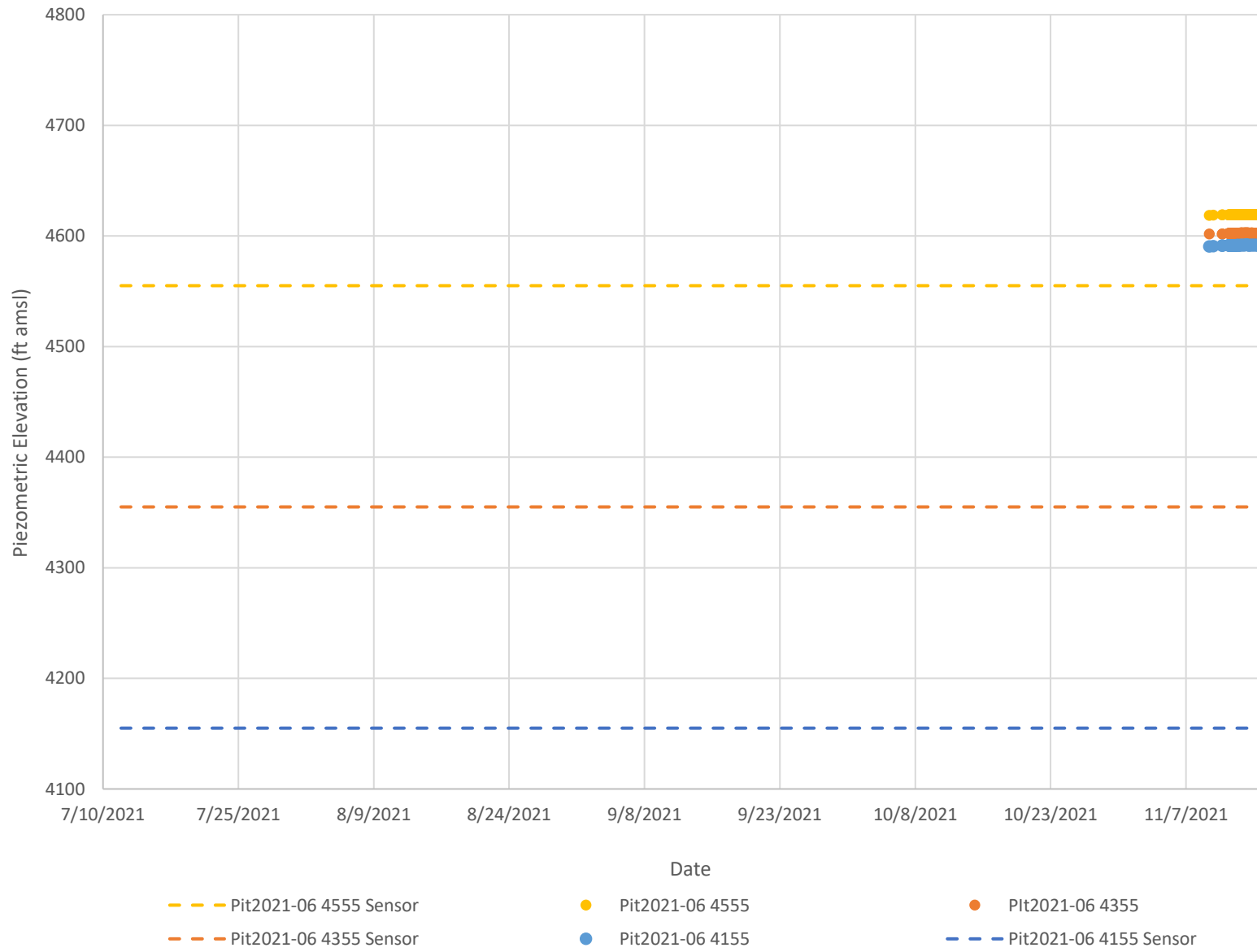
PROJECT: **Rosemont Copper World Project**

DRAWN: **SM**

CHECKED: **BG**

FIGURE: **13**

Pit 2021-06 Hydrograph





**PITEAU
ASSOCIATES**
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Management Consultants
A TETRA TECH COMPANY

OSP Hydrograph: Pit2021-07

CLIENT: Rosemont Copper Company

JOB #: 4286

DATE: May 2022

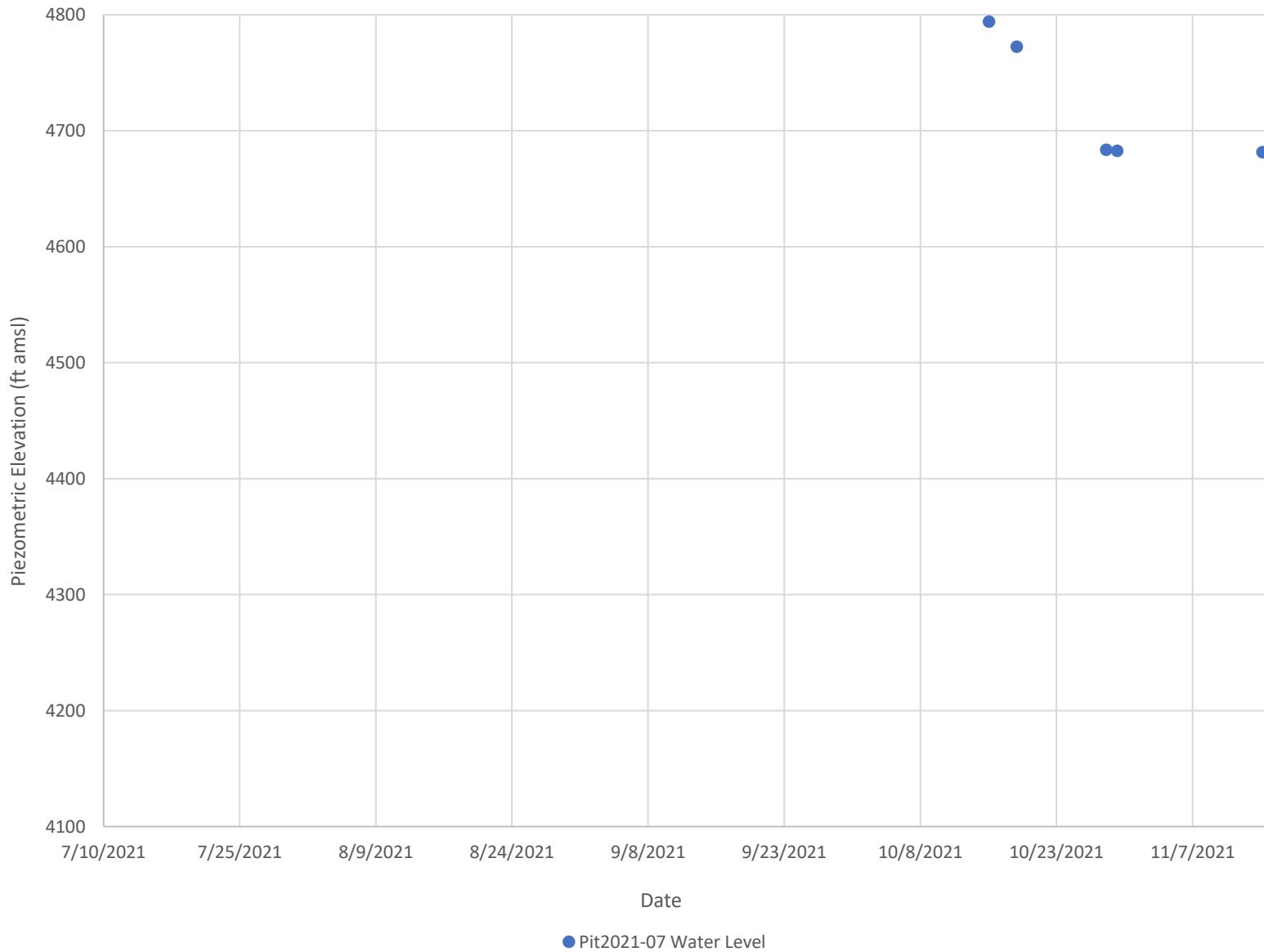
PROJECT: Rosemont Copper World Project

DRAWN: SM

CHECKED: BG

FIGURE: 14

Pit2021-07 Hydrograph



OSP Hydrograph: Pit2021-08

CLIENT: Rosemont Copper Company

JOB #: 4286

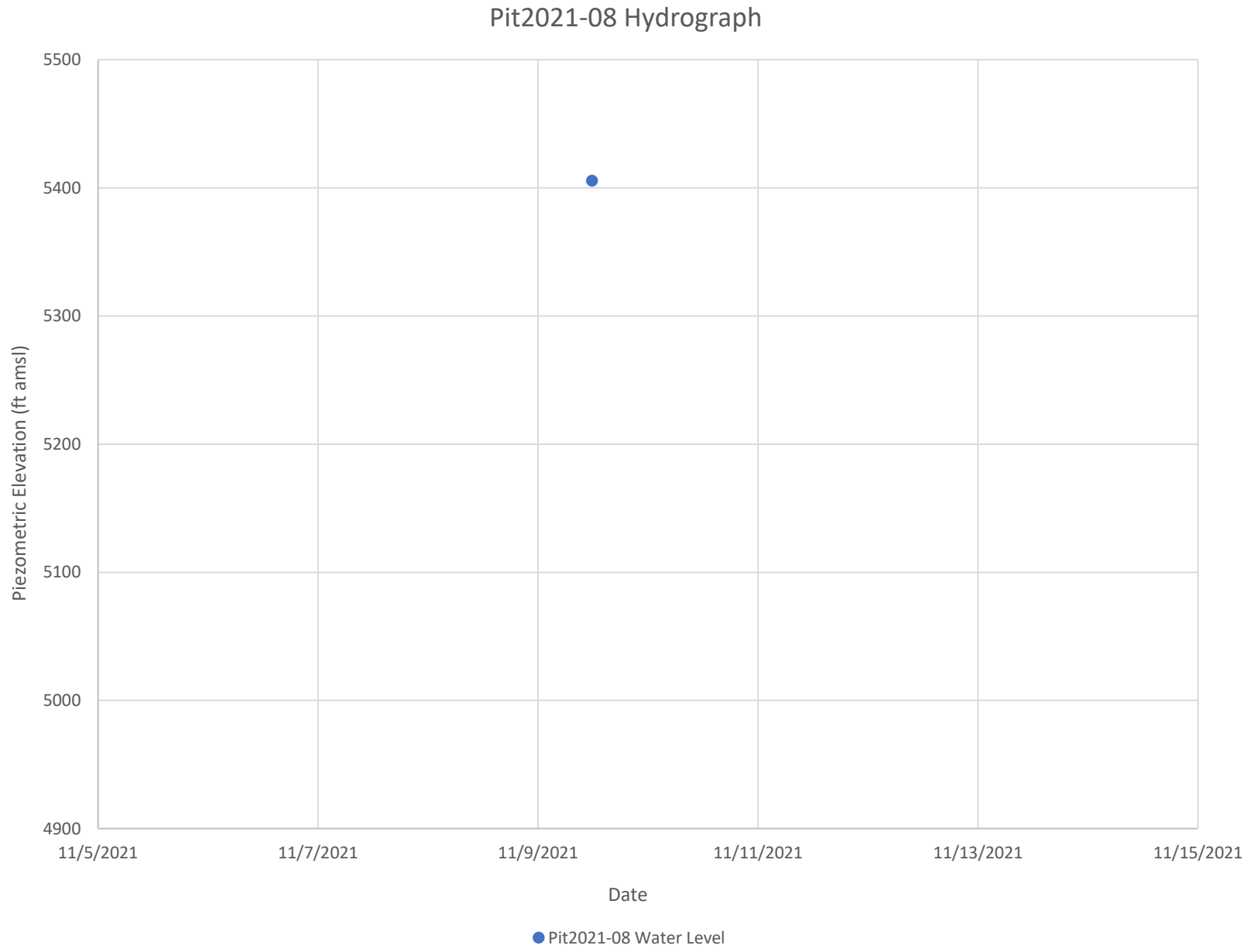
DATE: May 2022

PROJECT: Rosemont Copper World Project

DRAWN: SM

CHECKED: BG

FIGURE: 15



Piezometer Hydrograph: Pit2021-09

CLIENT: Rosemont Copper Company

JOB #: 4286

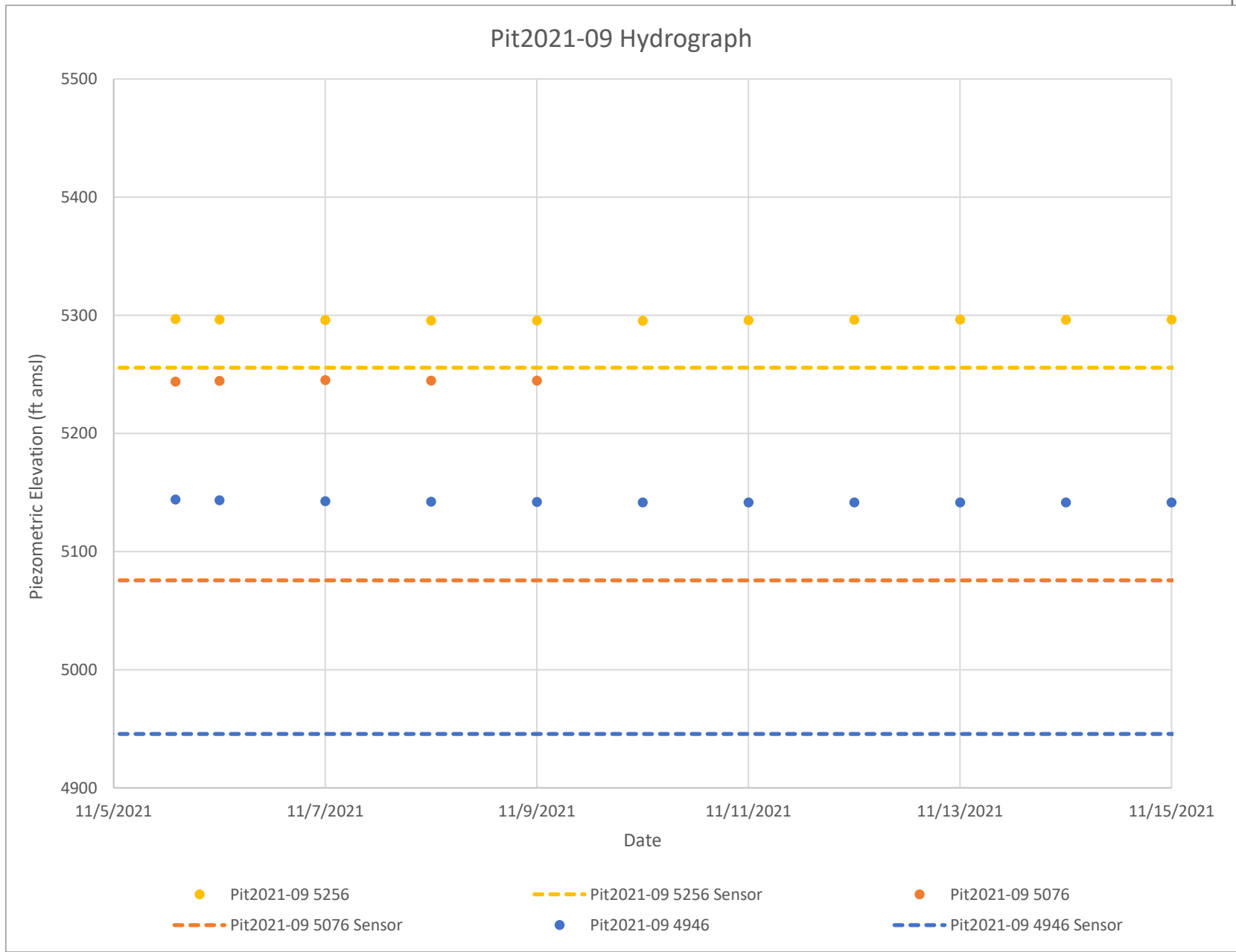
DATE: May 2022

PROJECT: Rosemont Copper World Project

DRAWN: SM

CHECKED: BG

FIGURE: 16



OSP Hydrograph: G&H2021-01

CLIENT: Rosemont Copper Company

JOB #: 4286

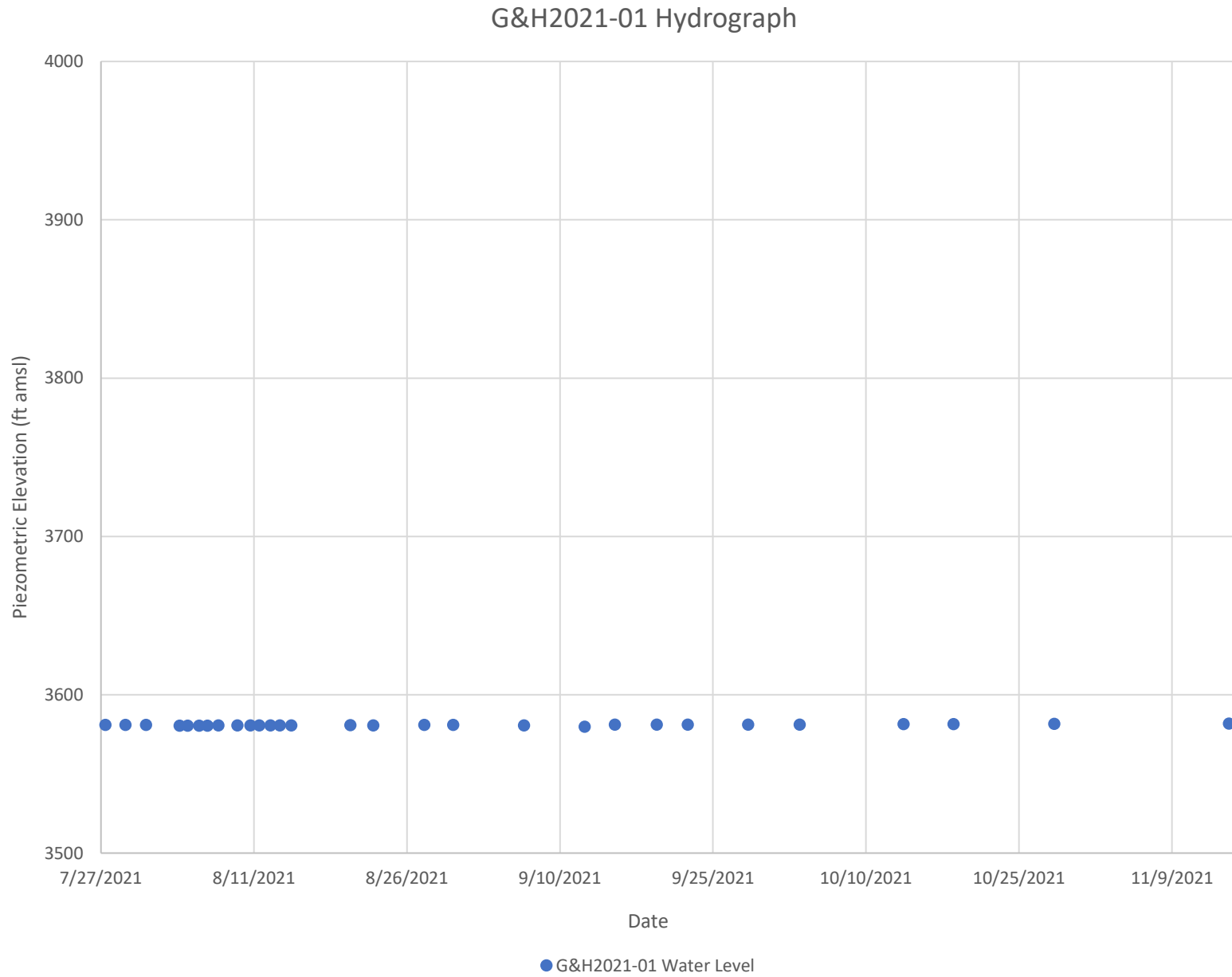
DATE: May 2022

PROJECT: Rosemont Copper World Project

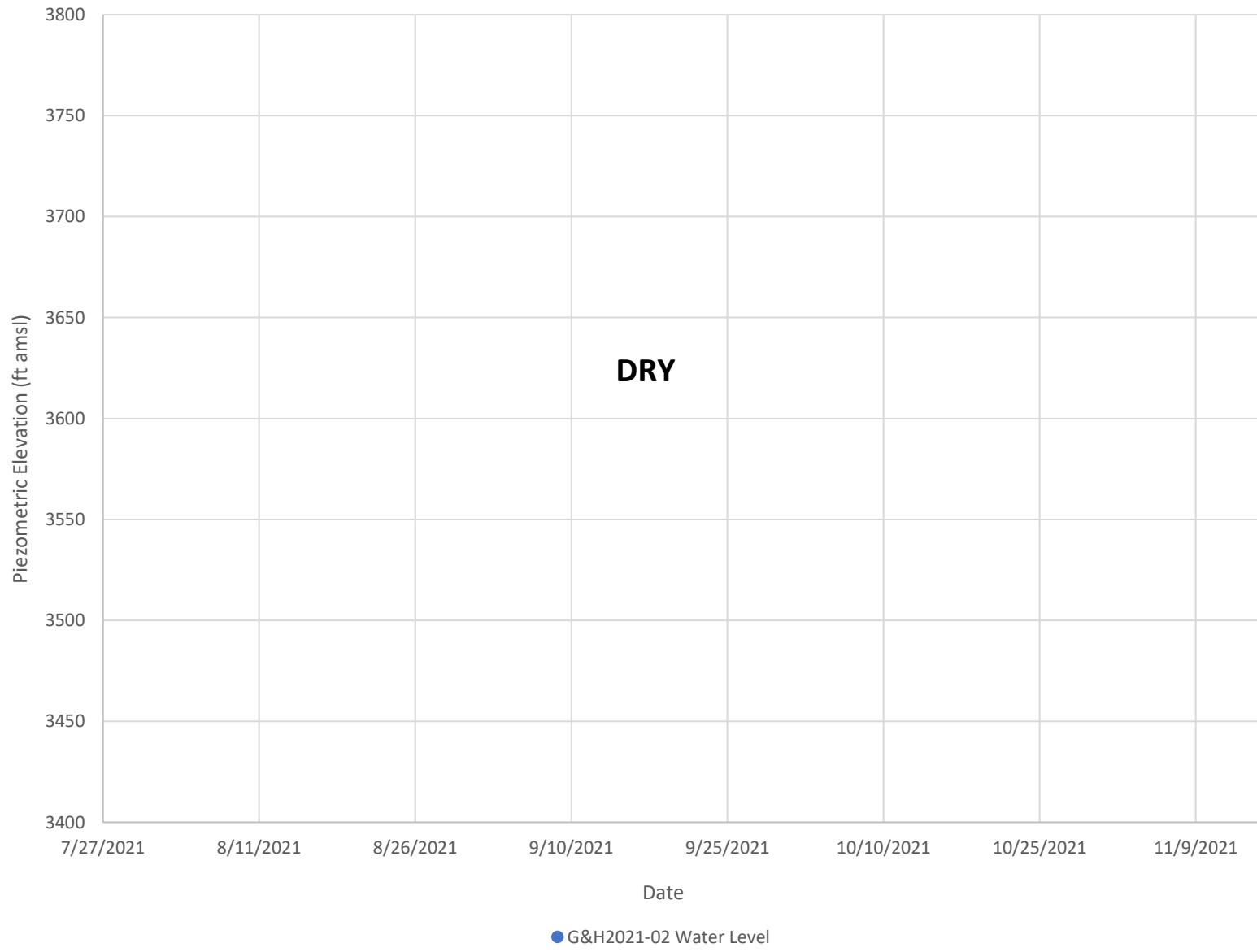
DRAWN: SM

CHECKED: BG

FIGURE: 17



G&H2021-02 Hydrograph



OSP Hydrograph: G&H2021-01

CLIENT: Rosemont Copper Company

JOB #: 4286

DATE: May 2022

PROJECT: Rosemont Copper World Project

DRAWN: SM

CHECKED: BG

FIGURE: 18

OSP Hydrograph: G&H2021-07

CLIENT: Rosemont Copper Company

JOB #: 4286

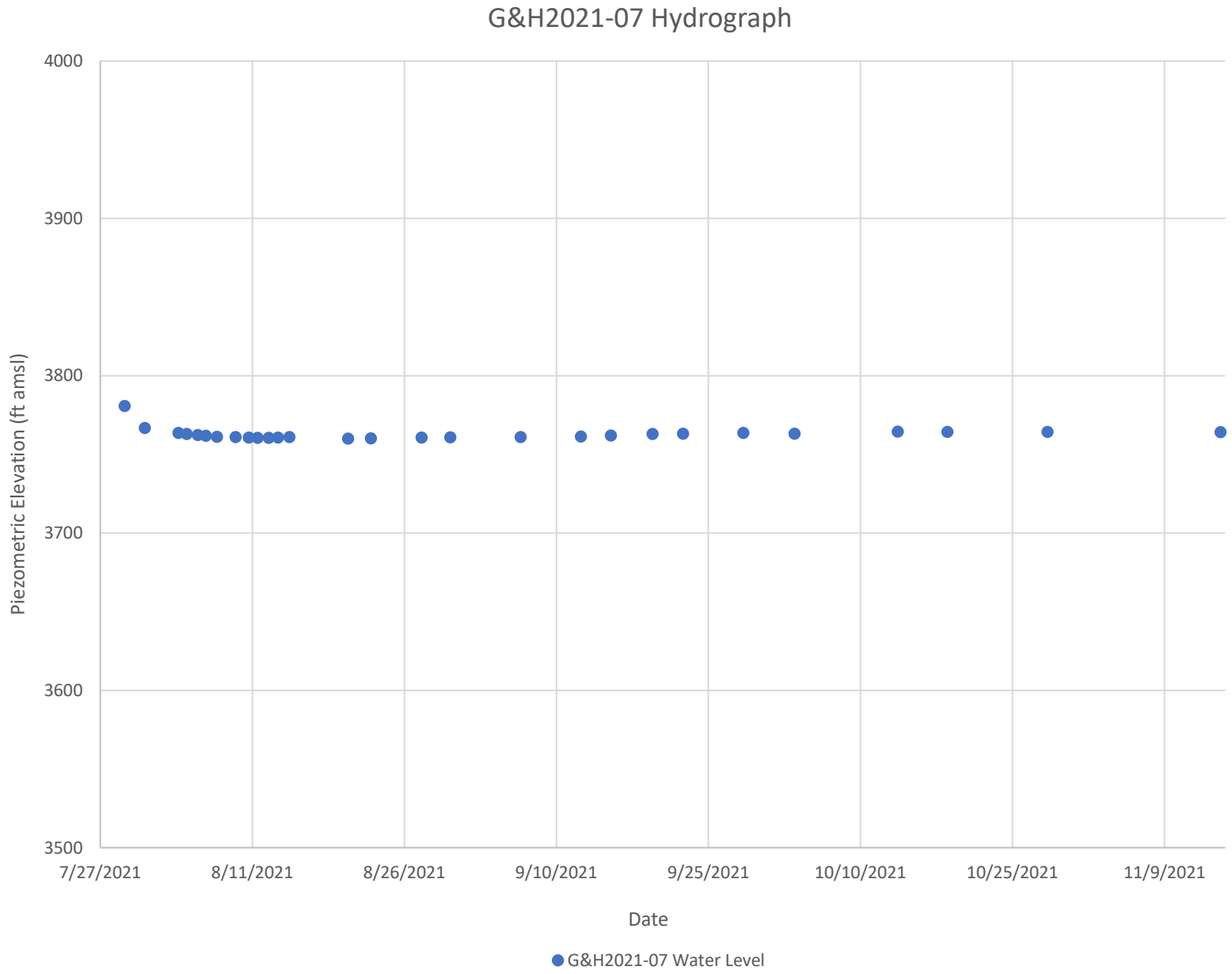
DATE: May 2022

PROJECT: Rosemont Copper World Project

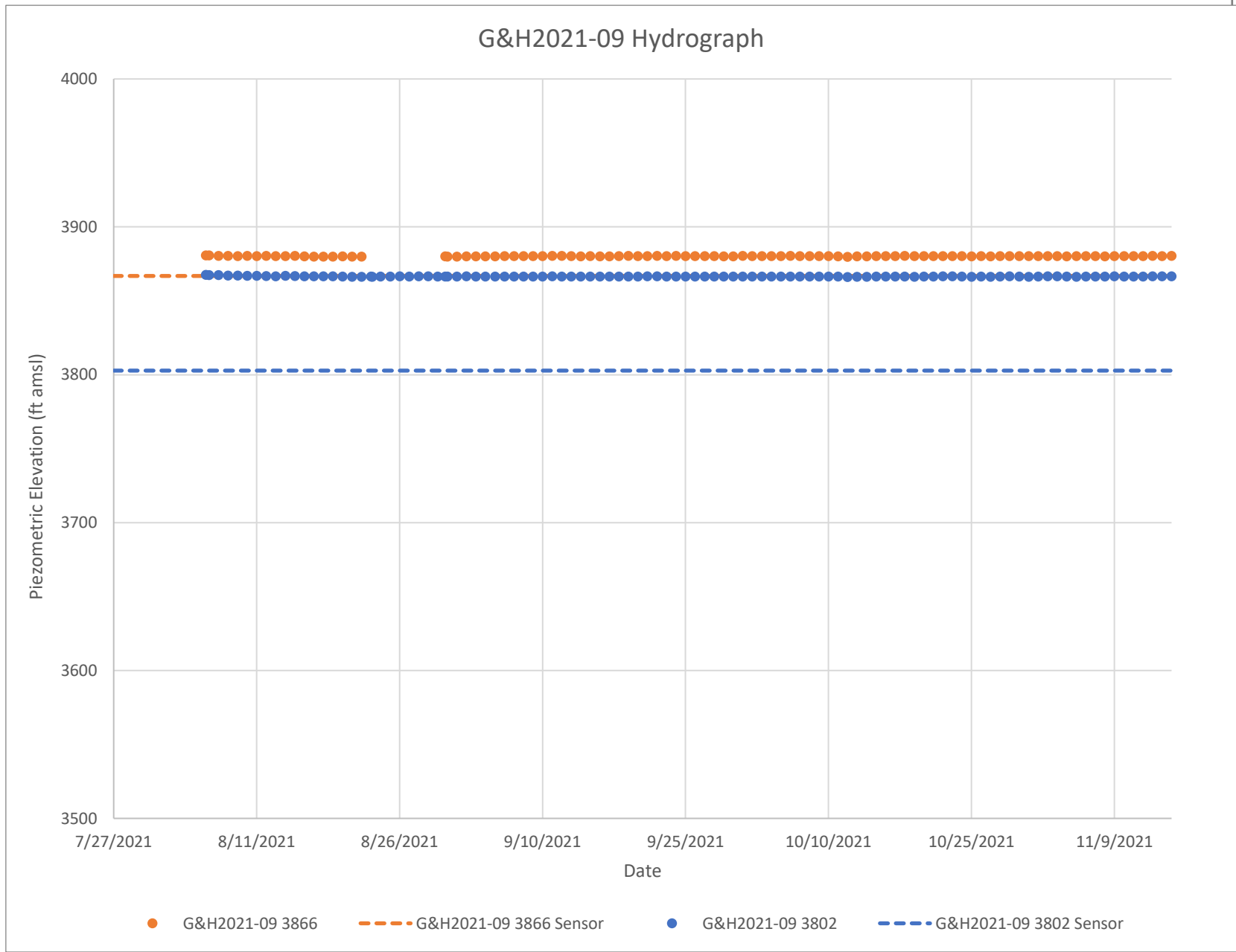
DRAWN: SM

CHECKED: BG

FIGURE: 19



OSP Hydrograph: G&H2021-09			
CLIENT:	Rosemont Copper Company		
JOB #:	4286		
DATE:	May 2022		
PROJECT:	Rosemont Copper World Project		
DRAWN:	SM	CHECKED:	BG
FIGURE:	20		



OSP Hydrograph: G&H2021-10

CLIENT: Rosemont Copper Company

JOB #: 4286

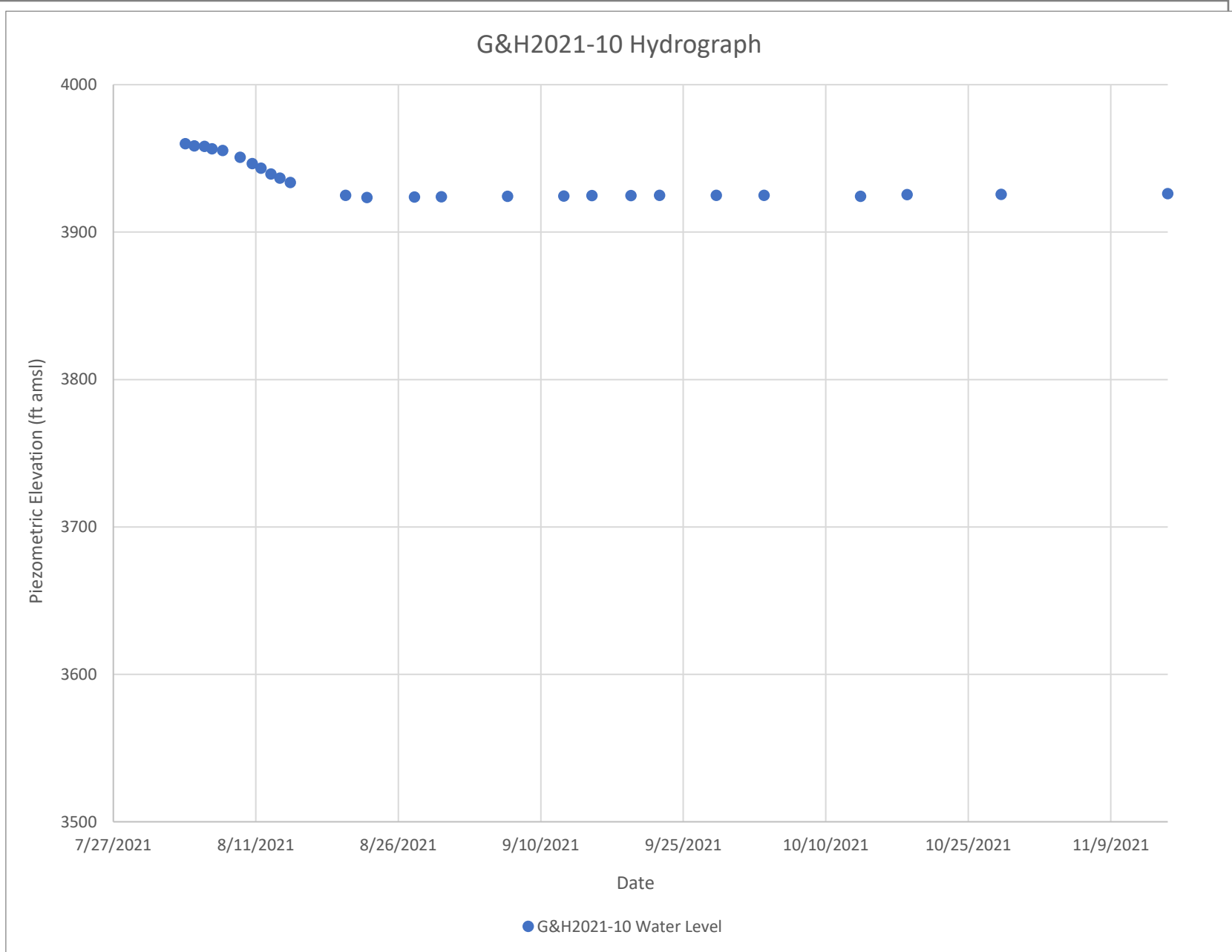
DATE: May 2022

PROJECT: Rosemont Copper World Project

DRAWN: SM

CHECKED: BG

FIGURE: 21





**PITEAU
ASSOCIATES**
Geotechnical and Water
Management Consultants
A TETRA TECH COMPANY

OSP Hydrograph: G&H2021-11

CLIENT: **Rosemont Copper Company**

JOB #: **4286**

DATE: **May 2022**

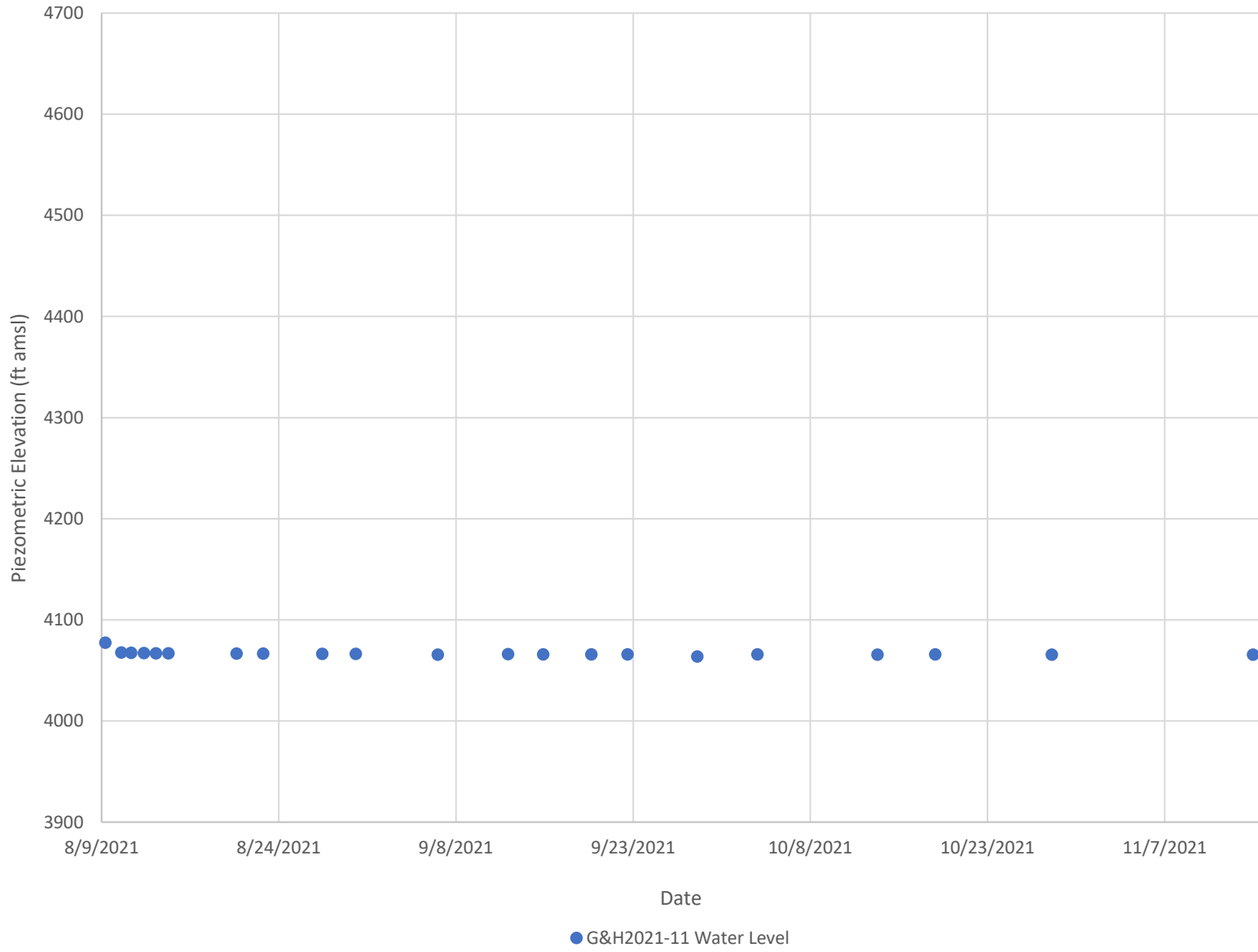
PROJECT: **Rosemont Copper World Project**

DRAWN: **SM**

CHECKED: **BG**

FIGURE: **22**

G&H2021-11 Hydrograph



Piezometer Hydrograph: G&H2021-13

CLIENT: Rosemont Copper Company

JOB #: 4286

DATE: May 2022

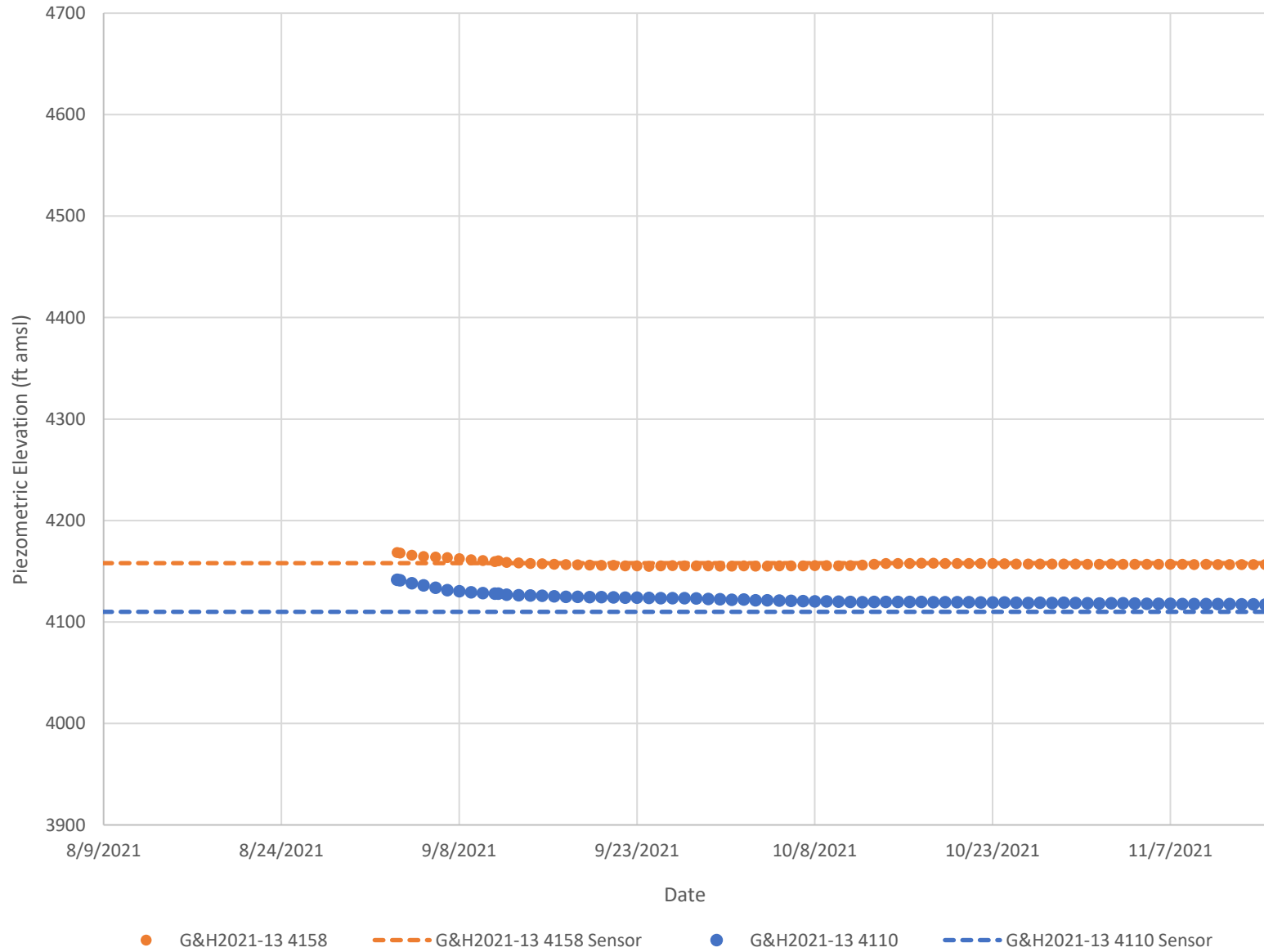
PROJECT: Rosemont Copper World Project

DRAWN: SM

CHECKED: BG

FIGURE: 23

G&H2021-13 Hydrograph





**PITEAU
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A TETRA TECH COMPANY

OSP Hydrograph: G&H2021-17

CLIENT: **Rosemont Copper Company**

PROJECT: **Rosemont Copper World Project**

JOB #: **4286**

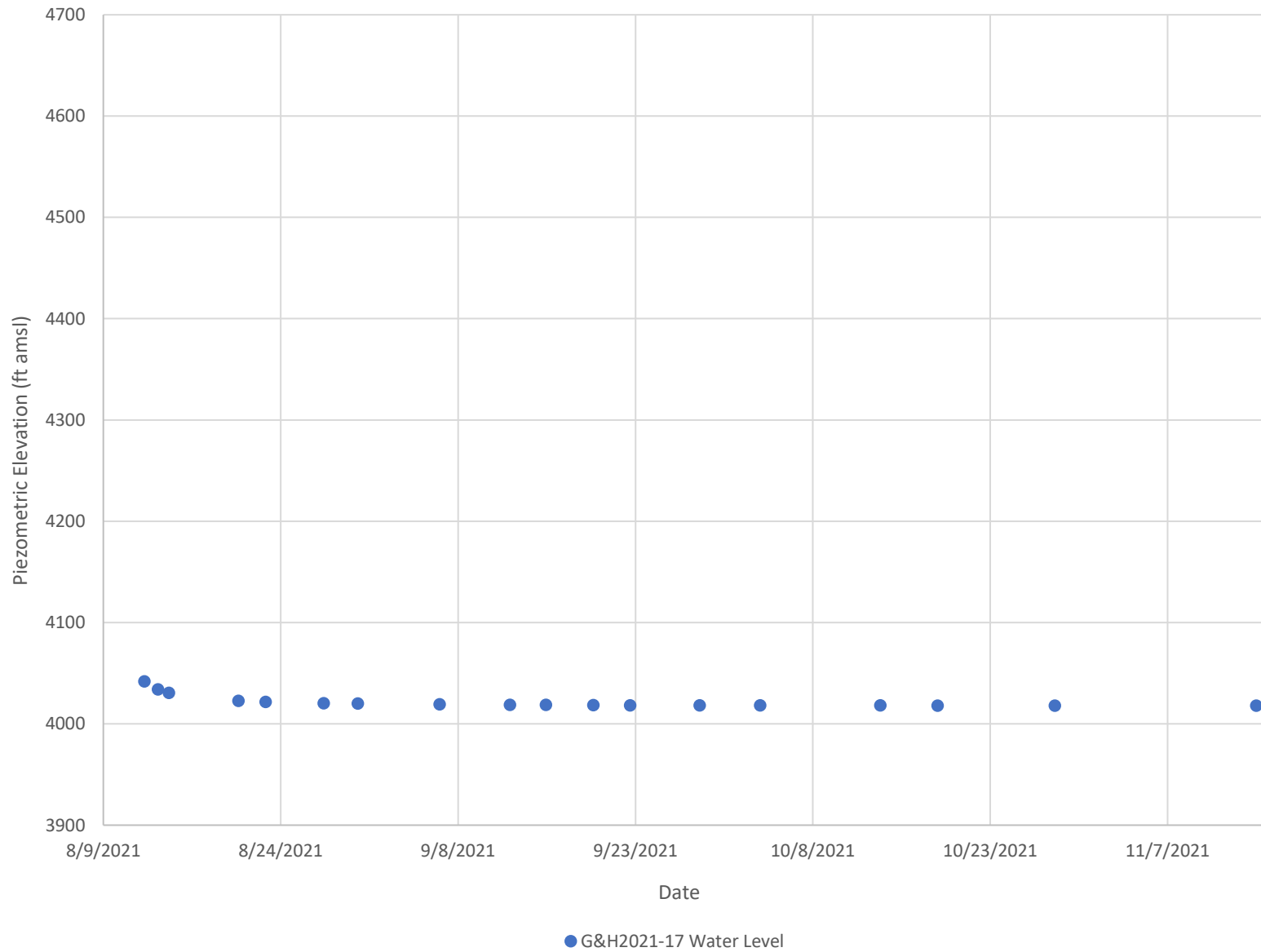
DRAWN: **SM**

CHECKED: **BG**

DATE: **May 2022**

FIGURE: **24**

G&H2021-17 Hydrograph



OSP Hydrograph: G&H2021-22

CLIENT: Rosemont Copper Company

JOB #: 4286

DATE: May 2022

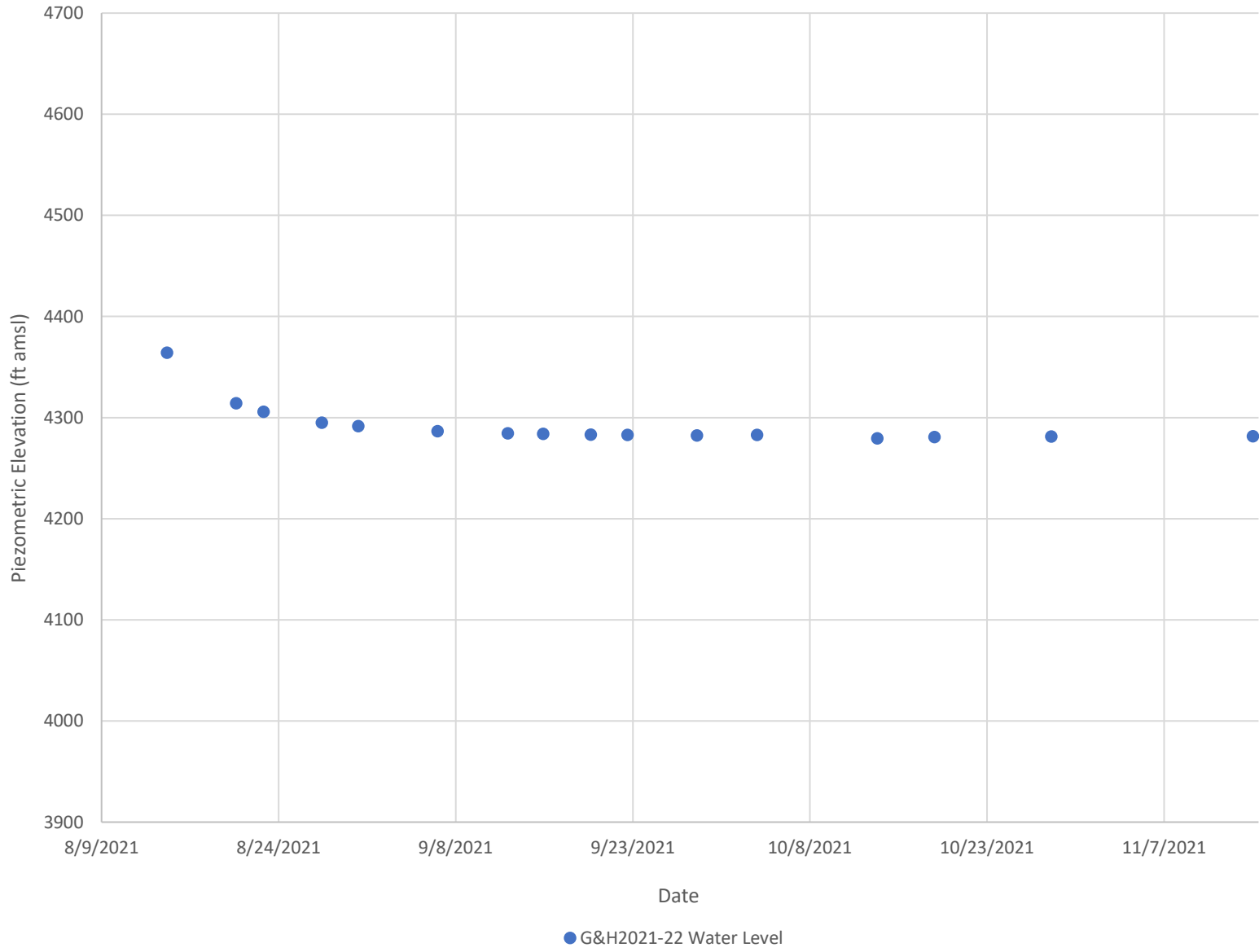
PROJECT: Rosemont Copper World Project

DRAWN: SM

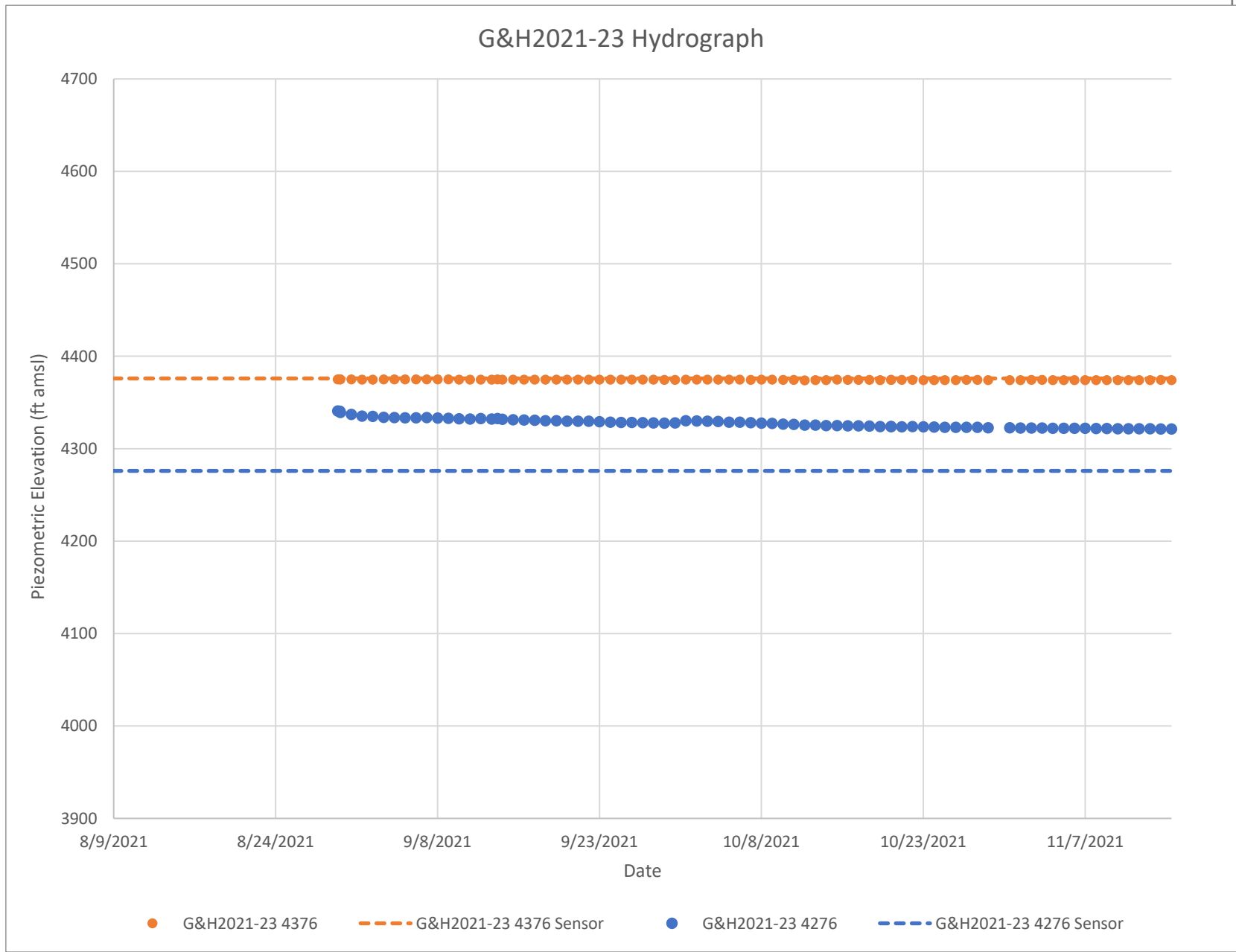
CHECKED: BG

FIGURE: 25

G&H2021-22 Hydrograph



Piezometer Hydrograph: G&H2021-23			
CLIENT:	Rosemont Copper Company		
JOB #:	4286		
DATE:	May 2022		
PROJECT:	Rosemont Copper World Project		
DRAWN:	SM		CHECKED:
FIGURE:	26		BG





PITEAU
ASSOCIATES
Geotechnical and Water
Management Consultants
A TETRA TECH COMPANY

Piezometer Hydrograph: G&H2021-24

CLIENT: Rosemont Copper Company

JOB #: 4286

DATE: May 2022

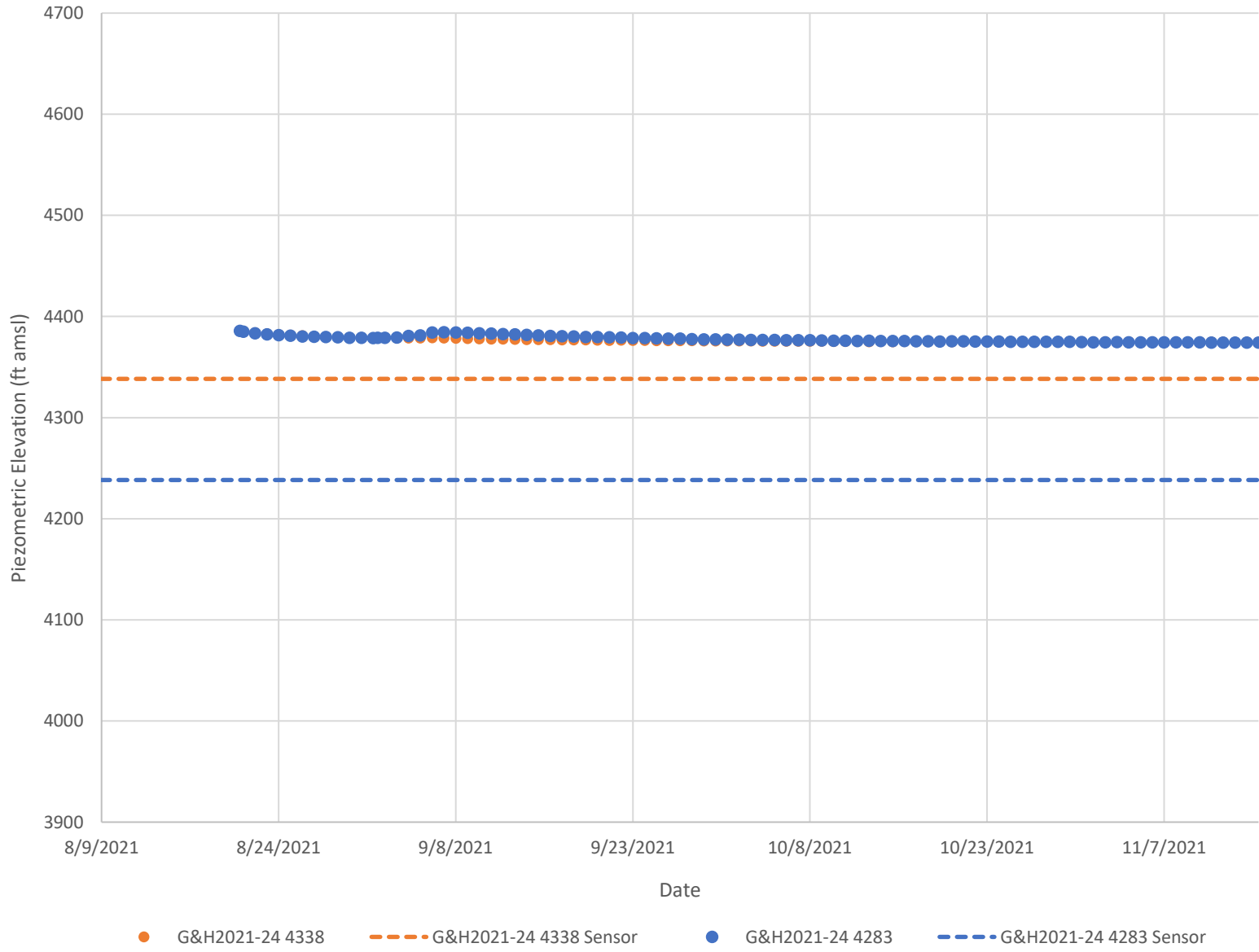
PROJECT: Rosemont Copper World Project

DRAWN: SM

CHECKED: BG

FIGURE: 27

G&H2021-24 Hydrograph



OSP Hydrograph: G&H2021-25

CLIENT: Rosemont Copper Company

JOB #: 4286

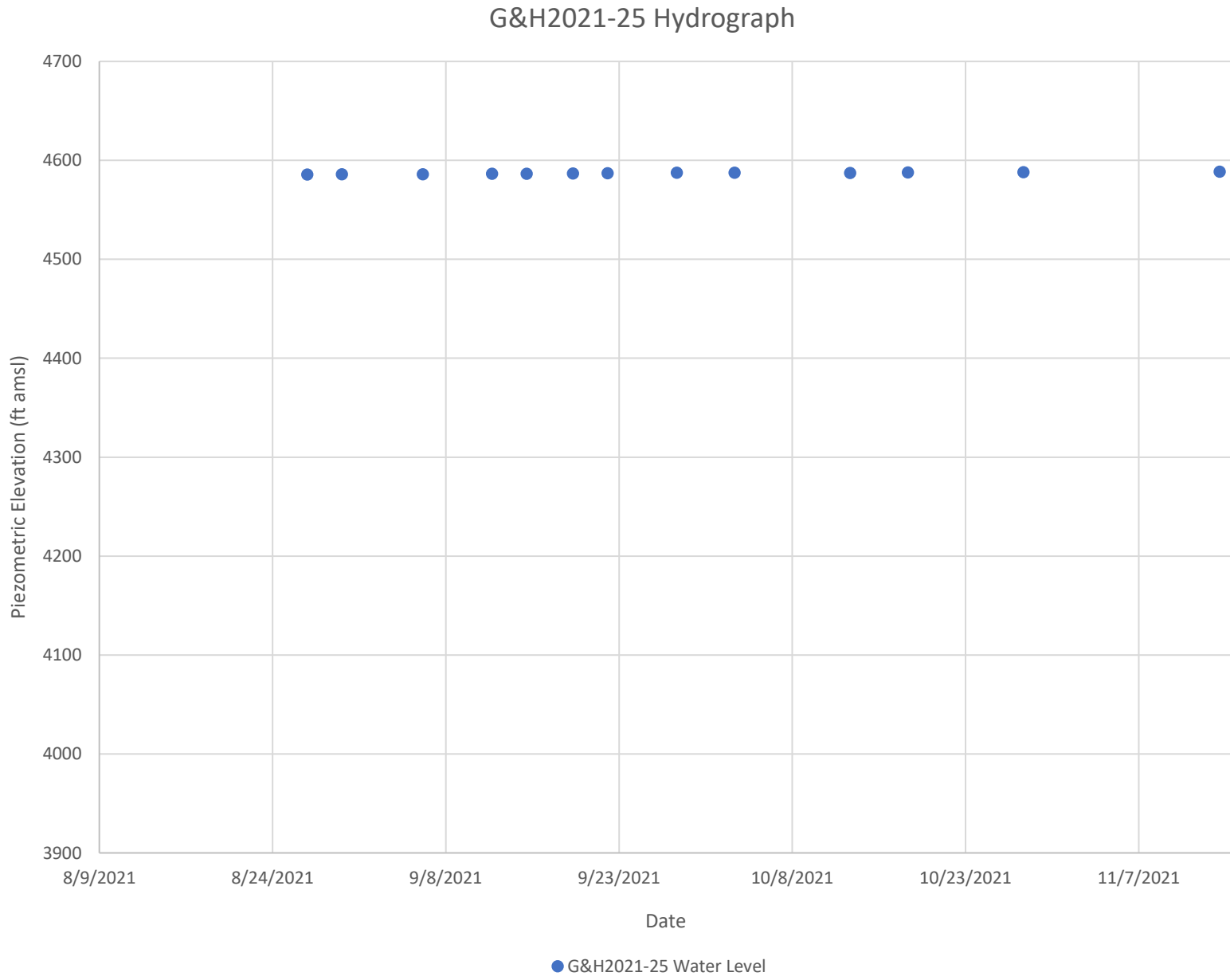
DATE: May 2022

PROJECT: Rosemont Copper World Project

DRAWN: SM

CHECKED: BG

FIGURE: 28



APPENDIX L

**2021 Hydrogeologic Characterization Groundwater
Sample Analytical Reports**



October 26, 2021

David Krizek
Rosemont Copper Company
5255 East Williams Circle, Suite W1065
Tucson, AZ 85711

TEL (520) 495-3527
FAX (520) 495-3540

Work Order No.: 21J0073

RE: Groundwater

Dear David Krizek,

Turner Laboratories, Inc. received 1 sample(s) on 10/05/2021 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Elizabeth Kasik
Laboratory Director

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0073
Date Received: 10/05/2021

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date/Time
21J0073-01	RNW-HB-091	Ground Water	10/04/2021 1315

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0073
Date Received: 10/05/2021

Case Narrative

The 8270C analysis was performed by Pace Analytical National in Mount Juliet, TN.

The isotopes analyses was performed by Isotech in Champaign, IL.

The radiochemistry analysis was performed by Radiation Safety Engineering, Inc. in Chandler, AZ.

- B1 Target analyte detected in the method blank at or above the method reporting limit.
- B5 Target analyte detected in method blank at or above the method reporting limit, but below trigger level or MCL.
- E4 Concentration estimated. Analyte was detected below laboratory Minimum Reporting Limit (MRL) but above MDL.
- E8 Analyte reported to MDL per project specification. Target analyte was not detected in the sample.
- H5 This test is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.
- M1 Matrix spike recovery was high; the associated LCS/LCSD was acceptable.
- M2 Matrix spike recovery was low; the associated LCS/LCSD was acceptable.
- M3 The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated LCS/LCSD recovery was acceptable.
- V1 CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

All soil, sludge, and solid matrix determinations are reported on a wet weight basis unless otherwise noted.

- ND Not Detected at or above the PQL
- PQL Practical Quantitation Limit
- DF Dilution Factor

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0073
Lab Sample ID: 21J0073-01

Client Sample ID: RNW-HB-091
Collection Date/Time: 10/04/2021 1315
Matrix: Ground Water

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Hardness-Calculation									
Hardness, Calcium/Magnesium (As CaCO3)	590				mg/L	1	10/07/2021 1110	10/08/2021 1035	MH
Nitrate + Nitrite Sum-Calculation									
Nitrate and Nitrite Sum	ND		0.10		mg/L	1	10/05/2021 1700	10/05/2021 1808	ACG
ICP Dissolved Metals-E 200.7 (4.4)									
Boron	0.094	0.0032	0.10	E4	mg/L	1	10/08/2021 1220	10/11/2021 1601	MH
Calcium	180		4.0		mg/L	1	10/08/2021 1220	10/11/2021 1601	MH
Chromium	ND		0.030		mg/L	1	10/08/2021 1220	10/11/2021 1601	MH
Iron	ND		0.30		mg/L	1	10/08/2021 1220	10/11/2021 1601	MH
Magnesium	43		3.0		mg/L	1	10/08/2021 1220	10/11/2021 1601	MH
Potassium	7.2		5.0		mg/L	1	10/08/2021 1220	10/12/2021 1316	MH
Silica	10		2.0		mg/L	1	10/08/2021 1220	10/11/2021 1601	MH
Sodium	140		5.0		mg/L	1	10/08/2021 1220	10/12/2021 1019	MH
ICP/MS Dissolved Metals-E 200.8 (5.4)									
Aluminum	ND		0.040		mg/L	1	10/08/2021 1220	10/11/2021 1514	CR
Antimony	ND		0.00050		mg/L	1	10/08/2021 1220	10/11/2021 1514	CR
Arsenic	ND		0.00050		mg/L	1	10/08/2021 1220	10/11/2021 1514	CR
Barium	0.047		0.00050		mg/L	1	10/08/2021 1220	10/11/2021 1514	CR
Beryllium	ND		0.00025		mg/L	1	10/08/2021 1220	10/11/2021 1514	CR
Cadmium	ND		0.00025		mg/L	1	10/08/2021 1220	10/11/2021 1514	CR
Cobalt	0.00053		0.00025		mg/L	1	10/08/2021 1220	10/11/2021 1514	CR
Copper	0.00098		0.00050		mg/L	1	10/08/2021 1220	10/12/2021 1156	CR
Lead	ND		0.00050		mg/L	1	10/08/2021 1220	10/11/2021 1514	CR
Manganese	0.59		0.00025		mg/L	1	10/08/2021 1220	10/14/2021 1616	CR
Molybdenum	0.099		0.00025		mg/L	1	10/08/2021 1220	10/11/2021 1514	CR
Nickel	0.0037		0.00050		mg/L	1	10/08/2021 1220	10/11/2021 1514	CR
Selenium	0.013		0.0025		mg/L	1	10/08/2021 1220	10/11/2021 1514	CR
Silver	ND	0.000021	0.00050	E8	mg/L	1	10/08/2021 1220	10/11/2021 1514	CR
Thallium	0.000035	0.000023	0.00050	E4	mg/L	1	10/08/2021 1220	10/11/2021 1514	CR
Uranium	0.0079		0.00050	M1	mg/L	1	10/08/2021 1220	10/11/2021 1514	CR
Zinc	ND		0.040		mg/L	1	10/08/2021 1220	10/11/2021 1514	CR

CVAA Dissolved Mercury-E 245.1

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0073
Lab Sample ID: 21J0073-01

Client Sample ID: RNW-HB-091
Collection Date/Time: 10/04/2021 1315
Matrix: Ground Water

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Mercury	0.0000470.000041		0.0010	E4	mg/L	1	10/13/2021 1330	10/13/2021 1555	RAD
pH-E150.1									
pH (pH Units)	7.5			H5	-	1	10/05/2021 1600	10/05/2021 1605	CWB
Temperature (°C)	21			H5	-	1	10/05/2021 1600	10/05/2021 1605	CWB
ICP Total Metals-E200.7 (4.4)									
Boron	0.10		0.10		mg/L	1	10/07/2021 1110	10/08/2021 1035	MH
Calcium	170		4.0		mg/L	1	10/07/2021 1110	10/08/2021 1035	MH
Iron	2.0		0.30		mg/L	1	10/07/2021 1110	10/08/2021 1035	MH
Magnesium	41		3.0		mg/L	1	10/07/2021 1110	10/08/2021 1035	MH
Potassium	7.3		5.0		mg/L	1	10/07/2021 1110	10/08/2021 1035	MH
Silica	12		0.20		mg/L	1	10/07/2021 1110	10/08/2021 1035	MH
Sodium	150		5.0		mg/L	1	10/07/2021 1110	10/08/2021 1035	MH
ICP/MS Total Metals-E200.8 (5.4)									
Aluminum	ND		0.040		mg/L	1	10/07/2021 1245	10/13/2021 1341	CR
Antimony	ND		0.00050		mg/L	1	10/07/2021 1245	10/13/2021 1341	CR
Arsenic	ND		0.00050		mg/L	1	10/07/2021 1245	10/13/2021 1341	CR
Barium	0.046		0.00050		mg/L	1	10/07/2021 1245	10/13/2021 1341	CR
Beryllium	ND		0.00025		mg/L	1	10/07/2021 1245	10/13/2021 1341	CR
Cadmium	ND		0.00025		mg/L	1	10/07/2021 1245	10/13/2021 1341	CR
Chromium	ND		0.00050		mg/L	1	10/07/2021 1245	10/13/2021 1341	CR
Cobalt	0.000570		0.000250		mg/L	1	10/07/2021 1245	10/13/2021 1341	CR
Copper	0.0016		0.00050		mg/L	1	10/07/2021 1245	10/13/2021 1341	CR
Lead	ND		0.00050		mg/L	1	10/07/2021 1245	10/13/2021 1341	CR
Manganese	0.61		0.00025		mg/L	1	10/07/2021 1245	10/13/2021 1341	CR
Molybdenum	0.10		0.00025		mg/L	1	10/07/2021 1245	10/13/2021 1341	CR
Nickel	0.0039		0.00050	B5	mg/L	1	10/07/2021 1245	10/14/2021 1355	CR
Selenium	0.0094		0.0025		mg/L	1	10/07/2021 1245	10/13/2021 1341	CR
Silver	ND	0.000021	0.00050	E8	mg/L	1	10/07/2021 1245	10/13/2021 1341	CR
Thallium	ND		0.00050		mg/L	1	10/07/2021 1245	10/13/2021 1341	CR
Uranium	0.0078		0.00050		mg/L	1	10/07/2021 1245	10/13/2021 1341	CR
Zinc	ND		0.040		mg/L	1	10/07/2021 1245	10/13/2021 1341	CR
CVAA Total Mercury-E245.1									
Mercury	ND	0.00036	0.0010	E8	mg/L	1	10/13/2021 1130	10/13/2021 1526	CWB

Client: Rosemont Copper Company

Project: Groundwater

Work Order: 21J0073

Lab Sample ID: 21J0073-01

Client Sample ID: RNW-HB-091

Collection Date/Time: 10/04/2021 1315

Matrix: Ground Water

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Anions by Ion Chromatography-E300.0 (2.1)									
Chloride	13		1.0		mg/L	1	10/05/2021 1700	10/05/2021 1808	ACG
Fluoride	1.9		0.50		mg/L	1	10/05/2021 1700	10/05/2021 1808	ACG
Nitrogen, Nitrate (As N)	ND		0.50		mg/L	1	10/05/2021 1700	10/05/2021 1808	ACG
Nitrogen, Nitrite (As N)	ND		0.10		mg/L	1	10/05/2021 1700	10/05/2021 1808	ACG
Phosphorus, Dissolved Orthophosphate (As P)	ND		0.50		mg/L	1	10/05/2021 1700	10/05/2021 1808	MH
Sulfate	680		250		mg/L	50	10/05/2021 1700	10/08/2021 2357	MH
Calculation-Ion Balance									
Anion	18.9				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Cation	18.8				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Cation/Anion, % Difference	0.260				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Alkalinity-SM2320B									
Alkalinity, Bicarbonate (As CaCO3)	200		2.0		mg/L	1	10/07/2021 0924	10/07/2021 1043	AGC
Alkalinity, Carbonate (As CaCO3)	ND		2.0		mg/L	1	10/07/2021 0924	10/07/2021 1043	AGC
Alkalinity, Hydroxide (As CaCO3)	ND		2.0		mg/L	1	10/07/2021 0924	10/07/2021 1043	AGC
Alkalinity, Phenolphthalein (As CaCO3)	ND		2.0		mg/L	1	10/07/2021 0924	10/07/2021 1043	AGC
Alkalinity, Total (As CaCO3)	200		2.0		mg/L	1	10/07/2021 0924	10/07/2021 1043	AGC
Specific Conductance-SM2510 B									
Conductivity	230		0.10		µmhos/cm	1	10/08/2021 1410	10/08/2021 1510	CWB
Total Dissolved Solids (Residue, Filterable)-SM2540 C									
Total Dissolved Solids (Residue, Filterable)	1300		20		mg/L	1	10/06/2021 0844	10/08/2021 1644	AGC
Ammonia as N-SM4500-NH3 B,C									
Nitrogen, Ammonia (As N)	ND		0.50		mg/L	1	10/12/2021 0915	10/12/2021 1000	MH
Silica-SM4500-SiO2 C									
Silica	11		10		mg/L	5	10/12/2021 0900	10/12/2021 1000	AGC

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0073
Lab Sample ID: 21J0073-01

Client Sample ID: RNW-HB-091
Collection Date/Time: 10/04/2021 1315
Matrix: Ground Water

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Volatile Organic Compounds by GC/MS-SW8260B									
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,1,1-Trichloroethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,1,2-Trichloroethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,1,2-Trichlorotrifluoroethane	ND		5.0		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,1-Dichloroethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,1-Dichloroethene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,1-Dichloropropene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,2,3-Trichlorobenzene	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,2,3-Trichloropropane	ND		1.0		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,2,4-Trichlorobenzene	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,2,4-Trimethylbenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,2-Dibromo-3-chloropropane	ND		10		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,2-Dibromoethane	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,2-Dichlorobenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,2-Dichloroethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,2-Dichloropropane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,3,5-Trimethylbenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,3-Dichlorobenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,3-Dichloropropane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
1,4-Dichlorobenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
2,2-Dichloropropane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
2-Butanone (MEK)	ND		10		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
2-Chlorotoluene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
2-Hexanone	ND		2.5		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
4-Chlorotoluene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
4-Isopropyltoluene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
4-Methyl-2-pentanone	ND		2.5		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Acetone	ND		10		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Acrylonitrile	ND		10		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Benzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Bromobenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Bromochloromethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Bromodichloromethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Bromoform	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Bromomethane	ND		1.0	V1	ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Carbon disulfide	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Carbon tetrachloride	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Chlorobenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Chloroethane	ND		1.0		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Chloroform	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0073
Lab Sample ID: 21J0073-01

Client Sample ID: RNW-HB-091
Collection Date/Time: 10/04/2021 1315
Matrix: Ground Water

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Chloromethane	ND		1.0		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
cis-1,2-Dichloroethene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
cis-1,3-Dichloropropene	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Dibromochloromethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Dibromomethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Dichlorodifluoromethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Ethylbenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Hexachlorobutadiene	ND		5.0		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Iodomethane	ND		10		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Isopropylbenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
m,p-Xylene	ND		1.0		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Methylene chloride	ND		1.0		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Naphthalene	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
n-Butylbenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
n-Propylbenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
o-Xylene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
sec-Butylbenzene	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Styrene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
tert-Butylbenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Tetrachloroethene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Toluene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
trans-1,2-Dichloroethene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
trans-1,3-Dichloropropene	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
trans-1,4-Dichloro-2-butene	ND		10		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Trichloroethene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Trichlorofluoromethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Vinyl acetate	ND		10		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP
Vinyl chloride	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0750	KP

Surr: 4-Bromofluorobenzene	99	70-130	%REC	1	10/06/2021 1800	10/07/2021 750	KP
Surr: Dibromofluoromethane	110	70-130	%REC	1	10/06/2021 1800	10/07/2021 750	KP
Surr: Toluene-d8	101	70-130	%REC	1	10/06/2021 1800	10/07/2021 750	KP

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0073
Date Received: 10/05/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110060 - E 200.7 (4.4)										
Blank (2110060-BLK1)				Prepared: 10/07/2021 Analyzed: 10/11/2021						
Boron	ND	0.10	mg/L							
Calcium	ND	4.0	mg/L							
Chromium	ND	0.030	mg/L							
Iron	ND	0.30	mg/L							
Magnesium	ND	3.0	mg/L							
Potassium	ND	5.0	mg/L							
Silica	ND	2.0	mg/L							
Sodium	ND	5.0	mg/L							
LCS (2110060-BS1)				Prepared: 10/07/2021 Analyzed: 10/11/2021						
Boron	0.96	0.10	mg/L	1.000		96	85-115			
Calcium	10	4.0	mg/L	10.00		103	85-115			
Chromium	0.19	0.030	mg/L	0.2000		96	85-115			
Iron	0.99	0.30	mg/L	1.000		99	85-115			
Magnesium	10	3.0	mg/L	10.00		102	85-115			
Potassium	9.9	5.0	mg/L	10.00		99	85-115			
Sodium	10	5.0	mg/L	10.00		100	85-115			
LCS (2110060-BS2)				Prepared: 10/07/2021 Analyzed: 10/11/2021						
Silica	2.0	2.0	mg/L	2.143		94	90-110			
LCS Dup (2110060-BSD1)				Prepared: 10/07/2021 Analyzed: 10/11/2021						
Boron	0.96	0.10	mg/L	1.000		96	85-115	0.7	20	
Calcium	10	4.0	mg/L	10.00		103	85-115	0.2	20	
Chromium	0.19	0.030	mg/L	0.2000		96	85-115	0.2	20	
Iron	0.99	0.30	mg/L	1.000		99	85-115	0.5	20	
Magnesium	10	3.0	mg/L	10.00		103	85-115	0.5	20	
Potassium	9.8	5.0	mg/L	10.00		98	85-115	1	20	
Sodium	10	5.0	mg/L	10.00		100	85-115	0.3	20	
LCS Dup (2110060-BSD2)				Prepared: 10/07/2021 Analyzed: 10/11/2021						
Silica	2.0	2.0	mg/L	2.143		95	90-110	1	20	
Matrix Spike (2110060-MS1)		Source: 21J0164-01		Prepared: 10/07/2021 Analyzed: 10/11/2021						
Boron	1.3	0.10	mg/L	1.000	0.024	124	70-130			
Calcium	570	4.0	mg/L	10.00	520	546	70-130			M3
Chromium	0.23	0.030	mg/L	0.2000	ND	115	70-130			
Iron	1.2	0.30	mg/L	1.000	0.018	118	70-130			
Magnesium	87	3.0	mg/L	10.00	67	208	70-130			M3
Potassium	13	10	mg/L	10.00	5.7	74	70-130			
Sodium	57	5.0	mg/L	10.00	53	39	70-130			M3

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0073
Date Received: 10/05/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110060 - E 200.7 (4.4)										
Matrix Spike (2110060-MS2)		Source: 21J0117-01		Prepared: 10/07/2021 Analyzed: 10/11/2021						
Boron	1.1	0.10	mg/L	1.000	0.053	106	70-130			
Calcium	76	4.0	mg/L	10.00	66	101	70-130			
Chromium	0.20	0.030	mg/L	0.2000	ND	101	70-130			
Iron	1.2	0.30	mg/L	1.000	0.066	109	70-130			
Magnesium	31	3.0	mg/L	10.00	21	99	70-130			
Potassium	14	5.0	mg/L	10.00	4.1	95	70-130			
Sodium	100	5.0	mg/L	10.00	91	89	70-130			
Matrix Spike (2110060-MS3)		Source: 21J0164-01		Prepared: 10/07/2021 Analyzed: 10/11/2021						
Silica	4.2	2.0	mg/L	2.143	1.9	107	85-115			
Matrix Spike (2110060-MS4)		Source: 21J0117-01		Prepared: 10/07/2021 Analyzed: 10/11/2021						
Silica	28	2.0	mg/L	2.143	26	77	85-115			
Batch 2110070 - E200.7 (4.4)										
Blank (2110070-BLK1)		Prepared: 10/07/2021 Analyzed: 10/08/2021								
Boron	ND	0.10	mg/L							
Calcium	ND	4.0	mg/L							
Iron	ND	0.30	mg/L							
Magnesium	ND	3.0	mg/L							
Potassium	ND	5.0	mg/L							
Silica	ND	0.20	mg/L							
Sodium	ND	5.0	mg/L							
LCS (2110070-BS1)		Prepared: 10/07/2021 Analyzed: 10/08/2021								
Boron	1.0	0.10	mg/L	1.000		104	85-115			
Calcium	9.7	4.0	mg/L	10.00		97	85-115			
Iron	1.0	0.30	mg/L	1.000		102	85-115			
Magnesium	9.7	3.0	mg/L	10.00		97	85-115			
Potassium	9.9	5.0	mg/L	10.00		99	85-115			
Sodium	10	5.0	mg/L	10.00		104	85-115			
LCS (2110070-BS2)		Prepared: 10/07/2021 Analyzed: 10/08/2021								
Silica	2.1	0.20	mg/L	2.143		98	85-115			
LCS Dup (2110070-BSD1)		Prepared: 10/07/2021 Analyzed: 10/08/2021								
Boron	1.0	0.10	mg/L	1.000		104	85-115	0.3	20	
Calcium	9.6	4.0	mg/L	10.00		96	85-115	1	20	
Iron	1.0	0.30	mg/L	1.000		101	85-115	1	20	
Magnesium	9.6	3.0	mg/L	10.00		96	85-115	0.4	20	
Potassium	9.9	5.0	mg/L	10.00		99	85-115	0.7	20	
Sodium	10	5.0	mg/L	10.00		103	85-115	1	20	
LCS Dup (2110070-BSD2)		Prepared: 10/07/2021 Analyzed: 10/08/2021								
Silica	2.1	0.20	mg/L	2.143		97	85-115	0.8	20	

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0073
Date Received: 10/05/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110070 - E200.7 (4.4)										
Matrix Spike (2110070-MS1)		Source: 21J0084-01		Prepared: 10/07/2021 Analyzed: 10/08/2021						
Boron	1.3	0.10	mg/L	1.000	0.059	123	70-130			
Calcium	160	4.0	mg/L	10.00	150	53	70-130			M3
Iron	3.2	0.30	mg/L	1.000	2.2	101	70-130			
Magnesium	37	3.0	mg/L	10.00	28	91	70-130			
Potassium	14	5.0	mg/L	10.00	3.3	104	70-130			
Sodium	160	5.0	mg/L	10.00	160	66	70-130			M3
Matrix Spike (2110070-MS2)		Source: 21J0084-01		Prepared: 10/07/2021 Analyzed: 10/08/2021						
Silica	26	0.20	mg/L	2.143	24	93	70-130			
Batch 2110100 - E200.8 (5.4)										
Blank (2110100-BLK1)		Prepared: 10/07/2021 Analyzed: 10/13/2021								
Aluminum	ND	0.040	mg/L							
Antimony	ND	0.00050	mg/L							
Arsenic	ND	0.00050	mg/L							
Barium	ND	0.00050	mg/L							
Beryllium	ND	0.00025	mg/L							
Cadmium	ND	0.00025	mg/L							
Chromium	ND	0.00050	mg/L							
Cobalt	ND	0.000250	mg/L							
Copper	ND	0.00050	mg/L							
Lead	ND	0.00050	mg/L							
Manganese	ND	0.00025	mg/L							
Molybdenum	ND	0.00025	mg/L							
Nickel	0.00079	0.00050	mg/L							B1
Selenium	ND	0.0025	mg/L							
Silver	ND	0.00050	mg/L							
Thallium	ND	0.00050	mg/L							
Uranium	ND	0.00050	mg/L							
Zinc	ND	0.040	mg/L							

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0073
Date Received: 10/05/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110100 - E200.8 (5.4)										
LCS (2110100-BS1) Prepared: 10/07/2021 Analyzed: 10/13/2021										
Aluminum	0.11	0.040	mg/L	0.1000		105	85-115			
Antimony	0.048	0.00050	mg/L	0.05000		97	85-115			
Arsenic	0.048	0.00050	mg/L	0.05000		97	85-115			
Barium	0.048	0.00050	mg/L	0.05000		97	85-115			
Beryllium	0.049	0.00025	mg/L	0.05000		97	85-115			
Cadmium	0.048	0.00025	mg/L	0.05000		97	85-115			
Chromium	0.048	0.00050	mg/L	0.05000		96	85-115			
Cobalt	0.0479	0.000250	mg/L	0.05000		96	85-115			
Copper	0.047	0.00050	mg/L	0.05000		95	85-115			
Lead	0.048	0.00050	mg/L	0.05000		96	85-115			
Manganese	0.048	0.00025	mg/L	0.05000		96	85-115			
Molybdenum	0.048	0.00025	mg/L	0.05000		95	85-115			
Nickel	0.047	0.00050	mg/L	0.05000		93	85-115			
Selenium	0.048	0.0025	mg/L	0.05000		96	85-115			
Silver	0.047	0.00050	mg/L	0.05000		95	85-115			
Thallium	0.047	0.00050	mg/L	0.05000		94	85-115			
Uranium	0.048	0.00050	mg/L	0.05000		96	85-115			
Zinc	0.10	0.040	mg/L	0.1000		102	85-115			
LCS Dup (2110100-BSD1) Prepared: 10/07/2021 Analyzed: 10/13/2021										
Aluminum	0.11	0.040	mg/L	0.1000		113	85-115	7	20	
Antimony	0.054	0.00050	mg/L	0.05000		108	85-115	11	20	
Arsenic	0.052	0.00050	mg/L	0.05000		104	85-115	7	20	
Barium	0.054	0.00050	mg/L	0.05000		108	85-115	11	20	
Beryllium	0.051	0.00025	mg/L	0.05000		103	85-115	6	20	
Cadmium	0.054	0.00025	mg/L	0.05000		108	85-115	11	20	
Chromium	0.052	0.00050	mg/L	0.05000		105	85-115	9	20	
Cobalt	0.0524	0.000250	mg/L	0.05000		105	85-115	9	20	
Copper	0.052	0.00050	mg/L	0.05000		103	85-115	9	20	
Lead	0.053	0.00050	mg/L	0.05000		107	85-115	10	20	
Manganese	0.052	0.00025	mg/L	0.05000		104	85-115	9	20	
Molybdenum	0.053	0.00025	mg/L	0.05000		106	85-115	11	20	
Nickel	0.048	0.00050	mg/L	0.05000		95	85-115	2	20	
Selenium	0.051	0.0025	mg/L	0.05000		103	85-115	7	20	
Silver	0.053	0.00050	mg/L	0.05000		105	85-115	11	20	
Thallium	0.053	0.00050	mg/L	0.05000		106	85-115	11	20	
Uranium	0.054	0.00050	mg/L	0.05000		108	85-115	12	20	
Zinc	0.11	0.040	mg/L	0.1000		108	85-115	6	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110100 - E200.8 (5.4)										
Matrix Spike (2110100-MS1)		Source: 21J0164-01		Prepared: 10/07/2021 Analyzed: 10/13/2021						
Aluminum	0.098	0.040	mg/L	0.1000	ND	98	70-130			
Antimony	0.050	0.00050	mg/L	0.05000	0.0013	97	70-130			
Arsenic	0.051	0.00050	mg/L	0.05000	0.00030	101	70-130			
Barium	0.057	0.00050	mg/L	0.05000	0.0069	101	70-130			
Beryllium	0.045	0.00025	mg/L	0.05000	ND	89	70-130			
Cadmium	0.045	0.00025	mg/L	0.05000	0.00050	90	70-130			
Chromium	0.047	0.00050	mg/L	0.05000	0.00098	91	70-130			
Cobalt	0.0452	0.000250	mg/L	0.05000	0.0000324	90	70-130			
Copper	0.043	0.00050	mg/L	0.05000	0.00043	85	70-130			
Lead	0.052	0.00050	mg/L	0.05000	0.0013	102	70-130			
Manganese	0.051	0.00025	mg/L	0.05000	0.0038	94	70-130			
Molybdenum	0.053	0.00025	mg/L	0.05000	0.00068	104	70-130			
Nickel	0.045	0.00050	mg/L	0.05000	0.00023	90	70-130			
Selenium	0.053	0.0025	mg/L	0.05000	0.0016	104	70-130			
Silver	0.041	0.00050	mg/L	0.05000	ND	83	70-130			
Thallium	0.051	0.00050	mg/L	0.05000	0.00030	102	70-130			
Uranium	0.056	0.00050	mg/L	0.05000	ND	111	70-130			
Zinc	0.089	0.040	mg/L	0.1000	0.0053	84	70-130			
Batch 2110101 - E 200.8 (5.4)										
Blank (2110101-BLK1)		Prepared & Analyzed: 10/11/2021								
Aluminum	ND	0.040	mg/L							
Antimony	ND	0.00050	mg/L							
Arsenic	ND	0.00050	mg/L							
Barium	ND	0.00050	mg/L							
Beryllium	ND	0.00025	mg/L							
Cadmium	ND	0.00025	mg/L							
Cobalt	ND	0.00025	mg/L							
Copper	ND	0.00050	mg/L							
Lead	ND	0.00050	mg/L							
Manganese	ND	0.00025	mg/L							
Molybdenum	ND	0.00025	mg/L							
Nickel	ND	0.00050	mg/L							
Selenium	0.00035	0.0025	mg/L							
Silver	ND	0.00050	mg/L							
Thallium	ND	0.00050	mg/L							
Uranium	ND	0.00050	mg/L							
Zinc	ND	0.040	mg/L							

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110101 - E 200.8 (5.4)										
LCS (2110101-BS1) Prepared & Analyzed: 10/11/2021										
Aluminum	0.10	0.040	mg/L	0.1000		103	85-115			
Antimony	0.053	0.00050	mg/L	0.05000		106	85-115			
Arsenic	0.052	0.00050	mg/L	0.05000		105	85-115			
Barium	0.053	0.00050	mg/L	0.05000		106	85-115			
Beryllium	0.051	0.00025	mg/L	0.05000		102	85-115			
Cadmium	0.053	0.00025	mg/L	0.05000		105	85-115			
Cobalt	0.051	0.00025	mg/L	0.05000		103	85-115			
Copper	0.050	0.00050	mg/L	0.05000		100	85-115			
Lead	0.053	0.00050	mg/L	0.05000		106	85-115			
Manganese	0.048	0.00025	mg/L	0.05000		95	85-115			
Molybdenum	0.053	0.00025	mg/L	0.05000		106	85-115			
Nickel	0.050	0.00050	mg/L	0.05000		100	85-115			
Selenium	0.053	0.0025	mg/L	0.05000		106	85-115			
Silver	0.045	0.00050	mg/L	0.05000		91	85-115			
Thallium	0.053	0.00050	mg/L	0.05000		105	85-115			
Uranium	0.053	0.00050	mg/L	0.05000		107	85-115			
Zinc	0.11	0.040	mg/L	0.1000		108	85-115			
LCS Dup (2110101-BS1) Prepared & Analyzed: 10/11/2021										
Aluminum	0.10	0.040	mg/L	0.1000		104	85-115	0.9	20	
Antimony	0.054	0.00050	mg/L	0.05000		108	85-115	2	20	
Arsenic	0.053	0.00050	mg/L	0.05000		106	85-115	0.7	20	
Barium	0.054	0.00050	mg/L	0.05000		107	85-115	1	20	
Beryllium	0.050	0.00025	mg/L	0.05000		101	85-115	1	20	
Cadmium	0.053	0.00025	mg/L	0.05000		106	85-115	0.5	20	
Cobalt	0.051	0.00025	mg/L	0.05000		102	85-115	0.3	20	
Copper	0.050	0.00050	mg/L	0.05000		100	85-115	0.1	20	
Lead	0.053	0.00050	mg/L	0.05000		105	85-115	0.6	20	
Manganese	0.047	0.00025	mg/L	0.05000		94	85-115	2	20	
Molybdenum	0.053	0.00025	mg/L	0.05000		106	85-115	0.3	20	
Nickel	0.050	0.00050	mg/L	0.05000		100	85-115	0.1	20	
Selenium	0.051	0.0025	mg/L	0.05000		103	85-115	3	20	
Silver	0.047	0.00050	mg/L	0.05000		94	85-115	4	20	
Thallium	0.053	0.00050	mg/L	0.05000		105	85-115	0.06	20	
Uranium	0.053	0.00050	mg/L	0.05000		106	85-115	0.5	20	
Zinc	0.11	0.040	mg/L	0.1000		108	85-115	0.5	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110101 - E 200.8 (5.4)										
Matrix Spike (2110101-MS1)		Source: 21J0073-01		Prepared & Analyzed: 10/11/2021						
Aluminum	0.11	0.040	mg/L	0.1000	ND	111	70-130			
Antimony	0.065	0.00050	mg/L	0.05000	0.00042	129	70-130			
Arsenic	0.064	0.00050	mg/L	0.05000	0.00012	128	70-130			
Barium	0.11	0.00050	mg/L	0.05000	0.047	126	70-130			
Beryllium	0.055	0.00025	mg/L	0.05000	0.000018	111	70-130			
Cadmium	0.057	0.00025	mg/L	0.05000	ND	114	70-130			
Cobalt	0.055	0.00025	mg/L	0.05000	0.00053	108	70-130			
Copper	0.043	0.00050	mg/L	0.05000	0.00098	84	70-130			
Lead	0.062	0.00050	mg/L	0.05000	ND	124	70-130			
Manganese	0.64	0.00025	mg/L	0.05000	0.59	95	70-130			
Molybdenum	0.16	0.00025	mg/L	0.05000	0.099	128	70-130			
Nickel	0.055	0.00050	mg/L	0.05000	0.0037	103	70-130			
Selenium	0.078	0.0025	mg/L	0.05000	0.013	129	70-130			
Silver	0.047	0.00050	mg/L	0.05000	ND	94	70-130			
Thallium	0.062	0.00050	mg/L	0.05000	0.000035	125	70-130			
Uranium	0.078	0.00050	mg/L	0.05000	0.0079	140	70-130			M1
Zinc	0.11	0.040	mg/L	0.1000	ND	111	70-130			
Batch 2110134 - E245.1										
Blank (2110134-BLK1)				Prepared & Analyzed: 10/13/2021						
Mercury	ND	0.0010	mg/L							
LCS (2110134-BS1)				Prepared & Analyzed: 10/13/2021						
Mercury	0.0051	0.0010	mg/L	0.005000		101	85-115			
LCS Dup (2110134-BSD1)				Prepared & Analyzed: 10/13/2021						
Mercury	0.0050	0.0010	mg/L	0.005000		99	85-115	2	20	
Matrix Spike (2110134-MS1)				Source: 21I00749-01		Prepared & Analyzed: 10/13/2021				
Mercury	0.0049	0.0010	mg/L	0.005000	ND	98	70-130			
Matrix Spike Dup (2110134-MSD1)				Source: 21I00749-01		Prepared & Analyzed: 10/13/2021				
Mercury	0.0050	0.0010	mg/L	0.005000	ND	100	70-130	2	20	
Batch 2110135 - E 245.1										
Blank (2110135-BLK1)				Prepared & Analyzed: 10/13/2021						
Mercury	0.000049	0.0010	mg/L							
LCS (2110135-BS1)				Prepared & Analyzed: 10/13/2021						
Mercury	0.0051	0.0010	mg/L	0.005000		101	85-115			
LCS Dup (2110135-BSD1)				Prepared & Analyzed: 10/13/2021						
Mercury	0.0051	0.0010	mg/L	0.005000		103	85-115	1	20	
Matrix Spike (2110135-MS1)				Source: 21J00073-01		Prepared & Analyzed: 10/13/2021				
Mercury	0.0051	0.0010	mg/L	0.005000	0.000047	101	70-130			
Matrix Spike Dup (2110135-MSD1)				Source: 21J00073-01		Prepared & Analyzed: 10/13/2021				
Mercury	0.0051	0.0010	mg/L	0.005000	0.000047	102	70-130	0.2	20	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110042 - E150.1										
Duplicate (2110042-DUP1)		Source: 21J0073-01		Prepared & Analyzed: 10/05/2021						
pH (pH Units)	7.5		-		7.5			0.1	200	H5
Temperature (°C)	21		-		21			0	200	H5
Batch 2110051 - SM2540 C										
Duplicate (2110051-DUP1)		Source: 2110749-01		Prepared: 10/06/2021 Analyzed: 10/08/2021						
Total Dissolved Solids (Residue, Filterable)	300	20	mg/L		320			4	5	
Duplicate (2110051-DUP2)		Source: 21J0005-01		Prepared: 10/06/2021 Analyzed: 10/08/2021						
Total Dissolved Solids (Residue, Filterable)	1300	20	mg/L		1300			0.2	5	
Batch 2110068 - SM2320B										
Blank (2110068-BLK1)		Prepared & Analyzed: 10/07/2021								
Alkalinity, Bicarbonate (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Carbonate (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Hydroxide (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Phenolphthalein (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Total (As CaCO3)	ND	2.0	mg/L							
LCS (2110068-BS1)		Prepared & Analyzed: 10/07/2021								
Alkalinity, Total (As CaCO3)	250	2.0	mg/L	250.0		100	90-110			
LCS Dup (2110068-BSD1)		Prepared & Analyzed: 10/07/2021								
Alkalinity, Total (As CaCO3)	250	2.0	mg/L	250.0		100	90-110	0	10	
Matrix Spike (2110068-MS1)		Source: 21J0013-01		Prepared & Analyzed: 10/07/2021						
Alkalinity, Total (As CaCO3)	370	2.0	mg/L	250.0	120	100	70-130			
Matrix Spike Dup (2110068-MSD1)		Source: 21J0013-01		Prepared & Analyzed: 10/07/2021						
Alkalinity, Total (As CaCO3)	370	2.0	mg/L	250.0	120	100	70-130	0	10	
Batch 2110094 - SM2510 B										
LCS (2110094-BS1)		Prepared & Analyzed: 10/08/2021								
Conductivity	150	0.10	µmhos/cm	141.2		106	0-200			
LCS Dup (2110094-BSD1)		Prepared & Analyzed: 10/08/2021								
Conductivity	150	0.10	µmhos/cm	141.2		106	0-200	0	200	
Duplicate (2110094-DUP1)		Source: 21J0117-01		Prepared & Analyzed: 10/08/2021						
Conductivity	900	0.10	µmhos/cm		890			0.1	10	
Duplicate (2110094-DUP2)		Source: 21J0218-03		Prepared & Analyzed: 10/08/2021						
Conductivity	540	0.10	µmhos/cm		540			0.2	10	
Batch 2110119 - SM4500-SiO2 C										
Blank (2110119-BLK1)		Prepared & Analyzed: 10/12/2021								
Silica	ND	2.0	mg/L							

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110119 - SM4500-SiO2 C										
LCS (2110119-BS1)				Prepared & Analyzed: 10/12/2021						
Silica	8.3	2.0	mg/L	8.000		104	90-110			
LCS Dup (2110119-BSD1)				Prepared & Analyzed: 10/12/2021						
Silica	8.3	2.0	mg/L	8.000		104	90-110	0.4	20	
Matrix Spike (2110119-MS1)				Source: 21J0218-03		Prepared & Analyzed: 10/12/2021				
Silica	61	10	mg/L	40.00	16	114	85-115			
Matrix Spike Dup (2110119-MSD1)				Source: 21J0218-03		Prepared & Analyzed: 10/12/2021				
Silica	61	10	mg/L	40.00	16	114	85-115	0.1	20	
Batch 2110146 - SM4500-NH3 B,C										
Blank (2110146-BLK1)				Prepared & Analyzed: 10/12/2021						
Nitrogen, Ammonia (As N)	ND	0.50	mg/L							
LCS (2110146-BS1)				Prepared & Analyzed: 10/12/2021						
Nitrogen, Ammonia (As N)	4.9	0.50	mg/L	5.000		99	90-110			
LCS Dup (2110146-BSD1)				Prepared & Analyzed: 10/12/2021						
Nitrogen, Ammonia (As N)	5.1	0.50	mg/L	5.000		102	90-110	3	10	
Matrix Spike (2110146-MS1)				Source: 21I0603-01		Prepared & Analyzed: 10/12/2021				
Nitrogen, Ammonia (As N)	6.0	0.50	mg/L	5.000	1.2	96	75-120			
Matrix Spike (2110146-MS2)				Source: 21J0073-01		Prepared & Analyzed: 10/12/2021				
Nitrogen, Ammonia (As N)	4.9	0.50	mg/L	5.000	ND	98	75-120			
Matrix Spike Dup (2110146-MSD1)				Source: 21I0603-01		Prepared & Analyzed: 10/12/2021				
Nitrogen, Ammonia (As N)	6.1	0.50	mg/L	5.000	1.2	99	75-120	3	20	
Matrix Spike Dup (2110146-MSD2)				Source: 21J0073-01		Prepared & Analyzed: 10/12/2021				
Nitrogen, Ammonia (As N)	4.9	0.50	mg/L	5.000	ND	99	75-120	0.9	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110056 - SW8260B										

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110056 - SW8260B										
Blank (2110056-BLK1)				Prepared & Analyzed: 10/06/2021						
1,1,1,2-Tetrachloroethane	ND	0.50	ug/L							
1,1,1-Trichloroethane	ND	0.50	ug/L							
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L							
1,1,2-Trichloroethane	ND	0.50	ug/L							
1,1,2-Trichlorotrifluoroethane	ND	5.0	ug/L							
1,1-Dichloroethane	ND	0.50	ug/L							
1,1-Dichloroethene	ND	0.50	ug/L							
1,1-Dichloropropene	ND	0.50	ug/L							
1,2,3-Trichlorobenzene	ND	2.0	ug/L							
1,2,3-Trichloropropane	ND	1.0	ug/L							
1,2,4-Trichlorobenzene	ND	2.0	ug/L							
1,2,4-Trimethylbenzene	ND	0.50	ug/L							
1,2-Dibromo-3-chloropropane	ND	10	ug/L							
1,2-Dibromoethane	ND	2.0	ug/L							
1,2-Dichlorobenzene	ND	0.50	ug/L							
1,2-Dichloroethane	ND	0.50	ug/L							
1,2-Dichloropropane	ND	0.50	ug/L							
1,3,5-Trimethylbenzene	ND	0.50	ug/L							
1,3-Dichlorobenzene	ND	0.50	ug/L							
1,3-Dichloropropane	ND	0.50	ug/L							
1,4-Dichlorobenzene	ND	0.50	ug/L							
2,2-Dichloropropane	ND	0.50	ug/L							
2-Butanone (MEK)	ND	10	ug/L							
2-Chlorotoluene	ND	0.50	ug/L							
2-Hexanone	ND	2.5	ug/L							
4-Chlorotoluene	ND	0.50	ug/L							
4-Isopropyltoluene	ND	0.50	ug/L							
4-Methyl-2-pentanone	ND	2.5	ug/L							
Acetone	ND	10	ug/L							
Acrylonitrile	ND	10	ug/L							
Benzene	ND	0.50	ug/L							
Bromobenzene	ND	0.50	ug/L							
Bromochloromethane	ND	0.50	ug/L							
Bromodichloromethane	ND	0.50	ug/L							
Bromoform	ND	2.0	ug/L							
Bromomethane	ND	1.0	ug/L							
Carbon disulfide	ND	2.0	ug/L							
Carbon tetrachloride	ND	0.50	ug/L							
Chlorobenzene	ND	0.50	ug/L							
Chloroethane	ND	1.0	ug/L							
Chloroform	ND	0.50	ug/L							
Chloromethane	ND	1.0	ug/L							
cis-1,2-Dichloroethene	ND	0.50	ug/L							
cis-1,3-Dichloropropene	ND	2.0	ug/L							
Dibromochloromethane	ND	0.50	ug/L							
Dibromomethane	ND	0.50	ug/L							
Dichlorodifluoromethane	ND	0.50	ug/L							
Ethylbenzene	ND	0.50	ug/L							

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110056 - SW8260B										
Blank (2110056-BLK1)				Prepared & Analyzed: 10/06/2021						
Hexachlorobutadiene	ND	5.0	ug/L							
Iodomethane	ND	10	ug/L							
Isopropylbenzene	ND	0.50	ug/L							
m,p-Xylene	ND	1.0	ug/L							
Methylene chloride	ND	1.0	ug/L							
Naphthalene	ND	2.0	ug/L							
n-Butylbenzene	ND	0.50	ug/L							
n-Propylbenzene	ND	0.50	ug/L							
o-Xylene	ND	0.50	ug/L							
sec-Butylbenzene	ND	2.0	ug/L							
Styrene	ND	0.50	ug/L							
tert-Butylbenzene	ND	0.50	ug/L							
Tetrachloroethene	ND	0.50	ug/L							
Toluene	ND	0.50	ug/L							
trans-1,2-Dichloroethene	ND	0.50	ug/L							
trans-1,3-Dichloropropene	ND	2.0	ug/L							
trans-1,4-Dichloro-2-butene	ND	10	ug/L							
Trichloroethene	ND	0.50	ug/L							
Trichlorofluoromethane	ND	0.50	ug/L							
Vinyl acetate	ND	10	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	25.1		ug/L	25.00		100	70-130			
Surrogate: Dibromofluoromethane	26.7		ug/L	25.00		107	70-130			
Surrogate: Toluene-d8	26.3		ug/L	25.00		105	70-130			
LCS (2110056-BS1)				Prepared & Analyzed: 10/06/2021						
1,1-Dichloroethene	22		ug/L	25.00		89	70-130			
Benzene	24		ug/L	25.00		95	70-130			
Chlorobenzene	26		ug/L	25.00		106	70-130			
Toluene	26		ug/L	25.00		104	70-130			
Trichloroethene	25		ug/L	25.00		101	70-130			
Surrogate: 4-Bromofluorobenzene	24.8		ug/L	25.00		99	70-130			
Surrogate: Dibromofluoromethane	25.6		ug/L	25.00		102	70-130			
Surrogate: Toluene-d8	26.1		ug/L	25.00		105	70-130			
LCS Dup (2110056-BSD1)				Prepared & Analyzed: 10/06/2021						
1,1-Dichloroethene	21		ug/L	25.00		86	70-130	3	30	
Benzene	24		ug/L	25.00		97	70-130	3	30	
Chlorobenzene	26		ug/L	25.00		106	70-130	0.1	30	
Toluene	26		ug/L	25.00		103	70-130	1	30	
Trichloroethene	25		ug/L	25.00		100	70-130	0.08	30	
Surrogate: 4-Bromofluorobenzene	24.3		ug/L	25.00		97	70-130			
Surrogate: Dibromofluoromethane	25.7		ug/L	25.00		103	70-130			
Surrogate: Toluene-d8	25.5		ug/L	25.00		102	70-130			

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0073
Date Received: 10/05/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110056 - SW8260B										
Matrix Spike (2110056-MS1)		Source: 21J0095-01		Prepared & Analyzed: 10/06/2021						
1,1-Dichloroethene	22		ug/L	25.00	0.17	88	70-130			
Benzene	25		ug/L	25.00	0.010	101	70-130			
Chlorobenzene	26		ug/L	25.00	0.0	105	70-130			
Toluene	26		ug/L	25.00	0.0	103	70-130			
Trichloroethene	42		ug/L	25.00	17	100	70-130			
Surrogate: 4-Bromofluorobenzene	23.9		ug/L	25.00		95	70-130			
Surrogate: Dibromofluoromethane	26.7		ug/L	25.00		107	70-130			
Surrogate: Toluene-d8	25.3		ug/L	25.00		101	70-130			
Matrix Spike Dup (2110056-MSD1)		Source: 21J0095-01		Prepared & Analyzed: 10/06/2021						
1,1-Dichloroethene	22		ug/L	25.00	0.17	89	70-130	1	30	
Benzene	25		ug/L	25.00	0.010	100	70-130	0.9	30	
Chlorobenzene	26		ug/L	25.00	0.0	105	70-130	0.2	30	
Toluene	26		ug/L	25.00	0.0	102	70-130	1	30	
Trichloroethene	42		ug/L	25.00	17	101	70-130	0.4	30	
Surrogate: 4-Bromofluorobenzene	24.7		ug/L	25.00		99	70-130			
Surrogate: Dibromofluoromethane	26.8		ug/L	25.00		107	70-130			
Surrogate: Toluene-d8	25.4		ug/L	25.00		102	70-130			

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0073
Date Received: 10/05/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110038 - E300.0 (2.1)										
Blank (2110038-BLK1)				Prepared & Analyzed: 10/05/2021						
Chloride	ND	1.0	mg/L							
Fluoride	ND	0.50	mg/L							
Nitrogen, Nitrate (As N)	ND	0.50	mg/L							
Nitrogen, Nitrite (As N)	ND	0.10	mg/L							
Phosphorus, Dissolved Orthophosphate (As P)	ND	0.50	mg/L							
Sulfate	ND	5.0	mg/L							
LCS (2110038-BS1)				Prepared & Analyzed: 10/05/2021						
Chloride	12	1.0	mg/L	12.50		97	90-110			
Fluoride	2.0	0.50	mg/L	2.000		100	90-110			
Nitrogen, Nitrate (As N)	4.9	0.50	mg/L	5.000		99	90-110			
Nitrogen, Nitrite (As N)	2.5	0.10	mg/L	2.500		99	90-110			
Phosphorus, Dissolved Orthophosphate (As P)	2.6	0.50	mg/L	2.500		104	90-110			
Sulfate	13	5.0	mg/L	12.50		101	90-110			
LCS Dup (2110038-BSD1)				Prepared & Analyzed: 10/05/2021						
Chloride	12	1.0	mg/L	12.50		96	90-110	1	10	
Fluoride	2.0	0.50	mg/L	2.000		98	90-110	3	10	
Nitrogen, Nitrate (As N)	4.9	0.50	mg/L	5.000		97	90-110	1	10	
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500		97	90-110	1	10	
Phosphorus, Dissolved Orthophosphate (As P)	2.5	0.50	mg/L	2.500		102	90-110	2	10	
Sulfate	12	5.0	mg/L	12.50		99	90-110	2	10	
Matrix Spike (2110038-MS1)				Source: 21J0005-01		Prepared: 10/05/2021 Analyzed: 10/06/2021				
Nitrogen, Nitrite (As N)	1.2	0.10	mg/L	2.500	ND	48	80-120			M2
Matrix Spike (2110038-MS2)				Source: 21J0084-01		Prepared: 10/05/2021 Analyzed: 10/15/2021				
Fluoride	1.8	0.50	mg/L	2.000	0.32	74	80-120			M2
Nitrogen, Nitrate (As N)	5.0	0.50	mg/L	5.000	0.21	95	80-120			
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500	ND	97	80-120			
Matrix Spike (2110038-MS3)				Source: 21J0005-01		Prepared: 10/05/2021 Analyzed: 10/15/2021				
Chloride	15		mg/L	12.50	0.0	118	80-120			
Fluoride	1.7		mg/L	2.000	0.025	83	80-120			
Nitrogen, Nitrate (As N)	5.2		mg/L	5.000	0.56	94	80-120			
Sulfate	34		mg/L	12.50	0.0	273	80-120			M1
Matrix Spike Dup (2110038-MSD1)				Source: 21J0005-01		Prepared: 10/05/2021 Analyzed: 10/06/2021				
Nitrogen, Nitrite (As N)	1.2	0.10	mg/L	2.500	ND	48	80-120	0.5	10	M2
Matrix Spike Dup (2110038-MSD2)				Source: 21J0084-01		Prepared: 10/05/2021 Analyzed: 10/15/2021				
Fluoride	1.8	0.50	mg/L	2.000	0.32	74	80-120	0.6	10	M2
Nitrogen, Nitrate (As N)	5.0	0.50	mg/L	5.000	0.21	95	80-120	0.2	10	
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500	ND	97	80-120	0.2	10	

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0073
Date Received: 10/05/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110038 - E300.0 (2.1)										
Matrix Spike Dup (2110038-MSD3)		Source: 21J0005-01		Prepared: 10/05/2021 Analyzed: 10/15/2021						
Chloride	15		mg/L	12.50	0.0	118	80-120	0.003	10	
Fluoride	1.7		mg/L	2.000	0.025	83	80-120	0.3	10	
Nitrogen, Nitrate (As N)	5.2		mg/L	5.000	0.56	94	80-120	0.06	10	
Sulfate	34		mg/L	12.50	0.0	273	80-120	0.2	10	M1



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SAMPLER'S SIGNATURE Will Scott

1. RELINQUISHED BY: Melissa Miller

Bill Goldsmith	Printed Name
Pleau Associates	Printed Name
05/21	Firm
1040	Firm
Date/Time	Date/Time

10K/AROUND REQUIREMENTS:
 _____ Standard (approx. 10 days)*
 _____ Next day _____ 2 Day _____ X _____ 5 Day*
 _____ X _____ Email Preliminary Results To:
 david.krizek@hubbayminerals.com
 * Working Days

REPORT REQUIREMENT(S):

- X. I. Routine Report
- X. II. Report (Includes DUP, MS, MSD, a required, may be charged as samples)
- III. Date Validation Report (Includes All Raw Data)

Add 10% to invoice

INVOICE INFORMATION

Account ____ Y ____ N

P.O. # _____

Bill to: _____

SAMPLE RECEIPT: _____

Total Containers 11

Temperature 9.9

☒ Wet Ice ☐ Blue Ice

3. RELINQUISHED BY:

4. RECEIVED BY: 

***LEGEND**

SPECIAL INSTRUCTIONS/CCOMMENTS:

11

Printed Name _____

Signature James H. Hedy

GW = GROUNDWATER
SD = SOLID

AD&Q Forms: ☐ Yes ☐

NO	Container Intact	<input checked="" type="checkbox"/>
----	------------------	-------------------------------------

Appropriate Head Space ☒

Firm

TURNER LABORATORIES, INC.
Film 2457711416

SG = SLUDGE
SL = SOIL

Mail ADEQ Forms: ☐ Yes ☐

No	COC/Labels Agree	<input checked="" type="checkbox"/>	FR
----	------------------	-------------------------------------	----

☒ Received Within Hold TimeDate/TimeDate/Time

ST = STORMWATER
WW = WASTEWATER

100

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions					
Frequency: As needed and when sampled (Field Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
General Measurements					
Depth to Water level	feet	Water Level Sounder	NA		
Water level elevation	feet amsl	calculation	NA		
Temperature – field	° C (Celsius)	Oakton PC 450 Meter/Oakton pH Con 10 Meter or equivalent	NA		
pH – field	S.U.	Oakton PC 450 Meter/Oakton pH Con 10 Meter or equivalent	NA		
Conductivity – field	µS/cm	Oakton PC 450 Meter/ Oakton pH Con 10 Meter or equivalent	NA		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
General Measurements, General Chemistry					
Temperature – lab	° C	SM 4500 H+B	NA		
pH – lab	S.U.	SM 4500 H+B	NA		
Conductivity – lab	µS/cm	SW-846 9050A	2.0		
Total dissolved solids	mg/L	SM 2540 C	20		
Hardness ¹	mg/L	SM 2340B/calculation	13.0		
Cation/Anion Balance	%	calculation	NA		
Total alkalinity	mg/L	SM 2320 B	4.0		
Bicarbonate	mg/L	SM 2320 B	4.0		
Carbonate	mg/L	SM 2320 B	4.0		
Hydroxide	mg/L	SM 2320 B	4.0		
Sulfate	mg/L	EPA 300.0	0.50		
Chloride	mg/L	EPA 300.0	0.50		
Fluoride	mg/L	EPA 300.0	0.50		
Nitrate (as nitrogen [N])	mg/L	EPA 300.0	0.10		
Nitrite (as N)	mg/L	EPA 300.0	0.10		
Nitrate + Nitrite (as N)	mg/L	EPA 300.0/calculation	0.10		
Calcium ¹	mg/L	EPA 200.7	2.0		
Magnesium ¹	mg/L	EPA 200.7	2.0		
Sodium ¹	mg/L	EPA 200.7	0.5		
Potassium ¹	mg/L	EPA 200.7	0.5		
Ammonia (as N)	mg/L	SM 4500	0.5		
Orthophosphate (as P)	mg/L	EPA 300.0	0.1		
Silicon Dioxide ¹	mg/L	EPA 200.7	0.214		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Dissolved Metals					
Aluminum	mg/L	EPA 200.7	0.1		
Antimony	mg/L	EPA 200.8	0.001		
Arsenic	mg/L	EPA 200.8	0.0005		
Barium	mg/L	EPA 200.7	0.01		
Beryllium	mg/L	EPA 200.7	0.001		
Boron	mg/L	EPA 200.7	0.05		
Cadmium	mg/L	EPA 200.7	0.001		
Chromium	mg/L	EPA 200.7	0.01		
Cobalt	mg/L	EPA 200.7	0.01		
Copper	mg/L	EPA 200.7	0.01		
Iron	mg/L	EPA 200.7	0.1		
Lead	mg/L	EPA 200.8	0.0005		
Manganese	mg/L	EPA 200.7	0.01		
Mercury	mg/L	EPA 245.1	0.0002		
Molybdenum	mg/L	EPA 200.7	0.01		
Nickel	mg/L	EPA 200.7	0.01		
Selenium	mg/L	EPA 200.8	0.0005		
Silver	mg/L	EPA 200.8	0.0001		
Thallium	mg/L	EPA 200.8	0.0001		
Uranium	mg/L	EPA 200.8	0.0001		
Zinc	mg/L	EPA 200.8	0.013		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Total Recoverable Metals					
Aluminum	mg/L	EPA 200.7	0.1		
Antimony	mg/L	EPA 200.8	0.001		
Arsenic	mg/L	EPA 200.8	0.0005		
Barium	mg/L	EPA 200.7	0.01		
Beryllium	mg/L	EPA 200.7	0.001		
Boron	mg/L	EPA 200.7	0.05		
Cadmium	mg/L	EPA 200.7	0.001		
Chromium	mg/L	EPA 200.7	0.01		
Cobalt	mg/L	EPA 200.7	0.01		
Copper	mg/L	EPA 200.7	0.01		
Iron	mg/L	EPA 200.7	0.1		
Lead	mg/L	EPA 200.8	0.0005		
Manganese	mg/L	EPA 200.7	0.01		
Mercury	mg/L	EPA 245.1	0.0002		
Molybdenum	mg/L	EPA 200.7	0.01		
Nickel	mg/L	EPA 200.7	0.01		
Selenium	mg/L	EPA 200.8	0.0005		
Silver	mg/L	EPA 200.8	0.0001		
Thallium	mg/L	EPA 200.8	0.0001		
Uranium	mg/L	EPA 200.8	0.0001		
Zinc	mg/L	EPA 200.8	0.013		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Radiochemicals					
Gross alpha particle activity	pCi/L	EPA 900	3.0		
Adjusted gross alpha	pCi/L	calculation	3.0		
Total Radium (Ra 226 + Ra 228)	pCi/L	calculation	1.0		
Radium 226	pCi/L	EPA 903.1 or HPGE-GA	1.0		
Radium 228	pCi/L	EPA 904 or HPGE-GA	1.0		
Uranium isotopes	pCi/L	ASTM 6239	1.0		

Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Other					
Stable isotopes: H and O	Per mil	Mass spectrometer	0.10		
Organics - Volatile	mg/L	SW8260B	Variable		
Organics – Semi-Volatile	mg/L	8270	Variable		

Units: S.U. = standard units

μS/cm = micro Siemens per centimeter

mg/L = milligrams per liter

μg/L = micrograms per liter

pCi/L = picoCuries per liter

amsl = above mean sea level

Per mil = parts per thousand

NA = not applicable

¹: Parameter to be analyzed as both dissolved and total.



ANALYTICAL REPORT

October 14, 2021

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Is

⁸ Gl

⁹ Al

¹⁰ Sc

Turner Laboratories Inc

Sample Delivery Group: L1415697
Samples Received: 10/08/2021
Project Number: 21J0073
Description: 21J0073

Report To: Max DiSante
2445 North Coyote Drive
Suite 104
Tucson, AZ 85745

Entire Report Reviewed By:

Jordan N Zito
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Qc
⁷ Is
⁸ Gl
⁹ Al
¹⁰ Sc

SAMPLE SUMMARY

21J0073-01 L1415697-01 GW

Collected by

Collected date/time

Received date/time

10/04/21 13:15

10/08/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1754277	1	10/10/21 03:31	10/10/21 16:57	AGW	Mt. Juliet, TN

¹Cp ${}^2\text{Tc}$ ${}^3\text{Ss}$ ${}^4\text{Cn}$ ^5Sr ${}^6\text{Qc}$ ${}^7\text{Li}$ ${}^8\text{Gf}$ ${}^9\text{Al}$ ^{10}Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Jordan N Zito
Project Manager

Sample Delivery Group (SDG) Narrative

An aliquot for analysis was taken from the original container received due to volume requirements of the laboratory's procedure. Rinsing of the original sample container for inclusion in the sample extraction was not performed.

<u>Lab Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L1415697-01	21J0073-01	8270C



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00100	1	10/10/2021 16:57	WG1754277
Acenaphthylene	ND		0.00100	1	10/10/2021 16:57	WG1754277
Anthracene	ND		0.00100	1	10/10/2021 16:57	WG1754277
Benzidine	ND		0.0100	1	10/10/2021 16:57	WG1754277
Benzo(a)anthracene	ND		0.00100	1	10/10/2021 16:57	WG1754277
Benzo(b)fluoranthene	ND		0.00100	1	10/10/2021 16:57	WG1754277
Benzo(k)fluoranthene	ND		0.00100	1	10/10/2021 16:57	WG1754277
Benzo(g,h,i)perylene	ND		0.00100	1	10/10/2021 16:57	WG1754277
Benzo(a)pyrene	ND		0.00100	1	10/10/2021 16:57	WG1754277
Bis(2-chlorethoxy)methane	ND		0.0100	1	10/10/2021 16:57	WG1754277
Bis(2-chloroethyl)ether	ND		0.0100	1	10/10/2021 16:57	WG1754277
2,2-Oxybis(1-Chloropropane)	ND		0.0100	1	10/10/2021 16:57	WG1754277
4-Bromophenyl-phenylether	ND		0.0100	1	10/10/2021 16:57	WG1754277
2-Chloronaphthalene	ND		0.00100	1	10/10/2021 16:57	WG1754277
4-Chlorophenyl-phenylether	ND		0.0100	1	10/10/2021 16:57	WG1754277
Chrysene	ND		0.00100	1	10/10/2021 16:57	WG1754277
Dibenz(a,h)anthracene	ND		0.00100	1	10/10/2021 16:57	WG1754277
1,2-Dichlorobenzene	ND		0.0100	1	10/10/2021 16:57	WG1754277
1,3-Dichlorobenzene	ND		0.0100	1	10/10/2021 16:57	WG1754277
1,4-Dichlorobenzene	ND		0.0100	1	10/10/2021 16:57	WG1754277
3,3-Dichlorobenzidine	ND		0.0100	1	10/10/2021 16:57	WG1754277
2,4-Dinitrotoluene	ND		0.0100	1	10/10/2021 16:57	WG1754277
2,6-Dinitrotoluene	ND		0.0100	1	10/10/2021 16:57	WG1754277
Fluoranthene	ND		0.00100	1	10/10/2021 16:57	WG1754277
Fluorene	ND		0.00100	1	10/10/2021 16:57	WG1754277
Hexachlorobenzene	ND		0.00100	1	10/10/2021 16:57	WG1754277
Hexachloro-1,3-butadiene	ND		0.0100	1	10/10/2021 16:57	WG1754277
Hexachlorocyclopentadiene	ND		0.0100	1	10/10/2021 16:57	WG1754277
Hexachloroethane	ND		0.0100	1	10/10/2021 16:57	WG1754277
Indeno(1,2,3-cd)pyrene	ND		0.00100	1	10/10/2021 16:57	WG1754277
Isophorone	ND		0.0100	1	10/10/2021 16:57	WG1754277
Naphthalene	ND		0.00100	1	10/10/2021 16:57	WG1754277
Nitrobenzene	ND		0.0100	1	10/10/2021 16:57	WG1754277
n-Nitrosodimethylamine	ND		0.0100	1	10/10/2021 16:57	WG1754277
n-Nitrosodiphenylamine	ND		0.0100	1	10/10/2021 16:57	WG1754277
n-Nitrosodi-n-propylamine	ND		0.0100	1	10/10/2021 16:57	WG1754277
Phenanthrene	ND		0.00100	1	10/10/2021 16:57	WG1754277
Benzylbutyl phthalate	ND		0.00300	1	10/10/2021 16:57	WG1754277
Bis(2-ethylhexyl)phthalate	ND		0.00300	1	10/10/2021 16:57	WG1754277
Di-n-butyl phthalate	ND		0.00300	1	10/10/2021 16:57	WG1754277
Diethyl phthalate	ND		0.00300	1	10/10/2021 16:57	WG1754277
Dimethyl phthalate	ND		0.00300	1	10/10/2021 16:57	WG1754277
Di-n-octyl phthalate	ND		0.00300	1	10/10/2021 16:57	WG1754277
Pyrene	ND		0.00100	1	10/10/2021 16:57	WG1754277
1,2,4-Trichlorobenzene	ND		0.0100	1	10/10/2021 16:57	WG1754277
4-Chloro-3-methylphenol	ND		0.0100	1	10/10/2021 16:57	WG1754277
2-Chlorophenol	ND		0.0100	1	10/10/2021 16:57	WG1754277
2,4-Dichlorophenol	ND		0.0100	1	10/10/2021 16:57	WG1754277
2,4-Dimethylphenol	ND		0.0100	1	10/10/2021 16:57	WG1754277
4,6-Dinitro-2-methylphenol	ND		0.0100	1	10/10/2021 16:57	WG1754277
2,4-Dinitrophenol	ND		0.0100	1	10/10/2021 16:57	WG1754277
2-Nitrophenol	ND		0.0100	1	10/10/2021 16:57	WG1754277
4-Nitrophenol	ND		0.0100	1	10/10/2021 16:57	WG1754277
Pentachlorophenol	ND		0.0100	1	10/10/2021 16:57	WG1754277
Phenol	ND		0.0100	1	10/10/2021 16:57	WG1754277
2,4,6-Trichlorophenol	ND		0.0100	1	10/10/2021 16:57	WG1754277



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorophenol	32.8		10.0-120		10/10/2021 16:57	WG1754277
(S) Phenol-d5	18.9		10.0-120		10/10/2021 16:57	WG1754277
(S) Nitrobenzene-d5	66.1		10.0-127		10/10/2021 16:57	WG1754277
(S) 2-Fluorobiphenyl	66.4		10.0-130		10/10/2021 16:57	WG1754277
(S) 2,4,6-Tribromophenol	63.5		10.0-155		10/10/2021 16:57	WG1754277
(S) p-Terphenyl-d14	63.5		10.0-128		10/10/2021 16:57	WG1754277

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Is⁸ Gl⁹ Al¹⁰ Sc

Method Blank (MB)

(MB) R3715461-2 10/10/21 15:30

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acenaphthene	U		0.0000886	0.00100
Acenaphthylene	U		0.0000921	0.00100
Anthracene	U		0.0000804	0.00100
Benzidine	U		0.00374	0.0100
Benzo(a)anthracene	U		0.000199	0.00100
Benzo(b)fluoranthene	0.000209	E4	0.000130	0.00100
Benzo(k)fluoranthene	0.000259	E4	0.000120	0.00100
Benzo(g,h,i)perylene	0.000490	E4	0.000121	0.00100
Benzo(a)pyrene	0.000218	E4	0.0000381	0.00100
Bis(2-chlorethoxy)methane	U		0.000116	0.0100
Bis(2-chloroethyl)ether	U		0.000137	0.0100
2,2-Oxybis(1-Chloropropane)	U		0.000210	0.0100
4-Bromophenyl-phenylether	U		0.0000877	0.0100
2-Chloronaphthalene	U		0.0000648	0.00100
4-Chlorophenyl-phenylether	U		0.0000926	0.0100
Chrysene	U		0.000130	0.00100
Dibenz(a,h)anthracene	0.000343	E4	0.0000644	0.00100
1,2-Dichlorobenzene	U		0.0000713	0.0100
1,3-Dichlorobenzene	U		0.000132	0.0100
1,4-Dichlorobenzene	U		0.0000942	0.0100
3,3-Dichlorobenzidine	U		0.000212	0.0100
2,4-Dinitrotoluene	U		0.0000983	0.0100
2,6-Dinitrotoluene	U		0.000250	0.0100
Fluoranthene	U		0.000102	0.00100
Fluorene	U		0.0000844	0.00100
Hexachlorobenzene	U		0.0000755	0.00100
Hexachloro-1,3-butadiene	U		0.0000968	0.0100
Hexachlorocyclopentadiene	U		0.0000598	0.0100
Hexachloroethane	U		0.000127	0.0100
Indeno(1,2,3-cd)pyrene	U		0.000279	0.00100
Isophorone	U		0.000143	0.0100
Naphthalene	U		0.000159	0.00100
Nitrobenzene	U		0.000297	0.0100
n-Nitrosodimethylamine	U		0.000998	0.0100
n-Nitrosodiphenylamine	U		0.00237	0.0100
n-Nitrosodi-n-propylamine	U		0.000261	0.0100
Phenanthrene	U		0.000112	0.00100
Benzylbutyl phthalate	U		0.000765	0.00300
Bis(2-ethylhexyl)phthalate	U		0.000895	0.00300
Di-n-butyl phthalate	U		0.000453	0.00300

1
Cp

2
Tc

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Ss

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Cn

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Sr

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Qc

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Is

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Gl

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Al

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Sc

Method Blank (MB)

(MB) R3715461-2 10/10/21 15:30

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Diethyl phthalate	U		0.000287	0.00300
Dimethyl phthalate	U		0.000260	0.00300
Di-n-octyl phthalate	U		0.000932	0.00300
Pyrene	U		0.000107	0.00100
1,2,4-Trichlorobenzene	U		0.0000698	0.0100
4-Chloro-3-methylphenol	U		0.000131	0.0100
2-Chlorophenol	U		0.000133	0.0100
2,4-Dichlorophenol	U		0.000102	0.0100
2,4-Dimethylphenol	U		0.0000636	0.0100
4,6-Dinitro-2-methylphenol	U		0.00112	0.0100
2,4-Dinitrophenol	U		0.00593	0.0100
2-Nitrophenol	U		0.000117	0.0100
4-Nitrophenol	U		0.000143	0.0100
Pentachlorophenol	U		0.000313	0.0100
Phenol	U		0.00433	0.0100
2,4,6-Trichlorophenol	U		0.000100	0.0100
(S) 2-Fluorophenol	26.2			10.0-120
(S) Phenol-d5	15.1			10.0-120
(S) Nitrobenzene-d5	60.0			10.0-127
(S) 2-Fluorobiphenyl	73.0			10.0-130
(S) 2,4,6-Tribromophenol	59.5			10.0-155
(S) p-Terphenyl-d14	64.8			10.0-128

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Is

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⁹Al

¹⁰Sc

Laboratory Control Sample (LCS)

(LCS) R3715461-1 10/10/21 14:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0500	0.0353	70.6	41.0-120	
Acenaphthylene	0.0500	0.0390	78.0	43.0-120	
Anthracene	0.0500	0.0356	71.2	45.0-120	
Benzidine	0.100	0.0550	55.0	10.0-120	
Benzo(a)anthracene	0.0500	0.0389	77.8	47.0-120	
Benzo(b)fluoranthene	0.0500	0.0367	73.4	46.0-120	
Benzo(k)fluoranthene	0.0500	0.0366	73.2	46.0-120	
Benzo(g,h,i)perylene	0.0500	0.0321	64.2	48.0-121	
Benzo(a)pyrene	0.0500	0.0358	71.6	47.0-120	
Bis(2-chlorethoxy)methane	0.0500	0.0305	61.0	33.0-120	
Bis(2-chloroethyl)ether	0.0500	0.0316	63.2	23.0-120	

Laboratory Control Sample (LCS)

(LCS) R3715461-1 10/10/21 14:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
2,2-Oxybis(1-Chloropropane)	0.0500	0.0307	61.4	28.0-120	
4-Bromophenyl-phenylether	0.0500	0.0349	69.8	45.0-120	
2-Chloronaphthalene	0.0500	0.0378	75.6	37.0-120	
4-Chlorophenyl-phenylether	0.0500	0.0389	77.8	44.0-120	
Chrysene	0.0500	0.0387	77.4	48.0-120	
Dibenz(a,h)anthracene	0.0500	0.0318	63.6	47.0-120	
1,2-Dichlorobenzene	0.0500	0.0342	68.4	20.0-120	
1,3-Dichlorobenzene	0.0500	0.0337	67.4	17.0-120	
1,4-Dichlorobenzene	0.0500	0.0337	67.4	18.0-120	
3,3-Dichlorobenzidine	0.100	0.0776	77.6	44.0-120	
2,4-Dinitrotoluene	0.0500	0.0424	84.8	49.0-124	
2,6-Dinitrotoluene	0.0500	0.0383	76.6	46.0-120	
Fluoranthene	0.0500	0.0377	75.4	51.0-120	
Fluorene	0.0500	0.0379	75.8	47.0-120	
Hexachlorobenzene	0.0500	0.0328	65.6	44.0-120	
Hexachloro-1,3-butadiene	0.0500	0.0351	70.2	19.0-120	
Hexachlorocyclopentadiene	0.0500	0.0214	42.8	15.0-120	
Hexachloroethane	0.0500	0.0329	65.8	15.0-120	
Indeno(1,2,3-cd)pyrene	0.0500	0.0328	65.6	49.0-122	
Isophorone	0.0500	0.0302	60.4	36.0-120	
Naphthalene	0.0500	0.0309	61.8	27.0-120	
Nitrobenzene	0.0500	0.0323	64.6	27.0-120	
n-Nitrosodimethylamine	0.0500	0.0205	41.0	10.0-120	
n-Nitrosodiphenylamine	0.0500	0.0347	69.4	47.0-120	
n-Nitrosodi-n-propylamine	0.0500	0.0312	62.4	31.0-120	
Phenanthrene	0.0500	0.0362	72.4	46.0-120	
Benzylbutyl phthalate	0.0500	0.0361	72.2	43.0-121	
Bis(2-ethylhexyl)phthalate	0.0500	0.0342	68.4	43.0-122	
Di-n-butyl phthalate	0.0500	0.0356	71.2	49.0-121	
Diethyl phthalate	0.0500	0.0370	74.0	48.0-122	
Dimethyl phthalate	0.0500	0.0367	73.4	48.0-120	
Di-n-octyl phthalate	0.0500	0.0356	71.2	42.0-125	
Pyrene	0.0500	0.0391	78.2	47.0-120	
1,2,4-Trichlorobenzene	0.0500	0.0331	66.2	24.0-120	
4-Chloro-3-methylphenol	0.0500	0.0276	55.2	40.0-120	
2-Chlorophenol	0.0500	0.0275	55.0	25.0-120	
2,4-Dichlorophenol	0.0500	0.0320	64.0	36.0-120	
2,4-Dimethylphenol	0.0500	0.0280	56.0	33.0-120	
4,6-Dinitro-2-methylphenol	0.0500	0.0490	98.0	38.0-138	
2,4-Dinitrophenol	0.0500	0.0483	96.6	10.0-120	

¹Cp

²Tc

³Ss

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¹⁰Sc

Laboratory Control Sample (LCS)

(LCS) R3715461-1 10/10/21 14:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
2-Nitrophenol	0.0500	0.0338	67.6	31.0-120	
4-Nitrophenol	0.0500	0.00954	19.1	10.0-120	
Pentachlorophenol	0.0500	0.0431	86.2	23.0-120	
Phenol	0.0500	0.00897	17.9	10.0-120	
2,4,6-Trichlorophenol	0.0500	0.0388	77.6	42.0-120	
(S) 2-Fluorophenol			28.9	10.0-120	
(S) Phenol-d5			16.8	10.0-120	
(S) Nitrobenzene-d5			55.0	10.0-127	
(S) 2-Fluorobiphenyl			75.0	10.0-130	
(S) 2,4,6-Tribromophenol			67.0	10.0-155	
(S) p-Terphenyl-d14			66.9	10.0-128	

L1414245-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1414245-01 10/10/21 15:10 • (MS) R3715411-1 10/10/21 15:31 • (MSD) R3715411-2 10/10/21 15:53

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Benzidine	0.100	ND	0.0638	0.0452	63.8	45.2	1	10.0-120			34.1	37
Acenaphthene	0.0500	ND	0.0318	0.0291	63.6	58.2	1	28.0-120			8.87	25
Acenaphthylene	0.0500	ND	0.0348	0.0320	69.6	64.0	1	31.0-121			8.38	25
Anthracene	0.0500	ND	0.0329	0.0331	65.8	66.2	1	36.0-120			0.606	23
Benzo(a)anthracene	0.0500	ND	0.0374	0.0389	74.8	77.8	1	39.0-120			3.93	23
Benzo(b)fluoranthene	0.0500	ND	0.0350	0.0364	70.0	72.8	1	37.0-120			3.92	23
Benzo(k)fluoranthene	0.0500	ND	0.0340	0.0352	68.0	70.4	1	37.0-120			3.47	26
Benzo(g,h,i)perylene	0.0500	ND	0.0318	0.0334	63.6	66.8	1	37.0-123			4.91	25
Benzo(a)pyrene	0.0500	ND	0.0348	0.0361	69.6	72.2	1	37.0-120			3.67	24
Bis(2-chlorethoxy)methane	0.0500	ND	0.0305	0.0259	61.0	51.8	1	17.0-120			16.3	31
Bis(2-chloroethyl)ether	0.0500	ND	0.0330	0.0278	66.0	55.6	1	14.0-120			17.1	33
2,2-Oxybis(1-Chloropropane)	0.0500	ND	0.0298	0.0251	59.6	50.2	1	18.0-120			17.1	34
4-Bromophenyl-phenylether	0.0500	ND	0.0335	0.0326	67.0	65.2	1	37.0-120			2.72	24
2-Chloronaphthalene	0.0500	ND	0.0322	0.0286	64.4	57.2	1	29.0-120			11.8	28
4-Chlorophenyl-phenylether	0.0500	ND	0.0329	0.0307	65.8	61.4	1	36.0-120			6.92	23
Chrysene	0.0500	ND	0.0339	0.0350	67.8	70.0	1	38.0-120			3.19	23
Dibenz(a,h)anthracene	0.0500	ND	0.0314	0.0331	62.8	66.2	1	36.0-121			5.27	24
1,2-Dichlorobenzene	0.0500	ND	0.0313	0.0269	62.6	53.8	1	18.0-120			15.1	40
1,3-Dichlorobenzene	0.0500	ND	0.0315	0.0265	63.0	53.0	1	15.0-120			17.2	40
1,4-Dichlorobenzene	0.0500	ND	0.0310	0.0265	62.0	53.0	1	17.0-120			15.7	40
3,3-Dichlorobenzidine	0.100	ND	0.0732	0.0754	73.2	75.4	1	10.0-134			2.96	30
2,4-Dinitrotoluene	0.0500	ND	0.0367	0.0368	73.4	73.6	1	39.0-125			0.272	25

1Cp

2Tc

3Ss

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5Sr

6Qc

7Is

8Gl

9Al

10Sc

L1414245-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1414245-01 10/10/21 15:10 • (MS) R3715411-1 10/10/21 15:31 • (MSD) R3715411-2 10/10/21 15:53

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,6-Dinitrotoluene	0.0500	ND	0.0347	0.0332	69.4	66.4	1	36.0-120			4.42	27
Fluoranthene	0.0500	ND	0.0350	0.0356	70.0	71.2	1	41.0-121			1.70	22
Fluorene	0.0500	ND	0.0321	0.0300	64.2	60.0	1	37.0-120			6.76	24
Hexachlorobenzene	0.0500	ND	0.0327	0.0318	65.4	63.6	1	35.0-122			2.79	24
Hexachloro-1,3-butadiene	0.0500	ND	0.0290	0.0249	58.0	49.8	1	12.0-120			15.2	34
Hexachlorocyclopentadiene	0.0500	ND	0.0247	0.0211	49.4	42.2	1	10.0-120			15.7	33
Hexachloroethane	0.0500	ND	0.0326	0.0270	65.2	54.0	1	10.0-120			18.8	40
Indeno(1,2,3-cd)pyrene	0.0500	ND	0.0336	0.0348	67.2	69.6	1	38.0-125			3.51	24
Isophorone	0.0500	ND	0.0314	0.0272	62.8	54.4	1	21.0-120			14.3	27
Naphthalene	0.0500	ND	0.0280	0.0242	56.0	48.4	1	10.0-120			14.6	31
Nitrobenzene	0.0500	ND	0.0309	0.0263	61.8	52.6	1	12.0-120			16.1	30
n-Nitrosodimethylamine	0.0500	ND	0.0234	0.0192	46.8	38.4	1	10.0-120			19.7	40
n-Nitrosodiphenylamine	0.0500	ND	0.0335	0.0333	67.0	66.6	1	37.0-120			0.599	24
n-Nitrosodi-n-propylamine	0.0500	ND	0.0325	0.0281	65.0	56.2	1	16.0-120			14.5	30
Phenanthrene	0.0500	ND	0.0375	0.0371	75.0	74.2	1	33.0-120			1.07	22
Benzylbutyl phthalate	0.0500	ND	0.0417	0.0427	83.4	85.4	1	34.0-126			2.37	24
Bis(2-ethylhexyl)phthalate	0.0500	ND	0.0363	0.0379	72.6	75.8	1	33.0-126			4.31	25
Di-n-butyl phthalate	0.0500	ND	0.0387	0.0395	77.4	79.0	1	35.0-128			2.05	23
Diethyl phthalate	0.0500	ND	0.0357	0.0347	71.4	69.4	1	39.0-125			2.84	24
Dimethyl phthalate	0.0500	ND	0.0342	0.0325	68.4	65.0	1	37.0-120			5.10	24
Di-n-octyl phthalate	0.0500	ND	0.0381	0.0391	76.2	78.2	1	25.0-135			2.59	26
Pyrene	0.0500	ND	0.0366	0.0372	73.2	74.4	1	39.0-120			1.63	22
1,2,4-Trichlorobenzene	0.0500	ND	0.0298	0.0252	59.6	50.4	1	15.0-120			16.7	31
4-Chloro-3-methylphenol	0.0500	ND	0.0263	0.0257	52.6	51.4	1	26.0-120			2.31	27
2-Chlorophenol	0.0500	ND	0.0250	0.0222	50.0	44.4	1	18.0-120			11.9	34
2,4-Dichlorophenol	0.0500	ND	0.0267	0.0244	53.4	48.8	1	19.0-120			9.00	27
2,4-Dimethylphenol	0.0500	ND	0.0270	0.0242	54.0	48.4	1	15.0-120			10.9	28
4,6-Dinitro-2-methylphenol	0.0500	ND	0.0343	0.0362	68.6	72.4	1	10.0-144			5.39	39
2,4-Dinitrophenol	0.0500	ND	0.0316	0.0331	63.2	66.2	1	10.0-120			4.64	40
2-Nitrophenol	0.0500	ND	0.0278	0.0251	55.6	50.2	1	20.0-120			10.2	30
4-Nitrophenol	0.0500	ND	0.0720	0.0673	144	135	1	10.0-120	M1	M1	6.75	40
Pentachlorophenol	0.0500	ND	0.0264	0.0296	52.8	59.2	1	10.0-128			11.4	37
Phenol	0.0500	ND	0.0115	ND	23.0	18.6	1	10.0-120			21.0	40
2,4,6-Trichlorophenol	0.0500	ND	0.0293	0.0280	58.6	56.0	1	26.0-120			4.54	31
(S) 2-Fluorophenol					29.0	24.3		10.0-120				
(S) Phenol-d5					17.3	14.8		10.0-120				
(S) Nitrobenzene-d5					61.2	53.5		10.0-127				
(S) 2-Fluorobiphenyl					66.2	59.5		10.0-130				
(S) 2,4,6-Tribromophenol					60.0	65.5		10.0-155				
(S) p-Terphenyl-d14					65.8	68.0		10.0-128				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Is

8Gl

9Al

10Sc

INTERNAL STANDARD SUMMARY

Instrument: BNAMS26 • File ID: 1010_03

10/10/21 11:48

Sample ID	File ID	1,4-DICHLOROBENZENE-D4	NAPHTHALENE-D8	ACENAPHTHENE-D10	PHENANTHRENE-D10	CHRYSENE-D12	PERYLENE-D12
		Response	Response	Response	Response	Response	Response
Standard	1010_03	308379	1056796	637184	1177827	945647	889135
Upper Limit		616758	2113592	1274368	2355654	1891294	1778270
Lower Limit		154190	528398	318592	588914	472824	444568
LCS R3715461-1 WG1754277 1x	1010_11	385520	1468405	800335	1541223	1291440	1209156
BLANK R3715461-2 WG1754277 1x	1010_13	366908	1235434	727862	1318180	1054981	1079343

Instrument: BNAMS32 • File ID: 1010_003-1

10/10/21 12:09

Sample ID	File ID	1,4-DICHLOROBENZENE-D4	NAPHTHALENE-D8	ACENAPHTHENE-D10	PHENANTHRENE-D10	CHRYSENE-D12	PERYLENE-D12
		Response	Response	Response	Response	Response	Response
Standard	1010_003-1	170660	643694	378629	692237	614906	586948
Upper Limit		341320	1287388	757258	1384474	1229812	1173896
Lower Limit		85330	321847	189315	346119	307453	293474
MS R3715411-1 WG1754277 1x	1010_012	177361	737400	398798	746686	659061	660903
MSD R3715411-2 WG1754277 1x	1010_013	171710	714809	388234	725292	645090	637892
L1415697-01 WG1754277 1x	1010_016	177110	672556	392144	758062	699036	699222

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Is

8Gl

9Al

10Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

E4	Concentration estimated. Analyte was detected below laboratory minimum reporting level (MRL) but above MDL.
M1	Matrix spike recovery was high, the method control sample recovery was acceptable.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



SUBCONTRACT ORDER

Turner Laboratories, Inc.

21J0073

D107

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Pace Analytical Services - Tennessee
12065 Lebabon Rd.
Mt. Juliet, TN 37122
Phone :(615) 758-5858
Fax: -
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
Sample ID: 21J0073-01 Drinking Water	10/11/2021 13:15		1415657-01
Semivolatle Organics by SW 8270	10/11/2021 13:15		
Containers Supplied:			

Sample ID: 21J0073-01 Drinking Water Sampled:10/04/2021 13:15

Semivolatle Organics by SW 8270 10/11/2021 13:15

Containers Supplied:

Sample Receipt Checklist

COC Seal Present/Intact:	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	If Applicable
COC Signed/Accurate:	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	VOA Zero Headspace: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Bottles arrive intact:	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	Pres. Correct/Check: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Correct bottles used:	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	
Sufficient vclume sent:	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	
RAD Screen <0.5 mR/hr:	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	

Released By *[Signature]* Date 10/6/21 1600

Received By *[Signature]* Date 10/6/21 1600

Released By *[Signature]* Date 10/8/21 1030

Received By *[Signature]* Date 10/8/21 1030

Lab #: 806226 Job #: 49048 IS-102736 Co. Job#:
Sample Name: 21J0073-01 Co. Lab#:
Company: Turner Laboratories, Inc
API/Well:
Container: Plastic Bottle
Field/Site Name: 21J0073
Location:
Formation/Depth:
Sampling Point:
Date Sampled: 10/04/2021 13:15 Date Received: 10/12/2021 Date Reported: 10/21/2021

δD of water ----- -60.7 ‰ relative to VSMOW

$\delta^{18}O$ of water ----- -8.50 ‰ relative to VSMOW

Tritium content of water ----- na

$\delta^{13}C$ of DIC ----- na

^{14}C content of DIC ----- na

$\delta^{15}N$ of nitrate ----- na

$\delta^{18}O$ of nitrate ----- na

$\delta^{34}S$ of sulfate ----- na

$\delta^{18}O$ of sulfate ----- na

Vacuum Distilled? * ----- No

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

SUBCONTRACT ORDER

Turner Laboratories, Inc.

21J0073

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Isotech Laboratories
1308 Parkland Court
Champaign, IL 61821
Phone :1(217) 398-3490
Fax: -
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
Sample ID: 21J0073-01 Drinking Water Sampled:10/04/2021 13:15			
Isotope Analysis	10/18/2021 13:15		H and O Isotopes
Containers Supplied:			

Released By

Date

Received By

Grace Skube / SR Isotech

Date

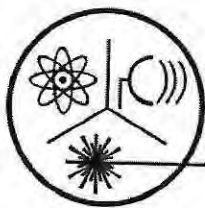
OCT 12 2021

Released By

Date

Received By

Date



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121

Website: www.radsafe.com

(480) 897-9459

FAX (480) 892-5446

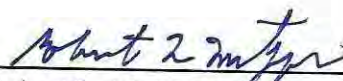
Radiochemical Activity in Water (pCi/L)

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: October 04, 2021
Sample Received: October 08, 2021
Analysis Completed: October 25, 2021

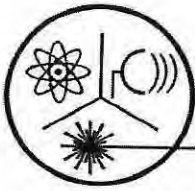
Sample ID	Gross Alpha Activity Method 600/00-02 (pCi/L)	Uranium Activity Method ASTM D6239 (pCi/L)	Adjusted Gross Alpha (pCi/L)	Gross Beta Activity Method 900.0 (pCi/L)	Radium 226 Activity Method GammaRay HPGE (pCi/L)	Radium 228 Activity Method GammaRay HPGE (pCi/L)	Total Radium (pCi/L)
21J0073-01	9.0 ± 1.0	7.9 ± 0.9	1.1 ± 1.3	12.3 ± 1.9	0.6 ± 0.3	< 0.6	0.6 ± 0.3

Date of Analysis	10/11/2021	10/12/2021	10/12/2021	10/19/2021	10/15/2021	10/15/2021	10/15/2021
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Robert L. Metzger, Ph.D., C.H.P.
Laboratory License Number AZ0462

October 25, 2021

Date



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

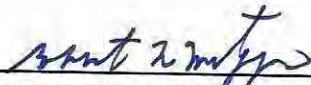
(480) 897-9459
FAX (480) 892-5446

Isotopic Uranium Analysis

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: October 04, 2021
Sample Received: October 08, 2021
Uranium Analysis Date: October 12, 2021

Sample No.	^{238}U	^{235}U	^{234}U	Total	
21J0073-01	2.9 ± 0.4	0.137 ± 0.003	4.8 ± 0.5	7.9 ± 0.9	Activity (pCi/L)
	8.8 ± 1.2	0.064 ± 0.001	0.00077 ± 0.00009	8.8 ± 1.2	Content ($\mu\text{g/L}$)
	Comments:				


Robert L. Metzger, Ph.D., C.H.P.

October 25, 2021

Date

Laboratory License Number AZ0462

Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
 Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04

PWS Name:

October 4, 2021 13:15 (24 hour clock)

Sample Date Sample Time

Owner/Contact Person

Owner/Contact Fax Number

Owner/Contact Phone Number

Sample Collection Point

☐ EPDS #

Compliance Sample Type:

☐ Reduced Monitoring

Date Q1 collected:

☐ Quarterly

Date Q2 collected:

☐ Composite of four quarterly samples

Date Q3 collected:

Date Q4 collected:

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
	15 pCi/L		Adjusted Gross Alpha	4000	10/12/2021	1.1 ± 1.3	
600/00-02		3 pCi/L	Gross Alpha	4002	10/11/2021	9.0 ± 1.0	
7500 - Rn			Radon	4004			
ASTM D6239	30 µg/L	1 µg/L	Combined Uranium	4006	10/12/2021	8.8 ± 1.2 µg/L	
			Uranium 234	4007	10/12/2021	0.00077 ± 0.00009	
			Uranium 235	4008	10/12/2021	0.064 ± 0.001	
			Uranium 238	4009	10/12/2021	8.8 ± 1.2	
	5 pCi/L	1 pCi/L	Combined Radium (226,228)	4010	10/15/2021	0.6 ± 0.3	
GammaRay HPGE		1 pCi/L	Radium 226	4020	10/15/2021	0.6 ± 0.3	
GammaRay HPGE		1 pCi/L	Radium 228	4030	10/15/2021	< 0.6	

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE67404

Lab ID Number: AZ0462

Lab Name: Radiation Safety Engineering, Inc.

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459

Comments: 21J0073-01

Authorized Signature:

Date Public Water System Notified:

DWAR 6: 11/2007

Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
 Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____ PWS Name: _____

October 4, 2021 13:15 (24 hour clock)
 Sample Date Sample Time Owner/Contact Person _____

Owner/Contact Fax Number _____ Owner/Contact Phone Number _____

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

☐ Reduced Monitoring Date Q1 collected: _____
☐ Quarterly Date Q2 collected: _____
☐ Composite of four quarterly samples Date Q3 collected: _____
 Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
900	4 mrem	4 pCi/L	Gross Beta	4100	10/19/2021	< 4 mrem	
906	20,000 pCi/L	1,000 pCi/L	Tritium	4102			
		10 pCi/L	Strontium-89	4172			
	8 pCi/L	2 pCi/L	Strontium-90	4174			
		1 pCi/L	Iodine-131	4264			
		10 pCi/L	Cesium-134	4270			

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE67404 _____

Lab ID Number: AZ0462 _____

Lab Name: Radiation Safety Engineering, Inc. _____

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459 _____

Comments: 21J0073-01 _____

Authorized Signature:  _____

Date Public Water System Notified: _____

SUBCONTRACT ORDER

Turner Laboratories, Inc.

21J0073

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Radiation Safety Engineering, Inc.
3245 N. Washington St.
Chandler, AZ 85225-1121
Phone : (480) 897-9459
Fax: (480) 892-5446
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
----------	---------	---------------	----------

Sample ID: 21J0073-01 Drinking Water Sampled: 10/04/2021 13:15

Radiochemistry, Uranium	04/02/2022 13:15	
Radiochemistry, Radium 226/228	11/03/2021 13:15	
Radiochemistry, Gross Alpha Beta	04/02/2022 13:15	

Containers Supplied:

67404

Released By

Date

Received By

Date

Released By

Date

Received By

Date



October 26, 2021

David Krizek
Rosemont Copper Company
5255 East Williams Circle, Suite W1065
Tucson, AZ 85711

TEL (520) 495-3527
FAX (520) 495-3540

Work Order No.: 21J0117
Order Name: 2459991012 / 619033

RE: Groundwater

Dear David Krizek,

Turner Laboratories, Inc. received 1 sample(s) on 10/06/2021 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Elizabeth Kasik
Laboratory Director

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0117
Date Received: 10/06/2021

Order: 2459991012 / 619033

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date/Time
21J0117-01	RNW-HB-108	Ground Water	10/05/2021 1400

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0117
Date Received: 10/06/2021

Case Narrative

The 8270C analysis was performed by Pace Analytical National in Mount Juliet, TN.

The isotopes analyses was performed by Isotech in Champaign, IL.

The radiochemistry analysis was performed by Radiation Safety Engineering, Inc. in Chandler, AZ.

- C4 Confirmatory analysis was past holding time
- E4 Concentration estimated. Analyte was detected below laboratory Minimum Reporting Limit (MRL) but above MDL.
- E8 Analyte reported to MDL per project specification. Target analyte was not detected in the sample.
- H5 This test is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.
- L5 The associated blank spike recovery was above laboratory/method acceptance limits. This analyte was not detected in the sample.
- M1 Matrix spike recovery was high; the associated LCS/LCSD was acceptable.
- M2 Matrix spike recovery was low; the associated LCS/LCSD was acceptable.
- M3 The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated LCS/LCSD recovery was acceptable.
- V1 CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

All soil, sludge, and solid matrix determinations are reported on a wet weight basis unless otherwise noted.

- ND Not Detected at or above the PQL
- PQL Practical Quantitation Limit
- DF Dilution Factor

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0117
Lab Sample ID: 21J0117-01

Client Sample ID: RNW-HB-108
Collection Date/Time: 10/05/2021 1400
Matrix: Ground Water
Order Name: 2459991012 / 619033

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Hardness-Calculation									
Hardness, Calcium/Magnesium (As CaCO3)	230				mg/L	1	10/07/2021 1110	10/08/2021 1106	MH
Nitrate + Nitrite Sum-Calculation									
Nitrate and Nitrite Sum	ND		0.10		mg/L	1	10/06/2021 1737	10/06/2021 1821	ACG
ICP Dissolved Metals-E 200.7 (4.4)									
Boron	0.053	0.0032	0.10	E4	mg/L	1	10/08/2021 1220	10/11/2021 1517	MH
Calcium	66		4.0		mg/L	1	10/08/2021 1220	10/11/2021 1517	MH
Chromium	ND		0.030		mg/L	1	10/08/2021 1220	10/11/2021 1517	MH
Iron	ND		0.30		mg/L	1	10/08/2021 1220	10/11/2021 1517	MH
Magnesium	21		3.0		mg/L	1	10/08/2021 1220	10/11/2021 1517	MH
Potassium	ND		5.0		mg/L	1	10/08/2021 1220	10/12/2021 1253	MH
Silica	26		2.0		mg/L	1	10/08/2021 1220	10/11/2021 1517	MH
Sodium	91		5.0		mg/L	1	10/08/2021 1220	10/12/2021 1013	MH
ICP/MS Dissolved Metals-E 200.8 (5.4)									
Aluminum	ND		0.040		mg/L	1	10/08/2021 1220	10/11/2021 1545	CR
Antimony	ND		0.00050		mg/L	1	10/08/2021 1220	10/11/2021 1545	CR
Arsenic	0.0057		0.00050		mg/L	1	10/08/2021 1220	10/11/2021 1545	CR
Barium	0.028		0.00050		mg/L	1	10/08/2021 1220	10/11/2021 1545	CR
Beryllium	ND		0.00025		mg/L	1	10/08/2021 1220	10/11/2021 1545	CR
Cadmium	ND		0.00025		mg/L	1	10/08/2021 1220	10/11/2021 1545	CR
Cobalt	ND		0.00025		mg/L	1	10/08/2021 1220	10/11/2021 1545	CR
Copper	0.00080		0.00050		mg/L	1	10/08/2021 1220	10/12/2021 1224	CR
Lead	ND		0.00050		mg/L	1	10/08/2021 1220	10/11/2021 1545	CR
Manganese	0.079		0.00025		mg/L	1	10/08/2021 1220	10/14/2021 1623	CR
Molybdenum	0.089		0.00025		mg/L	1	10/08/2021 1220	10/11/2021 1545	CR
Nickel	0.0012		0.00050		mg/L	1	10/08/2021 1220	10/11/2021 1545	CR
Selenium	0.0013	0.00025	0.0025	E4	mg/L	1	10/08/2021 1220	10/11/2021 1545	CR
Silver	ND	0.000021	0.00050	E8	mg/L	1	10/08/2021 1220	10/11/2021 1545	CR
Thallium	ND	0.000023	0.00050	E8	mg/L	1	10/08/2021 1220	10/11/2021 1545	CR
Uranium	0.018		0.00050		mg/L	1	10/08/2021 1220	10/11/2021 1545	CR
Zinc	ND		0.040		mg/L	1	10/08/2021 1220	10/11/2021 1545	CR

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0117
Lab Sample ID: 21J0117-01

Client Sample ID: RNW-HB-108
Collection Date/Time: 10/05/2021 1400
Matrix: Ground Water
Order Name: 2459991012 / 619033

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Mercury	0.000049	0.000041	0.0010	E4	mg/L	1	10/13/2021 1130	10/13/2021 1603	CWB
pH-E150.1									
pH (pH Units)	7.9			H5	-	1	10/07/2021 1545	10/07/2021 1548	CWB
Temperature (°C)	21			H5	-	1	10/07/2021 1545	10/07/2021 1548	CWB
ICP Total Metals-E200.7 (4.4)									
Boron	0.059	0.0032	0.10	E4	mg/L	1	10/07/2021 1110	10/08/2021 1106	MH
Calcium	61		4.0		mg/L	1	10/07/2021 1110	10/08/2021 1106	MH
Iron	ND		0.30		mg/L	1	10/07/2021 1110	10/08/2021 1106	MH
Magnesium	19		3.0		mg/L	1	10/07/2021 1110	10/08/2021 1106	MH
Potassium	ND		5.0		mg/L	1	10/07/2021 1110	10/11/2021 0903	MH
Silica	27		0.20		mg/L	1	10/07/2021 1110	10/08/2021 1106	MH
Sodium	91		5.0		mg/L	1	10/07/2021 1110	10/08/2021 1106	MH
ICP/MS Total Metals-E200.8 (5.4)									
Aluminum	ND		0.040		mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
Antimony	ND		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
Arsenic	0.0056		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
Barium	0.040		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
Beryllium	ND		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
Cadmium	ND		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
Chromium	ND		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
Cobalt	ND		0.000250		mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
Copper	0.0028		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
Lead	0.00053		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
Manganese	0.12		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
Molybdenum	0.086		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
Nickel	0.0040		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
Selenium	0.00064	0.00025	0.0025	E4	mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
Silver	ND	0.000021	0.00050	E4	mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
Thallium	0.000034	0.000023	0.00050	E4	mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
Uranium	0.015		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
Zinc	ND		0.040		mg/L	1	10/12/2021 1200	10/13/2021 1450	CR
CVAA Total Mercury-E245.1									
Mercury	ND	0.00036	0.0010	E8	mg/L	1	10/13/2021 1130	10/13/2021 1529	RAD

Client: Rosemont Copper Company

Project: Groundwater

Work Order: 21J0117

Lab Sample ID: 21J0117-01

Client Sample ID: RNW-HB-108

Collection Date/Time: 10/05/2021 1400

Matrix: Ground Water

Order Name: 2459991012 / 619033

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Anions by Ion Chromatography-E300.0 (2.1)									
Chloride	16		1.0		mg/L	1	10/06/2021 1737	10/14/2021 1807	MH
Fluoride	2.4		0.50		mg/L	1	10/06/2021 1737	10/14/2021 1807	MH
Nitrogen, Nitrate (As N)	ND		0.50	V1	mg/L	1	10/06/2021 1737	10/06/2021 1821	ACG
Nitrogen, Nitrite (As N)	ND		0.10	V1	mg/L	1	10/06/2021 1737	10/06/2021 1821	ACG
Phosphorus, Dissolved Orthophosphate (As P)	ND		0.50	C4, L5, V1	mg/L	1	10/06/2021 1737	10/14/2021 1807	MH
Sulfate	150		50		mg/L	10	10/06/2021 1737	10/14/2021 1651	MH
Calculation-Ion Balance									
Anion	10.1				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Cation	8.98				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Cation/Anion, % Difference	5.67				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Alkalinity-SM2320B									
Alkalinity, Bicarbonate (As CaCO3)	280		2.0		mg/L	1	10/07/2021 0924	10/07/2021 1043	AGC
Alkalinity, Carbonate (As CaCO3)	ND		2.0		mg/L	1	10/07/2021 0924	10/07/2021 1043	AGC
Alkalinity, Hydroxide (As CaCO3)	ND		2.0		mg/L	1	10/07/2021 0924	10/07/2021 1043	AGC
Alkalinity, Phenolphthalein (As CaCO3)	ND		2.0		mg/L	1	10/07/2021 0924	10/07/2021 1043	AGC
Alkalinity, Total (As CaCO3)	280		2.0		mg/L	1	10/07/2021 0924	10/07/2021 1043	AGC
Specific Conductance-SM2510 B									
Conductivity	890		0.10		µmhos/cm	1	10/08/2021 1410	10/08/2021 1510	CWB
Total Dissolved Solids (Residue, Filterable)-SM2540 C									
Total Dissolved Solids (Residue, Filterable)	580		20		mg/L	1	10/06/2021 0844	10/08/2021 1644	AGC
Ammonia as N-SM4500-NH3 B,C									
Nitrogen, Ammonia (As N)	ND		0.50		mg/L	1	10/12/2021 0915	10/12/2021 1000	MH
Silica-SM4500-SiO2 C									
Silica	29		10		mg/L	5	10/12/2021 0900	10/12/2021 1000	AGC

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0117
Lab Sample ID: 21J0117-01

Client Sample ID: RNW-HB-108
Collection Date/Time: 10/05/2021 1400
Matrix: Ground Water
Order Name: 2459991012 / 619033

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Volatile Organic Compounds by GC/MS-SW8260B									
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,1,1-Trichloroethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,1,2-Trichloroethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,1,2-Trichlorotrifluoroethane	ND		5.0		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,1-Dichloroethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,1-Dichloroethene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,1-Dichloropropene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,2,3-Trichlorobenzene	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,2,3-Trichloropropane	ND		1.0		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,2,4-Trichlorobenzene	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,2,4-Trimethylbenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,2-Dibromo-3-chloropropane	ND		10		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,2-Dibromoethane	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,2-Dichlorobenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,2-Dichloroethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,2-Dichloropropane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,3,5-Trimethylbenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,3-Dichlorobenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,3-Dichloropropane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
1,4-Dichlorobenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
2,2-Dichloropropane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
2-Butanone (MEK)	ND		10		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
2-Chlorotoluene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
2-Hexanone	ND		2.5		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
4-Chlorotoluene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
4-Isopropyltoluene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
4-Methyl-2-pentanone	ND		2.5		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Acetone	ND		10		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Acrylonitrile	ND		10		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Benzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Bromobenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Bromochloromethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Bromodichloromethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Bromoform	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Bromomethane	12		1.0		ug/L	1	10/19/2021 1534	10/19/2021 2238	KP
Carbon disulfide	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Carbon tetrachloride	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Chlorobenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0117
Lab Sample ID: 21J0117-01

Client Sample ID: RNW-HB-108
Collection Date/Time: 10/05/2021 1400
Matrix: Ground Water
Order Name: 2459991012 / 619033

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Chloroethane	ND		1.0		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Chloroform	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Chloromethane	ND		1.0		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
cis-1,2-Dichloroethene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
cis-1,3-Dichloropropene	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Dibromochloromethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Dibromomethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Dichlorodifluoromethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Ethylbenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Hexachlorobutadiene	ND		5.0		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Iodomethane	ND		10		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Isopropylbenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
m,p-Xylene	ND		1.0		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Methylene chloride	ND		1.0		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Naphthalene	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
n-Butylbenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
n-Propylbenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
o-Xylene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
sec-Butylbenzene	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Styrene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
tert-Butylbenzene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Tetrachloroethene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Toluene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
trans-1,2-Dichloroethene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
trans-1,3-Dichloropropene	ND		2.0		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
trans-1,4-Dichloro-2-butene	ND		10		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Trichloroethene	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Trichlorofluoromethane	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Vinyl acetate	ND		10		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP
Vinyl chloride	ND		0.50		ug/L	1	10/06/2021 1800	10/07/2021 0832	KP

Surr: 4-Bromofluorobenzene	110	70-130	%REC	1	10/19/2021 1534	10/19/2021 2238	KP
Surr: 4-Bromofluorobenzene	96	70-130	%REC	1	10/06/2021 1800	10/07/2021 832	KP
Surr: Dibromofluoromethane	110	70-130	%REC	1	10/06/2021 1800	10/07/2021 832	KP
Surr: Dibromofluoromethane	119	70-130	%REC	1	10/19/2021 1534	10/19/2021 2238	KP
Surr: Toluene-d8	113	70-130	%REC	1	10/19/2021 1534	10/19/2021 2238	KP
Surr: Toluene-d8	101	70-130	%REC	1	10/06/2021 1800	10/07/2021 832	KP

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0117
Date Received: 10/06/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110060 - E 200.7 (4.4)										
Blank (2110060-BLK1)				Prepared: 10/07/2021 Analyzed: 10/11/2021						
Boron	ND	0.10	mg/L							
Calcium	ND	4.0	mg/L							
Chromium	ND	0.030	mg/L							
Iron	ND	0.30	mg/L							
Magnesium	ND	3.0	mg/L							
Potassium	ND	5.0	mg/L							
Silica	ND	2.0	mg/L							
Sodium	ND	5.0	mg/L							
LCS (2110060-BS1)				Prepared: 10/07/2021 Analyzed: 10/11/2021						
Boron	0.96	0.10	mg/L	1.000		96	85-115			
Calcium	10	4.0	mg/L	10.00		103	85-115			
Chromium	0.19	0.030	mg/L	0.2000		96	85-115			
Iron	0.99	0.30	mg/L	1.000		99	85-115			
Magnesium	10	3.0	mg/L	10.00		102	85-115			
Potassium	9.9	5.0	mg/L	10.00		99	85-115			
Sodium	10	5.0	mg/L	10.00		100	85-115			
LCS (2110060-BS2)				Prepared: 10/07/2021 Analyzed: 10/11/2021						
Silica	2.0	2.0	mg/L	2.143		94	90-110			
LCS Dup (2110060-BSD1)				Prepared: 10/07/2021 Analyzed: 10/11/2021						
Boron	0.96	0.10	mg/L	1.000		96	85-115	0.7	20	
Calcium	10	4.0	mg/L	10.00		103	85-115	0.2	20	
Chromium	0.19	0.030	mg/L	0.2000		96	85-115	0.2	20	
Iron	0.99	0.30	mg/L	1.000		99	85-115	0.5	20	
Magnesium	10	3.0	mg/L	10.00		103	85-115	0.5	20	
Potassium	9.8	5.0	mg/L	10.00		98	85-115	1	20	
Sodium	10	5.0	mg/L	10.00		100	85-115	0.3	20	
LCS Dup (2110060-BSD2)				Prepared: 10/07/2021 Analyzed: 10/11/2021						
Silica	2.0	2.0	mg/L	2.143		95	90-110	1	20	
Matrix Spike (2110060-MS1)				Source: 21J0164-01		Prepared: 10/07/2021 Analyzed: 10/11/2021				
Boron	1.3	0.10	mg/L	1.000	0.024	124	70-130			
Calcium	570	4.0	mg/L	10.00	520	546	70-130			M3
Chromium	0.23	0.030	mg/L	0.2000	ND	115	70-130			
Iron	1.2	0.30	mg/L	1.000	0.018	118	70-130			
Magnesium	87	3.0	mg/L	10.00	67	208	70-130			M3
Potassium	13	10	mg/L	10.00	5.7	74	70-130			
Sodium	57	5.0	mg/L	10.00	53	39	70-130			M3

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0117
Date Received: 10/06/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110060 - E 200.7 (4.4)										
Matrix Spike (2110060-MS2)		Source: 21J0117-01		Prepared: 10/07/2021 Analyzed: 10/11/2021						
Boron	1.1	0.10	mg/L	1.000	0.053	106	70-130			
Calcium	76	4.0	mg/L	10.00	66	101	70-130			
Chromium	0.20	0.030	mg/L	0.2000	ND	101	70-130			
Iron	1.2	0.30	mg/L	1.000	0.066	109	70-130			
Magnesium	31	3.0	mg/L	10.00	21	99	70-130			
Potassium	14	5.0	mg/L	10.00	4.1	95	70-130			
Sodium	100	5.0	mg/L	10.00	91	89	70-130			
Matrix Spike (2110060-MS3)		Source: 21J0164-01		Prepared: 10/07/2021 Analyzed: 10/11/2021						
Silica	4.2	2.0	mg/L	2.143	1.9	107	85-115			
Matrix Spike (2110060-MS4)		Source: 21J0117-01		Prepared: 10/07/2021 Analyzed: 10/11/2021						
Silica	28	2.0	mg/L	2.143	26	77	85-115			
Batch 2110070 - E200.7 (4.4)										
Blank (2110070-BLK1)		Prepared: 10/07/2021 Analyzed: 10/08/2021								
Boron	ND	0.10	mg/L							
Calcium	ND	4.0	mg/L							
Iron	ND	0.30	mg/L							
Magnesium	ND	3.0	mg/L							
Potassium	ND	5.0	mg/L							
Silica	ND	0.20	mg/L							
Sodium	ND	5.0	mg/L							
LCS (2110070-BS1)		Prepared: 10/07/2021 Analyzed: 10/08/2021								
Boron	1.0	0.10	mg/L	1.000		104	85-115			
Calcium	9.7	4.0	mg/L	10.00		97	85-115			
Iron	1.0	0.30	mg/L	1.000		102	85-115			
Magnesium	9.7	3.0	mg/L	10.00		97	85-115			
Potassium	9.9	5.0	mg/L	10.00		99	85-115			
Sodium	10	5.0	mg/L	10.00		104	85-115			
LCS (2110070-BS2)		Prepared: 10/07/2021 Analyzed: 10/08/2021								
Silica	2.1	0.20	mg/L	2.143		98	85-115			
LCS Dup (2110070-BSD1)		Prepared: 10/07/2021 Analyzed: 10/08/2021								
Boron	1.0	0.10	mg/L	1.000		104	85-115	0.3	20	
Calcium	9.6	4.0	mg/L	10.00		96	85-115	1	20	
Iron	1.0	0.30	mg/L	1.000		101	85-115	1	20	
Magnesium	9.6	3.0	mg/L	10.00		96	85-115	0.4	20	
Potassium	9.9	5.0	mg/L	10.00		99	85-115	0.7	20	
Sodium	10	5.0	mg/L	10.00		103	85-115	1	20	
LCS Dup (2110070-BSD2)		Prepared: 10/07/2021 Analyzed: 10/08/2021								
Silica	2.1	0.20	mg/L	2.143		97	85-115	0.8	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110070 - E200.7 (4.4)										
Matrix Spike (2110070-MS1)		Source: 21J0084-01		Prepared: 10/07/2021 Analyzed: 10/08/2021						
Boron	1.3	0.10	mg/L	1.000	0.059	123	70-130			
Calcium	160	4.0	mg/L	10.00	150	53	70-130			M3
Iron	3.2	0.30	mg/L	1.000	2.2	101	70-130			
Magnesium	37	3.0	mg/L	10.00	28	91	70-130			
Potassium	14	5.0	mg/L	10.00	3.3	104	70-130			
Sodium	160	5.0	mg/L	10.00	160	66	70-130			M3
Matrix Spike (2110070-MS2)		Source: 21J0084-01		Prepared: 10/07/2021 Analyzed: 10/08/2021						
Silica	26	0.20	mg/L	2.143	24	93	70-130			
Batch 2110101 - E 200.8 (5.4)										
Blank (2110101-BLK1)		Prepared & Analyzed: 10/11/2021								
Aluminum	ND	0.040	mg/L							
Antimony	ND	0.00050	mg/L							
Arsenic	ND	0.00050	mg/L							
Barium	ND	0.00050	mg/L							
Beryllium	ND	0.00025	mg/L							
Cadmium	ND	0.00025	mg/L							
Cobalt	ND	0.00025	mg/L							
Copper	ND	0.00050	mg/L							
Lead	ND	0.00050	mg/L							
Manganese	ND	0.00025	mg/L							
Molybdenum	ND	0.00025	mg/L							
Nickel	ND	0.00050	mg/L							
Selenium	0.00035	0.0025	mg/L							
Silver	ND	0.00050	mg/L							
Thallium	ND	0.00050	mg/L							
Uranium	ND	0.00050	mg/L							
Zinc	ND	0.040	mg/L							
LCS (2110101-BS1)		Prepared & Analyzed: 10/11/2021								
Aluminum	0.10	0.040	mg/L	0.1000		103	85-115			
Antimony	0.053	0.00050	mg/L	0.05000		106	85-115			
Arsenic	0.052	0.00050	mg/L	0.05000		105	85-115			
Barium	0.053	0.00050	mg/L	0.05000		106	85-115			
Beryllium	0.051	0.00025	mg/L	0.05000		102	85-115			
Cadmium	0.053	0.00025	mg/L	0.05000		105	85-115			
Cobalt	0.051	0.00025	mg/L	0.05000		103	85-115			
Copper	0.050	0.00050	mg/L	0.05000		100	85-115			
Lead	0.053	0.00050	mg/L	0.05000		106	85-115			
Manganese	0.048	0.00025	mg/L	0.05000		95	85-115			
Molybdenum	0.053	0.00025	mg/L	0.05000		106	85-115			
Nickel	0.050	0.00050	mg/L	0.05000		100	85-115			
Selenium	0.053	0.0025	mg/L	0.05000		106	85-115			
Silver	0.045	0.00050	mg/L	0.05000		91	85-115			
Thallium	0.053	0.00050	mg/L	0.05000		105	85-115			
Uranium	0.053	0.00050	mg/L	0.05000		107	85-115			
Zinc	0.11	0.040	mg/L	0.1000		108	85-115			

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110101 - E 200.8 (5.4)										
LCS Dup (2110101-BSD1)				Prepared & Analyzed: 10/11/2021						
Aluminum	0.10	0.040	mg/L	0.1000		104	85-115	0.9	20	
Antimony	0.054	0.00050	mg/L	0.05000		108	85-115	2	20	
Arsenic	0.053	0.00050	mg/L	0.05000		106	85-115	0.7	20	
Barium	0.054	0.00050	mg/L	0.05000		107	85-115	1	20	
Beryllium	0.050	0.00025	mg/L	0.05000		101	85-115	1	20	
Cadmium	0.053	0.00025	mg/L	0.05000		106	85-115	0.5	20	
Cobalt	0.051	0.00025	mg/L	0.05000		102	85-115	0.3	20	
Copper	0.050	0.00050	mg/L	0.05000		100	85-115	0.1	20	
Lead	0.053	0.00050	mg/L	0.05000		105	85-115	0.6	20	
Manganese	0.047	0.00025	mg/L	0.05000		94	85-115	2	20	
Molybdenum	0.053	0.00025	mg/L	0.05000		106	85-115	0.3	20	
Nickel	0.050	0.00050	mg/L	0.05000		100	85-115	0.1	20	
Selenium	0.051	0.0025	mg/L	0.05000		103	85-115	3	20	
Silver	0.047	0.00050	mg/L	0.05000		94	85-115	4	20	
Thallium	0.053	0.00050	mg/L	0.05000		105	85-115	0.06	20	
Uranium	0.053	0.00050	mg/L	0.05000		106	85-115	0.5	20	
Zinc	0.11	0.040	mg/L	0.1000		108	85-115	0.5	20	
Matrix Spike (2110101-MS1)				Source: 21J0073-01		Prepared & Analyzed: 10/11/2021				
Aluminum	0.11	0.040	mg/L	0.1000	ND	111	70-130			
Antimony	0.065	0.00050	mg/L	0.05000	0.00042	129	70-130			
Arsenic	0.064	0.00050	mg/L	0.05000	0.00012	128	70-130			
Barium	0.11	0.00050	mg/L	0.05000	0.047	126	70-130			
Beryllium	0.055	0.00025	mg/L	0.05000	0.000018	111	70-130			
Cadmium	0.057	0.00025	mg/L	0.05000	ND	114	70-130			
Cobalt	0.055	0.00025	mg/L	0.05000	0.00053	108	70-130			
Copper	0.043	0.00050	mg/L	0.05000	0.00098	84	70-130			
Lead	0.062	0.00050	mg/L	0.05000	ND	124	70-130			
Manganese	0.64	0.00025	mg/L	0.05000	0.59	95	70-130			
Molybdenum	0.16	0.00025	mg/L	0.05000	0.099	128	70-130			
Nickel	0.055	0.00050	mg/L	0.05000	0.0037	103	70-130			
Selenium	0.078	0.0025	mg/L	0.05000	0.013	129	70-130			
Silver	0.047	0.00050	mg/L	0.05000	ND	94	70-130			
Thallium	0.062	0.00050	mg/L	0.05000	0.000035	125	70-130			
Uranium	0.078	0.00050	mg/L	0.05000	0.0079	140	70-130			M1
Zinc	0.11	0.040	mg/L	0.1000	ND	111	70-130			
Batch 2110133 - E200.8 (5.4)										

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110133 - E200.8 (5.4)										
Blank (2110133-BLK1)				Prepared: 10/12/2021 Analyzed: 10/13/2021						
Aluminum	ND	0.040	mg/L							
Antimony	ND	0.00050	mg/L							
Arsenic	ND	0.00050	mg/L							
Barium	ND	0.00050	mg/L							
Beryllium	ND	0.00025	mg/L							
Cadmium	ND	0.00025	mg/L							
Chromium	ND	0.00050	mg/L							
Cobalt	ND	0.000250	mg/L							
Copper	ND	0.00050	mg/L							
Lead	ND	0.00050	mg/L							
Manganese	ND	0.00025	mg/L							
Molybdenum	ND	0.00025	mg/L							
Nickel	ND	0.00050	mg/L							
Selenium	ND	0.0025	mg/L							
Silver	ND	0.00050	mg/L							
Thallium	ND	0.00050	mg/L							
Uranium	ND	0.00050	mg/L							
Zinc	ND	0.040	mg/L							
LCS (2110133-BS1)				Prepared: 10/12/2021 Analyzed: 10/13/2021						
Aluminum	0.10	0.040	mg/L	0.1000		103	85-115			
Antimony	0.047	0.00050	mg/L	0.05000		94	85-115			
Arsenic	0.048	0.00050	mg/L	0.05000		97	85-115			
Barium	0.048	0.00050	mg/L	0.05000		95	85-115			
Beryllium	0.048	0.00025	mg/L	0.05000		96	85-115			
Cadmium	0.047	0.00025	mg/L	0.05000		94	85-115			
Chromium	0.047	0.00050	mg/L	0.05000		94	85-115			
Cobalt	0.0478	0.000250	mg/L	0.05000		96	85-115			
Copper	0.048	0.00050	mg/L	0.05000		95	85-115			
Lead	0.049	0.00050	mg/L	0.05000		99	85-115			
Manganese	0.048	0.00025	mg/L	0.05000		96	85-115			
Molybdenum	0.047	0.00025	mg/L	0.05000		94	85-115			
Nickel	0.048	0.00050	mg/L	0.05000		95	85-115			
Selenium	0.049	0.0025	mg/L	0.05000		97	85-115			
Silver	0.047	0.00050	mg/L	0.05000		94	85-115			
Thallium	0.047	0.00050	mg/L	0.05000		95	85-115			
Uranium	0.046	0.00050	mg/L	0.05000		93	85-115			
Zinc	0.098	0.040	mg/L	0.1000		98	85-115			

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110133 - E200.8 (5.4)										
LCS Dup (2110133-BSD1)				Prepared: 10/12/2021 Analyzed: 10/13/2021						
Aluminum	0.11	0.040	mg/L	0.1000		105	85-115	2	20	
Antimony	0.047	0.00050	mg/L	0.05000		95	85-115	0.3	20	
Arsenic	0.049	0.00050	mg/L	0.05000		97	85-115	0.9	20	
Barium	0.048	0.00050	mg/L	0.05000		95	85-115	0.1	20	
Beryllium	0.048	0.00025	mg/L	0.05000		96	85-115	0.03	20	
Cadmium	0.048	0.00025	mg/L	0.05000		95	85-115	0.7	20	
Chromium	0.047	0.00050	mg/L	0.05000		95	85-115	0.9	20	
Cobalt	0.0474	0.000250	mg/L	0.05000		95	85-115	0.7	20	
Copper	0.051	0.00050	mg/L	0.05000		102	85-115	6	20	
Lead	0.049	0.00050	mg/L	0.05000		98	85-115	1	20	
Manganese	0.048	0.00025	mg/L	0.05000		97	85-115	1	20	
Molybdenum	0.047	0.00025	mg/L	0.05000		94	85-115	0.3	20	
Nickel	0.048	0.00050	mg/L	0.05000		96	85-115	0.2	20	
Selenium	0.047	0.0025	mg/L	0.05000		95	85-115	3	20	
Silver	0.047	0.00050	mg/L	0.05000		95	85-115	0.5	20	
Thallium	0.048	0.00050	mg/L	0.05000		95	85-115	0.6	20	
Uranium	0.046	0.00050	mg/L	0.05000		93	85-115	0.2	20	
Zinc	0.098	0.040	mg/L	0.1000		98	85-115	0.1	20	
Matrix Spike (2110133-MS1)				Source: 21J0219-01		Prepared: 10/12/2021 Analyzed: 10/13/2021				
Aluminum	0.32	0.040	mg/L	0.1000	0.32	2	70-130			
Antimony	0.047	0.00050	mg/L	0.05000	0.000093	93	70-130			
Arsenic	0.058	0.00050	mg/L	0.05000	0.0084	99	70-130			
Barium	0.089	0.00050	mg/L	0.05000	0.061	55	70-130			
Beryllium	0.049	0.00025	mg/L	0.05000	0.000026	98	70-130			
Cadmium	0.046	0.00025	mg/L	0.05000	ND	93	70-130			
Chromium	0.047	0.00050	mg/L	0.05000	0.00073	93	70-130			
Cobalt	0.0456	0.000250	mg/L	0.05000	0.0000667	91	70-130			
Copper	0.13	0.00050	mg/L	0.05000	0.14	NR	70-130			M2
Lead	0.049	0.00050	mg/L	0.05000	0.00047	97	70-130			
Manganese	0.075	0.00025	mg/L	0.05000	0.0018	146	70-130			M1
Molybdenum	0.051	0.00025	mg/L	0.05000	0.00030	101	70-130			
Nickel	0.046	0.00050	mg/L	0.05000	0.00019	91	70-130			
Selenium	0.045	0.0025	mg/L	0.05000	ND	89	70-130			
Silver	0.041	0.00050	mg/L	0.05000	ND	81	70-130			
Thallium	0.047	0.00050	mg/L	0.05000	0.00036	94	70-130			
Uranium	0.051	0.00050	mg/L	0.05000	0.00020	101	70-130			
Zinc	0.39	0.040	mg/L	0.1000	0.011	376	70-130			M1

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110133 - E200.8 (5.4)										
Matrix Spike (2110133-MS2)		Source: 21J0250-01		Prepared: 10/12/2021 Analyzed: 10/13/2021						
Aluminum	0.23	0.040	mg/L	0.1000	ND	234	70-130			M1
Antimony	0.047	0.00050	mg/L	0.05000	0.00010	95	70-130			
Arsenic	0.059	0.00050	mg/L	0.05000	0.011	96	70-130			
Barium	0.079	0.00050	mg/L	0.05000	0.013	133	70-130			M1
Beryllium	0.049	0.00025	mg/L	0.05000	ND	99	70-130			
Cadmium	0.046	0.00025	mg/L	0.05000	0.0016	89	70-130			
Chromium	0.047	0.00050	mg/L	0.05000	0.0011	92	70-130			
Cobalt	0.0458	0.000250	mg/L	0.05000	0.000177	91	70-130			
Copper	0.096	0.00050	mg/L	0.05000	0.0049	182	70-130			M1
Lead	0.050	0.00050	mg/L	0.05000	0.00063	98	70-130			
Manganese	0.088	0.00025	mg/L	0.05000	0.062	51	70-130			M2
Molybdenum	0.052	0.00025	mg/L	0.05000	0.0057	92	70-130			
Nickel	0.045	0.00050	mg/L	0.05000	0.00035	89	70-130			
Selenium	0.049	0.0025	mg/L	0.05000	0.00079	96	70-130			
Silver	0.041	0.00050	mg/L	0.05000	ND	82	70-130			
Thallium	0.048	0.00050	mg/L	0.05000	0.00028	96	70-130			
Uranium	0.055	0.00050	mg/L	0.05000	0.0033	104	70-130			
Zinc	0.23	0.040	mg/L	0.1000	0.20	26	70-130			M2
Batch 2110134 - E245.1										
Blank (2110134-BLK1)				Prepared & Analyzed: 10/13/2021						
Mercury	ND	0.0010	mg/L							
LCS (2110134-BS1)				Prepared & Analyzed: 10/13/2021						
Mercury	0.0051	0.0010	mg/L	0.005000		101	85-115			
LCS Dup (2110134-BSD1)				Prepared & Analyzed: 10/13/2021						
Mercury	0.0050	0.0010	mg/L	0.005000		99	85-115	2	20	
Matrix Spike (2110134-MS1)				Prepared & Analyzed: 10/13/2021						
Mercury	0.0049	0.0010	mg/L	0.005000	ND	98	70-130			
Matrix Spike Dup (2110134-MSD1)				Prepared & Analyzed: 10/13/2021						
Mercury	0.0050	0.0010	mg/L	0.005000	ND	100	70-130	2	20	
Batch 2110135 - E 245.1										
Blank (2110135-BLK1)				Prepared & Analyzed: 10/13/2021						
Mercury	0.000049	0.0010	mg/L							
LCS (2110135-BS1)				Prepared & Analyzed: 10/13/2021						
Mercury	0.0051	0.0010	mg/L	0.005000		101	85-115			
LCS Dup (2110135-BSD1)				Prepared & Analyzed: 10/13/2021						
Mercury	0.0051	0.0010	mg/L	0.005000		103	85-115	1	20	
Matrix Spike (2110135-MS1)				Prepared & Analyzed: 10/13/2021						
Mercury	0.0051	0.0010	mg/L	0.005000	0.000047	101	70-130			
Matrix Spike Dup (2110135-MSD1)				Prepared & Analyzed: 10/13/2021						
Mercury	0.0051	0.0010	mg/L	0.005000	0.000047	102	70-130	0.2	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110051 - SM2540 C										
Duplicate (2110051-DUP1)		Source: 21I0749-01		Prepared: 10/06/2021 Analyzed: 10/08/2021						
Total Dissolved Solids (Residue, Filterable)	300	20	mg/L		320			4	5	
Duplicate (2110051-DUP2)		Source: 21J0005-01		Prepared: 10/06/2021 Analyzed: 10/08/2021						
Total Dissolved Solids (Residue, Filterable)	1300	20	mg/L		1300			0.2	5	
Batch 2110068 - SM2320B										
Blank (2110068-BLK1)		Prepared & Analyzed: 10/07/2021								
Alkalinity, Bicarbonate (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Carbonate (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Hydroxide (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Phenolphthalein (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Total (As CaCO3)	ND	2.0	mg/L							
LCS (2110068-BS1)		Prepared & Analyzed: 10/07/2021								
Alkalinity, Total (As CaCO3)	250	2.0	mg/L	250.0		100	90-110			
LCS Dup (2110068-BSD1)		Prepared & Analyzed: 10/07/2021								
Alkalinity, Total (As CaCO3)	250	2.0	mg/L	250.0		100	90-110	0	10	
Matrix Spike (2110068-MS1)		Source: 21J0013-01		Prepared & Analyzed: 10/07/2021						
Alkalinity, Total (As CaCO3)	370	2.0	mg/L	250.0	120	100	70-130			
Matrix Spike Dup (2110068-MSD1)		Source: 21J0013-01		Prepared & Analyzed: 10/07/2021						
Alkalinity, Total (As CaCO3)	370	2.0	mg/L	250.0	120	100	70-130	0	10	
Batch 2110088 - E150.1										
Duplicate (2110088-DUP1)		Source: 21J0117-01		Prepared & Analyzed: 10/07/2021						
pH (pH Units)	7.9		-		7.9			0	200	H5
Temperature (°C)	21		-		21			0.5	200	H5
Batch 2110094 - SM2510 B										
LCS (2110094-BS1)		Prepared & Analyzed: 10/08/2021								
Conductivity	150	0.10	µmhos/cm	141.2		106	0-200			
LCS Dup (2110094-BSD1)		Prepared & Analyzed: 10/08/2021								
Conductivity	150	0.10	µmhos/cm	141.2		106	0-200	0	200	
Duplicate (2110094-DUP1)		Source: 21J0117-01		Prepared & Analyzed: 10/08/2021						
Conductivity	900	0.10	µmhos/cm		890			0.1	10	
Duplicate (2110094-DUP2)		Source: 21J0218-03		Prepared & Analyzed: 10/08/2021						
Conductivity	540	0.10	µmhos/cm		540			0.2	10	
Batch 2110119 - SM4500-SiO2 C										
Blank (2110119-BLK1)		Prepared & Analyzed: 10/12/2021								
Silica	ND	2.0	mg/L							

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110119 - SM4500-SiO2 C										
LCS (2110119-BS1)				Prepared & Analyzed: 10/12/2021						
Silica	8.3	2.0	mg/L	8.000		104	90-110			
LCS Dup (2110119-BSD1)				Prepared & Analyzed: 10/12/2021						
Silica	8.3	2.0	mg/L	8.000		104	90-110	0.4	20	
Matrix Spike (2110119-MS1)				Source: 21J0218-03		Prepared & Analyzed: 10/12/2021				
Silica	61	10	mg/L	40.00	16	114	85-115			
Matrix Spike Dup (2110119-MSD1)				Source: 21J0218-03		Prepared & Analyzed: 10/12/2021				
Silica	61	10	mg/L	40.00	16	114	85-115	0.1	20	
Batch 2110146 - SM4500-NH3 B,C										
Blank (2110146-BLK1)				Prepared & Analyzed: 10/12/2021						
Nitrogen, Ammonia (As N)	ND	0.50	mg/L							
LCS (2110146-BS1)				Prepared & Analyzed: 10/12/2021						
Nitrogen, Ammonia (As N)	4.9	0.50	mg/L	5.000		99	90-110			
LCS Dup (2110146-BSD1)				Prepared & Analyzed: 10/12/2021						
Nitrogen, Ammonia (As N)	5.1	0.50	mg/L	5.000		102	90-110	3	10	
Matrix Spike (2110146-MS1)				Source: 21I0603-01		Prepared & Analyzed: 10/12/2021				
Nitrogen, Ammonia (As N)	6.0	0.50	mg/L	5.000	1.2	96	75-120			
Matrix Spike (2110146-MS2)				Source: 21J0073-01		Prepared & Analyzed: 10/12/2021				
Nitrogen, Ammonia (As N)	4.9	0.50	mg/L	5.000	ND	98	75-120			
Matrix Spike Dup (2110146-MSD1)				Source: 21I0603-01		Prepared & Analyzed: 10/12/2021				
Nitrogen, Ammonia (As N)	6.1	0.50	mg/L	5.000	1.2	99	75-120	3	20	
Matrix Spike Dup (2110146-MSD2)				Source: 21J0073-01		Prepared & Analyzed: 10/12/2021				
Nitrogen, Ammonia (As N)	4.9	0.50	mg/L	5.000	ND	99	75-120	0.9	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110056 - SW8260B										

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110056 - SW8260B										
Blank (2110056-BLK1)				Prepared & Analyzed: 10/06/2021						
1,1,1,2-Tetrachloroethane	ND	0.50	ug/L							
1,1,1-Trichloroethane	ND	0.50	ug/L							
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L							
1,1,2-Trichloroethane	ND	0.50	ug/L							
1,1,2-Trichlorotrifluoroethane	ND	5.0	ug/L							
1,1-Dichloroethane	ND	0.50	ug/L							
1,1-Dichloroethene	ND	0.50	ug/L							
1,1-Dichloropropene	ND	0.50	ug/L							
1,2,3-Trichlorobenzene	ND	2.0	ug/L							
1,2,3-Trichloropropane	ND	1.0	ug/L							
1,2,4-Trichlorobenzene	ND	2.0	ug/L							
1,2,4-Trimethylbenzene	ND	0.50	ug/L							
1,2-Dibromo-3-chloropropane	ND	10	ug/L							
1,2-Dibromoethane	ND	2.0	ug/L							
1,2-Dichlorobenzene	ND	0.50	ug/L							
1,2-Dichloroethane	ND	0.50	ug/L							
1,2-Dichloropropane	ND	0.50	ug/L							
1,3,5-Trimethylbenzene	ND	0.50	ug/L							
1,3-Dichlorobenzene	ND	0.50	ug/L							
1,3-Dichloropropane	ND	0.50	ug/L							
1,4-Dichlorobenzene	ND	0.50	ug/L							
2,2-Dichloropropane	ND	0.50	ug/L							
2-Butanone (MEK)	ND	10	ug/L							
2-Chlorotoluene	ND	0.50	ug/L							
2-Hexanone	ND	2.5	ug/L							
4-Chlorotoluene	ND	0.50	ug/L							
4-Isopropyltoluene	ND	0.50	ug/L							
4-Methyl-2-pentanone	ND	2.5	ug/L							
Acetone	ND	10	ug/L							
Acrylonitrile	ND	10	ug/L							
Benzene	ND	0.50	ug/L							
Bromobenzene	ND	0.50	ug/L							
Bromochloromethane	ND	0.50	ug/L							
Bromodichloromethane	ND	0.50	ug/L							
Bromoform	ND	2.0	ug/L							
Bromomethane	ND	1.0	ug/L							
Carbon disulfide	ND	2.0	ug/L							
Carbon tetrachloride	ND	0.50	ug/L							
Chlorobenzene	ND	0.50	ug/L							
Chloroethane	ND	1.0	ug/L							
Chloroform	ND	0.50	ug/L							
Chloromethane	ND	1.0	ug/L							
cis-1,2-Dichloroethene	ND	0.50	ug/L							
cis-1,3-Dichloropropene	ND	2.0	ug/L							
Dibromochloromethane	ND	0.50	ug/L							
Dibromomethane	ND	0.50	ug/L							
Dichlorodifluoromethane	ND	0.50	ug/L							
Ethylbenzene	ND	0.50	ug/L							

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110056 - SW8260B										
Blank (2110056-BLK1)				Prepared & Analyzed: 10/06/2021						
Hexachlorobutadiene	ND	5.0	ug/L							
Iodomethane	ND	10	ug/L							
Isopropylbenzene	ND	0.50	ug/L							
m,p-Xylene	ND	1.0	ug/L							
Methylene chloride	ND	1.0	ug/L							
Naphthalene	ND	2.0	ug/L							
n-Butylbenzene	ND	0.50	ug/L							
n-Propylbenzene	ND	0.50	ug/L							
o-Xylene	ND	0.50	ug/L							
sec-Butylbenzene	ND	2.0	ug/L							
Styrene	ND	0.50	ug/L							
tert-Butylbenzene	ND	0.50	ug/L							
Tetrachloroethene	ND	0.50	ug/L							
Toluene	ND	0.50	ug/L							
trans-1,2-Dichloroethene	ND	0.50	ug/L							
trans-1,3-Dichloropropene	ND	2.0	ug/L							
trans-1,4-Dichloro-2-butene	ND	10	ug/L							
Trichloroethene	ND	0.50	ug/L							
Trichlorofluoromethane	ND	0.50	ug/L							
Vinyl acetate	ND	10	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	25.1		ug/L	25.00		100	70-130			
Surrogate: Dibromofluoromethane	26.7		ug/L	25.00		107	70-130			
Surrogate: Toluene-d8	26.3		ug/L	25.00		105	70-130			
LCS (2110056-BS1)				Prepared & Analyzed: 10/06/2021						
1,1-Dichloroethene	22		ug/L	25.00		89	70-130			
Benzene	24		ug/L	25.00		95	70-130			
Chlorobenzene	26		ug/L	25.00		106	70-130			
Toluene	26		ug/L	25.00		104	70-130			
Trichloroethene	25		ug/L	25.00		101	70-130			
Surrogate: 4-Bromofluorobenzene	24.8		ug/L	25.00		99	70-130			
Surrogate: Dibromofluoromethane	25.6		ug/L	25.00		102	70-130			
Surrogate: Toluene-d8	26.1		ug/L	25.00		105	70-130			
LCS Dup (2110056-BSD1)				Prepared & Analyzed: 10/06/2021						
1,1-Dichloroethene	21		ug/L	25.00		86	70-130	3	30	
Benzene	24		ug/L	25.00		97	70-130	3	30	
Chlorobenzene	26		ug/L	25.00		106	70-130	0.1	30	
Toluene	26		ug/L	25.00		103	70-130	1	30	
Trichloroethene	25		ug/L	25.00		100	70-130	0.08	30	
Surrogate: 4-Bromofluorobenzene	24.3		ug/L	25.00		97	70-130			
Surrogate: Dibromofluoromethane	25.7		ug/L	25.00		103	70-130			
Surrogate: Toluene-d8	25.5		ug/L	25.00		102	70-130			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110056 - SW8260B										
Matrix Spike (2110056-MS1)		Source: 21J0095-01		Prepared & Analyzed: 10/06/2021						
1,1-Dichloroethene	22		ug/L	25.00	0.17	88	70-130			
Benzene	25		ug/L	25.00	0.010	101	70-130			
Chlorobenzene	26		ug/L	25.00	0.0	105	70-130			
Toluene	26		ug/L	25.00	0.0	103	70-130			
Trichloroethene	42		ug/L	25.00	17	100	70-130			
Surrogate: 4-Bromofluorobenzene	23.9		ug/L	25.00		95	70-130			
Surrogate: Dibromofluoromethane	26.7		ug/L	25.00		107	70-130			
Surrogate: Toluene-d8	25.3		ug/L	25.00		101	70-130			
Matrix Spike Dup (2110056-MSD1)		Source: 21J0095-01		Prepared & Analyzed: 10/06/2021						
1,1-Dichloroethene	22		ug/L	25.00	0.17	89	70-130	1	30	
Benzene	25		ug/L	25.00	0.010	100	70-130	0.9	30	
Chlorobenzene	26		ug/L	25.00	0.0	105	70-130	0.2	30	
Toluene	26		ug/L	25.00	0.0	102	70-130	1	30	
Trichloroethene	42		ug/L	25.00	17	101	70-130	0.4	30	
Surrogate: 4-Bromofluorobenzene	24.7		ug/L	25.00		99	70-130			
Surrogate: Dibromofluoromethane	26.8		ug/L	25.00		107	70-130			
Surrogate: Toluene-d8	25.4		ug/L	25.00		102	70-130			
Batch 2110221 - SW8260B										

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110221 - SW8260B										
Blank (2110221-BLK1)				Prepared: 10/19/2021 Analyzed: 10/20/2021						
1,1,1,2-Tetrachloroethane	ND	0.50	ug/L							
1,1,1-Trichloroethane	ND	0.50	ug/L							
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L							
1,1,2-Trichloroethane	ND	0.50	ug/L							
1,1,2-Trichlorotrifluoroethane	ND	5.0	ug/L							
1,1-Dichloroethane	ND	0.50	ug/L							
1,1-Dichloroethene	ND	0.50	ug/L							
1,1-Dichloropropene	ND	0.50	ug/L							
1,2,3-Trichlorobenzene	ND	2.0	ug/L							
1,2,3-Trichloropropane	ND	1.0	ug/L							
1,2,4-Trichlorobenzene	ND	2.0	ug/L							
1,2,4-Trimethylbenzene	ND	0.50	ug/L							
1,2-Dibromo-3-chloropropane	ND	10	ug/L							
1,2-Dibromoethane	ND	2.0	ug/L							
1,2-Dichlorobenzene	ND	0.50	ug/L							
1,2-Dichloroethane	ND	0.50	ug/L							
1,2-Dichloropropane	ND	0.50	ug/L							
1,3,5-Trimethylbenzene	ND	0.50	ug/L							
1,3-Dichlorobenzene	ND	0.50	ug/L							
1,3-Dichloropropane	ND	0.50	ug/L							
1,4-Dichlorobenzene	ND	0.50	ug/L							
2,2-Dichloropropane	ND	0.50	ug/L							
2-Butanone (MEK)	ND	10	ug/L							
2-Chlorotoluene	ND	0.50	ug/L							
2-Hexanone	ND	2.5	ug/L							
4-Chlorotoluene	ND	0.50	ug/L							
4-Isopropyltoluene	ND	0.50	ug/L							
4-Methyl-2-pentanone	ND	2.5	ug/L							
Acetone	ND	10	ug/L							
Acrylonitrile	ND	10	ug/L							
Benzene	ND	0.50	ug/L							
Bromobenzene	ND	0.50	ug/L							
Bromochloromethane	ND	0.50	ug/L							
Bromodichloromethane	ND	0.50	ug/L							
Bromoform	ND	2.0	ug/L							
Bromomethane	ND	1.0	ug/L							
Carbon disulfide	ND	2.0	ug/L							
Carbon tetrachloride	ND	0.50	ug/L							
Chlorobenzene	ND	0.50	ug/L							
Chloroethane	ND	1.0	ug/L							
Chloroform	ND	0.50	ug/L							
Chloromethane	ND	1.0	ug/L							
cis-1,2-Dichloroethene	ND	0.50	ug/L							
cis-1,3-Dichloropropene	ND	2.0	ug/L							
Dibromochloromethane	ND	0.50	ug/L							
Dibromomethane	ND	0.50	ug/L							
Dichlorodifluoromethane	ND	0.50	ug/L							
Ethylbenzene	ND	0.50	ug/L							

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110221 - SW8260B										
Blank (2110221-BLK1)				Prepared: 10/19/2021 Analyzed: 10/20/2021						
Hexachlorobutadiene	ND	5.0	ug/L							
Iodomethane	ND	10	ug/L							
Isopropylbenzene	ND	0.50	ug/L							
m,p-Xylene	ND	1.0	ug/L							
Methylene chloride	ND	1.0	ug/L							
Naphthalene	ND	2.0	ug/L							
n-Butylbenzene	ND	0.50	ug/L							
n-Propylbenzene	ND	0.50	ug/L							
o-Xylene	ND	0.50	ug/L							
sec-Butylbenzene	ND	2.0	ug/L							
Styrene	ND	0.50	ug/L							
tert-Butylbenzene	ND	0.50	ug/L							
Tetrachloroethene	ND	0.50	ug/L							
Toluene	ND	0.50	ug/L							
trans-1,2-Dichloroethene	ND	0.50	ug/L							
trans-1,3-Dichloropropene	ND	2.0	ug/L							
trans-1,4-Dichloro-2-butene	ND	10	ug/L							
Trichloroethene	ND	0.50	ug/L							
Trichlorofluoromethane	ND	0.50	ug/L							
Vinyl acetate	ND	10	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	27.0		ug/L	25.00		108	70-130			
Surrogate: Dibromofluoromethane	29.9		ug/L	25.00		120	70-130			
Surrogate: Toluene-d8	27.9		ug/L	25.00		112	70-130			
LCS (2110221-BS1)				Prepared & Analyzed: 10/19/2021						
1,1-Dichloroethene	24		ug/L	25.00		96	70-130			
Benzene	26		ug/L	25.00		105	70-130			
Chlorobenzene	27		ug/L	25.00		110	70-130			
Toluene	27		ug/L	25.00		107	70-130			
Trichloroethene	26		ug/L	25.00		103	70-130			
Surrogate: 4-Bromofluorobenzene	26.2		ug/L	25.00		105	70-130			
Surrogate: Dibromofluoromethane	28.0		ug/L	25.00		112	70-130			
Surrogate: Toluene-d8	27.3		ug/L	25.00		109	70-130			
LCS Dup (2110221-BSD1)				Prepared: 10/19/2021 Analyzed: 10/20/2021						
1,1-Dichloroethene	24		ug/L	25.00		98	70-130	2	30	
Benzene	27		ug/L	25.00		107	70-130	2	30	
Chlorobenzene	27		ug/L	25.00		108	70-130	2	30	
Toluene	25		ug/L	25.00		101	70-130	6	30	
Trichloroethene	26		ug/L	25.00		104	70-130	1	30	
Surrogate: 4-Bromofluorobenzene	26.4		ug/L	25.00		106	70-130			
Surrogate: Dibromofluoromethane	29.7		ug/L	25.00		119	70-130			
Surrogate: Toluene-d8	27.3		ug/L	25.00		109	70-130			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110221 - SW8260B										
Matrix Spike (2110221-MS1)		Source: 21J0370-02		Prepared: 10/19/2021 Analyzed: 10/20/2021						
1,1-Dichloroethene	25		ug/L	25.00	0.010	98	70-130			
Benzene	27		ug/L	25.00	0.0	108	70-130			
Chlorobenzene	27		ug/L	25.00	0.020	108	70-130			
Toluene	26		ug/L	25.00	0.54	103	70-130			
Trichloroethene	26		ug/L	25.00	0.0	104	70-130			
Surrogate: 4-Bromofluorobenzene	27.3		ug/L	25.00		109	70-130			
Surrogate: Dibromofluoromethane	29.2		ug/L	25.00		117	70-130			
Surrogate: Toluene-d8	27.7		ug/L	25.00		111	70-130			
Matrix Spike Dup (2110221-MSD1)		Source: 21J0370-02		Prepared: 10/19/2021 Analyzed: 10/20/2021						
1,1-Dichloroethene	25		ug/L	25.00	0.010	98	70-130	0.2	30	
Benzene	27		ug/L	25.00	0.0	110	70-130	2	30	
Chlorobenzene	27		ug/L	25.00	0.020	109	70-130	0.8	30	
Toluene	27		ug/L	25.00	0.54	105	70-130	2	30	
Trichloroethene	26		ug/L	25.00	0.0	106	70-130	2	30	
Surrogate: 4-Bromofluorobenzene	26.8		ug/L	25.00		107	70-130			
Surrogate: Dibromofluoromethane	29.7		ug/L	25.00		119	70-130			
Surrogate: Toluene-d8	27.8		ug/L	25.00		111	70-130			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110055 - E300.0 (2.1)										
Blank (2110055-BLK1)				Prepared & Analyzed: 10/06/2021						
Chloride	ND	1.0	mg/L							
Fluoride	ND	0.50	mg/L							
Nitrogen, Nitrate (As N)	ND	0.50	mg/L							
Nitrogen, Nitrite (As N)	ND	0.10	mg/L							
Sulfate	ND	5.0	mg/L							
LCS (2110055-BS1)				Prepared & Analyzed: 10/06/2021						
Chloride	12	1.0	mg/L	12.50		95	90-110			
Fluoride	2.0	0.50	mg/L	2.000		98	90-110			
Nitrogen, Nitrate (As N)	4.8	0.50	mg/L	5.000		97	90-110			
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500		95	90-110			
Sulfate	12	5.0	mg/L	12.50		98	90-110			
LCS Dup (2110055-BSD1)				Prepared & Analyzed: 10/06/2021						
Chloride	12	1.0	mg/L	12.50		95	90-110	0.008	10	
Fluoride	2.0	0.50	mg/L	2.000		100	90-110	2	10	
Nitrogen, Nitrate (As N)	4.8	0.50	mg/L	5.000		97	90-110	0.1	10	
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500		95	90-110	0.2	10	
Sulfate	12	5.0	mg/L	12.50		98	90-110	0.3	10	
Matrix Spike (2110055-MS1)		Source: 21J0173-01		Prepared: 10/06/2021 Analyzed: 10/15/2021						
Chloride	20	1.0	mg/L	12.50	5.2	122	80-120			M1
Fluoride	2.3	0.50	mg/L	2.000	0.36	95	80-120			
Nitrogen, Nitrate (As N)	7.6	0.50	mg/L	5.000	1.8	117	80-120			
Nitrogen, Nitrite (As N)	3.4	0.10	mg/L	2.500	ND	134	80-120			M1
Sulfate	33	5.0	mg/L	12.50	19	110	80-120			
Matrix Spike Dup (2110055-MSD1)		Source: 21J0173-01		Prepared: 10/06/2021 Analyzed: 10/15/2021						
Chloride	23	1.0	mg/L	12.50	5.2	145	80-120	13	10	M1
Fluoride	2.6	0.50	mg/L	2.000	0.36	114	80-120	16	10	M1
Nitrogen, Nitrate (As N)	8.7	0.50	mg/L	5.000	1.8	139	80-120	14	10	M1
Nitrogen, Nitrite (As N)	4.0	0.10	mg/L	2.500	ND	158	80-120	16	10	M1
Sulfate	36	5.0	mg/L	12.50	19	135	80-120	9	10	M1
Batch 2110140 - E300.0 (2.1)										
Blank (2110140-BLK1)				Prepared & Analyzed: 10/14/2021						
Phosphorus, Dissolved Orthophosphate (As P)	ND	0.50	mg/L							
LCS (2110140-BS1)				Prepared & Analyzed: 10/14/2021						
Phosphorus, Dissolved Orthophosphate (As P)	2.9	0.50	mg/L	2.500		115	90-110			L5
LCS Dup (2110140-BSD1)				Prepared & Analyzed: 10/14/2021						
Phosphorus, Dissolved Orthophosphate (As P)	2.8	0.50	mg/L	2.500		114	90-110	1	10	L5
Matrix Spike (2110140-MS1)		Source: 21J0408-03		Prepared & Analyzed: 10/14/2021						
Phosphorus, Dissolved Orthophosphate (As P)	2.8	0.50	mg/L	2.500	ND	112	80-120			

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Date Received: 10/06/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110140 - E300.0 (2.1)										
Matrix Spike (2110140-MS2)		Source: 21J0409-01		Prepared & Analyzed: 10/14/2021						
Phosphorus, Dissolved Orthophosphate (As P)	2.9	0.50	mg/L	2.500	ND	116	80-120			
Matrix Spike Dup (2110140-MSD1)		Source: 21J0408-03		Prepared & Analyzed: 10/14/2021						
Phosphorus, Dissolved Orthophosphate (As P)	2.8	0.50	mg/L	2.500	ND	113	80-120	1	10	
Matrix Spike Dup (2110140-MSD2)		Source: 21J0409-01		Prepared: 10/14/2021 Analyzed: 10/15/2021						
Phosphorus, Dissolved Orthophosphate (As P)	3.0	0.50	mg/L	2.500	ND	120	80-120	4	10	

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions					
Frequency: As needed and when sampled (Field Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
General Measurements					
Depth to Water level	feet	Water Level Sounder	NA		
Water level elevation	feet amsl	calculation	NA		
Temperature – field	° C (Celsius)	Oakton PC 450 Meter/Oakton pH Con 10 Meter or equivalent	NA		
pH – field	S.U.	Oakton PC 450 Meter/Oakton pH Con 10 Meter or equivalent	NA		
Conductivity – field	µS/cm	Oakton PC 450 Meter/ Oakton pH Con 10 Meter or equivalent	NA		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
General Measurements, General Chemistry					
Temperature – lab	° C	SM 4500 H+B	NA		
pH – lab	S.U.	SM 4500 H+B	NA		
Conductivity – lab	µS/cm	SW-846 9050A	2.0		
Total dissolved solids	mg/L	SM 2540 C	20		
Hardness ¹	mg/L	SM 2340B/calculation	13.0		
Cation/Anion Balance	%	calculation	NA		
Total alkalinity	mg/L	SM 2320 B	4.0		
Bicarbonate	mg/L	SM 2320 B	4.0		
Carbonate	mg/L	SM 2320 B	4.0		
Hydroxide	mg/L	SM 2320 B	4.0		
Sulfate	mg/L	EPA 300.0	0.50		
Chloride	mg/L	EPA 300.0	0.50		
Fluoride	mg/L	EPA 300.0	0.50		
Nitrate (as nitrogen [N])	mg/L	EPA 300.0	0.10		
Nitrite (as N)	mg/L	EPA 300.0	0.10		
Nitrate + Nitrite (as N)	mg/L	EPA 300.0/calculation	0.10		
Calcium ¹	mg/L	EPA 200.7	2.0		
Magnesium ¹	mg/L	EPA 200.7	2.0		
Sodium ¹	mg/L	EPA 200.7	0.5		
Potassium ¹	mg/L	EPA 200.7	0.5		
Ammonia (as N)	mg/L	SM 4500	0.5		
Orthophosphate (as P)	mg/L	EPA 300.0	0.1		
Silicon Dioxide ¹	mg/L	EPA 200.7	0.214		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Dissolved Metals					
Aluminum	mg/L	EPA 200.7	0.1		
Antimony	mg/L	EPA 200.8	0.001		
Arsenic	mg/L	EPA 200.8	0.0005		
Barium	mg/L	EPA 200.7	0.01		
Beryllium	mg/L	EPA 200.7	0.001		
Boron	mg/L	EPA 200.7	0.05		
Cadmium	mg/L	EPA 200.7	0.001		
Chromium	mg/L	EPA 200.7	0.01		
Cobalt	mg/L	EPA 200.7	0.01		
Copper	mg/L	EPA 200.7	0.01		
Iron	mg/L	EPA 200.7	0.1		
Lead	mg/L	EPA 200.8	0.0005		
Manganese	mg/L	EPA 200.7	0.01		
Mercury	mg/L	EPA 245.1	0.0002		
Molybdenum	mg/L	EPA 200.7	0.01		
Nickel	mg/L	EPA 200.7	0.01		
Selenium	mg/L	EPA 200.8	0.0005		
Silver	mg/L	EPA 200.8	0.0001		
Thallium	mg/L	EPA 200.8	0.0001		
Uranium	mg/L	EPA 200.8	0.0001		
Zinc	mg/L	EPA 200.8	0.013		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Total Recoverable Metals					
Aluminum	mg/L	EPA 200.7	0.1		
Antimony	mg/L	EPA 200.8	0.001		
Arsenic	mg/L	EPA 200.8	0.0005		
Barium	mg/L	EPA 200.7	0.01		
Beryllium	mg/L	EPA 200.7	0.001		
Boron	mg/L	EPA 200.7	0.05		
Cadmium	mg/L	EPA 200.7	0.001		
Chromium	mg/L	EPA 200.7	0.01		
Cobalt	mg/L	EPA 200.7	0.01		
Copper	mg/L	EPA 200.7	0.01		
Iron	mg/L	EPA 200.7	0.1		
Lead	mg/L	EPA 200.8	0.0005		
Manganese	mg/L	EPA 200.7	0.01		
Mercury	mg/L	EPA 245.1	0.0002		
Molybdenum	mg/L	EPA 200.7	0.01		
Nickel	mg/L	EPA 200.7	0.01		
Selenium	mg/L	EPA 200.8	0.0005		
Silver	mg/L	EPA 200.8	0.0001		
Thallium	mg/L	EPA 200.8	0.0001		
Uranium	mg/L	EPA 200.8	0.0001		
Zinc	mg/L	EPA 200.8	0.013		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Radiochemicals					
Gross alpha particle activity	pCi/L	EPA 900	3.0		
Adjusted gross alpha	pCi/L	calculation	3.0		
Total Radium (Ra 226 + Ra 228)	pCi/L	calculation	1.0		
Radium 226	pCi/L	EPA 903.1 or HPGE-GA	1.0		
Radium 228	pCi/L	EPA 904 or HPGE-GA	1.0		
Uranium isotopes	pCi/L	ASTM 6239	1.0		

Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Other					
Stable isotopes: H and O	Per mil	Mass spectrometer	0.10		
Organics - Volatile	mg/L	SW8260B	Variable		
Organics – Semi-Volatile	mg/L	8270	Variable		

Units: S.U. = standard units

μS/cm = micro Siemens per centimeter

mg/L = milligrams per liter

μg/L = micrograms per liter

pCi/L = picoCuries per liter

amsl = above mean sea level

Per mil = parts per thousand

NA = not applicable

¹: Parameter to be analyzed as both dissolved and total.



ANALYTICAL REPORT

October 18, 2021

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Is

⁸ Gl

⁹ Al

¹⁰ Sc

Turner Laboratories Inc

Sample Delivery Group: L1415695
Samples Received: 10/08/2021
Project Number: 21J0117
Description: 21J0117

Report To: Max DiSante
2445 North Coyote Drive
Suite 104
Tucson, AZ 85745

Entire Report Reviewed By:

Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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		⁹ Al
		¹⁰ Sc

SAMPLE SUMMARY

21J0117-01 L1415695-01 GW

Collected by

Collected date/time

Received date/time

10/05/21 14:00

10/08/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1754898	1	10/12/21 16:22	10/13/21 01:30	JNJ	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Is

⁸Gl

⁹Al

¹⁰Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Daphne Richards
Project Manager

Sample Delivery Group (SDG) Narrative

An aliquot for analysis was taken from the original container received due to volume requirements of the laboratory's procedure. Rinsing of the original sample container for inclusion in the sample extraction was not performed.

<u>Lab Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L1415695-01	21J0117-01	8270C



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch	
Acenaphthene	ND		0.00100	1	10/13/2021 01:30	WG1754898	¹ Cp
Acenaphthylene	ND		0.00100	1	10/13/2021 01:30	WG1754898	² Tc
Anthracene	ND		0.00100	1	10/13/2021 01:30	WG1754898	³ Ss
Benzidine	ND		0.0100	1	10/13/2021 01:30	WG1754898	⁴ Cn
Benzo(a)anthracene	ND		0.00100	1	10/13/2021 01:30	WG1754898	⁵ Sr
Benzo(b)fluoranthene	ND		0.00100	1	10/13/2021 01:30	WG1754898	⁶ Qc
Benzo(k)fluoranthene	ND		0.00100	1	10/13/2021 01:30	WG1754898	⁷ Is
Benzo(g,h,i)perylene	ND		0.00100	1	10/13/2021 01:30	WG1754898	⁸ Gl
Benzo(a)pyrene	ND		0.00100	1	10/13/2021 01:30	WG1754898	⁹ Al
Bis(2-chlorethoxy)methane	ND		0.0100	1	10/13/2021 01:30	WG1754898	¹⁰ Sc
Bis(2-chloroethyl)ether	ND		0.0100	1	10/13/2021 01:30	WG1754898	
2,2-Oxybis(1-Chloropropane)	ND		0.0100	1	10/13/2021 01:30	WG1754898	
4-Bromophenyl-phenylether	ND		0.0100	1	10/13/2021 01:30	WG1754898	
2-Chloronaphthalene	ND		0.00100	1	10/13/2021 01:30	WG1754898	
4-Chlorophenyl-phenylether	ND		0.0100	1	10/13/2021 01:30	WG1754898	
Chrysene	ND		0.00100	1	10/13/2021 01:30	WG1754898	
Dibenz(a,h)anthracene	ND		0.00100	1	10/13/2021 01:30	WG1754898	
1,2-Dichlorobenzene	ND		0.0100	1	10/13/2021 01:30	WG1754898	
1,3-Dichlorobenzene	ND		0.0100	1	10/13/2021 01:30	WG1754898	
1,4-Dichlorobenzene	ND		0.0100	1	10/13/2021 01:30	WG1754898	
3,3-Dichlorobenzidine	ND		0.0100	1	10/13/2021 01:30	WG1754898	
2,4-Dinitrotoluene	ND		0.0100	1	10/13/2021 01:30	WG1754898	
2,6-Dinitrotoluene	ND		0.0100	1	10/13/2021 01:30	WG1754898	
Fluoranthene	ND		0.00100	1	10/13/2021 01:30	WG1754898	
Fluorene	ND		0.00100	1	10/13/2021 01:30	WG1754898	
Hexachlorobenzene	ND		0.00100	1	10/13/2021 01:30	WG1754898	
Hexachloro-1,3-butadiene	ND		0.0100	1	10/13/2021 01:30	WG1754898	
Hexachlorocyclopentadiene	ND		0.0100	1	10/13/2021 01:30	WG1754898	
Hexachloroethane	ND		0.0100	1	10/13/2021 01:30	WG1754898	
Indeno(1,2,3-cd)pyrene	ND		0.00100	1	10/13/2021 01:30	WG1754898	
Isophorone	ND		0.0100	1	10/13/2021 01:30	WG1754898	
Naphthalene	ND		0.00100	1	10/13/2021 01:30	WG1754898	
Nitrobenzene	ND		0.0100	1	10/13/2021 01:30	WG1754898	
n-Nitrosodimethylamine	ND		0.0100	1	10/13/2021 01:30	WG1754898	
n-Nitrosodiphenylamine	ND		0.0100	1	10/13/2021 01:30	WG1754898	
n-Nitrosodi-n-propylamine	ND		0.0100	1	10/13/2021 01:30	WG1754898	
Phenanthrene	ND		0.00100	1	10/13/2021 01:30	WG1754898	
Benzylbutyl phthalate	ND		0.00300	1	10/13/2021 01:30	WG1754898	
Bis(2-ethylhexyl)phthalate	ND		0.00300	1	10/13/2021 01:30	WG1754898	
Di-n-butyl phthalate	ND		0.00300	1	10/13/2021 01:30	WG1754898	
Diethyl phthalate	ND		0.00300	1	10/13/2021 01:30	WG1754898	
Dimethyl phthalate	ND		0.00300	1	10/13/2021 01:30	WG1754898	
Di-n-octyl phthalate	ND		0.00300	1	10/13/2021 01:30	WG1754898	
Pyrene	ND		0.00100	1	10/13/2021 01:30	WG1754898	
1,2,4-Trichlorobenzene	ND		0.0100	1	10/13/2021 01:30	WG1754898	
4-Chloro-3-methylphenol	ND		0.0100	1	10/13/2021 01:30	WG1754898	
2-Chlorophenol	ND		0.0100	1	10/13/2021 01:30	WG1754898	
2,4-Dichlorophenol	ND		0.0100	1	10/13/2021 01:30	WG1754898	
2,4-Dimethylphenol	ND		0.0100	1	10/13/2021 01:30	WG1754898	
4,6-Dinitro-2-methylphenol	ND		0.0100	1	10/13/2021 01:30	WG1754898	
2,4-Dinitrophenol	ND		0.0100	1	10/13/2021 01:30	WG1754898	
2-Nitrophenol	ND		0.0100	1	10/13/2021 01:30	WG1754898	
4-Nitrophenol	ND		0.0100	1	10/13/2021 01:30	WG1754898	
Pentachlorophenol	ND		0.0100	1	10/13/2021 01:30	WG1754898	
Phenol	ND		0.0100	1	10/13/2021 01:30	WG1754898	
2,4,6-Trichlorophenol	ND		0.0100	1	10/13/2021 01:30	WG1754898	

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorophenol	38.9		10.0-120		10/13/2021 01:30	WG1754898
(S) Phenol-d5	25.6		10.0-120		10/13/2021 01:30	WG1754898
(S) Nitrobenzene-d5	59.1		10.0-127		10/13/2021 01:30	WG1754898
(S) 2-Fluorobiphenyl	73.9		10.0-130		10/13/2021 01:30	WG1754898
(S) 2,4,6-Tribromophenol	61.7		10.0-155		10/13/2021 01:30	WG1754898
(S) p-Terphenyl-d14	65.5		10.0-128		10/13/2021 01:30	WG1754898

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Is⁸ Gl⁹ Al¹⁰ Sc

Method Blank (MB)

(MB) R3715960-2 10/13/21 00:25

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acenaphthene	U		0.0000886	0.00100
Acenaphthylene	U		0.0000921	0.00100
Anthracene	U		0.0000804	0.00100
Benzidine	U		0.00374	0.0100
Benzo(a)anthracene	U		0.000199	0.00100
Benzo(b)fluoranthene	U		0.000130	0.00100
Benzo(k)fluoranthene	U		0.000120	0.00100
Benzo(g,h,i)perylene	U		0.000121	0.00100
Benzo(a)pyrene	U		0.0000381	0.00100
Bis(2-chlorethoxy)methane	U		0.000116	0.0100
Bis(2-chloroethyl)ether	U		0.000137	0.0100
2,2-oxybis(1-chloropropane)	U		0.000210	0.0100
4-Bromophenyl-phenylether	U		0.0000877	0.0100
2-Chloronaphthalene	U		0.0000648	0.00100
4-Chlorophenyl-phenylether	U		0.0000926	0.0100
Chrysene	U		0.000130	0.00100
Dibenz(a,h)anthracene	U		0.0000644	0.00100
1,2-Dichlorobenzene	U		0.0000713	0.0100
1,3-Dichlorobenzene	U		0.000132	0.0100
1,4-Dichlorobenzene	U		0.0000942	0.0100
3,3-Dichlorobenzidine	U		0.000212	0.0100
2,4-Dinitrotoluene	U		0.0000983	0.0100
2,6-Dinitrotoluene	U		0.000250	0.0100
Fluoranthene	U		0.000102	0.00100
Fluorene	U		0.0000844	0.00100
Hexachlorobenzene	U		0.0000755	0.00100
Hexachloro-1,3-butadiene	U		0.0000968	0.0100
Hexachlorocyclopentadiene	U		0.0000598	0.0100
Hexachloroethane	U		0.000127	0.0100
Indeno(1,2,3-cd)pyrene	U		0.000279	0.00100
Isophorone	U		0.000143	0.0100
Naphthalene	U		0.000159	0.00100
Nitrobenzene	U		0.000297	0.0100
n-Nitrosodimethylamine	U		0.000998	0.0100
n-Nitrosodiphenylamine	U		0.00237	0.0100
n-Nitrosodi-n-propylamine	U		0.000261	0.0100
Phenanthrene	U		0.000112	0.00100
Benzylbutyl phthalate	U		0.000765	0.00300
Bis(2-ethylhexyl)phthalate	U		0.000895	0.00300
Di-n-butyl phthalate	U		0.000453	0.00300

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Is

⁸Gl

⁹Al

¹⁰Sc

Method Blank (MB)

(MB) R3715960-2 10/13/21 00:25

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Diethyl phthalate	U		0.000287	0.00300
Dimethyl phthalate	U		0.000260	0.00300
Di-n-octyl phthalate	U		0.000932	0.00300
Pyrene	U		0.000107	0.00100
1,2,4-Trichlorobenzene	U		0.0000698	0.0100
4-Chloro-3-methylphenol	U		0.000131	0.0100
2-Chlorophenol	U		0.000133	0.0100
2-Nitrophenol	U		0.000117	0.0100
4-Nitrophenol	U		0.000143	0.0100
Pentachlorophenol	U		0.000313	0.0100
Phenol	U		0.00433	0.0100
2,4,6-Trichlorophenol	U		0.000100	0.0100
2,4-Dichlorophenol	U		0.000102	0.0100
2,4-Dimethylphenol	U		0.0000636	0.0100
4,6-Dinitro-2-methylphenol	U		0.00112	0.0100
2,4-Dinitrophenol	U		0.00593	0.0100
(S) Nitrobenzene-d5	53.7			10.0-127
(S) 2-Fluorobiphenyl	62.7			10.0-130
(S) p-Terphenyl-d14	65.7			10.0-128
(S) Phenol-d5	24.1			10.0-120
(S) 2-Fluorophenol	37.6			10.0-120
(S) 2,4,6-Tribromophenol	52.0			10.0-155

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Is

⁸Gl

⁹Al

¹⁰Sc

Laboratory Control Sample (LCS)

(LCS) R3715960-1 10/13/21 00:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0500	0.0333	66.6	41.0-120	
Acenaphthylene	0.0500	0.0361	72.2	43.0-120	
Anthracene	0.0500	0.0351	70.2	45.0-120	
Benzidine	0.100	0.0478	47.8	10.0-120	
Benzo(a)anthracene	0.0500	0.0362	72.4	47.0-120	
Benzo(b)fluoranthene	0.0500	0.0366	73.2	46.0-120	
Benzo(k)fluoranthene	0.0500	0.0368	73.6	46.0-120	
Benzo(g,h,i)perylene	0.0500	0.0335	67.0	48.0-121	
Benzo(a)pyrene	0.0500	0.0364	72.8	47.0-120	
Bis(2-chlorethoxy)methane	0.0500	0.0306	61.2	33.0-120	
Bis(2-chloroethyl)ether	0.0500	0.0328	65.6	23.0-120	

Laboratory Control Sample (LCS)

(LCS) R3715960-1 10/13/21 00:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
2,2-oxybis(1-chloropropane)	0.0500	0.0312	62.4	28.0-120	
4-Bromophenyl-phenylether	0.0500	0.0355	71.0	45.0-120	
2-Chloronaphthalene	0.0500	0.0345	69.0	37.0-120	
4-Chlorophenyl-phenylether	0.0500	0.0356	71.2	44.0-120	
Chrysene	0.0500	0.0369	73.8	48.0-120	
Dibenz(a,h)anthracene	0.0500	0.0349	69.8	47.0-120	
3,3-Dichlorobenzidine	0.100	0.0795	79.5	44.0-120	
2,4-Dinitrotoluene	0.0500	0.0400	80.0	49.0-124	
2,6-Dinitrotoluene	0.0500	0.0372	74.4	46.0-120	
Fluoranthene	0.0500	0.0363	72.6	51.0-120	
Fluorene	0.0500	0.0354	70.8	47.0-120	
Hexachlorobenzene	0.0500	0.0337	67.4	44.0-120	
Hexachloro-1,3-butadiene	0.0500	0.0314	62.8	19.0-120	
Hexachlorocyclopentadiene	0.0500	0.0226	45.2	15.0-120	
Hexachloroethane	0.0500	0.0315	63.0	15.0-120	
Indeno(1,2,3-cd)pyrene	0.0500	0.0337	67.4	49.0-122	
Isophorone	0.0500	0.0309	61.8	36.0-120	
Naphthalene	0.0500	0.0305	61.0	27.0-120	
Nitrobenzene	0.0500	0.0308	61.6	27.0-120	
n-Nitrosodimethylamine	0.0500	0.0184	36.8	10.0-120	
n-Nitrosodiphenylamine	0.0500	0.0333	66.6	47.0-120	
n-Nitrosodi-n-propylamine	0.0500	0.0324	64.8	31.0-120	
Phenanthrene	0.0500	0.0353	70.6	46.0-120	
Benzylbutyl phthalate	0.0500	0.0374	74.8	43.0-121	
Bis(2-ethylhexyl)phthalate	0.0500	0.0372	74.4	43.0-122	
Di-n-butyl phthalate	0.0500	0.0379	75.8	49.0-121	
Diethyl phthalate	0.0500	0.0367	73.4	48.0-122	
Dimethyl phthalate	0.0500	0.0368	73.6	48.0-120	
Di-n-octyl phthalate	0.0500	0.0335	67.0	42.0-125	
Pyrene	0.0500	0.0372	74.4	47.0-120	
1,2,4-Trichlorobenzene	0.0500	0.0314	62.8	24.0-120	
4-Chloro-3-methylphenol	0.0500	0.0299	59.8	40.0-120	
2-Chlorophenol	0.0500	0.0303	60.6	25.0-120	
2,4-Dichlorophenol	0.0500	0.0312	62.4	36.0-120	
2,4-Dimethylphenol	0.0500	0.0296	59.2	33.0-120	
4,6-Dinitro-2-methylphenol	0.0500	0.0457	91.4	38.0-138	
2,4-Dinitrophenol	0.0500	0.0426	85.2	10.0-120	
2-Nitrophenol	0.0500	0.0323	64.6	31.0-120	
4-Nitrophenol	0.0500	0.0158	31.6	10.0-120	
Pentachlorophenol	0.0500	0.0372	74.4	23.0-120	

¹Cp

²Tc

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¹⁰Sc

Laboratory Control Sample (LCS)

(LCS) R3715960-1 10/13/21 00:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phenol	0.0500	0.0129	25.8	10.0-120	
2,4,6-Trichlorophenol	0.0500	0.0323	64.6	42.0-120	
1,2-Dichlorobenzene	0.0500	0.0326	65.2	20.0-120	
1,3-Dichlorobenzene	0.0500	0.0318	63.6	17.0-120	
1,4-Dichlorobenzene	0.0500	0.0319	63.8	18.0-120	
(S) Nitrobenzene-d5			46.9	10.0-127	
(S) 2-Fluorobiphenyl			74.3	10.0-130	
(S) p-Terphenyl-d14			69.4	10.0-128	
(S) Phenol-d5			25.7	10.0-120	
(S) 2-Fluorophenol			38.5	10.0-120	
(S) 2,4,6-Tribromophenol			69.5	10.0-155	

L1415695-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1415695-01 10/13/21 01:30 • (MS) R3715960-3 10/13/21 01:51 • (MSD) R3715960-4 10/13/21 02:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.0510	ND	0.0329	0.0310	64.5	63.3	1.02	28.0-120			5.95	25
Acenaphthylene	0.0510	ND	0.0358	0.0334	70.2	68.2	1.02	31.0-121			6.94	25
Anthracene	0.0510	ND	0.0344	0.0334	67.5	68.2	1.02	36.0-120			2.95	23
Benidine	0.102	ND	0.0399	0.0395	39.1	40.3	1.02	10.0-120			1.01	37
Benzo(a)anthracene	0.0510	ND	0.0355	0.0331	69.6	67.6	1.02	39.0-120			7.00	23
Benzo(b)fluoranthene	0.0510	ND	0.0351	0.0337	68.8	68.8	1.02	37.0-120			4.07	23
Benzo(k)fluoranthene	0.0510	ND	0.0365	0.0339	71.6	69.2	1.02	37.0-120			7.39	26
Benzo(g,h,i)perylene	0.0510	ND	0.0340	0.0303	66.7	61.8	1.02	37.0-123			11.5	25
Benzo(a)pyrene	0.0510	ND	0.0362	0.0338	71.0	69.0	1.02	37.0-120			6.86	24
Bis(2-chlorethoxy)methane	0.0510	ND	0.0306	0.0284	60.0	58.0	1.02	17.0-120			7.46	31
Bis(2-chloroethyl)ether	0.0510	ND	0.0332	0.0298	65.1	60.8	1.02	14.0-120			10.8	33
2,2-oxybis(1-chloropropane)	0.0510	ND	0.0310	0.0283	60.8	57.8	1.02	18.0-120			9.11	34
4-Bromophenyl-phenylether	0.0510	ND	0.0340	0.0329	66.7	67.1	1.02	37.0-120			3.29	24
2-Chloronaphthalene	0.0510	ND	0.0343	0.0318	67.3	64.9	1.02	29.0-120			7.56	28
4-Chlorophenyl-phenylether	0.0510	ND	0.0351	0.0338	68.8	69.0	1.02	36.0-120			3.77	23
Chrysene	0.0510	ND	0.0355	0.0334	69.6	68.2	1.02	38.0-120			6.10	23
Dibenz(a,h)anthracene	0.0510	ND	0.0334	0.0305	65.5	62.2	1.02	36.0-121			9.08	24
3,3-Dichlorobenzidine	0.102	ND	0.0815	0.0735	79.9	75.0	1.02	10.0-134			10.3	30
2,4-Dinitrotoluene	0.0510	ND	0.0389	0.0374	76.3	76.3	1.02	39.0-125			3.93	25
2,6-Dinitrotoluene	0.0510	ND	0.0359	0.0351	70.4	71.6	1.02	36.0-120			2.25	27
Fluoranthene	0.0510	ND	0.0355	0.0337	69.6	68.8	1.02	41.0-121			5.20	22
Fluorene	0.0510	ND	0.0342	0.0330	67.1	67.3	1.02	37.0-120			3.57	24

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Is

8Gl

9Al

10Sc

L1415695-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1415695-01 10/13/21 01:30 • (MS) R3715960-3 10/13/21 01:51 • (MSD) R3715960-4 10/13/21 02:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexachlorobenzene	0.0510	ND	0.0327	0.0319	64.1	65.1	1.02	35.0-122			2.48	24
Hexachloro-1,3-butadiene	0.0510	ND	0.0318	0.0281	62.4	57.3	1.02	12.0-120			12.4	34
Hexachlorocyclopentadiene	0.0510	ND	0.0240	0.0225	47.1	45.9	1.02	10.0-120			6.45	33
Hexachloroethane	0.0510	ND	0.0320	0.0285	62.7	58.2	1.02	10.0-120			11.6	40
Indeno(1,2,3-cd)pyrene	0.0510	ND	0.0338	0.0312	66.3	63.7	1.02	38.0-125			8.00	24
Isophorone	0.0510	ND	0.0311	0.0289	61.0	59.0	1.02	21.0-120			7.33	27
Naphthalene	0.0510	ND	0.0302	0.0277	59.2	56.5	1.02	10.0-120			8.64	31
Nitrobenzene	0.0510	ND	0.0307	0.0278	60.2	56.7	1.02	12.0-120			9.91	30
n-Nitrosodimethylamine	0.0510	ND	0.0198	0.0175	38.8	35.7	1.02	10.0-120			12.3	40
n-Nitrosodiphenylamine	0.0510	ND	0.0345	0.0324	67.6	66.1	1.02	37.0-120			6.28	24
n-Nitrosodi-n-propylamine	0.0510	ND	0.0309	0.0296	60.6	60.4	1.02	16.0-120			4.30	30
Phenanthrene	0.0510	ND	0.0342	0.0328	67.1	66.9	1.02	33.0-120			4.18	22
Benzylbutyl phthalate	0.0510	ND	0.0376	0.0349	73.7	71.2	1.02	34.0-126			7.45	24
Bis(2-ethylhexyl)phthalate	0.0510	ND	0.0352	0.0327	69.0	66.7	1.02	33.0-126			7.36	25
Di-n-butyl phthalate	0.0510	ND	0.0379	0.0355	74.3	72.4	1.02	35.0-128			6.54	23
Diethyl phthalate	0.0510	ND	0.0366	0.0349	71.8	71.2	1.02	39.0-125			4.76	24
Dimethyl phthalate	0.0510	ND	0.0358	0.0340	70.2	69.4	1.02	37.0-120			5.16	24
Di-n-octyl phthalate	0.0510	ND	0.0313	0.0288	61.4	58.8	1.02	25.0-135			8.32	26
Pyrene	0.0510	ND	0.0368	0.0353	72.2	72.0	1.02	39.0-120			4.16	22
1,2,4-Trichlorobenzene	0.0510	ND	0.0317	0.0282	62.2	57.6	1.02	15.0-120			11.7	31
4-Chloro-3-methylphenol	0.0510	ND	0.0303	0.0284	59.4	58.0	1.02	26.0-120			6.47	27
2-Chlorophenol	0.0510	ND	0.0306	0.0282	60.0	57.6	1.02	18.0-120			8.16	34
2,4-Dichlorophenol	0.0510	ND	0.0311	0.0294	61.0	60.0	1.02	19.0-120			5.62	27
2,4-Dimethylphenol	0.0510	ND	0.0319	0.0292	62.5	59.6	1.02	15.0-120			8.84	28
4,6-Dinitro-2-methylphenol	0.0510	ND	0.0440	0.0426	86.3	86.9	1.02	10.0-144			3.23	39
2,4-Dinitrophenol	0.0510	ND	0.0422	0.0410	82.7	83.7	1.02	10.0-120			2.88	40
2-Nitrophenol	0.0510	ND	0.0320	0.0295	62.7	60.2	1.02	20.0-120			8.13	30
4-Nitrophenol	0.0510	ND	0.0164	0.0144	32.2	29.4	1.02	10.0-120			13.0	40
Pentachlorophenol	0.0510	ND	0.0356	0.0344	69.8	70.2	1.02	10.0-128			3.43	37
Phenol	0.0510	ND	0.0134	0.0121	26.3	24.7	1.02	10.0-120			10.2	40
2,4,6-Trichlorophenol	0.0510	ND	0.0321	0.0320	62.9	65.3	1.02	26.0-120			0.312	31
1,2-Dichlorobenzene	0.0510	ND	0.0326	0.0293	63.9	59.8	1.02	18.0-120			10.7	40
1,3-Dichlorobenzene	0.0510	ND	0.0318	0.0287	62.4	58.6	1.02	15.0-120			10.2	40
1,4-Dichlorobenzene	0.0510	ND	0.0324	0.0286	63.5	58.4	1.02	17.0-120			12.5	40
(S) Nitrobenzene-d5					46.9	52.0		10.0-127				
(S) 2-Fluorobiphenyl					69.6	71.2		10.0-130				
(S) p-Terphenyl-d14					65.5	65.0		10.0-128				
(S) Phenol-d5					26.2	24.5		10.0-120				
(S) 2-Fluorophenol					42.1	38.5		10.0-120				
(S) 2,4,6-Tribromophenol					63.2	65.3		10.0-155				

¹Cp

²Tc

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INTERNAL STANDARD SUMMARY

Instrument: BNAMS29 • File ID: 1012A_002-1

10/12/21 23:01							
Sample ID	File ID	1,4-DICHLOROBENZENE-D4	NAPHTHALENE-D8	ACENAPHTHENE-D10	PHENANTHRENE-D10	CHRYSENE-D12	PERYLENE-D12
		Response	Response	Response	Response	Response	Response
Standard	1012A_002-1	283954	990750	533108	923581	716355	620338
Upper Limit		567908	1981500	1066216	1847162	1432710	1240676
Lower Limit		141977	495375	266554	461791	358178	310169
LCS R3715960-1 WG1754898 1x	1012A_005	353887	1381171	702331	1191348	855140	759543
BLANK R3715960-2 WG1754898 1x	1012A_006	393214	1403650	790668	1361454	953926	838740
L1415695-01 WG1754898 1x	1012A_009	372465	1340156	727871	1251875	888516	783677
MS R3715960-3 WG1754898 1.02x	1012A_010	309993	1180006	589977	1016155	724525	649969
MSD R3715960-4 WG1754898 1x	1012A_011	361904	1401345	696817	1183369	839580	741893

1Cp

2Tc

3Ss

4Cn

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6Qc

7Is

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9Al

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GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



SUBCONTRACT ORDER

Turner Laboratories, Inc.

D106

21J0117

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Pace Analytical Services - Tennessee
12065 Lebabon Rd.
Mt. Juliet, TN 37122
Phone: (615) 758-5858
Fax: -
Please CC Kevin Brim Kbrim@turnerlabs.com

Expires	Laboratory ID	Comments
---------	---------------	----------

Analysis

L1415695 -d

Sample ID: 21J0117-01 Drinking Water Sampled: 10/05/2021 14:00

Semivolatle Organics by SW 8270

10/12/2021 14:00

Containers Supplied:

Sample Receipt Checklist
COC Seal Present/Intact: ☒ Y ☐ N If Applicable
COC Signed/Accurate: ☒ Y ☐ N VCA Zero HeadSpace: ☒ Y ☐ N
Bottles arrive intact: ☒ Y ☐ N Pres. Correct/Check: ☒ Y ☐ N
Correct bottles used: ☒ Y ☐ N
Sufficient volume sent: ☒ Y ☐ N
RAD Screen <0.5 mR/hr: ☒ Y ☐ N

Released By

Lead May 10/6/21 1600

Date

Received By

PS 10/6/21 1600

Date

Released By

Date

Received By

Brim Kevin 10/8/21 1030

Date

Lab #: 806227 Job #: 49048 IS-102736 Co. Job#:
Sample Name: 21J0117-01 Co. Lab#:
Company: Turner Laboratories, Inc
API/Well:
Container: Plastic Bottle
Field/Site Name: 21J0117
Location:
Formation/Depth:
Sampling Point:
Date Sampled: 10/05/2021 14:00 Date Received: 10/12/2021 Date Reported: 10/21/2021

δD of water ----- -57.9 ‰ relative to VSMOW

$\delta^{18}O$ of water ----- -8.02 ‰ relative to VSMOW

Tritium content of water ----- na

$\delta^{13}C$ of DIC ----- na

^{14}C content of DIC ----- na

$\delta^{15}N$ of nitrate ----- na

$\delta^{18}O$ of nitrate ----- na

$\delta^{34}S$ of sulfate ----- na

$\delta^{18}O$ of sulfate ----- na

Vacuum Distilled? * ----- No

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

SUBCONTRACT ORDER

Turner Laboratories, Inc.

21J0117

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Isotech Laboratories
1308 Parkland Court
Champaign, IL 61821
Phone :1(217) 398-3490
Fax: -
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
Sample ID: 21J0117-01 Drinking Water Sampled:10/05/2021 14:00			
Isotope Analysis Containers Supplied:	10/19/2021 14:00		H and O Isotopes

Released By

Date

Received By

Date

Grace Skube / SR Isotech

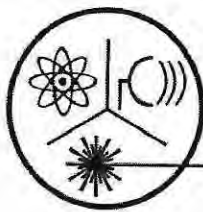
OCT 12 2021

Released By

Date

Received By

Date



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

(480) 897-9459
FAX (480) 892-5446

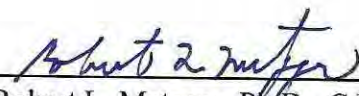
Radiochemical Activity in Water (pCi/L)

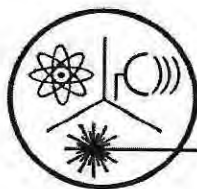
Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: October 05, 2021
Sample Received: October 08, 2021
Analysis Completed: October 25, 2021

Sample ID	Gross Alpha Activity Method 600/00-02 (pCi/L)	Uranium Activity Method ASTM D6239 (pCi/L)	Adjusted Gross Alpha (pCi/L)	Gross Beta Activity Method 900.0 (pCi/L)	Radium 226 Activity Method GammaRay HPGE (pCi/L)	Radium 228 Activity Method GammaRay HPGE (pCi/L)	Total Radium (pCi/L)
21J0117-01	18.0 ± 1.3	13.8 ± 1.3	4.2 ± 1.8	17.9 ± 2.1	0.5 ± 0.2	3.1 ± 0.4	3.6 ± 0.4

Date of Analysis	10/11/2021	10/12/2021	10/12/2021	10/19/2021	10/15/2021	10/15/2021	10/15/2021
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Robert L. Metzger, Ph.D., C.H.P. October 25, 2021
Laboratory License Number AZ0462 Date



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

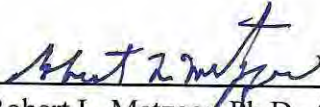
(480) 897-9459
FAX (480) 892-5446

Isotopic Uranium Analysis

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: October 05, 2021
Sample Received: October 08, 2021
Uranium Analysis Date: October 12, 2021

Sample No.	^{238}U	^{235}U	^{234}U	Total	
21J0117-01	6.3 ± 0.6	0.292 ± 0.004	7.2 ± 0.7	13.8 ± 1.3	Activity (pCi/L)
	18.6 ± 1.8	0.136 ± 0.002	0.00116 ± 0.00011	18.8 ± 1.8	Content ($\mu\text{g/L}$)
	Comments:				


Robert L. Metzger, Ph.D., C.H.P.

October 25, 2021

Date

Laboratory License Number AZ0462

Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
 Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____ PWS Name: _____

October 5, 2021 14:00 (24 hour clock) _____

Sample Date Sample Time Owner/Contact Person _____

Owner/Contact Fax Number _____ Owner/Contact Phone Number _____

Sample Collection Point
☐ EPDS # _____

Compliance Sample Type:

- ☐ Reduced Monitoring Date Q1 collected: _____
- ☐ Quarterly Date Q2 collected: _____
- ☐ Composite of four quarterly samples Date Q3 collected: _____
- Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
	15 pCi/L		Adjusted Gross Alpha	4000	10/12/2021	4.2 ± 1.8	
600/00-02		3 pCi/L	Gross Alpha	4002	10/11/2021	18.0 ± 1.3	
7500 - Rn			Radon	4004			
ASTM D6239	30 µg/L	1 µg/L	Combined Uranium	4006	10/12/2021	18.8 ± 1.8 µg/L	
			Uranium 234	4007	10/12/2021	0.00116 ± 0.00011	
			Uranium 235	4008	10/12/2021	0.136 ± 0.002	
			Uranium 238	4009	10/12/2021	18.6 ± 1.8	
	5 pCi/L	1 pCi/L	Combined Radium (226,228)	4010	10/15/2021	3.6 ± 0.4	
GammaRay HPGE		1 pCi/L	Radium 226	4020	10/15/2021	0.5 ± 0.2	
GammaRay HPGE		1 pCi/L	Radium 228	4030	10/15/2021	3.1 ± 0.4	

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE67406 _____

Lab ID Number: AZ0462 _____

Lab Name: Radiation Safety Engineering, Inc. _____

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459 _____

Comments: 21J0117-01 _____

Authorized Signature:  _____

Date Public Water System Notified: _____

Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____

PWS Name: _____

October 5, 2021 14:00 (24 hour clock)

Sample Date Sample Time

Owner/Contact Person _____

Owner/Contact Fax Number _____

Owner/Contact Phone Number _____

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

☐ Reduced Monitoring

Date Q1 collected: _____

☐ Quarterly

Date Q2 collected: _____

☐ Composite of four quarterly samples

Date Q3 collected: _____

Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
900	4 mrem	4 pCi/L	Gross Beta	4100	10/19/2021	< 4 mrem	
906	20,000 pCi/L	1,000 pCi/L	Tritium	4102			
		10 pCi/L	Strontium-89	4172			
	8 pCi/L	2 pCi/L	Strontium-90	4174			
		1 pCi/L	Iodine-131	4264			
		10 pCi/L	Cesium-134	4270			

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE67406

Lab ID Number: AZ0462

Lab Name: Radiation Safety Engineering, Inc.

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459

Comments: 21J0117-01

Authorized Signature: 

Date Public Water System Notified: _____

SUBCONTRACT ORDER

Turner Laboratories, Inc.

21J0117

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Radiation Safety Engineering, Inc.
3245 N. Washington St.
Chandler, AZ 85225-1121
Phone : (480) 897-9459
Fax: (480) 892-5446
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
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Sample ID: 21J0117-01 Drinking Water Sampled: 10/05/2021 14:00

Radiochemistry, Uranium	04/03/2022 14:00	
Radiochemistry, Radium 226/228	11/04/2021 14:00	
Radiochemistry, Gross Alpha Beta	04/03/2022 14:00	

Containers Supplied:

67406

Released By

Date

Received By

Date

Released By

Date

Received By

Date



October 26, 2021

David Krizek
Rosemont Copper Company
5255 East Williams Circle, Suite W1065
Tucson, AZ 85711

TEL (520) 495-3527
FAX (520) 495-3540

Work Order No.: 21J0176
Order Name: 2459991012 / 619033

RE: Groundwater

Dear David Krizek,

Turner Laboratories, Inc. received 1 sample(s) on 10/07/2021 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

A handwritten signature in blue ink, appearing to read "Elizabeth Kasik". The signature is fluid and cursive, written over a light blue rectangular background.

Elizabeth Kasik
Laboratory Director

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0176
Date Received: 10/07/2021

Order: 2459991012 / 619033

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date/Time
21J0176-01	GH2021-01	Ground Water	10/06/2021 1045

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0176
Date Received: 10/07/2021

Case Narrative

The 8270C analysis was performed by Pace Analytical National in Mount Juliet, TN.

The isotopes analysis was performed by Isotech in Champaign, IL.

The radiochemistry analysis was performed by Radiation Safety Engineering, Inc. in Chandler, AZ..

- B1 Target analyte detected in the method blank at or above the method reporting limit.
- B5 Target analyte detected in method blank at or above the method reporting limit, but below trigger level or MCL.
- E4 Concentration estimated. Analyte was detected below laboratory Minimum Reporting Limit (MRL) but above MDL.
- E8 Analyte reported to MDL per project specification. Target analyte was not detected in the sample.
- H5 This test is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.
- L5 The associated blank spike recovery was above laboratory/method acceptance limits. This analyte was not detected in the sample.
- M1 Matrix spike recovery was high; the associated LCS/LCSD was acceptable.
- M2 Matrix spike recovery was low; the associated LCS/LCSD was acceptable.
- M3 The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated LCS/LCSD recovery was acceptable.
- R13 MS/MSD RPD exceeded method acceptance limit. Matrix spike recovery was outside acceptance criteria. Batch precision and accuracy were demonstrated.
- V1 CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

All soil, sludge, and solid matrix determinations are reported on a wet weight basis unless otherwise noted.

- ND Not Detected at or above the PQL
- PQL Practical Quantitation Limit
- DF Dilution Factor

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0176
Lab Sample ID: 21J0176-01

Client Sample ID: GH2021-01
Collection Date/Time: 10/06/2021 1045
Matrix: Ground Water
Order Name: 2459991012 / 619033

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Hardness-Calculation									
Hardness, Calcium/Magnesium (As CaCO3)	670				mg/L	1	10/12/2021 1100	10/13/2021 1637	MH
Nitrate + Nitrite Sum-Calculation									
Nitrate and Nitrite Sum	ND		0.10		mg/L	1	10/07/2021 1400	10/07/2021 1411	MH
ICP Dissolved Metals-E 200.7 (4.4)									
Boron	0.60		0.10		mg/L	1	10/08/2021 1220	10/12/2021 1321	MH
Calcium	190		4.0		mg/L	1	10/08/2021 1220	10/12/2021 1321	MH
Chromium	ND		0.030		mg/L	1	10/08/2021 1220	10/12/2021 1321	MH
Iron	ND		0.30		mg/L	1	10/08/2021 1220	10/12/2021 1321	MH
Magnesium	58		3.0		mg/L	1	10/08/2021 1220	10/12/2021 1321	MH
Potassium	ND		5.0		mg/L	1	10/08/2021 1220	10/12/2021 1321	MH
Silica	69		2.0		mg/L	1	10/08/2021 1220	10/12/2021 1321	MH
Sodium	39		5.0		mg/L	1	10/08/2021 1220	10/12/2021 1321	MH
ICP/MS Dissolved Metals-E 200.8 (5.4)									
Aluminum	ND		0.040		mg/L	1	10/08/2021 1220	10/11/2021 1548	CR
Antimony	0.0011		0.00050		mg/L	1	10/08/2021 1220	10/11/2021 1548	CR
Arsenic	0.0071		0.00050		mg/L	1	10/08/2021 1220	10/11/2021 1548	CR
Barium	0.040		0.00050		mg/L	1	10/08/2021 1220	10/11/2021 1548	CR
Beryllium	ND		0.00025		mg/L	1	10/08/2021 1220	10/11/2021 1548	CR
Cadmium	ND		0.00025		mg/L	1	10/08/2021 1220	10/11/2021 1548	CR
Cobalt	0.00046		0.00025		mg/L	1	10/08/2021 1220	10/11/2021 1548	CR
Copper	0.00055		0.00050		mg/L	1	10/08/2021 1220	10/12/2021 1227	CR
Lead	ND		0.00050		mg/L	1	10/08/2021 1220	10/11/2021 1548	CR
Manganese	0.64		0.00025		mg/L	1	10/08/2021 1220	10/14/2021 1626	CR
Molybdenum	0.24		0.00025		mg/L	1	10/08/2021 1220	10/11/2021 1548	CR
Nickel	0.0020		0.00050		mg/L	1	10/08/2021 1220	10/11/2021 1548	CR
Selenium	0.0057		0.0025		mg/L	1	10/08/2021 1220	10/11/2021 1548	CR
Silver	ND	0.000021	0.00050	E8	mg/L	1	10/08/2021 1220	10/11/2021 1548	CR
Thallium	ND	0.000023	0.00050	E8	mg/L	1	10/08/2021 1220	10/11/2021 1548	CR
Uranium	0.015		0.00050		mg/L	1	10/08/2021 1220	10/11/2021 1548	CR
Zinc	ND		0.040		mg/L	1	10/08/2021 1220	10/11/2021 1548	CR

CVAA Dissolved Mercury-E 245.1

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0176
Lab Sample ID: 21J0176-01

Client Sample ID: GH2021-01
Collection Date/Time: 10/06/2021 1045
Matrix: Ground Water
Order Name: 2459991012 / 619033

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Mercury	0.0000570.000041		0.0010	E4	mg/L	1	10/13/2021 1130	10/13/2021 1605	CWB
pH-E150.1									
pH (pH Units)	7.5			H5	-	1	10/07/2021 1545	10/07/2021 1554	CWB
Temperature (°C)	21			H5	-	1	10/07/2021 1545	10/07/2021 1554	CWB
ICP Total Metals-E200.7 (4.4)									
Boron	0.66		0.10		mg/L	1	10/12/2021 1100	10/13/2021 1637	MH
Calcium	180		4.0		mg/L	1	10/12/2021 1100	10/13/2021 1637	MH
Iron	ND		0.30		mg/L	1	10/12/2021 1100	10/13/2021 1637	MH
Magnesium	55		3.0		mg/L	1	10/12/2021 1100	10/13/2021 1637	MH
Potassium	ND		5.0		mg/L	1	10/12/2021 1100	10/13/2021 1637	MH
Silica	65		0.20		mg/L	1	10/12/2021 1100	10/13/2021 1637	MH
Sodium	42		5.0		mg/L	1	10/12/2021 1100	10/13/2021 1637	MH
ICP/MS Total Metals-E200.8 (5.4)									
Aluminum	0.064		0.040		mg/L	1	10/07/2021 1245	10/13/2021 1345	CR
Antimony	0.00098		0.00050		mg/L	1	10/07/2021 1245	10/13/2021 1345	CR
Arsenic	0.0071		0.00050		mg/L	1	10/07/2021 1245	10/13/2021 1345	CR
Barium	0.040		0.00050		mg/L	1	10/07/2021 1245	10/13/2021 1345	CR
Beryllium	ND		0.00025		mg/L	1	10/07/2021 1245	10/13/2021 1345	CR
Cadmium	ND		0.00025		mg/L	1	10/07/2021 1245	10/13/2021 1345	CR
Chromium	ND		0.00050		mg/L	1	10/07/2021 1245	10/13/2021 1345	CR
Cobalt	0.000509		0.000250		mg/L	1	10/07/2021 1245	10/13/2021 1345	CR
Copper	0.0012		0.00050		mg/L	1	10/07/2021 1245	10/13/2021 1345	CR
Lead	0.00062		0.00050		mg/L	1	10/07/2021 1245	10/13/2021 1345	CR
Manganese	0.68		0.00025		mg/L	1	10/07/2021 1245	10/13/2021 1345	CR
Molybdenum	0.25		0.00025		mg/L	1	10/07/2021 1245	10/13/2021 1345	CR
Nickel	0.0022		0.00050	B5	mg/L	1	10/07/2021 1245	10/14/2021 1358	CR
Selenium	0.0047		0.0025		mg/L	1	10/07/2021 1245	10/13/2021 1345	CR
Silver	0.0000640.000021		0.00050	E4	mg/L	1	10/07/2021 1245	10/13/2021 1345	CR
Thallium	ND	0.000023	0.00050	E8	mg/L	1	10/07/2021 1245	10/13/2021 1345	CR
Uranium	0.014		0.00050		mg/L	1	10/07/2021 1245	10/13/2021 1345	CR
Zinc	ND		0.040		mg/L	1	10/07/2021 1245	10/13/2021 1345	CR
CVAA Total Mercury-E245.1									
Mercury	ND	0.00036	0.0010	E8	mg/L	1	10/13/2021 1130	10/13/2021 1531	RAD

Client: Rosemont Copper Company

Project: Groundwater

Work Order: 21J0176

Lab Sample ID: 21J0176-01

Client Sample ID: GH2021-01

Collection Date/Time: 10/06/2021 1045

Matrix: Ground Water

Order Name: 2459991012 / 619033

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Anions by Ion Chromatography-E300.0 (2.1)									
Chloride	39		20		mg/L	20	10/07/2021 1409	10/15/2021 1648	MH
Fluoride	1.8		0.50		mg/L	1	10/07/2021 1400	10/07/2021 1411	MH
Nitrogen, Nitrate (As N)	ND		0.50		mg/L	1	10/07/2021 1400	10/07/2021 1411	MH
Nitrogen, Nitrite (As N)	ND		0.10		mg/L	1	10/07/2021 1400	10/07/2021 1411	MH
Phosphorus, Dissolved Orthophosphate (As P)	ND		0.50	L5, V1	mg/L	1	10/07/2021 1400	10/07/2021 1411	MH
Sulfate	570		100		mg/L	20	10/07/2021 1409	10/15/2021 1648	MH
Calculation-Ion Balance									
Anion	19.1				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Cation	16.0				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Cation/Anion, % Difference	8.85				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Alkalinity-SM2320B									
Alkalinity, Bicarbonate (As CaCO3)	210		2.0		mg/L	1	10/07/2021 0924	10/07/2021 1043	AGC
Alkalinity, Carbonate (As CaCO3)	ND		2.0		mg/L	1	10/07/2021 0924	10/07/2021 1043	AGC
Alkalinity, Hydroxide (As CaCO3)	ND		2.0		mg/L	1	10/07/2021 0924	10/07/2021 1043	AGC
Alkalinity, Phenolphthalein (As CaCO3)	ND		2.0		mg/L	1	10/07/2021 0924	10/07/2021 1043	AGC
Alkalinity, Total (As CaCO3)	210		2.0		mg/L	1	10/07/2021 0924	10/07/2021 1043	AGC
Specific Conductance-SM2510 B									
Conductivity	1400		0.10		µmhos/cm	1	10/08/2021 1410	10/08/2021 1510	CWB
Total Dissolved Solids (Residue, Filterable)-SM2540 C									
Total Dissolved Solids (Residue, Filterable)	1100		20		mg/L	1	10/11/2021 0802	10/13/2021 1238	AGC
Ammonia as N-SM4500-NH3 B,C									
Nitrogen, Ammonia (As N)	ND		0.50		mg/L	1	10/12/2021 0915	10/12/2021 1000	MH
Silica-SM4500-SiO2 C									
Silica	69		10		mg/L	5	10/12/2021 0900	10/12/2021 1000	AGC

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0176
Lab Sample ID: 21J0176-01

Client Sample ID: GH2021-01
Collection Date/Time: 10/06/2021 1045
Matrix: Ground Water
Order Name: 2459991012 / 619033

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Volatile Organic Compounds by GC/MS-SW8260B									
1,1,1,2-Tetrachloroethane	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,1,1-Trichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,1,2-Trichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,1,2-Trichlorotrifluoroethane	ND		5.0		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,1-Dichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,1-Dichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,1-Dichloropropene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,2,3-Trichlorobenzene	ND		2.0		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,2,3-Trichloropropane	ND		1.0		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,2,4-Trichlorobenzene	ND		2.0		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,2,4-Trimethylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,2-Dibromo-3-chloropropane	ND		10		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,2-Dibromoethane	ND		2.0		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,2-Dichlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,2-Dichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,2-Dichloropropane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,3,5-Trimethylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,3-Dichlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,3-Dichloropropane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
1,4-Dichlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
2,2-Dichloropropane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
2-Butanone (MEK)	ND		10		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
2-Chlorotoluene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
2-Hexanone	ND		2.5		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
4-Chlorotoluene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
4-Isopropyltoluene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
4-Methyl-2-pentanone	ND		2.5		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Acetone	ND		10		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Acrylonitrile	ND		10	V1	ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Benzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Bromobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Bromochloromethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Bromodichloromethane	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Bromoform	ND		2.0	V1	ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Bromomethane	ND		1.0	V1	ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Carbon disulfide	ND		2.0		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Carbon tetrachloride	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Chlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Chloroethane	ND		1.0	V1	ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Chloroform	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0176
Lab Sample ID: 21J0176-01

Client Sample ID: GH2021-01
Collection Date/Time: 10/06/2021 1045
Matrix: Ground Water
Order Name: 2459991012 / 619033

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Chloromethane	ND		1.0	V1	ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
cis-1,2-Dichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
cis-1,3-Dichloropropene	ND		2.0		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Dibromochloromethane	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Dibromomethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Dichlorodifluoromethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Ethylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Hexachlorobutadiene	ND		5.0		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Iodomethane	ND		10		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Isopropylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
m,p-Xylene	ND		1.0		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Methylene chloride	ND		1.0		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Naphthalene	ND		2.0		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
n-Butylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
n-Propylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
o-Xylene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
sec-Butylbenzene	ND		2.0		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Styrene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
tert-Butylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Tetrachloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Toluene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
trans-1,2-Dichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
trans-1,3-Dichloropropene	ND		2.0		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
trans-1,4-Dichloro-2-butene	ND		10		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Trichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Trichlorofluoromethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Vinyl acetate	ND		10		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP
Vinyl chloride	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2244	KP

Surr: 4-Bromofluorobenzene	109	70-130	%REC	1	10/13/2021 0832	10/13/2021 2244	KP
Surr: Dibromofluoromethane	119	70-130	%REC	1	10/13/2021 0832	10/13/2021 2244	KP
Surr: Toluene-d8	112	70-130	%REC	1	10/13/2021 0832	10/13/2021 2244	KP

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0176
Date Received: 10/07/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110060 - E 200.7 (4.4)										
Blank (2110060-BLK1)				Prepared: 10/07/2021 Analyzed: 10/11/2021						
Boron	ND	0.10	mg/L							
Calcium	ND	4.0	mg/L							
Chromium	ND	0.030	mg/L							
Iron	ND	0.30	mg/L							
Magnesium	ND	3.0	mg/L							
Potassium	ND	5.0	mg/L							
Silica	ND	2.0	mg/L							
Sodium	ND	5.0	mg/L							
LCS (2110060-BS1)				Prepared: 10/07/2021 Analyzed: 10/11/2021						
Boron	0.96	0.10	mg/L	1.000		96	85-115			
Calcium	10	4.0	mg/L	10.00		103	85-115			
Chromium	0.19	0.030	mg/L	0.2000		96	85-115			
Iron	0.99	0.30	mg/L	1.000		99	85-115			
Magnesium	10	3.0	mg/L	10.00		102	85-115			
Potassium	9.9	5.0	mg/L	10.00		99	85-115			
Sodium	10	5.0	mg/L	10.00		100	85-115			
LCS (2110060-BS2)				Prepared: 10/07/2021 Analyzed: 10/11/2021						
Silica	2.0	2.0	mg/L	2.143		94	90-110			
LCS Dup (2110060-BSD1)				Prepared: 10/07/2021 Analyzed: 10/11/2021						
Boron	0.96	0.10	mg/L	1.000		96	85-115	0.7	20	
Calcium	10	4.0	mg/L	10.00		103	85-115	0.2	20	
Chromium	0.19	0.030	mg/L	0.2000		96	85-115	0.2	20	
Iron	0.99	0.30	mg/L	1.000		99	85-115	0.5	20	
Magnesium	10	3.0	mg/L	10.00		103	85-115	0.5	20	
Potassium	9.8	5.0	mg/L	10.00		98	85-115	1	20	
Sodium	10	5.0	mg/L	10.00		100	85-115	0.3	20	
LCS Dup (2110060-BSD2)				Prepared: 10/07/2021 Analyzed: 10/11/2021						
Silica	2.0	2.0	mg/L	2.143		95	90-110	1	20	
Matrix Spike (2110060-MS1)		Source: 21J0164-01		Prepared: 10/07/2021 Analyzed: 10/11/2021						
Boron	1.3	0.10	mg/L	1.000	0.024	124	70-130			
Calcium	570	4.0	mg/L	10.00	520	546	70-130			M3
Chromium	0.23	0.030	mg/L	0.2000	ND	115	70-130			
Iron	1.2	0.30	mg/L	1.000	0.018	118	70-130			
Magnesium	87	3.0	mg/L	10.00	67	208	70-130			M3
Potassium	13	10	mg/L	10.00	5.7	74	70-130			
Sodium	57	5.0	mg/L	10.00	53	39	70-130			M3

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0176
Date Received: 10/07/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110060 - E 200.7 (4.4)										
Matrix Spike (2110060-MS2)		Source: 21J0117-01		Prepared: 10/07/2021 Analyzed: 10/11/2021						
Boron	1.1	0.10	mg/L	1.000	0.053	106	70-130			
Calcium	76	4.0	mg/L	10.00	66	101	70-130			
Chromium	0.20	0.030	mg/L	0.2000	ND	101	70-130			
Iron	1.2	0.30	mg/L	1.000	0.066	109	70-130			
Magnesium	31	3.0	mg/L	10.00	21	99	70-130			
Potassium	14	5.0	mg/L	10.00	4.1	95	70-130			
Sodium	100	5.0	mg/L	10.00	91	89	70-130			
Matrix Spike (2110060-MS3)		Source: 21J0164-01		Prepared: 10/07/2021 Analyzed: 10/11/2021						
Silica	4.2	2.0	mg/L	2.143	1.9	107	85-115			
Matrix Spike (2110060-MS4)		Source: 21J0117-01		Prepared: 10/07/2021 Analyzed: 10/11/2021						
Silica	28	2.0	mg/L	2.143	26	77	85-115			
Batch 2110100 - E200.8 (5.4)										
Blank (2110100-BLK1)		Prepared: 10/07/2021 Analyzed: 10/13/2021								
Aluminum	ND	0.040	mg/L							
Antimony	ND	0.00050	mg/L							
Arsenic	ND	0.00050	mg/L							
Barium	ND	0.00050	mg/L							
Beryllium	ND	0.00025	mg/L							
Cadmium	ND	0.00025	mg/L							
Chromium	ND	0.00050	mg/L							
Cobalt	ND	0.000250	mg/L							
Copper	ND	0.00050	mg/L							
Lead	ND	0.00050	mg/L							
Manganese	ND	0.00025	mg/L							
Molybdenum	ND	0.00025	mg/L							
Nickel	0.00079	0.00050	mg/L							B1
Selenium	ND	0.0025	mg/L							
Silver	ND	0.00050	mg/L							
Thallium	ND	0.00050	mg/L							
Uranium	ND	0.00050	mg/L							
Zinc	ND	0.040	mg/L							

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0176
Date Received: 10/07/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110100 - E200.8 (5.4)										
LCS (2110100-BS1) Prepared: 10/07/2021 Analyzed: 10/13/2021										
Aluminum	0.11	0.040	mg/L	0.1000		105	85-115			
Antimony	0.048	0.00050	mg/L	0.05000		97	85-115			
Arsenic	0.048	0.00050	mg/L	0.05000		97	85-115			
Barium	0.048	0.00050	mg/L	0.05000		97	85-115			
Beryllium	0.049	0.00025	mg/L	0.05000		97	85-115			
Cadmium	0.048	0.00025	mg/L	0.05000		97	85-115			
Chromium	0.048	0.00050	mg/L	0.05000		96	85-115			
Cobalt	0.0479	0.000250	mg/L	0.05000		96	85-115			
Copper	0.047	0.00050	mg/L	0.05000		95	85-115			
Lead	0.048	0.00050	mg/L	0.05000		96	85-115			
Manganese	0.048	0.00025	mg/L	0.05000		96	85-115			
Molybdenum	0.048	0.00025	mg/L	0.05000		95	85-115			
Nickel	0.047	0.00050	mg/L	0.05000		93	85-115			
Selenium	0.048	0.0025	mg/L	0.05000		96	85-115			
Silver	0.047	0.00050	mg/L	0.05000		95	85-115			
Thallium	0.047	0.00050	mg/L	0.05000		94	85-115			
Uranium	0.048	0.00050	mg/L	0.05000		96	85-115			
Zinc	0.10	0.040	mg/L	0.1000		102	85-115			
LCS Dup (2110100-BSD1) Prepared: 10/07/2021 Analyzed: 10/13/2021										
Aluminum	0.11	0.040	mg/L	0.1000		113	85-115	7	20	
Antimony	0.054	0.00050	mg/L	0.05000		108	85-115	11	20	
Arsenic	0.052	0.00050	mg/L	0.05000		104	85-115	7	20	
Barium	0.054	0.00050	mg/L	0.05000		108	85-115	11	20	
Beryllium	0.051	0.00025	mg/L	0.05000		103	85-115	6	20	
Cadmium	0.054	0.00025	mg/L	0.05000		108	85-115	11	20	
Chromium	0.052	0.00050	mg/L	0.05000		105	85-115	9	20	
Cobalt	0.0524	0.000250	mg/L	0.05000		105	85-115	9	20	
Copper	0.052	0.00050	mg/L	0.05000		103	85-115	9	20	
Lead	0.053	0.00050	mg/L	0.05000		107	85-115	10	20	
Manganese	0.052	0.00025	mg/L	0.05000		104	85-115	9	20	
Molybdenum	0.053	0.00025	mg/L	0.05000		106	85-115	11	20	
Nickel	0.048	0.00050	mg/L	0.05000		95	85-115	2	20	
Selenium	0.051	0.0025	mg/L	0.05000		103	85-115	7	20	
Silver	0.053	0.00050	mg/L	0.05000		105	85-115	11	20	
Thallium	0.053	0.00050	mg/L	0.05000		106	85-115	11	20	
Uranium	0.054	0.00050	mg/L	0.05000		108	85-115	12	20	
Zinc	0.11	0.040	mg/L	0.1000		108	85-115	6	20	

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0176
Date Received: 10/07/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110100 - E200.8 (5.4)										
Matrix Spike (2110100-MS1)		Source: 21J0164-01		Prepared: 10/07/2021 Analyzed: 10/13/2021						
Aluminum	0.098	0.040	mg/L	0.1000	ND	98	70-130			
Antimony	0.050	0.00050	mg/L	0.05000	0.0013	97	70-130			
Arsenic	0.051	0.00050	mg/L	0.05000	0.00030	101	70-130			
Barium	0.057	0.00050	mg/L	0.05000	0.0069	101	70-130			
Beryllium	0.045	0.00025	mg/L	0.05000	ND	89	70-130			
Cadmium	0.045	0.00025	mg/L	0.05000	0.00050	90	70-130			
Chromium	0.047	0.00050	mg/L	0.05000	0.00098	91	70-130			
Cobalt	0.0452	0.000250	mg/L	0.05000	0.0000324	90	70-130			
Copper	0.043	0.00050	mg/L	0.05000	0.00043	85	70-130			
Lead	0.052	0.00050	mg/L	0.05000	0.0013	102	70-130			
Manganese	0.051	0.00025	mg/L	0.05000	0.0038	94	70-130			
Molybdenum	0.053	0.00025	mg/L	0.05000	0.00068	104	70-130			
Nickel	0.045	0.00050	mg/L	0.05000	0.00023	90	70-130			
Selenium	0.053	0.0025	mg/L	0.05000	0.0016	104	70-130			
Silver	0.041	0.00050	mg/L	0.05000	ND	83	70-130			
Thallium	0.051	0.00050	mg/L	0.05000	0.00030	102	70-130			
Uranium	0.056	0.00050	mg/L	0.05000	ND	111	70-130			
Zinc	0.089	0.040	mg/L	0.1000	0.0053	84	70-130			

Batch 2110101 - E 200.8 (5.4)

Blank (2110101-BLK1)				Prepared & Analyzed: 10/11/2021						
Aluminum	ND	0.040	mg/L							
Antimony	ND	0.00050	mg/L							
Arsenic	ND	0.00050	mg/L							
Barium	ND	0.00050	mg/L							
Beryllium	ND	0.00025	mg/L							
Cadmium	ND	0.00025	mg/L							
Cobalt	ND	0.00025	mg/L							
Copper	ND	0.00050	mg/L							
Lead	ND	0.00050	mg/L							
Manganese	ND	0.00025	mg/L							
Molybdenum	ND	0.00025	mg/L							
Nickel	ND	0.00050	mg/L							
Selenium	0.00035	0.0025	mg/L							
Silver	ND	0.00050	mg/L							
Thallium	ND	0.00050	mg/L							
Uranium	ND	0.00050	mg/L							
Zinc	ND	0.040	mg/L							

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0176
Date Received: 10/07/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110101 - E 200.8 (5.4)										
LCS (2110101-BS1)				Prepared & Analyzed: 10/11/2021						
Aluminum	0.10	0.040	mg/L	0.1000		103	85-115			
Antimony	0.053	0.00050	mg/L	0.05000		106	85-115			
Arsenic	0.052	0.00050	mg/L	0.05000		105	85-115			
Barium	0.053	0.00050	mg/L	0.05000		106	85-115			
Beryllium	0.051	0.00025	mg/L	0.05000		102	85-115			
Cadmium	0.053	0.00025	mg/L	0.05000		105	85-115			
Cobalt	0.051	0.00025	mg/L	0.05000		103	85-115			
Copper	0.050	0.00050	mg/L	0.05000		100	85-115			
Lead	0.053	0.00050	mg/L	0.05000		106	85-115			
Manganese	0.048	0.00025	mg/L	0.05000		95	85-115			
Molybdenum	0.053	0.00025	mg/L	0.05000		106	85-115			
Nickel	0.050	0.00050	mg/L	0.05000		100	85-115			
Selenium	0.053	0.0025	mg/L	0.05000		106	85-115			
Silver	0.045	0.00050	mg/L	0.05000		91	85-115			
Thallium	0.053	0.00050	mg/L	0.05000		105	85-115			
Uranium	0.053	0.00050	mg/L	0.05000		107	85-115			
Zinc	0.11	0.040	mg/L	0.1000		108	85-115			
LCS Dup (2110101-BSD1)				Prepared & Analyzed: 10/11/2021						
Aluminum	0.10	0.040	mg/L	0.1000		104	85-115	0.9	20	
Antimony	0.054	0.00050	mg/L	0.05000		108	85-115	2	20	
Arsenic	0.053	0.00050	mg/L	0.05000		106	85-115	0.7	20	
Barium	0.054	0.00050	mg/L	0.05000		107	85-115	1	20	
Beryllium	0.050	0.00025	mg/L	0.05000		101	85-115	1	20	
Cadmium	0.053	0.00025	mg/L	0.05000		106	85-115	0.5	20	
Cobalt	0.051	0.00025	mg/L	0.05000		102	85-115	0.3	20	
Copper	0.050	0.00050	mg/L	0.05000		100	85-115	0.1	20	
Lead	0.053	0.00050	mg/L	0.05000		105	85-115	0.6	20	
Manganese	0.047	0.00025	mg/L	0.05000		94	85-115	2	20	
Molybdenum	0.053	0.00025	mg/L	0.05000		106	85-115	0.3	20	
Nickel	0.050	0.00050	mg/L	0.05000		100	85-115	0.1	20	
Selenium	0.051	0.0025	mg/L	0.05000		103	85-115	3	20	
Silver	0.047	0.00050	mg/L	0.05000		94	85-115	4	20	
Thallium	0.053	0.00050	mg/L	0.05000		105	85-115	0.06	20	
Uranium	0.053	0.00050	mg/L	0.05000		106	85-115	0.5	20	
Zinc	0.11	0.040	mg/L	0.1000		108	85-115	0.5	20	

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0176
Date Received: 10/07/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110101 - E 200.8 (5.4)										
Matrix Spike (2110101-MS1)		Source: 21J0073-01		Prepared & Analyzed: 10/11/2021						
Aluminum	0.11	0.040	mg/L	0.1000	ND	111	70-130			
Antimony	0.065	0.00050	mg/L	0.05000	0.00042	129	70-130			
Arsenic	0.064	0.00050	mg/L	0.05000	0.00012	128	70-130			
Barium	0.11	0.00050	mg/L	0.05000	0.047	126	70-130			
Beryllium	0.055	0.00025	mg/L	0.05000	0.000018	111	70-130			
Cadmium	0.057	0.00025	mg/L	0.05000	ND	114	70-130			
Cobalt	0.055	0.00025	mg/L	0.05000	0.00053	108	70-130			
Copper	0.043	0.00050	mg/L	0.05000	0.00098	84	70-130			
Lead	0.062	0.00050	mg/L	0.05000	ND	124	70-130			
Manganese	0.64	0.00025	mg/L	0.05000	0.59	95	70-130			
Molybdenum	0.16	0.00025	mg/L	0.05000	0.099	128	70-130			
Nickel	0.055	0.00050	mg/L	0.05000	0.0037	103	70-130			
Selenium	0.078	0.0025	mg/L	0.05000	0.013	129	70-130			
Silver	0.047	0.00050	mg/L	0.05000	ND	94	70-130			
Thallium	0.062	0.00050	mg/L	0.05000	0.000035	125	70-130			
Uranium	0.078	0.00050	mg/L	0.05000	0.0079	140	70-130			M1
Zinc	0.11	0.040	mg/L	0.1000	ND	111	70-130			
Batch 2110129 - E200.7 (4.4)										
Blank (2110129-BLK1)		Prepared: 10/12/2021 Analyzed: 10/13/2021								
Boron	ND	0.10	mg/L							
Calcium	ND	4.0	mg/L							
Iron	ND	0.30	mg/L							
Magnesium	ND	3.0	mg/L							
Potassium	ND	5.0	mg/L							
Silica	ND	0.20	mg/L							
Sodium	ND	5.0	mg/L							
LCS (2110129-BS1)		Prepared: 10/12/2021 Analyzed: 10/13/2021								
Boron	0.99	0.10	mg/L	1.000		99	85-115			
Calcium	9.6	4.0	mg/L	10.00		96	85-115			
Iron	0.94	0.30	mg/L	1.000		94	85-115			
Magnesium	9.6	3.0	mg/L	10.00		96	85-115			
Potassium	9.9	5.0	mg/L	10.00		99	85-115			
Sodium	10	5.0	mg/L	10.00		102	85-115			
LCS (2110129-BS2)		Prepared: 10/12/2021 Analyzed: 10/13/2021								
Silica	9.1	0.20	mg/L	10.00		91	85-115			
LCS Dup (2110129-BSD1)		Prepared: 10/12/2021 Analyzed: 10/13/2021								
Boron	0.99	0.10	mg/L	1.000		99	85-115	0.3	20	
Calcium	9.6	4.0	mg/L	10.00		96	85-115	0.3	20	
Iron	0.94	0.30	mg/L	1.000		94	85-115	0.2	20	
Magnesium	9.6	3.0	mg/L	10.00		96	85-115	0.4	20	
Potassium	9.8	5.0	mg/L	10.00		98	85-115	2	20	
Sodium	10	5.0	mg/L	10.00		100	85-115	2	20	
LCS Dup (2110129-BSD2)		Prepared: 10/12/2021 Analyzed: 10/13/2021								
Silica	9.2	0.20	mg/L	10.00		92	85-115	0.5	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110129 - E200.7 (4.4)										
Matrix Spike (2110129-MS1)		Source: 21J0254-01		Prepared: 10/12/2021 Analyzed: 10/13/2021						
Boron	1.1	0.10	mg/L	1.000	0.056	101	70-130			M3
Calcium	65	4.0	mg/L	10.00	58	67	70-130			
Iron	0.94	0.30	mg/L	1.000	0.0080	93	70-130			
Magnesium	17	3.0	mg/L	10.00	7.7	91	70-130			
Potassium	13	5.0	mg/L	10.00	3.1	97	70-130			
Sodium	67	5.0	mg/L	10.00	58	84	70-130			
Matrix Spike (2110129-MS2)		Source: 21J0058-01		Prepared: 10/12/2021 Analyzed: 10/14/2021						
Boron	1.1	0.10	mg/L	1.000	0.070	105	70-130			M3
Calcium	160	4.0	mg/L	10.00	160	46	70-130			
Iron	1.5	0.30	mg/L	1.000	0.57	93	70-130			
Magnesium	31	3.0	mg/L	10.00	22	89	70-130			
Potassium	99	5.0	mg/L	10.00	91	79	70-130			
Matrix Spike (2110129-MS3)		Source: 21J0021-01		Prepared: 10/12/2021 Analyzed: 10/14/2021						
Silica	37	0.20	mg/L	10.00	29	85	70-130			
Batch 2110134 - E245.1										
Blank (2110134-BLK1)		Prepared & Analyzed: 10/13/2021								
Mercury	ND	0.0010	mg/L							
LCS (2110134-BS1)		Prepared & Analyzed: 10/13/2021								
Mercury	0.0051	0.0010	mg/L	0.005000		101	85-115			
LCS Dup (2110134-BSD1)		Prepared & Analyzed: 10/13/2021								
Mercury	0.0050	0.0010	mg/L	0.005000		99	85-115	2	20	
Matrix Spike (2110134-MS1)		Source: 2110749-01		Prepared & Analyzed: 10/13/2021						
Mercury	0.0049	0.0010	mg/L	0.005000	ND	98	70-130			
Matrix Spike Dup (2110134-MSD1)		Source: 2110749-01		Prepared & Analyzed: 10/13/2021						
Mercury	0.0050	0.0010	mg/L	0.005000	ND	100	70-130	2	20	
Batch 2110135 - E 245.1										
Blank (2110135-BLK1)		Prepared & Analyzed: 10/13/2021								
Mercury	0.000049	0.0010	mg/L							
LCS (2110135-BS1)		Prepared & Analyzed: 10/13/2021								
Mercury	0.0051	0.0010	mg/L	0.005000		101	85-115			
LCS Dup (2110135-BSD1)		Prepared & Analyzed: 10/13/2021								
Mercury	0.0051	0.0010	mg/L	0.005000		103	85-115	1	20	
Matrix Spike (2110135-MS1)		Source: 21J0073-01		Prepared & Analyzed: 10/13/2021						
Mercury	0.0051	0.0010	mg/L	0.005000	0.000047	101	70-130			
Matrix Spike Dup (2110135-MSD1)		Source: 21J0073-01		Prepared & Analyzed: 10/13/2021						
Mercury	0.0051	0.0010	mg/L	0.005000	0.000047	102	70-130	0.2	20	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110068 - SM2320B										
Blank (2110068-BLK1)				Prepared & Analyzed: 10/07/2021						
Alkalinity, Bicarbonate (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Carbonate (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Hydroxide (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Phenolphthalein (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Total (As CaCO3)	ND	2.0	mg/L							
LCS (2110068-BS1)				Prepared & Analyzed: 10/07/2021						
Alkalinity, Total (As CaCO3)	250	2.0	mg/L	250.0		100	90-110			
LCS Dup (2110068-BSD1)				Prepared & Analyzed: 10/07/2021						
Alkalinity, Total (As CaCO3)	250	2.0	mg/L	250.0		100	90-110	0	10	
Matrix Spike (2110068-MS1)		Source: 21J0013-01		Prepared & Analyzed: 10/07/2021						
Alkalinity, Total (As CaCO3)	370	2.0	mg/L	250.0	120	100	70-130			
Matrix Spike Dup (2110068-MSD1)		Source: 21J0013-01		Prepared & Analyzed: 10/07/2021						
Alkalinity, Total (As CaCO3)	370	2.0	mg/L	250.0	120	100	70-130	0	10	
Batch 2110088 - E150.1										
Duplicate (2110088-DUP1)		Source: 21J0117-01		Prepared & Analyzed: 10/07/2021						
pH (pH Units)	7.9		-		7.9			0	200	H5
Temperature (°C)	21		-		21			0.5	200	H5
Batch 2110094 - SM2510 B										
LCS (2110094-BS1)				Prepared & Analyzed: 10/08/2021						
Conductivity	150	0.10	µmhos/cm	141.2		106	0-200			
LCS Dup (2110094-BSD1)				Prepared & Analyzed: 10/08/2021						
Conductivity	150	0.10	µmhos/cm	141.2		106	0-200	0	200	
Duplicate (2110094-DUP1)		Source: 21J0117-01		Prepared & Analyzed: 10/08/2021						
Conductivity	900	0.10	µmhos/cm		890			0.1	10	
Duplicate (2110094-DUP2)		Source: 21J0218-03		Prepared & Analyzed: 10/08/2021						
Conductivity	540	0.10	µmhos/cm		540			0.2	10	
Batch 2110104 - SM2540 C										
Duplicate (2110104-DUP1)		Source: 21J0176-01		Prepared: 10/11/2021 Analyzed: 10/13/2021						
Total Dissolved Solids (Residue, Filterable)	1100	20	mg/L		1100			0.4	5	
Batch 2110119 - SM4500-SiO2 C										
Blank (2110119-BLK1)				Prepared & Analyzed: 10/12/2021						
Silica	ND	2.0	mg/L							
LCS (2110119-BS1)				Prepared & Analyzed: 10/12/2021						
Silica	8.3	2.0	mg/L	8.000		104	90-110			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110119 - SM4500-SiO2 C										
LCS Dup (2110119-BSD1)				Prepared & Analyzed: 10/12/2021						
Silica	8.3	2.0	mg/L	8.000		104	90-110	0.4	20	
Matrix Spike (2110119-MS1)				Source: 21J0218-03		Prepared & Analyzed: 10/12/2021				
Silica	61	10	mg/L	40.00	16	114	85-115			
Matrix Spike Dup (2110119-MSD1)				Source: 21J0218-03		Prepared & Analyzed: 10/12/2021				
Silica	61	10	mg/L	40.00	16	114	85-115	0.1	20	
Batch 2110146 - SM4500-NH3 B,C										
Blank (2110146-BLK1)				Prepared & Analyzed: 10/12/2021						
Nitrogen, Ammonia (As N)	ND	0.50	mg/L							
LCS (2110146-BS1)				Prepared & Analyzed: 10/12/2021						
Nitrogen, Ammonia (As N)	4.9	0.50	mg/L	5.000		99	90-110			
LCS Dup (2110146-BSD1)				Prepared & Analyzed: 10/12/2021						
Nitrogen, Ammonia (As N)	5.1	0.50	mg/L	5.000		102	90-110	3	10	
Matrix Spike (2110146-MS1)				Source: 21I0603-01		Prepared & Analyzed: 10/12/2021				
Nitrogen, Ammonia (As N)	6.0	0.50	mg/L	5.000	1.2	96	75-120			
Matrix Spike (2110146-MS2)				Source: 21J0073-01		Prepared & Analyzed: 10/12/2021				
Nitrogen, Ammonia (As N)	4.9	0.50	mg/L	5.000	ND	98	75-120			
Matrix Spike Dup (2110146-MSD1)				Source: 21I0603-01		Prepared & Analyzed: 10/12/2021				
Nitrogen, Ammonia (As N)	6.1	0.50	mg/L	5.000	1.2	99	75-120	3	20	
Matrix Spike Dup (2110146-MSD2)				Source: 21J0073-01		Prepared & Analyzed: 10/12/2021				
Nitrogen, Ammonia (As N)	4.9	0.50	mg/L	5.000	ND	99	75-120	0.9	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110190 - SW8260B										

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110190 - SW8260B										
Blank (2110190-BLK1)				Prepared & Analyzed: 10/13/2021						
1,1,1,2-Tetrachloroethane	ND	0.50	ug/L							
1,1,1-Trichloroethane	ND	0.50	ug/L							
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L							
1,1,2-Trichloroethane	ND	0.50	ug/L							
1,1,2-Trichlorotrifluoroethane	ND	5.0	ug/L							
1,1-Dichloroethane	ND	0.50	ug/L							
1,1-Dichloroethene	ND	0.50	ug/L							
1,1-Dichloropropene	ND	0.50	ug/L							
1,2,3-Trichlorobenzene	ND	2.0	ug/L							
1,2,3-Trichloropropane	ND	1.0	ug/L							
1,2,4-Trichlorobenzene	ND	2.0	ug/L							
1,2,4-Trimethylbenzene	ND	0.50	ug/L							
1,2-Dibromo-3-chloropropane	ND	10	ug/L							
1,2-Dibromoethane	ND	2.0	ug/L							
1,2-Dichlorobenzene	ND	0.50	ug/L							
1,2-Dichloroethane	ND	0.50	ug/L							
1,2-Dichloropropane	ND	0.50	ug/L							
1,3,5-Trimethylbenzene	ND	0.50	ug/L							
1,3-Dichlorobenzene	ND	0.50	ug/L							
1,3-Dichloropropane	ND	0.50	ug/L							
1,4-Dichlorobenzene	ND	0.50	ug/L							
2,2-Dichloropropane	ND	0.50	ug/L							
2-Butanone (MEK)	ND	10	ug/L							
2-Chlorotoluene	ND	0.50	ug/L							
2-Hexanone	ND	2.5	ug/L							
4-Chlorotoluene	ND	0.50	ug/L							
4-Isopropyltoluene	ND	0.50	ug/L							
4-Methyl-2-pentanone	ND	2.5	ug/L							
Acetone	ND	10	ug/L							
Acrylonitrile	ND	10	ug/L							
Benzene	ND	0.50	ug/L							
Bromobenzene	ND	0.50	ug/L							
Bromochloromethane	ND	0.50	ug/L							
Bromodichloromethane	ND	0.50	ug/L							
Bromoform	ND	2.0	ug/L							
Bromomethane	ND	1.0	ug/L							
Carbon disulfide	ND	2.0	ug/L							
Carbon tetrachloride	ND	0.50	ug/L							
Chlorobenzene	ND	0.50	ug/L							
Chloroethane	ND	1.0	ug/L							
Chloroform	ND	0.50	ug/L							
Chloromethane	ND	1.0	ug/L							
cis-1,2-Dichloroethene	ND	0.50	ug/L							
cis-1,3-Dichloropropene	ND	2.0	ug/L							
Dibromochloromethane	ND	0.50	ug/L							
Dibromomethane	ND	0.50	ug/L							
Dichlorodifluoromethane	ND	0.50	ug/L							
Ethylbenzene	ND	0.50	ug/L							

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110190 - SW8260B										
Blank (2110190-BLK1)				Prepared & Analyzed: 10/13/2021						
Hexachlorobutadiene	ND	5.0	ug/L							
Iodomethane	ND	10	ug/L							
Isopropylbenzene	ND	0.50	ug/L							
m,p-Xylene	ND	1.0	ug/L							
Methylene chloride	ND	1.0	ug/L							
Naphthalene	ND	2.0	ug/L							
n-Butylbenzene	ND	0.50	ug/L							
n-Propylbenzene	ND	0.50	ug/L							
o-Xylene	ND	0.50	ug/L							
sec-Butylbenzene	ND	2.0	ug/L							
Styrene	ND	0.50	ug/L							
tert-Butylbenzene	ND	0.50	ug/L							
Tetrachloroethene	ND	0.50	ug/L							
Toluene	ND	0.50	ug/L							
trans-1,2-Dichloroethene	ND	0.50	ug/L							
trans-1,3-Dichloropropene	ND	2.0	ug/L							
trans-1,4-Dichloro-2-butene	ND	10	ug/L							
Trichloroethene	ND	0.50	ug/L							
Trichlorofluoromethane	ND	0.50	ug/L							
Vinyl acetate	ND	10	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	26.7		ug/L	25.00		107	70-130			
Surrogate: Dibromofluoromethane	29.2		ug/L	25.00		117	70-130			
Surrogate: Toluene-d8	27.0		ug/L	25.00		108	70-130			
LCS (2110190-BS1)				Prepared & Analyzed: 10/13/2021						
1,1-Dichloroethene	23		ug/L	25.00		90	70-130			
Benzene	25		ug/L	25.00		101	70-130			
Chlorobenzene	26		ug/L	25.00		103	70-130			
Toluene	25		ug/L	25.00		99	70-130			
Trichloroethene	25		ug/L	25.00		99	70-130			
Surrogate: 4-Bromofluorobenzene	25.6		ug/L	25.00		102	70-130			
Surrogate: Dibromofluoromethane	28.1		ug/L	25.00		112	70-130			
Surrogate: Toluene-d8	25.9		ug/L	25.00		103	70-130			
LCS Dup (2110190-BSD1)				Prepared & Analyzed: 10/13/2021						
1,1-Dichloroethene	23		ug/L	25.00		92	70-130	2	30	
Benzene	25		ug/L	25.00		102	70-130	1	30	
Chlorobenzene	26		ug/L	25.00		105	70-130	2	30	
Toluene	25		ug/L	25.00		102	70-130	3	30	
Trichloroethene	25		ug/L	25.00		101	70-130	2	30	
Surrogate: 4-Bromofluorobenzene	27.1		ug/L	25.00		108	70-130			
Surrogate: Dibromofluoromethane	29.4		ug/L	25.00		118	70-130			
Surrogate: Toluene-d8	27.1		ug/L	25.00		108	70-130			

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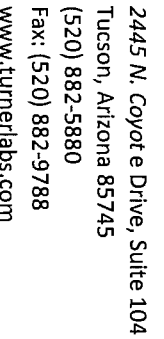
QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110190 - SW8260B										
Matrix Spike (2110190-MS1)		Source: 21J0218-01		Prepared: 10/13/2021 Analyzed: 10/14/2021						
1,1-Dichloroethene	24		ug/L	25.00	0.010	95	70-130			
Benzene	26		ug/L	25.00	0.0	106	70-130			
Chlorobenzene	27		ug/L	25.00	0.0	107	70-130			
Toluene	26		ug/L	25.00	0.0	104	70-130			
Trichloroethene	25		ug/L	25.00	0.0	102	70-130			
Surrogate: 4-Bromofluorobenzene	26.1		ug/L	25.00		105	70-130			
Surrogate: Dibromofluoromethane	28.5		ug/L	25.00		114	70-130			
Surrogate: Toluene-d8	27.2		ug/L	25.00		109	70-130			
Matrix Spike Dup (2110190-MSD1)		Source: 21J0218-01		Prepared: 10/13/2021 Analyzed: 10/14/2021						
1,1-Dichloroethene	22		ug/L	25.00	0.010	90	70-130	6	30	
Benzene	25		ug/L	25.00	0.0	101	70-130	5	30	
Chlorobenzene	25		ug/L	25.00	0.0	102	70-130	5	30	
Toluene	25		ug/L	25.00	0.0	100	70-130	4	30	
Trichloroethene	24		ug/L	25.00	0.0	96	70-130	5	30	
Surrogate: 4-Bromofluorobenzene	26.4		ug/L	25.00		105	70-130			
Surrogate: Dibromofluoromethane	28.1		ug/L	25.00		113	70-130			
Surrogate: Toluene-d8	27.1		ug/L	25.00		108	70-130			

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110066 - E300.0 (2.1)										
Blank (2110066-BLK1)				Prepared & Analyzed: 10/07/2021						
Chloride	ND	1.0	mg/L							
Fluoride	ND	0.50	mg/L							
Nitrogen, Nitrate (As N)	ND	0.50	mg/L							
Nitrogen, Nitrite (As N)	ND	0.10	mg/L							
Phosphorus, Dissolved Orthophosphate (As P)	ND	0.50	mg/L							
Sulfate	ND	5.0	mg/L							
LCS (2110066-BS1)				Prepared & Analyzed: 10/07/2021						
Chloride	12	1.0	mg/L	12.50		99	90-110			
Fluoride	2.0	0.50	mg/L	2.000		102	90-110			
Nitrogen, Nitrate (As N)	5.1	0.50	mg/L	5.000		102	90-110			
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500		98	90-110			
Phosphorus, Dissolved Orthophosphate (As P)	2.8	0.50	mg/L	2.500		112	90-110			L5
Sulfate	13	5.0	mg/L	12.50		102	90-110			
LCS Dup (2110066-BSD1)				Prepared & Analyzed: 10/07/2021						
Chloride	12	1.0	mg/L	12.50		96	90-110	4	10	
Fluoride	2.0	0.50	mg/L	2.000		98	90-110	4	10	
Nitrogen, Nitrate (As N)	4.9	0.50	mg/L	5.000		98	90-110	4	10	
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500		94	90-110	3	10	
Phosphorus, Dissolved Orthophosphate (As P)	2.7	0.50	mg/L	2.500		109	90-110	3	10	
Sulfate	12	5.0	mg/L	12.50		98	90-110	4	10	
Matrix Spike (2110066-MS1)				Source: 21J0200-01	Prepared & Analyzed: 10/07/2021					
Fluoride	2.1	0.50	mg/L	2.000	0.51	78	80-120			M2
Nitrogen, Nitrate (As N)	9.2	0.50	mg/L	5.000	4.0	105	80-120			
Nitrogen, Nitrite (As N)	2.3	0.10	mg/L	2.500	ND	94	80-120			
Phosphorus, Dissolved Orthophosphate (As P)	2.8	0.50	mg/L	2.500	ND	114	80-120			
Sulfate	21	5.0	mg/L	12.50	10	88	80-120			
Matrix Spike (2110066-MS2)				Source: 21J0200-01	Prepared & Analyzed: 10/07/2021					
Chloride	18		mg/L	12.50	3.1	123	80-120			M1
Matrix Spike Dup (2110066-MSD1)				Source: 21J0200-01	Prepared & Analyzed: 10/07/2021					
Fluoride	2.1	0.50	mg/L	2.000	0.51	78	80-120	0.2	10	M2
Nitrogen, Nitrate (As N)	9.2	0.50	mg/L	5.000	4.0	105	80-120	0.3	10	
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500	ND	94	80-120	0.3	10	
Phosphorus, Dissolved Orthophosphate (As P)	2.9	0.50	mg/L	2.500	ND	116	80-120	2	10	
Sulfate	21	5.0	mg/L	12.50	10	89	80-120	0.08	10	
Matrix Spike Dup (2110066-MSD2)				Source: 21J0200-01	Prepared & Analyzed: 10/07/2021					
Chloride	17		mg/L	12.50	3.1	109	80-120	10	10	R13



CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 21J0174 DATE 10/7/21 PAGE 1 OF 1

PROJECT NAME : Groundwater (2459991012/619033)																																																																															
CONTACT NAME : <u>David Krizek</u>																																																																															
COMPANY NAME : <u>Rosemont Copper Company</u>																																																																															
ADDRESS : <u>5255 E Williams Circle, Suite 1065</u>																																																																															
CITY <u>Tucson</u> STATE <u>AZ</u> ZIP CODE <u></u>																																																																															
PHONE <u>520-495-3527</u> FAX <u></u>																																																																															
SAMPLER'S SIGNATURE <u>[Signature]</u>																																																																															
NUMBER OF CONTAINERS																																																																															
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Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions					
Frequency: As needed and when sampled (Field Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
General Measurements					
Depth to Water level	feet	Water Level Sounder	NA		
Water level elevation	feet amsl	calculation	NA		
Temperature – field	° C (Celsius)	Oakton PC 450 Meter/Oakton pH Con 10 Meter or equivalent	NA		
pH – field	S.U.	Oakton PC 450 Meter/Oakton pH Con 10 Meter or equivalent	NA		
Conductivity – field	µS/cm	Oakton PC 450 Meter/ Oakton pH Con 10 Meter or equivalent	NA		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
General Measurements, General Chemistry					
Temperature – lab	° C	SM 4500 H+B	NA		
pH – lab	S.U.	SM 4500 H+B	NA		
Conductivity – lab	µS/cm	SW-846 9050A	2.0		
Total dissolved solids	mg/L	SM 2540 C	20		
Hardness ¹	mg/L	SM 2340B/calculation	13.0		
Cation/Anion Balance	%	calculation	NA		
Total alkalinity	mg/L	SM 2320 B	4.0		
Bicarbonate	mg/L	SM 2320 B	4.0		
Carbonate	mg/L	SM 2320 B	4.0		
Hydroxide	mg/L	SM 2320 B	4.0		
Sulfate	mg/L	EPA 300.0	0.50		
Chloride	mg/L	EPA 300.0	0.50		
Fluoride	mg/L	EPA 300.0	0.50		
Nitrate (as nitrogen [N])	mg/L	EPA 300.0	0.10		
Nitrite (as N)	mg/L	EPA 300.0	0.10		
Nitrate + Nitrite (as N)	mg/L	EPA 300.0/calculation	0.10		
Calcium ¹	mg/L	EPA 200.7	2.0		
Magnesium ¹	mg/L	EPA 200.7	2.0		
Sodium ¹	mg/L	EPA 200.7	0.5		
Potassium ¹	mg/L	EPA 200.7	0.5		
Ammonia (as N)	mg/L	SM 4500	0.5		
Orthophosphate (as P)	mg/L	EPA 300.0	0.1		
Silicon Dioxide ¹	mg/L	EPA 200.7	0.214		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Dissolved Metals					
Aluminum	mg/L	EPA 200.7	0.1		
Antimony	mg/L	EPA 200.8	0.001		
Arsenic	mg/L	EPA 200.8	0.0005		
Barium	mg/L	EPA 200.7	0.01		
Beryllium	mg/L	EPA 200.7	0.001		
Boron	mg/L	EPA 200.7	0.05		
Cadmium	mg/L	EPA 200.7	0.001		
Chromium	mg/L	EPA 200.7	0.01		
Cobalt	mg/L	EPA 200.7	0.01		
Copper	mg/L	EPA 200.7	0.01		
Iron	mg/L	EPA 200.7	0.1		
Lead	mg/L	EPA 200.8	0.0005		
Manganese	mg/L	EPA 200.7	0.01		
Mercury	mg/L	EPA 245.1	0.0002		
Molybdenum	mg/L	EPA 200.7	0.01		
Nickel	mg/L	EPA 200.7	0.01		
Selenium	mg/L	EPA 200.8	0.0005		
Silver	mg/L	EPA 200.8	0.0001		
Thallium	mg/L	EPA 200.8	0.0001		
Uranium	mg/L	EPA 200.8	0.0001		
Zinc	mg/L	EPA 200.8	0.013		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Total Recoverable Metals					
Aluminum	mg/L	EPA 200.7	0.1		
Antimony	mg/L	EPA 200.8	0.001		
Arsenic	mg/L	EPA 200.8	0.0005		
Barium	mg/L	EPA 200.7	0.01		
Beryllium	mg/L	EPA 200.7	0.001		
Boron	mg/L	EPA 200.7	0.05		
Cadmium	mg/L	EPA 200.7	0.001		
Chromium	mg/L	EPA 200.7	0.01		
Cobalt	mg/L	EPA 200.7	0.01		
Copper	mg/L	EPA 200.7	0.01		
Iron	mg/L	EPA 200.7	0.1		
Lead	mg/L	EPA 200.8	0.0005		
Manganese	mg/L	EPA 200.7	0.01		
Mercury	mg/L	EPA 245.1	0.0002		
Molybdenum	mg/L	EPA 200.7	0.01		
Nickel	mg/L	EPA 200.7	0.01		
Selenium	mg/L	EPA 200.8	0.0005		
Silver	mg/L	EPA 200.8	0.0001		
Thallium	mg/L	EPA 200.8	0.0001		
Uranium	mg/L	EPA 200.8	0.0001		
Zinc	mg/L	EPA 200.8	0.013		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)				
Frequency: As needed and when sampled (Laboratory Parameters)				
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)	
Radiochemicals				
Gross alpha particle activity	pCi/L	EPA 900	3.0	
Adjusted gross alpha	pCi/L	calculation	3.0	
Total Radium (Ra 226 + Ra 228)	pCi/L	calculation	1.0	
Radium 226	pCi/L	EPA 903.1 or HPGE-GA	1.0	
Radium 228	pCi/L	EPA 904 or HPGE-GA	1.0	
Uranium isotopes	pCi/L	ASTM 6239	1.0	

Frequency: As needed and when sampled (Laboratory Parameters)				
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)	
Other				
Stable isotopes: H and O	Per mil	Mass spectrometer	0.10	
Organics - Volatile	mg/L	SW8260B	Variable	
Organics – Semi-Volatile	mg/L	8270	Variable	

Units: S.U. = standard units

NA = not applicable

µS/cm = micro Siemens per centimeter

mg/L = milligrams per liter

µg/L = micrograms per liter

pCi/L = picoCuries per liter

amsl = above mean sea level

Per mil = parts per thousand

¹: Parameter to be analyzed as both dissolved and total.



ANALYTICAL REPORT

October 18, 2021



Turner Laboratories Inc

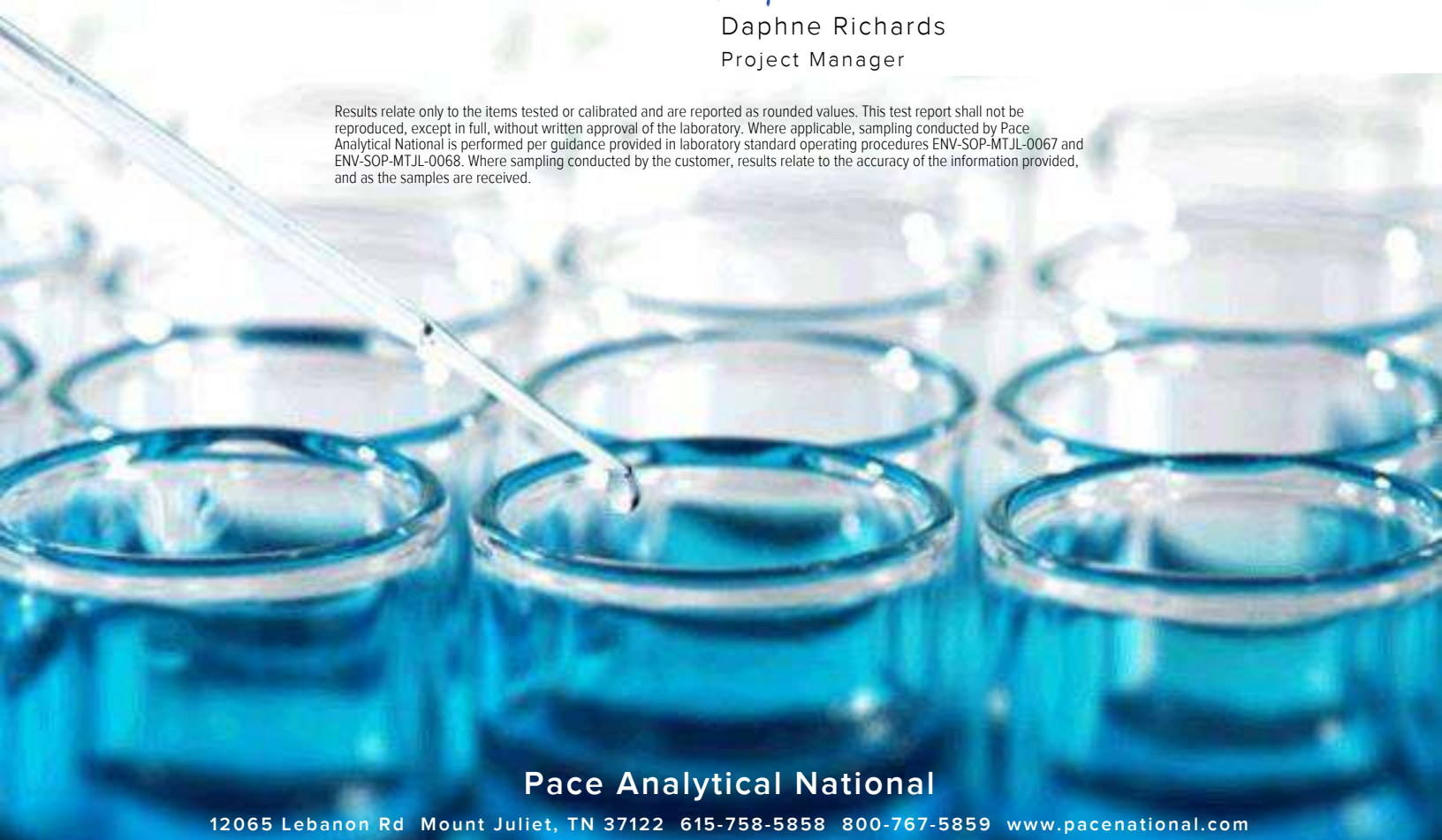
Sample Delivery Group: L1415704
Samples Received: 10/08/2021
Project Number: 21J0176
Description:

Report To: Max DiSante
2445 North Coyote Drive
Suite 104
Tucson, AZ 85745

Entire Report Reviewed By:

Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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Sr: Sample Results	5	³ Ss
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Qc: Quality Control Summary	7	
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	7	⁵ Sr
Is: Internal Standard Summary	12	⁶ Qc
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Gl: Glossary of Terms	13	⁷ Is
Al: Accreditations & Locations	14	
Sc: Sample Chain of Custody	15	⁸ Gl
		⁹ Al
		¹⁰ Sc

SAMPLE SUMMARY

21J0176-01 L1415704-01 GW

Collected by

Collected date/time

Received date/time

10/06/21 10:45

10/08/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1755649	1	10/13/21 07:18	10/13/21 13:53	JNJ	Mt. Juliet, TN

¹Cp ${}^2\text{Tc}$ ${}^3\text{Ss}$ ${}^4\text{Cn}$ ^5Sr ${}^6\text{Qc}$ ${}^7\text{Li}$ ${}^8\text{Gf}$ ${}^9\text{Al}$ ^{10}Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Daphne Richards
Project Manager

Project Narrative

L1415701-01 8270: Benzidine is reporting with critically low recovery in the laboratory control sample(s). This compound is a method defined poor performer. Results are estimated.

Sample Delivery Group (SDG) Narrative

An aliquot for analysis was taken from the original container received due to volume requirements of the laboratory's procedure. Rinsing of the original sample container for inclusion in the sample extraction was not performed.

<u>Lab Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L1415704-01	21J0176-01	8270C



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00100	1	10/13/2021 13:53	WG1755649
Acenaphthylene	ND		0.00100	1	10/13/2021 13:53	WG1755649
Anthracene	ND		0.00100	1	10/13/2021 13:53	WG1755649
Benidine	ND	L2 M7 R2	0.0100	1	10/13/2021 13:53	WG1755649
Benzo(a)anthracene	ND		0.00100	1	10/13/2021 13:53	WG1755649
Benzo(b)fluoranthene	ND		0.00100	1	10/13/2021 13:53	WG1755649
Benzo(k)fluoranthene	ND		0.00100	1	10/13/2021 13:53	WG1755649
Benzo(g,h,i)perylene	ND		0.00100	1	10/13/2021 13:53	WG1755649
Benzo(a)pyrene	ND		0.00100	1	10/13/2021 13:53	WG1755649
Bis(2-chlorethoxy)methane	ND		0.0100	1	10/13/2021 13:53	WG1755649
Bis(2-chloroethyl)ether	ND		0.0100	1	10/13/2021 13:53	WG1755649
2,2-Oxybis(1-Chloropropane)	ND		0.0100	1	10/13/2021 13:53	WG1755649
4-Bromophenyl-phenylether	ND		0.0100	1	10/13/2021 13:53	WG1755649
2-Chloronaphthalene	ND		0.00100	1	10/13/2021 13:53	WG1755649
4-Chlorophenyl-phenylether	ND		0.0100	1	10/13/2021 13:53	WG1755649
Chrysene	ND		0.00100	1	10/13/2021 13:53	WG1755649
Dibenz(a,h)anthracene	ND		0.00100	1	10/13/2021 13:53	WG1755649
1,2-Dichlorobenzene	ND		0.0100	1	10/13/2021 13:53	WG1755649
1,3-Dichlorobenzene	ND		0.0100	1	10/13/2021 13:53	WG1755649
1,4-Dichlorobenzene	ND		0.0100	1	10/13/2021 13:53	WG1755649
3,3-Dichlorobenzidine	ND		0.0100	1	10/13/2021 13:53	WG1755649
2,4-Dinitrotoluene	ND		0.0100	1	10/13/2021 13:53	WG1755649
2,6-Dinitrotoluene	ND		0.0100	1	10/13/2021 13:53	WG1755649
Fluoranthene	ND		0.00100	1	10/13/2021 13:53	WG1755649
Fluorene	ND		0.00100	1	10/13/2021 13:53	WG1755649
Hexachlorobenzene	ND		0.00100	1	10/13/2021 13:53	WG1755649
Hexachloro-1,3-butadiene	ND		0.0100	1	10/13/2021 13:53	WG1755649
Hexachlorocyclopentadiene	ND		0.0100	1	10/13/2021 13:53	WG1755649
Hexachloroethane	ND		0.0100	1	10/13/2021 13:53	WG1755649
Indeno(1,2,3-cd)pyrene	ND		0.00100	1	10/13/2021 13:53	WG1755649
Isophorone	ND		0.0100	1	10/13/2021 13:53	WG1755649
Naphthalene	ND		0.00100	1	10/13/2021 13:53	WG1755649
Nitrobenzene	ND		0.0100	1	10/13/2021 13:53	WG1755649
n-Nitrosodimethylamine	ND		0.0100	1	10/13/2021 13:53	WG1755649
n-Nitrosodiphenylamine	ND		0.0100	1	10/13/2021 13:53	WG1755649
n-Nitrosodi-n-propylamine	ND		0.0100	1	10/13/2021 13:53	WG1755649
Phenanthrene	ND		0.00100	1	10/13/2021 13:53	WG1755649
Benzylbutyl phthalate	ND		0.00300	1	10/13/2021 13:53	WG1755649
Bis(2-ethylhexyl)phthalate	ND		0.00300	1	10/13/2021 13:53	WG1755649
Di-n-butyl phthalate	ND		0.00300	1	10/13/2021 13:53	WG1755649
Diethyl phthalate	ND		0.00300	1	10/13/2021 13:53	WG1755649
Dimethyl phthalate	ND		0.00300	1	10/13/2021 13:53	WG1755649
Di-n-octyl phthalate	ND		0.00300	1	10/13/2021 13:53	WG1755649
Pyrene	ND		0.00100	1	10/13/2021 13:53	WG1755649
1,2,4-Trichlorobenzene	ND		0.0100	1	10/13/2021 13:53	WG1755649
4-Chloro-3-methylphenol	ND		0.0100	1	10/13/2021 13:53	WG1755649
2-Chlorophenol	ND		0.0100	1	10/13/2021 13:53	WG1755649
2,4-Dichlorophenol	ND		0.0100	1	10/13/2021 13:53	WG1755649
2,4-Dimethylphenol	ND		0.0100	1	10/13/2021 13:53	WG1755649
4,6-Dinitro-2-methylphenol	ND		0.0100	1	10/13/2021 13:53	WG1755649
2,4-Dinitrophenol	ND		0.0100	1	10/13/2021 13:53	WG1755649
2-Nitrophenol	ND		0.0100	1	10/13/2021 13:53	WG1755649
4-Nitrophenol	ND	L1 M6	0.0100	1	10/13/2021 13:53	WG1755649
Pentachlorophenol	ND		0.0100	1	10/13/2021 13:53	WG1755649
Phenol	ND		0.0100	1	10/13/2021 13:53	WG1755649
2,4,6-Trichlorophenol	ND		0.0100	1	10/13/2021 13:53	WG1755649



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorophenol	38.2		10.0-120		10/13/2021 13:53	WG1755649
(S) Phenol-d5	25.3		10.0-120		10/13/2021 13:53	WG1755649
(S) Nitrobenzene-d5	65.5		10.0-127		10/13/2021 13:53	WG1755649
(S) 2-Fluorobiphenyl	62.9		10.0-130		10/13/2021 13:53	WG1755649
(S) 2,4,6-Tribromophenol	60.0		10.0-155		10/13/2021 13:53	WG1755649
(S) p-Terphenyl-d14	58.6		10.0-128		10/13/2021 13:53	WG1755649

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Is⁸ Gl⁹ Al¹⁰ Sc

Method Blank (MB)

(MB) R3716562-2 10/13/21 13:32

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acenaphthene	U		0.0000886	0.00100
Acenaphthylene	U		0.0000921	0.00100
Anthracene	U		0.0000804	0.00100
Benzidine	U		0.00374	0.0100
Benzo(a)anthracene	U		0.000199	0.00100
Benzo(b)fluoranthene	U		0.000130	0.00100
Benzo(k)fluoranthene	U		0.000120	0.00100
Benzo(g,h,i)perylene	U		0.000121	0.00100
Benzo(a)pyrene	U		0.0000381	0.00100
Bis(2-chlorethoxy)methane	U		0.000116	0.0100
Bis(2-chloroethyl)ether	U		0.000137	0.0100
2,2-Oxybis(1-Chloropropane)	U		0.000210	0.0100
4-Bromophenyl-phenylether	U		0.0000877	0.0100
2-Chloronaphthalene	U		0.0000648	0.00100
4-Chlorophenyl-phenylether	U		0.0000926	0.0100
Chrysene	U		0.000130	0.00100
Dibenz(a,h)anthracene	U		0.0000644	0.00100
1,2-Dichlorobenzene	U		0.0000713	0.0100
1,3-Dichlorobenzene	U		0.000132	0.0100
1,4-Dichlorobenzene	U		0.0000942	0.0100
3,3-Dichlorobenzidine	U		0.000212	0.0100
2,4-Dinitrotoluene	U		0.0000983	0.0100
2,6-Dinitrotoluene	U		0.000250	0.0100
Fluoranthene	U		0.000102	0.00100
Fluorene	U		0.0000844	0.00100
Hexachlorobenzene	U		0.0000755	0.00100
Hexachloro-1,3-butadiene	U		0.0000968	0.0100
Hexachlorocyclopentadiene	U		0.0000598	0.0100
Hexachloroethane	U		0.000127	0.0100
Indeno(1,2,3-cd)pyrene	U		0.000279	0.00100
Isophorone	U		0.000143	0.0100
Naphthalene	U		0.000159	0.00100
Nitrobenzene	U		0.000297	0.0100
n-Nitrosodimethylamine	U		0.000998	0.0100
n-Nitrosodiphenylamine	U		0.00237	0.0100
n-Nitrosodi-n-propylamine	U		0.000261	0.0100
Phenanthrene	U		0.000112	0.00100
Benzylbutyl phthalate	U		0.000765	0.00300
Bis(2-ethylhexyl)phthalate	U		0.000895	0.00300
Di-n-butyl phthalate	U		0.000453	0.00300

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Is

⁸Gl

⁹Al

¹⁰Sc

Method Blank (MB)

(MB) R3716562-2 10/13/21 13:32

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Diethyl phthalate	U		0.000287	0.00300
Dimethyl phthalate	U		0.000260	0.00300
Di-n-octyl phthalate	U		0.000932	0.00300
Pyrene	U		0.000107	0.00100
1,2,4-Trichlorobenzene	U		0.0000698	0.0100
4-Chloro-3-methylphenol	U		0.000131	0.0100
2-Chlorophenol	U		0.000133	0.0100
2,4-Dichlorophenol	U		0.000102	0.0100
2,4-Dimethylphenol	U		0.0000636	0.0100
4,6-Dinitro-2-methylphenol	U		0.00112	0.0100
2,4-Dinitrophenol	U		0.00593	0.0100
2-Nitrophenol	U		0.000117	0.0100
4-Nitrophenol	U		0.000143	0.0100
Pentachlorophenol	U		0.000313	0.0100
Phenol	U		0.00433	0.0100
2,4,6-Trichlorophenol	U		0.000100	0.0100
(S) Nitrobenzene-d5	69.0			10.0-127
(S) 2-Fluorobiphenyl	65.9			10.0-130
(S) p-Terphenyl-d14	65.5			10.0-128
(S) Phenol-d5	23.0			10.0-120
(S) 2-Fluorophenol	33.9			10.0-120
(S) 2,4,6-Tribromophenol	67.5			10.0-155

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Is

8Gl

9Al

10Sc

Laboratory Control Sample (LCS)

(LCS) R3716562-1 10/13/21 13:10

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0500	0.0274	54.8	41.0-120	
Acenaphthylene	0.0500	0.0301	60.2	43.0-120	
Anthracene	0.0500	0.0324	64.8	45.0-120	
Benzidine	0.100	0.00376	3.76	10.0-120	L2
Benzo(a)anthracene	0.0500	0.0365	73.0	47.0-120	
Benzo(b)fluoranthene	0.0500	0.0334	66.8	46.0-120	
Benzo(k)fluoranthene	0.0500	0.0333	66.6	46.0-120	
Benzo(g,h,i)perylene	0.0500	0.0328	65.6	48.0-121	
Benzo(a)pyrene	0.0500	0.0337	67.4	47.0-120	
Bis(2-chlorethoxy)methane	0.0500	0.0282	56.4	33.0-120	
Bis(2-chloroethyl)ether	0.0500	0.0295	59.0	23.0-120	

Laboratory Control Sample (LCS)

(LCS) R3716562-1 10/13/21 13:10

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
2,2-Oxybis(1-Chloropropane)	0.0500	0.0249	49.8	28.0-120	
4-Bromophenyl-phenylether	0.0500	0.0306	61.2	45.0-120	
2-Chloronaphthalene	0.0500	0.0258	51.6	37.0-120	
4-Chlorophenyl-phenylether	0.0500	0.0295	59.0	44.0-120	
Chrysene	0.0500	0.0331	66.2	48.0-120	
Dibenz(a,h)anthracene	0.0500	0.0324	64.8	47.0-120	
1,2-Dichlorobenzene	0.0500	0.0222	44.4	20.0-120	
1,3-Dichlorobenzene	0.0500	0.0215	43.0	17.0-120	
1,4-Dichlorobenzene	0.0500	0.0220	44.0	18.0-120	
3,3-Dichlorobenzidine	0.100	0.0730	73.0	44.0-120	
2,4-Dinitrotoluene	0.0500	0.0379	75.8	49.0-124	
2,6-Dinitrotoluene	0.0500	0.0348	69.6	46.0-120	
Fluoranthene	0.0500	0.0356	71.2	51.0-120	
Fluorene	0.0500	0.0296	59.2	47.0-120	
Hexachlorobenzene	0.0500	0.0303	60.6	44.0-120	
Hexachloro-1,3-butadiene	0.0500	0.0201	40.2	19.0-120	
Hexachlorocyclopentadiene	0.0500	0.0146	29.2	15.0-120	
Hexachloroethane	0.0500	0.0220	44.0	15.0-120	
Indeno(1,2,3-cd)pyrene	0.0500	0.0336	67.2	49.0-122	
Isophorone	0.0500	0.0305	61.0	36.0-120	
Naphthalene	0.0500	0.0216	43.2	27.0-120	
Nitrobenzene	0.0500	0.0269	53.8	27.0-120	
n-Nitrosodimethylamine	0.0500	0.0256	51.2	10.0-120	
n-Nitrosodiphenylamine	0.0500	0.0316	63.2	47.0-120	
n-Nitrosodi-n-propylamine	0.0500	0.0308	61.6	31.0-120	
Phenanthrene	0.0500	0.0363	72.6	46.0-120	
Benzylbutyl phthalate	0.0500	0.0388	77.6	43.0-121	
Bis(2-ethylhexyl)phthalate	0.0500	0.0343	68.6	43.0-122	
Di-n-butyl phthalate	0.0500	0.0388	77.6	49.0-121	
Diethyl phthalate	0.0500	0.0361	72.2	48.0-122	
Dimethyl phthalate	0.0500	0.0345	69.0	48.0-120	
Di-n-octyl phthalate	0.0500	0.0361	72.2	42.0-125	
Pyrene	0.0500	0.0335	67.0	47.0-120	
1,2,4-Trichlorobenzene	0.0500	0.0215	43.0	24.0-120	
4-Chloro-3-methylphenol	0.0500	0.0237	47.4	40.0-120	
2-Chlorophenol	0.0500	0.0205	41.0	25.0-120	
2,4-Dichlorophenol	0.0500	0.0237	47.4	36.0-120	
2,4-Dimethylphenol	0.0500	0.0233	46.6	33.0-120	
4,6-Dinitro-2-methylphenol	0.0500	0.0396	79.2	38.0-138	
2,4-Dinitrophenol	0.0500	0.0334	66.8	10.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Is

8Gl

9Al

10Sc

Laboratory Control Sample (LCS)

(LCS) R3716562-1 10/13/21 13:10

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2-Nitrophenol	0.0500	0.0269	53.8	31.0-120	
4-Nitrophenol	0.0500	0.0761	152	10.0-120	L1
Pentachlorophenol	0.0500	0.0289	57.8	23.0-120	
Phenol	0.0500	0.0121	24.2	10.0-120	
2,4,6-Trichlorophenol	0.0500	0.0284	56.8	42.0-120	
(S) Nitrobenzene-d5			56.0	10.0-127	
(S) 2-Fluorobiphenyl			56.4	10.0-130	
(S) p-Terphenyl-d14			60.5	10.0-128	
(S) Phenol-d5			20.1	10.0-120	
(S) 2-Fluorophenol			26.4	10.0-120	
(S) 2,4,6-Tribromophenol			65.5	10.0-155	

L1415704-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1415704-01 10/13/21 13:53 • (MS) R3716562-3 10/13/21 14:15 • (MSD) R3716562-4 10/13/21 14:36

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.0500	ND	0.0292	0.0329	58.4	65.8	1	28.0-120			11.9	25
Acenaphthylene	0.0500	ND	0.0317	0.0363	63.4	72.6	1	31.0-121			13.5	25
Anthracene	0.0500	ND	0.0333	0.0370	66.6	74.0	1	36.0-120			10.5	23
Benzydine	0.100	ND	0.0176	ND	17.6	6.95	1	10.0-120		M7 R2	86.8	37
Benzo(a)anthracene	0.0500	ND	0.0372	0.0407	74.4	81.4	1	39.0-120			8.99	23
Benzo(b)fluoranthene	0.0500	ND	0.0349	0.0384	69.8	76.8	1	37.0-120			9.55	23
Benzo(k)fluoranthene	0.0500	ND	0.0335	0.0367	67.0	73.4	1	37.0-120			9.12	26
Benzo(g,h,i)perylene	0.0500	ND	0.0317	0.0352	63.4	70.4	1	37.0-123			10.5	25
Benzo(a)pyrene	0.0500	ND	0.0344	0.0377	68.8	75.4	1	37.0-120			9.15	24
Bis(2-chlorethoxy)methane	0.0500	ND	0.0306	0.0328	61.2	65.6	1	17.0-120			6.94	31
Bis(2-chloroethyl)ether	0.0500	ND	0.0311	0.0336	62.2	67.2	1	14.0-120			7.73	33
2,2-oxybis(1-chloropropane)	0.0500	ND	0.0277	0.0310	55.4	62.0	1	18.0-120			11.2	34
4-Bromophenyl-phenylether	0.0500	ND	0.0318	0.0359	63.6	71.8	1	37.0-120			12.1	24
2-Chloronaphthalene	0.0500	ND	0.0277	0.0315	55.4	63.0	1	29.0-120			12.8	28
4-Chlorophenyl-phenylether	0.0500	ND	0.0311	0.0352	62.2	70.4	1	36.0-120			12.4	23
Chrysene	0.0500	ND	0.0336	0.0370	67.2	74.0	1	38.0-120			9.63	23
Dibenz(a,h)anthracene	0.0500	ND	0.0326	0.0355	65.2	71.0	1	36.0-121			8.52	24
3,3-Dichlorobenzidine	0.100	ND	0.0750	0.0804	75.0	80.4	1	10.0-134			6.95	30
2,4-Dinitrotoluene	0.0500	ND	0.0390	0.0437	78.0	87.4	1	39.0-125			11.4	25
2,6-Dinitrotoluene	0.0500	ND	0.0350	0.0384	70.0	76.8	1	36.0-120			9.26	27
Fluoranthene	0.0500	ND	0.0357	0.0396	71.4	79.2	1	41.0-121			10.4	22
Fluorene	0.0500	ND	0.0308	0.0353	61.6	70.6	1	37.0-120			13.6	24

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Is

8Gl

9Al

10Sc

L1415704-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1415704-01 10/13/21 13:53 • (MS) R3716562-3 10/13/21 14:15 • (MSD) R3716562-4 10/13/21 14:36

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexachlorobenzene	0.0500	ND	0.0312	0.0355	62.4	71.0	1	35.0-122			12.9	24
Hexachloro-1,3-butadiene	0.0500	ND	0.0233	0.0242	46.6	48.4	1	12.0-120			3.79	34
Hexachlorocyclopentadiene	0.0500	ND	0.0155	0.0176	31.0	35.2	1	10.0-120			12.7	33
Hexachloroethane	0.0500	ND	0.0255	0.0267	51.0	53.4	1	10.0-120			4.60	40
Indeno(1,2,3-cd)pyrene	0.0500	ND	0.0330	0.0371	66.0	74.2	1	38.0-125			11.7	24
Isophorone	0.0500	ND	0.0329	0.0364	65.8	72.8	1	21.0-120			10.1	27
Nitrobenzene	0.0500	ND	0.0299	0.0331	59.8	66.2	1	12.0-120			10.2	30
n-Nitrosodimethylamine	0.0500	ND	0.0262	0.0279	52.4	55.8	1	10.0-120			6.28	40
n-Nitrosodiphenylamine	0.0500	ND	0.0324	0.0368	64.8	73.6	1	37.0-120			12.7	24
n-Nitrosodi-n-propylamine	0.0500	ND	0.0329	0.0355	65.8	71.0	1	16.0-120			7.60	30
Phenanthrene	0.0500	ND	0.0367	0.0412	73.4	82.4	1	33.0-120			11.6	22
Benzylbutyl phthalate	0.0500	ND	0.0407	0.0446	81.4	89.2	1	34.0-126			9.14	24
Bis(2-ethylhexyl)phthalate	0.0500	ND	0.0350	0.0387	70.0	77.4	1	33.0-126			10.0	25
Di-n-butyl phthalate	0.0500	ND	0.0396	0.0432	79.2	86.4	1	35.0-128			8.70	23
Diethyl phthalate	0.0500	ND	0.0362	0.0410	72.4	82.0	1	39.0-125			12.4	24
Dimethyl phthalate	0.0500	ND	0.0353	0.0390	70.6	78.0	1	37.0-120			9.96	24
Di-n-octyl phthalate	0.0500	ND	0.0367	0.0409	73.4	81.8	1	25.0-135			10.8	26
Pyrene	0.0500	ND	0.0349	0.0385	69.8	77.0	1	39.0-120			9.81	22
1,2,4-Trichlorobenzene	0.0500	ND	0.0251	0.0276	50.2	55.2	1	15.0-120			9.49	31
4-Chloro-3-methylphenol	0.0500	ND	0.0287	0.0339	57.4	67.8	1	26.0-120			16.6	27
2-Chlorophenol	0.0500	ND	0.0240	0.0286	48.0	57.2	1	18.0-120			17.5	34
2,4-Dichlorophenol	0.0500	ND	0.0274	0.0322	54.8	64.4	1	19.0-120			16.1	27
2,4-Dimethylphenol	0.0500	ND	0.0279	0.0315	55.8	63.0	1	15.0-120			12.1	28
4,6-Dinitro-2-methylphenol	0.0500	ND	0.0403	0.0474	80.6	94.8	1	10.0-144			16.2	39
2,4-Dinitrophenol	0.0500	ND	0.0376	0.0451	75.2	90.2	1	10.0-120			18.1	40
2-Nitrophenol	0.0500	ND	0.0306	0.0349	61.2	69.8	1	20.0-120			13.1	30
4-Nitrophenol	0.0500	ND	0.0810	0.0942	162	188	1	10.0-120	M6	M6	15.1	40
1,2-Dichlorobenzene	0.0500	ND	0.0254	0.0277	50.8	55.4	1	18.0-120			8.66	40
1,3-Dichlorobenzene	0.0500	ND	0.0245	0.0266	49.0	53.2	1	15.0-120			8.22	40
Phenol	0.0500	ND	0.0141	0.0151	28.2	30.2	1	10.0-120			6.85	40
1,4-Dichlorobenzene	0.0500	ND	0.0246	0.0272	49.2	54.4	1	17.0-120			10.0	40
2,4,6-Trichlorophenol	0.0500	ND	0.0298	0.0349	59.6	69.8	1	26.0-120			15.8	31
Naphthalene	0.0500	ND	0.0252	0.0283	50.4	56.6	1	10.0-120			11.6	31
Pentachlorophenol	0.0500	ND	0.0302	0.0365	60.4	73.0	1	10.0-128			18.9	37
(S) Nitrobenzene-d5					60.6	67.2		10.0-127				
(S) 2-Fluorobiphenyl					60.6	67.9		10.0-130				
(S) p-Terphenyl-d14					61.6	68.7		10.0-128				
(S) Phenol-d5					22.9	26.8		10.0-120				
(S) 2-Fluorophenol					30.2	36.7		10.0-120				
(S) 2,4,6-Tribromophenol					67.0	78.5		10.0-155				

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Is

8

Gl

9

Al

10

Sc

INTERNAL STANDARD SUMMARY

Instrument: BNAMS32 • File ID: 1013A_002

10/13/21 12:27							
Sample ID	File ID	1,4-DICHLOROBENZENE-D4	NAPHTHALENE-D8	ACENAPHTHENE-D10	PHENANTHRENE-D10	CHRYSENE-D12	PERYLENE-D12
		Response	Response	Response	Response	Response	Response
Standard	1013A_002	201065	801754	491966	951899	910678	842925
Upper Limit		402130	1603508	983932	1903798	1821356	1685850
Lower Limit		100533	400877	245983	475950	455339	421463
LCS R3716562-1 WG1755649 1x	1013A_004	193886	820288	461418	881879	867805	924094
BLANK R3716562-2 WG1755649 1x	1013A_005	189697	726842	436815	895622	922277	982556
L1415704-01 WG1755649 1x	1013A_006	193175	748658	457168	944133	964649	1011302
MS R3716562-3 WG1755649 1x	1013A_007	201421	827795	500042	977998	932967	955175
MSD R3716562-4 WG1755649 1x	1013A_008	197190	814528	488334	953507	915296	934626

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Is

8Gl

9Al

10Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

L1	The associated blank spike recovery was above laboratory acceptance limits.
L2	The associated blank spike recovery was below laboratory acceptance limits.
M6	Matrix spike recovery was high. Data reported per ADEQ policy 0154.000. Matrix Interference was confirmed.
M7	Matrix spike recovery was low. Data reported per ADEQ policy 0154.000. Matrix interference was confirmed.
R2	RPD/RSD exceeded the laboratory acceptance limit.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



1242

SUBCONTRACT ORDER

Turner Laboratories, Inc.

21J0176

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Pace Analytical Services - Tennessee
12065 Lebabon Rd.
Mt. Juliet, TN 37122
Phone : (615) 758-5858
Fax: -
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis

Expires Laboratory ID Comments

Sample ID: 21J0176-01 Drinking Water Sampled: 10/06/2021 10:45

Semivolatle Organics by SW 8270

Containers Supplied:

L1415704-01

10/13/2021 10:45

Sample Receipt Checklist
COC Seal Present/Intact: ☒ Y ☐ N If Applicable
COC Signed/Accurate: ☒ Y ☐ N VOA Zero Headspace: ☒ Y ☐ N
Bottles arrive intact: ☒ Y ☐ N Pres. Correct/Check: ☒ Y ☐ N
Correct bottles used: ☒ Y ☐ N
Sufficient volume sent: ☒ Y ☐ N
RAD Screen <0.5 mR/hr: ☒ Y ☐ N

Full (10/8/21 1030)

A-28T
840-8

LM 10/7/21 1600 Date
Received By *US* 10/7/21 1600 Date
Received By Date
Received By Date

Lab #: 806228 Job #: 49048 IS-102736 Co. Job#:
 Sample Name: 21J0176-01 Co. Lab#:
 Company: Turner Laboratories, Inc
 API/Well:
 Container: Plastic Bottle
 Field/Site Name: 21J0176
 Location:
 Formation/Depth:
 Sampling Point:
 Date Sampled: 10/06/2021 10:45 Date Received: 10/12/2021 Date Reported: 10/21/2021

δD of water ----- -58.4 ‰ relative to VSMOW

$\delta^{18}O$ of water ----- -8.30 ‰ relative to VSMOW

Tritium content of water ----- na

$\delta^{13}C$ of DIC ----- na

^{14}C content of DIC ----- na

$\delta^{15}N$ of nitrate ----- na

$\delta^{18}O$ of nitrate ----- na

$\delta^{34}S$ of sulfate ----- na

$\delta^{18}O$ of sulfate ----- na

Vacuum Distilled? * ----- No

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

SUBCONTRACT ORDER

Turner Laboratories, Inc.

21J0176

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Isotech Laboratories
1308 Parkland Court
Champaign, IL 61821
Phone :1(217) 398-3490
Fax: -
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
Sample ID: 21J0176-01 Drinking Water Sampled:10/06/2021 10:45			
Isotope Analysis Containers Supplied:	10/20/2021 10:45		H and O Isotopes

Released By

Date

Received By

Date

Grace Skube / SR Isotech

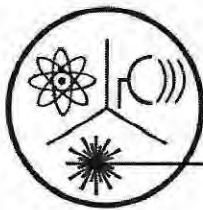
OCT 12 2021

Released By

Date

Received By

Date



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121

Website: www.radsafe.com

(480) 897-9459

FAX (480) 892-5446

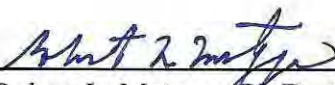
Radiochemical Activity in Water (pCi/L)

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: October 06, 2021
Sample Received: October 08, 2021
Analysis Completed: October 25, 2021

Sample ID	Gross Alpha Activity Method 600/00-02 (pCi/L)	Uranium Activity Method ASTM D6239 (pCi/L)	Adjusted Gross Alpha (pCi/L)	Gross Beta Activity Method 900.0 (pCi/L)	Radium 226 Activity Method GammaRay HPGE (pCi/L)	Radium 228 Activity Method GammaRay HPGE (pCi/L)	Total Radium (pCi/L)
21J0176-01	18.0 ± 1.4	15.9 ± 1.4	2.1 ± 2.0	10.1 ± 1.7	1.9 ± 0.3	1.1 ± 0.5	3.0 ± 0.6

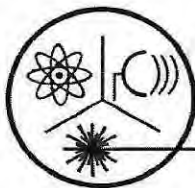
Date of Analysis	10/11/2021	10/12/2021	10/12/2021	10/19/2021	10/15/2021	10/15/2021	10/15/2021
------------------	------------	------------	------------	------------	------------	------------	------------


Robert L. Metzger, Ph.D., C.H.P.

October 25, 2021

Date

Laboratory License Number AZ0462



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

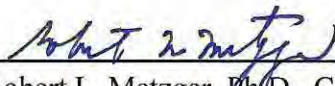
(480) 897-9459
FAX (480) 892-5446

Isotopic Uranium Analysis

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: October 06, 2021
Sample Received: October 08, 2021
Uranium Analysis Date: October 12, 2021

Sample No.	^{238}U	^{235}U	^{234}U	Total	
21J0176-01	7.0 ± 0.6	0.328 ± 0.005	8.5 ± 0.7	15.9 ± 1.4	Activity (pCi/L)
	21.0 ± 1.9	0.153 ± 0.002	0.00136 ± 0.00012	21.1 ± 1.9	Content ($\mu\text{g/L}$)
	Comments:				


Robert L. Metzger, Ph.D., C.H.P.

October 25, 2021

Date

Laboratory License Number AZ0462

Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
 Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____ PWS Name: _____

October 6, 2021 10:45 (24 hour clock) _____
 Sample Date Sample Time Owner/Contact Person

Owner/Contact Fax Number _____ Owner/Contact Phone Number _____

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

☐ Reduced Monitoring Date Q1 collected: _____
☐ Quarterly Date Q2 collected: _____
☐ Composite of four quarterly samples Date Q3 collected: _____
 Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
	15 pCi/L		Adjusted Gross Alpha	4000	10/12/2021	2.1 ± 2.0	
600/00-02		3 pCi/L	Gross Alpha	4002	10/11/2021	18.0 ± 1.4	
7500 - Rn			Radon	4004			
ASTM D6239	30 µg/L	1 µg/L	Combined Uranium	4006	10/12/2021	21.1 ± 1.9 µg/L	
			Uranium 234	4007	10/12/2021	0.00136 ± 0.00012	
			Uranium 235	4008	10/12/2021	0.153 ± 0.002	
			Uranium 238	4009	10/12/2021	21.0 ± 1.9	
	5 pCi/L	1 pCi/L	Combined Radium (226,228)	4010	10/15/2021	3.0 ± 0.6	
GammaRay HPGE		1 pCi/L	Radium 226	4020	10/15/2021	1.9 ± 0.3	
GammaRay HPGE		1 pCi/L	Radium 228	4030	10/15/2021	1.1 ± 0.5	

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE67405 _____

Lab ID Number: AZ0462 _____

Lab Name: Radiation Safety Engineering, Inc. _____

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459 _____

Comments: 21J0176-01 _____

Authorized Signature:  _____

Date Public Water System Notified: _____

Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____

PWS Name: _____

October 6, 2021 10:45 (24 hour clock)

Sample Date Sample Time

Owner/Contact Person

Owner/Contact Fax Number

Owner/Contact Phone Number

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

☐ Reduced Monitoring

Date Q1 collected: _____

☐ Quarterly

Date Q2 collected: _____

☐ Composite of four quarterly samples

Date Q3 collected: _____

Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
900	4 mrem	4 pCi/L	Gross Beta	4100	10/19/2021	< 4 mrem	
906	20,000 pCi/L	1,000 pCi/L	Tritium	4102			
		10 pCi/L	Strontium-89	4172			
	8 pCi/L	2 pCi/L	Strontium-90	4174			
		1 pCi/L	Iodine-131	4264	---	<	
		10 pCi/L	Cesium-134	4270			

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE67405

Lab ID Number: AZ0462

Lab Name: Radiation Safety Engineering, Inc.

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459

Comments: 21J0176-01

Authorized Signature: 

Date Public Water System Notified: _____

DWAR 6A: 11/2007

SUBCONTRACT ORDER

Turner Laboratories, Inc.

21J0176

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Radiation Safety Engineering, Inc.
3245 N. Washington St.
Chandler, AZ 85225-1121
Phone : (480) 897-9459
Fax: (480) 892-5446
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
Sample ID: 21J0176-01 Drinking Water Sampled: 10/06/2021 10:45			
Radiochemistry, Uranium	04/04/2022 10:45		
Radiochemistry, Radium 226/228	11/05/2021 10:45		
Radiochemistry, Gross Alpha Beta	04/04/2022 10:45		67405
Containers Supplied:			

Released By	Date	Received By	Date
<i>[Signature]</i>	10/7/21 1600	UPS	10/7/21 1600
Released By	Date	Received By	Date
		A.H.	10-8-21- 10:05



October 27, 2021

David Krizek
Rosemont Copper Company
5255 East Williams Circle, Suite W1065
Tucson, AZ 85711

TEL (520) 495-3527
FAX (520) 495-3540

Work Order No.: 21J0218
Order Name: Groundwater
(2459991012/619033)

RE: Groundwater

Dear David Krizek,

Turner Laboratories, Inc. received 3 sample(s) on 10/08/2021 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Elizabeth Kasik
Laboratory Director

Client:

Project:

Work Order:

Date Received:

Rosemont Copper Company

Groundwater

21J0218

10/08/2021

Order: Groundwater (2459991012/619033)

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date/Time
21J0218-01	GH2021-07	Ground Water	10/07/2021 1130
21J0218-02	GH2021-11	Ground Water	10/07/2021 1230
21J0218-03	GH2021-22	Ground Water	10/07/2021 1615

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Date Received: 10/08/2021

Case Narrative

The isotopes analyses was performed by Isotech in Champaign, IL.

The 8270C analysis was performed by Pace Analytical National in Mount Juliet, TN.

The radiochemistry analysis was performed by Radiation Safety Engineering, Inc. in Chandler, AZ.

- B3 Target analyte detected in calibration blank at or above the method reporting limit.
- B7 Target analyte detected in method blank at or above the method reporting limit. Concentration found in the sample was 10 times above the concentration found in the method blank.
- E4 Concentration estimated. Analyte was detected below laboratory Minimum Reporting Limit (MRL) but above MDL.
- E8 Analyte reported to MDL per project specification. Target analyte was not detected in the sample.
- H5 This test is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.
- L5 The associated blank spike recovery was above laboratory/method acceptance limits. This analyte was not detected in the sample.
- M1 Matrix spike recovery was high; the associated LCS/LCSD was acceptable.
- M2 Matrix spike recovery was low; the associated LCS/LCSD was acceptable.
- M3 The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated LCS/LCSD recovery was acceptable.
- M6 Matrix spike recovery was high. Data reported per ADEQ policy 0154.000. Matrix interference was confirmed.
- V1 CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

All soil, sludge, and solid matrix determinations are reported on a wet weight basis unless otherwise noted.

- ND Not Detected at or above the PQL
- PQL Practical Quantitation Limit
- DF Dilution Factor

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Lab Sample ID: 21J0218-01

Client Sample ID: GH2021-07
Collection Date/Time: 10/07/2021 1130
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Hardness-Calculation									
Hardness, Calcium/Magnesium (As CaCO3)	350				mg/L	1	10/08/2021 1430	10/13/2021 1428	MH
Nitrate + Nitrite Sum-Calculation									
Nitrate and Nitrite Sum	2.6		0.10		mg/L	1	10/08/2021 1344	10/08/2021 1749	MH
ICP Dissolved Metals-E 200.7 (4.4)									
Boron	0.53		0.10		mg/L	1	10/12/2021 0955	10/18/2021 1327	MH
Calcium	110		4.0		mg/L	1	10/15/2021 1010	10/18/2021 1327	MH
Chromium	ND	0.0030	0.030	E8	mg/L	1	10/12/2021 0955	10/18/2021 1327	MH
Iron	ND		0.30		mg/L	1	10/12/2021 0955	10/18/2021 1327	MH
Magnesium	19		3.0		mg/L	1	10/15/2021 1010	10/18/2021 1327	MH
Potassium	ND		5.0		mg/L	1	10/12/2021 0955	10/18/2021 1327	MH
Silica	60		2.0		mg/L	1	10/12/2021 0955	10/18/2021 1327	MH
Sodium	21		5.0		mg/L	1	10/12/2021 0955	10/18/2021 1327	MH
ICP/MS Dissolved Metals-E 200.8 (5.4)									
Aluminum	ND		0.040		mg/L	1	10/12/2021 0955	10/12/2021 1701	CR
Antimony	0.0010		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1701	CR
Arsenic	0.012		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1701	CR
Barium	0.011		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1701	CR
Beryllium	ND		0.00025		mg/L	1	10/12/2021 0955	10/12/2021 1701	CR
Cadmium	ND		0.00025		mg/L	1	10/12/2021 0955	10/12/2021 1701	CR
Cobalt	ND		0.00025		mg/L	1	10/12/2021 0955	10/12/2021 1701	CR
Copper	ND		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1701	CR
Lead	ND		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1701	CR
Manganese	0.0044		0.00025		mg/L	1	10/12/2021 0955	10/14/2021 1650	CR
Molybdenum	0.15		0.00025		mg/L	1	10/12/2021 0955	10/12/2021 1701	CR
Nickel	0.00054		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1701	CR
Selenium	0.0059		0.0025		mg/L	1	10/12/2021 0955	10/12/2021 1701	CR
Silver	ND		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1701	CR
Thallium	0.0000250.000023		0.00050	E4	mg/L	1	10/12/2021 0955	10/12/2021 1701	CR
Uranium	0.0042		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1701	CR
Zinc	ND		0.040		mg/L	1	10/12/2021 0955	10/12/2021 1701	CR

CVAA Dissolved Mercury-E 245.1

Client: Rosemont Copper Company

Project: Groundwater

Work Order: 21J0218

Lab Sample ID: 21J0218-01

Client Sample ID: GH2021-07

Collection Date/Time: 10/07/2021 1130

Matrix: Ground Water

Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Mercury	0.0000530.000041		0.0010	E4	mg/L	1	10/13/2021 1130	10/13/2021 1608	CWB
pH-E150.1									
pH (pH Units)	7.7			H5	-	1	10/08/2021 1625	10/08/2021 1628	CWB
Temperature (°C)	22			H5	-	1	10/08/2021 1625	10/08/2021 1628	CWB
ICP Total Metals-E200.7 (4.4)									
Boron	0.55		0.10		mg/L	1	10/08/2021 1430	10/13/2021 1428	MH
Calcium	110		4.0		mg/L	1	10/08/2021 1430	10/13/2021 1428	MH
Iron	ND		0.30		mg/L	1	10/08/2021 1430	10/13/2021 1428	MH
Magnesium	19		3.0		mg/L	1	10/08/2021 1430	10/13/2021 1428	MH
Potassium	ND		5.0		mg/L	1	10/08/2021 1430	10/13/2021 1428	MH
Silica	61		0.20		mg/L	1	10/08/2021 1430	10/13/2021 1428	MH
Sodium	22		5.0		mg/L	1	10/08/2021 1430	10/13/2021 1428	MH
ICP/MS Total Metals-E200.8 (5.4)									
Aluminum	ND		0.040		mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
Antimony	0.00097		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
Arsenic	0.013		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
Barium	0.023		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
Beryllium	ND		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
Cadmium	ND		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
Chromium	0.00060		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
Cobalt	ND		0.000250		mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
Copper	0.0051		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
Lead	0.00067		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
Manganese	0.024		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
Molybdenum	0.15		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
Nickel	0.0063		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
Selenium	0.0064		0.0025		mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
Silver	ND	0.000021	0.00050	E8	mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
Thallium	0.0000260.000023		0.00050	E4	mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
Uranium	0.0043		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
Zinc	ND		0.040		mg/L	1	10/12/2021 1200	10/13/2021 1454	CR
CVAA Total Mercury-E245.1									
Mercury	ND	0.00036	0.0010	E8	mg/L	1	10/13/2021 1130	10/13/2021 1534	RAD

Client:Rosemont Copper Company

Project:Groundwater

Work Order:21J0218

Lab Sample ID:21J0218-01

Client Sample ID: GH2021-07

Collection Date/Time: 10/07/2021 1130

Matrix: Ground Water

Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Anions by Ion Chromatography-E300.0 (2.1)									
Chloride	42		10		mg/L	10	10/08/2021 1344	10/21/2021 1820	MH
Fluoride	1.2		0.50		mg/L	1	10/08/2021 1344	10/08/2021 1749	MH
Nitrogen, Nitrate (As N)	2.6		0.50	B7	mg/L	1	10/08/2021 1344	10/08/2021 1749	MH
Nitrogen, Nitrite (As N)	ND		0.10		mg/L	1	10/08/2021 1344	10/08/2021 1749	MH
Phosphorus, Dissolved Orthophosphate (As P)	ND		0.50	L5	mg/L	1	10/08/2021 1344	10/08/2021 1749	MH
Sulfate	220		50		mg/L	10	10/08/2021 1344	10/21/2021 1820	MH
Calculation-Ion Balance									
Anion	11.3				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Cation	7.97				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Cation/Anion, % Difference	17.2				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Alkalinity-SM2320B									
Alkalinity, Bicarbonate (As CaCO3)	180		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Alkalinity, Carbonate (As CaCO3)	ND		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Alkalinity, Hydroxide (As CaCO3)	ND		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Alkalinity, Phenolphthalein (As CaCO3)	ND		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Alkalinity, Total (As CaCO3)	180		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Specific Conductance-SM2510 B									
Conductivity	790		0.10		µmhos/cm	1	10/08/2021 1410	10/08/2021 1510	CWB
Total Dissolved Solids (Residue, Filterable)-SM2540 C									
Total Dissolved Solids (Residue, Filterable)	550		20		mg/L	1	10/11/2021 0802	10/13/2021 1238	AGC
Ammonia as N-SM4500-NH3 B,C									
Nitrogen, Ammonia (As N)	ND		0.50		mg/L	1	10/12/2021 0915	10/12/2021 1000	MH
Silica-SM4500-SiO2 C									
Silica	63		10		mg/L	5	10/12/2021 0900	10/12/2021 1000	AGC

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Lab Sample ID: 21J0218-01

Client Sample ID: GH2021-07
Collection Date/Time: 10/07/2021 1130
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Volatile Organic Compounds by GC/MS-SW8260B									
1,1,1,2-Tetrachloroethane	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,1,1-Trichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,1,2-Trichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,1,2-Trichlorotrifluoroethane	ND		5.0		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,1-Dichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,1-Dichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,1-Dichloropropene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,2,3-Trichlorobenzene	ND		2.0		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,2,3-Trichloropropane	ND		1.0		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,2,4-Trichlorobenzene	ND		2.0		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,2,4-Trimethylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,2-Dibromo-3-chloropropane	ND		10		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,2-Dibromoethane	ND		2.0		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,2-Dichlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,2-Dichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,2-Dichloropropane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,3,5-Trimethylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,3-Dichlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,3-Dichloropropane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
1,4-Dichlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
2,2-Dichloropropane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
2-Butanone (MEK)	ND		10		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
2-Chlorotoluene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
2-Hexanone	ND		2.5		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
4-Chlorotoluene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
4-Isopropyltoluene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
4-Methyl-2-pentanone	ND		2.5		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Acetone	ND		10		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Acrylonitrile	ND		10	V1	ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Benzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Bromobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Bromochloromethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Bromodichloromethane	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Bromoform	ND		2.0	V1	ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Bromomethane	ND		1.0	V1	ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Carbon disulfide	ND		2.0		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Carbon tetrachloride	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Chlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Chloroethane	ND		1.0	V1	ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Chloroform	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Lab Sample ID: 21J0218-01

Client Sample ID: GH2021-07
Collection Date/Time: 10/07/2021 1130
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Chloromethane	ND		1.0	V1	ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
cis-1,2-Dichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
cis-1,3-Dichloropropene	ND		2.0		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Dibromochloromethane	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Dibromomethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Dichlorodifluoromethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Ethylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Hexachlorobutadiene	ND		5.0		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Iodomethane	ND		10		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Isopropylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
m,p-Xylene	ND		1.0		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Methylene chloride	ND		1.0		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Naphthalene	ND		2.0		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
n-Butylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
n-Propylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
o-Xylene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
sec-Butylbenzene	ND		2.0		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Styrene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
tert-Butylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Tetrachloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Toluene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
trans-1,2-Dichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
trans-1,3-Dichloropropene	ND		2.0		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
trans-1,4-Dichloro-2-butene	ND		10		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Trichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Trichlorofluoromethane	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Vinyl acetate	ND		10		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP
Vinyl chloride	ND		0.50		ug/L	1	10/13/2021 0832	10/13/2021 2326	KP

Surr: 4-Bromofluorobenzene	106	70-130	%REC	1	10/13/2021 0832	10/13/2021 2326	KP
Surr: Dibromofluoromethane	117	70-130	%REC	1	10/13/2021 0832	10/13/2021 2326	KP
Surr: Toluene-d8	110	70-130	%REC	1	10/13/2021 0832	10/13/2021 2326	KP

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Lab Sample ID: 21J0218-02

Client Sample ID: GH2021-11
Collection Date/Time: 10/07/2021 1230
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Hardness-Calculation									
Hardness, Calcium/Magnesium (As CaCO3)	180				mg/L	1	10/08/2021 1430	10/13/2021 1431	MH
Nitrate + Nitrite Sum-Calculation									
Nitrate and Nitrite Sum	ND		0.10		mg/L	1	10/08/2021 1344	10/08/2021 1809	MH
ICP Dissolved Metals-E 200.7 (4.4)									
Boron	0.051	0.0032	0.10	E4	mg/L	1	10/12/2021 0955	10/18/2021 1330	MH
Calcium	54		4.0		mg/L	1	10/15/2021 1010	10/18/2021 1330	MH
Chromium	ND	0.0030	0.030	E8	mg/L	1	10/12/2021 0955	10/18/2021 1330	MH
Iron	ND		0.30		mg/L	1	10/12/2021 0955	10/18/2021 1330	MH
Magnesium	9.8		3.0		mg/L	1	10/15/2021 1010	10/18/2021 1330	MH
Potassium	ND		5.0		mg/L	1	10/12/2021 0955	10/18/2021 1330	MH
Silica	23		2.0		mg/L	1	10/12/2021 0955	10/18/2021 1330	MH
Sodium	35		5.0		mg/L	1	10/12/2021 0955	10/18/2021 1330	MH
ICP/MS Dissolved Metals-E 200.8 (5.4)									
Aluminum	ND		0.040		mg/L	1	10/12/2021 0955	10/12/2021 1708	CR
Antimony	ND		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1708	CR
Arsenic	0.00055		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1708	CR
Barium	0.10		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1708	CR
Beryllium	ND		0.00025		mg/L	1	10/12/2021 0955	10/12/2021 1708	CR
Cadmium	ND		0.00025		mg/L	1	10/12/2021 0955	10/12/2021 1708	CR
Cobalt	ND		0.00025		mg/L	1	10/12/2021 0955	10/12/2021 1708	CR
Copper	ND		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1708	CR
Lead	ND		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1708	CR
Manganese	0.25		0.00025		mg/L	1	10/12/2021 0955	10/14/2021 1657	CR
Molybdenum	0.21		0.00025		mg/L	1	10/12/2021 0955	10/12/2021 1708	CR
Nickel	0.00073		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1708	CR
Selenium	ND	0.00025	0.0025	E8	mg/L	1	10/12/2021 0955	10/12/2021 1708	CR
Silver	0.000042	0.000021	0.00050	E4	mg/L	1	10/12/2021 0955	10/12/2021 1708	CR
Thallium	ND	0.000023	0.00050	E8	mg/L	1	10/12/2021 0955	10/12/2021 1708	CR
Uranium	0.052		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1708	CR
Zinc	ND		0.040		mg/L	1	10/12/2021 0955	10/12/2021 1708	CR
CVAA Dissolved Mercury-E 245.1									
Mercury	0.000041	0.000041	0.0010	E4	mg/L	1	10/13/2021 1130	10/13/2021 1610	CWB

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Lab Sample ID: 21J0218-02

Client Sample ID: GH2021-11
Collection Date/Time: 10/07/2021 1230
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
pH-E150.1									
pH (pH Units)	7.5			H5	-	1	10/08/2021 1625	10/12/2021 1629	CWB
Temperature (°C)	22			H5	-	1	10/08/2021 1625	10/12/2021 1629	CWB
ICP Total Metals-E200.7 (4.4)									
Boron	0.061	0.0032	0.10	E4	mg/L	1	10/08/2021 1430	10/13/2021 1431	MH
Calcium	54		4.0		mg/L	1	10/08/2021 1430	10/13/2021 1431	MH
Iron	ND		0.30		mg/L	1	10/08/2021 1430	10/13/2021 1431	MH
Magnesium	9.6		3.0		mg/L	1	10/08/2021 1430	10/13/2021 1431	MH
Potassium	ND		5.0		mg/L	1	10/08/2021 1430	10/13/2021 1431	MH
Silica	23		0.20		mg/L	1	10/08/2021 1430	10/13/2021 1431	MH
Sodium	35		5.0		mg/L	1	10/08/2021 1430	10/13/2021 1431	MH
ICP/MS Total Metals-E200.8 (5.4)									
Aluminum	ND		0.040		mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
Antimony	ND		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
Arsenic	ND		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
Barium	0.11		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
Beryllium	ND		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
Cadmium	ND		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
Chromium	ND		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
Cobalt	ND		0.000250		mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
Copper	ND		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
Lead	ND		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
Manganese	0.26		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
Molybdenum	0.21		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
Nickel	ND		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
Selenium	ND	0.00025	0.0025	E8	mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
Silver	ND	0.000021	0.00050	E8	mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
Thallium	ND	0.000023	0.00050	E8	mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
Uranium	0.052		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
Zinc	ND		0.040		mg/L	1	10/12/2021 1200	10/13/2021 1457	CR
CVAA Total Mercury-E245.1									
Mercury	ND	0.00036	0.0010	E8	mg/L	1	10/13/2021 1130	10/13/2021 1537	RAD
Anions by Ion Chromatography-E300.0 (2.1)									

Client: Rosemont Copper Company

Project: Groundwater

Work Order: 21J0218

Lab Sample ID: 21J0218-02

Client Sample ID: GH2021-11

Collection Date/Time: 10/07/2021 1230

Matrix: Ground Water

Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Chloride	19		1.0		mg/L	1	10/08/2021 1344	10/08/2021 1809	MH
Fluoride	2.6		0.50		mg/L	1	10/08/2021 1344	10/08/2021 1809	MH
Nitrogen, Nitrate (As N)	ND		0.50	B3	mg/L	1	10/08/2021 1344	10/08/2021 1809	MH
Nitrogen, Nitrite (As N)	ND		0.10		mg/L	1	10/08/2021 1344	10/08/2021 1809	MH
Phosphorus, Dissolved	ND		0.50	L5,	mg/L	1	10/08/2021 1344	10/08/2021 1809	MH
Orthophosphate (As P)				M6					
Sulfate	38		5.0		mg/L	1	10/08/2021 1344	10/08/2021 1809	MH

Calculation-Ion Balance

Anion	6.30				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Cation	5.03				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Cation/Anion, % Difference	11.1				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB

Alkalinity-SM2320B

Alkalinity, Bicarbonate (As CaCO3)	210		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Alkalinity, Carbonate (As CaCO3)	ND		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Alkalinity, Hydroxide (As CaCO3)	ND		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Alkalinity, Phenolphthalein (As CaCO3)	ND		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Alkalinity, Total (As CaCO3)	210		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC

Specific Conductance-SM2510 B

Conductivity	520		0.10		µmhos/cm	1	10/08/2021 1410	10/08/2021 1510	CWB
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Total Dissolved Solids (Residue, Filterable)-SM2540 C

Total Dissolved Solids (Residue, Filterable)	300		20		mg/L	1	10/11/2021 0802	10/13/2021 1238	AGC
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Ammonia as N-SM4500-NH3 B,C

Nitrogen, Ammonia (As N)	ND		0.50		mg/L	1	10/12/2021 0915	10/12/2021 1000	MH
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Silica-SM4500-SiO2 C

Silica	24		10		mg/L	5	10/12/2021 0900	10/12/2021 1000	AGC
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Volatile Organic Compounds by GC/MS-SW8260B

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Lab Sample ID: 21J0218-02

Client Sample ID: GH2021-11
Collection Date/Time: 10/07/2021 1230
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
1,1,1,2-Tetrachloroethane	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,1,1-Trichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,1,2-Trichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,1,2-Trichlorotrifluoroethane	ND		5.0		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,1-Dichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,1-Dichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,1-Dichloropropene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,2,3-Trichlorobenzene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,2,3-Trichloropropane	ND		1.0		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,2,4-Trichlorobenzene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,2,4-Trimethylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,2-Dibromo-3-chloropropane	ND		10		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,2-Dibromoethane	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,2-Dichlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,2-Dichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,2-Dichloropropane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,3,5-Trimethylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,3-Dichlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,3-Dichloropropane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
1,4-Dichlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
2,2-Dichloropropane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
2-Butanone (MEK)	ND		10		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
2-Chlorotoluene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
2-Hexanone	ND		2.5		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
4-Chlorotoluene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
4-Isopropyltoluene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
4-Methyl-2-pentanone	ND		2.5		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Acetone	ND		10		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Acrylonitrile	ND		10	V1	ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Benzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Bromobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Bromochloromethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Bromodichloromethane	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Bromoform	ND		2.0	V1	ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Bromomethane	ND		1.0	V1	ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Carbon disulfide	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Carbon tetrachloride	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Chlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Chloroethane	ND		1.0	V1	ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Chloroform	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Chloromethane	ND		1.0	V1	ug/L	1	10/13/2021 0832	10/14/2021 0006	KP

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Lab Sample ID: 21J0218-02

Client Sample ID: GH2021-11
Collection Date/Time: 10/07/2021 1230
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
cis-1,2-Dichloroethene	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
cis-1,3-Dichloropropene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Dibromochloromethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Dibromomethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Dichlorodifluoromethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Ethylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Hexachlorobutadiene	ND		5.0		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Iodomethane	ND		10		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Isopropylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
m,p-Xylene	ND		1.0		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Methylene chloride	ND		1.0		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Naphthalene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
n-Butylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
n-Propylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
o-Xylene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
sec-Butylbenzene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Styrene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
tert-Butylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Tetrachloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Toluene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
trans-1,2-Dichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
trans-1,3-Dichloropropene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
trans-1,4-Dichloro-2-butene	ND		10		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Trichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Trichlorofluoromethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Vinyl acetate	ND		10		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Vinyl chloride	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0006	KP
Surr: 4-Bromofluorobenzene	107	70-130			%REC	1	10/13/2021 0832	10/14/2021 006	KP
Surr: Dibromofluoromethane	118	70-130			%REC	1	10/13/2021 0832	10/14/2021 006	KP
Surr: Toluene-d8	110	70-130			%REC	1	10/13/2021 0832	10/14/2021 006	KP

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Lab Sample ID: 21J0218-03

Client Sample ID: GH2021-22
Collection Date/Time: 10/07/2021 1615
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Hardness-Calculation									
Hardness, Calcium/Magnesium (As CaCO3)	180				mg/L	1	10/08/2021 1430	10/13/2021 1434	MH
Nitrate + Nitrite Sum-Calculation									
Nitrate and Nitrite Sum	ND		0.10		mg/L	1	10/08/2021 1344	10/08/2021 1828	MH
ICP Dissolved Metals-E 200.7 (4.4)									
Boron	0.087	0.0032	0.10	E4	mg/L	1	10/12/2021 0955	10/18/2021 1333	MH
Calcium	55		4.0		mg/L	1	10/15/2021 1010	10/18/2021 1333	MH
Chromium	ND	0.0030	0.030	E8	mg/L	1	10/12/2021 0955	10/18/2021 1333	MH
Iron	ND		0.30		mg/L	1	10/12/2021 0955	10/18/2021 1333	MH
Magnesium	9.6		3.0		mg/L	1	10/15/2021 1010	10/18/2021 1333	MH
Potassium	ND		5.0		mg/L	1	10/12/2021 0955	10/18/2021 1333	MH
Silica	16		2.0		mg/L	1	10/12/2021 0955	10/18/2021 1333	MH
Sodium	35		5.0		mg/L	1	10/12/2021 0955	10/18/2021 1333	MH
ICP/MS Dissolved Metals-E 200.8 (5.4)									
Aluminum	ND		0.040		mg/L	1	10/12/2021 0955	10/12/2021 1712	CR
Antimony	ND		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1712	CR
Arsenic	0.00080		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1712	CR
Barium	0.070		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1712	CR
Beryllium	ND		0.00025		mg/L	1	10/12/2021 0955	10/12/2021 1712	CR
Cadmium	ND		0.00025		mg/L	1	10/12/2021 0955	10/12/2021 1712	CR
Cobalt	ND		0.00025		mg/L	1	10/12/2021 0955	10/12/2021 1712	CR
Copper	ND		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1712	CR
Lead	ND		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1712	CR
Manganese	0.080		0.00025		mg/L	1	10/12/2021 0955	10/14/2021 1701	CR
Molybdenum	0.17		0.00025		mg/L	1	10/12/2021 0955	10/12/2021 1712	CR
Nickel	0.00054		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1712	CR
Selenium	ND	0.00025	0.0025	E8	mg/L	1	10/12/2021 0955	10/12/2021 1712	CR
Silver	ND	0.000021	0.00050	E8	mg/L	1	10/12/2021 0955	10/12/2021 1712	CR
Thallium	ND	0.000023	0.00050	E8	mg/L	1	10/12/2021 0955	10/12/2021 1712	CR
Uranium	0.0037		0.00050		mg/L	1	10/12/2021 0955	10/12/2021 1712	CR
Zinc	ND		0.040		mg/L	1	10/12/2021 0955	10/12/2021 1712	CR
CVAA Dissolved Mercury-E 245.1									
Mercury	0.000090	0.000041	0.0010	E4	mg/L	1	10/13/2021 1130	10/13/2021 1613	CWB

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Lab Sample ID: 21J0218-03

Client Sample ID: GH2021-22
Collection Date/Time: 10/07/2021 1615
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
pH-E150.1									
pH (pH Units)	8.1			H5	-	1	10/08/2021 1625	10/08/2021 1630	CWB
Temperature (°C)	22			H5	-	1	10/08/2021 1625	10/08/2021 1630	CWB
ICP Total Metals-E200.7 (4.4)									
Boron	0.096	0.0032	0.10	E4	mg/L	1	10/08/2021 1430	10/13/2021 1434	MH
Calcium	55		4.0		mg/L	1	10/08/2021 1430	10/13/2021 1434	MH
Iron	ND		0.30		mg/L	1	10/08/2021 1430	10/13/2021 1434	MH
Magnesium	9.4		3.0		mg/L	1	10/08/2021 1430	10/13/2021 1434	MH
Potassium	ND		5.0		mg/L	1	10/08/2021 1430	10/13/2021 1434	MH
Silica	16		0.20		mg/L	1	10/08/2021 1430	10/13/2021 1434	MH
Sodium	35		5.0		mg/L	1	10/08/2021 1430	10/13/2021 1434	MH
ICP/MS Total Metals-E200.8 (5.4)									
Aluminum	ND		0.040		mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
Antimony	ND		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
Arsenic	0.00073		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
Barium	0.074		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
Beryllium	ND		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
Cadmium	ND		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
Chromium	ND		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
Cobalt	ND		0.000250		mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
Copper	ND		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
Lead	ND		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
Manganese	0.082		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
Molybdenum	0.17		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
Nickel	ND		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
Selenium	ND	0.00025	0.0025	E8	mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
Silver	ND	0.000021	0.00050	E8	mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
Thallium	ND	0.000023	0.00050	E8	mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
Uranium	0.0029		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
Zinc	ND		0.040		mg/L	1	10/12/2021 1200	10/13/2021 1501	CR
CVAA Total Mercury-E245.1									
Mercury	ND	0.00036	0.0010	E8	mg/L	1	10/13/2021 1130	10/13/2021 1539	RAD
Anions by Ion Chromatography-E300.0 (2.1)									

Client: Rosemont Copper Company

Project: Groundwater

Work Order: 21J0218

Lab Sample ID: 21J0218-03

Client Sample ID: GH2021-22

Collection Date/Time: 10/07/2021 1615

Matrix: Ground Water

Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Chloride	12		1.0		mg/L	1	10/08/2021 1344	10/08/2021 1828	MH
Fluoride	1.2		0.50		mg/L	1	10/08/2021 1344	10/08/2021 1828	MH
Nitrogen, Nitrate (As N)	ND		0.50	B3	mg/L	1	10/08/2021 1344	10/08/2021 1828	MH
Nitrogen, Nitrite (As N)	ND		0.10		mg/L	1	10/08/2021 1344	10/08/2021 1828	MH
Phosphorus, Dissolved	ND		0.50	L5	mg/L	1	10/08/2021 1344	10/08/2021 1828	MH
Orthophosphate (As P)									
Sulfate	120		50		mg/L	10	10/08/2021 1344	10/21/2021 1839	MH

Calculation-Ion Balance

Anion	6.12				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Cation	5.06				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Cation/Anion, % Difference	9.49				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB

Alkalinity-SM2320B

Alkalinity, Bicarbonate (As CaCO3)	140		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Alkalinity, Carbonate (As CaCO3)	ND		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Alkalinity, Hydroxide (As CaCO3)	ND		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Alkalinity, Phenolphthalein (As CaCO3)	ND		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Alkalinity, Total (As CaCO3)	140		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC

Specific Conductance-SM2510 B

Conductivity	540		0.10		µmhos/cm	1	10/08/2021 1410	10/08/2021 1510	CWB
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Total Dissolved Solids (Residue, Filterable)-SM2540 C

Total Dissolved Solids (Residue, Filterable)	330		20		mg/L	1	10/11/2021 0802	10/13/2021 1238	AGC
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Ammonia as N-SM4500-NH3 B,C

Nitrogen, Ammonia (As N)	ND		0.50		mg/L	1	10/12/2021 0915	10/12/2021 1000	MH
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Silica-SM4500-SiO2 C

Silica	16		10		mg/L	5	10/12/2021 0900	10/12/2021 1000	AGC
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Volatile Organic Compounds by GC/MS-SW8260B

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Lab Sample ID: 21J0218-03

Client Sample ID: GH2021-22
Collection Date/Time: 10/07/2021 1615
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
1,1,1,2-Tetrachloroethane	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,1,1-Trichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,1,2-Trichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,1,2-Trichlorotrifluoroethane	ND		5.0		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,1-Dichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,1-Dichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,1-Dichloropropene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,2,3-Trichlorobenzene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,2,3-Trichloropropane	ND		1.0		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,2,4-Trichlorobenzene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,2,4-Trimethylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,2-Dibromo-3-chloropropane	ND		10		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,2-Dibromoethane	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,2-Dichlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,2-Dichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,2-Dichloropropane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,3,5-Trimethylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,3-Dichlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,3-Dichloropropane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
1,4-Dichlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
2,2-Dichloropropane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
2-Butanone (MEK)	ND		10		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
2-Chlorotoluene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
2-Hexanone	ND		2.5		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
4-Chlorotoluene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
4-Isopropyltoluene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
4-Methyl-2-pentanone	ND		2.5		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Acetone	45		10		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Acrylonitrile	ND		10	V1	ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Benzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Bromobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Bromochloromethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Bromodichloromethane	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Bromoform	ND		2.0	V1	ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Bromomethane	ND		1.0	V1	ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Carbon disulfide	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Carbon tetrachloride	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Chlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Chloroethane	ND		1.0	V1	ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Chloroform	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Chloromethane	ND		1.0	V1	ug/L	1	10/13/2021 0832	10/14/2021 0047	KP

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Lab Sample ID: 21J0218-03

Client Sample ID: GH2021-22
Collection Date/Time: 10/07/2021 1615
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
cis-1,2-Dichloroethene	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
cis-1,3-Dichloropropene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Dibromochloromethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Dibromomethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Dichlorodifluoromethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Ethylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Hexachlorobutadiene	ND		5.0		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Iodomethane	ND		10		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Isopropylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
m,p-Xylene	ND		1.0		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Methylene chloride	ND		1.0		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Naphthalene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
n-Butylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
n-Propylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
o-Xylene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
sec-Butylbenzene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Styrene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
tert-Butylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Tetrachloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Toluene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
trans-1,2-Dichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
trans-1,3-Dichloropropene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
trans-1,4-Dichloro-2-butene	ND		10		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Trichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Trichlorofluoromethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Vinyl acetate	ND		10		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Vinyl chloride	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0047	KP
Surr: 4-Bromofluorobenzene	106	70-130			%REC	1	10/13/2021 0832	10/14/2021 047	KP
Surr: Dibromofluoromethane	116	70-130			%REC	1	10/13/2021 0832	10/14/2021 047	KP
Surr: Toluene-d8	108	70-130			%REC	1	10/13/2021 0832	10/14/2021 047	KP

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Date Received: 10/08/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110099 - E200.7 (4.4)										
Blank (2110099-BLK1)				Prepared: 10/11/2021 Analyzed: 10/13/2021						
Boron	ND	0.10	mg/L							
Calcium	ND	4.0	mg/L							
Iron	ND	0.30	mg/L							
Magnesium	ND	3.0	mg/L							
Potassium	ND	5.0	mg/L							
Silica	ND	0.20	mg/L							
Sodium	ND	5.0	mg/L							
LCS (2110099-BS1)				Prepared: 10/11/2021 Analyzed: 10/13/2021						
Boron	0.96	0.10	mg/L	1.000		96	85-115			
Calcium	9.3	4.0	mg/L	10.00		93	85-115			
Iron	0.92	0.30	mg/L	1.000		92	85-115			
Magnesium	9.5	3.0	mg/L	10.00		95	85-115			
Potassium	9.5	5.0	mg/L	10.00		95	85-115			
Sodium	9.6	5.0	mg/L	10.00		96	85-115			
LCS (2110099-BS2)				Prepared: 10/11/2021 Analyzed: 10/13/2021						
Silica	2.0	0.20	mg/L	2.143		93	85-115			
LCS Dup (2110099-BSD1)				Prepared: 10/11/2021 Analyzed: 10/13/2021						
Boron	1.0	0.10	mg/L	1.000		100	85-115	4	20	
Calcium	9.6	4.0	mg/L	10.00		96	85-115	3	20	
Iron	0.96	0.30	mg/L	1.000		96	85-115	4	20	
Magnesium	9.8	3.0	mg/L	10.00		98	85-115	3	20	
Potassium	10	5.0	mg/L	10.00		100	85-115	4	20	
Sodium	10	5.0	mg/L	10.00		101	85-115	5	20	
LCS Dup (2110099-BSD2)				Prepared: 10/11/2021 Analyzed: 10/13/2021						
Silica	2.0	0.20	mg/L	2.143		96	85-115	3	20	
Matrix Spike (2110099-MS1)		Source: 21J0043-01		Prepared: 10/11/2021 Analyzed: 10/13/2021						
Boron	1.2	0.10	mg/L	1.000	0.061	109	70-130			
Calcium	76	4.0	mg/L	10.00	67	89	70-130			
Iron	1.0	0.30	mg/L	1.000	0.0049	103	70-130			
Magnesium	15	3.0	mg/L	10.00	5.1	98	70-130			
Potassium	14	5.0	mg/L	10.00	3.4	104	70-130			
Sodium	72	5.0	mg/L	10.00	62	103	70-130			
Matrix Spike (2110099-MS2)		Source: 21J0043-01		Prepared: 10/11/2021 Analyzed: 10/13/2021						
Silica	31	0.20	mg/L	2.143	29	94	70-130			
Batch 2110108 - E 200.7 (4.4)										

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Date Received: 10/08/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110108 - E 200.7 (4.4)										
Blank (2110108-BLK1)				Prepared: 10/11/2021 Analyzed: 10/18/2021						
Boron	ND	0.10	mg/L							
Calcium	ND	4.0	mg/L							
Chromium	ND	0.030	mg/L							
Iron	ND	0.30	mg/L							
Magnesium	ND	3.0	mg/L							
Potassium	ND	5.0	mg/L							
Silica	ND	2.0	mg/L							
Sodium	ND	5.0	mg/L							
LCS (2110108-BS1)				Prepared: 10/11/2021 Analyzed: 10/18/2021						
Boron	1.0	0.10	mg/L	1.000		102	85-115			
Calcium	9.5	4.0	mg/L	10.00		95	85-115			
Chromium	0.20	0.030	mg/L	0.2000		99	85-115			
Iron	0.96	0.30	mg/L	1.000		96	85-115			
Magnesium	9.8	3.0	mg/L	10.00		98	85-115			
Potassium	10	5.0	mg/L	10.00		101	85-115			
Sodium	10	5.0	mg/L	10.00		101	85-115			
LCS (2110108-BS2)				Prepared: 10/11/2021 Analyzed: 10/18/2021						
Silica	2.2	2.0	mg/L	2.143		102	90-110			
LCS Dup (2110108-BSD1)				Prepared: 10/11/2021 Analyzed: 10/18/2021						
Boron	1.0	0.10	mg/L	1.000		102	85-115	0.3	20	
Calcium	9.5	4.0	mg/L	10.00		95	85-115	0.2	20	
Chromium	0.20	0.030	mg/L	0.2000		100	85-115	0.09	20	
Iron	0.96	0.30	mg/L	1.000		96	85-115	0.2	20	
Magnesium	9.8	3.0	mg/L	10.00		98	85-115	0.6	20	
Potassium	10	5.0	mg/L	10.00		100	85-115	0.9	20	
Sodium	10	5.0	mg/L	10.00		100	85-115	0.7	20	
LCS Dup (2110108-BSD2)				Prepared: 10/11/2021 Analyzed: 10/18/2021						
Silica	2.2	2.0	mg/L	2.143		101	90-110	1	20	
Matrix Spike (2110108-MS1)		Source: 21J0174-33		Prepared: 10/11/2021 Analyzed: 10/18/2021						
Boron	1.4		mg/L	1.000	0.033	138	70-130			M6
Calcium	48		mg/L	10.00	47	2	70-130			M3
Chromium	0.32		mg/L	0.2000	0.048	134	70-130			M6
Iron	10		mg/L	1.000	11	NR	70-130			M3
Magnesium	290		mg/L	10.00	330	NR	70-130			M3
Potassium	12		mg/L	10.00	3.4	85	70-130			
Sodium	13		mg/L	10.00	5.1	76	70-130			

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Date Received: 10/08/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110108 - E 200.7 (4.4)										
Matrix Spike (2110108-MS2)		Source: 21J0332-01		Prepared: 10/11/2021 Analyzed: 10/18/2021						
Boron	1.1	0.10	mg/L	1.000	0.020	112	70-130			
Calcium	71	4.0	mg/L	10.00	61	100	70-130			
Chromium	0.21	0.030	mg/L	0.2000	ND	105	70-130			
Iron	3.8	0.30	mg/L	1.000	2.9	99	70-130			
Magnesium	21	3.0	mg/L	10.00	11	102	70-130			
Potassium	12	5.0	mg/L	10.00	2.0	104	70-130			
Sodium	19	5.0	mg/L	10.00	9.2	101	70-130			
Matrix Spike (2110108-MS3)		Source: 21J0174-33		Prepared: 10/11/2021 Analyzed: 10/18/2021						
Silica	18		mg/L	2.143	18	NR	85-115			M3
Matrix Spike (2110108-MS4)		Source: 21J0332-01		Prepared: 10/11/2021 Analyzed: 10/18/2021						
Silica	11	2.0	mg/L	2.143	9.7	84	85-115			
Batch 2110117 - E 200.8 (5.4)										
Blank (2110117-BLK1)				Prepared & Analyzed: 10/12/2021						
Aluminum	ND	0.040	mg/L							
Antimony	ND	0.00050	mg/L							
Arsenic	ND	0.00050	mg/L							
Barium	ND	0.00050	mg/L							
Beryllium	ND	0.00025	mg/L							
Cadmium	ND	0.00025	mg/L							
Cobalt	ND	0.00025	mg/L							
Copper	ND	0.00050	mg/L							
Lead	ND	0.00050	mg/L							
Manganese	ND	0.00025	mg/L							
Molybdenum	ND	0.00025	mg/L							
Nickel	ND	0.00050	mg/L							
Selenium	ND	0.0025	mg/L							
Silver	ND	0.00050	mg/L							
Thallium	ND	0.00050	mg/L							
Uranium	ND	0.00050	mg/L							
Zinc	ND	0.040	mg/L							

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Date Received: 10/08/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110117 - E 200.8 (5.4)										
LCS (2110117-BS1)				Prepared & Analyzed: 10/12/2021						
Aluminum	0.10	0.040	mg/L	0.1000		101	85-115			
Antimony	0.051	0.00050	mg/L	0.05000		102	85-115			
Arsenic	0.051	0.00050	mg/L	0.05000		102	85-115			
Barium	0.050	0.00050	mg/L	0.05000		101	85-115			
Beryllium	0.049	0.00025	mg/L	0.05000		98	85-115			
Cadmium	0.052	0.00025	mg/L	0.05000		103	85-115			
Cobalt	0.050	0.00025	mg/L	0.05000		101	85-115			
Copper	0.049	0.00050	mg/L	0.05000		98	85-115			
Lead	0.051	0.00050	mg/L	0.05000		102	85-115			
Manganese	0.047	0.00025	mg/L	0.05000		94	85-115			
Molybdenum	0.051	0.00025	mg/L	0.05000		102	85-115			
Nickel	0.049	0.00050	mg/L	0.05000		99	85-115			
Selenium	0.049	0.0025	mg/L	0.05000		98	85-115			
Silver	0.047	0.00050	mg/L	0.05000		94	85-115			
Thallium	0.052	0.00050	mg/L	0.05000		104	85-115			
Uranium	0.053	0.00050	mg/L	0.05000		106	85-115			
Zinc	0.11	0.040	mg/L	0.1000		106	85-115			
LCS Dup (2110117-BSD1)				Prepared & Analyzed: 10/12/2021						
Aluminum	0.10	0.040	mg/L	0.1000		103	85-115	2	20	
Antimony	0.050	0.00050	mg/L	0.05000		101	85-115	1	20	
Arsenic	0.050	0.00050	mg/L	0.05000		99	85-115	3	20	
Barium	0.050	0.00050	mg/L	0.05000		101	85-115	0.07	20	
Beryllium	0.050	0.00025	mg/L	0.05000		100	85-115	2	20	
Cadmium	0.051	0.00025	mg/L	0.05000		103	85-115	0.5	20	
Cobalt	0.051	0.00025	mg/L	0.05000		101	85-115	0.3	20	
Copper	0.049	0.00050	mg/L	0.05000		97	85-115	0.01	20	
Lead	0.051	0.00050	mg/L	0.05000		102	85-115	0.1	20	
Manganese	0.046	0.00025	mg/L	0.05000		92	85-115	2	20	
Molybdenum	0.051	0.00025	mg/L	0.05000		102	85-115	0.1	20	
Nickel	0.049	0.00050	mg/L	0.05000		99	85-115	0.04	20	
Selenium	0.051	0.0025	mg/L	0.05000		101	85-115	3	20	
Silver	0.048	0.00050	mg/L	0.05000		96	85-115	1	20	
Thallium	0.052	0.00050	mg/L	0.05000		104	85-115	0.05	20	
Uranium	0.052	0.00050	mg/L	0.05000		104	85-115	1	20	
Zinc	0.11	0.040	mg/L	0.1000		105	85-115	0.7	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110117 - E 200.8 (5.4)										
Matrix Spike (2110117-MS1)		Source: 21J0218-01			Prepared & Analyzed: 10/12/2021					
Aluminum	0.11	0.040	mg/L	0.1000	ND	107	70-130			
Antimony	0.054	0.00050	mg/L	0.05000	0.0010	107	70-130			
Arsenic	0.065	0.00050	mg/L	0.05000	0.012	106	70-130			
Barium	0.063	0.00050	mg/L	0.05000	0.011	103	70-130			
Beryllium	0.052	0.00025	mg/L	0.05000	ND	104	70-130			
Cadmium	0.051	0.00025	mg/L	0.05000	ND	102	70-130			
Cobalt	0.048	0.00025	mg/L	0.05000	0.000047	95	70-130			
Copper	0.047	0.00050	mg/L	0.05000	0.00040	93	70-130			
Lead	0.052	0.00050	mg/L	0.05000	ND	104	70-130			
Manganese	0.050	0.00025	mg/L	0.05000	0.0044	91	70-130			
Molybdenum	0.20	0.00025	mg/L	0.05000	0.15	103	70-130			
Nickel	0.047	0.00050	mg/L	0.05000	0.00054	92	70-130			
Selenium	0.061	0.0025	mg/L	0.05000	0.0059	110	70-130			
Silver	0.043	0.00050	mg/L	0.05000	ND	87	70-130			
Thallium	0.053	0.00050	mg/L	0.05000	0.000025	106	70-130			
Uranium	0.062	0.00050	mg/L	0.05000	0.0042	116	70-130			
Zinc	0.11	0.040	mg/L	0.1000	0.0063	100	70-130			

Batch 2110133 - E200.8 (5.4)

Blank (2110133-BLK1)				Prepared: 10/12/2021 Analyzed: 10/13/2021						
Aluminum	ND	0.040	mg/L							
Antimony	ND	0.00050	mg/L							
Arsenic	ND	0.00050	mg/L							
Barium	ND	0.00050	mg/L							
Beryllium	ND	0.00025	mg/L							
Cadmium	ND	0.00025	mg/L							
Chromium	ND	0.00050	mg/L							
Cobalt	ND	0.000250	mg/L							
Copper	ND	0.00050	mg/L							
Lead	ND	0.00050	mg/L							
Manganese	ND	0.00025	mg/L							
Molybdenum	ND	0.00025	mg/L							
Nickel	ND	0.00050	mg/L							
Selenium	ND	0.0025	mg/L							
Silver	ND	0.00050	mg/L							
Thallium	ND	0.00050	mg/L							
Uranium	ND	0.00050	mg/L							
Zinc	ND	0.040	mg/L							

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110133 - E200.8 (5.4)										
LCS (2110133-BS1) Prepared: 10/12/2021 Analyzed: 10/13/2021										
Aluminum	0.10	0.040	mg/L	0.1000		103	85-115			
Antimony	0.047	0.00050	mg/L	0.05000		94	85-115			
Arsenic	0.048	0.00050	mg/L	0.05000		97	85-115			
Barium	0.048	0.00050	mg/L	0.05000		95	85-115			
Beryllium	0.048	0.00025	mg/L	0.05000		96	85-115			
Cadmium	0.047	0.00025	mg/L	0.05000		94	85-115			
Chromium	0.047	0.00050	mg/L	0.05000		94	85-115			
Cobalt	0.0478	0.000250	mg/L	0.05000		96	85-115			
Copper	0.048	0.00050	mg/L	0.05000		95	85-115			
Lead	0.049	0.00050	mg/L	0.05000		99	85-115			
Manganese	0.048	0.00025	mg/L	0.05000		96	85-115			
Molybdenum	0.047	0.00025	mg/L	0.05000		94	85-115			
Nickel	0.048	0.00050	mg/L	0.05000		95	85-115			
Selenium	0.049	0.0025	mg/L	0.05000		97	85-115			
Silver	0.047	0.00050	mg/L	0.05000		94	85-115			
Thallium	0.047	0.00050	mg/L	0.05000		95	85-115			
Uranium	0.046	0.00050	mg/L	0.05000		93	85-115			
Zinc	0.098	0.040	mg/L	0.1000		98	85-115			
LCS Dup (2110133-BSD1) Prepared: 10/12/2021 Analyzed: 10/13/2021										
Aluminum	0.11	0.040	mg/L	0.1000		105	85-115	2	20	
Antimony	0.047	0.00050	mg/L	0.05000		95	85-115	0.3	20	
Arsenic	0.049	0.00050	mg/L	0.05000		97	85-115	0.9	20	
Barium	0.048	0.00050	mg/L	0.05000		95	85-115	0.1	20	
Beryllium	0.048	0.00025	mg/L	0.05000		96	85-115	0.03	20	
Cadmium	0.048	0.00025	mg/L	0.05000		95	85-115	0.7	20	
Chromium	0.047	0.00050	mg/L	0.05000		95	85-115	0.9	20	
Cobalt	0.0474	0.000250	mg/L	0.05000		95	85-115	0.7	20	
Copper	0.051	0.00050	mg/L	0.05000		102	85-115	6	20	
Lead	0.049	0.00050	mg/L	0.05000		98	85-115	1	20	
Manganese	0.048	0.00025	mg/L	0.05000		97	85-115	1	20	
Molybdenum	0.047	0.00025	mg/L	0.05000		94	85-115	0.3	20	
Nickel	0.048	0.00050	mg/L	0.05000		96	85-115	0.2	20	
Selenium	0.047	0.0025	mg/L	0.05000		95	85-115	3	20	
Silver	0.047	0.00050	mg/L	0.05000		95	85-115	0.5	20	
Thallium	0.048	0.00050	mg/L	0.05000		95	85-115	0.6	20	
Uranium	0.046	0.00050	mg/L	0.05000		93	85-115	0.2	20	
Zinc	0.098	0.040	mg/L	0.1000		98	85-115	0.1	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110133 - E200.8 (5.4)										
Matrix Spike (2110133-MS1)		Source: 21J0219-01		Prepared: 10/12/2021 Analyzed: 10/13/2021						
Aluminum	0.32	0.040	mg/L	0.1000	0.32	2	70-130			
Antimony	0.047	0.00050	mg/L	0.05000	0.000093	93	70-130			
Arsenic	0.058	0.00050	mg/L	0.05000	0.0084	99	70-130			
Barium	0.089	0.00050	mg/L	0.05000	0.061	55	70-130			
Beryllium	0.049	0.00025	mg/L	0.05000	0.000026	98	70-130			
Cadmium	0.046	0.00025	mg/L	0.05000	ND	93	70-130			
Chromium	0.047	0.00050	mg/L	0.05000	0.00073	93	70-130			
Cobalt	0.0456	0.000250	mg/L	0.05000	0.0000667	91	70-130			
Copper	0.13	0.00050	mg/L	0.05000	0.14	NR	70-130			M2
Lead	0.049	0.00050	mg/L	0.05000	0.00047	97	70-130			
Manganese	0.075	0.00025	mg/L	0.05000	0.0018	146	70-130			M1
Molybdenum	0.051	0.00025	mg/L	0.05000	0.00030	101	70-130			
Nickel	0.046	0.00050	mg/L	0.05000	0.00019	91	70-130			
Selenium	0.045	0.0025	mg/L	0.05000	ND	89	70-130			
Silver	0.041	0.00050	mg/L	0.05000	ND	81	70-130			
Thallium	0.047	0.00050	mg/L	0.05000	0.00036	94	70-130			
Uranium	0.051	0.00050	mg/L	0.05000	0.00020	101	70-130			
Zinc	0.39	0.040	mg/L	0.1000	0.011	376	70-130			M1
Matrix Spike (2110133-MS2)		Source: 21J0250-01		Prepared: 10/12/2021 Analyzed: 10/13/2021						
Aluminum	0.23	0.040	mg/L	0.1000	ND	234	70-130			M1
Antimony	0.047	0.00050	mg/L	0.05000	0.00010	95	70-130			
Arsenic	0.059	0.00050	mg/L	0.05000	0.011	96	70-130			
Barium	0.079	0.00050	mg/L	0.05000	0.013	133	70-130			M1
Beryllium	0.049	0.00025	mg/L	0.05000	ND	99	70-130			
Cadmium	0.046	0.00025	mg/L	0.05000	0.0016	89	70-130			
Chromium	0.047	0.00050	mg/L	0.05000	0.0011	92	70-130			
Cobalt	0.0458	0.000250	mg/L	0.05000	0.000177	91	70-130			
Copper	0.096	0.00050	mg/L	0.05000	0.0049	182	70-130			M1
Lead	0.050	0.00050	mg/L	0.05000	0.00063	98	70-130			
Manganese	0.088	0.00025	mg/L	0.05000	0.062	51	70-130			M2
Molybdenum	0.052	0.00025	mg/L	0.05000	0.0057	92	70-130			
Nickel	0.045	0.00050	mg/L	0.05000	0.00035	89	70-130			
Selenium	0.049	0.0025	mg/L	0.05000	0.00079	96	70-130			
Silver	0.041	0.00050	mg/L	0.05000	ND	82	70-130			
Thallium	0.048	0.00050	mg/L	0.05000	0.00028	96	70-130			
Uranium	0.055	0.00050	mg/L	0.05000	0.0033	104	70-130			
Zinc	0.23	0.040	mg/L	0.1000	0.20	26	70-130			M2
Batch 2110134 - E245.1										
Blank (2110134-BLK1)		Prepared & Analyzed: 10/13/2021								
Mercury	ND	0.0010	mg/L							
LCS (2110134-BS1)		Prepared & Analyzed: 10/13/2021								
Mercury	0.0051	0.0010	mg/L	0.005000		101	85-115			
LCS Dup (2110134-BSD1)		Prepared & Analyzed: 10/13/2021								
Mercury	0.0050	0.0010	mg/L	0.005000		99	85-115	2	20	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110134 - E245.1										
Matrix Spike (2110134-MS1)		Source: 21I0749-01		Prepared & Analyzed: 10/13/2021						
Mercury	0.0049	0.0010	mg/L	0.005000	ND	98	70-130			
Matrix Spike Dup (2110134-MSD1)		Source: 21I0749-01		Prepared & Analyzed: 10/13/2021						
Mercury	0.0050	0.0010	mg/L	0.005000	ND	100	70-130	2	20	
Batch 2110135 - E 245.1										
Blank (2110135-BLK1)		Prepared & Analyzed: 10/13/2021								
Mercury	0.000049	0.0010	mg/L							
LCS (2110135-BS1)		Prepared & Analyzed: 10/13/2021								
Mercury	0.0051	0.0010	mg/L	0.005000		101	85-115			
LCS Dup (2110135-BSD1)		Prepared & Analyzed: 10/13/2021								
Mercury	0.0051	0.0010	mg/L	0.005000		103	85-115	1	20	
Matrix Spike (2110135-MS1)		Source: 21J0073-01		Prepared & Analyzed: 10/13/2021						
Mercury	0.0051	0.0010	mg/L	0.005000	0.000047	101	70-130			
Matrix Spike Dup (2110135-MSD1)		Source: 21J0073-01		Prepared & Analyzed: 10/13/2021						
Mercury	0.0051	0.0010	mg/L	0.005000	0.000047	102	70-130	0.2	20	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110094 - SM2510 B										
LCS (2110094-BS1)				Prepared & Analyzed: 10/08/2021						
Conductivity	150	0.10	µmhos/cm	141.2		106	0-200			
LCS Dup (2110094-BSD1)				Prepared & Analyzed: 10/08/2021						
Conductivity	150	0.10	µmhos/cm	141.2		106	0-200	0	200	
Duplicate (2110094-DUP1)				Source: 21J0117-01		Prepared & Analyzed: 10/08/2021				
Conductivity	900	0.10	µmhos/cm		890			0.1	10	
Duplicate (2110094-DUP2)				Source: 21J0218-03		Prepared & Analyzed: 10/08/2021				
Conductivity	540	0.10	µmhos/cm		540			0.2	10	
Batch 2110104 - SM2540 C										
Duplicate (2110104-DUP1)				Source: 21J0176-01		Prepared: 10/11/2021 Analyzed: 10/13/2021				
Total Dissolved Solids (Residue, Filterable)	1100	20	mg/L		1100			0.4	5	
Batch 2110118 - SM2320B										
Blank (2110118-BLK1)				Prepared & Analyzed: 10/12/2021						
Alkalinity, Bicarbonate (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Carbonate (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Hydroxide (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Phenolphthalein (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Total (As CaCO3)	ND	2.0	mg/L							
LCS (2110118-BS1)				Prepared & Analyzed: 10/12/2021						
Alkalinity, Total (As CaCO3)	250	2.0	mg/L	250.0		101	90-110			
LCS Dup (2110118-BSD1)				Prepared & Analyzed: 10/12/2021						
Alkalinity, Total (As CaCO3)	250	2.0	mg/L	250.0		100	90-110	0.8	10	
Matrix Spike (2110118-MS1)				Source: 21J0218-03		Prepared & Analyzed: 10/12/2021				
Alkalinity, Total (As CaCO3)	380	2.0	mg/L	250.0	140	98	70-130			
Matrix Spike Dup (2110118-MSD1)				Source: 21J0218-03		Prepared & Analyzed: 10/12/2021				
Alkalinity, Total (As CaCO3)	390	2.0	mg/L	250.0	140	100	70-130	1	10	
Batch 2110119 - SM4500-SiO2 C										
Blank (2110119-BLK1)				Prepared & Analyzed: 10/12/2021						
Silica	ND	2.0	mg/L							
LCS (2110119-BS1)				Prepared & Analyzed: 10/12/2021						
Silica	8.3	2.0	mg/L	8.000		104	90-110			
LCS Dup (2110119-BSD1)				Prepared & Analyzed: 10/12/2021						
Silica	8.3	2.0	mg/L	8.000		104	90-110	0.4	20	
Matrix Spike (2110119-MS1)				Source: 21J0218-03		Prepared & Analyzed: 10/12/2021				
Silica	61	10	mg/L	40.00	16	114	85-115			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110119 - SM4500-SiO2 C										
Matrix Spike Dup (2110119-MSD1)		Source: 21J0218-03		Prepared & Analyzed: 10/12/2021						
Silica	61	10	mg/L	40.00	16	114	85-115	0.1	20	
Batch 2110122 - E150.1										
Duplicate (2110122-DUP1)		Source: 21J0218-03		Prepared & Analyzed: 10/08/2021						
pH (pH Units)	8.1		-		8.1			0	200	H5
Temperature (°C)	22		-		22			0	200	H5
Batch 2110146 - SM4500-NH3 B,C										
Blank (2110146-BLK1)		Prepared & Analyzed: 10/12/2021								
Nitrogen, Ammonia (As N)	ND	0.50	mg/L							
LCS (2110146-BS1)		Prepared & Analyzed: 10/12/2021								
Nitrogen, Ammonia (As N)	4.9	0.50	mg/L	5.000		99	90-110			
LCS Dup (2110146-BSD1)		Prepared & Analyzed: 10/12/2021								
Nitrogen, Ammonia (As N)	5.1	0.50	mg/L	5.000		102	90-110	3	10	
Matrix Spike (2110146-MS1)		Source: 2110603-01		Prepared & Analyzed: 10/12/2021						
Nitrogen, Ammonia (As N)	6.0	0.50	mg/L	5.000	1.2	96	75-120			
Matrix Spike (2110146-MS2)		Source: 21J0073-01		Prepared & Analyzed: 10/12/2021						
Nitrogen, Ammonia (As N)	4.9	0.50	mg/L	5.000	ND	98	75-120			
Matrix Spike Dup (2110146-MSD1)		Source: 2110603-01		Prepared & Analyzed: 10/12/2021						
Nitrogen, Ammonia (As N)	6.1	0.50	mg/L	5.000	1.2	99	75-120	3	20	
Matrix Spike Dup (2110146-MSD2)		Source: 21J0073-01		Prepared & Analyzed: 10/12/2021						
Nitrogen, Ammonia (As N)	4.9	0.50	mg/L	5.000	ND	99	75-120	0.9	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110190 - SW8260B										

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110190 - SW8260B										
Blank (2110190-BLK1)				Prepared & Analyzed: 10/13/2021						
1,1,1,2-Tetrachloroethane	ND	0.50	ug/L							
1,1,1-Trichloroethane	ND	0.50	ug/L							
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L							
1,1,2-Trichloroethane	ND	0.50	ug/L							
1,1,2-Trichlorotrifluoroethane	ND	5.0	ug/L							
1,1-Dichloroethane	ND	0.50	ug/L							
1,1-Dichloroethene	ND	0.50	ug/L							
1,1-Dichloropropene	ND	0.50	ug/L							
1,2,3-Trichlorobenzene	ND	2.0	ug/L							
1,2,3-Trichloropropane	ND	1.0	ug/L							
1,2,4-Trichlorobenzene	ND	2.0	ug/L							
1,2,4-Trimethylbenzene	ND	0.50	ug/L							
1,2-Dibromo-3-chloropropane	ND	10	ug/L							
1,2-Dibromoethane	ND	2.0	ug/L							
1,2-Dichlorobenzene	ND	0.50	ug/L							
1,2-Dichloroethane	ND	0.50	ug/L							
1,2-Dichloropropane	ND	0.50	ug/L							
1,3,5-Trimethylbenzene	ND	0.50	ug/L							
1,3-Dichlorobenzene	ND	0.50	ug/L							
1,3-Dichloropropane	ND	0.50	ug/L							
1,4-Dichlorobenzene	ND	0.50	ug/L							
2,2-Dichloropropane	ND	0.50	ug/L							
2-Butanone (MEK)	ND	10	ug/L							
2-Chlorotoluene	ND	0.50	ug/L							
2-Hexanone	ND	2.5	ug/L							
4-Chlorotoluene	ND	0.50	ug/L							
4-Isopropyltoluene	ND	0.50	ug/L							
4-Methyl-2-pentanone	ND	2.5	ug/L							
Acetone	ND	10	ug/L							
Acrylonitrile	ND	10	ug/L							
Benzene	ND	0.50	ug/L							
Bromobenzene	ND	0.50	ug/L							
Bromochloromethane	ND	0.50	ug/L							
Bromodichloromethane	ND	0.50	ug/L							
Bromoform	ND	2.0	ug/L							
Bromomethane	ND	1.0	ug/L							
Carbon disulfide	ND	2.0	ug/L							
Carbon tetrachloride	ND	0.50	ug/L							
Chlorobenzene	ND	0.50	ug/L							
Chloroethane	ND	1.0	ug/L							
Chloroform	ND	0.50	ug/L							
Chloromethane	ND	1.0	ug/L							
cis-1,2-Dichloroethene	ND	0.50	ug/L							
cis-1,3-Dichloropropene	ND	2.0	ug/L							
Dibromochloromethane	ND	0.50	ug/L							
Dibromomethane	ND	0.50	ug/L							
Dichlorodifluoromethane	ND	0.50	ug/L							
Ethylbenzene	ND	0.50	ug/L							

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Date Received: 10/08/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110190 - SW8260B										
Blank (2110190-BLK1)				Prepared & Analyzed: 10/13/2021						
Hexachlorobutadiene	ND	5.0	ug/L							
Iodomethane	ND	10	ug/L							
Isopropylbenzene	ND	0.50	ug/L							
m,p-Xylene	ND	1.0	ug/L							
Methylene chloride	ND	1.0	ug/L							
Naphthalene	ND	2.0	ug/L							
n-Butylbenzene	ND	0.50	ug/L							
n-Propylbenzene	ND	0.50	ug/L							
o-Xylene	ND	0.50	ug/L							
sec-Butylbenzene	ND	2.0	ug/L							
Styrene	ND	0.50	ug/L							
tert-Butylbenzene	ND	0.50	ug/L							
Tetrachloroethene	ND	0.50	ug/L							
Toluene	ND	0.50	ug/L							
trans-1,2-Dichloroethene	ND	0.50	ug/L							
trans-1,3-Dichloropropene	ND	2.0	ug/L							
trans-1,4-Dichloro-2-butene	ND	10	ug/L							
Trichloroethene	ND	0.50	ug/L							
Trichlorofluoromethane	ND	0.50	ug/L							
Vinyl acetate	ND	10	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	26.7		ug/L	25.00		107	70-130			
Surrogate: Dibromofluoromethane	29.2		ug/L	25.00		117	70-130			
Surrogate: Toluene-d8	27.0		ug/L	25.00		108	70-130			
LCS (2110190-BS1)				Prepared & Analyzed: 10/13/2021						
1,1-Dichloroethene	23		ug/L	25.00		90	70-130			
Benzene	25		ug/L	25.00		101	70-130			
Chlorobenzene	26		ug/L	25.00		103	70-130			
Toluene	25		ug/L	25.00		99	70-130			
Trichloroethene	25		ug/L	25.00		99	70-130			
Surrogate: 4-Bromofluorobenzene	25.6		ug/L	25.00		102	70-130			
Surrogate: Dibromofluoromethane	28.1		ug/L	25.00		112	70-130			
Surrogate: Toluene-d8	25.9		ug/L	25.00		103	70-130			
LCS Dup (2110190-BSD1)				Prepared & Analyzed: 10/13/2021						
1,1-Dichloroethene	23		ug/L	25.00		92	70-130	2	30	
Benzene	25		ug/L	25.00		102	70-130	1	30	
Chlorobenzene	26		ug/L	25.00		105	70-130	2	30	
Toluene	25		ug/L	25.00		102	70-130	3	30	
Trichloroethene	25		ug/L	25.00		101	70-130	2	30	
Surrogate: 4-Bromofluorobenzene	27.1		ug/L	25.00		108	70-130			
Surrogate: Dibromofluoromethane	29.4		ug/L	25.00		118	70-130			
Surrogate: Toluene-d8	27.1		ug/L	25.00		108	70-130			

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Date Received: 10/08/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110190 - SW8260B										
Matrix Spike (2110190-MS1)		Source: 21J0218-01		Prepared: 10/13/2021 Analyzed: 10/14/2021						
1,1-Dichloroethene	24		ug/L	25.00	0.010	95	70-130			
Benzene	26		ug/L	25.00	0.0	106	70-130			
Chlorobenzene	27		ug/L	25.00	0.0	107	70-130			
Toluene	26		ug/L	25.00	0.0	104	70-130			
Trichloroethene	25		ug/L	25.00	0.0	102	70-130			
Surrogate: 4-Bromofluorobenzene	26.1		ug/L	25.00		105	70-130			
Surrogate: Dibromofluoromethane	28.5		ug/L	25.00		114	70-130			
Surrogate: Toluene-d8	27.2		ug/L	25.00		109	70-130			
Matrix Spike Dup (2110190-MSD1)		Source: 21J0218-01		Prepared: 10/13/2021 Analyzed: 10/14/2021						
1,1-Dichloroethene	22		ug/L	25.00	0.010	90	70-130	6	30	
Benzene	25		ug/L	25.00	0.0	101	70-130	5	30	
Chlorobenzene	25		ug/L	25.00	0.0	102	70-130	5	30	
Toluene	25		ug/L	25.00	0.0	100	70-130	4	30	
Trichloroethene	24		ug/L	25.00	0.0	96	70-130	5	30	
Surrogate: 4-Bromofluorobenzene	26.4		ug/L	25.00		105	70-130			
Surrogate: Dibromofluoromethane	28.1		ug/L	25.00		113	70-130			
Surrogate: Toluene-d8	27.1		ug/L	25.00		108	70-130			

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0218
Date Received: 10/08/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110080 - E300.0 (2.1)										
Blank (2110080-BLK1)				Prepared & Analyzed: 10/08/2021						
Chloride	ND	1.0	mg/L							
Fluoride	ND	0.50	mg/L							
Nitrogen, Nitrate (As N)	ND	0.50	mg/L							
Nitrogen, Nitrite (As N)	ND	0.10	mg/L							
Phosphorus, Dissolved Orthophosphate (As P)	ND	0.50	mg/L							
Sulfate	ND	5.0	mg/L							
LCS (2110080-BS1)				Prepared & Analyzed: 10/08/2021						
Chloride	12	1.0	mg/L	12.50		98	90-110			
Fluoride	2.1	0.50	mg/L	2.000		106	90-110			
Nitrogen, Nitrate (As N)	5.1	0.50	mg/L	5.000		102	90-110			
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500		96	90-110			
Phosphorus, Dissolved Orthophosphate (As P)	2.9	0.50	mg/L	2.500		115	90-110			L5
Sulfate	13	5.0	mg/L	12.50		102	90-110			
LCS Dup (2110080-BSD1)				Prepared & Analyzed: 10/08/2021						
Chloride	12	1.0	mg/L	12.50		99	90-110	0.3	10	
Fluoride	2.1	0.50	mg/L	2.000		104	90-110	2	10	
Nitrogen, Nitrate (As N)	5.1	0.50	mg/L	5.000		102	90-110	0.3	10	
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500		96	90-110	0.5	10	
Phosphorus, Dissolved Orthophosphate (As P)	2.9	0.50	mg/L	2.500		115	90-110	0.3	10	L5
Sulfate	13	5.0	mg/L	12.50		102	90-110	0.5	10	
Matrix Spike (2110080-MS1)		Source: 21J0218-02		Prepared: 10/08/2021 Analyzed: 10/21/2021						
Nitrogen, Nitrate (As N)	5.4	0.50	mg/L	5.000	0.20	104	80-120			
Nitrogen, Nitrite (As N)	2.3	0.10	mg/L	2.500	ND	93	80-120			
Phosphorus, Dissolved Orthophosphate (As P)	3.1	0.50	mg/L	2.500	ND	122	80-120			M6
Matrix Spike (2110080-MS2)		Source: 21J0218-02		Prepared: 10/08/2021 Analyzed: 10/21/2021						
Chloride	16		mg/L	12.50	3.7	100	80-120			
Fluoride	2.2		mg/L	2.000	0.52	86	80-120			
Sulfate	20		mg/L	12.50	7.6	99	80-120			
Matrix Spike Dup (2110080-MSD1)		Source: 21J0218-02		Prepared: 10/08/2021 Analyzed: 10/21/2021						
Nitrogen, Nitrate (As N)	5.1	0.50	mg/L	5.000	0.20	97	80-120	6	10	
Nitrogen, Nitrite (As N)	2.2	0.10	mg/L	2.500	ND	88	80-120	5	10	
Phosphorus, Dissolved Orthophosphate (As P)	2.9	0.50	mg/L	2.500	ND	116	80-120	6	10	
Matrix Spike Dup (2110080-MSD2)		Source: 21J0218-02		Prepared: 10/08/2021 Analyzed: 10/21/2021						
Chloride	17		mg/L	12.50	3.7	107	80-120	5	10	
Fluoride	2.4		mg/L	2.000	0.52	93	80-120	6	10	
Sulfate	21		mg/L	12.50	7.6	106	80-120	5	10	

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions					
Frequency: As needed and when sampled (Field Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
General Measurements					
Depth to Water level	feet	Water Level Sounder	NA		
Water level elevation	feet amsl	calculation	NA		
		Oakton PC 450 Meter/Oakton pH Con 10 Meter or equivalent			
Temperature – field	° C (Celsius)	Oakton PC 450 Meter/Oakton pH Con 10 Meter or equivalent	NA		
pH – field	S.U.		NA		
		Oakton PC 450 Meter/Oakton pH Con 10 Meter or equivalent			
Conductivity – field	µS/cm		NA		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
General Measurements, General Chemistry					
Temperature – lab	° C	SM 4500 H+B	NA		
pH – lab	S.U.	SM 4500 H+B	NA		
Conductivity – lab	µS/cm	SW-846 9050A	2.0		
Total dissolved solids	mg/L	SM 2540 C	20		
Hardness ¹	mg/L	SM 2340B/calculation	13.0		
Cation/Anion Balance	%	calculation	NA		
Total alkalinity	mg/L	SM 2320 B	4.0		
Bicarbonate	mg/L	SM 2320 B	4.0		
Carbonate	mg/L	SM 2320 B	4.0		
Hydroxide	mg/L	SM 2320 B	4.0		
Sulfate	mg/L	EPA 300.0	0.50		
Chloride	mg/L	EPA 300.0	0.50		
Fluoride	mg/L	EPA 300.0	0.50		
Nitrate (as nitrogen [N])	mg/L	EPA 300.0	0.10		
Nitrite (as N)	mg/L	EPA 300.0	0.10		
Nitrate + Nitrite (as N)	mg/L	EPA 300.0/calculation	0.10		
Calcium ¹	mg/L	EPA 200.7	2.0		
Magnesium ¹	mg/L	EPA 200.7	2.0		
Sodium ¹	mg/L	EPA 200.7	0.5		
Potassium ¹	mg/L	EPA 200.7	0.5		
Ammonia (as N)	mg/L	SM 4500	0.5		
Orthophosphate (as P)	mg/L	EPA 300.0	0.1		
Silicon Dioxide ¹	mg/L	EPA 200.7	0.214		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Dissolved Metals					
Aluminum	mg/L	EPA 200.7	0.1		
Antimony	mg/L	EPA 200.8	0.001		
Arsenic	mg/L	EPA 200.8	0.0005		
Barium	mg/L	EPA 200.7	0.01		
Beryllium	mg/L	EPA 200.7	0.001		
Boron	mg/L	EPA 200.7	0.05		
Cadmium	mg/L	EPA 200.7	0.001		
Chromium	mg/L	EPA 200.7	0.01		
Cobalt	mg/L	EPA 200.7	0.01		
Copper	mg/L	EPA 200.7	0.01		
Iron	mg/L	EPA 200.7	0.1		
Lead	mg/L	EPA 200.8	0.0005		
Manganese	mg/L	EPA 200.7	0.01		
Mercury	mg/L	EPA 245.1	0.0002		
Molybdenum	mg/L	EPA 200.7	0.01		
Nickel	mg/L	EPA 200.7	0.01		
Selenium	mg/L	EPA 200.8	0.0005		
Silver	mg/L	EPA 200.8	0.0001		
Thallium	mg/L	EPA 200.8	0.0001		
Uranium	mg/L	EPA 200.8	0.0001		
Zinc	mg/L	EPA 200.8	0.013		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Total Recoverable Metals					
Aluminum	mg/L	EPA 200.7	0.1		
Antimony	mg/L	EPA 200.8	0.001		
Arsenic	mg/L	EPA 200.8	0.0005		
Barium	mg/L	EPA 200.7	0.01		
Beryllium	mg/L	EPA 200.7	0.001		
Boron	mg/L	EPA 200.7	0.05		
Cadmium	mg/L	EPA 200.7	0.001		
Chromium	mg/L	EPA 200.7	0.01		
Cobalt	mg/L	EPA 200.7	0.01		
Copper	mg/L	EPA 200.7	0.01		
Iron	mg/L	EPA 200.7	0.1		
Lead	mg/L	EPA 200.8	0.0005		
Manganese	mg/L	EPA 200.7	0.01		
Mercury	mg/L	EPA 245.1	0.0002		
Molybdenum	mg/L	EPA 200.7	0.01		
Nickel	mg/L	EPA 200.7	0.01		
Selenium	mg/L	EPA 200.8	0.0005		
Silver	mg/L	EPA 200.8	0.0001		
Thallium	mg/L	EPA 200.8	0.0001		
Uranium	mg/L	EPA 200.8	0.0001		
Zinc	mg/L	EPA 200.8	0.013		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)

Frequency: As needed and when sampled (Laboratory Parameters)				
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)	
Radiochemicals				
Gross alpha particle activity	pCi/L	EPA 900	3.0	
Adjusted gross alpha	pCi/L	calculation	3.0	
Total Radium (Ra 226 + Ra 228)	pCi/L	calculation	1.0	
Radium 226	pCi/L	EPA 903.1 or HPGE-GA	1.0	
Radium 228	pCi/L	EPA 904 or HPGE-GA	1.0	
Uranium isotopes	pCi/L	ASTM 6239	1.0	

Frequency: As needed and when sampled (Laboratory Parameters)				
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)	
Other				
Stable isotopes: H and O	Per mil	Mass spectrometer	0.10	
Organics - Volatile	mg/L	SW8260B	Variable	
Organics – Semi-Volatile	mg/L	8270	Variable	

Units: S.U. = standard units

NA = not applicable

µS/cm = micro Siemens per centimeter

mg/L = milligrams per liter

µg/L = micrograms per liter

pCi/L = picoCuries per liter

amsl = above mean sea level

Per mil = parts per thousand

¹: Parameter to be analyzed as both dissolved and total.

Lab #: 806229 Job #: 49048 IS-102736 Co. Job#:
Sample Name: 21J0218-01 Co. Lab#:
Company: Turner Laboratories, Inc
API/Well:
Container: Plastic Bottle
Field/Site Name: 21J0218
Location:
Formation/Depth:
Sampling Point:
Date Sampled: 10/07/2021 11:30 Date Received: 10/12/2021 Date Reported: 10/21/2021

δ D of water ----- -60.0 ‰ relative to VSMOW

δ^{18} O of water ----- -8.38 ‰ relative to VSMOW

Tritium content of water ----- na

δ^{13} C of DIC ----- na

14 C content of DIC ----- na

δ^{15} N of nitrate ----- na

δ^{18} O of nitrate ----- na

δ^{34} S of sulfate ----- na

δ^{18} O of sulfate ----- na

Vacuum Distilled? * ----- No

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 806230 Job #: 49048 IS-102736 Co. Job#:
Sample Name: 21J0218-02 Co. Lab#:
Company: Turner Laboratories, Inc
API/Well:
Container: Plastic Bottle
Field/Site Name: 21J0218
Location:
Formation/Depth:
Sampling Point:
Date Sampled: 10/07/2021 12:30 Date Received: 10/12/2021 Date Reported: 10/21/2021

δD of water ----- -61.6 ‰ relative to VSMOW

$\delta^{18}O$ of water ----- -8.82 ‰ relative to VSMOW

Tritium content of water ----- na

$\delta^{13}C$ of DIC ----- na

^{14}C content of DIC ----- na

$\delta^{15}N$ of nitrate ----- na

$\delta^{18}O$ of nitrate ----- na

$\delta^{34}S$ of sulfate ----- na

$\delta^{18}O$ of sulfate ----- na

Vacuum Distilled? * ----- No

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 806231 Job #: 49048 IS-102736 Co. Job#:
Sample Name: 21J0218-03 Co. Lab#:
Company: Turner Laboratories, Inc
API/Well:
Container: Plastic Bottle
Field/Site Name: 21J0218
Location:
Formation/Depth:
Sampling Point:
Date Sampled: 10/07/2021 16:15 Date Received: 10/12/2021 Date Reported: 10/21/2021

δ D of water ----- -60.9 ‰ relative to VSMOW

δ^{18} O of water ----- -8.75 ‰ relative to VSMOW

Tritium content of water ----- na

δ^{13} C of DIC ----- na

14 C content of DIC ----- na

δ^{15} N of nitrate ----- na

δ^{18} O of nitrate ----- na

δ^{34} S of sulfate ----- na

δ^{18} O of sulfate ----- na

Vacuum Distilled? * ----- No

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

SUBCONTRACT ORDER

Turner Laboratories, Inc.

21J0218**SENDING LABORATORY:**

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Isotech Laboratories
1308 Parkland Court
Champaign, IL 61821
Phone :1(217) 398-3490
Fax: -
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
Sample ID: 21J0218-01 Drinking Water Sampled:10/07/2021 11:30			
Isotope Analysis Containers Supplied:	10/21/2021 11:30		H and O Isotopes
Sample ID: 21J0218-02 Drinking Water Sampled:10/07/2021 12:30			
Isotope Analysis Containers Supplied:	10/21/2021 12:30		H and O Isotopes
Sample ID: 21J0218-03 Drinking Water Sampled:10/07/2021 16:15			
Isotope Analysis Containers Supplied:	10/21/2021 16:15		H and O Isotopes

Released By

Date

Received By

Date

Grace Skube / S. Isotech

OCT 12 2021

Released By

Date

Received By

Date



ANALYTICAL REPORT

October 21, 2021

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Is

⁸ Gl

⁹ Al

¹⁰ Sc

Turner Laboratories Inc

Sample Delivery Group: L1416755
Samples Received: 10/12/2021
Project Number: 2IJ0218
Description:

Report To: Elizabeth Kasik
2445 North Coyote Drive
Suite 104
Tucson, AZ 85745

Entire Report Reviewed By:

Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

2IJ0218-01 L1416755-01 GW

				Collected by	Collected date/time	Received date/time
					10/07/21 11:30	10/12/21 10:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1756480	1	10/14/21 00:48	10/14/21 14:49	JNJ	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

2IJ0218-02 L1416755-02 GW

				Collected by	Collected date/time	Received date/time
					10/07/21 12:30	10/12/21 10:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1756480	1	10/14/21 00:48	10/14/21 15:54	JNJ	Mt. Juliet, TN

⁴ Cn

⁵ Sr

2IJ0218-03 L1416755-03 GW

				Collected by	Collected date/time	Received date/time
					10/07/21 16:15	10/12/21 10:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1756480	1	10/14/21 00:48	10/14/21 16:15	JNJ	Mt. Juliet, TN

⁶ Qc

⁷ Is

⁸ Gl

⁹ Al

¹⁰ Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Daphne Richards
Project Manager

Sample Delivery Group (SDG) Narrative

An aliquot for analysis was taken from the original container received due to volume requirements of the laboratory's procedure. Rinsing of the original sample container for inclusion in the sample extraction was not performed.

<u>Lab Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L1416755-01	2IJ0218-01	8270C
L1416755-02	2IJ0218-02	8270C
L1416755-03	2IJ0218-03	8270C



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Acenaphthene	U	R5	0.0000886	0.00100	1	10/14/2021 14:49	WG1756480
Acenaphthylene	U		0.0000921	0.00100	1	10/14/2021 14:49	WG1756480
Anthracene	U		0.0000804	0.00100	1	10/14/2021 14:49	WG1756480
Benzidine	U		0.00374	0.0100	1	10/14/2021 14:49	WG1756480
Benzo(a)anthracene	U		0.000199	0.00100	1	10/14/2021 14:49	WG1756480
Benzo(b)fluoranthene	U		0.000130	0.00100	1	10/14/2021 14:49	WG1756480
Benzo(k)fluoranthene	U		0.000120	0.00100	1	10/14/2021 14:49	WG1756480
Benzo(g,h,i)perylene	U		0.000121	0.00100	1	10/14/2021 14:49	WG1756480
Benzo(a)pyrene	U		0.0000381	0.00100	1	10/14/2021 14:49	WG1756480
Bis(2-chlorethoxy)methane	U		0.000116	0.0100	1	10/14/2021 14:49	WG1756480
Bis(2-chloroethyl)ether	U		0.000137	0.0100	1	10/14/2021 14:49	WG1756480
2,2-Oxybis(1-Chloropropane)	U		0.000210	0.0100	1	10/14/2021 14:49	WG1756480
4-Bromophenyl-phenylether	U		0.0000877	0.0100	1	10/14/2021 14:49	WG1756480
2-Chloronaphthalene	U		0.0000648	0.00100	1	10/14/2021 14:49	WG1756480
4-Chlorophenyl-phenylether	U		0.0000926	0.0100	1	10/14/2021 14:49	WG1756480
Chrysene	U		0.000130	0.00100	1	10/14/2021 14:49	WG1756480
Dibenz(a,h)anthracene	U		0.0000644	0.00100	1	10/14/2021 14:49	WG1756480
1,2-Dichlorobenzene	U		0.0000713	0.0100	1	10/14/2021 14:49	WG1756480
1,3-Dichlorobenzene	U		0.000132	0.0100	1	10/14/2021 14:49	WG1756480
1,4-Dichlorobenzene	U		0.0000942	0.0100	1	10/14/2021 14:49	WG1756480
3,3-Dichlorobenzidine	U		0.000212	0.0100	1	10/14/2021 14:49	WG1756480
2,4-Dinitrotoluene	U		0.0000983	0.0100	1	10/14/2021 14:49	WG1756480
2,6-Dinitrotoluene	U		0.000250	0.0100	1	10/14/2021 14:49	WG1756480
Fluoranthene	U		0.000102	0.00100	1	10/14/2021 14:49	WG1756480
Fluorene	U		0.0000844	0.00100	1	10/14/2021 14:49	WG1756480
Hexachlorobenzene	U		0.0000755	0.00100	1	10/14/2021 14:49	WG1756480
Hexachloro-1,3-butadiene	U		0.0000968	0.0100	1	10/14/2021 14:49	WG1756480
Hexachlorocyclopentadiene	U		0.0000598	0.0100	1	10/14/2021 14:49	WG1756480
Hexachloroethane	U		0.000127	0.0100	1	10/14/2021 14:49	WG1756480
Indeno(1,2,3-cd)pyrene	U		0.000279	0.00100	1	10/14/2021 14:49	WG1756480
Isophorone	U		0.000143	0.0100	1	10/14/2021 14:49	WG1756480
Naphthalene	U		0.000159	0.00100	1	10/14/2021 14:49	WG1756480
Nitrobenzene	U		0.000297	0.0100	1	10/14/2021 14:49	WG1756480
n-Nitrosodimethylamine	U		0.000998	0.0100	1	10/14/2021 14:49	WG1756480
n-Nitrosodiphenylamine	U		0.00237	0.0100	1	10/14/2021 14:49	WG1756480
n-Nitrosodi-n-propylamine	U		0.000261	0.0100	1	10/14/2021 14:49	WG1756480
Phenanthrene	U		0.000112	0.00100	1	10/14/2021 14:49	WG1756480
Benzylbutyl phthalate	U		0.000765	0.00300	1	10/14/2021 14:49	WG1756480
Bis(2-ethylhexyl)phthalate	U		0.000895	0.00300	1	10/14/2021 14:49	WG1756480
Di-n-butyl phthalate	U		0.000453	0.00300	1	10/14/2021 14:49	WG1756480
Diethyl phthalate	U		0.000287	0.00300	1	10/14/2021 14:49	WG1756480
Dimethyl phthalate	U		0.000260	0.00300	1	10/14/2021 14:49	WG1756480
Di-n-octyl phthalate	U		0.000932	0.00300	1	10/14/2021 14:49	WG1756480
Pyrene	U		0.000107	0.00100	1	10/14/2021 14:49	WG1756480
1,2,4-Trichlorobenzene	U		0.0000698	0.0100	1	10/14/2021 14:49	WG1756480
4-Chloro-3-methylphenol	U		0.000131	0.0100	1	10/14/2021 14:49	WG1756480
2-Chlorophenol	U		0.000133	0.0100	1	10/14/2021 14:49	WG1756480
2,4-Dichlorophenol	U		0.000102	0.0100	1	10/14/2021 14:49	WG1756480
2,4-Dimethylphenol	U		0.0000636	0.0100	1	10/14/2021 14:49	WG1756480
4,6-Dinitro-2-methylphenol	U		0.00112	0.0100	1	10/14/2021 14:49	WG1756480
2,4-Dinitrophenol	U		0.00593	0.0100	1	10/14/2021 14:49	WG1756480
2-Nitrophenol	U		0.000117	0.0100	1	10/14/2021 14:49	WG1756480
4-Nitrophenol	U		0.000143	0.0100	1	10/14/2021 14:49	WG1756480
Pentachlorophenol	U		0.000313	0.0100	1	10/14/2021 14:49	WG1756480
Phenol	U		0.00433	0.0100	1	10/14/2021 14:49	WG1756480
2,4,6-Trichlorophenol	U		0.000100	0.0100	1	10/14/2021 14:49	WG1756480



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorophenol	24.8			10.0-120		10/14/2021 14:49	WG1756480
(S) Phenol-d5	17.2			10.0-120		10/14/2021 14:49	WG1756480
(S) Nitrobenzene-d5	52.7			10.0-127		10/14/2021 14:49	WG1756480
(S) 2-Fluorobiphenyl	59.2			10.0-130		10/14/2021 14:49	WG1756480
(S) 2,4,6-Tribromophenol	44.7			10.0-155		10/14/2021 14:49	WG1756480
(S) p-Terphenyl-d14	54.4			10.0-128		10/14/2021 14:49	WG1756480

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Is

⁸Gl

⁹Al

¹⁰Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.0000886	0.00100	1	10/14/2021 15:54	WG1756480
Acenaphthylene	U		0.0000921	0.00100	1	10/14/2021 15:54	WG1756480
Anthracene	U		0.0000804	0.00100	1	10/14/2021 15:54	WG1756480
Benzidine	U		0.00374	0.0100	1	10/14/2021 15:54	WG1756480
Benzo(a)anthracene	U		0.000199	0.00100	1	10/14/2021 15:54	WG1756480
Benzo(b)fluoranthene	U		0.000130	0.00100	1	10/14/2021 15:54	WG1756480
Benzo(k)fluoranthene	U		0.000120	0.00100	1	10/14/2021 15:54	WG1756480
Benzo(g,h,i)perylene	U		0.000121	0.00100	1	10/14/2021 15:54	WG1756480
Benzo(a)pyrene	U		0.0000381	0.00100	1	10/14/2021 15:54	WG1756480
Bis(2-chlorethoxy)methane	U		0.000116	0.0100	1	10/14/2021 15:54	WG1756480
Bis(2-chloroethyl)ether	U		0.000137	0.0100	1	10/14/2021 15:54	WG1756480
2,2-Oxybis(1-Chloropropane)	U		0.000210	0.0100	1	10/14/2021 15:54	WG1756480
4-Bromophenyl-phenylether	U		0.0000877	0.0100	1	10/14/2021 15:54	WG1756480
2-Chloronaphthalene	U		0.0000648	0.00100	1	10/14/2021 15:54	WG1756480
4-Chlorophenyl-phenylether	U		0.0000926	0.0100	1	10/14/2021 15:54	WG1756480
Chrysene	U		0.000130	0.00100	1	10/14/2021 15:54	WG1756480
Dibenz(a,h)anthracene	U		0.0000644	0.00100	1	10/14/2021 15:54	WG1756480
1,2-Dichlorobenzene	U		0.0000713	0.0100	1	10/14/2021 15:54	WG1756480
1,3-Dichlorobenzene	U		0.000132	0.0100	1	10/14/2021 15:54	WG1756480
1,4-Dichlorobenzene	U		0.0000942	0.0100	1	10/14/2021 15:54	WG1756480
3,3-Dichlorobenzidine	U		0.000212	0.0100	1	10/14/2021 15:54	WG1756480
2,4-Dinitrotoluene	U		0.0000983	0.0100	1	10/14/2021 15:54	WG1756480
2,6-Dinitrotoluene	U		0.000250	0.0100	1	10/14/2021 15:54	WG1756480
Fluoranthene	U		0.000102	0.00100	1	10/14/2021 15:54	WG1756480
Fluorene	U		0.0000844	0.00100	1	10/14/2021 15:54	WG1756480
Hexachlorobenzene	U		0.0000755	0.00100	1	10/14/2021 15:54	WG1756480
Hexachloro-1,3-butadiene	U		0.0000968	0.0100	1	10/14/2021 15:54	WG1756480
Hexachlorocyclopentadiene	U		0.0000598	0.0100	1	10/14/2021 15:54	WG1756480
Hexachloroethane	U		0.000127	0.0100	1	10/14/2021 15:54	WG1756480
Indeno(1,2,3-cd)pyrene	U		0.000279	0.00100	1	10/14/2021 15:54	WG1756480
Isophorone	U		0.000143	0.0100	1	10/14/2021 15:54	WG1756480
Naphthalene	U		0.000159	0.00100	1	10/14/2021 15:54	WG1756480
Nitrobenzene	U		0.000297	0.0100	1	10/14/2021 15:54	WG1756480
n-Nitrosodimethylamine	U		0.000998	0.0100	1	10/14/2021 15:54	WG1756480
n-Nitrosodiphenylamine	U		0.00237	0.0100	1	10/14/2021 15:54	WG1756480
n-Nitrosodi-n-propylamine	U		0.000261	0.0100	1	10/14/2021 15:54	WG1756480
Phenanthrene	U		0.000112	0.00100	1	10/14/2021 15:54	WG1756480
Benzylbutyl phthalate	U		0.000765	0.00300	1	10/14/2021 15:54	WG1756480
Bis(2-ethylhexyl)phthalate	U		0.000895	0.00300	1	10/14/2021 15:54	WG1756480
Di-n-butyl phthalate	0.000555	E4	0.000453	0.00300	1	10/14/2021 15:54	WG1756480
Diethyl phthalate	U		0.000287	0.00300	1	10/14/2021 15:54	WG1756480
Dimethyl phthalate	U		0.000260	0.00300	1	10/14/2021 15:54	WG1756480
Di-n-octyl phthalate	U		0.000932	0.00300	1	10/14/2021 15:54	WG1756480
Pyrene	U		0.000107	0.00100	1	10/14/2021 15:54	WG1756480
1,2,4-Trichlorobenzene	U		0.0000698	0.0100	1	10/14/2021 15:54	WG1756480
4-Chloro-3-methylphenol	U		0.000131	0.0100	1	10/14/2021 15:54	WG1756480
2-Chlorophenol	U		0.000133	0.0100	1	10/14/2021 15:54	WG1756480
2,4-Dichlorophenol	U		0.000102	0.0100	1	10/14/2021 15:54	WG1756480
2,4-Dimethylphenol	U		0.0000636	0.0100	1	10/14/2021 15:54	WG1756480
4,6-Dinitro-2-methylphenol	U		0.00112	0.0100	1	10/14/2021 15:54	WG1756480
2,4-Dinitrophenol	U		0.00593	0.0100	1	10/14/2021 15:54	WG1756480
2-Nitrophenol	U		0.000117	0.0100	1	10/14/2021 15:54	WG1756480
4-Nitrophenol	U		0.000143	0.0100	1	10/14/2021 15:54	WG1756480
Pentachlorophenol	U		0.000313	0.0100	1	10/14/2021 15:54	WG1756480
Phenol	U		0.00433	0.0100	1	10/14/2021 15:54	WG1756480
2,4,6-Trichlorophenol	U		0.000100	0.0100	1	10/14/2021 15:54	WG1756480



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorophenol	27.5			10.0-120		10/14/2021 15:54	WG1756480
(S) Phenol-d5	18.0			10.0-120		10/14/2021 15:54	WG1756480
(S) Nitrobenzene-d5	50.6			10.0-127		10/14/2021 15:54	WG1756480
(S) 2-Fluorobiphenyl	59.7			10.0-130		10/14/2021 15:54	WG1756480
(S) 2,4,6-Tribromophenol	51.5			10.0-155		10/14/2021 15:54	WG1756480
(S) p-Terphenyl-d14	52.1			10.0-128		10/14/2021 15:54	WG1756480

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Is

⁸Gl

⁹Al

¹⁰Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.0000886	0.00100	1	10/14/2021 16:15	WG1756480
Acenaphthylene	U		0.0000921	0.00100	1	10/14/2021 16:15	WG1756480
Anthracene	U		0.0000804	0.00100	1	10/14/2021 16:15	WG1756480
Benzidine	U		0.00374	0.0100	1	10/14/2021 16:15	WG1756480
Benzo(a)anthracene	U		0.000199	0.00100	1	10/14/2021 16:15	WG1756480
Benzo(b)fluoranthene	U		0.000130	0.00100	1	10/14/2021 16:15	WG1756480
Benzo(k)fluoranthene	U		0.000120	0.00100	1	10/14/2021 16:15	WG1756480
Benzo(g,h,i)perylene	U		0.000121	0.00100	1	10/14/2021 16:15	WG1756480
Benzo(a)pyrene	U		0.0000381	0.00100	1	10/14/2021 16:15	WG1756480
Bis(2-chlorethoxy)methane	U		0.000116	0.0100	1	10/14/2021 16:15	WG1756480
Bis(2-chloroethyl)ether	U		0.000137	0.0100	1	10/14/2021 16:15	WG1756480
2,2-Oxybis(1-Chloropropane)	U		0.000210	0.0100	1	10/14/2021 16:15	WG1756480
4-Bromophenyl-phenylether	U		0.0000877	0.0100	1	10/14/2021 16:15	WG1756480
2-Chloronaphthalene	U		0.0000648	0.00100	1	10/14/2021 16:15	WG1756480
4-Chlorophenyl-phenylether	U		0.0000926	0.0100	1	10/14/2021 16:15	WG1756480
Chrysene	U		0.000130	0.00100	1	10/14/2021 16:15	WG1756480
Dibenz(a,h)anthracene	U		0.0000644	0.00100	1	10/14/2021 16:15	WG1756480
1,2-Dichlorobenzene	U		0.0000713	0.0100	1	10/14/2021 16:15	WG1756480
1,3-Dichlorobenzene	U		0.000132	0.0100	1	10/14/2021 16:15	WG1756480
1,4-Dichlorobenzene	U		0.0000942	0.0100	1	10/14/2021 16:15	WG1756480
3,3-Dichlorobenzidine	U		0.000212	0.0100	1	10/14/2021 16:15	WG1756480
2,4-Dinitrotoluene	U		0.0000983	0.0100	1	10/14/2021 16:15	WG1756480
2,6-Dinitrotoluene	U		0.000250	0.0100	1	10/14/2021 16:15	WG1756480
Fluoranthene	U		0.000102	0.00100	1	10/14/2021 16:15	WG1756480
Fluorene	U		0.0000844	0.00100	1	10/14/2021 16:15	WG1756480
Hexachlorobenzene	U		0.0000755	0.00100	1	10/14/2021 16:15	WG1756480
Hexachloro-1,3-butadiene	U		0.0000968	0.0100	1	10/14/2021 16:15	WG1756480
Hexachlorocyclopentadiene	U		0.0000598	0.0100	1	10/14/2021 16:15	WG1756480
Hexachloroethane	U		0.000127	0.0100	1	10/14/2021 16:15	WG1756480
Indeno(1,2,3-cd)pyrene	U		0.000279	0.00100	1	10/14/2021 16:15	WG1756480
Isophorone	U		0.000143	0.0100	1	10/14/2021 16:15	WG1756480
Naphthalene	U		0.000159	0.00100	1	10/14/2021 16:15	WG1756480
Nitrobenzene	U		0.000297	0.0100	1	10/14/2021 16:15	WG1756480
n-Nitrosodimethylamine	U		0.000998	0.0100	1	10/14/2021 16:15	WG1756480
n-Nitrosodiphenylamine	U		0.00237	0.0100	1	10/14/2021 16:15	WG1756480
n-Nitrosodi-n-propylamine	U		0.000261	0.0100	1	10/14/2021 16:15	WG1756480
Phenanthrene	U		0.000112	0.00100	1	10/14/2021 16:15	WG1756480
Benzylbutyl phthalate	U		0.000765	0.00300	1	10/14/2021 16:15	WG1756480
Bis(2-ethylhexyl)phthalate	U		0.000895	0.00300	1	10/14/2021 16:15	WG1756480
Di-n-butyl phthalate	0.000575	E4	0.000453	0.00300	1	10/14/2021 16:15	WG1756480
Diethyl phthalate	U		0.000287	0.00300	1	10/14/2021 16:15	WG1756480
Dimethyl phthalate	U		0.000260	0.00300	1	10/14/2021 16:15	WG1756480
Di-n-octyl phthalate	U		0.000932	0.00300	1	10/14/2021 16:15	WG1756480
Pyrene	U		0.000107	0.00100	1	10/14/2021 16:15	WG1756480
1,2,4-Trichlorobenzene	U		0.0000698	0.0100	1	10/14/2021 16:15	WG1756480
4-Chloro-3-methylphenol	U		0.000131	0.0100	1	10/14/2021 16:15	WG1756480
2-Chlorophenol	U		0.000133	0.0100	1	10/14/2021 16:15	WG1756480
2,4-Dichlorophenol	U		0.000102	0.0100	1	10/14/2021 16:15	WG1756480
2,4-Dimethylphenol	U		0.0000636	0.0100	1	10/14/2021 16:15	WG1756480
4,6-Dinitro-2-methylphenol	U		0.00112	0.0100	1	10/14/2021 16:15	WG1756480
2,4-Dinitrophenol	U		0.00593	0.0100	1	10/14/2021 16:15	WG1756480
2-Nitrophenol	U		0.000117	0.0100	1	10/14/2021 16:15	WG1756480
4-Nitrophenol	U		0.000143	0.0100	1	10/14/2021 16:15	WG1756480
Pentachlorophenol	U		0.000313	0.0100	1	10/14/2021 16:15	WG1756480
Phenol	U		0.00433	0.0100	1	10/14/2021 16:15	WG1756480
2,4,6-Trichlorophenol	U		0.000100	0.0100	1	10/14/2021 16:15	WG1756480



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorophenol	25.7			10.0-120		10/14/2021 16:15	WG1756480
(S) Phenol-d5	16.7			10.0-120		10/14/2021 16:15	WG1756480
(S) Nitrobenzene-d5	51.2			10.0-127		10/14/2021 16:15	WG1756480
(S) 2-Fluorobiphenyl	58.0			10.0-130		10/14/2021 16:15	WG1756480
(S) 2,4,6-Tribromophenol	52.5			10.0-155		10/14/2021 16:15	WG1756480
(S) p-Terphenyl-d14	56.0			10.0-128		10/14/2021 16:15	WG1756480

¹Cp

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¹⁰Sc

Method Blank (MB)

(MB) R3718271-2 10/14/21 09:50

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acenaphthene	U		0.0000886	0.00100
Acenaphthylene	U		0.0000921	0.00100
Anthracene	U		0.0000804	0.00100
Benzidine	U		0.00374	0.0100
Benzo(a)anthracene	U		0.000199	0.00100
Benzo(b)fluoranthene	U		0.000130	0.00100
Benzo(k)fluoranthene	U		0.000120	0.00100
Benzo(g,h,i)perylene	U		0.000121	0.00100
Benzo(a)pyrene	U		0.0000381	0.00100
Bis(2-chlorethoxy)methane	U		0.000116	0.0100
Bis(2-chloroethyl)ether	U		0.000137	0.0100
2,2-Oxybis(1-Chloropropane)	U		0.000210	0.0100
4-Bromophenyl-phenylether	U		0.0000877	0.0100
2-Chloronaphthalene	U		0.0000648	0.00100
4-Chlorophenyl-phenylether	U		0.0000926	0.0100
Chrysene	U		0.000130	0.00100
Dibenz(a,h)anthracene	U		0.0000644	0.00100
1,2-Dichlorobenzene	U		0.0000713	0.0100
1,3-Dichlorobenzene	U		0.000132	0.0100
1,4-Dichlorobenzene	U		0.0000942	0.0100
3,3-Dichlorobenzidine	U		0.000212	0.0100
2,4-Dinitrotoluene	U		0.0000983	0.0100
2,6-Dinitrotoluene	U		0.000250	0.0100
Fluoranthene	U		0.000102	0.00100
Fluorene	U		0.0000844	0.00100
Hexachlorobenzene	U		0.0000755	0.00100
Hexachloro-1,3-butadiene	U		0.0000968	0.0100
Hexachlorocyclopentadiene	U		0.0000598	0.0100
Hexachloroethane	U		0.000127	0.0100
Indeno(1,2,3-cd)pyrene	U		0.000279	0.00100
Isophorone	U		0.000143	0.0100
Naphthalene	U		0.000159	0.00100
Nitrobenzene	U		0.000297	0.0100
n-Nitrosodimethylamine	U		0.000998	0.0100
n-Nitrosodiphenylamine	U		0.00237	0.0100
n-Nitrosodi-n-propylamine	U		0.000261	0.0100
Phenanthrene	U		0.000112	0.00100
Benzylbutyl phthalate	U		0.000765	0.00300
Bis(2-ethylhexyl)phthalate	U		0.000895	0.00300
Di-n-butyl phthalate	U		0.000453	0.00300

¹Cp

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Method Blank (MB)

(MB) R3718271-2 10/14/21 09:50

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Diethyl phthalate	U		0.000287	0.00300
Dimethyl phthalate	U		0.000260	0.00300
Di-n-octyl phthalate	U		0.000932	0.00300
Pyrene	U		0.000107	0.00100
1,2,4-Trichlorobenzene	U		0.0000698	0.0100
4-Chloro-3-methylphenol	U		0.000131	0.0100
2-Chlorophenol	U		0.000133	0.0100
2,4-Dichlorophenol	U		0.000102	0.0100
2,4-Dimethylphenol	U		0.0000636	0.0100
4,6-Dinitro-2-methylphenol	U		0.00112	0.0100
2,4-Dinitrophenol	U		0.00593	0.0100
2-Nitrophenol	U		0.000117	0.0100
4-Nitrophenol	U		0.000143	0.0100
Pentachlorophenol	U		0.000313	0.0100
Phenol	U		0.00433	0.0100
2,4,6-Trichlorophenol	U		0.000100	0.0100
(S) Nitrobenzene-d5	55.4			10.0-127
(S) 2-Fluorobiphenyl	64.8			10.0-130
(S) p-Terphenyl-d14	59.2			10.0-128
(S) Phenol-d5	20.7			10.0-120
(S) 2-Fluorophenol	33.2			10.0-120
(S) 2,4,6-Tribromophenol	52.5			10.0-155

1Cp

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Laboratory Control Sample (LCS)

(LCS) R3718271-1 10/14/21 09:28

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0500	0.0324	64.8	41.0-120	
Acenaphthylene	0.0500	0.0354	70.8	43.0-120	
Anthracene	0.0500	0.0334	66.8	45.0-120	
Benzidine	0.100	0.0521	52.1	10.0-120	
Benzo(a)anthracene	0.0500	0.0329	65.8	47.0-120	
Benzo(b)fluoranthene	0.0500	0.0328	65.6	46.0-120	
Benzo(k)fluoranthene	0.0500	0.0327	65.4	46.0-120	
Benzo(g,h,i)perylene	0.0500	0.0318	63.6	48.0-121	
Benzo(a)pyrene	0.0500	0.0325	65.0	47.0-120	
Bis(2-chlorethoxy)methane	0.0500	0.0302	60.4	33.0-120	
Bis(2-chloroethyl)ether	0.0500	0.0337	67.4	23.0-120	

Laboratory Control Sample (LCS)

(LCS) R3718271-1 10/14/21 09:28

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
2,2-Oxybis(1-Chloropropane)	0.0500	0.0319	63.8	28.0-120	
4-Bromophenyl-phenylether	0.0500	0.0304	60.8	45.0-120	
2-Chloronaphthalene	0.0500	0.0314	62.8	37.0-120	
4-Chlorophenyl-phenylether	0.0500	0.0360	72.0	44.0-120	
Chrysene	0.0500	0.0326	65.2	48.0-120	
Dibenz(a,h)anthracene	0.0500	0.0329	65.8	47.0-120	
1,2-Dichlorobenzene	0.0500	0.0329	65.8	20.0-120	
1,3-Dichlorobenzene	0.0500	0.0314	62.8	17.0-120	
1,4-Dichlorobenzene	0.0500	0.0325	65.0	18.0-120	
3,3-Dichlorobenzidine	0.100	0.0774	77.4	44.0-120	
2,4-Dinitrotoluene	0.0500	0.0448	89.6	49.0-124	
2,6-Dinitrotoluene	0.0500	0.0383	76.6	46.0-120	
Fluoranthene	0.0500	0.0378	75.6	51.0-120	
Fluorene	0.0500	0.0363	72.6	47.0-120	
Hexachlorobenzene	0.0500	0.0304	60.8	44.0-120	
Hexachloro-1,3-butadiene	0.0500	0.0299	59.8	19.0-120	
Hexachlorocyclopentadiene	0.0500	0.0170	34.0	15.0-120	
Hexachloroethane	0.0500	0.0313	62.6	15.0-120	
Indeno(1,2,3-cd)pyrene	0.0500	0.0324	64.8	49.0-122	
Isophorone	0.0500	0.0320	64.0	36.0-120	
Naphthalene	0.0500	0.0293	58.6	27.0-120	
Nitrobenzene	0.0500	0.0295	59.0	27.0-120	
n-Nitrosodimethylamine	0.0500	0.0135	27.0	10.0-120	
n-Nitrosodiphenylamine	0.0500	0.0295	59.0	47.0-120	
n-Nitrosodi-n-propylamine	0.0500	0.0345	69.0	31.0-120	
Phenanthrene	0.0500	0.0325	65.0	46.0-120	
Benzylbutyl phthalate	0.0500	0.0345	69.0	43.0-121	
Bis(2-ethylhexyl)phthalate	0.0500	0.0350	70.0	43.0-122	
Di-n-butyl phthalate	0.0500	0.0385	77.0	49.0-121	
Diethyl phthalate	0.0500	0.0396	79.2	48.0-122	
Dimethyl phthalate	0.0500	0.0374	74.8	48.0-120	
Di-n-octyl phthalate	0.0500	0.0344	68.8	42.0-125	
Pyrene	0.0500	0.0294	58.8	47.0-120	
1,2,4-Trichlorobenzene	0.0500	0.0299	59.8	24.0-120	
4-Chloro-3-methylphenol	0.0500	0.0258	51.6	40.0-120	
2-Chlorophenol	0.0500	0.0231	46.2	25.0-120	
2,4-Dichlorophenol	0.0500	0.0267	53.4	36.0-120	
2,4-Dimethylphenol	0.0500	0.0250	50.0	33.0-120	
4,6-Dinitro-2-methylphenol	0.0500	0.0417	83.4	38.0-138	
2,4-Dinitrophenol	0.0500	0.0394	78.8	10.0-120	

¹Cp

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Laboratory Control Sample (LCS)

(LCS) R3718271-1 10/14/21 09:28

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2-Nitrophenol	0.0500	0.0296	59.2	31.0-120	
4-Nitrophenol	0.0500	0.00944	18.9	10.0-120	
Pentachlorophenol	0.0500	0.0318	63.6	23.0-120	
Phenol	0.0500	0.00859	17.2	10.0-120	
2,4,6-Trichlorophenol	0.0500	0.0281	56.2	42.0-120	
(S) Nitrobenzene-d5			50.0	10.0-127	
(S) 2-Fluorobiphenyl			66.3	10.0-130	
(S) p-Terphenyl-d14			55.6	10.0-128	
(S) Phenol-d5			16.6	10.0-120	
(S) 2-Fluorophenol			24.4	10.0-120	
(S) 2,4,6-Tribromophenol			58.0	10.0-155	

L1416755-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1416755-01 10/14/21 14:49 • (MS) R3718271-3 10/14/21 15:11 • (MSD) R3718271-4 10/14/21 15:32

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.0500	U	0.0308	0.0307	61.6	61.4	1	28.0-120			0.325	25
Acenaphthylene	0.0500	U	0.0329	0.0330	65.8	66.0	1	31.0-121			0.303	25
Anthracene	0.0500	U	0.0316	0.0311	63.2	62.2	1	36.0-120			1.59	23
Benzo(a)anthracene	0.0500	U	0.0307	0.0295	61.4	59.0	1	39.0-120			3.99	23
Benzo(b)fluoranthene	0.0500	U	0.0299	0.0278	59.8	55.6	1	37.0-120			7.28	23
Benzo(k)fluoranthene	0.0500	U	0.0292	0.0273	58.4	54.6	1	37.0-120			6.73	26
Benzo(g,h,i)perylene	0.0500	U	0.0265	0.0249	53.0	49.8	1	37.0-123			6.23	25
Benzo(a)pyrene	0.0500	U	0.0310	0.0290	62.0	58.0	1	37.0-120			6.67	24
Bis(2-chlorethoxy)methane	0.0500	U	0.0284	0.0283	56.8	56.6	1	17.0-120			0.353	31
Bis(2-chloroethyl)ether	0.0500	U	0.0326	0.0314	65.2	62.8	1	14.0-120			3.75	33
2,2-Oxybis(1-Chloropropane)	0.0500	U	0.0305	0.0294	61.0	58.8	1	18.0-120			3.67	34
4-Bromophenyl-phenylether	0.0500	U	0.0299	0.0291	59.8	58.2	1	37.0-120			2.71	24
2-Chloronaphthalene	0.0500	U	0.0299	0.0296	59.8	59.2	1	29.0-120			1.01	28
4-Chlorophenyl-phenylether	0.0500	U	0.0345	0.0344	69.0	68.8	1	36.0-120			0.290	23
Chrysene	0.0500	U	0.0303	0.0295	60.6	59.0	1	38.0-120			2.68	23
Dibenz(a,h)anthracene	0.0500	U	0.0273	0.0250	54.6	50.0	1	36.0-121			8.80	24
3,3-Dichlorobenzidine	0.100	U	0.0747	0.0744	74.7	74.4	1	10.0-134			0.402	30
2,4-Dinitrotoluene	0.0500	U	0.0406	0.0417	81.2	83.4	1	39.0-125			2.67	25
2,6-Dinitrotoluene	0.0500	U	0.0360	0.0367	72.0	73.4	1	36.0-120			1.93	27
Fluoranthene	0.0500	U	0.0354	0.0346	70.8	69.2	1	41.0-121			2.29	22
Fluorene	0.0500	U	0.0340	0.0345	68.0	69.0	1	37.0-120			1.46	24
Hexachlorobenzene	0.0500	U	0.0282	0.0282	56.4	56.4	1	35.0-122			0.000	24

1Cp

2Tc

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L1416755-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1416755-01 10/14/21 14:49 • (MS) R3718271-3 10/14/21 15:11 • (MSD) R3718271-4 10/14/21 15:32

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexachloro-1,3-butadiene	0.0500	U	0.0276	0.0272	55.2	54.4	1	12.0-120			1.46	34
Hexachlorocyclopentadiene	0.0500	U	0.0247	0.0232	49.4	46.4	1	10.0-120			6.26	33
Hexachloroethane	0.0500	U	0.0298	0.0291	59.6	58.2	1	10.0-120			2.38	40
Indeno(1,2,3-cd)pyrene	0.0500	U	0.0278	0.0263	55.6	52.6	1	38.0-125			5.55	24
Isophorone	0.0500	U	0.0297	0.0303	59.4	60.6	1	21.0-120			2.00	27
Naphthalene	0.0500	U	0.0281	0.0279	56.2	55.8	1	10.0-120			0.714	31
Nitrobenzene	0.0500	U	0.0282	0.0274	56.4	54.8	1	12.0-120			2.88	30
n-Nitrosodiphenylamine	0.0500	U	0.0294	0.0292	58.8	58.4	1	37.0-120			0.683	24
n-Nitrosodi-n-propylamine	0.0500	U	0.0324	0.0329	64.8	65.8	1	16.0-120			1.53	30
Phenanthrene	0.0500	U	0.0305	0.0308	61.0	61.6	1	33.0-120			0.979	22
Benzylbutyl phthalate	0.0500	U	0.0331	0.0324	66.2	64.8	1	34.0-126			2.14	24
Bis(2-ethylhexyl)phthalate	0.0500	U	0.0316	0.0284	63.2	56.8	1	33.0-126			10.7	25
Di-n-butyl phthalate	0.0500	U	0.0360	0.0352	72.0	70.4	1	35.0-128			2.25	23
Diethyl phthalate	0.0500	U	0.0365	0.0374	73.0	74.8	1	39.0-125			2.44	24
Dimethyl phthalate	0.0500	U	0.0350	0.0355	70.0	71.0	1	37.0-120			1.42	24
Di-n-octyl phthalate	0.0500	U	0.0310	0.0281	62.0	56.2	1	25.0-135			9.81	26
Pyrene	0.0500	U	0.0292	0.0288	58.4	57.6	1	39.0-120			1.38	22
4-Chloro-3-methylphenol	0.0500	U	0.0280	0.0250	56.0	50.0	1	26.0-120			11.3	27
2-Chlorophenol	0.0500	U	0.0249	0.0217	49.8	43.4	1	18.0-120			13.7	34
2,4-Dichlorophenol	0.0500	U	0.0268	0.0242	53.6	48.4	1	19.0-120			10.2	27
2,4-Dimethylphenol	0.0500	U	0.0260	0.0230	52.0	46.0	1	15.0-120			12.2	28
4,6-Dinitro-2-methylphenol	0.0500	U	0.0387	0.0384	77.4	76.8	1	10.0-144			0.778	39
2,4-Dinitrophenol	0.0500	U	0.0398	0.0374	79.6	74.8	1	10.0-120			6.22	40
2-Nitrophenol	0.0500	U	0.0276	0.0263	55.2	52.6	1	20.0-120			4.82	30
4-Nitrophenol	0.0500	U	0.0121	0.0109	24.2	21.8	1	10.0-120			10.4	40
Pentachlorophenol	0.0500	U	0.0314	0.0305	62.8	61.0	1	10.0-128			2.91	37
Phenol	0.0500	U	0.00902	0.00827	18.0	16.5	1	10.0-120			8.68	40
2,4,6-Trichlorophenol	0.0500	U	0.0267	0.0258	53.4	51.6	1	26.0-120			3.43	31
Benzidine	0.100	U	0.0359	0.0587	35.9	58.7	1	10.0-120		R5	48.2	37
1,2-Dichlorobenzene	0.0500	U	0.0311	0.0304	62.2	60.8	1	18.0-120			2.28	40
1,3-Dichlorobenzene	0.0500	U	0.0300	0.0289	60.0	57.8	1	15.0-120			3.74	40
1,4-Dichlorobenzene	0.0500	U	0.0310	0.0294	62.0	58.8	1	17.0-120			5.30	40
n-Nitrosodimethylamine	0.0500	U	0.0145	0.0137	29.0	27.4	1	10.0-120			5.67	40
1,2,4-Trichlorobenzene	0.0500	U	0.0283	0.0275	56.6	55.0	1	15.0-120			2.87	31
(S) Nitrobenzene-d5					49.0	48.2		10.0-127				
(S) 2-Fluorobiphenyl					63.1	62.2		10.0-130				
(S) p-Terphenyl-d14					54.7	52.3		10.0-128				
(S) Phenol-d5					19.1	17.0		10.0-120				
(S) 2-Fluorophenol					27.7	24.2		10.0-120				
(S) 2,4,6-Tribromophenol					55.0	56.0		10.0-155				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

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8Gl

9Al

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INTERNAL STANDARD SUMMARY

Instrument: BNAMS29 • File ID: 1014_003-1

10/14/21 08:25

Sample ID	File ID	1,4-DICHLOROBENZENE-D4	NAPHTHALENE-D8	ACENAPHTHENE-D10	PHENANTHRENE-D10	CHRYSENE-D12	PERYLENE-D12
		Response	Response	Response	Response	Response	Response
Standard	1014_003-1	224593	866199	544422	1101629	1005722	972471
Upper Limit		449186	1732398	1088844	2203258	2011444	1944942
Lower Limit		112297	433100	272211	550815	502861	486236
LCS R3718271-1 WG1756480 1x	1014_006	232300	978828	577821	1187804	1131090	1114752
BLANK R3718271-2 WG1756480 1x	1014_007	213028	804278	506970	1054334	1086950	1122994
L1416755-01 WG1756480 1x	1014_021	238304	906355	580549	1185244	1155458	1139791
MS R3718271-3 WG1756480 1x	1014_022	256885	1098783	654129	1317734	1168797	1121636
MSD R3718271-4 WG1756480 1x	1014_023	248701	1066128	633898	1309731	1155844	1100976
L1416755-02 WG1756480 1x	1014_024	224863	876973	546682	1174226	1093800	1091985
L1416755-03 WG1756480 1x	1014_025	236855	891980	571763	1178131	1121597	1108112

1Cp

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8Gl

9Al

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GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.
Qualifier	Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting level (MRL) but above MDL.
R5	MS/MSD RPD exceeded the laboratory acceptance limit. Recovery met acceptance criteria.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



SUBCONTRACT ORDER

Turner Laboratories, Inc.

21J0218

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Pace Analytical Services - Tennessee
12065 Lebabon Rd.
Mt. Juliet, TN 37122
Phone : (615) 758-5858
Fax: -
Please CC Kevin Brim Kbrim@turnerlabs.com

J106

Analysis	Expires	Laboratory ID	Comments
Sample ID: 21J0218-01 Drinking Water Semivolatle Organics by SW 8270 Containers Supplied:	10/14/2021 11:30		L 141678581
Sample ID: 21J0218-02 Drinking Water Semivolatle Organics by SW 8270 Containers Supplied:	10/14/2021 12:30		82
Sample ID: 21J0218-03 Drinking Water Semivolatle Organics by SW 8270 Containers Supplied:	10/14/2021 16:15		Only received one bottle from the client.

cnt=5
TB=0

4.9 + 0 = 4.9 ATG



Released By: Len A. May Date: 10/14/21 Received By: UPS Date: 10/11/21
 Released By: T. Roberts Date: 10/12/21

10/12/21 - NCF L1416755 TURLABTAZ

R5

Time estimate: 0h Time spent: 0h

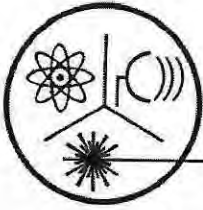
Members

-  Matthew Shacklock (responsible)
-  DR Daphne Richards
-  JZ Jordan Zito

- ☐ Parameter(s) past holding time
- ☐ Temperature not in range
- ☐ Improper container type
- ☐ pH not in range
- ☐ Insufficient sample volume
- ☐ Sample is biphasic
- ☐ Vials received with headspace
- ☒ Broken container
- ☐ Sufficient sample remains
- ☐ If broken container: Insufficient packing material around container
- ☐ If broken container: Insufficient packing material inside cooler
- ☐ If broken container: Improper handling by carrier: _____
- ☐ If broken container: Sample was frozen
- ☐ If broken container: Container lid not intact
- ☐ Client informed by Call
- ☐ Client informed by Email
- ☐ Client informed by Voicemail
- ☐ Date/Time: _____
- ☐ PM initials: _____
- ☐ Client Contact: _____

Comments

Matthew Shacklock	12 October 2021 3:56 PM
1 of 2 bottles received broken for 2110218-03	
Jordan Zito	12 October 2021 3:58 PM
proceed with remaining containers	
Matthew Shacklock	12 October 2021 4:04 PM
Done	



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

(480) 897-9459
FAX (480) 892-5446


Radiochemical Activity in Water (pCi/L)

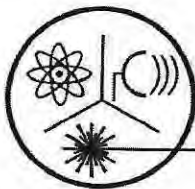
Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: October 07, 2021
Sample Received: October 13, 2021
Analysis Completed: October 25, 2021

Sample ID	Gross Alpha Activity Method 600/00-02 (pCi/L)	Uranium Activity Method ASTM D6239 (pCi/L)	Adjusted Gross Alpha (pCi/L)	Gross Beta Activity Method 900.0 (pCi/L)	Radium 226 Activity Method GammaRay HPGE (pCi/L)	Radium 228 Activity Method GammaRay HPGE (pCi/L)	Total Radium (pCi/L)
21J0218-01	4.2 ± 0.8	3.7 ± 0.7	0.5 ± 1.1	< 2.8	0.6 ± 0.2	< 0.6	0.6 ± 0.2

Date of Analysis	10/18/2021	10/22/2021	10/22/2021	10/19/2021	10/15/2021	10/15/2021	10/15/2021
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Robert L. Metzger, Ph.D., C.H.P. October 25, 2021
Date
Laboratory License Number AZ0462



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

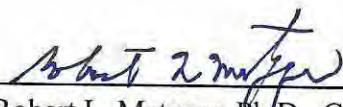
(480) 897-9459
FAX (480) 892-5446

Isotopic Uranium Analysis

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: October 07, 2021
Sample Received: October 13, 2021
Uranium Analysis Date: October 22, 2021

Sample No.	^{238}U	^{235}U	^{234}U	Total	
21J0218-01	1.8 ± 0.3	0.082 ± 0.002	1.8 ± 0.3	3.7 ± 0.7	Activity (pCi/L)
	5.2 ± 1.0	0.038 ± 0.001	0.00030 ± 0.00005	5.3 ± 1.0	Content ($\mu\text{g/L}$)
	Comments:				


Robert L. Metzger, Ph.D., C.H.P.

October 25, 2021

Date

Laboratory License Number AZ0462

Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
 Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____ PWS Name: _____

October 7, 2021 11:30 (24 hour clock)
 Sample Date Sample Time Owner/Contact Person _____

Owner/Contact Fax Number _____ Owner/Contact Phone Number _____

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

☐ Reduced Monitoring

☐ Quarterly

☐ Composite of four quarterly samples

Date Q1 collected: _____

Date Q2 collected: _____

Date Q3 collected: _____

Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
	15 pCi/L		Adjusted Gross Alpha	4000	10/22/2021	0.5 ± 1.1	
600/00-02		3 pCi/L	Gross Alpha	4002	10/18/2021	4.2 ± 0.8	
7500 - Rn			Radon	4004			
ASTM D6239	30 µg/L	1 µg/L	Combined Uranium	4006	10/22/2021	5.3 ± 1.0 µg/L	
			Uranium 234	4007	10/22/2021	0.00030 ± 0.00005	
			Uranium 235	4008	10/22/2021	0.038 ± 0.001	
			Uranium 238	4009	10/22/2021	5.2 ± 1.0	
	5 pCi/L	1 pCi/L	Combined Radium (226,228)	4010	10/15/2021	0.6 ± 0.2	
GammaRay HPGE		1 pCi/L	Radium 226	4020	10/15/2021	0.6 ± 0.2	
GammaRay HPGE		1 pCi/L	Radium 228	4030	10/15/2021	< 0.6	

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE67415

Lab ID Number: AZ0462

Lab Name: Radiation Safety Engineering, Inc.

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459

Comments: 21J0218-01

Authorized Signature: 

Date Public Water System Notified: _____

Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
 Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____ PWS Name: _____

October 7, 2021 11:30 (24 hour clock)
 Sample Date Sample Time Owner/Contact Person _____

Owner/Contact Fax Number _____ Owner/Contact Phone Number _____

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

☐ Reduced Monitoring Date Q1 collected: _____
☐ Quarterly Date Q2 collected: _____
☐ Composite of four quarterly samples Date Q3 collected: _____
 Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
900	4 mrem	4 pCi/L	Gross Beta	4100	10/19/2021	< 4 mrem	
906	20,000 pCi/L	1,000 pCi/L	Tritium	4102			
		10 pCi/L	Strontium-89	4172			
	8 pCi/L	2 pCi/L	Strontium-90	4174			
		1 pCi/L	Iodine-131	4264			
		10 pCi/L	Cesium-134	4270			

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE67415 _____

Lab ID Number: AZ0462 _____

Lab Name: Radiation Safety Engineering, Inc. _____

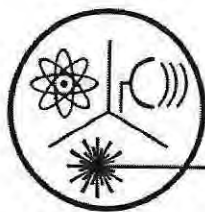
Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459 _____

Comments: 21J0218-01 _____

Authorized Signature:  _____

Date Public Water System Notified: _____

DWAR 6A: 11/2007



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121

Website: www.radsafe.com

(480) 897-9459

FAX (480) 892-5446

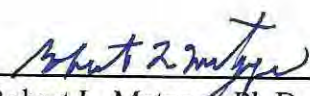
Radiochemical Activity in Water (pCi/L)

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: October 07, 2021
Sample Received: October 13, 2021
Analysis Completed: October 25, 2021

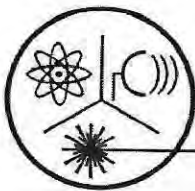
Sample ID	Gross Alpha Activity Method 600/00-02 (pCi/L)	Uranium Activity Method ASTM D6239 (pCi/L)	Adjusted Gross Alpha (pCi/L)	Gross Beta Activity Method 900.0 (pCi/L)	Radium 226 Activity Method GammaRay HPGE (pCi/L)	Radium 228 Activity Method GammaRay HPGE (pCi/L)	Total Radium (pCi/L)
21J0218-02	38.1 ± 2.2	35.1 ± 2.1	3.0 ± 3.0	15.5 ± 1.8	0.9 ± 0.2	< 0.6	0.9 ± 0.2

Date of Analysis	10/18/2021	10/22/2021	10/22/2021	10/19/2021	10/15/2021	10/15/2021	10/15/2021
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Robert L. Metzger, Ph.D., C.H.P.
Laboratory License Number AZ0462

October 25, 2021

Date



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

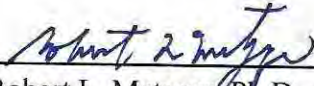
(480) 897-9459
FAX (480) 892-5446

Isotopic Uranium Analysis

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: October 07, 2021
Sample Received: October 13, 2021
Uranium Analysis Date: October 22, 2021

Sample No.	^{238}U	^{235}U	^{234}U	Total	
21J0218-02	12.3 ± 0.9	0.574 ± 0.006	22.2 ± 1.2	35.1 ± 2.1	Activity (pCi/L)
	36.7 ± 2.5	0.268 ± 0.003	0.00356 ± 0.00019	37.0 ± 2.6	Content ($\mu\text{g/L}$)
	Comments:				


Robert L. Metzger, Ph.D., C.H.P.

October 25, 2021

Date

Laboratory License Number AZ0462

Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
 Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____ PWS Name: _____

October 7, 2021 12:30 (24 hour clock) _____

Sample Date Sample Time Owner/Contact Person _____

Owner/Contact Fax Number _____ Owner/Contact Phone Number _____

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

☐ Reduced Monitoring

Date Q1 collected: _____

☐ Quarterly

Date Q2 collected: _____

☐ Composite of four quarterly samples

Date Q3 collected: _____

Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
	15 pCi/L		Adjusted Gross Alpha	4000	10/22/2021	3.0 ± 3.0	
600/00-02		3 pCi/L	Gross Alpha	4002	10/18/2021	38.1 ± 2.2	
7500 - Rn			Radon	4004			
ASTM D6239	30 µg/L	1 µg/L	Combined Uranium	4006	10/22/2021	37.0 ± 2.6 µg/L	X
			Uranium 234	4007	10/22/2021	0.00356 ± 0.00019	
			Uranium 235	4008	10/22/2021	0.268 ± 0.003	
			Uranium 238	4009	10/22/2021	36.7 ± 2.5	
	5 pCi/L	1 pCi/L	Combined Radium (226,228)	4010	10/15/2021	0.9 ± 0.2	
GammaRay HPGE		1 pCi/L	Radium 226	4020	10/15/2021	0.9 ± 0.2	
GammaRay HPGE		1 pCi/L	Radium 228	4030	10/15/2021	< 0.6	

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE67416 _____

Lab ID Number: AZ0462 _____

Lab Name: Radiation Safety Engineering, Inc. _____

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459 _____

Comments: 21J0218-02 _____

Authorized Signature:  _____

Date Public Water System Notified: _____

Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____

PWS Name: _____

October 7, 2021 12:30 (24 hour clock)

Sample Date Sample Time

Owner/Contact Person _____

Owner/Contact Fax Number _____

Owner/Contact Phone Number _____

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

☐ Reduced Monitoring

Date Q1 collected: _____

☐ Quarterly

Date Q2 collected: _____

☐ Composite of four quarterly samples

Date Q3 collected: _____

Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
900	4 mrem	4 pCi/L	Gross Beta	4100	10/19/2021	< 4 mrem	
906	20,000 pCi/L	1,000 pCi/L	Tritium	4102			
		10 pCi/L	Strontium-89	4172			
	8 pCi/L	2 pCi/L	Strontium-90	4174			
		1 pCi/L	Iodine-131	4264			
		10 pCi/L	Cesium-134	4270			

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE67416 _____

Lab ID Number: AZ0462 _____

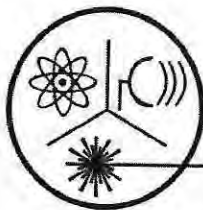
Lab Name: Radiation Safety Engineering, Inc. _____

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459 _____

Comments: 21J0218-02 _____

Authorized Signature:  _____

Date Public Water System Notified: _____



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121

Website: www.radsafe.com

(480) 897-9459

FAX (480) 892-5446

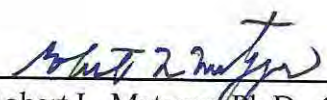
Radiochemical Activity in Water (pCi/L)

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

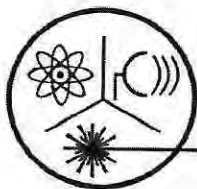
Sampling Date: October 07, 2021
Sample Received: October 13, 2021
Analysis Completed: October 25, 2021

Sample ID	Gross Alpha Activity Method 600/00-02 (pCi/L)	Uranium Activity Method ASTM D6239 (pCi/L)	Adjusted Gross Alpha (pCi/L)	Gross Beta Activity Method 900.0 (pCi/L)	Radium 226 Activity Method GammaRay HPGE (pCi/L)	Radium 228 Activity Method GammaRay HPGE (pCi/L)	Total Radium (pCi/L)
21J0218-03	11.7 ± 1.2	4.7 ± 0.7	7.0 ± 1.4	7.1 ± 1.6	1.9 ± 0.3	1.3 ± 0.3	3.2 ± 0.4

Date of Analysis	10/18/2021	10/22/2021	10/22/2021	10/19/2021	10/15/2021	10/15/2021	10/15/2021
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Robert L. Metzger, Ph.D., C.H.P.
Laboratory License Number AZ0462

October 25, 2021
Date



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121

Website: www.radsafe.com

(480) 897-9459

FAX (480) 892-5446

Isotopic Uranium Analysis

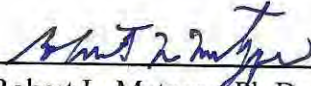
Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: October 07, 2021

Sample Received: October 13, 2021

Uranium Analysis Date: October 22, 2021

Sample No.	^{238}U	^{235}U	^{234}U	Total	
21J0218-03	2.0 ± 0.3	0.093 ± 0.002	2.7 ± 0.4	4.7 ± 0.7	Activity (pCi/L)
	5.9 ± 1.0	0.043 ± 0.001	0.00043 ± 0.00006	6.0 ± 1.0	Content ($\mu\text{g/L}$)
	Comments:				


Robert L. Metzger, Ph.D., C.H.P.

October 25, 2021

Date

Laboratory License Number AZ0462

Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
 Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____ PWS Name: _____

October 7, 2021 16:15 (24 hour clock) _____

Sample Date Sample Time Owner/Contact Person _____

Owner/Contact Fax Number _____ Owner/Contact Phone Number _____

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

☐ Reduced Monitoring

Date Q1 collected: _____

☐ Quarterly

Date Q2 collected: _____

☐ Composite of four quarterly samples

Date Q3 collected: _____

Date Q4 collected: _____

RADIOCHEMICAL ANALYSIS

>>>To be filled out by laboratory personnel<<<

Combined Uranium must be reported in micrograms per liter

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
	15 pCi/L		Adjusted Gross Alpha	4000	10/22/2021	7.0 ± 1.4	
600/00-02		3 pCi/L	Gross Alpha	4002	10/18/2021	11.7 ± 1.2	
7500 - Rn			Radon	4004			
ASTM D6239	30 µg/L	1 µg/L	Combined Uranium	4006	10/22/2021	6.0 ± 1.0 µg/L	
			Uranium 234	4007	10/22/2021	0.00043 ± 0.00006	
			Uranium 235	4008	10/22/2021	0.043 ± 0.001	
			Uranium 238	4009	10/22/2021	5.9 ± 1.0	
	5 pCi/L	1 pCi/L	Combined Radium (226,228)	4010	10/15/2021	3.2 ± 0.4	
GammaRay HPGE		1 pCi/L	Radium 226	4020	10/15/2021	1.9 ± 0.3	
GammaRay HPGE		1 pCi/L	Radium 228	4030	10/15/2021	1.3 ± 0.3	

LABORATORY INFORMATION

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE67417 _____

Lab ID Number: AZ0462 _____

Lab Name: Radiation Safety Engineering, Inc. _____

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459 _____

Comments: 21J0218-03 _____

Authorized Signature:  _____

Date Public Water System Notified: _____

Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____

PWS Name: _____

October 7, 2021 16:15 (24 hour clock)

Sample Date Sample Time

Owner/Contact Person _____

Owner/Contact Fax Number _____

Owner/Contact Phone Number _____

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

☐ Reduced Monitoring

Date Q1 collected: _____

☐ Quarterly

Date Q2 collected: _____

☐ Composite of four quarterly samples

Date Q3 collected: _____

Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
900	4 mrem	4 pCi/L	Gross Beta	4100	10/19/2021	< 4 mrem	
906	20,000 pCi/L	1,000 pCi/L	Tritium	4102			
		10 pCi/L	Strontium-89	4172			
	8 pCi/L	2 pCi/L	Strontium-90	4174			
		1 pCi/L	Iodine-131	4264			
		10 pCi/L	Cesium-134	4270			

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

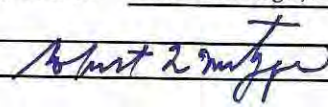
Specimen Number: RSE67417

Lab ID Number: AZ0462

Lab Name: Radiation Safety Engineering, Inc.

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459

Comments: 21J0218-03

Authorized Signature: 

Date Public Water System Notified: _____

SUBCONTRACT ORDER

Turner Laboratories, Inc.

21J0218

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Radiation Safety Engineering, Inc.
3245 N. Washington St.
Chandler, AZ 85225-1121
Phone : (480) 897-9459
Fax: (480) 892-5446
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
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Sample ID: 21J0218-01 Drinking Water Sampled: 10/07/2021 11:30

Radiochemistry, Uranium	04/05/2022 11:30		
Radiochemistry, Radium 226/228	11/06/2021 11:30		
Radiochemistry, Gross Alpha Beta	04/05/2022 11:30		

Containers Supplied:

67415

Sample ID: 21J0218-02 Drinking Water Sampled: 10/07/2021 12:30

Radiochemistry, Uranium	04/05/2022 12:30		
Radiochemistry, Radium 226/228	11/06/2021 12:30		
Radiochemistry, Gross Alpha Beta	04/05/2022 12:30		

Containers Supplied:

67416

Sample ID: 21J0218-03 Drinking Water Sampled: 10/07/2021 16:15

Radiochemistry, Uranium	04/05/2022 16:15		
Radiochemistry, Radium 226/228	11/06/2021 16:15		
Radiochemistry, Gross Alpha Beta	04/05/2022 16:15		

Containers Supplied:

67417

Released By	Date	Received By	Date
<i>Leah M. J.</i>	10/12/21 1600	<i>UPS</i>	10/12/21 1600
Released By	Date	Received By	Date
		<i>A.H.</i>	10-13-21 11:30



October 27, 2021

David Krizek
Rosemont Copper Company
5255 East Williams Circle, Suite W1065
Tucson, AZ 85711

TEL (520) 495-3527
FAX (520) 495-3540

RE: Groundwater

Work Order No.: 21J0237
Order Name: Groundwater
(2459991012/619033)

Dear David Krizek,

Turner Laboratories, Inc. received 1 sample(s) on 10/11/2021 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Elizabeth Kasik
Laboratory Director

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0237
Date Received: 10/11/2021

Order: Groundwater (2459991012/619033)

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date/Time
21J0237-01	GH2021-25	Ground Water	10/10/2021 1800

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0237
Date Received: 10/11/2021

Case Narrative

The 8270C analysis was performed by Pace Analytical National in Mount Juliet, TN.

The isotopes analyses was performed by Isotech in Champaign, IL.

The radiochemistry analysis was performed by Radiation Safety Engineering, Inc. in Chandler, AZ.

- C4 Confirmatory analysis was past holding time
- E4 Concentration estimated. Analyte was detected below laboratory Minimum Reporting Limit (MRL) but above MDL.
- E8 Analyte reported to MDL per project specification. Target analyte was not detected in the sample.
- H5 This test is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.
- L5 The associated blank spike recovery was above laboratory/method acceptance limits. This analyte was not detected in the sample.
- M1 Matrix spike recovery was high; the associated LCS/LCSD was acceptable.
- M2 Matrix spike recovery was low; the associated LCS/LCSD was acceptable.
- M3 The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated LCS/LCSD recovery was acceptable.
- M6 Matrix spike recovery was high. Data reported per ADEQ policy 0154.000. Matrix interference was confirmed.
- V1 CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

All soil, sludge, and solid matrix determinations are reported on a wet weight basis unless otherwise noted.

- ND Not Detected at or above the PQL
- PQL Practical Quantitation Limit
- DF Dilution Factor

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0237
Lab Sample ID: 21J0237-01

Client Sample ID: GH2021-25
Collection Date/Time: 10/10/2021 1800
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Hardness-Calculation									
Hardness, Calcium/Magnesium (As CaCO3)	160				mg/L	1	10/12/2021 0925	10/13/2021 1437	MH
Nitrate + Nitrite Sum-Calculation									
Nitrate and Nitrite Sum	ND		0.10		mg/L	1	10/11/2021 1506	10/12/2021 0009	MH
ICP Dissolved Metals-E 200.7 (4.4)									
Boron	0.044	0.0032	0.10	E4	mg/L	1	10/14/2021 1030	10/18/2021 1336	MH
Calcium	46		4.0		mg/L	1	10/15/2021 1010	10/18/2021 1336	MH
Chromium	ND	0.0030	0.030	E8	mg/L	1	10/14/2021 1030	10/18/2021 1336	MH
Iron	ND		0.30		mg/L	1	10/14/2021 1030	10/18/2021 1336	MH
Magnesium	11		3.0		mg/L	1	10/15/2021 1010	10/18/2021 1336	MH
Potassium	ND		5.0		mg/L	1	10/14/2021 1030	10/18/2021 1336	MH
Silica	29		2.0		mg/L	1	10/14/2021 1030	10/18/2021 1336	MH
Sodium	47		5.0		mg/L	1	10/14/2021 1030	10/18/2021 1336	MH
ICP/MS Dissolved Metals-E 200.8 (5.4)									
Aluminum	ND		0.040		mg/L	1	10/14/2021 1030	10/15/2021 1316	CR
Antimony	ND		0.00050		mg/L	1	10/14/2021 1030	10/15/2021 1316	CR
Arsenic	0.0070		0.00050		mg/L	1	10/14/2021 1030	10/15/2021 1316	CR
Barium	0.024		0.00050		mg/L	1	10/14/2021 1030	10/15/2021 1316	CR
Beryllium	ND		0.00025		mg/L	1	10/14/2021 1030	10/15/2021 1316	CR
Cadmium	ND		0.00025		mg/L	1	10/14/2021 1030	10/15/2021 1316	CR
Cobalt	ND		0.00025		mg/L	1	10/14/2021 1030	10/15/2021 1316	CR
Copper	0.0011		0.00050		mg/L	1	10/14/2021 1030	10/15/2021 1316	CR
Lead	ND		0.00050		mg/L	1	10/14/2021 1030	10/15/2021 1316	CR
Manganese	0.37		0.00025	M3	mg/L	1	10/14/2021 1030	10/15/2021 1316	CR
Molybdenum	0.23		0.00025	M3	mg/L	1	10/14/2021 1030	10/15/2021 1316	CR
Nickel	ND		0.00050		mg/L	1	10/14/2021 1030	10/15/2021 1316	CR
Selenium	0.00088	0.00025	0.0025	E4	mg/L	1	10/14/2021 1030	10/15/2021 1316	CR
Silver	ND	0.000021	0.00050	E8	mg/L	1	10/14/2021 1030	10/15/2021 1316	CR
Thallium	ND	0.000023	0.00050	E8	mg/L	1	10/14/2021 1030	10/15/2021 1316	CR
Uranium	0.0045		0.00050		mg/L	1	10/14/2021 1030	10/15/2021 1316	CR
Zinc	ND		0.040		mg/L	1	10/14/2021 1030	10/15/2021 1316	CR

Client: Rosemont Copper Company

Project: Groundwater

Work Order: 21J0237

Lab Sample ID: 21J0237-01

Client Sample ID: GH2021-25

Collection Date/Time: 10/10/2021 1800

Matrix: Ground Water

Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Mercury	ND	0.000041	0.0010	E8	mg/L	1	10/13/2021 1130	10/13/2021 1616	CWB
pH-E150.1									
pH (pH Units)	7.6			H5	-	1	10/11/2021 1720	10/11/2021 1727	CWB
Temperature (°C)	23			H5	-	1	10/11/2021 1720	10/11/2021 1727	CWB
ICP Total Metals-E200.7 (4.4)									
Boron	0.052	0.0032	0.10	E4	mg/L	1	10/12/2021 0925	10/13/2021 1437	MH
Calcium	47		4.0		mg/L	1	10/12/2021 0925	10/13/2021 1437	MH
Iron	0.33		0.30		mg/L	1	10/12/2021 0925	10/13/2021 1437	MH
Magnesium	11		3.0		mg/L	1	10/12/2021 0925	10/13/2021 1437	MH
Potassium	ND		5.0		mg/L	1	10/12/2021 0925	10/13/2021 1437	MH
Silica	29		0.20		mg/L	1	10/12/2021 0925	10/13/2021 1437	MH
Sodium	46		5.0		mg/L	1	10/12/2021 0925	10/13/2021 1437	MH
ICP/MS Total Metals-E200.8 (5.4)									
Aluminum	0.057		0.040		mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
Antimony	ND		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
Arsenic	0.0069		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
Barium	0.024		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
Beryllium	ND		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
Cadmium	ND		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
Chromium	ND		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
Cobalt	ND		0.000250		mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
Copper	0.0051		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
Lead	ND		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
Manganese	0.36		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
Molybdenum	0.22		0.00025		mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
Nickel	ND		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
Selenium	0.00040	0.00025	0.0025	E4	mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
Silver	ND	0.000021	0.00050	E8	mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
Thallium	ND	0.000023	0.00050	E8	mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
Uranium	0.0044		0.00050		mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
Zinc	ND		0.040		mg/L	1	10/12/2021 1200	10/13/2021 1504	CR
CVAA Total Mercury-E245.1									
Mercury	ND	0.00036	0.0010	E8	mg/L	1	10/14/2021 1300	10/14/2021 1642	CWB

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0237
Lab Sample ID: 21J0237-01

Client Sample ID: GH2021-25
Collection Date/Time: 10/10/2021 1800
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Anions by Ion Chromatography-E300.0 (2.1)									
Chloride	11		1.0	M2	mg/L	1	10/11/2021 1506	10/12/2021 0009	MH
Fluoride	3.0		0.50	M2	mg/L	1	10/11/2021 1506	10/12/2021 0009	MH
Nitrogen, Nitrate (As N)	ND		0.50		mg/L	1	10/11/2021 1506	10/12/2021 0009	MH
Nitrogen, Nitrite (As N)	ND		0.10		mg/L	1	10/11/2021 1506	10/12/2021 0009	MH
Phosphorus, Dissolved Orthophosphate (As P)	ND		0.50	V1, C4, L5	mg/L	1	10/11/2021 1506	10/14/2021 1711	MH
Sulfate	50		25	M2	mg/L	5	10/11/2021 1506	10/22/2021 1839	ACG
Calculation-Ion Balance									
Anion	6.70				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Cation	5.26				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Cation/Anion, % Difference	12.0				meq/L	1	10/26/2021 1240	10/26/2021 1241	KB
Alkalinity-SM2320B									
Alkalinity, Bicarbonate (As CaCO3)	220		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Alkalinity, Carbonate (As CaCO3)	ND		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Alkalinity, Hydroxide (As CaCO3)	ND		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Alkalinity, Phenolphthalein (As CaCO3)	ND		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Alkalinity, Total (As CaCO3)	220		2.0		mg/L	1	10/12/2021 1020	10/12/2021 1101	AGC
Specific Conductance-SM2510 B									
Conductivity	540		0.10		µmhos/cm	1	10/15/2021 1515	10/15/2021 1605	CWB
Total Dissolved Solids (Residue, Filterable)-SM2540 C									
Total Dissolved Solids (Residue, Filterable)	330		20		mg/L	1	10/13/2021 0839	10/15/2021 1030	AGC
Ammonia as N-SM4500-NH3 B,C									
Nitrogen, Ammonia (As N)	ND		0.50		mg/L	1	10/19/2021 1000	10/19/2021 1600	ACG
Silica-SM4500-SiO2 C									
Silica	30		10		mg/L	5	10/12/2021 0900	10/12/2021 1000	AGC

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0237
Lab Sample ID: 21J0237-01

Client Sample ID: GH2021-25
Collection Date/Time: 10/10/2021 1800
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Volatile Organic Compounds by GC/MS-SW8260B									
1,1,1,2-Tetrachloroethane	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,1,1-Trichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,1,2-Trichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,1,2-Trichlorotrifluoroethane	ND		5.0		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,1-Dichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,1-Dichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,1-Dichloropropene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,2,3-Trichlorobenzene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,2,3-Trichloropropane	ND		1.0		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,2,4-Trichlorobenzene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,2,4-Trimethylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,2-Dibromo-3-chloropropane	ND		10		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,2-Dibromoethane	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,2-Dichlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,2-Dichloroethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,2-Dichloropropane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,3,5-Trimethylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,3-Dichlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,3-Dichloropropane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
1,4-Dichlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
2,2-Dichloropropane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
2-Butanone (MEK)	ND		10		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
2-Chlorotoluene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
2-Hexanone	ND		2.5		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
4-Chlorotoluene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
4-Isopropyltoluene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
4-Methyl-2-pentanone	ND		2.5		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Acetone	ND		10		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Acrylonitrile	ND		10	V1	ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Benzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Bromobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Bromochloromethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Bromodichloromethane	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Bromoform	ND		2.0	V1	ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Bromomethane	ND		1.0	V1	ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Carbon disulfide	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Carbon tetrachloride	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Chlorobenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0237
Lab Sample ID: 21J0237-01

Client Sample ID: GH2021-25
Collection Date/Time: 10/10/2021 1800
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Chloroethane	ND		1.0	V1	ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Chloroform	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Chloromethane	ND		1.0	V1	ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
cis-1,2-Dichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
cis-1,3-Dichloropropene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Dibromochloromethane	ND		0.50	V1	ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Dibromomethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Dichlorodifluoromethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Ethylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Hexachlorobutadiene	ND		5.0		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Iodomethane	ND		10		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Isopropylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
m,p-Xylene	ND		1.0		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Methylene chloride	ND		1.0		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Naphthalene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
n-Butylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
n-Propylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
o-Xylene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
sec-Butylbenzene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Styrene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
tert-Butylbenzene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Tetrachloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Toluene	0.54		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
trans-1,2-Dichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
trans-1,3-Dichloropropene	ND		2.0		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
trans-1,4-Dichloro-2-butene	ND		10		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Trichloroethene	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Trichlorofluoromethane	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Vinyl acetate	ND		10		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Vinyl chloride	ND		0.50		ug/L	1	10/13/2021 0832	10/14/2021 0128	KP
Surr: 4-Bromofluorobenzene	109	70-130			%REC	1	10/13/2021 0832	10/14/2021 128	KP
Surr: Dibromofluoromethane	119	70-130			%REC	1	10/13/2021 0832	10/14/2021 128	KP
Surr: Toluene-d8	112	70-130			%REC	1	10/13/2021 0832	10/14/2021 128	KP

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110099 - E200.7 (4.4)										
Blank (2110099-BLK1)				Prepared: 10/11/2021 Analyzed: 10/13/2021						
Boron	ND	0.10	mg/L							
Calcium	ND	4.0	mg/L							
Iron	ND	0.30	mg/L							
Magnesium	ND	3.0	mg/L							
Potassium	ND	5.0	mg/L							
Silica	ND	0.20	mg/L							
Sodium	ND	5.0	mg/L							
LCS (2110099-BS1)				Prepared: 10/11/2021 Analyzed: 10/13/2021						
Boron	0.96	0.10	mg/L	1.000		96	85-115			
Calcium	9.3	4.0	mg/L	10.00		93	85-115			
Iron	0.92	0.30	mg/L	1.000		92	85-115			
Magnesium	9.5	3.0	mg/L	10.00		95	85-115			
Potassium	9.5	5.0	mg/L	10.00		95	85-115			
Sodium	9.6	5.0	mg/L	10.00		96	85-115			
LCS (2110099-BS2)				Prepared: 10/11/2021 Analyzed: 10/13/2021						
Silica	2.0	0.20	mg/L	2.143		93	85-115			
LCS Dup (2110099-BSD1)				Prepared: 10/11/2021 Analyzed: 10/13/2021						
Boron	1.0	0.10	mg/L	1.000		100	85-115	4	20	
Calcium	9.6	4.0	mg/L	10.00		96	85-115	3	20	
Iron	0.96	0.30	mg/L	1.000		96	85-115	4	20	
Magnesium	9.8	3.0	mg/L	10.00		98	85-115	3	20	
Potassium	10	5.0	mg/L	10.00		100	85-115	4	20	
Sodium	10	5.0	mg/L	10.00		101	85-115	5	20	
LCS Dup (2110099-BSD2)				Prepared: 10/11/2021 Analyzed: 10/13/2021						
Silica	2.0	0.20	mg/L	2.143		96	85-115	3	20	
Matrix Spike (2110099-MS1)		Source: 21J0043-01		Prepared: 10/11/2021 Analyzed: 10/13/2021						
Boron	1.2	0.10	mg/L	1.000	0.061	109	70-130			
Calcium	76	4.0	mg/L	10.00	67	89	70-130			
Iron	1.0	0.30	mg/L	1.000	0.0049	103	70-130			
Magnesium	15	3.0	mg/L	10.00	5.1	98	70-130			
Potassium	14	5.0	mg/L	10.00	3.4	104	70-130			
Sodium	72	5.0	mg/L	10.00	62	103	70-130			
Matrix Spike (2110099-MS2)		Source: 21J0043-01		Prepared: 10/11/2021 Analyzed: 10/13/2021						
Silica	31	0.20	mg/L	2.143	29	94	70-130			
Batch 2110108 - E 200.7 (4.4)										

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110108 - E 200.7 (4.4)										
Blank (2110108-BLK1)				Prepared: 10/11/2021 Analyzed: 10/18/2021						
Boron	ND	0.10	mg/L							
Calcium	ND	4.0	mg/L							
Chromium	ND	0.030	mg/L							
Iron	ND	0.30	mg/L							
Magnesium	ND	3.0	mg/L							
Potassium	ND	5.0	mg/L							
Silica	ND	2.0	mg/L							
Sodium	ND	5.0	mg/L							
LCS (2110108-BS1)				Prepared: 10/11/2021 Analyzed: 10/18/2021						
Boron	1.0	0.10	mg/L	1.000		102	85-115			
Calcium	9.5	4.0	mg/L	10.00		95	85-115			
Chromium	0.20	0.030	mg/L	0.2000		99	85-115			
Iron	0.96	0.30	mg/L	1.000		96	85-115			
Magnesium	9.8	3.0	mg/L	10.00		98	85-115			
Potassium	10	5.0	mg/L	10.00		101	85-115			
Sodium	10	5.0	mg/L	10.00		101	85-115			
LCS (2110108-BS2)				Prepared: 10/11/2021 Analyzed: 10/18/2021						
Silica	2.2	2.0	mg/L	2.143		102	90-110			
LCS Dup (2110108-BSD1)				Prepared: 10/11/2021 Analyzed: 10/18/2021						
Boron	1.0	0.10	mg/L	1.000		102	85-115	0.3	20	
Calcium	9.5	4.0	mg/L	10.00		95	85-115	0.2	20	
Chromium	0.20	0.030	mg/L	0.2000		100	85-115	0.09	20	
Iron	0.96	0.30	mg/L	1.000		96	85-115	0.2	20	
Magnesium	9.8	3.0	mg/L	10.00		98	85-115	0.6	20	
Potassium	10	5.0	mg/L	10.00		100	85-115	0.9	20	
Sodium	10	5.0	mg/L	10.00		100	85-115	0.7	20	
LCS Dup (2110108-BSD2)				Prepared: 10/11/2021 Analyzed: 10/18/2021						
Silica	2.2	2.0	mg/L	2.143		101	90-110	1	20	
Matrix Spike (2110108-MS1)		Source: 21J0174-33		Prepared: 10/11/2021 Analyzed: 10/18/2021						
Boron	1.4		mg/L	1.000	0.033	138	70-130			M6
Calcium	48		mg/L	10.00	47	2	70-130			M3
Chromium	0.32		mg/L	0.2000	0.048	134	70-130			M6
Iron	10		mg/L	1.000	11	NR	70-130			M3
Magnesium	290		mg/L	10.00	330	NR	70-130			M3
Potassium	12		mg/L	10.00	3.4	85	70-130			
Sodium	13		mg/L	10.00	5.1	76	70-130			

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110108 - E 200.7 (4.4)										
Matrix Spike (2110108-MS2)		Source: 21J0332-01		Prepared: 10/11/2021 Analyzed: 10/18/2021						
Boron	1.1	0.10	mg/L	1.000	0.020	112	70-130			
Calcium	71	4.0	mg/L	10.00	61	100	70-130			
Chromium	0.21	0.030	mg/L	0.2000	ND	105	70-130			
Iron	3.8	0.30	mg/L	1.000	2.9	99	70-130			
Magnesium	21	3.0	mg/L	10.00	11	102	70-130			
Potassium	12	5.0	mg/L	10.00	2.0	104	70-130			
Sodium	19	5.0	mg/L	10.00	9.2	101	70-130			
Matrix Spike (2110108-MS3)		Source: 21J0174-33		Prepared: 10/11/2021 Analyzed: 10/18/2021						
Silica	18		mg/L	2.143	18	NR	85-115		M3	
Matrix Spike (2110108-MS4)		Source: 21J0332-01		Prepared: 10/11/2021 Analyzed: 10/18/2021						
Silica	11	2.0	mg/L	2.143	9.7	84	85-115			
Batch 2110133 - E200.8 (5.4)										
Blank (2110133-BLK1)		Prepared: 10/12/2021 Analyzed: 10/13/2021								
Aluminum	ND	0.040	mg/L							
Antimony	ND	0.00050	mg/L							
Arsenic	ND	0.00050	mg/L							
Barium	ND	0.00050	mg/L							
Beryllium	ND	0.00025	mg/L							
Cadmium	ND	0.00025	mg/L							
Chromium	ND	0.00050	mg/L							
Cobalt	ND	0.000250	mg/L							
Copper	ND	0.00050	mg/L							
Lead	ND	0.00050	mg/L							
Manganese	ND	0.00025	mg/L							
Molybdenum	ND	0.00025	mg/L							
Nickel	ND	0.00050	mg/L							
Selenium	ND	0.0025	mg/L							
Silver	ND	0.00050	mg/L							
Thallium	ND	0.00050	mg/L							
Uranium	ND	0.00050	mg/L							
Zinc	ND	0.040	mg/L							

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110133 - E200.8 (5.4)										
LCS (2110133-BS1) Prepared: 10/12/2021 Analyzed: 10/13/2021										
Aluminum	0.10	0.040	mg/L	0.1000		103	85-115			
Antimony	0.047	0.00050	mg/L	0.05000		94	85-115			
Arsenic	0.048	0.00050	mg/L	0.05000		97	85-115			
Barium	0.048	0.00050	mg/L	0.05000		95	85-115			
Beryllium	0.048	0.00025	mg/L	0.05000		96	85-115			
Cadmium	0.047	0.00025	mg/L	0.05000		94	85-115			
Chromium	0.047	0.00050	mg/L	0.05000		94	85-115			
Cobalt	0.0478	0.000250	mg/L	0.05000		96	85-115			
Copper	0.048	0.00050	mg/L	0.05000		95	85-115			
Lead	0.049	0.00050	mg/L	0.05000		99	85-115			
Manganese	0.048	0.00025	mg/L	0.05000		96	85-115			
Molybdenum	0.047	0.00025	mg/L	0.05000		94	85-115			
Nickel	0.048	0.00050	mg/L	0.05000		95	85-115			
Selenium	0.049	0.0025	mg/L	0.05000		97	85-115			
Silver	0.047	0.00050	mg/L	0.05000		94	85-115			
Thallium	0.047	0.00050	mg/L	0.05000		95	85-115			
Uranium	0.046	0.00050	mg/L	0.05000		93	85-115			
Zinc	0.098	0.040	mg/L	0.1000		98	85-115			
LCS Dup (2110133-BS1) Prepared: 10/12/2021 Analyzed: 10/13/2021										
Aluminum	0.11	0.040	mg/L	0.1000		105	85-115	2	20	
Antimony	0.047	0.00050	mg/L	0.05000		95	85-115	0.3	20	
Arsenic	0.049	0.00050	mg/L	0.05000		97	85-115	0.9	20	
Barium	0.048	0.00050	mg/L	0.05000		95	85-115	0.1	20	
Beryllium	0.048	0.00025	mg/L	0.05000		96	85-115	0.03	20	
Cadmium	0.048	0.00025	mg/L	0.05000		95	85-115	0.7	20	
Chromium	0.047	0.00050	mg/L	0.05000		95	85-115	0.9	20	
Cobalt	0.0474	0.000250	mg/L	0.05000		95	85-115	0.7	20	
Copper	0.051	0.00050	mg/L	0.05000		102	85-115	6	20	
Lead	0.049	0.00050	mg/L	0.05000		98	85-115	1	20	
Manganese	0.048	0.00025	mg/L	0.05000		97	85-115	1	20	
Molybdenum	0.047	0.00025	mg/L	0.05000		94	85-115	0.3	20	
Nickel	0.048	0.00050	mg/L	0.05000		96	85-115	0.2	20	
Selenium	0.047	0.0025	mg/L	0.05000		95	85-115	3	20	
Silver	0.047	0.00050	mg/L	0.05000		95	85-115	0.5	20	
Thallium	0.048	0.00050	mg/L	0.05000		95	85-115	0.6	20	
Uranium	0.046	0.00050	mg/L	0.05000		93	85-115	0.2	20	
Zinc	0.098	0.040	mg/L	0.1000		98	85-115	0.1	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110133 - E200.8 (5.4)										
Matrix Spike (2110133-MS1)		Source: 21J0219-01		Prepared: 10/12/2021 Analyzed: 10/13/2021						
Aluminum	0.32	0.040	mg/L	0.1000	0.32	2	70-130			
Antimony	0.047	0.00050	mg/L	0.05000	0.000093	93	70-130			
Arsenic	0.058	0.00050	mg/L	0.05000	0.0084	99	70-130			
Barium	0.089	0.00050	mg/L	0.05000	0.061	55	70-130			
Beryllium	0.049	0.00025	mg/L	0.05000	0.000026	98	70-130			
Cadmium	0.046	0.00025	mg/L	0.05000	ND	93	70-130			
Chromium	0.047	0.00050	mg/L	0.05000	0.00073	93	70-130			
Cobalt	0.0456	0.000250	mg/L	0.05000	0.0000667	91	70-130			
Copper	0.13	0.00050	mg/L	0.05000	0.14	NR	70-130			M2
Lead	0.049	0.00050	mg/L	0.05000	0.00047	97	70-130			
Manganese	0.075	0.00025	mg/L	0.05000	0.0018	146	70-130			M1
Molybdenum	0.051	0.00025	mg/L	0.05000	0.00030	101	70-130			
Nickel	0.046	0.00050	mg/L	0.05000	0.00019	91	70-130			
Selenium	0.045	0.0025	mg/L	0.05000	ND	89	70-130			
Silver	0.041	0.00050	mg/L	0.05000	ND	81	70-130			
Thallium	0.047	0.00050	mg/L	0.05000	0.00036	94	70-130			
Uranium	0.051	0.00050	mg/L	0.05000	0.00020	101	70-130			
Zinc	0.39	0.040	mg/L	0.1000	0.011	376	70-130			M1
Matrix Spike (2110133-MS2)		Source: 21J0250-01		Prepared: 10/12/2021 Analyzed: 10/13/2021						
Aluminum	0.23	0.040	mg/L	0.1000	ND	234	70-130			M1
Antimony	0.047	0.00050	mg/L	0.05000	0.00010	95	70-130			
Arsenic	0.059	0.00050	mg/L	0.05000	0.011	96	70-130			
Barium	0.079	0.00050	mg/L	0.05000	0.013	133	70-130			M1
Beryllium	0.049	0.00025	mg/L	0.05000	ND	99	70-130			
Cadmium	0.046	0.00025	mg/L	0.05000	0.0016	89	70-130			
Chromium	0.047	0.00050	mg/L	0.05000	0.0011	92	70-130			
Cobalt	0.0458	0.000250	mg/L	0.05000	0.000177	91	70-130			
Copper	0.096	0.00050	mg/L	0.05000	0.0049	182	70-130			M1
Lead	0.050	0.00050	mg/L	0.05000	0.00063	98	70-130			
Manganese	0.088	0.00025	mg/L	0.05000	0.062	51	70-130			M2
Molybdenum	0.052	0.00025	mg/L	0.05000	0.0057	92	70-130			
Nickel	0.045	0.00050	mg/L	0.05000	0.00035	89	70-130			
Selenium	0.049	0.0025	mg/L	0.05000	0.00079	96	70-130			
Silver	0.041	0.00050	mg/L	0.05000	ND	82	70-130			
Thallium	0.048	0.00050	mg/L	0.05000	0.00028	96	70-130			
Uranium	0.055	0.00050	mg/L	0.05000	0.0033	104	70-130			
Zinc	0.23	0.040	mg/L	0.1000	0.20	26	70-130			M2
Batch 2110135 - E 245.1										
Blank (2110135-BLK1)		Prepared & Analyzed: 10/13/2021								
Mercury	0.000049	0.0010	mg/L							
LCS (2110135-BS1)		Prepared & Analyzed: 10/13/2021								
Mercury	0.0051	0.0010	mg/L	0.005000		101	85-115			
LCS Dup (2110135-BSD1)		Prepared & Analyzed: 10/13/2021								
Mercury	0.0051	0.0010	mg/L	0.005000		103	85-115	1	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110135 - E 245.1										
Matrix Spike (2110135-MS1)		Source: 21J0073-01		Prepared & Analyzed: 10/13/2021						
Mercury	0.0051	0.0010	mg/L	0.005000	0.000047	101	70-130			
Matrix Spike Dup (2110135-MSD1)		Source: 21J0073-01		Prepared & Analyzed: 10/13/2021						
Mercury	0.0051	0.0010	mg/L	0.005000	0.000047	102	70-130	0.2	20	
Batch 2110154 - E 200.8 (5.4)										
Blank (2110154-BLK1)				Prepared: 10/14/2021 Analyzed: 10/15/2021						
Aluminum	ND	0.040	mg/L							
Antimony	ND	0.00050	mg/L							
Arsenic	ND	0.00050	mg/L							
Barium	ND	0.00050	mg/L							
Beryllium	ND	0.00025	mg/L							
Cadmium	ND	0.00025	mg/L							
Cobalt	ND	0.00025	mg/L							
Copper	ND	0.00050	mg/L							
Lead	ND	0.00050	mg/L							
Manganese	ND	0.00025	mg/L							
Molybdenum	ND	0.00025	mg/L							
Nickel	ND	0.00050	mg/L							
Selenium	ND	0.0025	mg/L							
Silver	ND	0.00050	mg/L							
Thallium	ND	0.00050	mg/L							
Uranium	ND	0.00050	mg/L							
Zinc	ND	0.040	mg/L							
LCS (2110154-BS1)				Prepared: 10/14/2021 Analyzed: 10/15/2021						
Aluminum	0.10	0.040	mg/L	0.1000		103	85-115			
Antimony	0.049	0.00050	mg/L	0.05000		97	85-115			
Arsenic	0.047	0.00050	mg/L	0.05000		94	85-115			
Barium	0.048	0.00050	mg/L	0.05000		96	85-115			
Beryllium	0.049	0.00025	mg/L	0.05000		97	85-115			
Cadmium	0.049	0.00025	mg/L	0.05000		97	85-115			
Cobalt	0.048	0.00025	mg/L	0.05000		97	85-115			
Copper	0.047	0.00050	mg/L	0.05000		94	85-115			
Lead	0.048	0.00050	mg/L	0.05000		96	85-115			
Manganese	0.049	0.00025	mg/L	0.05000		98	85-115			
Molybdenum	0.049	0.00025	mg/L	0.05000		98	85-115			
Nickel	0.048	0.00050	mg/L	0.05000		96	85-115			
Selenium	0.048	0.0025	mg/L	0.05000		96	85-115			
Silver	0.045	0.00050	mg/L	0.05000		91	85-115			
Thallium	0.049	0.00050	mg/L	0.05000		98	85-115			
Uranium	0.049	0.00050	mg/L	0.05000		99	85-115			
Zinc	0.10	0.040	mg/L	0.1000		100	85-115			

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110154 - E 200.8 (5.4)										
LCS Dup (2110154-BSD1)				Prepared: 10/14/2021 Analyzed: 10/15/2021						
Aluminum	0.10	0.040	mg/L	0.1000		101	85-115	2	20	
Antimony	0.049	0.00050	mg/L	0.05000		98	85-115	0.9	20	
Arsenic	0.049	0.00050	mg/L	0.05000		97	85-115	3	20	
Barium	0.049	0.00050	mg/L	0.05000		99	85-115	3	20	
Beryllium	0.048	0.00025	mg/L	0.05000		96	85-115	1	20	
Cadmium	0.049	0.00025	mg/L	0.05000		98	85-115	0.5	20	
Cobalt	0.049	0.00025	mg/L	0.05000		97	85-115	0.3	20	
Copper	0.048	0.00050	mg/L	0.05000		95	85-115	2	20	
Lead	0.049	0.00050	mg/L	0.05000		97	85-115	2	20	
Manganese	0.050	0.00025	mg/L	0.05000		99	85-115	1	20	
Molybdenum	0.050	0.00025	mg/L	0.05000		99	85-115	1	20	
Nickel	0.048	0.00050	mg/L	0.05000		96	85-115	0.1	20	
Selenium	0.049	0.0025	mg/L	0.05000		98	85-115	3	20	
Silver	0.046	0.00050	mg/L	0.05000		92	85-115	1	20	
Thallium	0.050	0.00050	mg/L	0.05000		100	85-115	1	20	
Uranium	0.050	0.00050	mg/L	0.05000		100	85-115	1	20	
Zinc	0.10	0.040	mg/L	0.1000		101	85-115	0.8	20	
Matrix Spike (2110154-MS1)				Source: 21J0237-01		Prepared: 10/14/2021 Analyzed: 10/21/2021				
Aluminum	0.099	0.040	mg/L	0.1000	ND	99	70-130			
Antimony	0.051	0.00050	mg/L	0.05000	0.000094	102	70-130			
Arsenic	0.055	0.00050	mg/L	0.05000	0.0070	95	70-130			
Barium	0.072	0.00050	mg/L	0.05000	0.024	96	70-130			
Beryllium	0.049	0.00025	mg/L	0.05000	0.000062	97	70-130			
Cadmium	0.047	0.00025	mg/L	0.05000	0.00011	94	70-130			
Cobalt	0.044	0.00025	mg/L	0.05000	0.00016	88	70-130			
Copper	0.044	0.00050	mg/L	0.05000	0.0011	86	70-130			
Lead	0.048	0.00050	mg/L	0.05000	ND	96	70-130			
Manganese	0.40	0.00025	mg/L	0.05000	0.37	50	70-130			M3
Molybdenum	0.26	0.00025	mg/L	0.05000	0.23	68	70-130			M3
Nickel	0.042	0.00050	mg/L	0.05000	0.00028	84	70-130			
Selenium	0.049	0.0025	mg/L	0.05000	0.00088	97	70-130			
Silver	0.040	0.00050	mg/L	0.05000	ND	80	70-130			
Thallium	0.048	0.00050	mg/L	0.05000	ND	96	70-130			
Uranium	0.058	0.00050	mg/L	0.05000	0.0045	107	70-130			
Zinc	0.11	0.040	mg/L	0.1000	0.016	91	70-130			
Batch 2110158 - E245.1										
Blank (2110158-BLK1)				Prepared & Analyzed: 10/14/2021						
Mercury	ND	0.0010	mg/L							
LCS (2110158-BS1)				Prepared & Analyzed: 10/14/2021						
Mercury	0.0050	0.0010	mg/L	0.005000		100	85-115			
LCS Dup (2110158-BSD1)				Prepared & Analyzed: 10/14/2021						
Mercury	0.0047	0.0010	mg/L	0.005000		94	85-115	6	20	
Matrix Spike (2110158-MS1)				Source: 21J0054-01		Prepared & Analyzed: 10/14/2021				
Mercury	0.0050	0.0010	mg/L	0.005000	ND	99	70-130			

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110158 - E245.1										
Matrix Spike Dup (2110158-MSD1)		Source: 21J0054-01		Prepared & Analyzed: 10/14/2021						
Mercury	0.0049	0.0010	mg/L	0.005000	ND	99	70-130	0.7	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110118 - SM2320B										
Blank (2110118-BLK1)				Prepared & Analyzed: 10/12/2021						
Alkalinity, Bicarbonate (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Carbonate (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Hydroxide (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Phenolphthalein (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Total (As CaCO3)	ND	2.0	mg/L							
LCS (2110118-BS1)				Prepared & Analyzed: 10/12/2021						
Alkalinity, Total (As CaCO3)	250	2.0	mg/L	250.0		101	90-110			
LCS Dup (2110118-BSD1)				Prepared & Analyzed: 10/12/2021						
Alkalinity, Total (As CaCO3)	250	2.0	mg/L	250.0		100	90-110	0.8	10	
Matrix Spike (2110118-MS1)		Source: 21J0218-03		Prepared & Analyzed: 10/12/2021						
Alkalinity, Total (As CaCO3)	380	2.0	mg/L	250.0	140	98	70-130			
Matrix Spike Dup (2110118-MSD1)		Source: 21J0218-03		Prepared & Analyzed: 10/12/2021						
Alkalinity, Total (As CaCO3)	390	2.0	mg/L	250.0	140	100	70-130	1	10	
Batch 2110119 - SM4500-SiO2 C										
Blank (2110119-BLK1)				Prepared & Analyzed: 10/12/2021						
Silica	ND	2.0	mg/L							
LCS (2110119-BS1)				Prepared & Analyzed: 10/12/2021						
Silica	8.3	2.0	mg/L	8.000		104	90-110			
LCS Dup (2110119-BSD1)				Prepared & Analyzed: 10/12/2021						
Silica	8.3	2.0	mg/L	8.000		104	90-110	0.4	20	
Matrix Spike (2110119-MS1)		Source: 21J0218-03		Prepared & Analyzed: 10/12/2021						
Silica	61	10	mg/L	40.00	16	114	85-115			
Matrix Spike Dup (2110119-MSD1)		Source: 21J0218-03		Prepared & Analyzed: 10/12/2021						
Silica	61	10	mg/L	40.00	16	114	85-115	0.1	20	
Batch 2110121 - E150.1										
Duplicate (2110121-DUP1)		Source: 21J0237-01		Prepared: 10/11/2021 Analyzed: 10/12/2021						
pH (pH Units)	7.6		-		7.6			0.1	200	H5
Temperature (°C)	23		-		23			0	200	H5
Batch 2110124 - SM2540 C										
Duplicate (2110124-DUP1)		Source: 21J0289-01		Prepared: 10/13/2021 Analyzed: 10/15/2021						
Total Dissolved Solids (Residue, Filterable)	1500	20	mg/L		1400			1	5	
Batch 2110181 - SM2510 B										
LCS (2110181-BS1)				Prepared & Analyzed: 10/15/2021						
Conductivity	150	0.10	µmhos/cm	141.2		108	0-200			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110181 - SM2510 B										
LCS Dup (2110181-BSD1)				Prepared & Analyzed: 10/15/2021						
Conductivity	150	0.10	µmhos/cm	141.2		108	0-200	0	200	
Duplicate (2110181-DUP1)				Source: 21J0340-01 Prepared & Analyzed: 10/15/2021						
Conductivity	4.5	0.10	µmhos/cm		4.6			2	10	
Batch 2110217 - SM4500-NH3 B,C										
Blank (2110217-BLK1)				Prepared & Analyzed: 10/19/2021						
Nitrogen, Ammonia (As N)	ND	0.50	mg/L							
LCS (2110217-BS1)				Prepared & Analyzed: 10/19/2021						
Nitrogen, Ammonia (As N)	5.5	0.50	mg/L	5.000		110	90-110			
LCS Dup (2110217-BSD1)				Prepared & Analyzed: 10/19/2021						
Nitrogen, Ammonia (As N)	5.2	0.50	mg/L	5.000		105	90-110	5	10	
Matrix Spike (2110217-MS1)				Source: 21J0011-01 Prepared & Analyzed: 10/19/2021						
Nitrogen, Ammonia (As N)	4.6	0.50	mg/L	5.000	ND	93	75-120			
Matrix Spike (2110217-MS2)				Source: 21J0332-01 Prepared & Analyzed: 10/19/2021						
Nitrogen, Ammonia (As N)	4.7	0.50	mg/L	5.000	ND	94	75-120			
Matrix Spike Dup (2110217-MSD1)				Source: 21J0011-01 Prepared & Analyzed: 10/19/2021						
Nitrogen, Ammonia (As N)	5.0	0.50	mg/L	5.000	ND	99	75-120	7	20	
Matrix Spike Dup (2110217-MSD2)				Source: 21J0332-01 Prepared & Analyzed: 10/19/2021						
Nitrogen, Ammonia (As N)	4.8	0.50	mg/L	5.000	ND	96	75-120	2	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110190 - SW8260B										

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110190 - SW8260B										
Blank (2110190-BLK1)				Prepared & Analyzed: 10/13/2021						
1,1,1,2-Tetrachloroethane	ND	0.50	ug/L							
1,1,1-Trichloroethane	ND	0.50	ug/L							
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L							
1,1,2-Trichloroethane	ND	0.50	ug/L							
1,1,2-Trichlorotrifluoroethane	ND	5.0	ug/L							
1,1-Dichloroethane	ND	0.50	ug/L							
1,1-Dichloroethene	ND	0.50	ug/L							
1,1-Dichloropropene	ND	0.50	ug/L							
1,2,3-Trichlorobenzene	ND	2.0	ug/L							
1,2,3-Trichloropropane	ND	1.0	ug/L							
1,2,4-Trichlorobenzene	ND	2.0	ug/L							
1,2,4-Trimethylbenzene	ND	0.50	ug/L							
1,2-Dibromo-3-chloropropane	ND	10	ug/L							
1,2-Dibromoethane	ND	2.0	ug/L							
1,2-Dichlorobenzene	ND	0.50	ug/L							
1,2-Dichloroethane	ND	0.50	ug/L							
1,2-Dichloropropane	ND	0.50	ug/L							
1,3,5-Trimethylbenzene	ND	0.50	ug/L							
1,3-Dichlorobenzene	ND	0.50	ug/L							
1,3-Dichloropropane	ND	0.50	ug/L							
1,4-Dichlorobenzene	ND	0.50	ug/L							
2,2-Dichloropropane	ND	0.50	ug/L							
2-Butanone (MEK)	ND	10	ug/L							
2-Chlorotoluene	ND	0.50	ug/L							
2-Hexanone	ND	2.5	ug/L							
4-Chlorotoluene	ND	0.50	ug/L							
4-Isopropyltoluene	ND	0.50	ug/L							
4-Methyl-2-pentanone	ND	2.5	ug/L							
Acetone	ND	10	ug/L							
Acrylonitrile	ND	10	ug/L							
Benzene	ND	0.50	ug/L							
Bromobenzene	ND	0.50	ug/L							
Bromochloromethane	ND	0.50	ug/L							
Bromodichloromethane	ND	0.50	ug/L							
Bromoform	ND	2.0	ug/L							
Bromomethane	ND	1.0	ug/L							
Carbon disulfide	ND	2.0	ug/L							
Carbon tetrachloride	ND	0.50	ug/L							
Chlorobenzene	ND	0.50	ug/L							
Chloroethane	ND	1.0	ug/L							
Chloroform	ND	0.50	ug/L							
Chloromethane	ND	1.0	ug/L							
cis-1,2-Dichloroethene	ND	0.50	ug/L							
cis-1,3-Dichloropropene	ND	2.0	ug/L							
Dibromochloromethane	ND	0.50	ug/L							
Dibromomethane	ND	0.50	ug/L							
Dichlorodifluoromethane	ND	0.50	ug/L							
Ethylbenzene	ND	0.50	ug/L							

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110190 - SW8260B										
Blank (2110190-BLK1)				Prepared & Analyzed: 10/13/2021						
Hexachlorobutadiene	ND	5.0	ug/L							
Iodomethane	ND	10	ug/L							
Isopropylbenzene	ND	0.50	ug/L							
m,p-Xylene	ND	1.0	ug/L							
Methylene chloride	ND	1.0	ug/L							
Naphthalene	ND	2.0	ug/L							
n-Butylbenzene	ND	0.50	ug/L							
n-Propylbenzene	ND	0.50	ug/L							
o-Xylene	ND	0.50	ug/L							
sec-Butylbenzene	ND	2.0	ug/L							
Styrene	ND	0.50	ug/L							
tert-Butylbenzene	ND	0.50	ug/L							
Tetrachloroethene	ND	0.50	ug/L							
Toluene	ND	0.50	ug/L							
trans-1,2-Dichloroethene	ND	0.50	ug/L							
trans-1,3-Dichloropropene	ND	2.0	ug/L							
trans-1,4-Dichloro-2-butene	ND	10	ug/L							
Trichloroethene	ND	0.50	ug/L							
Trichlorofluoromethane	ND	0.50	ug/L							
Vinyl acetate	ND	10	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	26.7		ug/L	25.00		107	70-130			
Surrogate: Dibromofluoromethane	29.2		ug/L	25.00		117	70-130			
Surrogate: Toluene-d8	27.0		ug/L	25.00		108	70-130			
LCS (2110190-BS1)				Prepared & Analyzed: 10/13/2021						
1,1-Dichloroethene	23		ug/L	25.00		90	70-130			
Benzene	25		ug/L	25.00		101	70-130			
Chlorobenzene	26		ug/L	25.00		103	70-130			
Toluene	25		ug/L	25.00		99	70-130			
Trichloroethene	25		ug/L	25.00		99	70-130			
Surrogate: 4-Bromofluorobenzene	25.6		ug/L	25.00		102	70-130			
Surrogate: Dibromofluoromethane	28.1		ug/L	25.00		112	70-130			
Surrogate: Toluene-d8	25.9		ug/L	25.00		103	70-130			
LCS Dup (2110190-BSD1)				Prepared & Analyzed: 10/13/2021						
1,1-Dichloroethene	23		ug/L	25.00		92	70-130	2	30	
Benzene	25		ug/L	25.00		102	70-130	1	30	
Chlorobenzene	26		ug/L	25.00		105	70-130	2	30	
Toluene	25		ug/L	25.00		102	70-130	3	30	
Trichloroethene	25		ug/L	25.00		101	70-130	2	30	
Surrogate: 4-Bromofluorobenzene	27.1		ug/L	25.00		108	70-130			
Surrogate: Dibromofluoromethane	29.4		ug/L	25.00		118	70-130			
Surrogate: Toluene-d8	27.1		ug/L	25.00		108	70-130			

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110190 - SW8260B										
Matrix Spike (2110190-MS1)		Source: 21J0218-01		Prepared: 10/13/2021 Analyzed: 10/14/2021						
1,1-Dichloroethene	24		ug/L	25.00	0.010	95	70-130			
Benzene	26		ug/L	25.00	0.0	106	70-130			
Chlorobenzene	27		ug/L	25.00	0.0	107	70-130			
Toluene	26		ug/L	25.00	0.0	104	70-130			
Trichloroethene	25		ug/L	25.00	0.0	102	70-130			
Surrogate: 4-Bromofluorobenzene	26.1		ug/L	25.00		105	70-130			
Surrogate: Dibromofluoromethane	28.5		ug/L	25.00		114	70-130			
Surrogate: Toluene-d8	27.2		ug/L	25.00		109	70-130			
Matrix Spike Dup (2110190-MSD1)		Source: 21J0218-01		Prepared: 10/13/2021 Analyzed: 10/14/2021						
1,1-Dichloroethene	22		ug/L	25.00	0.010	90	70-130	6	30	
Benzene	25		ug/L	25.00	0.0	101	70-130	5	30	
Chlorobenzene	25		ug/L	25.00	0.0	102	70-130	5	30	
Toluene	25		ug/L	25.00	0.0	100	70-130	4	30	
Trichloroethene	24		ug/L	25.00	0.0	96	70-130	5	30	
Surrogate: 4-Bromofluorobenzene	26.4		ug/L	25.00		105	70-130			
Surrogate: Dibromofluoromethane	28.1		ug/L	25.00		113	70-130			
Surrogate: Toluene-d8	27.1		ug/L	25.00		108	70-130			

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110106 - E300.0 (2.1)										
Blank (2110106-BLK1)				Prepared & Analyzed: 10/11/2021						
Chloride	ND	1.0	mg/L							
Fluoride	ND	0.50	mg/L							
Nitrogen, Nitrate (As N)	ND	0.50	mg/L							
Nitrogen, Nitrite (As N)	ND	0.10	mg/L							
Sulfate	ND	5.0	mg/L							
LCS (2110106-BS1)				Prepared & Analyzed: 10/11/2021						
Chloride	12	1.0	mg/L	12.50		96	90-110			
Fluoride	2.0	0.50	mg/L	2.000		100	90-110			
Nitrogen, Nitrate (As N)	4.8	0.50	mg/L	5.000		97	90-110			
Nitrogen, Nitrite (As N)	2.5	0.10	mg/L	2.500		99	90-110			
Sulfate	12	5.0	mg/L	12.50		98	90-110			
LCS Dup (2110106-BSD1)				Prepared & Analyzed: 10/11/2021						
Chloride	12	1.0	mg/L	12.50		96	90-110	0.03	10	
Fluoride	2.0	0.50	mg/L	2.000		99	90-110	1	10	
Nitrogen, Nitrate (As N)	4.8	0.50	mg/L	5.000		97	90-110	0.06	10	
Nitrogen, Nitrite (As N)	2.5	0.10	mg/L	2.500		99	90-110	0.02	10	
Sulfate	12	5.0	mg/L	12.50		98	90-110	0.2	10	
Matrix Spike (2110106-MS1)		Source: 21J0237-01		Prepared: 10/11/2021 Analyzed: 10/12/2021						
Chloride	24	1.0	mg/L	12.50	11	105	80-120			
Fluoride	4.4	0.50	mg/L	2.000	3.0	72	80-120			M2
Nitrogen, Nitrate (As N)	4.9	0.50	mg/L	5.000	0.20	94	80-120			
Nitrogen, Nitrite (As N)	2.5	0.10	mg/L	2.500	ND	99	80-120			
Matrix Spike (2110106-MS2)		Source: 21J0237-01RE1		Prepared: 10/11/2021 Analyzed: 10/19/2021						
Chloride	14	1.0	mg/L	12.50	11	25	80-120			M2
Fluoride	2.4	0.50	mg/L	2.000	3.0	NR	80-120			M2
Nitrogen, Nitrate (As N)	4.9	0.50	mg/L	5.000	0.20	94	80-120			
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500	ND	97	80-120			
Phosphorus, Dissolved Orthophosphate (As P)	2.7	0.50	mg/L	2.500	ND	108	80-120			
Sulfate	22	5.0	mg/L	12.50	50	NR	80-120			M2
Matrix Spike Dup (2110106-MSD1)		Source: 21J0237-01		Prepared: 10/11/2021 Analyzed: 10/12/2021						
Chloride	25	1.0	mg/L	12.50	11	106	80-120	0.5	10	
Fluoride	4.4	0.50	mg/L	2.000	3.0	73	80-120	0.5	10	M2
Nitrogen, Nitrate (As N)	5.0	0.50	mg/L	5.000	0.20	95	80-120	0.9	10	
Nitrogen, Nitrite (As N)	2.5	0.10	mg/L	2.500	ND	100	80-120	1	10	
Matrix Spike Dup (2110106-MSD2)		Source: 21J0237-01RE1		Prepared: 10/11/2021 Analyzed: 10/19/2021						
Chloride	14	1.0	mg/L	12.50	11	25	80-120	0.7	10	M2
Fluoride	2.0	0.50	mg/L	2.000	3.0	NR	80-120	16	10	M2
Nitrogen, Nitrate (As N)	4.8	0.50	mg/L	5.000	0.20	93	80-120	0.9	10	
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500	ND	97	80-120	0.4	10	
Phosphorus, Dissolved Orthophosphate (As P)	2.6	0.50	mg/L	2.500	ND	103	80-120	4	10	
Sulfate	21	5.0	mg/L	12.50	50	NR	80-120	3	10	M2
Batch 2110140 - E300.0 (2.1)										

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0237
Date Received: 10/11/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Blank (2110140-BLK1)				Prepared & Analyzed: 10/14/2021						
Phosphorus, Dissolved Orthophosphate (As P)	ND	0.50	mg/L							
LCS (2110140-BS1)				Prepared & Analyzed: 10/14/2021						
Phosphorus, Dissolved Orthophosphate (As P)	2.9	0.50	mg/L	2.500		115	90-110			L5
LCS Dup (2110140-BSD1)				Prepared & Analyzed: 10/14/2021						
Phosphorus, Dissolved Orthophosphate (As P)	2.8	0.50	mg/L	2.500		114	90-110	1	10	L5
Matrix Spike (2110140-MS1)				Source: 21J0408-03		Prepared & Analyzed: 10/14/2021				
Phosphorus, Dissolved Orthophosphate (As P)	2.8	0.50	mg/L	2.500	ND	112	80-120			
Matrix Spike (2110140-MS2)				Source: 21J0409-01		Prepared & Analyzed: 10/14/2021				
Phosphorus, Dissolved Orthophosphate (As P)	2.9	0.50	mg/L	2.500	ND	116	80-120			
Matrix Spike Dup (2110140-MSD1)				Source: 21J0408-03		Prepared & Analyzed: 10/14/2021				
Phosphorus, Dissolved Orthophosphate (As P)	2.8	0.50	mg/L	2.500	ND	113	80-120	1	10	
Matrix Spike Dup (2110140-MSD2)				Source: 21J0409-01		Prepared: 10/14/2021 Analyzed: 10/15/2021				
Phosphorus, Dissolved Orthophosphate (As P)	3.0	0.50	mg/L	2.500	ND	120	80-120	4	10	



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Fax: (520) 882-9788
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CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 2150237 DATE 10/11/21 PAGE 1 OF 1

PROJECT NAME : Groundwater (2459991012/619033)

CONTACT NAME : David Krizek

COMPANY NAME : Rosemont Copper Company

ADDRESS : 5255 E Williams Circle, Suite 1065

CITY : Tucson STATE : AZ ZIP CODE :

PHONE : 520-495-3527 FAX :

SAMPLER'S SIGNATURE [Signature]

SAMPLE I.D. DATE TIME LAB I.D. SAMPLE MATRIX*

GH2021-25 10/10/21 18:00 GW

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NUMBER OF CONTAINERS

General Chemistry - see attached
Dissolved Metals - see attached
Total Recoverable Metals - see attached
Radiochemicals - see attached
Stable Isotopes (H and O) - see attached
Organics - Volatile - see attached
Organics - Semi-Volatile - see attached

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

1. RELINQUISHED BY:

Signature [Signature]

Printed Name

Bill Goldsmith

Pitman Associates

Date/Time 10/11/21 08:02

2. RECEIVED BY:

Signature [Signature]

Printed Name

Turner Laboratories, Inc.

Firm

Date/Time 10/11/21 05:02

3. RELINQUISHED BY:

Signature [Signature]

Printed Name

Firm

Date/Time

*LEGEND

DW = DRINKING WATER
GW = GROUNDWATER
SD = SOLID
SG = SLUDGE
SL = SOIL
ST = STORMWATER
WW = WASTEWATER

TURNAROUND REQUIREMENTS:

Standard (approx. 10 days)*

Next day 2 Day X 5 Day*

X Email Preliminary Results To:

david.krizek@turnerlabs.com

* Working Days

REPORT REQUIREMENTS:

X I. Routine Report

X II. Report (includes DUP, MS, MSD, as required, may be changed as samples)

III. Date Validation Report (includes All Raw Data)

Add 10% to Invoice

INVOICE INFORMATION:

Account Y N

P.O. #

Bill to:

SAMPLE RECEIPT:

Total Containers 11

Temperature 2.9

Wet Ice ☒ Blue Ice ☐

SPECIAL INSTRUCTIONS/COMMENTS:

Compliance Analysis: ☐ Yes ☐ No

Container Intact ☒ Preservation Confirmation ☐

Appropriate Head Space ☐

Received Within Hold Time ☐

COC/Labels Agree ☐

Mail ADEQ Forms: ☐ Yes ☐ No

Mail ADEQ Forms: ☐ Yes ☐ No

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions					
Frequency: As needed and when sampled (Field Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
General Measurements					
Depth to Water level	feet	Water Level Sounder	NA		
Water level elevation	feet amsl	calculation	NA		
		Oakton PC 450 Meter/Oakton pH Con 10 Meter or equivalent			
Temperature – field	° C (Celsius)	Oakton PC 450 Meter/Oakton pH Con 10 Meter or equivalent	NA		
pH – field	S.U.		NA		
		Oakton PC 450 Meter/Oakton pH Con 10 Meter or equivalent			
Conductivity – field	µS/cm		NA		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)				
Frequency: As needed and when sampled (Laboratory Parameters)				
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)	
General Measurements, General Chemistry				
Temperature – lab	° C	SM 4500 H+B	NA	
pH – lab	S.U.	SM 4500 H+B	NA	
Conductivity – lab	µS/cm	SW-846 9050A	2.0	
Total dissolved solids	mg/L	SM 2540 C	20	
Hardness ¹	mg/L	SM 2340B/calculation	13.0	
Cation/Anion Balance	%	calculation	NA	
Total alkalinity	mg/L	SM 2320 B	4.0	
Bicarbonate	mg/L	SM 2320 B	4.0	
Carbonate	mg/L	SM 2320 B	4.0	
Hydroxide	mg/L	SM 2320 B	4.0	
Sulfate	mg/L	EPA 300.0	0.50	
Chloride	mg/L	EPA 300.0	0.50	
Fluoride	mg/L	EPA 300.0	0.50	
Nitrate (as nitrogen [N])	mg/L	EPA 300.0	0.10	
Nitrite (as N)	mg/L	EPA 300.0	0.10	
Nitrate + Nitrite (as N)	mg/L	EPA 300.0/calculation	0.10	
Calcium ¹	mg/L	EPA 200.7	2.0	
Magnesium ¹	mg/L	EPA 200.7	2.0	
Sodium ¹	mg/L	EPA 200.7	0.5	
Potassium ¹	mg/L	EPA 200.7	0.5	
Ammonia (as N)	mg/L	SM 4500	0.5	
Orthophosphate (as P)	mg/L	EPA 300.0	0.1	
Silicon Dioxide ¹	mg/L	EPA 200.7	0.214	

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Dissolved Metals					
Aluminum	mg/L	EPA 200.7	0.1		
Antimony	mg/L	EPA 200.8	0.001		
Arsenic	mg/L	EPA 200.8	0.0005		
Barium	mg/L	EPA 200.7	0.01		
Beryllium	mg/L	EPA 200.7	0.001		
Boron	mg/L	EPA 200.7	0.05		
Cadmium	mg/L	EPA 200.7	0.001		
Chromium	mg/L	EPA 200.7	0.01		
Cobalt	mg/L	EPA 200.7	0.01		
Copper	mg/L	EPA 200.7	0.01		
Iron	mg/L	EPA 200.7	0.1		
Lead	mg/L	EPA 200.8	0.0005		
Manganese	mg/L	EPA 200.7	0.01		
Mercury	mg/L	EPA 245.1	0.0002		
Molybdenum	mg/L	EPA 200.7	0.01		
Nickel	mg/L	EPA 200.7	0.01		
Selenium	mg/L	EPA 200.8	0.0005		
Silver	mg/L	EPA 200.8	0.0001		
Thallium	mg/L	EPA 200.8	0.0001		
Uranium	mg/L	EPA 200.8	0.0001		
Zinc	mg/L	EPA 200.8	0.013		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Total Recoverable Metals					
Aluminum	mg/L	EPA 200.7	0.1		
Antimony	mg/L	EPA 200.8	0.001		
Arsenic	mg/L	EPA 200.8	0.0005		
Barium	mg/L	EPA 200.7	0.01		
Beryllium	mg/L	EPA 200.7	0.001		
Boron	mg/L	EPA 200.7	0.05		
Cadmium	mg/L	EPA 200.7	0.001		
Chromium	mg/L	EPA 200.7	0.01		
Cobalt	mg/L	EPA 200.7	0.01		
Copper	mg/L	EPA 200.7	0.01		
Iron	mg/L	EPA 200.7	0.1		
Lead	mg/L	EPA 200.8	0.0005		
Manganese	mg/L	EPA 200.7	0.01		
Mercury	mg/L	EPA 245.1	0.0002		
Molybdenum	mg/L	EPA 200.7	0.01		
Nickel	mg/L	EPA 200.7	0.01		
Selenium	mg/L	EPA 200.8	0.0005		
Silver	mg/L	EPA 200.8	0.0001		
Thallium	mg/L	EPA 200.8	0.0001		
Uranium	mg/L	EPA 200.8	0.0001		
Zinc	mg/L	EPA 200.8	0.013		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)				
Frequency: As needed and when sampled (Laboratory Parameters)				
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)	
Radiochemicals				
Gross alpha particle activity	pCi/L	EPA 900	3.0	
Adjusted gross alpha	pCi/L	calculation	3.0	
Total Radium (Ra 226 + Ra 228)	pCi/L	calculation	1.0	
Radium 226	pCi/L	EPA 903.1 or HPGE-GA	1.0	
Radium 228	pCi/L	EPA 904 or HPGE-GA	1.0	
Uranium isotopes	pCi/L	ASTM 6239	1.0	

Frequency: As needed and when sampled (Laboratory Parameters)				
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)	
Other				
Stable isotopes: H and O	Per mil	Mass spectrometer	0.10	
Organics - Volatile	mg/L	SW8260B	Variable	
Organics – Semi-Volatile	mg/L	8270	Variable	

Units: S.U. = standard units

NA = not applicable

µS/cm = micro Siemens per centimeter
 mg/L = milligrams per liter
 µg/L = micrograms per liter
 pCi/L = picoCuries per liter
 amsl = above mean sea level
 Per mil = parts per thousand

¹: Parameter to be analyzed as both dissolved and total.



ANALYTICAL REPORT

October 20, 2021



Turner Laboratories Inc

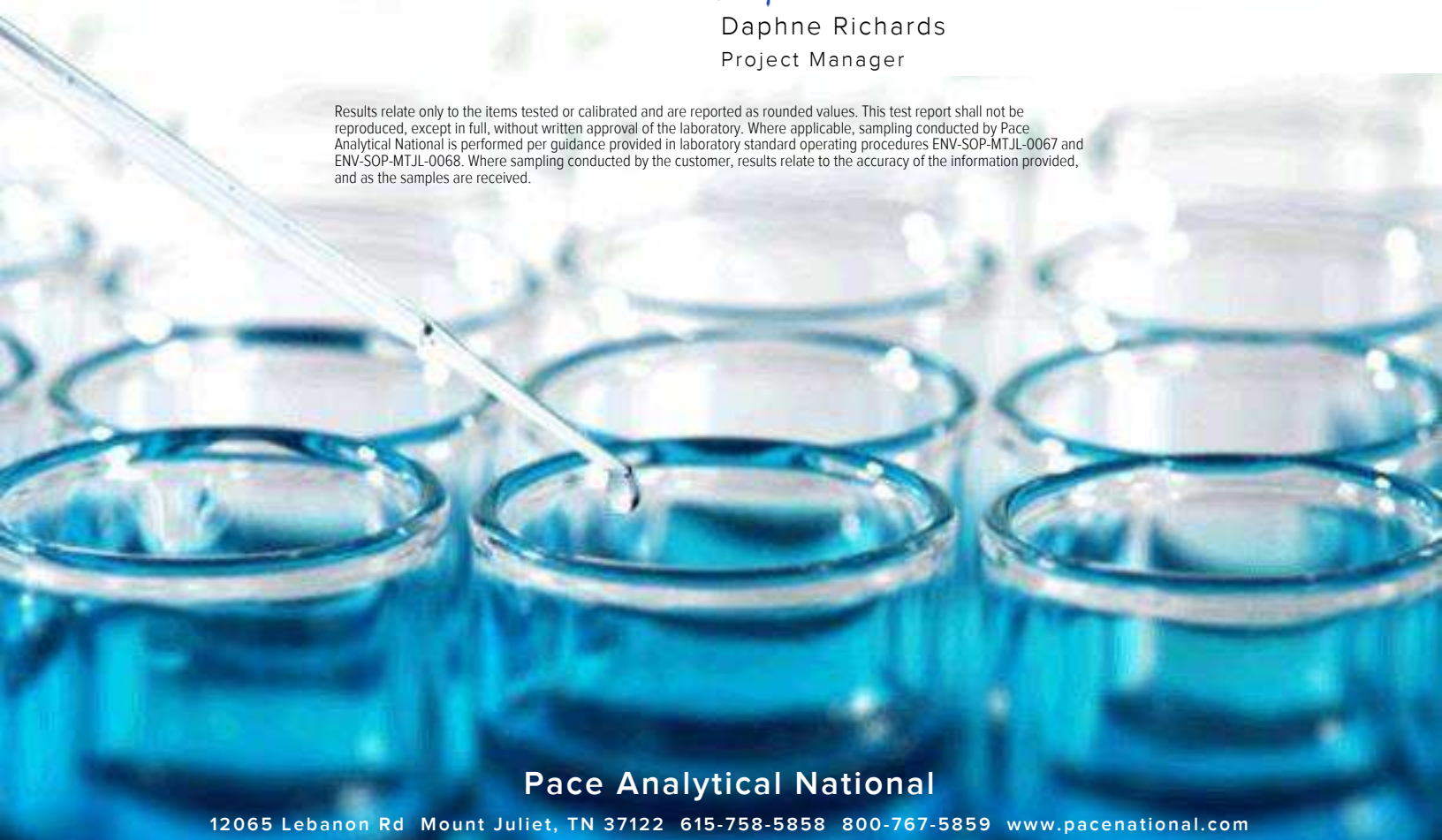
Sample Delivery Group: L1416751
Samples Received: 10/12/2021
Project Number: 2IJ0237
Description:

Report To: Elizabeth Kasik
2445 North Coyote Drive
Suite 104
Tucson, AZ 85745

Entire Report Reviewed By:

Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Qc
⁷ Is
⁸ Gl
⁹ Al
¹⁰ Sc

SAMPLE SUMMARY

2IJ0237-01 L1416751-01 GW

Collected by

Collected date/time

Received date/time

10/10/21 18:00

10/12/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1757218	1	10/14/21 15:36	10/15/21 00:49	AGW	Mt. Juliet, TN

¹Cp

 ${}^2\text{Tc}$

³Ss

 ${}^4\text{Cn}$ ^5Sr ⁶Qc ${}^7\text{Is}$ ⁸Gl ${}^9\text{Al}$ ^{10}Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Daphne Richards
Project Manager

Sample Delivery Group (SDG) Narrative

Insufficient sample volume to perform MS/MSD analyses per method QC requirements.

<u>Lab Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L1416751-01	2IJ0237-01	8270C



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Acenaphthene	U	L2	0.0000886	0.00100	1	10/15/2021 00:49	WG1757218
Acenaphthylene	U		0.0000921	0.00100	1	10/15/2021 00:49	WG1757218
Anthracene	U		0.0000804	0.00100	1	10/15/2021 00:49	WG1757218
Benzidine	U		0.00374	0.0100	1	10/15/2021 00:49	WG1757218
Benzo(a)anthracene	U		0.000199	0.00100	1	10/15/2021 00:49	WG1757218
Benzo(b)fluoranthene	U		0.000130	0.00100	1	10/15/2021 00:49	WG1757218
Benzo(k)fluoranthene	U		0.000120	0.00100	1	10/15/2021 00:49	WG1757218
Benzo(g,h,i)perylene	U		0.000121	0.00100	1	10/15/2021 00:49	WG1757218
Benzo(a)pyrene	U		0.0000381	0.00100	1	10/15/2021 00:49	WG1757218
Bis(2-chlorethoxy)methane	U		0.000116	0.0100	1	10/15/2021 00:49	WG1757218
Bis(2-chloroethyl)ether	U		0.000137	0.0100	1	10/15/2021 00:49	WG1757218
2,2-Oxybis(1-Chloropropane)	U		0.000210	0.0100	1	10/15/2021 00:49	WG1757218
4-Bromophenyl-phenylether	U		0.0000877	0.0100	1	10/15/2021 00:49	WG1757218
2-Chloronaphthalene	U		0.0000648	0.00100	1	10/15/2021 00:49	WG1757218
4-Chlorophenyl-phenylether	U		0.0000926	0.0100	1	10/15/2021 00:49	WG1757218
Chrysene	U		0.000130	0.00100	1	10/15/2021 00:49	WG1757218
Dibenz(a,h)anthracene	U		0.0000644	0.00100	1	10/15/2021 00:49	WG1757218
1,2-Dichlorobenzene	U		0.0000713	0.0100	1	10/15/2021 00:49	WG1757218
1,3-Dichlorobenzene	U		0.000132	0.0100	1	10/15/2021 00:49	WG1757218
1,4-Dichlorobenzene	U		0.0000942	0.0100	1	10/15/2021 00:49	WG1757218
3,3-Dichlorobenzidine	U		0.000212	0.0100	1	10/15/2021 00:49	WG1757218
2,4-Dinitrotoluene	U		0.0000983	0.0100	1	10/15/2021 00:49	WG1757218
2,6-Dinitrotoluene	U		0.000250	0.0100	1	10/15/2021 00:49	WG1757218
Fluoranthene	U		0.000102	0.00100	1	10/15/2021 00:49	WG1757218
Fluorene	U		0.0000844	0.00100	1	10/15/2021 00:49	WG1757218
Hexachlorobenzene	U		0.0000755	0.00100	1	10/15/2021 00:49	WG1757218
Hexachloro-1,3-butadiene	U		0.0000968	0.0100	1	10/15/2021 00:49	WG1757218
Hexachlorocyclopentadiene	U		0.0000598	0.0100	1	10/15/2021 00:49	WG1757218
Hexachloroethane	U		0.000127	0.0100	1	10/15/2021 00:49	WG1757218
Indeno(1,2,3-cd)pyrene	U		0.000279	0.00100	1	10/15/2021 00:49	WG1757218
Isophorone	U		0.000143	0.0100	1	10/15/2021 00:49	WG1757218
Naphthalene	U		0.000159	0.00100	1	10/15/2021 00:49	WG1757218
Nitrobenzene	U		0.000297	0.0100	1	10/15/2021 00:49	WG1757218
n-Nitrosodimethylamine	U		0.000998	0.0100	1	10/15/2021 00:49	WG1757218
n-Nitrosodiphenylamine	U		0.00237	0.0100	1	10/15/2021 00:49	WG1757218
n-Nitrosodi-n-propylamine	U		0.000261	0.0100	1	10/15/2021 00:49	WG1757218
Phenanthrene	U		0.000112	0.00100	1	10/15/2021 00:49	WG1757218
Benzylbutyl phthalate	U		0.000765	0.00300	1	10/15/2021 00:49	WG1757218
Bis(2-ethylhexyl)phthalate	U		0.000895	0.00300	1	10/15/2021 00:49	WG1757218
Di-n-butyl phthalate	U		0.000453	0.00300	1	10/15/2021 00:49	WG1757218
Diethyl phthalate	U		0.000287	0.00300	1	10/15/2021 00:49	WG1757218
Dimethyl phthalate	U		0.000260	0.00300	1	10/15/2021 00:49	WG1757218
Di-n-octyl phthalate	U		0.000932	0.00300	1	10/15/2021 00:49	WG1757218
Pyrene	U		0.000107	0.00100	1	10/15/2021 00:49	WG1757218
1,2,4-Trichlorobenzene	U		0.0000698	0.0100	1	10/15/2021 00:49	WG1757218
4-Chloro-3-methylphenol	U		0.000131	0.0100	1	10/15/2021 00:49	WG1757218
2-Chlorophenol	U		0.000133	0.0100	1	10/15/2021 00:49	WG1757218
2,4-Dichlorophenol	U		0.000102	0.0100	1	10/15/2021 00:49	WG1757218
2,4-Dimethylphenol	U		0.0000636	0.0100	1	10/15/2021 00:49	WG1757218
4,6-Dinitro-2-methylphenol	U		0.00112	0.0100	1	10/15/2021 00:49	WG1757218
2,4-Dinitrophenol	U		0.00593	0.0100	1	10/15/2021 00:49	WG1757218
2-Nitrophenol	U		0.000117	0.0100	1	10/15/2021 00:49	WG1757218
4-Nitrophenol	U		0.000143	0.0100	1	10/15/2021 00:49	WG1757218
Pentachlorophenol	U		0.000313	0.0100	1	10/15/2021 00:49	WG1757218
Phenol	U		0.00433	0.0100	1	10/15/2021 00:49	WG1757218
2,4,6-Trichlorophenol	U		0.000100	0.0100	1	10/15/2021 00:49	WG1757218



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorophenol	31.8			10.0-120		10/15/2021 00:49	WG1757218
(S) Phenol-d5	21.6			10.0-120		10/15/2021 00:49	WG1757218
(S) Nitrobenzene-d5	50.2			10.0-127		10/15/2021 00:49	WG1757218
(S) 2-Fluorobiphenyl	52.8			10.0-130		10/15/2021 00:49	WG1757218
(S) 2,4,6-Tribromophenol	57.0			10.0-155		10/15/2021 00:49	WG1757218
(S) p-Terphenyl-d14	57.4			10.0-128		10/15/2021 00:49	WG1757218

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Is

⁸Gl

⁹Al

¹⁰Sc

Method Blank (MB)

(MB) R3717297-3 10/14/21 23:23

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acenaphthene	U		0.0000886	0.00100
Acenaphthylene	U		0.0000921	0.00100
Anthracene	U		0.0000804	0.00100
Benzidine	U		0.00374	0.0100
Benzo(a)anthracene	U		0.000199	0.00100
Benzo(b)fluoranthene	U		0.000130	0.00100
Benzo(k)fluoranthene	U		0.000120	0.00100
Benzo(g,h,i)perylene	U		0.000121	0.00100
Benzo(a)pyrene	U		0.0000381	0.00100
Bis(2-chlorethoxy)methane	U		0.000116	0.0100
Bis(2-chloroethyl)ether	U		0.000137	0.0100
2,2-oxybis(1-chloropropane)	U		0.000210	0.0100
4-Bromophenyl-phenylether	U		0.0000877	0.0100
2-Chloronaphthalene	U		0.0000648	0.00100
4-Chlorophenyl-phenylether	U		0.0000926	0.0100
Chrysene	U		0.000130	0.00100
Dibenz(a,h)anthracene	U		0.0000644	0.00100
1,2-Dichlorobenzene	U		0.0000713	0.0100
1,3-Dichlorobenzene	U		0.000132	0.0100
1,4-Dichlorobenzene	U		0.0000942	0.0100
3,3-Dichlorobenzidine	U		0.000212	0.0100
2,4-Dinitrotoluene	U		0.0000983	0.0100
2,6-Dinitrotoluene	U		0.000250	0.0100
Fluoranthene	U		0.000102	0.00100
Fluorene	U		0.0000844	0.00100
Hexachlorobenzene	U		0.0000755	0.00100
Hexachloro-1,3-butadiene	U		0.0000968	0.0100
Hexachlorocyclopentadiene	U		0.0000598	0.0100
Hexachloroethane	U		0.000127	0.0100
Indeno(1,2,3-cd)pyrene	U		0.000279	0.00100
Isophorone	U		0.000143	0.0100
Naphthalene	U		0.000159	0.00100
Nitrobenzene	U		0.000297	0.0100
n-Nitrosodimethylamine	U		0.000998	0.0100
n-Nitrosodiphenylamine	U		0.00237	0.0100
n-Nitrosodi-n-propylamine	U		0.000261	0.0100
Phenanthrene	U		0.000112	0.00100
Benzylbutyl phthalate	U		0.000765	0.00300
Bis(2-ethylhexyl)phthalate	U		0.000895	0.00300
Di-n-butyl phthalate	U		0.000453	0.00300

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Is

8

Gl

9

Al

10

Sc

Method Blank (MB)

(MB) R3717297-3 10/14/21 23:23

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Diethyl phthalate	U		0.000287	0.00300
Dimethyl phthalate	U		0.000260	0.00300
Di-n-octyl phthalate	U		0.000932	0.00300
Pyrene	U		0.000107	0.00100
1,2,4-Trichlorobenzene	U		0.0000698	0.0100
4-Chloro-3-methylphenol	U		0.000131	0.0100
2-Chlorophenol	U		0.000133	0.0100
2-Nitrophenol	U		0.000117	0.0100
4-Nitrophenol	U		0.000143	0.0100
Pentachlorophenol	U		0.000313	0.0100
Phenol	U		0.00433	0.0100
2,4,6-Trichlorophenol	U		0.000100	0.0100
2,4-Dichlorophenol	U		0.000102	0.0100
2,4-Dimethylphenol	U		0.0000636	0.0100
4,6-Dinitro-2-methylphenol	U		0.00112	0.0100
2,4-Dinitrophenol	U		0.00593	0.0100
(S) Nitrobenzene-d5	50.0			10.0-127
(S) 2-Fluorobiphenyl	51.5			10.0-130
(S) p-Terphenyl-d14	56.9			10.0-128
(S) Phenol-d5	20.7			10.0-120
(S) 2-Fluorophenol	31.4			10.0-120
(S) 2,4,6-Tribromophenol	52.0			10.0-155

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Is

8Gl

9Al

10Sc

Laboratory Control Sample (LCS)

(LCS) R3717297-1 10/14/21 22:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0500	0.0303	60.6	41.0-120	
Acenaphthylene	0.0500	0.0295	59.0	43.0-120	
Anthracene	0.0500	0.0333	66.6	45.0-120	
Benzidine	0.100	0.00918	9.18	10.0-120	L2
Benzo(a)anthracene	0.0500	0.0343	68.6	47.0-120	
Benzo(b)fluoranthene	0.0500	0.0345	69.0	46.0-120	
Benzo(k)fluoranthene	0.0500	0.0334	66.8	46.0-120	
Benzo(g,h,i)perylene	0.0500	0.0341	68.2	48.0-121	
Benzo(a)pyrene	0.0500	0.0328	65.6	47.0-120	
Bis(2-chlorethoxy)methane	0.0500	0.0297	59.4	33.0-120	
Bis(2-chloroethyl)ether	0.0500	0.0309	61.8	23.0-120	

Laboratory Control Sample (LCS)

(LCS) R3717297-1 10/14/21 22:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
2,2-oxybis(1-chloropropane)	0.0500	0.0283	56.6	28.0-120	
4-Bromophenyl-phenylether	0.0500	0.0342	68.4	45.0-120	
2-Chloronaphthalene	0.0500	0.0285	57.0	37.0-120	
4-Chlorophenyl-phenylether	0.0500	0.0333	66.6	44.0-120	
Chrysene	0.0500	0.0339	67.8	48.0-120	
Dibenz(a,h)anthracene	0.0500	0.0345	69.0	47.0-120	
3,3-Dichlorobenzidine	0.100	0.0713	71.3	44.0-120	
2,4-Dinitrotoluene	0.0500	0.0346	69.2	49.0-124	
2,6-Dinitrotoluene	0.0500	0.0321	64.2	46.0-120	
Fluoranthene	0.0500	0.0358	71.6	51.0-120	
Fluorene	0.0500	0.0328	65.6	47.0-120	
Hexachlorobenzene	0.0500	0.0348	69.6	44.0-120	
Hexachloro-1,3-butadiene	0.0500	0.0245	49.0	19.0-120	
Hexachlorocyclopentadiene	0.0500	0.0200	40.0	15.0-120	
Hexachloroethane	0.0500	0.0249	49.8	15.0-120	
Indeno(1,2,3-cd)pyrene	0.0500	0.0350	70.0	49.0-122	
Isophorone	0.0500	0.0294	58.8	36.0-120	
Naphthalene	0.0500	0.0243	48.6	27.0-120	
Nitrobenzene	0.0500	0.0264	52.8	27.0-120	
n-Nitrosodimethylamine	0.0500	0.0193	38.6	10.0-120	
n-Nitrosodiphenylamine	0.0500	0.0322	64.4	47.0-120	
n-Nitrosodi-n-propylamine	0.0500	0.0325	65.0	31.0-120	
Phenanthrene	0.0500	0.0331	66.2	46.0-120	
Benzylbutyl phthalate	0.0500	0.0300	60.0	43.0-121	
Bis(2-ethylhexyl)phthalate	0.0500	0.0289	57.8	43.0-122	
Di-n-butyl phthalate	0.0500	0.0355	71.0	49.0-121	
Diethyl phthalate	0.0500	0.0347	69.4	48.0-122	
Dimethyl phthalate	0.0500	0.0343	68.6	48.0-120	
Di-n-octyl phthalate	0.0500	0.0281	56.2	42.0-125	
Pyrene	0.0500	0.0349	69.8	47.0-120	
1,2,4-Trichlorobenzene	0.0500	0.0251	50.2	24.0-120	
4-Chloro-3-methylphenol	0.0500	0.0295	59.0	40.0-120	
2-Chlorophenol	0.0500	0.0282	56.4	25.0-120	
2,4-Dichlorophenol	0.0500	0.0303	60.6	36.0-120	
2,4-Dimethylphenol	0.0500	0.0286	57.2	33.0-120	
4,6-Dinitro-2-methylphenol	0.0500	0.0328	65.6	38.0-138	
2,4-Dinitrophenol	0.0500	0.0267	53.4	10.0-120	
2-Nitrophenol	0.0500	0.0291	58.2	31.0-120	
4-Nitrophenol	0.0500	0.0145	29.0	10.0-120	
Pentachlorophenol	0.0500	0.0310	62.0	23.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Is

8Gl

9Al

10Sc

Laboratory Control Sample (LCS)

(LCS) R3717297-1 10/14/21 22:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Phenol	0.0500	0.0131	26.2	10.0-120	
2,4,6-Trichlorophenol	0.0500	0.0317	63.4	42.0-120	
1,2-Dichlorobenzene	0.0500	0.0256	51.2	20.0-120	
1,3-Dichlorobenzene	0.0500	0.0253	50.6	17.0-120	
1,4-Dichlorobenzene	0.0500	0.0249	49.8	18.0-120	
(S) Nitrobenzene-d5			49.8	10.0-127	
(S) 2-Fluorobiphenyl			60.6	10.0-130	
(S) p-Terphenyl-d14			65.7	10.0-128	
(S) Phenol-d5			25.0	10.0-120	
(S) 2-Fluorophenol			36.0	10.0-120	
(S) 2,4,6-Tribromophenol			67.0	10.0-155	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Is

⁸Gl

⁹Al

¹⁰Sc

INTERNAL STANDARD SUMMARY

Instrument: BNAMS19 • File ID: 1014A_03

10/14/21 20:53

Sample ID	File ID	1,4-DICHLOROBENZENE-D4 Response	NAPHTHALENE-D8 Response	ACENAPHTHENE-D10 Response	PHENANTHRENE-D10 Response	CHRYSENE-D12 Response	PERYLENE-D12 Response
Standard	1014A_03	139828	492671	297060	534792	479635	477006
Upper Limit		279656	985342	594120	1069584	959270	954012
Lower Limit		69914	246336	148530	267396	239818	238503
LCS R3717297-1 WG1757218 1x	1014A_08	142719	558592	316391	569719	513647	501685
BLANK R3717297-3 WG1757218 1x	1014A_10	142100	507831	305863	543159	479454	480160
L1416751-01 WG1757218 1x	1014A_14	157386	568172	341569	610372	536014	517469

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Is

8Gl

9Al

10Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

L2	The associated blank spike recovery was below laboratory acceptance limits.
----	---



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



SUBCONTRACT ORDER

Turner Laboratories, Inc.

21J0237

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Pace Analytical Services - Tennessee
12065 Lebabon Rd.
ft. Juliet, TN 37122
Phone: (615) 758-5858
Fax: -
Please CC Kevin Brim Kbrim@turnerlabs.com

J107

Analysis

Expires

Laboratory ID

Comments

Sample ID: 21J0237-01 Drinking Water Sampled: 10/10/2021 18:00

Semivolatiles Organics by SW 8270

Containers Supplied:

10/17/2021 18:00

1416751-01

CH⁺ = 1

TB = 0

4.9+D = 4.9 Aum

Sample Receipt Checklist
COC Seal Present/Intact: Y ☒ N ☐ If Applicable
COC Signed/Accurate: Y ☒ N ☐ VOA Zero Headspace: Y ☒ N ☐
Bottles active intact: Y ☒ N ☐ Pres. Correct/Check: Y ☒ N ☐
Correct bottles used: Y ☒ N ☐
Sufficient volume sent: Y ☒ N ☐
RAD Screen <0.5 mR/hr: Y ☒ N ☐

Released By James May Date 10/11/21 Received By UPS Date 10/11/21
Released By J. Robertson Date 10/12/21 Received By J. Robertson Date 10/12/21

Lab #: 806232 Job #: 49048 IS-102736 Co. Job#:
Sample Name: 21J0237-01 Co. Lab#:
Company: Turner Laboratories, Inc
API/Well:
Container: Plastic Bottle
Field/Site Name: 21J0237
Location:
Formation/Depth:
Sampling Point:
Date Sampled: 10/10/2021 18:00 Date Received: 10/12/2021 Date Reported: 10/21/2021

δD of water ----- -59.1 ‰ relative to VSMOW

$\delta^{18}O$ of water ----- -8.41 ‰ relative to VSMOW

Tritium content of water ----- na

$\delta^{13}C$ of DIC ----- na

^{14}C content of DIC ----- na

$\delta^{15}N$ of nitrate ----- na

$\delta^{18}O$ of nitrate ----- na

$\delta^{34}S$ of sulfate ----- na

$\delta^{18}O$ of sulfate ----- na

Vacuum Distilled? * ----- No

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

SUBCONTRACT ORDER

Turner Laboratories, Inc.

21J0237

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Isotech Laboratories
1308 Parkland Court
Champaign, IL 61821
Phone :1(217) 398-3490
Fax: -
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis

Expires

Laboratory ID

Comments

Sample ID: 21J0237-01 Drinking Water Sampled:10/10/2021 18:00

Isotope Analysis

10/24/2021 18:00

H and O Isotopes

Containers Supplied:

Released By

Date

Received By

Grace Skube / S.R. Isotech

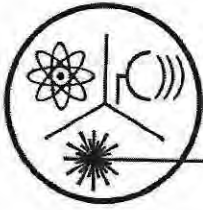
Date

Date

Released By

Date

Received By



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

(480) 897-9459
FAX (480) 892-5446

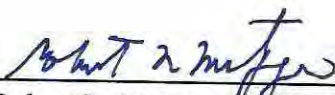
Radiochemical Activity in Water (pCi/L)

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

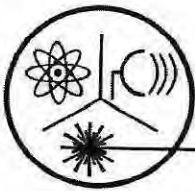
Sampling Date: October 10, 2021
Sample Received: October 13, 2021
Analysis Completed: October 25, 2021

Sample ID	Gross Alpha Activity Method 600/00-02 (pCi/L)	Uranium Activity Method ASTM D6239 (pCi/L)	Adjusted Gross Alpha (pCi/L)	Gross Beta Activity Method 900.0 (pCi/L)	Radium 226 Activity Method GammaRay HPGE (pCi/L)	Radium 228 Activity Method GammaRay HPGE (pCi/L)	Total Radium (pCi/L)
21J0237-01	8.0 ± 1.0	4.6 ± 0.7	3.4 ± 1.2	< 2.7	0.7 ± 0.2	< 0.6	0.7 ± 0.2

Date of Analysis	10/18/2021	10/22/2021	10/22/2021	10/19/2021	10/15/2021	10/15/2021	10/15/2021
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Robert L. Metzger, Ph.D., C.H.P.
Laboratory License Number AZ0462

October 25, 2021
Date



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

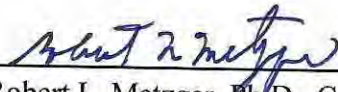
(480) 897-9459
FAX (480) 892-5446

Isotopic Uranium Analysis

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: October 10, 2021
Sample Received: October 13, 2021
Uranium Analysis Date: October 22, 2021

Sample No.	^{238}U	^{235}U	^{234}U	Total	
21J0237-01	1.2 ± 0.3	0.057 ± 0.002	3.3 ± 0.4	4.6 ± 0.7	Activity (pCi/L)
	3.7 ± 0.8	0.027 ± 0.001	0.00053 ± 0.00007	3.7 ± 0.8	Content ($\mu\text{g/L}$)
	Comments:				


Robert L. Metzger, Ph.D., C.H.P.

October 25, 2021

Date

Laboratory License Number AZ0462

Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
 Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____ PWS Name: _____

October 10, 2021 18:00 (24 hour clock) _____

Sample Date Sample Time Owner/Contact Person _____

Owner/Contact Fax Number _____ Owner/Contact Phone Number _____

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

☐ Reduced Monitoring

Date Q1 collected: _____

☐ Quarterly

Date Q2 collected: _____

☐ Composite of four quarterly samples

Date Q3 collected: _____

Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
	15 pCi/L		Adjusted Gross Alpha	4000	10/22/2021	3.4 ± 1.2	
600/00-02		3 pCi/L	Gross Alpha	4002	10/18/2021	8.0 ± 1.0	
7500 - Rn			Radon	4004			
ASTM D6239	30 µg/L	1 µg/L	Combined Uranium	4006	10/22/2021	3.7 ± 0.8 µg/L	
			Uranium 234	4007	10/22/2021	0.00053 ± 0.00007	
			Uranium 235	4008	10/22/2021	0.027 ± 0.001	
			Uranium 238	4009	10/22/2021	3.7 ± 0.8	
	5 pCi/L	1 pCi/L	Combined Radium (226,228)	4010	10/15/2021	0.7 ± 0.2	
GammaRay HPGE		1 pCi/L	Radium 226	4020	10/15/2021	0.7 ± 0.2	
GammaRay HPGE		1 pCi/L	Radium 228	4030	10/15/2021	< 0.6	

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE67418 _____

Lab ID Number: AZ0462 _____

Lab Name: Radiation Safety Engineering, Inc. _____

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459 _____

Comments: 21J0237-01 _____

Authorized Signature:  _____

Date Public Water System Notified: _____

Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
 Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____

PWS Name: _____

October 10, 2021 18:00 (24 hour clock)

Sample Date Sample Time

Owner/Contact Person _____

Owner/Contact Fax Number _____

Owner/Contact Phone Number _____

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

☐ Reduced Monitoring

Date Q1 collected: _____

☐ Quarterly

Date Q2 collected: _____

☐ Composite of four quarterly samples

Date Q3 collected: _____

Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
900	4 mrem	4 pCi/L	Gross Beta	4100	10/19/2021	< 4 mrem	
906	20,000 pCi/L	1,000 pCi/L	Tritium	4102			
		10 pCi/L	Strontium-89	4172			
	8 pCi/L	2 pCi/L	Strontium-90	4174			
		1 pCi/L	Iodine-131	4264			
		10 pCi/L	Cesium-134	4270			

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE67418

Lab ID Number: AZ0462

Lab Name: Radiation Safety Engineering, Inc.

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459

Comments: 21J0237-01

Authorized Signature: 

Date Public Water System Notified: _____

SUBCONTRACT ORDER

Turner Laboratories, Inc.

21J0237

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Radiation Safety Engineering, Inc.
3245 N. Washington St.
Chandler, AZ 85225-1121
Phone : (480) 897-9459
Fax: (480) 892-5446
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
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Sample ID: 21J0237-01 Drinking Water Sampled: 10/10/2021 18:00

Radiochemistry, Uranium	04/08/2022 18:00		
Radiochemistry, Radium 226/228	11/09/2021 18:00		
Radiochemistry, Gross Alpha Beta	04/08/2022 18:00		

Containers Supplied:

67418

Released By	Date	Received By	Date
<i>[Signature]</i>	10/12/21 1600	UPS	10/12/21 1600
Released By	Date	Received By	Date
		A.H.	10-13-21- 11:30



November 05, 2021

David Krizek
Rosemont Copper Company
5255 East Williams Circle, Suite W1065
Tucson, AZ 85711

TEL (520) 495-3527
FAX (520) 495-3540

RE: Groundwater

Work Order No.: 21J0308

Order Name: Groundwater
(2459991012/619033)

Dear David Krizek,

Turner Laboratories, Inc. received 1 sample(s) on 10/12/2021 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

A handwritten signature in blue ink, appearing to read "Elizabeth Kasik". The signature is fluid and cursive, with the first name "Elizabeth" and last name "Kasik" clearly distinguishable.

Elizabeth Kasik
Laboratory Director

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0308
Date Received: 10/12/2021

Order: Groundwater (2459991012/619033)

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date/Time
21J0308-01	GH2021-10	Ground Water	10/12/2021 1145

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0308
Date Received: 10/12/2021

Case Narrative

The 8270C analysis was performed by Pace Analytical National in Mount Juliet, TN.

The radiochemistry analysis was performed by Radiation Safety Engineering, Inc. in Chandler, AZ.

The isotope analysis was performed by Isotech in Champaign, IL.

- C4 Confirmatory analysis was past holding time
- E4 Concentration estimated. Analyte was detected below laboratory Minimum Reporting Limit (MRL) but above MDL.
- E8 Analyte reported to MDL per project specification. Target analyte was not detected in the sample.
- H5 This test is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.
- L5 The associated blank spike recovery was above laboratory/method acceptance limits. This analyte was not detected in the sample.
- M1 Matrix spike recovery was high; the associated LCS/LCSD was acceptable.
- M2 Matrix spike recovery was low; the associated LCS/LCSD was acceptable.
- M3 The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated LCS/LCSD recovery was acceptable.
- M6 Matrix spike recovery was high. Data reported per ADEQ policy 0154.000. Matrix interference was confirmed.
- V1 CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

All soil, sludge, and solid matrix determinations are reported on a wet weight basis unless otherwise noted.

- ND Not Detected at or above the PQL
- PQL Practical Quantitation Limit
- DF Dilution Factor

Client: Rosemont Copper Company

Project: Groundwater

Work Order: 21J0308

Lab Sample ID: 21J0308-01

Client Sample ID: GH2021-10

Collection Date/Time: 10/12/2021 1145

Matrix: Ground Water

Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Hardness-Calculation									
Hardness, Calcium/Magnesium (As CaCO3)	750				mg/L	1	10/14/2021 1205	10/18/2021 1529	MH
Nitrate + Nitrite Sum-Calculation									
Nitrate and Nitrite Sum	ND		0.10		mg/L	1	10/12/2021 1448	10/12/2021 2127	MH
ICP Dissolved Metals-E 200.7 (4.4)									
Boron	0.19		0.10		mg/L	1	10/15/2021 1010	10/18/2021 1401	MH
Calcium	78		4.0		mg/L	1	10/15/2021 1010	10/18/2021 1401	MH
Chromium	ND	0.0030	0.030	E8	mg/L	1	10/15/2021 1010	10/18/2021 1401	MH
Iron	ND		0.30		mg/L	1	10/15/2021 1010	10/18/2021 1401	MH
Magnesium	21		3.0		mg/L	1	10/15/2021 1010	10/18/2021 1401	MH
Potassium	5.3		5.0		mg/L	1	10/15/2021 1010	10/18/2021 1401	MH
Silica	21		2.0		mg/L	1	10/15/2021 1010	10/18/2021 1401	MH
Sodium	61		5.0		mg/L	1	10/15/2021 1010	10/18/2021 1401	MH
ICP/MS Dissolved Metals-E 200.8 (5.4)									
Aluminum	ND		0.040		mg/L	1	10/15/2021 1010	10/15/2021 1323	CR
Antimony	ND		0.00050		mg/L	1	10/15/2021 1010	10/15/2021 1323	CR
Arsenic	0.0016		0.00050		mg/L	1	10/15/2021 1010	10/15/2021 1323	CR
Barium	0.74		0.00050		mg/L	1	10/15/2021 1010	10/15/2021 1323	CR
Beryllium	ND		0.00025		mg/L	1	10/15/2021 1010	10/15/2021 1323	CR
Cadmium	ND		0.00025		mg/L	1	10/15/2021 1010	10/15/2021 1323	CR
Cobalt	0.00056		0.00025		mg/L	1	10/15/2021 1010	10/15/2021 1323	CR
Copper	0.00069		0.00050		mg/L	1	10/15/2021 1010	10/15/2021 1323	CR
Lead	ND		0.00050		mg/L	1	10/15/2021 1010	10/15/2021 1323	CR
Manganese	0.38		0.00025		mg/L	1	10/15/2021 1010	10/15/2021 1323	CR
Molybdenum	0.098		0.00025		mg/L	1	10/15/2021 1010	10/15/2021 1323	CR
Nickel	0.0049		0.00050		mg/L	1	10/15/2021 1010	10/15/2021 1323	CR
Selenium	0.0010	0.00025	0.0025	E4	mg/L	1	10/15/2021 1010	10/15/2021 1323	CR
Silver	ND	0.000021	0.00050	E8	mg/L	1	10/15/2021 1010	10/15/2021 1323	CR
Thallium	ND	0.000023	0.00050	E8	mg/L	1	10/15/2021 1010	10/15/2021 1323	CR
Uranium	0.0032		0.00050		mg/L	1	10/15/2021 1010	10/15/2021 1323	CR
Zinc	ND		0.040		mg/L	1	10/15/2021 1010	10/15/2021 1323	CR

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0308
Lab Sample ID: 21J0308-01

Client Sample ID: GH2021-10
Collection Date/Time: 10/12/2021 1145
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Mercury	0.00011	0.000041	0.0010	E4	mg/L	1	10/19/2021 1010	10/19/2021 1451	CWB
pH-E150.1									
pH (pH Units)	7.1			H5	-	1	10/13/2021 1630	10/13/2021 1635	CWB
Temperature (°C)	22			H5	-	1	10/13/2021 1630	10/13/2021 1635	CWB
ICP Total Metals-E200.7 (4.4)									
Boron	0.38		0.10		mg/L	1	10/14/2021 1205	10/18/2021 1529	MH
Calcium	220		4.0		mg/L	1	10/14/2021 1205	10/18/2021 1529	MH
Iron	130		3.0		mg/L	10	10/14/2021 1205	10/18/2021 1551	MH
Magnesium	50		3.0		mg/L	1	10/14/2021 1205	10/18/2021 1529	MH
Potassium	21		5.0		mg/L	1	10/14/2021 1205	10/18/2021 1529	MH
Silica	270		2.0		mg/L	10	10/14/2021 1205	10/18/2021 1551	MH
Sodium	60		5.0		mg/L	1	10/14/2021 1205	10/18/2021 1529	MH
ICP/MS Total Metals-E200.8 (5.4)									
Aluminum	81		4.0		mg/L	100	10/14/2021 1300	10/15/2021 1722	CR
Antimony	ND		0.00050		mg/L	1	10/14/2021 1300	10/15/2021 1705	CR
Arsenic	0.062		0.00050		mg/L	1	10/14/2021 1300	10/15/2021 1705	CR
Barium	3.3		0.0050		mg/L	10	10/14/2021 1300	10/15/2021 1725	CR
Beryllium	0.016		0.00025		mg/L	1	10/14/2021 1300	10/15/2021 1705	CR
Cadmium	0.00045		0.00025		mg/L	1	10/14/2021 1300	10/15/2021 1705	CR
Chromium	0.11		0.00050		mg/L	1	10/14/2021 1300	10/15/2021 1705	CR
Cobalt	0.0309		0.000250		mg/L	1	10/14/2021 1300	10/15/2021 1705	CR
Copper	0.43		0.00050		mg/L	1	10/14/2021 1300	10/15/2021 1705	CR
Lead	0.047		0.00050		mg/L	1	10/14/2021 1300	10/15/2021 1705	CR
Manganese	1.9		0.0025		mg/L	10	10/14/2021 1300	10/15/2021 1725	CR
Molybdenum	0.047		0.00025		mg/L	1	10/14/2021 1300	10/15/2021 1705	CR
Nickel	0.055		0.00050		mg/L	1	10/14/2021 1300	10/15/2021 1705	CR
Selenium	0.064		0.0025		mg/L	1	10/14/2021 1300	10/15/2021 1705	CR
Silver	0.033		0.00050		mg/L	1	10/14/2021 1300	10/15/2021 1705	CR
Thallium	0.0014		0.00050		mg/L	1	10/14/2021 1300	10/15/2021 1705	CR
Uranium	0.013		0.00050		mg/L	1	10/14/2021 1300	10/15/2021 1705	CR
Zinc	1.5		0.40		mg/L	10	10/14/2021 1300	10/15/2021 1725	CR
CVAA Total Mercury-E245.1									
Mercury	0.00062	0.00036	0.0010	E4	mg/L	1	10/14/2021 1300	10/14/2021 1645	CWB

Client: Rosemont Copper Company

Project: Groundwater

Work Order: 21J0308

Lab Sample ID: 21J0308-01

Client Sample ID: GH2021-10

Collection Date/Time: 10/12/2021 1145

Matrix: Ground Water

Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Anions by Ion Chromatography-E300.0 (2.1)									
Chloride	26		10		mg/L	10	10/12/2021 1448	10/25/2021 2330	ACG
Fluoride	1.4		0.50		mg/L	1	10/12/2021 1448	10/12/2021 2127	MH
Nitrogen, Nitrate (As N)	ND		0.50		mg/L	1	10/12/2021 1448	10/12/2021 2127	MH
Nitrogen, Nitrite (As N)	ND		0.10		mg/L	1	10/12/2021 1448	10/12/2021 2127	MH
Phosphorus, Dissolved Orthophosphate (As P)	ND		0.50	C4, L5, V1	mg/L	1	10/12/2021 1448	10/14/2021 1729	MH
Sulfate	110		50		mg/L	10	10/12/2021 1448	10/25/2021 2330	ACG
Calculation-Ion Balance									
Anion	55.8				meq/L	1	11/05/2021 1501	11/05/2021 1501	KB
Cation	8.42				meq/L	1	11/05/2021 1501	11/05/2021 1501	KB
Cation/Anion, % Difference	73.8				meq/L	1	11/05/2021 1501	11/05/2021 1501	KB
Alkalinity-SM2320B									
Alkalinity, Bicarbonate (As CaCO3)	2600		2.0		mg/L	1	10/14/2021 0953	10/14/2021 1213	AGC
Alkalinity, Carbonate (As CaCO3)	ND		2.0		mg/L	1	10/14/2021 0953	10/14/2021 1213	AGC
Alkalinity, Hydroxide (As CaCO3)	ND		2.0		mg/L	1	10/14/2021 0953	10/14/2021 1213	AGC
Alkalinity, Phenolphthalein (As CaCO3)	ND		2.0		mg/L	1	10/14/2021 0953	10/14/2021 1213	AGC
Alkalinity, Total (As CaCO3)	2600		2.0		mg/L	1	10/14/2021 0953	10/14/2021 1213	AGC
Specific Conductance-SM2510 B									
Conductivity	830		0.10		µmhos/cm	1	10/15/2021 1515	10/15/2021 1605	CWB
Total Dissolved Solids (Residue, Filterable)-SM2540 C									
Total Dissolved Solids (Residue, Filterable)	510		20		mg/L	1	10/13/2021 0839	10/15/2021 1030	AGC
Ammonia as N-SM4500-NH3 B,C									
Nitrogen, Ammonia (As N)	ND		0.50		mg/L	1	10/19/2021 1000	10/19/2021 1600	ACG
Silica-SM4500-SiO2 C									
Silica	25		10		mg/L	5	10/19/2021 0833	10/19/2021 0939	AGC

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0308
Lab Sample ID: 21J0308-01

Client Sample ID: GH2021-10
Collection Date/Time: 10/12/2021 1145
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Volatile Organic Compounds by GC/MS-SW8260B									
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,1,1-Trichloroethane	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,1,2-Trichloroethane	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,1,2-Trichlorotrifluoroethane	ND		5.0		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,1-Dichloroethane	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,1-Dichloroethene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,1-Dichloropropene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,2,3-Trichlorobenzene	ND		2.0		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,2,3-Trichloropropane	ND		1.0		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,2,4-Trichlorobenzene	ND		2.0		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,2,4-Trimethylbenzene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,2-Dibromo-3-chloropropane	ND		10		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,2-Dibromoethane	ND		2.0		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,2-Dichlorobenzene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,2-Dichloroethane	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,2-Dichloropropane	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,3,5-Trimethylbenzene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,3-Dichlorobenzene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,3-Dichloropropane	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
1,4-Dichlorobenzene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
2,2-Dichloropropane	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
2-Butanone (MEK)	ND		10		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
2-Chlorotoluene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
2-Hexanone	ND		2.5		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
4-Chlorotoluene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
4-Isopropyltoluene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
4-Methyl-2-pentanone	ND		2.5		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Acetone	68		10		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Acrylonitrile	ND		10	V1	ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Benzene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Bromobenzene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Bromochloromethane	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Bromodichloromethane	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Bromoform	ND		2.0		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Bromomethane	ND		1.0		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Carbon disulfide	ND		2.0		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Carbon tetrachloride	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Chlorobenzene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0308
Lab Sample ID: 21J0308-01

Client Sample ID: GH2021-10
Collection Date/Time: 10/12/2021 1145
Matrix: Ground Water
Order Name: Groundwater (2459991012/619033)

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Chloroethane	ND		1.0		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Chloroform	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Chloromethane	ND		1.0		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
cis-1,2-Dichloroethene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
cis-1,3-Dichloropropene	ND		2.0		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Dibromochloromethane	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Dibromomethane	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Dichlorodifluoromethane	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Ethylbenzene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Hexachlorobutadiene	ND		5.0		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Iodomethane	ND		10		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Isopropylbenzene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
m,p-Xylene	ND		1.0		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Methylene chloride	ND		1.0		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Naphthalene	ND		2.0		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
n-Butylbenzene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
n-Propylbenzene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
o-Xylene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
sec-Butylbenzene	ND		2.0		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Styrene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
tert-Butylbenzene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Tetrachloroethene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Toluene	0.81		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
trans-1,2-Dichloroethene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
trans-1,3-Dichloropropene	ND		2.0		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
trans-1,4-Dichloro-2-butene	ND		10		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Trichloroethene	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Trichlorofluoromethane	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Vinyl acetate	ND		10		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Vinyl chloride	ND		0.50		ug/L	1	10/19/2021 1534	10/20/2021 0122	KP
Surr: 4-Bromofluorobenzene	103	70-130			%REC	1	10/19/2021 1534	10/20/2021 122	KP
Surr: Dibromofluoromethane	118	70-130			%REC	1	10/19/2021 1534	10/20/2021 122	KP
Surr: Toluene-d8	108	70-130			%REC	1	10/19/2021 1534	10/20/2021 122	KP

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110108 - E 200.7 (4.4)										
Blank (2110108-BLK1)				Prepared: 10/11/2021 Analyzed: 10/18/2021						
Boron	ND	0.10	mg/L							
Calcium	ND	4.0	mg/L							
Chromium	ND	0.030	mg/L							
Iron	ND	0.30	mg/L							
Magnesium	ND	3.0	mg/L							
Potassium	ND	5.0	mg/L							
Silica	ND	2.0	mg/L							
Sodium	ND	5.0	mg/L							
LCS (2110108-BS1)				Prepared: 10/11/2021 Analyzed: 10/18/2021						
Boron	1.0	0.10	mg/L	1.000		102	85-115			
Calcium	9.5	4.0	mg/L	10.00		95	85-115			
Chromium	0.20	0.030	mg/L	0.2000		99	85-115			
Iron	0.96	0.30	mg/L	1.000		96	85-115			
Magnesium	9.8	3.0	mg/L	10.00		98	85-115			
Potassium	10	5.0	mg/L	10.00		101	85-115			
Sodium	10	5.0	mg/L	10.00		101	85-115			
LCS (2110108-BS2)				Prepared: 10/11/2021 Analyzed: 10/18/2021						
Silica	2.2	2.0	mg/L	2.143		102	90-110			
LCS Dup (2110108-BSD1)				Prepared: 10/11/2021 Analyzed: 10/18/2021						
Boron	1.0	0.10	mg/L	1.000		102	85-115	0.3	20	
Calcium	9.5	4.0	mg/L	10.00		95	85-115	0.2	20	
Chromium	0.20	0.030	mg/L	0.2000		100	85-115	0.09	20	
Iron	0.96	0.30	mg/L	1.000		96	85-115	0.2	20	
Magnesium	9.8	3.0	mg/L	10.00		98	85-115	0.6	20	
Potassium	10	5.0	mg/L	10.00		100	85-115	0.9	20	
Sodium	10	5.0	mg/L	10.00		100	85-115	0.7	20	
LCS Dup (2110108-BSD2)				Prepared: 10/11/2021 Analyzed: 10/18/2021						
Silica	2.2	2.0	mg/L	2.143		101	90-110	1	20	
Matrix Spike (2110108-MS1)		Source: 21J0174-33		Prepared: 10/11/2021 Analyzed: 10/18/2021						
Boron	1.4		mg/L	1.000	0.033	138	70-130			M6
Calcium	48		mg/L	10.00	47	2	70-130			M3
Chromium	0.32		mg/L	0.2000	0.048	134	70-130			M6
Iron	10		mg/L	1.000	11	NR	70-130			M3
Magnesium	290		mg/L	10.00	330	NR	70-130			M3
Potassium	12		mg/L	10.00	3.4	85	70-130			
Sodium	13		mg/L	10.00	5.1	76	70-130			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110108 - E 200.7 (4.4)										
Matrix Spike (2110108-MS2)		Source: 21J0332-01		Prepared: 10/11/2021 Analyzed: 10/18/2021						
Boron	1.1	0.10	mg/L	1.000	0.020	112	70-130			
Calcium	71	4.0	mg/L	10.00	61	100	70-130			
Chromium	0.21	0.030	mg/L	0.2000	ND	105	70-130			
Iron	3.8	0.30	mg/L	1.000	2.9	99	70-130			
Magnesium	21	3.0	mg/L	10.00	11	102	70-130			
Potassium	12	5.0	mg/L	10.00	2.0	104	70-130			
Sodium	19	5.0	mg/L	10.00	9.2	101	70-130			
Matrix Spike (2110108-MS3)		Source: 21J0174-33		Prepared: 10/11/2021 Analyzed: 10/18/2021						
Silica	18		mg/L	2.143	18	NR	85-115			M3
Matrix Spike (2110108-MS4)		Source: 21J0332-01		Prepared: 10/11/2021 Analyzed: 10/18/2021						
Silica	11	2.0	mg/L	2.143	9.7	84	85-115			
Batch 2110154 - E 200.8 (5.4)										
Blank (2110154-BLK1)		Prepared: 10/14/2021 Analyzed: 10/15/2021								
Aluminum	ND	0.040	mg/L							
Antimony	ND	0.00050	mg/L							
Arsenic	ND	0.00050	mg/L							
Barium	ND	0.00050	mg/L							
Beryllium	ND	0.00025	mg/L							
Cadmium	ND	0.00025	mg/L							
Cobalt	ND	0.00025	mg/L							
Copper	ND	0.00050	mg/L							
Lead	ND	0.00050	mg/L							
Manganese	ND	0.00025	mg/L							
Molybdenum	ND	0.00025	mg/L							
Nickel	ND	0.00050	mg/L							
Selenium	ND	0.0025	mg/L							
Silver	ND	0.00050	mg/L							
Thallium	ND	0.00050	mg/L							
Uranium	ND	0.00050	mg/L							
Zinc	ND	0.040	mg/L							

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110154 - E 200.8 (5.4)										
LCS (2110154-BS1) Prepared: 10/14/2021 Analyzed: 10/15/2021										
Aluminum	0.10	0.040	mg/L	0.1000		103	85-115			
Antimony	0.049	0.00050	mg/L	0.05000		97	85-115			
Arsenic	0.047	0.00050	mg/L	0.05000		94	85-115			
Barium	0.048	0.00050	mg/L	0.05000		96	85-115			
Beryllium	0.049	0.00025	mg/L	0.05000		97	85-115			
Cadmium	0.049	0.00025	mg/L	0.05000		97	85-115			
Cobalt	0.048	0.00025	mg/L	0.05000		97	85-115			
Copper	0.047	0.00050	mg/L	0.05000		94	85-115			
Lead	0.048	0.00050	mg/L	0.05000		96	85-115			
Manganese	0.049	0.00025	mg/L	0.05000		98	85-115			
Molybdenum	0.049	0.00025	mg/L	0.05000		98	85-115			
Nickel	0.048	0.00050	mg/L	0.05000		96	85-115			
Selenium	0.048	0.0025	mg/L	0.05000		96	85-115			
Silver	0.045	0.00050	mg/L	0.05000		91	85-115			
Thallium	0.049	0.00050	mg/L	0.05000		98	85-115			
Uranium	0.049	0.00050	mg/L	0.05000		99	85-115			
Zinc	0.10	0.040	mg/L	0.1000		100	85-115			
LCS Dup (2110154-BSD1) Prepared: 10/14/2021 Analyzed: 10/15/2021										
Aluminum	0.10	0.040	mg/L	0.1000		101	85-115	2	20	
Antimony	0.049	0.00050	mg/L	0.05000		98	85-115	0.9	20	
Arsenic	0.049	0.00050	mg/L	0.05000		97	85-115	3	20	
Barium	0.049	0.00050	mg/L	0.05000		99	85-115	3	20	
Beryllium	0.048	0.00025	mg/L	0.05000		96	85-115	1	20	
Cadmium	0.049	0.00025	mg/L	0.05000		98	85-115	0.5	20	
Cobalt	0.049	0.00025	mg/L	0.05000		97	85-115	0.3	20	
Copper	0.048	0.00050	mg/L	0.05000		95	85-115	2	20	
Lead	0.049	0.00050	mg/L	0.05000		97	85-115	2	20	
Manganese	0.050	0.00025	mg/L	0.05000		99	85-115	1	20	
Molybdenum	0.050	0.00025	mg/L	0.05000		99	85-115	1	20	
Nickel	0.048	0.00050	mg/L	0.05000		96	85-115	0.1	20	
Selenium	0.049	0.0025	mg/L	0.05000		98	85-115	3	20	
Silver	0.046	0.00050	mg/L	0.05000		92	85-115	1	20	
Thallium	0.050	0.00050	mg/L	0.05000		100	85-115	1	20	
Uranium	0.050	0.00050	mg/L	0.05000		100	85-115	1	20	
Zinc	0.10	0.040	mg/L	0.1000		101	85-115	0.8	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110154 - E 200.8 (5.4)										
Matrix Spike (2110154-MS1)		Source: 21J0237-01		Prepared: 10/14/2021 Analyzed: 10/21/2021						
Aluminum	0.099	0.040	mg/L	0.1000	ND	99	70-130			
Antimony	0.051	0.00050	mg/L	0.05000	0.000094	102	70-130			
Arsenic	0.055	0.00050	mg/L	0.05000	0.0070	95	70-130			
Barium	0.072	0.00050	mg/L	0.05000	0.024	96	70-130			
Beryllium	0.049	0.00025	mg/L	0.05000	0.000062	97	70-130			
Cadmium	0.047	0.00025	mg/L	0.05000	0.00011	94	70-130			
Cobalt	0.044	0.00025	mg/L	0.05000	0.00016	88	70-130			
Copper	0.044	0.00050	mg/L	0.05000	0.0011	86	70-130			
Lead	0.048	0.00050	mg/L	0.05000	ND	96	70-130			
Manganese	0.40	0.00025	mg/L	0.05000	0.37	50	70-130			M3
Molybdenum	0.26	0.00025	mg/L	0.05000	0.23	68	70-130			M3
Nickel	0.042	0.00050	mg/L	0.05000	0.00028	84	70-130			
Selenium	0.049	0.0025	mg/L	0.05000	0.00088	97	70-130			
Silver	0.040	0.00050	mg/L	0.05000	ND	80	70-130			
Thallium	0.048	0.00050	mg/L	0.05000	ND	96	70-130			
Uranium	0.058	0.00050	mg/L	0.05000	0.0045	107	70-130			
Zinc	0.11	0.040	mg/L	0.1000	0.016	91	70-130			
Batch 2110158 - E245.1										
Blank (2110158-BLK1)		Prepared & Analyzed: 10/14/2021								
Mercury	ND	0.0010	mg/L							
LCS (2110158-BS1)		Prepared & Analyzed: 10/14/2021								
Mercury	0.0050	0.0010	mg/L	0.005000		100	85-115			
LCS Dup (2110158-BSD1)		Prepared & Analyzed: 10/14/2021								
Mercury	0.0047	0.0010	mg/L	0.005000		94	85-115	6	20	
Matrix Spike (2110158-MS1)		Source: 21J0054-01		Prepared & Analyzed: 10/14/2021						
Mercury	0.0050	0.0010	mg/L	0.005000	ND	99	70-130			
Matrix Spike Dup (2110158-MSD1)		Source: 21J0054-01		Prepared & Analyzed: 10/14/2021						
Mercury	0.0049	0.0010	mg/L	0.005000	ND	99	70-130	0.7	20	
Batch 2110161 - E200.7 (4.4)										
Blank (2110161-BLK1)		Prepared: 10/14/2021 Analyzed: 10/15/2021								
Boron	ND	0.10	mg/L							
Calcium	ND	4.0	mg/L							
Iron	ND	0.30	mg/L							
Magnesium	ND	3.0	mg/L							
Potassium	ND	5.0	mg/L							
Silica	ND	0.20	mg/L							
Sodium	ND	5.0	mg/L							

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110161 - E200.7 (4.4)										
LCS (2110161-BS1)				Prepared: 10/14/2021 Analyzed: 10/15/2021						
Boron	0.97	0.10	mg/L	1.000		97	85-115			
Calcium	10	4.0	mg/L	10.00		101	85-115			
Iron	0.97	0.30	mg/L	1.000		97	85-115			
Magnesium	9.9	3.0	mg/L	10.00		99	85-115			
Potassium	9.5	5.0	mg/L	10.00		95	85-115			
Sodium	9.7	5.0	mg/L	10.00		97	85-115			
LCS (2110161-BS2)				Prepared: 10/14/2021 Analyzed: 10/18/2021						
Silica	9.5	0.20	mg/L	10.00		95	85-115			
LCS Dup (2110161-BSD1)				Prepared: 10/14/2021 Analyzed: 10/15/2021						
Boron	0.97	0.10	mg/L	1.000		97	85-115	0.3	20	
Calcium	10	4.0	mg/L	10.00		100	85-115	1	20	
Iron	0.95	0.30	mg/L	1.000		95	85-115	2	20	
Magnesium	9.9	3.0	mg/L	10.00		99	85-115	0.03	20	
Potassium	9.7	5.0	mg/L	10.00		97	85-115	2	20	
Sodium	9.9	5.0	mg/L	10.00		99	85-115	2	20	
LCS Dup (2110161-BSD2)				Prepared: 10/14/2021 Analyzed: 10/18/2021						
Silica	9.6	0.20	mg/L	10.00		96	85-115	1	20	
Matrix Spike (2110161-MS1)				Source: 21J0178-02		Prepared: 10/14/2021 Analyzed: 10/15/2021				
Boron	1.2	0.10	mg/L	1.000	0.31	94	70-130			
Calcium	220	4.0	mg/L	10.00	220	55	70-130			M3
Iron	1.4	0.30	mg/L	1.000	0.51	92	70-130			
Magnesium	50	3.0	mg/L	10.00	41	90	70-130			
Potassium	38	5.0	mg/L	10.00	29	87	70-130			
Sodium	170	5.0	mg/L	10.00	160	39	70-130			M3
Matrix Spike (2110161-MS2)				Source: 21J0331-02		Prepared: 10/14/2021 Analyzed: 10/18/2021				
Boron	1.1	0.10	mg/L	1.000	0.017	105	70-130			
Calcium	47	4.0	mg/L	10.00	39	81	70-130			
Iron	1.3	0.30	mg/L	1.000	0.39	88	70-130			
Magnesium	12	3.0	mg/L	10.00	2.6	93	70-130			
Potassium	11	5.0	mg/L	10.00	1.2	100	70-130			
Sodium	29	5.0	mg/L	10.00	19	98	70-130			
Matrix Spike (2110161-MS3)				Source: 21J0340-01		Prepared: 10/14/2021 Analyzed: 10/18/2021				
Silica	9.7	0.20	mg/L	10.00	0.32	94	70-130			
Batch 2110175 - E200.8 (5.4)										

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110175 - E200.8 (5.4)										
Blank (2110175-BLK1)				Prepared & Analyzed: 10/15/2021						
Aluminum	ND	0.040	mg/L							
Antimony	ND	0.00050	mg/L							
Arsenic	ND	0.00050	mg/L							
Barium	ND	0.00050	mg/L							
Beryllium	ND	0.00025	mg/L							
Cadmium	ND	0.00025	mg/L							
Chromium	ND	0.00050	mg/L							
Cobalt	ND	0.000250	mg/L							
Copper	ND	0.00050	mg/L							
Lead	ND	0.00050	mg/L							
Manganese	ND	0.00025	mg/L							
Molybdenum	ND	0.00025	mg/L							
Nickel	ND	0.00050	mg/L							
Selenium	ND	0.0025	mg/L							
Silver	ND	0.00050	mg/L							
Thallium	ND	0.00050	mg/L							
Uranium	ND	0.00050	mg/L							
Zinc	ND	0.040	mg/L							
LCS (2110175-BS1)				Prepared & Analyzed: 10/15/2021						
Aluminum	0.10	0.040	mg/L	0.1000		104	85-115			
Antimony	0.049	0.00050	mg/L	0.05000		97	85-115			
Arsenic	0.050	0.00050	mg/L	0.05000		101	85-115			
Barium	0.050	0.00050	mg/L	0.05000		100	85-115			
Beryllium	0.049	0.00025	mg/L	0.05000		99	85-115			
Cadmium	0.049	0.00025	mg/L	0.05000		99	85-115			
Chromium	0.050	0.00050	mg/L	0.05000		100	85-115			
Cobalt	0.0491	0.000250	mg/L	0.05000		98	85-115			
Copper	0.049	0.00050	mg/L	0.05000		98	85-115			
Lead	0.050	0.00050	mg/L	0.05000		99	85-115			
Manganese	0.050	0.00025	mg/L	0.05000		99	85-115			
Molybdenum	0.050	0.00025	mg/L	0.05000		99	85-115			
Nickel	0.050	0.00050	mg/L	0.05000		100	85-115			
Selenium	0.049	0.0025	mg/L	0.05000		98	85-115			
Silver	0.049	0.00050	mg/L	0.05000		98	85-115			
Thallium	0.049	0.00050	mg/L	0.05000		98	85-115			
Uranium	0.050	0.00050	mg/L	0.05000		101	85-115			
Zinc	0.11	0.040	mg/L	0.1000		106	85-115			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110175 - E200.8 (5.4)										
LCS Dup (2110175-BSD1)				Prepared & Analyzed: 10/15/2021						
Aluminum	0.10	0.040	mg/L	0.1000		100	85-115	3	20	
Antimony	0.047	0.00050	mg/L	0.05000		94	85-115	4	20	
Arsenic	0.048	0.00050	mg/L	0.05000		96	85-115	4	20	
Barium	0.048	0.00050	mg/L	0.05000		96	85-115	3	20	
Beryllium	0.048	0.00025	mg/L	0.05000		97	85-115	2	20	
Cadmium	0.047	0.00025	mg/L	0.05000		95	85-115	4	20	
Chromium	0.048	0.00050	mg/L	0.05000		95	85-115	4	20	
Cobalt	0.0473	0.000250	mg/L	0.05000		95	85-115	4	20	
Copper	0.048	0.00050	mg/L	0.05000		96	85-115	2	20	
Lead	0.049	0.00050	mg/L	0.05000		98	85-115	1	20	
Manganese	0.048	0.00025	mg/L	0.05000		95	85-115	4	20	
Molybdenum	0.048	0.00025	mg/L	0.05000		95	85-115	4	20	
Nickel	0.048	0.00050	mg/L	0.05000		96	85-115	4	20	
Selenium	0.047	0.0025	mg/L	0.05000		94	85-115	4	20	
Silver	0.047	0.00050	mg/L	0.05000		94	85-115	4	20	
Thallium	0.048	0.00050	mg/L	0.05000		96	85-115	2	20	
Uranium	0.049	0.00050	mg/L	0.05000		98	85-115	3	20	
Zinc	0.10	0.040	mg/L	0.1000		103	85-115	2	20	
Matrix Spike (2110175-MS1)				Source: 21J0311-01	Prepared & Analyzed: 10/15/2021					
Aluminum	0.10	0.040	mg/L	0.1000	ND	104	70-130			
Antimony	0.047	0.00050	mg/L	0.05000	0.000054	94	70-130			
Arsenic	0.047	0.00050	mg/L	0.05000	0.00087	92	70-130			
Barium	0.12	0.00050	mg/L	0.05000	0.070	99	70-130			
Beryllium	0.048	0.00025	mg/L	0.05000	0.00026	95	70-130			
Cadmium	0.046	0.00025	mg/L	0.05000	ND	91	70-130			
Chromium	0.047	0.00050	mg/L	0.05000	0.00019	93	70-130			
Cobalt	0.0452	0.000250	mg/L	0.05000	0.0000983	90	70-130			
Copper	0.045	0.00050	mg/L	0.05000	0.00085	88	70-130			
Lead	0.048	0.00050	mg/L	0.05000	0.00014	95	70-130			
Manganese	0.12	0.00025	mg/L	0.05000	0.079	84	70-130			
Molybdenum	0.049	0.00025	mg/L	0.05000	0.0017	96	70-130			
Nickel	0.045	0.00050	mg/L	0.05000	0.0013	88	70-130			
Selenium	0.044	0.0025	mg/L	0.05000	ND	89	70-130			
Silver	0.040	0.00050	mg/L	0.05000	ND	80	70-130			
Thallium	0.047	0.00050	mg/L	0.05000	0.00034	94	70-130			
Uranium	0.057	0.00050	mg/L	0.05000	0.0024	110	70-130			
Zinc	0.13	0.040	mg/L	0.1000	0.028	100	70-130			
Batch 2110200 - E 245.1										
Blank (2110200-BLK1)				Prepared & Analyzed: 10/19/2021						
Mercury	0.000095	0.0010	mg/L							
LCS (2110200-BS1)				Prepared & Analyzed: 10/19/2021						
Mercury	0.0050	0.0010	mg/L	0.005000		101	85-115			
LCS Dup (2110200-BSD1)				Prepared & Analyzed: 10/19/2021						
Mercury	0.0053	0.0010	mg/L	0.005000		106	85-115	5	20	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110200 - E 245.1										
Matrix Spike (2110200-MS1)		Source: 21J0332-01		Prepared & Analyzed: 10/19/2021						
Mercury	0.0050	0.0010	mg/L	0.005000	0.000062	99	70-130			
Matrix Spike Dup (2110200-MSD1)		Source: 21J0332-01		Prepared & Analyzed: 10/19/2021						
Mercury	0.0050	0.0010	mg/L	0.005000	0.000062	98	70-130	0.9	20	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110124 - SM2540 C										
Duplicate (2110124-DUP1)		Source: 21J0289-01		Prepared: 10/13/2021 Analyzed: 10/15/2021						
Total Dissolved Solids (Residue, Filterable)	1500	20	mg/L		1400			1	5	
Batch 2110150 - E150.1										
Duplicate (2110150-DUP1)		Source: 21J0311-01		Prepared & Analyzed: 10/13/2021						
pH (pH Units)	7.2		-		7.2			0.4	200	H5
Temperature (°C)	22		-		22			0	200	H5
Batch 2110156 - SM2320B										
Blank (2110156-BLK1)		Prepared & Analyzed: 10/14/2021								
Alkalinity, Bicarbonate (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Carbonate (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Hydroxide (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Phenolphthalein (As CaCO3)	ND	2.0	mg/L							
Alkalinity, Total (As CaCO3)	ND	2.0	mg/L							
LCS (2110156-BS1)		Prepared & Analyzed: 10/14/2021								
Alkalinity, Total (As CaCO3)	250	2.0	mg/L	250.0		100	90-110			
LCS Dup (2110156-BSD1)		Prepared & Analyzed: 10/14/2021								
Alkalinity, Total (As CaCO3)	250	2.0	mg/L	250.0		100	90-110	0	10	
Matrix Spike (2110156-MS1)		Source: 21J0311-01		Prepared & Analyzed: 10/14/2021						
Alkalinity, Total (As CaCO3)	340	2.0	mg/L	250.0	96	98	70-130			
Matrix Spike Dup (2110156-MSD1)		Source: 21J0311-01		Prepared & Analyzed: 10/14/2021						
Alkalinity, Total (As CaCO3)	340	2.0	mg/L	250.0	96	98	70-130	0	10	
Batch 2110181 - SM2510 B										
LCS (2110181-BS1)		Prepared & Analyzed: 10/15/2021								
Conductivity	150	0.10	µmhos/cm	141.2		108	0-200			
LCS Dup (2110181-BSD1)		Prepared & Analyzed: 10/15/2021								
Conductivity	150	0.10	µmhos/cm	141.2		108	0-200	0	200	
Duplicate (2110181-DUP1)		Source: 21J0340-01		Prepared & Analyzed: 10/15/2021						
Conductivity	4.5	0.10	µmhos/cm		4.6			2	10	
Batch 2110197 - SM4500-SiO2 C										
Blank (2110197-BLK1)		Prepared & Analyzed: 10/19/2021								
Silica	ND	2.0	mg/L							
LCS (2110197-BS1)		Prepared & Analyzed: 10/19/2021								
Silica	8.1	2.0	mg/L	8.000		101	90-110			
LCS Dup (2110197-BSD1)		Prepared & Analyzed: 10/19/2021								
Silica	8.3	2.0	mg/L	8.000		103	90-110	2	20	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110197 - SM4500-SiO2 C										
Matrix Spike (2110197-MS1)		Source: 21J0308-01		Prepared & Analyzed: 10/19/2021						
Silica	68	10	mg/L	40.00	25	107	85-115			
Matrix Spike Dup (2110197-MSD1)		Source: 21J0308-01		Prepared & Analyzed: 10/19/2021						
Silica	63	10	mg/L	40.00	25	96	85-115	7	20	
Batch 2110217 - SM4500-NH3 B,C										
Blank (2110217-BLK1)		Prepared & Analyzed: 10/19/2021								
Nitrogen, Ammonia (As N)	ND	0.50	mg/L							
LCS (2110217-BS1)		Prepared & Analyzed: 10/19/2021								
Nitrogen, Ammonia (As N)	5.5	0.50	mg/L	5.000		110	90-110			
LCS Dup (2110217-BSD1)		Prepared & Analyzed: 10/19/2021								
Nitrogen, Ammonia (As N)	5.2	0.50	mg/L	5.000		105	90-110	5	10	
Matrix Spike (2110217-MS1)		Source: 21J0011-01		Prepared & Analyzed: 10/19/2021						
Nitrogen, Ammonia (As N)	4.6	0.50	mg/L	5.000	ND	93	75-120			
Matrix Spike (2110217-MS2)		Source: 21J0332-01		Prepared & Analyzed: 10/19/2021						
Nitrogen, Ammonia (As N)	4.7	0.50	mg/L	5.000	ND	94	75-120			
Matrix Spike Dup (2110217-MSD1)		Source: 21J0011-01		Prepared & Analyzed: 10/19/2021						
Nitrogen, Ammonia (As N)	5.0	0.50	mg/L	5.000	ND	99	75-120	7	20	
Matrix Spike Dup (2110217-MSD2)		Source: 21J0332-01		Prepared & Analyzed: 10/19/2021						
Nitrogen, Ammonia (As N)	4.8	0.50	mg/L	5.000	ND	96	75-120	2	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110190 - SW8260B										

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110190 - SW8260B										
Blank (2110190-BLK1)				Prepared & Analyzed: 10/13/2021						
1,1,1,2-Tetrachloroethane	ND	0.50	ug/L							
1,1,1-Trichloroethane	ND	0.50	ug/L							
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L							
1,1,2-Trichloroethane	ND	0.50	ug/L							
1,1,2-Trichlorotrifluoroethane	ND	5.0	ug/L							
1,1-Dichloroethane	ND	0.50	ug/L							
1,1-Dichloroethene	ND	0.50	ug/L							
1,1-Dichloropropene	ND	0.50	ug/L							
1,2,3-Trichlorobenzene	ND	2.0	ug/L							
1,2,3-Trichloropropane	ND	1.0	ug/L							
1,2,4-Trichlorobenzene	ND	2.0	ug/L							
1,2,4-Trimethylbenzene	ND	0.50	ug/L							
1,2-Dibromo-3-chloropropane	ND	10	ug/L							
1,2-Dibromoethane	ND	2.0	ug/L							
1,2-Dichlorobenzene	ND	0.50	ug/L							
1,2-Dichloroethane	ND	0.50	ug/L							
1,2-Dichloropropane	ND	0.50	ug/L							
1,3,5-Trimethylbenzene	ND	0.50	ug/L							
1,3-Dichlorobenzene	ND	0.50	ug/L							
1,3-Dichloropropane	ND	0.50	ug/L							
1,4-Dichlorobenzene	ND	0.50	ug/L							
2,2-Dichloropropane	ND	0.50	ug/L							
2-Butanone (MEK)	ND	10	ug/L							
2-Chlorotoluene	ND	0.50	ug/L							
2-Hexanone	ND	2.5	ug/L							
4-Chlorotoluene	ND	0.50	ug/L							
4-Isopropyltoluene	ND	0.50	ug/L							
4-Methyl-2-pentanone	ND	2.5	ug/L							
Acetone	ND	10	ug/L							
Acrylonitrile	ND	10	ug/L							
Benzene	ND	0.50	ug/L							
Bromobenzene	ND	0.50	ug/L							
Bromochloromethane	ND	0.50	ug/L							
Bromodichloromethane	ND	0.50	ug/L							
Bromoform	ND	2.0	ug/L							
Bromomethane	ND	1.0	ug/L							
Carbon disulfide	ND	2.0	ug/L							
Carbon tetrachloride	ND	0.50	ug/L							
Chlorobenzene	ND	0.50	ug/L							
Chloroethane	ND	1.0	ug/L							
Chloroform	ND	0.50	ug/L							
Chloromethane	ND	1.0	ug/L							
cis-1,2-Dichloroethene	ND	0.50	ug/L							
cis-1,3-Dichloropropene	ND	2.0	ug/L							
Dibromochloromethane	ND	0.50	ug/L							
Dibromomethane	ND	0.50	ug/L							
Dichlorodifluoromethane	ND	0.50	ug/L							
Ethylbenzene	ND	0.50	ug/L							

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110190 - SW8260B										
Blank (2110190-BLK1)				Prepared & Analyzed: 10/13/2021						
Hexachlorobutadiene	ND	5.0	ug/L							
Iodomethane	ND	10	ug/L							
Isopropylbenzene	ND	0.50	ug/L							
m,p-Xylene	ND	1.0	ug/L							
Methylene chloride	ND	1.0	ug/L							
Naphthalene	ND	2.0	ug/L							
n-Butylbenzene	ND	0.50	ug/L							
n-Propylbenzene	ND	0.50	ug/L							
o-Xylene	ND	0.50	ug/L							
sec-Butylbenzene	ND	2.0	ug/L							
Styrene	ND	0.50	ug/L							
tert-Butylbenzene	ND	0.50	ug/L							
Tetrachloroethene	ND	0.50	ug/L							
Toluene	ND	0.50	ug/L							
trans-1,2-Dichloroethene	ND	0.50	ug/L							
trans-1,3-Dichloropropene	ND	2.0	ug/L							
trans-1,4-Dichloro-2-butene	ND	10	ug/L							
Trichloroethene	ND	0.50	ug/L							
Trichlorofluoromethane	ND	0.50	ug/L							
Vinyl acetate	ND	10	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	26.7		ug/L	25.00		107	70-130			
Surrogate: Dibromofluoromethane	29.2		ug/L	25.00		117	70-130			
Surrogate: Toluene-d8	27.0		ug/L	25.00		108	70-130			
LCS (2110190-BS1)				Prepared & Analyzed: 10/13/2021						
1,1-Dichloroethene	23		ug/L	25.00		90	70-130			
Benzene	25		ug/L	25.00		101	70-130			
Chlorobenzene	26		ug/L	25.00		103	70-130			
Toluene	25		ug/L	25.00		99	70-130			
Trichloroethene	25		ug/L	25.00		99	70-130			
Surrogate: 4-Bromofluorobenzene	25.6		ug/L	25.00		102	70-130			
Surrogate: Dibromofluoromethane	28.1		ug/L	25.00		112	70-130			
Surrogate: Toluene-d8	25.9		ug/L	25.00		103	70-130			
LCS Dup (2110190-BSD1)				Prepared & Analyzed: 10/13/2021						
1,1-Dichloroethene	23		ug/L	25.00		92	70-130	2	30	
Benzene	25		ug/L	25.00		102	70-130	1	30	
Chlorobenzene	26		ug/L	25.00		105	70-130	2	30	
Toluene	25		ug/L	25.00		102	70-130	3	30	
Trichloroethene	25		ug/L	25.00		101	70-130	2	30	
Surrogate: 4-Bromofluorobenzene	27.1		ug/L	25.00		108	70-130			
Surrogate: Dibromofluoromethane	29.4		ug/L	25.00		118	70-130			
Surrogate: Toluene-d8	27.1		ug/L	25.00		108	70-130			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110190 - SW8260B										
Matrix Spike (2110190-MS1)		Source: 21J0218-01		Prepared: 10/13/2021 Analyzed: 10/14/2021						
1,1-Dichloroethene	24		ug/L	25.00	0.010	95	70-130			
Benzene	26		ug/L	25.00	0.0	106	70-130			
Chlorobenzene	27		ug/L	25.00	0.0	107	70-130			
Toluene	26		ug/L	25.00	0.0	104	70-130			
Trichloroethene	25		ug/L	25.00	0.0	102	70-130			
Surrogate: 4-Bromofluorobenzene	26.1		ug/L	25.00		105	70-130			
Surrogate: Dibromofluoromethane	28.5		ug/L	25.00		114	70-130			
Surrogate: Toluene-d8	27.2		ug/L	25.00		109	70-130			
Matrix Spike Dup (2110190-MSD1)		Source: 21J0218-01		Prepared: 10/13/2021 Analyzed: 10/14/2021						
1,1-Dichloroethene	22		ug/L	25.00	0.010	90	70-130	6	30	
Benzene	25		ug/L	25.00	0.0	101	70-130	5	30	
Chlorobenzene	25		ug/L	25.00	0.0	102	70-130	5	30	
Toluene	25		ug/L	25.00	0.0	100	70-130	4	30	
Trichloroethene	24		ug/L	25.00	0.0	96	70-130	5	30	
Surrogate: 4-Bromofluorobenzene	26.4		ug/L	25.00		105	70-130			
Surrogate: Dibromofluoromethane	28.1		ug/L	25.00		113	70-130			
Surrogate: Toluene-d8	27.1		ug/L	25.00		108	70-130			
Batch 2110221 - SW8260B										

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110221 - SW8260B										
Blank (2110221-BLK1)				Prepared: 10/19/2021 Analyzed: 10/20/2021						
1,1,1,2-Tetrachloroethane	ND	0.50	ug/L							
1,1,1-Trichloroethane	ND	0.50	ug/L							
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L							
1,1,2-Trichloroethane	ND	0.50	ug/L							
1,1,2-Trichlorotrifluoroethane	ND	5.0	ug/L							
1,1-Dichloroethane	ND	0.50	ug/L							
1,1-Dichloroethene	ND	0.50	ug/L							
1,1-Dichloropropene	ND	0.50	ug/L							
1,2,3-Trichlorobenzene	ND	2.0	ug/L							
1,2,3-Trichloropropane	ND	1.0	ug/L							
1,2,4-Trichlorobenzene	ND	2.0	ug/L							
1,2,4-Trimethylbenzene	ND	0.50	ug/L							
1,2-Dibromo-3-chloropropane	ND	10	ug/L							
1,2-Dibromoethane	ND	2.0	ug/L							
1,2-Dichlorobenzene	ND	0.50	ug/L							
1,2-Dichloroethane	ND	0.50	ug/L							
1,2-Dichloropropane	ND	0.50	ug/L							
1,3,5-Trimethylbenzene	ND	0.50	ug/L							
1,3-Dichlorobenzene	ND	0.50	ug/L							
1,3-Dichloropropane	ND	0.50	ug/L							
1,4-Dichlorobenzene	ND	0.50	ug/L							
2,2-Dichloropropane	ND	0.50	ug/L							
2-Butanone (MEK)	ND	10	ug/L							
2-Chlorotoluene	ND	0.50	ug/L							
2-Hexanone	ND	2.5	ug/L							
4-Chlorotoluene	ND	0.50	ug/L							
4-Isopropyltoluene	ND	0.50	ug/L							
4-Methyl-2-pentanone	ND	2.5	ug/L							
Acetone	ND	10	ug/L							
Acrylonitrile	ND	10	ug/L							
Benzene	ND	0.50	ug/L							
Bromobenzene	ND	0.50	ug/L							
Bromochloromethane	ND	0.50	ug/L							
Bromodichloromethane	ND	0.50	ug/L							
Bromoform	ND	2.0	ug/L							
Bromomethane	ND	1.0	ug/L							
Carbon disulfide	ND	2.0	ug/L							
Carbon tetrachloride	ND	0.50	ug/L							
Chlorobenzene	ND	0.50	ug/L							
Chloroethane	ND	1.0	ug/L							
Chloroform	ND	0.50	ug/L							
Chloromethane	ND	1.0	ug/L							
cis-1,2-Dichloroethene	ND	0.50	ug/L							
cis-1,3-Dichloropropene	ND	2.0	ug/L							
Dibromochloromethane	ND	0.50	ug/L							
Dibromomethane	ND	0.50	ug/L							
Dichlorodifluoromethane	ND	0.50	ug/L							
Ethylbenzene	ND	0.50	ug/L							

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110221 - SW8260B										
Blank (2110221-BLK1)				Prepared: 10/19/2021 Analyzed: 10/20/2021						
Hexachlorobutadiene	ND	5.0	ug/L							
Iodomethane	ND	10	ug/L							
Isopropylbenzene	ND	0.50	ug/L							
m,p-Xylene	ND	1.0	ug/L							
Methylene chloride	ND	1.0	ug/L							
Naphthalene	ND	2.0	ug/L							
n-Butylbenzene	ND	0.50	ug/L							
n-Propylbenzene	ND	0.50	ug/L							
o-Xylene	ND	0.50	ug/L							
sec-Butylbenzene	ND	2.0	ug/L							
Styrene	ND	0.50	ug/L							
tert-Butylbenzene	ND	0.50	ug/L							
Tetrachloroethene	ND	0.50	ug/L							
Toluene	ND	0.50	ug/L							
trans-1,2-Dichloroethene	ND	0.50	ug/L							
trans-1,3-Dichloropropene	ND	2.0	ug/L							
trans-1,4-Dichloro-2-butene	ND	10	ug/L							
Trichloroethene	ND	0.50	ug/L							
Trichlorofluoromethane	ND	0.50	ug/L							
Vinyl acetate	ND	10	ug/L							
Vinyl chloride	ND	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	27.0		ug/L	25.00		108	70-130			
Surrogate: Dibromofluoromethane	29.9		ug/L	25.00		120	70-130			
Surrogate: Toluene-d8	27.9		ug/L	25.00		112	70-130			
LCS (2110221-BS1)				Prepared & Analyzed: 10/19/2021						
1,1-Dichloroethene	24		ug/L	25.00		96	70-130			
Benzene	26		ug/L	25.00		105	70-130			
Chlorobenzene	27		ug/L	25.00		110	70-130			
Toluene	27		ug/L	25.00		107	70-130			
Trichloroethene	26		ug/L	25.00		103	70-130			
Surrogate: 4-Bromofluorobenzene	26.2		ug/L	25.00		105	70-130			
Surrogate: Dibromofluoromethane	28.0		ug/L	25.00		112	70-130			
Surrogate: Toluene-d8	27.3		ug/L	25.00		109	70-130			
LCS Dup (2110221-BSD1)				Prepared: 10/19/2021 Analyzed: 10/20/2021						
1,1-Dichloroethene	24		ug/L	25.00		98	70-130	2	30	
Benzene	27		ug/L	25.00		107	70-130	2	30	
Chlorobenzene	27		ug/L	25.00		108	70-130	2	30	
Toluene	25		ug/L	25.00		101	70-130	6	30	
Trichloroethene	26		ug/L	25.00		104	70-130	1	30	
Surrogate: 4-Bromofluorobenzene	26.4		ug/L	25.00		106	70-130			
Surrogate: Dibromofluoromethane	29.7		ug/L	25.00		119	70-130			
Surrogate: Toluene-d8	27.3		ug/L	25.00		109	70-130			

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0308
Date Received: 10/12/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110221 - SW8260B										
Matrix Spike (2110221-MS1)		Source: 21J0370-02		Prepared: 10/19/2021 Analyzed: 10/20/2021						
1,1-Dichloroethene	25		ug/L	25.00	0.010	98	70-130			
Benzene	27		ug/L	25.00	0.0	108	70-130			
Chlorobenzene	27		ug/L	25.00	0.020	108	70-130			
Toluene	26		ug/L	25.00	0.54	103	70-130			
Trichloroethene	26		ug/L	25.00	0.0	104	70-130			
Surrogate: 4-Bromofluorobenzene	27.3		ug/L	25.00		109	70-130			
Surrogate: Dibromofluoromethane	29.2		ug/L	25.00		117	70-130			
Surrogate: Toluene-d8	27.7		ug/L	25.00		111	70-130			
Matrix Spike Dup (2110221-MSD1)		Source: 21J0370-02		Prepared: 10/19/2021 Analyzed: 10/20/2021						
1,1-Dichloroethene	25		ug/L	25.00	0.010	98	70-130	0.2	30	
Benzene	27		ug/L	25.00	0.0	110	70-130	2	30	
Chlorobenzene	27		ug/L	25.00	0.020	109	70-130	0.8	30	
Toluene	27		ug/L	25.00	0.54	105	70-130	2	30	
Trichloroethene	26		ug/L	25.00	0.0	106	70-130	2	30	
Surrogate: 4-Bromofluorobenzene	26.8		ug/L	25.00		107	70-130			
Surrogate: Dibromofluoromethane	29.7		ug/L	25.00		119	70-130			
Surrogate: Toluene-d8	27.8		ug/L	25.00		111	70-130			

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0308
Date Received: 10/12/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110113 - E300.0 (2.1)										
Blank (2110113-BLK1)				Prepared & Analyzed: 10/12/2021						
Chloride	ND	1.0	mg/L							
Fluoride	ND	0.50	mg/L							
Nitrogen, Nitrate (As N)	ND	0.50	mg/L							
Nitrogen, Nitrite (As N)	ND	0.10	mg/L							
Sulfate	ND	5.0	mg/L							
LCS (2110113-BS1)				Prepared & Analyzed: 10/12/2021						
Chloride	12	1.0	mg/L	12.50		94	90-110			
Fluoride	1.9	0.50	mg/L	2.000		96	90-110			
Nitrogen, Nitrate (As N)	4.8	0.50	mg/L	5.000		96	90-110			
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500		96	90-110			
Sulfate	12	5.0	mg/L	12.50		97	90-110			
LCS Dup (2110113-BSD1)				Prepared & Analyzed: 10/12/2021						
Chloride	12	1.0	mg/L	12.50		96	90-110	1	10	
Fluoride	1.9	0.50	mg/L	2.000		97	90-110	0.8	10	
Nitrogen, Nitrate (As N)	4.9	0.50	mg/L	5.000		97	90-110	1	10	
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500		96	90-110	0.8	10	
Sulfate	12	5.0	mg/L	12.50		98	90-110	0.7	10	
Matrix Spike (2110113-MS1)		Source: 21J0278-01		Prepared: 10/12/2021 Analyzed: 10/13/2021						
Nitrogen, Nitrate (As N)	6.1	0.50	mg/L	5.000	1.2	98	80-120			
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500	0.12	91	80-120			
Matrix Spike (2110113-MS2)		Source: 21J0305-01		Prepared: 10/12/2021 Analyzed: 10/13/2021						
Fluoride	1.9	0.50	mg/L	2.000	0.39	76	80-120			M2
Nitrogen, Nitrate (As N)	7.5	0.50	mg/L	5.000	2.1	109	80-120			
Nitrogen, Nitrite (As N)	2.0	0.10	mg/L	2.500	ND	80	80-120			M2
Sulfate	20	5.0	mg/L	12.50	8.4	91	80-120			
Matrix Spike (2110113-MS3)		Source: 21J0298-01		Prepared: 10/12/2021 Analyzed: 10/13/2021						
Fluoride	2.3	0.50	mg/L	2.000	0.80	77	80-120			M2
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500	ND	94	80-120			
Matrix Spike (2110113-MS4)		Source: 21J0298-01RE1		Prepared: 10/12/2021 Analyzed: 10/22/2021						
Chloride	400	20	mg/L	250.0	140	105	80-120			
Sulfate	390	100	mg/L	250.0	140	99	80-120			
Matrix Spike Dup (2110113-MSD1)		Source: 21J0278-01		Prepared: 10/12/2021 Analyzed: 10/13/2021						
Nitrogen, Nitrate (As N)	6.2	0.50	mg/L	5.000	1.2	100	80-120	1	10	
Nitrogen, Nitrite (As N)	2.5	0.10	mg/L	2.500	0.12	93	80-120	2	10	
Matrix Spike Dup (2110113-MSD2)		Source: 21J0305-01		Prepared: 10/12/2021 Analyzed: 10/13/2021						
Fluoride	1.9	0.50	mg/L	2.000	0.39	76	80-120	0.1	10	M2
Nitrogen, Nitrate (As N)	7.6	0.50	mg/L	5.000	2.1	110	80-120	0.3	10	
Nitrogen, Nitrite (As N)	2.0	0.10	mg/L	2.500	ND	80	80-120	0.6	10	
Sulfate	20	5.0	mg/L	12.50	8.4	91	80-120	0.09	10	

Client: Rosemont Copper Company
Project: Groundwater
Work Order: 21J0308
Date Received: 10/12/2021

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 2110113 - E300.0 (2.1)										
Matrix Spike Dup (2110113-MSD3)		Source: 21J0298-01		Prepared: 10/12/2021 Analyzed: 10/13/2021						
Fluoride	2.4	0.50	mg/L	2.000	0.80	78	80-120	1	10	M2
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500	ND	96	80-120	2	10	
Matrix Spike Dup (2110113-MSD4)		Source: 21J0298-01RE1		Prepared: 10/12/2021 Analyzed: 10/22/2021						
Chloride	470	20	mg/L	250.0	140	133	80-120	16	10	M1
Sulfate	450	100	mg/L	250.0	140	122	80-120	14	10	M1
Batch 2110140 - E300.0 (2.1)										
Blank (2110140-BLK1)		Prepared & Analyzed: 10/14/2021								
Phosphorus, Dissolved Orthophosphate (As P)	ND	0.50	mg/L							
LCS (2110140-BS1)		Prepared & Analyzed: 10/14/2021								
Phosphorus, Dissolved Orthophosphate (As P)	2.9	0.50	mg/L	2.500		115	90-110			L5
LCS Dup (2110140-BSD1)		Prepared & Analyzed: 10/14/2021								
Phosphorus, Dissolved Orthophosphate (As P)	2.8	0.50	mg/L	2.500		114	90-110	1	10	L5
Matrix Spike (2110140-MS1)		Source: 21J0408-03		Prepared & Analyzed: 10/14/2021						
Phosphorus, Dissolved Orthophosphate (As P)	2.8	0.50	mg/L	2.500	ND	112	80-120			
Matrix Spike (2110140-MS2)		Source: 21J0409-01		Prepared & Analyzed: 10/14/2021						
Phosphorus, Dissolved Orthophosphate (As P)	2.9	0.50	mg/L	2.500	ND	116	80-120			
Matrix Spike Dup (2110140-MSD1)		Source: 21J0408-03		Prepared & Analyzed: 10/14/2021						
Phosphorus, Dissolved Orthophosphate (As P)	2.8	0.50	mg/L	2.500	ND	113	80-120	1	10	
Matrix Spike Dup (2110140-MSD2)		Source: 21J0409-01		Prepared: 10/14/2021 Analyzed: 10/15/2021						
Phosphorus, Dissolved Orthophosphate (As P)	3.0	0.50	mg/L	2.500	ND	120	80-120	4	10	

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions					
Frequency: As needed and when sampled (Field Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
General Measurements					
Depth to Water level	feet	Water Level Sounder	NA		
Water level elevation	feet amsl	calculation	NA		
Temperature – field	° C (Celsius)	Oakton PC 450 Meter/Oakton pH Con 10 Meter or equivalent	NA		
pH – field	S.U.	Oakton PC 450 Meter/Oakton pH Con 10 Meter or equivalent	NA		
Conductivity – field	µS/cm	Oakton PC 450 Meter/ Oakton pH Con 10 Meter or equivalent	NA		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
General Measurements, General Chemistry					
Temperature – lab	° C	SM 4500 H+B	NA		
pH – lab	S.U.	SM 4500 H+B	NA		
Conductivity – lab	µS/cm	SW-846 9050A	2.0		
Total dissolved solids	mg/L	SM 2540 C	20		
Hardness ¹	mg/L	SM 2340B/calculation	13.0		
Cation/Anion Balance	%	calculation	NA		
Total alkalinity	mg/L	SM 2320 B	4.0		
Bicarbonate	mg/L	SM 2320 B	4.0		
Carbonate	mg/L	SM 2320 B	4.0		
Hydroxide	mg/L	SM 2320 B	4.0		
Sulfate	mg/L	EPA 300.0	0.50		
Chloride	mg/L	EPA 300.0	0.50		
Fluoride	mg/L	EPA 300.0	0.50		
Nitrate (as nitrogen [N])	mg/L	EPA 300.0	0.10		
Nitrite (as N)	mg/L	EPA 300.0	0.10		
Nitrate + Nitrite (as N)	mg/L	EPA 300.0/calculation	0.10		
Calcium ¹	mg/L	EPA 200.7	2.0		
Magnesium ¹	mg/L	EPA 200.7	2.0		
Sodium ¹	mg/L	EPA 200.7	0.5		
Potassium ¹	mg/L	EPA 200.7	0.5		
Ammonia (as N)	mg/L	SM 4500	0.5		
Orthophosphate (as P)	mg/L	EPA 300.0	0.1		
Silicon Dioxide ¹	mg/L	EPA 200.7	0.214		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Dissolved Metals					
Aluminum	mg/L	EPA 200.7	0.1		
Antimony	mg/L	EPA 200.8	0.001		
Arsenic	mg/L	EPA 200.8	0.0005		
Barium	mg/L	EPA 200.7	0.01		
Beryllium	mg/L	EPA 200.7	0.001		
Boron	mg/L	EPA 200.7	0.05		
Cadmium	mg/L	EPA 200.7	0.001		
Chromium	mg/L	EPA 200.7	0.01		
Cobalt	mg/L	EPA 200.7	0.01		
Copper	mg/L	EPA 200.7	0.01		
Iron	mg/L	EPA 200.7	0.1		
Lead	mg/L	EPA 200.8	0.0005		
Manganese	mg/L	EPA 200.7	0.01		
Mercury	mg/L	EPA 245.1	0.0002		
Molybdenum	mg/L	EPA 200.7	0.01		
Nickel	mg/L	EPA 200.7	0.01		
Selenium	mg/L	EPA 200.8	0.0005		
Silver	mg/L	EPA 200.8	0.0001		
Thallium	mg/L	EPA 200.8	0.0001		
Uranium	mg/L	EPA 200.8	0.0001		
Zinc	mg/L	EPA 200.8	0.013		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Total Recoverable Metals					
Aluminum	mg/L	EPA 200.7	0.1		
Antimony	mg/L	EPA 200.8	0.001		
Arsenic	mg/L	EPA 200.8	0.0005		
Barium	mg/L	EPA 200.7	0.01		
Beryllium	mg/L	EPA 200.7	0.001		
Boron	mg/L	EPA 200.7	0.05		
Cadmium	mg/L	EPA 200.7	0.001		
Chromium	mg/L	EPA 200.7	0.01		
Cobalt	mg/L	EPA 200.7	0.01		
Copper	mg/L	EPA 200.7	0.01		
Iron	mg/L	EPA 200.7	0.1		
Lead	mg/L	EPA 200.8	0.0005		
Manganese	mg/L	EPA 200.7	0.01		
Mercury	mg/L	EPA 245.1	0.0002		
Molybdenum	mg/L	EPA 200.7	0.01		
Nickel	mg/L	EPA 200.7	0.01		
Selenium	mg/L	EPA 200.8	0.0005		
Silver	mg/L	EPA 200.8	0.0001		
Thallium	mg/L	EPA 200.8	0.0001		
Uranium	mg/L	EPA 200.8	0.0001		
Zinc	mg/L	EPA 200.8	0.013		

Groundwater Monitoring – Existing Conditions – Lab Sheet

October 5, 2021

Groundwater Monitoring – Existing Conditions (continued)					
Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Radiochemicals					
Gross alpha particle activity	pCi/L	EPA 900	3.0		
Adjusted gross alpha	pCi/L	calculation	3.0		
Total Radium (Ra 226 + Ra 228)	pCi/L	calculation	1.0		
Radium 226	pCi/L	EPA 903.1 or HPGE-GA	1.0		
Radium 228	pCi/L	EPA 904 or HPGE-GA	1.0		
Uranium isotopes	pCi/L	ASTM 6239	1.0		

Frequency: As needed and when sampled (Laboratory Parameters)					
Parameter	Units	Analytical Method	Acceptable Detection Limits (at or below the listed value)		
Other					
Stable isotopes: H and O	Per mil	Mass spectrometer	0.10		
Organics - Volatile	mg/L	SW8260B	Variable		
Organics – Semi-Volatile	mg/L	8270	Variable		

Units: S.U. = standard units

μS/cm = micro Siemens per centimeter

mg/L = milligrams per liter

μg/L = micrograms per liter

pCi/L = picoCuries per liter

amsl = above mean sea level

Per mil = parts per thousand

NA = not applicable

¹: Parameter to be analyzed as both dissolved and total.



ANALYTICAL REPORT

October 21, 2021



Turner Laboratories Inc

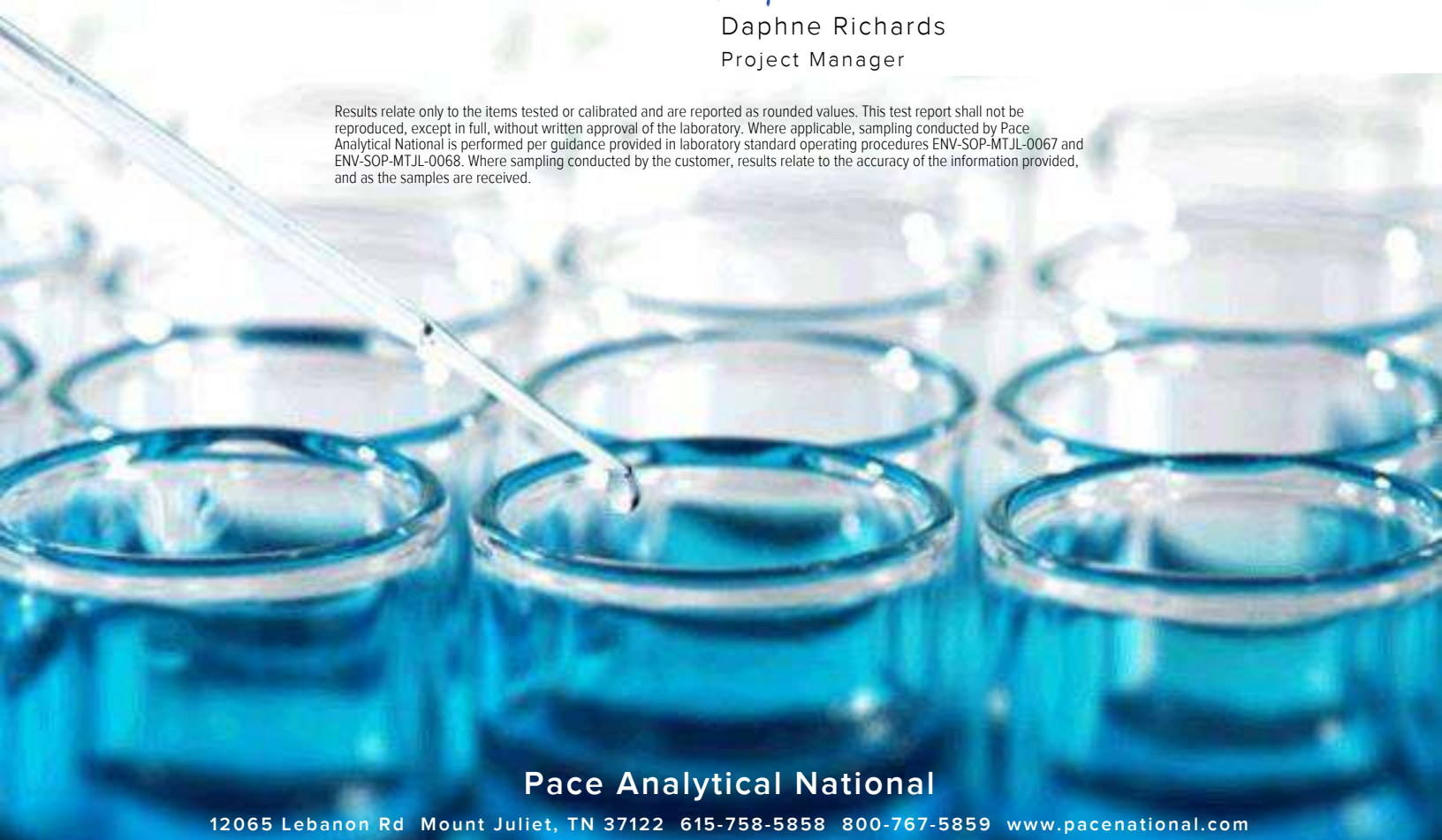
Sample Delivery Group: L1418792
Samples Received: 10/15/2021
Project Number: 21J0308
Description:

Report To: Max DiSante
2445 North Coyote Drive
Suite 104
Tucson, AZ 85745

Entire Report Reviewed By:

Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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		⁹ Al
		¹⁰ Sc

SAMPLE SUMMARY

21J0308-01 L1418792-01 GW

Collected by

Collected date/time

Received date/time

10/12/21 11:45

10/15/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1758696	1	10/19/21 03:16	10/20/21 04:26	AGW	Mt. Juliet, TN

1 Cp

 ^{235}Tc 3S_s ${}^4\text{C}_n$ ^{87}Sr ${}^6\text{Qc}$ ⁷Is ${}^8\text{Gf}$ ${}^9\text{Al}$ ^{10}Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Daphne Richards
Project Manager

Sample Delivery Group (SDG) Narrative

An aliquot for analysis was taken from the original container received due to volume requirements of the laboratory's procedure. Rinsing of the original sample container for inclusion in the sample extraction was not performed.

<u>Lab Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L1418792-01	21J0308-01	8270C



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.0000886	0.00100	1	10/20/2021 04:26	WG1758696
Acenaphthylene	U		0.0000921	0.00100	1	10/20/2021 04:26	WG1758696
Anthracene	U		0.0000804	0.00100	1	10/20/2021 04:26	WG1758696
Benzidine	U		0.00374	0.0100	1	10/20/2021 04:26	WG1758696
Benzo(a)anthracene	U		0.000199	0.00100	1	10/20/2021 04:26	WG1758696
Benzo(b)fluoranthene	U		0.000130	0.00100	1	10/20/2021 04:26	WG1758696
Benzo(k)fluoranthene	U		0.000120	0.00100	1	10/20/2021 04:26	WG1758696
Benzo(g,h,i)perylene	U		0.000121	0.00100	1	10/20/2021 04:26	WG1758696
Benzo(a)pyrene	0.0000439	E4	0.0000381	0.00100	1	10/20/2021 04:26	WG1758696
Bis(2-chlorethoxy)methane	U		0.000116	0.0100	1	10/20/2021 04:26	WG1758696
Bis(2-chloroethyl)ether	U		0.000137	0.0100	1	10/20/2021 04:26	WG1758696
2,2-Oxybis(1-Chloropropane)	U		0.000210	0.0100	1	10/20/2021 04:26	WG1758696
4-Bromophenyl-phenylether	U		0.0000877	0.0100	1	10/20/2021 04:26	WG1758696
2-Chloronaphthalene	U		0.0000648	0.00100	1	10/20/2021 04:26	WG1758696
4-Chlorophenyl-phenylether	U		0.0000926	0.0100	1	10/20/2021 04:26	WG1758696
Chrysene	U		0.000130	0.00100	1	10/20/2021 04:26	WG1758696
Dibenz(a,h)anthracene	U		0.0000644	0.00100	1	10/20/2021 04:26	WG1758696
1,2-Dichlorobenzene	U		0.0000713	0.0100	1	10/20/2021 04:26	WG1758696
1,3-Dichlorobenzene	U		0.000132	0.0100	1	10/20/2021 04:26	WG1758696
1,4-Dichlorobenzene	U		0.0000942	0.0100	1	10/20/2021 04:26	WG1758696
3,3-Dichlorobenzidine	U		0.000212	0.0100	1	10/20/2021 04:26	WG1758696
2,4-Dinitrotoluene	U		0.0000983	0.0100	1	10/20/2021 04:26	WG1758696
2,6-Dinitrotoluene	U		0.000250	0.0100	1	10/20/2021 04:26	WG1758696
Fluoranthene	U		0.000102	0.00100	1	10/20/2021 04:26	WG1758696
Fluorene	U		0.0000844	0.00100	1	10/20/2021 04:26	WG1758696
Hexachlorobenzene	U		0.0000755	0.00100	1	10/20/2021 04:26	WG1758696
Hexachloro-1,3-butadiene	U		0.0000968	0.0100	1	10/20/2021 04:26	WG1758696
Hexachlorocyclopentadiene	U		0.0000598	0.0100	1	10/20/2021 04:26	WG1758696
Hexachloroethane	U		0.000127	0.0100	1	10/20/2021 04:26	WG1758696
Indeno(1,2,3-cd)pyrene	U		0.000279	0.00100	1	10/20/2021 04:26	WG1758696
Isophorone	U		0.000143	0.0100	1	10/20/2021 04:26	WG1758696
Naphthalene	U		0.000159	0.00100	1	10/20/2021 04:26	WG1758696
Nitrobenzene	U		0.000297	0.0100	1	10/20/2021 04:26	WG1758696
n-Nitrosodimethylamine	U		0.000998	0.0100	1	10/20/2021 04:26	WG1758696
n-Nitrosodiphenylamine	U		0.00237	0.0100	1	10/20/2021 04:26	WG1758696
n-Nitrosodi-n-propylamine	U		0.000261	0.0100	1	10/20/2021 04:26	WG1758696
Phenanthrene	U		0.000112	0.00100	1	10/20/2021 04:26	WG1758696
Benzylbutyl phthalate	U		0.000765	0.00300	1	10/20/2021 04:26	WG1758696
Bis(2-ethylhexyl)phthalate	U		0.000895	0.00300	1	10/20/2021 04:26	WG1758696
Di-n-butyl phthalate	U		0.000453	0.00300	1	10/20/2021 04:26	WG1758696
Diethyl phthalate	U		0.000287	0.00300	1	10/20/2021 04:26	WG1758696
Dimethyl phthalate	U		0.000260	0.00300	1	10/20/2021 04:26	WG1758696
Di-n-octyl phthalate	U		0.000932	0.00300	1	10/20/2021 04:26	WG1758696
Pyrene	U		0.000107	0.00100	1	10/20/2021 04:26	WG1758696
1,2,4-Trichlorobenzene	U		0.0000698	0.0100	1	10/20/2021 04:26	WG1758696
4-Chloro-3-methylphenol	U		0.000131	0.0100	1	10/20/2021 04:26	WG1758696
2-Chlorophenol	U		0.000133	0.0100	1	10/20/2021 04:26	WG1758696
2,4-Dichlorophenol	U		0.000102	0.0100	1	10/20/2021 04:26	WG1758696
2,4-Dimethylphenol	U		0.0000636	0.0100	1	10/20/2021 04:26	WG1758696
4,6-Dinitro-2-methylphenol	U		0.00112	0.0100	1	10/20/2021 04:26	WG1758696
2,4-Dinitrophenol	U		0.00593	0.0100	1	10/20/2021 04:26	WG1758696
2-Nitrophenol	U		0.000117	0.0100	1	10/20/2021 04:26	WG1758696
4-Nitrophenol	U		0.000143	0.0100	1	10/20/2021 04:26	WG1758696
Pentachlorophenol	U		0.000313	0.0100	1	10/20/2021 04:26	WG1758696
Phenol	U		0.00433	0.0100	1	10/20/2021 04:26	WG1758696
2,4,6-Trichlorophenol	U		0.000100	0.0100	1	10/20/2021 04:26	WG1758696



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorophenol	28.9			10.0-120		10/20/2021 04:26	WG1758696
(S) Phenol-d5	21.6			10.0-120		10/20/2021 04:26	WG1758696
(S) Nitrobenzene-d5	55.6			10.0-127		10/20/2021 04:26	WG1758696
(S) 2-Fluorobiphenyl	65.2			10.0-130		10/20/2021 04:26	WG1758696
(S) 2,4,6-Tribromophenol	57.5			10.0-155		10/20/2021 04:26	WG1758696
(S) p-Terphenyl-d14	61.0			10.0-128		10/20/2021 04:26	WG1758696

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

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⁹Al

¹⁰Sc

Method Blank (MB)

(MB) R3718967-2 10/19/21 23:26

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acenaphthene	U		0.0000886	0.00100
Acenaphthylene	U		0.0000921	0.00100
Anthracene	U		0.0000804	0.00100
Benzidine	U		0.00374	0.0100
Benzo(a)anthracene	U		0.000199	0.00100
Benzo(b)fluoranthene	U		0.000130	0.00100
Benzo(k)fluoranthene	U		0.000120	0.00100
Benzo(g,h,i)perylene	U		0.000121	0.00100
Benzo(a)pyrene	U		0.0000381	0.00100
Bis(2-chlorethoxy)methane	U		0.000116	0.0100
Bis(2-chloroethyl)ether	U		0.000137	0.0100
2,2-oxybis(1-chloropropane)	U		0.000210	0.0100
4-Bromophenyl-phenylether	U		0.0000877	0.0100
2-Chloronaphthalene	U		0.0000648	0.00100
4-Chlorophenyl-phenylether	U		0.0000926	0.0100
Chrysene	U		0.000130	0.00100
Dibenz(a,h)anthracene	U		0.0000644	0.00100
1,2-Dichlorobenzene	U		0.0000713	0.0100
1,3-Dichlorobenzene	U		0.000132	0.0100
1,4-Dichlorobenzene	U		0.0000942	0.0100
3,3-Dichlorobenzidine	U		0.000212	0.0100
2,4-Dinitrotoluene	U		0.0000983	0.0100
2,6-Dinitrotoluene	U		0.000250	0.0100
Fluoranthene	U		0.000102	0.00100
Fluorene	U		0.0000844	0.00100
Hexachlorobenzene	U		0.0000755	0.00100
Hexachloro-1,3-butadiene	U		0.0000968	0.0100
Hexachlorocyclopentadiene	U		0.0000598	0.0100
Hexachloroethane	U		0.000127	0.0100
Indeno(1,2,3-cd)pyrene	U		0.000279	0.00100
Isophorone	U		0.000143	0.0100
Naphthalene	U		0.000159	0.00100
Nitrobenzene	U		0.000297	0.0100
n-Nitrosodimethylamine	U		0.000998	0.0100
n-Nitrosodiphenylamine	U		0.00237	0.0100
n-Nitrosodi-n-propylamine	U		0.000261	0.0100
Phenanthrene	U		0.000112	0.00100
Benzylbutyl phthalate	U		0.000765	0.00300
Bis(2-ethylhexyl)phthalate	U		0.000895	0.00300
Di-n-butyl phthalate	U		0.000453	0.00300

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

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¹⁰Sc

Method Blank (MB)

(MB) R3718967-2 10/19/21 23:26

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Diethyl phthalate	U		0.000287	0.00300
Dimethyl phthalate	U		0.000260	0.00300
Di-n-octyl phthalate	U		0.000932	0.00300
Pyrene	U		0.000107	0.00100
1,2,4-Trichlorobenzene	U		0.0000698	0.0100
4-Chloro-3-methylphenol	U		0.000131	0.0100
2-Chlorophenol	U		0.000133	0.0100
2-Nitrophenol	U		0.000117	0.0100
4-Nitrophenol	U		0.000143	0.0100
Pentachlorophenol	U		0.000313	0.0100
Phenol	U		0.00433	0.0100
2,4,6-Trichlorophenol	U		0.000100	0.0100
2,4-Dichlorophenol	U		0.000102	0.0100
2,4-Dimethylphenol	U		0.0000636	0.0100
4,6-Dinitro-2-methylphenol	U		0.00112	0.0100
2,4-Dinitrophenol	U		0.00593	0.0100
(S) Nitrobenzene-d5	52.4			10.0-127
(S) 2-Fluorobiphenyl	68.4			10.0-130
(S) p-Terphenyl-d14	72.2			10.0-128
(S) Phenol-d5	14.6			10.0-120
(S) 2-Fluorophenol	25.3			10.0-120
(S) 2,4,6-Tribromophenol	59.5			10.0-155

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

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Laboratory Control Sample (LCS)

(LCS) R3718967-1 10/19/21 23:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0500	0.0366	73.2	41.0-120	
Acenaphthylene	0.0500	0.0379	75.8	43.0-120	
Anthracene	0.0500	0.0375	75.0	45.0-120	
Benzidine	0.100	0.0382	38.2	10.0-120	
Benzo(a)anthracene	0.0500	0.0390	78.0	47.0-120	
Benzo(b)fluoranthene	0.0500	0.0389	77.8	46.0-120	
Benzo(k)fluoranthene	0.0500	0.0400	80.0	46.0-120	
Benzo(g,h,i)perylene	0.0500	0.0360	72.0	48.0-121	
Benzo(a)pyrene	0.0500	0.0374	74.8	47.0-120	
Bis(2-chlorethoxy)methane	0.0500	0.0320	64.0	33.0-120	
Bis(2-chloroethyl)ether	0.0500	0.0314	62.8	23.0-120	

Laboratory Control Sample (LCS)

(LCS) R3718967-1 10/19/21 23:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
2,2-oxybis(1-chloropropane)	0.0500	0.0324	64.8	28.0-120	
4-Bromophenyl-phenylether	0.0500	0.0386	77.2	45.0-120	
2-Chloronaphthalene	0.0500	0.0356	71.2	37.0-120	
4-Chlorophenyl-phenylether	0.0500	0.0409	81.8	44.0-120	
Chrysene	0.0500	0.0394	78.8	48.0-120	
Dibenz(a,h)anthracene	0.0500	0.0373	74.6	47.0-120	
3,3-Dichlorobenzidine	0.100	0.0889	88.9	44.0-120	
2,4-Dinitrotoluene	0.0500	0.0465	93.0	49.0-124	
2,6-Dinitrotoluene	0.0500	0.0413	82.6	46.0-120	
Fluoranthene	0.0500	0.0416	83.2	51.0-120	
Fluorene	0.0500	0.0398	79.6	47.0-120	
Hexachlorobenzene	0.0500	0.0383	76.6	44.0-120	
Hexachloro-1,3-butadiene	0.0500	0.0355	71.0	19.0-120	
Hexachlorocyclopentadiene	0.0500	0.0134	26.8	15.0-120	
Hexachloroethane	0.0500	0.0331	66.2	15.0-120	
Indeno(1,2,3-cd)pyrene	0.0500	0.0365	73.0	49.0-122	
Isophorone	0.0500	0.0343	68.6	36.0-120	
Naphthalene	0.0500	0.0317	63.4	27.0-120	
Nitrobenzene	0.0500	0.0324	64.8	27.0-120	
n-Nitrosodimethylamine	0.0500	0.0159	31.8	10.0-120	
n-Nitrosodiphenylamine	0.0500	0.0353	70.6	47.0-120	
n-Nitrosodi-n-propylamine	0.0500	0.0350	70.0	31.0-120	
Phenanthrene	0.0500	0.0380	76.0	46.0-120	
Benzylbutyl phthalate	0.0500	0.0417	83.4	43.0-121	
Bis(2-ethylhexyl)phthalate	0.0500	0.0427	85.4	43.0-122	
Di-n-butyl phthalate	0.0500	0.0437	87.4	49.0-121	
Diethyl phthalate	0.0500	0.0435	87.0	48.0-122	
Dimethyl phthalate	0.0500	0.0417	83.4	48.0-120	
Di-n-octyl phthalate	0.0500	0.0392	78.4	42.0-125	
Pyrene	0.0500	0.0381	76.2	47.0-120	
1,2,4-Trichlorobenzene	0.0500	0.0333	66.6	24.0-120	
4-Chloro-3-methylphenol	0.0500	0.0275	55.0	40.0-120	
2-Chlorophenol	0.0500	0.0263	52.6	25.0-120	
2,4-Dichlorophenol	0.0500	0.0304	60.8	36.0-120	
2,4-Dimethylphenol	0.0500	0.0284	56.8	33.0-120	
4,6-Dinitro-2-methylphenol	0.0500	0.0500	100	38.0-138	
2,4-Dinitrophenol	0.0500	0.0467	93.4	10.0-120	
2-Nitrophenol	0.0500	0.0328	65.6	31.0-120	
4-Nitrophenol	0.0500	0.00715	14.3	10.0-120	
Pentachlorophenol	0.0500	0.0363	72.6	23.0-120	

¹Cp

²Tc

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Laboratory Control Sample (LCS)

(LCS) R3718967-1 10/19/21 23:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Phenol	0.0500	0.00852	17.0	10.0-120	
2,4,6-Trichlorophenol	0.0500	0.0327	65.4	42.0-120	
1,2-Dichlorobenzene	0.0500	0.0339	67.8	20.0-120	
1,3-Dichlorobenzene	0.0500	0.0325	65.0	17.0-120	
1,4-Dichlorobenzene	0.0500	0.0333	66.6	18.0-120	
(S) Nitrobenzene-d5			56.2	10.0-127	
(S) 2-Fluorobiphenyl			75.6	10.0-130	
(S) p-Terphenyl-d14			74.0	10.0-128	
(S) Phenol-d5			17.5	10.0-120	
(S) 2-Fluorophenol			29.0	10.0-120	
(S) 2,4,6-Tribromophenol			74.5	10.0-155	

L1417486-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1417486-04 10/19/21 23:47 • (MS) R3718967-3 10/20/21 00:08 • (MSD) R3718967-4 10/20/21 00:30

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.0455	U	0.0238	0.0271	52.3	59.6	1	28.0-120			13.0	25
Acenaphthylene	0.0455	U	0.0247	0.0289	54.3	63.5	1	31.0-121			15.7	25
Anthracene	0.0455	U	0.0257	0.0270	56.5	59.3	1	36.0-120			4.93	23
Benidine	0.0910	U	U	U	0.000	0.000	1	10.0-120	M2	M2	0.000	37
Benzo(a)anthracene	0.0455	U	0.0276	0.0231	60.7	50.8	1	39.0-120			17.8	23
Benzo(b)fluoranthene	0.0455	U	0.0278	0.0222	61.1	48.8	1	37.0-120			22.4	23
Benzo(k)fluoranthene	0.0455	U	0.0285	0.0226	62.6	49.7	1	37.0-120			23.1	26
Benzo(g,h,i)perylene	0.0455	U	0.0267	0.0208	58.7	45.7	1	37.0-123			24.8	25
Benzo(a)pyrene	0.0455	U	0.0287	0.0222	63.1	48.8	1	37.0-120		R5	25.5	24
Bis(2-chlorethoxy)methane	0.0455	U	0.0217	0.0258	47.7	56.7	1	17.0-120			17.3	31
Bis(2-chloroethyl)ether	0.0455	U	0.0206	0.0242	45.3	53.2	1	14.0-120			16.1	33
2,2-oxybis(1-chloropropane)	0.0455	U	0.0210	0.0252	46.2	55.4	1	18.0-120			18.2	34
4-Bromophenyl-phenylether	0.0455	U	0.0284	0.0295	62.4	64.8	1	37.0-120			3.80	24
2-Chloronaphthalene	0.0455	U	0.0238	0.0278	52.3	61.1	1	29.0-120			15.5	28
4-Chlorophenyl-phenylether	0.0455	U	0.0264	0.0281	58.0	61.8	1	36.0-120			6.24	23
Chrysene	0.0455	U	0.0285	0.0232	62.6	51.0	1	38.0-120			20.5	23
Dibenz(a,h)anthracene	0.0455	U	0.0265	0.0208	58.2	45.7	1	36.0-121		R5	24.1	24
3,3-Dichlorobenzidine	0.0910	U	U	U	0.000	0.000	1	10.0-134	M2	M2	0.000	30
2,4-Dinitrotoluene	0.0455	U	0.0293	0.0345	64.4	75.8	1	39.0-125			16.3	25
2,6-Dinitrotoluene	0.0455	U	0.0272	0.0329	59.8	72.3	1	36.0-120			19.0	27
Fluoranthene	0.0455	U	0.0266	0.0255	58.5	56.0	1	41.0-121			4.22	22
Fluorene	0.0455	U	0.0250	0.0280	54.9	61.5	1	37.0-120			11.3	24

1Cp

2Tc

3Ss

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5Sr

6Qc

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8Gl

9Al

10Sc

L1417486-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1417486-04 10/19/21 23:47 • (MS) R3718967-3 10/20/21 00:08 • (MSD) R3718967-4 10/20/21 00:30

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexachlorobenzene	0.0455	U	0.0304	0.0261	66.8	57.4	1	35.0-122			15.2	24
Hexachloro-1,3-butadiene	0.0455	U	0.0222	0.0240	48.8	52.7	1	12.0-120			7.79	34
Hexachlorocyclopentadiene	0.0455	U	0.0150	0.0164	33.0	36.0	1	10.0-120			8.92	33
Hexachloroethane	0.0455	U	0.0206	0.0237	45.3	52.1	1	10.0-120			14.0	40
Indeno(1,2,3-cd)pyrene	0.0455	U	0.0269	0.0206	59.1	45.3	1	38.0-125		R5	26.5	24
Isophorone	0.0455	U	0.0222	0.0270	48.8	59.3	1	21.0-120			19.5	27
Naphthalene	0.0455	U	0.0206	0.0244	45.3	53.6	1	10.0-120			16.9	31
Nitrobenzene	0.0455	U	0.0209	0.0263	45.9	57.8	1	12.0-120			22.9	30
n-Nitrosodimethylamine	0.0455	U	0.0116	0.0127	25.5	27.9	1	10.0-120			9.05	40
n-Nitrosodiphenylamine	0.0455	U	0.0253	0.0274	55.6	60.2	1	37.0-120			7.97	24
n-Nitrosodi-n-propylamine	0.0455	U	0.0229	0.0275	50.3	60.4	1	16.0-120			18.3	30
Phenanthrene	0.0455	U	0.0261	0.0279	57.4	61.3	1	33.0-120			6.67	22
Benzylbutyl phthalate	0.0455	U	0.0289	0.0294	63.5	64.6	1	34.0-126			1.72	24
Bis(2-ethylhexyl)phthalate	0.0455	U	0.0328	0.0246	72.1	54.1	1	33.0-126		R5	28.6	25
Di-n-butyl phthalate	0.0455	U	0.0285	0.0308	62.6	67.7	1	35.0-128			7.76	23
Diethyl phthalate	0.0455	U	0.0276	0.0315	60.7	69.2	1	39.0-125			13.2	24
Dimethyl phthalate	0.0455	U	0.0262	0.0295	57.6	64.8	1	37.0-120			11.8	24
Di-n-octyl phthalate	0.0455	U	0.0298	0.0227	65.5	49.9	1	25.0-135		R5	27.0	26
Pyrene	0.0455	U	0.0287	0.0276	63.1	60.7	1	39.0-120			3.91	22
1,2,4-Trichlorobenzene	0.0455	U	0.0210	0.0245	46.2	53.8	1	15.0-120			15.4	31
4-Chloro-3-methylphenol	0.0455	U	0.0188	0.0197	41.3	43.3	1	26.0-120			4.68	27
2-Chlorophenol	0.0455	U	0.0164	0.0171	36.0	37.6	1	18.0-120			4.18	34
2,4-Dichlorophenol	0.0455	U	0.0189	0.0193	41.5	42.4	1	19.0-120			2.09	27
2,4-Dimethylphenol	0.0455	U	0.0187	0.0191	41.1	42.0	1	15.0-120			2.12	28
4,6-Dinitro-2-methylphenol	0.0455	U	0.0335	0.0330	73.6	72.5	1	10.0-144			1.50	39
2,4-Dinitrophenol	0.0455	U	0.0275	0.0294	60.4	64.6	1	10.0-120			6.68	40
2-Nitrophenol	0.0455	U	0.0199	0.0218	43.7	47.9	1	20.0-120			9.11	30
4-Nitrophenol	0.0455	U	0.0690	0.00612	152	13.5	1	10.0-120	M1	R2	167	40
Pentachlorophenol	0.0455	U	0.0275	0.0254	60.4	55.8	1	10.0-128			7.94	37
Phenol	0.0455	U	0.00723	0.00764	15.9	16.8	1	10.0-120			5.51	40
2,4,6-Trichlorophenol	0.0455	U	0.0200	0.0208	44.0	45.7	1	26.0-120			3.92	31
1,2-Dichlorobenzene	0.0455	U	0.0210	0.0252	46.2	55.4	1	18.0-120			18.2	40
1,3-Dichlorobenzene	0.0455	U	0.0204	0.0236	44.8	51.9	1	15.0-120			14.5	40
1,4-Dichlorobenzene	0.0455	U	0.0205	0.0244	45.1	53.6	1	17.0-120			17.4	40
(S) Nitrobenzene-d5					39.5	46.4		10.0-127				
(S) 2-Fluorobiphenyl					56.2	62.6		10.0-130				
(S) p-Terphenyl-d14					62.5	51.9		10.0-128				
(S) Phenol-d5					15.7	15.7		10.0-120				
(S) 2-Fluorophenol					23.6	24.2		10.0-120				
(S) 2,4,6-Tribromophenol					54.4	52.6		10.0-155				

1
Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Is

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Al

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Sc

INTERNAL STANDARD SUMMARY

Instrument: BNAMS29 • File ID: 1019A_003

10/19/21 22:07							
Sample ID	File ID	1,4-DICHLOROBENZENE-D4	NAPHTHALENE-D8	ACENAPHTHENE-D10	PHENANTHRENE-D10	CHRYSENE-D12	PERYLENE-D12
		Response	Response	Response	Response	Response	Response
Standard	1019A_003	341240	1206444	668058	1159630	846228	747496
Upper Limit		682480	2412888	1336116	2319260	1692456	1494992
Lower Limit		170620	603222	334029	579815	423114	373748
LCS R3718967-1 WG1758696 1x	1019A_005	322300	1277201	689739	1276363	1020615	949303
BLANK R3718967-2 WG1758696 1x	1019A_006	363591	1308691	781620	1482879	1078827	896919
MS R3718967-3 WG1758696 1x	1019A_008	344127	1332424	682184	1082511	716565	661795
MSD R3718967-4 WG1758696 1x	1019A_009	330500	1292403	655327	1048598	701950	644604
L1418792-01 WG1758696 1x	1019A_020	326144	1201304	737881	1411325	1180923	1030918

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Is

⁸Gl

⁹Al

¹⁰Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting level (MRL) but above MDL.
M1	Matrix spike recovery was high, the method control sample recovery was acceptable.
M2	Matrix spike recovery was low, the method control sample recovery was acceptable.
R2	RPD/RSD exceeded the laboratory acceptance limit.
R5	MS/MSD RPD exceeded the laboratory acceptance limit. Recovery met acceptance criteria.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



SUBCONTRACT ORDER
Turner Laboratories, Inc.
21J0308

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Pace Analytical Services - Tennessee
12065 Leabon Rd.
Mt. Juliet, TN 37122
Phone :(615) 758-5858
Fax: -
Please CC Kevin Brim Kbrim@turnerlabs.com

L11418792

Analysis

Expires

Laboratory ID

Comments

Sample ID: 21J0308-01 Drinking Water Sampled: 10/12/2021 11:45

Semivolatile Organics by SW 8270

10/19/2021 11:45

Containers Supplied:

K212

Sample Receipt Checklist
COC Seal Present/Intact: ☒ Y ☐ N
COC Signed/Accurate: ☒ Y ☐ N
Bottles active/Intact: ☒ Y ☐ N
Correct bottles used: ☒ Y ☐ N
Sufficient volume sent: ☒ Y ☐ N
RAD Screen <0.5 mR/hr: ☒ Y ☐ N
If Applicable
VOA Zero Headspace: ☒ Y ☐ N
Pres. Correct/Check: ☒ Y ☐ N

Released By

Date

Received By

Date

Released By

Date

Received By

Date



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

(480) 897-9459
FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: October 12, 2021
Sample Received: October 15, 2021
Analysis Completed: October 27, 2021

Sample ID	Gross Alpha Activity Method 600/00-02 (pCi/L)	Uranium Activity Method ASTM D6239 (pCi/L)	Adjusted Gross Alpha (pCi/L)	Gross Beta Activity Method 900.0 (pCi/L)	Radium 226 Activity Method GammaRay HPGE (pCi/L)	Radium 228 Activity Method GammaRay HPGE (pCi/L)	Total Radium (pCi/L)
21J0308-01	12.3 ± 1.9	3.7 ± 0.6	8.6 ± 2.0	9.4 ± 1.7	0.5 ± 0.2	1.9 ± 0.4	2.4 ± 0.4

Date of Analysis	10/18/2021	10/22/2021	10/22/2021	10/26/2021	10/15/2021	10/15/2021	10/15/2021
------------------	------------	------------	------------	------------	------------	------------	------------

Alexander J. Myers, Ph.D.

October 27, 2021

Date

Laboratory License Number AZ0462



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com

(480) 897-9459
FAX (480) 892-5446

Isotopic Uranium Analysis

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: October 12, 2021
Sample Received: October 15, 2021
Uranium Analysis Date: October 22, 2021

Sample No.	^{238}U	^{235}U	^{234}U	Total	
21J0308-01	0.8 ± 0.2	0.036 ± 0.002	2.9 ± 0.4	3.7 ± 0.6	Activity (pCi/L)
	2.3 ± 0.7	0.017 ± 0.001	0.00046 ± 0.00007	2.3 ± 0.7	Content ($\mu\text{g/L}$)
	Comments:				

October 27, 2021

Alexander J. Myers, Ph.D.

Date

Laboratory License Number AZ0462

Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
 Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____

PWS Name: _____

October 12, 2021 11:45 (24 hour clock)
 Sample Date Sample Time

Owner/Contact Person _____

Owner/Contact Fax Number _____

Owner/Contact Phone Number _____

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

☐ Reduced Monitoring

Date Q1 collected: _____

☐ Quarterly

Date Q2 collected: _____

☐ Composite of four quarterly samples

Date Q3 collected: _____

Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
	15 pCi/L		Adjusted Gross Alpha	4000	10/22/2021	8.6 ± 2.0	
600/00-02		3 pCi/L	Gross Alpha	4002	10/18/2021	12.3 ± 1.9	
7500 - Rn			Radon	4004			
ASTM D6239	30 µg/L	1 µg/L	Combined Uranium	4006	10/22/2021	2.3 ± 0.7 µg/L	
			Uranium 234	4007	10/22/2021	0.00046 ± 0.00007	
			Uranium 235	4008	10/22/2021	0.017 ± 0.001	
			Uranium 238	4009	10/22/2021	2.3 ± 0.7	
	5 pCi/L	1 pCi/L	Combined Radium (226,228)	4010	10/15/2021	2.4 ± 0.4	
GammaRay HPGE		1 pCi/L	Radium 226	4020	10/15/2021	0.5 ± 0.2	
GammaRay HPGE		1 pCi/L	Radium 228	4030	10/15/2021	1.9 ± 0.4	

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

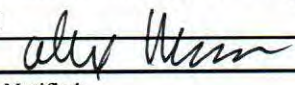
Specimen Number: RSE67463 _____

Lab ID Number: AZ0462 _____

Lab Name: Radiation Safety Engineering, Inc. _____

Printed Name and Phone Number of Laboratory Contact: Alexander J. Myers, Ph.D. (480) 897-9459 _____

Comments: 21J0308-01 _____

Authorized Signature:  _____

Date Public Water System Notified: _____

DWAR 6: 11/2007

Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
 Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____

PWS Name: _____

October 12, 2021 11:45 (24 hour clock)
 Sample Date Sample Time

Owner/Contact Person _____

Owner/Contact Fax Number _____

Owner/Contact Phone Number _____

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

- ☐ Reduced Monitoring
☐ Quarterly
☐ Composite of four quarterly samples

Date Q1 collected: _____

Date Q2 collected: _____

Date Q3 collected: _____

Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result	Exceed MCL
900	4 mrem	4 pCi/L	Gross Beta	4100	10/26/2021	< 4 mrem	_____
906	20,000 pCi/L	1,000 pCi/L	Tritium	4102	_____	_____	_____
_____	_____	10 pCi/L	Strontium-89	4172	_____	_____	_____
_____	8 pCi/L	2 pCi/L	Strontium-90	4174	_____	_____	_____
_____	_____	1 pCi/L	Iodine-131	4264	_____	_____	_____
_____	_____	10 pCi/L	Cesium-134	4270	_____	_____	_____

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE67463 _____

Lab ID Number: AZ0462 _____

Lab Name: Radiation Safety Engineering, Inc. _____

Printed Name and Phone Number of Laboratory Contact: Alexander J. Myers, Ph.D. (480) 897-9459 _____

Comments: 21J0308-01 _____

Authorized Signature:  _____

Date Public Water System Notified: _____

DWAR 6A: 11/2007

SUBCONTRACT ORDER

Turner Laboratories, Inc.

21J0308

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Radiation Safety Engineering, Inc.
3245 N. Washington St.
Chandler, AZ 85225-1121
Phone : (480) 897-9459
Fax: (480) 892-5446
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
----------	---------	---------------	----------

Sample ID: 21J0308-01 Drinking Water Sampled: 10/12/2021 11:45

Radiochemistry, Uranium 04/10/2022 11:45

Radiochemistry, Radium 226/228 11/11/2021 11:45

Radiochemistry, Gross Alpha Beta 04/10/2022 11:45

Containers Supplied:

67463

Released By

Date

Received By

Date

Released By

Date

Received By

Date

Lab #: 806980 Job #: 49143 IS-102736 Co. Job#:
Sample Name: 21J0308-01 Co. Lab#:
Company: Turner Laboratories, Inc
API/Well:
Container: Plastic Bottle
Field/Site Name: 21J0308
Location:
Formation/Depth:
Sampling Point:
Date Sampled: 10/12/2021 11:45 Date Received: 10/22/2021 Date Reported: 11/05/2021

δ D of water ----- -59.6 ‰ relative to VSMOW

δ^{18} O of water ----- -8.44 ‰ relative to VSMOW

Tritium content of water ----- na

δ^{13} C of DIC ----- na

14 C content of DIC ----- na

δ^{15} N of nitrate ----- na

δ^{18} O of nitrate ----- na

δ^{34} S of sulfate ----- na

δ^{18} O of sulfate ----- na

Vacuum Distilled? * ----- No

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

SUBCONTRACT ORDER

Turner Laboratories, Inc.

21J0308

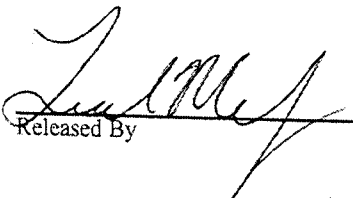
SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Max DiSante

RECEIVING LABORATORY:

Isotech Laboratories
1308 Parkland Court
Champaign, IL 61821
Phone :1(217) 398-3490
Fax: -
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
Sample ID: 21J0308-01 Drinking Water Sampled:10/12/2021 11:45			
Isotope Analysis	10/26/2021 11:45		H and O Isotopes
Containers Supplied:			

Released By	Date	Received By	Date
	10/21/21 1600	URS	10/21/21 1600
Released By	Date	Received By	Date
		Les Schluter / SR Isotech	10/22/21 9:20

APPENDIX M

Groundwater Sample Analytical Results: Major and Trace Ions and Routine Parameters

Appendix M - Groundwater Sample Analytical Results: Major and Trace Ions and Routine Parameters

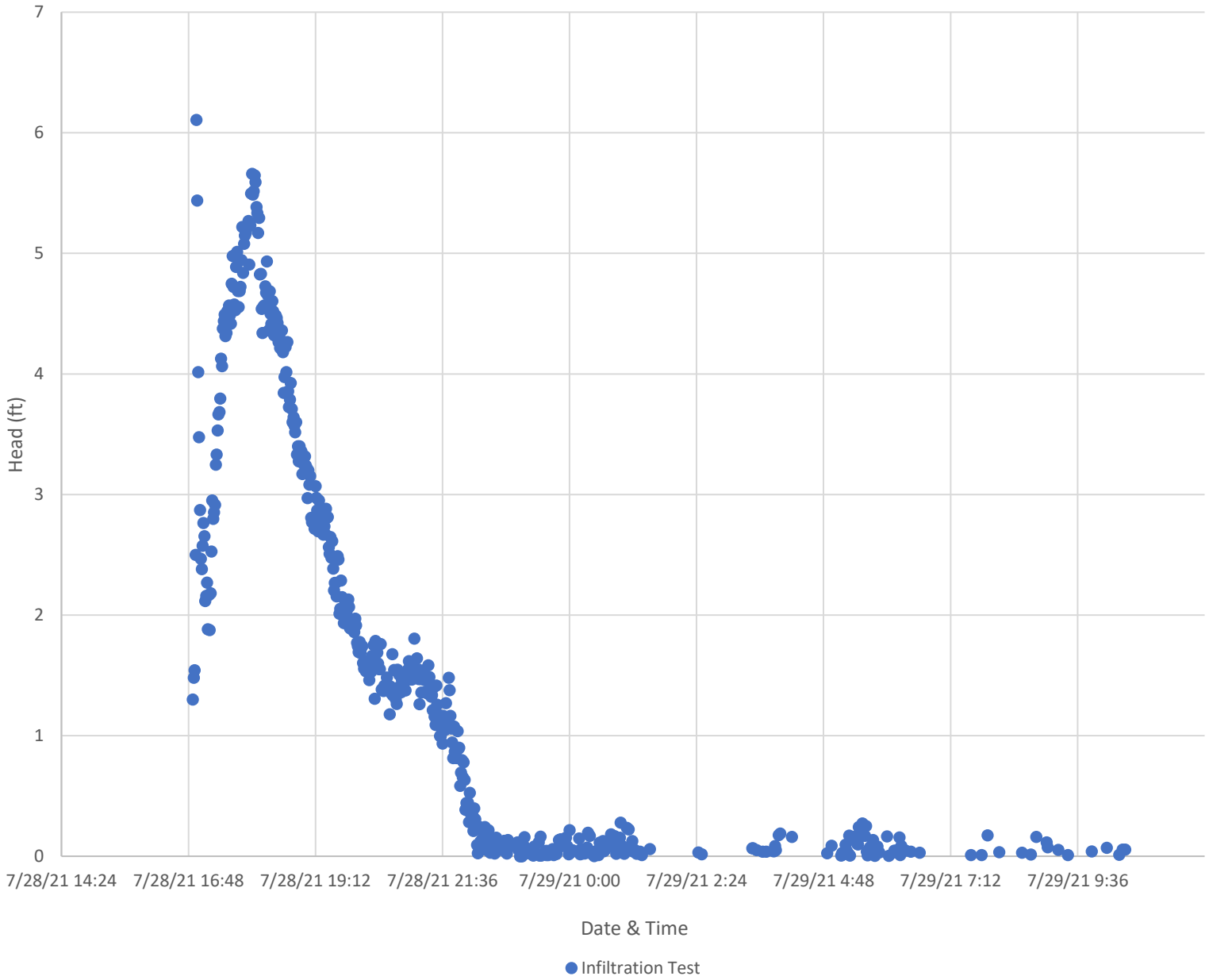
Location ID			GH2021-01		GH2021-07		GH2021-10		GH2021-11		GH2021-22		GH2021-25		RNW-HB-091		RNW-HB-108	
Date			10/6/2021	11/2/2021	10/7/2021	11/2/2021	10/12/2021	11/2/2021	10/7/2021	11/2/2021	10/7/2021	11/2/2021	10/10/2021	11/4/2021	10/4/2021	11/4/2021	10/5/2021	11/4/2021
Parameter	Units	Profile I																
Alkalinity, Bicarbonate	mg/L	-	210	190	180	170	2600	250	210	200	140	130	220	200	200	200	280	270
Alkalinity, Carbonate	mg/L	-	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2.0	<2	<2.0	<2	<2.0
Alkalinity, Total	mg/L	-	210	190	180	170	2600	250	210	200	140	130	220	200	200	200	280	270
Aluminum, Dissolved	mg/L	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.040	<0.04	<0.040	<0.04	<0.040
Antimony, Dissolved	mg/L	0.006	0.0011	<0.0005	0.001	0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.0005	<0.00050	<0.0005	<0.00050
Arsenic, Dissolved	mg/L	0.05	0.0071	0.0032	0.012	0.013	0.0016	0.00085	0.00055	0.00063	0.0008	0.00069	0.007	0.0027	<0.0005	<0.00050	0.0057	0.0062
Barium, Dissolved	mg/L	2	0.04	0.042	0.011	0.011	0.74	0.081	0.1	0.1	0.07	0.066	0.024	0.022	0.047	0.038	0.028	0.017
Beryllium, Dissolved	mg/L	0.004	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
Boron, Dissolved	mg/L	-	0.6	0.58	0.53	0.56	0.19	0.088	0.051	0.055	0.087	0.091	0.044	0.047	0.094	0.1	0.053	0.054
Cadmium, Dissolved	mg/L	0.005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
Calcium, Dissolved	mg/L	-	190	170	110	100	78	83	54	52	55	48	46	45	180	150	66	62
Chloride	mg/L	-	39	29	42	31	26	27	19	17	12	13	11	9.9	13	14	16	14
Chromium, Dissolved	mg/L	0.1	<0.03	<0.0005	<0.03	<0.0005	<0.03	<0.0005	<0.03	<0.0005	<0.03	<0.0005	<0.03	<0.00050	<0.03	<0.00050	<0.03	<0.00050
Cobalt, Dissolved	mg/L	-	0.00046	<0.00025	<0.00025	<0.00025	0.00056	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	0.00053	<0.00025	<0.00025	<0.00025
Copper, Dissolved	mg/L	-	0.00055	<0.0005	<0.0005	0.00074	0.00069	0.0012	<0.0005	0.0005	<0.0005	<0.0005	0.0011	0.0013	0.00098	0.0025	0.0008	0.0024
Fluoride	mg/L	4	1.8	1.8	1.2	1.3	1.4	1.6	2.6	2.6	1.2	1.5	3	2.7	1.9	2	2.4	2.5
Iron, Dissolved	mg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.30	<0.3	<0.30	<0.3	<0.30
Lead, Dissolved	mg/L	0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.0005	<0.00050	<0.0005	<0.00050
Magnesium, Dissolved	mg/L	-	58	54	19	19	21	21	9.8	9.5	9.6	8.3	11	11	43	34	21	22
Manganese, Dissolved	mg/L	-	0.64	0.98	0.0044	0.0028	0.38	0.32	0.25	0.25	0.08	0.074	0.37	0.31	0.59	0.29	0.079	0.074
Mercury, Dissolved	mg/L	0.002	0.000057	0.000057	0.000053	0.000053	0.00011	<0.000041	0.000041	0.000041	0.00009	0.00009	<0.000041	<0.000041	0.000047	<0.000041	0.000049	<0.000041
Molybdenum, Dissolved	mg/L	-	0.24	0.21	0.15	0.14	0.098	0.038	0.21	0.2	0.17	0.14	0.23	0.21	0.099	0.091	0.089	0.078
Nickel, Dissolved	mg/L	0.1	0.002	0.0012	0.00054	<0.0005	0.0049	<0.0005	0.00073	<0.0005	0.00054	<0.0005	<0.0005	<0.00050	0.0037	0.0008	0.0012	0.0012
Nitrate and Nitrite Sum	mg/L	10	<0.1	<0.1	2.6	2.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10
Nitrogen, Nitrate (As N)	mg/L	10	<0.5	<0.5	2.6	2.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.5	<0.50	<0.5	<0.50
Nitrogen, Nitrite (As N)	mg/L	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10
Phosphorus, Dissolved	mg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.5	<0.50	<0.5	<0.50
Potassium, Dissolved	mg/L	-	<5	<5	<5	<5	5.3	<5	<5	<5	<5	<5	<5	<5.0	7.2	7.1	<5	<5.0
Selenium, Dissolved	mg/L	0.05	0.0057	0.0017	0.0059	0.0065	0.001	0.00063	<0.00025	0.00028	<0.00025	0.00034	0.00088	0.00031	0.013	0.0011	0.0013	0.00046
Silica, Dissolved	mg/L	-	69	63	63	60	25	29	23	23	16	16	29	30	10	11	26	26
Silver, Dissolved	mg/L	-	<0.000021	0.000029	<0.000021	0.00006	<0.000021	0.000074	0.000042	0.00016	<0.000021	0.00018	<0.000021	<0.000021	<0.000021	0.000025	<0.000021	0.000084
Sodium, Dissolved	mg/L	-	39	41	21	20	61	57	35	34	35	37	47	41	140	130	91	75
Sulfate	mg/L	-	570	540	220	170	110	110	38	33	120	110	50	43	680	510	150	140
Thallium, Dissolved	mg/L	0.002	<0.000023	<0.000023	0.000025	<0.000023	<0.000023	0.000026	<0.000023	<0.000023	<0.000023	<0.000023	<0.000023	<0.000023	0.000035	0.000035	<0.000023	0.00004
Uranium, Dissolved	mg/L	-	0.015	0.0099	0.0042	0.0045	0.0032	0.0021	0.052	0.045	0.0037	0.0062	0.0045	0.0043	0.0079	0.004	0.018	0.016
Zinc, Dissolved	mg/L	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.040	<0.04	<0.040	<0.04	<0.040
Anion	meq/L	-	19.1	17.6	11.3	9.67	55.8	9.73	6.3	5.91	6.12	5.76	6.7	6.11	18.9	15.4	10.1	9.6
Cation	meq/L	-	16	14.7	7.97	7.42	8.42	8.36	5.03	4.87	5.06	4.69	5.26	4.95	18.8	15.7	8.98	8.62
Error	%	-	8.85		17.2		73.8		11.1		9.49		12	10.5	0.26	0.99	5.67	5.41
pH (pH Units)	s.u.	-	7.5	7.5	7.7	7.7	7.1	7.7	7.5	7.5	8.1	7.9	7.6	7.5	7.5	7.5	7.9	7.7
TDS	mg/L	-	1100	1100	550	540	510	590	300	290	330	320	330	310	1300	1100	580	550

APPENDIX N

Test Pit Infiltration Testing Data

Infiltration Test #1 - G&H2021-01

CLIENT:	Rosemont Copper Company		PROJECT:	Rosemont Copper World Project	
JOB #:	4286	DRAWN:	SM	CHECKED:	BG
DATE:	May 2022	FIGURE:	1		





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Infiltration Test #2 - G&H2021-01

CLIENT: Rosemont Copper Company

PROJECT: Rosemont Copper World Project

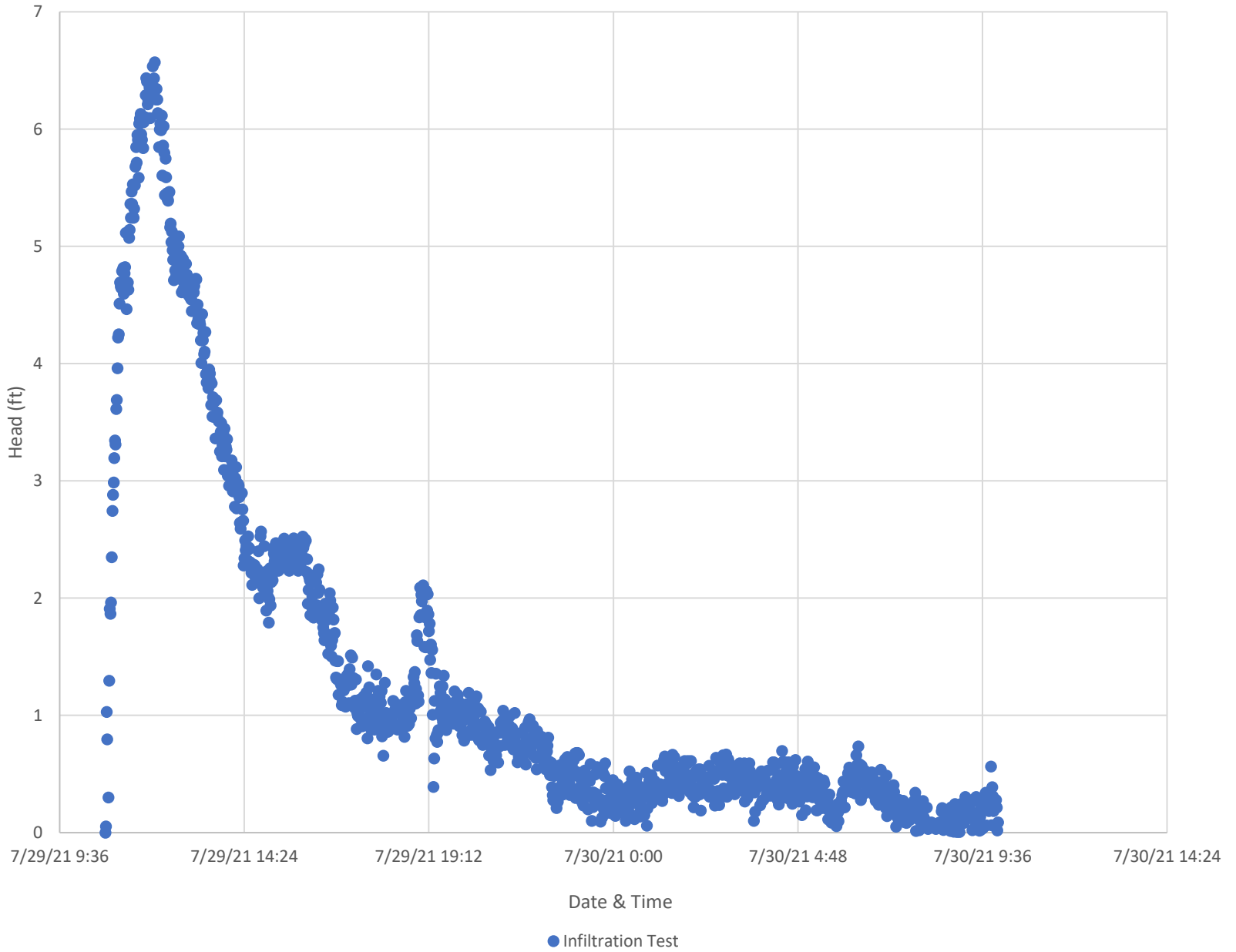
JOB #: 4286

DRAWN: SM

CHECKED: BG

DATE: May 2022

FIGURE: 2





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Infiltration Test #1 - G&H2021-10

CLIENT: Rosemont Copper Company

PROJECT: Rosemont Copper World Project

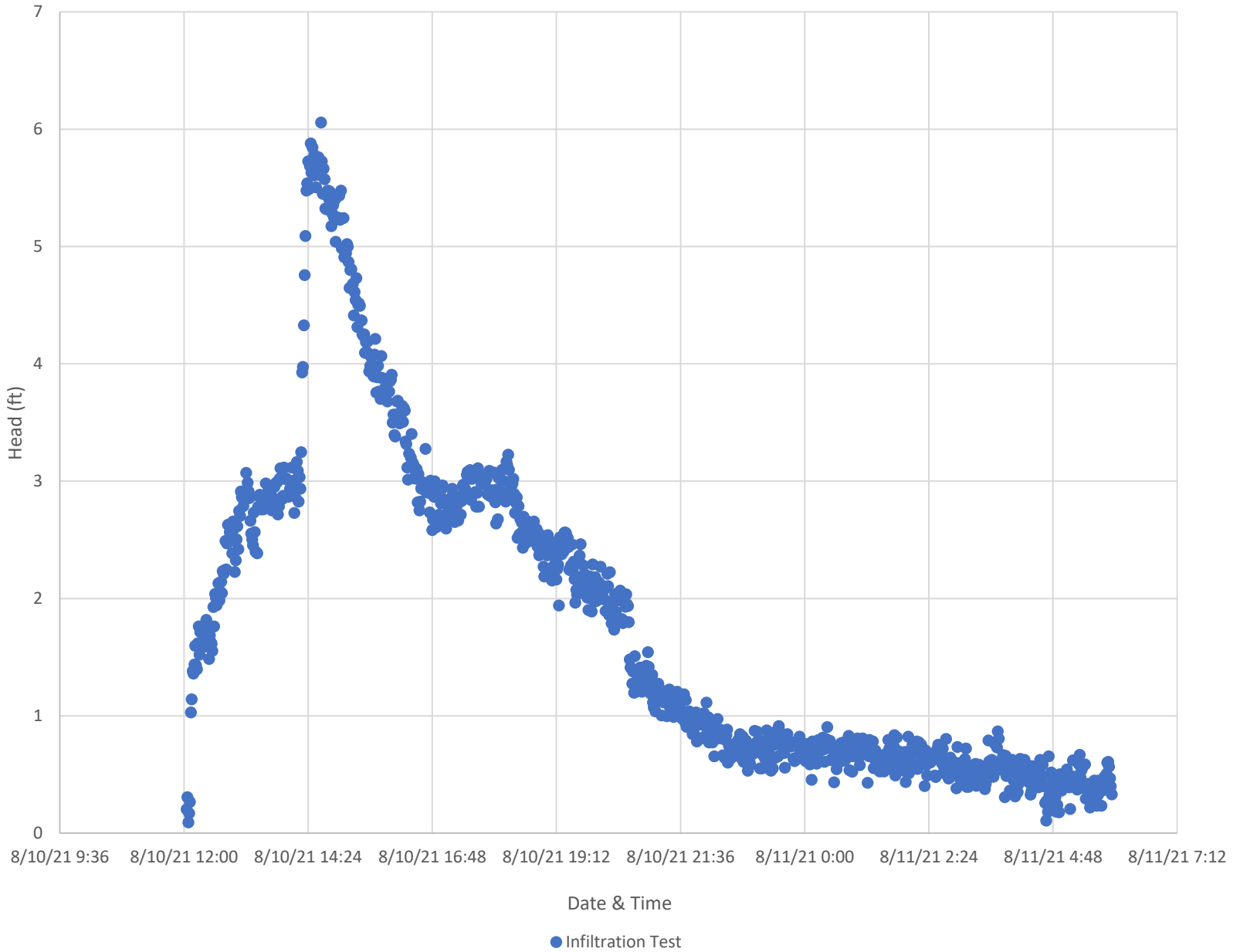
JOB #: 4286

DRAWN: SM

CHECKED: BG

DATE: May 2022

FIGURE: 4

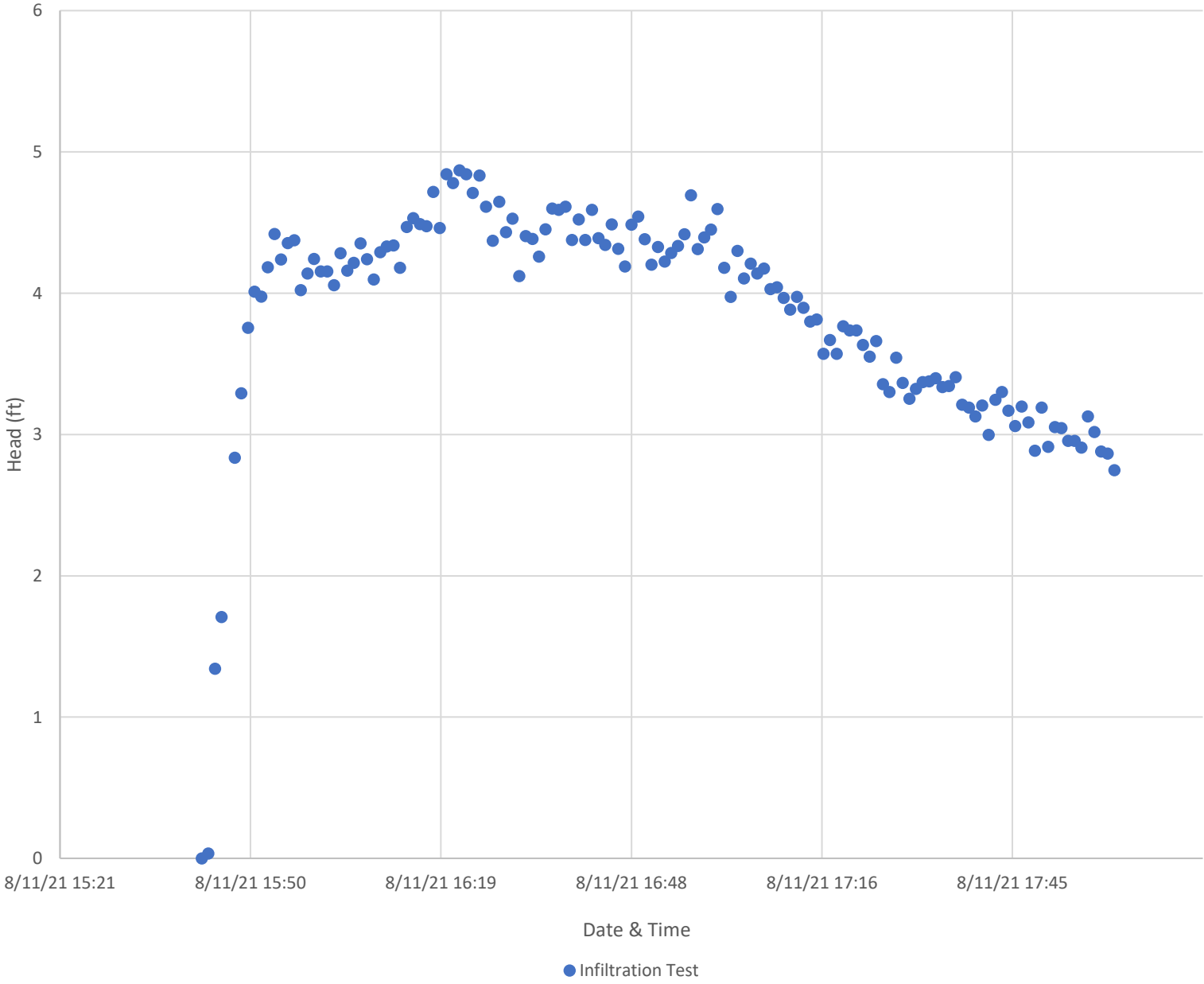




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Infiltration Test #2 - G&H2021-10

CLIENT:	Rosemont Copper Company		
JOB #:	4286	DRAWN:	SM
DATE:	May 2022	CHECKED:	BG





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Infiltration Test #1 - G&H2021-22

CLIENT: Rosemont Copper Company

PROJECT: Rosemont Copper World Project

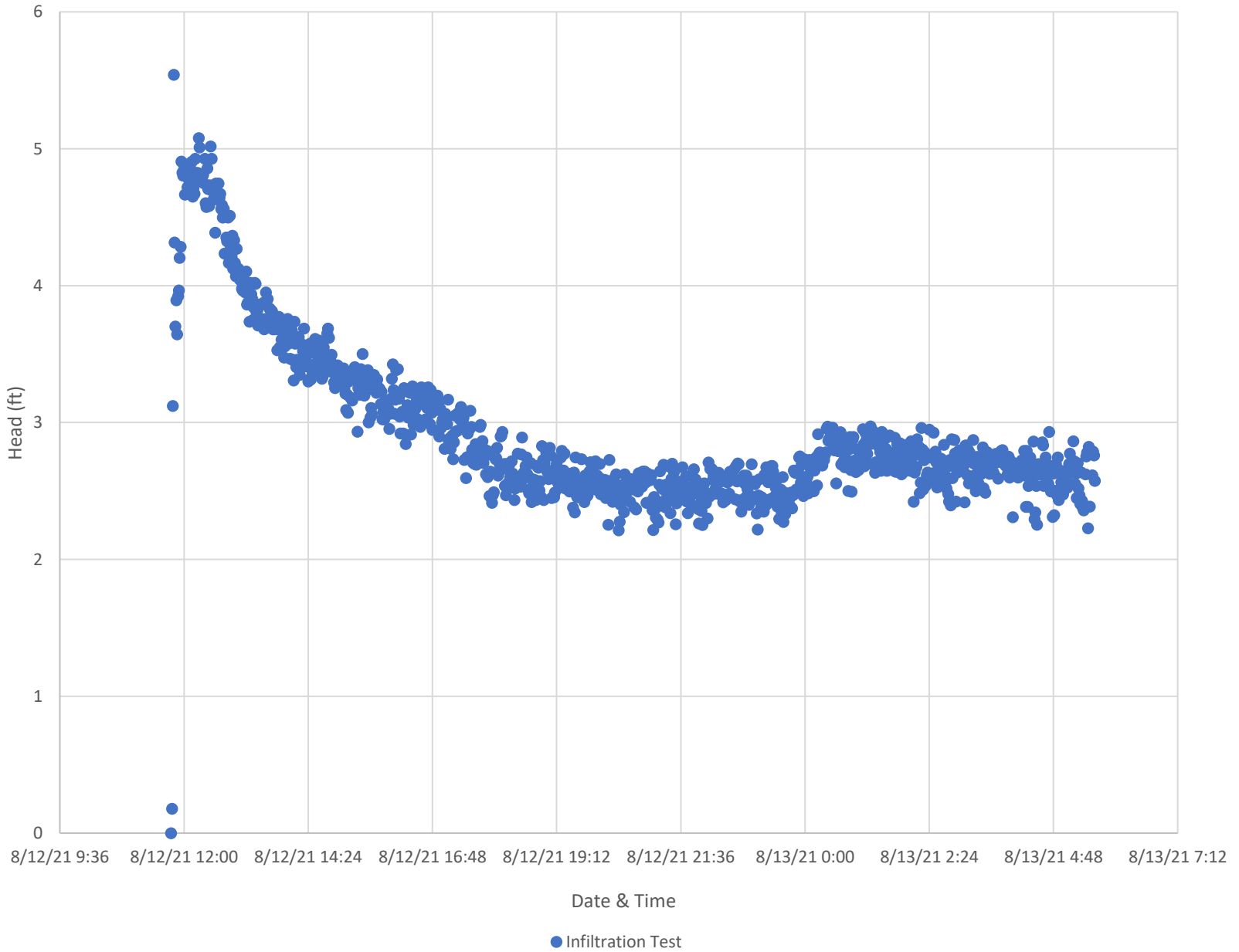
JOB #: 4286

DRAWN: SM

CHECKED: BG

DATE: May 2022

FIGURE: 6





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Infiltration Test #2 - G&H2021-24

CLIENT: Rosemont Copper Company

PROJECT: Rosemont Copper World Project

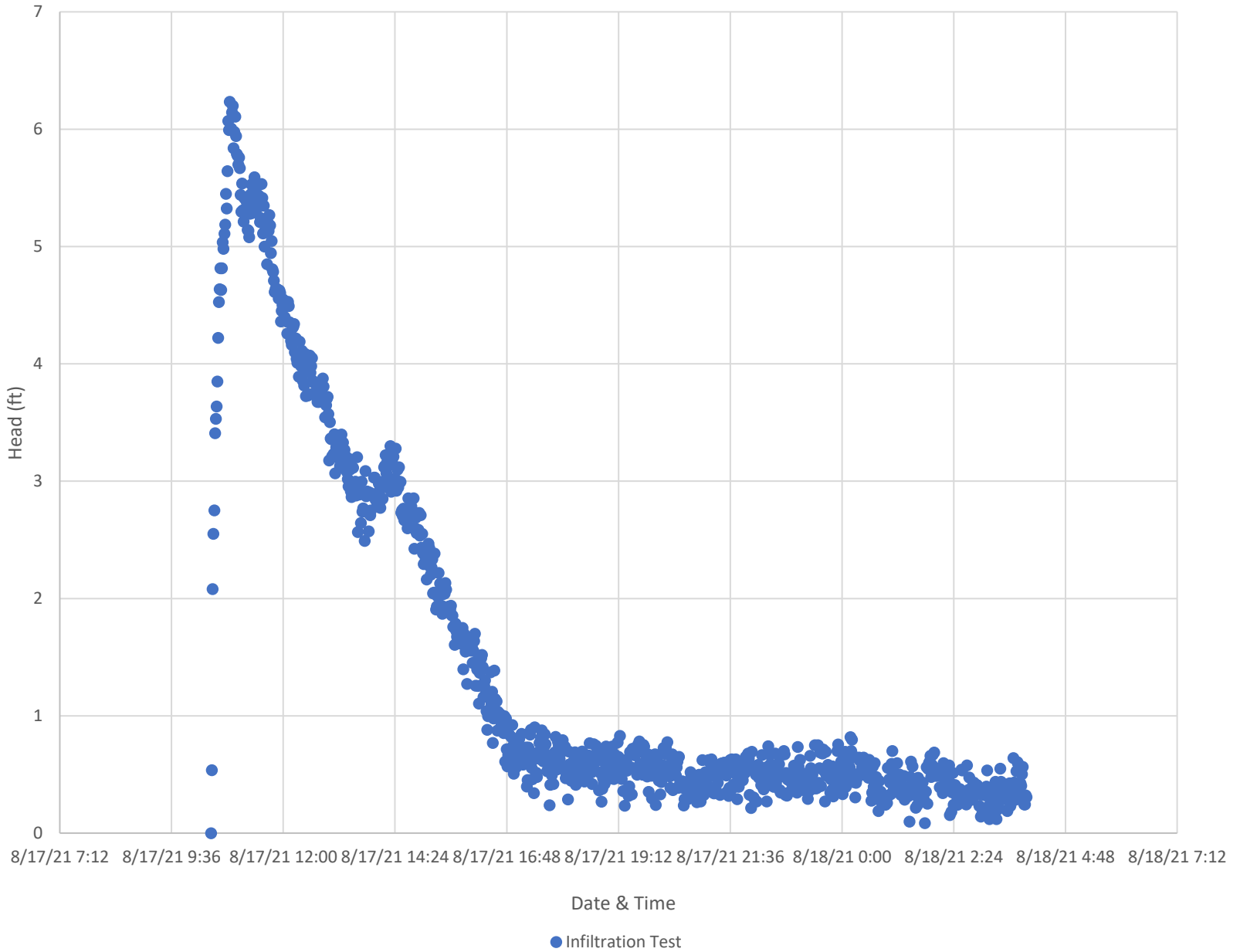
JOB #: 4286

DRAWN: SM

CHECKED: BG

DATE: May 2022

FIGURE: 7



Infiltration Test #1 - G&H2021-25			
CLIENT:	Rosemont Copper Company		PROJECT: Rosemont Copper World Project
JOB #:	4286	DRAWN:	SM
DATE:	May 2022	CHECKED:	BG
FIGURE: 8			

