Stage 1 Abatement Plan Proposal for the Mosaic Potash Mine

Mosaic Potash Carlsbad, New Mexico

Submitted to:

Haskins Hobson, P.E.
Senior Environmental Engineer
Mosaic Potash Carlsbad
1361 Potash Mines Road
Carlsbad, New Mexico 88221

Submitted by:

Golder Associates USA Inc.
2440 Louisiana Boulevard N.E. Suite 400
Albuquerque, New Mexico, USA 87110

+1 505-881-5357

21502059-1-R-1

March 21, 2022

Table of Contents

TABLES

FIGURES

ATTACHMENT

1.0 INTRODUCTION

Mosaic Potash Carlsbad Inc. (Mosaic) received a notification from the New Mexico Environment Department (NMED) Water Protection Division dated October 20, 2021, requiring Mosaic to submit a Stage 1 Abatement Plan Proposal (S1APP) for the Mosaic Potash Mine (Site) pursuant to 20.6.2.4106 New Mexico Administrative Code (NMAC) of the Ground Water and Surface Water Protection Regulations. In the notification letter (included in **Attachment 1**), the NMED requested that Mosaic submit a S1APP to address total dissolved solids (TDS), chloride and sulfate concentrations in groundwater downgradient of the Site.

This S1APP for Mosaic's site in Carlsbad, New Mexico, has been prepared by Golder Associates USA Inc. (Golder), a member of WSP, in accordance with 20.6.2.4106.C NMAC, which states that the purpose of a Stage 1 Abatement Plan (S1AP) is to design and conduct a site investigation that adequately defines site conditions and provides the necessary data to select and design "if necessary" (as provided in 20.6.2.4106.E NMAC), an effective abatement option. 20.6.2.4106.C NMAC has six mandatory S1AP elements, and NMED requested five additional elements to be included in the S1AP to further enhance the site investigation.

During the S1AP process, Mosaic will attempt to separate correlated monitoring data from causation monitoring data to determine whether discharges from the Site have caused any water pollution in excess of applicable water quality standards. Correlated data means that when one variable changes, so does the other variable (e.g., brine discharge increases and TDS in monitoring wells increase at the same time); however, this covariance is not necessarily due to a direct or indirect causal link between variables. Causation data means that the changes in one variable bring about the changes in the other variable (e.g., increasing groundwater pumping rates may cause TDS in monitoring wells to increase).

Whether a Stage 2 abatement process is necessary will also be contingent on the feasibility and economic costs of the maximum use of commercially accepted abatement technology as specified in 20.6.2.4103.E(1)(a) and (1)(b) NMAC, the reasonable relationship between the economic and social costs and benefits of attainment of the standard as specified in 20.6.2.4103.E(1)(c) NMAC, and/or the statistically valid extrapolated-over-20 years technical infeasibility of the maximum use of commercially accepted abatement technology as specified in 20.6.2.4103.E(1)(d) NMAC.

As summarized below, numerous hydrogeologic studies have been conducted in and around the Site that have provided detailed information on the groundwater and surface water conditions at the Site and the nature of permitted discharges. Utilization of these existing studies and ongoing data collected as part of Mosaic's Discharge Permit 1399 (DP-1399) will form key components of the S1AP. The draft DP-1399 permit was issued by the NMED on June 4, 2021, and a public notice was issued by the NMED on June 29, 2021, proposing approval of the draft DP-1399 permit. Additional studies and investigations are identified in the draft DP-1399 permit that will be implemented once the final DP-1399 permit is issued. Pertinent information obtained from these additional studies will be integrated into the S1AP as time permits.

2.0 DESCRIPTION OF THE MOSAIC POTASH SITE [20.6.2.4106.C(1) NMAC]

The following sections provide an overview of the Site, including a site map and history, and the nature of historical and current discharges. The discussion also includes an overview of previous investigations and studies conducted in and around the Site.

2.1 History of Potash Mining, Salt Harvesting, and Oilfield Brine Disposal in the Nash Draw

Potash Mining

Potassium is one of three essential fertilizers in the agriculture industry, along with phosphate and nitrogen. Potash is the common name for several types of potassium salts found in the earth in water-soluble form. Potash is typically mined from deep ore beds below the earth's surface. Potash ore beds were first discovered in 1925 in the Nash Draw (**Figures 1 and 19**), a naturally occurring depression located east of Carlsbad in southern Eddy County, New Mexico. According to the United States (U.S.) Department of Energy, the Nash Draw is approximately five (5) miles wide, 200 to 300 feet deep, 14 miles long and open to the southwest. The draw was caused in part by subsurface dissolution and subsidence of the overlying sediments. Nash Draw ends topographically at the Pecos River, but the surface drainage in the draw terminates in Laguna Grande de la Sal (Laguna Grande).

There are a series of nine distinctly-named natural playas that exist within the Nash Draw. A playa is a flat desert basin or sunken dry lakebed from which surface water evaporates quickly. Most playa basins are underlined with clay soils that swell when wet to form a seal that holds water. Playas are ephemeral, going through natural wet and dry cycles, depending on the occurrence of rainfall near the playas. The only natural mitigation of salinity in the playas is natural rainfall, both from direct precipitation on the playa surfaces and stormwater run-on into the playas. Average annual precipitation in the Nash Draw area is approximately 13 inches, with over 75 percent of the precipitation normally falling between May and October. Precipitation during these months is typically derived from convection storms fed by summer monsoon flows of moisture that enter southern New Mexico from the Gulf of Mexico. Winter precipitation is generally of little consequence, averaging one-half inch per month or less for the period of November through March. Snowfall in the area is generally quite low, averaging approximately 3.25 inches per year for the Carlsbad area station, little of which remains on the ground for any length of time. Evaporation is significant in the region, with over 100 inches of Class A pan evaporation per year, which is nearly 8 times the amount of annual precipitation. Monthly evaporation ranges from approximately 4 inches per month during the winter months to 15 to 20 inches per month during the summer.

The first mine shaft to the potash deposits in the area was completed in 1930, and the first commercial shipment took place in March 1931. A 20-mile railroad spur was built from Carlsbad to the mine and later to other potash operations. A now defunct refinery, owned by the U.S. Potash Company, located west of Laguna Grande, was the first potash refinery in the basin (**Table 1 and Figure 1**). The refinery began operations in September 1932 and used Laguna Grande as a disposal area for brine and tailings from their potash refining operations (Robinson and Lang 1938, Powers 2006).

By 1934, 11 companies were exploring for potash in southeast New Mexico. In 1936, Union Potash & Chemical, Texas Potash, Independent Potash & Chemical, New Mexico Potash, and Carlsbad Potash merged into a predecessor of Mosaic and began producing mainly sylvite- and langbeinite-based products in 1940 (Barker and Gundiler 2008). Over the next 30 years, mining development and production advanced steadily as an increasing number of companies grew and then merged. By the 1960s, southeastern New Mexico was the largest potash producing region in the U.S., supplying 85 percent of the country's consumption.

Due to the national importance of high-quality potash reserves in Eddy and Lea Counties, New Mexico, there is a standing order of the U.S. Secretary of the Interior, first issued in 1939 and amended in 1951, 1965, 1975, 1986, and 2012, which designates the 497,000-acre Carlsbad Potash District as reserved for potash production. This federal order is further supported by the New Mexico Energy, Minerals and Natural Resources Department, Oil Conservation Commission's 1988 Order No. R-111-P, which defined the boundaries of the Known Potash Leasing Area and established that the potash deposits are "life-of-mine-reserves" permanently protected from oil and gas drilling activities.

The potash industry has generated millions of dollars of mineral rights revenues for the State of New Mexico over the past 90 years and created thousands of mining-related jobs for multiple generations of New Mexicans. The locations of past and present potash mining operations in and around Eddy and Lea Counties, as presented by mindat.org (https://www.mindat.org/feature-5490702.html), are summarized in **Table 1** and shown in **Figure 1**.

Salt Harvesting

There are two companies that actively harvest salt from the Nash Draw for human consumption, water softeners, swimming pools, road deicing and other purposes. United Salt Carlsbad, LLC (United Salt) and New Mexico Salt & Minerals Company (New Mexico Salt) collect salt deposits from the surface of Laguna Grande after the brine that Mosaic discharges to Laguna Grande has evaporated. A third company, Southwest Salt Company (Southwest Salt), located southeast of Laguna Grande just outside the Nash Draw, pumps millions of gallons of brine from groundwater sources near Malaga Bend into large evaporation ponds that use the power of the sun to concentrate the salt that is harvested for water softeners and pool salts. The three companies are shown in **Figures 2 and 19**.

Oilfield Brine Disposal

During the 1980s, both Laguna Tres and Laguna Quatro playas (**Figures 3, 11, 19, and 20**) were used for oilfield-produced brine disposal. Order No. R-7031 issued by the New Mexico Oil Conservation Commission (NMOCC) in July 1982 granted B&E, Inc. permission to discharge 7,500 barrels of brine per day to each of the playas. Subsequent NMOCC Order No. R-7031-A in March 1986 granted B&E, Inc. permission to discharge 15,000 barrels of brine per day to Laguna Quatro. Available records indicate that brine disposal by B&E, Inc. occurred between 1982 and January 1992.

2.2 Overview of the Mosaic Potash Mine Facility

The Site is located approximately 16 miles east of Carlsbad in Eddy County, New Mexico (**Figure 1**). The Site has an underground potash mine and a surface mill that produces potash products including fertilizers used for plant growth and products for animal feed. Facilities associated with the mine include underground workings from which potash ore is mechanically extracted, hoists to bring the ore to the surface, the Plant where the ore is separated from the unusable salts and clay, the Salt Stack consisting of tailings discharged from the Plant, the Clay Settling Pond, the Laguna Uno and Laguna Grande Brine Management Areas, pipelines, and associated containment dikes. **Figure 2** shows the locations of these major facilities at the Site.

Tailings from the Plant are discharged as a brine slurry onto the Salt Stack where coarse salt and clay settle on the Salt Stack. Brine and residual clay flowing off the Salt Stack are typically discharged to the Clay Settling Pond but can be diverted to Laguna Uno during plant maintenance periods described in the permit as upset conditions. Following discharge to the Clay Settling Pond, the brine is then conveyed through a 24-inch diameter pipeline (Brine Pipeline) approximately six (6) miles to the bottom of the Nash Draw and discharged into the northern end of Laguna Grande. The brine in Laguna Grande is diverted into a series of evaporation cells operated by United Salt and New Mexico Salt for chloride salt harvesting. Prior to construction of the Clay Settling Pond in 2005, the brine and residual clay was discharged directly to Laguna Uno where residual clay settled out in the Laguna Uno Clay Settling Area. The brine would flow overland to the Laguna Uno Brine Management Area.

Specific details about the Site and corresponding surface land ownership information are provided in **Figure 3**. The Plant is located in Sections 1 and 12, T22S, R29E; the Salt Stack is located in Sections 1, 12 and 13, T22S, R29E and Sections 6, 7 and 18, T22S, R30E; and the Clay Settling Pond and Laguna Uno are located in Sections 13, 24 and 25, T22S, R29E and Sections 19 and 30, T22S, R30E. The Brine Pipeline is located in Sections 23, 24, 26, and 35, T22S, R29E, and Sections 2 and 3, T23S, R29E; Laguna Grande is located in Sections 3, 4, 5, 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 21, 22, and 28 T23S, R29E, and Sections 13 and 24, T23S, R28E.

2.3 Mine Units

- Mine units specified in the draft DP-1399 permit are shown in **Figures 2 and 3** and include the following:
- *Plant* - The Plant occupies approximately 120 acres located north of the other mine units discussed below. Major ore processing facilities include ore bins, a crusher, granulation plant, sizing screens, wash screens, a thickener, dryers, and a belt filter. Support facilities include offices, storage and loading facilities, maintenance shops, several warehouses, and a laboratory. The primary product produced at the Plant is a fertilizer sold commercially around the world under the product name K-Mag®.
- *Tailings Management Area* - The Tailings Management Area includes the Salt Stack, the Clay Settling Pond (CSP), the Brine Pipeline, the Laguna Grande and Laguna Uno Brine Management Areas, and associated containment dikes as described below.

  1) *Salt Stack* - The Salt Stack currently covers an area of approximately 1,000 acres. Tailings that are deposited on the Salt Stack originate as two separate streams from the Plant. The first stream originates at the tailings wash screen and is primarily comprised of coarse salt tailings. The second stream originates at the thickener underflow pump and is comprised of fine salt tailings and insoluble fine particles (mostly clay). Deposition and growth of the Salt Stack is managed with a series of internal berms. Brine and residual clay flowing off the Salt Stack is discharged to the Clay Settling Pond except during upset conditions when the brine and residual clay is discharged to Laguna Uno. Upset conditions may include operational conditions that prohibit discharge into and from the Clay Settling Pond, and during times of preapproved maintenance as necessary. Several dikes have been constructed on the east and south margins of the Salt Stack to prevent stormwater originating on the Salt Stack from flowing east into natural drainages and Laguna Uno. The current DP-1399 groundwater monitoring network is shown in **Figure 2** and includes three (3) piezometers (P-Central, P-East, and P-West) located in the vicinity of the Salt Stack (P-East) and the Clay Settling Pond (P-West and P-Center) (**Figure 12**). A piezometer is an instrument placed in boreholes to monitor the pressure or depth of groundwater.

  2) *Salt Dike 1 and Salt Stack Contingency Dike* - The southern edge of the Salt Stack is bounded by Salt Dike 1 (SD1) and the Salt Stack Contingency Dike (SSCD). SD1 and the SSCD were designed and constructed in 2010 to divert brine flow away from Laguna Uno and into the Clay Settling Pond (see **Figure 2)**.

  3) *Clay Settling Pond* - The CSP was first built in 2005 and currently covers an area of approximately 150 acres. The eastern and southern extents of the CSP are defined by the CSP Dike. The western extent of the CSP is defined by natural terrain features. Some of the clay particles settle out of the brine in the CSP

and the partially clarified brine is then decanted into the Brine Pipeline. The CSP Dike was raised five feet in 2019 to increase the brine and clay holding capacity of the CSP (**Figure 2**).

4) *Brine Pipeline* - The Brine Pipeline conveys partially clarified brine from the CSP by gravity approximately six miles south to the Laguna Grande Brine Management Area. The maximum design flow capacity of the pipeline is 4,880 gallons per minute. Construction of the pipeline was completed in December 2010 (**Figures 2 and 3**).

5) *Laguna Uno Brine Management Area* - Laguna Uno is an approximately 1,000-acre playa located south of the Salt Stack. Laguna Uno is one of the nine named natural playas in the Nash Draw. See **Table 3** and **Figures 2, 3 and 12** for more information about the Nash Draw playas. The Southeast and Southwest Laguna Uno Dikes were constructed as a preventative measure to prevent possible stormwater releases from Laguna Uno.

6) *Laguna Grande Brine Management Area* **-** Laguna Grande is the largest natural playa in the Nash Draw and covers an area of approximately 4,500 acres. The northeast portion of Laguna Grande includes the Laguna Grande Brine Management Area, also identified as Pond 4, which was created by construction of the Pond 4 Dike (see **Figures 2, 3, 24 and 25**). The southwest portion of Laguna Grande includes several salt harvesting ponds divided by internal dikes described as Ponds 1, 1A, 2A, 2B, 3A and 3B.

7) *Southwest Laguna Grande Dike* **-** Southwest of the southern edge of Laguna Grande, this dike stands between the salt harvesting evaporation ponds in Laguna Grande and the southern extend of Nash Draw at the Nash Draw saddle. Mosaic constructed the Southwest Laguna Grande Dike (SWLGD) in 2009. The purpose of the SWLGD is to minimize brackish surface flows released from the playa from reaching the Pecos River. Under normal weather patterns, there is no water impounded behind this dike. The only water that has accumulated behind the dike since 2018 was associated with direct precipitation on the footprint of the dike structure. The current DP-1399 monitoring network includes three staff gauges within Laguna Grande and one staff gauge immediately upgradient of the SWLGD (see **Figures 2, 24 and 25)**.

8) *Other Ancillary Facilities and Structures* **-** In addition to the major mine units, there are several support facilities and structures dispersed across the mine. These include haul and access roads, mine shafts, and headframes.

The area between Laguna Grande and the Pecos River has been the primary focus of ongoing hydrogeologic investigations conducted in association with DP-1399. The current DP-1399 groundwater monitoring network is shown in **Figures 2, 15, 16, 18, 24, and 25** and includes 15 monitoring wells (LG-1, LG-5, LG-23, LG-25, LG-26, LG-28, LG 29, LG-30, LG-31, LG-32, LG-34, LG-35, LG-36, LG-37, LG-38) located north and east of the Pecos River and one monitoring well (LG-33) located on the west side of the Pecos River. The DP-1399 monitoring network also includes four Pecos River sampling points (River 1 through River 4) and three Pecos River staff gauges (Pecos River Staff Gauge #1 through #3).

At the request of the NMED, Mosaic also included the area immediately west of the Pecos River in the S1AP study area as shown inside the green boundaries in **Figure 24** to evaluate the hydrogeologic conditions west of the Pecos River to rule out any possibility that there may be impacted groundwater in this area from discharges from the Site. A number of the wells west of the Pecos River, indicated by green dots in the figure, are privately owned, and gathering data from these wells will depend on the well owners granting access to Mosaic to collect groundwater samples.

2.4 Summary of Previous Groundwater Investigations and Monitoring [20.6.2.4106.C(7) NMAC]

There have been numerous groundwater investigations and studies conducted that have provided detailed information on the hydrogeologic conditions in and around the Site. Several of the earliest studies in the area were conducted to support permitting of the U.S. Department of Energy's Waste Isolation Pilot Project (WIPP) (see **Figures 1 and 19**) (Bachman 1981, 1985; Beauheim and Ruskauff 1998; Chapman 1988; Department of Energy 2004; Hill 1999; Hillesheim et. Al. 2006; Kuhlman and Barnhart 2011; Land and Veni 2012; Lorenz 2006; Mercer 1983; Powers 2006), to characterize the Gnome project area (Department of Energy 2017; Cooper and Glanzman 1971), and to study water quality impacts observed at Malaga Bend (Cox and Havens 1965; Hale et. al 1954; Robinson and Lang 1938). Multiple studies have also been conducted at the Site throughout the years to investigate potential impacts to groundwater from Site discharges (Golder 2002; Vail 2014).

A table summarizing the key investigations and studies conducted in and around the Site is provided in **Table 2**. Information from these investigations and studies will be compiled and evaluated as part of the data gap analysis included as Task 1 of the S1APP, and pertinent information gleaned from them will be used to support the individual tasks associated with the S1AP. A description of the key hydrology studies in the Nash Draw area that have been performed over the last 90 years is provided below.

Robinson and Lang (1938)

Results of the earliest studies indicated that TDS concentrations within Laguna Grande were naturally elevated, prior to any potash mining tailings brine being discharged into the playa. In the 1930s, Thomas Robinson and Walter Lang surveyed the geology and hydrology of Nash Draw on behalf of the U.S. Geological Survey (USGS) at the request of the State Engineer of New Mexico to study the ground water conditions in the Pecos River Valley. Robinson and Lang discovered and reported the presence of brine underlying the main axis of Nash Draw and proposed that solution of upper Salado halite created the draw and the brine aquifer. The gradient of the brine aquifer, corrected for salinity differences, indicated flow down the Nash Draw toward the Pecos River, with upwelling saline water in springs along the Pecos River considered the outflow. Details of the work by Robinson and Lang (1938) indicated that:

1) the salinity of water encountered in the zone was quite variable;

2) it was unlikely brine from Laguna Grande was infiltrating downward to the brine aquifer in view of the fact that much fresher water was encountered below Laguna Grande;

3) brine flow in the aquifer beneath Nash Draw was from north to south-southwest; and

4) brine from the brine aquifer was being discharged into the Pecos River.

According to Robinson and Lang's analyses of USGS representative samples collected in July 1924 from the west side of Laguna Grande, TDS concentrations were 162,300 and 239,000 parts per million (ppm), respectively. For water, 1 ppm = approximately 1 milligram per liter (mg/L), so the 1924 TDS concentrations near Laguna Grande were at least ten times greater than the protectable groundwater quality standard of 10,000 mg/L. The USGS also collected a sample of salt from the bottom of Laguna Grande near the point where the most concentrated water sample was collected. This sample of salt consisted chiefly of sodium chloride. In addition, persons who settled in this area as early as 1875 reported to the USGS that, at that time, travelers "came to the lake and picked off chunks of salt from the bottom, which they carried off in sacks while traveling up the Pecos Valley."

Robinson and Lang further identified three sources of water in Laguna Grande including:

1) surface drainage during periods of rainfall,
2) spring discharge and groundwater inflow, and
3) the effluent from the U.S. Potash Refinery, located on the present-day site of New Mexico Salt's operations on the western edge of Laguna Grande (see **Figures 1 and 2**). As indicated in **Table 1**, U.S. Potash was a predecessor of Intrepid Potash.

Hendrickson and Jones (1952)

Fourteen years later, in 1952, G.E. Hendrickson and R.S. Jones, geologists for the USGS, published a report on the geology and ground water resources of Eddy County for the New Mexico Bureau of Mines and Mineral Resources and the State Engineer of New Mexico. The authors visited more than 400 wells during their investigation and collected water samples for chemical analyses from representative wells and springs. The report's abstract indicates that:

1) in the Carlsbad area, ground water occurs in the Carlsbad Limestone, gypsiferous Castile and Rustler formations, and in the alluvium [near the Pecos River];
2) the water in the Castile and Rustler formations and in the alluvium is impotable [not drinkable] in most places within the Carlsbad area;
3) ground water from the alluvium near the Guadalupe Mountains is generally good quality, but farther east toward Carlsbad, as the water moves through gypsiferous rocks, the sulfate content increases and the water is unfit for domestic use; and
4) water of poor quality is obtained from most wells in the Nash Draw and just east of the Pecos River from Malaga Bend southward.

In the report's Topography and Drainage section, the authors found that "East of the Pecos, drainage is chiefly to enclosed basins, and the Pecos has no important tributaries from the east." In the report's Stratigraphy section, they also found that:

1) the Castile formation yields water to many stock and domestic wells. The water is high in sulfate and is undesirable for human consumption;
2) the Salado formation occurs in most of the county east of the Pecos. Potash ore is mined in this formation. No wells in the county take water from this formation. In the potash mines area, the Salado contains no pore spaces capable of transmitting any great quantity of water. The brine contaminating the Pecos River water at Malaga Bend is derived from solution at the top of the Salado formation (quoting Robinson and Lang [1938]);
3) the Rustler [formation] yields water to many stock wells and some domestic wells. It also furnishes some of the water used by the International Minerals and Chemical Co. (a predecessor of Mosaic Potash), and the Potash Co. of America for refining potash (see **Table 1 and Figure 1**). The water from the Rustler generally is not desirable for domestic use because of its high chloride and sulfate content. In certain areas, wells penetrating the lower part of the Rustler yield concentrated brine derived from the underlying Salado formation which cannot be used even for livestock. This brine aquifer at the base of the Rustler

discharges salt water into the Pecos River in the vicinity of Malaga Bend (quoting Robinson and Lang [1938]); and

4) the many small, closed shallow depressions east of the Pecos contain silt and clay washed in from the surrounding areas. Some of the depressions contain shallow lakes, such as Salt Lake (Laguna Grande de la Sal). Water wells in and near these depressions generally yield highly mineralized water which can be used, if at all, only for stock.

In the report's Ground Water section, the authors found that:

1) west of the Pecos River ground water moves generally eastward to discharge into the river. East of the Pecos ground water moves southward and south-westward into the river, but the rate of movement and the amount of water discharged into the Pecos from the east are comparatively small;

2) in the area south of Carlsbad ground water containing as much as 5,000 ppm [5,000 mg/L] of dissolved solids is used for irrigation;

3) water having more than 1,000 ppm [1,000 mg/L] is commonly used in parts of Eddy County, especially south of the Black River and east of the Pecos (for domestic use);

4) many of the stock wells in the south and east parts of (Eddy) county produce water containing more than 5,000 ppm [5,000 mg/L] of dissolved solids; and

5) the potash refineries are the only industries using large quantities of ground water in Eddy County. One of the potash refineries uses water of rather poor quality, containing about 3,500 ppm [3,500 mg/L], from the Pecos River; one uses water suitable for domestic uses from wells on the High Plains in Lea County together with rather highly mineralized water from wells penetrating the limestone of the Rustler formation at the Plant; and the third, which was used by Mosaic's predecessor, IMC Potash Carlsbad Inc., uses water similar to Carlsbad city water from wells in the Carlsbad limestone in La Huerta and highly mineralized water from wells in the limestone of the Rustler formation at the Plant.

The authors also found that:

1) the ground water used in the Carlsbad area is from three sources: the alluvium, the gypsiferous Rustler and Castile formations, and the Carlsbad limestone. The alluvium consists of clay, silt, sand, gravel, caliche, and conglomerate, and the component materials are irregularly distributed both horizontally and vertically. Locally, the conglomerate is so well cemented that it is reported as limestone by well drillers (Hale 1945);

2) south of Carlsbad, within the alluvium unit eastward from Dark Canyon, the ground water becomes more highly mineralized as it mixes with water returned from irrigation and leaking from the Southern Canal (**Figure 19**). Near the canal, ground water generally contains more than 1,000 ppm [1,000 mg/L] of sulfate and from 400 to 900 ppm [400 to 900 mg/L] of chloride (Hale 1945). This water generally is nearly impotable (undrinkable) east of the Southern Canal (in the direction of the Pecos River) as the water generally contains more than 1,000 ppm [1,000 mg/L] of chloride and 2,000 ppm [2,000 mg/L] of sulfate. [NMED groundwater quality standards for Domestic Water Supply established in 20.6.2.3103.B NMAC are 250.0 mg/L for chloride and 600.0 mg/L for sulfate, so all of the 1952 values exceeded the standards.]; and

3) the water from the Castile-Rustler aquifer is generally high in sulfate and moderately high in chloride. Water from nearly all wells in this aquifer has an unpleasant taste and is generally considered unsuitable for drinking. The water from all wells probably is suitable for stock, although dairymen report greater milk production when the water of better quality from the Carlsbad limestone is used.

Finally, the authors offered several conclusions based on their findings, including:

1) An apparent long-term correlation exists between precipitation and the chloride content of water from wells and springs. Increased precipitation provides a greater recharge to the “good-quality” ground water. Increased precipitation also provides more “good-quality” water as surface runoff to bodies of water.

2) It is quite possible that the effects of pumping (in the Carlsbad Limestone) may materially change the quality of water in time. Pumping of wells drawing water of good quality from conduits in the limestone cause a temporary lowering of the head of the water in these conduits. While the head is lowered in the conduits containing water of good quality, water of poor quality from other conduits in the limestone or from the overlying beds can enter the conduits that produce the water of good quality. Mixing can take place in wells not properly cased to shut off the water of poor quality or where the separation between the waters of different quality is imperfect. This mixing can take place while wells are being pumped, even though static water levels in the limestone do not decline. Although the possible changes in chloride content of the water in the Carlsbad limestone induced by heavy pumping of wells in the limestone are largely masked by changes due to other factors, the effects of pumping may be the most significant of all the factors influencing the future supply of water of good quality. If the chloride content increases in future years of normal precipitation beyond the high point reached in early 1941, it may be assumed that part of this increase is probably due to pumping.

Geohydrology Associates (1978-1979)

Some of the more recent site-wide investigations were conducted by Geohydrology Associates, Inc. (1978 and 1979) for the U.S. Department of Interior Bureau of Land Management (BLM) and involved hydrogeologic studies and water resources evaluations related to proposed expansion of potash operations in the area. The 1978 study used a review of previous studies in the area to create a high-level water balance study of the Carlsbad area. Findings from this study include:

1) overuse of wells (Hood 1963) and phreatophytes (a deep-rooted plant drawing its water supply from the phreatic zone), along the river (Mower and others 1964; Thomas1963b) have been implicated as causes of damage to water quality in the Pecos River entirely unrelated to the potash industry;

2) it has been shown in other areas of the country that leaking brine-disposal pits can cause significant damage to groundwater supplies (Lehr 1969); whereas in the Carlsbad potash area, the ground water quality before the presence of the potash industry was questionable because of abundant natural salt deposits near the surface. Data obtained during this study indicated that water in the topographic and water-table troughs would not be potable even if mining had not occurred. Most of the potash refineries are located in these troughs and all of the refineries discharge brine to natural depressions, many of which are at or near the water table;

3) the Salado Formation appears to be free of circulating ground water; thus it serves as a barrier between deeper, fresher water in the Capitan Limestone and shallower, saturated brine occurring in the brine

aquifer in the base of the Rustler Formation. Most water-use activities in the potash area do not affect the lower (Capitan Limestone) aquifer;

4) data show water quality is better in areas where the water table is high and poorer toward water-table troughs. The lower part of the aquifer in the Rustler Formation is known to contain brine. Water-quality data demonstrate that water-quality zones are stratified in the aquifer, where potable water is present at the top of the aquifer, floating on the more-dense brine; and

5) the water quality from a spring east and up-gradient from the IMC Potash Carlsbad discharge at Laguna Uno is distinctly different from that of the industrial brine. Most notable, the spring-water content of calcium and silica is higher than the plant discharge. The spring water is not potable, suggesting that water quality changes near Tamarisk Flat would occur even if mining had not taken place.

Contents of the 1979 Geohydrology Associates report include a preliminary study which helped define the regional hydrologic conditions in the Nash Draw through drilling and aquifer testing. Findings from this study include:

1) the Dewey Lake Redbeds and the Triassic shales offer the greatest potential for retention of fluids. The coefficients of transmissivity measured in wells screened within these deposits indicate that the flow rates through the deposits are generally less than 17 feet per year (which is a relatively low flow rate);

2) although the potash refining operations have increased the mineral ionization of ground water in the vicinity of the plants, earlier studies indicate that there was no potable water in these areas prior to the beginning of potash development;

3) aquifer tests performed on the wells within Nash Draw provided estimates of the aquifer transmissivities. Transmissivity is the flow rate under a unit hydraulic gradient through a unit width of aquifer of given saturated thickness. The transmissivity estimates were as follows: Quaternary sands and gravel deposits (mean: 255 square feet per day [ft^2/day]); Triassic shales and sandstone (mean: 9.8 ft^2/day); siltstone and shales of the Dewey Lake Redbeds (mean: 4.9 ft^2/day); and gypsum, siltstone, and dolomites of the Rustler Formation (mean: 136 ft^2/day). These results show that the hydraulic properties of the individual aquifers are highly variable and related to both the thickness of the individual water-bearing formations and the material making up the formations (e.g., sand, silt, clay); and

4) Results of the drilling program indicated that Laguna Grande may discharge into the Pecos River via the ground water. However, because of the high natural salinity of Salt Lake (Laguna Grande) and the high evaporation rate for Laguna Uno and the other lakes below IMC, it cannot be documented that refinery waste has an adverse effect on the Pecos River.

Golder Associates (2002)

The first extensive study conducted by Golder at the Site was the Hydrogeology Baseline Study between 2000 and 2001 (Golder 2002) and included a detailed investigation of the hydrogeology, surface water hydrology, and discharges at the Site. The Hydrogeology Baseline Study included the drilling and logging of 32 boreholes to depths of between approximately 26 and 213 feet below ground surface (ft bgs), installation of 28 groundwater monitoring wells to depths of between 17 and 75 ft bgs, hydraulic testing, geophysical surveys, and chemical analysis of groundwater, surface water, and brines. All but six of the wells (LG-1, LG-3, LG-4, LG-5, LG-23, and LG-25) were considered temporary wells and were plugged and abandoned following completion of the

Hydrogeology Baseline Study. The results of this 2002 study provided a detailed assessment of the hydrogeology and potential impacts to groundwater at the Site.

Since 2002, Golder installed an additional 13 monitoring wells (LG-26 through LG-38) in the area between Laguna Grande and the Pecos River, and three piezometers (P-East, P-Central, P-West) were installed in the vicinity of the Salt Stack in association with DP-1399. Additional soil borings and test pits have been drilled in support of the various engineering design projects related to the Salt Stack, Clay Setting Dike, and Tailings Management Area that provide additional hydrogeologic information for the northern and central areas of the Site.

Department of Energy Waste Isolation Pilot Plant Characterization (2004)

The 2004 Department of Energy WIPP Site Characterization report quoted a 1954 study, stating "Hale et al. (1954) believed the Rustler-Salado contact residuum discharges to the alluvium near Malaga Bend on the Pecos River. Because the confining beds in this area are probably fractured because of dissolution and collapse of the evaporites, the brine (under artesian head) moves up through these fractures into the overlying alluvium and then discharges into the Pecos River."

The WIPP report continued: "Water in the Rustler-Salado contact residuum in Nash Draw contains the largest concentrations of dissolved solids in the WIPP area, ranging from 41,500 mg/L in borehole H-1 to 412,000 mg/L in borehole H-5c. These waters are classified as brines. The dissolved mineral constituents in the brine consist mostly of sulfates and chlorides of calcium, magnesium, sodium, and potassium; the major constituents are sodium and chloride. Water quality in the Pecos River basin is affected by mineral pollution from natural sources and from irrigation return flows.Below Brantley Reservoir (**Figure 1**), springs flowing into the river are usually submerged and difficult to sample; springs that could be sampled had TDS concentrations of 3,350 to 4,000 mg/L. Concentrated brine entering at Malaga Bend (**Figures 11 and 19**) adds an estimated 64 metric tons/day (370 tons/day) of chloride to the Pecos River."

The WIPP report also stated: "Nash Draw, the largest surface drainage feature east of the Pecos River in the WIPP region, is a closed depression and does not provide surface flow into the Pecos. Potash mining operations in and near Nash Draw likely contribute to the flow in Nash Draw. For example, the Mississippi Potash Inc. East [Intrepid Potash East] (**Table 1 and Figure 1**) operation located 11 to 13 km (7 to 8 mi) due north of the WIPP site disposes of mine tailings and refining-process effluent on its property and has done so since 1965. Records obtained from the New Mexico Office of the State Engineer show that since 1973, an average of 3 × 106 m^3 (2,400 acre-feet [ac-ft]) of water per year has been pumped from local aquifers (Ogallala and Capitan) for use in the potash-refining process at that location (Sandia National Laboratories (SNL) 2003b)."

Vail (2014)

In 2014, Mosaic Environmental Manager Scott Vail, Ph.D., produced a report for the BLM that described the geology and hydrology of the Nash Draw to determine the possibility of release of groundwater from under Laguna Grande into the Pecos River. After analyzing the data from over 180 boreholes drilled by multiple potash mining and oil and gas companies over several decades, Vail's report concludes: "It is difficult to conceive a model by which either the Culebra Dolomite or Brine Aquifer might be a hydraulic pathway connecting Nash Draw with the Pecos River, either at Malaga Bend or to the southwest. The Culebra in the Draw has the form of a trough which drains to Laguna Grande. Limited flow potential exists between Laguna Grande and the Pecos River west and southwestward through the Gatuña Formation. Nash Draw has a potential playa surface of over 5,000 acres, with an evaporation potential over 10,000 gallons per minute (gpm) on an annual basis, which is greater than the combined mining and stormwater discharges into Nash Draw."

Lipson and Renninger (2021)

In 2021, Dave Lipson, Ph.D., C.P.G. and Tamera Renninger, GISP, completed a GIS Analysis Report of Karst Depressions in Laguna Grande Watershed. This report was submitted to, reviewed, and accepted by the New Mexico Office of the State Engineer Dam Safety Bureau (NMOSE DSB). The result of this report was a GIS-based quantitative analysis method that showed that: 1) sinkholes in the gypsum karst of Nash Draw are collapse structures formed by a process of solution and fill; 2) they are not interconnected by a subsurface network of bedrock conduits; and 3) they do not rapidly transmit excess storm water to playa lakes or the Pecos River. Rather, the sinkholes of Nash Draw are filled with fine-grained soils at the bottom, and they store excess storm water during precipitation events.

2.5 Area Geology and Hydrogeology

The Site is located within the lower portion of Nash Draw and extends approximately 11 miles between the Mosaic Plant to the north and the Pecos River to the south/southwest. The southern portion of the S1AP study area also includes an area to the west of the Pecos River as previously described in Section 2.3 (**Figure 2**). The following sections describe the geologic, hydrogeologic, and surface water characteristics at the Site.

2.5.1 Area Geology

A surface geologic map of the southern Nash Draw, shown in **Figure 4** and **Figure 5**, presents a shallow stratigraphic column that was developed based on individual geologic units encountered within the Mosaic monitoring well network and nearby well and soil borings. Additional descriptions of each of the geologic units are provided with the shallow stratigraphic column and are based in part on information provided in various hydrogeologic reports specific to the Nash Draw area (Vail 2012 and 2014, Vine 1963). As shown in **Figure 5**, the geologic units immediately underlying the Site consist of the Permian Rustler Formation and Quaternary deposits. Geologic cross sections for the area surrounding the Site are provided in **Figures 6, 7, 8, 9, and 10**. The base for the groundwater system underlying Nash Draw is considered to be the top of the Salado Formation at a depth between 300 to 500 ft bgs. The salt of the Salado Formation has a very low permeability, and the weight of the overburden is sufficient to cause plastic flow of the salt and prevent the development of cracks and crevices (Hendrickson and Jones 1952), resulting in a low permeability which limits vertical communication with underlying units. In other words, Nash Draw groundwater sits on top of a salt body lying beneath Nash Draw, and groundwater quality may be naturally influenced by the presence of the salt below.

Primary components of the Rustler Formation are gypsum and/or anhydrite, with dolomitic limestone, siltstone, and halite. In the majority of Nash Draw, the upper section of the Rustler formation is eroded down to the Tamarisk Member, although the overlying Magenta Member is exposed along the lateral (eastern and western) borders of Nash Draw. Rustler Formation units underlie most of Nash Draw and are generally overlain by thin veneers of Quaternary deposits, with the exceptions of thicker alluvial accumulations in Laguna Grande and other playas formed at solution collapses. The Gatuña Formation is a late Tertiary to early Quaternary deposit of poorly consolidated sandstone and siltstone with lesser amounts of conglomerate, clay and shale that is commonly associated with a prominent caliche or calcrete caprock. The Gatuña Formation is generally not more than about five feet thick, but locally reaches a thickness of 200 feet (Hendrickson and Jones 1952). Observed precipitous lateral changes in thickness, as well as mixed lithology, have led some to conclude that the Gatuña Formation is generally associated with collapse features (Geohydrology Associates 1979). Additional descriptions of the Gatuña Formation in the area of the Site is provided below.

2.5.2 Area Hydrogeology

Robinson and Lang (1938) surveyed the geology and hydrology of Nash Draw in the late 1930s in support of the growing potash industry in the area. They discovered and reported the presence of brine underlying the main axis of Nash Draw and proposed that solution of upper Salado halite created the draw and the brine. They also found that this brine aquifer was upwelling locally in the nearby Pecos River. The approximate extent of the brine aquifer in the area was delineated by Cooper and Glanzman (1971) and is shown in **Figure 11**.

Nash Draw, a “dog-bone shaped depression,” is oriented in a northeast-southwest direction on the west side of the Laguna Grande watershed (Goodbar et al. 2020; Powers et al. 2006) (**Figure 1**). Bachman (1987) described Nash Draw as a complex karst valley formed during the Pleistocene. During this time, a tributary drainage system, unofficially named the Gatuña stream system, flowed southwesterly across what is now known as Nash Draw and deposited sometimes extensive deposits of alluvium unofficially named the Gatuña Formation. The paleo-Gatuña stream system eroded into bedrock where it encountered evaporites of the Rustler Formation, commencing the dissolution along strike of the beds northeast-southwest (Bachman 1987). The dissolution of the evaporites during Gatuña deposition time ultimately created collapse sinks filled with eroded sediments, and as the collapse sinks coalesced, Nash Draw continued to expand to its present-day orientation (Bachman 1987). Because streams within Nash Draw are ephemeral, “…alluvium that has been mapped over large parts of the Nash Draw quadrangle is locally derived material deposited by sheet wash on the slopes of depressions and by intermittent streams that discharge their load into the depressions as alluvial fans during rare periods of flash flooding” (Vine 1963).

The following description of the area hydrogeology is separated into three geographic areas of the Site. The general geographic areas of the Site are shown in **Figure 2**. The northern area of the Site extends from the Plant to the north to the headwaters of Laguna Grande to the south, and includes the Plant, Salt Stack, Laguna Uno Brine Management Area, and associated containment dikes. The central area of the Site includes Laguna Grande, the Brine Pipeline, and the SWLGD. The northeast portion of Laguna Grande includes the Laguna Grande Brine Management Area, also identified as Pond 4, which was created by construction of the Pond 4 Dike. The southwest portion of Laguna Grande includes several salt harvesting ponds divided by internal dikes described as Ponds 1, 1A, 2A, 2B, 3A and 3B. The southern area of the Site includes the area between the SWLGD and the Pecos River, and a portion of the area west of Pecos River is included in the S1AP area.

Hydrogeology in the Northern Area of the Site

Within the northern area of the Site, the Salt Stack and the playa lakes are located on top of the gypsum of the Tamarisk Member, which contains dissolution features. The Culebra underlies the Tamarisk and contains water that is interpreted to be related to the playa lakes (Lambert and Harvey 1987). The flow from the Tamarisk to the Culebra may occur vertically downward through the gypsum or it may discharge laterally through playa lake deposits in contact with the underlying Culebra in locations where the Tamarisk is not present. Three piezometers were installed at locations east and west of the Salt Stack, immediately downgradient of the Salt Stack Contingency Dike in 2013 (P-Central, P-East, and P-West), and are routinely monitored as part of the DP-1399 program (Golder 2014a). The boring logs and well construction logs for the three piezometers indicate that they are all completed within the Tamarisk Member of the Rustler Formation. The January 2022 potentiometric surface indicates a southwesterly groundwater flow direction along the axis of Nash Draw in the area (**Figure 12**).

Available water quality data for these piezometers indicates that the TDS concentrations in this area range from approximately 200,000 mg/L (P-West) to over 300,000 mg/L (P-Central) (**Figure 14**). The TDS concentrations in these three piezometers have fluctuated between 150,000 and 380,000 mg/L but have consistently been greater than 10,000 mg/L, the protectable groundwater quality standard since they were installed in 2013.

Hydrogeology in the Central Area Around Laguna Grande

The direction of groundwater flow in the area of Laguna Grande has been determined from a 2001 potentiometric contour map of the area developed as part of the Hydrogeology Baseline Study (Golder 2002) (**Figure 13**). In all wells tested, the water levels in the area surrounding Laguna Grande were found to be above or at the Laguna Grande stage level, indicating the potential for discharge of the groundwater to Laguna Grande. Discharges of springs and seeps to Laguna Grande are visible, particularly along the northeastern and northwestern portions of the lake. Well LG-11, drilled to the east of Laguna Grande and outside the impact of the playa lakes, contained water with comparatively low salinity (TDS value of 14,731 mg/L) and a water level lower than the Laguna Grande wells (LG-22 and LG-7A) to the west of it (Golder 2002).

Based on these observations, impacts from Laguna Grande is limited to the topographically low areas adjacent to the playa lake, and these waters do not communicate with water bodies in the topographically elevated areas along the eastern boundaries of Nash Draw. In well LG-10 drilled to the west of Laguna Grande as part of the Hydrogeology Baseline Study, and well LG-36 drilled southwest of Laguna Grande in December 2021 (**Figure 2**), the Culebra Dolomite Member was found to be dry (which most likely indicates the western edge of Nash Draw).

The nine test wells drilled in 2001 in the central area, identified as LG-7A, LG-7B, LG-8A, LG-8B, LG-8C, LG-9A, LG-9B, and LG-12 are shown in **Figures 6 and 13.** Available TDS data for the wells located between the Salt Stack and Laguna Grande are shown in **Figure 14**. The TDS concentrations observed in wells LG-8A, 8B, 8C (located on the northern perimeter of Laguna Grande), and LG-12 (located on the southeast side of Laguna Tres) in 2001 generally fell within the 228,000 to 326,000 mg/L range. For the wells located immediately east (LG-7A, 7B) and west (LG-9A, 9B) of Laguna Grande, the TDS concentrations observed in 2001 are relatively lower, ranging between approximately 53,400 and 127,000 mg/L. However, all wells had TDS concentrations above the protectable water quality standard between 53,400 and 326,000 mg/L at least 9 years before the Brine Pipeline from the Clay Settling Pond to Laguna Grande was completed in December 2010.

Hydrogeology in the Area South and West of Laguna Grande

The area south and west of Laguna Grande and adjacent to the Pecos River is underlain by alluvial river deposits, playa lake sediments, and caliche. The Gatuña Formation is the principal shallow water-bearing unit in this area. The Gatuña Formation unit is composed of locally-derived fluvial sand, silt, clay, and some gravel that were generally transported short distances from outcrops of sandstone, shale, and limestone adjacent to Nash Draw. Some of the gravels within the Gatuña Formation are of mixed meta-sedimentary or igneous lithology, indicating a more distant source. The Gatuña Formation is characterized by numerous caliche development zones which are similar in texture, mineralogy and age to caliche zones that are common in the Ogallala Formation. The unit locally has high permeability where well-sorted gravelly or cobbly zones are present (Brokaw et al. 1972). Since Gatuña Formation fluvial materials were deposited over an irregular surface, thickness and texture are irregular and textural subunits are laterally discontinuous.

The available soil boring logs and water level and water quality data associated with the Mosaic monitoring well network, nearby wells and soil borings suggest that there is a possibility of discrete water-bearing units existing within the Gatuña Formation between Laguna Grande and the Pecos River. In particular, wells screened within the discontinuous conglomerate lenses within the Gatuña Formation appear to show confined/semi-confined characteristics, with water levels observed to rise several tens of feet when the formation is penetrated during drilling. It is important to note that these conglomerate lenses containing potentially perched groundwater appear to be discrete, disconnected zones that do not represent a single continuous hydrostratigraphic layer. In contrast, the undifferentiated silt, clay, and sand water-bearing unit within the Gatuña Formation appears to be a single continuous hydrostratigraphic layer and unconfined based on drilling logs that indicate that the static groundwater levels observed after individual wells are completed are near the levels observed during drilling.

The current DP-1399 groundwater monitoring network includes 15 monitoring wells (LG-1, LG-5, LG-23, LG-25, LG-26, LG-28, LG 29, LG-30, LG-31, LG-32, LG-34, LG-35, LG-36, LG-37, LG-38) located between Laguna Grande and the Pecos River and one monitoring well (LG-33) located on the west side of the Pecos River. (**Figure 2**). An October 2020 potentiometric map was developed using the DP-1399 monitoring network and a limited number of wells located on the west side of the Pecos River with available water level data during this time. The October 2020 potentiometric surface (which incorporates available water level data from wells on the west side of the Pecos River) indicates a general southwesterly groundwater flow direction in the area south of Laguna Grande that transitions to a southerly-southeasterly flow direction in the vicinity of the Pecos River (quasi-parallel to the axis of the Pecos River) (**Figure 15**). The January 2022 potentiometric surface indicates a southwesterly groundwater flow direction toward the Pecos River in the area of monitoring wells LG-1, LG-26, LG-28, LG-30, and LG 32, that also transitions to a southerly or south-southeasterly gradient near wells LG-25, LG-34, and LG-35 (**Figure 16**).

TDS concentrations observed in wells completed within the conglomerate lenses are generally high, with concentrations ranging between approximately 125,000 and 358,000 mg/L. TDS concentrations within the caliche are shown to range from approximately 65,000 to 115,000 mg/L. Groundwater within the alluvium adjacent to the Pecos River is generally of better water quality, with TDS concentrations typically below about 7,000 mg/L. The TDS concentrations within the individual DP-1399 monitoring wells are shown for the period of record (2004 to present) in **Figure 17.** With the exception of wells LG-2 and LG-26, the majority of the DP-1399 wells show relatively steady TDS concentrations over time. Wells LG-2 and LG-26 originally had TDS concentrations below 10,000 mg/L, but the TDS concentrations in both wells increased above 10,000 mg/L in 2005, prior to Mosaic discharging brine into Laguna Grande which started in December 2010. The most recent TDS concentration measured at well LG -2 was 109,000 mg/L in October 2020, and the most recent TDS concentration measured at well LG-26 was 169,000 mg/L in January 2022. The observed rise in concentrations of TDS and other constituents in these two wells will be further investigated as part of the S1AP.

The most recent TDS concentrations observed in monitoring wells located between Laguna Grande and the Pecos River and on the west side of the Pecos River are shown in **Figure 18**. As shown in the figure, there are three BLM wells located between Laguna Grande and the Pecos River that had TDS concentrations ranging between 55,876 mg/L (Well 23.29.18.14) and 283,492 mg/L (Well 23.29.28.41) dating back to 1979, approximately 31 years before Mosaic began discharging brine to Laguna Grande via the Brine Pipeline. Available water quality data for the west side of the Pecos River show TDS concentrations in groundwater wells in 2010, 2016, 2020, and 2022 generally ranged between approximately 5,400 mg/L and 8,800 mg/L.

West side wells C03965 and C04556 POD are associated with a corrective action program being conducted by Chevron Environmental Management Company and Arcadis related to the accidental discharge of produced water from a produced water pipeline on Mosaic fee land in 2014. Semi-annual groundwater monitoring is currently being conducted on these wells under New Mexico Oil Conservation Division (NMOCD) remediation permit number 2RP-2400. Two of the wells associated with this release (C03695-POD1 and C03695-POD3) show TDS concentrations in 2020 greater than 10,000 mg/L.

2.6 Area Surface Water Hydrology

The surface water features in and around the Site comprise much of the southwestern portion of Nash Draw and includes the Pecos River. As shown in **Figures 1, 2, and 3**, Mosaic's potash processing facility is at the northern edge of the Site. Extending southwards from the Plant is the Salt Stack, where solid-phase salt and clay tailings are deposited. The Salt Stack gradually transitions to the CSP where the heavier clay portions of the tailings settle out, and the remainder of the brine terminates in Laguna Grande. South of the tailings area is a circular chain of playa lakes. From north to south, these features are commonly called Laguna Uno, Lindsey Lake, Tamarisk Flats, Laguna Dos, Laguna Cinco, Laguna Seis, Laguna Quatro, and Laguna Tres. Laguna Grande in the southern portion of the Site, is the lowest hydrologic sink or terminus for the Nash Draw. See **Table 3** for more information about these playas.

2.6.1 Watershed Characteristics

The Site lies entirely within the lower portion of Nash Draw and is typical of a karstic closed basin watershed. Nash Draw is an internally drained basin with no known external surface drainage. It is delineated on the west and east sides by escarpments named Quahada Ridge and Livingston Ridge, respectively (Vine 1963). These ridges are topped by Mescalero caliche overlying the Gatuña Formation (Bachman 1987). The Maroon Cliffs delineate the north side of Nash Draw and separate it from Clayton Basin to the north (Powers et al. 2006; Bachman 1985). The southern boundary of Nash Draw (**Figure 19**), between the southern edge of Laguna Grande and the Pecos River, is delineated by an unnamed escarpment. The stream network is poorly defined, surface drainages are ephemeral, and connections between waters are few and temporary. Channels typically form narrow arroyos that transition rapidly to broad alluvial fans.

For the purpose of stormwater runoff analysis, partially-isolated watersheds or closed basins have been identified and delineated within Nash Draw (**Figure 19**). Estimation of appropriate runoff coefficients have included an assessment of the reduction in the runoff volume due to both closed basin features within the Nash Draw basin and subsurface karstic features. The most current basin delineation in 2021 (Golder 2021) indicates that the total area contributing runoff to the Laguna Grande basin is approximately 368 square miles.

Golder is currently evaluating the hydrology within Nash Draw to support design improvements of the SWLGD, in coordination with the New Mexico Office of the State Engineer – Dam Safety Bureau (OSE-DSB). The Colorado-New Mexico Regional Extreme Precipitation Study (REPS) was jointly released in 2018 by the Colorado Division of Water Resources, Dam Safety Branch and NM OSE-DSB (CDWR and OSE-DSB 2018). This study is the culmination of a multi-year effort to update extreme rainfall estimates in the region. Due to the incorporation of more recent and region-specific storm datasets into this study, the NM OSE-DSB requested that Golder use the REPS for the recent hydrology evaluations (Golder 2021). One of the tools developed with REPS is the MetPortal tool. MetPortal is a web-based tool that can be used to develop Annual Exceedance Probability (AEP) estimates and temporal distributions using either point locations (latitude/longitude) or basin shapefiles. The 100-year, 24-hour MetPortal storm event for Nash Draw is 3.43 inches (Golder 2021). Initial evaluation of this storm event indicates there would be no release from Nash Draw.

2.6.2 Major Surface Water Bodies within the Area

There are nine significant depressions and playa lakes within the Site area. These lakes can be characterized as shallow, saline playa lakes, supplied by runoff and groundwater discharge. The playa lakes show a consistent drop in elevation from northeast to southwest, from Laguna Uno (3,011 ft above mean sea level [ft-amsl]) to Laguna Grande (2,956 ft-amsl). Descriptions of the depressions and playa lakes in the Site area are provided in **Table 3**, and the locations of samples previously collected from the playa lakes and springs at the Site are shown in **Figure 20**.

As previously described in sections 2.4 and 2.5.2, TDS concentrations within Laguna Grande were naturally elevated prior to any brine discharge by Mosaic into the playa. According to Robinson and Lang (1938), samples collected by the USGS in July 1924 from the west side of Laguna Grande showed TDS concentrations of 162,300 and 239,000 ppm, respectively. The water quality of the playa lakes was further investigated in 2001 as part of the Hydrogeology Baseline Study (Golder 2002), and the Brine Pipeline outfall is sampled quarterly by Mosaic personnel. All of the playa lakes contain poor quality water not suitable for human consumption and are slightly more saline than the tailings brine exiting the Brine Pipeline. As shown in **Figure 21**, the median TDS concentrations of the individual playa lakes have been measured to be slightly greater than the tailings brine TDS concentrations. Therefore, Mosaic's DP-1399-permitted release of tailings brine into Laguna Uno (before December 2010) and Laguna Grande (beginning in December 2010) does not appear to have resulted in a statistically significant increase in the salinity of these two playa lakes.

2.6.3 Springs and Seeps

The majority of non-mining-related surface water flow within the Site area is generated by natural springs and seeps, which were investigated in 2001 as part of the Hydrogeology Baseline Study (Golder 2002) and have been sampled periodically by Mosaic personnel. All of the springs observed in 2001 appeared to flow independently of precipitation events, and all of the springs and seeps were typically of very poor-quality water. The median TDS concentrations of the springs and seeps range from approximately 150,000 mg/L to 360,000 mg/L, and the median concentration of Mosaic's tailings brine discharge is approximately 285,000 mg/L (**Figure 22**). The springs investigated in 2001 are shown in **Figure 20** and included the following, from north to south:

Springs North and East of Laguna Uno (Section 19 Springs). North of Laguna Uno and east of the Clay Settling Area, springs emerge from the Tamarisk Member for about one mile along the eastern edge of the Salt Stack. The springs ultimately discharge into Laguna Uno. The total discharge from the springs was estimated at approximately 900 gpm in 2001. Like other springs in this area of Nash Draw, the discharge is quite saline but is less concentrated than the Brine Pipeline tailings discharge.

Springs Near Lindsey Lake. A series of small springs along the northern end of Lindsey Lake provides a constant source of inflow to this lake. The springs are located near a steep section along the western divide of Nash Draw. Estimated flow is approximately 125 gpm. Other springs occurring along the eastern side of the lake may be related to seepage from Laguna Uno. All of the springs are quite saline.

Surprise Spring. Surprise Spring is located in the northern end of Laguna Grande. It has been mentioned in documents dating to the early 1900s and predates any potash mining activities in the Nash Draw. Flow from Surprise Spring was estimated at 200 gpm and is not believed to vary significantly seasonally (Lambert and

Harvey 1987). Chemical analysis of the spring discharge indicates a relation to the local surface water and tailings brine discharge (Lambert and Harvey 1987). In other words, Lambert and Harvey concluded in 1987 that the spring water quality was representative of a mixture of groundwater and historic tailings brine discharge in the area.

Seeps East and Northeast of Laguna Grande. A series of Rustler Formation outcrops seep small amounts of water to Laguna Grande during much of the year. The seeps are distributed over an area along the northeast side of the playa lake and the rate of discharge is difficult to estimate. All of the seeps are quite saline.

All the springs and seeps contain poor quality water and have salinity levels within the ranges observed in the tailings brine. Median TDS concentrations of the individual springs generally fall within the 250,000 to 360,000 mg/L range, far above the protectable groundwater limit. Two springs that have relatively lower mean TDS concentrations are the Section 19 Pond spring located north and east (upgradient) of Laguna Uno at approximately 152,000 mg/L, and the Laguna Dos spring located south and east (cross gradient) of Laguna Uno at approximately 151,000 mg/L, but both exceed the protectable groundwater limit.

Tailings Brine Water Chemistry

The TDS concentration and major ion (chloride, sulfate, etc.) composition of the Mosaic tailings brine discharge is presented in the DP-1399 semi-annual monitoring reports that Mosaic submits to the NMED and presented in **Table 4**. The TDS concentrations of tailings brine samples collected between 2012 and 2021 have ranged between 107,000 to 401,000 mg/L, with a median concentration of 285,000 mg/L (**Figure 21**). More recent brine samples from 2020 and 2021 have showed a decrease in TDS concentrations, with measured values between a low of 115,000 mg/L (October 2021) and a high of 341,000 mg/L (May 2021), for a median TDS concentration of 283,500 mg/L. In other words, the recent 2021 values fall within the historical range of TDS values measured in the Brine Pipeline samples taken at the Site since 2012.

2.6.4 Pecos River

The Pecos River, running from the northwest to the southeast near the Site, flows approximately 1.3 miles southwest of Laguna Grande and is the only freshwater perennial stream in the vicinity of the Site. The only significant continuously flowing tributary of the Pecos in the area is the Black River located on the west side of the Pecos River approximately 4 miles downstream and southeast of Laguna Grande (**Figure 19**). Studies of the chemical character of water in the Pecos River basin in New Mexico began in 1937. Results of early investigations in the area indicated that highly mineralized water enters the Pecos River through seeps and springs in the Malaga Bend section of the river, located approximately five (5) miles south of Laguna Grande, adding greatly to the already high mineral load carried by the river as it enters that stretch (Hale et. al. 1954). The source of the concentrated brine in the alluvium at Malaga Bend is the brine aquifer that underlies the area at a depth of approximately 200 feet (**Figure 11**). The brine is under sufficient head in the aquifer to percolate upward through the overlying formations and ultimately to the Pecos River.

On behalf of Mosaic, Golder collects quarterly surface water quality samples from three locations on the Pecos River as part of the DP-1399 monitoring program, identified as River 1, River 2, and River 3 in **Figure 2**. A fourth Pecos River sample point (River 4) was established in January 2022, which will provide additional information regarding the quality of surface water downstream of Laguna Grande. A time-series plot of TDS concentrations over time at the Pecos River sampling points is included as **Figure 23**. The TDS concentrations at these three locations appear to show parallel seasonal changes (similar TDS values at the same sample time along the stretch of the Pecos closest to Laguna Grande) rather than a defined trend. A distinct drop in TDS concentrations was observed in July 2021 following the flooding that occurred in the Pecos River in late June 2021. The TDS concentrations were shown to rise back up to just below their average concentrations at all three sample points during the October 2021 sampling event.

The median TDS concentrations of the Pecos River sample points range from 4,380 mg/L at River 1 to 4,936 mg/L at River 2. River 3, located northwest and upgradient of the Site, has a median TDS concentration of 4,515 mg/L. River 4, the newest and most downgradient sample point, had a TDS concentration of 4,560 mg/L in January 2022.

Mosaic also installed three staff gauges and monitoring systems along the Pecos River in 2018, identified as Pecos River Staff Gauges #1, #2, #3 in **Figure 2.** A fourth Pecos River Staff Gauge and monitoring system is scheduled to be installed in the second quarter of 2022 downstream of Staff Gauge #3. The staff gauges include adjacent automated camera systems programmed to record a photograph of the stage height of the Pecos River at one-hour intervals. Hourly water level data for the individual instrumented staff gauges are provided in the DP-1399 semi-annual monitoring reports Mosaic submits to the NMED. A summary of the daily average water level data collected from the individual staff gauges are included in **Table 5**.

3.0 SITE INVESTIGATION WORK PLAN [20.6.2.4106.C(2) NMAC]

This section provides a site investigation work plan for assessment of the Site in accordance with 20.6.2.4106.C(2) NMAC, and some area specific considerations. In accordance with the cited regulations, the S1AP will evaluate the areas of known ground water and surface water with TDS concentrations higher than the protectable groundwater standards and requirements set forth in Section 20.6.2.4103 NMAC. This work will be performed based on both existing site data collected as part of the DP-1399 monitoring program and other site investigations and additional data collected through the proposed S1AP scope of work as outlined below. See **Table 9** for a proposed monitoring and reporting schedule and **Table 10** for a proposed schedule of each task described below.

3.1 Task 1 - Data Gap Analysis [20.6.2.4106.C(7) NMAC]

Due to the extensive amount of information already available for the Site, the first step in the S1AP is an assessment of the existing information and identification of data gaps for purposes of an abatement plan. Following the data gap analysis, the next stage is the collection and evaluation of additional data, to be coordinated with studies already required under DP-1399 and other ongoing studies at the Site.

Although this S1APP is designed to adequately define Site conditions and provide the necessary data to select and design an effective Stage 2 abatement option (if necessary), if Mosaic identifies data gaps as part of Task 1, applicable S1AP task scopes of work presented herein will be refined accordingly and submitted to the NMED. Results of the data gap analysis will be presented as an attachment to the summary S1AP quarterly progress report covering the period when the gap analysis is completed.

3.2 Task 2 - Workplan to Further Investigate Site Geology and Hydrogeology [20.6.2.4106.C(2)(a) NMAC]

Task 2 will include an investigation of the Site geology and hydrogeology in accordance with 20.6.2.4106.C(2)(a) NMAC. The results of this investigation will help further define the vertical and horizontal extent and magnitude of vadose-zone and groundwater with concentrations of constituents in excess of the standards and requirements set forth in Section 20.6.2.4103 NMAC, and subsurface hydraulic parameters including hydraulic conductivity, transmissivity, storativity, and migration rates and directions of various water quality constituents. The Task 2 investigation will also provide an inventory of water wells inside and within one (1) mile from the perimeter of the three-dimensional body where the standards set forth in Subsection B of Section 20.6.2.4103 NMAC are exceeded, and location and number of such wells actually or potentially affected by Mosaic discharges (**Figure 24**). Details of the proposed Task 2 investigation of the Site geology and hydrogeology are presented in the following sections.

3.2.1 Task 2a - Well Inventory

All groundwater wells inside and within a one-mile perimeter of the three-dimensional body of water where measured constituents are present in excess of the numerical standards of 20.6.2.3103 NMAC, and all groundwater wells actually or potentially affected by water contaminants from this area, will be identified as part of Task 2a. A well inventory was previously conducted in 2019 as part of further characterization of the hydrogeology in the area between Laguna Grande and the Pecos River at the request of the NMED (Mosaic Potash Carlsbad Inc. 2019). A summary of the available completion information for the soil borings, piezometers, and wells in the area of the Site was developed as part of this previous inventory, and the information has been updated with new well information obtained as part of the development of this S1APP. **Tables 6 through 8** present the completion information for the soil borings, piezometers and wells in the area of the Site.

The existing well inventory will be updated as part of the S1AP using the New Mexico Office of the State Engineer WATERS database and the USGS National Water Information System with subsequent field verification, as well as information in Mosaic files and personal knowledge of Mosaic staff. Results of the updated well inventory will be presented as an attachment to the summary S1AP quarterly progress report covering the period when the inventory is completed. The well inventory results will also be included as an attachment to the Final Site Investigation Report detailing the results of the S1AP.

3.2.2 Task 2b - Define the Extent of Potential Impacts to Groundwater from Mosaic Discharges

As previously described in Section 2.4 of this S1APP, multiple studies have been conducted at the Site throughout the years to investigate the source of brine within the Rustler and Gatuña Formations and potential impacts to groundwater from Site discharges. Tasks 2c, 2d, 2e, 3, and 4 described below will provide a comprehensive evaluation of the geology, hydrogeology, surface water hydrology, and waste streams at the Site. The data obtained from these tasks will be evaluated together as one package to provide a comprehensive assessment of the potential impacts to groundwater from Mosaic discharges.

It is anticipated that through this evaluation, the detailed geochemical characteristics/signatures of the individual media (groundwater, surface water, brine discharge, and natural sources of brine) will be identified, and that the potential of mixing of the various media will be estimated. Mosaic anticipates that a series of maps will be developed showing the distribution of various geochemical constituents across the Site and by media as part of Task 2b, and the results of the analysis will provide an assessment of the potential impacts to groundwater from Mosaic discharges. The results of the assessment of the potential impacts to groundwater from Mosaic discharges will be included in the Final Site Investigation Report detailing the results of the S1AP.

3.2.3 Task 2c - Characterize the Hydrogeologic Conditions Between Laguna Grande and the Pecos River

Mosaic conducted multiple investigations throughout the years to characterize the hydrogeology in the area between Laguna Grande and the Pecos River, and the ongoing DP-1399 monitoring program continues to build on our understanding of the hydrogeology in the area. Some of the more recent work conducted at the Site to help further characterize the hydrogeology in the area between Laguna Grande and the Pecos River was completed in 2018 and 2019 at the request of the NMED (2018). As part of this investigation, Golder and HRS Water Consultants, Inc. completed a well and soil boring inventory of the area between Laguna Grande and Loving, New Mexico, on the west side of the Pecos River and developed four new regional hydrogeologic cross sections within the area based on the survey data (**Figures 6 through 10**). Additionally, Mosaic recently installed six additional groundwater monitoring wells in the area between November 2020 and December 2021 that provide additional information on the hydrogeology in the area.

As part of Task 2c, Mosaic will update the existing hydrogeologic cross sections with the new hydrogeologic data obtained from the six new wells (LG-33 through LG-38) installed by Mosaic since the original cross sections were developed, as well as any new hydrogeologic data obtained from the updated well inventory conducted as part of Task 2a. Additional analysis of the hydrogeologic conditions in the area will be conducted as part of Task 2c, including:

- Further analysis of water quality trends within the current DP-1399 groundwater monitoring network, which includes 15 monitoring wells (LG-1, LG-5, LG-23, LG-25, LG-26, LG-28, LG 29, LG-30, LG-31, LG-32, LG-34, LG-35, LG-36, LG-37, LG-38) located between Laguna Grande and the Pecos River and one monitoring well (LG-33) located on the west side of the Pecos River. Concentration trend plots of the individual analytical test parameters will be developed for the period of record for each of the DP-1399 monitoring wells.
- Evaluation of the vertical and horizontal extent and magnitude of vadose-zone and groundwater constituents in excess of the standards and requirements set forth in Section 20.6.2.4103 NMAC.
- Evaluation of the geochemical characteristics, or water types, for the individual water-bearing units identified in the area based on existing ion chemistry through the development of Stiff, Schoeller, and Piper Trilinear diagrams.
- Evaluation of the subsurface hydraulic parameters for the individual water-bearing units identified in the area including hydraulic conductivity, transmissivity, storativity, and rate and direction of groundwater flow.

The results of the updated characterization of the hydrogeologic conditions between Laguna Grande and the Pecos River will be included in the Final Site Investigation Report detailing the results of the S1AP.

3.2.4 Task 2d - Characterize the Hydrogeologic Conditions West of the Pecos River

As part of Task 2d, Mosaic will attempt to perform a water level survey and water quality monitoring of privately-owned wells located on the west side of the Pecos River within a one-mile radius of the three-dimensional body where the standards set forth in Subsection B of Section 20.6.2.4103 NMAC are exceeded. Active wells currently identified on the west side of the Pecos River are shown in **Figure 24**, and available construction details for these wells is provided in **Table 7** (Note: this list will be updated as part of the Task 2a well inventory). Additional soil boring details are provided in **Table 8**. The preliminary list of wells proposed to be monitored on the west side of the Pecos River is shown in **Figure 24** and summarized in **Table 9**. This list may be updated following the Task 2a well inventory and will ultimately be finalized through collaboration between Mosaic and the NMED.

Once the final list of wells to be monitored is established and the associated landowners are identified, Mosaic will make all reasonable efforts to obtain access to the wells from the landowners. For the wells where access is granted, Mosaic will survey the wellheads, measure the water levels, and take water quality samples to be analyzed for the parameters listed in **Table 9**. Mosaic has also been monitoring two additional wells on the west side of the Pecos River, LG-33 monitoring well as part of the DP-1399 monitoring program and C00500 (also identified as C00868), a groundwater supply well. Mosaic proposes to monitor the landowner wells and well C00500/C00868 during the second and fourth quarterly DP-1399 monitoring events following NMED's approval of the S1APP.

Additionally, the C03965 and C04556 POD wells located on the west side of the Pecos River (**Figure 24**) are associated with a corrective action program being conducted by Chevron Environmental Management Company and Arcadis related to the accidental discharge of produced water from an oil and gas produced water pipeline in 2014. Semi-annual groundwater monitoring is currently being conducted on these wells under NMOCD Remediation Permit Number 2RP-2400. Mosaic proposes to incorporate available semi-annual (second quarter and fourth quarter) water level and water quality data associated with this corrective action program into the S1AP.

As shown in **Table 9**, Mosaic will gather a minimum of eight quarters of data from the existing monitoring well network and a minimum of four quarters of data from the proposed wells west of the Pecos River.

Golder will develop potentiometric maps and water quality maps covering both the east and west sides of the Pecos River for each quarterly monitoring event to help establish regional groundwater flow directions in the area, whether there appears to be a connection between the shallow groundwater on both sides of the Pecos River, and the regional distribution of groundwater quality parameters. Historical water level data is also available from several USGS wells located on the east and west sides of the Pecos River. There were USGS groundwater level monitoring events in 2013, 2018, and 2021 that correspond with historical DP-1399 quarterly monitoring events. Golder will also prepare potentiometric maps for these overlapping events to help establish regional groundwater flow directions in the area and determine whether the regional groundwater flow patterns have changed over time.

The results of the characterization of the hydrogeologic conditions on the west side of the Pecos River will be included in the Final Site Investigation Report detailing the results of the S1AP.

3.2.5 Task 2e - Characterize the Hydrogeologic Connection Between the Pecos River and Groundwater Discharging from the Site

Mosaic characterized the potential hydrogeologic connection between the Pecos River and groundwater discharging from the Site as part of the DP-1399 Condition 12 study in 2014 (Golder 2014b), and in 2019 (Mosaic 2019) at the request of the NMED (2018). Consistent with our previous analyses, groundwater levels at the Pecos River will be estimated from the automated monitoring data sets associated with wells nearest the Pecos River (wells LG 25, LG-26, LG-30, and LG-35). Groundwater levels directly adjacent to the Pecos River will be estimated at locations downgradient of each of these wells by projecting the corresponding potentiometric surfaces from the groundwater elevation maps that are developed quarterly as part of the DP-1399 monitoring program. The potentiometric maps (**Figures 15 and 16**) presented in each quarterly groundwater monitoring report will be evaluated to determine the hydraulic gradients near each of the four instrumented wells highlighted in yellow in **Figure 25**. The measured groundwater levels at each instrumented well will then be multiplied by the hydraulic gradient near each well (i.e., slope of the water table) and the distances downgradient to the Pecos River to estimate the groundwater levels directly adjacent to the Pecos River.

Surface water elevations at each of the projected points downgradient of the four individual wells will estimated by first determining the surface water gradient between the corresponding DP-1399 automated staff gauges (existing Pecos River Staff Gauges 1 through 3, and Pecos River Staff Gauge 4 scheduled to be installed in the second quarter of 2022) and then multiplying the surface water gradient by the distance between the nearest staff gauge and the associated projected point downgradient of each well. This provides an estimate of the total change in the surface water elevation in feet between the nearest staff gauge and the projected point downgradient of each well. This number is then either added to (if upgradient) or subtracted from (if downgradient) the measured surface water elevation at the nearest staff gauge to provide an estimate of the surface water elevation downgradient of the projected point downgradient of each well. Hydrographs of projected surface water levels and projected groundwater levels at each of the four points along the Pecos River will be prepared quarterly and summarized in the summary quarterly progress reports submitted to NMED.

Additionally, as part of the DP-1399 monitoring program, Mosaic collects surface water quality samples from four sampling stations on the Pecos River designated as River 1, River 2, River 3, and River 4. The water quality data from these sampling points will be used to establish the geochemical characteristics, or water types, based on existing ion chemistry through the development of Stiff, Schoeller, and Piper Trilinear diagrams. Additionally, water quality trend plots will be prepared for each of the river sample points that show the changes in concentrations of individual constituents over time and distance downstream within the Pecos River. The Pecos River water quality data will be compared to the groundwater quality data analyzed under Task 2c to determine if there are similar water types in any of the wells and if there are similar trends in concentrations of various constituents observed between any of the wells and the Pecos River sample points (**Figure 25**). The results of the geochemical characterization of the Pecos River water will be included in the Final Site Investigation Report detailing the results of the S1AP.

3.3 Task 3 - Workplan to Further Investigate Site Surface Water Hydrology [20.6.2.4106.C(2)(b) NMAC]

Task 3 will include an investigation of the Site surface water hydrology in accordance with 20.6.2.4106.C(2)(b) NMAC. The results of this investigation will provide details of the surface-water hydrology, seasonal stream flow characteristics, groundwater/surface-water relationships, and the potential for impacts to the Pecos River from mining operations. Existing Site data from previous investigations will be heavily relied upon in our evaluation as well as the surface water quality and stage data collected as part of the DP-1399 monitoring program and S1AP Task 2e (described above). Available water level and water quality data (both current and historic) will be obtained from the USGS National Water Information System Database for the Pecos River Station near Malaga Bend (USGS Station #8406500). The water quality data for USGS Station #8406500 will be compared to the water quality data obtained from Mosaic River Stations 1 through 4, and the Malaga Bend station stage data will be evaluated alongside the data from Mosaic Pecos River automated staff gauges #1 through #4.

Additional hydrographs of stage data from Laguna Grande automated staff gauges #1 through #3 will be evaluated along with groundwater hydrographs from nearby DP-1399 groundwater monitoring wells to provide estimated gradients between the surface water stage in Laguna Grande and the groundwater surface. These data, in combination with the water quality and water level data obtained as part of S1AP Task 2e, will provide a comprehensive characterization of the surface water hydrology at the Site. The results of the surface water hydrologic investigation will be included in the Final Site Investigation Report detailing the results of the S1AP.

3.4 Additional Site Investigation Components [20.6.2.4106.C(7) NMAC]

Several additional Site investigation components were identified by the NMED in their October 2021 notification letter to Mosaic to be included in the S1APP. These individual scope items are described in the following sections.

3.4.1 Task 4 - Workplan for Characterization of the Waste Stream Discharged from the Plant to the Salt Stack and Laguna Grande

Flows and water quality from the Salt Stack to Laguna Grande are measured from the Brine Pipeline in accordance with DP-1399, and flow volumes of heavy media tailings and thickener underflows are measured as part of Site operations. The brine discharge will continue to be monitored quarterly in accordance with Conditions C105.G.2 and C105.G.3 of the draft DP-1399 permit, with the addition of total suspended solids analyses as described below in S1AP Task 5. Additionally, as part of Task 5, daily flow rates for the heavy media tailings and thickener underflows will be recorded. The geochemical characteristics of the brine discharge will be compared to the geochemical characteristics of the groundwater and surface water at the Site determined as part of S1AP Tasks 2c and 2e (described above). This analysis will help determine if there are similar or unique water types observed between the brine discharge, groundwater, and surface water at the Site, or if there are similar or unique trends in concentrations of various constituents observed between the different media over time. The results of the characterization of the waste stream discharged from the Plant to the Salt Stack and Laguna Grande will be included in the Final Site Investigation Report detailing the results of the S1AP.

3.4.2 Task 5 - Workplan to Evaluate the Effect of the Discharge of Suspended Clay Particles to the Laguna Grande Brine Management Area

As described in S1AP Task 4 above, Mosaic will continue to quarterly sample the brine being discharged from the Brine Pipeline to Laguna Grande as part of the DP-1399 monitoring program. As detailed in **Table 9**, Mosaic proposes to add total suspended solids (TSS) to the quarterly brine discharge analyte list summarized in Conditions C105.G.2 and C105.G.3 of the draft DP-1399 permit. The addition of TSS to the analyte list in combination with the measured flow rates will allow for the quantification of the mass of solids added to Laguna Grande via the Brine Pipeline. By determining the solids addition rate to Laguna Grande, Mosaic can determine the effectiveness of the solids separation from the Salt Stack to the Clay Settling Pond, the relative quality of brine entering Laguna Grande, and the sediment load to Laguna Grande associated with Mosaic's brine discharge.

Mosaic will also collect a sample of water from the culvert that discharges naturally occurring surface water into the northern end of Laguna Grande during the quarterly monitoring events and analyze the sample for TSS and other inorganic constituents listed in **Table 9**. A visual estimate of the flow rate discharging from the natural runoff culvert will also be made during each quarterly monitoring event to allow for quantification of the sediment load to Laguna Grande from natural runoff. The locations of the Brine Pipeline discharge point and the natural runoff culvert are shown in **Figure 2**. The results of the Task 5 analysis will provide an estimate of the sediment load to Laguna Grande associated with both brine discharge from the Clay Settling Pond and from natural surface runoff. The results of the quarterly analyses will be presented in the DP-1399 semi-annual monitoring reports submitted in accordance with Condition C105.H of the draft DP-1399 permit. The full analysis of the estimated sediment load at Laguna Grande during the S1AP program will be presented in the Final Site Investigation Report detailing the results of the S1AP.

Additionally, Condition C105.N of draft DP-1399 permit requires Mosaic to submit a work plan to the NMED within 45 days of the effective date of the permit a plan to monitor the surface water quality in shorebird habitats that may be impacted by Mosaic's operations. Pertinent data collected from the Condition C105.N study will also be incorporated into Task 5 analysis, and the water quality data collected as part of Task 5 of the S1AP will be used to support the Condition C105.N study.

3.4.3 Task 6 - Workplan to Evaluate the Relationship Between Salt-Producer Operations and Impacts to Groundwater and the Pecos River

As previously described in Section 2.1, there are three current salt harvesting companies in the area: United Salt, New Mexico Salt, and Southwest Salt. Mosaic does not have the authority to compel any of these companies to participate in or contribute to this S1AP. However, Mosaic proposes to review any publicly available discharge permits issued by NMED, any discharge data submitted to the NMED, any salt production data, and groundwater pumping data for each company. If there is any information that may be relevant to Task 1 above, or if any data correlations or causations of groundwater quality degradation can be determined from our analysis, this information will be presented in the Final Site Investigation Report.

3.4.4 Task 7 - Workplan to Address Hydrologic Conditions Present in the Area of Monitoring Well LG-2

At the request of the Mining Environmental Compliance Section (MECS) of NMED (2021a), Mosaic submitted the Work Plan for New Monitoring Wells Near Existing Well LG-2 (Work Plan) to the agency on June 16, 2021. The Work Plan was subsequently approved by the NMED on June 25, 2021 (NMED 2021b). Work was completed according to the NMED-approved work plan between December 2021 and January 2022 and included the installation of one monitoring well (LG-38) on Mosaic property, and two wells (LG-36 and LG-37) located on lands managed by the BLM (**Figures 2, 3, and 16**). The work completed was intended to meet the NMED's request to further characterize the hydrogeology in the DP-1399 monitoring network by addressing individual conditions in Section C105 of the draft DP-1399 permit. All associated field activities were performed at the direction of Golder on behalf of Mosaic.

The three new wells were drilled and installed by Cascade Environmental Drilling (Cascade) between December 13 and 18, 2021, in accordance with New Mexico State regulations (NMAC 19.27.4). The as-built well completion report for the new LG-2 area wells is scheduled to be submitted to the NMED in the second quarter of 2022 and will include specific details of the drilling and well completion program. The as-built report will provide detailed boring logs, well completion logs, and wellhead survey data for the three new wells, along with a detailed description of the drilling and well installation program. Detailed as-built construction details for wells LG-36, LG-37, and LG-38 are presented in **Table 6**.

Once these installations were completed, LG-37 and LG-38 were sampled in January 2022 as part of the DP-1399 quarterly monitoring program, and the laboratory analytical results will be presented in the DP-1399 2022 first semi-annual monitoring report. LG-36 was measured as dry. These wells will continue to be monitored and the results reported to the NMED in accordance with Condition C105 of the draft DP-1399 permit. Pressure transducers equipped with internal data loggers will be installed in the three new monitoring wells in the second quarter of 2022 in accordance with condition C105.B of the draft DP-1399 permit. The submersible pressure transducers will be programed to record water levels to the nearest 0.01 foot and water temperatures on an hourly basis. These transducers will be routinely downloaded, and the data sets updated as part of the DP-1399 monitoring program in accordance with condition C105.H.1 of the draft DP-1399 permit.

4.0 TASK 8 - PROPOSED MONITORING PLAN [20.6.2.4106.C(3) NMAC]

For the S1AP monitoring program, Mosaic proposes to continue monitoring existing DP-1399 groundwater monitoring wells, surface water sampling points, Pecos River staff gauges, Laguna Grande staff gauges, and the Brine Pipeline in accordance with the requirements listed in Table 1 of the draft DP-1399 permit. Additional monitoring is proposed in the S1AP that is separate from the DP-1399 monitoring program as described above in the individual proposed tasks scopes of work. The proposed Stage S1AP monitoring and reporting schedule is presented in **Table 9**.

Unless otherwise approved in writing by NMED, Mosaic will conduct sampling and analysis in accordance with the most recent edition of the following documents (20.6.2.3107.B NMAC):

1) American Public Health Association, Standard Methods for the Examination of Water and Wastewater (18th, 19th, or current)
2) U.S. Environmental Protection Agency, Methods for Chemical Analysis of Water and Waste
3) USGS, Techniques for Water Resources Investigations of the USGS
4) American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards, Part 31. Water
5) USGS et al., National Handbook of Recommended Methods for Water Data Acquisition
6) Federal Register, latest methods published for monitoring pursuant to Resource Conservation and Recovery Act regulations
7) Methods of Soil Analysis: Part 1. Physical and Mineralogical Methods; Part 2. Microbiological and Biochemical Properties; Part 3. Chemical Methods, American Society of Agronomy
8) Brine monitoring shall be conducted according to test procedures approved under Title 40 Code of Federal Regulations (CFR) Part 136.

Specific analytical methods to be employed at the Site during the S1AP will be provided in the quality assurance and quality control (QA/QC) plan being prepared as part of Task 9. As presented in **Table 10**, the proposed monitoring plan will be submitted to the NMED for approval within 30 days of the NMED's approval of the S1APP.

5.0 TASK 9 - QUALITY ASSURANCE PLAN [20.6.2.4106.C(4) NMAC]

Mosaic will develop and submit a QA/QC plan to NMED sufficient to cover all expected activities at the Site related to the S1AP prior to the commencement of any field investigations. As presented in **Table 10**, the QA/QC plan will be submitted to the NMED for approval within 60 days of the NMED's approval of the S1APP.

6.0 TASK 10 - SITE HEALTH AND SAFETY PLAN [20.6.2.4106.C(5) NMAC]

Mosaic will develop and submit a site health and safety plan to NMED sufficient to cover all expected activities at the Site related to the abatement plan prior to the commencement of any field investigations conducted under this S1AP. As presented in **Table 10**, the health and safety plan will be submitted to the NMED for approval within 60 days of the NMED's approval of the S1APP.

7.0 TASK 11 - STAGE 1 ABATEMENT PLAN REPORTING

The proposed S1AP implementation and reporting schedule is provided in **Table 10**. Mosaic will submit summary quarterly progress reports covering each calendar quarter beginning with the first full calendar quarter following NMED's approval of the S1APP. Summary quarterly progress reports will be submitted to the NMED detailing the status of S1AP activities conducted over the previous quarter, an updated project schedule, and any deviations from the approved S1APP that occurred (if applicable). The summary quarterly reports will be submitted within 30 days of receipt of the final analytical results associated with each quarter and will continue up until the submittal of the Final Site Investigation Report.

A Final Site Investigation Report will be submitted to the NMED detailing the results of the S1AP. As detailed in **Table 10**, Mosaic's proposed reporting schedule includes the submittal of a Draft Final Site Investigation Report to the NMED within 90 days of receipt of the final quarterly analytical data set. The Final Site Investigation Report will be submitted within 90 days from receipt of NMED comments on the Draft Final Site Investigation Report.

8.0 STAGE 1 ABATEMENT PLAN IMPLEMENTATION SCHEDULE [20.6.2.4106.C(6) NMAC]

The proposed schedule for completion of the S1AP is outlined in **Table 10**. Because 20.6.2.4103.D NMAC states that abatement is not considered complete until a minimum of eight (8) consecutive sampling events collected from all compliance sampling stations approved by the secretary, with a minimum of 90 days between sampling events spanning a time period no greater than four (4) years, Mosaic is proposing a two-year completion schedule for implementation of the S1AP. The Draft Final Site Investigation Report will be submitted to the NMED within 90 days of receipt of the final quarterly analytical data set, and the Final Site Investigation Report will be submitted within 90 days from receipt of NMED comments on the Draft Final Site Investigation Report. It is also important to ensure that the S1AP schedule allows for fluctuations in Mosaic potash mining and K-Mag® production rates as well as seasonal variations in precipitation and evaporation rates.

Additional data collection required under the S1AP will be coordinated with additional facility-specific requirements stipulated in the draft DP-1399 permit to the extent possible. The additional facility specific requirements specified in the draft DP-1399 permit expected to be most closely integrated with the S1AP are listed in Part C of the draft permit and include Part C101.C (Clay Setting Pond dike raise as-built), Part C103.A (stormwater management plan), and Part C105.N (monitoring of water quality in shorebird habitats).

Key tasks that will need to be initiated at the beginning of the S1AP include the data gap analysis (Task 1), well inventory (Task 2a), monitoring plan (Task 8), QA/QC plan (Task 9), and Site health and safety plan (Task 10).

9.0 REFERENCES

Bachman, George O. 1981. Geology of Nash Draw, Eddy County, New Mexico. Open-File Report 81-31. U.S. Geological Survey, Denver, CO.

Bachman, George O. 1985. Assessment of Near-Surface Dissolution at and Near the Waste Isolation Pilot Plant

(WIPP), Southeastern New Mexico. SAND84-7178. Sandia National Laboratories, Albuquerque, NM. ERMS #224609.

Bachman, George O. 1987. Karst in Evaporites in Southeastern New Mexico. SAND86-7078, Sandia National Laboratories.

Barker, James and Gundiler, Ibrahim. 2008. New Mexico Potash - Past, Present, and Future, New Mexico Earth Matters Summer 2008. Published by the New Mexico Bureau of Geology and Mineral Resources • A Division of New Mexico Tech.

Beauheim, R.L., and Ruskauff, G.J. 1998. Analysis of Hydraulic Tests of the Culebra and Magenta Dolomites and Dewey Lake Redbeds Conducted at the Waste Isolation Pilot Plant Site. SAND98-0049. Albuquerque, NM: Sandia National Laboratories.

Brokaw, A. L., Jones, C. L., Cooley, M. E., and Hays, W. H., 1972, Geology and Hydrology of the Carlsbad

Potash Area, Eddy County, New Mexico. Prepared for the United States Department of the Interior Geological Survey, Open-file 72-49.

CDWR and OSE-DSB (Colorado Division of Water Resources, Dam Safety Branch and New Mexico Office of the State Engineer, Dam Safety Bureau). 2018. Colorado-New Mexico Regional Extreme Precipitation Study, November 30.

Chapman, J.B. 1988. Chemical and Radiochemical Characteristics of Groundwater in the Culebra Dolomite,

Southeastern NM. EEG-39. Environmental Evaluation Group, Santa Fe, NM.

Cooper, James and Glanzman, V.M. 1971. Geohydrology of Project Gnome Site, Eddy County, New Mexico. Geological Survey Professional Paper 712-A. Prepared in cooperation with the U.S. Atomic Energy Commission.

Cox, E. R., and Havens, J. S., 1965, A Progress Report on the Malaga Bend Experimental Salinity Alleviation

Project, Eddy County, New Mexico. Prepared in cooperation with the Pecos River Commission, Open-file 65-35. Department of Energy. 2004. Department of Energy Waste Isolation Pilot Plant Characterization. DOE/WIPP 2004-3231. March 2004.

Department of Energy. 2017. 2016 Groundwater Monitoring and Inspection Report Gnome-Coach, New Mexico, Site. U.S. Department of Energy.

Geohydrology Associates, Inc. 1978. Ground-Water Study Related to Proposed Expansion of Potash Mining Near Carlsbad, New Mexico: Consultant report to the United States Department of the Interior Bureau of Land Management, Denver Colorado, Contract No. YA-512-CT7-217.

Geohydrology Associates, Inc. 1979. Water-Resources Study of the Carlsbad Potash Area, New Mexico: Consultant report to the United States Department of the Interior Bureau of Land Management, Denver Colorado, Contract No. YA-512-CT8-195.

Gibbs, R.J. 1972. Response: Mechanisms Controlling World Water Chemistry: Evaporation-Crystallization Process. *Science*, Vol. 172 (3985).

Golder Associates Inc. (Golder). 2002a. Hydrogeology Baseline Report (Project 003-2214). Submitted to IMC Potash Carlsbad Inc. August 2.

Golder. 2002b. Baseline Surface Water Report, prepared for IMC Potash. Project 003-2214. Denver Colorado: Golder.

Golder. 2002c. Baseline Monitoring of Groundwater in Support of the IMC Potash Tailings Management and Evaporation Pond Expansion. September 19.

Golder. 2004. Design Report for Clay Settling Dike IMC Potash Carlsbad Inc., Eddy, County New Mexico. Project No. 003-2214-CPS. August.

Golder. 2006. Mosaic Potash Southwest Laguna Grande Dike Application and Supporting Documents prepared for Mosaic Potash Carlsbad Inc., Eddy County, New Mexico. Project 003-2214. Denver, Colorado. June.

Golder. 2009a. Technical Memorandum - Hydraulic Testing Results in Support of Dewatering For Contingency Dike Design – Mosaic Potash Carlsbad, Eddy County, New Mexico. September 21.

Golder. 2009b: "Engineering Design Report, Salt Stack Contingency Dike and Salt Dike No. 1, Salt Stack/Clay Settling Area, Eddy County, New Mexico." Dated October 2009.

Golder. 2014a. DP-1399 Condition 11 Report - Evaluation of the Salt Stack Contingency Dike and Groundwater in the Salt Stack Area. January 13.

Golder. 2014b. DP-1399 Condition 12 Report - Evaluation of the Hydrologic Conditions Between Laguna Grande and the Pecos River. January 14.

Golder. 2021. Revised Hydrologic Analysis for Southwest Laguna Grande Dike Mosaic Potash Carlsbad. Submitted to the New Mexico Office of the State Engineer Dam Safety Bureau. August 4.

Goodbar, Andrea K., Powers, D. W., Goodbar, James R., Holt, Robert M., 2020. Karst and Sinkholes at Nash Draw, Southeastern Mexico (USA). 16th Sinkhole Conference.

Hale, W. 1945. Ground-water conditions in the vicinity of Carlbad, New Mexico, New Mexico State Engineer 16th - 17th Biennial Reports 1942 – 1946, pp. 196 -260.

Hale, W. E., Hughes, L. S., and Cox, E. R. 1954. Possible Improvement of Quality of Water of the Pecos River by Diversion of Brine at Malaga Bend, Eddy County, New Mexico. U.S. Geol. Survey, Water Resources Div. December.

Hendrickson, G.E. and Jones, R.S. 1952. Geology and Ground-Water Resources of Eddy County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Ground-Water Report 3 169 p.

Hill, Carol A. 1999. Intrastratal karst at the WIPP site, southeastern New Mexico, Caves and Karst of Southeastern New Mexico. New Mexico Geological Society 57th Annual Fall Field Conference Guidebook, pp. 233-242.

Hillesheim, M.B., Beauheim, R.L., and Richardson, R.G., 2006, Overview of the WIPP groundwater monitoring

program with inferences about karst in the WIPP vicinity: New Mexico Geological Society, 57th Field Conference Guidebook, p. 277-286.

Hood, James W. and Kister, Lester R. 1962. Saline-Water Resources of New Mexico. U.S. Geological Survey Water-Supply Paper 1601.

Hood, J. W., 1963, Saline ground water in the Roswell basin, Chaves and Eddy Counties, New Mexico: 1958-59: U.S. Geo1. Survey Water-Supply Paper 1539-M.

Kuhlman, Kristopher L., and Kevin S. Barnhart. 2011. Hydrogeology Associated with the Waste Isolation Pilot Plant. No. SAND2011-0036C, Sandia National Lab, (SNL-NM), Albuquerque, NM (United States); Sandia National Laboratories, Buckley AFB, CO.

Lambert, S.J., and Carter, J.A. 1987. Uranium-Isotope Systematics in Groundwaters of the Rustler Formation, Northern Delaware Basin, Southeastern New Mexico. I. Principles and Preliminary Results. SAND87-0388. Sandia National Laboratories, Albuquerque, NM.

Land, Lewis, and George Veni. 2012. Electrical Resistivity Survey of Intrepid Potash Injection Well Site: Eddy County, New Mexico: Report of Investigation 3. Carlsbad, NM: National Cave and Karst Research Institute.

Lehr, J. H., 1969, A study of ground-water contamination due to saline water disposal in the Morrow County oil fields: Water Resources Center Research Project Completion Rept., 81.

Lipson, D.S. and Renninger, T. 2021. GIS Analysis Report, Karst Depressions in Laguna Grande Watershed, Eddy County, New Mexico, Southwest Laguna Grande Dike, Spillway Modifications, NMOSE File D-667. Prepared for Mosaic Potash Carlsbad Inc. June 27.

Lorenz, John C., 2006. Assessment of the Potential for Karst in the Rustler Formation at the WIPP site. Sandia National Laboratories.

Mercer, J. W. 1983. Geohydrology of the Proposed Waste Isolation Pilot Plant Site, Los Medanos Area, Southeastern New Mexico. USGS Water Resources Investigations Report 83-4016, 93p.

Mower, R. W., Hood, J. W., Cushman, R. L., Borton, R. L., and Galloway, S. E., 1964, An appraisal of potential ground-water salvage along the Pecos River between Acme and Artesia, New Mexico: U. S. Geol. Survey Water-Supply Paper 1659.

Mosaic Potash Carlsbad Inc. 2019. Further Characterization of the Hydrogeology in the Area Between Laguna Grande and the Pecos River in Support of DP-1399 Renewal – Mosaic Potash Carlsbad Inc. Letter report submitted to the NMED. August 15.

Mosaic Potash Carlsbad Inc. 2021. Mosaic DP-1399 Monitoring Network Improvements: Completion Report. Letter report submitted to the NMED. January 18.

New Mexico Environment Department (NMED) Ground Water Quality Bureau Mining Environmental Compliance Section. 2018. Request for Additional Information, Discharge Permit 1399 (DP-1399), Mosaic Potash Carlsbad, Inc. April 23.

NMED Water Protection Division. 2021. Letter from the NMED Water Protection Division to John Anderson, Mosaic Potash Carlsbad, Inc. RE: Abatement Plan Required for the Mosaic Potash Mine, Mosaic Potash Carlsbad, Inc., Carlsbad, NM. October 20.

Powers, Dennis W. 2006. Analysis Report for Task 1D, AP-114 Current and Historic Information on Water Levels and Specific Gravity in Potash Tailings Ponds within the Culebra Modeling Domain.

Powers, Dennis W., Richard L. Beauheim, Robert M. Holt, and David L. Hughes. 2006. Evaporite karst features and processes at Nash Draw, Eddy County, New Mexico. Caves and Karst of Southeastern New Mexico, New Mexico Geological Society 57th Annual Fall Field Conference Guidebook, pp. 253-265.

Robinson T. W., Lang WB. 1938. Geology and groundwater conditions of the Pecos River valley in the vicinity of Laguna Grande de la Sal, New Mexico. New Mexico State Engineer 12th and 13th Biennial Reports. p. 79-100.

SNC-Lavalin Inc. 2014. Mosaic Carlsbad Inc. - TMA Hydrogeological Compilation. Internal Ref: 619343. September 2014.

Thomas, H. E., 1963, Causes of depletion of the Pecos River in New Mexico: U.S. Geol. Survey Water-Supply Paper 1619-G.

Vail, Scott. 2012a. Geologic Relationships Between the Laguna Grande Evaporation Pond and the Pecos River, Eddy County, New Mexico and Potential for Groundwater Impacts. For Mosaic Potash Carlsbad Inc. January.

Vail, Scott. 2012b. Analysis of Pecos River and Nash Draw Geochemistry, Eddy County, New Mexico, and Impact of Potash Brine Evaporation. For Mosaic Potash Carlsbad Inc. February 20.

Vail, Scott. 2014. Geology and Hydrology of the Rustler Formation (Permian) in Nash Draw, Eddy County, New Mexico. April.

Vine, J.D. 1963, Surface Geology of the Nash Draw Quadrangle, Eddy County, New Mexico, Contributions to General Geology: United States Geological Survey Bulletin 1141-B.

Yuan, Fasong and Miyamoto, Seiichi. 2005. Dominant Processes Controlling Water Chemistry of the Pecos River in American Southwest, Geophysical Research Letters, Vol. 32, LI17406. September.

Tables

Table 1: Current and Historic Potash Mining Operations Within the Area of the Mosaic Potash Mine

Site No. [1]	Site Name [2]	Site Name Other	Latitude (WGS84)	Longitude (WGS84)	Description
1	Mosaic Mine	Union Potash & Chemical Co. mine; International Agriculture mine; International Minerals & Chemical Corp. mine; Mosaic Potash mine	32° 24' 46" N	103° 56' 15" W	The time periods for the alternate names are: Union Potash & Chemical mine (1936-1940); International Agriculture mine (1940-1941); International Minerals & Chemical mine (1941-2004); Mosaic Potash mine (2004-Present). Acquired by Mosaic, in Oct. 2004, from IMC
2	Nash Draw Mine	Duval Sulphur & Potash Co. - Nash Draw mine; Potash Producers - Nash Draw; Western Ag - Nash Draw; IMC Potash - Nash Draw; Mosaic Potash - Nash Draw	32° 20' 14" N	103° 49' 55" W	The time periods for the names are: Duval (1952-1984), Potash Producers (1984-1985), Western Ag (1985-1996), IMC Potash (1996-2004), Mosaic Potash (2004-Present).
3a	U. S. Potash Co. Mine	U.S. Potash Mine; U.S. Borax & Chemical Co. Mine; U.S. Potash and Chemical Mine; Continental American Mine; Teledyne Mine; Mississippi Potash West Mine; Intrepid Potash West Mine	32° 28' 55" N	103° 53' 25" W	Mine site location. The time periods for the alternate names are: U.S. Potash mine (1931-1956); U.S. Borax mine (1956-1968); U.S. Potash and Chemical mine (1968-1970); Continental American mine (1970-1972); Teledyne mine (1972-1974); Mississippi Potash West mine (1974-2004); Intrepid Potash West mine (2004-Present).
3b	United States Potash Company	---	32° 18' 38" N	104° 1' 48" W	Refinery site location
4	National Potash Co. Mine	National Potash mine; Mississippi Potash North mine; Intrepid Potash North mine	32° 32' 30" N	104° 2' 9" W	The time periods for the alternate names are: National Potash mine (1957-1985), Mississippi Potash North mine (1985-2004), Intrepid Potash North mine (2004-Present).
5	Saunders Mine	Duval Sulphur & Potash - Saunders mine; Potash Producers - Saunders mine; Western Ag - Saunders mine	32° 32' 8" N	103° 56' 1" W	The time periods for the names are: Duval Sulphur & Potash (1952-1984), Potash Producers (1984-1985), Western Ag (1985-1990).
6	Kerr McGee Mine	Kermac Mine; Kerr McGee Mine; Vertac Mine; Fermetia Mine; New Mexico Potash Mine; Mississippi Potash East Mine; Intrepid Potash East Mine; Hobbs Potash facility	32° 30' 15" N	103° 46' 55" W	The time periods for the alternate names are: Kermac mine (1965-1975); Kerr McGee Mine (1975-1985); Vertac Mine (1985-1988); Fermetia Mine (1988-1989); New Mexico Potash Mine (1989-1996); Mississippi Potash East Mine (1996-2004); and, Intrepid Potash East Mine (2004-present).
7	Crescent/North Mine	Duval Sulphur & Potash - Crescent Mine; Mississippi Potash - Crescent/North Mine	32° 34' 8" N	103° 55' 9" W	The time periods for the alternate names are: Duval Sulphur & Potash - Crescent mine (1976-1984), Mississippi Potash Crescent/North mine (1985-1990s).
8	PCA Mine	Potash Company of America mine; Lundberg Industries mine; Eddy Potash mine; HB Potash mine; Intrepid Potash - HB Project	32° 35' 58" N	103° 58' 33" W	The time periods for the alternate names are: PCA mine (1935-1985), Lundberg Industries mine (1985-1987), Eddy Potash mine (1987-2004), HB Potash mine (2004-2009), Intrepid Potash - HB Project (2009-Present).
9	Amax Mine	Southwest Potash mine; Horizon Potash mine	32° 40' 15" N	103° 58' 6" W	The time periods for the names are: Southwest Potash mine (1952-1964), Amax mine (1964-1993), Horizon Potash mine (1993).
10	New Mexico Potash Corporation	Hobbs Underground Potash Mine	32° 36' 45" N	103° 43' 44" W	---
11	New Mexico Salt & Minerals Company	---	32° 18' 39" N	104° 1' 53" W	Salt harvesting operations
12	United Salt Carlsbad, LLC	---	32° 18' 41" N	104° 0' 20" W	Salt harvesting operations
13	Southwest Salt Company	---	32° 15' 7" N	104° 1' 12" W	Salt harvesting operations

Notes:
[1] - See Figure 1 for site locations.
[2] - Data provided by: mindat.org; sites 3a, 11, 12, and 13 from internet data search
https://www.mindat.org/feature-5490702.html

Table 2: Summary of Key Investigations and Studies Conducted in and Around the Mosaic Potash Mine Site

Previous Investigations	Investigation Period	Reference	Summary
Geology and Groundwater Conditions Near Laguna Grande	1938	Robinson and Lang 1938	Description of historic operations, hydrogeology, groundwater and surface water constituent concentrations near Laguna Grande.
Groundwater Study – Proposed Expansion of Potash Mine	1978	Geohydrology Associates 1978	Geologic and hydrogeologic investigation of Carlsbad Potash area.
Water-Resources Study of Carlsbad Potash Area	1978-1979	Geohydrology Associates 1979	Geology and hydrogeology of the area; surface and subsurface water budget of ponds.
Hydrogeology Baseline Study	2000-2001	Golder 2002a	Surface and borehole geophysical surveys, 32 soil borings, 28 monitoring well installations, hydraulic testing, surface water and groundwater quality monitoring, geochemical characterizations, field reconnaissance surveys.
Baseline Surface Water Report, Prepared for IMC Potash	2002	Golder 2002b	Hydrogeological, geochemical, and geologic report for LG area – brine and evaporation ponds.
Baseline Monitoring of Groundwater in Support of the IMC Potash Tailings Management and Evaporation Pond Expansion	2002	Golder 2002c	Hydraulic testing of LG-26 and LG-27 and groundwater samples collected from LG-1,2,3,4,5,23,25,26,27 wells.
Design Report for Clay Settling Dike	2004	Golder 2004	Surface water hydrology and geotechnical design aspects of an earthen containment dike at Clay Settling Area.
Department of Energy Waste Isolation Pilot Plant Characterization	2004	Department of Energy 2004	Performance assessment to demonstrate the Waste Isolation Pilot Plant disposal system meets environmental performance standards.
Water Level and Water Quality Summary of the Potash Tailings Pons Near the WIPP Site	2006	Powers 2006	Current and historic information on water levels and specific gravity in Potash Tailings Ponds within the WIPP Culebra Modeling Domain
Southwest Laguna Grande Dike: Design Report	2006	Golder 2006	Mapping of Laguna Grande, geotechnical and design analyses of Southwest Laguna Grande Dike, and local hydrology of Laguna Grande and dike structure.
Hydraulic Testing Results in Support of Dewatering for Contingency Dike Design	2009	Golder 2009a	Test Pits, geotechnical borings, hydraulic testing.
Geologic Relationships Between the Laguna Grande Evaporation Pond and the Pecos River and Potential Groundwater Impacts	2012	Vail 2012a	Geologic relationships between Laguna Grande and the Pecos River, groundwater analyses, geologic cross sections.
Analysis of Pecos River and Nash Draw Geochemistry and Impact of Potash Brine Evaporation	2012	Vail 2012b	Pecos River water quality, brine water quality, surface water quality, groundwater quality.
Geology and Hydrology of the Rustler Formation (Permian) in Nash Draw	2014	Vail 2014	Hydrogeology of the Rustler Formation in Nash Draw, geologic cross sections, brine aquifer analyses.
Mosaic Potash Carlsbad Inc. TMA Hydrogeological Compilation	2014	SNC-Lavalin 2014	Hydrogeological compilation of available hydrogeological and stratigraphic information for Mosaic Carlsbad.
Revised Hydrologic Analysis for Southwest Laguna Grande Dike	2020 - 2021	Golder 2021	Modification report of hydrology analysis done on Southwest Laguna Grande Dike and spillway to comply with NMOSE-DSB standards, surface water hydrology and runoff estimates within Laguna Grande watershed, karst losses.
GIS Analysis Report – Karst Depressions in LG Watershed	2021	Lipson and Renninger 2021	Investigation of the geology and hydrogeology within Laguna Grande watershed, karst delineations, surface water losses.
Mosaic DP-1399 Monitoring Network Improvements: Completion Report	2020-2021	Mosaic 2021	Installation and monitoring of new wells LG-33 through LG-35, hydrogeologic logs, well completion logs
Mosaic DP-1399 LG-2 Area Well Installation Completion Report	2021	Mosaic 2022 (Pending)	Installation and monitoring of new wells LG-36 through LG-38, hydrogeologic logs, well completion logs

Table 3: Surface Water Bodies Within the Mosaic Potash Mine Site Area

Playa Lake or Depression	Approximate Aerial Extent (acres)	Average Depth (feet)	Watershed Area (acres)	Comments
Laguna Uno	300 (summer) to 700 (winter)	2	8,600	Laguna Uno is a natural depression and serves as the evaporation pond for Mosaic's tailings brine.
Laguna Dos	75	<1	2,000	Water levels are fairly stable through the year indicating connection with shallow groundwater.
Laguna Cuatro	185	<1	1,600	Connected by a ditch to Laguna Tres.
Laguna Tres	Dry (summer) 900 (winter)	<1	2,500	
Laguna Cinco	Unknown	Unknown	Unknown	
Laguna Seis	Unknown	Unknown	Unknown	
Lindsey Lake	110	Unknown	110	Lindsey Lake has overflow discharge to Tamarisk Flats.
Tamarisk Flats	215	<1	6,300	
Laguna Grande	3,200 (including area used in salt harvesting)	2	5,600 north 8,000 south	Salt harvesting occurs on the southern portion of the lake and water levels are controlled by pumping, construction of dikes, and evaporation.

Table 4: Water Quality Data for Brine Discharge

Date	TDS (ppm)	Sodium (ppm)	Calcium (ppm)	Magnesium (ppm)	Potassium (ppm)	Chloride (ppm)	Sulfate (ppm)	Alkalinity as $CaCO_3$ (ppm)	Specific Conductivity (mS/cm) (ppm)	pH (std. units)
11/26/2012	382,000	110,000	77	7,200	43,000	190,000	42,000	130	680	7.50
11/26/2012	320,800	89,000	21	6,210	37,194	156,600	31,684	213	765	7.82
4/29/2013	401,000	NA	NA	NA	NA	NA	NA	350	670	7.41
4/29/2013	317,800	79,700	11	8,542	36,503	149,100	43,959	306	778	7.88
7/31/2013	301,500	156,500	30	7,901	29,444	156,500	26,090	462	728	7.85
8/1/2013	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2/18/2014	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
4/30/2014	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
7/22/2014	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
10/27/2014	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1/16/2015	107,000	32,000	110	1,600	8,300	66,000	7,000	180	210	7.84
4/4/2016	273,183	77,193	377	359	16,625	142,022	62,072	127	385	7.46
6/12/2017	271,667	83,333	433	3,983	13,583	150,000	20,250	208	538	7.18
10/26/2017	274,590	79,180	261	3,410	18,279	170,492	26,066	262	662	7.37
2/20/2018	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
4/6/2018	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
7/27/2018	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
10/5/2018	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
7/27/2019	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
11/2/2019	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1/29/2020	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
4/28/2020	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
6/22/2020	269,000	63,700	417	9,100	21,200	122,000	48,400	200	207,000	7.54
12/21/2020	284,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
1/11/2021	254,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
2/1/2021	285,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
2/22/2021	199,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/15/2021	297,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/22/2021	293,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
4/5/2021	285,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
4/26/2021	173,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
5/3/2021	341,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
5/17/2021	287,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
5/24/2021	265,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/7/2021	298,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/28/2021	201,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/19/2021	283,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/26/2021	257,000	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4: Water Quality Data for Brine Discharge

Date	TDS (ppm)	Sodium (ppm)	Calcium (ppm)	Magnesium (ppm)	Potassium (ppm)	Chloride (ppm)	Sulfate (ppm)	Alkalinity as $CaCO_3$ (ppm)	Specific Conductivity (mS/cm) (ppm)	pH (std. units)
8/9/2021	305,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/1/2021	279,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/6/2021	291,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/12/2021	115,000	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
- NA: Not Analyzed
- ppm: parts per million
- All cation results are for the dissolved fraction

Brine Pipeline had no discharges from February 2018 to April 2020 while the CSP Dike raise project was underway. Brine was discharged to Laguna Uno during this time due to upset conditions.

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
8/23/2018	2943.75	2936.75	2932.94
8/24/2018	2943.68	2936.80	2932.86
8/25/2018	2943.65	2936.85	2932.77
8/26/2018	2943.65	2936.85	2932.75
8/27/2018	2943.70	2936.81	2932.81
8/28/2018	2943.75	2936.76	2932.84
8/29/2018	2943.75	2936.85	2932.94
8/30/2018	2943.75	2936.76	2932.85
8/31/2018	2943.78	2936.81	2932.89
9/1/2018	2943.87	2936.85	2932.94
9/2/2018	2943.95	2936.85	2933.04
9/3/2018	2943.89	2936.85	2932.98
9/4/2018	2943.85	2936.90	2932.95
9/5/2018	2943.92	2936.96	2933.04
9/6/2018	2944.24	2937.32	2933.42
9/7/2018	2944.28	2937.36	2933.52
9/8/2018	2944.21	2937.22	2933.48
9/9/2018	2943.95	2936.88	2933.02
9/10/2018	2943.95	2936.93	2933.00
9/11/2018	2943.95	2936.95	2933.04
9/12/2018	2943.86	2936.82	2932.98
9/13/2018	2943.82	2936.71	2932.88
9/14/2018	2943.80	2936.69	2932.84
9/15/2018	2943.85	2936.82	2932.94
9/16/2018	2943.85	2936.85	2933.01
9/17/2018	2943.85	2936.85	2932.99
9/18/2018	2943.85	2936.78	2932.87
9/19/2018	2943.85	2936.75	2932.84
9/20/2018	2943.88	2936.79	2932.85
9/21/2018	2943.96	2936.97	2933.02
9/22/2018	2943.98	2937.01	2933.04
9/23/2018	2943.78	2936.76	2932.93
9/24/2018	2943.75	2936.70	2932.84
9/25/2018	2943.78	2936.77	2932.84
9/26/2018	2943.85	2936.87	2932.93

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
9/27/2018	2943.97	2936.98	2932.99
9/28/2018	2943.97	2936.92	2932.99
9/29/2018	2943.95	2936.97	2932.99
9/30/2018	2943.95	2937.03	2933.03
10/1/2018	2943.95	2937.05	2933.04
10/2/2018	2943.95	2936.98	2933.04
10/3/2018	2943.95	2936.97	2933.04
10/4/2018	2943.95	2936.98	2933.04
10/5/2018	2943.95	2936.95	2932.98
10/6/2018	2943.99	2936.95	2933.00
10/7/2018	2944.15	NR	2933.29
10/8/2018	2944.08	NR	2933.23
10/9/2018	2944.05	NR	2933.08
10/10/2018	2944.05	NR	2933.04
10/11/2018	2944.05	NR	2933.04
10/12/2018	2944.05	NR	2933.04
10/13/2018	2944.05	NR	2933.21
10/14/2018	2944.05	NR	2933.21
10/15/2018	2943.98	NR	2933.07
10/16/2018	2943.95	NR	2933.04
10/17/2018	2943.97	NR	2933.04
10/18/2018	2944.05	NR	2933.11
10/19/2018	2944.12	NR	2933.19
10/20/2018	2944.08	NR	2933.24
10/21/2018	2944.05	NR	2933.14
10/22/2018	2944.05	NR	2933.14
10/23/2018	2944.09	NR	2933.14
10/24/2018	2944.51	NR	2933.55
10/25/2018	2944.48	NR	2933.72
10/26/2018	2944.13	NR	2933.29
10/27/2018	2944.05	NR	2933.18
10/28/2018	2944.05	NR	2933.14
10/29/2018	2944.05	NR	2933.14
10/30/2018	2943.97	NR	2933.14
10/31/2018	2943.95	NR	2933.14

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
11/1/2018	2943.95	NR	2933.15
11/2/2018	2943.95	NR	2933.18
11/3/2018	2943.95	NR	2933.14
11/4/2018	2943.95	NR	2933.14
11/5/2018	2943.95	NR	2933.14
11/6/2018	2943.95	NR	2933.14
11/7/2018	2943.95	NR	2933.14
11/8/2018	2943.95	NR	2933.14
11/9/2018	2943.95	2937.05	2933.14
11/10/2018	2943.95	2937.05	2933.14
11/11/2018	2943.95	2937.05	2933.14
11/12/2018	2943.95	2937.05	2933.14
11/13/2018	2943.95	2937.05	2933.14
11/14/2018	2943.95	2937.02	2933.08
11/15/2018	2943.95	2936.95	2933.04
11/16/2018	2943.95	2936.95	2933.04
11/17/2018	2943.95	2936.98	2933.04
11/18/2018	2943.95	2936.97	2933.04
11/19/2018	2943.95	2936.95	2933.04
11/20/2018	2943.95	2936.95	2933.04
11/21/2018	2943.95	2936.95	2933.04
11/22/2018	2943.95	2936.95	2933.04
11/23/2018	2943.95	2936.95	2933.04
11/24/2018	2943.95	2936.95	2933.04
11/25/2018	2943.89	2936.95	2933.04
11/26/2018	2943.85	2936.95	2933.04
11/27/2018	2943.85	2936.95	2933.04
11/28/2018	2943.85	2936.95	2933.04
11/29/2018	2943.85	2936.95	2933.04
11/30/2018	2943.85	2936.95	2933.04
12/1/2018	2943.85	2936.95	2933.04
12/2/2018	2943.85	2936.95	2933.04
12/3/2018	2943.85	2936.95	2933.04
12/4/2018	2943.85	2936.95	2933.04
12/5/2018	2943.85	2936.95	2933.04

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
12/6/2018	2943.85	2936.95	2933.04
12/7/2018	2943.89	2936.97	2933.04
12/8/2018	2943.95	2937.05	2933.13
12/9/2018	2943.95	2937.01	2933.14
12/10/2018	2943.95	2936.95	2933.14
12/11/2018	2943.95	2936.95	2933.14
12/12/2018	2943.95	2936.95	2933.14
12/13/2018	2944.01	2936.95	2933.14
12/14/2018	2944.05	2936.95	2933.14
12/15/2018	2943.98	2936.95	2933.09
12/16/2018	2943.95	2936.95	2933.04
12/17/2018	2943.95	2936.95	2933.04
12/18/2018	2943.95	2936.95	2933.04
12/19/2018	2943.95	2936.95	2933.04
12/20/2018	2943.95	2936.95	2933.04
12/21/2018	2943.95	2936.95	2933.04
12/22/2018	2943.88	2936.95	2933.04
12/23/2018	2943.88	2936.95	2932.97
12/24/2018	2943.95	2936.95	2932.96
12/25/2018	2943.95	2936.95	2933.04
12/26/2018	2943.95	2936.90	2933.04
12/27/2018	2943.95	2936.85	2933.04
12/28/2018	2943.95	2936.85	2933.04
12/29/2018	2943.95	2936.85	2933.04
12/30/2018	2943.95	2936.85	2933.04
12/31/2018	2943.95	2936.85	2932.98
1/1/2019	2943.95	2936.85	2932.94
1/2/2019	2943.88	2936.85	2932.95
1/3/2019	2943.92	2936.85	2933.04
1/4/2019	2943.95	2936.85	2933.04
1/5/2019	2943.95	2936.85	2933.04
1/6/2019	2943.95	2936.85	2933.04
1/7/2019	2943.95	2936.85	2933.04
1/8/2019	2943.95	2936.85	2933.04
1/9/2019	2943.95	2936.85	2933.04

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
1/10/2019	2943.95	2936.85	2933.04
1/11/2019	2943.95	2936.95	2933.04
1/12/2019	2943.95	2936.95	2933.04
1/13/2019	2943.95	2936.95	2933.04
1/14/2019	2943.95	2936.88	2932.98
1/15/2019	2943.95	2936.85	2932.94
1/16/2019	2943.95	2936.85	2932.94
1/17/2019	2943.88	2936.85	2932.94
1/18/2019	2943.91	2936.85	2932.96
1/19/2019	2943.95	2936.85	2933.04
1/20/2019	2943.95	2936.85	2933.04
1/21/2019	2943.95	2936.85	2933.04
1/22/2019	2943.95	2936.79	2933.04
1/23/2019	2943.95	2936.75	2932.98
1/24/2019	2943.95	2936.75	2932.96
1/25/2019	2943.95	2936.75	2933.04
1/26/2019	2943.95	2936.75	2933.04
1/27/2019	2943.88	2936.75	2933.04
1/28/2019	2943.85	2936.75	2932.97
1/29/2019	2943.89	2936.75	2932.94
1/30/2019	2943.95	2936.80	2933.00
1/31/2019	2943.95	2936.85	2933.04
2/1/2019	2943.95	2936.85	2933.04
2/2/2019	2943.88	2936.85	2933.04
2/3/2019	2943.85	2936.85	2932.95
2/4/2019	2943.85	2936.79	2932.94
2/5/2019	2943.85	2936.75	2932.94
2/6/2019	2943.85	2936.75	2932.99
2/7/2019	2943.85	2936.75	2933.04
2/8/2019	2943.85	2936.75	2933.04
2/9/2019	2943.85	2936.75	2932.97
2/10/2019	2943.85	2936.75	2932.94
2/11/2019	2943.90	2936.75	2932.97
2/12/2019	2943.95	2936.75	2933.04
2/13/2019	2943.88	2936.75	2933.04

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
2/14/2019	2943.85	2936.75	2932.97
2/15/2019	2943.85	2936.75	2932.94
2/16/2019	2943.85	2936.75	2932.94
2/17/2019	2943.85	2936.75	2932.94
2/18/2019	2943.85	2936.75	2932.94
2/19/2019	2943.85	2936.75	2932.94
2/20/2019	2943.85	2936.75	2932.88
2/21/2019	2943.85	2936.75	2932.94
2/22/2019	2943.85	2936.75	2932.94
2/23/2019	2943.85	2936.75	2932.88
2/24/2019	2943.85	2936.68	2932.84
2/25/2019	2943.85	2936.65	2932.85
2/26/2019	2943.85	2936.65	2932.90
2/27/2019	2943.85	2936.65	2932.84
2/28/2019	2943.85	2936.65	2932.93
3/1/2019	2943.85	2936.67	2932.94
3/2/2019	2943.85	2936.74	2932.94
3/3/2019	2943.78	2936.52	2932.94
3/4/2019	2943.75	2936.45	2932.94
3/5/2019	2943.75	2936.45	2932.94
3/6/2019	2943.75	2936.50	2932.94
3/7/2019	2943.78	2936.63	2932.94
3/8/2019	2943.78	2936.48	2932.94
3/9/2019	2943.75	2936.52	2932.88
3/10/2019	2943.75	2936.55	2932.94
3/11/2019	2943.75	2936.55	2932.94
3/12/2019	2943.75	2936.58	2932.94
3/13/2019	2943.96	2936.98	2933.12
3/14/2019	2944.07	2937.10	2933.30
3/15/2019	2943.84	2936.68	2932.92
3/16/2019	2943.75	2936.60	2932.74
3/17/2019	2943.80	2936.64	2932.80
3/18/2019	2943.85	2936.67	2932.93
3/19/2019	2943.85	2936.65	2932.94
3/20/2019	2943.76	2936.65	2932.89

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
3/21/2019	2943.75	2936.58	2932.82
3/22/2019	2943.75	2936.63	2932.94
3/23/2019	2943.83	2936.73	2932.94
3/24/2019	2943.78	2936.67	2932.88
3/25/2019	2943.75	2936.56	2932.80
3/26/2019	2943.75	2936.55	2932.77
3/27/2019	2943.81	2936.62	2932.94
3/28/2019	2943.85	2936.73	2932.94
3/29/2019	2943.85	2936.70	2932.94
3/30/2019	2943.78	2936.65	2932.86
3/31/2019	2943.75	2936.53	2932.77
4/1/2019	2943.75	2936.48	2932.77
4/2/2019	2943.80	2936.59	2932.94
4/3/2019	2943.85	2936.73	2932.94
4/4/2019	2943.85	2936.75	2932.85
4/5/2019	2943.79	2936.70	2932.80
4/6/2019	2943.75	2936.60	2932.74
4/7/2019	2943.75	2936.59	2932.74
4/8/2019	2943.75	2936.67	2932.79
4/9/2019	2943.75	2936.67	2932.84
4/10/2019	2943.76	2936.65	2932.84
4/11/2019	2943.73	2936.64	2932.75
4/12/2019	2943.73	2936.47	2932.67
4/13/2019	2943.85	2936.54	2932.70
4/14/2019	2943.85	2936.67	2932.84
4/15/2019	2943.85	2936.71	2932.84
4/16/2019	2943.85	2936.65	2932.84
4/17/2019	2943.85	2936.66	2932.85
4/18/2019	2943.81	2936.65	2932.85
4/19/2019	2943.81	2936.56	2932.85
4/20/2019	2943.75	2936.55	2932.80
4/21/2019	2943.75	2936.55	2932.74
4/22/2019	2943.76	2936.55	2932.75
4/23/2019	2943.88	2936.79	2932.93
4/24/2019	2943.97	2936.98	2933.19

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
4/25/2019	2943.85	2936.86	2933.00
4/26/2019	2943.85	2936.75	2932.94
4/27/2019	2943.85	2936.73	2932.94
4/28/2019	2943.85	2936.66	2932.94
4/29/2019	2943.85	2936.66	2932.90
4/30/2019	2943.85	2936.65	2932.84
5/1/2019	2943.85	2936.73	2932.84
5/2/2019	2943.77	2936.67	2932.84
5/3/2019	2943.75	2936.65	2932.84
5/4/2019	2943.79	2936.65	2932.84
5/5/2019	2943.85	2936.65	2932.90
5/6/2019	2943.85	2936.65	2932.91
5/7/2019	2943.84	2936.65	2932.90
5/8/2019	2943.85	2936.65	2932.93
5/9/2019	2943.85	2936.65	2932.80
5/10/2019	2943.75	2936.58	2932.81
5/11/2019	2943.75	2936.59	2932.84
5/12/2019	2943.75	2936.59	2932.76
5/13/2019	2943.79	2936.60	2932.75
5/14/2019	2943.85	2936.68	2932.91
5/15/2019	2943.81	2936.73	2932.94
5/16/2019	2943.75	2936.61	2932.86
5/17/2019	2943.76	2936.59	2932.91
5/18/2019	2943.81	2936.76	2932.99
5/19/2019	2943.77	2936.65	2932.89
5/20/2019	2943.75	2936.65	2932.84
5/21/2019	2943.75	2936.65	2932.84
5/22/2019	2943.81	2936.63	2932.87
5/23/2019	2943.68	2936.49	2932.84
5/24/2019	2943.75	2936.53	2932.84
5/25/2019	2943.75	2936.59	2932.84
5/26/2019	2943.73	2936.56	2932.84
5/27/2019	2943.65	2936.55	2932.84
5/28/2019	2943.74	2936.63	2932.84
5/29/2019	2943.79	2936.66	2932.84

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
5/30/2019	2943.75	2936.65	2932.84
5/31/2019	2943.76	2936.66	2932.84
6/1/2019	2943.77	2936.65	2932.89
6/2/2019	2943.79	2936.70	2933.00
6/3/2019	2943.85	2936.85	2932.95
6/4/2019	2943.93	2936.95	2933.00
6/5/2019	2943.98	2936.93	2933.03
6/6/2019	2944.01	2937.00	2933.21
6/7/2019	2943.91	2936.91	2933.00
6/8/2019	2943.85	2936.81	2932.84
6/9/2019	2943.85	2936.75	2932.89
6/10/2019	2943.85	2936.75	2932.83
6/11/2019	2943.85	2936.75	2932.74
6/12/2019	2943.85	2936.76	2932.74
6/13/2019	2943.85	2936.73	2932.80
6/14/2019	2943.85	2936.75	2932.84
6/15/2019	2943.85	2936.75	2932.84
6/16/2019	2943.85	2936.75	2932.84
6/17/2019	2943.85	2936.75	2932.83
6/18/2019	2943.85	2936.75	2932.84
6/19/2019	2943.83	2936.75	2932.84
6/20/2019	2943.77	2936.73	2932.84
6/21/2019	2943.67	2936.56	2932.89
6/22/2019	2943.65	2936.55	2932.88
6/23/2019	2943.66	2936.59	2932.84
6/24/2019	2943.69	2936.58	2932.88
6/25/2019	2943.75	2936.65	2932.94
6/26/2019	2943.75	2936.65	2932.94
6/27/2019	2943.80	2936.65	2932.90
6/28/2019	2943.85	2936.69	2932.84
6/29/2019	2943.85	2936.75	2932.84
6/30/2019	2943.85	2936.74	2932.84
7/1/2019	2943.85	2936.61	2932.81
7/2/2019	2943.85	2936.55	2932.74
7/3/2019	2943.85	2936.61	2932.75

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
7/4/2019	2943.85	2936.75	2932.84
7/5/2019	2943.85	2936.75	2932.84
7/6/2019	2943.85	2936.75	2932.87
7/7/2019	2943.85	2936.75	2932.94
7/8/2019	2943.85	2936.84	2932.94
7/9/2019	2943.85	2936.82	2932.94
7/10/2019	2943.85	2936.75	2932.94
7/11/2019	2943.93	2936.78	2932.92
7/12/2019	2944.01	2936.91	2932.98
7/13/2019	2943.95	2936.89	2933.09
7/14/2019	2943.88	2936.85	2932.98
7/15/2019	2943.85	2936.80	2932.94
7/16/2019	2943.85	2936.75	2932.94
7/17/2019	2943.85	2936.75	2932.93
7/18/2019	2943.85	2936.75	2932.94
7/19/2019	2943.85	2936.70	2932.92
7/20/2019	2943.85	2936.69	2932.84
7/21/2019	2943.85	2936.75	2932.84
7/22/2019	2943.89	2936.83	2932.93
7/23/2019	2944.25	2937.22	2933.23
7/24/2019	2944.29	2937.22	2933.46
7/25/2019	2943.92	2936.92	2933.06
7/26/2019	2943.85	2936.78	2932.91
7/27/2019	2943.77	2936.75	2932.88
7/28/2019	2943.82	2936.75	2932.94
7/29/2019	2943.99	2936.75	2932.94
7/30/2019	2944.01	2936.75	2932.94
7/31/2019	2943.83	2936.75	2932.94
8/1/2019	2943.75	2936.75	2932.87
8/2/2019	2943.75	2936.75	2932.84
8/3/2019	2943.75	2936.75	2932.84
8/4/2019	2943.83	2936.75	2932.84
8/5/2019	2943.92	2936.75	2932.90
8/6/2019	2943.95	2936.75	2932.89
8/7/2019	2943.95	2936.77	2932.84

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
8/8/2019	2943.95	2936.85	2932.91
8/9/2019	2943.95	2936.85	2932.94
8/10/2019	2943.95	2936.85	2932.94
8/11/2019	2943.95	2936.85	2932.94
8/12/2019	2943.95	2936.85	2932.94
8/13/2019	2943.99	2936.85	2932.94
8/14/2019	2943.98	2936.85	2932.94
8/15/2019	2943.95	2936.85	2932.94
8/16/2019	2943.87	2936.85	2932.94
8/17/2019	2943.85	2936.85	2932.94
8/18/2019	2943.92	2936.85	2932.94
8/19/2019	2943.88	2936.85	2932.94
8/20/2019	2943.85	2936.85	2932.94
8/21/2019	2943.81	2936.85	2932.94
8/22/2019	2943.75	2936.85	2932.94
8/23/2019	2943.78	2936.85	2932.94
8/24/2019	2943.85	2936.85	2932.94
8/25/2019	2943.85	2936.85	2932.94
8/26/2019	2943.85	2936.85	2932.94
8/27/2019	2943.85	2936.85	2932.94
8/28/2019	2943.85	2936.85	2932.94
8/29/2019	2943.85	2936.85	2932.94
8/30/2019	2943.85	2936.85	2932.94
8/31/2019	2943.70	2936.85	2932.94
9/1/2019	2943.72	2936.85	2932.94
9/2/2019	2943.75	2936.81	2932.94
9/3/2019	2943.75	2936.81	2932.94
9/4/2019	2943.75	2936.85	2932.94
9/5/2019	2943.75	2936.85	2932.94
9/6/2019	2943.80	2936.85	2932.94
9/7/2019	2943.85	2936.85	2932.94
9/8/2019	2943.66	2936.85	2932.94
9/9/2019	2943.69	2936.85	2932.94
9/10/2019	2943.85	2936.85	2932.94
9/11/2019	2943.91	2936.85	2932.94

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
9/12/2019	2943.85	2936.85	2932.94
9/13/2019	2943.75	2936.85	2932.94
9/14/2019	2943.71	2936.85	2932.94
9/15/2019	2943.65	2936.85	2932.94
9/16/2019	2943.71	2936.85	2932.94
9/17/2019	2943.75	2936.85	2932.94
9/18/2019	2943.75	2936.85	2932.94
9/19/2019	2943.81	2936.85	2932.94
9/20/2019	2943.76	2936.85	2932.94
9/21/2019	2943.88	2936.93	2932.94
9/22/2019	2944.21	2937.01	2932.97
9/23/2019	2943.97	2936.90	2933.04
9/24/2019	2943.75	2936.81	2933.04
9/25/2019	2943.75	2936.73	2933.04
9/26/2019	2943.82	2936.72	2933.04
9/27/2019	2943.85	2936.85	2933.04
9/28/2019	2943.85	2936.81	2933.04
9/29/2019	2943.88	2936.78	2933.04
9/30/2019	2943.95	2936.88	2933.08
10/1/2019	2944.24	2937.12	2933.35
10/2/2019	2944.41	2937.12	2933.65
10/3/2019	2944.05	2936.98	2933.23
10/4/2019	2944.05	2936.91	2933.14
10/5/2019	2943.98	2936.85	2933.14
10/6/2019	2943.95	2936.85	2933.14
10/7/2019	2943.95	2936.85	2933.14
10/8/2019	2943.95	2936.85	2933.14
10/9/2019	2943.95	2936.85	2933.14
10/10/2019	2943.88	2936.81	2933.14
10/11/2019	2943.85	2936.75	2933.14
10/12/2019	2943.85	2936.75	2933.14
10/13/2019	2943.85	2936.75	2933.14
10/14/2019	2943.85	2936.75	2933.02
10/15/2019	2943.85	2936.81	2932.94
10/16/2019	2943.87	2936.91	2932.94

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
10/17/2019	2943.95	2936.85	2932.94
10/18/2019	2943.95	2936.85	2932.94
10/19/2019	2943.95	2936.85	2932.94
10/20/2019	2943.95	2936.85	2932.94
10/21/2019	2943.95	2936.85	2932.94
10/22/2019	2943.95	2936.85	2932.94
10/23/2019	2943.95	2936.85	2932.94
10/24/2019	2943.95	2936.85	2932.94
10/25/2019	2943.95	2936.85	2932.94
10/26/2019	2943.95	2936.85	2932.94
10/27/2019	2943.95	2936.85	2932.94
10/28/2019	2943.95	2936.85	2932.94
10/29/2019	2943.95	2936.85	2932.94
10/30/2019	2943.95	2936.85	2932.94
10/31/2019	2943.95	2936.85	2932.94
11/1/2019	2943.95	2936.85	2932.94
11/2/2019	2943.95	2936.88	2932.97
11/3/2019	2943.95	2936.95	2933.04
11/4/2019	2943.95	2936.91	2933.04
11/5/2019	2943.95	2936.84	2932.94
11/6/2019	2943.95	2936.85	2932.94
11/7/2019	2943.95	2936.85	2932.94
11/8/2019	2943.95	2936.85	2932.97
11/9/2019	2943.95	2936.85	2933.04
11/10/2019	2943.95	2936.85	2933.04
11/11/2019	2943.96	2936.85	2932.97
11/12/2019	2943.85	2936.85	2932.94
11/13/2019	2943.85	2936.85	2932.94
11/14/2019	2943.85	2936.85	2932.94
11/15/2019	2943.85	2936.85	2932.94
11/16/2019	2943.85	2936.85	2932.94
11/17/2019	2943.85	2936.85	2932.94
11/18/2019	2943.85	2936.85	2932.94
11/19/2019	2943.85	2936.85	2932.94
11/20/2019	2943.85	2936.85	2932.94

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
11/21/2019	2943.88	2936.85	2932.94
11/22/2019	2943.95	2936.86	2933.00
11/23/2019	2943.95	2936.84	2933.04
11/24/2019	2943.95	2936.85	2933.04
11/25/2019	2943.95	2936.85	2933.04
11/26/2019	2943.96	2936.85	2933.04
11/27/2019	2943.95	2936.86	2933.05
11/28/2019	2943.95	2936.88	2933.05
11/29/2019	2943.95	2936.87	2933.14
11/30/2019	2943.95	2936.85	2933.05
12/1/2019	2943.95	2936.85	2933.04
12/2/2019	2943.95	2936.85	2933.04
12/3/2019	2943.95	2936.85	2933.04
12/4/2019	2943.95	2936.85	2933.04
12/5/2019	2943.95	2936.85	2933.04
12/6/2019	2943.95	2936.85	2933.04
12/7/2019	2943.95	2936.85	2933.04
12/8/2019	2943.95	2936.85	2933.04
12/9/2019	2943.95	2936.85	2933.04
12/10/2019	2943.95	2936.85	2933.04
12/11/2019	2943.95	2936.85	2933.04
12/12/2019	2943.95	2936.85	2933.04
12/13/2019	2943.95	2936.85	2933.04
12/14/2019	2943.95	2936.85	2933.04
12/15/2019	2943.95	2936.85	2933.01
12/16/2019	2943.95	2936.85	2932.94
12/17/2019	2943.95	2936.85	2932.94
12/18/2019	2943.86	2936.85	2932.88
12/19/2019	2943.88	2936.85	2932.84
12/20/2019	2943.95	2936.85	2932.94
12/21/2019	2943.95	2936.85	2932.94
12/22/2019	2943.95	2936.85	2932.94
12/23/2019	2943.95	2936.85	2932.94
12/24/2019	2943.95	2936.85	2932.94
12/25/2019	2943.95	2936.85	2932.94

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
12/26/2019	2943.95	2936.85	2932.94
12/27/2019	2943.95	2936.85	2932.94
12/28/2019	2943.95	2936.85	2932.94
12/29/2019	2943.91	2936.85	2932.94
12/30/2019	2943.85	2936.85	2932.94
12/31/2019	2943.85	2936.85	2932.94
1/1/2020	2943.85	2936.76	2932.94
1/2/2020	2943.90	2936.76	2932.94
1/3/2020	2943.98	2936.90	2932.98
1/4/2020	2943.95	2937.11	2933.29
1/5/2020	2943.95	2937.15	2933.17
1/6/2020	2943.95	2937.11	2933.14
1/7/2020	2943.95	2937.08	2933.16
1/8/2020	2944.05	2937.20	2933.43
1/9/2020	2944.05	2937.25	2933.54
1/10/2020	2944.15	2937.25	2933.46
1/11/2020	2944.15	2937.16	2933.36
1/12/2020	2944.15	2937.11	2933.25
1/13/2020	2944.15	2937.05	2933.24
1/14/2020	2944.15	2937.05	2933.24
1/15/2020	2944.08	2936.96	2933.17
1/16/2020	2944.05	2936.95	2933.14
1/17/2020	2944.05	2936.95	2933.14
1/18/2020	2944.05	2936.95	2933.14
1/19/2020	2943.96	2936.86	2933.09
1/20/2020	2943.95	2936.85	2933.04
1/21/2020	2944.01	2936.85	2933.08
1/22/2020	2944.05	2936.85	2933.14
1/23/2020	2944.05	2936.85	2933.05
1/24/2020	2944.05	2936.85	2933.06
1/25/2020	2944.05	2936.85	2933.14
1/26/2020	2944.05	2936.85	2933.14
1/27/2020	2944.05	2936.85	2933.14
1/28/2020	2944.01	2936.85	2933.13
1/29/2020	2943.95	2936.85	2932.94

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
1/30/2020	2943.95	2936.85	2932.95
1/31/2020	2943.95	2936.85	2933.10
2/1/2020	2943.95	2936.85	2933.02
2/2/2020	2943.95	2936.85	2932.94
2/3/2020	2943.95	2936.85	2932.99
2/4/2020	2943.95	2936.89	2933.14
2/5/2020	2944.05	2936.95	2933.14
2/6/2020	2944.05	2936.95	2933.14
2/7/2020	2944.05	2936.95	2933.14
2/8/2020	2944.02	2936.95	2933.14
2/9/2020	2943.95	2936.95	2932.95
2/10/2020	2943.95	2936.95	2932.94
2/11/2020	2943.95	2936.95	2932.95
2/12/2020	2943.99	2936.95	2933.08
2/13/2020	2944.02	2936.95	2933.14
2/14/2020	2943.95	2936.95	2933.14
2/15/2020	2943.96	2936.95	2933.14
2/16/2020	2944.05	2936.96	2933.14
2/17/2020	2944.05	2936.95	2933.14
2/18/2020	2943.99	2936.95	2933.14
2/19/2020	2943.95	2936.87	2933.14
2/20/2020	2943.95	2936.85	2933.14
2/21/2020	2943.95	2936.85	2933.14
2/22/2020	2943.95	2936.85	2933.14
2/23/2020	2943.98	2936.85	2933.14
2/24/2020	2944.01	2936.85	2933.13
2/25/2020	2943.90	2936.85	2933.04
2/26/2020	2943.87	2936.85	2933.04
2/27/2020	2943.95	2936.85	2933.04
2/28/2020	2943.95	2936.85	2933.04
2/29/2020	2943.95	2936.85	2933.04
3/1/2020	2943.95	2936.85	2933.04
3/2/2020	2943.95	2936.85	2933.04
3/3/2020	2943.96	2936.87	2933.05
3/4/2020	2944.22	2937.09	2933.27

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
3/5/2020	2944.11	2937.14	2933.35
3/6/2020	2943.95	2937.00	2933.19
3/7/2020	2943.95	2936.95	2933.08
3/8/2020	2943.95	2936.95	2933.04
3/9/2020	2943.95	2936.95	2933.13
3/10/2020	2943.95	2936.95	2933.14
3/11/2020	2943.95	2936.95	2933.10
3/12/2020	2943.95	2936.95	2933.04
3/13/2020	2943.95	2936.95	2933.12
3/14/2020	2943.95	2936.95	2933.14
3/15/2020	2943.95	2936.95	2933.14
3/16/2020	2943.95	2936.95	2933.14
3/17/2020	2943.95	2936.95	2933.14
3/18/2020	2943.95	2936.95	2933.14
3/19/2020	2943.95	2936.95	2933.14
3/20/2020	2943.95	2936.95	2933.08
3/21/2020	2943.95	2936.95	2933.04
3/22/2020	2943.95	2936.95	2933.04
3/23/2020	2943.95	2936.95	2932.95
3/24/2020	2943.95	2936.95	2932.94
3/25/2020	2943.95	2936.95	2932.94
3/26/2020	2943.95	2936.89	2932.94
3/27/2020	2943.86	2936.79	2932.94
3/28/2020	2943.75	2936.75	2932.94
3/29/2020	2943.81	2936.75	2932.94
3/30/2020	2943.85	2936.76	2932.94
3/31/2020	2943.85	2936.85	2932.94
4/1/2020	2943.86	2936.85	2932.94
4/2/2020	2943.95	2936.85	2932.94
4/3/2020	2943.95	2936.89	2932.94
4/4/2020	2943.95	2936.85	2932.94
4/5/2020	2943.95	2936.85	2932.94
4/6/2020	2943.95	2936.85	2932.94
4/7/2020	2943.95	2936.85	2932.94
4/8/2020	2943.71	2936.61	2932.94

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
4/9/2020	2943.65	2936.45	2932.94
4/10/2020	2943.65	2936.45	2932.94
4/11/2020	2943.65	2936.45	2932.94
4/12/2020	2943.65	2936.45	2932.94
4/13/2020	2943.65	2936.45	2932.94
4/14/2020	2943.65	2936.45	2932.94
4/15/2020	2943.65	2936.45	2932.94
4/16/2020	2943.65	2936.45	2932.94
4/17/2020	2943.65	2936.45	2932.94
4/18/2020	2943.65	2936.45	2932.94
4/19/2020	2943.65	2936.45	2932.94
4/20/2020	2943.65	2936.45	2932.94
4/21/2020	2943.65	2936.45	2932.94
4/22/2020	2943.65	2936.51	2932.94
4/23/2020	2943.65	2936.55	2932.94
4/24/2020	2943.70	2936.55	2932.94
4/25/2020	2943.75	2936.55	2932.94
4/26/2020	2943.75	2936.55	2932.94
4/27/2020	2943.75	2936.55	2932.94
4/27/2020	2943.75	2936.52	2932.94
4/28/2020	2943.75	2936.45	2932.94
4/29/2020	2943.75	2936.42	2932.94
4/30/2020	2943.75	2936.45	2932.94
5/1/2020	2943.75	2936.45	2932.94
5/2/2020	2943.75	2936.45	2932.94
5/3/2020	2943.75	2936.45	2932.94
5/4/2020	2943.75	2936.45	2932.94
5/5/2020	2943.75	2936.45	2932.94
5/6/2020	2943.75	2936.45	2932.94
5/7/2020	2943.75	2936.45	2932.94
5/8/2020	2943.75	2936.45	2932.94
5/9/2020	2943.75	2936.45	2932.94
5/10/2020	2943.75	2936.45	2932.94
5/11/2020	2943.75	2936.45	2932.94
5/12/2020	2943.75	2936.45	2932.94

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
5/13/2020	2943.75	2936.45	2932.94
5/14/2020	2943.75	2936.41	2932.94
5/15/2020	2943.75	2936.35	2932.94
5/16/2020	2943.75	2936.35	2932.94
5/17/2020	2943.75	2936.39	2932.94
5/18/2020	2943.75	2936.45	2932.94
5/19/2020	2943.75	2936.45	2932.94
5/20/2020	2943.75	2936.45	2932.94
5/21/2020	2943.75	2936.45	2932.94
5/22/2020	2943.75	2936.45	2932.94
5/23/2020	2943.75	2936.45	2932.94
5/24/2020	2943.75	2936.45	2932.94
5/25/2020	2943.75	2936.45	2932.94
5/26/2020	2943.75	2936.45	2932.94
5/27/2020	2943.75	2936.45	2932.94
5/28/2020	2943.75	2936.45	2932.94
5/29/2020	2943.75	2936.45	2932.94
5/30/2020	2943.75	2936.45	2932.94
5/31/2020	2943.75	2936.45	2932.94
6/1/2020	2943.75	2936.45	2932.94
6/2/2020	2943.75	2936.45	2932.94
6/3/2020	2943.75	2936.45	2932.94
6/4/2020	2943.75	2936.45	2932.94
6/5/2020	2943.75	2936.45	2932.94
6/6/2020	2943.75	2936.45	2932.94
6/7/2020	2943.75	2936.45	2932.94
6/8/2020	2943.75	2936.45	2932.94
6/9/2020	2943.75	2936.45	2932.94
6/10/2020	2943.75	2936.45	2932.94
6/11/2020	2943.75	2936.45	2932.94
6/12/2020	2943.75	2936.38	2932.94
6/13/2020	2943.75	2936.38	2932.94
6/14/2020	2943.75	2936.45	2932.94
6/15/2020	2943.75	2936.45	2932.94
6/16/2020	2943.75	2936.45	2932.94

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
6/17/2020	2943.75	2936.45	2932.94
6/18/2020	2943.75	2936.48	2932.94
6/19/2020	2943.75	2936.55	2932.94
6/20/2020	2943.75	2936.55	2932.94
6/21/2020	2943.75	2936.55	2932.94
6/22/2020	2943.75	2936.55	2932.94
6/23/2020	2943.75	2936.57	2932.94
6/24/2020	2943.75	2936.73	2932.94
6/25/2020	2943.75	2936.65	2932.94
6/26/2020	2943.75	2936.65	2932.94
6/27/2020	2943.75	2936.65	2932.94
6/28/2020	2943.75	2936.65	2932.94
6/29/2020	2943.75	2936.65	2932.94
6/30/2020	2943.75	2936.65	2932.94
7/1/2020	2943.75	2936.65	2932.94
7/2/2020	2943.75	2936.65	2932.94
7/3/2020	2943.75	2936.65	2932.94
7/4/2020	2943.75	2936.65	2932.94
7/5/2020	2943.75	2936.65	2932.94
7/6/2020	2943.75	2936.65	2932.94
7/7/2020	2943.75	2936.65	2932.94
7/8/2020	2943.75	2936.65	2932.94
7/9/2020	2943.75	2936.65	2932.94
7/10/2020	2943.75	2936.65	2932.94
7/11/2020	2943.75	2936.65	2932.94
7/12/2020	2943.75	2936.59	2932.94
7/13/2020	2943.75	2936.55	2932.94
7/14/2020	2943.75	2936.55	2932.94
7/15/2020	2943.75	2936.60	2932.94
7/16/2020	2943.75	2936.65	2932.94
7/17/2020	2943.75	2936.65	2932.94
7/18/2020	2943.75	2936.65	2932.94
7/19/2020	2943.75	2936.65	2932.94
7/20/2020	2943.85	2936.73	2932.94
7/21/2020	2943.85	2936.75	2932.94

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
7/22/2020	2943.85	2936.75	2932.94
7/23/2020	2943.85	2936.75	2932.94
7/24/2020	2943.85	2936.75	2932.94
7/25/2020	2943.78	2936.75	2932.94
7/26/2020	2943.75	2936.75	2932.94
7/27/2020	2943.75	2936.75	2932.94
7/28/2020	2943.74	2936.71	2932.89
7/29/2020	2943.65	2936.65	2932.74
7/30/2020	2943.65	2936.65	2932.74
7/31/2020	2943.65	2936.65	2932.74
8/1/2020	2943.65	2936.65	2932.74
8/2/2020	2943.65	2936.65	2932.74
8/3/2020	2943.65	2936.65	2932.74
8/4/2020	2943.65	2936.65	2932.74
8/5/2020	2943.65	2936.65	2932.74
8/6/2020	2943.65	2936.65	2932.74
8/7/2020	2943.65	2936.65	2932.74
8/8/2020	2943.65	2936.65	2932.74
8/9/2020	2943.65	2936.65	2932.74
8/10/2020	2943.65	2936.65	2932.74
8/11/2020	2943.65	2936.65	2932.74
8/12/2020	2943.65	2936.65	2932.74
8/13/2020	2943.65	2936.65	2932.74
8/14/2020	2943.65	2936.65	2932.74
8/15/2020	2943.65	2936.65	2932.74
8/16/2020	2943.65	2936.65	2932.74
8/17/2020	2943.65	2936.65	2932.74
8/18/2020	2943.65	2936.65	2932.74
8/19/2020	2943.65	2936.65	2932.74
8/20/2020	2943.65	2936.64	2932.74
8/21/2020	2943.65	2936.55	2932.74
8/22/2020	2943.65	2936.55	2932.74
8/23/2020	2943.65	2936.55	2932.74
8/24/2020	2943.65	2936.55	2932.74
8/25/2020	2943.65	2936.55	2932.74

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
8/26/2020	2943.65	2936.55	2932.74
8/27/2020	2943.65	2936.55	2932.74
8/28/2020	2943.65	2936.57	2932.74
8/29/2020	2943.65	2936.55	2932.74
8/30/2020	2943.65	2936.55	2932.74
8/31/2020	2943.65	2936.55	2932.74
9/1/2020	2943.65	2936.55	2932.74
9/2/2020	2943.65	2936.55	2932.74
9/3/2020	2943.65	2936.55	2932.74
9/4/2020	2943.65	2936.55	2932.74
9/5/2020	2943.65	2936.55	2932.74
9/6/2020	2943.65	2936.55	2932.74
9/7/2020	2943.65	2936.55	2932.74
9/8/2020	2943.65	2936.55	2932.74
9/9/2020	2943.65	2936.58	2932.74
9/10/2020	2943.65	2936.65	2932.74
9/11/2020	2943.65	2936.65	2932.74
9/12/2020	2943.65	2936.65	2932.74
9/13/2020	2943.65	2936.65	2932.74
9/14/2020	2943.65	2936.65	2932.74
9/15/2020	2943.65	2936.65	2932.74
9/16/2020	2943.65	2936.65	2932.74
9/17/2020	2943.65	2936.65	2932.74
9/18/2020	2943.65	2936.65	2932.74
9/19/2020	2943.65	2936.65	2932.74
9/20/2020	2943.65	2936.65	2932.74
9/21/2020	2943.65	2936.65	2932.74
9/22/2020	2943.65	2936.65	2932.74
9/23/2020	2943.65	2936.65	2932.74
9/24/2020	2943.65	2936.65	2932.74
9/25/2020	2943.65	2936.65	2932.74
9/26/2020	2943.65	2936.65	2932.74
9/27/2020	2943.65	2936.65	2932.74
9/28/2020	2943.62	2936.59	2932.74
9/29/2020	2943.55	2936.62	2932.74

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
9/30/2020	2943.55	2936.65	2932.74
10/1/2020	2943.55	2936.66	2932.74
10/2/2020	2943.55	2936.65	2932.74
10/3/2020	2943.55	2936.68	2932.74
10/4/2020	2943.55	2936.75	2932.74
10/5/2020	2943.55	2936.74	2932.74
10/6/2020	2943.55	2936.65	2932.74
10/7/2020	2943.55	2936.72	2932.74
10/8/2020	2943.55	2936.75	2932.74
10/9/2020	2943.55	2936.66	2932.74
10/10/2020	2943.55	2936.65	2932.74
10/11/2020	2943.55	2936.65	2932.74
10/12/2020	2943.55	2936.65	2932.74
10/13/2020	2943.55	2936.65	2932.74
10/14/2020	2943.55	2936.65	2932.74
10/15/2020	2943.55	2936.78	2932.74
10/16/2020	2943.55	2936.72	2932.74
10/17/2020	2943.55	2936.65	2932.74
10/18/2020	2943.55	2936.65	2932.74
10/19/2020	2943.55	2936.65	2932.74
10/20/2020	2943.55	2936.65	2932.74
10/21/2020	2943.55	2936.65	2932.74
10/22/2020	2943.55	2936.65	2932.74
10/23/2020	2943.55	2936.65	2932.74
10/24/2020	2943.55	2936.65	2932.74
10/25/2020	2943.55	2936.65	2932.74
10/26/2020	2943.58	2936.65	2932.74
10/27/2020	2943.73	2936.83	2932.76
10/28/2020	2943.89	2936.90	2932.79
10/28/2020	2943.89	2936.90	2932.80
10/29/2020	2943.85	2936.89	2932.84
10/30/2020	2943.85	2936.95	2932.84
10/31/2020	2943.85	2936.95	2932.84
11/1/2020	2943.85	2936.95	2932.84
11/2/2020	2943.85	2936.95	2932.84

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
11/3/2020	2943.85	2936.95	2932.84
11/4/2020	2943.85	2936.95	2932.84
11/5/2020	2943.85	2936.95	2932.84
11/6/2020	2943.85	2936.95	2932.84
11/7/2020	2943.85	2936.95	2932.84
11/8/2020	2943.85	2936.95	2932.84
11/9/2020	2943.85	2936.95	2932.84
11/10/2020	2943.85	2936.95	2932.84
11/11/2020	2943.85	2936.95	2932.84
11/12/2020	2943.85	2936.95	2932.84
11/13/2020	2943.85	2936.95	2932.84
11/14/2020	2943.85	2936.95	2932.84
11/15/2020	2943.85	2936.95	2932.84
11/16/2020	2943.85	2936.95	2932.84
11/17/2020	2943.85	2936.95	2932.84
11/18/2020	2943.85	2936.95	2932.84
11/19/2020	2943.85	2936.95	2932.84
11/20/2020	2943.85	2936.95	2932.84
11/21/2020	2943.85	2936.95	2932.84
11/22/2020	2943.85	2936.95	2932.84
11/23/2020	2943.85	2936.95	2932.84
11/24/2020	2943.85	2936.95	2932.84
11/25/2020	2943.85	2936.95	2932.84
11/26/2020	2943.85	2936.95	2932.84
11/27/2020	2943.85	2936.95	2932.84
11/28/2020	2943.85	2936.95	2932.84
11/29/2020	2943.85	2936.95	2932.84
11/30/2020	2943.85	2936.95	2932.84
12/1/2020	2943.85	2936.95	2932.84
12/2/2020	2943.85	2936.95	2932.84
12/3/2020	2943.85	2936.95	2932.84
12/4/2020	2943.85	2936.95	2932.84
12/5/2020	2943.85	2936.95	2932.84
12/6/2020	2943.85	2936.95	2932.84
12/7/2020	2943.85	2936.95	2932.84

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
12/8/2020	2943.85	2936.95	2932.84
12/9/2020	2943.85	2936.89	2932.84
12/10/2020	2943.85	2936.85	2932.84
12/11/2020	2943.85	2936.79	2932.84
12/12/2020	2943.85	2936.75	2932.84
12/13/2020	2943.85	2936.91	2932.84
12/14/2020	2943.85	2936.95	NR
12/15/2020	2943.85	2936.95	NR
12/16/2020	2943.85	2936.95	NR
12/17/2020	2943.85	2936.95	NR
12/18/2020	2943.85	2936.95	NR
12/19/2020	2943.85	2936.95	NR
12/20/2020	2943.85	2936.95	NR
12/21/2020	2943.85	2936.95	NR
12/22/2020	2943.85	2936.95	NR
12/23/2020	2943.85	2936.95	NR
12/24/2020	2943.85	2936.95	NR
12/25/2020	2943.85	2936.95	NR
12/26/2020	2943.85	2936.95	NR
12/27/2020	2943.85	2936.95	NR
12/28/2020	2943.85	2936.95	NR
12/29/2020	2943.85	2936.95	NR
12/30/2020	2943.85	2936.95	NR
12/31/2020	2943.85	2936.95	NR
1/1/2021	2943.85	2936.95	NR
1/2/2021	2943.85	2936.95	NR
1/3/2021	2943.85	2936.95	NR
1/4/2021	2943.85	2936.95	NR
1/5/2021	2943.85	2936.95	NR
1/6/2021	2943.85	2936.95	NR
1/7/2021	2943.85	2936.95	NR
1/8/2021	2943.85	2936.95	NR
1/9/2021	2943.85	2936.95	NR
1/10/2021	NR	2936.95	NR
1/11/2021	NR	NR	NR

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
1/12/2021	NR	NR	NR
1/13/2021	NR	NR	NR
1/14/2021	NR	NR	NR
1/15/2021	NR	NR	NR
1/16/2021	NR	NR	NR
1/17/2021	NR	NR	NR
1/18/2021	NR	NR	NR
1/19/2021	NR	NR	NR
1/20/2021	NR	NR	NR
1/21/2021	NR	NR	NR
1/22/2021	NR	NR	NR
1/23/2021	NR	NR	NR
1/24/2021	NR	NR	NR
1/25/2021	NR	NR	NR
1/26/2021	NR	NR	2932.54
1/27/2021	2943.75	2936.45	2932.54
1/28/2021	2943.75	2936.45	2932.54
1/29/2021	2943.75	2936.45	2932.54
1/30/2021	2943.75	2936.45	2932.54
1/31/2021	2943.75	2936.45	2932.54
2/1/2021	2943.75	2936.45	2932.54
2/2/2021	2943.75	2936.45	2932.54
2/3/2021	2943.75	2936.45	2932.54
2/4/2021	2943.75	2936.45	2932.54
2/5/2021	2943.75	2936.45	2932.54
2/6/2021	2943.75	2936.45	2932.54
2/7/2021	2943.75	2936.45	2932.54
2/8/2021	2943.75	2936.45	2932.54
2/9/2021	2943.75	2936.45	2932.54
2/10/2021	2943.75	2936.45	2932.54
2/11/2021	2943.75	2936.45	2932.54
2/12/2021	2943.75	2936.45	2932.54
2/13/2021	2943.75	2936.45	2932.54
2/14/2021	2943.75	2936.45	2932.54
2/15/2021	2943.75	2936.45	2932.54

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
2/16/2021	2943.75	2936.45	2932.54
2/17/2021	2943.75	2936.45	2932.54
2/18/2021	2943.75	2936.45	2932.54
2/19/2021	2943.75	2936.45	2932.54
2/20/2021	2943.75	2936.45	2932.54
2/21/2021	2943.75	2936.45	2932.54
2/22/2021	2943.75	2936.45	2932.54
2/23/2021	2943.75	2936.45	2932.54
2/24/2021	2943.75	2936.45	2932.54
2/25/2021	2943.75	2936.45	2932.54
2/26/2021	2943.75	2936.45	2932.54
2/27/2021	2943.75	2936.45	2932.54
2/28/2021	2943.75	2936.45	2932.54
3/1/2021	2943.75	2936.45	2932.54
3/2/2021	2943.75	2936.45	2932.54
3/3/2021	2943.75	2936.45	2932.54
3/4/2021	2943.75	2936.45	2932.54
3/5/2021	2943.75	2936.45	2932.54
3/6/2021	2943.75	2936.45	2932.54
3/7/2021	2943.75	2936.45	2932.54
3/8/2021	2943.75	2936.45	2932.54
3/9/2021	2943.75	2936.45	2932.54
3/10/2021	2943.75	2936.45	2932.54
3/11/2021	2943.75	2936.45	2932.54
3/12/2021	2943.75	2936.45	2932.54
3/13/2021	2943.75	2936.45	2932.54
3/14/2021	2943.75	2936.45	2932.54
3/15/2021	2943.75	2936.45	2932.54
3/16/2021	2943.75	2936.45	2932.54
3/17/2021	2943.75	2936.45	2932.54
3/18/2021	2943.75	2936.45	2932.54
3/19/2021	2943.75	2936.45	2932.54
3/20/2021	2943.75	2936.45	2932.54
3/21/2021	2943.75	2936.45	2932.54
3/22/2021	2943.75	2936.45	2932.54

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
3/23/2021	2943.75	2936.45	2932.54
3/24/2021	2943.75	2936.45	2932.54
3/25/2021	2943.75	2936.45	2932.54
3/26/2021	2943.75	2936.45	2932.54
3/27/2021	2943.75	2936.45	2932.54
3/28/2021	2943.75	2936.45	2932.54
3/29/2021	2943.75	2936.45	2932.54
3/30/2021	2943.75	2936.45	2932.54
3/31/2021	2943.75	2936.45	2932.54
4/1/2021	2943.75	2936.45	2932.54
4/2/2021	2943.75	2936.45	2932.54
4/3/2021	2943.75	2936.45	2932.54
4/4/2021	2943.75	2936.45	2932.54
4/5/2021	2943.75	2936.45	2932.54
4/6/2021	2943.75	2936.45	2932.54
4/7/2021	2943.75	2936.45	2932.54
4/8/2021	2943.75	2936.45	2932.54
4/9/2021	2943.75	2936.45	2932.54
4/10/2021	2943.75	2936.45	2932.54
4/11/2021	2943.75	2936.45	2932.54
4/12/2021	2943.75	2936.45	2932.54
4/13/2021	2943.75	2936.45	2932.54
4/14/2021	2943.75	2936.45	2932.54
4/15/2021	2943.75	2936.45	2932.54
4/16/2021	2943.75	2936.45	2932.54
4/17/2021	2943.75	2936.45	2932.54
4/18/2021	2943.75	2936.45	2932.54
4/19/2021	2943.75	2936.45	2932.54
4/20/2021	2943.75	2936.45	2932.54
4/21/2021	2943.75	2936.45	2932.54
4/22/2021	2943.75	2936.45	2932.54
4/23/2021	2943.75	2936.45	2932.54
4/24/2021	2943.75	2936.45	2932.54
4/25/2021	2943.75	2936.45	2932.54
4/26/2021	2943.75	2936.45	2932.54

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
4/27/2021	2943.75	2936.45	2932.54
4/28/2021	2943.75	2936.45	2932.54
4/29/2021	2943.75	2936.45	2932.54
4/30/2021	2943.75	2936.45	2932.54
5/1/2021	2943.75	2936.45	2932.54
5/2/2021	2943.75	2936.45	2932.54
5/3/2021	2943.75	2936.45	2932.54
5/4/2021	2943.75	2936.45	2932.54
5/5/2021	2943.75	2936.45	2932.54
5/6/2021	2943.75	2936.45	2932.54
5/7/2021	2943.75	2936.45	2932.54
5/8/2021	2943.75	2936.45	2932.54
5/9/2021	2943.75	2936.45	2932.54
5/10/2021	2943.75	2936.45	2932.54
5/11/2021	2943.75	2936.45	2932.54
5/12/2021	2943.75	2936.45	2932.54
5/13/2021	2943.75	2936.45	2932.54
5/14/2021	2943.75	2936.45	2932.54
5/15/2021	2943.75	2936.45	2932.54
5/16/2021	2943.75	2936.45	2932.54
5/17/2021	2943.75	2936.45	2932.54
5/18/2021	2943.75	2936.45	2932.54
5/19/2021	2943.75	2936.45	2932.54
5/20/2021	2943.75	2936.45	2932.54
5/21/2021	2943.75	2936.45	2932.54
5/22/2021	2943.75	2936.45	2932.54
5/23/2021	2943.75	2936.45	2932.54
5/24/2021	2943.75	2936.45	2932.54
5/25/2021	2943.75	2936.45	2932.54
5/26/2021	2943.75	2936.45	2932.54
5/27/2021	2943.75	2936.45	2932.54
5/28/2021	2943.75	2936.45	2932.54
5/29/2021	2943.75	2936.45	2932.54
5/30/2021	2943.75	2936.45	2932.54
5/31/2021	2943.75	2936.45	2932.54

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
6/1/2021	2943.75	2936.45	2932.54
6/2/2021	2943.75	2936.45	2932.54
6/3/2021	2943.75	2936.45	2932.54
6/4/2021	2943.75	2936.45	2932.54
6/5/2021	2943.71	2936.45	2932.54
6/6/2021	2943.65	2936.45	2932.54
6/7/2021	2943.65	2936.45	2932.54
6/8/2021	2943.65	2936.45	2932.54
6/9/2021	2943.65	2936.45	2932.54
6/10/2021	2943.65	2936.45	2932.54
6/11/2021	2943.65	2936.45	2932.54
6/12/2021	2943.65	2936.45	2932.54
6/13/2021	2943.65	2936.45	2932.54
6/14/2021	2943.65	2936.45	2932.54
6/15/2021	2943.65	2936.45	2932.54
6/16/2021	2943.65	2936.45	2932.54
6/17/2021	2943.65	2936.45	2932.54
6/18/2021	2943.65	2936.45	2932.54
6/19/2021	2943.65	2936.45	2932.54
6/20/2021	2943.65	2936.45	2932.54
6/21/2021	2943.65	2936.45	2932.54
6/22/2021	2943.65	2936.45	2932.54
6/23/2021	2943.65	2936.45	2932.54
6/24/2021	2943.65	2936.45	2932.54
6/25/2021	2943.65	2936.45	2932.54
6/26/2021	2943.65	2936.45	2932.54
6/27/2021	2943.58	2936.45	2932.52
6/28/2021	2943.73	2936.53	2932.52
6/29/2021	2944.01	2936.79	2932.76
6/30/2021	2948.88	NR	NR
7/1/2021	2946.63	NR	NR
7/2/2021	2945.28	NR	NR
7/3/2021	2946.90	NR	NR
7/4/2021	2945.36	NR	NR
7/5/2021	2945.17	NR	NR

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
7/6/2021	2945.51	NR	NR
7/7/2021	2945.05	NR	NR
7/8/2021	2944.40	NR	NR
7/9/2021	2944.09	NR	NR
7/10/2021	2943.95	NR	NR
7/11/2021	2943.88	NR	NR
7/12/2021	2943.85	NR	NR
7/13/2021	2943.87	NR	NR
7/14/2021	2945.07	NR	NR
7/15/2021	2945.16	NR	NR
7/16/2021	2944.88	NR	NR
7/17/2021	2944.58	NR	NR
7/18/2021	2944.20	NR	NR
7/19/2021	2943.95	NR	NR
7/20/2021	2943.95	NR	NR
7/21/2021	2943.95	NR	NR
7/22/2021	2943.95	NR	NR
7/23/2021	2943.95	NR	NR
7/24/2021	2943.95	NR	NR
7/25/2021	2943.97	NR	NR
7/26/2021	2943.95	NR	NR
7/27/2021	2943.95	NR	NR
7/28/2021	2943.95	NR	NR
7/29/2021	2943.95	NR	NR
7/30/2021	2943.95	NR	NR
7/31/2021	2943.95	NR	NR
8/1/2021	2943.95	NR	NR
8/2/2021	2944.02	NR	NR
8/3/2021	2944.05	NR	NR
8/4/2021	2943.97	NR	NR
8/5/2021	2943.95	NR	NR
8/6/2021	2943.95	NR	NR
8/7/2021	2943.95	NR	NR
8/8/2021	2943.95	NR	NR
8/9/2021	2943.95	NR	NR

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
8/10/2021	2943.95	NR	NR
8/11/2021	2943.95	NR	NR
8/12/2021	2943.95	NR	NR
8/13/2021	2943.95	NR	NR
8/14/2021	2943.95	NR	NR
8/15/2021	2945.44	NR	NR
8/16/2021	2945.40	NR	NR
8/17/2021	2944.38	NR	NR
8/18/2021	2943.97	NR	NR
8/19/2021	2943.95	NR	NR
8/20/2021	2943.95	NR	NR
8/21/2021	2943.95	NR	NR
8/22/2021	2944.90	NR	NR
8/23/2021	2946.19	NR	NR
8/24/2021	2946.24	NR	NR
8/25/2021	2945.76	NR	NR
8/26/2021	2944.92	NR	NR
8/27/2021	2944.44	NR	NR
8/28/2021	2943.95	NR	NR
8/29/2021	2943.95	NR	NR
8/30/2021	2943.95	NR	NR
8/31/2021	2943.95	NR	NR
9/1/2021	2943.95	NR	NR
9/2/2021	2943.95	NR	NR
9/3/2021	2943.95	NR	NR
9/4/2021	2943.95	NR	NR
9/5/2021	2944.04	NR	NR
9/6/2021	2944.13	NR	NR
9/7/2021	2943.95	NR	NR
9/8/2021	2943.95	NR	NR
9/9/2021	2943.95	NR	NR
9/10/2021	2943.95	NR	NR
9/11/2021	2943.95	NR	NR
9/12/2021	2943.95	NR	NR
9/13/2021	2943.95	NR	NR

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
9/14/2021	2943.95	NR	NR
9/15/2021	2943.95	NR	NR
9/16/2021	2943.95	NR	NR
9/17/2021	2943.95	NR	NR
9/18/2021	2943.95	NR	NR
9/19/2021	2943.95	NR	NR
9/20/2021	2943.95	NR	NR
9/21/2021	2943.95	NR	NR
9/22/2021	2943.95	NR	NR
9/23/2021	2943.95	NR	NR
9/24/2021	2943.95	NR	NR
9/25/2021	2943.95	NR	NR
9/26/2021	2943.95	NR	NR
9/27/2021	2943.95	NR	NR
9/28/2021	2943.95	NR	NR
9/29/2021	2943.95	NR	NR
9/30/2021	2943.95	NR	NR
10/1/2021	2943.95	NR	NR
10/2/2021	2943.95	NR	NR
10/3/2021	2943.95	NR	NR
10/4/2021	2943.95	NR	NR
10/5/2021	2943.95	NR	NR
10/6/2021	2943.95	NR	NR
10/7/2021	2943.95	NR	NR
10/8/2021	2943.95	NR	NR
10/9/2021	2943.95	NR	NR
10/10/2021	2943.95	NR	NR
10/11/2021	2943.95	NR	NR
10/12/2021	2943.95	NR	NR
10/13/2021	2943.95	NR	NR
10/14/2021	2943.95	NR	NR
10/15/2021	2943.95	NR	NR
10/16/2021	2943.95	NR	NR
10/17/2021	2943.95	NR	NR
10/18/2021	2943.95	NR	NR

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
10/19/2021	2943.95	NR	NR
10/20/2021	2943.95	NR	NR
10/21/2021	2943.95	NR	NR
10/22/2021	2943.95	NR	NR
10/23/2021	2943.95	NR	NR
10/24/2021	2943.95	NR	NR
10/25/2021	2943.95	NR	NR
10/26/2021	2943.95	NR	NR
10/27/2021	2943.95	NR	NR
10/28/2021	2943.95	NR	NR
10/29/2021	2943.95	NR	NR
10/30/2021	2943.95	NR	NR
10/31/2021	2943.95	NR	NR
11/1/2021	2943.95	NR	NR
11/2/2021	2943.95	NR	NR
11/3/2021	2943.95	NR	NR
11/4/2021	2943.95	NR	NR
11/5/2021	2943.95	NR	NR
11/6/2021	2943.95	NR	NR
11/7/2021	2943.95	NR	NR
11/8/2021	2943.95	NR	NR
11/9/2021	2943.95	NR	NR
11/10/2021	2943.95	NR	NR
11/11/2021	2943.95	NR	NR
11/12/2021	2943.95	NR	NR
11/13/2021	2943.95	NR	NR
11/14/2021	2943.95	NR	NR
11/15/2021	2943.95	NR	NR
11/16/2021	2943.95	NR	NR
11/17/2021	2943.95	NR	NR
11/18/2021	2943.95	NR	NR
11/19/2021	2943.95	NR	NR
11/20/2021	2943.95	NR	NR
11/21/2021	2943.95	NR	NR
11/22/2021	2943.95	NR	NR

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
11/23/2021	2943.95	NR	NR
11/24/2021	2943.95	NR	NR
11/25/2021	2943.95	NR	NR
11/26/2021	2943.95	NR	NR
11/27/2021	2943.95	NR	NR
11/28/2021	2943.95	NR	NR
11/29/2021	2943.95	NR	NR
11/30/2021	2943.95	NR	NR
12/1/2021	2943.95	NR	NR
12/2/2021	2943.95	NR	NR
12/3/2021	2943.95	NR	NR
12/4/2021	2943.95	NR	NR
12/5/2021	2943.95	NR	NR
12/6/2021	2943.95	NR	NR
12/7/2021	2943.95	NR	NR
12/8/2021	2943.95	NR	NR
12/9/2021	2943.95	NR	NR
12/10/2021	2943.95	NR	NR
12/11/2021	2943.95	NR	NR
12/12/2021	2943.95	NR	NR
12/13/2021	2943.95	NR	NR
12/14/2021	2943.95	NR	NR
12/15/2021	2943.95	NR	NR
12/16/2021	2943.95	NR	NR
12/17/2021	2943.95	NR	NR
12/18/2021	2943.95	NR	NR
12/19/2021	2943.95	NR	NR
12/20/2021	2943.95	NR	NR
12/21/2021	2943.95	NR	NR
12/22/2021	2943.95	NR	NR
12/23/2021	2943.95	NR	NR
12/24/2021	2943.95	NR	NR
12/25/2021	2943.95	NR	NR
12/26/2021	2943.95	NR	NR
12/27/2021	2943.95	NR	NR

Table 5: Pecos River Staff Gauge Surface Water Elevation Data

Date	PR-1 (ft amsl)	PR-2 (ft amsl)	PR-3 (ft amsl)
12/28/2021	2943.95	NR	NR
12/29/2021	2943.95	NR	NR
12/30/2021	2943.95	NR	NR
12/31/2021	2943.95	NR	NR
1/1/2022	2943.95	NR	NR
1/2/2022	2943.95	NR	NR
1/3/2022	2943.95	NR	NR
1/4/2022	2943.95	NR	NR
1/5/2022	2943.95	NR	NR
1/6/2022	2943.95	NR	NR
1/7/2022	2943.95	NR	NR
1/8/2022	2943.95	NR	NR
1/9/2022	2943.95	NR	NR
1/10/2022	2943.95	NR	NR
1/11/2022	2943.95	NR	NR
1/12/2022	2943.95	NR	NR
1/13/2022	2943.95	NR	NR
1/14/2022	2943.95	NR	NR
1/15/2022	2943.95	NR	NR
1/16/2022	2943.95	NR	NR
1/17/2022	2943.95	NR	NR
1/18/2022	2943.95	NR	NR
1/19/2022	2943.95	NR	NR
1/20/2022	2943.95	NR	NR
1/21/2022	2943.95	2936.75	2932.84
Average:	**2943.88**	**2936.72**	**2932.89**

Note:
- Data are presented as daily average water elevation measurements taken from hourly staff gauge readings
- ft amsl : Feet above mean sea level
- NR : Data not recorded (values not recorded due to battery issue or loss of staff gauge)
- -- : Data has not yet been downloaded
- Pecos River staff gauges were installed in August 2018 and measurements began immediately following installations

Table 6. Summary of Laguna Grande Area Monitor Well Construction Details (Mosaic Wells)

Well ID	Date Drilled	Current Status	NAD83 Coordinates [1]		Ground Surface Elevation [3]	Elevation Top of Casing	Primary Formation Completed In	Total Depth of Boring	Total Depth of Well	Top of Screen	Bottom of Screen	Top of Screen	Bottom of Screen	Data Availability			
			Northing [2]	Easting [2]	(ft amsl)	(ft amsl)		(ft bgs)	(ft bgs)	(ft bgs)	(ft bgs)	(ft amsl)	(ft amsl)	Boring Logs	Well Logs	Water Levels	
LG-1	5/22/2000	Existing	470386.0	635526.2	2966.08	2966.78	Caliche	60.0	39.0	27.8	39	2938.3	2927.1	YES	YES	23.32 ft bgs (7/25/01)	1/04 to present
LG-2	6/6/2000	Existing, no longer part of DP-1399	476867.3	632230.7	2972.77	2974.52	Caliche	150.0	35.0	25	35	2947.8	2937.8	YES	YES	22.89 ft bgs (7/25/01)	1/04 to present
LG-3	5/25/2000	Missing/Inaccessible	472201.0	637323.0	2957.9	---	Fine Sand and Silt	30.0	17.0	12	17	2945.9	2940.9	YES	YES	7.12 ft bgs (7/25/01)	1/04 to 7/05
LG-4	9/6/2000	Missing/Inaccessible	470892.0	638475.0	2958.9	---	Caliche	150.0	68.0	48	68	2910.9	2890.9	YES	YES	8.80 ft bgs (7/25/01)	1/04 to 7/05
LG-5	9/6/2000	Existing	465855.4	648445.6	2970.68	2972.42	Limestone/Dolomite	213.5	40.0	35	40	2935.7	2930.7	YES	YES	15.61 ft bgs (7/25/01)	1/04 to present
LG-6	2/17/2001	Plugged and Abandoned [4]	469344.0	652215.0	2960.4	---	Caliche	80.0	20.0	10	20	2950.4	2940.4	YES	YES	6.93 ft bgs (7/25/01)	---
LG-7a	2/12/2001	Plugged and Abandoned [4]	477803.0	653487.0	2961.8	---	Limestone/Dolomite	48.0	27.5	18.5	27.5	2943.3	2934.3	YES	YES	4.42 ft bgs (7/25/01)	---
LG-7b	2/14/2001	Plugged and Abandoned [4]	477803.0	653487.0	2961.9	---	Caliche	13.0	12.5	7.5	12.5	2954.4	2949.4	YES	YES	4.07 ft bgs (7/25/01)	---
LG-8a	2/6/2001	Plugged and Abandoned [4]	483546.0	650006.0	2957.9	---	Limestone/Dolomite	85.0	75.0	65	75	2892.9	2882.9	YES	YES	0.43 ft bgs (7/25/01)	---
LG-8b	2/6/2001	Plugged and Abandoned [4]	483546.0	650006.0	2958.0	---	Gypsite	36.0	35.6	30.6	35.6	2927.4	2922.4	YES	YES	1.73 ft bgs (7/25/01)	---
LG-8c	2/8/2001	Plugged and Abandoned [4]	483546.0	650006.0	2958.0	---	Salt, Sand, Silt and Clay	12.0	11.5	6.5	11.5	2951.5	2946.5	YES	YES	3.08 ft bgs (7/25/01)	---
LG-9a	2/19/2001	Plugged and Abandoned [4]	482712.0	644383.0	2957.7	---	Limestone/Dolomite	38.0	30.0	10	30	2947.7	2927.7	YES	YES	1.51 ft bgs (7/25/01)	---
LG-9b	2/21/2001	Plugged and Abandoned [4]	482712.0	644383.0	2957.7	---	Caliche	5.0	5.0	2.5	5	2955.2	2952.7	YES	YES	1.44 ft bgs (7/25/01)	---
LG-10	3/5/2001	Plugged and Abandoned [4]	481967.0	641571.0	2988.6	---	Limestone/Dolomite	32.0	30.7	10.7	30.7	2977.9	2957.9	YES	YES	Dry (3/15/01)	---
LG-11	7/20/2001	Plugged and Abandoned [4]	472766.0	655006.0	2946.2	---	Limestone/Dolomite	56.0	51.0	31	51	2915.2	2895.2	YES	YES	30.06 ft bgs (7/25/01)	---
LG-12	*7/13/2001*	Plugged and Abandoned [4]	479797.0	665465.0	2983.6	---	*Limestone/Dolomite*	*45.0*	*36.0*	*26*	*36*	2957.6	2947.6	YES	YES	5.33 ft bgs (7/25/01)	---
LG-13	3/13/2001	Plugged and Abandoned [4]	477697.0	643277.0	2956.7	---	Sand, Silt and Clay	60.0	29.5	19.5	29.5	2937.2	2927.2	YES	YES	1.85 ft bgs (3/16/01)	---
LG-14	3/9/2001	Plugged and Abandoned [4]	477258.0	645769.0	2974.6	---	Caliche and Limestone/Dolomite	70.0	70.0	37	70	2937.6	2904.6	YES	YES	20.30 ft bgs (3/12/01)	---
LG-15	3/24/2001	Plugged and Abandoned [4]	475793.0	646837.0	2960.6	---	Clay with Sand and Gravel	60.0	---	---	---	---	---	YES	NA		---
LG-16a	3/20/2001	Plugged and Abandoned [4]	474261.0	647456.0	2958.1	---	Sand, Gravel (Caliche)	22.0	10.8	7.5	10.8	2950.6	2947.3	YES	YES	3.98 ft bgs (3/22/01)	---
LG-16b	3/21/2001	Plugged and Abandoned [4]	474261.0	647456.0	2957.1	---	Limestone/Dolomite	40.0	35.0	25	35	2932.1	2922.1	YES	YES	3.47 ft bgs (3/24/01)	---
LG-17	3/17/2001	Plugged and Abandoned [4]	477060.0	639980.0	2960.7	---	Sand, Silt and Clay	40.0	24.0	20	24	2940.7	2936.7	YES	YES	6.27 ft bgs (3/19/01)	---
LG-18	3/14/2001	No Well Installed	473893.0	639418.0	2960.2	NA	Sand, Silt and Clay, Cobbles at Bottom	49.0	NA	NA	NA	NA	NA	YES	NA		---
LG-19	3/16/2001	Plugged and Abandoned [4]	469674.0	647430.0	2955.4	---	Clay and Sand	60.0	26.0	21	26	2934.4	2929.4	YES	YES	0.41 ft bgs (3/19/01)	---
LG-20	3/12/2001	No Well Installed	472582.0	646588.0	2951.7	NA	Salt - Lake Bottom	4.0	NA	NA	NA	NA	NA	YES	NA	No Data	---
LG-21	3/25/2001	Plugged and Abandoned [4]	479027.0	641893.0	2958.1	---	Clay, Silt and Sand, Some Gravel	50.0	24.0	14	24	2944.1	2934.1	YES	YES	2.44 ft bgs (3/25/01)	---
LG-22	3/30/2001	Plugged and Abandoned [4]	474778.0	649944.0	2966.0	---	Limestone/Dolomite	60.0	56.9	36.9	56.9	2929.1	2909.1	YES	YES	8.57 ft bgs (7/25/01)	---
LG-23	7/10/2001	Existing	463050.8	648440.1	2972.08	2973.22	Limestone/Dolomite	80.0	75.0	47.5	75	2924.6	2897.1	YES	YES	20.78 ft ngs (7/25/01)	1/04 to present
LG-24	7/22/2001	Plugged and Abandoned [4]	449630.0	645931.0	2957.8	---	Limestone/Dolomite	46.0	41.0	21	41	2936.8	2916.8	YES	YES	Dry (7/25/01)	---
LG-25	7/27/2001	Existing	472539.1	631039.2	2972.11	2972.92	Caliche and Sand	50.0	26.0	11	26	2961.1	2946.1	YES	YES	21.88 (8/01/01)	1/04 to present
LG-26	8/13/2002	Existing	464579.4	638904.2	2951.22	2952.61	Conglomerate	47.0	45.0	30	45	2921.2	2906.2	YES	YES	17.2 ft bgs (5/1/13)	1/04 to present
LG-27	8/15/2002	Existing, no longer part of DP-1399	456419.0	639735.6	2958.21	2959.4	Silt and Clay with Gypsum Streaks	82.0	55.0	30	55	2928.2	2903.2	YES	YES	30.23 ft bgs (08/15/02)	1/04 to 3/17
LG-28	1/12/2006	Existing	468369.0	641030.1	2961.25	2962.52	Conglomerate	40.0	38.0	28	38	2933.3	2923.3	YES	YES	7.33 ft bgs (1/12/06), 1.29 ft bgs (5/29/13)	2/06 to present
LG-29	1/9/2006	Existing	468782.4	644247.2	2974.80	2976.14	Conglomerate	30.0	26.0	18	26	2956.8	2948.8	YES	YES	17.53 ft bgs (5/30/13)	2/06 to present
LG-30	1/13/2006	Existing	468468.3	636128.4	2966.70	2968.55	Conglomerate	50.0	48.0	38	48	2928.7	2918.7	YES	YES	24..58 ft bgs (1/13/06), 25.77 ft bgs (5/30/13)	2/06 to present
LG-31	4/13/2013	Existing	461969.5	641604.6	2982.31	2984.72	Clay	99.5	99.0	89	99	2893.3	2883.3	YES	YES	53.61 ft bgs (5/30/13)	4/13 to present
LG-32	4/11/2013	Existing	468401.5	637956.0	2960.91	2963.80	Conglomerate Top, Sandy Clay Bottom	77.0	71.0	61	71	2899.9	2889.9	YES	YES	17 ft (4/13/13), 7.90 ft bgs (5/29/13)	4/13 to present
LG-33	11/17/2020	Existing	467732	633572	2967.33	2969.52	Gravelly clay, sand, gravelly sand, clayey sand	101.5	36.5	21.2	36.2	2946.1	2931.1	YES	YES	25.03 ft bgs on 11/22/2020	
LG-34	11/19/2020	Existing	473535	630365	2972.47	2974.70	Caliche with gravel and sand stringers, clay at btm.	100.0	23.3	13	23	2959.5	2949.5	YES	YES	17.71 ft bgs on 11/22/2020	
LG-35	11/16/2020	Existing	471062	632668	2977.29	2979.80	Gravel, calichefied gravel (conglomerate), sand	100.0	36.8	26.5	36.5	2950.8	2940.8	YES	YES	32.7 ft bgs on 11/22/2020	
LG-36	12/17/2021	Existing	479447.7	632035.3	3005.27	3007.78	Dolomite, mudstone with clayey sand 7 gravel stringers	101.0	62.5	47.2	62.2	2958.1	2943.1	YES	YES	Dry January 2022	
LG-37	12/15/2021	Existing	476401.8	631566.5	2974.98	2977.41	Sand with gravel, and clay stringers	100.0	33.8	13.5	33.5	2961.5	2941.5	YES	YES	18.5 ft bgs on 1/20/2022	
LG-38	12/14/2021	Existing	476343.1	633597.2	2960.82	2963.89	Sand, clayey sand, gravelly clay	101.0	31.1	15.8	30.8	2945.0	2930.0	YES	YES	5.1 ft bgs on 1/20/2022	
P-East	4/2/2013	Existing	512122.0	668725.5	3108.06	3110.60	Gypsum/Anhydrite	80.0	80.0	65	80	3043.1	3028.1	YES	YES		
P-West	4/2/2013	Existing	504594.6	660645.3	3068.44	3070.96	Gypsum/Anhydrite	80.0	79.0	59	79	3009.4	2989.4	YES	YES		
P-Center	4/2/2013	Existing	504886.3	664160.8	3032.65	3034.84	Gypsum, gravelly	20.0	20.0	15	20	3017.7	3012.7	YES	YES		
P-1D	8/7/2009	Existing	505574.6	665358.3	3030.0	3031.8	Silty Sand, Clay	31.0	27.5	22.5	27.5	3007.5	3002.5	YES	YES	2.7 ft bgs (8/7/09)	---
P-1S	8/6/2009	Existing	505573.1	665360.2	3030.0	3031.6	Clay, Salt, Minor Sand	20.0	20.0	10	20	3020.0	3010	YES	YES	1.4 ft bgs (8/6/09)	---
P-2S	8/6/2009	Existing	505567.0	665341.4	3030.0	3031.4	Salt and Silt with Sand	20.0	20.0	10	20	3020.0	3010	YES	YES	1.7 ft bgs (8/6/09)	---
P-3D	8/9/2009	Existing	505599.3	665372.4	3030.0	3031.5	Clay with Silt	30.0	28.5	23.5	28.5	3006.5	3001.5	YES	YES	6.5 ft bgs (8/9/09)	---
P-3S	8/7/2009	Existing	505598.3	665374.9	3030.0	3031.3	Salt	22.0	20.0	10	20	3020.0	3010	YES	YES	2.7 ft bgs (8/7/09)	---
PW-1	8/4/2009	Existing	505578.6	665379.5	3030.0	3032.3	Salt	27.0	25.0	10	20	3020.0	3010	YES	YES	2.2 ft bgs (8/4/09)	---
PW-2	8/5/2009	Existing	505580.2	665372.9	3030.0	3032.6	Silty Sand, Clayey Silt	41.0	39.5	24.5	39.5	3005.5	2990.5	YES	YES	2.2 ft bgs (8/5/09)	---

Notes:

[1] State Plane NAD83 Coordinates, New Mexico East 3001 Zone in Feet

[2] Coordinates are approximate—translated to NAD83 according to approximate section line locations on archived maps for the following wells: LG-3, 4, 6, 7a, 7b, 8a, 8b, 8c, 9a, 9b, 10, 11, 12, 13, 14, 15, 16a 16b, 17, 18, 19, 20, 21, 22, and 24.

[3] Elevations are approximate—unknown survey accuracy from archived well logs for the following wells: LG-3, 4, 6, 7a, 7b, 8a, 8b, 8c, 9a, 9b, 10, 11, 12, 13, 14, 15, 16a 16b, 17, 18, 19, 20, 21, 22, and 24.

[4] Wells were plugged and abandoned (Personal Communication with Scott Vail, 6/3/2009)

ft amsl: Feet above mean sea level

Table 7. Summary of Laguna Grande Area Monitor Well Construction Details (Other Wells)

Well ID	Date Drilled	Current Status	NAD83 Coordinates		Ground Surface Elevation [2] (ft amsl)	Elevation Top of Casing (ft amsl)	Primary Formation Completed In	Total Depth of Boring (ft bgs)	Total Depth of Well (ft bgs)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Top of Screen (ft amsl)	Bottom of Screen (ft amsl)	Data Availability			
			Northing [3]	Easting [3]										Boring Logs	Well Logs	Water Levels	
BLM 1979 Test Holes[1,3]																	
23.28.1.11	10/26/1978	Unknown	487770.6	629527.6	3068.81	NA	Clayey Shale and Gypsum	300	280	260	280	2808.81	2788.81	YES	NO	3/14/1979	155.69
23.29.18.14	11/17/1978	Unknown	475834.9	636216.1	2959.23	NA	Sand and Gravel	35	35	15	35	2944.23	2924.23	YES	NO	3/13/1979	7.12
23.29.20.33	10/25/1978	Unknown	467804.4	640125.5	2970.90	NA	Siltstone Top, Limestone	60	60	40	60	2930.9	2910.9	YES	NO	3/14/1979	22.88
23.29.26.12	10/24/1978	Unknown	466644.1	657408.3	3030.88	NA	Anhydrite/Shale	160	160	140	160	2890.88	2870.88	YES	NO	3/6/1979	107.75
23.29.28.41	10/24/1978	Unknown	463900.1	648116.4	2988.16	NA	Shale	100	80	50	60	2938.16	2928.16	YES	NO	3/14/1979	40.97
							Shale and Gypsum			70	80	2918.16	2908.16	YES	NO	3/14/1979	40.97
USGS 1965[2,3]																	
19.421	12/17/1962	Existing	437642.1	638845.1	2941.2	NA	Culebra Dolomite	72	70	16	72	2925.2	2869.2	YES	NO	12/17/1962	37.26
20.134	12/11/1962	Unknown	438314.7	640812.3	2959.3	NA	Culebra Dolomite, Shale, Gypsum	92	92	45.5	92	2913.8	2867.3	YES	NO	12/11/1962	61.75
20.322	10/31/1962	Unknown	437654.5	642147.7	2958.1	NA	Culebra Dolomite, Limestone	95.5	94	62	80	2896.1	2878.1	YES	NO	10/31/1962	60.18
20.412	11/14/1962	Unknown	437658.8	643471.2	2949	NA	Shale, Clay, Sand	105.5	105.5	72	102	2877.0	2847.0	YES	NO	11/14/1962	59.21
20.431	10/10/1962	Unknown	436328.5	642819.6	2962.4	NA	Dolomite w/Clay Stringers	84.5	84.5	54	84	2908.4	2878.4	YES	NO	10/10/1962	63.66
20.432	10/22/1962	Unknown	436328.5	643488.3	2957.8	NA	Conglomerate, Sand and Clay	77.5	73	27	61	2930.8	2896.8	YES	NO	10/22/1962	59.35
29.141	12/5/1962	Unknown	433666.2	641534.8	2946.3	NA	Culebra Dolomite w/Clay Stringers	92	90	54	90	2892.3	2856.3	YES	NO	12/5/1962	37.92
29.143	12/7/1962	Unknown	433002.0	641542.5	2928.7	NA	Culebra Dolomite w/Clay Stringers	62	62	33	62	2895.7	2866.7	YES	NO	12/7/1962	25.91
29.213	11/23/1962	Unknown	434331.6	642852.0	2949.6	NA	Culebra Dolomite w/Clay Stringers, Shale	101	100	61.5	100	2888.1	2849.6	YES	NO	11/23/1962	56.67
29.241	11/30/1962	Unknown	433668.5	644184.6	2949.1	NA	Shale, Siltstone, Limestone	115	114	56.5	114	2892.6	2835.1	YES	NO	11/30/1962	60.24
USGS National Water Information System[4]																	
USGS 321832104022001	---	Inactive	590478	3575080	2972	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	45	---	---	---	---	NO	NO	05/1950	
USGS 321828104024301	---	Inactive	589878	3574952	2980	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	40	---	---	---	---	NO	NO	05/1950	
USGS 321828104024601	---	Inactive	589799	3574951	2980	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	79	---	---	---	---	NO	NO	05/1950	
USGS 321818104025001	---	Inactive	589698	3574642	2976	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	210	---	---	---	---	NO	NO	1983-1996	
USGS 321821104025501	---	Inactive	589566	3574733	2873	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	132	---	---	---	---	NO	NO	09/1954	
USGS 321825104025901	---	Inactive	589460	3574856	2980	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	130	---	---	---	---	NO	NO	10/1954	
USGS 321830104030301	---	Inactive	589354	3575009	2980	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	80	---	---	---	---	NO	NO	1954-2018	
USGS 321836104031001	---	Inactive	589170	3575192	2979	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	---	---	---	---	---	NO	NO	09/1954	
USGS 321847104044501	---	Inactive	586682	3575509	2999	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	196	---	---	---	---	NO	NO	1983-2003	
USGS 321852104045601	---	Inactive	586393	3575660	3011	---	Alluvium, Bolson Deposits and Other Surface Deposits	130	130	---	---	---	---	NO	NO	10/1991	
USGS 321818104043601	---	Inactive	586698	3574631	3004.9	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	160	---	---	---	---	NO	NO	1954-2018	
USGS National Water Information System[4] (continued)																	
USGS 321818104043501	---	Inactive	586952	3574618	2998	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	137	---	---	---	---	NO	NO	1946-1956	
USGS 321817104042101	---	Inactive	587318	3574590	2995	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	88	---	---	---	---	NO	NO	1947-1955	
USGS 321818104032101	---	Inactive	588887	3574635	2981	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	100	---	---	---	---	NO	NO	1946-1948	
USGS 321806104043601	---	Inactive	586929	3574248	3001	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	145	---	---	---	---	NO	NO	1946-2021	
USGS 321728104052101	---	Inactive	585762	3573068	3034	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	200	---	---	---	---	NO	NO	1978-2003	
USGS 321728104040001	---	Inactive	587880	3573086	3020	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	220	---	---	---	---	NO	NO	1983-2003	
USGS 321733104035001	---	Inactive	588141	3573243	3032	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	148	---	---	---	---	NO	NO	1947-1981	
USGS 321727104023901	---	Inactive	589999	3573074	2993	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	96	---	---	---	---	NO	NO	1946-2003	

Table 7. Summary of Laguna Grande Area Monitor Well Construction Details (Other Wells)

Well ID	Date Drilled	Current Status	NAD83 Coordinates		Ground Surface Elevation [2]	Elevation Top of Casing	Primary Formation Completed In	Total Depth of Boring	Total Depth of Well	Top of Screen	Bottom of Screen	Top of Screen	Bottom of Screen	Data Availability			
			Northing [3]	Easting [3]	(ft amsl)	(ft amsl)		(ft bgs)	(ft bgs)	(ft bgs)	(ft bgs)	(ft amsl)	(ft amsl)	Boring Logs	Well Logs	Water Levels	
USGS 321701104044901	---	Inactive	586606	3572244	3032	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	150	---	---	---	---	NO	NO	1947-1979	
USGS 321702104041601	---	Inactive	587469	3572282	3034	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	174	---	---	---	---	NO	NO	02/1947	
USGS 321701104034401	---	Inactive	588081	3572290	3023	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	150	---	---	---	---	NO	NO	1978-2021	
USGS 321700104032001	---	Inactive	588934	3572233	3002	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	---	---	---	---	---	NO	NO	01/1978	
USGS 321652104021901	---	Inactive	590532	3572001	2982	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	200	---	---	---	---	NO	NO	1946-2003	
USGS 321652104021902	---	Inactive	590532	3572001	2982	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	80	---	---	---	---	NO	NO	1955-1996	
USGS 321621104050001	---	Inactive	586329	3571010	3055	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	---	---	---	---	---	NO	NO	10/1954	
USGS 321634104023501	---	Inactive	589832	3571287	2992	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	96	---	---	---	---	NO	NO	11/1954	
USGS 321609104025001	---	Inactive	589733	3570670	2993	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	31	---	---	---	---	NO	NO	11/1954	
USGS 321615104014601	---	Inactive	591406	3570870	2962	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	89	---	---	---	---	NO	NO	11/1954	
USGS 321536104043701	---	Inactive	586942	3569629	3042	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	125	---	---	---	---	NO	NO	1978-2003	
USGS 321526104033201	---	Inactive	588646	3569336	3016	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	250	---	---	---	---	NO	NO	1978-1996	
USGS 321545104015401	---	Inactive	591205	3569944	2921	---	Alluvium, Bolson Deposits and Other Surface Deposits	---	75	---	---	---	---	NO	NO	1978-2003	
OSE Well Database[4]																	
C03965-POD1	3/22/2016	Unknown	589800	3573463	---	---	---	---	---	---	---	---	---	---	---	---	---
C03965-POD2	3/22/2016	Unknown	589891	3573473	---	---	---	---	---	---	---	---	---	---	---	---	---
C03965-POD3	3/22/2016	Unknown	590014	3573527	---	---	---	---	---	---	---	---	---	---	---	---	---
C03965-POD4	7/18/2016	Active	589918	3573381	---	---	Sandstone w/Clay	40	40	30	40	---	---	YES	YES	7/18/2016	31
C03965-POD5	7/18/2016	Active	589864	3573534	---	---	Sandstone/Sand	35	35	25	35	---	---	YES	YES	7/18/2016	31
C03965-POD6	5/27/2020	Unknown	590021	3573526	---	---	---	---	---	---	---	---	---	---	---	---	---
C03965-POD7	5/27/2020	Unknown	589884	3573599	---	---	---	---	---	---	---	---	---	---	---	---	---
C03965-POD8	5/27/2020	Unknown	589723	3573587	---	---	---	---	---	---	---	---	---	---	---	---	---
C03965-POD9	5/28/2020	Unknown	589707	3573460	---	---	---	---	---	---	---	---	---	---	---	---	---
C03965-POD10	5/28/2020	Unknown	589813	3573358	---	---	---	---	---	---	---	---	---	---	---	---	---
C03965-POD11	5/28/2020	Unknown	589504	3573464	---	---	---	---	---	---	---	---	---	---	---	---	---
C01967	7/15/1981	Existing	590111	3574498	---	---	Sand and Gravel	264	264	256	264	---	---	YES	NO	7/15/1981	200
C02706	5/24/2000	Unknown	591528	3574304	---	---	Sandy Clay	30	17	12	17	---	---	YES	NO	5/24/2000	10
C03469-POD1	1/25/2011	Existing	588374	3575538	---	---	Sandy Silt/Clayey Sand	68	68	40	68	---	---	YES	YES	1/25/2011	38.47
C04216-POD1	4/4/2018	Active	588488	3576534	---	---	Clayey Sand/Sand	20	20	5	20	---	---	YES	YES	4/4/2018	9.98
C04216-POD2	4/4/2018	Active	588465	3576555	---	---	Sand	22	20.25	5.25	20.25	---	---	YES	YES	4/4/2018	9.92
C04216-POD3	4/4/2018	Active	588501	3576556	---	---	Caliche and Sand	24	23	8	23	---	---	YES	YES	4/4/2018	13.2
C04216-POD4	4/4/2018	Active	588499	3576513	---	---	Sandy Clay	20	20	5	20	---	---	YES	YES	4/4/2018	9.65
C04551-POD1	10/1/2020	Active	587818	3575529	---	---	Gravel	120	120	---	---	---	---	YES	YES	10/1/2020	50
C04556-POD1	---	---	589816	3573264	---	---	---	---	---	---	---	---	---	---	---	---	---
C04556-POD2	---	---	589891	3573239	---	---	---	---	---	---	---	---	---	---	---	---	---
C04556-POD3	---	---	589915	3573259	---	---	---	---	---	---	---	---	---	---	---	---	---
C04564-POD1	7/28/2021***	Plugged	589706	3573277	---	---	---	---	---	---	---	---	---	---	---	---	---
C04564-POD2	7/28/2021***	Plugged	589720	3573237	---	---	---	---	---	---	---	---	---	---	---	---	---
C01102	12/21/1962	Active	588901	3573672	---	---	Sand and Gravel	100	100	14	20	---	---	YES	NO	12/21/1962	12
C01816	7/27/1979	Unknown	587992	3573355	---	---	Sand/Broken Rock/Clay	200	102	42	102	---	---	YES	NO	7/27/1979	40
C00128	1/10/1953	Unknown	587783	3574162	---	---	Conglomerate Rock	149	130.1	36.7	130.1	---	---	YES	NO	1/10/1953	---
C02189	3/12/1990	Active	587985	3574572	---	---	Sand/Gravel/Shale	48		21	48	---	---	YES	NO	3/12/1990	29
C02503	8/29/1996	Unknown	587679	3574874	---	---	Sand/Gravel/Clay	70	70	30	70	---	---	YES	NO	8/29/1996	12
C00235	7/23/1950	Active	587676	3575280	---	---	Gypsum and Red Rock	160	160	0	160	---	---	YES	NO	7/23/1950	---
CO3762-POD1	8/11/2014	Active	585314	3574066	---	---	Sand with Clay	40	40	30	40	---	---	YES	YES	8/11/2014	31
CO3762-POD2	8/11/2014	Active	584893	3575598	---	---	Sand	40	40	30	40	---	---	YES	YES	8/11/2014	30
CO3762-POD3	8/11/2014	Active	586203	3574642	---	---	Sand	40		30	40	---	---	YES	YES	8/11/2014	30
C00211	1/12/1950, 6/20/1979	Unknown	586570	3573949	---	---	Conglomerate/Sand & Gravel	89	89	---	---	---	---	YES	NO	1/12/1950, 6/20/1979	48
C01336	9/20/1966	Unknown	586572	3573744	---	---	Gravel and Conglomerate	190	190	38	190	---	---	YES	NO	9/20/1966	30
C01872	6/12/1980	Unknown	586878	3573649	---	---	Conglomerate Rock	68	68	---	---	---	---	YES	NO	6/12/1980	48
C0443	2/9/1978	Unknown	587790	3572745	---	---	Sand and Clay	171		152	172	---	---	YES	NO	2/9/1978	160
C01870	12/6/1979	Unknown	586885	3572432	---	---	Conglomerate Rock	105	105	50	70	---	---	YES	NO	12/6/1979	48
							Conglomerate Rock			80	90	---	---				
C03146	2/15/2005	Active	589613	3572970	---	---	Conglomerate and Sand	82	82	62	82	---	---	YES	NO	2/15/2005	36
C00340	8/13/1952	Unknown	586483	3572022	---	---	Sandy Gypsum	117	---	---	---	---	---	YES	NO	8/13/1952	18
C03974-POD1	8/16/2016	Active	587087	3572220	---	---	Conglomerate with Sand	80	75	55	75	---	---	YES	NO	8/16/2016	42.5
C03732-POD1	4/13/2014	Existing	586321	3570929	---	---	Conglomerate with Clay Stringers	200	171	111	171	---	---	YES	YES	4/13/2014	10

Table 7. Summary of Laguna Grande Area Monitor Well Construction Details (Other Wells)

Well ID	Date Drilled	Current Status	NAD83 Coordinates		Ground Surface Elevation [2]	Elevation Top of Casing	Primary Formation Completed In	Total Depth of Boring	Total Depth of Well	Top of Screen	Bottom of Screen	Top of Screen	Bottom of Screen	Data Availability			
			Northing [3]	Easting [3]	(ft amsl)	(ft amsl)		(ft bgs)	(ft bgs)	(ft bgs)	(ft bgs)	(ft amsl)	(ft amsl)	Boring Logs	Well Logs	Water Levels	
C01938	2/1/1981	Unknown	586085	3571205	---	---	Clay with Sand	80	80	40	80	---	---	YES	YES	2/1/1981	3
C03432-POD1	10/20/2009	Existing	587527	3572162	---	---	Conglomerate and Sand	115	115	70	115	---	---	YES	NO	10/20/2009	65
C01122	1/5/1965	Unknown	587999	3572138	---	---	Gravel and Shale	175	175	---	---	---	---	YES	NO	1/5/1965	30
C01443	11/8/1970	Active	590123	3572064	---	---	Caliche/Sand/Gravel/Redbed	50	50	35	50	---	---	YES	NO	11/8/1970	27
C03535-POD1	4/8/2012	Existing	589860	3570751	---	---	Silty Clay/Coarse Sandstone/Silty Sand	210	210	110	210	---	---	YES	NO	4/8/2012	25
C02182	9/26/1989	Unknown	592328	3571048	---	---	Sand/Gravel with Shale	75	75	25	65	---	---	YES	NO	9/26/1989	30
C02707	6/9/2000	Unknown	595535	3571868	---	---	Limestone-Dolomitic Fractured	40	40	35	40	---	---	YES	NO	6/9/2000	18
C01240	10/15/1964	Unknown	586494	3569592	---	---	Conglomerate/Shale/Sand	125	125	---	---	---	---	YES	NO	10/15/1964	25
C02186	2/4/1990	Unknown	589128	3568606	---	---	Sand	100	100	80	100	---	---	YES	NO	2/4/1990	55
C02198	8/13/1990	Unknown	589940	3568611	---	---	Clay, Sand, and Gravel	78	78	22	78	---	---	YES	NO	8/13/1990	Dry
C02184	12/10/1989	Unknown	590248	3567700	---	---	Coarse Sand and Gravel	87	87	47	87	---	---	YES	NO	12/10/1989	60
C03615-POD1	5/4/2013	Existing	591964	3568500	---	---	Sand and Gravel	60	60	50	60	---	---	YES	YES	5/4/2013	36
C03615-POD2	5/1/2013	Existing	592661	3568013	---	---	Sand and Gravel, Clay on Bottom	60	60	45	60	---	---	YES	YES	5/1/2013	26
C01237	10/15/1964	Unknown	587197	3567298	---	---	Sand and Gravel/Shale	123	123	70	100	---	---	YES	NO	10/15/1964	---
C01442	10/17/1970	Unknown	587298	3567199	---	---	Clay and Gravel	100	100	---	---	---	---	YES	NO	10/17/1970	---
C02705	5/26/2000	Unknown	593902	3575093	---	---	Sand and Gravel, Clay	150	68	48	68	---	---	YES	YES	5/26/2000	28
C00136A	9/27/2003	Existing	591037	3570753	---	---	---	---	100	---	---	---	---	NO	NO	9/27/2003	60
C00136S	4/5/1976	Unknown	590426	3572167	---	---	---	---	122	---	---	---	---	NO	NO	4/5/1976	45
C00500	2/28/1945	Unknown	589811	3573176	---	---	---	---	130	---	---	---	---	NO	NO	---	---
C00571	7/30/1954	Existing	591241	3570957	---	---	Sandstone/Conglomerate, Limestone/Dolomite	---	90	---	---	---	---	NO	NO	7/30/1954	38
C00573	3/15/1957	Unknown	586188	3568087	---	---	Alluvium/Basin Fill	---	250	35	45	---	---	NO	NO	3/15/1957	35
					---	---		---		175	250	---	---				
OSE Well Database[4] (continued)																	
C01108	6/20/1967	Existing	588395	3573566	---	---	Anhydrite & Lime Conglomerate	60	60	---	---	---	---	NO	NO	---	---
C00868		Existing	589811	3573176	---	---	---	---	190	---	---	---	---	NO	NO	---	---
C00869	5/31/1946	Existing	587188	3572335	---	---	---	---	360	---	---	---	---	NO	NO	---	---
C00869S		Existing	587388	3572335	---	---	---	---	---	---	---	---	---	NO	NO	---	---
C00869S2		Existing	587996	3572343	---	---	---	---	---	---	---	---	---	NO	NO	---	---
C01892		Existing	584151	3573313	---	---	---	---	---	---	---	---	---	NO	NO	---	---
C02846	12/31/1938	Existing	581726	3576726	---	---	---	---	150	---	---	---	---	NO	NO	---	---
C02846S	10/8/2003	Existing	582926	3575527	---	---	---	---	150	---	---	---	---	NO	NO	---	---
C00616	12/5/1980	Unknown	587982	3574978	---	---	Alluvium/Basin Fill	---	120	60	120	---	---	NO	NO	12/5/1980	30
C01214	8/2/1964	Unknown	590010	3574597	---	---	Sandstone/Conglomerate/ Gravel	---	70	---	---	---	---	NO	NO	8/2/1964	20
C01215	8/4/1964	Unknown	590210	3574397	---	---	Sandstone/Conglomerate/ Gravel	---	104	---	---	---	---	NO	NO	8/4/1964	15
C01217	8/11/1964	Existing	589606	3574593	---	---	Sandstone/Conglomerate/ Gravel	---	87	---	---	---	---	NO	NO	8/11/1964	50
C01217S	1/12/1999	Unknown	595413	3574403	---	---	---	---	350	---	---	---	---	NO	NO	---	---
C01253	6/4/1965	Unknown	586375	3573338	---	---	Sandstone/Conglomerate/ Gravel	---	179	---	---	---	---	NO	NO	6/4/1965	50
C03001 EXPLORE	9/24/2003	Unknown	590430	3571355	---	---	---	---	140	---	---	---	---	NO	NO	---	---
C03059 EXPLORE	4/6/2004	Unknown	592993	3574378	---	---	Sandstone/Conglomerate/ Gravel/Limestone Dolomite	---	---	13	56	---	---	NO	NO	4/6/2004	65

Notes:

[1] - Geohydrology Associates, Inc., 1979, Water-Resources Study of the Carlsbad Potash Area, New Mexico: Consultant report to the United States Department of the Interior Bureau of Land Management, Denver Colorado, Contract No. YA-512-CT8-195.

[2] - Cox, E.R. and Havens, J.S. 1965. A Progress Report on the Malaga Bend Experimental Salinity Alleviation Project, Eddy County, New Mexico. United States Geological Survey Open File 65-35. November.

[3] - State Plane NAD83 Coordinates, New Mexico East 3001 Zone in Feet (derived from original PLSS coordinates)

[4] - NAD83 UTM in Meters (derived from original PLSS coordinates)

NA: Not Applicable

---: No data available

Table 8. Summary of Laguna Grande Area Soil Boring Details (Mosaic and Others)

Borehole ID	Date Drilled	Total Depth (feet)	NAD83 Coordinates [1]		Elevation[3] (ft msl)	Data Availability			
			Northing [2]	Easting [2]		Boring Logs	Well Logs	Water Levels (ft bgs)	Water Levels (ft msl)
Mosaic - Perimeter Dike									
GA-PD-01	3/9/2009	36.0	505246.5	664478.4	3029.5	YES	NA	11	3018.5
GA-PD-02	3/9/2009	41.5	505309.1	664675.7	3029.5	YES	NA	12	3017.5
GA-PD-03	3/10/2009	46.0	505386.2	664863.7	3029.7	YES	NA	12	3017.7
GA-PD-04	3/11/2009	41.0	505448.7	665054.9	3030.8	YES	NA	8	3022.8
GA-PD-05	3/11/2009	36.5	505529.5	665249.1	3030.5	YES	NA	11.5	3019
GA-PD-06	3/12/2009	40.0	505610.2	665434.0	3030.7	YES	NA	6 to 10	3024.7 to 3020.7
GA-PD-07	3/14/2009	27.0	505680.1	665628.2	3030.6	YES	NA	4	3026.6
GA-PD-08	3/12/2009	31.5	505742.6	665813.1	3031.0	YES	NA	2.5	3028.5
GA-PD-09	3/13/2009	27.0	505819.7	666004.2	3031.0	YES	NA	3	3028.0
Mosaic - Laguna Grande									
GA-LG-01	3/14/2009	39.0	474166.1	639014.5	2960.0	YES	NA	6	2954
GA-LG-02	3/15/2009	36.5	473784.4	639105.3	2960.0	YES	NA	2 to 3.5	2958 to 2956.5
GA-LG-03	3/15/2009	41.5	473406.3	639180.5	2960.0	YES	NA	6 to 7	2954 to 2953
GA-LG-04	3/15/2009	27.0	475046.7	637834.8	2960.0	YES	NA	5	2955
GA-LG-05	3/16/2009	32.0	474729.9	637730.7	2960.0	YES	NA	4	2956
GA-LG-06	3/16/2009	36.5	474376.6	637608.1	2959.0	YES	NA	4	2955
GA-LG-07	3/15/2009	31.5	473757.9	637520.3	2962.0	YES	NA	8	2954
GA-LG-08	3/16/2009	31.5	473132.2	637528.3	2962.0	YES	NA	5	2957
GA-LG-09	3/19/2009	31.5	472558.9	638021.3	2961.0	YES	NA	4.5	2956.5
GA-LG-10	3/17/2009	25.0	473578.7	639655.9	2957.0	YES	NA	0.5	2956.5
GA-LG-11	3/17/2009	22.0	473878.3	640093.7	2957.0	YES	NA	1	2956
GA-LG-12	3/17/2009	19.7	470404.8	642739.9	2960.0	YES	NA	7	2953
GA-LG-13	3/17/2009	16.5	470755.8	642133.1	2958.0	YES	NA	4.5	2953.5
GBH-1	6/20/2007	21.5	470302.8	642874.3	2960.0	YES	NA	5	2955
GBH-2	6/20/2007	29.0	470428.9	642710.9	2957.0	YES	NA	3	2954
GBH-3	6/22/2007	36.5	470483.8	642637.6	2960.0	YES	NA	7	2953
GBH-4	6/22/2007	26.5	470722.3	642186.5	2959.0	YES	NA	3.5	2955.5
GBH-5	6/22/2007	27.5	473165.9	639257.8	2960.0	YES	NA	3	2957
GBH-6	6/23/2007	43.0	472585.5	639818.8	2962.0	YES	NA	4.5	2957.5
DH-1	1/7/2006	60.0	3572811.0	593837.0	---	YES	NA	Dry	Dry
DH-2	1/6/2006	40.0	3572930.0	593475.0	2954.0	YES	NA	1.5	2952.5
DH-3	1/5/2006	60.0	3573188.0	593101.0	2955.0	YES	NA	Dry	Dry
DH-4	1/3/2006	60.0	3572910.0	592930.0	2958.0	YES	NA	2	2956
USGS 1965									
19.244	11/13/1962	149.0	---	---	---	YES	NA	Dry	Dry
OSE Well Database[3]									
C02704	5/19/2000	174	590722	3573486	---	YES	NA	---	---
C03460-POD1	10/8/2010	100	588857	3575004	---	YES	NA	38	---
C00315	8/26/1952	225	587973	3575995	---	YES	NA	45	---
C03862-POD1	4/23/2015	17	589672	3567505	---	YES	NA	10	---
C03862-POD2	4/23/2015	30	589665	3567507	---	YES	NA	10	---
C03862-POD3	4/23/2015	60	589685	3567500	---	YES	NA	10	---
C03862-POD4	4/23/2015	30	589705	3567490	---	YES	NA	10	---
C03862-POD5	4/23/2015	17	589785	3567458	---	YES	NA	10	---

Notes:
[1] State Plane NAD83 Coordinates, New Mexico East 3001 Zone in feet with the exception of borings DH-1 through DH-5 which are in NAD27 UTM in meters
[2] Elevations from AutoCAD base map
[3] - NAD83 UTM in Meters (derived from original PLSS coordinates)
ft amsl: Feet above mean sea level
ft bgs: Feet below ground surface
NA: Not Applicable
---: No data available

Table 9: Stage 1 Abatement Plan Proposed Monitoring and Reporting Schedule

Monitoring Report Schedule of Submittal			
Annual Reporting Frequency	**Estimated Number of Submittals**	**Description**	**Submittal Date(s)**
4	8	Summary quarterly progress reports	Within 30 days following receipt of final analytical results for each quarter
1	2	Draft and Final Site Investigation reports	Draft - 90 days following receipt of analytical results from final quarter of S1AP investigation. Final - 90 days following receipt of NMED's comments on Draft Report.

Stage 1 Abatement Plan Monitoring Schedule					
Mosaic Site Monitoring Well Network	**Sampling Program/Analytical Suite**				Notes
	Q1	**Q2**	**Q3**	**Q4**	
LG-1	ABC	ABC	ABC	ABC	Part of DP-1399 Monitoring Program[1]
LG-5	ABC	ABC	ABC	ABC	
LG-23	ABC	ABC	ABC	ABC	
LG-25	ABC	ABC	ABC	ABC	
LG-26	ABC	ABC	ABC	ABC	
LG-28	ABC	ABC	ABC	ABC	
LG-29	ABC	ABC	ABC	ABC	
LG-30	ABC	ABC	ABC	ABC	
LG-31	ABC	ABC	ABC	ABC	
LG-32	ABC	ABC	ABC	ABC	
LG-33	ABC	ABC	ABC	ABC	
LG-34	ABC	ABC	ABC	ABC	
LG-35	ABC	ABC	ABC	ABC	
LG-36	ABC	ABC	ABC	ABC	
LG-37	ABC	ABC	ABC	ABC	
LG-38	ABC	ABC	ABC	ABC	
Mosaic Salt Stack Piezometers	**Sampling Program/Analytical Suite**				Notes
	Q1	**Q2**	**Q3**	**Q4**	
P-East	ABC	ABC	ABC	ABC	Part of DP-1399 Monitoring Program[1]
P-Central	ABC	ABC	ABC	ABC	
P-West	ABC	ABC	ABC	ABC	
Proposed West Side Monitoring Well Network[2]	**Sampling Program/Analytical Suite**				Notes
	Q1	**Q2**	**Q3**	**Q4**	
To Be Determined					
C00500/C00868		ABC		ABC	West Side Wells to be Monitored if Access is Grated by Well Owner
C03146		ABC		ABC	
C00571		ABC		ABC	
C00136A		ABC		ABC	
C00136S		ABC		ABC	
C01443		ABC		ABC	
C01102		ABC		ABC	

Table 9: Stage 1 Abatement Plan Proposed Monitoring and Reporting Schedule

Stage 1 Abatement Plan Monitoring Schedule					
Proposed West Side Monitoring Well Network[2]	Sampling Program/Analytical Suite				Notes
	Q1	Q2	Q3	Q4	
C01108		ABC		ABC	West Side Wells to be Monitored if Access is Grated by Well Owner (cont.)
C03965 POD1		ABE		ABE	
C03965 POD2		ABE		ABE	
C03965 POD4		ABE		ABE	
C03965 POD5		ABE		ABE	
C03965 POD6		ABE		ABE	
C03965 POD7		ABE		ABE	
C03965 POD8		ABE		ABE	
C03965 POD9		ABE		ABE	
C03965 POD10		ABE		ABE	
C03965 POD11		ABE		ABE	
C04556-POD1		ABE		ABE	
C04556-POD2		ABE		ABE	
C04556-POD3		ABE		ABE	
Laguna Grande Sampling Locations	Sampling Program/Analytical Suite				Notes
	Q1	Q2	Q3	Q4	
Brine Pipeline	ABDF	ABDF	ABDF	ABDF	Part of DP-1399 Monitoring Program[1]
Laguna Grande Staff Gauge #1,2,3	W	W	W	W	
Southwest Laguna Grande Dike Staff Gauge	W	W	W	W	
Natural runoff culverts outlet into Laguna Grande	ABF	ABF	ABF	ABF	Stormwater runoff sample
Pecos River Sampling Locations	Sampling Program/Analytical Suite				Notes
	Q1	Q2	Q3	Q4	
River-1	AB	AB	AB	AB	Part of DP-1399 Monitoring Program[1]
River-2	AB	AB	AB	AB	
River-3	AB	AB	AB	AB	
River-4	AB	AB	AB	AB	
Pecos River Staff Gauge #1, 2, 3, 4	W	W	W	W	

Notes:

[1] - Monitored in accordance with DP-1399 monitoring program. Data obtained from this monitoring program will be incorporated into the Stage 1 Abatement Plan Site Investigation.

[2] -Water level survey and water quality monitoring of private landowner wells located on the west side of the Pecos River within a 1-mile radius of the three-dimensional body where the standards set forth in Subsection B of Section 20.6.2.4103 NMAC are exceeded. C03965 and C04556 POD wells are associated with a corrective action program being conducted by Chevron Environmental Management Company related to the discharge of produced water from a pipeline in 2014. Semi-annual groundwater monitoring is currently being conducted under New Mexico Oil Conservation Division (NMOCD) remediation permit number 2RP-2400. Mosaic proposes to incorporate available semi-annual (Q2 and Q4) water level and water quality data associated with this corrective action program into the Stage 1 Abatement Plan until a minimum of eight quarters of data have been collected from the individual wells.

Sampling Analytical Suites:

A - Field Measurements: Temperature, pH, specific conductance,

B - Laboratory Analyses: TDS, Na, Ca, Mg, K, Cl, SO4, B, Mn, Se, alkalinity (ppm as CaCO3), specific conductivity, and pH

C - Depth to water measurements, top of well casing, and water elevation to the nearest 0.01 foot

D - Fecal coliform or E. coli bacteria, total nitrogen

E - Laboratory Analyses: TDS, Na, Ca, Mg, K, Cl, SO4, alkalinity (ppm as CaCO3), specific conductivity, and pH

F - Total suspended solids

W - Stage height/water depth to nearest 0.1 foot

B - Laboratory Analyses: TDS, Na, Ca, Mg, K, Cl, SO4, B, Mn, Se, alkalinity (ppm as CaCO3), specific conductivity, and pH

Sampling Quarters: Q1 = January – March; Q2 = April – June; Q3 = July – September; Q4 = October – December

TDS = total dissolved solids; Na = Sodium; Ca = Calcium; Mg = Magnesium; K = Potassium; Cl- = Chloride; S04 = Sulfate; B = Boron; Mn = Manganese; Se = Selenium; Alkalinity = CaCO3 alkalinity; total nitrogen = total Kjeldahl nitrogen plus nitrate as nitrogen (TKN + NO3-N)

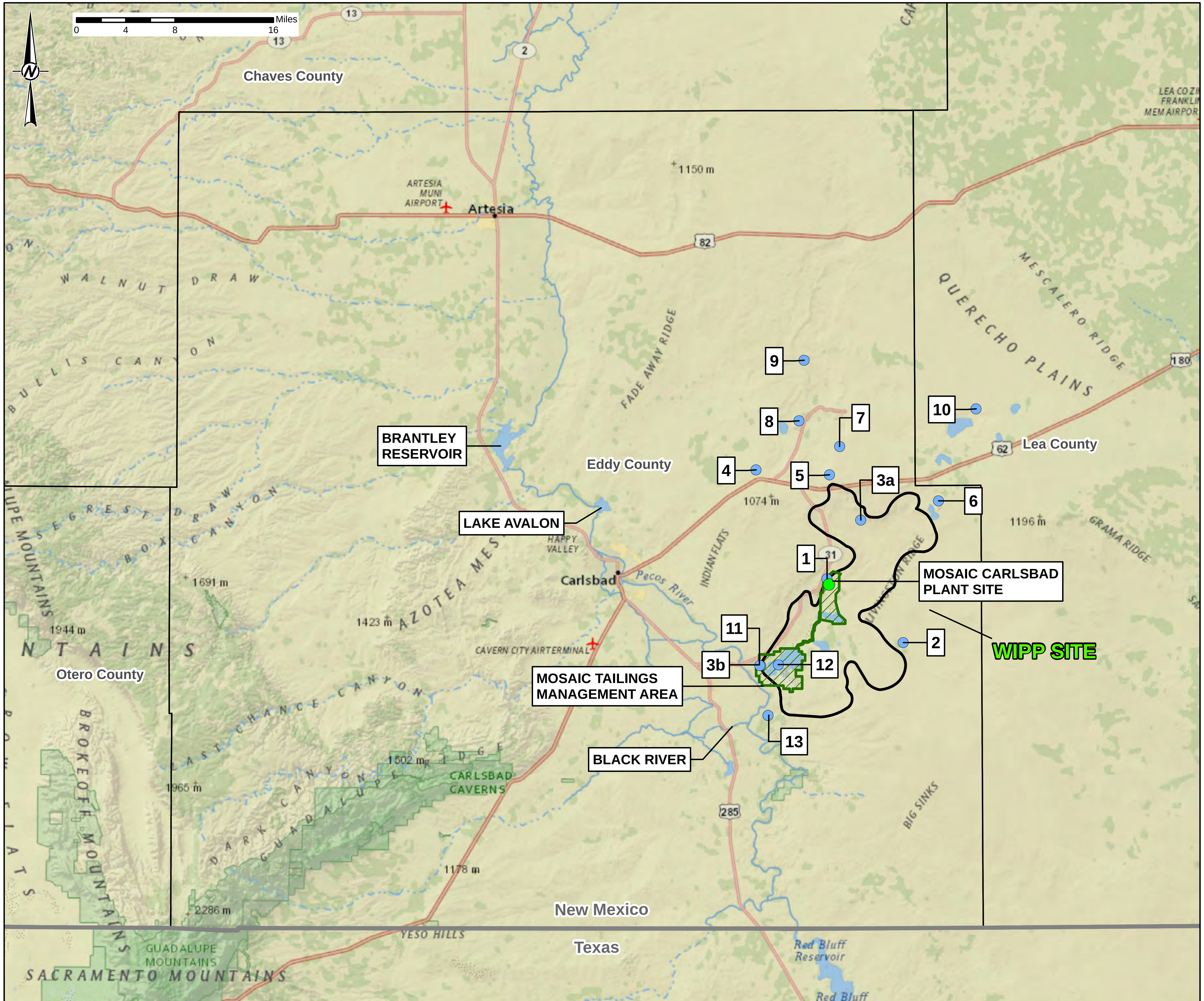
Table 10. Proposed Schedule for Stage 1 Abatement Plan Activities

Task	Description	Completion Date
---	Compile and Evaluate Existing Information	90 days from approval of S1APP work plan by NMED
1	Data Gap Analysis	90 days from approval of the S1APP by NMED
2	Further Investigate Site Geology and Hydrogeology	90 days following receipt of analytical results from final quarter of S1AP investigation
2a	Well Inventory	30 days from approval of the S1APP by NMED
2b	Define the Extent of Potential Impacts to Groundwater from Mosaic Discharges	90 days following receipt of analytical results from final quarter of S1AP investigation
2c	Characterize the Hydrogeologic Conditions Between Laguna Grande and the Pecos River	90 days following receipt of analytical results from final quarter of S1AP investigation
2d	Characterize the Hydrogeologic Conditions West of the Pecos River	90 days following receipt of analytical results from final quarter of S1AP investigation
2e	Characterize the Hydrogeologic Connection Between the Pecos River and Groundwater	90 days following receipt of analytical results from final quarter of S1AP investigation
3	Further Investigate Site Surface Water Hydrology	90 days following receipt of analytical results from final quarter of S1AP investigation
4	Characterization of the Waste Stream Discharged from the Plant Site to the Salt Stack and Laguna Grande	90 days following receipt of analytical results from final quarter of S1AP investigation
5	Evaluate the Effect of the Discharge of Suspended Clay Particles to the Laguna Grande Brine Management Area	90 days following receipt of analytical results from final quarter of S1AP investigation
6	Evaluate the Relationship Between Salt-Producer Operations and Impacts to Groundwater and the Pecos River	90 days following receipt of analytical results from final quarter of S1AP investigation
7	Study Hydrologic Conditions Present in the Area of Monitoring Well LG-2	Second quarter of 2022[a]
8	Proposed Monitoring Plan	30 days from approval of the S1APP by NMED
9	Quality Assurance Plan	60 days from approval of the S1APP by NMED
10	Site Health and Safety Plan	60 days from approval of the S1APP by NMED
11	Stage 1 Abatement Plan Reporting	---
11a	Summary Quarterly Progress Reports	Begin the first quarter following approval of the S1APP by NMED; final report for the eighth quarter of monitoring submitted within 30 days of receipt of final analytical report
11b	Draft Final Site Investigation Report	90 days following receipt of analytical results from final quarter of S1AP investigation
	Final Site Investigation Report	90 days following receipt of NMED's comments on Final Site Investigation Report

Notes:

[a] – Target submittal date for the as-built well completion report. The wells will continue to be monitored and the results reported to the NMED in accordance with Condition C105 of the Draft DP-1399 Permit.

Figures



LEGEND

- PLANT SITE
- HISTORIC AND CURRENT MINING OPERATIONS
- TAILINGS MANAGEMENT AREA
- APPROXIMATE NASH DRAW BOUNDARY DELINEATION
- STATE BOUNDARY
- COUNTY BOUNDARY

NOTES
1. SEE TABLE 1 FOR INFORMATION ON THE SITES IDENTIFIED ON THIS FIGURE.

REFERENCES
1. BASEMAP: ESRI PROVIDED BASEMAP SERVICE. NATIONAL GEOGRAPHIC.
2. HISTORIC AND CURRENT MINING OPERATIONS: HUDSON INSTITUTE OF MINERALOGY. MINDAT.ORG. SCOGGIN FLAT, EDDY COUNTY, NEW MEXICO, UNITED STATES.

CLIENT
MOSAIC POTASH CARLSBAD, INC.

PROJECT
MOSAIC POTASH MINE
STAGE 1 ABATEMENT PLAN PROPOSAL

TITLE
MOSAIC POTASH MINE LOCATION AND HISTORIC AND CURRENT POTASH MINING OPERATIONS IN THE AREA

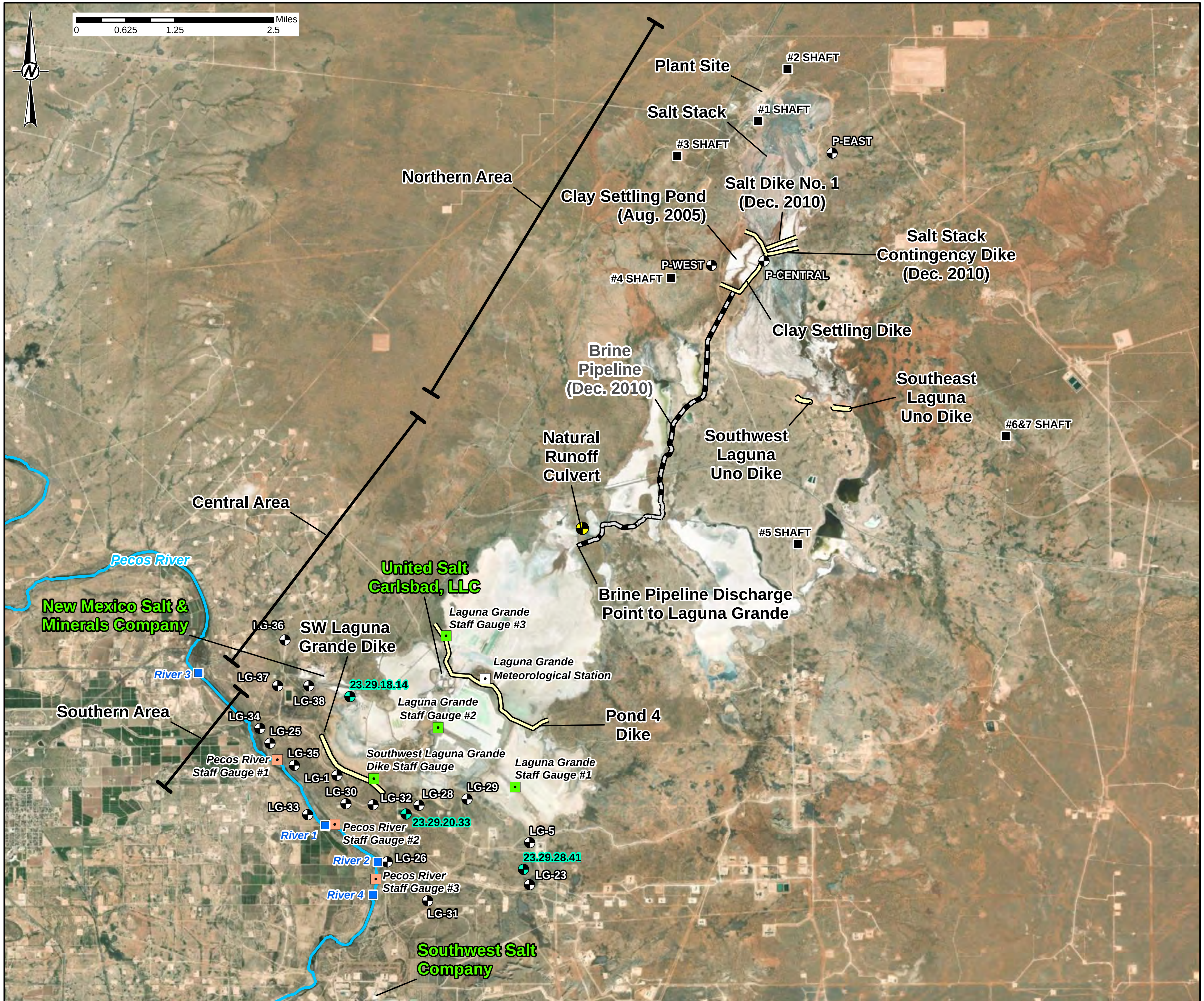
CONSULTANT

WSP GOLDER

YYYY-MM-DD	2022-03-18
DESIGNED	TS
PREPARED	RHG
REVIEWED	-
APPROVED	-

PROJECT NO. 21502059

FIGURE 1



LEGEND

- BRINE PIPELINE (COMPLETION DATE)
- DIKES
- PECOS RIVER
- GENERAL GEOGRAPHIC AREA OF THE SITE
- SHAFTS
- RIVER SURFACE WATER SAMPLE
- EXISTING MONITORING WELLS
- AUTOMATED METEOROLOGICAL STATION
- AUTOMATED STAFF GAUGE - LAGUNA GRANDE
- AUTOMATED STAFF GAUGE - PECOS RIVER
- BLM WELL ID
- NATURAL RUNOFF CULVERT

REFERENCES

1. BASEMAP: ESRI PROVIDED BASEMAP SERVICE. VIVID. MAXAR. IMAGERY COLLECTED 2020/2021.

CLIENT

MOSAIC POTASH CARLSBAD, INC.

PROJECT

MOSAIC POTASH MINE

STAGE 1 ABATEMENT PLAN PROPOSAL

TITLE

MINE FACILITIES

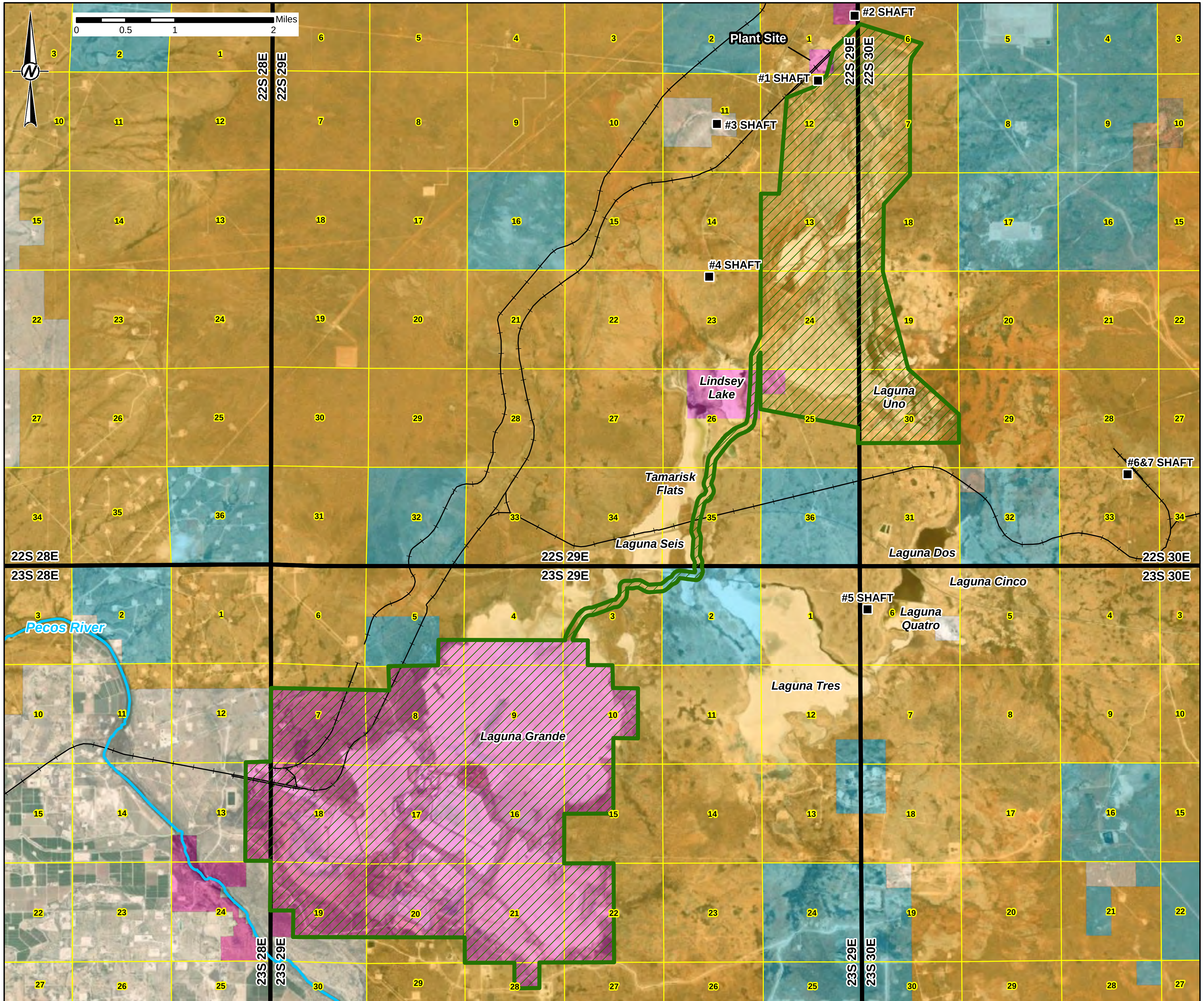
CONSULTANT

WSP GOLDER

YYYY-MM-DD	2022-03-18
DESIGNED	TS
PREPARED	RHG
REVIEWED	-
APPROVED	-

PROJECT NO. 21502059

FIGURE 2



LEGEND

- SHAFTS
- TAILINGS MANAGEMENT AREA
- TOWNSHIP/RANGE BOUNDARY
- SECTION BOUNDARY
- PECOS RIVER
- RAILROAD

SURFACE LAND OWNERSHIP

- MOSAIC FEE LAND
- PRIVATE (OTHER)
- BLM
- STATE

REFERENCES

1. BASEMAP: ESRI PROVIDED BASEMAP SERVICE. VIVID. MAXAR. IMAGERY COLLECTED 2020/2021.
2. SURFACE OWNERSHIP DATASET: MODIFIED FROM BUREAU OF LAND MANAGEMENT, 2014.

CLIENT

MOSAIC POTASH CARLSBAD, INC.

PROJECT

MOSAIC POTASH MINE
STAGE 1 ABATEMENT PLAN PROPOSAL

TITLE

SURFACE OWNERSHIP

CONSULTANT

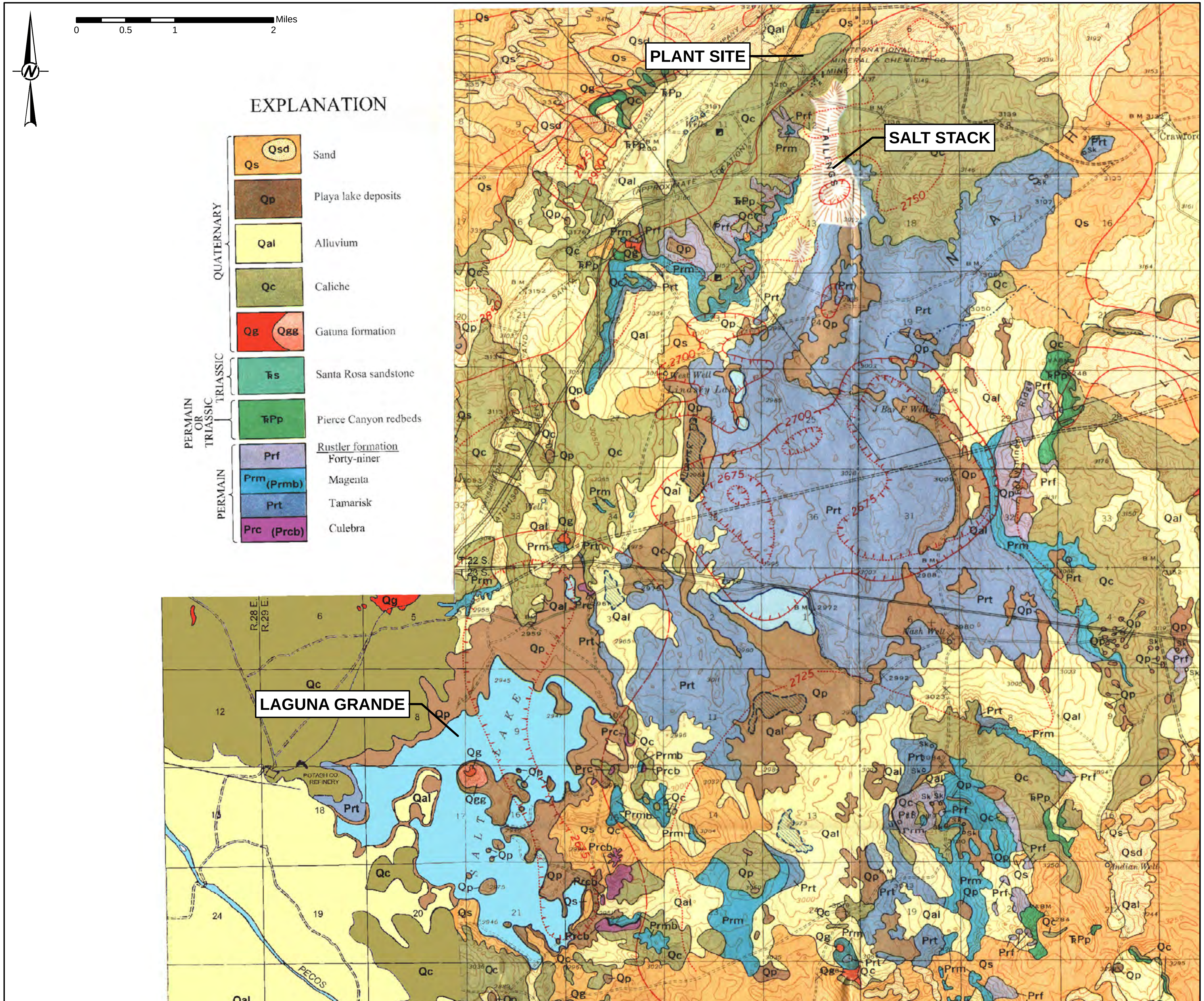
WSP GOLDER

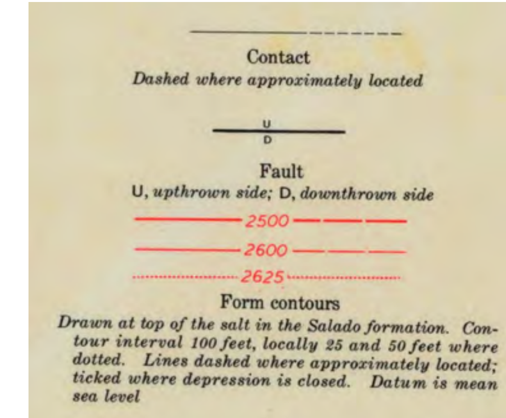
YYYY-MM-DD	2022-03-18
DESIGNED	TS
PREPARED	RHG
REVIEWED	-
APPROVED	-

PROJECT NO. 21502059

FIGURE 3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B





REFERENCES

1. VINE, J.D., 1963, SURFACE GEOLOGY OF THE NASH DRAW QUADRANGLE, EDDY COUNTY, NEW MEXICO: U.S. GEOLOGICAL SURVEY, BULLETIN 1141-B, SCALE 1:62,500.
2. ROBINSON, T.W., AND LANG, W.B., 1938, GEOLOGY AND GROUND-WATER CONDITIONS OF THE PECOS RIVER VALLEY IN THE VICINITY OF LAGUNA GRANDE DE LA SAL, NEW MEXICO: NEW MEXICO STATE ENGINEER OFFICE 12TH AND 13TH BIENNIAL REPORT, 1934-1938.

CLIENT
MOSAIC POTASH CARLSBAD, INC.

PROJECT
MOSAIC POTASH MINE
STAGE 1 ABATEMENT PLAN PROPOSAL

TITLE
NASH DRAW SURFACE GEOLOGY

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-03-18
DESIGNED	TS
PREPARED	RHG
REVIEWED	-
APPROVED	-

PROJECT NO.
21502059

FIGURE
4

Aeolian Sands and Playa Lake Deposits		Quaternary	Aeolian sands are thickest along the Pecos River and form a low berm over the Gatuna between the river and Laguna Grande. The playa lake deposits are fine-grained sediments with low permeability and are often intermixed with salt deposits.
Caliche	Gatuna Formation	Quaternary	Caliche is consistently found at the top of the Gatuna as a replacement of Gatuna sediments. Thickness varies in Nash Draw is typically between five and six feet. Caliche thickness may be significantly greater locally, particularly over relict sink hole deposits.
Conglomerate	Gatuna Formation	Quaternary	Cobbles, up to six inches, are matrix supported, well-rounded clasts of chert, quartzite and the underlying Permian units. Conglomerate appears to be concentrated near the top of the Gatuna, but not sufficiently continuous to be mapped aerially across the site.
Mixture of Sands, Silts, and Clays	Gatuna Formation	Quaternary	Unconsolidated sands, silts and clays are present in several boreholes beneath the caliche and conglomerate units (where present).
Sandstone, Siltstone, and Claystone	Gatuna Formation	Quaternary	Reddish-orange friable sandstone, siltstone, but locally includes gypsum, gray shale, and claystone.
Dewey Lake Red Beds	Dewey Lake Formation	Permian	The Dewey Lake Formation consists of thin-bedded, fine-grained, red sandstone, probably from a fluvial (river) source indicative of the end of basin deposition.
Forty-Niner Member	Rustler Formation	Permian	Massive gypsum or anhydrite with silt interbeds. In the Nash Draw area the Fortyniner is nearly everywhere removed by surface erosion or solution.
Magenta Dolomite	Rustler Formation	Permian	Consists of varigated greenish- to reddish-gray platy dolomite. Where present in the Nash Draw area, it is everywhere higher than the water table.
Tamarisk Gypsum	Rustler Formation	Permian	Underlies much of the floor of Nash Draw, but doesn't appear to be present in the area between Laguna Grande and the Pecos River.
Culebra Dolomite	Rustler Formation	Permian	Underlies the Gatuna Formation under much of Nash Draw adjacent to Laguna Grande. Fine-grained dolomite mud interbedded with primary breccia zones.
Los Medanos (Lower Rustler) Member	Rustler Formation	Permian	Silty sandstone overlain by interbedded silt and gypsum.

Notes: Unit descriptions based in part from: (Vail, 2012) Geologic Relationships Between the Laguna Grande Evaporation Pond and the Pecos River, Eddy County, New Mexico and Potential for Groundwater Impacts. For Mosaic Potash Carlsbad Inc. January; and (Vail, 2014) Geology and Hydrology of the Rustler Formation (Permian)in Nash Draw, Eddy County, NM. April.

PROJECT

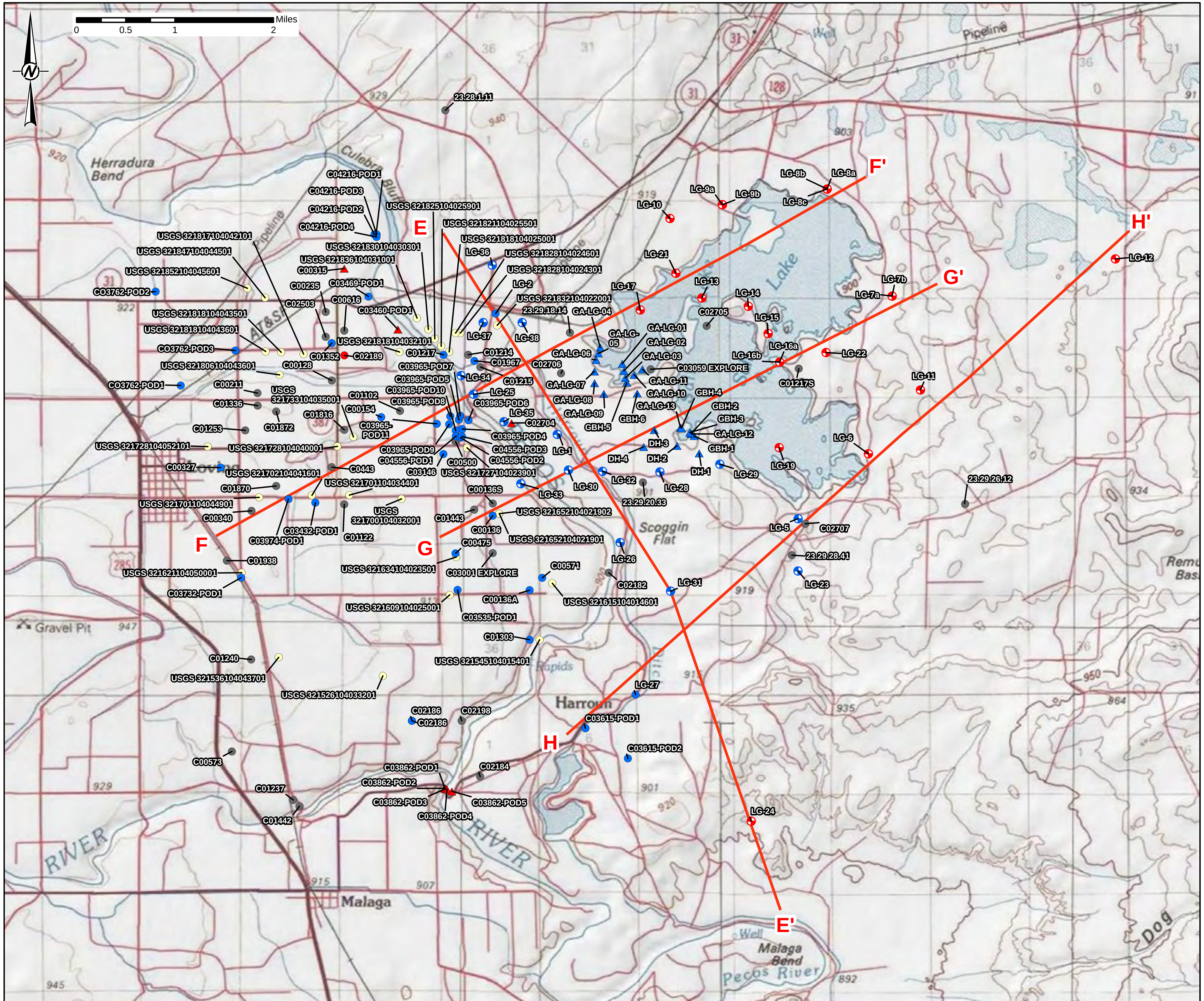
MOSAIC POTASH CARLSBAD INC.
STAGE 1 ABATEMENT PLAN PROPOSAL
CARLSBAD, NEW MEXICO

WSP GOLDER

TITLE

SHALLOW STRATIGRAPHIC UNITS IN THE NASH DRAW AREA

AUTHOR	CHECKED	REVIEWED	DATE	SCALE	JOB NO.	DWG NO.	SUBTITLE	REV. NO.	FIGURE
TS			02-23-22	NA	21502059	NA	NA	A	5



LEGEND

- NEW HYDROGEOLOGIC CROSS-SECTION
- MOSAIC MONITORING WELL/PIEZOMETER (EXISTING)
- MOSAIC MONITORING WELL (PLUGGED AND ABANDONED)
- MONITORING/PUMPING WELL (OTHERS - EXISTING)
- MONITORING/PUMPING WELL (OTHERS - PLUGGED AND ABANDONED)
- MONITORING/PUMPING WELL (OTHERS - INACTIVE)
- MONITORING/PUMPING WELL (OTHERS -UNKNOWN STATUS)
- SOIL BORING (MOSAIC)
- SOIL BORING (OTHERS)

REFERENCES

1. TOPOGRAPHIC BACKGROUND: ESRI BASEMAP SERVICES. USGS 1:24,000 TOPOGRAPHIC QUADRANGLES SHOWN: LOVING, REMUDA BASIN, MALAGA, AND PIERCE CANYON.

CLIENT
MOSAIC POTASH CARLSBAD, INC.

PROJECT
MOSAIC POTASH MINE
STAGE 1 ABATEMENT PLAN PROPOSAL

TITLE
WELLS, PIEZOMETERS, AND SOIL BORINGS WITHIN THE SITE AREA

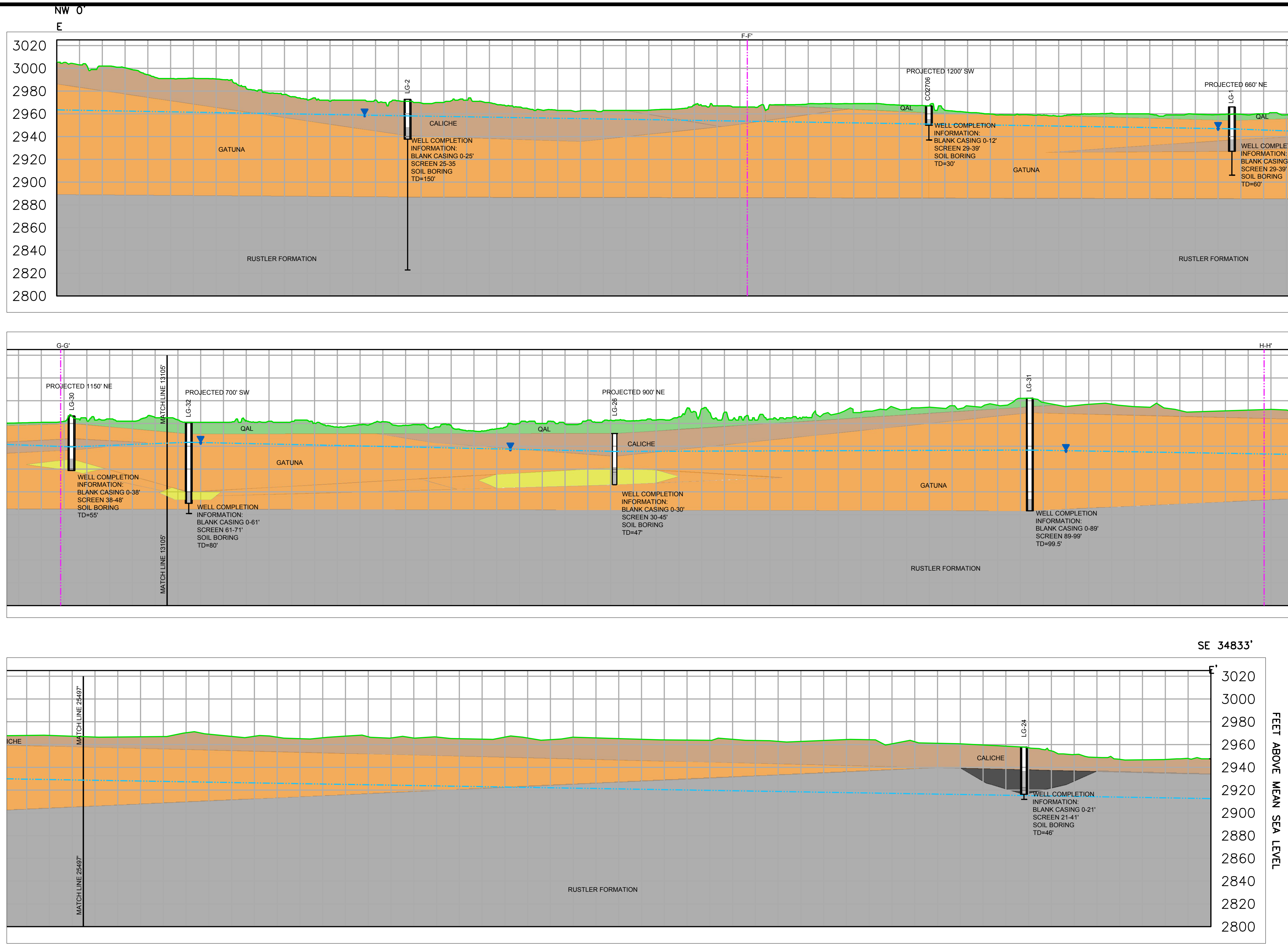
CONSULTANT

WSP GOLDER

YYYY-MM-DD	2022-03-18
DESIGNED	TS
PREPARED	RHG
REVIEWED	-
APPROVED	-

PROJECT NO.
21502059

FIGURE
6



LEGEND

QAL	RECENT ALLUVIUM, AEOLIAN SANDS, LACUSTRINE SILTS AND CLAYS
CALICHE	CALICHE
GATUNA	UNCONSOLIDATED SILT AND CLAY WITH MINOR SAND (GATUNA FORMATION) ALSO INCLUDES LOCALIZED SANDSTONE, SILTSTONE AND MUDSTONE
CONGLOMERATE	CONGLOMERATE
RUSTLER FORMATION	RUSTLER FORMATION CULEBRA MEMBER
RUSTLER FORMATION	LOWER RUSTLER FORMATION
TD	TOTAL DEPTH (FEET BGS)
BGS	BELOW GROUND SURFACE
(line with ▼)	MEASURED WATER LEVEL (APRIL 2019) AND PROJECTED POTENTIOMETRIC SURFACE

BLANK CASING

SCREEN INTERVAL

TOTAL DEPTH

BORING

NOTES

1. SURFACE TOPOGRAPHY BASED ON 2009 LIDAR SURVEY AND USGS TOPOGRAPHY OUTSIDE LIDAR SURVEY LIMITS

0 500 1000 1500
HORIZONTAL SCALE FEET

0 50 100 150
VERTICAL SCALE FEET

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
0	8/16/19	FINAL	TS	SB	EC	TS
B	8/12/19	CLIENT COMMENTS	TS	SB	EC	TS
A	2/23/22	DRAFT FOR REVIEW	TS	SB	EC	TS

PROJECT
MOSAIC POTASH CARLSBAD INC.
STAGE 1 ABATEMENT PLAN PROPOSAL
CARLSBAD, NEW MEXICO

TITLE

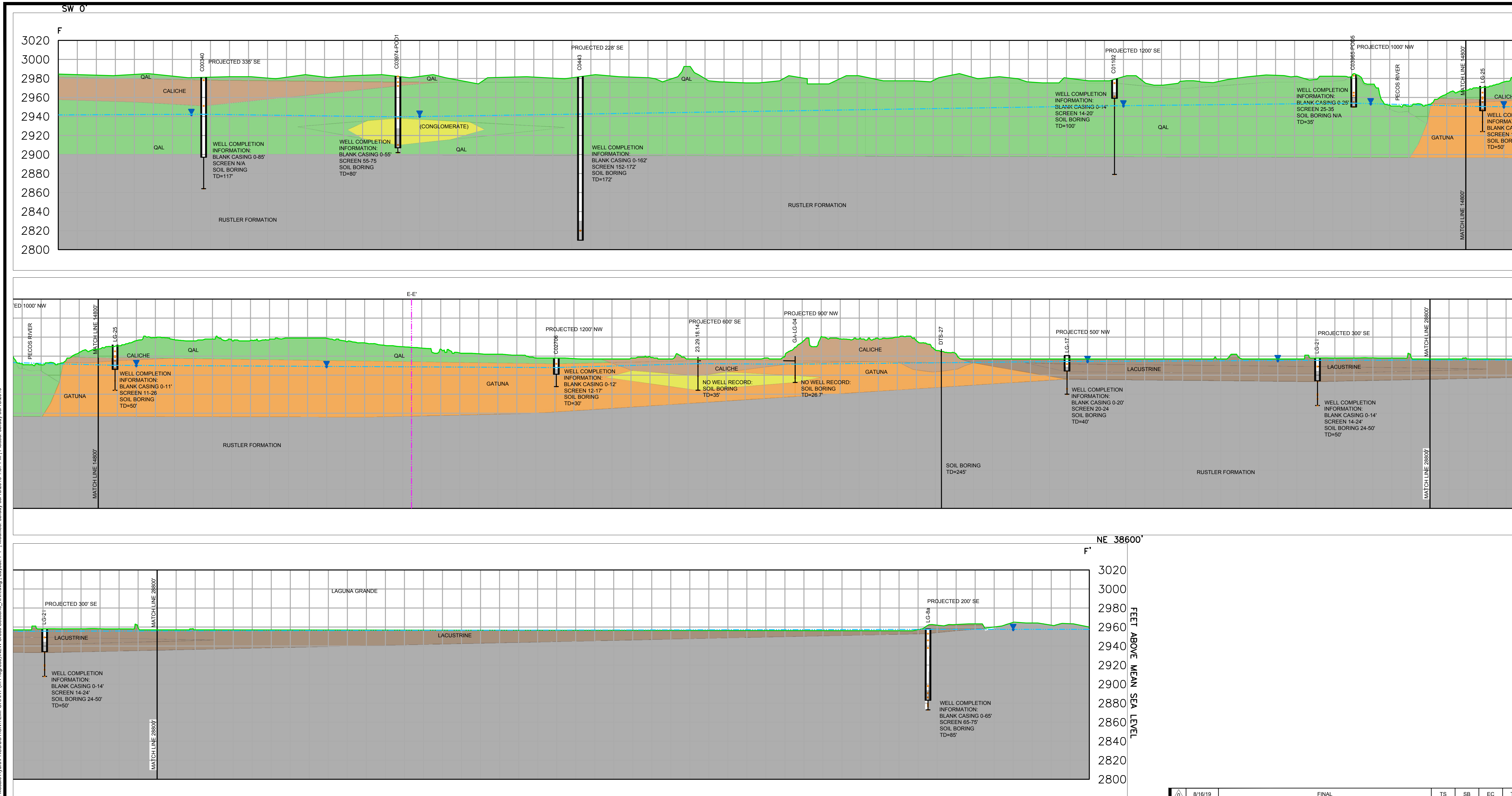
HYDROGEOLOGIC CROSS SECTION E-E'

WSP GOLDER

PROJECT No.		21502059
DESIGN	TS	8/16/19
CADD	SB	8/16/19
CHECK	EC	8/16/19
REVIEW	TS	2/23/22

FILE No. NEW Cross Sections_KRK
SCALE AS SHOWN
DRAWING

FIGURE 7



LEGEND

QAL	RECENT ALLUVIUM, AEOLIAN SANDS, LACUSTRINE SILTS AND CLAYS
LACUSTRINE	UNDIFFERENTIATED LACUSTRINE, LAKE BOTTOM/SALT
CALICHE	CALICHE
GATUNA	UNCONSOLIDATED SILT AND CLAY WITH MINOR SAND (GATUNA FORMATION) ALSO INCLUDES LOCALIZED SANDSTONE, SILTSTONE AND MUDSTONE
CONGLOMERATE	CONGLOMERATE
RUSTLER FORMATION	LOWER RUSTLER FORMATION
TD	TOTAL DEPTH (FEET BGS)
BGS	BELOW GROUND SURFACE
(water level symbol)	MEASURED WATER LEVEL (APRIL 2019) AND PROJECTED POTENTIOMETRIC SURFACE

BLANK CASING
SCREEN INTERVAL
TOTAL DEPTH
BORING

NOTES

1. SURFACE TOPOGRAPHY BASED ON 2009 LIDAR SURVEY AND USGS TOPOGRAPHY OUTSIDE LIDAR SURVEY LIMITS

0 500 1000 1500
HORIZONTAL SCALE FEET

0 50 100 150
VERTICAL SCALE FEET

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
0	8/16/19	FINAL	TS	SB	EC	TS
B	8/12/19	CLIENT COMMENTS	TS	SB	EC	TS
A	7/17/19	DRAFT FOR REVIEW	TS	SB	EC	TS

PROJECT
MOSAIC POTASH CARLSBAD INC.
STAGE 1 ABATEMENT PLAN PROPOSAL
CARLSBAD, NEW MEXICO

TITLE

HYDROGEOLOGIC CROSS SECTION F-F'

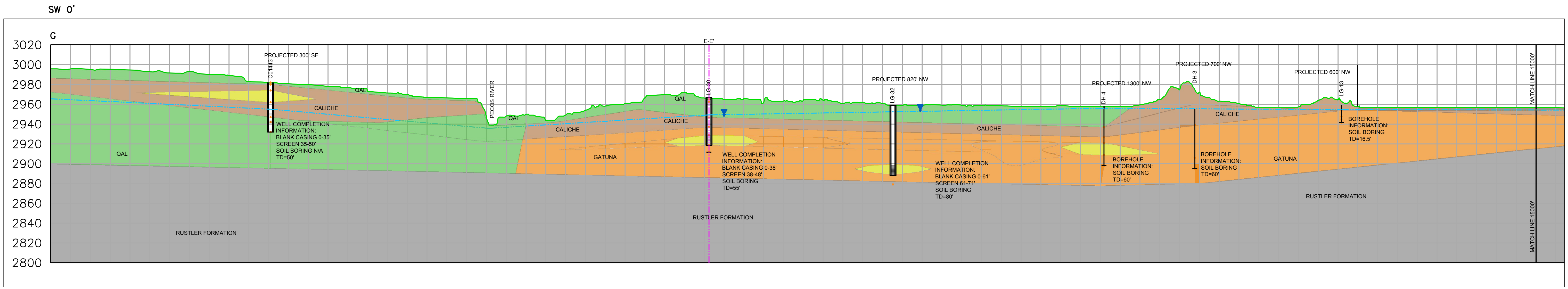
PROJECT No.		21502059
DESIGN	TS	8/16/19
CADD	SB	8/16/19
CHECK	EC	8/16/19
REVIEW	TS	2/23/22

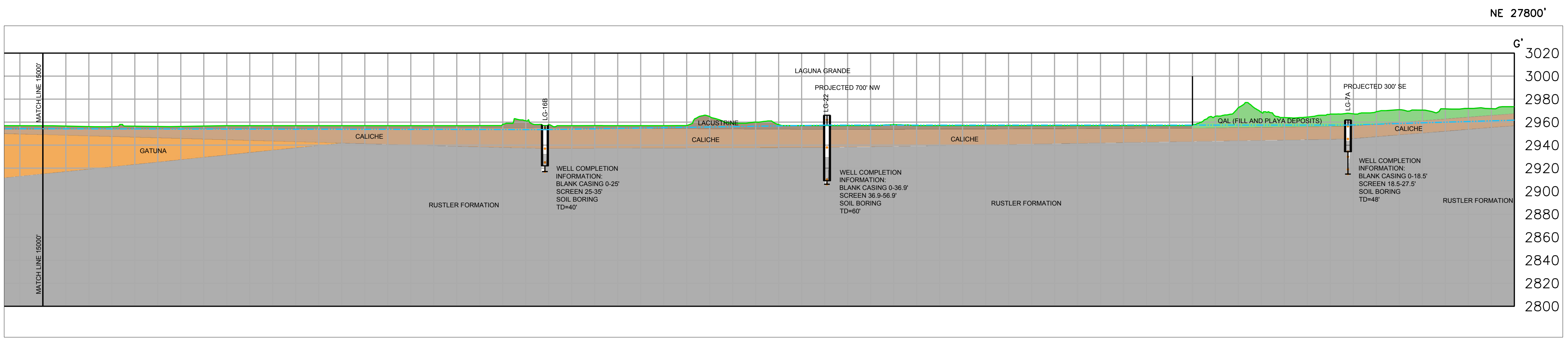
FILE No. NEW Cross Sections_KRK
SCALE AS SHOWN
DRAWING

WSP GOLDER

FIGURE 8

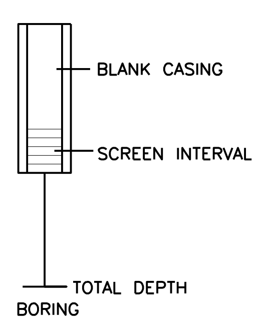
G:\Plan Production Data Files\Albuquerque_CAD Support\CAD\2013 Projects\130-1512 Mosaic Hydro\PRODUCTION\TEMPORARY (In Progress)\NEW Cross Sections_KRK.dwg | Layout: F-F' | Modified: sbrady 08/13/2019 1:37 PM | Plotted: sbrady 08/13/2019





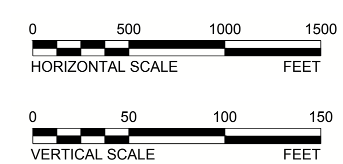
LEGEND

QAL	RECENT ALLUVIUM, AEOLIAN SANDS, LACUSTRINE SILTS AND CLAYS
LACUSTRINE	UNDIFFERENTIATED LACUSTRINE, LAKE BOTTOM SALT
CALICHE	CALICHE
GATUNA	UNCONSOLIDATED SILT AND CLAY WITH MINOR SAND (GATUNA FORMATION) ALSO INCLUDES LOCALIZED SANDSTONE, SILTSTONE AND MUDSTONE
CONGLOMERATE	CONGLOMERATE
RUSTLER FORMATION	LOWER RUSTLER FORMATION
TD	TOTAL DEPTH (FEET BGS)
BGS	BELOW GROUND SURFACE
(water level symbol)	MEASURED WATER LEVEL (APRIL 2019) AND PROJECTED POTENTIOMETRIC SURFACE



NOTES

1. SURFACE TOPOGRAPHY BASED ON 2009 LIDAR SURVEY AND USGS TOPOGRAPHY OUTSIDE LIDAR SURVEY LIMITS



REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
0	8/16/19	FINAL	TS	SB	EC	TS
B	8/12/19	CLIENT COMMENTS	TS	SB	EC	TS
A	7/17/19	DRAFT FOR REVIEW	TS	SB	EC	TS

PROJECT

MOSAIC POTASH CARLSBAD INC.
STAGE 1 ABATEMENT PLAN PROPOSAL
CARLSBAD, NEW MEXICO

TITLE

HYDROGEOLOGIC CROSS SECTION G-G'

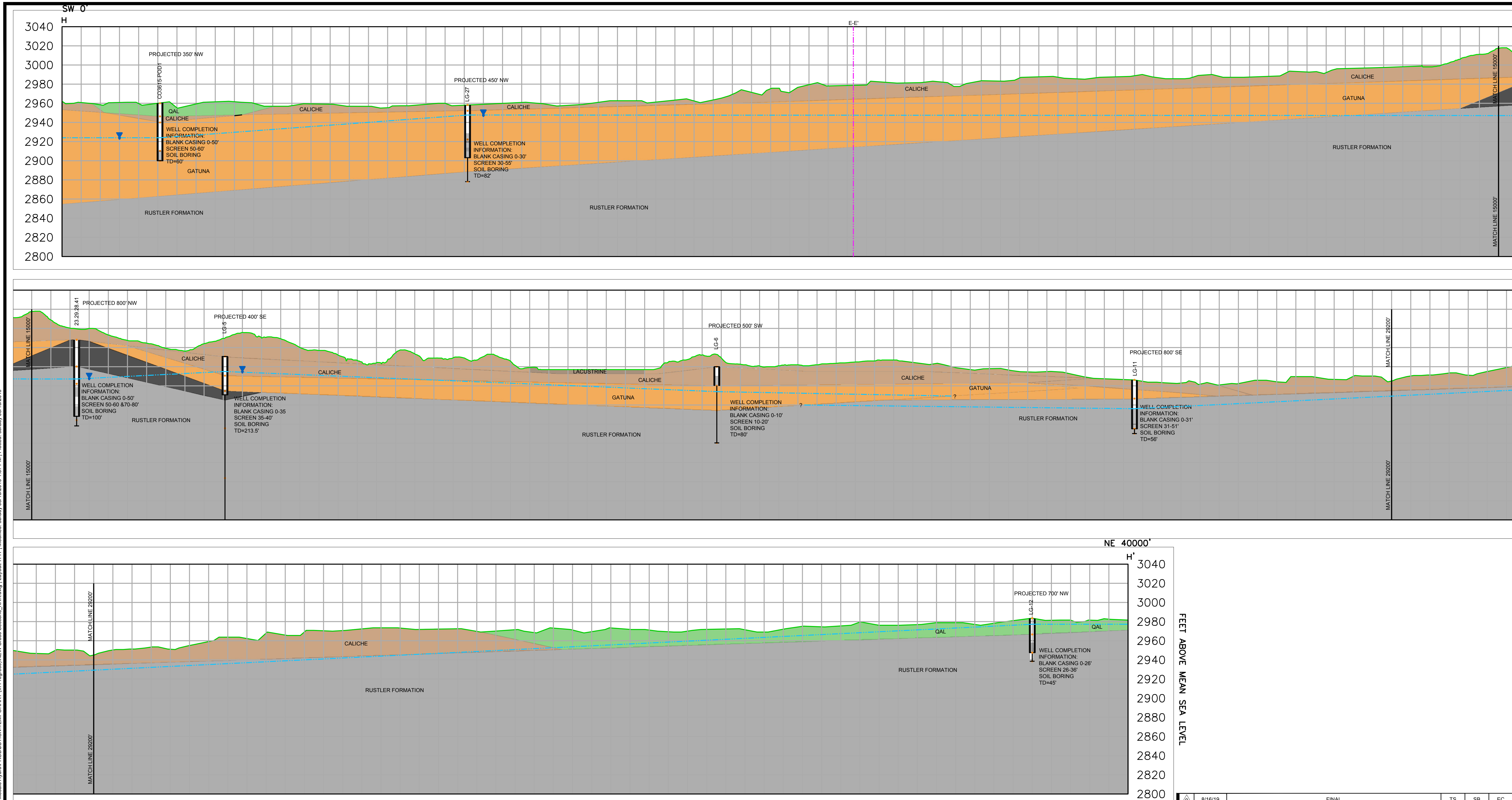
WSP GOLDER

PROJECT No.		21502059
DESIGN	TS	8/16/19
CADD	SB	8/16/19
CHECK	EC	8/16/19
REVIEW	TS	2/23/22

FILE No. NEW Cross Sections_KRK
SCALE AS SHOWN
DRAWING

FIGURE 9

G:\Plan Production Data Files\Albuquerque_CAD Support\CAD\2013 Projects\130-1512 Mosaic Hydro\PRODUCTION\TEMPORARY (In Progress)\NEW Cross Sections_KRK.dwg | Layout: G-G' | Modified: sbrady 08/13/2019 1:37 PM | Plotted: sbrady 08/13/2019



LEGEND

QAL	RECENT ALLUVIUM, AEOLIAN SANDS, LACUSTRINE SILTS AND CLAYS
LACUSTRINE	UNDIFFERENTIATED LACUSTRINE, LAKE BOTTOM/SALT
CALICHE	CALICHE
GATUNA	UNCONSOLIDATED SILT AND CLAY WITH MINOR SAND (GATUNA FORMATION) ALSO INCLUDES LOCALIZED SANDSTONE, SILTSTONE AND MUDSTONE
CONGLOMERATE	CONGLOMERATE
RUSTLER FORMATION	RUSTLER FORMATION– CULEBRA MEMBER
RUSTLER FORMATION	LOWER RUSTLER FORMATION
TD	TOTAL DEPTH (FEET BGS)
BGS	BELOW GROUND SURFACE
	MEASURED WATER LEVEL (APRIL 2019) AND PROJECTED POTENTIOMETRIC SURFACE

BLANK CASING

SCREEN INTERVAL

TOTAL DEPTH

BORING

NOTES

1. SURFACE TOPOGRAPHY BASED ON 2009 LIDAR SURVEY AND USGS TOPOGRAPHY OUTSIDE LIDAR SURVEY LIMITS

0 500 1000 1500
HORIZONTAL SCALE FEET

0 50 100 150
VERTICAL SCALE FEET

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
0	8/16/19	FINAL	TS	SB	EC	TS
B	8/12/19	CLIENT COMMENTS	TS	SB	EC	TS
A	2/23/22	DRAFT FOR REVIEW	TS	SB	EC	TS

PROJECT

MOSAIC POTASH CARLSBAD INC.
STAGE 1 ABATEMENT PLAN PROPOSAL
CARLSBAD, NEW MEXICO

TITLE

HYDROGEOLOGIC CROSS SECTION H-H'

WSP GOLDER

PROJECT No.		21502059
DESIGN	TS	8/16/19
CADD	SB	8/16/19
CHECK	EC	8/16/19
REVIEW	TS	2/23/22

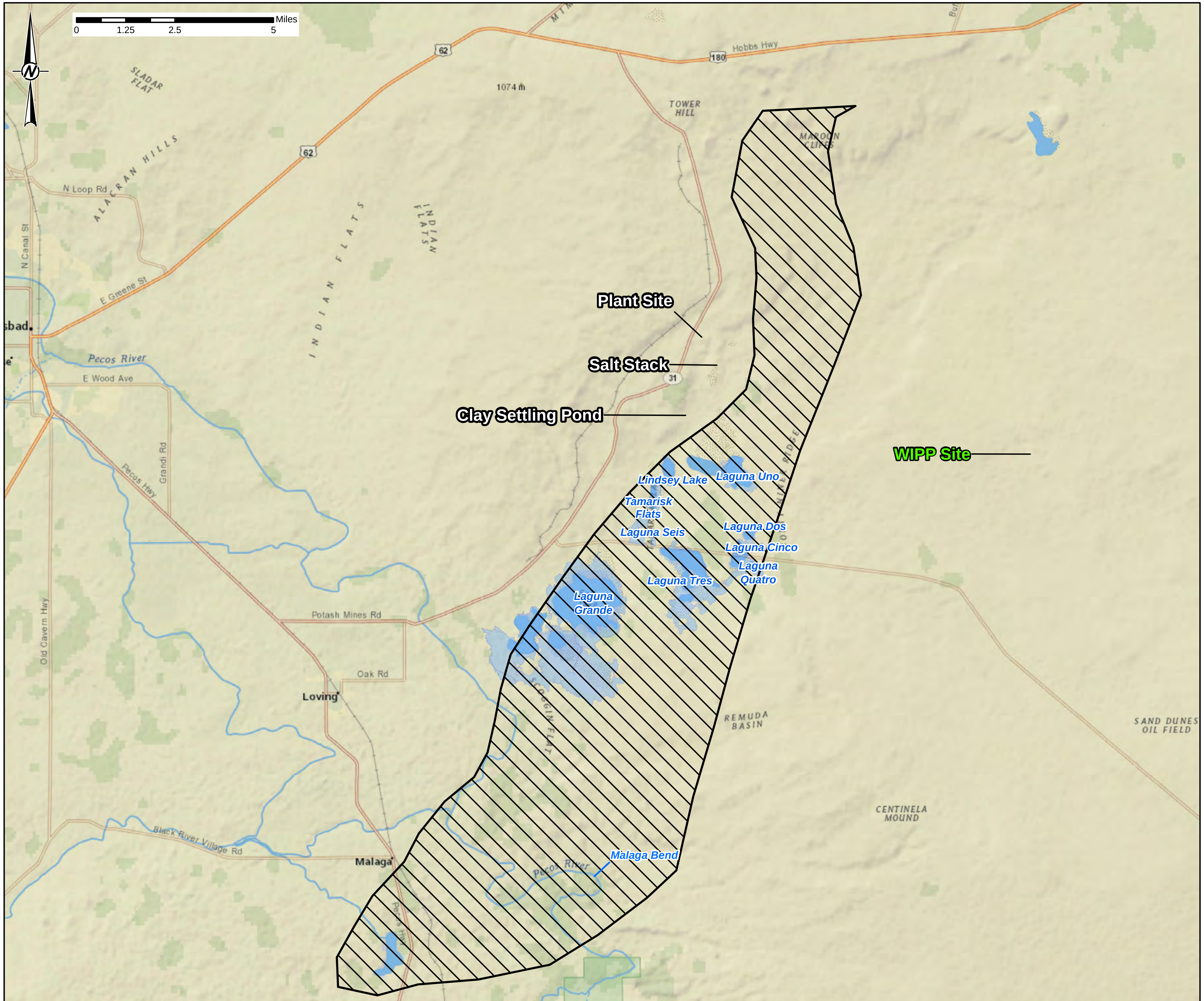
FILE No. NEW Cross Sections_KRK

SCALE AS SHOWN

DRAWING

FIGURE 10

G:\Plan Production Data Files\Albuquerque_CAD Support\CAD\2013 Projects\130-1512 Mosaic Hydro\PRODUCTION\TEMPORARY (In Progress)\NEW Cross Sections_KRK.dwg | Layout: H-H' | Modified: sbrady 08/13/2019 1:37 PM | Plotted: sbrady 08/13/2019



LEGEND

DELINEATED BRINE AQUIFER

LAKES/PLAYAS

REFERENCES

1. BASEMAP: ESRI PROVIDED BASEMAP SERVICE. NATIONAL GEOGRAPHIC BASEMAP SERVICE, 2021.
2. DELINEATED BRINE AQUIFER: FIGURE 6 - GENERAL DISTRIBUTION OF WATER-BEARING FORMATIONS IN THE PROJECT GNOME AREA (COOPER AND GLANZMAN 1971).

CLIENT

MOSAIC POTASH CARLSBAD, INC.

PROJECT

MOSAIC POTASH MINE
STAGE 1 ABATEMENT PLAN PROPOSAL

TITLE

APPROXIMATE EXTENT OF BRINE AQUIFER

CONSULTANT

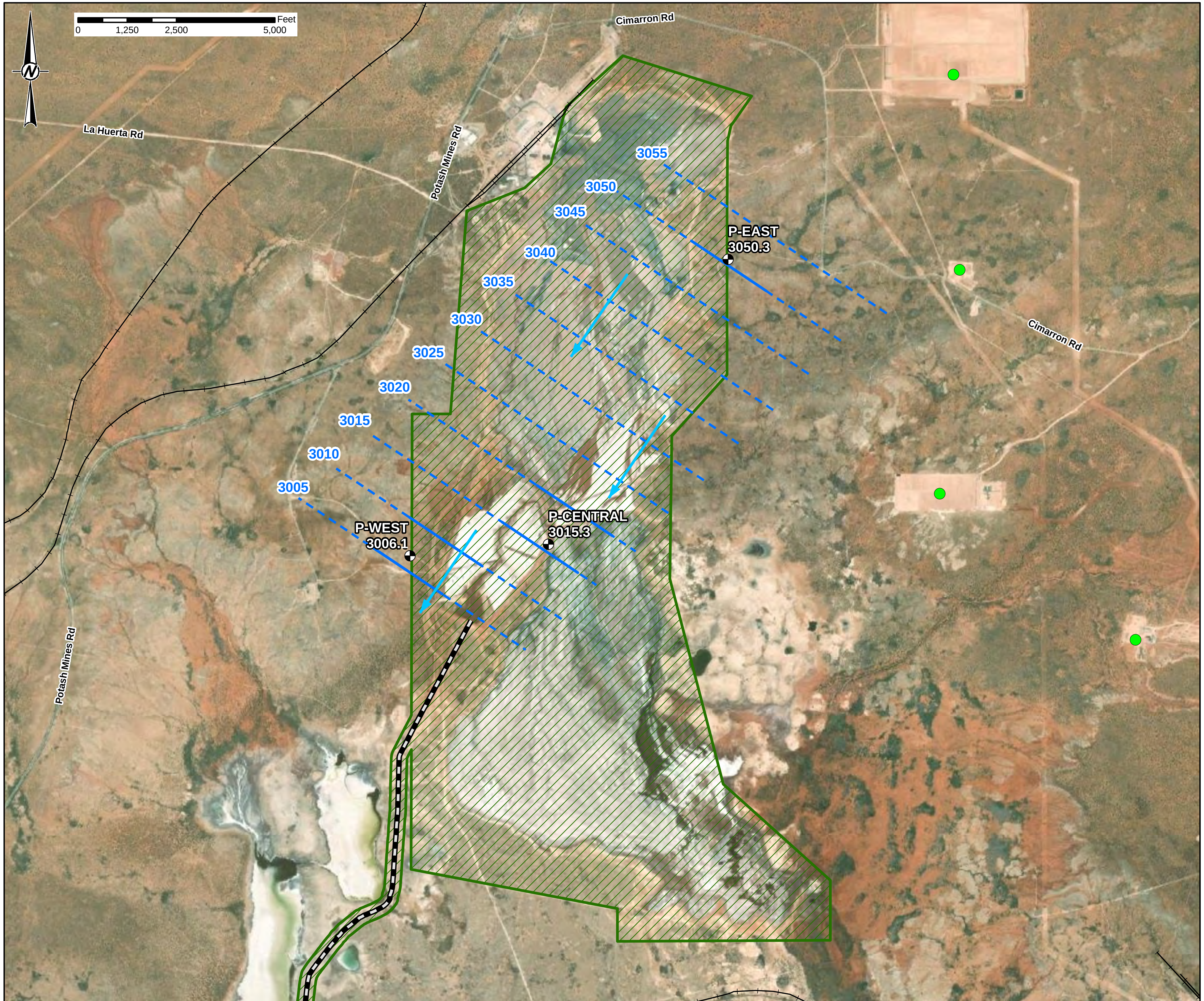
WSP GOLDER

YYYY-MM-DD	2022-03-18
DESIGNED	TS
PREPARED	RHG
REVIEWED	-
APPROVED	-

PROJECT NO.
21502059

FIGURE
11

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



LEGEND

- TAILINGS MANAGEMENT AREA
- BRINE PIPELINE
- RAILROAD
- MOSAIC PIEZOMETER ID
- OIL AND GAS DEVELOPMENT PAD
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION CONTOUR
- (DASHED WHERE INFERRED)

NOTES

1. GROUNDWATER ELEVATIONS MEASURED IN JANUARY, 2022.

REFERENCES

1. BASEMAP: ESRI PROVIDED BASEMAP SERVICE. VIVID. MAXAR. IMAGERY COLLECTED 2020/2021.

CLIENT

MOSAIC POTASH CARLSBAD, INC.

PROJECT

MOSAIC POTASH MINE
STAGE 1 ABATEMENT PLAN PROPOSAL

TITLE

POTENTIOMETRIC SURFACE FIRST QUARTER 2022
SALT STACK AREA

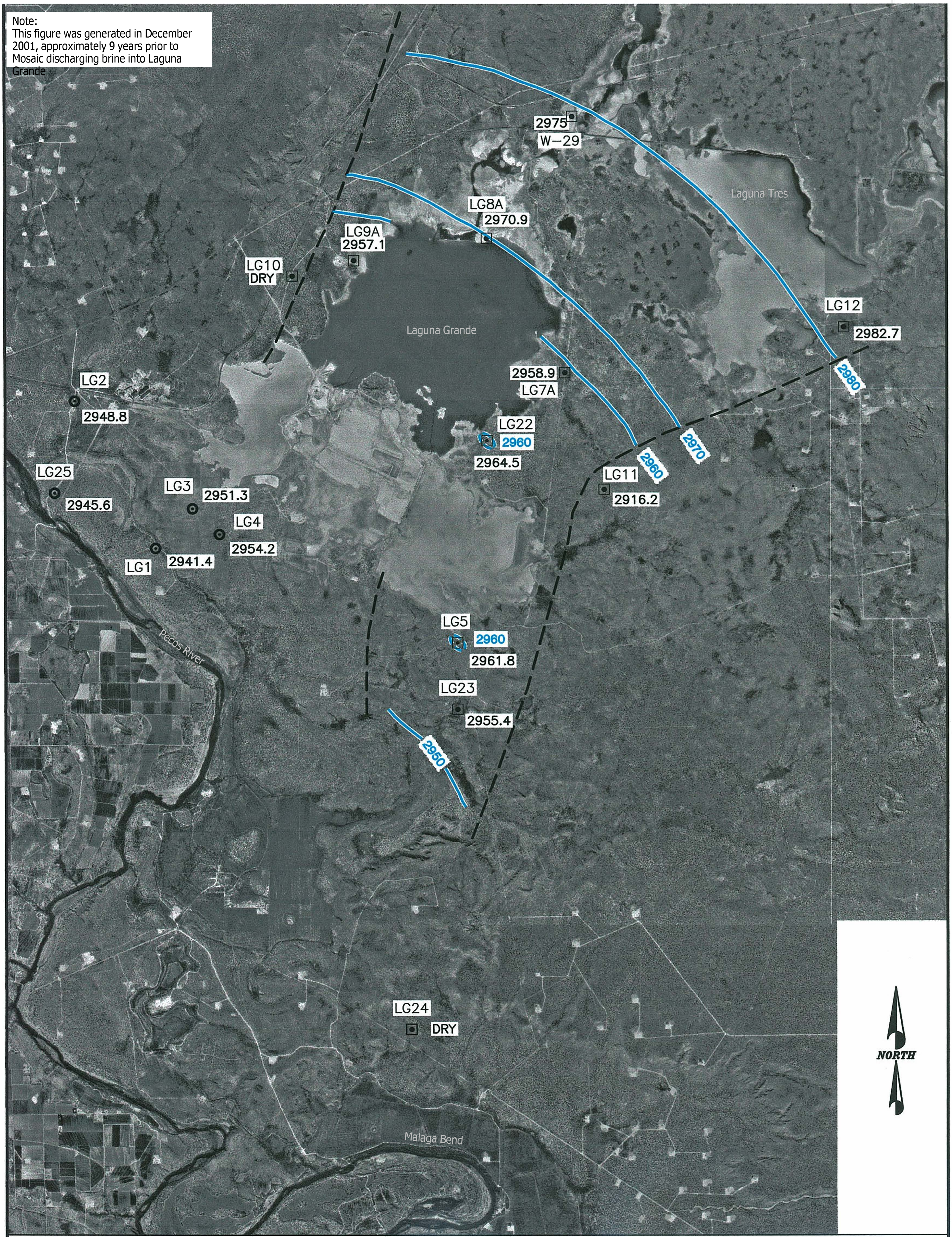
CONSULTANT

WSP GOLDER

YYYY-MM-DD	2022-03-18
DESIGNED	ML
PREPARED	RHG
REVIEWED	TS
APPROVED	TS

PROJECT NO. 21502059

FIGURE 12



Scale in Feet

0 2000 4000 8000

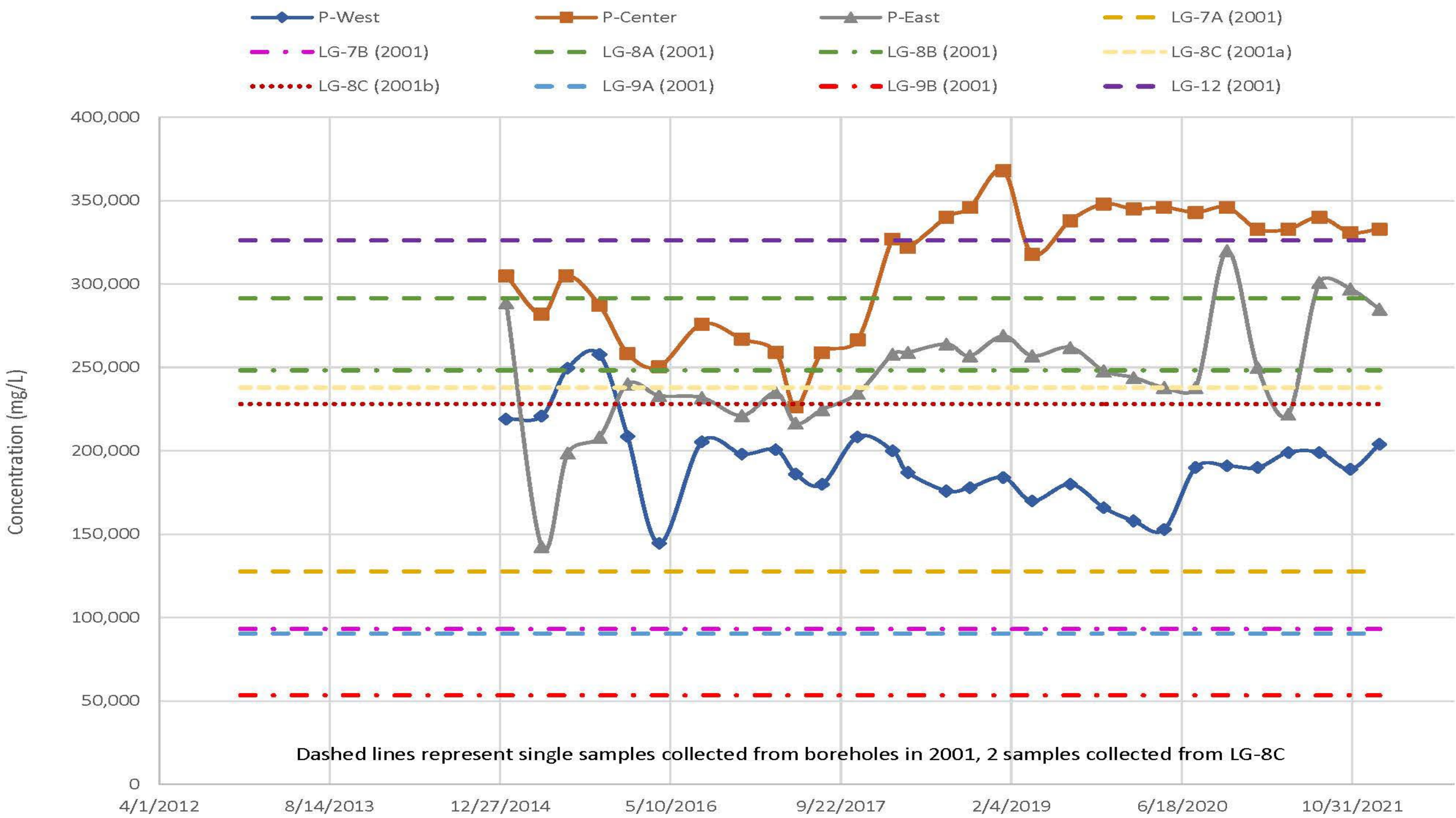
1" = 4000 feet

Figure from the Hydrogeology Baseline Report (Golder 2002)

LEGEND

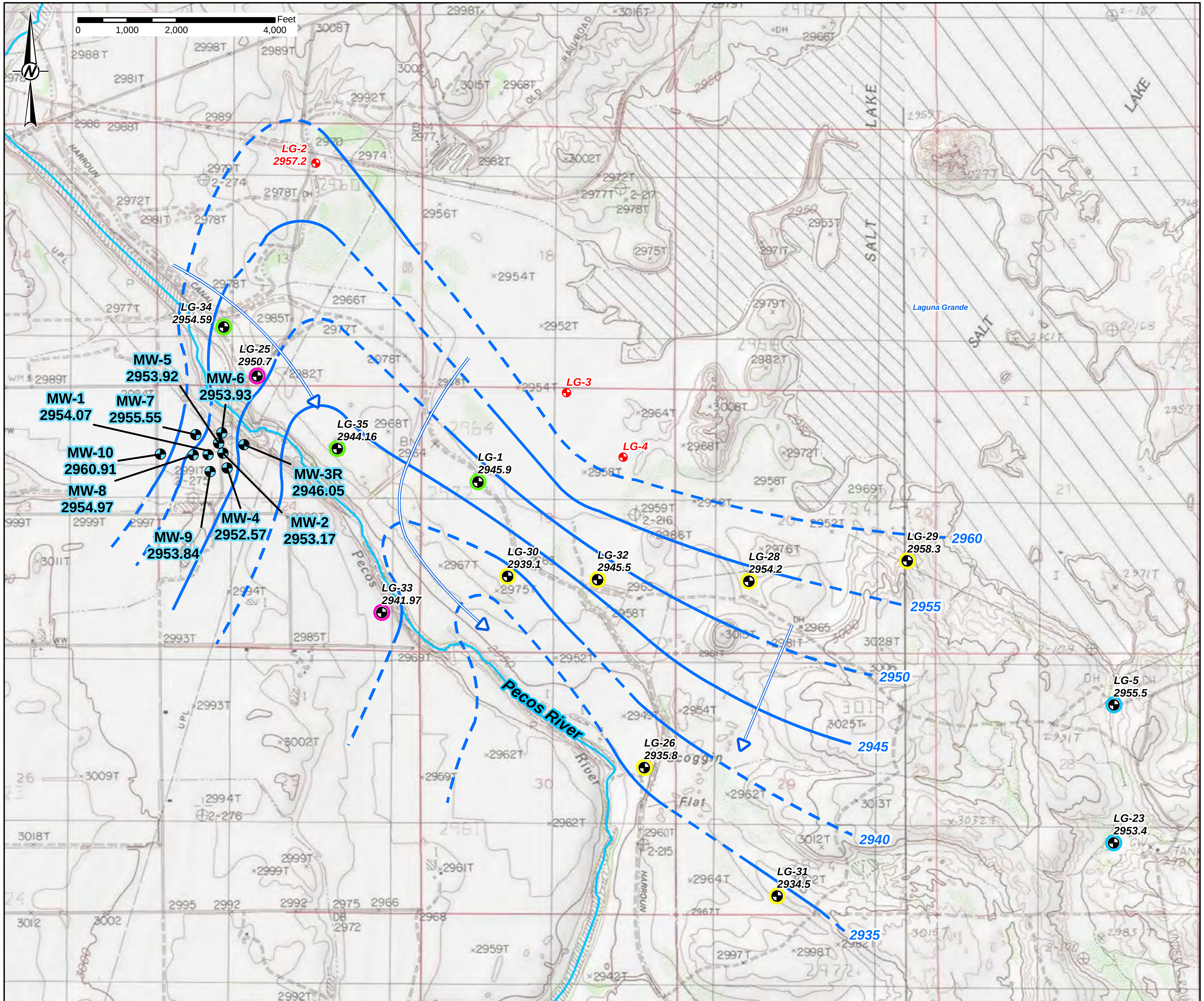
2955.4	ELEVATION OF FRESH WATER LEVELS AS OF 7/25/01 (FOR LG WELLS)
▣	CULEBRA WELLS
⊙	QUATERNARY WELLS
———	POTENTIOMETRIC CONTOUR
— — —	FLOW SYSTEM BOUNDARY

CLIENT/PROJECT						TITLE		
MOSAIC POTASH CARLSBAD INC. STAGE 1 ABATEMENT PLAN PROPOSAL			WSP GOLDER Denver, Colorado			POTENTIOMETRIC SURFACE OF THE CULEBRA DOLOMITE		
DRAWN sfd	CHECKED TS	REVIEWED MWB	DATE MAY 2002	SCALE AS SHOWN	FILE NO. 2214B190.dwg	JOB NO. 21502059	DWG NO./REV.NO. B190	FIGURE 13



PROJECT		TITLE
MOSAIC POTASH CARLSBAD INC. STAGE 1 ABATEMENT PLAN PROPOSAL CARLSBAD, NEW MEXICO	WSP GOLDER	**TDS CONCENTRATIONS IN GROUNDWATER – NORTHERN AND CENTRAL AREAS OF THE SITE**

AUTHOR	CHECKED	REVIEWED	DATE	SCALE	JOB NO.	DWG NO.	SUBTITLE	REV. NO.	FIGURE
EMC	TS		03-15-22	NA	21502059	NA	NA	A	**14**



LEGEND

- GROUNDWATER FLOW DIRECTION
- EQUIVALENT FRESHWATER HEAD ELEVATION CONTOUR
- (DASHED WHERE INFERRED)
- ARCADIS WELLS

MONITORING WELLS WITH OCTOBER 2020 EQUIVALENT FRESHWATER HEAD ELEVATION (WHERE APPLICABLE)

- PRESENT
- CURRENTLY INACCESSIBLE

MONITORING WELLS BY GEOLOGIC UNIT (SEE NOTE 2)

- ALLUVIUM / CALICHE
- CALICHE
- CULEBRA
- GATUNA

NOTE

1. EQUIVALENT FRESHWATER HEAD ELEVATIONS REPORTED IN FEET ABOVE MEAN SEA LEVEL.
2. WELLS LG-5 AND 23 WERE SCREENED IN THE CULEBRA AQUIFER AND WERE NOT USED IN CONTOURING.
3. MONITORING WELLS LG-33, LG-34, AND LG-35 GROUNDWATER ELEVATIONS WERE TAKEN FROM NOVEMBER 2020 AND ALL OTHER WELLS WERE TAKEN FROM OCTOBER 2020.

REFERENCES

1. BASEMAP: USGS 1:24,000 SCALE TOPOGRAPHIC QUADRANGLES: "MALAGA, NM", "PIERCE CANYON, NM", "LOVING, NM", AND "REMUDA BASIN, NM".
2. GROUNDWATER ELEVATION CONTOURS DEVELOPED BY GOLDER ASSOCIATES BASED ON OCTOBER 2020 WELL DATA PROVIDED BY MOSAIC.

CLIENT
MOSAIC POTASH CARLSBAD, INC.

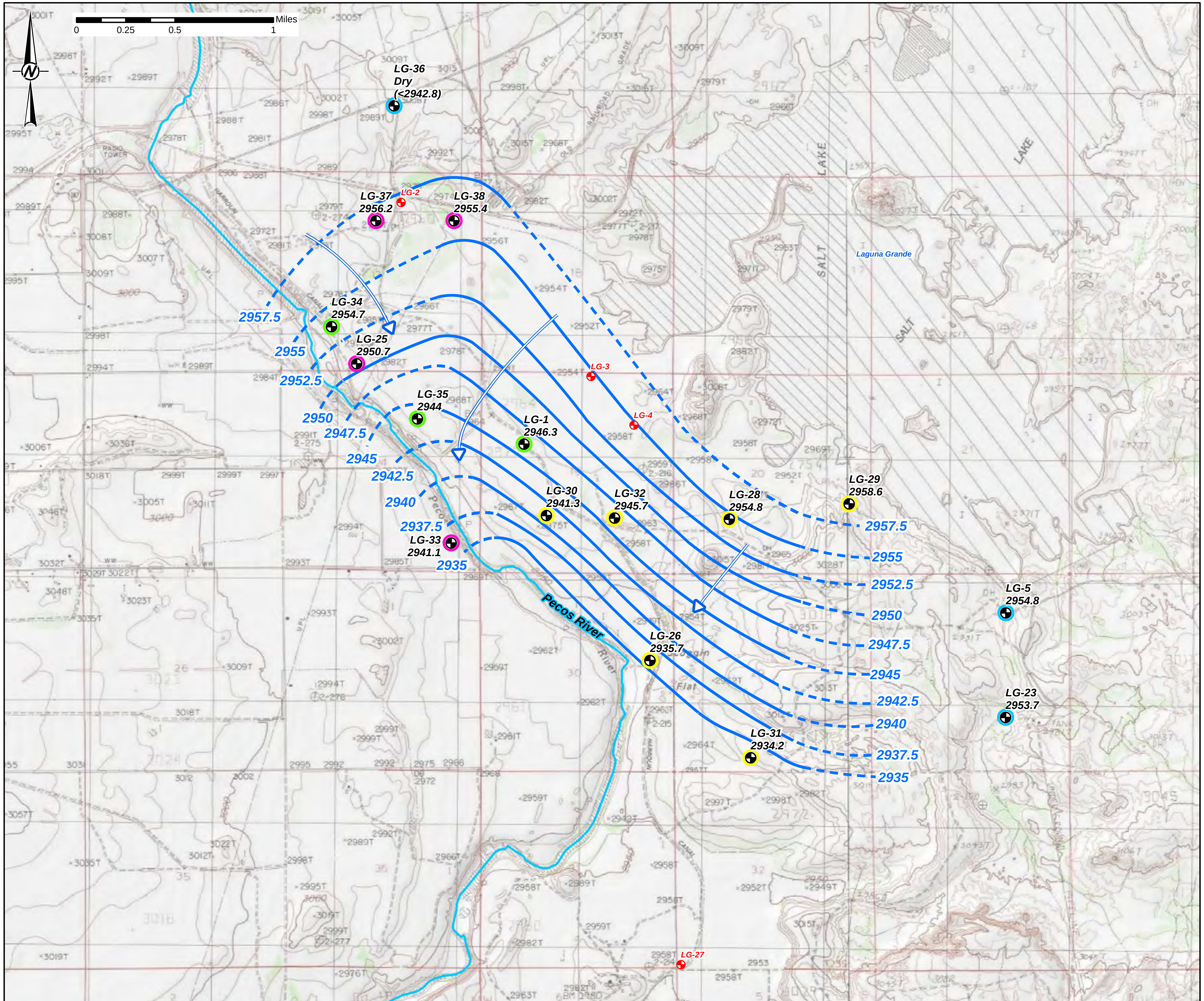
PROJECT
MOSAIC POTASH MINE
STAGE 1 ABATEMENT PLAN PROPOSAL

TITLE
POTENTIOMETRIC SURFACE OCTOBER 2020
SOUTHERN AREA OF THE SITE

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-03-18
DESIGNED	TS
PREPARED	RHG
REVIEWED	-
APPROVED	-

PROJECT NO. 21502059
FIGURE 15



LEGEND

GROUNDWATER FLOW DIRECTION

MONITORING WELLS WITH JANUARY 2022 EQUIVALENT FRESHWATER HEAD ELEVATION (WHERE APPLICABLE)

- PRESENT
- CURRENTLY INACCESSIBLE

MONITORING WELLS BY GEOLOGIC UNIT (SEE NOTE 2)

- ALLUVIUM / CALICHE
- CALICHE
- CULEBRA
- GATUNA

NOTE

1. EQUIVALENT FRESHWATER HEAD ELEVATIONS REPORTED IN FEET ABOVE MEAN SEA LEVEL.
2. WELLS LG-5, LG-23, AND LG -36 WERE SCREENED IN THE CULEBRA AQUIFER AND WERE NOT USED IN CONTOURING.
3. WELL LG-33 IS LOCATED ON THE WEST SIDE OF THE PECOS RIVER, AND WAS NOT USED IN CONTOURING.

REFERENCES

1. BASEMAP: USGS 1:24,000 SCALE TOPOGRAPHIC QUADRANGLES: "MALAGA, NM", "PIERCE CANYON, NM", "LOVING, NM", AND "REMUDA BASIN, NM".
2. GROUNDWATER ELEVATION CONTOURS DEVELOPED BY GOLDER ASSOCIATES BASED ON JANUARY 2022 WELL DATA PROVIDED BY MOSAIC.

CLIENT
MOSAIC POTASH CARLSBAD, INC.

PROJECT
MOSAIC POTASH MINE
STAGE 1 ABATEMENT PLAN PROPOSAL

TITLE
POTENTIOMETRIC SURFACE FIRST QUARTER 2022
SOUTHERN AREA OF THE SITE

CONSULTANT
WSP GOLDER

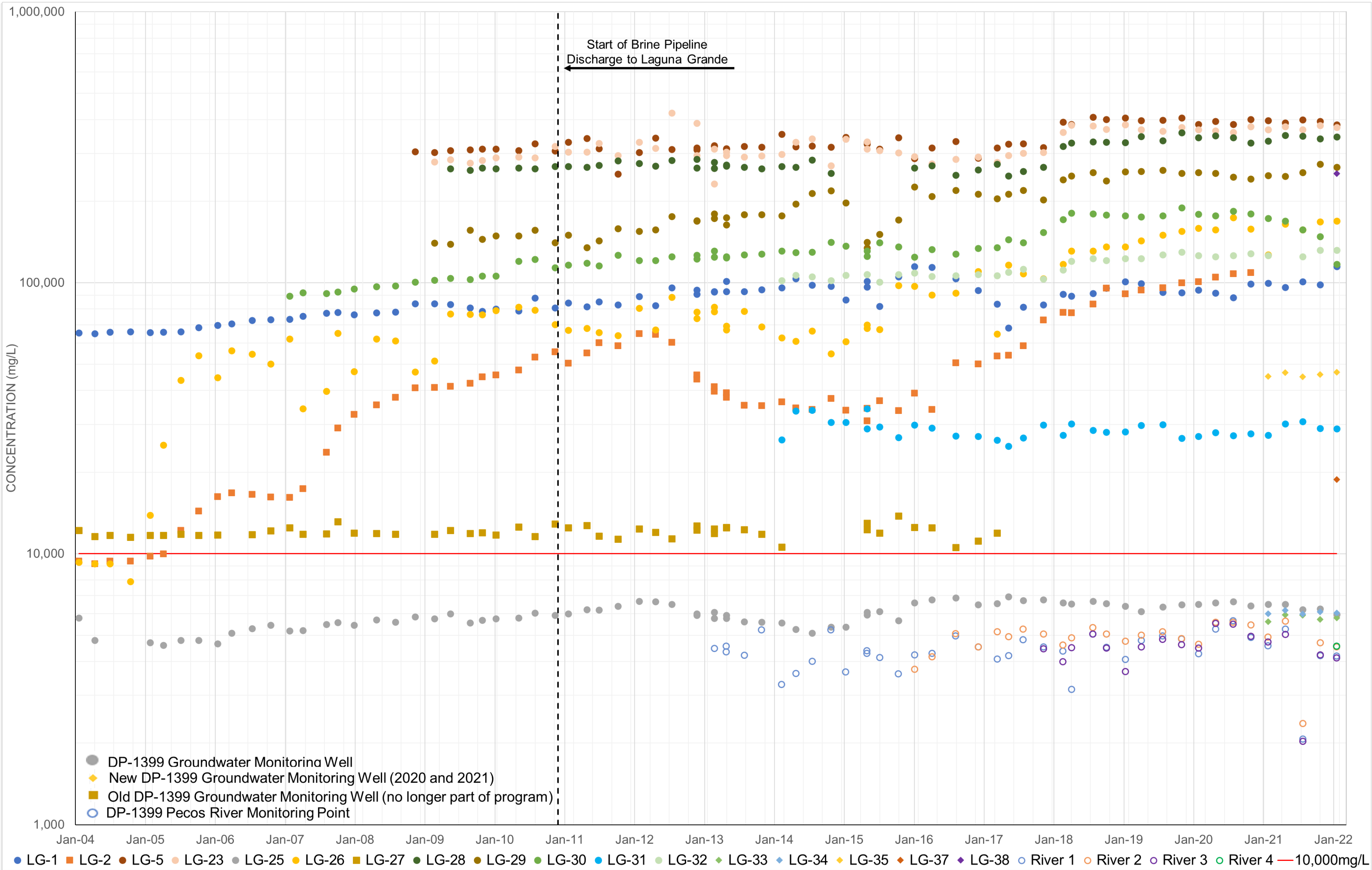
YYYY-MM-DD	2022-03-18
DESIGNED	ML
PREPARED	RHG
REVIEWED	TS
APPROVED	TS

PROJECT NO.
21502059

FIGURE
16

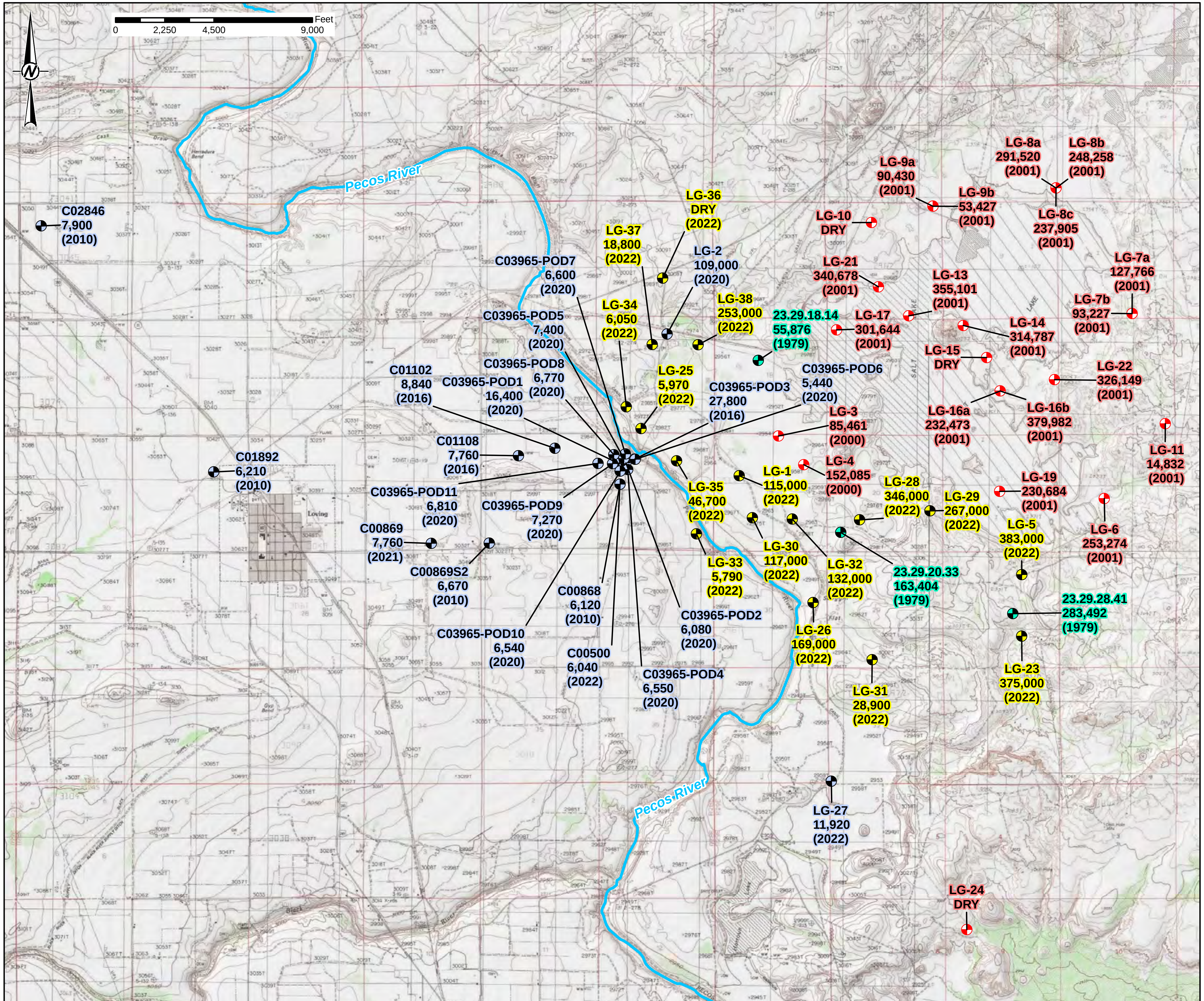
PATH: M:\Mosaic_Stage1_Abatement_2022\11x17_21502059_Mosaic_Stage1APP_Fig16_GWE_Q1_2022.mxd PRINTED ON: 2022-03-18 AT: 11:56:45 AM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



PROJECT		TITLE
MOSAIC POTASH CARLSBAD INC. STAGE 1 ABATEMENT PLAN PROPOSAL CARLSBAD, NEW MEXICO	WSP GOLDER	**TDS CONCENTRATION TRENDS IN GROUNDWATER AND THE PECOS RIVER - SOUTHERN AREA OF THE SITE**

AUTHOR	CHECKED	REVIEWED	DATE	SCALE	JOB NO.	DWG NO.	SUBTITLE	REV. NO.	FIGURE
EMC	TS		03-15-22	NA	21502059	NA	NA	A	17



LEGEND

- BLM WELL ID
  TDS WELL CONCENTRATION mg/L
  (YEAR OF SAMPLE)
- MOSAIC WELL ID
  TDS WELL CONCENTRATION mg/L
  (YEAR OF SAMPLE)
- PRIVATE WELL ID
  TDS WELL CONCENTRATION mg/L
  (YEAR OF SAMPLE)
- MOSAIC MONITORING WELL (PLUGGED AND ABANDONED)
- PECOS RIVER

NOTES

1. C03965-POD WELLS ARE ASSOCIATED WITH AN INVESTIGATION BY CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY OF A PRODUCED WATER RELEASE THAT OCCURRED IN 2014.

REFERENCES

1. TOPOGRAPHIC BACKGROUND: ESRI BASEMAP SERVICES. USGS 1:24,000 TOPOGRAPHIC QUADRANGLES SHOWN: LOVING, REMUDA BASIN, MALAGA, AND PIERCE CANYON.

CLIENT
MOSAIC POTASH CARLSBAD, INC.

PROJECT
MOSAIC POTASH MINE
STAGE 1 ABATEMENT PLAN PROPOSAL

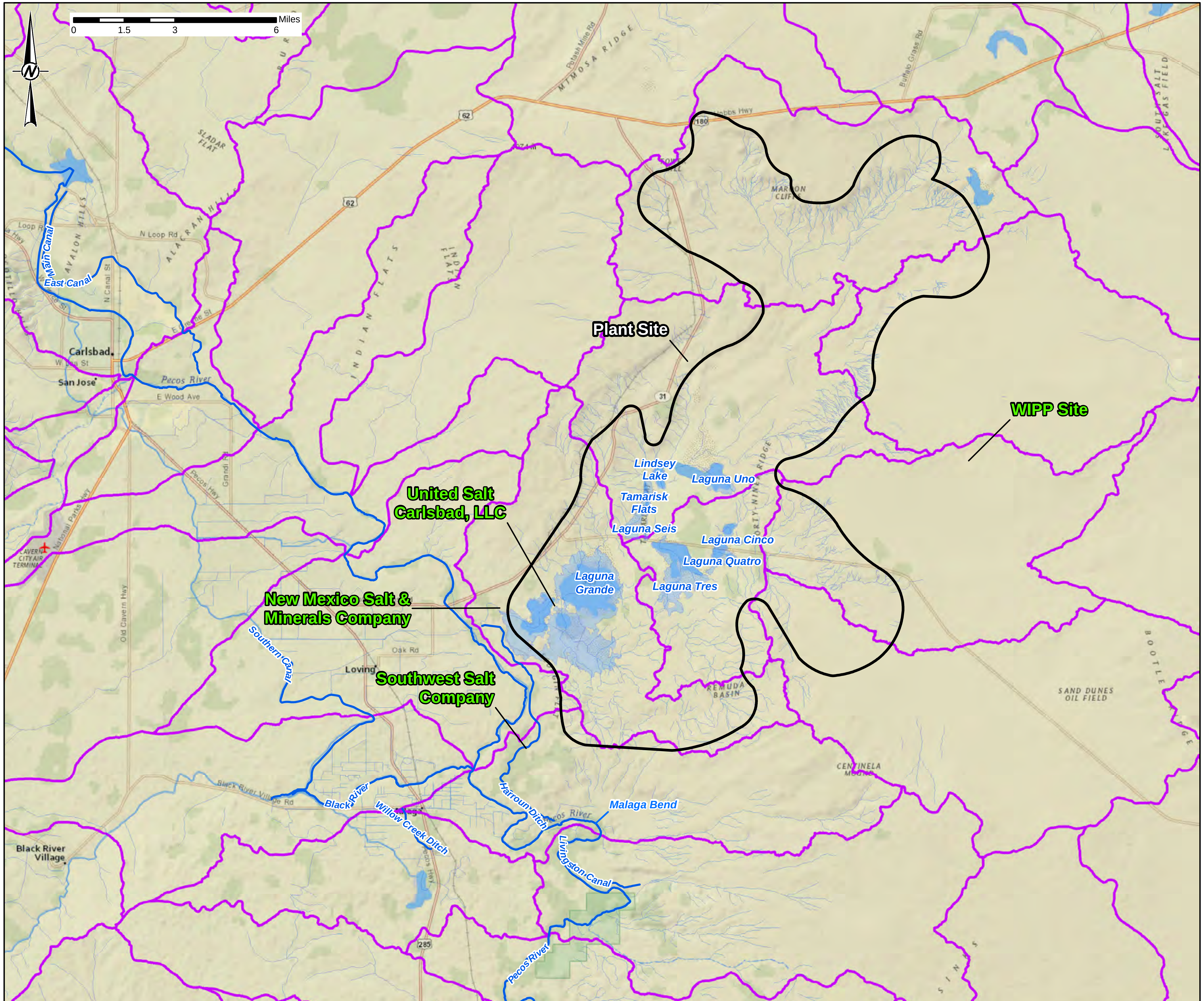
TITLE
WELL LOCATIONS WITH MOST RECENT TDS CONCENTRATIONS - SOUTHERN AREA OF THE SITE

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-03-18
DESIGNED	TS
PREPARED	RHG
REVIEWED	-
APPROVED	-

PROJECT NO.
21502059

FIGURE
18



LEGEND

- NAMED CHANNELS/RIVERS
- DRAINAGES
- LAKES/PLAYAS
- WATERSHED BOUNDARY (HUC12)
- APPROXIMATE NASH DRAW BOUNDARY DELINEATION

REFERENCES

1. BASEMAP: ESRI PROVIDED BASEMAP SERVICE. NATIONAL GEOGRAPHIC BASEMAP SERVICE, 2021.
2. HYDROLOGIC FEATURES: NATIONAL HYDROLOGY DATASET (NHD), USGS.
3. WATERSHEDS: NATIONAL WATERSHED BOUNDARY DATASET (WBD), USGS.

CLIENT
MOSAIC POTASH CARLSBAD, INC.

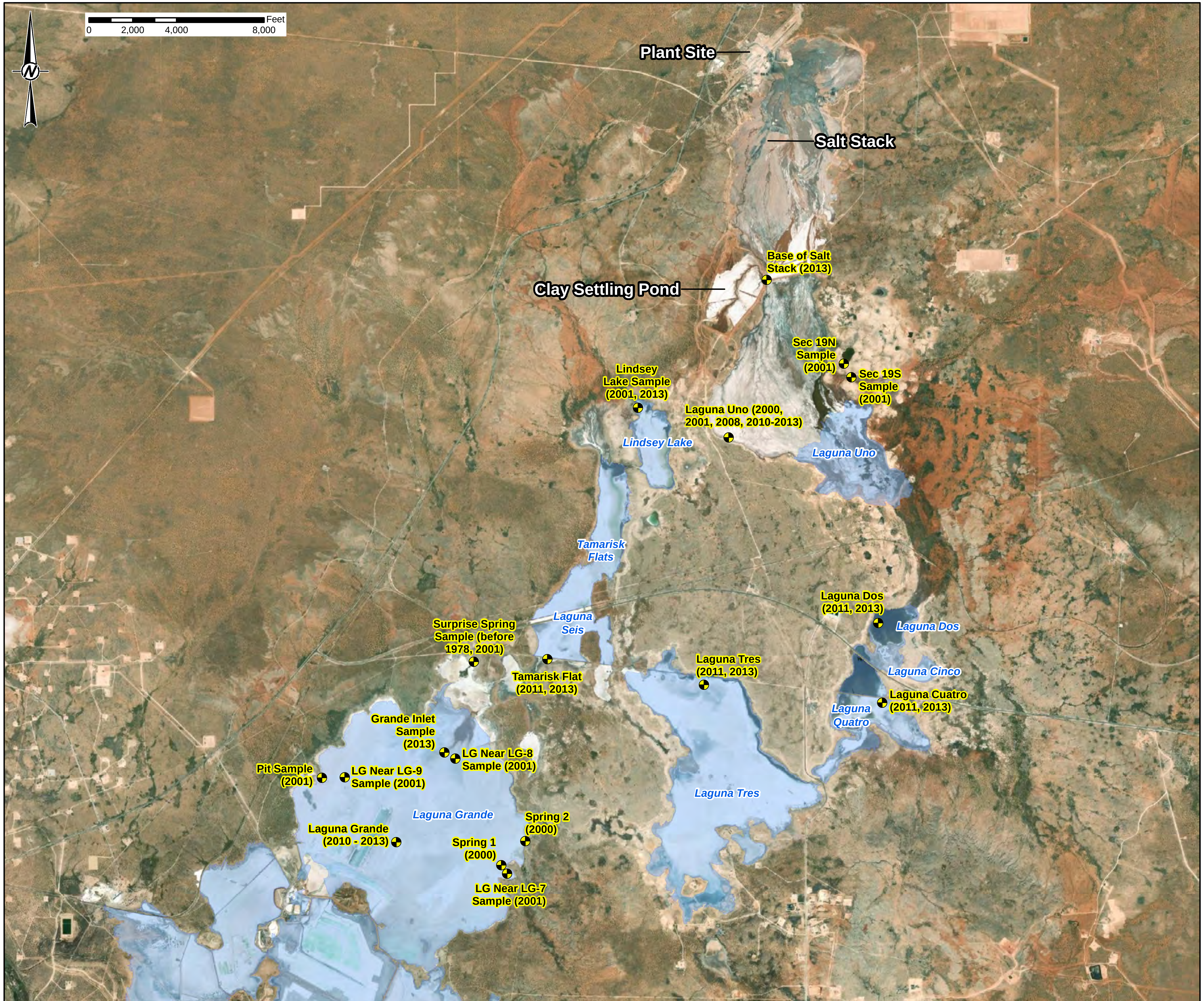
PROJECT
MOSAIC POTASH MINE
STAGE 1 ABATEMENT PLAN PROPOSAL

TITLE
NASH DRAW WATERSHEDS

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-03-18
DESIGNED	TS
PREPARED	RHG
REVIEWED	-
APPROVED	-

PROJECT NO. 21502059
FIGURE 19



LEGEND

APPROXIMATE SAMPLE LOCATION (SAMPLE DATES)

LAKES/PLAYAS

REFERENCES

1. BASEMAP: ESRI PROVIDED BASEMAP SERVICE. VIVD. MAXAR. IMAGERY COLLECTED 2020/2021.

CLIENT

MOSAIC POTASH CARLSBAD, INC.

PROJECT

MOSAIC POTASH MINE
STAGE 1 ABATEMENT PLAN PROPOSAL

TITLE

PLAYA LAKE AND SPRING SAMPLING LOCATIONS

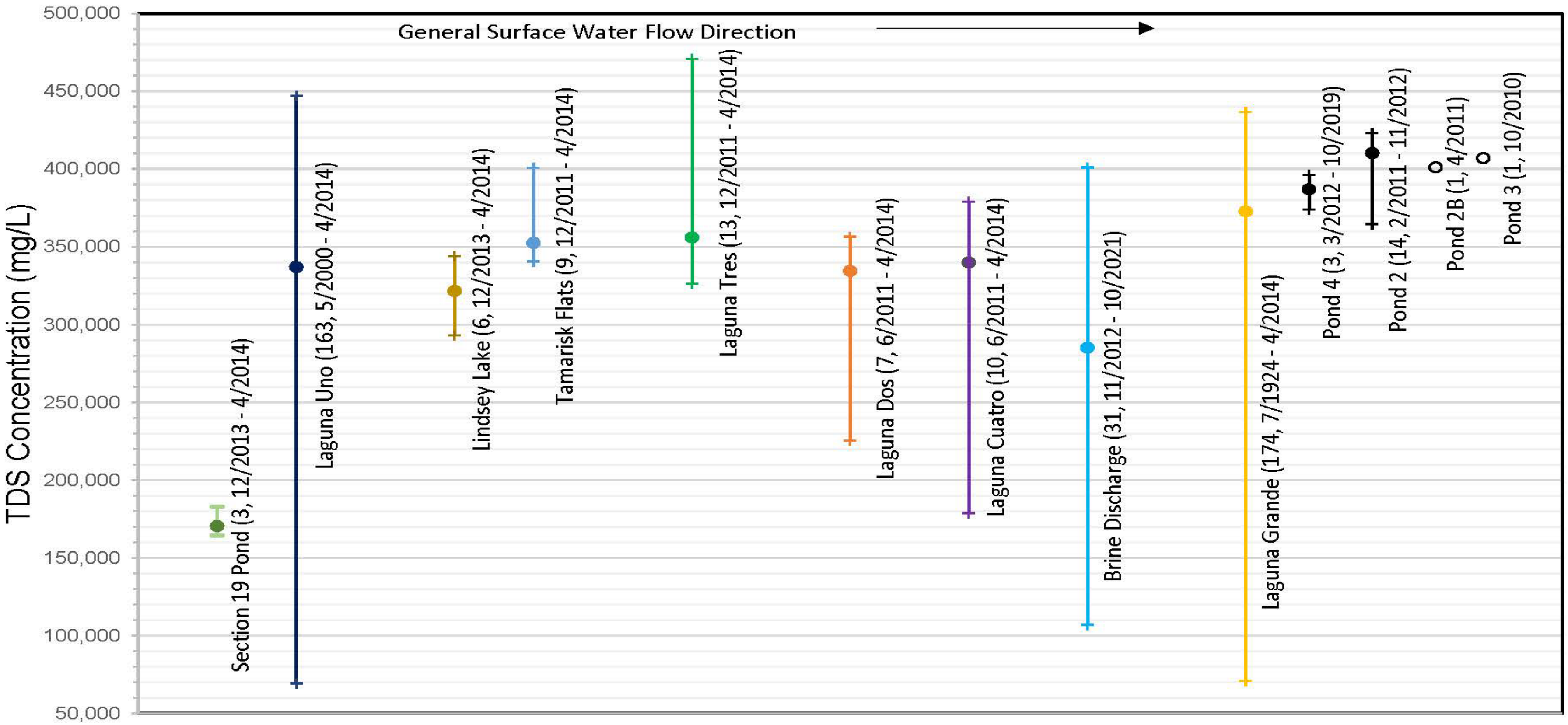
CONSULTANT

WSP GOLDER

YYYY-MM-DD	2022-03-18
DESIGNED	TS
PREPARED	RHG
REVIEWED	-
APPROVED	-

PROJECT NO.
21502059

FIGURE
20



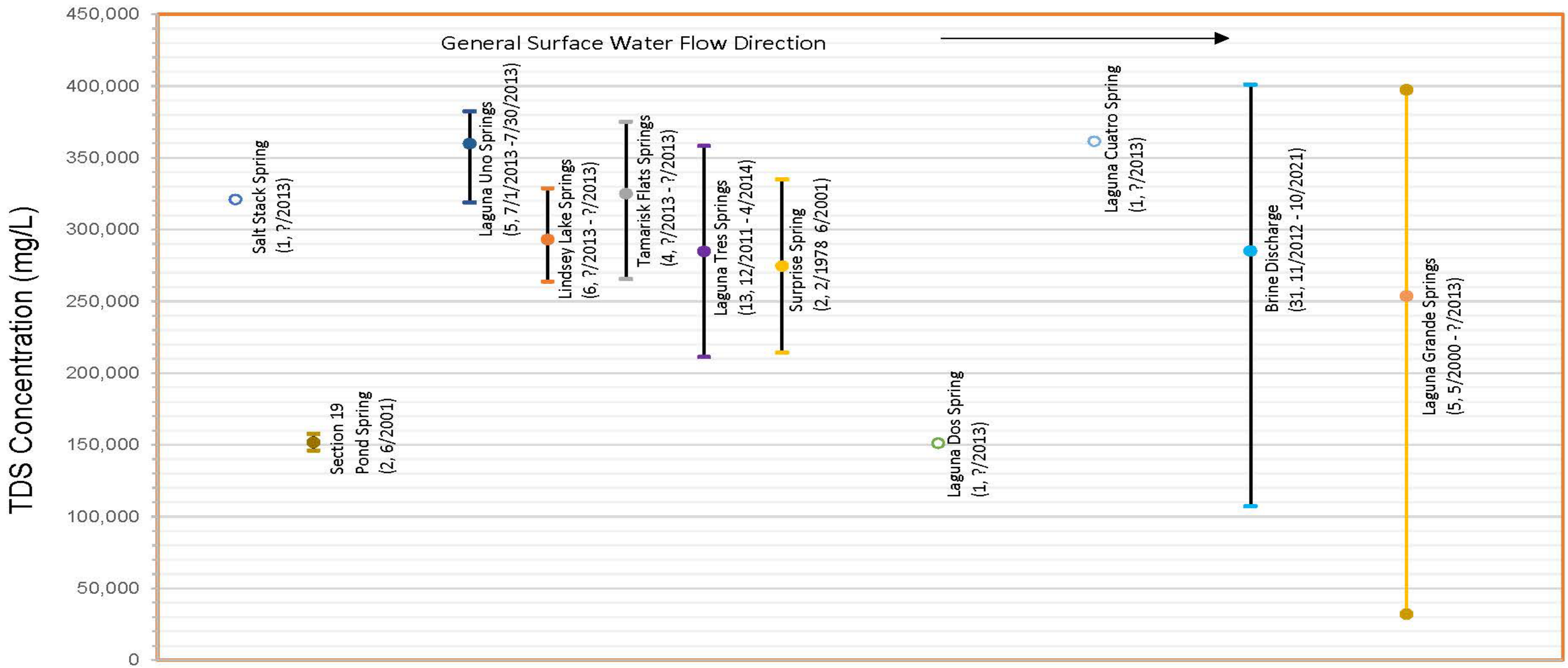
Legend: The data ranges are indicated by a solid line with + at the mnimum and maximum values.

- Median TDS Concentration (mg/L)
- Single Sample TDS Concentration (mg/L)

(31, 11/2012 - 10/2021) = (total # of samples, sample date range)

PROJECT		TITLE
MOSAIC POTASH CARLSBAD INC. STAGE 1 ABATEMENT PLAN PROPOSAL CARLSBAD, NEW MEXICO	WSP GOLDER	TDS CONCENTRATIONS IN SURFACE WATER

AUTHOR	CHECKED	REVIEWED	DATE	SCALE	JOB NO.	DWG NO.	SUBTITLE	REV. NO.	FIGURE
EMC	TS		02-23-22	NA	21502059	NA	NA	A	21



Legend: The data ranges are indicated by a solid line with + at the mnimum and maximum values.

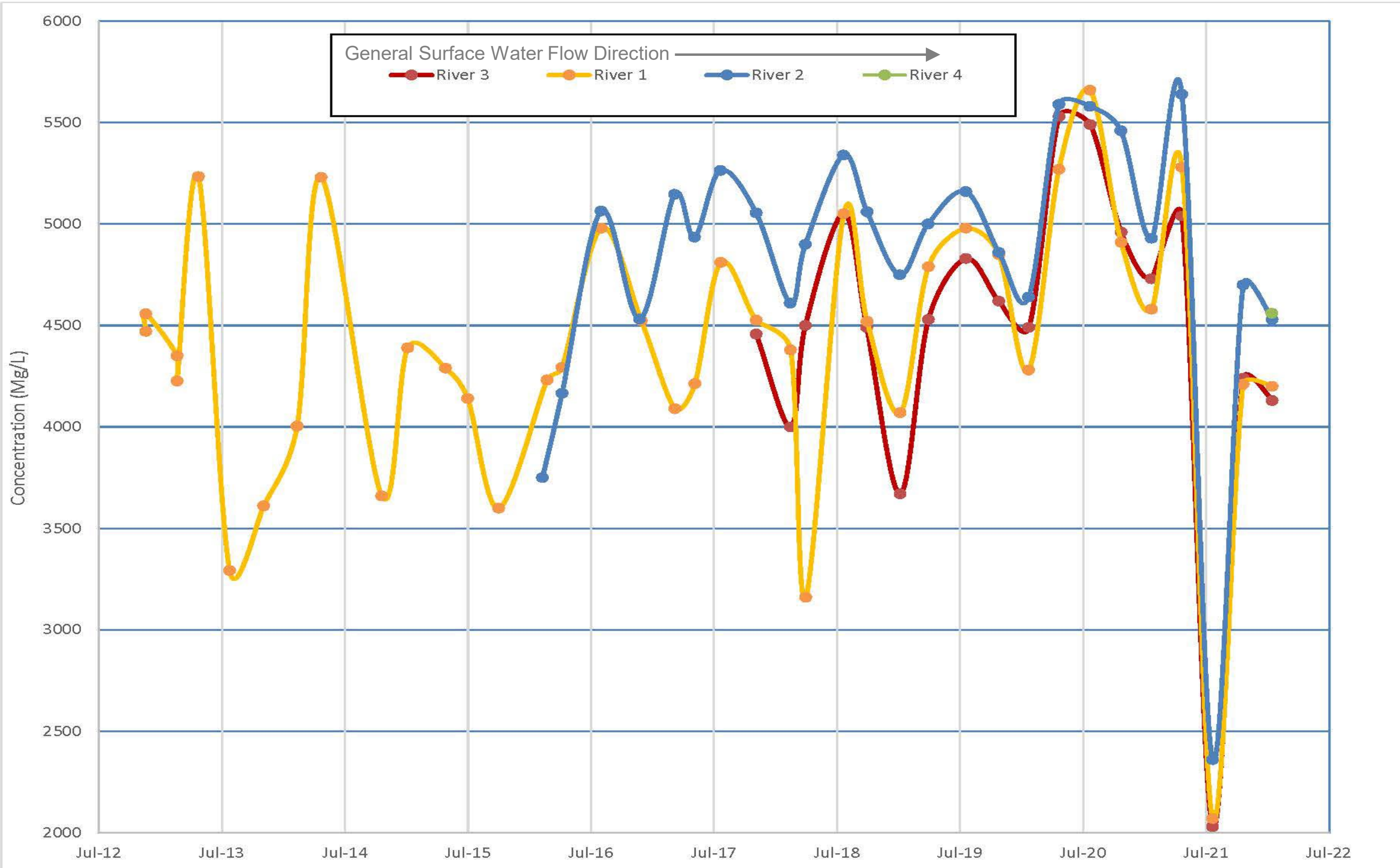
Median TDS Concentration (mg/L)

Single Sample TDS Concentration (mg/L)

(31, 11/2012 - 10/2021) = (total # of samples, sample date range), ?/2013 = unknown month sampled

PROJECT		TITLE
MOSAIC POTASH CARLSBAD INC. STAGE 1 ABATEMENT PLAN PROPOSAL CARLSBAD, NEW MEXICO	WSP GOLDER	**TDS CONCENTRATIONS IN SPRING DISCHARGE WATER**

AUTHOR	CHECKED	REVIEWED	DATE	SCALE	JOB NO.	DWG NO.	SUBTITLE	REV. NO.	FIGURE
EMC	TS		02-23-22	NA	21502059	NA	NA	A	22



PROJECT

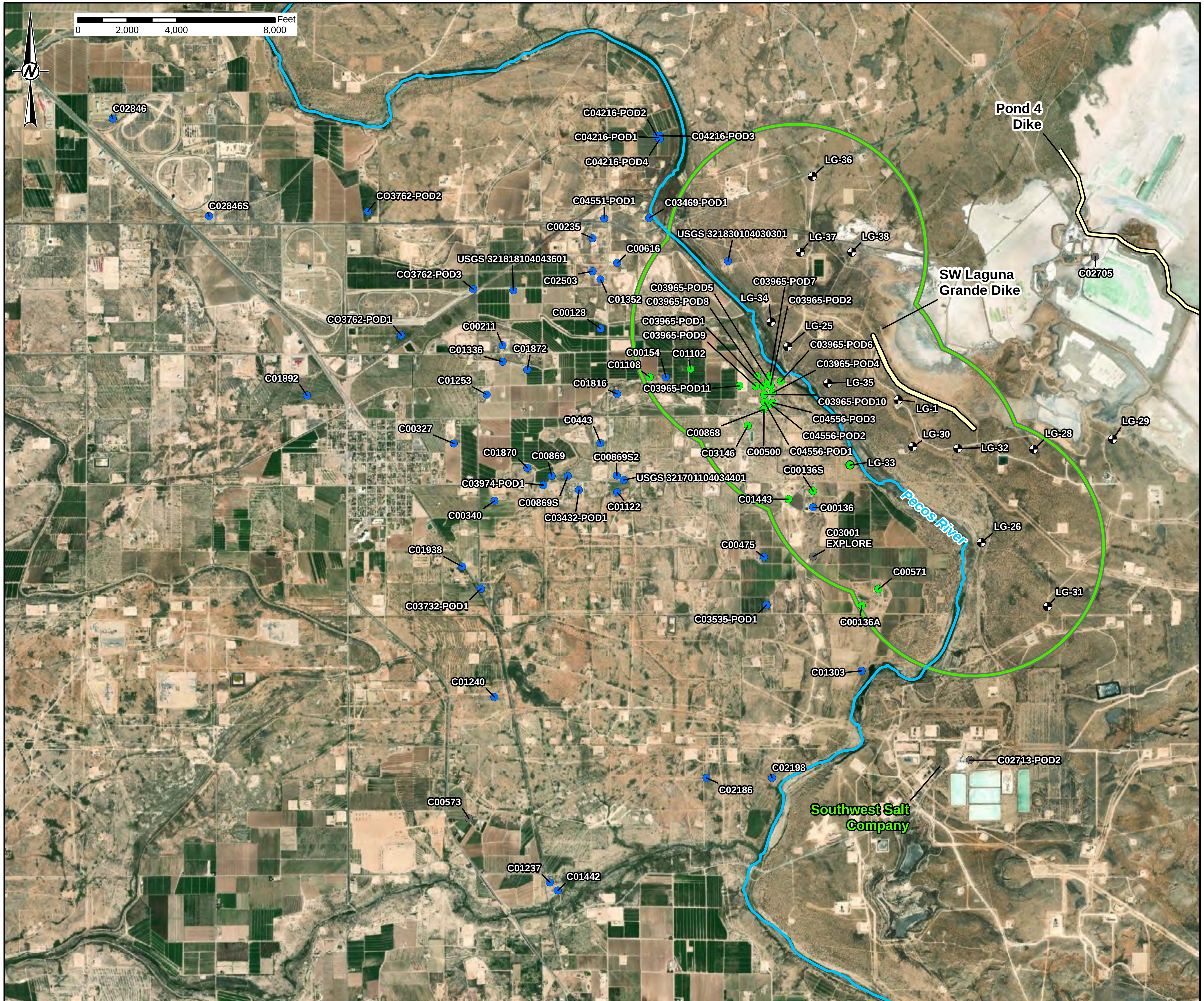
MOSAIC POTASH CARLSBAD INC.
STAGE 1 ABATEMENT PLAN PROPOSAL
CARLSBAD, NEW MEXICO

WSP GOLDER

TITLE

PECOS RIVER TDS CONCENTRATIONS

AUTHOR	CHECKED	REVIEWED	DATE	SCALE	JOB NO.	DWG NO.	SUBTITLE	REV. NO.	FIGURE
EMC	TS		03-15-22	NA	21502059	NA	NA	A	23



LEGEND

- EXISTING DP-1399 MONITORING WELLS
- MONITORING/PUMPING WELL (EXISTING)
- MONITORING/PUMPING WELL (OTHERS -UNKNOWN STATUS)
- PROPOSED WEST SIDE WELL TO BE MONITORED AS PART OF THE STAGE 1 ABATEMENT PLAN (IF ACCESS IS GRANTED BY WELL OWNER)
- 1-MILE RADIUS OF PERIMETER OF THE THREE-DIMENSIONAL BODY WHERE THE STANDARDS SET FORTH IN SUBSECTION B OF SECTION 20.6.2.4103 NMAC ARE EXCEEDED
- PECOS RIVER
- DIKES

REFERENCES

1. BASEMAP: ESRI PROVIDED BASEMAP SERVICE. VIVID. MAXAR. IMAGERY COLLECTED 2020/2021.

CLIENT
MOSAIC POTASH CARLSBAD, INC.

PROJECT
MOSAIC POTASH MINE
STAGE 1 ABATEMENT PLAN PROPOSAL

TITLE
EXISTING WELLS LOCATED ON THE WEST SIDE OF THE PECOS RIVER

CONSULTANT

WSP GOLDER

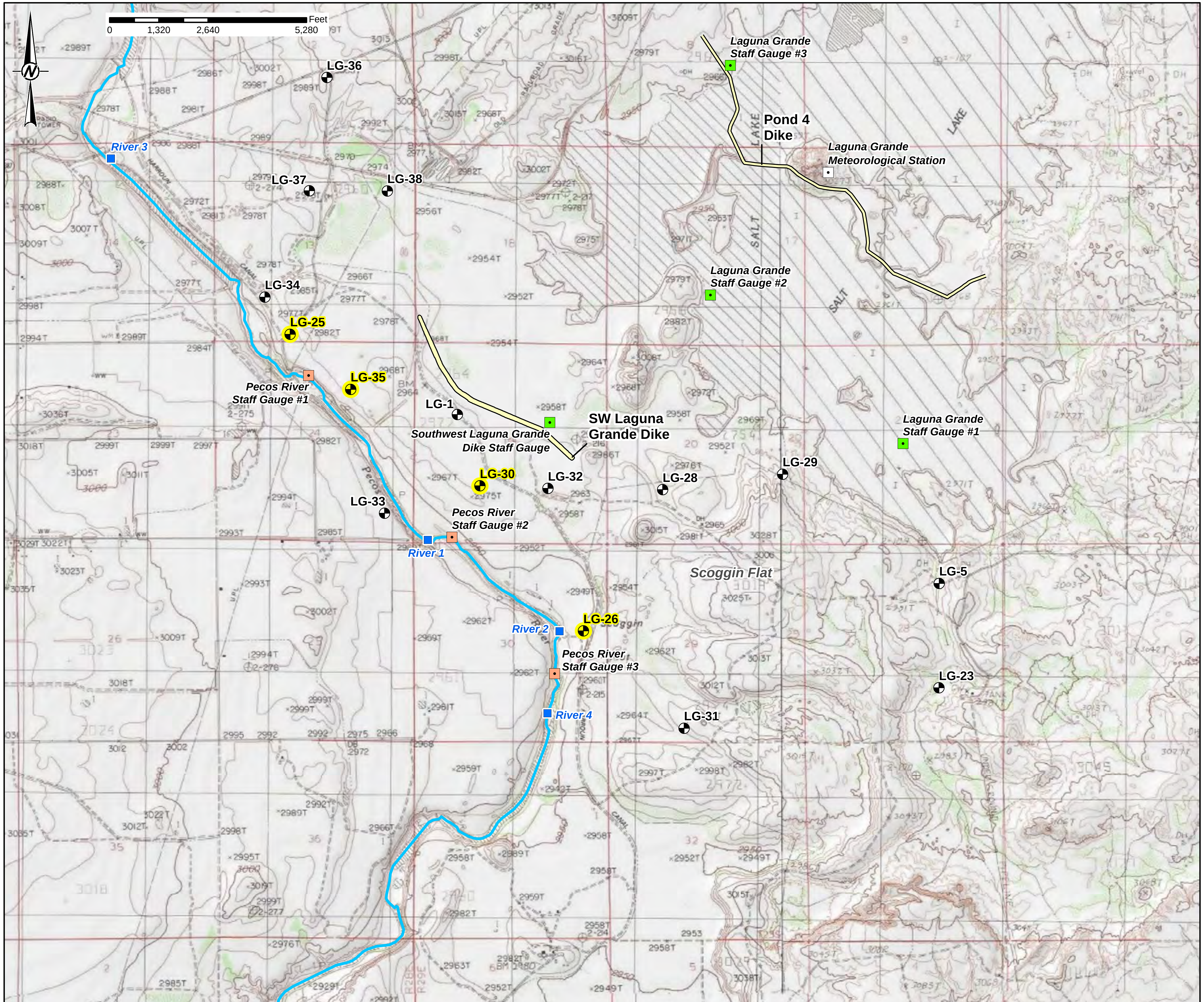
YYYY-MM-DD	2022-03-18
DESIGNED	TS
PREPARED	RHG
REVIEWED	-
APPROVED	-

PROJECT NO.
21502059

FIGURE
24

PATH: M:\Mosaic_Stage1_Abatement_2022\11x17_21502059_Mosaic_Stage1APP_Fig24_WestSideWells.mxd PRINTED ON: 2022-03-18 AT: 12:05:55 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



LEGEND

- MOSAIC WELL ID
- WELLS USED IN THE ANALYSIS OF THE HYDRAULIC CONNECTION BETWEEN GROUNDWATER AND THE PECOS RIVER
- RIVER SURFACE WATER SAMPLE
- AUTOMATED METEOROLOGICAL STATION
- AUTOMATED STAFF GAUGE - LAGUNA GRANDE
- AUTOMATED STAFF GAUGE - PECOS RIVER
- PECOS RIVER
- DIKES

REFERENCES

1. TOPOGRAPHIC BACKGROUND: ESRI BASEMAP SERVICES. USGS 1:24,000 TOPOGRAPHIC QUADRANGLES SHOWN: LOVING, REMUDA BASIN, MALAGA, AND PIERCE CANYON.

CLIENT
MOSAIC POTASH CARLSBAD, INC.

PROJECT
MOSAIC POTASH MINE
STAGE 1 ABATEMENT PLAN PROPOSAL

TITLE
MONITORING POINTS USED FOR CHARACTERIZING THE HYDRAULIC CONNECTION BETWEEN GROUNDWATER AND THE PECOS RIVER

CONSULTANT

WSP GOLDER

YYYY-MM-DD	2022-03-18
DESIGNED	TS
PREPARED	RHG
REVIEWED	-
APPROVED	-

PROJECT NO.
21502059

FIGURE
25

Attachment 1

October 20, 2021 Letter from the NMED Notifying Mosaic that a Stage 1 Abatement Plan is Required for the Site

VIA CERTIFIED MAIL

October 20, 2021

John Anderson
Mosaic Potash Carlsbad, Inc.
1361 Potash Mines Road
Carlsbad, New Mexico 88221
John.Anderson@mosaicco.com

RE: Abatement Plan Required for the Mosaic Potash Mine, Mosaic Potash Carlsbad, Inc., Carlsbad, NM

Dear John Anderson,

The Mining Environmental Compliance Section (MECS) of the New Mexico Environment Department (NMED) hereby notifies Mosaic Potash Carlsbad, Inc. (Permittee) that a Stage 1 Abatement Plan (S1AP) is required for the Mosaic Potash Mine (Site), pursuant to 20.6.2.4106(A) NMAC of the Ground Water and Surface Water Protection Regulations, 20.6.2 NMAC. The physical address for the Site is 1361 Potash Mines Road, Carlsbad, NM 88221.

The Permittee was first issued Discharge Permit 1399 (DP-1399) in 2004. Subsequently, DP-1399 was renewed in 2011, and a draft renewal of DP-1399 was sent out for public notice on May 27, 2020, and again on June 25, 2021. The draft DP-1399 renewal includes a condition requiring submittal of a S1AP. MECS has received multiple requests for a public hearing on the draft DP-1399. Any final agency determination regarding renewal of DP-1399 will most likely come after the potentially lengthy public hearing process. Discharges associated with the Site will continue to be regulated under the administratively continued DP-1399 dated September 30, 2011. Due to the importance of initiating abatement, MECS is requiring submission of a S1AP in accordance with 20.6.2.4104 NMAC outside of the DP-1399 renewal process.

Total dissolved solids (TDS), chloride, and sulfate have been reported in groundwater downgradient of the Site at concentrations exceeding the groundwater standards of 20.6.2.3103 NMAC in locations where the background concentration of groundwater is less than 10,000 mg/L TDS consistent with 20.6.2.4101(A)(1) NMAC.

Within 60 days of receipt of this letter, the Permittee is required to submit to NMED an S1AP proposal to address TDS, chloride, and sulfate contamination in groundwater downgradient of the Site. The S1AP proposal shall be designed to define site conditions as outlined in Subsection 20.6.2.4106(C) NMAC, including a proposal to define the extent of contamination of groundwater from Mosaic discharges, characterize the hydrogeologic conditions in groundwater between Laguna Grande and the Pecos River, hydrogeologic conditions west of the Pecos River to the extent that there may be contamination from discharges from the Site, and characterizing the connection between the Pecos River and groundwater impacted by the Permittee's operations. In addition to characterizing site conditions as required by 20.6.2.4106(C) NMAC, the S1AP Proposal shall also contain the following components per 20.6.2.4106(C)(7) NMAC.

1. A workplan for a comprehensive characterization of the waste stream discharged from the Plant Site to the Salt Stack and Laguna Grande. The waste stream characterization shall include analysis for, but not be limited to: TDS, boron, sodium, calcium, magnesium, potassium, chloride, sulfate, alkalinity reported as $CaCO_3$, specific conductance, and pH.

2. A workplan to evaluate the effect of the discharge of suspended clay particles to the long-term storage capacity of the Laguna Grande Brine Management Area and shorebird habitats, and the relationship between salt-producer operations and impacts to groundwater and the Pecos River.

3. A summary of existing information collected under previous groundwater investigations and groundwater monitoring, including information gained from the focused study to evaluate the hydrologic conditions and potential sources of contamination observed in monitoring well LG-2 as required by NMED in a letter to the Permittee dated May 17, 2021.

4. A data gap analysis to guide groundwater and surface water investigations.

5. A workplan as addressed in a letter from NMED dated May 17, 2021, to the Permittee to address hydrologic conditions present in the area of monitoring well LG-2.

If you have any questions, please contact Anne Maurer (anne.maurer@state.nm.us) of MECS at (505) 660-8878 or Kurt Vollbrecht (kurt.vollbrecht@state.nm.us), Program Manager of MECS at (505) 660-9420.

Sincerely,

John Rhoderick Digitally signed by John Rhoderick
Date: 2021.10.21 12:30:25 -06'00'

John Rhoderick, Acting Division Director
Water Protection Division
New Mexico Environment Department

Cc: Kurt Vollbrecht, Program Manager, MECS (signed PDF copy sent via electronic mail to: Kurt.vollbrecht@state.nm.us)
Anne Maurer, Mining Act Team Leader, MECS (signed PDF copy sent via electronic mail to: anne.maurer@state.nm.us
Robert E. Salaz, BLM (rsalaz@blm.gov)

golder.com

010-9342-3132/1/AMERICAS