

Presidio County Underground Water Conservation District
Alamito Creek Project
Presidio County, Texas

Report of Investigation

August 7, 2021

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This document was prepared in part by the technical assistance of Straub Corporation staff, especially Jill Johnson, MS., Staff Hydrogeologist.

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Location Alamito Creek Area, Casa Piedra, Presidio County, Texas

Reference Interconnectivity of Flowing Wells and Springs in the Casa Piedra Area.

Scope

Provide geoscientific and hydrogeologic assistance to the Presidio County Underground Water Conservation District (PCUWCD) in Presidio County, Texas to help potentially determine if a relationship exists between the waters of the flowing wells and the waters of the surface springs in the Alamito Creek area near Casa Piedra and the Dixon Water Foundation Properties ([Sample Locations](#)).

Study Area

The Alamito Creek study area ([Site Map](#)) begins approximately 24 miles south of Marfa, Texas off Ranch Road 169 and continues south on Ranch Road 169 an additional 20 miles to the Casa Piedra area. The Study Area is confined to the Alamito Creek drainage area and consists of seeps, springs, and water wells; both pumped and flowing.

Method of Study

Preliminary Data Review

A preliminary data review was conducted of the Alamito Creek area near Casa Piedra and the Dixon Water Foundation properties. Topographic, geologic, structural trends, and TWDB water chemistry and water well information was reviewed for potential relationships to the flowing wells and springs.

Site Specific Field Visit and Sample Collection

A four-day, site-specific field visit and sampling event was conducted in the Alamito Creek area to observe local geology and collect water samples from several wells and springs. The Presidio County UWCD acquired legal access from landowners to enter the properties for the field investigation and sampling.



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Water Quality Analysis

Water quality is often utilized as a source indicator of groundwater systems. Water samples were collected from the identified springs, creeks, and wells following an approved groundwater sample plan. Groundwater and surface water samples were analyzed by a NELAC/NELAP certified laboratory for the following analytes (Table 1):

Water Quality Analysis		
Analyte	Units	Analysis Method
Cations		
Calcium	mg/l	EPA Method E-200.7
Sodium	mg/l	EPA Method E-200.7
Potassium	mg/l	EPA Method E-200.7
Magnesium	mg/l	EPA Method E-200.7
Anions		
Chloride	mg/l	EPA Method E-300.0
Bromide	mg/l	EPA Method E-300.0
Fluoride	mg/l	EPA Method E-300.0
Nitrate	mg/l	EPA Method E-300.0
Sulfate	mg/l	EPA Method E-300.0
Alkalinity		
Alkalinity	mg/l	EPA Method E-310.1
Bicarbonate (HCO ₃ ⁻)	mg/l	EPA Method E-310.2
Total Dissolved Solids	mg/l	Method SM2540C / 160.1
pH		EPA Method 9040
Arsenic	ug/l	EPA Method E-200.8
Silver	ug/l	EPA Method E-200.8
Silica	mg/l	EPA Method E-200.7
Iron	mg/l	EPA Method E-200.7
Specific Conductivity	uS/cm	SM2510B
Uranium		
Uranium	ug/l	EPA Method E-200.8
Oxygen-18/Deuterium Isotope	0/00	Cavity Ring-Down Spectroscopy

Table 1

Isotope Analysis

Stable Isotopic Analysis of water can help determine the origin of groundwater and assist in correlating that water to other regional waters. Water samples were collected for analyses of stable isotopes of hydrogen and oxygen by ²H/¹H and ¹⁸O/¹⁶O ratios by Cavity Ring-Down



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Spectroscopy to provide comparative data about the potential source waters within the Alamito Creek study area. Water samples were collected from each sample location and sent to the Texas A&M Stable Isotope Geoscience Facility in College Station, Texas.

Data Presentation

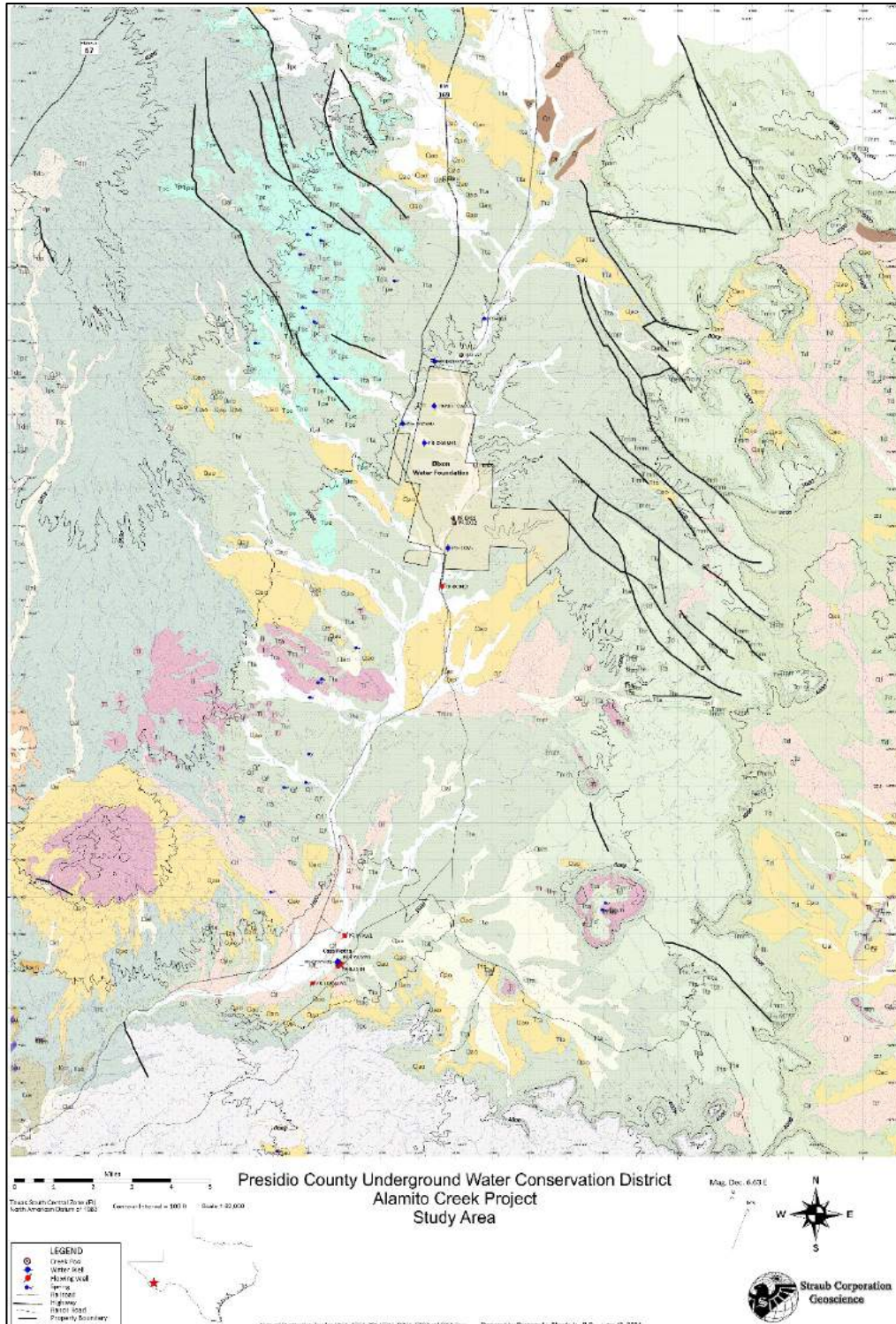
The water quality data were analyzed utilizing various industry standard plotting methods such as a Radial Plot, a Piper Plot, a Durov Plot, a Gibbs Plot, Linear Regression Comparison Plotting of Various Constituents for the comparison of naturally occurring groundwater, and with PHREEQC, a USGS geochemical modeling program. Isotopic data were plotted on a scatter plot against a trendline for the global meteoric water line (GMWL).



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Site Map





Sample Locations

Project Name	LOCATION N (WGS-84)	LOCATION E	Type	Sampled	Flow Rate (GPM)	Sample Rate	Static Level (ft)	MP (ft)	Total Depth (ft)	Elevation (DEM- ft-MSL)	GW Elevation (ft-MSL)	Conductivity (uS/cm)	Temperature (C)
Artesian Wells													
PR-000384	29.724520	-104.05623	AW	Y	~13	1.67	Flowing		600	3451		504	27.8
PR-000492	29.866688	-104.01915	AW	Y	~30	30	Flowing		1185	3762		524	31.2
PR-SKRMW1	29.7177	-104.06676	AW	Y	20.3	1.67	Flowing		~300	3413		588	27.7
PR-AVAV1	29.73596	-104.05403	AW	Y	6	6	Flowing			3448		335	27.1
Springs													
PR-IBS1	29.96671	-104.00608	SP	Y	Pumped ~70	70 GPM	2.25	1.4	19.5	3985	3984.15	485	23.3
PR-IBS2	29.95284	-104.0152	CF	Y	0	217			6	3916	3916	727	12.6
PR-DXS1	29.8973	-104.01544	CF	Y	0	211	0.58	0.3	6	3802	3801.72	1170	8.5
PR-DXS2	29.890632	-104.014987	CF	Y	0	217			6	3796	3796	778	17.5
PR-DXS3	29.912256	-104.007011	CF	Y	0	217	2.78	1	3.99	3843	3841.22	713	16.3
Water Wells													
PR-DXW1	29.919731	-104.029092	WW	Y		GPM				3924		605	21.4
PR-DXW5	29.88122	-104.01708	WW	Y			61.58	0.92		3814	3753.34	692	23.2
PR-MOFNWW1	29.95008	-104.02621	WW	Y		12			~300	4044		572	22.4
PR-MOFNWW2	29.93361	-104.02574	WW	Y		25			~300	3950		513	25
Water Wells not sampled													
PR-CPWW#1	29.72631	-104.0562	WW	N			17.7	1.625		3415	3398.925		
PR-CPWW#2	29.72601	-104.05687	WW	N			14.79	0.91		3414	3400.12		
PR-DXWW#1	29.91975	-104.0291	WW	N			42	0.5		3924	3882.5		
PR-DXWW#2	29.9265	-104.03871	WW	N			128.8	1		3983	3855.2		



Study Area Geology

The near surface geology ([Site Map](#)) of the Alamito Creek area consists predominately of members of the Buck Hill Volcanic Series of Paleogene extrusive volcanic rocks of the Oligocene Epoch. The eastern side of Alamito Creek consists of volcanic rock members of the Duff formation and the Mitchell Mesa Rhyolite Formation. The western side of Alamito Creek is comprised of the Tascotal Formation, Perdiz Conglomerate, and the Rawls Basalt Formation. Intersperse across the southern end of the study area and rising above the erosional floor of the Alamito Creek are intrusive igneous rocks of the Cienega Mountains, La Vuida, San Jacinto Mountains, and Cerro Boludo ([Geologic Scale](#)).

Duff Formation

The Duff Formation (Td) consists of rhyolitic tuff and tuffaceous sediments of clay, silt, sandstone, and conglomerate of variegated colors of gray, tan, pink, and red. The upper part of the formation consists of porphyritic lava flows with compositions ranging from rhyolite to trachyte (Davis, 1961).

Mitchell Mesa Rhyolite

The Mitchell Mesa Rhyolite Formation (Tmm) is the most voluminous and widespread ash-flow tuff of the Trans-Pecos area in Texas. It is a multiflow, single-cooling-unit, ash-flow tuff of high-silica rhyolite (Barnes, 1992).

Tascotal Formation

The Tascotal Formation (Tta), which makes up a significant portion of the study area along the Alamito Creek, consists in the upper part of sandstone, tuffaceous sandstone, and conglomerate. The sandstone is medium to coarse grained and consists of glass shards which compose the fine fraction of the formation with a continuous size graduation with pumice fragments (Walton, 1979). The conglomerate consists of pebble to cobble conglomerate, mostly limestone, some igneous rocks and chert. A significant portion of the interval is tuff and sandy tuff. The lower part is tuff, flaggy, slightly calcareous, light colored with some interbeds of tuffaceous, fine-grained sandstone (Barnes, 1992). The most abundant heavy minerals found in the Tascotal Formation are magnetite and biotite. Both minerals have been oxidized through diagenesis. Due to their abundance, the alteration of these silicic minerals provides silica, iron, and other elements for diagenesis (Walton, 1979).

Petan Basalt

The Petan Basalt (Tpe), also known as the Jones Formation of southern Davis Mountains, is found on the northern and eastern side of the study area. The Petan is not considered part of the Buck Hill Series; rather part of the Southern Rim Rock Country and is a sequence of porphyritic trachyte lavas that overlie the Mitchell Mesa Ignimbrite north and west of the Infiernito caldera (Barnes, 1992).



Perdiz Conglomerate

The Perdiz Conglomerate (Tpc) is found on the northwestern, western, and southwestern side of the study area, considered an upper member of the Tascotal formation by some, consists of fanglomerate of highly variable composition shed mostly eastward from the Chinati Mountains which include clasts as large as one meter in diameter and also includes clasts from the Infiernito caldera to the north (Barnes, 1992).

Oligocene Intrusive Igneous Rocks

The Intrusive Igneous Rocks (Ti) are represented in the study area by the Cienega Mountains, La Vuida, San Jacinto Mountains, and Cerro Boludo. They are made up of stocks, laccoliths, sills, and dikes. The major rock types consist of basalt, hawaiite, mugearite, trachyte, quartz trachyte, rhyolite, phonolite, latite, trachyandesite, and their coarser grained equivalents (Barnes, 1992).

Rawls Formation

The Rawls formation (Tr) comprises the mesa which rises from the floor of the Alamito Creek in the southern portion of the study area near Casa Piedra. It consists of trachyte; trachyandesite; latite porphyry; trachybasalt porphyry, nonwelded to thoroughly welded crystal-vitric to lithic-vitric, ash-flow tuff; latite porphyry; basalt; and volcanic mudflows consisting of latite, basalt, tuff, sandstone, and conglomerate with some diorite and olivine syenite (Barnes, 1992).

Quaternary Alluvium

The Quaternary Alluvium consist of older alluvium (Qao) and younger Alluvium fans (Qf). The older alluvial deposits of Pleistocene age are comprised of alluvium, colluvium, and caliche on surfaces dissected by modern drainage. Some pebbles, cobbles, boulders up to 4 ft in size can be found intermixed with sand. The alluvium may be unconsolidated to partly consolidated by calcic cement. It is composed of chert, quartzite, limestone, and volcanic rocks of vesicular, aphanitic, and porphyritic textures (Barnes, 1992). The younger alluvium fans of Pleistocene and Holocene age are found in the modern drainage features and consist of colluvium and fan deposits of gravel, sand, silt, and clay. Thin beds of caliche occur in the silt or interstitially in the layers of gravel (Davis, 1961).

Geologic Structure

Most of the study area is covered by numerous episodes of volcanic flows and erosional relief. The northern portion of the study area is crossed by the Texas Lineament, a northwesterly trending fault zone. The Texas Lineament is known as an approximately 80-kilometer-wide zone of recurrent deformation that trends northwesterly across the Trans-Pecos region. The area is potentially related to a fundamental crustal discontinuity. West-northwest-striking faults and flexures active during Precambrian, Paleozoic, early Mesozoic, Laramide, and Basin-and-Range tectonic events parallel the Texas Lineament (Muehlberger, 1980).



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Geologic Scale

Geologic Formations of the Alamito Creek Area, Presidio County, Texas				
Period	Epoch	Group	Formation	
Quaternary	Holocene		Quaternary Alluvium Fan	
	Pleistocene		Quaternary Older Alluvium	
Paleogene	Oligocene	Buck Hill Group	Rawls Formation	
			Oligocene Intrusive Igneous Rocks	
			Perdiz Conglomerate	
			Tascotal Formation	Petan/Jones Basalt
			Mitchell Mesa Rhyolite	
			Duff Formation	

References: TWDB, USGS, BEG, NMGS



Narrative of Field Work

Straub Corporation's geoscience crew arrived at the Casa Piedra Guesthouse on Alamito Creek during a snowstorm and freezing weather the evening of Sunday, February 14, 2021.

Field work commenced Monday, February 15, 2021, with the sampling of the flowing well PR-000384 at the Casa Piedra Guesthouse on Alamito Creek. The groundwater samples were collected via a valve located on the discharge of the flowing well ([Purging Table](#)).

Two windmills were located on the same property near Alamito Creek: PR-CPWM#1 and PR-CPWM#2. Groundwater samples were not collected on these wells; however, water level measurements were captured and are referenced in the sample locations table.

Groundwater samples were collected from the flowing well PR-SKRMAW1 from a discharge line connected to the well head. Later in the afternoon flowing well PR-AVAW1, was sampled from a metal pipe connected to the well head that discharged into a small trough.

February 16, 2021

The geoscience crew met with Phillip Boyd of the Dixon Water Foundation and Caroline Macartney and Trey Gerfers of the Presidio County Underground Water Conservation District (PCUWCD) on February 16, 2021, to collect water samples from the Dixon Water Foundation creek pools. After some difficulty accessing the pool areas, groundwater samples were collected from the soil immediately adjacent to the pools via a peristaltic pump through sample tubing installed into hand-driven drive rods designed for groundwater sampling.

February 17, 2021

On February 17, 2021, the geoscience crew met with Carolyn and Trey at the MOFN Ranch. The first well sampled on the MOFN Ranch was PR-MOFNWW1 through a water spigot, followed by well PR-MOFNWW2 via the discharge from a solar submersible pump.

The geoscience crew and PCUWCD members met the property owner of the northern most sample locations that afternoon and followed him to the Penitas Springs area. The spring, PR-IBS1, consisted of a once flowing well that was now being pumped via a submersible solar pump. The well was sampled from the discharge line that feeds the nearby pond.

After sampling PR-IBS1, the owner took us on a tour of his property. We visited the Alamito Creek area as well as the nearby train trestle that spanned the creek.

Later in the afternoon, the geoscience crew, and members of the PCUWCD located the sample point for PR-IBS2 along the Alamito Creek west of the train trestle. The sample point was located next to a standing pool in the flow path of the creek. Drive rods were installed into the soil near the pool. Once installed, the peristaltic pump was connected to the rods via new poly tubing. The sample point was purged, and a groundwater sample was collected.



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The geoscience crew and members of PCUWCD arrived at the Plata Siding, (PR-000492), near dark. An external discharge valve to the main tank was found to be operational and the tank was overflowing water from the top of the tank onto the ground. The external discharge valve was cracked open to allow water to discharge at a constant rate of approximately 30 gallons per minute, at which time, the overflow from the top subsided. Water quality measurements were collected during purging and water samples were collected following a stabilized trend. The valve was closed and secured after sampling, and water once again started flowing over the top.

February 18, 2021

The geoscience crew arrived at well PR-DXW5 on the Dixon Water Foundation following a delayed start due to potential snow and freezing weather. The well was found not pumping on arrival. Since the well was not pumping, a static water level measurement was collected. The well was purged for approximately 30 minutes and then sampled.

The geoscience crew arrived on the site of PR-DXW1 by mid-afternoon. The PR-DXW1 well was an electric submersible well setup to supply water for a cattle operation. The well was a manual start system and not running when we arrived. The well had a sample port on top, but no access to the wells interior to measure groundwater. Approximately 200 feet east of the well was a non-operational windmill water well near the cattle water tank. There was an access to the interior of the well from which a static water level was collected. The operational well was started and purged for approximately 15 minutes before the water sample was collected.

All the water wells, springs, and creek pools had been sampled by the later part of the afternoon and with time and daylight remaining, the geoscience crew went back to the Alamito Creek near the train trestle to observe some of the local geology.

The railroad trestle spans the Alamito Creek and exits into a cut into the hillside where some of the upper part of the hill is cut away exposing a part of the geologic cross section. Near the trestle the Alamito Creek makes a turn westerly where it creates a long pool of standing water. At the pool, the hill is sharply cut to expose a shear rock face where the overlying conglomerate formation can be seen lying unconformably over an erosional surface of volcanic tuff.

The Alamito Creek reach east of the trestle and rock face can be seen flowing and moving water into the area of the pool of standing water; however, only a limited amount of water can be seen exiting the area down the stream to the west. Slightly further west down the channel way, water movement ceases all together, leaving only intermittent disconnected small pools.

Leaving the site took the geoscience crew past the spring PR-IBS1, where they noticed the pump was not pumping. At that time, they took the opportunity to collect a static water level measurement from the well. As the crew were driving down the private road toward Ranch Road 169, they noticed visible sparry calcite on the floor of the road. Sparry calcite is an indicator of a sealed fault with fault gouge. A geologic measurement was made of the orientation



of the feature. The feature was trending approximately 327° NW, which is similar to the trend of the fault network of the Texas Lineament.

February 19, 2021

The Straub Corporation Geoscience crew carefully packaged all the samples on ice in coolers for transportation and delivery to the laboratory in Midland, Texas. The crew departed early in the morning for the long trip. The roads were still frozen and covered with ice and snow for most of the journey. The return trip was uneventful, and the samples arrived at the laboratory in good order without incident.

Water Wells

Drillers logs and water well data were reviewed from the Texas Water Development Board on-line database. Unfortunately, most of the wells that were sampled did not contain construction information, and the few that did, were too inconsistent to utilize for subsurface references in conjunction with this report.

Water level Measurement and Potentiometric Surfaces

Water level measurements were collected where available and accessible. For measurements to be accurate, a well could not be pumping or flowing. Some submersible pumps were pumping prior to measurement and sampling, and none of the flowing wells could be shut-in for pressure measurements.

Determining a water level gradient or a potentiometric surface requires at least three points of reference within a reasonable proximity of each other from the same formational zone. The geology, topographic elevation, and location of available measurement points within the Alamito Creek area created difficult conditions to achieve satisfactory results for the creation of a potentiometric surface. Data density and spatial orientation was not satisfactory to analyze stream flow conditions to determine stream gaining or losing status. Additional work will be required to determine groundwater elevation and stream orientation for the Alamito Creek area.

Summary of Sampling Methodology

Groundwater sampling procedures can be split into four tasks: measurement, purging, sampling, and decontamination.

Sample Location configuration

Three general types of locations were encountered during the field study: continuous flowing artesian wells, pumping non-flowing groundwater wells with electric submersible pumps, and surface water pools where 1-inch perforated steel drive points were manually installed near each pond to withdraw water with a peristaltic pump and tubing.



Water-Level Measurement

(When Possible and accessible) Prior to obtaining a water-level measurement, a clean surface area was created to which sampling equipment could be positioned and work could be performed. In accessible wells, static water level was measured from the top of casing to the static water level to the nearest 0.01 foot utilizing a Heron water-level meter or a Powers electric water-level meter.

Following the measurement of the static water level, the measuring point was established from the ground surface to the top of casing. All available depth measurements were made from top (the highest point) of the inner well casing on the northern side of the well.

Purging

Purging is the process of removing stagnant water from a well or sample location prior to sampling and replacing it with groundwater from the adjacent formation. Purging was performed for all locations prior to sample collection in order to remove stagnant or disrupted water from within the well casing or drive point and ensure that a representative formation sample was obtained. In all cases temperature and specific conductance were monitored during purging. The data values were recorded into the field logbook.

Sampling

Sampling is the process of collecting, containerizing, and preserving the groundwater sample after the purging process is complete. Representative groundwater samples were collected from each location into new laboratory provided sampleware. Glass sampleware were packaged in reduced impact packaging for shipping. All samples were maintained on ice for the entire duration of the field activity until they were delivered to the Laboratory. Sampling time and date were collected at the time of each sampling event.

Equipment and Supplies

Table 1. listed below identifies the types of equipment which was used for groundwater sampling applications.

Table 1. Equipment List

Purging/Sample Collection:

- Masterflex Model 7024 Peristaltic Pump
- ¼" HDPE poly-tubing

Sample Preparation/Field Equipment:

- Extech Ex-Stik II Specific Conductance/Thermometer Meter
- Powers – 500' Electric Water-Level Measurement Equipment
- Heron – 300' Dipper T Water Level Meter



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Additional equipment to support sample collection and provide baseline worker safety was required to some extent for each sampling task. The additional materials were separated into two primary groups: general equipment which is reusable and materials which are expendable.

General: Project-specific sampling program, Decontamination and Cleaning solutions (Distilled-water, Alconox Detergent in spray bottles), Site-specific Health & Safety equipment (gloves, goggles, snake guards, coats), Field data sheets and logbook, Preservation solutions, Sample containers, and intermediate containers, Coolers and ice, Tools, Sample drive probes, Hand auger, Shovel, Slide hammer, and First Aid kit.

Expendable Materials

Disposable Nitrile Gloves (chemical resistant), Chemical-free paper towels, and Trash containers, and Sample Tubing.

Decontamination

The purging equipment was decontaminated immediately before and after use with a solution of distilled water and Alconox laboratory detergent followed by a distilled water rinse to ensure against cross-contamination from one sample to the next. The discharge piping was decontaminated for each flowing and pumping well, while the drive assembly was decontaminated for each driven location. New tubing was utilized for each driven location for sample collection.

Water Quality and Isotope Analysis

Groundwater Quality

Nearly all groundwater originates as rain or snowmelt that subsequently enters the underlying subsurface geologic material. Precipitation based water, as it infiltrates the soil and geologic material to become groundwater, is altered as it takes on mineral matter. Groundwater, as it moves along flowlines from recharge to discharge areas, is chemically altered by the effects of a variety of geochemical processes (Freeze & Cherry, 1979).

This investigation was not designed as an in-depth geochemical analysis, but rather an overview and comparison of geochemical and isotopic signatures of sampled wells and springs within the area. The intent of this analysis was to graphically compare water chemistries of the wells, springs, and creek pools to determine if a potential relationship was discernable.

Basic water chemistry is broken into classifications of water quality based on the content of total dissolved solids (TDS). *Fresh water* is classified as waters with less than 1,000 mg/l TDS, while *brackish waters* range from approximately 1,000 to 10,000 mg/l TDS. The *Saline water* range is 10,000 to 100,000 mg/l TDS. Sea water is approximately 35,000 mg/l TDS, and *Brine waters* are significantly more saline with TDS over 100,000 mg/l (Freeze & Cherry, 1979).



Groundwater, as it moves along its flow path, tends to increase in dissolved solids. Shallow groundwater in recharge areas tend to be lower in total dissolved solids than in deeper parts of the system. Groundwater in discharge areas tends to also be higher in total dissolved solids than in recharge areas. The evolution of groundwater tends to evolve towards more saline water. This evolution is normally accompanied by the following regional changes in dominant anion species: (Freeze & Cherry, 1979)

As water travels along a flow path →
 $HCO_3^- \rightarrow HCO_3^- + SO_4^{2-} \rightarrow SO_4^{2-} + HCO_3^- \rightarrow SO_4^{2-} + Cl^- \rightarrow Cl^- + SO_4^{2-} \rightarrow Cl^-$
Increasing in age →
(Freeze & Cherry, 1979)

1. The upper zone is generally characterized by active groundwater low in TDS and rich in HCO_3^- which is derived from soil zone CO_2 and from the dissolution of calcite and dolomite. Since calcite or dolomite minerals occur in most sedimentary basins and dissolve rapidly in the presence of CO_2^- charged groundwater, HCO_3^- is almost invariably the dominant anion in recharge areas.
2. The intermediate zone is generally less active in groundwater circulation and higher in TDS. Sulfate is normally the dominant anion in this zone. The most common sulfate bearing minerals are gypsum and anhydrite.
3. The lower zone is characterized by very sluggish groundwater flow. High concentrations of chloride and total dissolved solids are characteristics of this zone. (Freeze & Cherry, 1979)

Saturation Index

The (S_i) or saturation index is the relationship between (Q) the reactant and the product or the comparison between a minerals dissolution-precipitation reaction at a specific time, space, and (K_{eq}) thermodynamic equilibrium condition. This process is useful for aqueous geochemical speciation modeling.

$$S_i = \frac{Q}{K_{eq}}$$

Speciation modeling is a complex process of simulating aqueous geochemical reactions, evolution, and transport processes in natural or contaminated water. PHREEQC (Parkhurst and Appelo 1999) is a USGS aqueous geochemistry modeling software which is utilized for speciation modeling. Speciation modeling is useful for estimating possible mineral dissolution and precipitation. Speciation modeling uses a chemical analysis of a water to calculate the distribution of aqueous species by using an ion-association aqueous model. The most important results of speciation calculations are saturation indices for minerals, which indicate whether a



mineral should dissolve or precipitate (U.S. Geological Survey, 2002). PHREEQCI version 3.7.0 4/27/2021 was utilized to estimate the saturation indices for this project.

Isotopes

Stable isotopes of oxygen and deuterium can be utilized in a variety of ways to study the influences of precipitation and groundwater in hydrogeological studies. Isotopes of oxygen $^{18}\text{O}/^{16}\text{O}$ and hydrogen $^2\text{H}/^1\text{H}$ are found in specific ratios (R) of water molecules. These ratios are presented as delta units (δ) per mille (‰) in relative difference to the known standard called the *standard mean ocean water* (SMOW): $\delta\text{‰} = [(R - R_{\text{standard}}) / R_{\text{standard}}] \times 1000$ (Freeze & Cherry, 1979).

These ratios can be utilized to track water molecules through the hydrologic cycle. Once water is evaporated from the ocean and moves inland through subsequent rain and evaporation events, heavy isotopes of ^{18}O and ^2H become depleted. Condensation and isotope fractionation are both temperature dependent. These effects create strong continental and seasonal trends in average annual isotopic concentrations in precipitation. These isotope ratios are affected by evaporation, post precipitation and do not follow the same original ratio relationship (Freeze & Cherry, 1979).

Stable isotope ratios are affected by evaporation due to fractionation. Precipitation-based soil water, in arid regions that have undergone partial evaporation prior to infiltration, produces a unique isotope signature that becomes a characteristic property of the subsurface water. These characteristics can be tracked to determine source and mixing of various groundwater sources (Healy, 2012).

Through numerous studies and efforts, the ratios of ^{18}O and ^2H concentrations have been obtained through precipitation surveys throughout the world, with the establishment of the global meteoric water line presented below:

$$\delta^2\text{H}\text{‰} = 8 \delta^{18}\text{O}\text{‰} + 10 \text{ (Craig 1961)}$$

A linear relationship between the global line and the local line can be established and utilized to help understand the influences of precipitation, runoff, evaporation, and infiltration in hydrological investigations (Freeze & Cherry, 1979).

Water Quality Data Analysis Methods

The water quality data were analyzed utilizing the follow industry standard plotting methods:

- Linear Regression Plot for Stable Isotopes of Oxygen-18 / Deuterium isotopic data plotted on a scatter plot against a trendline of the global meteoric water line (GMWL)
- Piper Plot for diagraming Cation and Anion concentrations from multiple samples into one plot with grouping.



- Durov Plot for diagramming Cation and Anion concentrations similar to the Piper but with TDS concentration and pH comparison.
- Gibbs Ratio Analysis compares the ratio of sodium and calcium to TDS against a graphical plot for evaporation, dilution, and weathering. It allows for the analysis of multiple samples with grouping.
- Linear Regression Plot of the ratio of Chloride to Sulfate for the analysis of naturally occurring waters to connate waters.
- Linear Regression Plots of Sulfate to TDS and Bicarbonate to TDS ratios for the analysis of the progress of naturally occurring waters along their evolution path.
- Radial Plot of Silicate Minerals (Cations) for the analysis of the evolution of mineral from naturally occurring waters in an igneous system.
- Radial Plot of Major Cations and Anions in milliequivalents per liter (meq/l) on a logarithmic plot for graphical comparison.
- Graphical Plot of the Saturation Indices for the speciation of minerals from the analysis of aqueous geochemistry utilizing PHREEQCI Version 2, a USGS geochemical modeling program.

Result of Analyses

Isotopes

The analysis of groundwater samples from the utilization of stable isotopes of oxygen-18 and deuterium resulted in approximately two categories of results; the Flowing Wells and deeper pumping MOFN Wells shared a similar ratio and the springs, creek pools, and shallow wells shared a similar ratio ([Stable Isotope Analysis](#)).

The average stable isotope value for the region from east to west is approximately -7.5 ^{18}O and -50 ^2H to -10 ^{18}O and -70 ^2H (Drever, 1988). The average for the springs, creek pools, and shallow wells was -7.19 ^{18}O and -48.80 ^2H while the average for the flowing wells and MOFN wells was -8.56 ^{18}O and -58.46 ^2H .

The range of the local isotope annual precipitation values, based on isotopic data for modern precipitation references from the University of Utah's Waterisotopes On-line database, an interpolated isotopic database, range from -8.7 ^{18}O and -57 ^2H in the higher altitude recharge areas of the Davis Mountains near Valentine, Texas to -6.2 ^{18}O and -40 ^2H within the Alamito creek area (Bowen, 2021).

The isotopic data for all the sampled locations appear to fall near the Global Meteoric Water Line (GMWL) indicating the groundwater is meteoric or precipitation based. The samples from the Flowing Wells and MOFN Wells appear to fall close to the modern-day isotopic values of the Davis Mountains and near the western regional values of the area. The springs, creek pools, and shallow wells tend to fall below the modeled modern values of Alamito Creek, but fall within regional values.



The Flowing Wells and MOFN Wells isotope values are clustered close together with minimal variation. The springs, creek pools, and shallow wells isotope values do not share as tight a grouping. As a group they tend to fall close to the GMWL with several falling off the line toward an evaporation profile. The samples that fall toward the evaporation profile are PR-IBS2, PRDXS1, and to a lesser degree PR-IBS1. Sample locations PR-IBS2 and PR-DXS1 are both associated with open channel flow which are both subject to potentially evaporated water, which will tend to move the profile away from the GMWL. PR-IBS1 is the Penitas Spring which has a pool of standing water near the spring. Evaporated waters from the nearby pool could potentially cross flow and partially influence some of the waters discharged from the spring well, helping to drive the analysis towards an evaporation profile.

Groundwater tends to have flow lines from recharge to discharge proportional to depth. Shallow groundwater tends to have shorter flowlines while deeper groundwater tends to have much longer flowlines and residence times (Freeze & Cherry, 1979). Based on the placement of the sample locations on the GMWL line in comparison to modern isotopes, the shallow near surface waters of the springs, creek pools, and shallow wells are most likely associated with precipitation along the upper reaches of the drainages of the Alamito Creek area and the associated recharge zones along its flow path. The water from the Flowing Wells and MOFN Wells, though they tend to match with modern isotopic signatures from the Davis Mountains, due to the depth and distance from the potential recharge area, the water is most likely a representative of precipitation-based recharge from a cooler time in the past.

Water Quality

The Total Dissolved Solids (TDS) of a liquid, as the name suggests, is a measurement of the concentration of elements that make up the aqueous chemistry of a fluid or water. The TDS of the groundwater samples ranged from 231 mg/l to 704 mg/l with an average of 370 mg/l of total dissolved solids. The water quality of the groundwater from a TDS perspective is well within the freshwater classification ([Laboratory Results](#)).

A common method for graphically representing groundwater geochemical characteristics or profiles is to utilize the major cation and anion relationships of groundwater samples. The Piper Plot (Piper 1944) and the Durov Plot (Durov/Zaporozec 1972) use major cation and anion relationships by separating the major cations (Ca, Na, Mg, K) and major anions (Cl, CO³, HCO³, SO⁴) based on milliequivalents per liter into two triangles. Each water sample is located in the representative cation/anion triangle based on percentage of concentration of each ion species (Freeze & Cherry, 1979).

The Piper Plot projects intersecting lines from each triangle onto a plotting diamond, which is broken into major quadrants of water types for grouping and identification. The Durov Plot extends the analyses from just major cation/anion to TDS and pH. The Durov Plot is primarily utilized for visualizing the differences in various water types and for group identification (Freeze & Cherry, 1979).



Piper Plots

The analysis of the Piper Plots ([Piper Plots](#)) revealed a relevant difference between the sampled water types. The plots were broken down into five (5) categories; Flowing Wells, MOFN Wells, Dixon Wells, Dixon Springs, and IBS Springs.

The Piper Plot or Trilinear Plot displays the major cations and anions in milliequivalents per liter on a graphical presentation to help facilitate the understanding of the hydro-chemical facies and chemical evolution of a natural groundwater source (Freeze & Cherry, 1979).

Based on the analysis of the sampled waters utilizing the Piper Plot, the “Flowing Wells” all demonstrated a remarkable similarity. These waters can be classified as a Sodium Bicarbonate type groundwater, demonstrating concentrations of both Sodium and Bicarbonate constituents. The “MOFN Wells”, though slightly different in chemical make-up and multiple hundreds of feet shallower and miles away, displayed a significant similarity to the “Flowing Wells” with a Sodium Bicarbonate type profile.

The Dixon water wells; PR-DXW1, and PR-DXW5 were plotted together. Though plotted together, they do not share the same water type. PR-DXW1 is on the western side of the Alamito Creek in a tributary plain and PR-DXW5 is located on the eastern side of the creek on the terrace above the flood plain in the Tascotal formation. PR-DXW1 as a Magnesium Bicarbonate type profile, while PR-DXW5 has a somewhat less pronounced Sodium Bicarbonate type profile.

The “Dixon Springs” or the sample points located along creek pools in the Alamito Creek retained a similar or proximity grouping. The sampled waters shared a similar Sodium/Potassium-Bicarbonate profile as the previously sampled waters; however, they were far enough away to be considered a mixed or non-dominate type water classification and not Sodium Bicarbonate water.

The “IBS Springs” share a similar profile as the “Dixon Springs” profile and the PR-DXW1 water well. PR-IBS2 fell into the same mixed type category as the “Dixon Springs”, while PR-IBS1 just edged into the Magnesium Bicarbonate rich type category similar to PR-DXW1.

Durov Plot

Based on the analysis of the groundwater samples utilizing the Durov Plotting method ([Durov Plot](#)), four distinctive groups appear. The Flowing Wells and MOFN Wells cluster closely, the springs and creek pools group together and are separated from the Flowing Wells and MOFN Wells. The PR-DXW5 well falls in between the two clusters, while the PR-DXW1 sits above the spring and creek group.

Gibbs Plot

The Gibbs Plot is predominately a surface water plot to analyze the chemical composition of surface waters through the relationship of TDS values and the $\text{Na}^+ / (\text{Na}^+ + \text{Ca}^{2+})$ ratios ([Gibbs Plot](#)). The Piper diagram is a graphical representation of the chemical composition of water in



terms of the eight major cations and anions, the Gibbs diagram only uses two cations directly. (Faure, 1998).

The Gibbs Plot indicates most of the water samples are aligned horizontally between 2 and 3 on the y-axis or along a central axis near the weathering interval. This potentially indicates that weathering of natural rock is the driving force in this plot. The springs, creek pools, and shallow wells tend to fall somewhat below the 1.0 ratio between 0.36 and 0.80, while the Flowing Wells and the MOFN Wells tend to fall close to the 1.0 ratio from 0.91 to 0.98.

Regression Plots

A regression analysis was utilized for ratios of Chloride/Sulfate, Bicarbonate/TDS, and Sulfate/TDS. A regression analysis utilized best fit for the slope of a line of an x/y intercept that runs through the center of a data set.

The regression calculations and R^2 values are as follows:

The regression line for the Cl/SO_4^{2-} Ratio was $X = (Y * 0.25369162) + 5.661795184$ with an R^2 value of 0.85

The regression line for the HCO_3^-/TDS Ratio was $X = (Y * 0.597843303) + 52.44429758$ with an R^2 value of 0.63

The regression line for the SO_4^{2-}/TDS Ratio was $X = (Y * 0.226881893) + -43.97375269$ with an R^2 value of 0.77

Chloride/Sulfate

The Chloride/Sulfate ratio ([Chloride/Sulfate Plot](#)) was utilized to understand the variability of brine waters and other non-brine naturally occurring waters. No significant rationale could be discerned from this plot. The data was proportionately scattered near the lower end of the plot with PR-DXS1 being an outlier. Some of the data appeared to create a line skewed from the main plot; however, it may only be a random occurrence from the methodology.

Bicarbonate/TDS

The Bicarbonate/TDS ratio ([Bicarbonate/TDS Plot](#)) was utilized to visualize the ratio of bicarbonate as an indicator of the relationship of quantitative exposure of the source waters to shallow bicarbonate rich environments. Indicated on the plot, the Flowing Wells cluster together below the trend line and sit the lowest on the left side of the plot followed by the MOFN Wells. The remaining sampled waters sit scattered above the trend line with PR-DXS1 as an outlier.

Sulfate/TDS

The Sulfate/TDS ratio ([Sulfate/TDS Plot](#)) was utilized to compare the water samples to an intermediate mixing zone where sulfate is the dominate characteristic. As seen on the plot, most of the samples clustered near the lower left of the plot with PR-DXS1 once again an outlier.



However, the Flowing Wells and the MOFN Wells are somewhat loosely clustered in the center of the sample group.

Radial Plots

Radial Plots are a graphical method for visualizing differing cation and anion geochemical characteristics of water samples. The Silicate Mineral plot ([Silicate Plot](#)) was utilized to graphically visualize the variation between the water sample on a logarithmic scale based directly on concentration in mg/l and on their relationship with volcanic rocks and the various formation types as listed in the geology section of this report.

The Major Cation/Anion Plot is a graphical method for visualizing differing cation and anion geochemical characteristics utilizing a radial logarithmic plot based on the milli equivalency of the constituents. It is specifically used for pattern recognition and comparison.

Silicate Mineral Plot

The Silicate Mineral Plots were divided into three groups: the Flowing Wells, the MOFN Wells and Shallow Wells, and the Creek Pools and Springs. The Flowing Wells grouped closely with a variation in the calcium concentration. This group was dominated by sodium and silica followed by calcium and potassium. Sodium and silica are indicative of igneous systems.

The MOFN Wells and Shallow Wells did not group as well. The MOFN Wells more closely resembled the Flowing Wells plot with a higher range of calcium. The Shallow Wells had a higher content of calcium, potassium, and additionally magnesium, which was absent from the Flowing Wells and MOFN Wells. This chemistry can also be associated with an igneous system of a differing rock type.

The Creek Pools and Springs visually share a similar profile; however, there are significant variations in the sodium, potassium, magnesium, and iron minerals. All the samples contained the additional mineral of iron, which was not present in the other groups; however, iron was absent in PR-DXS3.

Major Cation and Anion Plots

The Major Cation and Anion Plots ([Cation/Anion Plot](#)) were divided in five categories: Flowing or Artesia Wells, Dixon Springs or Creek Pools, Dixon Wells, MOFN Wells, and IBS Springs or Creek Pools. The Flowing Wells Plot contained all the flowing wells and presented a relatively good match and similar plot profile with PR-00492 representing the lower of the plot profiles.

The Dixon Springs or Creek Pools expressed a relatively similar visual plot outline with some variation between sulfate, nitrate, bromide, and chloride constituents. They did not share a profile similarity to the Flowing Wells.

The Dixon Wells Plot combined the two Dixon Wells sampled; PR-DXW1 from the western side of Alamito Creek and PR-DXW5 from the eastern side of Alamito Creek. The two plots showed



very little similarity, only coming close in bicarbonate. Nether shared a similar profile to the Flowing Wells.

The MOFN Wells Plot contained the two MOFN wells sampled. The two well plots appear quite similar. With a variation on sulfate, and minor variations on nitrate, bromide, and chloride. The MOFN Well Plots are the only plots to approach a similar profile to the Flowing Wells except for a significant variation in calcium.

The IBS Spring Plot contained PR-IBS1, the Penitas Spring; and PR-IBS2, a creek pool. The plots did not share visual similarities. PR-IBS1 more closely resembled PR-DXW1, while PR-IBS2 more closely matched the Dixon Springs Plots. None held similarity to the Flowing Well Plots.

Saturation Indices

Each water sample was modeled for the saturation indices utilizing the following constituents: Temp, pH, Ca, Na, Mg, K, Si, Fe, Cl, Br, F, NO₃⁻, SO₄²⁻, and Alk. The saturation indices for the groundwater samples all shared similar profiles for hydrogen, oxygen, and silica related products. A comparison of the related indices are as follows ([Saturation Indices](#)):

The saturation indices of the Flowing Wells shared a similar constituent composition and saturation profile with a minor addition of undersaturated Sylvite in PR-AVAW1 and PR-000384.

The MOFN Wells shared a very similar indices to the Flowing Wells with PR-MOFNWW1 sharing similarities to PR-000492, and PR-SKRMAW1. Groundwater sample PR-MOFNWW2 also shared similarities to samples PR-AVAW1 and PR-000384 with the addition of undersaturated Sylvite.

Samples PR-DXW5 and PR-DXS3 share very similar saturation profiles. Both locations share the eastern side of Alamito Creek and the Tascotal Formation.

Water samples PR-IBS2, PR-DXS1, and PR-DXS2 all share similar profiles. They have significant differences in species and saturation indices as well as precipitation potential of iron related products in comparison to all other waters sampled.

The saturation indices of PR-IBS1 and PR-DXW1 share a similar profile with similar constituents and indices.

Conclusion

Gravity, geologic depositional history, geologic structure, and precipitation are the controlling forces responsible for most groundwater sources. The geochemical makeup of groundwater is derived from the origins of the original evaporated ocean water as it moves on land. Once on land, the evaporated water is rained out as precipitation then evaporated once more as it moves



further inland from the ocean. Mixing between precipitation and surface waters occur as rain and snow are converted to runoff that enters the surface water hydrologic system. A portion of these waters are naturally diverted or captured as recharge or infiltration for aquifers.

Once in the ground and below the evapotranspiration zone that exists immediately below the land surface, infiltrating waters will start to collect various naturally occurring minerals like the major ion minerals and metals listed in this report. As water moves along its flow path and over time, groundwater will increase in total dissolved solids. Water actively moving through zones will flush these zones of minerals resulting in a lower residual TDS of the water due to a lack of available minerals; however, slow moving and less active groundwaters will increase in total dissolved solids.

The source of the groundwaters observed in this report appear to be meteoric in nature or precipitation based and not connate water or interstitial formational water. All the collected samples contained high silica and sodium minerals which are representatives of exposure to igneous geology. Volcanic glass shards are listed as a prevalent constituent in most of the formations surrounding the Alamito Creek area. This volcanic glass is easily dissolved, and diagenetic silicates and calcites replace the shards.

Based on the isotopic profile of the sampled waters, the Flowing Wells and the MOFN Wells share a significantly different isotopic signature compared to the springs, creek pools, and shallow water wells indicating a significant temporal or source differential.

Precipitation based groundwaters come into contact with surface soils where they collect HCO_3^- created from CO_2 derived from the soil zone or limestones or dolomites. HCO_3^- is the dominate mineral in shallow, lower TDS groundwaters. Over time and mixing HCO_3^- becomes dominated by sulfate and chloride. The HCO_3^- concentrations in the Flowing Wells and the MOFN Wells contained lower ratios of HCO_3^- compared to the springs, creek pools, and shallow water wells. The lower ratio of HCO_3^- in the Flowing Wells and MOFN Wells indicate potentially a longer residence time and distance traveled since the time of initial infiltration.

Potassium and magnesium minerals were present in most of the springs, creek pools, and shallow wells, while iron minerals were found in all the springs and creek pools, except PR-DXS3. Magnesium and iron were absent in the Flowing Wells and the MOFN Wells. A review of the basic mineral constituents from the surrounding formation yields sufficient data to assist in the identification of the source of some of the mineral constituents of the sampled waters.

Those waters rich in bicarbonate, calcium, sodium, silica, potassium, magnesium, and iron are most likely associated with waters from overland flows and shallow groundwater zones most likely attributed to the Petan or Jones basalts which are most likely the source of the magnesium and contact to the Tascotal formation is most likely the source of the iron. The abundance of bicarbonate is most likely associated with exposure to near surface soils abundant in CO_2 . While sodium, calcium, and silica are prevalent in most igneous rocks.



Samples PR-IBS1 and PR-DXW1 are most likely associated with groundwaters outflowing from the Petan Basalt on the western side of the Alamito Creek, while PR-IBS2, PR-DXS1, and PR-DXS2 are most likely associated with outflow from up channel deposits of the Petan Basalt and Mitchell Mesa Rhyolite with some contact with potential overland or near surface flow of the Tascotal formation.

Samples PR-DXW5 and PR-DXS3, with the lack of iron minerals, appears to potentially be associated with the Michell Mesa Rhyolite. PR-DXS3 is most likely associated with potential out flow of shallow water associated with incised near channel deposits of the Mitchell Mesa Rhyolite through faults on the eastern side of Alamito Creek.

Samples PR-000498, PR-00384, PR-SKRMAW1, and PR-AVAW1, which make up the “Flowing Wells” group, appear to be deep circulating groundwaters potentially associated with either the Mitchell Mesa Rhyolite or the rhyolitic tuff of the Duff Formation and not immediately connected to shallow surface flows. The groundwater samples from the PR-MOFNWW1 and PR-MOFNWW2 wells indicate waters of similar origin to the Flowing Wells further to the south. These wells are significantly shallower and over four-hundred feet higher in surface elevation than the flowing wells. Isotopically, the PR-MOFN wells have a very similar profile, which indicates the source water is potentially of similar origin. The geochemical makeup is similar to the Flowing Wells with some variation in associated mineral chemistry. Potentially, the PR-MOFN Wells are most likely completed into the underlying Mitchell Mesa Rhyolite below the Tascotal Formation with potential interconnecting pathways through long northwesterly trending faults that may intercept some of the original source waters of the Flowing Wells.

The association of the groundwater chemistry and potential pathways to specific formations are based on the general assumption of basic igneous rock geochemical composition, and not on any site-specific rock analysis other than the analysis made in referenced reports and information associated with the various listed formations. There are significant variations in the geo-chemical composition of the sampled groundwater groups that lead to the conclusion of differing source waters. However, no potentiometric analysis has been made to establish pressure head or potential static water level comparisons due to a lack of both spatial and level information. In addition, no subsurface information is available for comparative analysis of formation thickness or composition within the Alamito Creek area due to a lack of creditable comparative data.

The geo-chemical analysis of the groundwater samples and subsequent conclusions are based on a relatively small quantity of analytes in comparison to the large spatial distribution of the sampled waters and is not to be considered as conclusive evidence of definitive isolation; therefore, these conclusions, which are based on the variations in sampled water chemistry, are subject to change based on relevant or new data that may become available in the future.



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Limitations

Straub Corporation has prepared this investigation to the best of its ability. No other warranty, expressed or implied, is made or intended. Straub Corporation has examined and relied upon documents referenced in this investigation and has relied on oral statements and data submitted by certain individuals. Some information included in this investigation has been provided to Straub Corporation by the Presidio County Underground Water Conservation District and Dixon Water Foundation. Straub Corporation has not conducted an independent examination of the facts contained in referenced materials and statements. We have presumed the genuineness of the documents and that the information provided in documents or statements is true and accurate. This report is not intended to be an endorsement for any specific product or company. Straub Corporation has prepared this document in a professional manner. Straub Corporation also notes that the facts and conditions referenced in this report may change over time and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this document's preparation.

This document has been prepared for the benefit of the Presidio County Underground Water Conservation District and Dixon Water Foundation and their constituents. The information contained in this document including all exhibits and figures may not be used by any other party without the express prior written consent of Straub Corporation.

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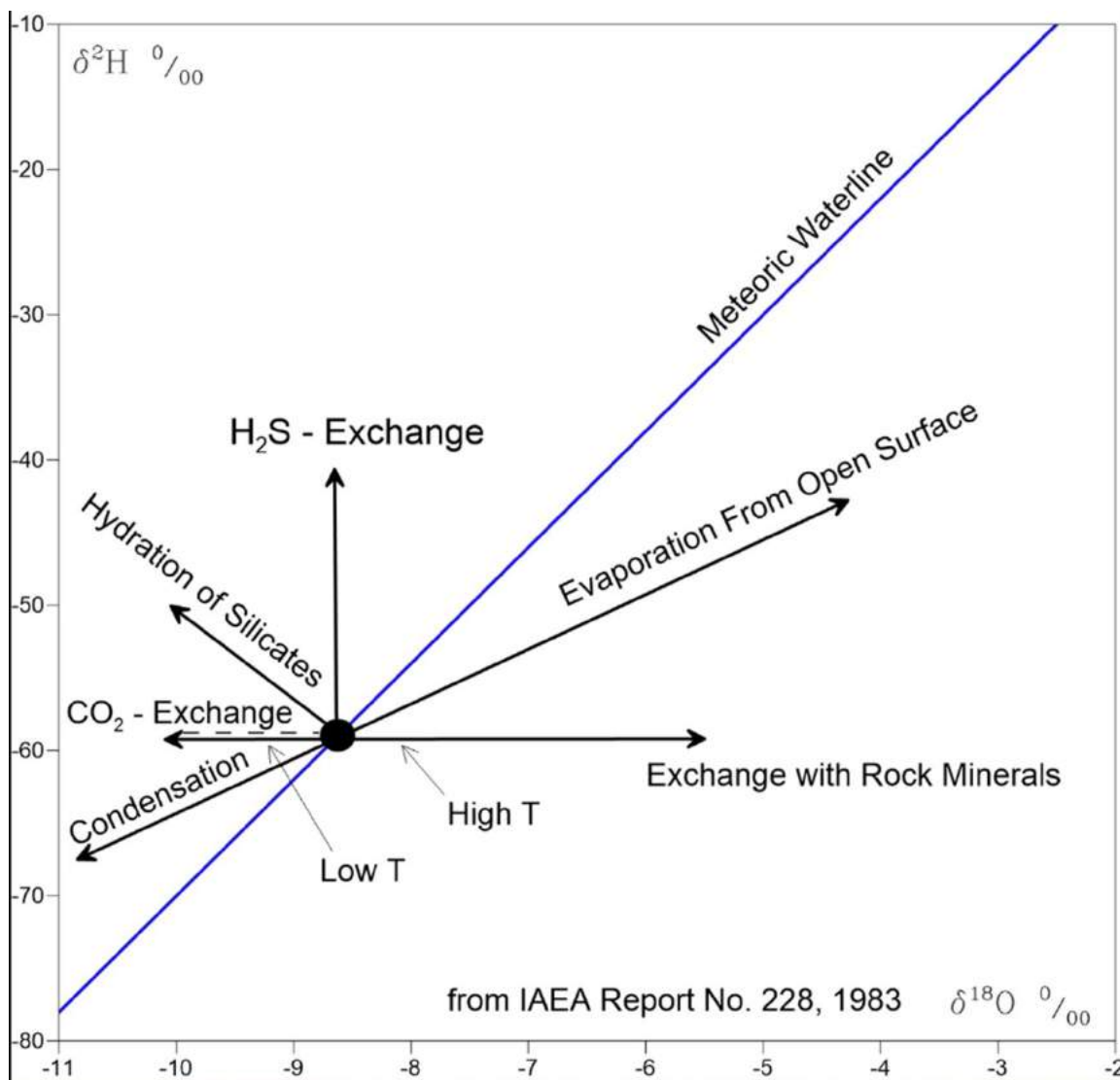
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Isotope Plot Interpretation Chart





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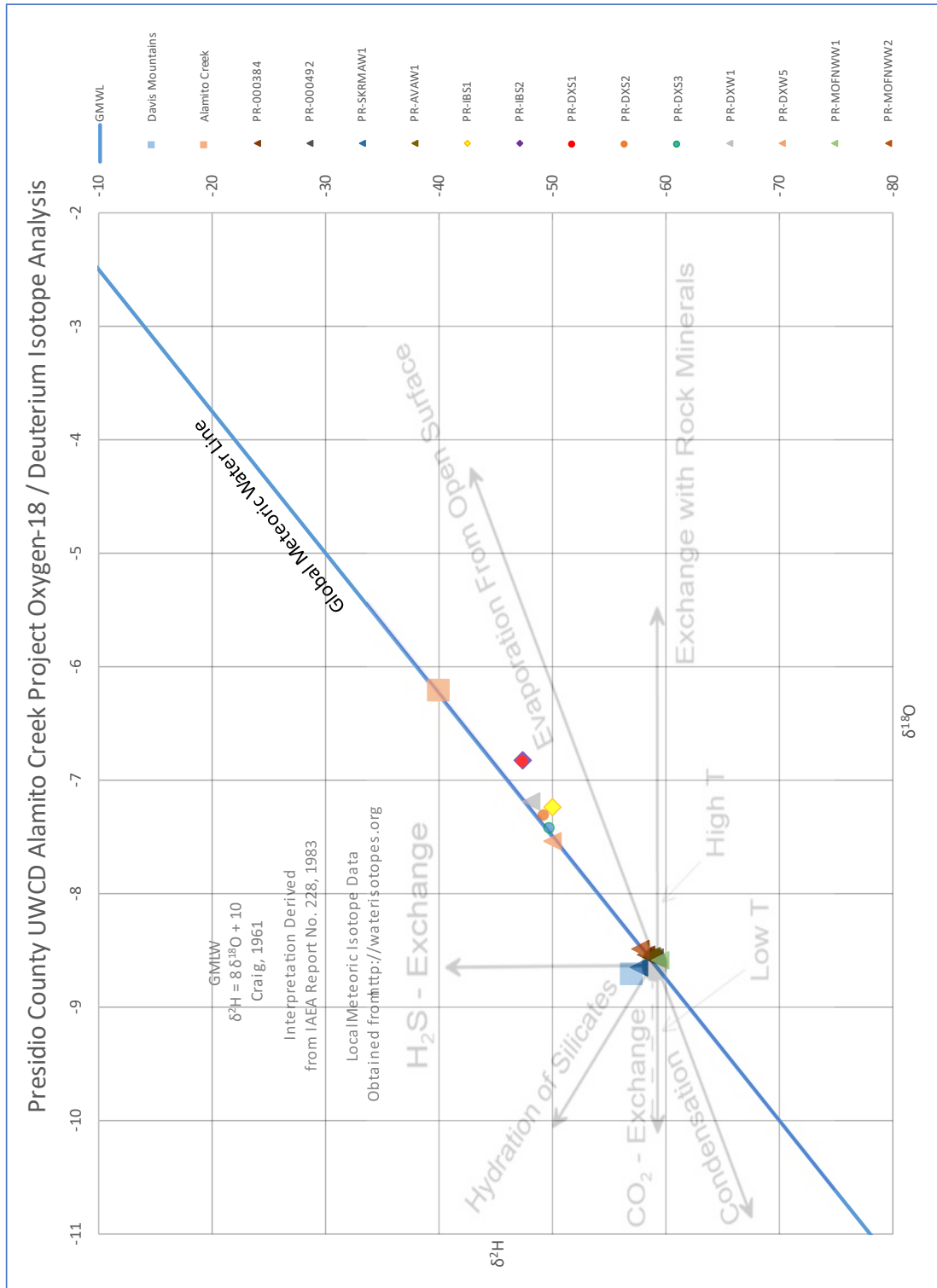
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Stable Isotope Data

Stable Isotope Geosciences Facility				
Texas A&M University				
Natural Liquid H ₂ O Analyses of $\delta^{18}\text{O}$ and δD				
Picarro L2120-i CRDS, A0211 vaporization module				
Sample	Additional Description	$\delta^{18}\text{O}$ VSMOW	δD VSMOW	Comment
PR-000384	Straub	-8.48	-57.91	
PR-000384	Straub	-8.59	-58.66	
PR-000492	Straub	-8.45	-58.66	
PR-000492	Straub	-8.66	-59.29	
PR-AVAW1	Straub	-8.48	-58.52	
PR-AVAW1	Straub	-8.62	-58.85	
PR-DXS1	Straub	-6.84	-47.17	
PR-DXS1	Straub	-6.81	-47.54	
PR-DXS2	Straub	-7.18	-48.61	
PR-DXS2	Straub	-7.43	-49.72	
PR-DXS3	Straub	-7.15	-47.43	
PR-DXS3	Straub	-7.67	-52.06	
PR-DXW5	Straub	-7.56	-49.80	
PR-DXW5	Straub	-7.50	-50.19	
PR-DXW1	Straub	-7.15	-47.82	
PR-DXW1	Straub	-7.21	-48.31	
PR-IBS1	Straub	-7.19	-49.26	
PR-IBS1	Straub	-7.29	-50.57	
PR-IBS2	Straub	-6.07	-44.85	
PR-IBS2	Straub	-6.73	-47.38	
PR-MOFNWW1	Straub	-8.61	-59.89	
PR-MOFNWW1	Straub	-8.56	-59.08	
PR-SKRMAW1	Straub	-8.82	-57.98	
PR-SKRMAW1	Straub	-8.49	-57.19	
PR-MOFNWW2	Straub	-8.72	-58.65	
PR-MOFNWW2	Straub	-8.25	-56.81	



Oxygen-18 / Deuterium Isotope Plot





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Laboratory Results

Certificate of Analysis Summary 688601 Straub Corporation, Stanton, TX

Project Name: Alamito Creek Prod

Date Received in Lab: Fri 02.19.2021 14:04
Report Date: 02.26.2021 19:15
Project Manager: John Builes



Project Id: Raymond Straub
Contact: Presidio County
Project Location:

Analysis Requested	Lab Id: Field Id: Depth: Matrix: Sampled:	688601-001 PR-000384 600 GROUND WATER 02.15.2021 13:00	688601-002 PR-SKRMW1 300 GROUND WATER 02.15.2021 15:50	688601-003 PR-AVAW1 GROUND WATER 02.15.2021 16:52	688601-004 PR-DXS1 1 GROUND WATER 02.16.2021 12:15	688601-005 PR-DXS2 1 GROUND WATER 02.16.2021 14:31	688601-006 PR-DXS3 1 GROUND WATER 02.16.2021 17:07
Alkalinity by SM2320B SUB: T104704215-20-39	Extracted: Analyzed: Units/RL:	02.23.2021 11:25 02.23.2021 12:01 mg/L RL	02.23.2021 11:25 02.23.2021 12:13 mg/L RL	02.23.2021 11:25 02.23.2021 12:20 mg/L RL	02.23.2021 11:25 02.23.2021 12:28 mg/L RL	02.23.2021 11:25 02.23.2021 12:35 mg/L RL	02.23.2021 11:25 02.23.2021 12:42 mg/L RL
Alkalinity, Bicarbonate (as CaCO3)		194 4.00	185 4.00	192 4.00	462 4.00	367 4.00	322 4.00
Inorganic Anions by EPA 300/300.1	Extracted: Analyzed: Units/RL:	02.19.2021 15:15 02.19.2021 21:15 mg/L RL	02.19.2021 15:15 02.19.2021 21:24 mg/L RL	02.19.2021 15:15 02.19.2021 21:32 mg/L RL	02.19.2021 15:15 02.19.2021 21:41 mg/L RL	02.19.2021 15:15 02.19.2021 21:50 mg/L RL	02.19.2021 15:15 02.19.2021 21:58 mg/L RL
Bromide		0.488 XF 0.100	0.582 0.100	0.447 0.100	0.758 0.100	0.394 0.100	0.418 0.100
Chloride		16.3 X 0.500	23.7 0.500	16.2 0.500	38.3 0.500	19.8 0.500	12.0 0.500
Fluoride		1.89 XF 0.100	2.83 0.100	1.93 0.100	1.74 0.100	2.70 0.100	1.98 0.100
Nitrate as N		2.65 K 0.100	4.21 K 0.100	2.57 K 0.100	0.129 K 0.100	<0.100 0.100	0.413 K 0.100
Sulfate		35.2 0.500	45.7 0.500	34.9 0.500	132 0.500	39.9 0.500	49.8 0.500
Recoverable Metals by EPA 200.8 SUB: T104704215-20-39	Extracted: Analyzed: Units/RL:	02.24.2021 11:00 02.25.2021 02:13 mg/L RL	02.24.2021 11:00 02.25.2021 02:16 mg/L RL	02.24.2021 11:00 02.25.2021 02:19 mg/L RL	02.24.2021 11:00 02.25.2021 02:22 mg/L RL	02.24.2021 11:00 02.25.2021 02:25 mg/L RL	02.24.2021 11:00 02.25.2021 02:28 mg/L RL
Arsenic		0.00820 0.00400	0.00450 0.00400	0.00906 0.00400	<0.00400 0.00400	0.00491 0.00400	<0.00400 0.00400
Silver		<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200
Uranium		0.0247 0.00100	0.0392 0.00100	0.0200 0.00100	0.0831 0.00100	0.0183 0.00100	0.0366 0.00100

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STRAUB CORPORATION - Geoscience

P.O. Box 192, Stanton, Texas 79782 (432) 756-3489

Certificate of Analysis Summary 688601 Straub Corporation, Stanton, TX

Project Name: Alamito Creek Prod



Project Id: Raymond Straub
 Contact: Presidio County
 Project Location: Alamito Creek Prod
 Date Received in Lab: Fri 02.19.2021 14:04
 Report Date: 02.26.2021 19:15
 Project Manager: John Builes

Lab Id: Field Id: Depth: Matrix: Sampled:	688601-001 PR-000384 600 GROUND WATER 02.15.2021 13:00	688601-002 PR-SKEMAW1 300 GROUND WATER 02.15.2021 15:50	688601-003 PR-AVAW1 GROUND WATER 02.15.2021 16:52	688601-004 PR-DXS1 1 GROUND WATER 02.16.2021 12:15	688601-005 PR-DXS2 1 GROUND WATER 02.16.2021 14:31	688601-006 PR-DXS3 1 GROUND WATER 02.16.2021 17:07
Recoverable Metals per ICP by EPA 200.7 SUB: T104704215-20-39	02.23.2021 08:30 02.24.2021 21:55 mg/L RL 1.78 0.200 -0.200 0.200 -0.200 0.200 0.649 0.500 24.2 1.07 121 0.500	02.23.2021 08:30 02.24.2021 22:00 mg/L RL 2.56 0.200 -0.200 0.200 -0.200 0.200 -0.500 0.500 26.3 1.07 130 0.500	02.23.2021 08:30 02.24.2021 22:04 mg/L RL 1.45 0.200 -0.200 0.200 -0.200 0.200 0.566 0.500 24.0 1.07 120 0.500	02.23.2021 08:30 02.24.2021 22:08 mg/L RL 78.0 D 10.0 0.786 0.200 10.7 0.200 5.39 0.500 50.4 1.07 175 0.500	02.23.2021 08:30 02.24.2021 22:12 mg/L RL 57.1 0.200 1.03 0.200 4.48 0.200 1.58 0.500 54.7 1.07 119 0.500	02.23.2021 08:30 02.24.2021 22:16 mg/L RL 50.8 0.200 -0.200 0.200 1.97 0.200 2.26 0.500 42.2 1.07 115 0.500
Specific Conductance @25C by SM2510B SUB: T104704215-20-39	02.22.2021 17:06 umhos/cm RL 568 10.0	02.22.2021 17:06 umhos/cm RL 644 10.0	02.22.2021 17:06 umhos/cm RL 580 10.0	02.22.2021 17:06 umhos/cm RL 1290 10.0	02.22.2021 17:06 umhos/cm RL 863 10.0	02.22.2021 17:06 umhos/cm RL 799 10.0
Conductivity TDS by SM2540C SUB: T104704215-20-39	02.22.2021 14:34 mg/L RL 280 5.00	02.22.2021 14:34 mg/L RL 318 5.00	02.22.2021 14:34 mg/L RL 297 5.00	02.22.2021 14:34 mg/L RL 704 5.00	02.22.2021 14:34 mg/L RL 431 5.00	02.22.2021 14:34 mg/L RL 423 5.00
Total Dissolved Solids pH by SM4500-H SUB: T104704215-20-39	02.25.2021 17:02 Deg C RL 19.9 K	02.25.2021 17:02 Deg C RL 19.9 K	02.25.2021 17:02 Deg C RL 19.9 K	02.25.2021 17:02 Deg C RL 19.9 K	02.25.2021 17:02 Deg C RL 19.9 K	02.25.2021 17:02 Deg C RL 20.0 K
Temperature pH by SM4500-H SUB: T104704215-20-39	02.25.2021 17:02 SU RL 8.52 K	02.25.2021 17:02 SU RL 8.65 K	02.25.2021 17:02 SU RL 8.79 K	02.25.2021 17:02 SU RL 8.13 K	02.25.2021 17:02 SU RL 7.95 K	02.25.2021 17:02 SU RL 8.10 K
pH						

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P.O. Box 192, Stanton, Texas 79782 (432) 756-3489

Certificate of Analysis Summary 688601

Straub Corporation, Stanton, TX

Project Name: Alamito Creek Prod

Project Id: Raymond Straub
 Contact: Presidio County
 Project Location: Alamito Creek Prod
 Date Received in Lab: Fri 02.19.2021 14:04
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 Project Manager: John Builes



Lab Id:	Field Id:	Depth:	Matrix:	Sampled:	Extracted:	Analyzed:	Units/RL:	688601-007	688601-008	688601-009	688601-010	688601-011	688601-012
Analysis Requested													
Alkalinity by SM2320B													
SUB: T104704215-20-39													
Alkalinity, Bicarbonate (as CaCO3)													
Inorganic Anions by EPA 300/300.1													
Bromide					0.442	0.100		0.19.2021 15:15	0.19.2021 15:15	0.19.2021 15:15	0.19.2021 15:15	0.19.2021 15:15	0.19.2021 15:15
Chloride					14.7	0.500		0.19.2021 22:07	0.19.2021 22:16	0.19.2021 18:38	0.19.2021 16:28	0.19.2021 16:37	0.19.2021 16:45
Fluoride					0.937	0.100			1.04	0.100	1.12	0.100	2.52 XCF
Nitrate as N					2.06K	0.100			1.41K	0.100	<0.100	0.100	1.75
Sulfate					44.0	0.500			19.2	0.500	<0.100	0.100	24.4 X
Recoverable Metals by EPA 200.8													
SUB: T104704215-20-39													
Arsenic					<0.00400	0.00400		02.24.2021 11:00	02.24.2021 11:00	02.24.2021 11:00	02.24.2021 11:00	02.24.2021 11:00	02.24.2021 11:00
Silver					<0.00200	0.00200		02.25.2021 02:31	02.25.2021 02:34	02.25.2021 02:37	02.25.2021 02:40	02.25.2021 02:51	02.25.2021 02:55
Uranium					0.0513	0.00100			<0.00400	0.00400	<0.00200	0.00200	<0.00400
									0.0410	0.00100	0.0221	0.00100	0.0167
													0.0338

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Certificate of Analysis Summary 688601 Straub Corporation, Stanton, TX

Project Name: Alamito Creek Prod

Date Received in Lab: Fri 02.19.2021 14:04

Report Date: 02.26.2021 19:15

Project Manager: John Builes



Project Id: Raymond Straub
Contact: Presidio County
Project Location:

Lab Id: Field Id: Depth: Matrix: Sampled:	688601-007 PR-M0FNWW1 300 GROUND WATER 02.17.2021 10:59	688601-008 PR-M0FNWW2 300 GROUND WATER 02.17.2021 12:10	688601-009 PR-IBS1 19 GROUND WATER 02.17.2021 14:08	688601-010 PR-IBS2 2 GROUND WATER 02.17.2021 17:17	688601-011 PR-000492 GROUND WATER 02.17.2021 18:40	688601-012 PR-DXW5 65. GROUND WATER 02.18.2021 15:05
Recoverable Metals per ICP by EPA 200.7 SUB: T104704215-20-39	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:
Calcium	10.8 0.200	9.11 0.200	48.8 0.200	60.9 0.200	0.829 0.200	31.1 0.200
Iron	<-0.200 0.200	<-0.200 0.200	<-0.200 0.200	0.221 0.200	<-0.200 0.200	<-0.200 0.200
Magnesium	<-0.200 0.200	<-0.200 0.200	3.28 0.200	4.72 0.200	<-0.200 0.200	0.348 0.200
Potassium	<-0.500 0.500	0.517 0.500	5.08 0.500	3.86 0.500	<-0.500 0.500	1.11 0.500
Silica	35.4 1.07	33.1 1.07	49.5 1.07	42.4 1.07	25.9 1.07	39.6 1.07
Sodium	118 0.500	113 0.500	54.0 0.500	106 0.500	120 0.500	131 0.500
Specific Conductance @25C by SM2510B SUB: T104704215-20-39	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:
Conductivity	614 10.0	543 10.0	502 10.0	810 10.0	561 10.0	753 10.0
TDS by SM2540C SUB: T104704215-20-39	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:
Total Dissolved Solids	372 5.00	366 5.00	231 5.00	431 5.00	338 5.00	331 5.00
pH by SM4500-H SUB: T104704215-20-39	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:
Temperature	20.0 K	19.9 K	20.0 K	20.0 K	20.1 K	20.0 K
pH by SM4500-H SUB: T104704215-20-39	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:	Extracted: Analyzed: Units/RL:
pH	8.49 K	8.59 K	8.33 K	8.47 K	9.18 K	8.50 K

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Straub Corporation, Stanton, TX

Project Name: Alamito Creek Prod



Project Id: Raymond Straub
 Contact: Presidio County
 Project Location: Alamito Creek Prod
 Date Received in Lab: Fri 02.19.2021 14:04
 Report Date: 02.26.2021 19:15
 Project Manager: John Builes

Analysis Requested	Lab Id: Field Id: Depth: Matrix: Sampled:	688601-013 PR-DXW1 42 GROUND WATER 02.18.2021 16:06				
Alkalinity by SM2320B SUB: T104704215-20-39	Extracted: Analyzed: Units/RL:	02.23.2021 11:25 02.23.2021 13:47 mg/L RL	315	4.00		
Alkalinity, Bicarbonate (as CaCO3)	Extracted: Analyzed: Units/RL:	02.19.2021 15:15 02.19.2021 16:54 mg/L RL	6.50	0.500		
Inorganic Anions by EPA 300/300.1	Extracted: Analyzed: Units/RL:	02.19.2021 15:15 02.19.2021 16:54 mg/L RL	0.938	0.100		
Bromide	Extracted: Analyzed: Units/RL:	02.19.2021 15:15 02.19.2021 16:54 mg/L RL	0.323	0.100		
Chloride	Extracted: Analyzed: Units/RL:	02.19.2021 15:15 02.19.2021 16:54 mg/L RL	6.50	0.500		
Fluoride	Extracted: Analyzed: Units/RL:	02.19.2021 15:15 02.19.2021 16:54 mg/L RL	0.938	0.100		
Nitrate as N	Extracted: Analyzed: Units/RL:	02.19.2021 15:15 02.19.2021 16:54 mg/L RL	0.234	0.100		
Sulfate	Extracted: Analyzed: Units/RL:	02.19.2021 15:15 02.19.2021 16:54 mg/L RL	14.2	0.500		
Recoverable Metals by EPA 200.8 SUB: T104704215-20-39	Extracted: Analyzed: Units/RL:	02.24.2021 11:00 02.25.2021 02:57 mg/L RL	<0.00400	0.00400		
Arsenic	Extracted: Analyzed: Units/RL:	02.24.2021 11:00 02.25.2021 02:57 mg/L RL	<0.00200	0.00200		
Silver	Extracted: Analyzed: Units/RL:	02.24.2021 11:00 02.25.2021 02:57 mg/L RL	0.00665	0.00100		
Uranium	Extracted: Analyzed: Units/RL:	02.24.2021 11:00 02.25.2021 02:57 mg/L RL				

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P.O. Box 192, Stanton, Texas 79782 (432) 756-3489

Certificate of Analysis Summary 688601

Straub Corporation, Stanton, TX

Project Name: Alamito Creek Prod



Project Id: Raymond Straub
 Contact: Presidio County
 Project Location: Presidio County
 Date Received in Lab: Fri 02.19.2021 14:04
 Report Date: 02.26.2021 19:15
 Project Manager: John Builes

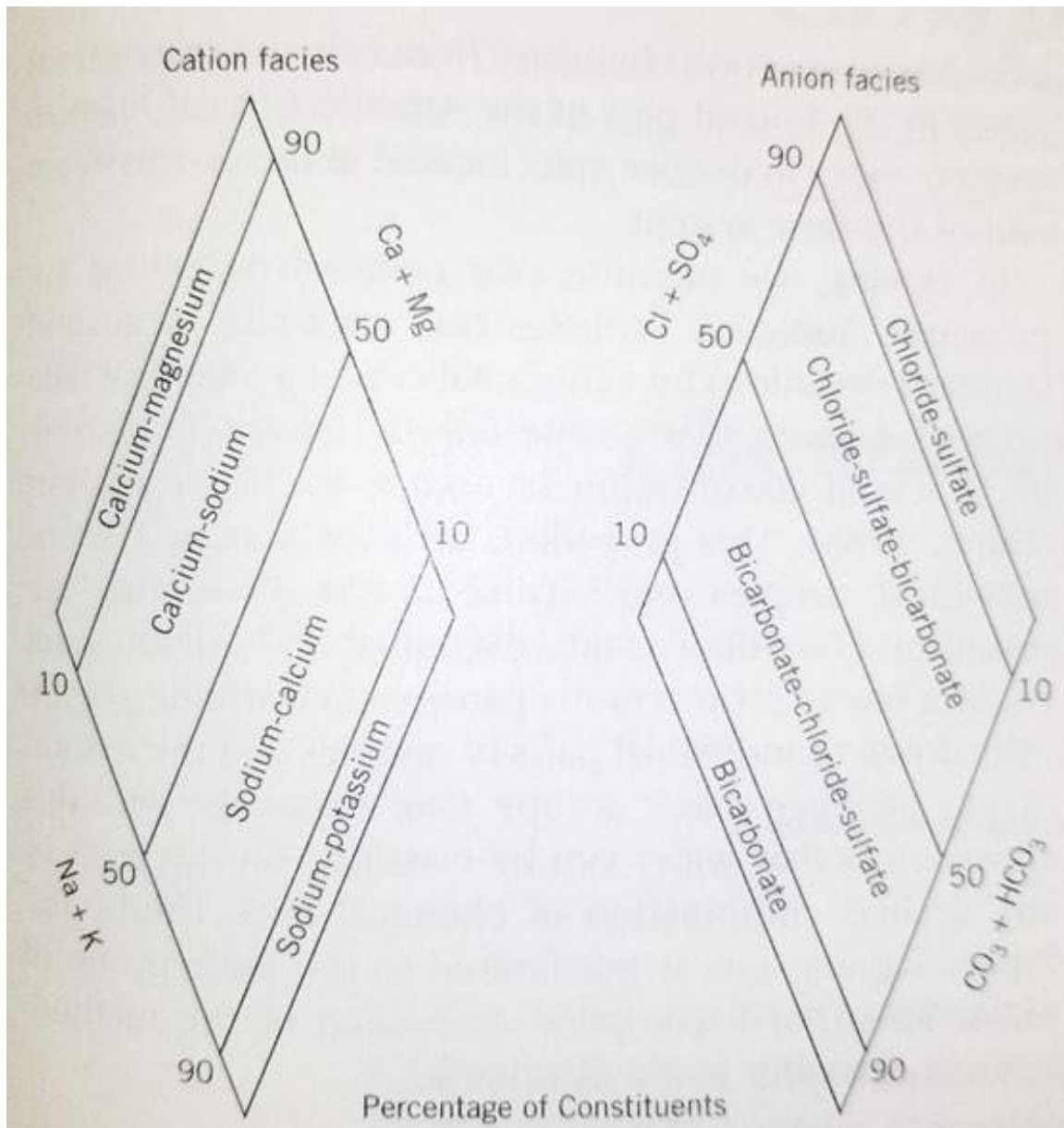
Analysis Requested	Lab Id: Field Id: Depth: Matrix: Sampled:	688601-013 PR-DXW1 42 GROUND WATER 02.18.2021 16:06
Recoverable Metals per ICP by EPA 200.7 SUB: T104704215-20-39	Extracted: Analyzed: Units/RL:	02.23.2021 08:30 02.24.2021 22:59 mg/L RL
Calcium		71.3 0.200
Iron		<0.200 0.200
Magnesium		17.1 0.200
Potassium		1.11 0.500
Silica		57.2 1.07
Sodium		40.7 0.500
Specific Conductance @25C by SM2510B SUB: T104704215-20-39	Extracted: Analyzed: Units/RL:	02.22.2021 17:06 umhos/cm RL
Conductivity		657 10.0
TDS by SM2540C SUB: T104704215-20-39	Extracted: Analyzed: Units/RL:	02.22.2021 14:34 mg/L RL
Total Dissolved Solids		289 5.00
pH by SM4500-H SUB: T104704215-20-39	Extracted: Analyzed: Units/RL:	02.25.2021 17:02 Deg C RL
Temperature		20.2 K
pH by SM4500-H SUB: T104704215-20-39	Extracted: Analyzed: Units/RL:	02.25.2021 17:02 SU RL
pH		7.99 K

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Piper Plot Interpretation Chart



(Domenico & Schwartz, 1998)



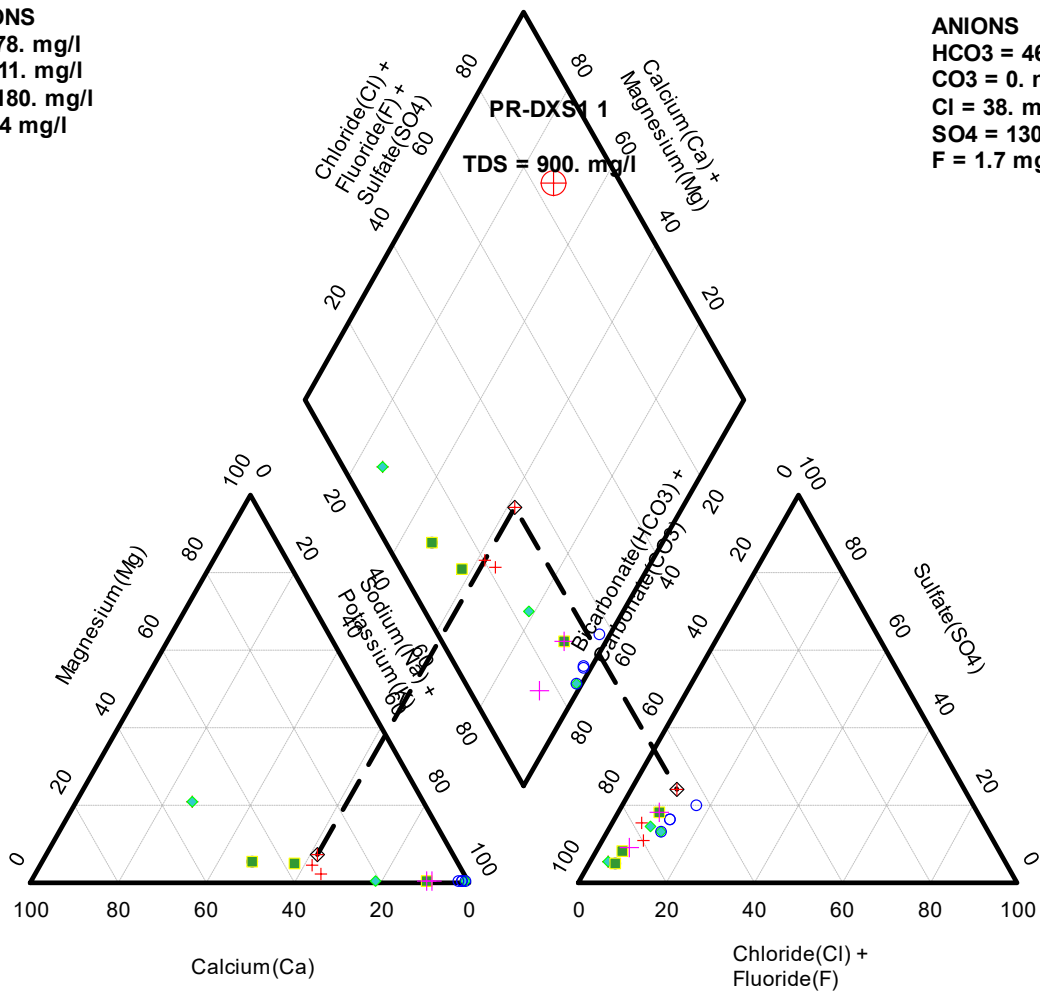
Water Quality Piper Plot – All Sample Locations

CATIONS

Ca = 78. mg/l
Mg = 11. mg/l
Na = 180. mg/l
K = 5.4 mg/l

ANIONS

HCO₃ = 460. mg/l
CO₃ = 0. mg/l
Cl = 38. mg/l
SO₄ = 130. mg/l
F = 1.7 mg/l





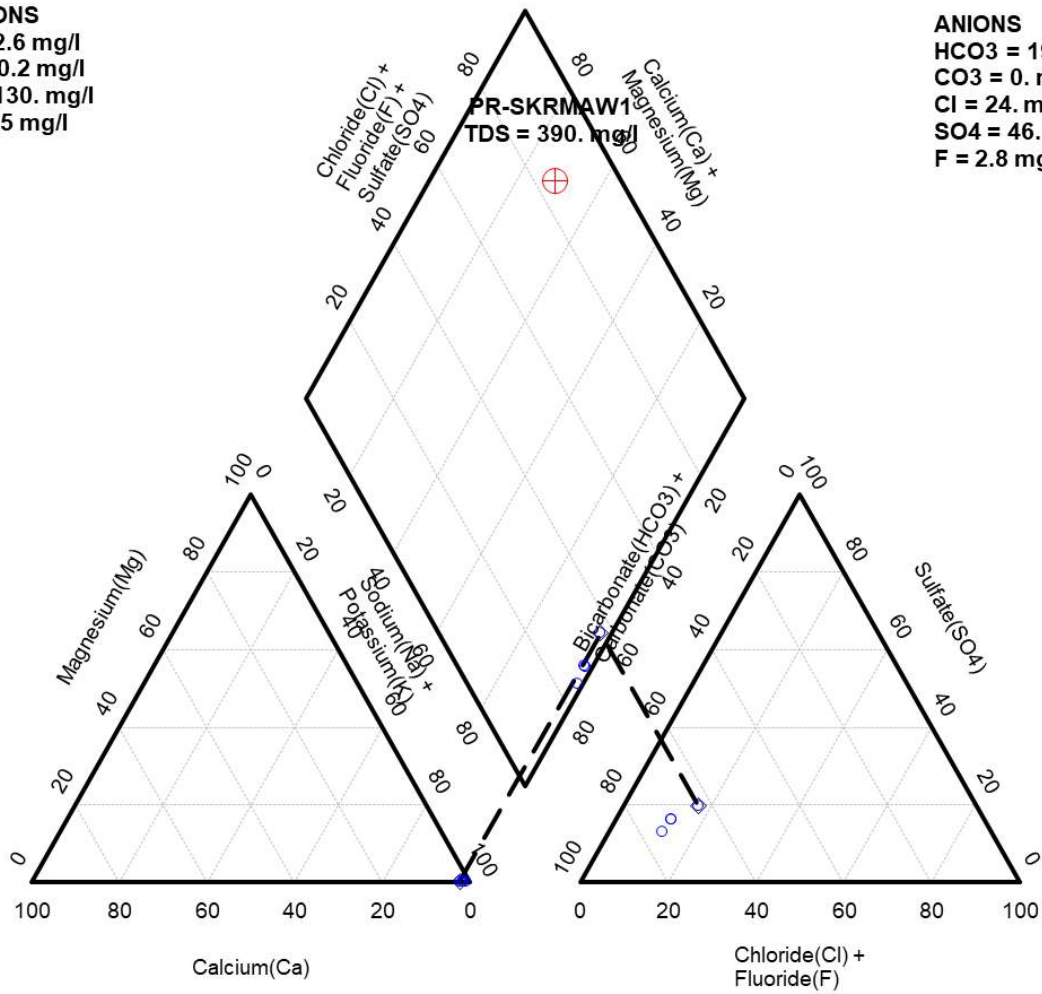
Water Quality Piper Plot – Flowing Wells Sample Locations

CATIONS

Ca = 2.6 mg/l
 Mg = 0.2 mg/l
 Na = 130. mg/l
 K = 0.5 mg/l

ANIONS

HCO₃ = 190. mg/l
 CO₃ = 0. mg/l
 Cl = 24. mg/l
 SO₄ = 46. mg/l
 F = 2.8 mg/l





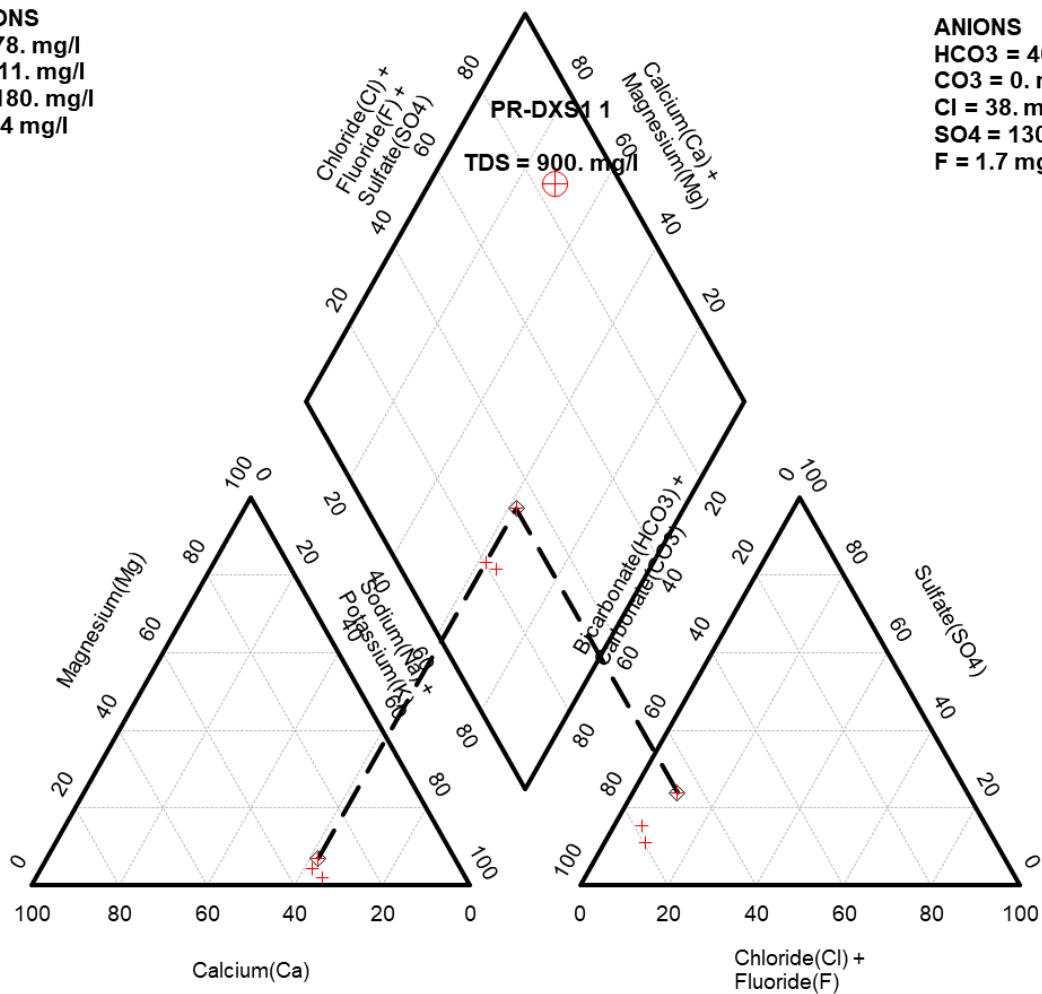
Water Quality Piper Plot – Dixon Springs Sample Locations

CATIONS

Ca = 78. mg/l
 Mg = 11. mg/l
 Na = 180. mg/l
 K = 5.4 mg/l

ANIONS

HCO₃ = 460. mg/l
 CO₃ = 0. mg/l
 Cl = 38. mg/l
 SO₄ = 130. mg/l
 F = 1.7 mg/l





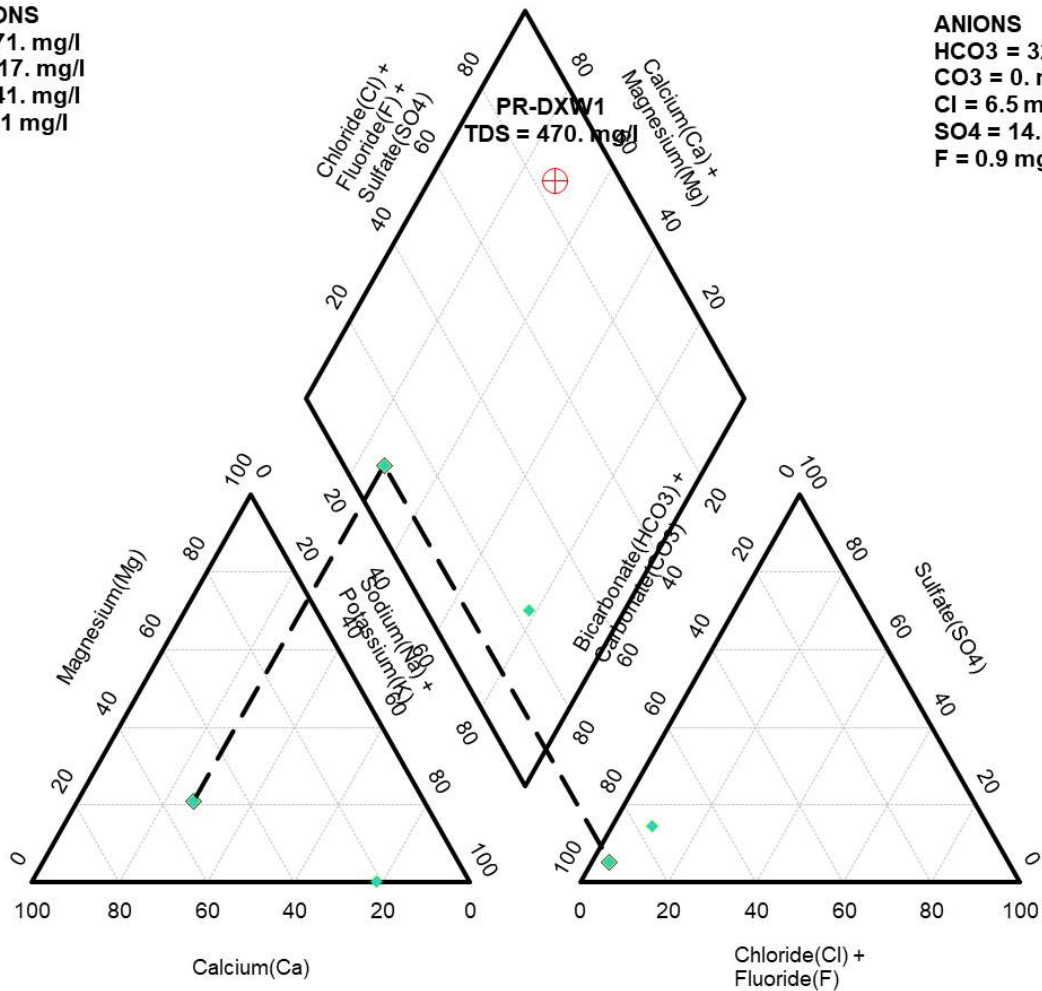
Water Quality Piper Plot – Dixon Wells Sample Locations

CATIONS

Ca = 71. mg/l
 Mg = 17. mg/l
 Na = 41. mg/l
 K = 1.1 mg/l

ANIONS

HCO₃ = 320. mg/l
 CO₃ = 0. mg/l
 Cl = 6.5 mg/l
 SO₄ = 14. mg/l
 F = 0.9 mg/l





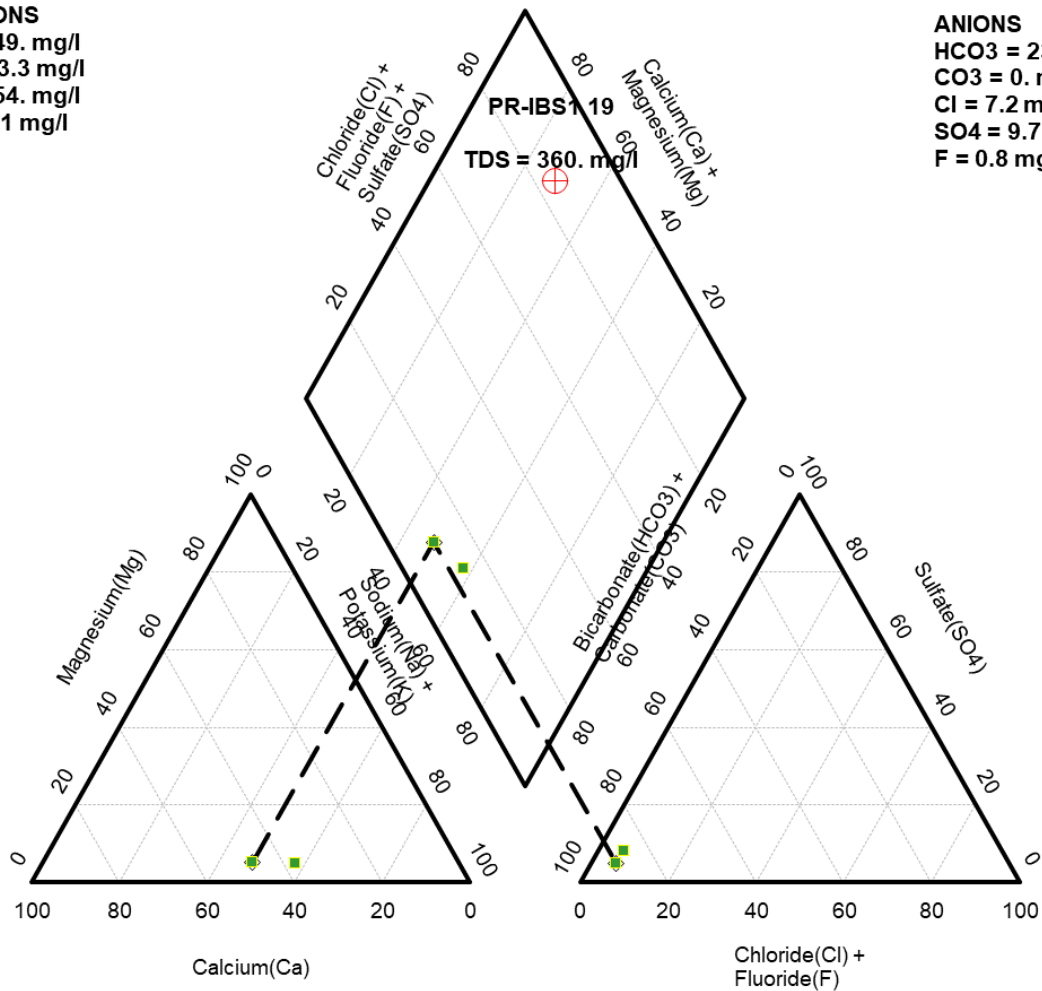
Water Quality Piper Plot – IBS Springs Sample Locations

CATIONS

Ca = 49. mg/l
 Mg = 3.3 mg/l
 Na = 54. mg/l
 K = 5.1 mg/l

ANIONS

HCO₃ = 230. mg/l
 CO₃ = 0. mg/l
 Cl = 7.2 mg/l
 SO₄ = 9.7 mg/l
 F = 0.8 mg/l





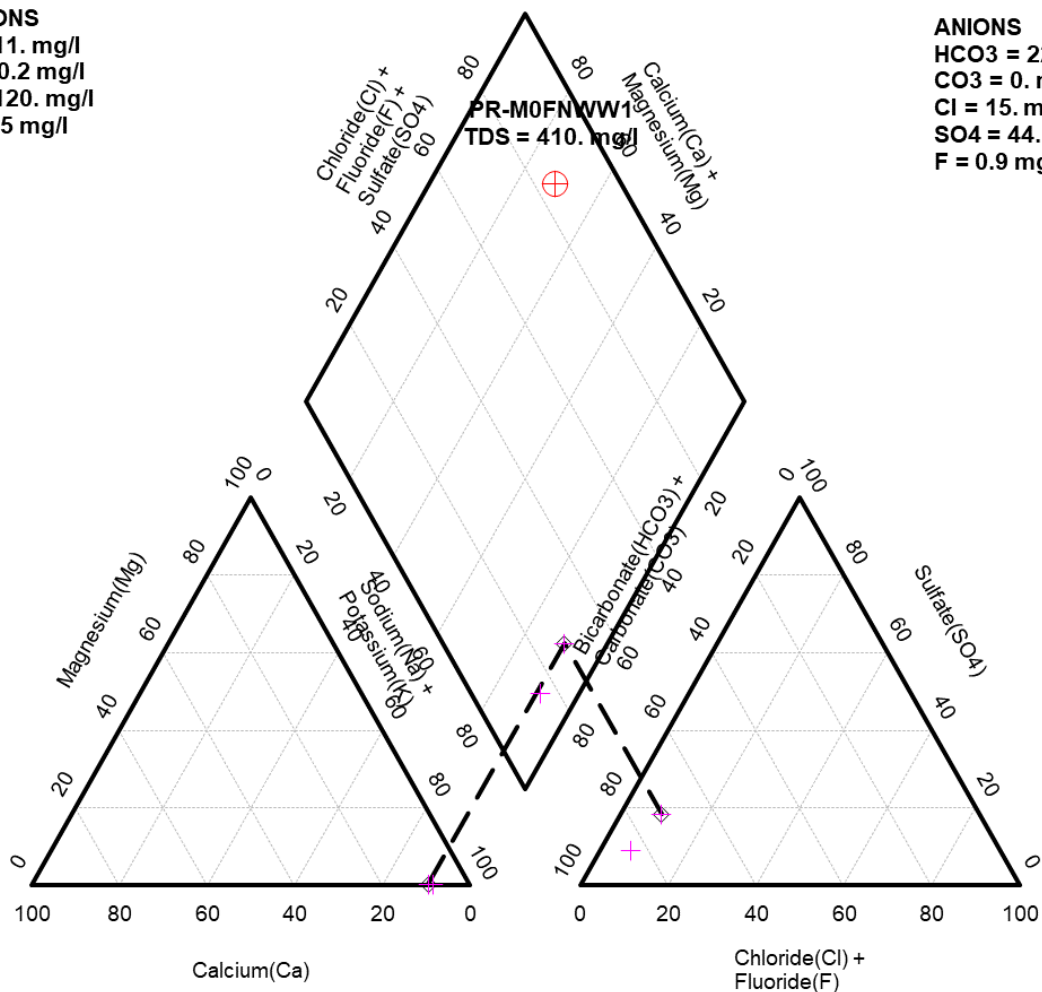
Water Quality Piper Plot – MOFN Wells Sample Locations

CATIONS

Ca = 11. mg/l
 Mg = 0.2 mg/l
 Na = 120. mg/l
 K = 0.5 mg/l

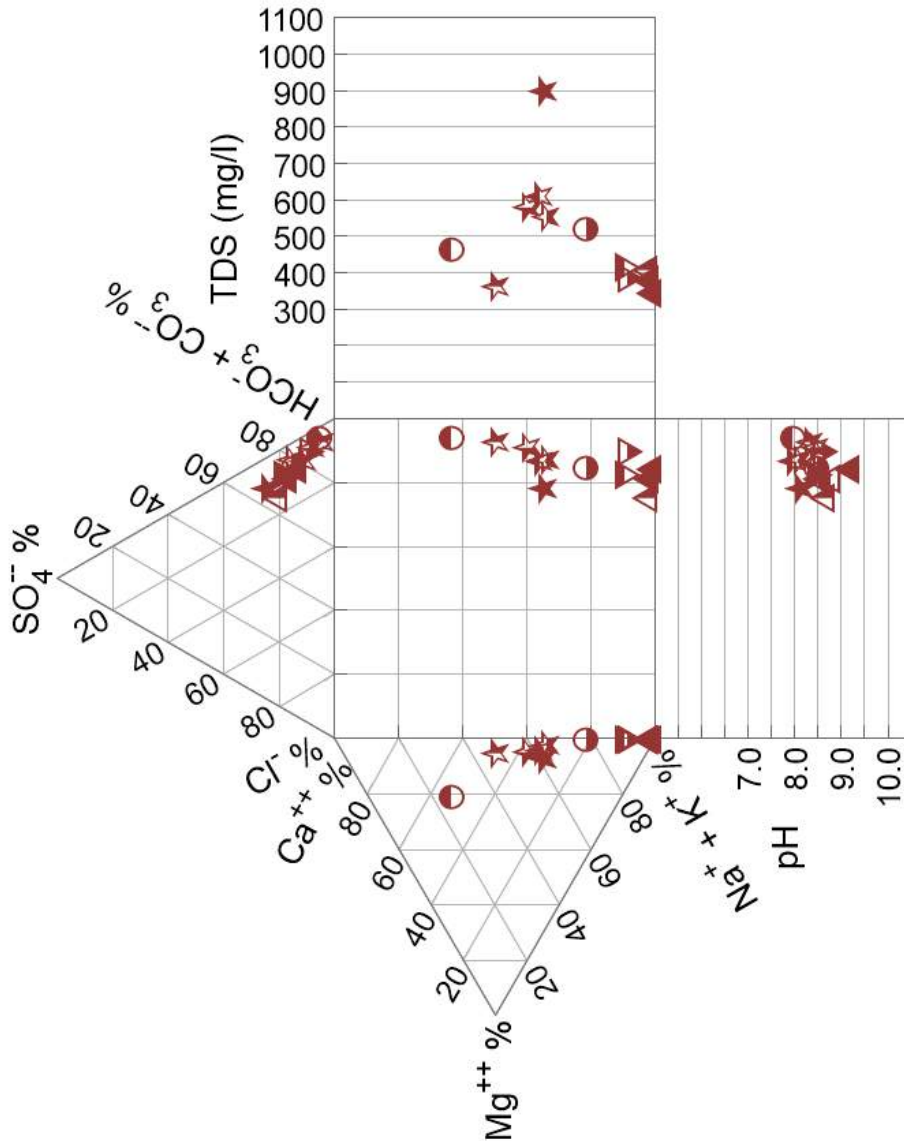
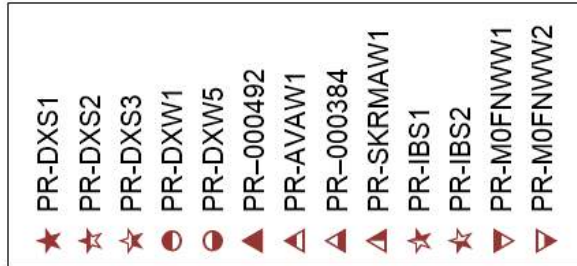
ANIONS

HCO₃ = 220. mg/l
 CO₃ = 0. mg/l
 Cl = 15. mg/l
 SO₄ = 44. mg/l
 F = 0.9 mg/l



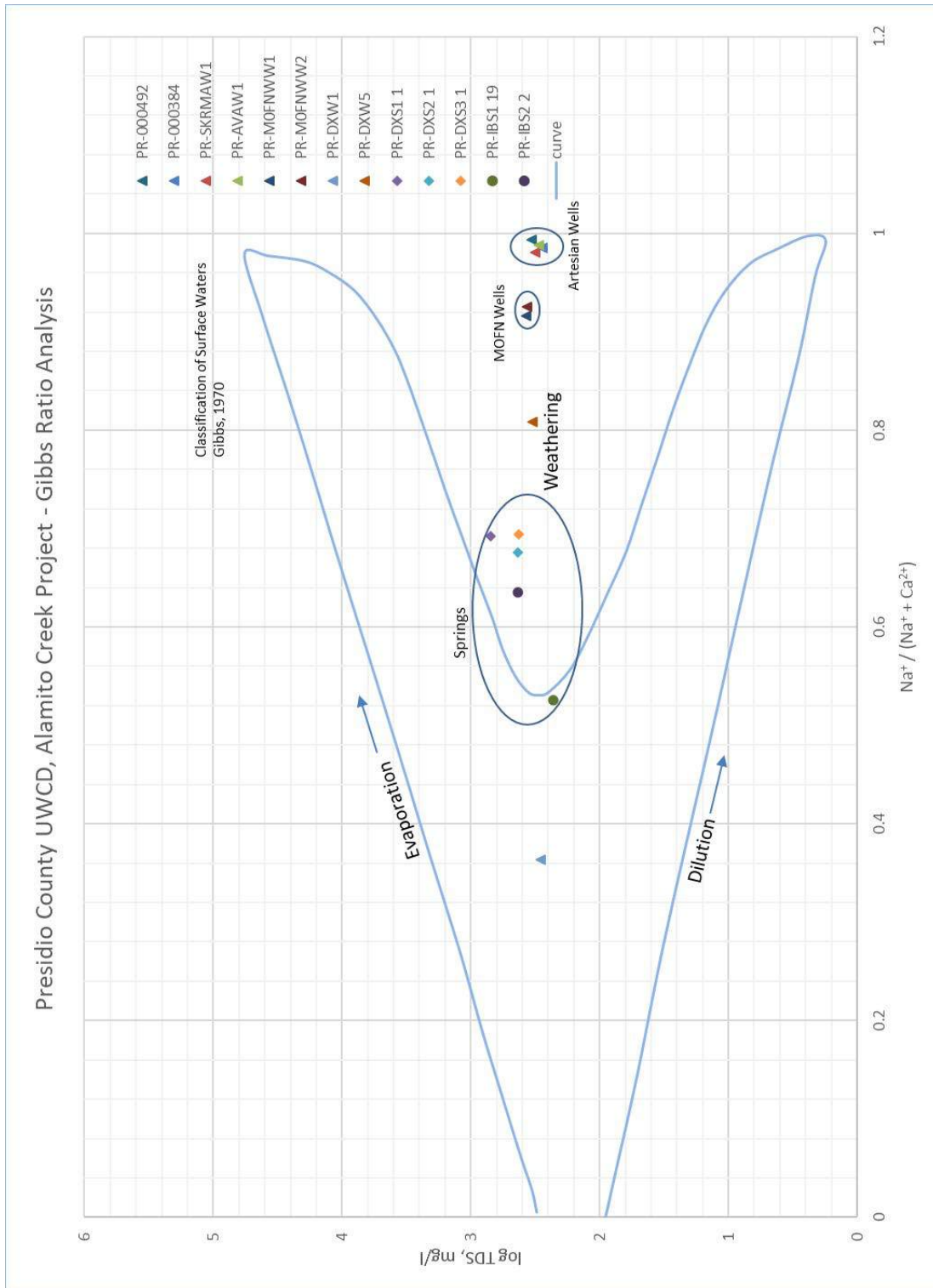


Water Quality Durov Diagram – All Sample Locations



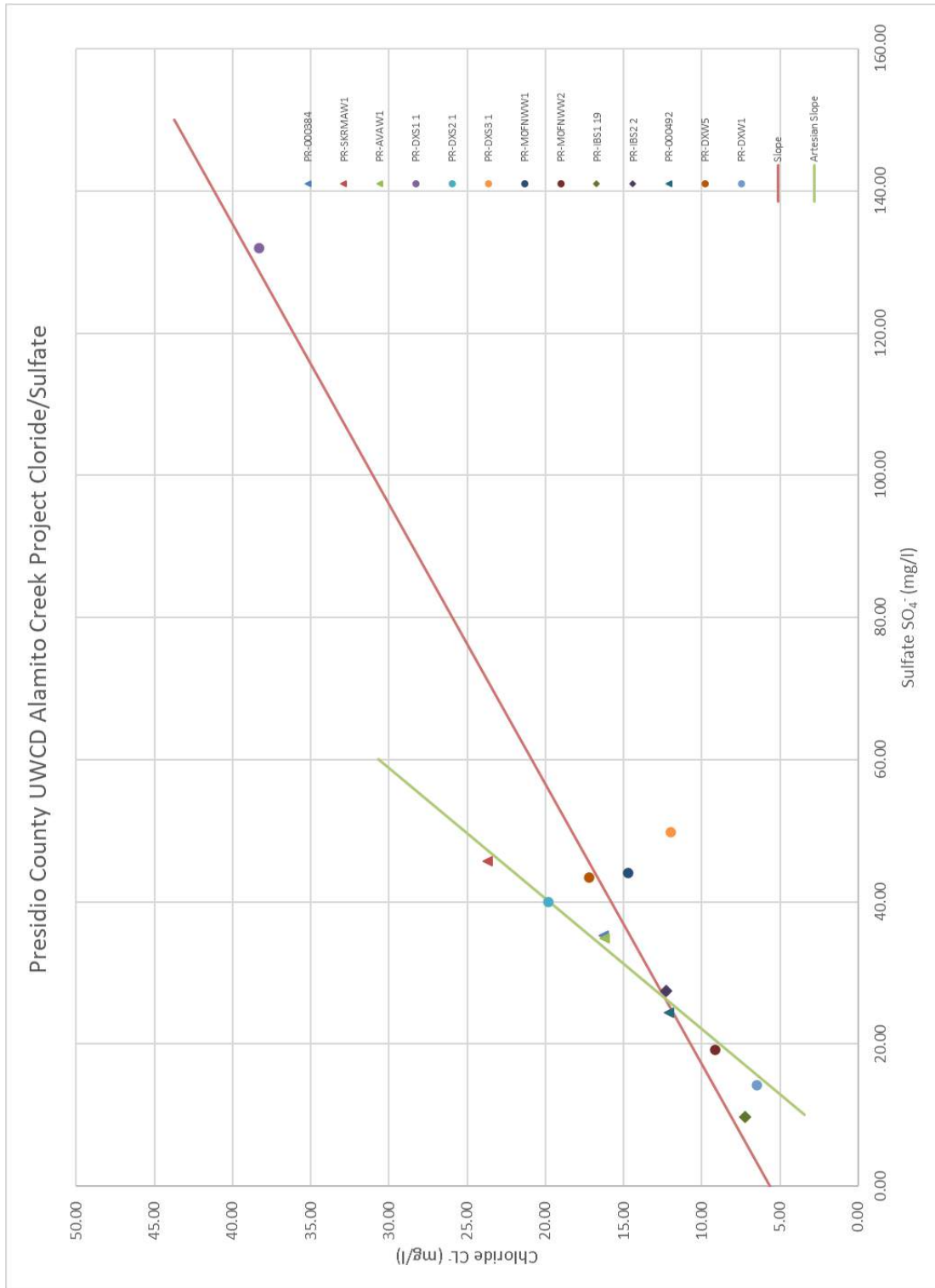


Gibbs Ratio Analysis



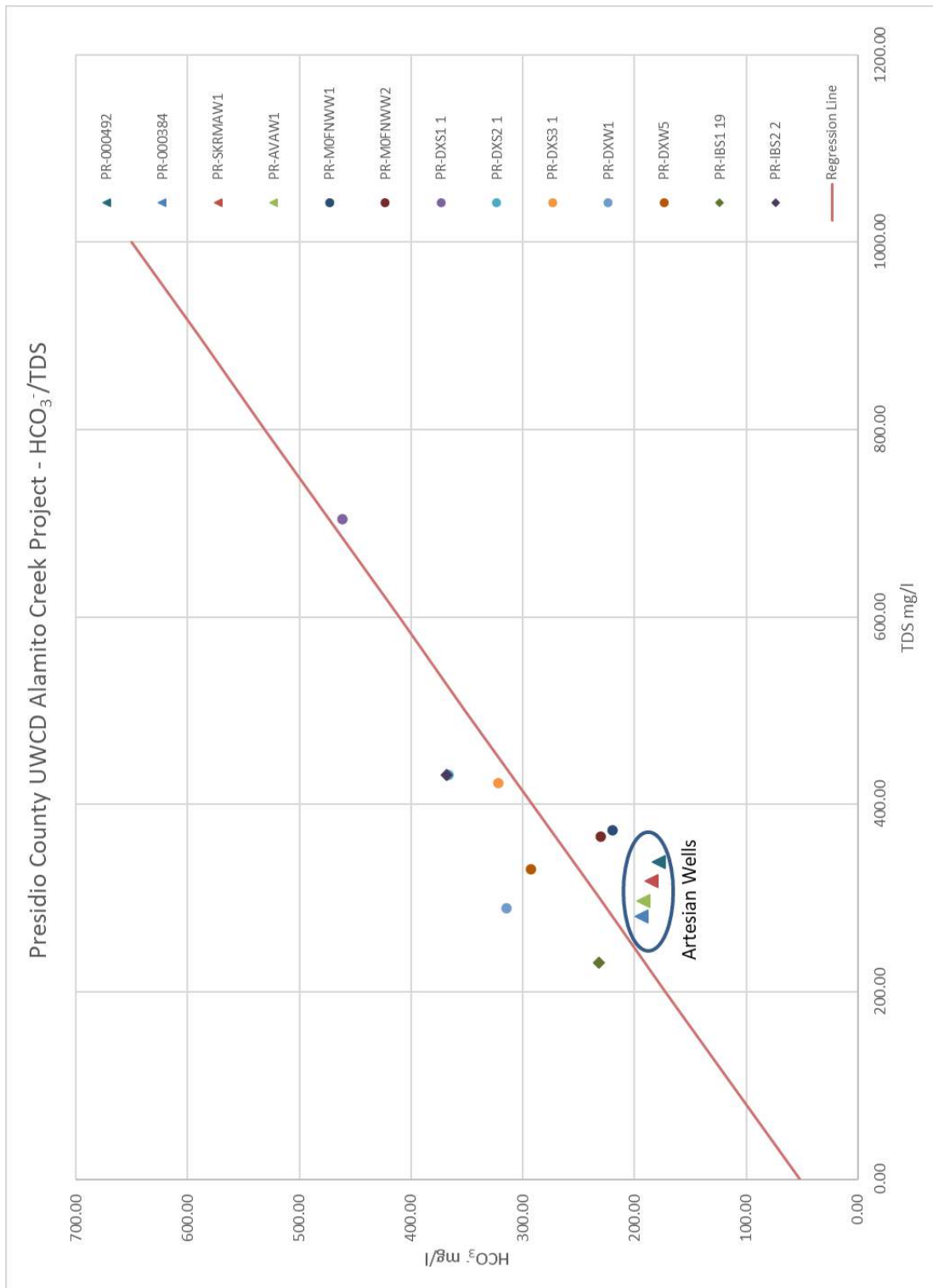


Chloride/Sulfate Ratio Plot



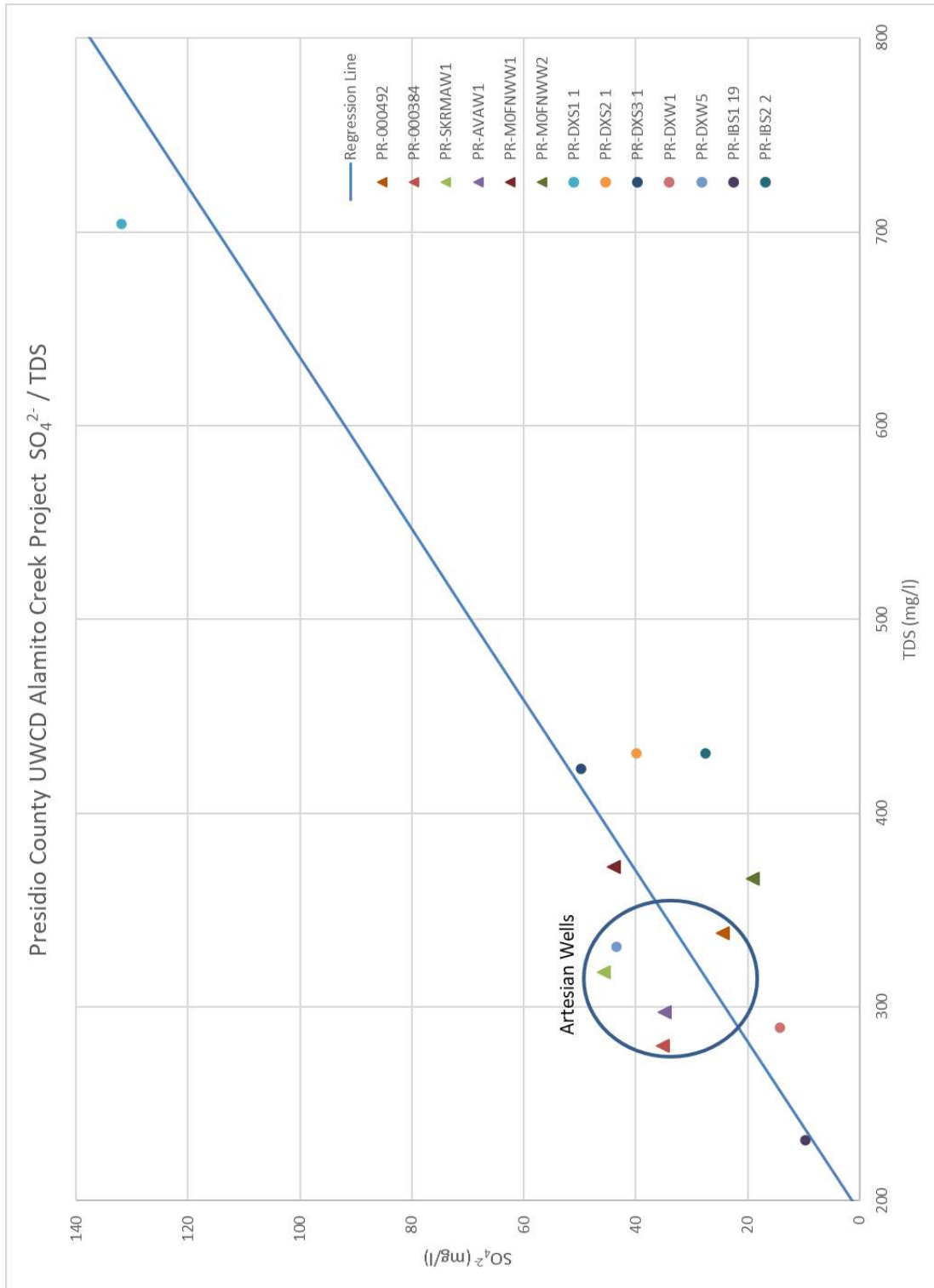


HCO₃⁻/TDS Ratio Plot



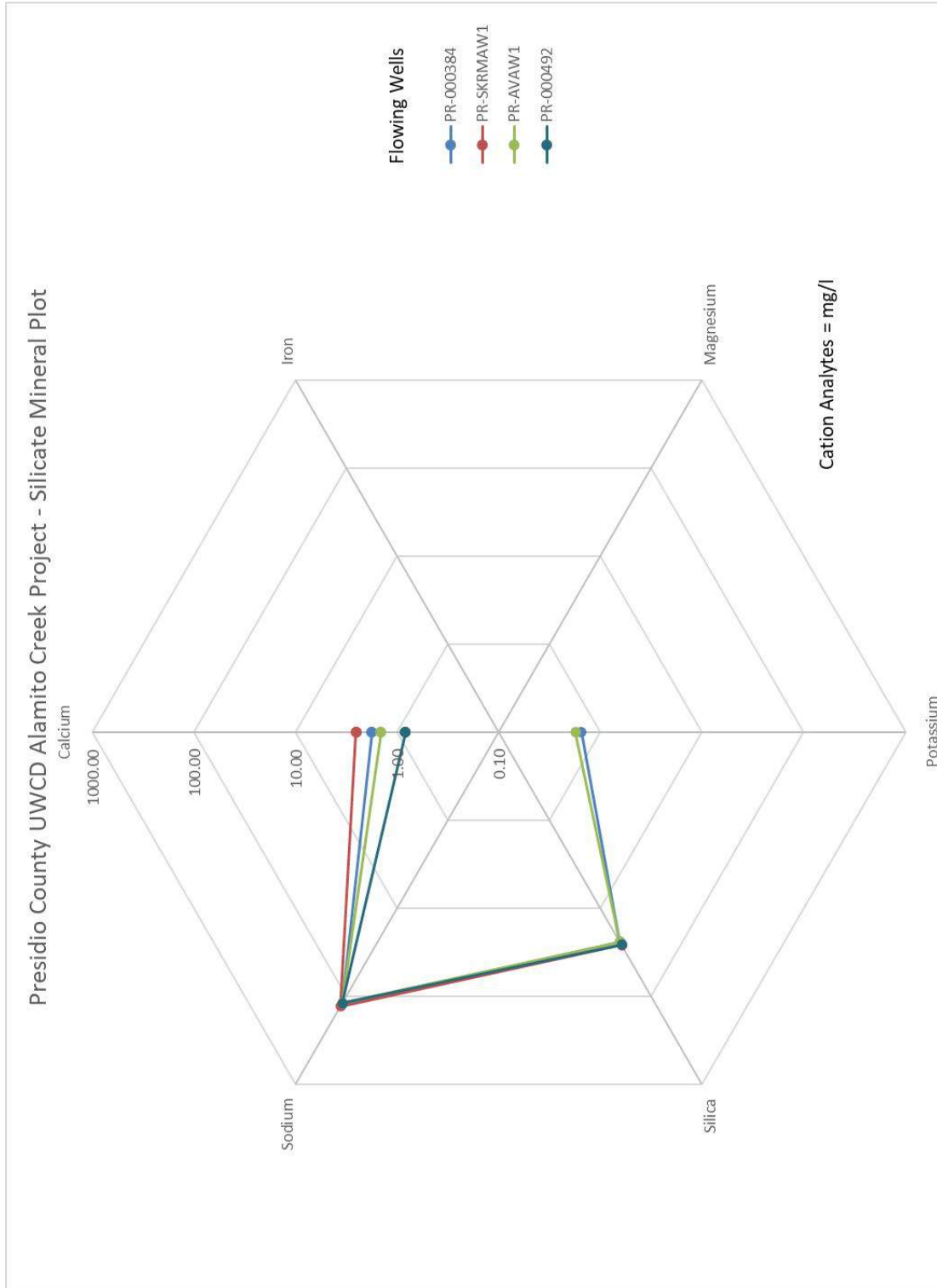


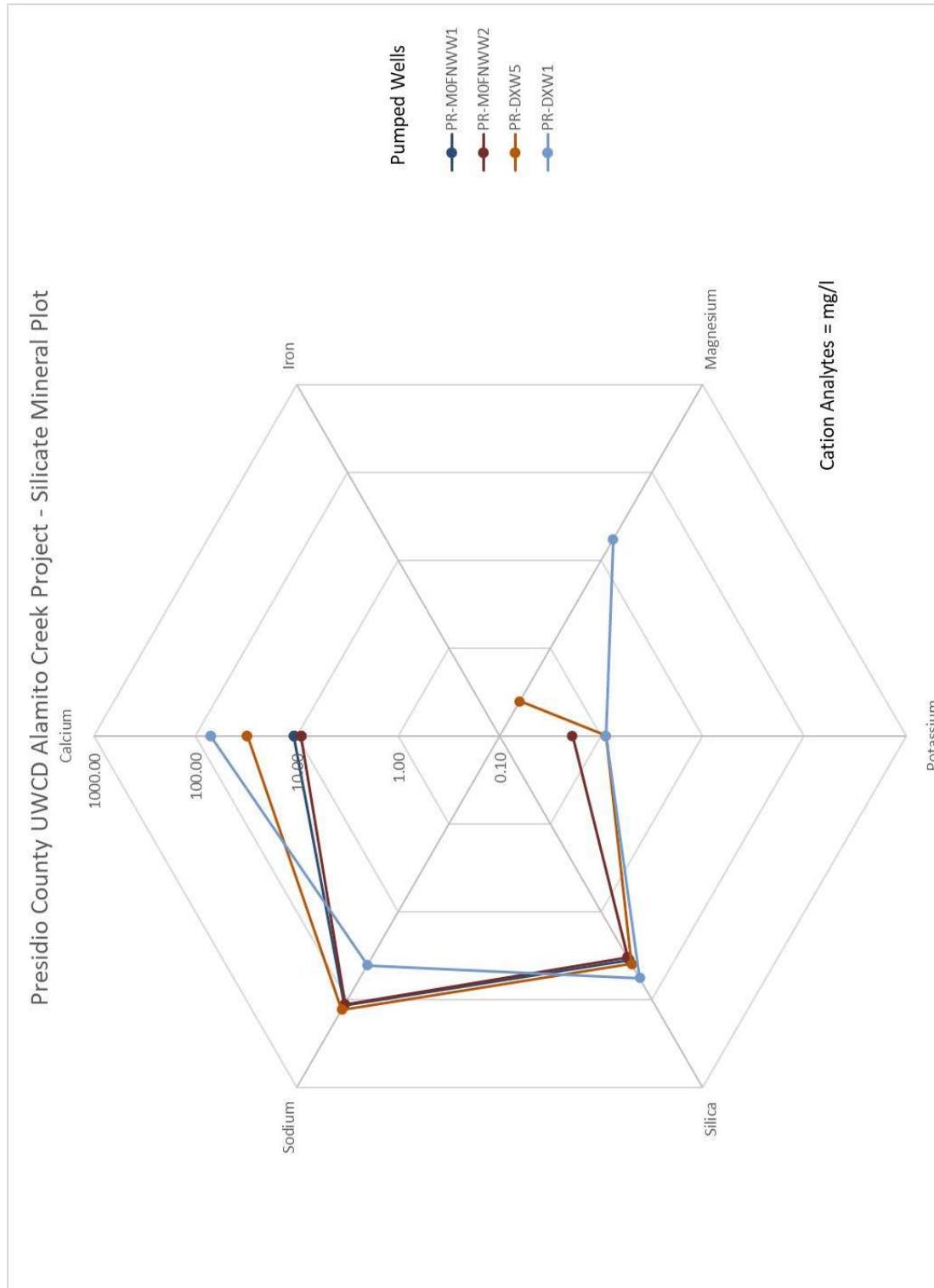
SO₄²⁻ / TDS Ratio Plot





Silicate Mineral Plot

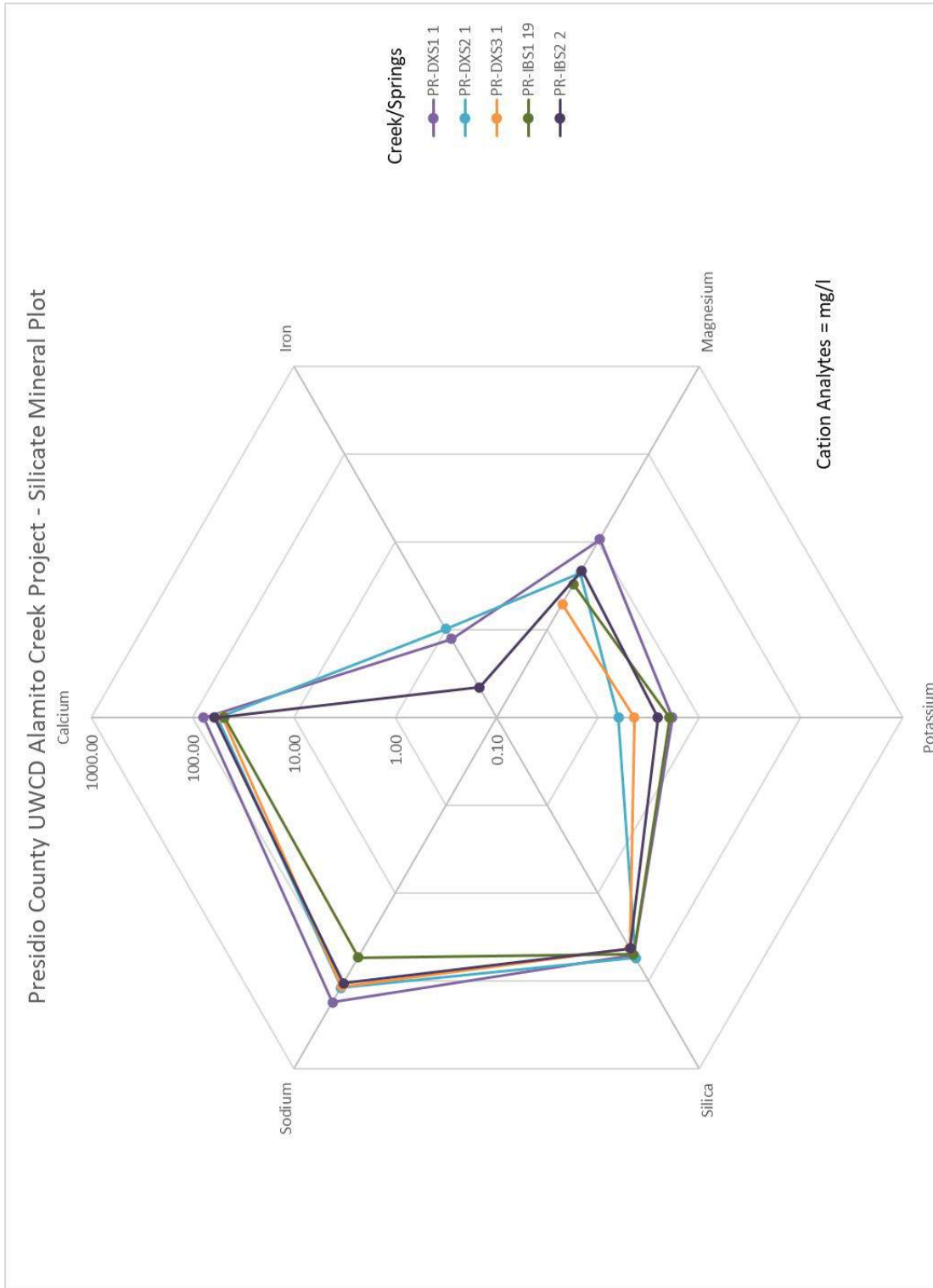






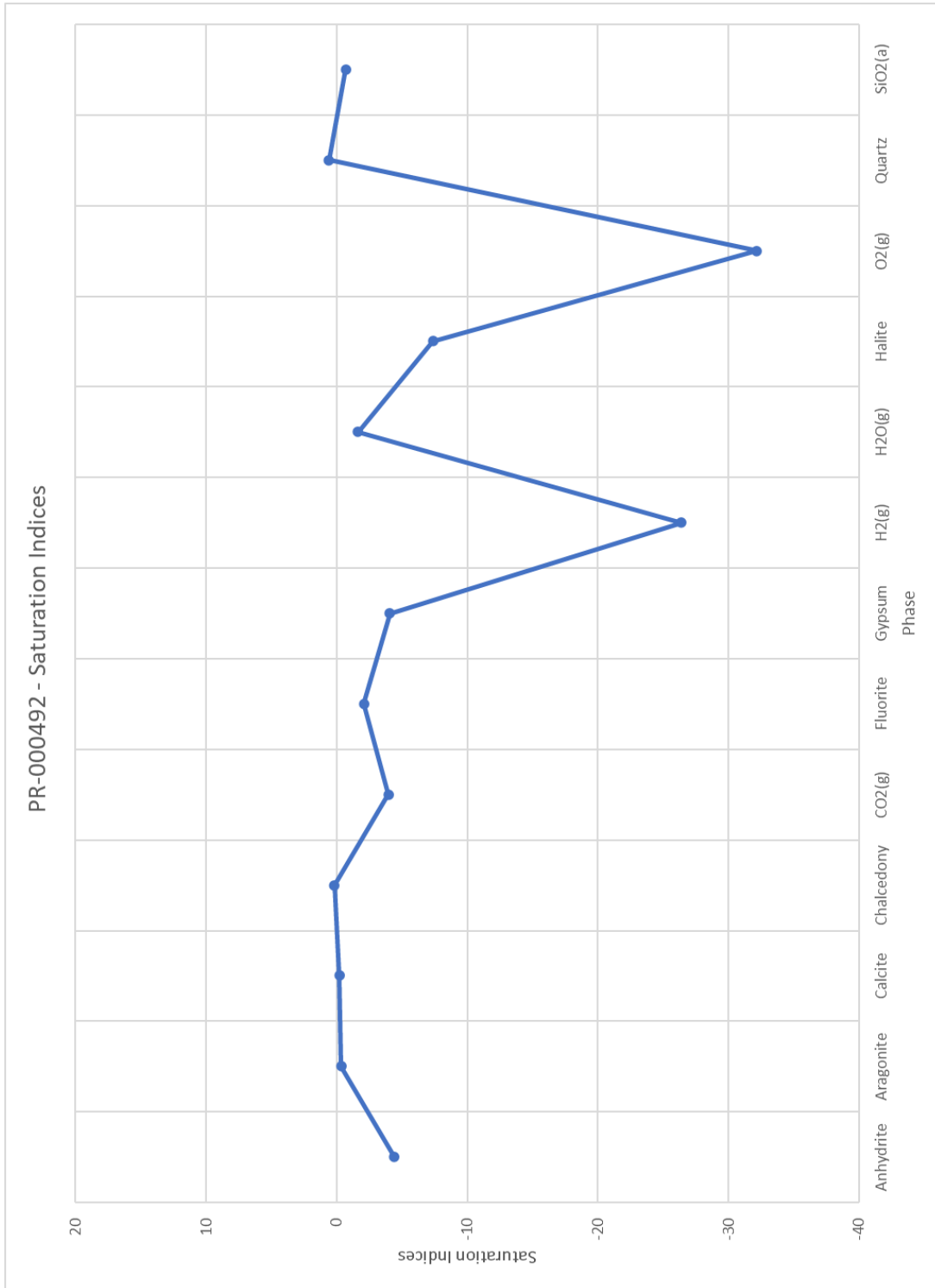
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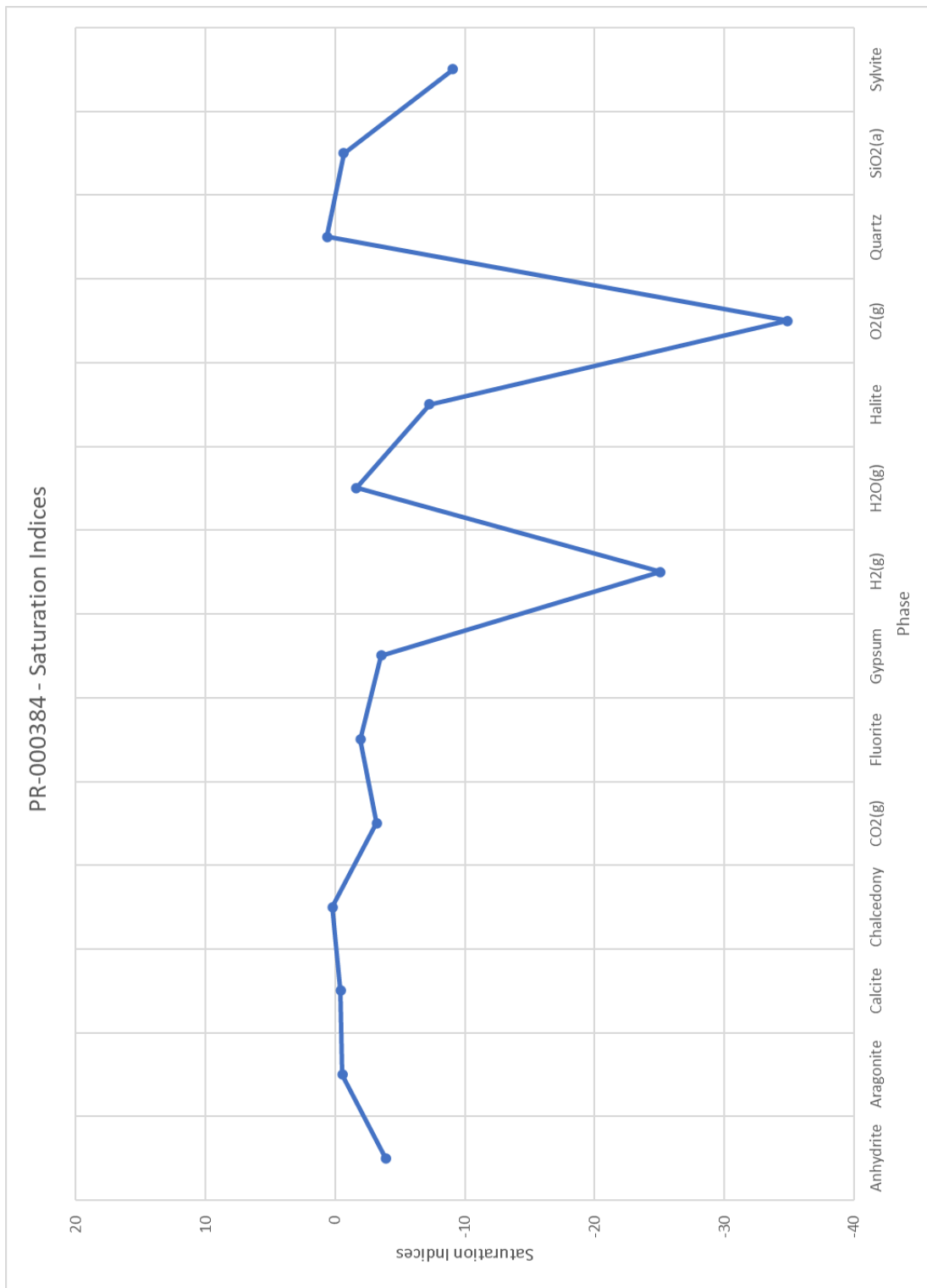
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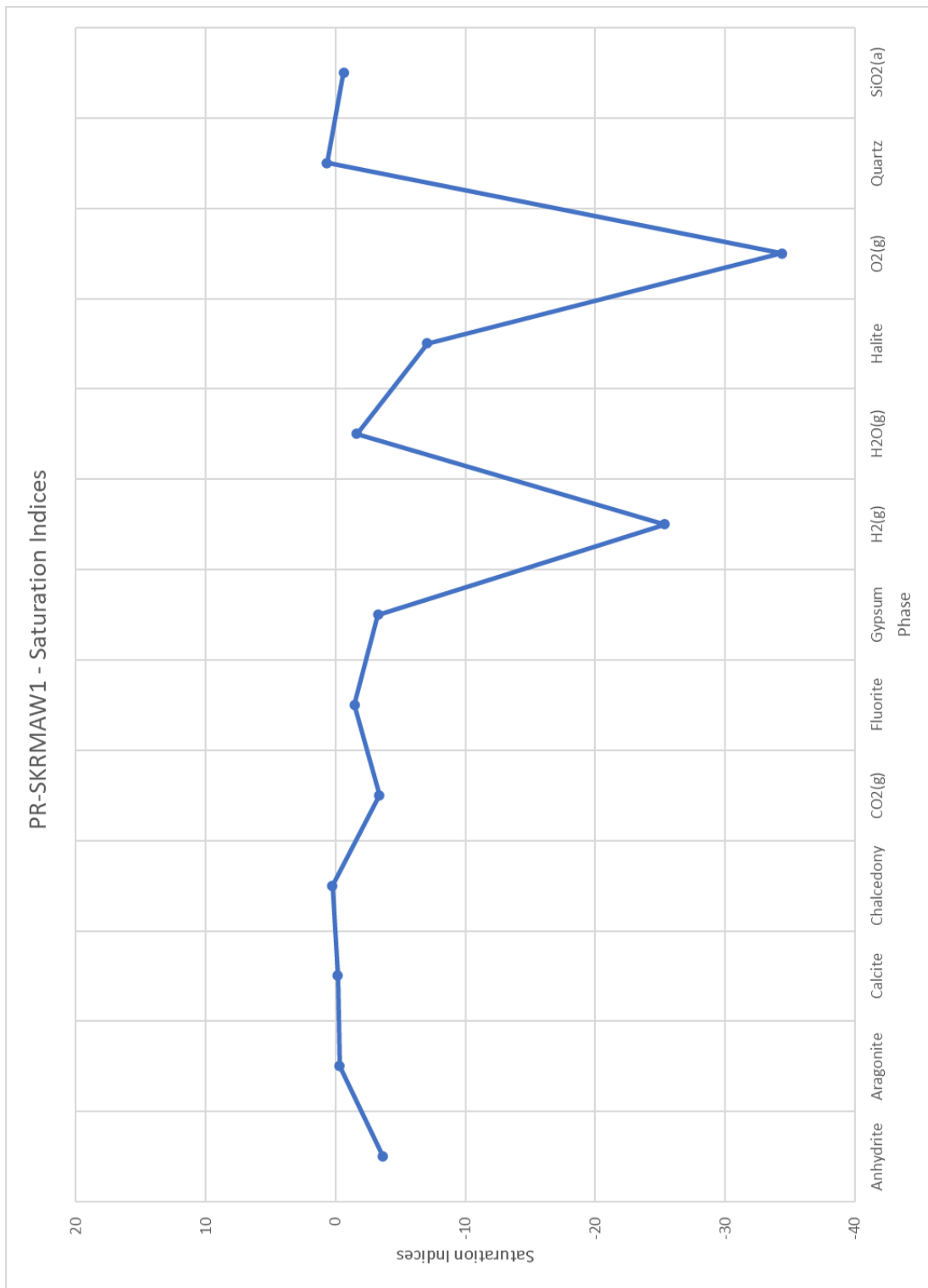


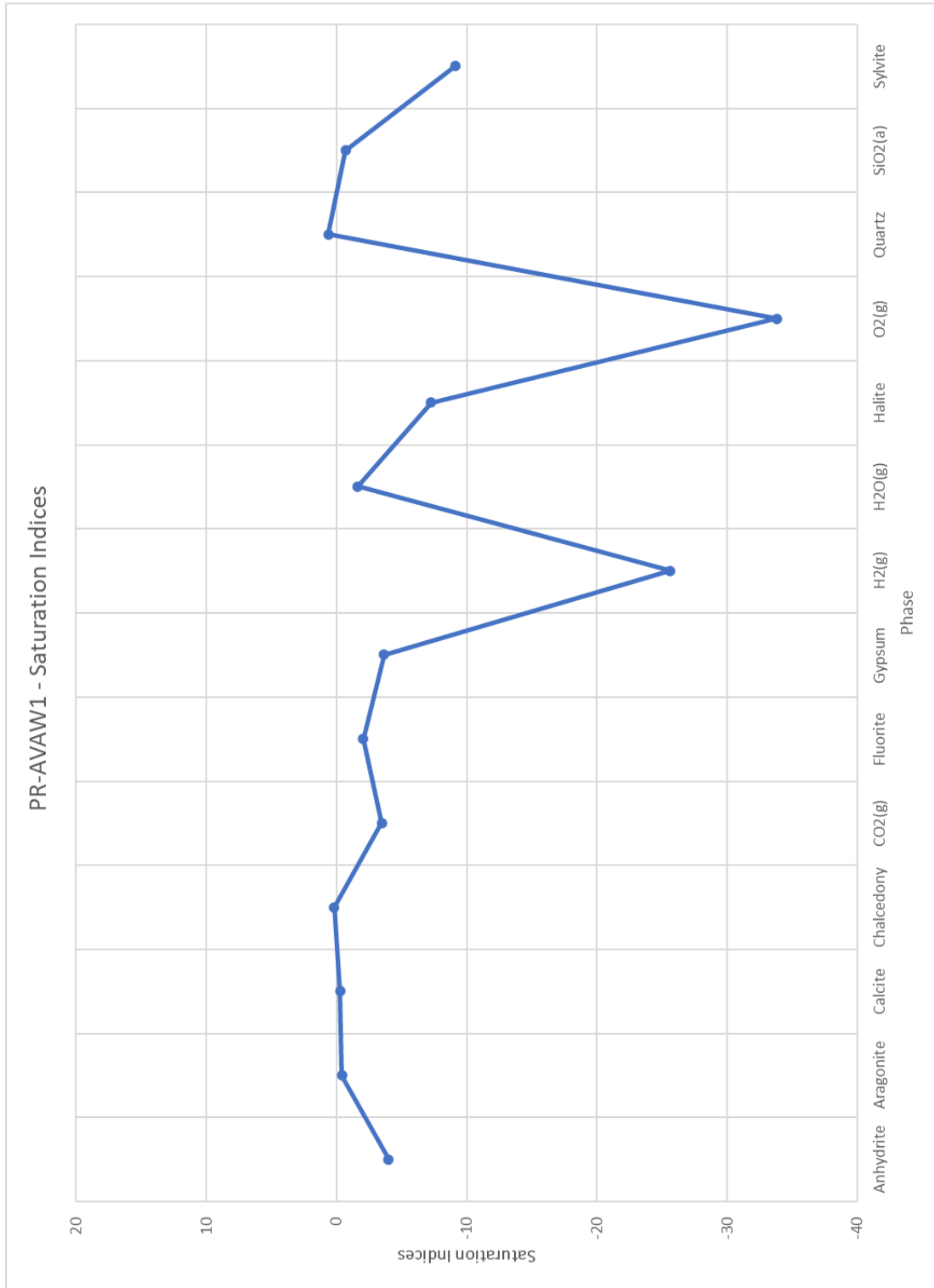


Saturation Indices Plots
Flowing Wells



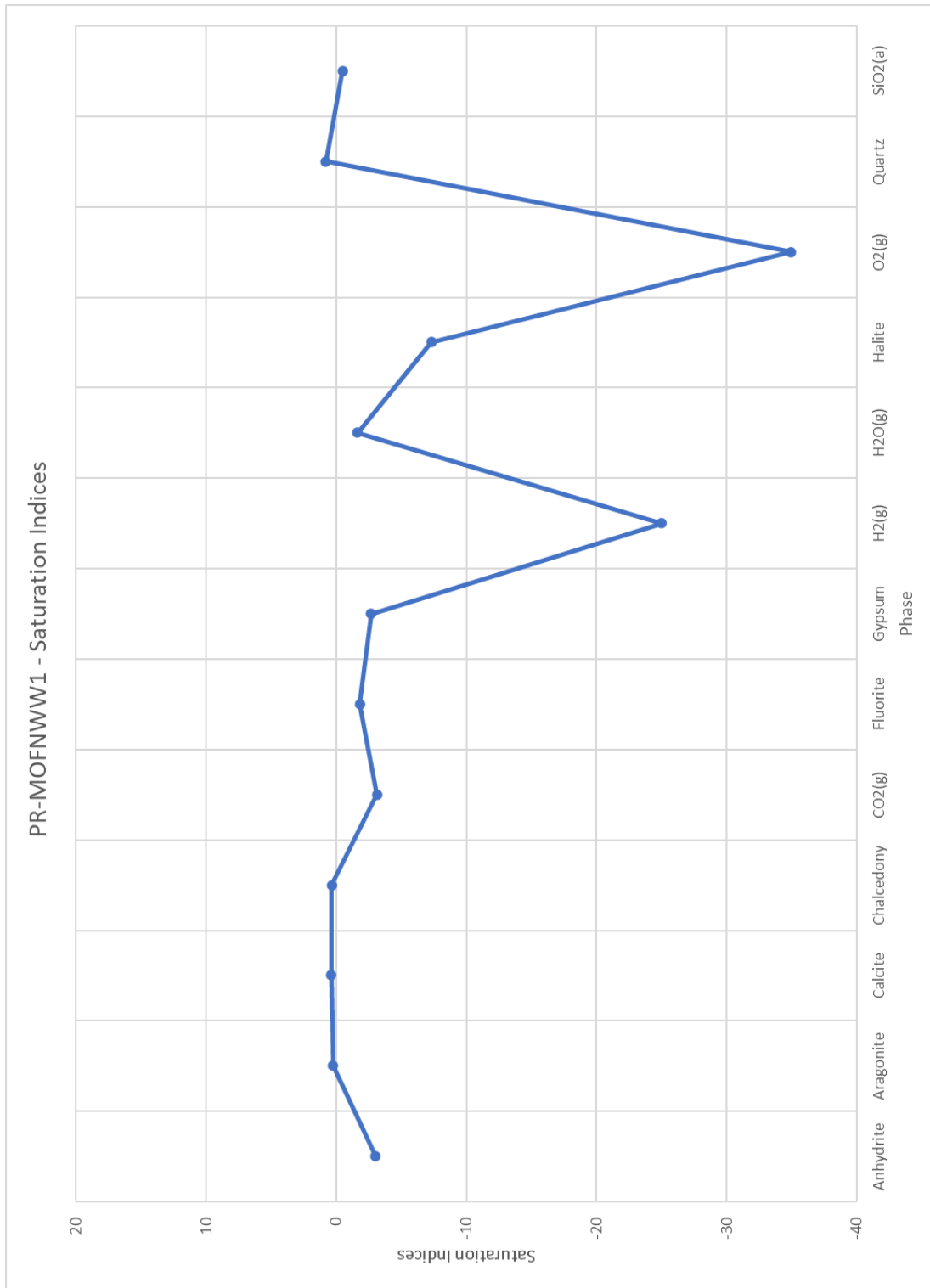


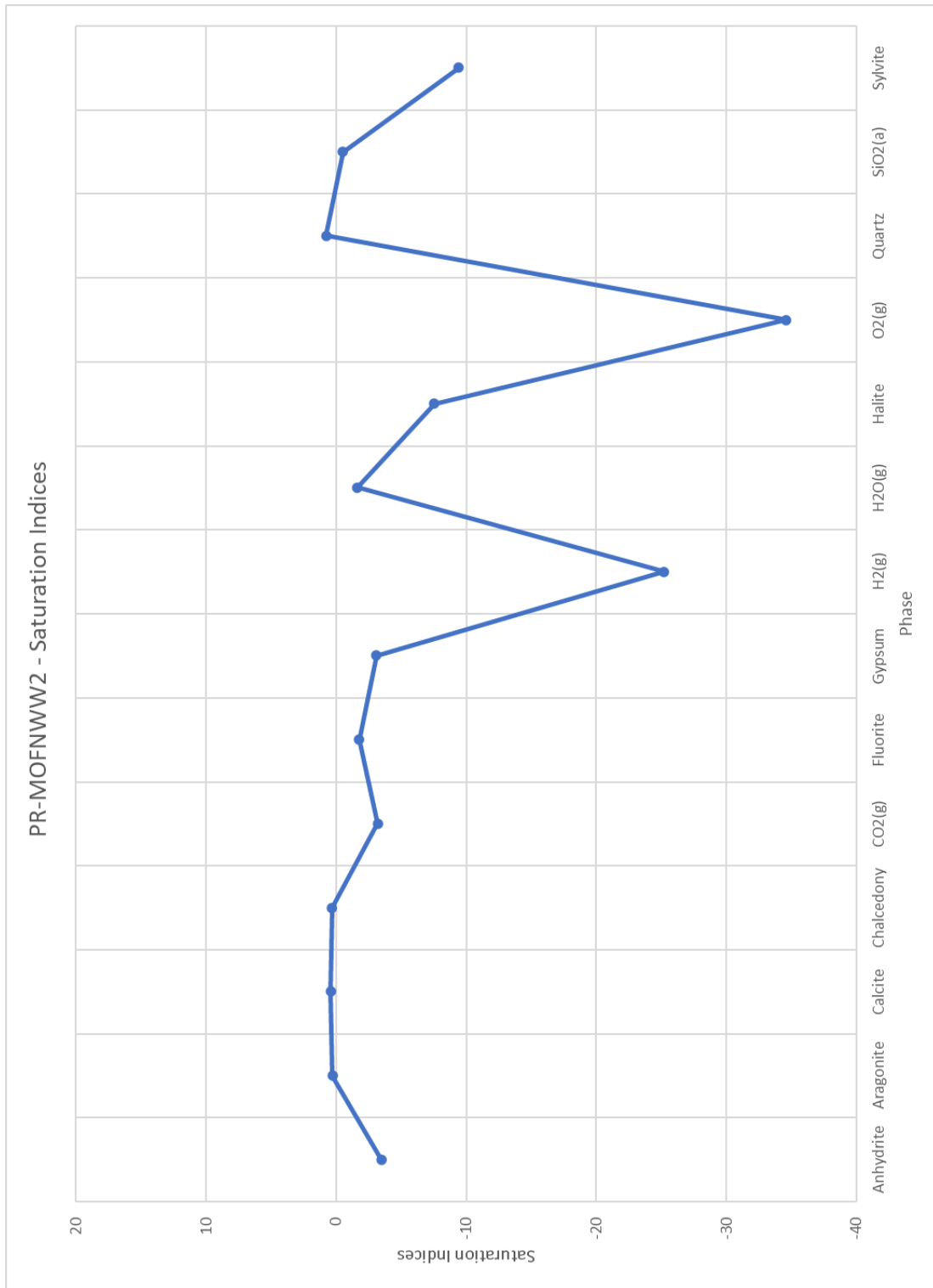






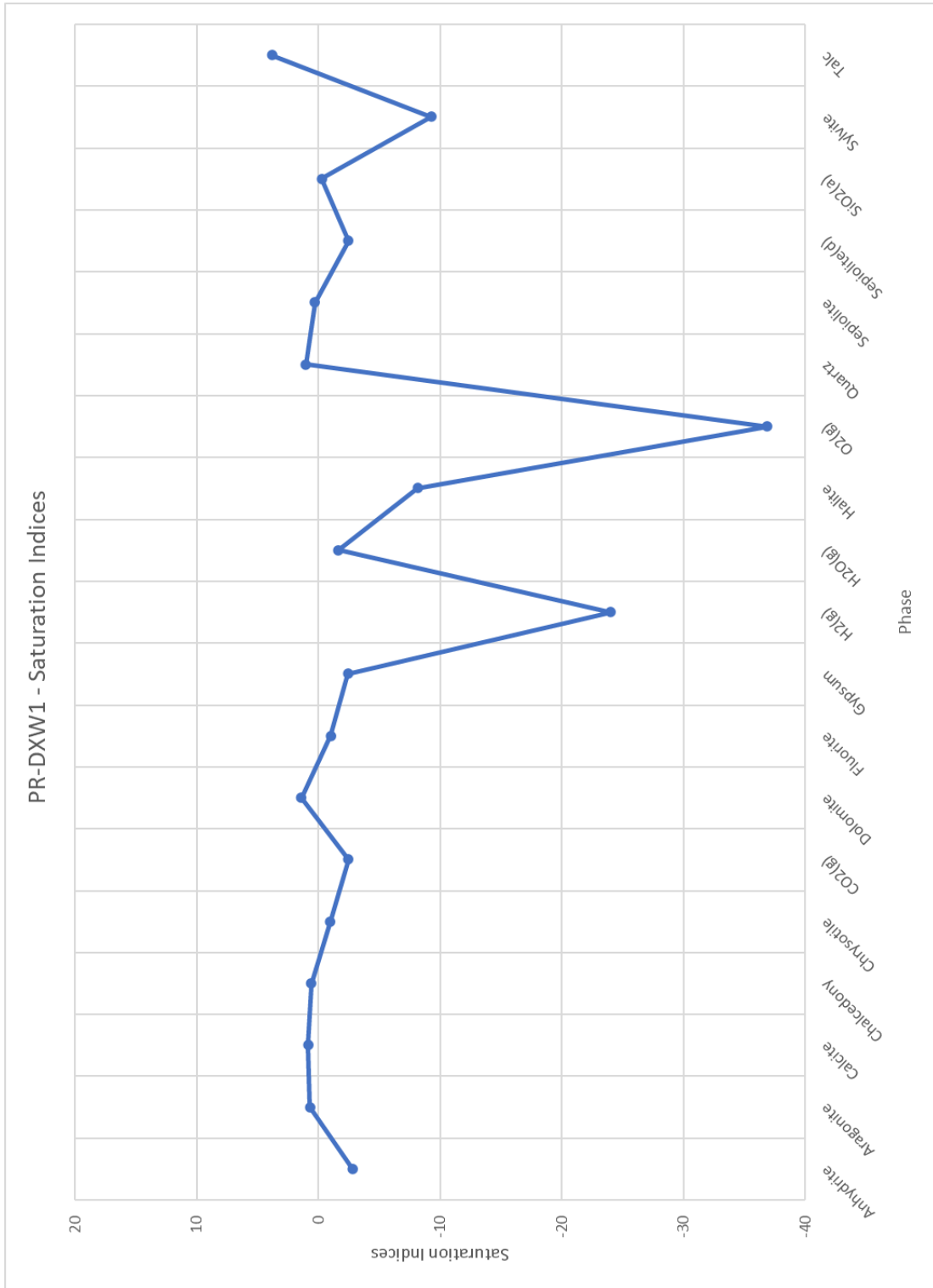
MOFN Wells







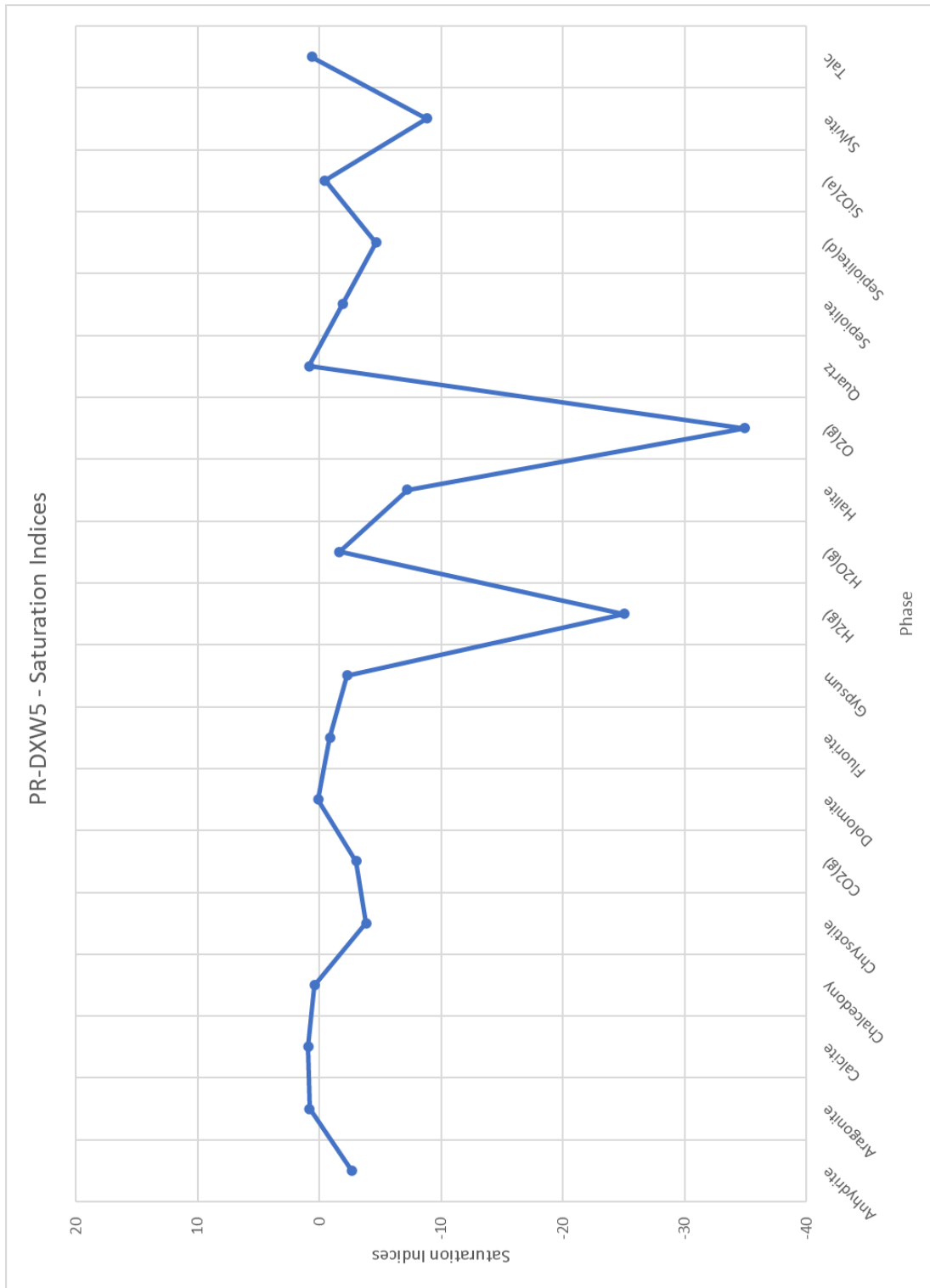
Dixon Wells





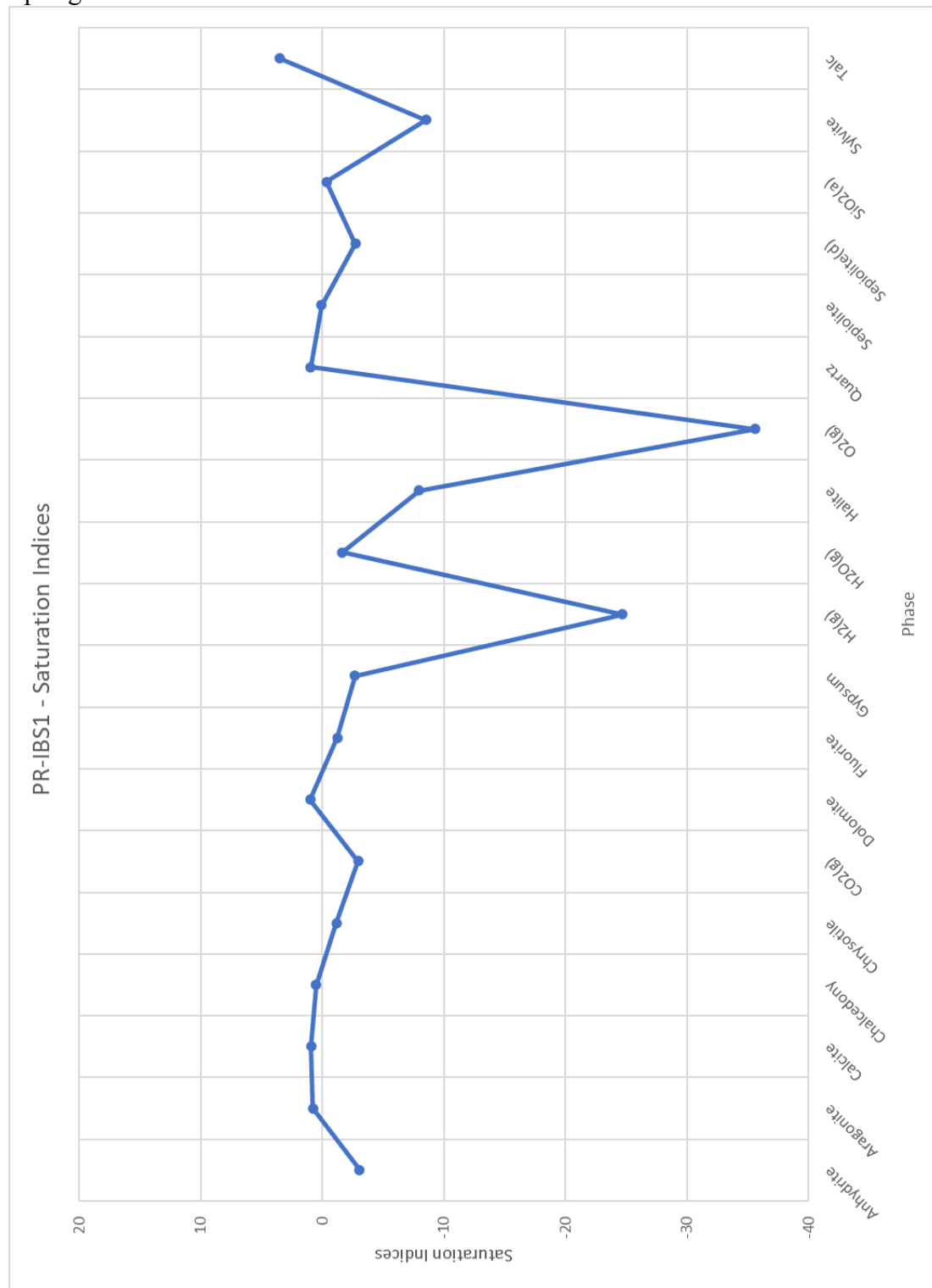
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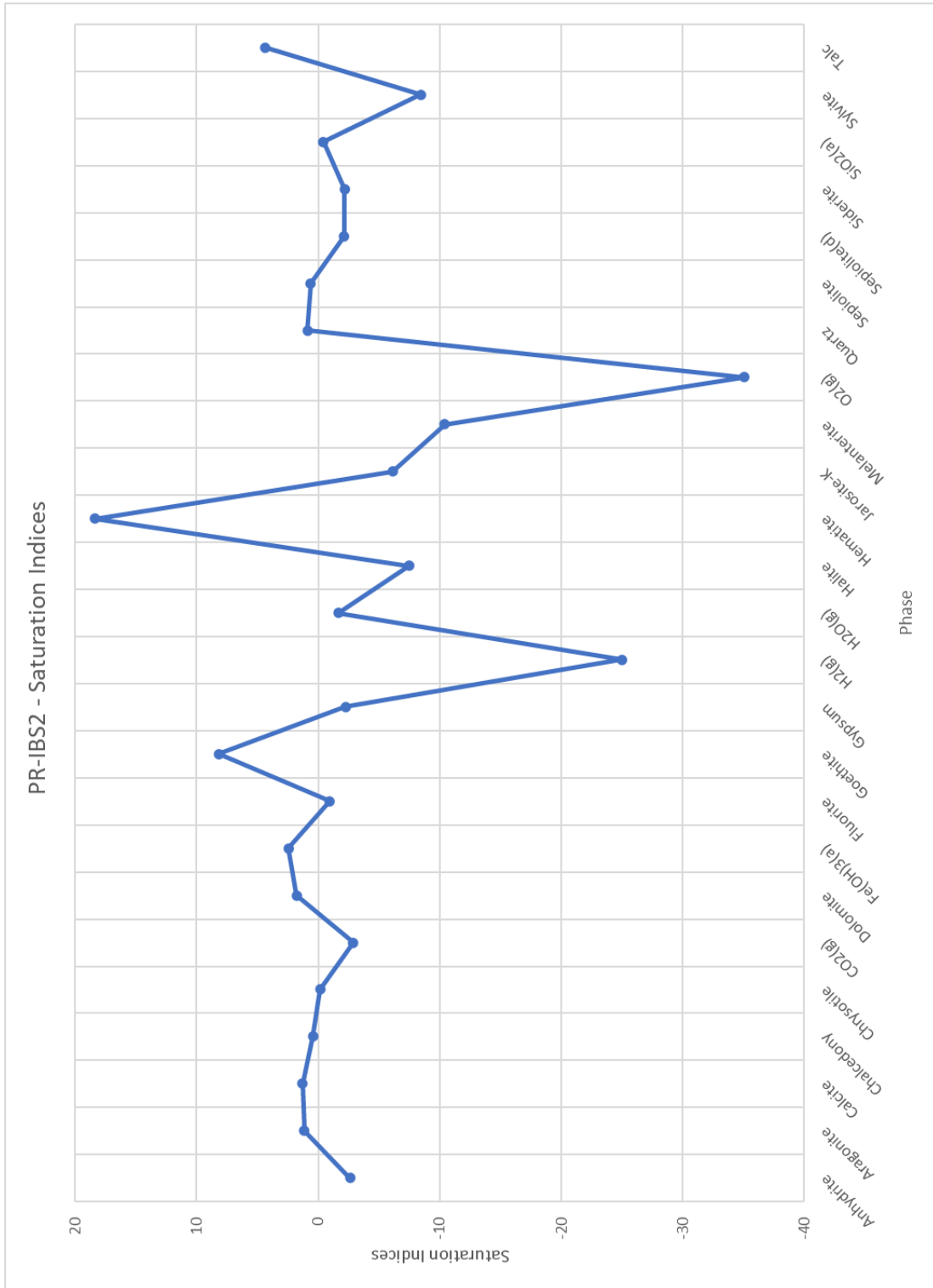
Springs/Creek





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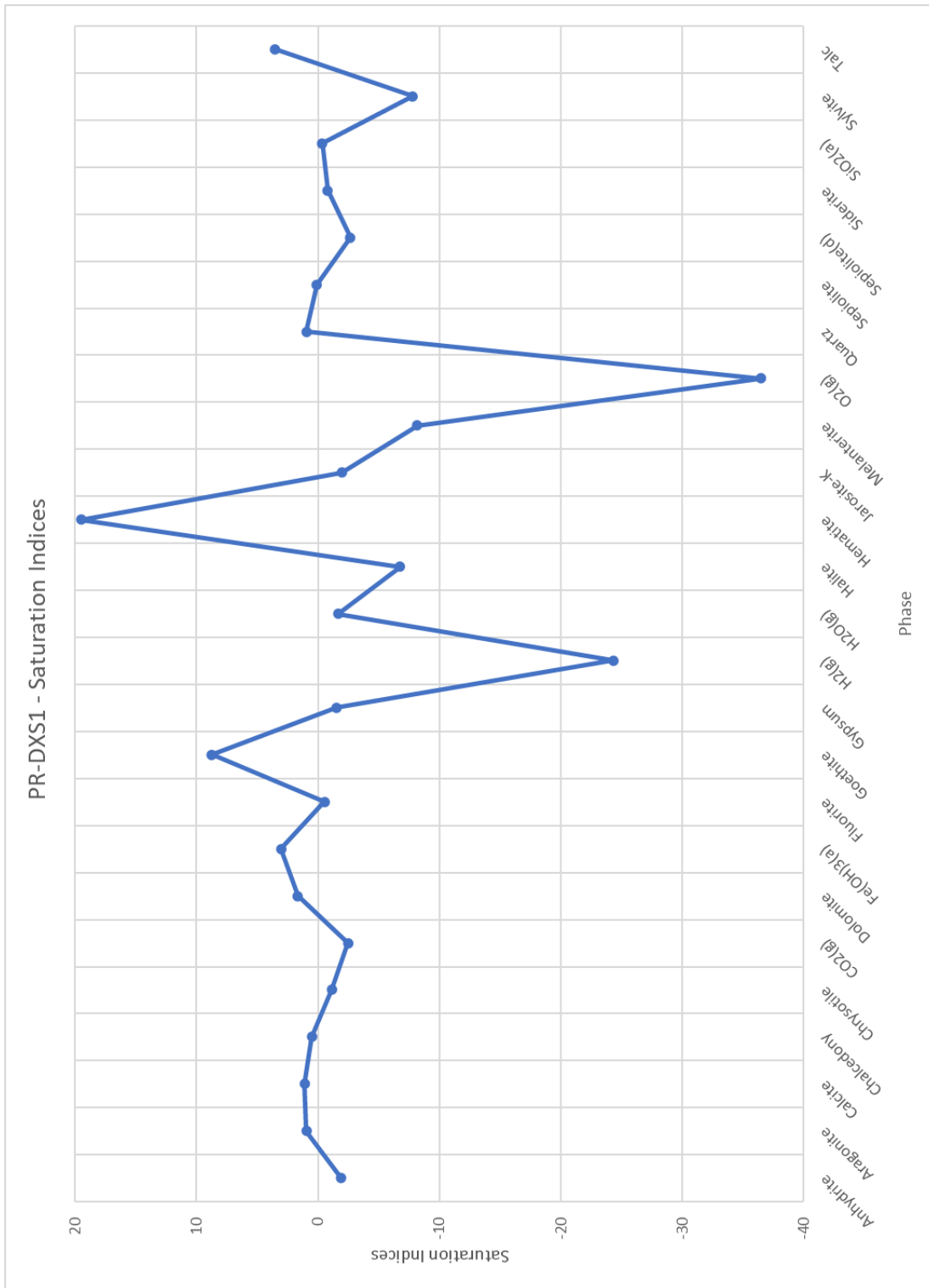
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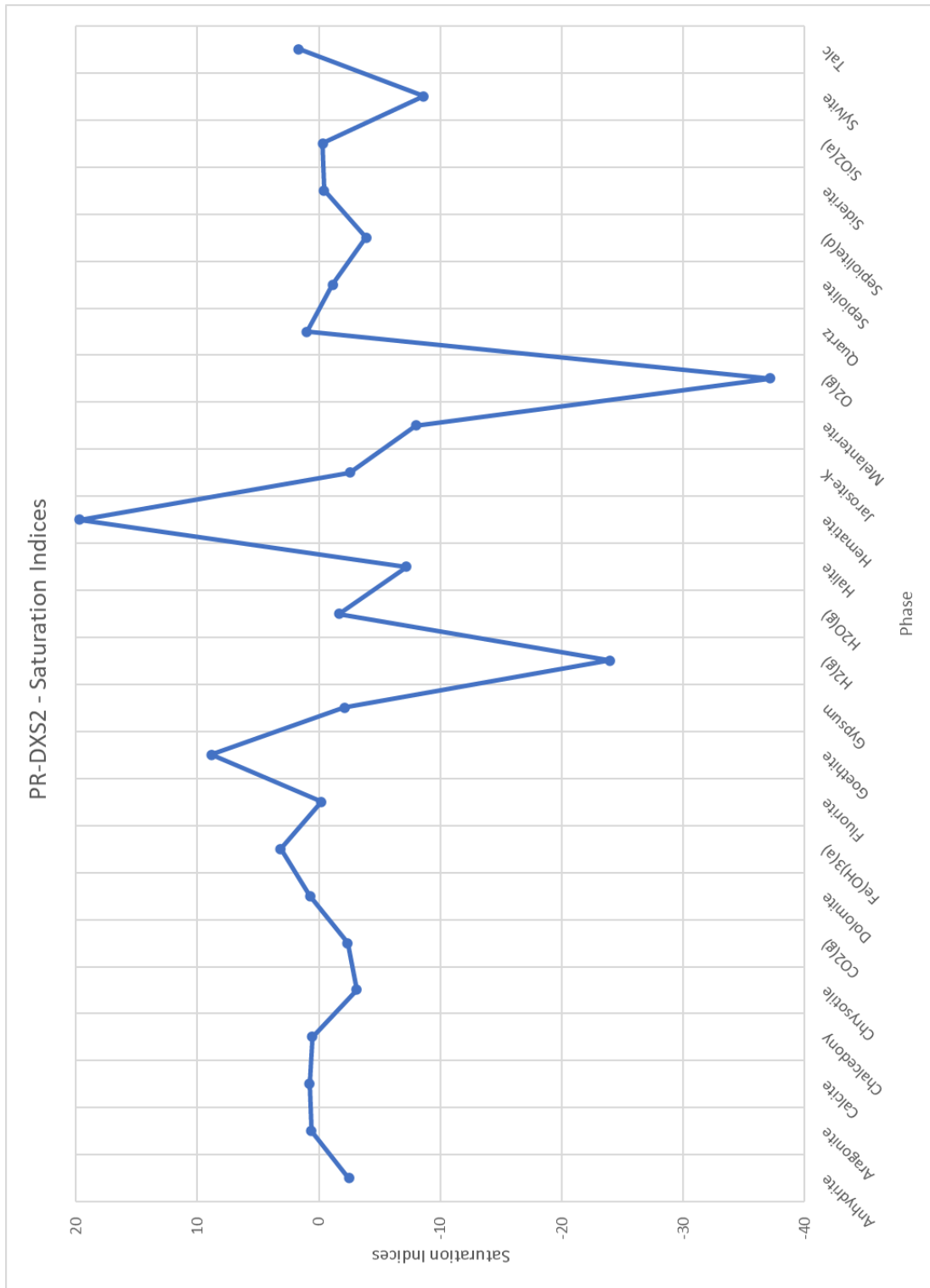
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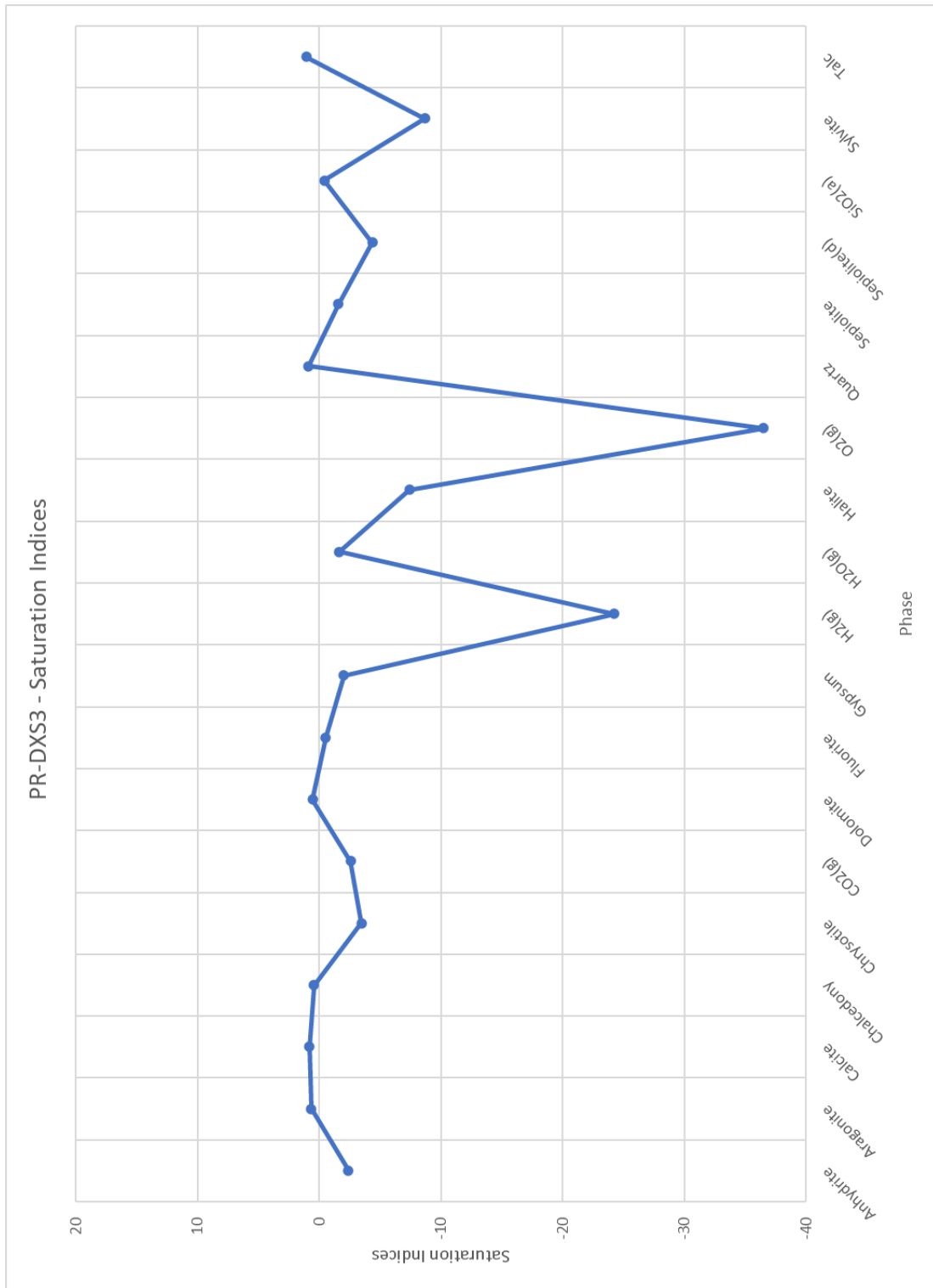
P.O. Box 192, Stanton, Texas 79782 (432) 756-3489





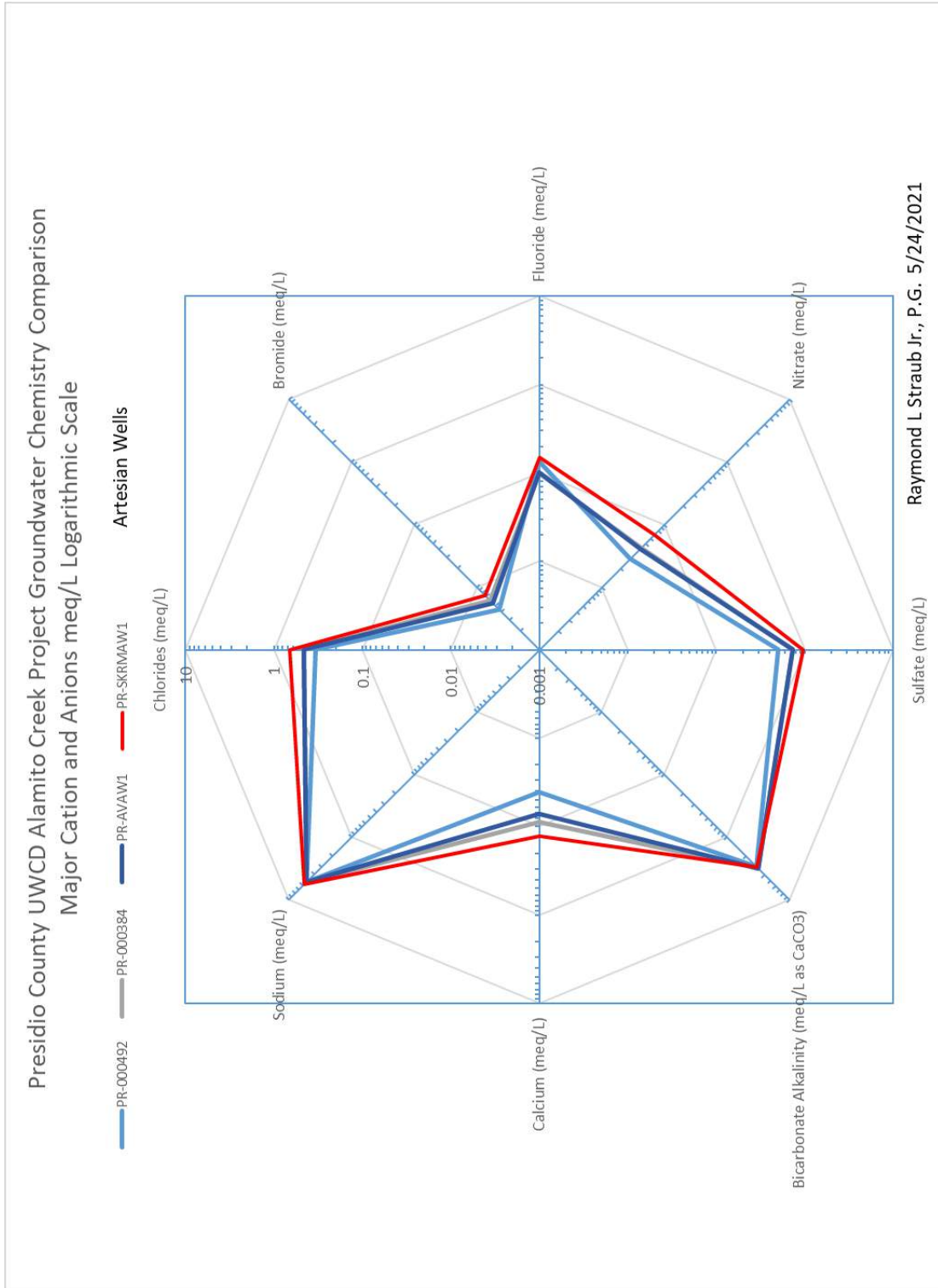
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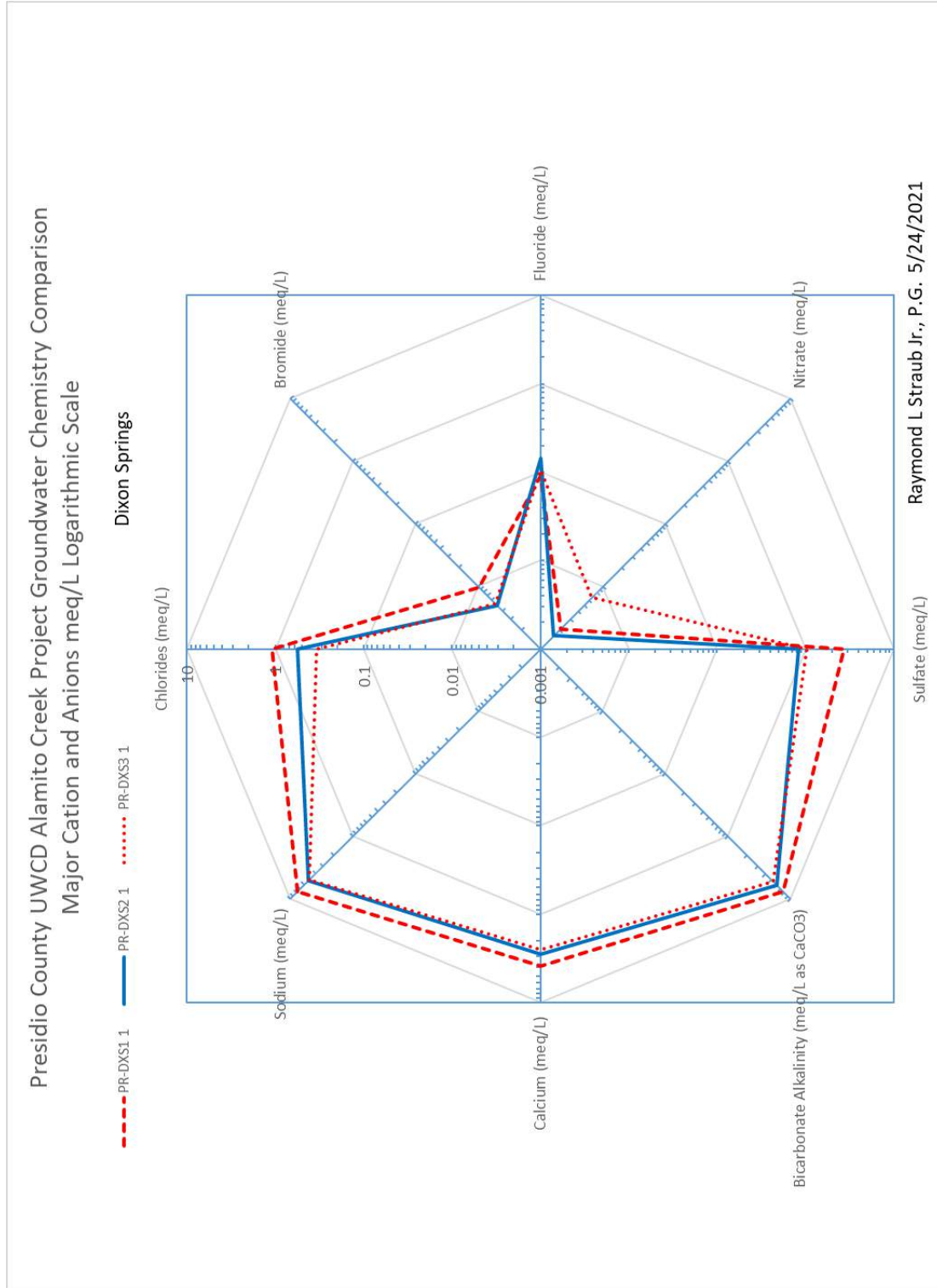


Water Quality Radial Plot – Artesian Wells



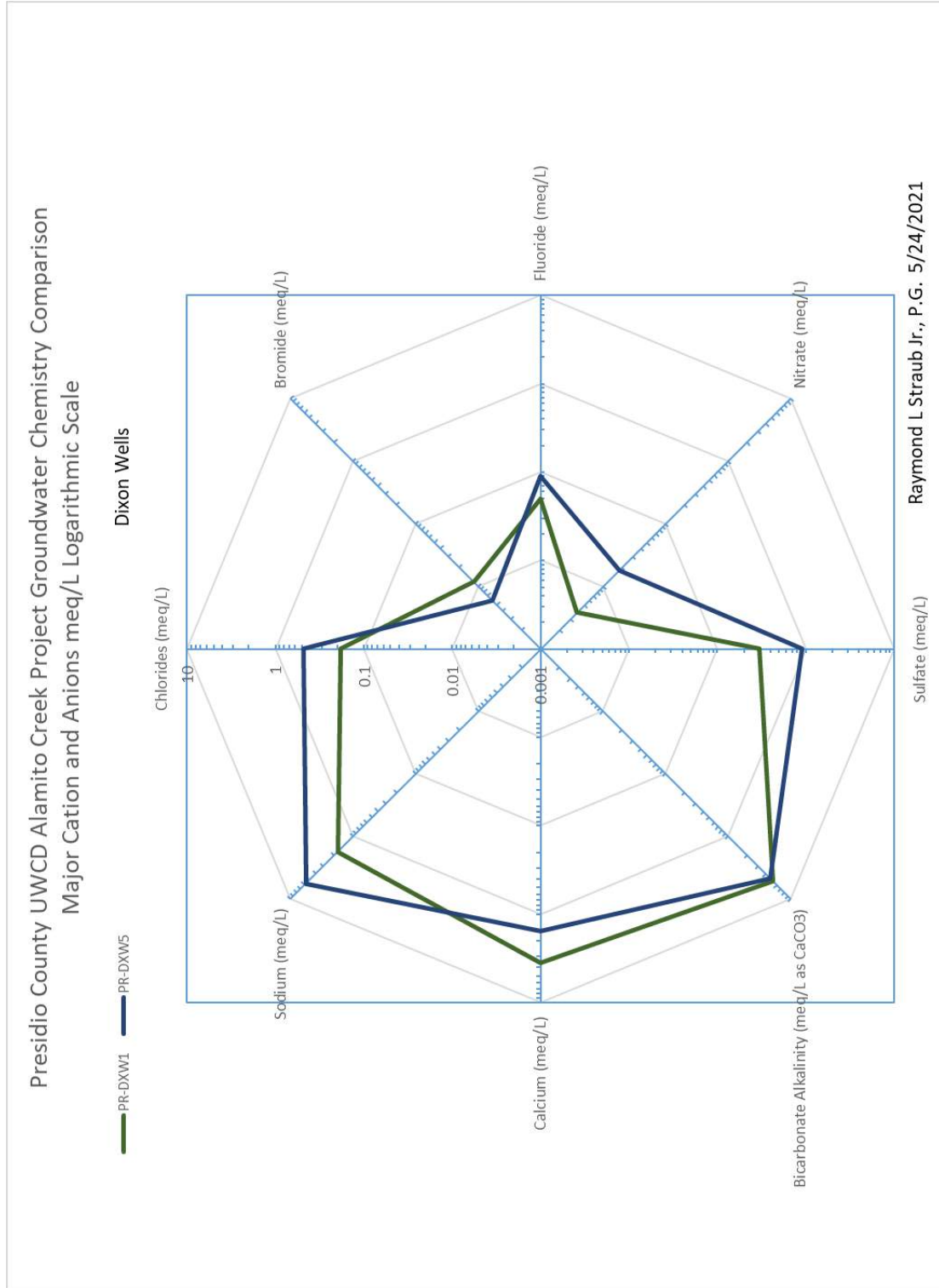


Water Quality Radial Plot – Dixon Springs



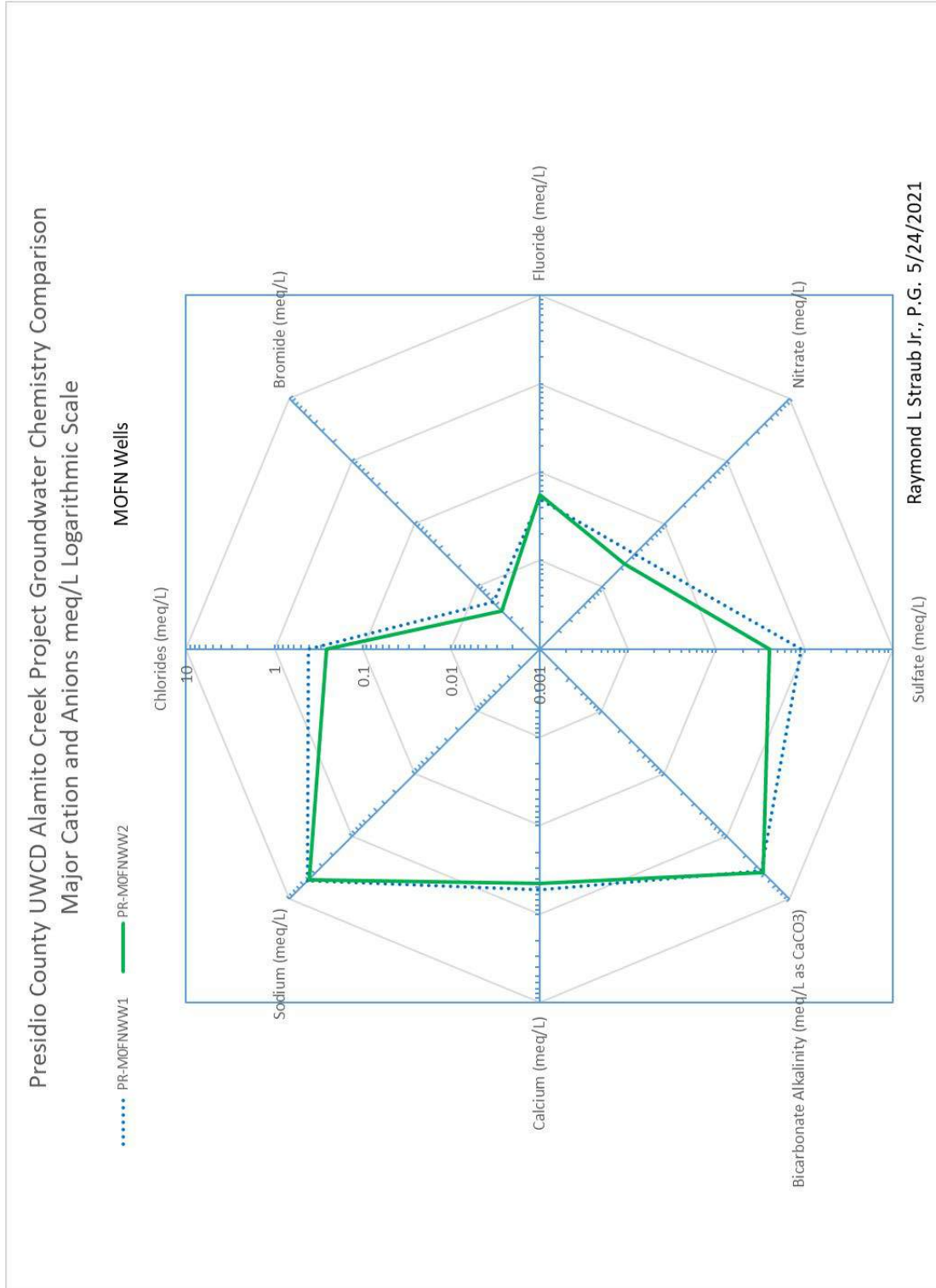


Water Quality Radial Plot – Dixon Wells





Water Quality Radial Plot – MOFN Wells

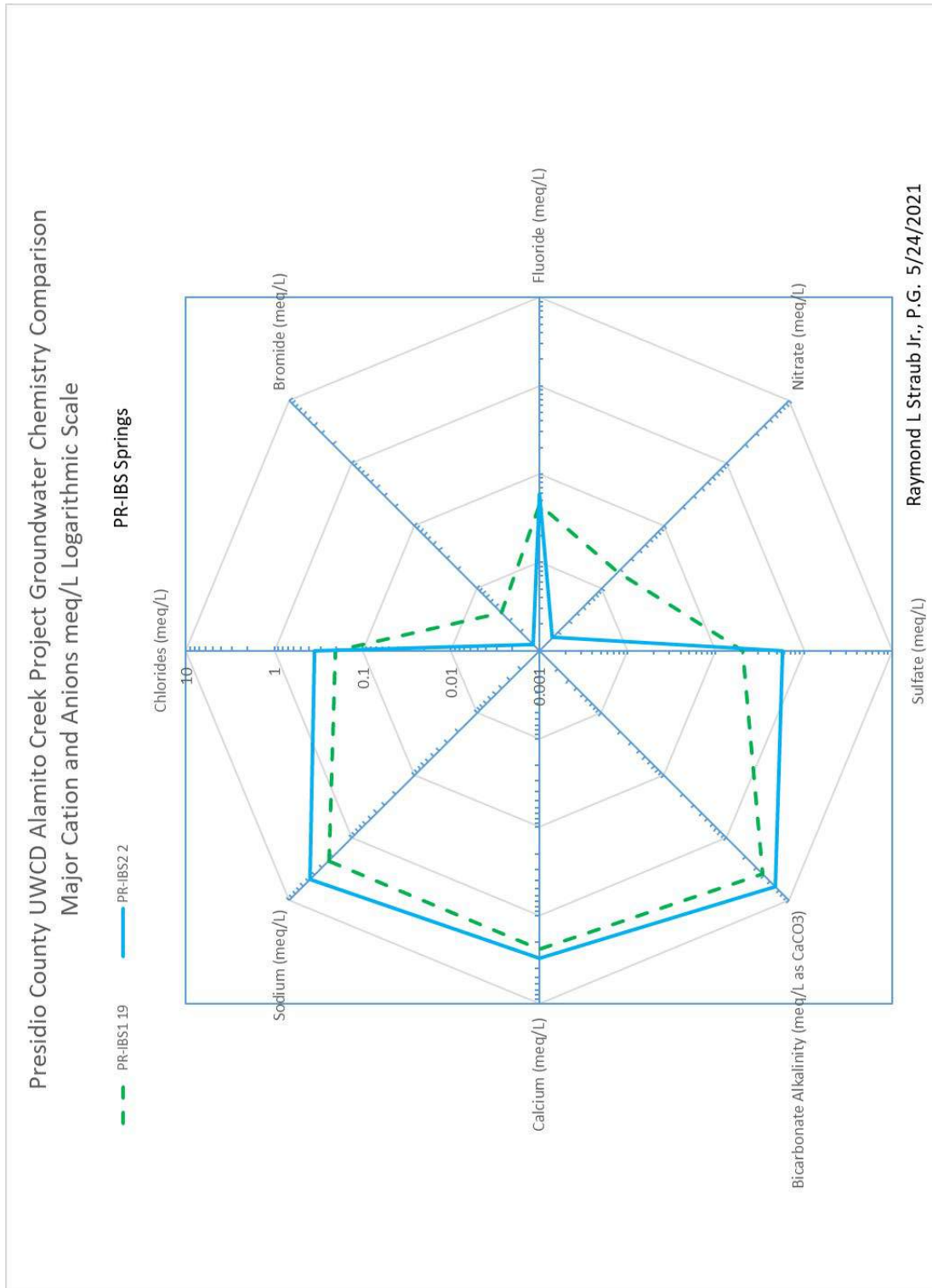


Raymond L Straub Jr., P.G. 5/24/2021

Sulfate (meq/L)



Water Quality Radial Plot – PR-IBS Springs





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Purge and Sampling Table

Presidio County UWCD Alamito Creek Project - Purge and Sampling Table						
Date	Time	Location	Temp (C)	Specific Conductivity (uS/cm)	Purge Rate	Volume/Comment
2/15/2021	12:40	PR-000384 (flowing)	26.3	534	1.7 (GPM)	5 (Constant)
			27.8	508		10
			27.8	504		15
	13:00	Sampled				20
2/15/2021	15:41	PR-SKRMAW1 (flowing)	27.7	588	20	Constant
	15:50	Sampled				
2/15/2021	16:33	PR-AVAW1 (flowing)	27.1	335	6	Constant
	16:52	Sampled				
2/16/2021	11:37	PR-DXS1 (creek)			218 (ml/min)	
	11:41		9.6	1147		
	11:44		9	1157		
	11:48		8.4	1165		
	11:51		8.4	1189		
	11:53		8.3	1192		
	11:56		8.4	1143		
	11:59		8.5	1170		
	12:15	Sampled				
2/16/2021	14:03	PR-DXS2 (creek)			217 (ml/min)	
	14:07		18.6	768		
	14:09		17.9	774		
	14:12		17.8	766		
	14:14		17.7	768		
	14:16		17.5	773		
	14:18		17.6	783		
	14:20		17.5	777		
	14:22		17.5	778		
	14:31	Sampled				
2/16/2021	16:35	PR-DXS3 (creek)			217 (ml/min)	
	16:42		16.6	691		
	16:44		16.4	698		
	16:46		16.2	698		
	16:49		16.2	710		
	16:51		16.2	707		
	16:53		16.3	712		
	16:57		16.3	713		
	17:07	Sampled				



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Presidio County UWCD Alamito Creek Project - Purge and Sampling Table						
2/17/2021	10:25	PR-MOFNWW1 (well)			12 (GPM)	
	10:30		22.1	583		
	10:33		21.4	578		
	10:43		21.1	581		
	10:45		22.2	575		
	10:47		22.2	574		
	10:49		22.5	568		
	10:51		22.4	572		
	10:59	Sampled				
2/17/2021	11:52	PR-MOFNWW2 (well)	22	526	~20 (GPM)	Pumping Solar
	11:54		24.2	513		
	11:56		24.8	513		
	11:58		25.3	513		
	12:01		25	513		
	12:10	Sampled				
2/17/2021	13:48	PR-IBS1 (spring)	22.3	485	65-70 (GPM)	Solar pumped spring
	13:51		23.3	478		
	13:53		23.6	481		
	13:55		23.8	485		
	13:58		23.8	485		
	14:08	Sampled				
2/17/2021	16:37	PR-IBS2 (creek)			150 (ml/min)	
	16:49		12.6	722		
	16:55		13			
	16:59		12.7			
	17:03		12.7			
	17:06		12.6			
	17:17	Sampled				
2/17/2021	18:33	PR-000492 (flowing)	28.9	535	30 (GPM)	Constant
	18:35		30.7	530		
	18:37		31.2	525		
	18:38		31.2	524		
	18:40	Sampled				
2/18/2021	14:32	PR-DXW5 (well)			7.5 (GPM)	Electric Pump
	14:36		21.8	650		
	14:42		23.3	963		
	14:47		23.3	728		
	14:54		23.5	700		
	15:04		23.2	692		
	15:05	Sampled				
2/18/2021	15:53	PR-DXW1 (well)			~8 (GPM)	Electric Pump
	15:56		19.5	608		
	16:00		21.1	604		
	16:05		21.4	604		
	16:06	Sampled				



Pictorial Log



La Viuda Peak
RM 169, Presidio County, Texas



San Jacinto Mountain, La Viuda Peak, and Transquilla
Canyon Mesa, Casa Piedra, Presidio County, Texas



Sample Point PR-000384



Sample Point PR-SKRMAW1



Sample Point PR-AVAW1



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Road entering Dixon Water Foundation



Sample Point PR-DXS1



Sample Point PR-DXS2



Sample Point PR-DXS3



Sample Point PR-MOFNWW1



Sample Point PR-MOFNWW2



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Sample Point PR-IBS1



Fault scarp on Alamito Creek near
Sample Point PR-IBS2



Cottonwood Tree on Alamito Creek
near Sample Point PR-IBS2



Sample Point PR-IBS2



Sample Point PR-000492



Sample Point PR-DXW5



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Sample Point PR-DXW1



Perdiz Conglomerate on Railway Cut



Railroad Trestle over Alamito Creek near fault scarp



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Sunrise near Alamito Creek at Casa Piedra, Presidio County, Texas



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Full Laboratory Report

Certificate of Analysis Summary 688601

Straub Corporation, Stanton, TX

Project Name: Alamito Creek Prod

Project Id:
Contact: Raymond Straub
Project Location: Presidio County

Date Received in Lab: Fri 02.19.2021 14:04
Report Date: 02.26.2021 19:15
Project Manager: John Builes

<i>Analysis Requested</i>	<i>Lab Id:</i>	688601-001	688601-002	688601-003	688601-004	688601-005	688601-006
	<i>Field Id:</i>	PR-000384	PR-SKRMW1	PR-AVAW1	PR-DXS1	PR-DXS2	PR-DXS3
	<i>Depth:</i>	600	300		1	1	1
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	02.15.2021 13:00	02.15.2021 15:50	02.15.2021 16:52	02.16.2021 12:15	02.16.2021 14:31	02.16.2021 17:07
Alkalinity by SM2320B SUB: T104704215-20-39	<i>Extracted:</i>	02.23.2021 11:25	02.23.2021 11:25	02.23.2021 11:25	02.23.2021 11:25	02.23.2021 11:25	02.23.2021 11:25
	<i>Analyzed:</i>	02.23.2021 12:01	02.23.2021 12:13	02.23.2021 12:20	02.23.2021 12:28	02.23.2021 12:35	02.23.2021 12:42
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Alkalinity, Bicarbonate (as CaCO3)		194 4.00	185 4.00	192 4.00	462 4.00	367 4.00	322 4.00
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	02.19.2021 15:15	02.19.2021 15:15	02.19.2021 15:15	02.19.2021 15:15	02.19.2021 15:15	02.19.2021 15:15
	<i>Analyzed:</i>	02.19.2021 21:15	02.19.2021 21:24	02.19.2021 21:32	02.19.2021 21:41	02.19.2021 21:50	02.19.2021 21:58
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Bromide		0.488 XF 0.100	0.582 0.100	0.447 0.100	0.758 0.100	0.394 0.100	0.418 0.100
Chloride		16.3 X 0.500	23.7 0.500	16.2 0.500	38.3 0.500	19.8 0.500	12.0 0.500
Fluoride		1.89 XF 0.100	2.83 0.100	1.93 0.100	1.74 0.100	2.70 0.100	1.98 0.100
Nitrate as N		2.65 K 0.100	4.21 K 0.100	2.57 K 0.100	0.129 K 0.100	<0.100 0.100	0.413 K 0.100
Sulfate		35.2 0.500	45.7 0.500	34.9 0.500	132 0.500	39.9 0.500	49.8 0.500
Recoverable Metals by EPA 200.8 SUB: T104704215-20-39	<i>Extracted:</i>	02.24.2021 11:00	02.24.2021 11:00	02.24.2021 11:00	02.24.2021 11:00	02.24.2021 11:00	02.24.2021 11:00
	<i>Analyzed:</i>	02.25.2021 02:13	02.25.2021 02:16	02.25.2021 02:19	02.25.2021 02:22	02.25.2021 02:25	02.25.2021 02:28
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Arsenic		0.00820 0.00400	0.00450 0.00400	0.00906 0.00400	<0.00400 0.00400	0.00491 0.00400	<0.00400 0.00400
Silver		<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200
Uranium		0.0247 0.00100	0.0392 0.00100	0.0200 0.00100	0.0831 0.00100	0.0183 0.00100	0.0366 0.00100

BRL - Below Reporting Limit



Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Certificate of Analysis Summary 688601

Straub Corporation, Stanton, TX

Project Name: Alamito Creek Prod

Project Id:
Contact: Raymond Straub
Project Location: Presidio County

Date Received in Lab: Fri 02.19.2021 14:04
Report Date: 02.26.2021 19:15
Project Manager: John Builes

<i>Analysis Requested</i>	<i>Lab Id:</i>	688601-001	688601-002	688601-003	688601-004	688601-005	688601-006
	<i>Field Id:</i>	PR-000384	PR-SKRMW1	PR-AVAW1	PR-DXS1	PR-DXS2	PR-DXS3
	<i>Depth:</i>	600	300		1	1	1
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	02.15.2021 13:00	02.15.2021 15:50	02.15.2021 16:52	02.16.2021 12:15	02.16.2021 14:31	02.16.2021 17:07
Recoverable Metals per ICP by EPA 200.7 SUB: T104704215-20-39	<i>Extracted:</i>	02.23.2021 08:30	02.23.2021 08:30	02.23.2021 08:30	02.23.2021 08:30	02.23.2021 08:30	02.23.2021 08:30
	<i>Analyzed:</i>	02.24.2021 21:55	02.24.2021 22:00	02.24.2021 22:04	02.24.2021 22:08	02.24.2021 22:12	02.24.2021 22:16
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Calcium		1.78 0.200	2.56 0.200	1.45 0.200	78.0 D 10.0	57.1 0.200	50.8 0.200
Iron		<0.200 0.200	<0.200 0.200	<0.200 0.200	0.786 0.200	1.03 0.200	<0.200 0.200
Magnesium		<0.200 0.200	<0.200 0.200	<0.200 0.200	10.7 0.200	4.48 0.200	1.97 0.200
Potassium		0.649 0.500	<0.500 0.500	0.566 0.500	5.39 0.500	1.58 0.500	2.26 0.500
Silica		24.2 1.07	26.3 1.07	24.0 1.07	50.4 1.07	54.7 1.07	42.2 1.07
Sodium		121 0.500	130 0.500	120 0.500	175 0.500	119 0.500	115 0.500
Specific Conductance @25C by SM2510B SUB: T104704215-20-39	<i>Extracted:</i>						
	<i>Analyzed:</i>	02.22.2021 17:06	02.22.2021 17:06	02.22.2021 17:06	02.22.2021 17:06	02.22.2021 17:06	02.22.2021 17:06
	<i>Units/RL:</i>	umhos/cm RL	umhos/cm RL	umhos/cm RL	umhos/cm RL	umhos/cm RL	umhos/cm RL
Conductivity		568 10.0	644 10.0	580 10.0	1290 10.0	863 10.0	799 10.0
TDS by SM2540C SUB: T104704215-20-39	<i>Extracted:</i>						
	<i>Analyzed:</i>	02.22.2021 14:34	02.22.2021 14:34	02.22.2021 14:34	02.22.2021 14:34	02.22.2021 14:34	02.22.2021 14:34
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		280 5.00	318 5.00	297 5.00	704 5.00	431 5.00	423 5.00
pH by SM4500-H SUB: T104704215-20-39	<i>Extracted:</i>						
	<i>Analyzed:</i>	02.25.2021 17:02	02.25.2021 17:02	02.25.2021 17:02	02.25.2021 17:02	02.25.2021 17:02	02.25.2021 17:02
	<i>Units/RL:</i>	Deg C RL	Deg C RL	Deg C RL	Deg C RL	Deg C RL	Deg C RL
Temperature		19.9 K	19.9 K	19.9 K	19.9 K	19.9 K	20.0 K
pH by SM4500-H SUB: T104704215-20-39	<i>Extracted:</i>						
	<i>Analyzed:</i>	02.25.2021 17:02	02.25.2021 17:02	02.25.2021 17:02	02.25.2021 17:02	02.25.2021 17:02	02.25.2021 17:02
	<i>Units/RL:</i>	SU RL	SU RL	SU RL	SU RL	SU RL	SU RL
pH		8.52 K	8.65 K	8.79 K	8.13 K	7.95 K	8.10 K



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Certificate of Analysis Summary 688601

Straub Corporation, Stanton, TX

Project Name: Alamito Creek Prod

Project Id:
Contact: Raymond Straub
Project Location: Presidio County

Date Received in Lab: Fri 02.19.2021 14:04
Report Date: 02.26.2021 19:15
Project Manager: John Builes

<i>Analysis Requested</i>	<i>Lab Id:</i>	688601-007	688601-008	688601-009	688601-010	688601-011	688601-012
	<i>Field Id:</i>	PR-M0FNWW1	PR-M0FNWW2	PR-IBS1	PR-IBS2	PR-000492	PR-DXW5
	<i>Depth:</i>	300	300	19	2		65.
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	02.17.2021 10:59	02.17.2021 12:10	02.17.2021 14:08	02.17.2021 17:17	02.17.2021 18:40	02.18.2021 15:05
Alkalinity by SM2320B SUB: T104704215-20-39	<i>Extracted:</i>	02.23.2021 11:25	02.23.2021 11:25	02.23.2021 11:25	02.23.2021 11:25	02.23.2021 11:25	02.23.2021 11:25
	<i>Analyzed:</i>	02.23.2021 13:00	02.23.2021 13:06	02.23.2021 13:12	02.23.2021 13:20	02.23.2021 13:26	02.23.2021 13:39
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Alkalinity, Bicarbonate (as CaCO3)		220 4.00	230 4.00	232 4.00	368 4.00	178 4.00	293 4.00
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	02.19.2021 15:15	02.19.2021 15:15	02.19.2021 15:15	02.19.2021 15:15	02.19.2021 15:15	02.19.2021 15:15
	<i>Analyzed:</i>	02.19.2021 22:07	02.19.2021 22:16	02.19.2021 18:38	02.19.2021 16:28	02.19.2021 16:37	02.19.2021 16:45
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Bromide		0.442 0.100	0.323 0.100	0.322 0.100	<0.100 0.100	0.353 0.100	0.470 0.100
Chloride		14.7 0.500	9.15 0.500	7.24 0.500	12.3 0.500	12.1 X 0.500	17.2 0.500
Fluoride		0.937 0.100	1.04 0.100	0.839 0.100	1.12 0.100	2.52 XF 0.100	1.71 0.100
Nitrate as N		2.06 K 0.100	1.41 K 0.100	1.11 K 0.100	<0.100 0.100	1.75 0.100	1.12 0.100
Sulfate		44.0 0.500	19.2 0.500	9.67 0.500	27.5 0.500	24.4 X 0.500	43.4 0.500
Recoverable Metals by EPA 200.8 SUB: T104704215-20-39	<i>Extracted:</i>	02.24.2021 11:00	02.24.2021 11:00	02.24.2021 11:00	02.24.2021 11:00	02.24.2021 11:00	02.24.2021 11:00
	<i>Analyzed:</i>	02.25.2021 02:31	02.25.2021 02:34	02.25.2021 02:37	02.25.2021 02:40	02.25.2021 02:51	02.25.2021 02:55
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Arsenic		<0.00400 0.00400	<0.00400 0.00400	0.00492 0.00400	0.00445 0.00400	0.00881 0.00400	<0.00400 0.00400
Silver		<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200
Uranium		0.0513 0.00100	0.0410 0.00100	0.0112 0.00100	0.0221 0.00100	0.0167 0.00100	0.0338 0.00100

BRL - Below Reporting Limit



Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Certificate of Analysis Summary 688601

Straub Corporation, Stanton, TX

Project Name: Alamito Creek Prod

Project Id:
Contact: Raymond Straub
Project Location: Presidio County

Date Received in Lab: Fri 02.19.2021 14:04
Report Date: 02.26.2021 19:15
Project Manager: John Builes

<i>Analysis Requested</i>	<i>Lab Id:</i>	688601-007	688601-008	688601-009	688601-010	688601-011	688601-012
	<i>Field Id:</i>	PR-M0FNWW1	PR-M0FNWW2	PR-IBS1	PR-IBS2	PR-000492	PR-DXW5
	<i>Depth:</i>	300	300	19	2		65.
	<i>Matrix:</i>	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER	GROUND WATER
	<i>Sampled:</i>	02.17.2021 10:59	02.17.2021 12:10	02.17.2021 14:08	02.17.2021 17:17	02.17.2021 18:40	02.18.2021 15:05
Recoverable Metals per ICP by EPA 200.7 SUB: T104704215-20-39	<i>Extracted:</i>	02.23.2021 08:30	02.23.2021 08:30	02.23.2021 08:30	02.23.2021 08:30	02.23.2021 08:30	02.23.2021 08:30
	<i>Analyzed:</i>	02.24.2021 22:21	02.24.2021 22:33	02.24.2021 22:37	02.24.2021 22:42	02.24.2021 22:50	02.24.2021 22:54
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Calcium		10.8 0.200	9.11 0.200	48.8 0.200	60.9 0.200	0.829 0.200	31.1 0.200
Iron		<0.200 0.200	<0.200 0.200	<0.200 0.200	0.221 0.200	<0.200 0.200	<0.200 0.200
Magnesium		<0.200 0.200	<0.200 0.200	3.28 0.200	4.72 0.200	<0.200 0.200	0.248 0.200
Potassium		<0.500 0.500	0.517 0.500	5.08 0.500	3.86 0.500	<0.500 0.500	1.11 0.500
Silica		35.4 1.07	33.1 1.07	49.5 1.07	42.4 1.07	25.9 1.07	39.6 1.07
Sodium		118 0.500	113 0.500	54.0 0.500	106 0.500	120 0.500	131 0.500
Specific Conductance @25C by SM2510B SUB: T104704215-20-39	<i>Extracted:</i>						
	<i>Analyzed:</i>	02.22.2021 17:06	02.22.2021 17:06	02.22.2021 17:06	02.22.2021 17:06	02.22.2021 17:06	02.22.2021 17:06
	<i>Units/RL:</i>	umhos/cm RL	umhos/cm RL	umhos/cm RL	umhos/cm RL	umhos/cm RL	umhos/cm RL
Conductivity		614 10.0	543 10.0	502 10.0	810 10.0	561 10.0	753 10.0
TDS by SM2540C SUB: T104704215-20-39	<i>Extracted:</i>						
	<i>Analyzed:</i>	02.22.2021 14:34	02.22.2021 14:34	02.22.2021 14:34	02.22.2021 14:34	02.22.2021 14:34	02.22.2021 14:34
	<i>Units/RL:</i>	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL	mg/L RL
Total Dissolved Solids		372 5.00	366 5.00	231 5.00	431 5.00	338 5.00	331 5.00
pH by SM4500-H SUB: T104704215-20-39	<i>Extracted:</i>						
	<i>Analyzed:</i>	02.25.2021 17:02	02.25.2021 17:02	02.25.2021 17:02	02.25.2021 17:02	02.25.2021 17:02	02.25.2021 17:02
	<i>Units/RL:</i>	Deg C RL	Deg C RL	Deg C RL	Deg C RL	Deg C RL	Deg C RL
Temperature		20.0 K	19.9 K	20.0 K	20.0 K	20.1 K	20.0 K
pH by SM4500-H SUB: T104704215-20-39	<i>Extracted:</i>						
	<i>Analyzed:</i>	02.25.2021 17:02	02.25.2021 17:02	02.25.2021 17:02	02.25.2021 17:02	02.25.2021 17:02	02.25.2021 17:02
	<i>Units/RL:</i>	SU RL	SU RL	SU RL	SU RL	SU RL	SU RL
pH		8.49 K	8.59 K	8.33 K	8.47 K	9.18 K	8.50 K

BRL - Below Reporting Limit

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Certificate of Analysis Summary 688601

Straub Corporation, Stanton, TX

Project Name: Alamito Creek Prod

Project Id:
Contact: Raymond Straub
Project Location: Presidio County

Date Received in Lab: Fri 02.19.2021 14:04
Report Date: 02.26.2021 19:15
Project Manager: John Builes

Analysis Requested	<i>Lab Id:</i>	688601-013				
	<i>Field Id:</i>	PR-DXW1				
	<i>Depth:</i>	42				
	<i>Matrix:</i>	GROUND WATER				
	<i>Sampled:</i>	02.18.2021 16:06				
Alkalinity by SM2320B SUB: T104704215-20-39	<i>Extracted:</i>	02.23.2021 11:25				
	<i>Analyzed:</i>	02.23.2021 13:47				
	<i>Units/RL:</i>	mg/L RL				
Alkalinity, Bicarbonate (as CaCO3)		315 4.00				
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	02.19.2021 15:15				
	<i>Analyzed:</i>	02.19.2021 16:54				
	<i>Units/RL:</i>	mg/L RL				
Bromide		0.323 0.100				
Chloride		6.50 0.500				
Fluoride		0.938 0.100				
Nitrate as N		0.234 0.100				
Sulfate		14.2 0.500				
Recoverable Metals by EPA 200.8 SUB: T104704215-20-39	<i>Extracted:</i>	02.24.2021 11:00				
	<i>Analyzed:</i>	02.25.2021 02:57				
	<i>Units/RL:</i>	mg/L RL				
Arsenic		<0.00400 0.00400				
Silver		<0.00200 0.00200				
Uranium		0.00665 0.00100				

BRL - Below Reporting Limit

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico



Certificate of Analysis Summary 688601

Straub Corporation, Stanton, TX

Project Name: Alamito Creek Prod

Project Id:
Contact: Raymond Straub
Project Location: Presidio County

Date Received in Lab: Fri 02.19.2021 14:04
Report Date: 02.26.2021 19:15
Project Manager: John Builes

Analysis Requested	Lab Id:	688601-013				
	Field Id:	PR-DXW1				
	Depth:	42				
	Matrix:	GROUND WATER				
	Sampled:	02.18.2021 16:06				
Recoverable Metals per ICP by EPA 200.7 SUB: T104704215-20-39	Extracted:	02.23.2021 08:30				
	Analyzed:	02.24.2021 22:59				
	Units/RL:	mg/L RL				
Calcium		71.3 0.200				
Iron		<0.200 0.200				
Magnesium		17.1 0.200				
Potassium		1.11 0.500				
Silica		57.2 1.07				
Sodium		40.7 0.500				
Specific Conductance @25C by SM2510B SUB: T104704215-20-39	Extracted:					
	Analyzed:	02.22.2021 17:06				
	Units/RL:	umhos/cm RL				
Conductivity		657 10.0				
TDS by SM2540C SUB: T104704215-20-39	Extracted:					
	Analyzed:	02.22.2021 14:34				
	Units/RL:	mg/L RL				
Total Dissolved Solids		289 5.00				
pH by SM4500-H SUB: T104704215-20-39	Extracted:					
	Analyzed:	02.25.2021 17:02				
	Units/RL:	Deg C RL				
Temperature		20.2 K				
pH by SM4500-H SUB: T104704215-20-39	Extracted:					
	Analyzed:	02.25.2021 17:02				
	Units/RL:	SU RL				
pH		7.99 K				

BRL - Below Reporting Limit

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Analytical Report 688601

for

Straub Corporation

Project Manager: Raymond Straub

Alamito Creek Prod

02.26.2021

Collected By: Client



**1211 W. Florida Ave
Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-38), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2020-014), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-26), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-18)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-24)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-20-21)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-20-8)
Xenco-Tampa: Florida (E87429), North Carolina (483)

02.26.2021

Project Manager: **Raymond Straub**

Straub Corporation

P.O. Box 192

Stanton, TX 79782

Reference: Eurofins Xenco, LLC Report No(s): **688601**

Alamito Creek Prod

Project Address: Presidio County

Raymond Straub:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the Eurofins Xenco, LLC Report Number(s) 688601. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by Eurofins Xenco, LLC. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 688601 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting Eurofins Xenco, LLC to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,



John Builes
Project Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Sample Cross Reference 688601

Straub Corporation, Stanton, TX

Alamito Creek Prod

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
PR-000384	W	02.15.2021 13:00	600	688601-001
PR-SKRMAW1	W	02.15.2021 15:50	300	688601-002
PR-AVAW1	W	02.15.2021 16:52		688601-003
PR-DXS1	W	02.16.2021 12:15	1	688601-004
PR-DXS2	W	02.16.2021 14:31	1	688601-005
PR-DXS3	W	02.16.2021 17:07	1	688601-006
PR-M0FNWW1	W	02.17.2021 10:59	300	688601-007
PR-M0FNWW2	W	02.17.2021 12:10	300	688601-008
PR-IBS1	W	02.17.2021 14:08	19	688601-009
PR-IBS2	W	02.17.2021 17:17	2	688601-010
PR-000492	W	02.17.2021 18:40		688601-011
PR-DXW5	W	02.18.2021 15:05	65.	688601-012
PR-DXW1	W	02.18.2021 16:06	42	688601-013

CASE NARRATIVE

Client Name: Straub Corporation

Project Name: Alamito Creek Prod

Project ID:
Work Order Number(s): 688601

Report Date: 02.26.2021
Date Received: 02.19.2021

Sample receipt non conformances and comments:

Out of hold was caused due to force majeure. Recent weather conditions associated with the winter storm affecting large parts of Texas resulted in laboratory closures and scheduling delays for our Stafford facility. As such the following sample(s) was prepared and/or analyzed outside holding time: 688601-001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013.

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3151337 Inorganic Anions by EPA 300/300.1

Bromide, Fluoride Relative Percent Difference (RPD) between matrix spike and duplicate were above quality control limits.

Samples in the analytical batch are: 688601-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013

Lab Sample ID 688601-011 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Fluoride recovered below QC limits in the Matrix Spike Duplicate. Chloride recovered above QC limits Bromide recovered above QC limits in the Matrix Spike Duplicate. Fluoride, Sulfate recovered above QC limits in the Matrix Spike. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 688601-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013. The Laboratory Control Sample for Chloride, Fluoride, Bromide, Sulfate is within laboratory Control Limits, therefore the data was accepted.

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: PR-000384	Matrix: Ground Water	Date Received: 02.19.2021 14:04
Lab Sample Id: 688601-001	Date Collected: 02.15.2021 13:00	Sample Depth: 600
Analytical Method: Alkalinity by SM2320B		Prep Method: SM2320P
Tech: ALZ		% Moisture:
Analyst: ALZ	Date Prep: 02.23.2021 11:25	SUB: T104704215-20-39
Seq Number: 3151529		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	194	4.00	mg/L	02.23.2021 12:01		1

Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: CHE		% Moisture:
Analyst: CHE	Date Prep: 02.19.2021 15:15	
Seq Number: 3151337		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Bromide	24959-67-9	0.488	0.100	mg/L	02.19.2021 21:15	XF	1
Chloride	16887-00-6	16.3	0.500	mg/L	02.19.2021 21:15	X	1
Fluoride	16984-48-8	1.89	0.100	mg/L	02.19.2021 21:15	XF	1
Nitrate as N	14797-55-8	2.65	0.100	mg/L	02.19.2021 21:15	K	1
Sulfate	14808-79-8	35.2	0.500	mg/L	02.19.2021 21:15		1

Analytical Method: TDS by SM2540C		Prep Method: E300P
Tech: DTN		% Moisture:
Analyst: DTN		SUB: T104704215-20-39
Seq Number: 3151412		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	280	5.00	mg/L	02.22.2021 14:34		1

Analytical Method: pH by SM4500-H		Prep Method: E300P
Tech: ANP		% Moisture:
Analyst: ANP		SUB: T104704215-20-39
Seq Number: 3151797		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	8.52		SU	02.25.2021 17:02	K	1
Temperature	TEMP	19.9		Deg C	02.25.2021 17:02	K	1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-000384** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-001 Date Collected: 02.15.2021 13:00 Sample Depth: 600

Analytical Method: Recoverable Metals by EPA 200.8 Prep Method: E200.8P

Tech: MLI
 Analyst: DEP Date Prep: 02.24.2021 11:00 % Moisture:
 Seq Number: 3151703 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Arsenic	7440-38-2	0.00820	0.00400	mg/L	02.25.2021 02:13		1
Silver	7440-22-4	<0.00200	0.00200	mg/L	02.25.2021 02:13	U	1
Uranium	7440-61-1	0.0247	0.00100	mg/L	02.25.2021 02:13		1

Analytical Method: Recoverable Metals per ICP by EPA 200.7 Prep Method: E200.7P

Tech: MLI
 Analyst: DEP Date Prep: 02.23.2021 08:30 % Moisture:
 Seq Number: 3151710 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Calcium	7440-70-2	1.78	0.200	mg/L	02.24.2021 21:55		1
Iron	7439-89-6	<0.200	0.200	mg/L	02.24.2021 21:55	U	1
Magnesium	7439-95-4	<0.200	0.200	mg/L	02.24.2021 21:55	U	1
Potassium	7440-09-7	0.649	0.500	mg/L	02.24.2021 21:55		1
Silica	7631-86-9	24.2	1.07	mg/L	02.24.2021 21:55		1
Sodium	7440-23-5	121	0.500	mg/L	02.24.2021 21:55		1

Analytical Method: Specific Conductance @25C by SM2510B

Tech: ANP
 Analyst: ANP Date Prep: 02.22.2021 17:06 % Moisture:
 Seq Number: 3151442 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	568	10.0	umhos/cm	02.22.2021 17:06		1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-SKRMAW1** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-002 Date Collected: 02.15.2021 15:50 Sample Depth: 300
 Analytical Method: Alkalinity by SM2320B Prep Method: SM2320P
 Tech: ALZ
 Analyst: ALZ Date Prep: 02.23.2021 11:25 % Moisture:
 Seq Number: 3151529 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	185	4.00	mg/L	02.23.2021 12:13		1

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
 Tech: CHE
 Analyst: CHE Date Prep: 02.19.2021 15:15 % Moisture:
 Seq Number: 3151337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Bromide	24959-67-9	0.582	0.100	mg/L	02.19.2021 21:24		1
Chloride	16887-00-6	23.7	0.500	mg/L	02.19.2021 21:24		1
Fluoride	16984-48-8	2.83	0.100	mg/L	02.19.2021 21:24		1
Nitrate as N	14797-55-8	4.21	0.100	mg/L	02.19.2021 21:24	K	1
Sulfate	14808-79-8	45.7	0.500	mg/L	02.19.2021 21:24		1

Analytical Method: TDS by SM2540C
 Tech: DTN
 Analyst: DTN % Moisture:
 Seq Number: 3151412 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	318	5.00	mg/L	02.22.2021 14:34		1

Analytical Method: pH by SM4500-H
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151797 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	8.65		SU	02.25.2021 17:02	K	1
Temperature	TEMP	19.9		Deg C	02.25.2021 17:02	K	1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-SKRMAW1** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-002 Date Collected: 02.15.2021 15:50 Sample Depth: 300
 Analytical Method: Recoverable Metals by EPA 200.8 Prep Method: E200.8P
 Tech: MLI
 Analyst: DEP Date Prep: 02.24.2021 11:00 % Moisture:
 Seq Number: 3151703 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Arsenic	7440-38-2	0.00450	0.00400	mg/L	02.25.2021 02:16		1
Silver	7440-22-4	<0.00200	0.00200	mg/L	02.25.2021 02:16	U	1
Uranium	7440-61-1	0.0392	0.00100	mg/L	02.25.2021 02:16		1

Analytical Method: Recoverable Metals per ICP by EPA 200.7 Prep Method: E200.7P
 Tech: MLI
 Analyst: DEP Date Prep: 02.23.2021 08:30 % Moisture:
 Seq Number: 3151710 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Calcium	7440-70-2	2.56	0.200	mg/L	02.24.2021 22:00		1
Iron	7439-89-6	<0.200	0.200	mg/L	02.24.2021 22:00	U	1
Magnesium	7439-95-4	<0.200	0.200	mg/L	02.24.2021 22:00	U	1
Potassium	7440-09-7	<0.500	0.500	mg/L	02.24.2021 22:00	U	1
Silica	7631-86-9	26.3	1.07	mg/L	02.24.2021 22:00		1
Sodium	7440-23-5	130	0.500	mg/L	02.24.2021 22:00		1

Analytical Method: Specific Conductance @25C by SM2510B
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151442 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	644	10.0	umhos/cm	02.22.2021 17:06		1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-AVAW1** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-003 Date Collected: 02.15.2021 16:52

Analytical Method: Alkalinity by SM2320B Prep Method: SM2320P
 Tech: ALZ
 Analyst: ALZ Date Prep: 02.23.2021 11:25 % Moisture:
 Seq Number: 3151529 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	192	4.00	mg/L	02.23.2021 12:20		1

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
 Tech: CHE
 Analyst: CHE Date Prep: 02.19.2021 15:15 % Moisture:
 Seq Number: 3151337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Bromide	24959-67-9	0.447	0.100	mg/L	02.19.2021 21:32		1
Chloride	16887-00-6	16.2	0.500	mg/L	02.19.2021 21:32		1
Fluoride	16984-48-8	1.93	0.100	mg/L	02.19.2021 21:32		1
Nitrate as N	14797-55-8	2.57	0.100	mg/L	02.19.2021 21:32	K	1
Sulfate	14808-79-8	34.9	0.500	mg/L	02.19.2021 21:32		1

Analytical Method: TDS by SM2540C
 Tech: DTN
 Analyst: DTN % Moisture:
 Seq Number: 3151412 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	297	5.00	mg/L	02.22.2021 14:34		1

Analytical Method: pH by SM4500-H
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151797 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	8.79		SU	02.25.2021 17:02	K	1
Temperature	TEMP	19.9		Deg C	02.25.2021 17:02	K	1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-AVAW1** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-003 Date Collected: 02.15.2021 16:52

Analytical Method: Recoverable Metals by EPA 200.8 Prep Method: E200.8P
 Tech: MLI
 Analyst: DEP Date Prep: 02.24.2021 11:00 % Moisture:
 Seq Number: 3151703 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Arsenic	7440-38-2	0.00906	0.00400	mg/L	02.25.2021 02:19		1
Silver	7440-22-4	<0.00200	0.00200	mg/L	02.25.2021 02:19	U	1
Uranium	7440-61-1	0.0200	0.00100	mg/L	02.25.2021 02:19		1

Analytical Method: Recoverable Metals per ICP by EPA 200.7 Prep Method: E200.7P
 Tech: MLI
 Analyst: DEP Date Prep: 02.23.2021 08:30 % Moisture:
 Seq Number: 3151710 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Calcium	7440-70-2	1.45	0.200	mg/L	02.24.2021 22:04		1
Iron	7439-89-6	<0.200	0.200	mg/L	02.24.2021 22:04	U	1
Magnesium	7439-95-4	<0.200	0.200	mg/L	02.24.2021 22:04	U	1
Potassium	7440-09-7	0.566	0.500	mg/L	02.24.2021 22:04		1
Silica	7631-86-9	24.0	1.07	mg/L	02.24.2021 22:04		1
Sodium	7440-23-5	120	0.500	mg/L	02.24.2021 22:04		1

Analytical Method: Specific Conductance @25C by SM2510B
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151442 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	580	10.0	umhos/cm	02.22.2021 17:06		1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-DXS1** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-004 Date Collected: 02.16.2021 12:15 Sample Depth: 1
 Analytical Method: Alkalinity by SM2320B Prep Method: SM2320P
 Tech: ALZ
 Analyst: ALZ Date Prep: 02.23.2021 11:25 % Moisture:
 Seq Number: 3151529 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	462	4.00	mg/L	02.23.2021 12:28		1

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
 Tech: CHE
 Analyst: CHE Date Prep: 02.19.2021 15:15 % Moisture:
 Seq Number: 3151337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Bromide	24959-67-9	0.758	0.100	mg/L	02.19.2021 21:41		1
Chloride	16887-00-6	38.3	0.500	mg/L	02.19.2021 21:41		1
Fluoride	16984-48-8	1.74	0.100	mg/L	02.19.2021 21:41		1
Nitrate as N	14797-55-8	0.129	0.100	mg/L	02.19.2021 21:41	K	1
Sulfate	14808-79-8	132	0.500	mg/L	02.19.2021 21:41		1

Analytical Method: TDS by SM2540C
 Tech: DTN
 Analyst: DTN % Moisture:
 Seq Number: 3151412 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	704	5.00	mg/L	02.22.2021 14:34		1

Analytical Method: pH by SM4500-H
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151797 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	8.13		SU	02.25.2021 17:02	K	1
Temperature	TEMP	19.9		Deg C	02.25.2021 17:02	K	1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-DXS1**
Lab Sample Id: 688601-004

Matrix: Ground Water
Date Collected: 02.16.2021 12:15

Date Received: 02.19.2021 14:04
Sample Depth: 1

Analytical Method: Recoverable Metals by EPA 200.8

Prep Method: E200.8P

Tech: MLI

Analyst: DEP

Date Prep: 02.24.2021 11:00

% Moisture:
SUB: T104704215-20-39

Seq Number: 3151703

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Arsenic	7440-38-2	<0.00400	0.00400	mg/L	02.25.2021 02:22	U	1
Silver	7440-22-4	<0.00200	0.00200	mg/L	02.25.2021 02:22	U	1
Uranium	7440-61-1	0.0831	0.00100	mg/L	02.25.2021 02:22		1

Analytical Method: Recoverable Metals per ICP by EPA 200.7

Prep Method: E200.7P

Tech: MLI

Analyst: DEP

Date Prep: 02.23.2021 08:30

% Moisture:
SUB: T104704215-20-39

Seq Number: 3151710

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Calcium	7440-70-2	78.0	10.0	mg/L	02.24.2021 20:31	D	50
Iron	7439-89-6	0.786	0.200	mg/L	02.24.2021 22:08		1
Magnesium	7439-95-4	10.7	0.200	mg/L	02.24.2021 22:08		1
Potassium	7440-09-7	5.39	0.500	mg/L	02.24.2021 22:08		1
Silica	7631-86-9	50.4	1.07	mg/L	02.24.2021 22:08		1
Sodium	7440-23-5	175	0.500	mg/L	02.24.2021 22:08		1

Analytical Method: Specific Conductance @25C by SM2510B

Tech: ANP

Analyst: ANP

% Moisture:
SUB: T104704215-20-39

Seq Number: 3151442

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	1290	10.0	umhos/cm	02.22.2021 17:06		1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-DXS2** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-005 Date Collected: 02.16.2021 14:31 Sample Depth: 1
 Analytical Method: Alkalinity by SM2320B Prep Method: SM2320P
 Tech: ALZ
 Analyst: ALZ Date Prep: 02.23.2021 11:25 % Moisture:
 Seq Number: 3151529 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	367	4.00	mg/L	02.23.2021 12:35		1

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
 Tech: CHE
 Analyst: CHE Date Prep: 02.19.2021 15:15 % Moisture:
 Seq Number: 3151337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Bromide	24959-67-9	0.394	0.100	mg/L	02.19.2021 21:50		1
Chloride	16887-00-6	19.8	0.500	mg/L	02.19.2021 21:50		1
Fluoride	16984-48-8	2.70	0.100	mg/L	02.19.2021 21:50		1
Nitrate as N	14797-55-8	<0.100	0.100	mg/L	02.19.2021 21:50	UK	1
Sulfate	14808-79-8	39.9	0.500	mg/L	02.19.2021 21:50		1

Analytical Method: TDS by SM2540C
 Tech: DTN
 Analyst: DTN % Moisture:
 Seq Number: 3151412 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	431	5.00	mg/L	02.22.2021 14:34		1

Analytical Method: pH by SM4500-H
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151797 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	7.95		SU	02.25.2021 17:02	K	1
Temperature	TEMP	19.9		Deg C	02.25.2021 17:02	K	1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-DXS2** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-005 Date Collected: 02.16.2021 14:31 Sample Depth: 1
 Analytical Method: Recoverable Metals by EPA 200.8 Prep Method: E200.8P
 Tech: MLI
 Analyst: DEP Date Prep: 02.24.2021 11:00 % Moisture:
 Seq Number: 3151703 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Arsenic	7440-38-2	0.00491	0.00400	mg/L	02.25.2021 02:25		1
Silver	7440-22-4	<0.00200	0.00200	mg/L	02.25.2021 02:25	U	1
Uranium	7440-61-1	0.0183	0.00100	mg/L	02.25.2021 02:25		1

Analytical Method: Recoverable Metals per ICP by EPA 200.7 Prep Method: E200.7P
 Tech: MLI
 Analyst: DEP Date Prep: 02.23.2021 08:30 % Moisture:
 Seq Number: 3151710 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Calcium	7440-70-2	57.1	0.200	mg/L	02.24.2021 22:12		1
Iron	7439-89-6	1.03	0.200	mg/L	02.24.2021 22:12		1
Magnesium	7439-95-4	4.48	0.200	mg/L	02.24.2021 22:12		1
Potassium	7440-09-7	1.58	0.500	mg/L	02.24.2021 22:12		1
Silica	7631-86-9	54.7	1.07	mg/L	02.24.2021 22:12		1
Sodium	7440-23-5	119	0.500	mg/L	02.24.2021 22:12		1

Analytical Method: Specific Conductance @25C by SM2510B
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151442 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	863	10.0	umhos/cm	02.22.2021 17:06		1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-DXS3** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-006 Date Collected: 02.16.2021 17:07 Sample Depth: 1
 Analytical Method: Alkalinity by SM2320B Prep Method: SM2320P
 Tech: ALZ
 Analyst: ALZ Date Prep: 02.23.2021 11:25 % Moisture:
 Seq Number: 3151529 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	322	4.00	mg/L	02.23.2021 12:42		1

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
 Tech: CHE
 Analyst: CHE Date Prep: 02.19.2021 15:15 % Moisture:
 Seq Number: 3151337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Bromide	24959-67-9	0.418	0.100	mg/L	02.19.2021 21:58		1
Chloride	16887-00-6	12.0	0.500	mg/L	02.19.2021 21:58		1
Fluoride	16984-48-8	1.98	0.100	mg/L	02.19.2021 21:58		1
Nitrate as N	14797-55-8	0.413	0.100	mg/L	02.19.2021 21:58	K	1
Sulfate	14808-79-8	49.8	0.500	mg/L	02.19.2021 21:58		1

Analytical Method: TDS by SM2540C
 Tech: DTN
 Analyst: DTN % Moisture:
 Seq Number: 3151412 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	423	5.00	mg/L	02.22.2021 14:34		1

Analytical Method: pH by SM4500-H
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151797 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	8.10		SU	02.25.2021 17:02	K	1
Temperature	TEMP	20.0		Deg C	02.25.2021 17:02	K	1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-DXS3** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-006 Date Collected: 02.16.2021 17:07 Sample Depth: 1

Analytical Method: Recoverable Metals by EPA 200.8 Prep Method: E200.8P

Tech: MLI
 Analyst: DEP Date Prep: 02.24.2021 11:00 % Moisture:
 Seq Number: 3151703 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Arsenic	7440-38-2	<0.00400	0.00400	mg/L	02.25.2021 02:28	U	1
Silver	7440-22-4	<0.00200	0.00200	mg/L	02.25.2021 02:28	U	1
Uranium	7440-61-1	0.0366	0.00100	mg/L	02.25.2021 02:28		1

Analytical Method: Recoverable Metals per ICP by EPA 200.7 Prep Method: E200.7P

Tech: MLI
 Analyst: DEP Date Prep: 02.23.2021 08:30 % Moisture:
 Seq Number: 3151710 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Calcium	7440-70-2	50.8	0.200	mg/L	02.24.2021 22:16		1
Iron	7439-89-6	<0.200	0.200	mg/L	02.24.2021 22:16	U	1
Magnesium	7439-95-4	1.97	0.200	mg/L	02.24.2021 22:16		1
Potassium	7440-09-7	2.26	0.500	mg/L	02.24.2021 22:16		1
Silica	7631-86-9	42.2	1.07	mg/L	02.24.2021 22:16		1
Sodium	7440-23-5	115	0.500	mg/L	02.24.2021 22:16		1

Analytical Method: Specific Conductance @25C by SM2510B

Tech: ANP
 Analyst: ANP Date Prep: 02.22.2021 17:06 % Moisture:
 Seq Number: 3151442 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	799	10.0	umhos/cm	02.22.2021 17:06		1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-M0FNWW1** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-007 Date Collected: 02.17.2021 10:59 Sample Depth: 300
 Analytical Method: Alkalinity by SM2320B Prep Method: SM2320P
 Tech: ALZ
 Analyst: ALZ Date Prep: 02.23.2021 11:25 % Moisture:
 Seq Number: 3151529 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	220	4.00	mg/L	02.23.2021 13:00		1

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
 Tech: CHE
 Analyst: CHE Date Prep: 02.19.2021 15:15 % Moisture:
 Seq Number: 3151337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Bromide	24959-67-9	0.442	0.100	mg/L	02.19.2021 22:07		1
Chloride	16887-00-6	14.7	0.500	mg/L	02.19.2021 22:07		1
Fluoride	16984-48-8	0.937	0.100	mg/L	02.19.2021 22:07		1
Nitrate as N	14797-55-8	2.06	0.100	mg/L	02.19.2021 22:07	K	1
Sulfate	14808-79-8	44.0	0.500	mg/L	02.19.2021 22:07		1

Analytical Method: TDS by SM2540C
 Tech: DTN
 Analyst: DTN % Moisture:
 Seq Number: 3151412 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	372	5.00	mg/L	02.22.2021 14:34		1

Analytical Method: pH by SM4500-H
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151797 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	8.49		SU	02.25.2021 17:02	K	1
Temperature	TEMP	20.0		Deg C	02.25.2021 17:02	K	1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-M0FNWW2** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-008 Date Collected: 02.17.2021 12:10 Sample Depth: 300
 Analytical Method: Alkalinity by SM2320B Prep Method: SM2320P
 Tech: ALZ
 Analyst: ALZ Date Prep: 02.23.2021 11:25 % Moisture:
 Seq Number: 3151529 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	230	4.00	mg/L	02.23.2021 13:06		1

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
 Tech: CHE
 Analyst: CHE Date Prep: 02.19.2021 15:15 % Moisture:
 Seq Number: 3151337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Bromide	24959-67-9	0.323	0.100	mg/L	02.19.2021 22:16		1
Chloride	16887-00-6	9.15	0.500	mg/L	02.19.2021 22:16		1
Fluoride	16984-48-8	1.04	0.100	mg/L	02.19.2021 22:16		1
Nitrate as N	14797-55-8	1.41	0.100	mg/L	02.19.2021 22:16	K	1
Sulfate	14808-79-8	19.2	0.500	mg/L	02.19.2021 22:16		1

Analytical Method: TDS by SM2540C
 Tech: DTN
 Analyst: DTN % Moisture:
 Seq Number: 3151412 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	366	5.00	mg/L	02.22.2021 14:34		1

Analytical Method: pH by SM4500-H
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151797 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	8.59		SU	02.25.2021 17:02	K	1
Temperature	TEMP	19.9		Deg C	02.25.2021 17:02	K	1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-M0FNWW2** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-008 Date Collected: 02.17.2021 12:10 Sample Depth: 300

Analytical Method: Recoverable Metals by EPA 200.8 Prep Method: E200.8P

Tech: MLI
 Analyst: DEP Date Prep: 02.24.2021 11:00 % Moisture:
 Seq Number: 3151703 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Arsenic	7440-38-2	<0.00400	0.00400	mg/L	02.25.2021 02:34	U	1
Silver	7440-22-4	<0.00200	0.00200	mg/L	02.25.2021 02:34	U	1
Uranium	7440-61-1	0.0410	0.00100	mg/L	02.25.2021 02:34		1

Analytical Method: Recoverable Metals per ICP by EPA 200.7 Prep Method: E200.7P

Tech: MLI
 Analyst: DEP Date Prep: 02.23.2021 08:30 % Moisture:
 Seq Number: 3151710 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Calcium	7440-70-2	9.11	0.200	mg/L	02.24.2021 22:33		1
Iron	7439-89-6	<0.200	0.200	mg/L	02.24.2021 22:33	U	1
Magnesium	7439-95-4	<0.200	0.200	mg/L	02.24.2021 22:33	U	1
Potassium	7440-09-7	0.517	0.500	mg/L	02.24.2021 22:33		1
Silica	7631-86-9	33.1	1.07	mg/L	02.24.2021 22:33		1
Sodium	7440-23-5	113	0.500	mg/L	02.24.2021 22:33		1

Analytical Method: Specific Conductance @25C by SM2510B

Tech: ANP
 Analyst: ANP Date Prep: 02.22.2021 17:06 % Moisture:
 Seq Number: 3151442 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	543	10.0	umhos/cm	02.22.2021 17:06		1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-IBS1** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-009 Date Collected: 02.17.2021 14:08 Sample Depth: 19
 Analytical Method: Alkalinity by SM2320B Prep Method: SM2320P
 Tech: ALZ
 Analyst: ALZ Date Prep: 02.23.2021 11:25 % Moisture:
 Seq Number: 3151529 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	232	4.00	mg/L	02.23.2021 13:12		1

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
 Tech: CHE
 Analyst: CHE Date Prep: 02.19.2021 15:15 % Moisture:
 Seq Number: 3151337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Bromide	24959-67-9	0.322	0.100	mg/L	02.19.2021 18:38		1
Chloride	16887-00-6	7.24	0.500	mg/L	02.19.2021 18:38		1
Fluoride	16984-48-8	0.839	0.100	mg/L	02.19.2021 18:38		1
Nitrate as N	14797-55-8	1.11	0.100	mg/L	02.19.2021 18:38	K	1
Sulfate	14808-79-8	9.67	0.500	mg/L	02.19.2021 18:38		1

Analytical Method: TDS by SM2540C
 Tech: DTN
 Analyst: DTN % Moisture:
 Seq Number: 3151412 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	231	5.00	mg/L	02.22.2021 14:34		1

Analytical Method: pH by SM4500-H
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151797 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	8.33		SU	02.25.2021 17:02	K	1
Temperature	TEMP	20.0		Deg C	02.25.2021 17:02	K	1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-IBS1** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-009 Date Collected: 02.17.2021 14:08 Sample Depth: 19
 Analytical Method: Recoverable Metals by EPA 200.8 Prep Method: E200.8P
 Tech: MLI
 Analyst: DEP Date Prep: 02.24.2021 11:00 % Moisture:
 Seq Number: 3151703 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Arsenic	7440-38-2	0.00492	0.00400	mg/L	02.25.2021 02:37		1
Silver	7440-22-4	<0.00200	0.00200	mg/L	02.25.2021 02:37	U	1
Uranium	7440-61-1	0.0112	0.00100	mg/L	02.25.2021 02:37		1

Analytical Method: Recoverable Metals per ICP by EPA 200.7 Prep Method: E200.7P
 Tech: MLI
 Analyst: DEP Date Prep: 02.23.2021 08:30 % Moisture:
 Seq Number: 3151710 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Calcium	7440-70-2	48.8	0.200	mg/L	02.24.2021 22:37		1
Iron	7439-89-6	<0.200	0.200	mg/L	02.24.2021 22:37	U	1
Magnesium	7439-95-4	3.28	0.200	mg/L	02.24.2021 22:37		1
Potassium	7440-09-7	5.08	0.500	mg/L	02.24.2021 22:37		1
Silica	7631-86-9	49.5	1.07	mg/L	02.24.2021 22:37		1
Sodium	7440-23-5	54.0	0.500	mg/L	02.24.2021 22:37		1

Analytical Method: Specific Conductance @25C by SM2510B
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151442 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	502	10.0	umhos/cm	02.22.2021 17:06		1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-IBS2** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-010 Date Collected: 02.17.2021 17:17 Sample Depth: 2
 Analytical Method: Alkalinity by SM2320B Prep Method: SM2320P
 Tech: ALZ
 Analyst: ALZ Date Prep: 02.23.2021 11:25 % Moisture:
 Seq Number: 3151529 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	368	4.00	mg/L	02.23.2021 13:20		1

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
 Tech: CHE
 Analyst: CHE Date Prep: 02.19.2021 15:15 % Moisture:
 Seq Number: 3151337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Bromide	24959-67-9	<0.100	0.100	mg/L	02.19.2021 16:28	U	1
Chloride	16887-00-6	12.3	0.500	mg/L	02.19.2021 16:28		1
Fluoride	16984-48-8	1.12	0.100	mg/L	02.19.2021 16:28		1
Nitrate as N	14797-55-8	<0.100	0.100	mg/L	02.19.2021 16:28	U	1
Sulfate	14808-79-8	27.5	0.500	mg/L	02.19.2021 16:28		1

Analytical Method: TDS by SM2540C
 Tech: DTN
 Analyst: DTN % Moisture:
 Seq Number: 3151412 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	431	5.00	mg/L	02.22.2021 14:34		1

Analytical Method: pH by SM4500-H
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151797 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	8.47		SU	02.25.2021 17:02	K	1
Temperature	TEMP	20.0		Deg C	02.25.2021 17:02	K	1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-IBS2** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-010 Date Collected: 02.17.2021 17:17 Sample Depth: 2
 Analytical Method: Recoverable Metals by EPA 200.8 Prep Method: E200.8P
 Tech: MLI
 Analyst: DEP Date Prep: 02.24.2021 11:00 % Moisture:
 Seq Number: 3151703 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Arsenic	7440-38-2	0.00445	0.00400	mg/L	02.25.2021 02:40		1
Silver	7440-22-4	<0.00200	0.00200	mg/L	02.25.2021 02:40	U	1
Uranium	7440-61-1	0.0221	0.00100	mg/L	02.25.2021 02:40		1

Analytical Method: Recoverable Metals per ICP by EPA 200.7 Prep Method: E200.7P
 Tech: MLI
 Analyst: DEP Date Prep: 02.23.2021 08:30 % Moisture:
 Seq Number: 3151710 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Calcium	7440-70-2	60.9	0.200	mg/L	02.24.2021 22:42		1
Iron	7439-89-6	0.221	0.200	mg/L	02.24.2021 22:42		1
Magnesium	7439-95-4	4.72	0.200	mg/L	02.24.2021 22:42		1
Potassium	7440-09-7	3.86	0.500	mg/L	02.24.2021 22:42		1
Silica	7631-86-9	42.4	1.07	mg/L	02.24.2021 22:42		1
Sodium	7440-23-5	106	0.500	mg/L	02.24.2021 22:42		1

Analytical Method: Specific Conductance @25C by SM2510B
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151442 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	810	10.0	umhos/cm	02.22.2021 17:06		1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-000492** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-011 Date Collected: 02.17.2021 18:40

Analytical Method: Alkalinity by SM2320B Prep Method: SM2320P
 Tech: ALZ
 Analyst: ALZ Date Prep: 02.23.2021 11:25 % Moisture:
 Seq Number: 3151529 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	178	4.00	mg/L	02.23.2021 13:26		1

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
 Tech: CHE
 Analyst: CHE Date Prep: 02.19.2021 15:15 % Moisture:
 Seq Number: 3151337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Bromide	24959-67-9	0.353	0.100	mg/L	02.19.2021 16:37		1
Chloride	16887-00-6	12.1	0.500	mg/L	02.19.2021 16:37	X	1
Fluoride	16984-48-8	2.52	0.100	mg/L	02.19.2021 16:37	XF	1
Nitrate as N	14797-55-8	1.75	0.100	mg/L	02.19.2021 16:37		1
Sulfate	14808-79-8	24.4	0.500	mg/L	02.19.2021 16:37	X	1

Analytical Method: TDS by SM2540C
 Tech: DTN
 Analyst: DTN % Moisture:
 Seq Number: 3151412 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	338	5.00	mg/L	02.22.2021 14:34		1

Analytical Method: pH by SM4500-H
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151797 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	9.18		SU	02.25.2021 17:02	K	1
Temperature	TEMP	20.1		Deg C	02.25.2021 17:02	K	1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-000492** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-011 Date Collected: 02.17.2021 18:40

Analytical Method: Recoverable Metals by EPA 200.8 Prep Method: E200.8P
 Tech: MLI
 Analyst: DEP Date Prep: 02.24.2021 11:00 % Moisture:
 Seq Number: 3151703 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Arsenic	7440-38-2	0.00881	0.00400	mg/L	02.25.2021 02:51		1
Silver	7440-22-4	<0.00200	0.00200	mg/L	02.25.2021 02:51	U	1
Uranium	7440-61-1	0.0167	0.00100	mg/L	02.25.2021 02:51		1

Analytical Method: Recoverable Metals per ICP by EPA 200.7 Prep Method: E200.7P
 Tech: MLI
 Analyst: DEP Date Prep: 02.23.2021 08:30 % Moisture:
 Seq Number: 3151710 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Calcium	7440-70-2	0.829	0.200	mg/L	02.24.2021 22:50		1
Iron	7439-89-6	<0.200	0.200	mg/L	02.24.2021 22:50	U	1
Magnesium	7439-95-4	<0.200	0.200	mg/L	02.24.2021 22:50	U	1
Potassium	7440-09-7	<0.500	0.500	mg/L	02.24.2021 22:50	U	1
Silica	7631-86-9	25.9	1.07	mg/L	02.24.2021 22:50		1
Sodium	7440-23-5	120	0.500	mg/L	02.24.2021 22:50		1

Analytical Method: Specific Conductance @25C by SM2510B
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151442 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	561	10.0	umhos/cm	02.22.2021 17:06		1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-DXW5** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-012 Date Collected: 02.18.2021 15:05 Sample Depth: 65.
 Analytical Method: Alkalinity by SM2320B Prep Method: SM2320P
 Tech: ALZ
 Analyst: ALZ Date Prep: 02.23.2021 11:25 % Moisture:
 Seq Number: 3151529 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	293	4.00	mg/L	02.23.2021 13:39		1

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
 Tech: CHE
 Analyst: CHE Date Prep: 02.19.2021 15:15 % Moisture:
 Seq Number: 3151337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Bromide	24959-67-9	0.470	0.100	mg/L	02.19.2021 16:45		1
Chloride	16887-00-6	17.2	0.500	mg/L	02.19.2021 16:45		1
Fluoride	16984-48-8	1.71	0.100	mg/L	02.19.2021 16:45		1
Nitrate as N	14797-55-8	1.12	0.100	mg/L	02.19.2021 16:45		1
Sulfate	14808-79-8	43.4	0.500	mg/L	02.19.2021 16:45		1

Analytical Method: TDS by SM2540C
 Tech: DTN
 Analyst: DTN % Moisture:
 Seq Number: 3151412 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	331	5.00	mg/L	02.22.2021 14:34		1

Analytical Method: pH by SM4500-H
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151797 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	8.50		SU	02.25.2021 17:02	K	1
Temperature	TEMP	20.0		Deg C	02.25.2021 17:02	K	1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-DXW5** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-012 Date Collected: 02.18.2021 15:05 Sample Depth: 65.

Analytical Method: Recoverable Metals by EPA 200.8 Prep Method: E200.8P

Tech: MLI
 Analyst: DEP Date Prep: 02.24.2021 11:00 % Moisture:
 Seq Number: 3151703 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Arsenic	7440-38-2	<0.00400	0.00400	mg/L	02.25.2021 02:55	U	1
Silver	7440-22-4	<0.00200	0.00200	mg/L	02.25.2021 02:55	U	1
Uranium	7440-61-1	0.0338	0.00100	mg/L	02.25.2021 02:55		1

Analytical Method: Recoverable Metals per ICP by EPA 200.7 Prep Method: E200.7P

Tech: MLI
 Analyst: DEP Date Prep: 02.23.2021 08:30 % Moisture:
 Seq Number: 3151710 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Calcium	7440-70-2	31.1	0.200	mg/L	02.24.2021 22:54		1
Iron	7439-89-6	<0.200	0.200	mg/L	02.24.2021 22:54	U	1
Magnesium	7439-95-4	0.248	0.200	mg/L	02.24.2021 22:54		1
Potassium	7440-09-7	1.11	0.500	mg/L	02.24.2021 22:54		1
Silica	7631-86-9	39.6	1.07	mg/L	02.24.2021 22:54		1
Sodium	7440-23-5	131	0.500	mg/L	02.24.2021 22:54		1

Analytical Method: Specific Conductance @25C by SM2510B

Tech: ANP
 Analyst: ANP Date Prep: 02.22.2021 17:06 % Moisture:
 Seq Number: 3151442 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	753	10.0	umhos/cm	02.22.2021 17:06		1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-DXW1** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-013 Date Collected: 02.18.2021 16:06 Sample Depth: 42
 Analytical Method: Alkalinity by SM2320B Prep Method: SM2320P
 Tech: ALZ
 Analyst: ALZ Date Prep: 02.23.2021 11:25 % Moisture:
 Seq Number: 3151529 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	315	4.00	mg/L	02.23.2021 13:47		1

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
 Tech: CHE
 Analyst: CHE Date Prep: 02.19.2021 15:15 % Moisture:
 Seq Number: 3151337

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Bromide	24959-67-9	0.323	0.100	mg/L	02.19.2021 16:54		1
Chloride	16887-00-6	6.50	0.500	mg/L	02.19.2021 16:54		1
Fluoride	16984-48-8	0.938	0.100	mg/L	02.19.2021 16:54		1
Nitrate as N	14797-55-8	0.234	0.100	mg/L	02.19.2021 16:54		1
Sulfate	14808-79-8	14.2	0.500	mg/L	02.19.2021 16:54		1

Analytical Method: TDS by SM2540C
 Tech: DTN
 Analyst: DTN % Moisture:
 Seq Number: 3151412 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Total Dissolved Solids	1642222	289	5.00	mg/L	02.22.2021 14:34		1

Analytical Method: pH by SM4500-H
 Tech: ANP
 Analyst: ANP % Moisture:
 Seq Number: 3151797 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	7.99		SU	02.25.2021 17:02	K	1
Temperature	TEMP	20.2		Deg C	02.25.2021 17:02	K	1

Certificate of Analytical Results 688601

Straub Corporation, Stanton, TX Alamito Creek Prod

Sample Id: **PR-DXW1** Matrix: Ground Water Date Received: 02.19.2021 14:04
 Lab Sample Id: 688601-013 Date Collected: 02.18.2021 16:06 Sample Depth: 42

Analytical Method: Recoverable Metals by EPA 200.8 Prep Method: E200.8P

Tech: MLI
 Analyst: DEP Date Prep: 02.24.2021 11:00 % Moisture:
 Seq Number: 3151703 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Arsenic	7440-38-2	<0.00400	0.00400	mg/L	02.25.2021 02:57	U	1
Silver	7440-22-4	<0.00200	0.00200	mg/L	02.25.2021 02:57	U	1
Uranium	7440-61-1	0.00665	0.00100	mg/L	02.25.2021 02:57		1

Analytical Method: Recoverable Metals per ICP by EPA 200.7 Prep Method: E200.7P

Tech: MLI
 Analyst: DEP Date Prep: 02.23.2021 08:30 % Moisture:
 Seq Number: 3151710 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Calcium	7440-70-2	71.3	0.200	mg/L	02.24.2021 22:59		1
Iron	7439-89-6	<0.200	0.200	mg/L	02.24.2021 22:59	U	1
Magnesium	7439-95-4	17.1	0.200	mg/L	02.24.2021 22:59		1
Potassium	7440-09-7	1.11	0.500	mg/L	02.24.2021 22:59		1
Silica	7631-86-9	57.2	1.07	mg/L	02.24.2021 22:59		1
Sodium	7440-23-5	40.7	0.500	mg/L	02.24.2021 22:59		1

Analytical Method: Specific Conductance @25C by SM2510B

Tech: ANP
 Analyst: ANP Date Prep: 02.22.2021 17:06 % Moisture:
 Seq Number: 3151442 SUB: T104704215-20-39

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	657	10.0	umhos/cm	02.22.2021 17:06		1

Straub Corporation
Alamito Creek Prod

Analytical Method: Alkalinity by SM2320B
Seq Number: 3151529

Matrix: Water
MB Sample Id: 7721814-1-BLK

Prep Method: SM2320P
Date Prep: 02.23.2021

Parameter	MB Result	Units	Analysis Date	Flag
Alkalinity, Bicarbonate (as CaCO3)	<4.00	mg/L	02.23.2021 11:40	

Analytical Method: Alkalinity by SM2320B
Seq Number: 3151529
Parent Sample Id: 688601-001

Matrix: Ground Water
MD Sample Id: 688601-001 D

Prep Method: SM2320P
Date Prep: 02.23.2021

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Alkalinity, Bicarbonate (as CaCO3)	194	190	2	20	mg/L	02.23.2021 12:07	

Analytical Method: Alkalinity by SM2320B
Seq Number: 3151529
Parent Sample Id: 688601-011

Matrix: Ground Water
MD Sample Id: 688601-011 D

Prep Method: SM2320P
Date Prep: 02.23.2021

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Alkalinity, Bicarbonate (as CaCO3)	178	183	3	20	mg/L	02.23.2021 13:33	

Analytical Method: Inorganic Anions by EPA 300/300.1
Seq Number: 3151337
MB Sample Id: 7721618-1-BLK

Matrix: Water
LCS Sample Id: 7721618-1-BKS

Prep Method: E300P
Date Prep: 02.19.2021
LCSD Sample Id: 7721618-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Bromide	<0.100	5.00	4.93	99	4.69	94	90-110	5	20	mg/L	02.19.2021 15:45	
Chloride	<0.500	25.0	24.7	99	24.3	97	90-110	2	20	mg/L	02.19.2021 15:45	
Fluoride	<0.100	5.00	4.62	92	4.51	90	90-110	2	20	mg/L	02.19.2021 15:45	
Nitrate as N	<0.100	5.00	4.94	99	4.93	99	90-110	0	20	mg/L	02.19.2021 15:45	
Sulfate	<0.500	25.0	24.7	99	24.6	98	90-110	0	20	mg/L	02.19.2021 15:45	

Analytical Method: Inorganic Anions by EPA 300/300.1
Seq Number: 3151337
Parent Sample Id: 688601-001

Matrix: Ground Water
MS Sample Id: 688601-001 S

Prep Method: E300P
Date Prep: 02.19.2021
MSD Sample Id: 688601-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Bromide	0.488	25.0	26.0	102	123	490	90-110	130	20	mg/L	02.19.2021 16:11	XF
Chloride	16.3	125	155	111	147	105	90-110	5	20	mg/L	02.19.2021 16:11	X
Fluoride	1.89	25.0	28.6	107	18.6	67	90-110	42	20	mg/L	02.19.2021 16:11	XF
Nitrate as N	2.65	25.0	28.5	103	28.4	103	90-110	0	20	mg/L	02.19.2021 16:11	
Sulfate	35.2	125	168	106	164	103	90-110	2	20	mg/L	02.19.2021 16:11	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* | (C-E) / (C+E) |
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

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Alamito Creek Prod

Analytical Method: Inorganic Anions by EPA 300/300.1

Seq Number: 3151337 Matrix: Ground Water Prep Method: E300P
 Parent Sample Id: 688601-011 MS Sample Id: 688601-011 S Date Prep: 02.19.2021
 MSD Sample Id: 688601-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Bromide	0.353	25.0	27.9	110	26.4	104	90-110	6	20	mg/L	02.19.2021 19:05	
Chloride	12.1	125	155	114	150	110	90-110	3	20	mg/L	02.19.2021 19:05	X
Fluoride	2.52	25.0	31.1	114	20.0	70	90-110	43	20	mg/L	02.19.2021 19:05	XF
Nitrate as N	1.75	25.0	29.3	110	29.1	109	90-110	1	20	mg/L	02.19.2021 19:05	
Sulfate	24.4	125	164	112	161	109	90-110	2	20	mg/L	02.19.2021 19:05	X

Analytical Method: TDS by SM2540C

Seq Number: 3151412 Matrix: Water
 MB Sample Id: 3151412-1-BLK LCS Sample Id: 3151412-1-BKS LCSD Sample Id: 3151412-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Total Dissolved Solids	<5.00	1000	974	97	988	99	80-120	1	10	mg/L	02.22.2021 14:34	

Analytical Method: TDS by SM2540C

Seq Number: 3151412 Matrix: Ground Water
 Parent Sample Id: 688601-001 MD Sample Id: 688601-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Total Dissolved Solids	280	261	7	10	mg/L	02.22.2021 14:34	

Analytical Method: TDS by SM2540C

Seq Number: 3151412 Matrix: Ground Water
 Parent Sample Id: 688601-011 MD Sample Id: 688601-011 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Total Dissolved Solids	338	313	8	10	mg/L	02.22.2021 14:34	

Analytical Method: pH by SM4500-H

Seq Number: 3151797 Matrix: Ground Water
 Parent Sample Id: 688601-001 MD Sample Id: 688601-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
pH	8.52	8.59	1	20	SU	02.25.2021 17:02	
Temperature	19.9	19.9	0	20	Deg C	02.25.2021 17:02	

MS/MSD Percent Recovery
 Relative Percent Difference
 LCS/LCSD Recovery
 Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec

Straub Corporation
Alamito Creek Prod

Analytical Method: pH by SM4500-H

Seq Number: 3151797 Matrix: Ground Water
Parent Sample Id: 688601-011 MD Sample Id: 688601-011 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
pH	9.18	9.28	1	20	SU	02.25.2021 17:02	
Temperature	20.1	20.2	0	20	Deg C	02.25.2021 17:02	

Analytical Method: Recoverable Metals by EPA 200.8

Seq Number: 3151703 Matrix: Water Prep Method: E200.8P
MB Sample Id: 7721883-1-BLK LCS Sample Id: 7721883-1-BKS Date Prep: 02.24.2021
LCSD Sample Id: 7721883-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Arsenic	<0.00400	0.100	0.0963	96	0.0960	96	85-115	0	20	mg/L	02.25.2021 01:46	
Silver	<0.00200	0.0500	0.0509	102	0.0508	102	85-115	0	20	mg/L	02.25.2021 01:46	
Uranium	<0.00100	0.0250	0.0234	94	0.0234	94	85-115	0	20	mg/L	02.25.2021 01:46	

Analytical Method: Recoverable Metals by EPA 200.8

Seq Number: 3151703 Matrix: Water Prep Method: E200.8P
Parent Sample Id: 686151-001 MS Sample Id: 686151-001 S Date Prep: 02.24.2021
MSD Sample Id: 686151-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Arsenic	0.00605	0.100	0.108	102	0.106	100	85-115	2	20	mg/L	02.25.2021 01:55	
Silver	<0.00200	0.0500	0.0481	96	0.0465	93	85-115	3	20	mg/L	02.25.2021 01:55	
Uranium	0.0116	0.0250	0.0384	107	0.0377	104	85-115	2	20	mg/L	02.25.2021 01:55	

Analytical Method: Recoverable Metals by EPA 200.8

Seq Number: 3151703 Matrix: Ground Water Prep Method: E200.8P
Parent Sample Id: 688601-010 MS Sample Id: 688601-010 S Date Prep: 02.24.2021

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	Limits	Units	Analysis Date	Flag
Arsenic	0.00445	0.100	0.103	99	85-115	mg/L	02.25.2021 02:49	
Silver	<0.00200	0.0500	0.0524	105	85-115	mg/L	02.25.2021 02:49	
Uranium	0.0221	0.0250	0.0498	111	85-115	mg/L	02.25.2021 02:49	

Analytical Method: Recoverable Metals per ICP by EPA 200.7

Seq Number: 3151710 Matrix: Water Prep Method: E200.7P
MB Sample Id: 7721811-1-BLK LCS Sample Id: 7721811-1-BKS Date Prep: 02.23.2021
LCSD Sample Id: 7721811-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Calcium	<0.200	25.0	24.3	97	24.3	97	85-115	0	20	mg/L	02.24.2021 19:41	
Iron	<0.200	5.00	4.99	100	4.99	100	85-115	0	20	mg/L	02.24.2021 19:41	
Magnesium	<0.200	25.0	24.5	98	24.5	98	85-115	0	20	mg/L	02.24.2021 19:41	
Potassium	<0.500	10.0	9.87	99	9.85	99	85-115	0	20	mg/L	02.24.2021 19:41	
Silica	<1.07	21.4	21.4	100	21.5	100	85-115	0	20	mg/L	02.24.2021 19:41	
Sodium	<0.500	25.0	24.1	96	24.1	96	85-115	0	20	mg/L	02.24.2021 19:41	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* |(C-E) / (C+E)|
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

Straub Corporation
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Analytical Method: Recoverable Metals per ICP by EPA 200.7

Seq Number: 3151710
Parent Sample Id: 688679-001

Matrix: Water
MS Sample Id: 688679-001 S

Prep Method: E200.7P
Date Prep: 02.23.2021
MSD Sample Id: 688679-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Calcium	34.8	25.0	60.2	102	60.1	101	70-130	0	20	mg/L	02.24.2021 19:53	
Iron	1.59	5.00	6.88	106	6.89	106	70-130	0	20	mg/L	02.24.2021 19:53	
Magnesium	4.64	25.0	30.7	104	30.7	104	70-130	0	20	mg/L	02.24.2021 19:53	
Potassium	117	10.0	126	90	126	90	70-130	0	20	mg/L	02.24.2021 19:53	
Silica	22.5	21.4	46.6	113	46.7	113	70-130	0	20	mg/L	02.24.2021 19:53	
Sodium	112	25.0	136	96	136	96	70-130	0	20	mg/L	02.24.2021 19:53	

Analytical Method: Recoverable Metals per ICP by EPA 200.7

Seq Number: 3151710
Parent Sample Id: 688601-010

Matrix: Ground Water
MS Sample Id: 688601-010 S

Prep Method: E200.7P
Date Prep: 02.23.2021

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	Limits	Units	Analysis Date	Flag
Calcium	60.9	25.0	87.5	106	70-130	mg/L	02.24.2021 22:46	
Iron	0.221	5.00	5.61	108	70-130	mg/L	02.24.2021 22:46	
Magnesium	4.72	25.0	31.4	107	70-130	mg/L	02.24.2021 22:46	
Potassium	3.86	10.0	14.7	108	70-130	mg/L	02.24.2021 22:46	
Silica	42.4	21.4	67.2	116	70-130	mg/L	02.24.2021 22:46	
Sodium	106	25.0	134	112	70-130	mg/L	02.24.2021 22:46	

Analytical Method: Specific Conductance @25C by SM2510B

Seq Number: 3151442
MB Sample Id: 3151442-1-BLK

Matrix: Water
LCS Sample Id: 3151442-1-BKS

LCSD Sample Id: 3151442-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Conductivity	<10.0	1410	1410	100	1410	100	80-120	0	20	umhos/cm	02.22.2021 17:06	

Analytical Method: Specific Conductance @25C by SM2510B

Seq Number: 3151442
Parent Sample Id: 688601-001

Matrix: Ground Water
MD Sample Id: 688601-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Conductivity	568	578	2	20	umhos/cm	02.22.2021 17:06	

Analytical Method: Specific Conductance @25C by SM2510B

Seq Number: 3151442
Parent Sample Id: 688601-011

Matrix: Ground Water
MD Sample Id: 688601-011 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Conductivity	561	561	0	20	umhos/cm	02.22.2021 17:06	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* | (C-E) / (C+E) |
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



Environment Testing
Xenco

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334
El Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Chain of Custody

Work Order No: 1882601

www.xenco.com Page 1 of 2

Project Manager: Raymond Strauss Jr, P.E. Bill to: (if different)

Company Name: Strauss Corporation Company Name:

Address: PO Box 192 Address:

City/State/Zip: Stanton TX 79782 City/State/Zip:

Phone: 432 990 5551 Email: Raymond.Strauss@StraussCorporation.com

Program: UST/PST PREP Brownfields RRC Superfund

State of Project:

Reporting: Level I Level II Level III PST/UST TRRP Level IV

Deliverables: EDD ADAPT Other:

Project Name: Alamita Creek Res. Turn Around: Routine Rush

Project Number: Residue Cleanup Due Date:

Project Location: Raymond Strauss Jr, P.E. TAT starts the day received by the lab, if received by 4:30pm

Sampler's Name: Raymond Strauss Jr, P.E.

P.O. #:

SAMPLE RECEIPT: Temp Blank: Yes No Wet Ice: Yes No

Samples Received Intact: Yes No Thermometer ID: 178

Cooler Custody Seals: Yes No Correction Factor: 0.5

Sample Custody Seals: Yes No Temperature Reading: 1.5

Total Containers: 2 Corrected Temperature: 2.0

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/Comp	# of Cont	Parameters	ANALYSIS REQUEST	Preservative Codes	Sample Comments
PR-000384	GW	2-15-21	13:00	600	3	3	(E-200.7) (E-200.6-Ag, Pb, Cu) CATIONS-Ca, Na, K, Mg, Si, Fe (NM) ANIONS-Cl, Br, F, NO ₃ ⁻ , SO ₄ ⁻² E-300.0 TDS SM 25406/160.1 PH-9040 ALK E-310.1, Ca CO ₃ E-310.2 SC-SM 22008		None: NO Cool: Cool HCL: HC H ₂ SO ₄ : H ₂ H ₃ PO ₄ : HP NaHSO ₄ : NABIS Na ₂ SO ₄ : NASO ₄ Zn Acetate+NaOH: Zn NaOH+Ascorbic Acid: SASC	0.650ml COOL 1.250ml HWBZ
PR-SKRM4W1	GW	2-15-21	15:50	~300	3	3				
PR-AVAVW1	GW	2-15-21	16:52	WTW	3	3				
PR-DXS1	GW	2-16-21	12:15	1	3	3				
PR-DXS2	GW	2-16-21	14:31	1	3	3				
PR-DXS3	GW	2-16-21	17:07	1	3	3				
PR-MDFUW1	GW	2-17-21	10:59	300	3	3				
PR-MDFUW2	GW	2-17-21	12:10	300	3	3				
PR-TBS1	GW	2-17-21	14:08	19	3	3				
PR-TBS2	GW	2-17-21	17:17	2	3	3				

Total 2007/6010 2008/6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO₂ Na Sr Ti Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed TCLP/SPLP 6010 : 8RCRA Sb As Ba Be Cd Cr Co Cu Ph Mn Mo Ni Se Ag TI U Hg: 1631 / 245.1 / 7470 / 7471

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Eurofins Xenco. Its affiliates and subcontractors. It assigns standard terms and conditions of service. Eurofins Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Eurofins Xenco. A minimum charge of \$85.00 will be applied to each project and a charge of \$5 for each sample submitted to Eurofins Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature) [Signature] Date/Time 02/19/21

Received by: (Signature) [Signature] Date/Time 1/4/04



Environment Testing
Xenco

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334
El Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Chain of Custody

Work Order No: _____

www.xenco.com Page 2 of 2

Project Manager: Raymond L Straus Jr, Ph.D. Bill to: (if different)

Company Name: STRANS CORPORATION Company Name:

Address: PO Box 792 Address:

City, State ZIP: STAYTON, TX 79782 City, State ZIP:

Phone: 432 970 5551 Email: Raymond@StransCorporation.com

Program: UST/PST PRP Brownfields RRC Superfund

State of Project: _____

Reporting: Level II Level III PST/UST TRRP Level IV

Deliverables: EDD ADAPT Other: _____

Project Name: Alamito Creek Proj. Turn Around: Routine Rush

Project Number: _____

Project Location: RESIDIO COUNTY Due Date: _____

Sample's Name: Raymond Straus Sr. PL TAT starts the day received by the lab, if received by 4:30pm

P.O. #: _____

SAMPLE RECEIPT: Temp Blank: Yes No Wet Ice: Yes No

Samples Received Intact: Yes No Thermometer ID: 178

Cooler Custody Seals: Yes No Correction Factor: 0.5

Sample Custody Seals: Yes No Temperature Readings: 1.5

Total Containers: 2 Corrected Temperature: 0.0

Parameters: (E-300.1) (E-300.8-A₃, A₅, A₆) CATIONS - Ca, Na, K, Mg, Si, Fe (HM)
ANIONS - Cl⁻, Br⁻, F⁻, NO₃⁻, SO₄⁻² E-300.0
TDS 5m 2840C/160.1 PM-9040
AIK E-302.1, CaCO₃ E-30.2 SC-5m 2840

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/Comp	# of Cont	ANALYSIS REQUEST	Preservative Codes	Sample Comments
PR-000492	BW	2-17-24	18:40	4K	Grab	3		None: NO D1 Water: H ₂ O	
PR-DXWS	GLW	2-18-24	15:05	65'	Grab	3		MeOH, Me HNO ₃ , HN	
PR-DXW1	GLW	2-18-24	16:06	42'	Grab	3		H ₂ SO ₄ : H ₂ NaOH, Na	

Total 2007/6010 2008/6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SIO₂ Na Sr Tl Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010 : 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U Hg: 1631 / 245.1 / 2470 / 7471

Note: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Eurofins Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Eurofins Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Eurofins Xenco. A minimum charge of \$85.00 will be applied to each project and a charge of \$5 for each sample submitted to Eurofins Xenco, but not analyzed. These terms will be entered unless previously negotiated.

Relinquished by: (Signature) [Signature] Received by: (Signature) [Signature] Date/Time: 02/19/24

Relinquished by: (Signature) _____ Received by: (Signature) _____ Date/Time: _____



STRAUB CORPORATION - Geoscience

P.O. Box 192, Stanton, Texas 79782 (432) 756-3489

is approximately three days. The District will be responsible for acquiring legal access from landowners to enter the properties for the field investigation and sampling.

Water Quality:

Water quality can be utilized as a source indicator of groundwater systems. Utilizing an approved groundwater sample plan, the groundwater samples collected from the identified springs and wells will be analyzed for the following analytes:

Water Quality Analysis		
Analyte	Units	Analysis Method
Cations		
Calcium	mg/l	EPA Method E-200.7
Sodium	mg/l	EPA Method E-200.7
Potassium	mg/l	EPA Method E-200.7
Magnesium	mg/l	EPA Method E-200.7
Anions		
Chloride	mg/l	EPA Method E-300.0
Bromide	mg/l	EPA Method E-300.0
Fluoride	mg/l	EPA Method E-300.0
Nitrate	mg/l	EPA Method E-300.0
Sulfate	mg/l	EPA Method E-300.0
Alkalinity	mg/l	EPA Method E-310.1
Bicarbonate (CaCO ₃)	mg/l	EPA Method E-310.2
Total Dissolved Solids	mg/l	Method SM2540C / 160.1
pH		EPA Method 9040
Arsenic	ug/l	EPA Method E-200.8
Silver	ug/l	EPA Method E-200.8
Silica	mg/l	EPA Method E-200.7
Iron	mg/l	EPA Method E-200.7
Specific Conductivity	uS/cm	SM2510B
Uranium	ug/l	EPA Method E-200.8
Oxygen-18/Deuterium Isotope	O/DU	Cavity Ring-Down Spectroscopy

All water samples will be placed in laboratory provided sample ware appropriate for the specified analytical analysis. Each groundwater sample container will be individually labeled with a unique identification number and placed on ice in a laboratory-supplied sample cooler. A properly completed chain of custody will be provided with the samples to the laboratory

Inter-Office Shipment

IOS Number : 78222

Date/Time: 02.19.2021

Created by: Brianna Teel

Please send report to: John Builes

Lab# From: **Midland**

Delivery Priority:

Address: 1211 W. Florida Ave

Lab# To: **Houston**

Air Bill No.: 772952975437

E-Mail: john.builes@eurofinset.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
688601-001	W	PR-000384	02.15.2021 13:00	E200.7	Recoverable Metals per ICP by EPA 200	02.25.2021	08.14.2021	JHB	CA FE K MG NA SI	
688601-001	W	PR-000384	02.15.2021 13:00	E200.8	Recoverable Metals by EPA 200.8	02.25.2021	08.14.2021	JHB	AG AS U	
688601-001	W	PR-000384	02.15.2021 13:00	SM4500-H	pH by SM4500-H	02.25.2021	02.15.2021 13:15	JHB		
688601-001	W	PR-000384	02.15.2021 13:00	SM2540C	TDS by SM2540C	02.25.2021	02.22.2021 13:00	JHB	TDS	
688601-001	W	PR-000384	02.15.2021 13:00	SM2320B	Alkalinity by SM2320B	02.25.2021	03.01.2021	JHB	ALKB	
688601-001	W	PR-000384	02.15.2021 13:00	SM2510B	Specific Conductance @25C by SM2510	02.25.2021	02.22.2021 13:00	JHB		
688601-002	W	PR-SKRMAW1	02.15.2021 15:50	E200.8	Recoverable Metals by EPA 200.8	02.25.2021	08.14.2021	JHB	AG AS U	
688601-002	W	PR-SKRMAW1	02.15.2021 15:50	E200.7	Recoverable Metals per ICP by EPA 200	02.25.2021	08.14.2021	JHB	CA FE K MG NA SI	
688601-002	W	PR-SKRMAW1	02.15.2021 15:50	SM4500-H	pH by SM4500-H	02.25.2021	02.15.2021 13:15	JHB		
688601-002	W	PR-SKRMAW1	02.15.2021 15:50	SM2540C	TDS by SM2540C	02.25.2021	02.22.2021 13:00	JHB	TDS	
688601-002	W	PR-SKRMAW1	02.15.2021 15:50	SM2320B	Alkalinity by SM2320B	02.25.2021	03.01.2021	JHB	ALKB	
688601-002	W	PR-SKRMAW1	02.15.2021 15:50	SM2510B	Specific Conductance @25C by SM2510	02.25.2021	02.22.2021 13:00	JHB		
688601-003	W	PR-AVAW1	02.15.2021 16:52	E200.7	Recoverable Metals per ICP by EPA 200	02.25.2021	08.14.2021	JHB	CA FE K MG NA SI	
688601-003	W	PR-AVAW1	02.15.2021 16:52	E200.8	Recoverable Metals by EPA 200.8	02.25.2021	08.14.2021	JHB	AG AS U	
688601-003	W	PR-AVAW1	02.15.2021 16:52	SM4500-H	pH by SM4500-H	02.25.2021	02.15.2021 13:15	JHB		
688601-003	W	PR-AVAW1	02.15.2021 16:52	SM2510B	Specific Conductance @25C by SM2510	02.25.2021	02.22.2021 13:00	JHB		
688601-003	W	PR-AVAW1	02.15.2021 16:52	SM2320B	Alkalinity by SM2320B	02.25.2021	03.01.2021	JHB	ALKB	
688601-003	W	PR-AVAW1	02.15.2021 16:52	SM2540C	TDS by SM2540C	02.25.2021	02.22.2021 13:00	JHB	TDS	
688601-004	W	PR-DXS1	02.16.2021 12:15	E200.8	Recoverable Metals by EPA 200.8	02.25.2021	08.14.2021	JHB	AG AS U	
688601-004	W	PR-DXS1	02.16.2021 12:15	E200.7	Recoverable Metals per ICP by EPA 200	02.25.2021	08.14.2021	JHB	CA FE K MG NA SI	
688601-004	W	PR-DXS1	02.16.2021 12:15	SM4500-H	pH by SM4500-H	02.25.2021	02.15.2021 13:15	JHB		
688601-004	W	PR-DXS1	02.16.2021 12:15	SM2540C	TDS by SM2540C	02.25.2021	02.22.2021 13:00	JHB	TDS	
688601-004	W	PR-DXS1	02.16.2021 12:15	SM2320B	Alkalinity by SM2320B	02.25.2021	03.01.2021	JHB	ALKB	
688601-004	W	PR-DXS1	02.16.2021 12:15	SM2510B	Specific Conductance @25C by SM2510	02.25.2021	02.22.2021 13:00	JHB		
688601-005	W	PR-DXS2	02.16.2021 14:31	E200.8	Recoverable Metals by EPA 200.8	02.25.2021	08.14.2021	JHB	AG AS U	

Inter-Office Shipment

IOS Number : 78222

Date/Time: 02.19.2021

Created by: Brianna Teel

Please send report to: John Builes

Lab# From: **Midland**

Delivery Priority:

Address: 1211 W. Florida Ave

Lab# To: **Houston**

Air Bill No.: 772952975437

E-Mail: john.builes@eurofinset.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
688601-005	W	PR-DXS2	02.16.2021 14:31	E200.7	Recoverable Metals per ICP by EPA 200	02.25.2021	08.14.2021	JHB	CA FE K MG NA SI	
688601-005	W	PR-DXS2	02.16.2021 14:31	SM2320B	Alkalinity by SM2320B	02.25.2021	03.01.2021	JHB	ALKB	
688601-005	W	PR-DXS2	02.16.2021 14:31	SM2540C	TDS by SM2540C	02.25.2021	02.22.2021 13:00	JHB	TDS	
688601-005	W	PR-DXS2	02.16.2021 14:31	SM4500-H	pH by SM4500-H	02.25.2021	02.15.2021 13:15	JHB		
688601-005	W	PR-DXS2	02.16.2021 14:31	SM2510B	Specific Conductance @25C by SM2510	02.25.2021	02.22.2021 13:00	JHB		
688601-006	W	PR-DXS3	02.16.2021 17:07	E200.8	Recoverable Metals by EPA 200.8	02.25.2021	08.14.2021	JHB	AG AS U	
688601-006	W	PR-DXS3	02.16.2021 17:07	E200.7	Recoverable Metals per ICP by EPA 200	02.25.2021	08.14.2021	JHB	CA FE K MG NA SI	
688601-006	W	PR-DXS3	02.16.2021 17:07	SM2510B	Specific Conductance @25C by SM2510	02.25.2021	02.22.2021 13:00	JHB		
688601-006	W	PR-DXS3	02.16.2021 17:07	SM2320B	Alkalinity by SM2320B	02.25.2021	03.01.2021	JHB	ALKB	
688601-006	W	PR-DXS3	02.16.2021 17:07	SM2540C	TDS by SM2540C	02.25.2021	02.22.2021 13:00	JHB	TDS	
688601-006	W	PR-DXS3	02.16.2021 17:07	SM4500-H	pH by SM4500-H	02.25.2021	02.15.2021 13:15	JHB		
688601-007	W	PR-M0FNWW1	02.17.2021 10:59	E200.8	Recoverable Metals by EPA 200.8	02.25.2021	08.14.2021	JHB	AG AS U	
688601-007	W	PR-M0FNWW1	02.17.2021 10:59	E200.7	Recoverable Metals per ICP by EPA 200	02.25.2021	08.14.2021	JHB	CA FE K MG NA SI	
688601-007	W	PR-M0FNWW1	02.17.2021 10:59	SM4500-H	pH by SM4500-H	02.25.2021	02.15.2021 13:15	JHB		
688601-007	W	PR-M0FNWW1	02.17.2021 10:59	SM2540C	TDS by SM2540C	02.25.2021	02.22.2021 13:00	JHB	TDS	
688601-007	W	PR-M0FNWW1	02.17.2021 10:59	SM2320B	Alkalinity by SM2320B	02.25.2021	03.01.2021	JHB	ALKB	
688601-007	W	PR-M0FNWW1	02.17.2021 10:59	SM2510B	Specific Conductance @25C by SM2510	02.25.2021	02.22.2021 13:00	JHB		
688601-008	W	PR-M0FNWW2	02.17.2021 12:10	E200.8	Recoverable Metals by EPA 200.8	02.25.2021	08.14.2021	JHB	AG AS U	
688601-008	W	PR-M0FNWW2	02.17.2021 12:10	E200.7	Recoverable Metals per ICP by EPA 200	02.25.2021	08.14.2021	JHB	CA FE K MG NA SI	
688601-008	W	PR-M0FNWW2	02.17.2021 12:10	SM4500-H	pH by SM4500-H	02.25.2021	02.15.2021 13:15	JHB		
688601-008	W	PR-M0FNWW2	02.17.2021 12:10	SM2540C	TDS by SM2540C	02.25.2021	02.22.2021 13:00	JHB	TDS	
688601-008	W	PR-M0FNWW2	02.17.2021 12:10	SM2320B	Alkalinity by SM2320B	02.25.2021	03.01.2021	JHB	ALKB	
688601-008	W	PR-M0FNWW2	02.17.2021 12:10	SM2510B	Specific Conductance @25C by SM2510	02.25.2021	02.22.2021 13:00	JHB		
688601-009	W	PR-IBS1	02.17.2021 14:08	E200.8	Recoverable Metals by EPA 200.8	02.25.2021	08.14.2021	JHB	AG AS U	
688601-009	W	PR-IBS1	02.17.2021 14:08	E200.7	Recoverable Metals per ICP by EPA 200	02.25.2021	08.14.2021	JHB	CA FE K MG NA SI	

Inter Office Shipment or Sample Comments:

Please check holding times as some samples will be breaking hold before due date

Inter-Office Shipment

IOS Number : 78222

Date/Time: 02.19.2021

Created by: Brianna Teel

Please send report to: John Builes

Lab# From: **Midland**

Delivery Priority:

Address: 1211 W. Florida Ave

Lab# To: **Houston**

Air Bill No.: 772952975437

E-Mail: john.builes@eurofinset.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
688601-009	W	PR-IBS1	02.17.2021 14:08	SM2510B	Specific Conductance @25C by SM2510	02.25.2021	02.22.2021 13:00	JHB		
688601-009	W	PR-IBS1	02.17.2021 14:08	SM2320B	Alkalinity by SM2320B	02.25.2021	03.01.2021	JHB	ALKB	
688601-009	W	PR-IBS1	02.17.2021 14:08	SM2540C	TDS by SM2540C	02.25.2021	02.22.2021 13:00	JHB	TDS	
688601-009	W	PR-IBS1	02.17.2021 14:08	SM4500-H	pH by SM4500-H	02.25.2021	02.15.2021 13:15	JHB		
688601-010	W	PR-IBS2	02.17.2021 17:17	E200.8	Recoverable Metals by EPA 200.8	02.25.2021	08.14.2021	JHB	AG AS U	
688601-010	W	PR-IBS2	02.17.2021 17:17	E200.7	Recoverable Metals per ICP by EPA 200	02.25.2021	08.14.2021	JHB	CA FE K MG NA SI	
688601-010	W	PR-IBS2	02.17.2021 17:17	SM4500-H	pH by SM4500-H	02.25.2021	02.15.2021 13:15	JHB		
688601-010	W	PR-IBS2	02.17.2021 17:17	SM2540C	TDS by SM2540C	02.25.2021	02.22.2021 13:00	JHB	TDS	
688601-010	W	PR-IBS2	02.17.2021 17:17	SM2320B	Alkalinity by SM2320B	02.25.2021	03.01.2021	JHB	ALKB	
688601-010	W	PR-IBS2	02.17.2021 17:17	SM2510B	Specific Conductance @25C by SM2510	02.25.2021	02.22.2021 13:00	JHB		
688601-011	W	PR-000492	02.17.2021 18:40	E200.8	Recoverable Metals by EPA 200.8	02.25.2021	08.14.2021	JHB	AG AS U	
688601-011	W	PR-000492	02.17.2021 18:40	E200.7	Recoverable Metals per ICP by EPA 200	02.25.2021	08.14.2021	JHB	CA FE K MG NA SI	
688601-011	W	PR-000492	02.17.2021 18:40	SM4500-H	pH by SM4500-H	02.25.2021	02.15.2021 13:15	JHB		
688601-011	W	PR-000492	02.17.2021 18:40	SM2540C	TDS by SM2540C	02.25.2021	02.22.2021 13:00	JHB	TDS	
688601-011	W	PR-000492	02.17.2021 18:40	SM2510B	Specific Conductance @25C by SM2510	02.25.2021	02.22.2021 13:00	JHB		
688601-011	W	PR-000492	02.17.2021 18:40	SM2320B	Alkalinity by SM2320B	02.25.2021	03.01.2021	JHB	ALKB	
688601-012	W	PR-DXW5	02.18.2021 15:05	SM4500-H	pH by SM4500-H	02.25.2021	02.15.2021 13:15	JHB		
688601-012	W	PR-DXW5	02.18.2021 15:05	SM2540C	TDS by SM2540C	02.25.2021	02.22.2021 13:00	JHB	TDS	
688601-012	W	PR-DXW5	02.18.2021 15:05	E200.7	Recoverable Metals per ICP by EPA 200	02.25.2021	08.14.2021	JHB	CA FE K MG NA SI	
688601-012	W	PR-DXW5	02.18.2021 15:05	E200.8	Recoverable Metals by EPA 200.8	02.25.2021	08.14.2021	JHB	AG AS U	
688601-012	W	PR-DXW5	02.18.2021 15:05	SM2320B	Alkalinity by SM2320B	02.25.2021	03.01.2021	JHB	ALKB	
688601-012	W	PR-DXW5	02.18.2021 15:05	SM2510B	Specific Conductance @25C by SM2510	02.25.2021	02.22.2021 13:00	JHB		
688601-013	W	PR-DXW1	02.18.2021 16:06	E200.8	Recoverable Metals by EPA 200.8	02.25.2021	08.14.2021	JHB	AG AS U	
688601-013	W	PR-DXW1	02.18.2021 16:06	E200.7	Recoverable Metals per ICP by EPA 200	02.25.2021	08.14.2021	JHB	CA FE K MG NA SI	
688601-013	W	PR-DXW1	02.18.2021 16:06	SM4500-H	pH by SM4500-H	02.25.2021	02.15.2021 13:15	JHB		

Inter Office Shipment or Sample Comments:

Relinquished By:

Received By:

Inter-Office Shipment

IOS Number : 78222

Date/Time: 02.19.2021

Created by: Brianna Teel

Please send report to: John Builes

Lab# From: **Midland**

Delivery Priority:

Address: 1211 W. Florida Ave

Lab# To: **Houston**

Air Bill No.: 772952975437

E-Mail: john.builes@eurofinset.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
688601-013	W	PR-DXW1	02.18.2021 16:06	SM2540C	TDS by SM2540C	02.25.2021	02.22.2021 13:00	JHB	TDS	
688601-013	W	PR-DXW1	02.18.2021 16:06	SM2320B	Alkalinity by SM2320B	02.25.2021	03.01.2021	JHB	ALKB	
688601-013	W	PR-DXW1	02.18.2021 16:06	SM2510B	Specific Conductance @25C by SM2510	02.25.2021	02.22.2021 13:00	JHB		

Inter Office Shipment or Sample Comments:

Date Relinquished:



Brianna Teel

02.19.2021

Date Received:



Jhyrom Edralin

02.20.2021

Cooler Temperature: 4.0



Inter Office Report- Sample Receipt Checklist

Sent To: Houston

IOS #: 78222

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : HOU-272

Sent By: Brianna Teel

Date Sent: 02.19.2021 02.45 PM

Received By: Jhyrom Edralin

Date Received: 02.20.2021 11.40 AM

Sample Receipt Checklist

Comments

- #1 *Temperature of cooler(s)? 4
- #2 *Shipping container in good condition? Yes
- #3 *Samples received with appropriate temperature? Yes
- #4 *Custody Seals intact on shipping container/ cooler? Yes
- #5 *Custody Seals Signed and dated for Containers/coolers Yes
- #6 *IOS present? Yes
- #7 Any missing/extra samples? No
- #8 IOS agrees with sample label(s)/matrix? Yes
- #9 Sample matrix/ properties agree with IOS? Yes
- #10 Samples in proper container/ bottle? Yes
- #11 Samples properly preserved? Yes
- #12 Sample container(s) intact? Yes
- #13 Sufficient sample amount for indicated test(s)? Yes
- #14 All samples received within hold time? Yes

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

NonConformance:

Please check holding times as some samples will be breaking hold before due date

Corrective Action Taken:

Nonconformance Documentation

Contact: _____ Contacted by : _____ Date: _____

Checklist reviewed by:

Jhyrom Edralin

Date: 02.20.2021

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: Straub Corporation

Date/ Time Received: 02.19.2021 02.04.00 PM

Work Order #: 688601

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : IR8

Sample Receipt Checklist	2	Comments
#1 *Temperature of cooler(s)?	2	
#2 *Shipping container in good condition?	Yes	
#3 *Samples received on ice?	Yes	
#4 *Custody Seals intact on shipping container/ cooler?	N/A	
#5 Custody Seals intact on sample bottles?	N/A	
#6*Custody Seals Signed and dated?	N/A	
#7 *Chain of Custody present?	Yes	
#8 Any missing/extra samples?	No	
#9 Chain of Custody signed when relinquished/ received?	Yes	
#10 Chain of Custody agrees with sample labels/matrix?	Yes	
#11 Container label(s) legible and intact?	Yes	
#12 Samples in proper container/ bottle?	Yes	
#13 Samples properly preserved?	Yes	
#14 Sample container(s) intact?	Yes	
#15 Sufficient sample amount for indicated test(s)?	Yes	
#16 All samples received within hold time?	Yes	Samples 001-009 Nitrates have broken hold Xenco Stafford
#17 Subcontract of sample(s)?	Yes	
#18 Water VOC samples have zero headspace?	N/A	

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: JKR

PH Device/Lot#: 10BDH1991

Checklist completed by:  Date: 02.19.2021
Brianna Teel

Checklist reviewed by:  Date: 02.25.2021
John Builes

