



Supplemental Investigation Report

Former Farmland Nitrogen Plant

City of Lawrence, Kansas

November 08, 2021

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1. Introduction

GHD Services Inc. (GHD) prepared this Supplemental Investigation Report on behalf of our client, the City of Lawrence, Kansas (the City), for the Former Farmland Industries Nitrogen Plant (Site). The project has Kansas Department of Health and Environment (KDHE) Site Identification C4-023-00009.

The work was completed in general accordance with the “Groundwater Monitoring Well Installation Work Plan” dated March 10, 2021 and approved by KDHE in a letter dated April 7, 2021.

1.1 Purpose

The purpose of the monitoring well installation is to further characterize the nature and extent (horizontal and vertical) of nitrogen-affected groundwater in the perched silty clay unit and the underlying alluvial aquifer in the northwestern part of the Site. The need to delineate the chemicals of concern (COCs) nitrate and ammonia and characterize geologic conditions in this area of the Site was identified through data collected from the City’s ongoing groundwater monitoring program and from data collected for a 2019 data gap study (GHD, 2020) that indicate the current groundwater extraction system could be improved to capture impacted groundwater around PW-9 and the area between PW-9 and PSW-5B2.

1.2 Project Description and History

The Site is a former nitrogen fertilizer manufacturing plant located at 1608 North 1400 Road in Lawrence, Kansas. The location of the Site is shown on Figure 1. Nitrogen fertilizers were manufactured at the Site from 1954 until 2001. Farmland Industries, Inc., the parent company to Farmland Nitrogen, filed bankruptcy in 2003 and placed funding for the future cleanup activities into the FI Kansas Remediation Trust (FI Trust). In 2010, the City acquired the property and the remaining balance of the trust funds, with a long-term interest in commercially re-developing the Site. Farmland Industries, and later FI Trust, KDHE, and the City have performed various environmental investigations, groundwater and stormwater monitoring, and remediation at the Site, including the operation of a groundwater containment system. These activities are documented in various reports that have been submitted to KDHE over the course of the project’s history.

The Facility Property included approximately 467 acres of the former operating facility and 120 acres of contiguous parcels. More than 200 acres of land in the southern part of the Site have been redeveloped as an industrial park known as the Lawrence VenturePark business park. The remaining northern portion is generally divided into the following specific topographic areas of interest: Sandstone Hill, Central Ponds, Plant A, Western Ponds, Eastern Ponds, Bag Warehouse, and Site-wide Groundwater. The layout of the Site is provided as Figure 2.

1.3 Site Hydrogeology

The subsurface hydrogeology of the Site is comprised of the following hydrostratigraphic (i.e., water bearing) units:

- Newman Terrace Deposits
- Kansas River Alluvial Deposits
- Tonganoxie Sandstone
- Weston Shale

The Newman Terrace Deposits consists of low permeable silty clay with a variable thickness up to 45 feet. The terrace deposits are not present in some areas of the Site. The terrace deposits are partially saturated and exist under unconfined conditions. The terrace deposits are considered an aquitard because of their low permeability. The groundwater in the terrace deposits exists under perched conditions in parts of the Site and is hydraulically separate from the regional groundwater system. The terrace deposits occur along the northern portion of the Site around the process ponds and the Bag Warehouse and extends north beyond the Burlington Northern Santa Fe railroad tracks.

The terrace deposits can overlie the sandstone along its southern extent, but it typically overlies the Kansas River Alluvial deposits north of the railroad tracks.

The Kansas River Alluvial Deposits are predominantly sand with interbedded units of sandy clay and gravel. The alluvial deposits vary in thickness from 0 to 30 feet at the Site but increase in thickness north of the Site towards the Kansas River. The alluvial deposits are classified as an aquifer because of their moderate permeability. The alluvial deposits exist under unconfined or semi-confined conditions. The alluvial deposits are found along the northern portion of the Site along Sandstone Hill, the Bag Warehouse and portions of the process ponds.

Tonganoxie Sandstone is an interbedded sandstone that consists of sandstone, mudstone, shale, and limestone. The sandstone represents a prominent topographic high feature colloquially known as Sandstone Hill (see Figure 2) where urea nitrogen was produced and stored in open ponds. The sandstone is partially saturated with groundwater and can exist under unconfined or confined conditions. Given its interbedded nature, the permeability is variable with the interbedded shale units acting as aquitards. Groundwater flow is radial emanating from the summit of Sandstone Hill and primarily follows fractures and contact zones between layers. On the north end of the Site, the sandstone groundwater discharges into the alluvial aquifer, which abuts up against the sandstone.

The Weston Shale represents the basal confining unit for the Site. The shale is encountered at an elevation ranging from 860 ft. above mean sea level (amsl) under Sandstone Hill to 762 ft. amsl north of the railroad tracks at MW-24B. The shale is an aquitard and prohibits downward migration from the overlying alluvial and sandstone groundwater systems.

1.4 Scope and limitations

This report has been prepared by GHD for City of Lawrence, Kansas and may only be used and relied on by City of Lawrence, Kansas for the purpose agreed between GHD and City of Lawrence, Kansas as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than City of Lawrence, Kansas arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring after the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

2. Scope of Work

The field activities conducted during the monitoring well installation described in this report include the following primary tasks:

- Monitoring well installation
 - Field reconnaissance to verify locations and underground utilities
 - Field screening of soil samples for the presence of ammonia
 - Geotechnical soil sample collection
 - Monitoring well development
- Monitoring well purging and sampling

- Laboratory analysis of groundwater samples
- Surveying of monitoring well locations and elevations

2.1 Monitoring Well Installation

GHD subcontracted drilling services to GSI, Inc., a Kansas-licensed drilling firm. GHD provided technical oversight of GSI during the drilling activities.

GSI installed nine alluvial aquifer monitoring wells and eight perched groundwater monitoring wells from May 10, 2021, to May 28, 2021. The wells are identified as MW-21A, MW-21B, MW-22A, MW-22B, MW-23A, MW-23B, MW-24A, MW-24B, MW-25B, MW-26A, MW-26B, MW-27A, MW-27B, MW-28A, MW-28B, MW-29A, and MW-29B. The “A” designates wells screened in the perched groundwater system and “B” designates wells screened in the alluvial groundwater system. The monitoring well locations are shown on Figure 2. The wells were constructed with 2-inch diameter, schedule 40, polyvinyl chloride (PVC) pipe with 10-15 feet of slotted (10 slot) PVC well screen. A sand filter pack was placed in each borehole approximately 2 feet above the top of the screen. A minimum 2-feet thick bentonite seal was placed above the sand-pack. Following hydration of the bentonite seal, the remaining annular space was filled with a cement-bentonite grout. The monitoring wells were completed with above ground lockable well covers. A concrete pad and protective bollards were installed around each wellhead completion. Monitoring well construction details are included on the stratigraphic and well instrumentation logs provided in Appendix A. Monitoring well construction details are summarized on Table 1.

GHD screened soils during drilling activities with a calibrated photoionization detector (PID) equipped with 10.6 eV lamp to determine if detectable concentrations of volatile ammonia are present in the soil within the vadose zone. PID responses ranged from no response to 0.7 ppm as shown on the stratigraphic and well instrumentation logs.

Following well installation, the City surveyed the well locations, ground elevations, and top of casing elevations for each new monitoring well and existing monitoring wells. The elevation data provided by the City are included in Table 1.

2.1.1 Geotechnical Soil Sample Collection

GHD collected soil samples from the fine-grained sediments in the perched water unit for geotechnical laboratory testing for vertical permeability. Soil samples were collected from the following locations and interval depths below ground surface (bgs):

- MW-24A (18.5' to 20' bgs)
- MW-27A (15.5' to 18' bgs)
- MW-28A (8.5' to 10' bgs)

GSI collected the samples directly into Shelby tubes and submitted to GSI's soil laboratory for permeability testing using ASTM D5084 Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.

GHD also collected soil samples from the coarse-grained material in the alluvial aquifer for grain size distribution analysis. Soil samples were collected from the following locations and intervals:

- MW-24B (53.5' to 55' bgs)
- MW-24B (44.75' to 45' bgs)
- MW-23B (34.5' to 35' bgs)

The samples were collected into 4oz glass jars with Teflon lined lids and submitted to GSI's soil laboratory for grain size distribution testing using ASTM D422 Standard Method for Determining Particle-Size Analysis.

2.1.2 Monitoring Well Development

GSI developed the monitoring wells from June 9 to June 11, 2021, to remove fine-grained sediment inside the filter pack and casing, to stabilize the filter pack around the well screen, and to improve hydraulic communication between the well screen and the targeted water-bearing zone. Each monitoring well was initially purged with a submersible pump until the water became visually clear. The monitoring wells were then surged using a surge block and pumped until a sand free condition was observed. A well development summary is provided in Table 2.

2.2 Monitoring Well Sampling

GHD gauged the groundwater elevations and collected groundwater samples from previously existing (30 wells) and new monitoring wells (17 wells) from June 14 to June 18, 2021. Groundwater elevation measurements were collected using an electronic water level tape, which was cleaned between wells in accordance with the work plan. The depth to groundwater was measured from the top-of-casing to the nearest ± 0.01 foot. Groundwater level measurements are presented in Table 3.

Following the gauging of water levels, GHD collected groundwater samples using low-flow purge (LFP) and sample procedures. Field sampling meters were calibrated daily. Sampling equipment was properly decontaminated, in accordance with the Work Plan, prior to sampling.

Monitoring wells were purged using stainless-steel submersible pumps. The pumps were slowly lowered into position to minimize mixing of the stagnant well casing water and to minimize the agitation of any solids into suspension. The pumps were positioned in the wells such that the intake corresponded to the approximate middle of the well screen (portion of screen under water). If possible, a minimum of 2 feet was maintained between the pump intake and the well bottom.

Groundwater samples were collected using LFP sampling methods in accordance with GHD standard operating procedures and KDHE standard operating procedure BER-01 (KDHE 2018). During purging, the pumping rate was sustained between 100 and 500 milliliters per minute (mL/min) and groundwater levels were measured to maintain a maximum 0.4 foot (0.1 m) of drawdown. Field parameters including pH, temperature, specific conductance, oxidation-reduction potential (ORP), dissolved oxygen (DO), and turbidity were monitored during purging to determine groundwater stabilization in the well screen prior to groundwater sample collection. Groundwater stabilization was achieved when three consecutive readings for each of the field parameters were within the following limits:

- pH ± 0.1 pH units of the average value of the three readings
- temperature ± 3 percent of the average value of the three readings
- conductivity ± 0.005 milliSiemen per centimeter (mS/cm) of the average value of the three readings for < 1 mS/cm and ± 0.01 mS/cm of the average value of the three readings for > 1 mS/cm
- ORP ± 10 millivolts (mV) of the average value of the three readings
- DO ± 10 percent of the average value of the three readings
- turbidity visually clear.

The final field parameter readings are presented in Table 4. Low-flow sampling field forms are provided in Appendix B. The groundwater samples were submitted under chain-of-custody documentation to the City Laboratory. A subset of duplicate samples were submitted to Pace Analytical Services (Pace) in Lenexa, Kansas for laboratory analysis.

2.3 Investigation Derived Waste

Soil screening results of soil cuttings derived during borehole drilling for the monitoring wells were less than 1.0 parts per million (ppm) of volatile organic compounds. Therefore, the soil cuttings were thinly spread on the ground surface adjacent to each monitoring well location. Groundwater containerized during monitoring well development, purging, and decontamination activities was transferred to the Overflow Pond. Composite samples were collected and

submitted for analysis to the City's laboratory. The analytical results for the composite samples are provided in Table 5.

2.4 Quality Control Samples

To ensure the validity of the sampling and analysis program, field quality control (QC) samples were collected with the monitoring well samples. Field QC consisted of collecting six field duplicate groundwater samples from monitoring wells CPMW-2S, MW-13B, PSW-17, PSW-18, N-1, and N-2. In addition, five split-samples from monitoring wells CPMW-2S, PSW-17, PSW-18, N-1, and N-2 were submitted to Pace for laboratory analysis.

2.5 Hydraulic Testing

On June 18, 2021, GHD performed single well response tests on monitoring well MW-22A, MW-22B, MW-27A, and MW-27B. Both falling head and rising head single well response tests were conducted at each new well location. The tests were performed by introducing and removing a pre-cleaned slug of known volume into the column of water in the wells. A pressure transducer with an electronic data logger recorded the water level response in the well. The slug and the pressure transducer were field cleaned between wells.

3. Results

The additional monitoring wells were installed to enhance the existing monitoring well network at the Site. The following table summarizes the monitoring well network enhancement.

Monitoring Well Network Summary

Designation	Existing Monitoring Wells	Additional Monitoring Wells
Perched Unit	PSW-1A, PSW-2A, PSW-3A, PSW-5A, PSW-6A, PSW-7A, PSW-9A, PSW-13A, PSW-17, PSW-18, PSW-19A	MW-21A, MW-22A, MW-23A, MW-24A, MW-26A, MW-27A, MW-28A, MW-29A
Alluvial Aquifer	PSW-1B, PSW-2B, PSW-4, PSW-5, PSW-5B2, PSW-6B4, PSW-7B2, PSW-9B, PSW-15, PSW-19B, PSW-20B, SW-10	MW-21B, MW-22B, MW-23B, MW-24B, MW-25B, MW-26B, MW-27B, MW-28B, MW-29B
Sandstone	N-1, N-2, CPMW-1S, CPMW-1D, CPMW-2S, PSW-13B	

3.1 Groundwater Gauging Results

In June 2021, depth to groundwater was measured in the 17 newly installed monitoring wells and in 30 existing monitoring wells. Groundwater elevations in the perched unit range from 801.78 ft (MW-29A) to 841.05 ft. (PSW-13A) amsl. The horizontal hydraulic gradient in the perched system was northerly with a gradient of 0.02 ft/ft. Monitoring wells MW-21A and PSW-19A were dry, which indicates the perched groundwater does not extend beyond these two wells to the north and west. The approximate extent of the perched groundwater unit, groundwater elevations and isocontours are depicted on Figure 3.

Groundwater elevations in the alluvial aquifer ranged from 793.51 ft (PSW-19B) to 798.05 ft. (PSW-2B) amsl. The horizontal hydraulic gradient is 0.01 ft/ft to the west-northwest. This groundwater flow direction towards the northwest is unique because the Kansas River is present north of the Site and flows to the east; however, the groundwater elevation data are consistent with reported historical observations in the existing monitoring network. Groundwater elevations, contours and gradient of the alluvial aquifer are depicted on Figure 4.

Groundwater elevations in the sandstone aquifer ranged from 839.00 ft (PSW-13B) to 880.23 ft. (N-2) amsl. The horizontal hydraulic gradient is 0.04 ft/ft. Groundwater flows radially away from the topographic feature of Sandstone Hill. Groundwater elevation contours for the Sandstone aquifer are presented in Figure 5.

3.2 Groundwater Sampling Results

GHD collected 44 groundwater samples and 11 duplicate/split samples from monitoring wells for laboratory analysis. The samples were submitted to Pace or the City of Lawrence laboratory using chain-of-custody protocols with a request for analysis for nitrate/nitrite-nitrogen by EPA Method 353.2 and ammonia-nitrogen by EPA Method 350.1.

Nitrate has a drinking water maximum contaminant level (MCL) of 10 milligrams per liter (mg/L). Ammonia does not have a Risk-based Standard for Kansas (RSK) (KDHE 2010) value or an MCL. A summary of the laboratory results from the current groundwater monitoring event are in Table 6. Historical groundwater data are in Table 7. Laboratory analytical reports from the City of Lawrence and Pace Analytical Services can be found in Appendix C.

Analytical results for nitrate/nitrite and ammonia in the discussion below are reported as nitrogen (N).

3.2.1 Perched Groundwater

Nitrate/nitrite in perched groundwater samples from the new monitoring wells ranged from 1.12 mg/L (MW-29A) to 72.5 mg/L (MW-24A). Nitrate/nitrite was above the MCL (10 mg/L) in samples from MW-23A, MW-24A, MW-26A, and MW-28A. Site-wide, nitrate/nitrite concentrations in the perched unit ranged from not-detected to 348 mg/L (PSW-7A). Nitrate/nitrite concentrations in the perched groundwater are provided on Figure 6.

Ammonia was not detected above laboratory reporting limits in samples from the new perched groundwater monitoring wells. Site-wide, perched groundwater ammonia concentrations ranged from not-detected to 386 mg/L (PSW-6A). Ammonia concentrations in the perched groundwater unit are provided on Figure 7.

3.2.2 Alluvial Aquifer

Nitrate/nitrite in alluvial aquifer groundwater samples from the new monitoring wells ranged from not-detected to 133 mg/L (MW-26B). Nitrate/nitrite was reported above the MCL (10 mg/L) in samples from MW-27B and MW-26B. Site-wide, nitrate/nitrite concentrations in the alluvial aquifer ranged from not detected to 133 mg/L (MW-26B). Nitrate/nitrite concentrations in the alluvial aquifer are provided on Figure 8.

Ammonia in groundwater samples from the new monitoring wells installed in the alluvial aquifer ranged from not-detected to 29.3 mg/L (MW-23B). Site-wide, ammonia concentrations in the alluvial aquifer ranged from not-detected to 137 mg/L (PSW-5B) in the alluvial aquifer. Ammonia in the alluvial aquifer are provided on Figure 9.

3.2.3 Sandstone Aquifer

No new monitoring wells were installed in the sandstone aquifer. Sitewide, nitrate/nitrite in the samples collected in the sandstone aquifer ranged from 51.1 mg/L (N-2) to 44,400 mg/L (N-1). These concentrations are comparable with historical data. Nitrate/nitrite concentrations in the sandstone aquifer are depicted on Figure 10.

Ammonia in the samples collected from monitoring wells screened in the sandstone ranged from 7.28 mg/L (N-2) to 44,200 mg/L (N-1). These concentrations are comparable with historical data. Ammonia concentrations in the sandstone aquifer are depicted on Figure 11.

3.3 Quality Control Sample Analytical Results

Quality assurance criteria which are consistent with guidance and QC procedures established by the *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*, EPA 540/R-99/008, October 1999, were applied to the analytical data by a GHD project chemist. The evaluation of the data was based upon information obtained from chain-of-custody forms, finished report forms, blank data, duplicate data and recovery data for matrix, laboratory control and surrogate spikes and based on criteria established in the *Site Quality Assurance Project Plan*.

The results of the evaluation are reported in the quality assurance assessment and verification memorandum presented in Appendix D. The data were found to exhibit acceptable levels of accuracy and precision based on the provided information and may be used with qualification as noted in the memorandum and in the data tables.

3.4 Hydraulic Testing Results

Aquifer testing was conducted to estimate the hydraulic properties in the perched groundwater and the alluvial aquifer. The single well response data were entered into the computer software AQTESOLV® for Windows. The single well response test data were analyzed for unconfined or confined groundwater systems using Bouwer and Rice (1976)¹. The data generated from the AQTESOLV® software determined the hydraulic conductivity value for each well location. A summary of single well response data results is presented in Table 8. The AQTESOLV® plots for each well are provided in Appendix E.

The aquifer test results were analyzed using Bouwer-Rice (1976). GHD used AQTESOLV™ (Duffield, 2007)² to analyze the results from two wells screened within both the alluvial and the perched unit to estimate the hydraulic conductivity for each groundwater system. Monitoring wells MW-22A and MW-27A were selected for the perched groundwater. For the alluvial aquifer, wells MW-22B and MW-27B were utilized. The rising and falling head test results for MW-22B could not be used because the aquifer recovery within the monitoring well was faster than the sensitivity of the instrumentation used to for the slug tests.

3.5 Geotechnical Analysis Results

Analysis of the cohesive geotechnical samples collected Shelby Tubes were tested using Methods ASTM D5084: Measurement of Hydraulic Conductivity of Saturated Porous Materials performed by GSI Engineering, LLC. The samples were collected from the soils just above the perched water table during installation on MW-24A, and from within the saturated zone in MW-27A and MW-28A. The results of the permeability tests are summarized in the following table.

ASTM D5084 Summary

Sample Name	Sample Description	Average Hydraulic Conductivity (K)
MW-24A (18.5'-20')	Dark grayish-brown fat clay	1.80E-08 cm/sec @ 20°C
MW-27A (15')	Grayish-brown fat clay w/ reddish brown clay	3.24E-08 cm/sec @ 20°C
MW-28A (8.5'-10')	Yellowish-brown lean clay	8.97E-08 cm/sec @ 20°C

The hydraulic conductivities (K) are calculated by establishing a constant flow of water through the specimens over a set time period. The permeability test results are included in Appendix F.

Analyses of the non-cohesive geotechnical samples was performed using Methods ASTM D422: Particle-Size Analysis of Soils and ASTM D1140: Amount of Material Finer than the No. 200 Sieve. The results of analyses are summarized in the following table.

Grain Size Analysis Summary

Borehole	Depth	Soil Description	% Gravel		% Sand			% Fines	
Number	(ft. bgs)		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
MW-24B	53.5 - 55	Gray poorly graded sand	0.0	4.7	10	76.1	6.9	2.3	0.0
MW-25B	54.5 - 55	Gray clayey sand	0.0	3.1	2.9	2.9	33.9	50	7.2
MW-27B	23.5 - 25	Reddish brown clayey sand	0.0	1.6	2.3	2.0	68.2	18.2	7.7

¹ Bouwer, H. and R. C. Rice, 1976. A slug method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, Water Resources Research, vol. 12, no. 3, pp. 423-428.

² Duffield, G.M., 2007. AQTESOLV for Windows Version 4.5 User's Guide, HydroSOLV, Inc., Reston, VA.

4. Data Evaluation

4.1 Site Geology and Hydrogeology

GHD prepared cross sections to represent the geology in the area north of the BNSF railroad tracks and south of N Road 1500. The monitoring wells included in the cross sections are shown on Figure 12. Cross-Section A-A' is provided as Figure 13, and Cross-Section B-B' is provided as Figure 14.

Subsurface material encountered during monitoring well installation generally consisted of clay with silt to depths ranging from 5 ft to 39 feet bgs. The clay with silt transitions to clay with fine sand with depth, except for MW-28B where the clay with fine sand was not observed.

The clay units are underlain by fine to medium sand at a range of approximately 40 ft. to 45 ft. bgs. The sand is underlain by shale at depths of approximately 59 feet bgs.

Based on the sediments encountered during well drilling activities, the perched groundwater occurs at thicknesses of approximately 0.5 ft to 6 ft primarily in the clay with silt. At MW-25B, perched water was observed in the clay with fine sand while drilling the alluvial well. At MW-21A, the perched unit did not produce water. PSW-19A located just to the southwest of MW-21A has not produced a sufficient volume of groundwater to sample since it was installed in 2013, confirming previous conclusions that the perched groundwater is limited in areal extent. Groundwater in the alluvial aquifer occurs in the underlying sand at depths varying from 23 ft. on the western end to 43.5 ft in the eastern end of the Site.

4.2 Aquifer Testing Analysis

The aquifer testing calculated the hydraulic conductivity in the perched groundwater and the alluvial aquifer. The perched groundwater has an average hydraulic conductivity (K) of 2.31E-03 ft/min and 9.90E-04 ft/min for MW-22A and MW-27A, respectively. The hydraulic conductivity values indicate that the perched groundwater is a less-permeable system. The alluvial aquifer at MW-27B has a hydraulic conductivity (K) value of 5.26E-03 ft/min. The K value indicates that the alluvial aquifer is more permeable than the perched groundwater.

4.2.1 Groundwater Flow and Gradient

The perched groundwater unit flows in a generally northerly direction. In the alluvial aquifer, the groundwater flow is generally northwesterly. North of the Site near N 1500 Road, the alluvial groundwater flow is north-northeasterly. The horizontal hydraulic gradient is approximately 0.02 ft/ft in the perched unit and 0.01 ft/ft in the alluvial aquifer.

Vertical hydraulic gradients between the nested wells are provided in Table 9 and show a downward gradient between the fine-grained perched and alluvial groundwater systems ranging from -0.17192 ft/ft (MW-29A/B) to -1.14135 ft/ft (MW-26A/B).

4.2.2 Groundwater Flow Velocity

The groundwater flow velocity for both groundwater systems was estimated using the single well response test data (see Table 8) using the average linear groundwater flow velocity (v) equation:

$$v = \frac{Ki}{n_e}$$

where:

K = hydraulic conductivity (ft/min)

i = hydraulic gradient (ft/ft)

n_e = assumed effective porosity

The hydraulic gradient across the perched groundwater is at a slope of 0.02 ft/ft. The effective porosity is an assumed value of 0.25. Effective porosity was based on accepted range for this soil type as presented in Table C.3.2 of Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water (EPA, 1998). Using the range of average K values from the aquifer tests, the average groundwater flow velocity ranges from 1.85E-04 ft/min to 7.92E-05 ft/min in the perched system. The effective porosity is an assumed value of 0.25 at a gradient of 0.01 ft/ft. Using the average K value of 5.26E-03 ft/min from the aquifer tests, the groundwater flow velocity is 2.11E-04 ft/min.

4.3 Groundwater Results Evaluation

Groundwater data were collected from newly-installed monitoring wells and from previously-existing monitoring wells to evaluate the concentration and distribution of nitrate/nitrite and ammonia in the perched groundwater unit, alluvial aquifer, and sandstone aquifer. The primary objective of the sampling was to further characterize the current nature and extent (horizontal and vertical) of nitrogen-affected groundwater in the perched silty clay unit and the underlying alluvial aquifer in the northwestern part of the Site.

The results of the monitoring well installation and sampling indicate the extent of nitrate/nitrite and ammonia is delineated in the alluvial aquifer. Groundwater analytical results in the perched zone suggest that an area of nitrate/nitrite-affected groundwater is present below the field north of the BNSF railroad tracks and south of N 1500 Rd. The affected area includes by MW-24A, MW-23A, and MW-28A where nitrate/nitrite concentrations were 72.5 mg/L, 14.1 mg/L, and 34.3 mg/L, respectively. This area of affected groundwater appears to be separated from nitrate/nitrite present in the perched groundwater at the base of Sandstone Hill and under Plant A by low or not-detected concentrations of nitrate/nitrite at PSW-18 and PSW-5A. The area of nitrate/nitrite-affected groundwater is delineated on all sides except for the north where 34.3 mg/L nitrate/nitrite was reported in groundwater samples from monitoring well MW-28A near N 1500 Rd. The extent of the groundwater impact is likely limited by the extent of the perched groundwater which was not observed at MW-21A and PSW-19A. The monitoring well network to the north of the Eastern Ponds does not include wells screened within the perched unit. As a result, the extent of groundwater impacts is unknown within the perched unit northeast of the ponds.

GHD graphed historical nitrate/nitrite and ammonia concentrations in groundwater with groundwater elevations over time for previously existing monitoring wells at the Site. The graphs are provided in Appendix G. The graphs show significant declines in nitrate/nitrite concentrations over time at monitoring wells PSW-1A, PSW-3A, PSW-3B3, PSW-5A, PSW-6A, PSW-6B4, W-7B2, PSW-13A, PSW-17, PSW-18, PSW-19B, and PSW-20B.

Nitrate/nitrite at PSW-2A and PSW-9B were variable until 2019 when concentrations increase substantially beginning in June 2019. This coincides with historically high regional precipitation and increased groundwater elevations. There is a clear correlation between the nitrate/nitrite concentration and the groundwater elevation in the data for these two wells.

Nitrate/nitrite and ammonia increased substantially at PSW-5B2 in late 2017 until June 2019 when nitrate/nitrite decreased to below 10 mg/L. Ammonia at PSW-5B2 also decreased but remains relatively high. Nitrate/nitrite has declined significantly at PSW-7A since 1997; however, in August 2016, nitrate/nitrite rebounded but appears to be stable since.

Nitrate/nitrite is stable and below 10 mg/L at PSW-1B, PSW-2B, PSW-4, PSW-5A, PSW-5B2, PSW-6B4, PSW-7B2, PSW-9A, PSW-9B, PSW-15, PSW-18, and PSW-20B.

5. Summary and Conclusions

Seventeen additional monitoring wells were installed at the Site to further characterize the nature and extent of nitrogen-affected groundwater in the perched silty clay unit and the underlying alluvial aquifer in the northwestern part of the Site between the railroad tracks and N 1500 Road. The results of the well installation and sampling indicate that nitrate/nitrite and ammonia are not present at significant levels in the alluvial aquifer in the area of investigation and

nitrate/nitrite is present in an apparently isolated area of groundwater in the perched groundwater system, including monitoring wells MW-23A, MW-24A, and MW-28A

Nitrate/nitrite and ammonia in groundwater south of the BNSF railroad under the former Plant A operations area, the Eastern Pond Area and Sandstone Hill is well-documented in the monitoring well network at the Site. Nitrate/nitrite and ammonia concentrations have declined significantly since 1997 when routine groundwater monitoring began.

The nitrogen-affected groundwater does not appear to be migrating from the Site in the alluvial aquifer except for the northwest part of the Site where containment well PW-9 is located. Historically, nitrate/nitrite had been observed north of N1500 Road at PSW-20B; however, nitrate/nitrite concentrations were less than 10 mg/L in the most recent sampling data collected in February 2021, May 2021, and June 2021.

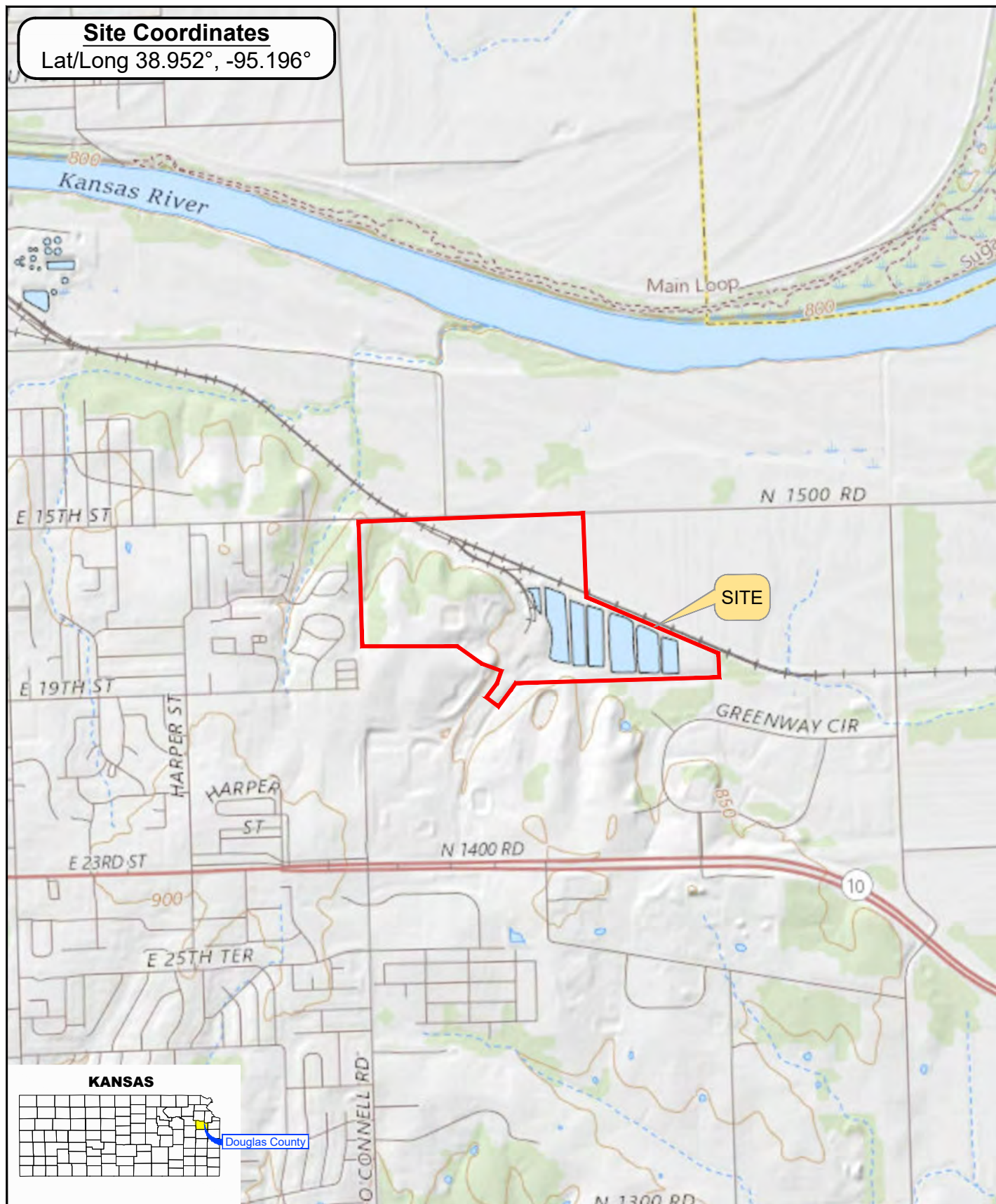
The geotechnical test results indicate the perched silty clay unit consisted of fat and lean clays with average hydraulic conductivities (K) of $2.31\text{E-}03$ ft/min and $9.09\text{E-}04$ ft/min.

The geotechnical results from the alluvial aquifer indicated poorly graded sands to clayey sands with a conductivity of $5.26\text{E-}03$ ft/min. These are consistent with expectations based on field observations during well drilling activities.

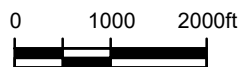
Based on the data collected, analyzed, and interpreted from the implemented work plan, the following conclusions can be reached:

1. Nitrate/nitrite and ammonia is not present in the alluvial aquifer in the area of interest. Much of the nitrate/nitrite present in groundwater at the overall Site is found in the perched groundwater unit under the former Plant A, former Western Ponds, the Eastern Ponds, and an apparently isolated area under the field north of the railroad tracks and south of N 1500 Road.
2. Ammonia is present in the perched groundwater unit under the former Plant A, Western Ponds, and Eastern Ponds.
3. Nitrate/nitrite is not present at concentrations above the nitrate action level of 10 mg/L in the alluvial aquifer, except for the northwest part of the Site where the footprint appears to be decreasing based upon decreasing trend in concentrations in samples from PSW-20B in recent sampling data.
4. Ammonia in the alluvial aquifer is present at higher concentrations in the vicinity of PSW-5B2 relative to other parts of the Site.
5. Perched groundwater located primarily on the west and northwest of the Site is not impacting the quality of groundwater present in the alluvial aquifer underlying it in those areas.
6. Improving the groundwater extraction system around PW-9 and the area between PW-9 and PSW-5B2 would not serve a beneficial purpose based upon data collected to date.
7. Additional monitoring data over time could identify seasonal effects, if any, on the data presented in this report.

Figures



Source: USGS 7.5 MINUTE QUAD "LAWRENCE EAST, KANSAS"



Coordinate System:
STATE PLANE -
KANSAS SOUTH



FORMER FARMLAND INDUSTRIES NITROGEN PLANT
MONITORING WELL INSTALLATION WORK PLAN
1608 N 1400 ROAD, LAWRENCE, KANSAS

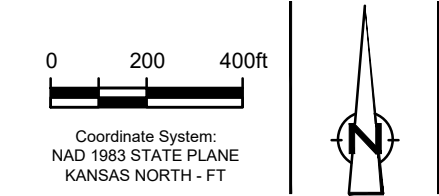
SITE LOCATION MAP

11224213
Nov 1, 2021

FIGURE 1



Source: GOOGLE AERIAL IMAGE DATED SEPTEMBER 21, 2018

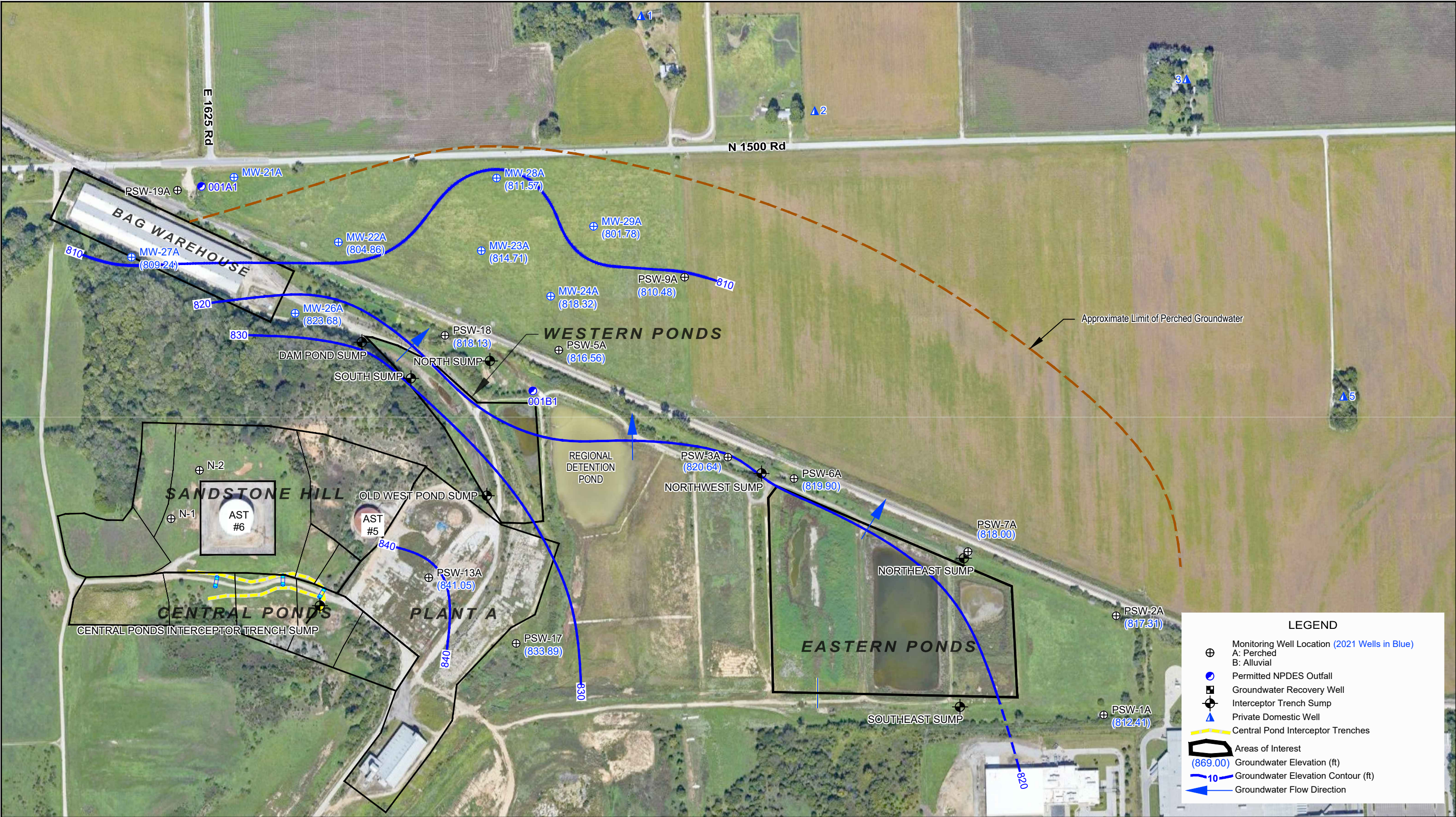


FORMER FARMLAND INDUSTRIES NITROGEN PLANT
MONITORING WELL INSTALLATION WORK PLAN
1608 N 1400 ROAD, LAWRENCE, KANSAS

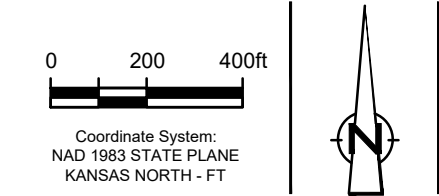
SITE LAYOUT MAP

11224213
Oct 21, 2021

FIGURE 2



Source: GOOGLE AERIAL IMAGE DATED SEPTEMBER 21, 2018



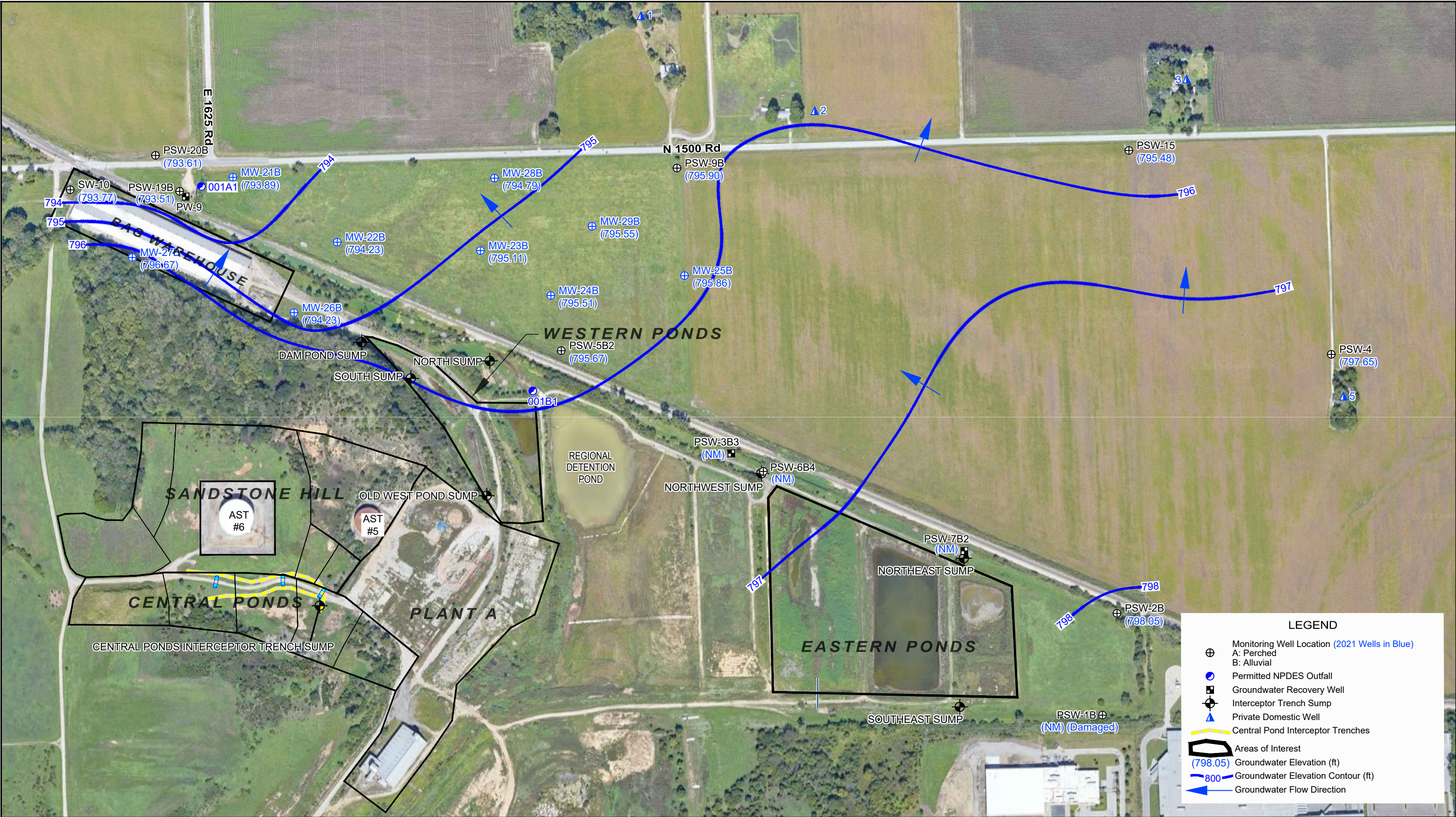
PERCHED ZONE:
MW-21A, MW-22A, MW-23A, MW-24A, MW-26A, MW-27A, MW-28A, MW-29A,
PSW-1A, PSW-2A, PSW-3A, PSW-5A, PSW-6A, PSW-7A, PSW-9A, PSW-13A,
PSW-17, PSW-18, AND PSW-19A.



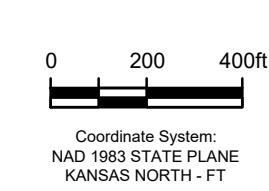
FORMER FARMLAND INDUSTRIES NITROGEN PLANT
MONITORING WELL INSTALLATION WORK PLAN
1608 N 1400 ROAD, LAWRENCE, KANSAS
GROUNDWATER ELEVATIONS - PERCHED ZONE
JUNE 2021

11224213
Jan 13, 2022

FIGURE 3



Source: GOOGLE AERIAL IMAGE DATED SEPTEMBER 21, 2018



WELLS IN ALLUVIAL AQUIFER:
MW-21B, MW-22B, MW-23B, MW-24B, MW-25B, MW-26B, MW-27B, MW-28B,
MW-29B, PSW-1B, PSW-2B, PSW-3B (NM), PSW-4, PSW-5B2, PSW-6B4 (NM),
PSW-7B2 (SCREENED IN THE ALLUVIAL AND SANDSTONE AQUIFER),
PSW-9B, PSW-15, PSW-19B, PSW-20B, AND SW-10.



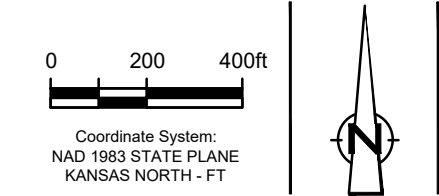
FORMER FARMLAND INDUSTRIES NITROGEN PLANT
MONITORING WELL INSTALLATION WORK PLAN
1608 N 1400 ROAD, LAWRENCE, KANSAS
GROUNDWATER ELEVATIONS - ALLUVIAL AQUIFER
JUNE 2021

11224213
Jan 13, 2022

FIGURE 4



Source: GOOGLE AERIAL IMAGE DATED SEPTEMBER 21, 2018



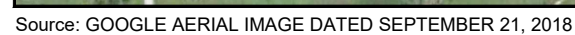
WELLS IN SANDSTONE AQUIFER:
N-1, N-2, CPMW-1S, CPMW-1D (NOT USED IN CONTOURS), CPMW-2SR,
AND PSW-13B.



FORMER FARMLAND INDUSTRIES NITROGEN PLANT
MONITORING WELL INSTALLATION WORK PLAN
1608 N 1400 ROAD, LAWRENCE, KANSAS
GROUNDWATER ELEVATIONS - SANDSTONE AQUIFER
JUNE 2021

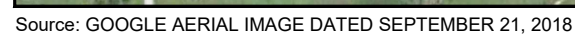
11224213
Jan 13, 2022

FIGURE 5

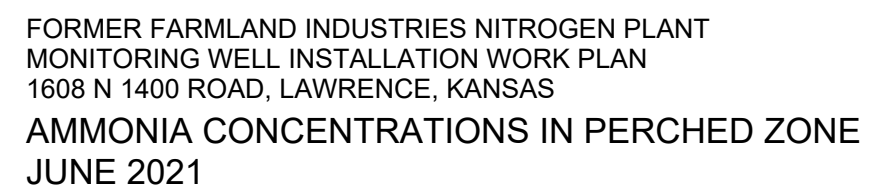


11224213
Oct 26, 2021

FIGURE 6



NOTE:
ISOCONTOUR LINES IN PLANT A AREA INFERRED USING CURRENT DATA
AND DATA FROM THE 2020 DATA GAP STUDY.

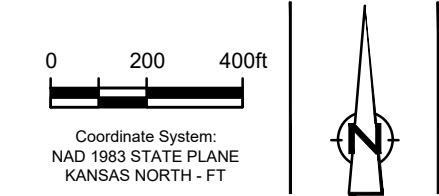


11224213
Oct 21, 2021

FIGURE 7



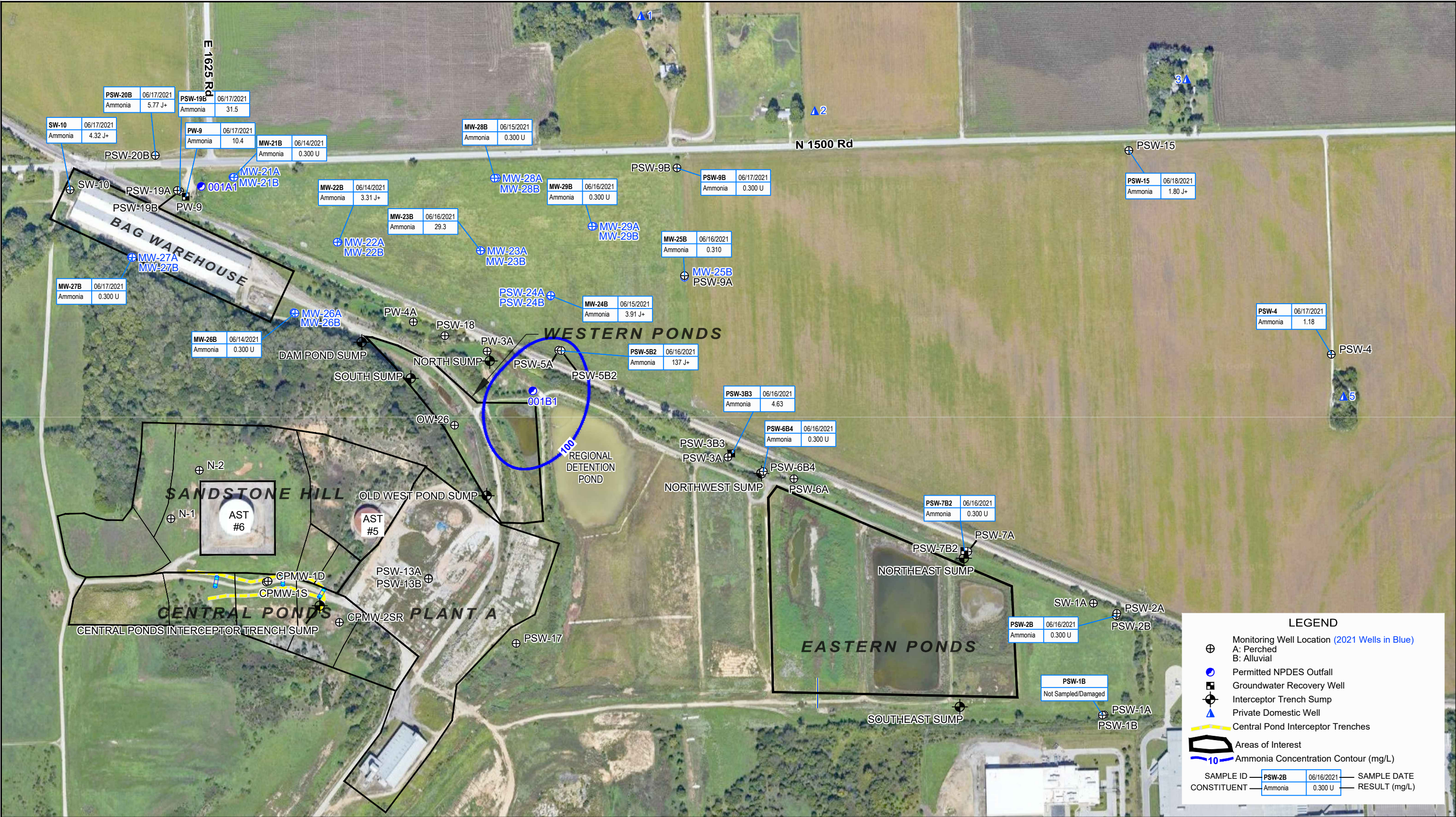
Source: GOOGLE AERIAL IMAGE DATED SEPTEMBER 21, 2018



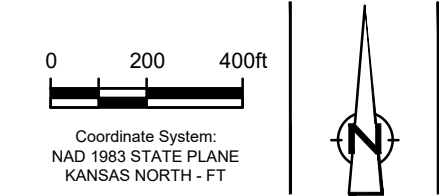
FORMER FARMLAND INDUSTRIES NITROGEN PLANT
MONITORING WELL INSTALLATION WORK PLAN
1608 N 1400 ROAD, LAWRENCE, KANSAS
NITRATE/NITRITE CONCENTRATIONS IN ALLUVIAL AQUIFER
JUNE 2021

11224213
Oct 21, 2021

FIGURE 8



Source: GOOGLE AERIAL IMAGE DATED SEPTEMBER 21, 2018



FORMER FARMLAND INDUSTRIES NITROGEN PLANT
MONITORING WELL INSTALLATION WORK PLAN
1608 N 1400 ROAD, LAWRENCE, KANSAS
AMMONIA CONCENTRATIONS IN ALLUVIAL AQUIFER
JUNE 2021

11224213
Oct 21, 2021

FIGURE 9



Source: GOOGLE AERIAL IMAGE DATED SEPTEMBER 21, 2018

0 200 400ft

Coordinate System:
NAD 1983 STATE PLANE
KANSAS NORTH - FT



CPMW-1S NOT USED IN ISOCONCENTRATIONS.



FORMER FARMLAND INDUSTRIES NITROGEN PLANT
MONITORING WELL INSTALLATION WORK PLAN
1608 N 1400 ROAD, LAWRENCE, KANSAS
NITRATE/NITRITE CONCENTRATIONS IN SANDSTONE AQUIFER
JUNE 2021

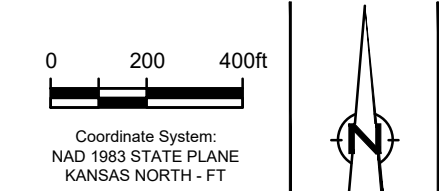
11224213

Oct 21, 2021

FIGURE 10



Source: GOOGLE AERIAL IMAGE DATED SEPTEMBER 21, 2018



CPMW-1S NOT USED IN ISOCONCENTRATIONS.



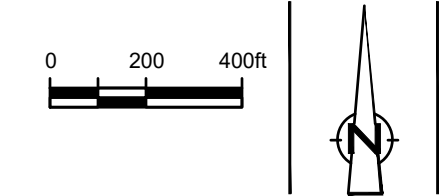
FORMER FARMLAND INDUSTRIES NITROGEN PLANT
MONITORING WELL INSTALLATION WORK PLAN
1608 N 1400 ROAD, LAWRENCE, KANSAS
AMMONIA CONCENTRATIONS IN SANDSTONE AQUIFER
JUNE 2021

11224213
Oct 21, 2021

FIGURE 11



Source: GOOGLE AERIAL IMAGE DATED SEPTEMBER 21, 2018

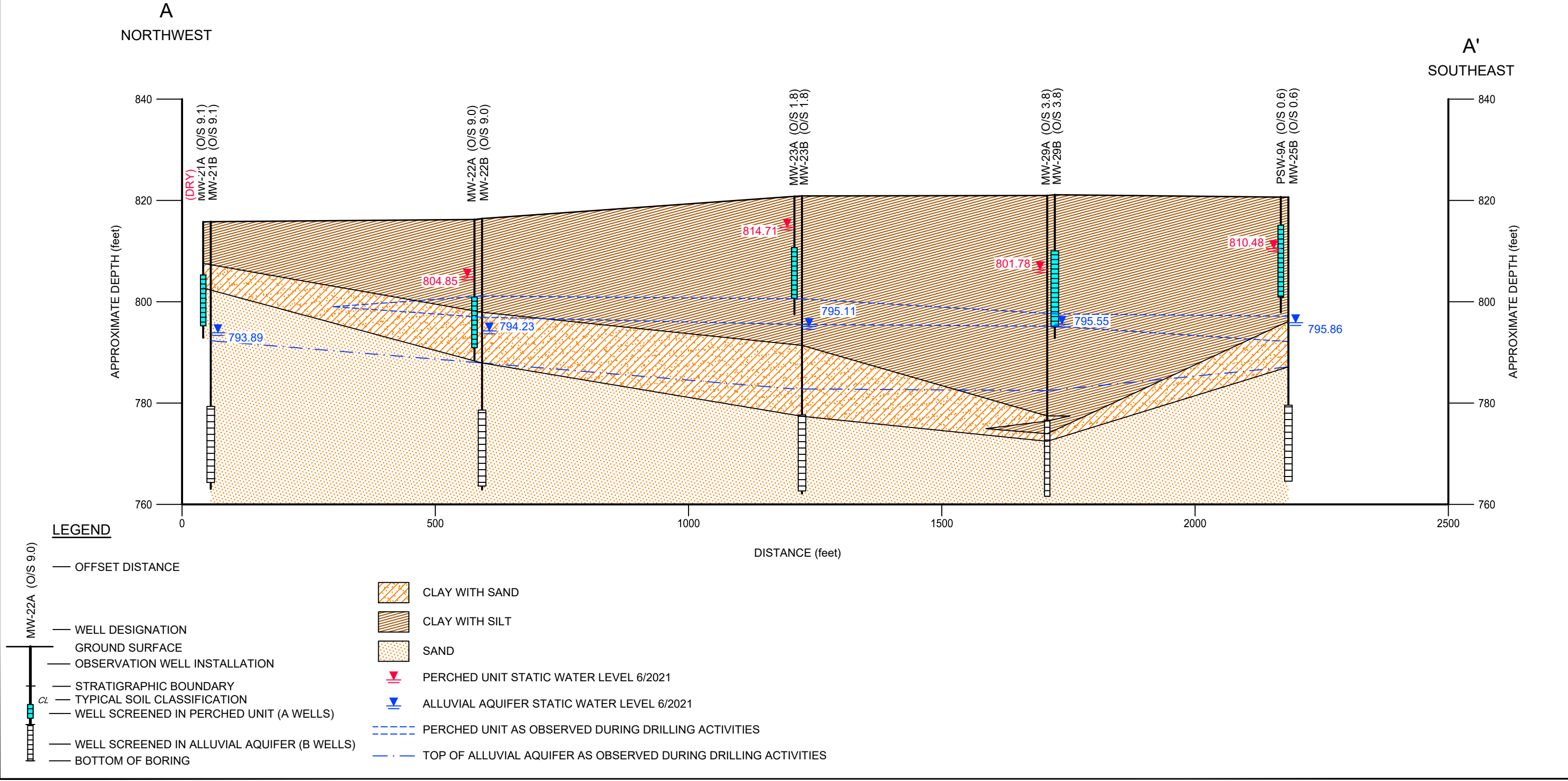


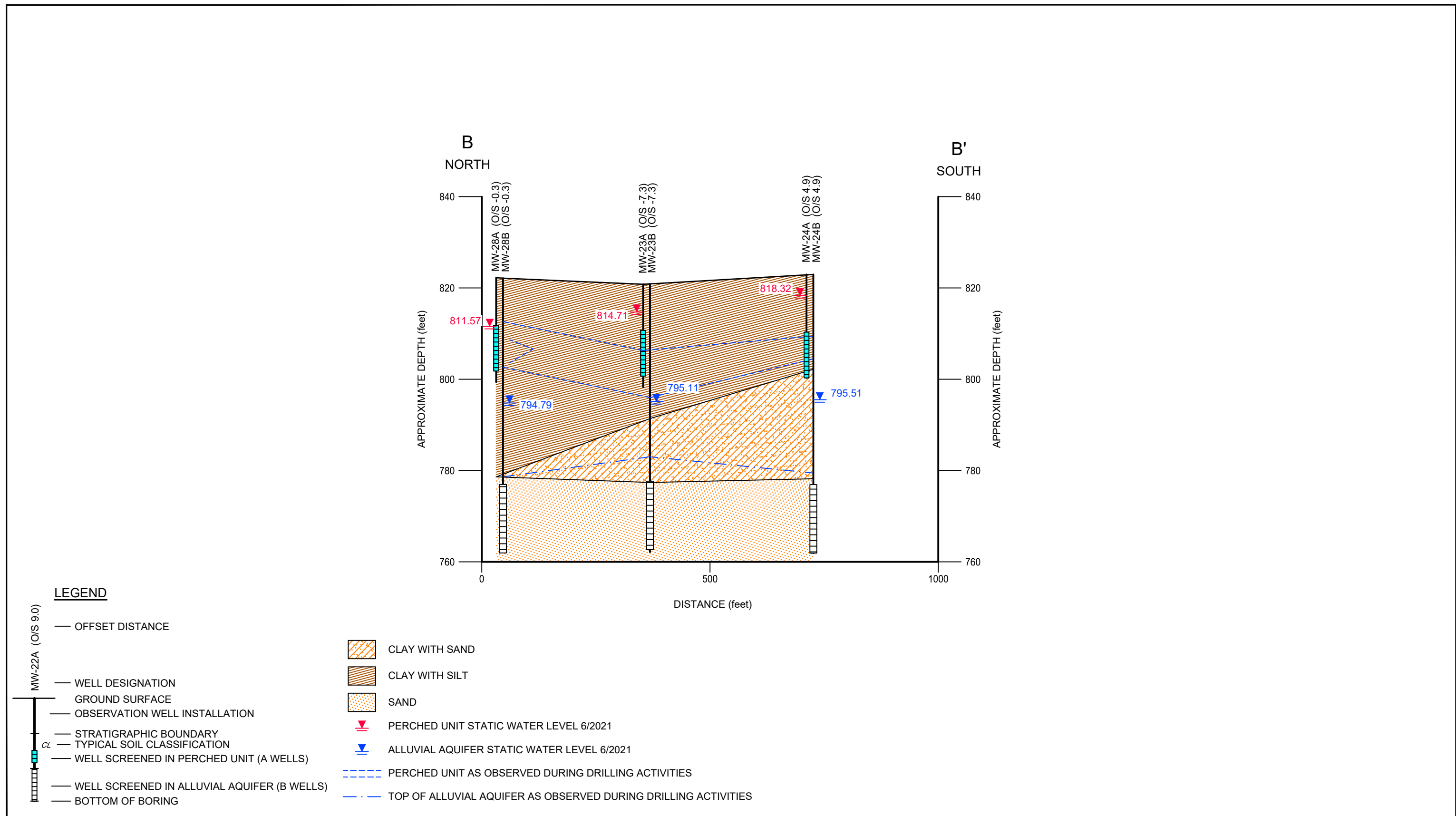
FORMER FARMLAND INDUSTRIES NITROGEN PLANT
MONITORING WELL INSTALLATION WORK PLAN
1608 N 1400 ROAD, LAWRENCE, KANSAS

FENCE DIAGRAM MAP

11224213
Sep 28, 2021

FIGURE 12





Tables

**Monitoring Well Construction Summary
Farmland Remediation Project
Lawrence, KS**

Well ID	Measured Total Depth	Ground Elevation	Top of Casing Elevation	Screen Length	Screen Elevation		Aquifer Designation
	<i>feet (bgs)⁴</i>	<i>feet (amsl)⁵</i>	<i>feet (amsl)</i>	<i>feet</i>	<i>feet (amsl)</i>		
MW-21A	22.87	815.77	818.14	10	805.27	- 795.27	Perched Zone
MW-21B	53.75	815.80	818.09	15	779.34	- 764.34	Alluvial Aquifer
MW-22A	27.71	816.23	818.65	10	800.94	- 790.94	Perched Zone
MW-22B	55.12	816.42	818.74	15	778.62	- 763.62	Alluvial Aquifer
MW-23A	22.54	820.80	823.23	10	810.69	- 800.69	Perched Zone
MW-23B	60.58	820.88	823.24	15	777.66	- 762.66	Alluvial Aquifer
MW-24A	22.67	820.65	822.96	10	810.29	- 800.29	Perched Zone
MW-24B	61.03	820.70	822.95	15	776.92	- 761.92	Alluvial Aquifer
MW-25B	58.21	820.63	822.79	15	779.58	- 764.58	Alluvial Aquifer
MW-26A	23.43	828.54	831.48	10	818.05	- 808.05	Perched Zone
MW-26B	50.78	828.36	830.97	15	795.19	- 780.19	Alluvial Aquifer
MW-27A	26.72	830.95	831.86	15	820.14	- 805.14	Perched Zone
MW-27B	50.86	829.45	831.98	15	796.12	- 781.12	Alluvial Aquifer
MW-28A	22.87	822.25	824.67	10	811.80	- 801.80	Perched Zone
MW-28B	62.33	822.12	824.28	15	776.95	- 761.95	Alluvial Aquifer
MW-29A	28.30	820.96	823.70	15	810.40	- 795.40	Perched Zone
MW-29B	62.09	821.11	823.34	15	776.25	- 761.25	Alluvial Aquifer
PSW-1A	27.29	820.39	822.66	15	810.37	- 795.37	Perched Zone
PSW-1B ²	59.5	820.20	821.22	20	781.72	- 761.72	Alluvial Aquifer
PSW-2A	22.00	819.34	821.50	15	814.50	- 799.50	Perched Zone
PSW-2B	27.42	818.59	821.03	15	808.61	- 793.61	Alluvial Aquifer
PSW-3A	26.23	824.28	826.11	20	819.88	- 799.88	Perched Zone
PSW-3B ³	63	--	--	15	--	- --	Alluvial Aquifer/Sandstone Aquifer
PSW-4	57.42	820.33	823.06	15	780.64	- 765.64	Alluvial Aquifer
PSW-5A	28.62	821.42	823.91	20	815.29	- 795.29	Perched Zone
PSW-5B2	60.01	821.18	822.96	20	782.95	- 762.95	Alluvial Aquifer
PSW-6A	27.80	822.09	824.14	20	816.34	- 796.34	Perched Zone
PSW-6B ⁴	59	--	--	10	--	- --	Alluvial Aquifer/Sandstone Aquifer
PSW-7A	21.85	819.43	821.98	15	815.13	- 800.13	Perched Zone

**Monitoring Well Construction Summary
Farmland Remediation Project
Lawrence, KS**

Well ID	Measured Total Depth	Ground Elevation	Top of Casing Elevation	Screen Length	Screen Elevation		Aquifer Designation
	<i>feet (bgs ⁴)</i>	<i>feet (amsl ⁵)</i>	<i>feet (amsl)</i>	<i>feet</i>	<i>feet (amsl)</i>		
PSW-7B2	60	--	--	15	--	- --	Alluvial Aquifer/Sandstone Aquifer
PSW-9A	22.8	820.70	822.89	15	815.09	- 800.09	Perched Zone
PSW-9B	57.63	821.64	824.01	20	786.38	- 766.38	Alluvial Aquifer
PSW-13A	24.05	845.37	847.35	15	838.30	- 823.30	Perched Zone
PSW-13B	39.85	846.00	847.55	10	817.70	- 807.70	Sandstone Aquifer
PSW-15	59.27	821.16	823.35	15	779.08	- 764.08	Alluvial Aquifer
PSW-17	23.59	839.59	841.89	15	833.30	- 818.30	Perched Zone
PSW-18	28.08	822.12	823.96	20	815.88	- 795.88	Perched Zone
PSW-19A	15	817.21	819.39	10	814.39	- 804.39	Perched Zone
PSW-19B	54.32	817.13	819.13	30	794.81	- 764.81	Alluvial Aquifer
PSW-20B	53.79	815.17	817.44	30	793.65	- 763.65	Alluvial Aquifer
SW-10	62.17	824.78	827.51	10	775.34	- 765.34	Alluvial Aquifer
CPMW-1D ³	47.53	875.09	877.23	5	834.70	- 829.70	Sandstone Aquifer/Shale
CPMW-1S ³	28	875.36	877.21	10	859.21	- 849.21	Sandstone Aquifer/Shale
CPMW-2SR ³	35.03	855.37	856.68	15	836.65	- 821.65	Sandstone Aquifer
N-1 ¹	28.19	891.44	893.78	16	881.59	- 865.59	Sandstone Aquifer
N-2 ¹	22.44	889.51	890.81	16	884.37	- 868.37	Sandstone Aquifer

¹ Source: Shaw Environmental Inc. Site Characterization Report, Former Farmland Nitrogen Plant, Lawrence, KS, February 1, 2006

² Source: WWC-5 forms.

³ Source: WWC-5 forms and Central Pond Interceptor Trench Completion Report - 2015

⁴ Top of casing

⁵ Above mean sea level

Table 2

**Well Development Summary
Farmland Remediation Project
Lawrence, KS**

MW ID	Date	Initial Measured Depth to Water (ft Below TOC ²)	Measured Total Depth (ft Below TOC ²)	Volume to be Purged ¹ (gallons)	Turbidity (Visual)	pH (s.u.)	Conductivity mS/cm	Temp Celcius	Total Volume Purged Gallons
MW-21A	6/09/2021	Dry	22.87	--	--	--	--	--	--
MW-21B	6/09/2021	24.36	56.18	51.87	Clear	5.69	1.177	11.20	245
MW-22A	6/09/2021	12.77	27.71	24.35	Clear	7.35	1.627	10.98	45
MW-22B	6/09/2021	24.61	55.12	49.73	Clear	8.08	1.207	10.98	160
MW-23A	6/10/2021	6.39	22.54	26.32	Clear	7.71	2.233	15.52	30
MW-23B	6/11/2021	28.10	60.52	52.84	Clear	7.63	1.537	10.25	175
MW-24A	6/10/2021	4.28	22.74	30.09	Cloudy	7.25	1.107	10.91	37
MW-24B	6/10/2021	27.38	61.03	54.85	Hazy	7.95	1.279	10.77	165
MW-25B	6/11/2021	27.11	58.21	50.69	Clear	7.63	1.537	10.25	175
MW-26A	6/11/2021	20.95	23.43	4.04	Cloudy	--	--	--	17 ³
MW-26B	6/11/2021	35.18	50.78	25.43	Clear	--	--	--	300
MW-27A	6/11/2021	7.31	23.25	25.98	Clear	6.97	0.944	8.84	40
MW-27B	6/11/2021	35.82	50.86	24.52	Clear	6.91	0.049	11.51	245
MW-28A	6/10/2021	11.50	22.87	18.53	Clear	--	--	--	30 ³
MW-28B	6/10/2021	29.37	62.33	53.72	Clear	8.01	1.493	11.06	180
MW-29A	6/10/2021	20.18	28.30	13.24	Cloudy	--	--	--	17 ³
MW-29B	6/10/2021	21.69	62.09	65.85	Clear	7.64	1.216	11.29	230

¹ PV= ((TD-DTW) * 0.163) * 10

² Top of Casing

³ Monitoring well purged dry and allowed to recharge multiple times to remove sufficient volume

Groundwater Elevations Summary - June 2021
Farmland Remediation Project
Lawrence, KS

Location	Measurement Date	Reference Elevation (ft. amsl¹)	Water Level Depth (ft. from TOC²)	Water Level Elevation (ft. amsl)
CPMW-1D	6/14/2021	877.230	20.48	856.75
CPMW-1S	6/14/2021	877.205	12.28	864.93
CPMW-2SR	6/14/2021	856.675	3.93	852.75
MW-21A	6/14/2021	818.136	Dry	Dry
MW-21B	6/14/2021	818.086	24.20	793.89
MW-22A	6/14/2021	818.645	13.79	804.86
MW-22B	6/14/2021	818.738	24.51	794.23
MW-23A	6/14/2021	823.227	8.52	814.71
MW-23B	6/14/2021	823.235	28.13	795.11
MW-24A	6/14/2021	822.955	4.64	818.32
MW-24B	6/14/2021	822.948	27.44	795.51
MW-25B	6/14/2021	822.790	26.93	795.86
MW-26A	6/14/2021	831.477	7.80	823.68
MW-26B	6/14/2021	830.971	36.74	794.23
MW-27A	6/14/2021	831.860	22.62	809.24
MW-27B	6/14/2021	831.980	35.31	796.67
MW-28A	6/14/2021	824.665	13.10	811.57
MW-28B	6/14/2021	824.276	29.49	794.79
MW-29A	6/14/2021	823.696	21.92	801.78
MW-29B	6/14/2021	823.342	27.79	795.55
N-1	6/14/2021	893.779	18.45	875.33
N-2	6/14/2021	890.812	10.58	880.23
PSW-1A	6/14/2021	822.660	10.25	812.41
PSW-1B	6/14/2021	821.217	NM ³	NM
PSW-2A	6/14/2021	821.504	4.19	817.31
PSW-2B	6/14/2021	821.034	22.98	798.05
PSW-3A	6/14/2021	826.110	5.47	820.64
PSW-3B3	6/14/2021	826.160	NM	NM
PSW-4	6/14/2021	823.059	25.41	797.65
PSW-5A	6/14/2021	823.911	7.35	816.56
PSW-5B2	6/14/2021	822.959	27.29	795.67
PSW-6A	6/14/2021	824.136	4.24	819.90
PSW-6B4	6/14/2021	824.610	NM	NM
PSW-7A	6/14/2021	821.982	3.98	818.00
PSW-7B2	6/14/2021	NM	NM	NM
PSW-9A	6/14/2021	822.886	12.41	810.48
PSW-9B	6/14/2021	824.008	28.11	795.90
PSW-13A	6/14/2021	847.348	6.30	841.05
PSW-13B	6/14/2021	847.553	8.55	839.00
PSW-15	6/14/2021	823.349	27.87	795.48
PSW-17	6/14/2021	841.893	8.00	833.89
PSW-18	6/14/2021	823.963	5.83	818.13
PSW-19A	6/14/2021	819.394	Dry	Dry
PSW-19B	6/14/2021	819.125	25.62	793.51
PSW-20B	6/14/2021	817.439	23.83	793.61
SW-10	6/14/2021	827.506	33.74	793.77

Notes

¹ Above mean sea level² Top of Casing³ Not Measured

Table 4

**Geochemical Parameter Summary
Farmland Remediation Project
Lawrence, KS**

Sample Location:	Sample Identification:	Sample Date:	Conductivity	Dissolved Oxygen (DO)	Oxidation Reduction Potential (ORP)	pH	Temperature	Turbidity
			(mS/cm)	(mg/L)	(mV)	(s.u.)	(° C)	(NTU)
CPMW-1D	WG-061521-NL-008	06/15/2021	78.678	0.57	125.6	8.62	16.50	Clear
CPMW-1S	WG-061521-NL-009	06/15/2021	28.401	1.17	117.7	8.35	28.74	Hazy
CPMW-2SR	WG-061821-NL-022	06/18/2021	77.72	0.79	-157.5	7.70	21.98	Clear
CPMW-2SR	WG-061821-NL-023	06/18/2021	--	--	--	--	--	--
CPMW-2SR	WG-061821-NL-022A	06/18/2021	--	--	--	--	--	--
MW-21B	WG-061421-NL-003	06/14/2021	0.773	0.68	98.6	6.53	25.37	Clear
MW-22A	WG-061421-NL-005	06/14/2021	0.817	3.52	77.1	6.70	22.72	Clear
MW-22B	WG-061421-NL-004	06/14/2021	1.250	1.13	23.0	6.59	24.55	Clear
MW-23A	WG-061621-NL-017	06/16/2021	0.564	0.18	-130.9	6.82	22.51	Hazy
MW-23B	WG-061621-NL-016	06/16/2021	0.618	0.08	-299.7	7.01	12.50	Clear
MW-24A	WG-061521-NL-011	06/15/2021	1.09	4.33	71.5	6.91	21.42	Clear
MW-24B	WG-061521-NL-010	06/15/2021	0.549	1.78	-63.3	6.74	16.64	Clear
MW-25B	WG-061621-NL-012	06/16/2021	0.344	0.06	-324.6	7.00	13.17	Clear
MW-26A	WG-061421-NL-002	06/14/2021	0.342	4.91	117.9	5.57	23.16	Clear
MW-26B	WG-061421-NL-001	06/14/2021	1.134	1.20	48.9	6.02	26.07	Cloudy
MW-27A	WG-061721-NL-019	06/17/2021	0.268	0.25	-178.8	6.79	17.80	Hazy
MW-27B	WG-061721-NL-018	06/17/2021	0.283	0.39	-175.0	6.42	11.02	Hazy
MW-28A	WG-061521-NL-007	06/15/2021	1.014	4.69	114.8	6.60	14.50	Clear
MW-28B	WG-061521-NL-006	06/15/2021	0.680	1.41	35.5	6.75	16.58	Clear
MW-29A	WG-061621-NL-015	06/16/2021	0.315	0.15	-122.9	6.86	23.66	Hazy
MW-29B	WG-061621-NL-014	06/16/2021	0.379	0.06	-291.3	6.53	13.26	Clear
N-1	WG-061821-SM-026	06/18/2021	171.768	0.19	73.8	8.11	17.99	--
N-1	WG-061821-SM-027	06/18/2021	--	--	--	--	--	--
N-1	WG-061821-SM-026A	06/18/2021	--	--	--	--	--	--
N-2	WG-061821-SM-024	06/18/2021	0.475	0.45	80.2	6.35	18.07	--
N-2	WG-061821-SM-025	06/18/2021	--	--	--	--	--	--
N-2	WG-061821-SM-024A	06/18/2021	--	--	--	--	--	--
PSW-1A	WG-061621-SM-001	06/16/2021	0.591	2.11	60.3	6.61	18.31	--
PSW-2A	WG-061621-SM-002	06/16/2021	1.495	1.28	87.8	6.32	20.31	--
PSW-2B	WG-061621-SM-003	06/16/2021	0.514	1.33	-42.4	6.75	16.88	--
PSW-3A	WG-061621-SM-008	06/16/2021	0.556	1.10	70.9	6.50	19.77	--

**Geochemical Parameter Summary
Farmland Remediation Project
Lawrence, KS**

Sample Location:	Sample Identification:	Sample Date:	Conductivity	Dissolved Oxygen (DO)	Oxidation Reduction Potential (ORP)	pH	Temperature	Turbidity
			(mS/cm)	(mg/L)	(mV)	(s.u.)	(° C)	(NTU)
PSW-3B3	WG-061621-SM-009	06/16/2021	0.872	2.63	14.2	6.82	16.34	--
PSW-4	WG-061721-NL-021	06/17/2021	0.230	0.14	-265.9	6.63	12.45	Clear
PSW-5A	WG-061621-SM-011	06/16/2021	0.643	1.91	46.4	6.95	21.91	--
PSW-5B2	WG-061621-SM-010	06/16/2021	2.742	1.08	50.1	6.04	18.25	--
PSW-6A	WG-061621-SM-006	06/16/2021	3.321	0.95	94.0	7.05	20.07	--
PSW-6B4	WG-061621-SM-007	06/16/2021	0.567	3.53	-36.4	6.98	16.2	--
PSW-7A	WG-061621-SM-004	06/16/2021	2.301	1.17	100.3	5.81	18.63	--
PSW-7B2	WG-061621-SM-005	06/16/2021	0.604	4.78	-24.2	6.92	14.92	--
PSW-9A	WG-061621-NL-013	06/16/2021	0.344	0.10	-181.2	6.45	21.73	Clear
PSW-9B	WG-061721-NL-020	06/17/2021	0.202	1.09	-174.1	6.41	11.93	Hazy
PSW-13A	WG-061721-SM-016	06/17/2021	2.356	0.86	120.5	6.40	20.64	--
PSW-13B	WG-061721-SM-017	06/17/2021	3.774	0.89	109.5	6.36	20.04	--
PSW-13B	WG-061721-SM-018	06/17/2021	--	--	--	--	--	--
PSW-15	WG-061821-SM-023	06/18/2021	0.605	0.53	-77.0	7.00	18.17	--
PSW-17	WG-061821-SM-019	06/18/2021	--	--	--	--	--	--
PSW-17	WG-061821-SM-020	06/18/2021	--	--	--	--	--	--
PSW-17	WG-061821-SM-019A	06/18/2021	0.740	0.55	74.8	6.98	18.76	--
PSW-18	WG-061821-SM-021	06/18/2021	--	--	--	--	--	--
PSW-18	WG-061821-SM-022	06/18/2021	--	--	--	--	--	--
PSW-18	WG-061821-SM-021A	06/18/2021	0.252	0.77	92.2	5.95	17.56	--
PSW-19B	WG-061721-SM-014	06/17/2021	1.110	1.34	99.8	6.16	18.02	--
PSW-20B	WG-061721-SM-013	06/17/2021	1.090	1.64	76.1	6.44	17.99	--
PW-9	WG-061721-SM-015	06/17/2021	0.894	2.39	112.9	6.58	16.22	--
SW-10	WG-061721-SM-012	06/17/2021	1.053	1.09	-7.0	6.40	18.53	--

Notes

mS/cm - millisiemens per centimeter
mV - millivolts
mg/L - milligrams per liter
NTU - Nephelometric Turbidity Units

Table 5

**Investigation Derived Waste Summary
Farmland Remediation Project
Lawrence, KS**

Location ID:	Development Water Composite	Development Water Composite	Development Water Composite	Development Water Composite	Development Water Composite	Purge Water Composite
Sample Name:	WW-060921-NL-001	WW-061021-NL-002	WW-061121-NL-003	WW-061121-NL-004	WW-061121-NL-005	WG-061821-NL-028
Sample Date:	06/09/2021	06/10/2021	06/11/2021	06/11/2021	06/11/2021	06/18/2021

Parameters Unit

General Chemistry

Ammonia	mg/L	0.300 U	11.8 J	0.641 J	30.0 J	0.896 J	62.6
Nitrite/Nitrate	mg/L	7.29	12.5	0.441	17.2	18.7	164

Notes:

U - Not detected at the associated reporting limit.

J - Estimated concentration.

Table 6

Groundwater Analytical Results Summary - June 2021
Farmland Remediation Project
Lawrence, KS

Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units Sample Type:	Ammonia (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)	Nitrite/Nitrate (mg/L)
CPMW-1D	WG-061521-NL-008	06/15/2021		18000	--	--	10600
CPMW-1S	WG-061521-NL-009	06/15/2021		4200	--	--	4420
CPMW-2SR	WG-061821-NL-022	06/18/2021		17300	--	--	15100 J
CPMW-2SR	WG-061821-NL-023	06/18/2021	Duplicate	19700	--	--	16700
CPMW-2SR	WG-061821-NL-022A	06/18/2021	Split	17800	28500 J-	R	28500 J
MW-21B	WG-061421-NL-003	06/14/2021		0.300 U	--	--	0.946
MW-22A	WG-061421-NL-005	06/14/2021		0.300 U	--	--	7.98
MW-22B	WG-061421-NL-004	06/14/2021		3.31 J+	--	--	0.250 U
MW-23A	WG-061621-NL-017	06/16/2021		0.300 U	--	--	14.1
MW-23B	WG-061621-NL-016	06/16/2021		29.3	--	--	0.250 U
MW-24A	WG-061521-NL-011	06/15/2021		0.300 U	--	--	72.5
MW-24B	WG-061521-NL-010	06/15/2021		3.91 J+	--	--	0.250 U
MW-25B	WG-061621-NL-012	06/16/2021		0.310	--	--	0.250 U
MW-26A	WG-061421-NL-002	06/14/2021		0.300 U	--	--	20.4
MW-26B	WG-061421-NL-001	06/14/2021		0.300 U	--	--	133
MW-27A	WG-061721-NL-019	06/17/2021		0.300 U	--	--	2.4
MW-27B	WG-061721-NL-018	06/17/2021		0.300 U	--	--	20.9
MW-28A	WG-061521-NL-007	06/15/2021		0.300 U	--	--	34.3
MW-28B	WG-061521-NL-006	06/15/2021		0.300 U	--	--	0.250 U
MW-29A	WG-061621-NL-015	06/16/2021		0.300 U	--	--	1.12
MW-29B	WG-061621-NL-014	06/16/2021		0.300 U	--	--	0.250 U
N-1	WG-061821-SM-026	06/18/2021		44200	--	--	32600
N-1	WG-061821-SM-027	06/18/2021	Duplicate	41200	--	--	29400
N-1	WG-061821-SM-026A	06/18/2021	Split	39600	38900 J+	5550 J-	44400
N-2	WG-061821-SM-024	06/18/2021		7.28 J+	--	--	42
N-2	WG-061821-SM-025	06/18/2021	Duplicate	7.80	--	--	51.1
N-2	WG-061821-SM-024A	06/18/2021	Split	7.5	52.5 J+	R	53.9
PSW-1A	WG-061621-SM-001	06/16/2021		0.300 U	--	--	7.89
PSW-2A	WG-061621-SM-002	06/16/2021		0.300 U	--	--	142
PSW-2B	WG-061621-SM-003	06/16/2021		0.300 U	--	--	0.250 U
PSW-3A	WG-061621-SM-008	06/16/2021		0.300 U	--	--	262
PSW-3B3	WG-061621-SM-009	06/16/2021		4.63	--	--	6.27
PSW-4	WG-061721-NL-021	06/17/2021		1.18	--	--	0.250 U

Table 6

Groundwater Analytical Results Summary - June 2021
Farmland Remediation Project
Lawrence, KS

Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units Sample Type:	Ammonia (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)	Nitrite/Nitrate (mg/L)
PSW-5A	WG-061621-SM-011	06/16/2021		0.300 U	--	--	0.250 U
PSW-5B2	WG-061621-SM-010	06/16/2021		137 J+	--	--	0.250 U
PSW-6A	WG-061621-SM-006	06/16/2021		386	--	--	253
PSW-6B4	WG-061621-SM-007	06/16/2021		0.300 U	--	--	1.76
PSW-7A	WG-061621-SM-004	06/16/2021		32.4 J+	--	--	348
PSW-7B2	WG-061621-SM-005	06/16/2021		0.300 U	--	--	0.250 U
PSW-9A	WG-061621-NL-013	06/16/2021		0.300 U	--	--	7.38
PSW-9B	WG-061721-NL-020	06/17/2021		0.300 U	--	--	9.16
PSW-13A	WG-061721-SM-016	06/17/2021		150	--	--	271
PSW-13B	WG-061721-SM-017	06/17/2021		33.8	--	--	512
PSW-13B	WG-061721-SM-018	06/17/2021	Duplicate	35.1	--	--	517
PSW-15	WG-061821-SM-023	06/18/2021		1.80 J+	--	--	0.250 U
PSW-17	WG-061821-SM-019	06/18/2021		0.615 J+	--	--	31.4
PSW-17	WG-061821-SM-020	06/18/2021	Duplicate	0.631	--	--	30.1
PSW-17	WG-061821-SM-019A	06/18/2021	Split	0.65	38.0 J+	R	39.4
PSW-18	WG-061821-SM-021	06/18/2021		0.300 UJ	--	--	0.893
PSW-18	WG-061821-SM-022	06/18/2021	Duplicate	1.82 J	--	--	0.829
PSW-18	WG-061821-SM-021A	06/18/2021	Split	1.9 J	1.2 J+	R	1.2
PSW-19B	WG-061721-SM-014	06/17/2021		31.5	--	--	64.9
PSW-20B	WG-061721-SM-013	06/17/2021		5.77 J+	--	--	2.87
PW-9	WG-061721-SM-015	06/17/2021		10.4	--	--	47.5
SW-10	WG-061721-SM-012	06/17/2021		4.32 J+	--	--	0.971

Notes

- U - Not detected at the associated reporting limit.
- J - Estimated concentration.
- UJ - Not detected; associated reporting limit is estimated.
- R - Rejected.
- J- - Estimated concentration, result may be biased low
- J+ - Estimated concentration, result may be biased high.

**Historical Groundwater Analytical Results Summary
Farmland Remediation Project
Lawrence, KS**

		General Chemistry Units		Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
Sample Location:	Sample Identification:	Sample Date:	Sample Type:		
CPMW-1D	CPMW-1D	03/24/2014		--	15700
CPMW-1D	CPMW-1D	03/31/2014		--	5300
CPMW-1D	CPMW-1D	05/13/2014		2300	2450
CPMW-1D	CPMW-1D	08/19/2014		544.7	5200
CPMW-1D	CPMW-1D	11/10/2014		--	459
CPMW-1D	CPMW-1D	11/20/2014		364	--
CPMW-1D	CPMW-1D	02/09/2015		298	320
CPMW-1D	CPMW-1D	05/12/2015		576	703
CPMW-1D	CPMW-1D	08/17/2015		624	592
CPMW-1D	CPMW-1D	11/09/2015		644	600
CPMW-1D	CPMW-1D	02/11/2016		1260	1180
CPMW-1D	CPMW-1D	05/19/2016		1180	908
CPMW-1D	CPMW-1D	08/24/2016		1730	1480
CPMW-1D	CPMW-1D	11/10/2016		1350	1910
CPMW-1D	CPMW-1D	02/06/2017		1430	1200
CPMW-1D	CPMW-1D	05/24/2017		4550	4060
CPMW-1D	CPMW-1D	08/10/2017		3160	2750
CPMW-1D	CPMW-1D	11/08/2017		1710	1380
CPMW-1D	CPMW-1D	02/08/2018		2950	2360
CPMW-1D	CPMW-1D	05/10/2018		671	2590
CPMW-1D	CPMW-1D	08/06/2018		3719.752	2870
CPMW-1D	CPMW-1D	11/13/2018		3243.671	2450
CPMW-1D	CPMW-1D	02/05/2019		9620	8970
CPMW-1D	CPMW-1D	06/12/2019		18300	15600
CPMW-1D	CPMW-1D	08/27/2019		23500	17300
CPMW-1D	CPMW-1D	11/18/2019		15600	13300
CPMW-1D	CPMW-1D	02/24/2020		27300	16500
CPMW-1D	CPMW-1D	05/26/2020		20300	16900
CPMW-1D	CPMW-1D	08/17/2020		16600	21000
CPMW-1D	CPMW-1D	11/23/2020		22000	16800
CPMW-1D	CPMW-1D	02/22/2021		18800	16100
CPMW-1D	CPMW-1D	05/24/2021		18500	15400
CPMW-1D	WG-061521-NL-008	06/15/2021		18000	10600
CPMW-1S	CPMW-1S	03/24/2014		--	26800
CPMW-1S	CPMW-1S	03/31/2014		--	16700
CPMW-1S	CPMW-1S	05/13/2014		45300	31000
CPMW-1S	CPMW-1S	08/19/2014		40150	37000
CPMW-1S	CPMW-1S	11/10/2014		--	22300
CPMW-1S	CPMW-1S	11/20/2014		30700	--
CPMW-1S	CPMW-1S	02/09/2015		20400	19100
CPMW-1S	CPMW-1S	05/12/2015		27700	21500
CPMW-1S	CPMW-1S	08/17/2015		22900	19180
CPMW-1S	CPMW-1S	11/09/2015		24100	20500
CPMW-1S	CPMW-1S	02/11/2016		18200	19400
CPMW-1S	CPMW-1S	05/19/2016		16800	14900
CPMW-1S	CPMW-1S	08/24/2016		16400	14100
CPMW-1S	CPMW-1S	11/10/2016		10900	14900

**Historical Groundwater Analytical Results Summary
Farmland Remediation Project
Lawrence, KS**

Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
CPMW-1S	CPMW-1S	02/06/2017		14700	10100
CPMW-1S	CPMW-1S	05/24/2017		11700	8690
CPMW-1S	CPMW-1S	08/10/2017		10600	9580
CPMW-1S	CPMW-1S	11/08/2017		12100	10000
CPMW-1S	CPMW-1S	02/08/2018		19100	14700
CPMW-1S	CPMW-1S	05/10/2018		19600	14800
CPMW-1S	CPMW-1S	08/06/2018		20216.43	16700
CPMW-1S	CPMW-1S	11/13/2018		15300.11	13900
CPMW-1S	CPMW-1S	02/05/2019		10900	8010
CPMW-1S	CPMW-1S	06/12/2019		4820	4900
CPMW-1S	CPMW-1S	08/27/2019		8650	5880
CPMW-1S	CPMW-1S	11/18/2019		10700	8640
CPMW-1S	CPMW-1S	02/24/2020		7360	6250
CPMW-1S	CPMW-1S	05/26/2020		3010	2480
CPMW-1S	CPMW-1S	08/17/2020		4180	5100
CPMW-1S	CPMW-1S	11/23/2020		14200	10200
CPMW-1S	CPMW-1S	02/22/2021		8650	6460
CPMW-1S	CPMW-1S	05/24/2021		4630	3910
CPMW-1S	WG-061521-NL-009	06/15/2021		4200	4420
CPMW-2D	CPMW-2D	03/24/2014		--	6.3
CPMW-2D	CPMW-2D	03/31/2014		--	4.5
CPMW-2D	CPMW-2D	05/13/2014		0.44	0.64
CPMW-2D	CPMW-2D	08/19/2014		1.369	1.9
CPMW-2D	CPMW-2D	11/10/2014		--	0.64
CPMW-2D	CPMW-2D	11/20/2014		0.3 U	--
CPMW-2D	CPMW-2D	02/09/2015		0.3 U	1.04
CPMW-2S	CPMW-2S	03/24/2014		--	766
CPMW-2S	CPMW-2S	03/31/2014		--	592
CPMW-2S		Plugged and Abandoned			
CPMW-2S/2SR	CPMW-2S/2SR	05/13/2014		239	709
CPMW-2S/2SR	CPMW-2S/2SR	08/19/2014		221.1	720
CPMW-2S/2SR	CPMW-2S/2SR	11/20/2014		274	695
CPMW-2S/2SR	CPMW-2S/2SR	02/09/2015		223	795
CPMW-2S/2SR	CPMW-2S/2SR	05/12/2015		2790	4790
CPMW-2S/2SR	CPMW-2S/2SR	08/17/2015		388	802
CPMW-2S/2SR	CPMW-2S/2SR	11/09/2015		489	722
CPMW-2S/2SR	CPMW-2S/2SR	02/11/2016		1360	1990
CPMW-2S/2SR	CPMW-2S/2SR	05/19/2016		205	399
CPMW-2S/2SR	CPMW-2S/2SR	08/24/2016		674	826
CPMW-2S/2SR	CPMW-2S/2SR	11/10/2016		195	441
CPMW-2S/2SR	CPMW-2S/2SR	02/06/2017		5770	5350
CPMW-2S/2SR	CPMW-2S/2SR	05/24/2017		521	741
CPMW-2S/2SR	CPMW-2S/2SR	08/10/2017		3990	4230
CPMW-2S/2SR	CPMW-2S/2SR	11/08/2017		5330	4360
CPMW-2S/2SR	CPMW-2S/2SR	02/08/2018		8620	7100

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units Sample Type:	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
CPMW-2S/2SR	CPMW-2S/2SR	05/10/2018		6780	6740
CPMW-2S/2SR	CPMW-2S/2SR	08/06/2018		11324.49	9520
CPMW-2S/2SR	CPMW-2S/2SR	11/13/2018		9481.417	9900
CPMW-2S/2SR	CPMW-2S/2SR	02/05/2019		11300	12700
CPMW-2S/2SR	CPMW-2S/2SR	06/12/2019		15600	12600
CPMW-2S/2SR	CPMW-2S/2SR	08/27/2019		18300	14300
CPMW-2S/2SR	CPMW-2S/2SR	11/18/2019		10800	11400
CPMW-2S/2SR	CPMW-2S/2SR	02/24/2020		12400	12700
CPMW-2S/2SR	CPMW-2S/2SR	05/26/2020		19500	18900
CPMW-2S/2SR	CPMW-2S/2SR	08/17/2020		13800	20500
CPMW-2S/2SR	CPMW-2S/2SR	11/23/2020		17500	16600
CPMW-2S/2SR	CPMW-2S/2SR	02/22/2021		15500	15800
CPMW-2S/2SR	CPMW-2S/2SR	05/24/2021		19900	18600
CPMW-2S/2SR	WG-061821-NL-022	06/18/2021		17300	15100 J
CPMW-2S/2SR	WG-061821-NL-022A	06/18/2021	(other)	17800	28500 J
CPMW-2S/2SR	WG-061821-NL-023	06/18/2021	Duplicate	19700	16700
MW-21B	WG-061421-NL-003	06/14/2021		0.300 U	0.946
MW-22A	WG-061421-NL-005	06/14/2021		0.300 U	7.98
MW-22B	WG-061421-NL-004	06/14/2021		3.31 J+	0.250 U
MW-23A	WG-061621-NL-017	06/16/2021		0.300 U	14.1
MW-23B	WG-061621-NL-016	06/16/2021		29.3	0.250 U
MW-24A	WG-061521-NL-011	06/15/2021		0.300 U	72.5
MW-24B	WG-061521-NL-010	06/15/2021		3.91 J+	0.250 U
MW-25B	WG-061621-NL-012	06/16/2021		0.310	0.250 U
MW-26A	WG-061421-NL-002	06/14/2021		0.300 U	20.4
MW-26B	WG-061421-NL-001	06/14/2021		0.300 U	133
MW-27A	WG-061721-NL-019	06/17/2021		0.300 U	2.40
MW-27B	WG-061721-NL-018	06/17/2021		0.300 U	20.9
MW-28A	WG-061521-NL-007	06/15/2021		0.300 U	34.3
MW-28B	WG-061521-NL-006	06/15/2021		0.300 U	0.250 U
MW-29A	WG-061621-NL-015	06/16/2021		0.300 U	1.12
MW-29B	WG-061621-NL-014	06/16/2021		0.300 U	0.250 U

**Historical Groundwater Analytical Results Summary
Farmland Remediation Project
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Sample Location:	Sample Identification:	Sample Date:	Sample Type:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
N-1	N-1	08/19/2014			21775	22000
N-1	N-1	11/09/2015			4420	5010
N-1	N-1	11/10/2016			3440	--
N-1	N-1	11/08/2017			10700	9420
N-1	N-1	02/08/2018			33300	41300
N-1	N-1	05/10/2018			2430	2350
N-1	N-1	11/13/2018			29595.04	33900
N-1	N-1	02/05/2019			25900	34900
N-1	N-1	06/12/2019			41800	49100
N-1	N-1	08/27/2019			11000	11300
N-1	N-1	11/18/2019			20000	18400
N-1	N-1	02/24/2020			24000	24900
N-1	N-1	05/26/2020			30200	32600
N-1	N-1	08/17/2020			19500	27700
N-1	N-1	11/23/2020			11000	12400
N-1	N-1	02/22/2021			11700	13600
N-1	N-1	05/24/2021			4900	4600
N-1	WG-061821-SM-026	06/18/2021			44200	32600
N-1	WG-061821-SM-026A	06/18/2021	Split		39600	44400
N-1	WG-061821-SM-027	06/18/2021	Duplicate		41200	29400
N-2	N-2	08/19/2014			3720	1500
N-2	N-2	11/09/2015			376	704
N-2	N-2	11/10/2016			684	--
N-2	N-2	11/08/2017			515	644
N-2	N-2	02/08/2018			772	1030
N-2	N-2	05/10/2018			696	873
N-2	N-2	11/13/2018			686.598	591
N-2	N-2	02/05/2019			597	756
N-2	N-2	06/12/2019			27.6	95
N-2	N-2	08/27/2019			1.54	16.9
N-2	N-2	11/18/2019			176	313
N-2	N-2	02/24/2020			169	328
N-2	N-2	05/26/2020			93.2	165
N-2	N-2	08/17/2020			115	70.2
N-2	N-2	11/23/2020			366	479
N-2	N-2	02/22/2021			598	686
N-2	N-2	05/24/2021			0.555	14.4
N-2	WG-061821-SM-024	06/18/2021			7.28 J+	42.0
N-2	WG-061821-SM-024A	06/18/2021	Split		7.5	53.9
N-2	WG-061821-SM-025	06/18/2021	Duplicate		7.80	51.1
PSW-1A	PSW-1A	11/25/1997			--	151
PSW-1A	PSW-1A	12/18/1997			--	139
PSW-1A	PSW-1A	01/27/1998			--	155
PSW-1A	PSW-1A	05/04/1998			--	177
PSW-1A	PSW-1A	08/18/1998			--	151

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-1A	PSW-1A	11/11/1998		--	152
PSW-1A	PSW-1A	02/08/1999		--	185
PSW-1A	PSW-1A	05/18/1999		--	158
PSW-1A	PSW-1A	08/10/1999		--	133
PSW-1A	PSW-1A	11/17/1999		--	185
PSW-1A	PSW-1A	02/15/2000		--	158
PSW-1A	PSW-1A	05/09/2000		--	188
PSW-1A	PSW-1A	11/14/2000		--	218
PSW-1A	PSW-1A	05/16/2001		--	126
PSW-1A	PSW-1A	08/16/2001		--	62
PSW-1A	PSW-1A	11/12/2001		--	28
PSW-1A	PSW-1A	01/14/2002		--	62
PSW-1A	PSW-1A	08/21/2002		--	72
PSW-1A	PSW-1A	11/07/2002		--	82
PSW-1A	PSW-1A	02/11/2003		--	117
PSW-1A	PSW-1A	05/12/2003		--	114
PSW-1A	PSW-1A	08/12/2003		--	149
PSW-1A	PSW-1A	11/11/2003		--	136
PSW-1A	PSW-1A	01/17/2004		--	148
PSW-1A	PSW-1A	05/20/2004		--	128
PSW-1A	PSW-1A	08/16/2004		--	121
PSW-1A	PSW-1A	11/15/2004		--	143
PSW-1A	PSW-1A	01/21/2005		--	148
PSW-1A	PSW-1A	05/17/2005		--	162
PSW-1A	PSW-1A	08/17/2005		--	129
PSW-1A	PSW-1A	11/16/2005		--	153
PSW-1A	PSW-1A	02/14/2006		--	163
PSW-1A	PSW-1A	05/22/2006		--	205
PSW-1A	PSW-1A	08/21/2006		--	257
PSW-1A	PSW-1A	11/09/2006		--	223
PSW-1A	PSW-1A	02/20/2007		--	230
PSW-1A	PSW-1A	05/22/2007		--	217
PSW-1A	PSW-1A	08/20/2007		--	203
PSW-1A	PSW-1A	11/08/2007		--	224
PSW-1A	PSW-1A	02/19/2008		--	164
PSW-1A	PSW-1A	05/14/2008		--	126
PSW-1A	PSW-1A	08/12/2008		--	137
PSW-1A	PSW-1A	11/18/2008		--	172
PSW-1A	PSW-1A	01/23/2009		--	180
PSW-1A	PSW-1A	05/20/2009		--	92.6
PSW-1A	PSW-1A	08/11/2009		--	104
PSW-1A	PSW-1A	11/11/2009		--	110
PSW-1A	PSW-1A	02/16/2010		--	102
PSW-1A	PSW-1A	05/24/2010		--	78
PSW-1A	PSW-1A	08/09/2010		--	78
PSW-1A	PSW-1A	11/16/2010		--	113
PSW-1A	PSW-1A	02/17/2011		0.7	106
PSW-1A	PSW-1A	05/23/2011		0.3 U	115

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-1A	PSW-1A	08/16/2011		0.25	152
PSW-1A	PSW-1A	11/17/2011		0.3 U	139
PSW-1A	PSW-1A	02/16/2012		0.3 U	138
PSW-1A	PSW-1A	05/21/2012		0.3 U	152
PSW-1A	PSW-1A	08/20/2012		0.13	165
PSW-1A	PSW-1A	11/13/2012		0.3 U	149
PSW-1A	PSW-1A	02/19/2013		0.3 U	138
PSW-1A	PSW-1A	05/15/2013		0.3 U	140
PSW-1A	PSW-1A	11/13/2013		0.3 U	67.1
PSW-1A	PSW-1A	02/19/2014		0.3 U	131
PSW-1A	PSW-1A	05/13/2014		0.3 U	130
PSW-1A	PSW-1A	08/19/2014		0.3 U	120
PSW-1A	PSW-1A	11/10/2014		--	52.5
PSW-1A	PSW-1A	11/20/2014		0.3 U	--
PSW-1A	PSW-1A	02/09/2015		0.3 U	36.6
PSW-1A	PSW-1A	05/12/2015		0.3 U	110
PSW-1A	PSW-1A	08/17/2015		0.3 U	51.3
PSW-1A	PSW-1A	11/09/2015		0.3 U	95.9
PSW-1A	PSW-1A	02/11/2016		0.3 U	56
PSW-1A	PSW-1A	05/19/2016		0.3 U	37
PSW-1A	PSW-1A	08/24/2016		0.3 U	32.4
PSW-1A	PSW-1A	11/10/2016		0.3 U	48.7
PSW-1A	PSW-1A	02/06/2017		0.3 U	40.2
PSW-1A	PSW-1A	05/24/2017		0.3 U	20.1
PSW-1A	PSW-1A	08/10/2017		0.3 U	19.9
PSW-1A	PSW-1A	11/08/2017		0.3 U	4.5
PSW-1A	PSW-1A	02/08/2018		0.3 U	50.7
PSW-1A	PSW-1A	05/10/2018		0.3 U	26.6
PSW-1A	PSW-1A	11/13/2018		0.3 U	35.1
PSW-1A	PSW-1A	02/05/2019		0.3 U	34.4
PSW-1A	PSW-1A	06/12/2019		0.3 U	14.5
PSW-1A	PSW-1A	08/27/2019		0.3 U	15.1
PSW-1A	PSW-1A	11/18/2019		0.3 U	28.5
PSW-1A	PSW-1A	02/24/2020		0.3 U	25.7
PSW-1A	PSW-1A	05/26/2020		0.3 U	8.45
PSW-1A	PSW-1A	08/17/2020		0.3 U	5.83
PSW-1A	PSW-1A	11/23/2020		0.3 U	24.9
PSW-1A	PSW-1A	02/22/2021		0.3 U	33.8
PSW-1A	PSW-1A	05/24/2021		0.3 U	21
PSW-1A	WG-061621-SM-001	06/16/2021		0.300 U	7.89
PSW-1B	PSW-1B	11/25/1997		--	0.25 U
PSW-1B	PSW-1B	12/18/1997		--	0.25 U
PSW-1B	PSW-1B	01/27/1998		--	0.25 U
PSW-1B	PSW-1B	05/04/1998		--	0.25 U
PSW-1B	PSW-1B	08/18/1998		--	0.25 U
PSW-1B	PSW-1B	11/11/1998		--	0.25 U
PSW-1B	PSW-1B	02/08/1999		--	0.25 U

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-1B	PSW-1B	05/18/1999		--	0.14
PSW-1B	PSW-1B	08/10/1999		--	0.25 U
PSW-1B	PSW-1B	11/17/1999		--	0.25 U
PSW-1B	PSW-1B	02/15/2000		--	0.25 U
PSW-1B	PSW-1B	05/09/2000		--	0.25 U
PSW-1B	PSW-1B	11/14/2000		--	0.25 U
PSW-1B	PSW-1B	05/16/2001		--	0.25 U
PSW-1B	PSW-1B	08/16/2001		--	0.25 U
PSW-1B	PSW-1B	11/12/2001		--	0.25 U
PSW-1B	PSW-1B	01/14/2002		--	0.25 U
PSW-1B	PSW-1B	05/22/2002		--	0.25 U
PSW-1B	PSW-1B	08/21/2002		--	0.09
PSW-1B	PSW-1B	11/07/2002		--	0.1
PSW-1B	PSW-1B	02/11/2003		--	0.16
PSW-1B	PSW-1B	05/12/2003		--	0.12
PSW-1B	PSW-1B	08/12/2003		--	0.25 U
PSW-1B	PSW-1B	11/11/2003		--	0.07
PSW-1B	PSW-1B	01/17/2004		--	0.25 U
PSW-1B	PSW-1B	05/20/2004		--	0.11
PSW-1B	PSW-1B	08/16/2004		--	0.1
PSW-1B	PSW-1B	11/15/2004		--	0.07
PSW-1B	PSW-1B	01/21/2005		--	0.09
PSW-1B	PSW-1B	05/17/2005		--	0.25 U
PSW-1B	PSW-1B	08/17/2005		--	0.25 U
PSW-1B	PSW-1B	11/16/2005		--	0.25 U
PSW-1B	PSW-1B	02/14/2006		--	0.25 U
PSW-1B	PSW-1B	05/22/2006		--	0.25 U
PSW-1B	PSW-1B	08/21/2006		--	0.25 U
PSW-1B	PSW-1B	11/09/2006		--	0.25 U
PSW-1B	PSW-1B	02/20/2007		--	0.07
PSW-1B	PSW-1B	05/22/2007		--	0.25 U
PSW-1B	PSW-1B	08/20/2007		--	0.25 U
PSW-1B	PSW-1B	11/08/2007		--	0.25 U
PSW-1B	PSW-1B	02/19/2008		--	0.25 U
PSW-1B	PSW-1B	05/14/2008		--	0.25 U
PSW-1B	PSW-1B	08/12/2008		--	0.25 U
PSW-1B	PSW-1B	11/18/2008		--	0.25 U
PSW-1B	PSW-1B	01/23/2009		--	0.25 U
PSW-1B	PSW-1B	05/20/2009		--	0.25 U
PSW-1B	PSW-1B	08/11/2009		--	0.25 U
PSW-1B	PSW-1B	11/11/2009		--	0.25 U
PSW-1B	PSW-1B	02/16/2010		--	0.25 U
PSW-1B	PSW-1B	05/24/2010		--	0.25 U
PSW-1B	PSW-1B	08/09/2010		--	0.25 U
PSW-1B	PSW-1B	11/16/2010		--	0.25 U
PSW-1B	PSW-1B	02/17/2011		0.6	0.25 U
PSW-1B	PSW-1B	05/23/2011		0.46	0.10 U
PSW-1B	PSW-1B	08/16/2011		0.49	0.10 U

**Historical Groundwater Analytical Results Summary
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		General Chemistry	Ammonia	Nitrite/Nitrate
		Units	(mg/L)	(mg/L)
Sample Location:	Sample Identification:	Sample Date:		
		Sample Type:		
PSW-1B	PSW-1B	11/17/2011	0.49	0.10 U
PSW-1B	PSW-1B	02/16/2012	0.4	0.10 U
PSW-1B	PSW-1B	05/21/2012	0.51	0.10 U
PSW-1B	PSW-1B	08/20/2012	0.5	0.10 U
PSW-1B	PSW-1B	11/13/2012	0.82	0.10 U
PSW-1B	PSW-1B	02/19/2013	0.13	0.10 U
PSW-1B	PSW-1B	05/15/2013	0.39	0.10 U
PSW-1B	PSW-1B	11/13/2013	0.92	0.10 U
PSW-1B	PSW-1B	02/19/2014	0.8	0.10 U
PSW-1B	PSW-1B	05/13/2014	0.51	0.10 U
PSW-1B	PSW-1B	08/19/2014	1.397	0.10 U
PSW-1B	PSW-1B	11/10/2014	--	0.49
PSW-1B	PSW-1B	11/20/2014	1.27	--
PSW-1B	PSW-1B	02/09/2015	1.16	0.25 U
PSW-1B	PSW-1B	05/12/2015	0.729	0.25 U
PSW-1B	PSW-1B	08/17/2015	1.38	0.25 U
PSW-1B	PSW-1B	11/09/2015	1.46	0.25 U
PSW-1B	PSW-1B	02/11/2016	1.22	0.25 U
PSW-1B	PSW-1B	05/19/2016	1.14	1.18
PSW-1B	PSW-1B	08/24/2016	1.36	0.25 U
PSW-1B	PSW-1B	11/10/2016	1.24	0.25 U
PSW-1B	PSW-1B	02/06/2017	2.2	0.25 U
PSW-1B	PSW-1B	05/24/2017	1.2	0.532
PSW-1B	PSW-1B	08/10/2017	1.3	0.25 U
PSW-1B	PSW-1B	11/08/2017	1.1	0.25 U
PSW-1B	PSW-1B	02/08/2018	1.2	0.25 U
PSW-1B	PSW-1B	05/10/2018	1.4	0.25 U
PSW-1B	PSW-1B	08/06/2018	1.471	0.25 U
PSW-1B	PSW-1B	11/13/2018	1.404	0.25 U
PSW-1B	PSW-1B	02/05/2019	1.37	0.25 U
PSW-1B	PSW-1B	06/12/2019	1.23	0.254
PSW-1B	PSW-1B	08/27/2019	1.06	0.256
PSW-1B	PSW-1B	11/18/2019	1.21	0.25 U
PSW-1B	PSW-1B	02/24/2020	1.31	0.25 U
PSW-1B	PSW-1B	05/26/2020	1.25	0.25 U
PSW-1B	PSW-1B	08/17/2020	1.52	0.25 U
PSW-1B	PSW-1B	11/23/2020	1.39	0.25 U
PSW-1B	PSW-1B	02/22/2021	1.28	0.25 U
PSW-1B		Well Damaged - Not Sampled		
PSW-2A	PSW-2A	11/25/1997	--	1.47
PSW-2A	PSW-2A	12/18/1997	--	1.11
PSW-2A	PSW-2A	01/27/1998	--	18.8
PSW-2A	PSW-2A	05/04/1998	--	1.55
PSW-2A	PSW-2A	08/18/1998	--	1.3
PSW-2A	PSW-2A	11/11/1998	--	4.55
PSW-2A	PSW-2A	02/08/1999	--	68.7
PSW-2A	PSW-2A	05/18/1999	--	10.3

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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-2A	PSW-2A	08/10/1999		--	4.13
PSW-2A	PSW-2A	11/17/1999		--	3.82
PSW-2A	PSW-2A	02/15/2000		--	5.72
PSW-2A	PSW-2A	05/09/2000		--	2.58
PSW-2A	PSW-2A	11/14/2000		--	2.1
PSW-2A	PSW-2A	05/16/2001		--	2.8
PSW-2A	PSW-2A	06/18/2001		--	2.7
PSW-2A	PSW-2A	07/12/2001		--	2.02
PSW-2A	PSW-2A	08/16/2001		--	2.6
PSW-2A	PSW-2A	09/24/2001		--	5.3
PSW-2A	PSW-2A	10/22/2001		--	4
PSW-2A	PSW-2A	11/12/2001		--	3.2
PSW-2A	PSW-2A	12/10/2001		--	3.3
PSW-2A	PSW-2A	01/08/2002		--	3.1
PSW-2A	PSW-2A	01/14/2002		--	3.5
PSW-2A	PSW-2A	03/18/2002		--	3.5
PSW-2A	PSW-2A	04/17/2002		--	3.4
PSW-2A	PSW-2A	05/22/2002		--	3.2
PSW-2A	PSW-2A	06/19/2002		--	3.9
PSW-2A	PSW-2A	07/11/2002		--	4
PSW-2A	PSW-2A	08/21/2002		--	3.7
PSW-2A	PSW-2A	11/07/2002		--	3.6
PSW-2A	PSW-2A	05/12/2003		--	2.65
PSW-2A	PSW-2A	08/12/2003		--	6.7
PSW-2A	PSW-2A	11/11/2003		--	6.4
PSW-2A	PSW-2A	01/17/2004		--	17.8
PSW-2A	PSW-2A	05/20/2004		--	15.7
PSW-2A	PSW-2A	08/16/2004		--	25
PSW-2A	PSW-2A	11/15/2004		--	16
PSW-2A	PSW-2A	01/21/2005		--	1.96
PSW-2A	PSW-2A	05/17/2005		--	3.55
PSW-2A	PSW-2A	08/17/2005		--	5.17
PSW-2A	PSW-2A	11/16/2005		--	5.75
PSW-2A	PSW-2A	02/14/2006		--	10.8
PSW-2A	PSW-2A	05/22/2006		--	9.45
PSW-2A	PSW-2A	08/21/2006		--	24.5
PSW-2A	PSW-2A	11/09/2006		--	23.3
PSW-2A	PSW-2A	02/20/2007		--	38.8
PSW-2A	PSW-2A	05/22/2007		--	25.5
PSW-2A	PSW-2A	08/20/2007		--	21.4
PSW-2A	PSW-2A	11/08/2007		--	13.8
PSW-2A	PSW-2A	02/19/2008		--	26
PSW-2A	PSW-2A	05/14/2008		--	31.3
PSW-2A	PSW-2A	08/12/2008		--	94.2
PSW-2A	PSW-2A	11/18/2008		--	39.6
PSW-2A	PSW-2A	01/23/2009		--	30.8
PSW-2A	PSW-2A	05/20/2009		--	59.5
PSW-2A	PSW-2A	08/11/2009		--	47.7

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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-2A	PSW-2A	11/11/2009		--	3.8
PSW-2A	PSW-2A	02/16/2010		--	0.7
PSW-2A	PSW-2A	05/24/2010		--	13.3
PSW-2A	PSW-2A	08/09/2010		--	44
PSW-2A	PSW-2A	11/16/2010		--	45.5
PSW-2A	PSW-2A	02/17/2011		2.1	33.3
PSW-2A	PSW-2A	05/23/2011		0.3 U	36.6
PSW-2A	PSW-2A	08/16/2011		0.3 U	28.5
PSW-2A	PSW-2A	11/17/2011		0.3 U	64
PSW-2A	PSW-2A	02/16/2012		0.3 U	46.3
PSW-2A	PSW-2A	05/21/2012		0.3 U	4.8
PSW-2A	PSW-2A	08/20/2012		0.3 U	77.8
PSW-2A	PSW-2A	05/15/2013		0.3 U	141
PSW-2A	PSW-2A	08/15/2013		0.3 U	30.7
PSW-2A	PSW-2A	11/13/2013		0.3 U	161
PSW-2A	PSW-2A	02/19/2014		0.3 U	8.1
PSW-2A	PSW-2A	05/13/2014		0.3 U	54
PSW-2A	PSW-2A	11/10/2014		--	140
PSW-2A	PSW-2A	11/20/2014		0.3 U	--
PSW-2A	PSW-2A	02/09/2015		0.3 U	133
PSW-2A	PSW-2A	05/12/2015		0.3 U	117
PSW-2A	PSW-2A	08/17/2015		0.3 U	8.4
PSW-2A	PSW-2A	11/09/2015		0.3 U	4.9
PSW-2A	PSW-2A	02/11/2016		0.3 U	1.44
PSW-2A	PSW-2A	05/19/2016		0.3 U	2.52
PSW-2A	PSW-2A	08/24/2016		0.3 U	1.02
PSW-2A	PSW-2A	11/10/2016		0.3 U	1
PSW-2A	PSW-2A	02/06/2017		0.3 U	5.28
PSW-2A	PSW-2A	05/24/2017		0.3 U	0.25 U
PSW-2A	PSW-2A	08/10/2017		0.3 U	4.34
PSW-2A	PSW-2A	11/08/2017		0.3 U	21.9
PSW-2A	PSW-2A	02/08/2018		0.3 U	1.99
PSW-2A	PSW-2A	05/10/2018		0.3 U	1.92
PSW-2A	PSW-2A	08/06/2018		0.3 U	29.6
PSW-2A	PSW-2A	11/13/2018		0.3 U	65.7
PSW-2A	PSW-2A	02/05/2019		0.3 U	29.6
PSW-2A	PSW-2A	06/12/2019		0.3 U	193
PSW-2A	PSW-2A	08/27/2019		0.3 U	185
PSW-2A	PSW-2A	11/18/2019		0.3 U	200
PSW-2A	PSW-2A	02/24/2020		0.3 U	174
PSW-2A	PSW-2A	05/26/2020		0.3 U	237
PSW-2A	PSW-2A	08/17/2020		0.3	180
PSW-2A	PSW-2A	11/23/2020		0.3 U	160
PSW-2A	PSW-2A	02/22/2021		0.3 U	120
PSW-2A	PSW-2A	05/24/2021		0.3 U	136
PSW-2A	WG-061621-SM-002	06/16/2021		0.300 U	142

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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-2B	PSW-2B	11/25/1997		--	0.25 U
PSW-2B	PSW-2B	12/18/1997		--	0.25 U
PSW-2B	PSW-2B	01/27/1998		--	0.25 U
PSW-2B	PSW-2B	05/04/1998		--	0.25 U
PSW-2B	PSW-2B	08/18/1998		--	0.25 U
PSW-2B	PSW-2B	11/11/1998		--	0.25 U
PSW-2B	PSW-2B	02/08/1999		--	0.25 U
PSW-2B	PSW-2B	05/18/1999		--	0.25 U
PSW-2B	PSW-2B	08/10/1999		--	0.25 U
PSW-2B	PSW-2B	11/17/1999		--	0.25 U
PSW-2B	PSW-2B	02/15/2000		--	0.25 U
PSW-2B	PSW-2B	05/09/2000		--	0.25 U
PSW-2B	PSW-2B	11/14/2000		--	0.25 U
PSW-2B	PSW-2B	05/16/2001		--	0.25 U
PSW-2B	PSW-2B	06/18/2001		--	0.25 U
PSW-2B	PSW-2B	07/12/2001		--	0.25 U
PSW-2B	PSW-2B	08/16/2001		--	0.25 U
PSW-2B	PSW-2B	09/24/2001		--	0.25 U
PSW-2B	PSW-2B	10/22/2001		--	0.25 U
PSW-2B	PSW-2B	11/12/2001		--	0.25 U
PSW-2B	PSW-2B	12/10/2001		--	0.25 U
PSW-2B	PSW-2B	01/08/2002		--	0.25 U
PSW-2B	PSW-2B	01/14/2002		--	0.25 U
PSW-2B	PSW-2B	03/18/2002		--	0.25 U
PSW-2B	PSW-2B	04/17/2002		--	0.25 U
PSW-2B	PSW-2B	05/22/2002		--	0.25 U
PSW-2B	PSW-2B	06/19/2002		--	0.25 U
PSW-2B	PSW-2B	07/11/2002		--	0.07
PSW-2B	PSW-2B	08/21/2002		--	0.11
PSW-2B	PSW-2B	11/07/2002		--	0.09
PSW-2B	PSW-2B	02/11/2003		--	0.16
PSW-2B	PSW-2B	05/12/2003		--	0.13
PSW-2B	PSW-2B	08/12/2003		--	0.25 U
PSW-2B	PSW-2B	11/11/2003		--	0.15
PSW-2B	PSW-2B	01/17/2004		--	0.25 U
PSW-2B	PSW-2B	05/20/2004		--	0.07
PSW-2B	PSW-2B	08/16/2004		--	0.1
PSW-2B	PSW-2B	11/15/2004		--	0.08
PSW-2B	PSW-2B	01/21/2005		--	0.09
PSW-2B	PSW-2B	05/17/2005		--	0.25 U
PSW-2B	PSW-2B	08/17/2005		--	0.25 U
PSW-2B	PSW-2B	11/16/2005		--	0.25 U
PSW-2B	PSW-2B	02/14/2006		--	0.25 U
PSW-2B	PSW-2B	05/22/2006		--	0.25 U
PSW-2B	PSW-2B	08/21/2006		--	0.25 U
PSW-2B	PSW-2B	11/09/2006		--	0.25 U
PSW-2B	PSW-2B	02/20/2007		--	0.25 U
PSW-2B	PSW-2B	05/22/2007		--	0.25 U

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-2B	PSW-2B	08/20/2007		--	0.25 U
PSW-2B	PSW-2B	11/08/2007		--	0.25 U
PSW-2B	PSW-2B	02/19/2008		--	0.25 U
PSW-2B	PSW-2B	05/14/2008		--	0.25 U
PSW-2B	PSW-2B	08/12/2008		--	0.25 U
PSW-2B	PSW-2B	11/18/2008		--	0.25 U
PSW-2B	PSW-2B	01/23/2009		--	0.25 U
PSW-2B	PSW-2B	05/20/2009		--	0.25 U
PSW-2B	PSW-2B	08/11/2009		--	0.25 U
PSW-2B	PSW-2B	11/11/2009		--	0.25 U
PSW-2B	PSW-2B	02/16/2010		--	0.25 U
PSW-2B	PSW-2B	05/24/2010		--	0.25 U
PSW-2B	PSW-2B	08/09/2010		--	0.25 U
PSW-2B	PSW-2B	11/16/2010		--	0.25 U
PSW-2B	PSW-2B	02/17/2011		0.7	0.25 U
PSW-2B	PSW-2B	05/23/2011		0.58	0.10 U
PSW-2B	PSW-2B	08/16/2011		0.68	0.10 U
PSW-2B	PSW-2B	11/17/2011		0.64	0.10 U
PSW-2B	PSW-2B	02/16/2012		0.61	0.10 U
PSW-2B	PSW-2B	05/21/2012		0.52	0.10 U
PSW-2B	PSW-2B	08/20/2012		0.72	0.10 U
PSW-2B	PSW-2B	11/13/2012		0.34	0.10 U
PSW-2B	PSW-2B	02/19/2013		0.16	0.10 U
PSW-2B	PSW-2B	05/15/2013		0.44	0.10 U
PSW-2B	PSW-2B	08/15/2013		0.5	0.25 U
PSW-2B	PSW-2B	11/13/2013		0.36	0.10 U
PSW-2B	PSW-2B	02/19/2014		0.59	0.10 U
PSW-2B	PSW-2B	05/13/2014		0.45	0.10 U
PSW-2B	PSW-2B	08/19/2014		0.808	0.10 U
PSW-2B	PSW-2B	11/10/2014		--	0.57
PSW-2B	PSW-2B	11/20/2014		1.14	--
PSW-2B	PSW-2B	02/09/2015		0.616	0.25 U
PSW-2B	PSW-2B	05/12/2015		0.729	0.25 U
PSW-2B	PSW-2B	08/17/2015		0.67	0.25 U
PSW-2B	PSW-2B	11/09/2015		0.701	0.25 U
PSW-2B	PSW-2B	02/11/2016		0.713	0.25 U
PSW-2B	PSW-2B	05/19/2016		0.532	0.25 U
PSW-2B	PSW-2B	08/24/2016		0.716	0.665
PSW-2B	PSW-2B	11/10/2016		0.706	0.25 U
PSW-2B	PSW-2B	02/06/2017		0.609	0.25 U
PSW-2B	PSW-2B	05/24/2017		0.6	0.25 U
PSW-2B	PSW-2B	08/10/2017		0.5	0.25 U
PSW-2B	PSW-2B	11/08/2017		0.4	0.25 U
PSW-2B	PSW-2B	02/08/2018		0.5	0.25 U
PSW-2B	PSW-2B	05/10/2018		0.8	0.25 U
PSW-2B	PSW-2B	08/06/2018		0.711	0.25 U
PSW-2B	PSW-2B	11/13/2018		0.683	0.25 U
PSW-2B	PSW-2B	02/05/2019		0.595	0.25 U

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-2B	PSW-2B	06/12/2019		0.763	0.57
PSW-2B	PSW-2B	08/27/2019		0.478	0.25 U
PSW-2B	PSW-2B	11/18/2019		0.746	0.268
PSW-2B	PSW-2B	02/24/2020		0.665	0.25 U
PSW-2B	PSW-2B	05/26/2020		0.638	0.25 U
PSW-2B	PSW-2B	08/17/2020		0.725	0.25 U
PSW-2B	PSW-2B	11/23/2020		0.872	0.25 U
PSW-2B	PSW-2B	02/22/2021		0.842	0.25 U
PSW-2B	PSW-2B	05/24/2021		0.856	0.25 U
PSW-2B	WG-061621-SM-003	06/16/2021		0.300 U	0.250 U
PSW-3A	PSW-3A	11/25/1997		--	3800
PSW-3A	PSW-3A	12/18/1997		--	3760
PSW-3A	PSW-3A	01/27/1998		--	3360
PSW-3A	PSW-3A	02/02/1998		--	3420
PSW-3A	PSW-3A	02/03/1998		--	3240
PSW-3A	PSW-3A	02/04/1998		--	3810
PSW-3A	PSW-3A	02/05/1998		--	3570
PSW-3A	PSW-3A	02/06/1998		--	3660
PSW-3A	PSW-3A	02/09/1998		--	3690
PSW-3A	PSW-3A	02/17/1998		--	3705
PSW-3A	PSW-3A	02/23/1998		--	4275
PSW-3A	PSW-3A	03/02/1998		--	3840
PSW-3A	PSW-3A	05/04/1998		--	3700
PSW-3A	PSW-3A	08/18/1998		--	3620
PSW-3A	PSW-3A	11/11/1998		--	2960
PSW-3A	PSW-3A	02/08/1999		--	2280
PSW-3A	PSW-3A	05/18/1999		--	2880
PSW-3A	PSW-3A	08/10/1999		--	2860
PSW-3A	PSW-3A	11/17/1999		--	2260
PSW-3A	PSW-3A	02/15/2000		--	2810
PSW-3A	PSW-3A	05/09/2000		--	2680
PSW-3A	PSW-3A	11/14/2000		--	1710
PSW-3A	PSW-3A	05/16/2001		--	2628
PSW-3A	PSW-3A	06/18/2001		--	1750
PSW-3A	PSW-3A	07/12/2001		--	1780
PSW-3A	PSW-3A	08/16/2001		--	1950
PSW-3A	PSW-3A	09/24/2001		--	1900
PSW-3A	PSW-3A	10/22/2001		--	2813
PSW-3A	PSW-3A	11/12/2001		--	2750
PSW-3A	PSW-3A	12/10/2001		--	2530
PSW-3A	PSW-3A	01/08/2002		--	2050
PSW-3A	PSW-3A	01/14/2002		--	2695
PSW-3A	PSW-3A	03/18/2002		--	2110
PSW-3A	PSW-3A	04/17/2002		--	2490
PSW-3A	PSW-3A	05/22/2002		--	3150
PSW-3A	PSW-3A	06/19/2002		--	3033
PSW-3A	PSW-3A	07/11/2002		--	2540

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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-3A	PSW-3A	08/21/2002		--	2423
PSW-3A	PSW-3A	11/07/2002		--	2314
PSW-3A	PSW-3A	02/11/2003		--	2371
PSW-3A	PSW-3A	05/12/2003		--	2029
PSW-3A	PSW-3A	08/12/2003		--	1687
PSW-3A	PSW-3A	11/11/2003		--	1751
PSW-3A	PSW-3A	01/17/2004		--	1294
PSW-3A	PSW-3A	05/20/2004		--	1520
PSW-3A	PSW-3A	08/16/2004		--	1117
PSW-3A	PSW-3A	11/15/2004		--	720
PSW-3A	PSW-3A	01/21/2005		--	1135
PSW-3A	PSW-3A	05/17/2005		--	663
PSW-3A	PSW-3A	08/17/2005		--	1138
PSW-3A	PSW-3A	11/16/2005		--	138
PSW-3A	PSW-3A	11/28/2005		--	723
PSW-3A	PSW-3A	02/14/2006		--	707
PSW-3A	PSW-3A	05/22/2006		--	390
PSW-3A	PSW-3A	08/21/2006		--	455
PSW-3A	PSW-3A	11/09/2006		--	276
PSW-3A	PSW-3A	02/20/2007		--	369
PSW-3A	PSW-3A	05/22/2007		--	387
PSW-3A	PSW-3A	08/20/2007		--	402
PSW-3A	PSW-3A	11/08/2007		--	394
PSW-3A	PSW-3A	02/19/2008		--	198
PSW-3A	PSW-3A	05/14/2008		--	364
PSW-3A	PSW-3A	08/12/2008		--	253
PSW-3A	PSW-3A	11/18/2008		--	208
PSW-3A	PSW-3A	01/23/2009		--	319
PSW-3A	PSW-3A	05/20/2009		--	183
PSW-3A	PSW-3A	08/11/2009		--	276
PSW-3A	PSW-3A	11/11/2009		--	174
PSW-3A	PSW-3A	02/16/2010		--	140
PSW-3A	PSW-3A	05/24/2010		--	160
PSW-3A	PSW-3A	08/09/2010		--	185
PSW-3A	PSW-3A	11/16/2010		--	242
PSW-3A	PSW-3A	02/17/2011		0.3 U	134
PSW-3A	PSW-3A	05/23/2011		0.3 U	189
PSW-3A	PSW-3A	08/16/2011		0.3 U	261
PSW-3A	PSW-3A	11/17/2011		0.3 U	251
PSW-3A	PSW-3A	02/16/2012		0.3 U	90.5
PSW-3A	PSW-3A	05/21/2012		0.3 U	137
PSW-3A	PSW-3A	08/20/2012		0.3 U	173
PSW-3A	PSW-3A	11/13/2012		0.3 U	203
PSW-3A	PSW-3A	02/19/2013		0.3 U	161
PSW-3A	PSW-3A	05/15/2013		0.3 U	121
PSW-3A	PSW-3A	08/15/2013		0.3 U	114
PSW-3A	PSW-3A	11/13/2013		0.3 U	164
PSW-3A	PSW-3A	02/19/2014		0.3 U	142

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-3A	PSW-3A	05/13/2014		0.3 U	199
PSW-3A	PSW-3A	08/19/2014		0.3 U	200
PSW-3A	PSW-3A	11/10/2014		--	110
PSW-3A	PSW-3A	11/20/2014		0.3 U	--
PSW-3A	PSW-3A	02/09/2015		0.3 U	94.9
PSW-3A	PSW-3A	05/12/2015		0.3 U	94.9
PSW-3A	PSW-3A	08/17/2015		0.3 U	92.7
PSW-3A	PSW-3A	11/09/2015		0.3 U	1332
PSW-3A	PSW-3A	02/11/2016		0.3 U	63.2
PSW-3A	PSW-3A	05/19/2016		0.3 U	45.9
PSW-3A	PSW-3A	08/24/2016		0.3 U	44
PSW-3A	PSW-3A	11/10/2016		0.3 U	29.9
PSW-3A	PSW-3A	02/06/2017		0.3 U	35.8
PSW-3A	PSW-3A	05/24/2017		0.3 U	38.4
PSW-3A	PSW-3A	08/10/2017		0.3 U	23.2
PSW-3A	PSW-3A	11/08/2017		0.3 U	17.8
PSW-3A	PSW-3A	02/08/2018		0.3 U	25.5
PSW-3A	PSW-3A	05/10/2018		0.3 U	39.3
PSW-3A	PSW-3A	08/06/2018		0.3 U	145
PSW-3A	PSW-3A	11/13/2018		0.3 U	189
PSW-3A	PSW-3A	02/05/2019		0.3 U	133
PSW-3A	PSW-3A	06/12/2019		0.3 U	79.5
PSW-3A	PSW-3A	08/27/2019		0.3 U	155
PSW-3A	PSW-3A	11/18/2019		0.3 U	260
PSW-3A	PSW-3A	02/24/2020		0.3 U	471
PSW-3A	PSW-3A	05/26/2020		0.3 U	466
PSW-3A	PSW-3A	08/17/2020		0.3 U	347
PSW-3A	PSW-3A	11/23/2020		0.3 U	255
PSW-3A	PSW-3A	02/22/2021		0.3 U	389
PSW-3A	PSW-3A	05/24/2021		0.3 U	176
PSW-3A	WG-061621-SM-008	06/16/2021		0.300 U	262
PSW-3B	PSW-3B	11/25/1997		--	0.27
PSW-3B	PSW-3B	12/18/1997		--	0.25 U
PSW-3B	PSW-3B	01/27/1998		--	6.68
PSW-3B	PSW-3B	02/02/1998		--	1.34
PSW-3B	PSW-3B	02/03/1998		--	0.42
PSW-3B	PSW-3B	02/04/1998		--	0.31
PSW-3B	PSW-3B	02/05/1998		--	0.19
PSW-3B	PSW-3B	02/06/1998		--	0.25 U
PSW-3B	PSW-3B	02/09/1998		--	0.27
PSW-3B	PSW-3B	02/17/1998		--	0.4
PSW-3B	PSW-3B	02/23/1998		--	0.45
PSW-3B	PSW-3B	03/02/1998		--	0.44
PSW-3B	PSW-3B	05/04/1998		--	6.08
PSW-3B	PSW-3B	08/18/1998		--	78.1
PSW-3B	PSW-3B	11/11/1998		--	37.4
PSW-3B	PSW-3B	02/08/1999		--	50

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-3B	PSW-3B	05/18/1999		--	19.3
PSW-3B	PSW-3B	08/10/1999		--	1.6
PSW-3B	PSW-3B	11/17/1999		--	4.36
PSW-3B	PSW-3B	02/15/2000		--	4.69
PSW-3B	PSW-3B	05/09/2000		--	10.8
PSW-3B	PSW-3B	11/14/2000		--	39.3
PSW-3B	PSW-3B	05/16/2001		--	52
PSW-3B	PSW-3B	06/18/2001		--	68
PSW-3B	PSW-3B	07/12/2001		--	82
PSW-3B	PSW-3B	08/16/2001		--	21
PSW-3B	PSW-3B	09/24/2001		--	90
PSW-3B	PSW-3B	10/22/2001		--	35
PSW-3B	PSW-3B	11/12/2001		--	2.6
PSW-3B	PSW-3B	12/10/2001		--	0.14
PSW-3B	PSW-3B	01/08/2002		--	0.25 U
PSW-3B	PSW-3B	01/14/2002		--	0.06
PSW-3B	PSW-3B	03/18/2002		--	0.08
PSW-3B	PSW-3B	04/17/2002		--	0.08
PSW-3B	PSW-3B	05/22/2002		--	0.08
PSW-3B	PSW-3B	06/19/2002		--	0.08
PSW-3B	PSW-3B	07/11/2002		--	0.14
PSW-3B	PSW-3B	08/21/2002		--	0.11
PSW-3B	PSW-3B	11/07/2002		--	0.29
PSW-3B	PSW-3B	02/11/2003		--	0.78
PSW-3B	PSW-3B	05/12/2003		--	0.61
PSW-3B	PSW-3B	08/12/2003		--	0.26
PSW-3B	PSW-3B	11/11/2003		--	0.49
PSW-3B	PSW-3B	01/17/2004		--	0.35
PSW-3B	PSW-3B	05/20/2004		--	0.19
PSW-3B	PSW-3B	08/16/2004		--	0.41
PSW-3B	PSW-3B	11/15/2004		--	0.1
PSW-3B	PSW-3B	01/21/2005		--	0.57
PSW-3B	PSW-3B	05/17/2005		--	0.25 U
PSW-3B	PSW-3B	08/17/2005		--	0.25 U
PSW-3B	PSW-3B	11/16/2005		--	0.09
PSW-3B	PSW-3B	02/14/2006		--	0.25 U
PSW-3B	PSW-3B	05/22/2006		--	0.25 U
PSW-3B	PSW-3B	08/21/2006		--	0.25 U
PSW-3B	PSW-3B	11/09/2006		--	0.25 U
PSW-3B	PSW-3B	02/20/2007		--	0.25 U
PSW-3B	PSW-3B	05/22/2007		--	0.25 U
PSW-3B	PSW-3B	08/20/2007		--	0.25 U
PSW-3B	PSW-3B	11/08/2007		--	0.25 U
PSW-3B	PSW-3B	02/19/2008		--	0.25 U
PSW-3B	PSW-3B	05/14/2008		--	0.25 U
PSW-3B	PSW-3B	08/12/2008		--	0.25 U
PSW-3B	PSW-3B	11/18/2008		--	0.25 U
PSW-3B	PSW-3B	01/23/2009		--	0.25 U

**Historical Groundwater Analytical Results Summary
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		General Chemistry	Ammonia	Nitrite/Nitrate
		Units	(mg/L)	(mg/L)
Sample Location:	Sample Identification:	Sample Date:		
		Sample Type:		
PSW-3B	PSW-3B	05/20/2009	--	0.25 U
PSW-3B	PSW-3B	08/11/2009	--	0.25 U
PSW-3B	PSW-3B	11/11/2009	--	0.25 U
PSW-3B	PSW-3B	02/16/2010	--	0.25 U
PSW-3B	PSW-3B	05/24/2010	--	0.25 U
PSW-3B	PSW-3B	08/09/2010	--	0.25 U
PSW-3B	PSW-3B	11/16/2010	--	0.25 U
PSW-3B	PSW-3B	02/17/2011	--	0.2
PSW-3B	PSW-3B	05/23/2011	--	0.10 U
PSW-3B	PSW-3B	08/16/2011	--	0.10 U
PSW-3B	PSW-3B	11/17/2011	--	0.10 U
PSW-3B	PSW-3B	02/16/2012	--	0.10 U
PSW-3B	PSW-3B	08/20/2012	--	0.1
PSW-3B	PSW-3B	11/13/2012	--	0.10 U
PSW-3B	PSW-3B	02/19/2013	--	0.10 U
PSW-3B	PSW-3B	05/15/2013	--	0.10 U
PSW-3B	PSW-3B	08/15/2013	--	0.25 U
PSW-3B	PSW-3B	11/13/2013	--	0.10 U
PSW-3B	PSW-3B	02/19/2014	--	0.10 U
PSW-3B	PSW-3B	05/13/2014	--	0.10 U
PSW-3B	PSW-3B	08/19/2014	--	0.10 U
PSW-3B	PSW-3B	11/10/2014	--	0.25 U
PSW-3B	PSW-3B	02/09/2015	--	0.51
PSW-3B	PSW-3B	05/12/2015	--	0.25 U
PSW-3B	PSW-3B	08/17/2015	--	0.25 U
PSW-3B	PSW-3B	11/09/2015	--	0.25 U
PSW-3B	PSW-3B	02/11/2016	--	0.25 U
PSW-3B	PSW-3B	05/19/2016	--	0.25 U
PSW-3B	PSW-3B	08/24/2016	--	0.25 U
PSW-3B	PSW-3B	11/10/2016	--	0.25 U
PSW-3B	PSW-3B	02/06/2017	--	0.25 U
PSW-3B	PSW-3B	05/24/2017	--	0.25 U
PSW-3B	PSW-3B	08/10/2017	--	0.25 U
PSW-3B		Well Plugged and Abandoned		
PSW-3B3	PSW-3B3	02/17/2011	5	--
PSW-3B3	PSW-3B3	05/23/2011	3.3	--
PSW-3B3	PSW-3B3	08/16/2011	4.2	--
PSW-3B3	PSW-3B3	11/17/2011	19.1	--
PSW-3B3	PSW-3B3	02/16/2012	6.4	--
PSW-3B3	PSW-3B3	08/20/2012	10.5	--
PSW-3B3	PSW-3B3	11/13/2012	2.8	--
PSW-3B3	PSW-3B3	02/19/2013	2.3	--
PSW-3B3	PSW-3B3	05/15/2013	2.4	--
PSW-3B3	PSW-3B3	08/15/2013	2.6	--
PSW-3B3	PSW-3B3	11/13/2013	2	--
PSW-3B3	PSW-3B3	02/19/2014	2.3	--
PSW-3B3	PSW-3B3	05/13/2014	2.8	--

**Historical Groundwater Analytical Results Summary
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		General Chemistry Units		Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
Sample Location:	Sample Identification:	Sample Date:	Sample Type:		
PSW-3B3	PSW-3B3	08/19/2014		3.927	--
PSW-3B3	PSW-3B3	11/20/2014		3.97	--
PSW-3B3	PSW-3B3	02/09/2015		4	--
PSW-3B3	PSW-3B3	05/12/2015		4.27	--
PSW-3B3	PSW-3B3	08/17/2015		3.58	--
PSW-3B3	PSW-3B3	11/09/2015		3.87	--
PSW-3B3	PSW-3B3	02/11/2016		3.42	--
PSW-3B3	PSW-3B3	05/19/2016		3.38	--
PSW-3B3	PSW-3B3	08/24/2016		3.38	--
PSW-3B3	PSW-3B3	11/10/2016		3.36	--
PSW-3B3	PSW-3B3	02/06/2017		3.27	--
PSW-3B3	PSW-3B3	05/24/2017		3.4	--
PSW-3B3	PSW-3B3	08/10/2017		3.5	--
PSW-3B3	PSW-3B3	11/08/2017		3.5	0.25 U
PSW-3B3	PSW-3B3	02/08/2018		3.6	0.25 U
PSW-3B3	PSW-3B3	05/10/2018		4	0.25 U
PSW-3B3	PSW-3B3	08/06/2018		4.245	0.25 U
PSW-3B3	PSW-3B3	11/13/2018		4.48	0.25 U
PSW-3B3	PSW-3B3	02/05/2019		4.39	0.25 U
PSW-3B3	PSW-3B3	06/12/2019		4.22	0.675
PSW-3B3	PSW-3B3	08/27/2019		3.55	1.1
PSW-3B3	PSW-3B3	05/26/2020		4.02	0.385
PSW-3B3	PSW-3B3	08/17/2020		4.15	0.319
PSW-3B3	PSW-3B3	11/23/2020		4.45	0.25 U
PSW-3B3	PSW-3B3	02/22/2021		4.98	0.25 U
PSW-3B3	PSW-3B3	05/24/2021		4.39	0.25 U
PSW-3B3	WG-061621-SM-009	06/16/2021		4.63	6.27
PSW-4	PSW-4	12/18/1997		--	0.25 U
PSW-4	PSW-4	01/27/1998		--	0.25 U
PSW-4	PSW-4	05/04/1998		--	0.25 U
PSW-4	PSW-4	08/18/1998		--	0.25 U
PSW-4	PSW-4	11/11/1998		--	0.25 U
PSW-4	PSW-4	02/08/1999		--	0.25 U
PSW-4	PSW-4	05/18/1999		--	0.25 U
PSW-4	PSW-4	08/10/1999		--	0.25 U
PSW-4	PSW-4	11/17/1999		--	0.25 U
PSW-4	PSW-4	02/15/2000		--	0.25 U
PSW-4	PSW-4	05/09/2000		--	0.25 U
PSW-4	PSW-4	11/14/2000		--	0.25 U
PSW-4	PSW-4	05/16/2001		--	0.25 U
PSW-4	PSW-4	06/18/2001		--	0.25 U
PSW-4	PSW-4	07/12/2001		--	0.25 U
PSW-4	PSW-4	08/16/2001		--	0.25 U
PSW-4	PSW-4	09/24/2001		--	0.25 U
PSW-4	PSW-4	10/22/2001		--	0.25 U
PSW-4	PSW-4	11/12/2001		--	0.25 U
PSW-4	PSW-4	12/10/2001		--	0.25 U

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-4	PSW-4	01/08/2002		--	0.25 U
PSW-4	PSW-4	01/14/2002		--	0.25 U
PSW-4	PSW-4	03/18/2002		--	0.25 U
PSW-4	PSW-4	04/17/2002		--	0.25 U
PSW-4	PSW-4	05/22/2002		--	0.25 U
PSW-4	PSW-4	06/19/2002		--	0.25 U
PSW-4	PSW-4	07/11/2002		--	0.08
PSW-4	PSW-4	08/21/2002		--	0.25 U
PSW-4	PSW-4	11/07/2002		--	0.06
PSW-4	PSW-4	02/11/2003		--	0.16
PSW-4	PSW-4	05/12/2003		--	0.49
PSW-4	PSW-4	08/12/2003		--	0.25 U
PSW-4	PSW-4	11/11/2003		--	0.25 U
PSW-4	PSW-4	01/17/2004		--	0.25 U
PSW-4	PSW-4	05/20/2004		--	0.06
PSW-4	PSW-4	08/16/2004		--	0.17
PSW-4	PSW-4	11/15/2004		--	0.25 U
PSW-4	PSW-4	01/21/2005		--	0.11
PSW-4	PSW-4	05/17/2005		--	0.25 U
PSW-4	PSW-4	08/17/2005		--	0.25 U
PSW-4	PSW-4	11/16/2005		--	0.25 U
PSW-4	PSW-4	02/14/2006		--	0.25 U
PSW-4	PSW-4	05/22/2006		--	0.25 U
PSW-4	PSW-4	08/21/2006		--	0.25 U
PSW-4	PSW-4	11/09/2006		--	0.25 U
PSW-4	PSW-4	02/20/2007		--	0.25 U
PSW-4	PSW-4	05/22/2007		--	0.25 U
PSW-4	PSW-4	08/20/2007		--	0.21
PSW-4	PSW-4	11/08/2007		--	0.25 U
PSW-4	PSW-4	02/19/2008		--	0.25 U
PSW-4	PSW-4	05/14/2008		--	0.25 U
PSW-4	PSW-4	08/12/2008		--	0.25 U
PSW-4	PSW-4	11/18/2008		--	0.25 U
PSW-4	PSW-4	01/23/2009		--	0.25 U
PSW-4	PSW-4	05/20/2009		--	0.25 U
PSW-4	PSW-4	08/11/2009		--	0.25 U
PSW-4	PSW-4	11/11/2009		--	0.25 U
PSW-4	PSW-4	02/16/2010		--	0.25 U
PSW-4	PSW-4	05/24/2010		--	0.25 U
PSW-4	PSW-4	08/09/2010		--	0.25 U
PSW-4	PSW-4	11/16/2010		--	0.25 U
PSW-4	PSW-4	02/17/2011		1.6	0.25 U
PSW-4	PSW-4	05/23/2011		1.2	0.10 U
PSW-4	PSW-4	08/16/2011		1.2	0.10 U
PSW-4	PSW-4	11/17/2011		1.5	0.10 U
PSW-4	PSW-4	02/16/2012		1.2	0.10 U
PSW-4	PSW-4	05/21/2012		1.1	0.10 U
PSW-4	PSW-4	08/20/2012		1.3	0.10 U

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-4	PSW-4	11/13/2012		0.78	0.10 U
PSW-4	PSW-4	02/19/2013		0.62	0.10 U
PSW-4	PSW-4	05/15/2013		0.83	0.10 U
PSW-4	PSW-4	08/15/2013		1	0.25 U
PSW-4	PSW-4	11/13/2013		0.88	0.10 U
PSW-4	PSW-4	02/19/2014		0.89	0.10 U
PSW-4	PSW-4	05/13/2014		0.91	0.10 U
PSW-4	PSW-4	08/19/2014		1.28	0.21
PSW-4	PSW-4	11/10/2014		--	0.47
PSW-4	PSW-4	11/20/2014		1.06	--
PSW-4	PSW-4	02/09/2015		1.17	0.5
PSW-4	PSW-4	05/12/2015		1.21	0.25 U
PSW-4	PSW-4	08/17/2015		1.11	0.25 U
PSW-4	PSW-4	11/09/2015		1.28	0.25 U
PSW-4	PSW-4	02/11/2016		1.1	0.25 U
PSW-4	PSW-4	05/19/2016		1.1	0.25 U
PSW-4	PSW-4	08/24/2016		1.16	0.25 U
PSW-4	PSW-4	11/10/2016		0.444	0.25 U
PSW-4	PSW-4	02/06/2017		1.21	0.25 U
PSW-4	PSW-4	05/24/2017		1	0.25 U
PSW-4	PSW-4	08/10/2017		1.1	0.25 U
PSW-4	PSW-4	11/08/2017		1.1	0.25 U
PSW-4	PSW-4	02/08/2018		1.3	0.25 U
PSW-4	PSW-4	05/10/2018		1.4	0.25 U
PSW-4	PSW-4	08/06/2018		1.358	0.25 U
PSW-4	PSW-4	11/13/2018		1.307	0.25 U
PSW-4	PSW-4	02/05/2019		1.05	0.25 U
PSW-4	PSW-4	06/12/2019		1.11	0.25 U
PSW-4	PSW-4	08/27/2019		0.871	0.25 U
PSW-4	PSW-4	11/18/2019		0.911	0.25 U
PSW-4	PSW-4	02/24/2020		3.08	0.25 U
PSW-4	PSW-4	05/26/2020		0.98	0.25 U
PSW-4	PSW-4	08/17/2020		1.01	0.25 U
PSW-4	PSW-4	11/23/2020		1.42	0.25 U
PSW-4	PSW-4	02/22/2021		1.59	0.25 U
PSW-4	PSW-4	05/24/2021		1.14	0.25 U
PSW-4	WG-061721-NL-021	06/17/2021		1.18	0.250 U
PSW-5A	PSW-5A	11/25/1997		--	11.4
PSW-5A	PSW-5A	12/18/1997		--	20.1
PSW-5A	PSW-5A	01/27/1998		--	27.1
PSW-5A	PSW-5A	05/04/1998		--	25
PSW-5A	PSW-5A	08/18/1998		--	20.8
PSW-5A	PSW-5A	11/11/1998		--	21.6
PSW-5A	PSW-5A	02/08/1999		--	23
PSW-5A	PSW-5A	05/18/1999		--	31.8
PSW-5A	PSW-5A	08/10/1999		--	20.7
PSW-5A	PSW-5A	11/17/1999		--	17.6

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-5A	PSW-5A	02/15/2000		--	16.8
PSW-5A	PSW-5A	05/09/2000		--	16.5
PSW-5A	PSW-5A	11/14/2000		--	9.1
PSW-5A	PSW-5A	05/16/2001		--	13.5
PSW-5A	PSW-5A	06/18/2001		--	13.2
PSW-5A	PSW-5A	07/12/2001		--	14.3
PSW-5A	PSW-5A	08/16/2001		--	14.5
PSW-5A	PSW-5A	09/24/2001		--	12
PSW-5A	PSW-5A	10/22/2001		--	12
PSW-5A	PSW-5A	11/12/2001		--	13
PSW-5A	PSW-5A	12/10/2001		--	12
PSW-5A	PSW-5A	01/08/2002		--	11.4
PSW-5A	PSW-5A	01/14/2002		--	11
PSW-5A	PSW-5A	03/18/2002		--	10.9
PSW-5A	PSW-5A	04/17/2002		--	12.6
PSW-5A	PSW-5A	05/22/2002		--	11.5
PSW-5A	PSW-5A	06/19/2002		--	9.4
PSW-5A	PSW-5A	07/11/2002		--	9.1
PSW-5A	PSW-5A	08/21/2002		--	7.6
PSW-5A	PSW-5A	11/07/2002		--	6.6
PSW-5A	PSW-5A	02/11/2003		--	4
PSW-5A	PSW-5A	05/12/2003		--	3.35
PSW-5A	PSW-5A	08/12/2003		--	4.04
PSW-5A	PSW-5A	11/11/2003		--	5.8
PSW-5A	PSW-5A	01/17/2004		--	4.6
PSW-5A	PSW-5A	05/20/2004		--	5.18
PSW-5A	PSW-5A	08/16/2004		--	5.2
PSW-5A	PSW-5A	11/15/2004		--	5
PSW-5A	PSW-5A	01/21/2005		--	5.6
PSW-5A	PSW-5A	05/17/2005		--	5.32
PSW-5A	PSW-5A	08/17/2005		--	4.89
PSW-5A	PSW-5A	11/16/2005		--	3.35
PSW-5A	PSW-5A	02/14/2006		--	4.43
PSW-5A	PSW-5A	05/22/2006		--	4.68
PSW-5A	PSW-5A	08/21/2006		--	3.81
PSW-5A	PSW-5A	11/09/2006		--	3.1
PSW-5A	PSW-5A	02/20/2007		--	4.67
PSW-5A	PSW-5A	05/22/2007		--	6.48
PSW-5A	PSW-5A	08/20/2007		--	7.07
PSW-5A	PSW-5A	11/08/2007		--	6.6
PSW-5A	PSW-5A	02/19/2008		--	6.8
PSW-5A	PSW-5A	05/14/2008		--	4.9
PSW-5A	PSW-5A	08/12/2008		--	4.49
PSW-5A	PSW-5A	11/18/2008		--	3.7
PSW-5A	PSW-5A	01/23/2009		--	4
PSW-5A	PSW-5A	05/20/2009		--	2.3
PSW-5A	PSW-5A	08/11/2009		--	4.3
PSW-5A	PSW-5A	11/11/2009		--	3

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-5A	PSW-5A	02/16/2010		--	2.8
PSW-5A	PSW-5A	05/24/2010		--	2.2
PSW-5A	PSW-5A	08/09/2010		--	2.6
PSW-5A	PSW-5A	11/16/2010		--	2.1
PSW-5A	PSW-5A	02/17/2011		0.3 U	2.2
PSW-5A	PSW-5A	05/23/2011		0.3 U	1.6
PSW-5A	PSW-5A	08/16/2011		0.3 U	1.5
PSW-5A	PSW-5A	11/17/2011		0.3 U	0.73
PSW-5A	PSW-5A	02/16/2012		0.3 U	1.7
PSW-5A	PSW-5A	05/21/2012		0.3 U	1.3
PSW-5A	PSW-5A	08/20/2012		0.3 U	0.95
PSW-5A	PSW-5A	11/13/2012		0.3 U	0.77
PSW-5A	PSW-5A	02/19/2013		0.3 U	0.96
PSW-5A	PSW-5A	05/15/2013		0.3 U	1.1
PSW-5A	PSW-5A	08/15/2013		0.3 U	1.1
PSW-5A	PSW-5A	11/13/2013		0.3 U	0.77
PSW-5A	PSW-5A	02/19/2014		0.3 U	1
PSW-5A	PSW-5A	05/13/2014		0.3 U	1.1
PSW-5A	PSW-5A	08/19/2014		0.3 U	1.5
PSW-5A	PSW-5A	11/10/2014		--	2.17
PSW-5A	PSW-5A	11/20/2014		0.3 U	--
PSW-5A	PSW-5A	02/09/2015		0.3 U	1.57
PSW-5A	PSW-5A	05/12/2015		0.3 U	1.68
PSW-5A	PSW-5A	08/17/2015		0.3 U	0.83
PSW-5A	PSW-5A	11/09/2015		0.3 U	0.98
PSW-5A	PSW-5A	02/11/2016		0.3 U	0.56
PSW-5A	PSW-5A	05/19/2016		0.3 U	0.998
PSW-5A	PSW-5A	08/24/2016		0.3 U	1.6
PSW-5A	PSW-5A	11/10/2016		0.3 U	0.705
PSW-5A	PSW-5A	02/06/2017		0.3 U	0.448
PSW-5A	PSW-5A	05/24/2017		0.3 U	0.961
PSW-5A	PSW-5A	08/10/2017		0.3 U	0.779
PSW-5A	PSW-5A	11/08/2017		0.3 U	0.854
PSW-5A	PSW-5A	02/08/2018		0.3 U	0.865
PSW-5A	PSW-5A	05/10/2018		0.3 U	0.475
PSW-5A	PSW-5A	08/06/2018		0.3 U	0.283
PSW-5A	PSW-5A	11/13/2018		0.3 U	0.439
PSW-5A	PSW-5A	02/05/2019		0.3 U	0.652
PSW-5A	PSW-5A	06/12/2019		0.3 U	1.86
PSW-5A	PSW-5A	08/27/2019		0.3 U	1.01
PSW-5A	PSW-5A	11/18/2019		0.3 U	0.376
PSW-5A	PSW-5A	02/24/2020		0.3 U	0.25 U
PSW-5A	PSW-5A	05/26/2020		0.3 U	0.662
PSW-5A	PSW-5A	08/17/2020		0.3 U	0.426
PSW-5A	PSW-5A	11/23/2020		0.3 U	0.25 U
PSW-5A	PSW-5A	02/22/2021		0.3 U	0.25 U
PSW-5A	PSW-5A	05/24/2021		0.3 U	0.25 U
PSW-5A	WG-061621-SM-011	06/16/2021		0.300 U	0.250 U

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Sample Location:	Sample Identification:	Sample Date:	General Chemistry	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Units Sample Type:		
PSW-5B	PSW-5B	11/25/1997		--	0.25 U
PSW-5B	PSW-5B	12/18/1997		--	0.25 U
PSW-5B	PSW-5B	01/27/1998		--	0.25 U
PSW-5B	PSW-5B	05/04/1998		--	16
PSW-5B	PSW-5B	08/18/1998		--	2.87
PSW-5B	PSW-5B	11/11/1998		--	5.52
PSW-5B	PSW-5B	02/08/1999		--	7.69
PSW-5B	PSW-5B	05/18/1999		--	8.19
PSW-5B	PSW-5B	08/10/1999		--	5.4
PSW-5B	PSW-5B	11/17/1999		--	0.08
PSW-5B	PSW-5B	02/15/2000		--	0.25 U
PSW-5B	PSW-5B	05/09/2000		--	0.25 U
PSW-5B	PSW-5B	11/14/2000		--	0.25 U
PSW-5B	PSW-5B	05/16/2001		--	3.6
PSW-5B	PSW-5B	06/18/2001		--	0.07
PSW-5B	PSW-5B	07/12/2001		--	1.2
PSW-5B	PSW-5B	08/16/2001		--	0.25 U
PSW-5B	PSW-5B	09/24/2001		--	0.25 U
PSW-5B	PSW-5B	10/22/2001		--	0.25 U
PSW-5B	PSW-5B	11/12/2001		--	0.25 U
PSW-5B	PSW-5B	12/10/2001		--	0.25 U
PSW-5B	PSW-5B	01/08/2002		--	0.25 U
PSW-5B	PSW-5B	01/14/2002		--	0.25 U
PSW-5B	PSW-5B	03/18/2002		--	0.25 U
PSW-5B	PSW-5B	04/17/2002		--	0.25 U
PSW-5B	PSW-5B	05/22/2002		--	0.25 U
PSW-5B	PSW-5B	06/19/2002		--	0.25 U
PSW-5B	PSW-5B	07/11/2002		--	0.1
PSW-5B	PSW-5B	08/21/2002		--	0.13
PSW-5B	PSW-5B	11/07/2002		--	0.1
PSW-5B	PSW-5B	02/11/2003		--	0.38
PSW-5B	PSW-5B	05/12/2003		--	2.96
PSW-5B	PSW-5B	08/12/2003		--	0.25 U
PSW-5B	PSW-5B	11/11/2003		--	0.13
PSW-5B	PSW-5B	01/17/2004		--	0.08
PSW-5B	PSW-5B	05/20/2004		--	0.25 U
PSW-5B	PSW-5B	08/16/2004		--	0.27
PSW-5B	PSW-5B	11/15/2004		--	0.15
PSW-5B	PSW-5B	01/21/2005		--	0.25 U
PSW-5B	PSW-5B	05/17/2005		--	0.25 U
PSW-5B	PSW-5B	08/17/2005		--	0.25 U
PSW-5B	PSW-5B	11/16/2005		--	7.64
PSW-5B	PSW-5B	02/14/2006		--	0.25 U
PSW-5B	PSW-5B	05/22/2006		--	14.7
PSW-5B	PSW-5B	08/21/2006		--	5.75
PSW-5B	PSW-5B	11/09/2006		--	2.54
PSW-5B	PSW-5B	05/22/2007		--	7

**Historical Groundwater Analytical Results Summary
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		General Chemistry	Ammonia	Nitrite/Nitrate
		Units	(mg/L)	(mg/L)
Sample Location:	Sample Identification:	Sample Date:		
		Sample Type:		
PSW-5B	PSW-5B	08/20/2007	--	0.25 U
PSW-5B	PSW-5B	11/08/2007	--	0.25 U
PSW-5B	PSW-5B	02/19/2008	--	0.25 U
PSW-5B	PSW-5B	05/14/2008	--	0.25 U
PSW-5B		Well Plugged and Abandoned		
PSW-5B2	PSW-5B2	08/12/2008	--	0.25 U
PSW-5B2	PSW-5B2	11/18/2008	--	0.25 U
PSW-5B2	PSW-5B2	01/23/2009	--	0.25 U
PSW-5B2	PSW-5B2	05/20/2009	--	0.25 U
PSW-5B2	PSW-5B2	08/11/2009	--	0.25 U
PSW-5B2	PSW-5B2	11/11/2009	--	0.25 U
PSW-5B2	PSW-5B2	02/16/2010	--	0.25 U
PSW-5B2	PSW-5B2	05/24/2010	--	0.25 U
PSW-5B2	PSW-5B2	08/09/2010	--	0.4
PSW-5B2	PSW-5B2	11/16/2010	--	0.25 U
PSW-5B2	PSW-5B2	02/17/2011	26.6	0.2
PSW-5B2	PSW-5B2	05/23/2011	25.3	0.10 U
PSW-5B2	PSW-5B2	08/16/2011	26	0.10 U
PSW-5B2	PSW-5B2	11/17/2011	28	0.10 U
PSW-5B2	PSW-5B2	02/16/2012	29.8	0.10 U
PSW-5B2	PSW-5B2	05/21/2012	25.6	0.10 U
PSW-5B2	PSW-5B2	08/20/2012	23.9	0.10 U
PSW-5B2	PSW-5B2	11/13/2012	14	0.10 U
PSW-5B2	PSW-5B2	02/19/2013	13.3	0.10 U
PSW-5B2	PSW-5B2	05/15/2013	23.6	0.10 U
PSW-5B2	PSW-5B2	08/15/2013	20.6	0.25 U
PSW-5B2	PSW-5B2	11/13/2013	20.4	0.10 U
PSW-5B2	PSW-5B2	02/19/2014	26.2	0.10 U
PSW-5B2	PSW-5B2	05/13/2014	31.7	0.10 U
PSW-5B2	PSW-5B2	08/19/2014	36.34	0.1 U
PSW-5B2	PSW-5B2	11/10/2014	--	0.54
PSW-5B2	PSW-5B2	11/20/2014	36.6	--
PSW-5B2	PSW-5B2	02/09/2015	38.2	0.52
PSW-5B2	PSW-5B2	05/12/2015	54.7	0.25 U
PSW-5B2	PSW-5B2	08/17/2015	37.5	0.25 U
PSW-5B2	PSW-5B2	11/09/2015	35.1	0.25 U
PSW-5B2	PSW-5B2	02/11/2016	38	0.25 U
PSW-5B2	PSW-5B2	05/19/2016	45.6	0.25 U
PSW-5B2	PSW-5B2	08/24/2016	31.7	0.25 U
PSW-5B2	PSW-5B2	11/10/2016	34.6	0.25 U
PSW-5B2	PSW-5B2	02/06/2017	38.3	0.25 U
PSW-5B2	PSW-5B2	05/24/2017	39.7	4.07
PSW-5B2	PSW-5B2	08/10/2017	36.9	0.25 U
PSW-5B2	PSW-5B2	11/08/2017	36.7	2.86
PSW-5B2	PSW-5B2	02/08/2018	37.8	11.3
PSW-5B2	PSW-5B2	05/10/2018	30.3	30.3
PSW-5B2	PSW-5B2	08/06/2018	59.358	41.3

**Historical Groundwater Analytical Results Summary
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		General Chemistry Units		Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
Sample Location:	Sample Identification:	Sample Date:	Sample Type:		
PSW-5B2	PSW-5B2	11/13/2018		151.916	52.3
PSW-5B2	PSW-5B2	02/05/2019		156	48.3
PSW-5B2	PSW-5B2	06/12/2019		149	1.99
PSW-5B2	PSW-5B2	08/27/2019		190	0.25 U
PSW-5B2	PSW-5B2	11/18/2019		124	0.25 U
PSW-5B2	PSW-5B2	02/24/2020		120	0.25 U
PSW-5B2	PSW-5B2	05/26/2020		142	1.1
PSW-5B2	PSW-5B2	08/17/2020		99.3	0.25 U
PSW-5B2	PSW-5B2	11/23/2020		134	0.25 U
PSW-5B2	PSW-5B2	02/22/2021		114	0.25 U
PSW-5B2	PSW-5B2	05/24/2021		114	1.66
PSW-5B2	WG-061621-SM-010	06/16/2021		137 J+	0.250 U
PSW-6A	PSW-6A	11/25/1997		--	3810
PSW-6A	PSW-6A	12/18/1997		--	3870
PSW-6A	PSW-6A	01/27/1998		--	5415
PSW-6A	PSW-6A	02/02/1998		--	6795
PSW-6A	PSW-6A	02/03/1998		--	5200
PSW-6A	PSW-6A	02/04/1998		--	4950
PSW-6A	PSW-6A	02/05/1998		--	4680
PSW-6A	PSW-6A	02/06/1998		--	5140
PSW-6A	PSW-6A	02/09/1998		--	4920
PSW-6A	PSW-6A	02/17/1998		--	4470
PSW-6A	PSW-6A	02/23/1998		--	5550
PSW-6A	PSW-6A	03/02/1998		--	4410
PSW-6A	PSW-6A	05/04/1998		--	5310
PSW-6A	PSW-6A	08/18/1998		--	5370
PSW-6A	PSW-6A	11/11/1998		--	5600
PSW-6A	PSW-6A	02/08/1999		--	7720
PSW-6A	PSW-6A	05/18/1999		--	7740
PSW-6A	PSW-6A	08/10/1999		--	5695
PSW-6A	PSW-6A	11/17/1999		--	6700
PSW-6A	PSW-6A	02/15/2000		--	4530
PSW-6A	PSW-6A	05/09/2000		--	6530
PSW-6A	PSW-6A	11/14/2000		--	3180
PSW-6A	PSW-6A	05/16/2001		--	3290
PSW-6A	PSW-6A	06/18/2001		--	2650
PSW-6A	PSW-6A	07/12/2001		--	2960
PSW-6A	PSW-6A	08/16/2001		--	4320
PSW-6A	PSW-6A	09/24/2001		--	4395
PSW-6A	PSW-6A	10/22/2001		--	3872
PSW-6A	PSW-6A	11/12/2001		--	6100
PSW-6A	PSW-6A	12/10/2001		--	4960
PSW-6A	PSW-6A	01/08/2002		--	5590
PSW-6A	PSW-6A	01/14/2002		--	4208
PSW-6A	PSW-6A	03/18/2002		--	4099
PSW-6A	PSW-6A	04/17/2002		--	4260
PSW-6A	PSW-6A	05/22/2002		--	2962

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-6A	PSW-6A	06/19/2002		--	2408
PSW-6A	PSW-6A	07/11/2002		--	2268
PSW-6A	PSW-6A	08/21/2002		--	2825
PSW-6A	PSW-6A	11/07/2002		--	2864
PSW-6A	PSW-6A	02/11/2003		--	2661
PSW-6A	PSW-6A	05/12/2003		--	1544
PSW-6A	PSW-6A	08/12/2003		--	2317
PSW-6A	PSW-6A	11/11/2003		--	1930
PSW-6A	PSW-6A	01/17/2004		--	373
PSW-6A	PSW-6A	05/20/2004		--	793
PSW-6A	PSW-6A	08/16/2004		--	372
PSW-6A	PSW-6A	11/15/2004		--	536
PSW-6A	PSW-6A	01/21/2005		--	174
PSW-6A	PSW-6A	05/17/2005		--	153
PSW-6A	PSW-6A	08/17/2005		--	151
PSW-6A	PSW-6A	11/16/2005		--	185
PSW-6A	PSW-6A	02/14/2006		--	107
PSW-6A	PSW-6A	05/22/2006		--	214
PSW-6A	PSW-6A	08/21/2006		--	284
PSW-6A	PSW-6A	11/09/2006		--	587
PSW-6A	PSW-6A	02/20/2007		--	329
PSW-6A	PSW-6A	05/22/2007		--	516
PSW-6A	PSW-6A	08/20/2007		--	1228
PSW-6A	PSW-6A	11/08/2007		--	644
PSW-6A	PSW-6A	02/19/2008		--	156
PSW-6A	PSW-6A	05/14/2008		--	184
PSW-6A	PSW-6A	08/12/2008		--	340
PSW-6A	PSW-6A	11/18/2008		--	241
PSW-6A	PSW-6A	01/23/2009		--	227
PSW-6A	PSW-6A	05/20/2009		--	215
PSW-6A	PSW-6A	08/11/2009		--	337
PSW-6A	PSW-6A	11/11/2009		--	190
PSW-6A	PSW-6A	02/16/2010		--	102
PSW-6A	PSW-6A	05/24/2010		--	109
PSW-6A	PSW-6A	08/09/2010		--	87.7
PSW-6A	PSW-6A	11/16/2010		--	176
PSW-6A	PSW-6A	02/17/2011		125	201
PSW-6A	PSW-6A	05/23/2011		190	201
PSW-6A	PSW-6A	08/16/2011		208	220
PSW-6A	PSW-6A	11/17/2011		201	348
PSW-6A	PSW-6A	02/16/2012		200	273
PSW-6A	PSW-6A	05/21/2012		233	101
PSW-6A	PSW-6A	08/20/2012		149	302
PSW-6A	PSW-6A	11/13/2012		146	281
PSW-6A	PSW-6A	02/19/2013		126	293
PSW-6A	PSW-6A	05/15/2013		166	198
PSW-6A	PSW-6A	08/15/2013		166	195
PSW-6A	PSW-6A	11/13/2013		185	280

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
PSW-6A	PSW-6A	02/19/2014		160	260
PSW-6A	PSW-6A	05/13/2014		288	357
PSW-6A	PSW-6A	08/19/2014		249.5	290
PSW-6A	PSW-6A	11/10/2014		--	224
PSW-6A	PSW-6A	11/20/2014		227	--
PSW-6A	PSW-6A	02/09/2015		211	252
PSW-6A	PSW-6A	05/12/2015		276	276
PSW-6A	PSW-6A	08/17/2015		140	153
PSW-6A	PSW-6A	11/09/2015		191	154
PSW-6A	PSW-6A	02/11/2016		119	115
PSW-6A	PSW-6A	05/19/2016		92.8	104
PSW-6A	PSW-6A	08/24/2016		89.2	81
PSW-6A	PSW-6A	11/10/2016		116	133
PSW-6A	PSW-6A	02/06/2017		91.8	103
PSW-6A	PSW-6A	05/24/2017		89.3	79.9
PSW-6A	PSW-6A	08/10/2017		94.7	87.2
PSW-6A	PSW-6A	11/08/2017		216	139
PSW-6A	PSW-6A	02/08/2018		225	147
PSW-6A	PSW-6A	05/10/2018		207	149
PSW-6A	PSW-6A	08/06/2018		234.881	189
PSW-6A	PSW-6A	11/13/2018		181.708	124
PSW-6A	PSW-6A	02/05/2019		256	183
PSW-6A	PSW-6A	06/12/2019		268	216
PSW-6A	PSW-6A	08/27/2019		399	233
PSW-6A	PSW-6A	11/18/2019		299	230
PSW-6A	PSW-6A	02/24/2020		301	308
PSW-6A	PSW-6A	05/26/2020		314	361
PSW-6A	PSW-6A	08/17/2020		354	281
PSW-6A	PSW-6A	11/23/2020		331	303
PSW-6A	PSW-6A	02/22/2021		307	260
PSW-6A	PSW-6A	05/24/2021		355	322
PSW-6A	WG-061621-SM-006	06/16/2021		386	253
PSW-6B/RW-2	PSW-6B/RW-2	11/25/1997		--	1380
PSW-6B/RW-2	PSW-6B/RW-2	12/18/1997		--	2025
PSW-6B/RW-2	PSW-6B/RW-2	01/27/1998		--	1390
PSW-6B/RW-2	PSW-6B/RW-2	02/02/1998		--	1140
PSW-6B/RW-2	PSW-6B/RW-2	02/03/1998		--	513
PSW-6B/RW-2	PSW-6B/RW-2	02/04/1998		--	392
PSW-6B/RW-2	PSW-6B/RW-2	02/05/1998		--	350
PSW-6B/RW-2	PSW-6B/RW-2	02/06/1998		--	320
PSW-6B/RW-2	PSW-6B/RW-2	02/09/1998		--	270
PSW-6B/RW-2	PSW-6B/RW-2	02/17/1998		--	207
PSW-6B/RW-2	PSW-6B/RW-2	02/23/1998		--	191
PSW-6B/RW-2	PSW-6B/RW-2	03/02/1998		--	190
PSW-6B/RW-2	PSW-6B/RW-2	05/04/1998		--	131
PSW-6B/RW-2	PSW-6B/RW-2	08/18/1998		--	102
PSW-6B/RW-2	PSW-6B/RW-2	02/08/1999		--	976

**Historical Groundwater Analytical Results Summary
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		General Chemistry		Ammonia	Nitrite/Nitrate
		Units		(mg/L)	(mg/L)
Sample Location:	Sample Identification:	Sample Date:	Sample Type:		
PSW-6B/RW-2	PSW-6B/RW-2	05/18/1999		--	46.1
PSW-6B/RW-2	PSW-6B/RW-2	08/10/1999		--	43.2
PSW-6B/RW-2	PSW-6B/RW-2	11/17/1999		--	29.5
PSW-6B/RW-2	PSW-6B/RW-2	02/15/2000		--	28.3
PSW-6B/RW-2	PSW-6B/RW-2	05/09/2000		--	26.6
PSW-6B/RW-2	PSW-6B/RW-2	11/14/2000		--	13.4
PSW-6B/RW-2	PSW-6B/RW-2	05/16/2001		--	5.9
PSW-6B/RW-2	PSW-6B/RW-2	06/18/2001		--	5.4
PSW-6B/RW-2	PSW-6B/RW-2	07/12/2001		--	5.6
PSW-6B/RW-2	PSW-6B/RW-2	08/16/2001		--	5.1
PSW-6B/RW-2	PSW-6B/RW-2	09/24/2001		--	5.6
PSW-6B/RW-2	PSW-6B/RW-2	10/22/2001		--	6.4
PSW-6B/RW-2	PSW-6B/RW-2	11/12/2001		--	7.1
PSW-6B/RW-2	PSW-6B/RW-2	12/10/2001		--	9.2
PSW-6B/RW-2	PSW-6B/RW-2	01/08/2002		--	5.8
PSW-6B/RW-2	PSW-6B/RW-2	01/14/2002		--	6
PSW-6B/RW-2	PSW-6B/RW-2	03/18/2002		--	6.1
PSW-6B/RW-2	PSW-6B/RW-2	04/17/2002		--	6.7
PSW-6B/RW-2	PSW-6B/RW-2	05/22/2002		--	5.2
PSW-6B/RW-2	PSW-6B/RW-2	06/19/2002		--	7.3
PSW-6B/RW-2	PSW-6B/RW-2	07/11/2002		--	5.2
PSW-6B/RW-2	PSW-6B/RW-2	08/21/2002		--	8.1
PSW-6B/RW-2	PSW-6B/RW-2	11/07/2002		--	5.6
PSW-6B/RW-2	PSW-6B/RW-2	02/11/2003		--	7.1
PSW-6B/RW-2	PSW-6B/RW-2	05/12/2003		--	8.86
PSW-6B/RW-2	PSW-6B/RW-2	08/12/2003		--	25
PSW-6B/RW-2	PSW-6B/RW-2	11/11/2003		--	6
PSW-6B/RW-2	PSW-6B/RW-2	01/17/2004		--	3.2
PSW-6B/RW-2	PSW-6B/RW-2	05/20/2004		--	3.48
PSW-6B/RW-2	PSW-6B/RW-2	08/16/2004		--	3.9
PSW-6B/RW-2	PSW-6B/RW-2	11/15/2004		--	5.1
PSW-6B/RW-2	PSW-6B/RW-2	01/21/2005		--	6.7
PSW-6B/RW-2	PSW-6B/RW-2	05/17/2005		--	4.06
PSW-6B/RW-2	PSW-6B/RW-2	08/17/2005		--	3.86
PSW-6B/RW-2	PSW-6B/RW-2	11/16/2005		--	2.94
PSW-6B/RW-2	PSW-6B/RW-2	02/14/2006		--	2.55
PSW-6B/RW-2	PSW-6B/RW-2	05/22/2006		--	4.87
PSW-6B/RW-2	PSW-6B/RW-2	08/21/2006		--	8.26
PSW-6B/RW-2	PSW-6B/RW-2	11/09/2006		--	10.4
PSW-6B/RW-2	PSW-6B/RW-2	02/20/2007		--	2
PSW-6B/RW-2	PSW-6B/RW-2	05/22/2007		--	0.82
PSW-6B/RW-2	PSW-6B/RW-2	08/20/2007		--	1.39
PSW-6B/RW-2	PSW-6B/RW-2	02/19/2008		--	1.2
PSW-6B/RW-2	PSW-6B/RW-2	05/14/2008		--	1.4
PSW-6B/RW-3		Well Plugged and Abandoned			

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-6B3	PSW-6B3	08/12/2008		--	1.39
PSW-6B3	PSW-6B3	11/18/2008		--	1.3
PSW-6B3	PSW-6B3	01/23/2009		--	1.4
PSW-6B3	PSW-6B3	05/20/2009		--	1.17
PSW-6B3	PSW-6B3	08/11/2009		--	1.34
PSW-6B3	PSW-6B3	11/11/2009		--	1.5
PSW-6B3	PSW-6B3	02/16/2010		--	0.8
PSW-6B3	PSW-6B3	05/24/2010		--	0.6
PSW-6B3	PSW-6B3	08/09/2010		--	0.54
PSW-6B3	PSW-6B3	11/16/2010		--	1.2
PSW-6B3	PSW-6B3	02/17/2011		--	0.7
PSW-6B3	PSW-6B3	05/23/2011		--	1.4
PSW-6B3	PSW-6B3	08/16/2011		--	1
PSW-6B3	PSW-6B3	11/17/2011		--	0.42
PSW-6B3	PSW-6B3	02/16/2012		--	1
PSW-6B3	PSW-6B3	08/20/2012		--	0.59
PSW-6B3	PSW-6B3	11/13/2012		--	0.62
PSW-6B3	PSW-6B3	02/19/2013		--	0.58
PSW-6B3	PSW-6B3	05/15/2013		--	0.26
PSW-6B3	PSW-6B3	08/15/2013		--	0.67
PSW-6B3	PSW-6B3	11/13/2013		--	0.51
PSW-6B3	PSW-6B3	02/19/2014		--	0.71
PSW-6B3/4	PSW-6B3/4	02/17/2011		5.1	--
PSW-6B3/4	PSW-6B3/4	05/23/2011		3.6	--
PSW-6B3/4	PSW-6B3/4	08/16/2011		3.8	--
PSW-6B3/4	PSW-6B3/4	11/17/2011		3.5	--
PSW-6B3/4	PSW-6B3/4	02/16/2012		3.4	--
PSW-6B3/4	PSW-6B3/4	08/20/2012		4.6	--
PSW-6B3/4	PSW-6B3/4	11/13/2012		2.1	--
PSW-6B3/4	PSW-6B3/4	02/19/2013		1.6	--
PSW-6B3/4	PSW-6B3/4	05/15/2013		4.3	--
PSW-6B3/4	PSW-6B3/4	08/15/2013		3.5	--
PSW-6B3/4	PSW-6B3/4	11/13/2013		4.3	--
PSW-6B3/4	PSW-6B3/4	02/19/2014		4	--
PSW-6B3/4	PSW-6B3/4	05/13/2014		4.4	--
PSW-6B3/4	PSW-6B3/6B4	05/13/2014		--	0.74
PSW-6B3/4	PSW-6B3/4	08/19/2014		4.386	--
PSW-6B3/4	PSW-6B3/6B4	08/19/2014		--	0.1 U
PSW-6B3/4	PSW-6B3/6B4	11/10/2014		--	1.53
PSW-6B3/4	PSW-6B3/4	11/20/2014		4.33	--
PSW-6B3/4	PSW-6B3/4	02/09/2015		4.48	--
PSW-6B3/4	PSW-6B3/6B4	02/09/2015		--	1.59
PSW-6B3/4	PSW-6B3/4	05/12/2015		4.45	--
PSW-6B3/4	PSW-6B3/6B4	05/12/2015		--	0.5
PSW-6B3/4	PSW-6B3/4	08/17/2015		4.19	--
PSW-6B3/4	PSW-6B3/6B4	08/17/2015		--	0.55
PSW-6B3/4	PSW-6B3/4	11/09/2015		4.15	--

**Historical Groundwater Analytical Results Summary
Farmland Remediation Project
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		General Chemistry Units		Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
Sample Location:	Sample Identification:	Sample Date:	Sample Type:		
PSW-6B3/4	PSW-6B3/6B4	11/09/2015		--	0.47
PSW-6B3/4	PSW-6B3/4	02/11/2016		3.87	--
PSW-6B3/4	PSW-6B3/6B4	02/11/2016		--	0.45
PSW-6B3/4	PSW-6B3/4	05/19/2016		3.85	--
PSW-6B3/4	PSW-6B3/6B4	05/19/2016		--	0.25 U
PSW-6B3/4	PSW-6B3/4	08/24/2016		3.77	--
PSW-6B3/4	PSW-6B3/6B4	08/24/2016		--	0.579
PSW-6B3/4	PSW-6B3/4	11/10/2016		3.96	--
PSW-6B3/4	PSW-6B3/6B4	11/10/2016		--	0.516
PSW-6B3/4	PSW-6B3/4	02/06/2017		4.02	--
PSW-6B3/4	PSW-6B3/6B4	02/06/2017		--	0.608
PSW-6B3/4	PSW-6B3/4	05/24/2017		3.2	--
PSW-6B3/4	PSW-6B3/6B4	05/24/2017		--	0.466
PSW-6B3/4	PSW-6B3/4	08/10/2017		4.2	--
PSW-6B3/4	PSW-6B3/6B4	08/10/2017		--	0.505
PSW-6B3/4	PSW-6B3/4	11/08/2017		4.1	0.592
PSW-6B3/4	PSW-6B3/4	02/08/2018		4.4	0.665
PSW-6B3/4	PSW-6B3/4	05/10/2018		4.4	0.675
PSW-6B3/4	PSW-6B3/4	08/06/2018		3.987	0.527
PSW-6B3/4	PSW-6B3/4	02/05/2019		3.87	0.805
PSW-6B3/4	PSW-6B3/4	06/12/2019		3.88	0.784
PSW-6B3/4	PSW-6B3/4	08/27/2019		3.32	0.656
PSW-6B3/4	PSW-6B3/4	11/18/2019		3.38	1.03
PSW-6B3/4	PSW-6B3/4	02/24/2020		23	231
PSW-6B3/4	PSW-6B3/4	05/26/2020		3.73	0.62
PSW-6B3/4	PSW-6B3/4	08/17/2020		3.73	0.734
PSW-6B3/4	PSW-6B3/4	11/23/2020		3.1	5.19
PSW-6B3/4	PSW-6B3/4	02/22/2021		4.32	4.77
PSW-6B3/4	PSW-6B3/4	05/24/2021		4.3	2.84
PSW-6B3/4	WG-061621-SM-007	06/16/2021		0.300 U	1.76
PSW-7A	PSW-7A	11/25/1997		--	1960
PSW-7A	PSW-7A	12/18/1997		--	1740
PSW-7A	PSW-7A	01/27/1998		--	1610
PSW-7A	PSW-7A	05/04/1998		--	1790
PSW-7A	PSW-7A	08/18/1998		--	386
PSW-7A	PSW-7A	11/11/1998		--	802
PSW-7A	PSW-7A	02/08/1999		--	735
PSW-7A	PSW-7A	05/18/1999		--	740
PSW-7A	PSW-7A	08/10/1999		--	976
PSW-7A	PSW-7A	11/17/1999		--	1150
PSW-7A	PSW-7A	02/15/2000		--	1210
PSW-7A	PSW-7A	05/09/2000		--	1110
PSW-7A	PSW-7A	11/14/2000		--	968
PSW-7A	PSW-7A	05/16/2001		--	773
PSW-7A	PSW-7A	06/18/2001		--	569
PSW-7A	PSW-7A	07/12/2001		--	634
PSW-7A	PSW-7A	08/16/2001		--	819

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-7A	PSW-7A	09/24/2001		--	631
PSW-7A	PSW-7A	10/22/2001		--	664
PSW-7A	PSW-7A	11/12/2001		--	945
PSW-7A	PSW-7A	12/10/2001		--	930
PSW-7A	PSW-7A	01/08/2002		--	998
PSW-7A	PSW-7A	01/14/2002		--	895
PSW-7A	PSW-7A	03/18/2002		--	958
PSW-7A	PSW-7A	04/17/2002		--	1290
PSW-7A	PSW-7A	05/22/2002		--	671
PSW-7A	PSW-7A	06/19/2002		--	657
PSW-7A	PSW-7A	07/11/2002		--	768
PSW-7A	PSW-7A	08/21/2002		--	672
PSW-7A	PSW-7A	11/07/2002		--	819
PSW-7A	PSW-7A	02/11/2003		--	712
PSW-7A	PSW-7A	05/12/2003		--	864
PSW-7A	PSW-7A	08/12/2003		--	1291
PSW-7A	PSW-7A	11/11/2003		--	1001
PSW-7A	PSW-7A	01/17/2004		--	1112
PSW-7A	PSW-7A	05/20/2004		--	749
PSW-7A	PSW-7A	08/16/2004		--	458
PSW-7A	PSW-7A	11/15/2004		--	238
PSW-7A	PSW-7A	01/21/2005		--	569
PSW-7A	PSW-7A	05/17/2005		--	515
PSW-7A	PSW-7A	08/17/2005		--	420
PSW-7A	PSW-7A	11/16/2005		--	354
PSW-7A	PSW-7A	02/14/2006		--	329
PSW-7A	PSW-7A	05/22/2006		--	310
PSW-7A	PSW-7A	08/21/2006		--	384
PSW-7A	PSW-7A	11/09/2006		--	316
PSW-7A	PSW-7A	02/20/2007		--	274
PSW-7A	PSW-7A	05/22/2007		--	166
PSW-7A	PSW-7A	08/20/2007		--	191
PSW-7A	PSW-7A	11/08/2007		--	173
PSW-7A	PSW-7A	02/19/2008		--	121
PSW-7A	PSW-7A	05/14/2008		--	99.3
PSW-7A	PSW-7A	08/12/2008		--	105
PSW-7A	PSW-7A	11/18/2008		--	87
PSW-7A	PSW-7A	01/23/2009		--	91.7
PSW-7A	PSW-7A	05/20/2009		--	66.2
PSW-7A	PSW-7A	08/11/2009		--	67.4
PSW-7A	PSW-7A	11/11/2009		--	38
PSW-7A	PSW-7A	02/16/2010		--	30.2
PSW-7A	PSW-7A	05/24/2010		--	31.4
PSW-7A	PSW-7A	08/09/2010		--	38.4
PSW-7A	PSW-7A	11/16/2010		--	39.2
PSW-7A	PSW-7A	02/17/2011		3.8	40.7
PSW-7A	PSW-7A	05/23/2011		4.6	56
PSW-7A	PSW-7A	08/16/2011		4.2	44.2

**Historical Groundwater Analytical Results Summary
Farmland Remediation Project
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		General Chemistry	Ammonia	Nitrite/Nitrate
		Units	(mg/L)	(mg/L)
Sample Location:	Sample Identification:	Sample Date:		
		Sample Type:		
PSW-7A	PSW-7A	11/17/2011	4.5	51.5
PSW-7A	PSW-7A	02/16/2012	4.2	47.4
PSW-7A	PSW-7A	05/21/2012	4.4	60.4
PSW-7A	PSW-7A	08/20/2012	4.8	44.2
PSW-7A	PSW-7A	11/13/2012	3.4	55.6
PSW-7A	PSW-7A	02/19/2013	2.2	82.9
PSW-7A	PSW-7A	05/15/2013	2.4	94.9
PSW-7A	PSW-7A	08/15/2013	2.1	38
PSW-7A	PSW-7A	11/13/2013	2.8	68.5
PSW-7A	PSW-7A	02/19/2014	4.3	62.7
PSW-7A	PSW-7A	05/13/2014	2.8	54.7
PSW-7A	PSW-7A	08/19/2014	6.988	70
PSW-7A	PSW-7A	11/10/2014	--	42.9
PSW-7A	PSW-7A	11/20/2014	3.95	--
PSW-7A	PSW-7A	02/09/2015	4.26	57.7
PSW-7A	PSW-7A	05/12/2015	3.73	55.5
PSW-7A	PSW-7A	08/17/2015	3.03	31.7
PSW-7A	PSW-7A	11/09/2015	4.65	33.3
PSW-7A	PSW-7A	02/11/2016	2.6	32
PSW-7A	PSW-7A	05/19/2016	3.08	36.5
PSW-7A	PSW-7A	08/24/2016	2.03	176
PSW-7A	PSW-7A	11/10/2016	8.53	151
PSW-7A	PSW-7A	02/06/2017	4.8	159
PSW-7A	PSW-7A	05/24/2017	10.7	279
PSW-7A	PSW-7A	08/10/2017	11.1	387
PSW-7A	PSW-7A	11/08/2017	17.7	378
PSW-7A	PSW-7A	02/08/2018	13.5	48
PSW-7A	PSW-7A	05/10/2018	20.9	443
PSW-7A	PSW-7A	08/06/2018	10.289	402
PSW-7A	PSW-7A	11/13/2018	10.369	365
PSW-7A	PSW-7A	02/05/2019	7.35	379
PSW-7A	PSW-7A	06/12/2019	7.92	289
PSW-7A	PSW-7A	08/27/2019	7.81	255
PSW-7A	PSW-7A	11/18/2019	9.88	266
PSW-7A	PSW-7A	02/24/2020	9.05	334
PSW-7A	PSW-7A	05/26/2020	17	535
PSW-7A	PSW-7A	08/17/2020	29.9	418
PSW-7A	PSW-7A	11/23/2020	21.2	295
PSW-7A	PSW-7A	02/22/2021	17.1	404
PSW-7A	PSW-7A	05/24/2021	21.8	359
PSW-7A	WG-061621-SM-004	06/16/2021	32.4 J+	348
PSW-7B	PSW-7B	11/25/1997	--	25.2
PSW-7B	PSW-7B	12/18/1997	--	7.11
PSW-7B	PSW-7B	01/27/1998	--	15.1
PSW-7B	PSW-7B	05/04/1998	--	0.19
PSW-7B	PSW-7B	08/18/1998	--	0.25 U
PSW-7B	PSW-7B	11/11/1998	--	0.25 U

**Historical Groundwater Analytical Results Summary
Farmland Remediation Project
Lawrence, KS**

Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-7B	PSW-7B	02/08/1999		--	3.63
PSW-7B	PSW-7B	05/18/1999		--	0.1
PSW-7B	PSW-7B	08/10/1999		--	0.25 U
PSW-7B	PSW-7B	11/17/1999		--	0.25 U
PSW-7B	PSW-7B	02/15/2000		--	0.25 U
PSW-7B	PSW-7B	05/09/2000		--	0.25 U
PSW-7B	PSW-7B	11/14/2000		--	2.8
PSW-7B	PSW-7B	05/16/2001		--	0.25 U
PSW-7B	PSW-7B	06/18/2001		--	0.25 U
PSW-7B	PSW-7B	07/12/2001		--	0.1
PSW-7B	PSW-7B	08/16/2001		--	4.5
PSW-7B	PSW-7B	09/24/2001		--	106
PSW-7B	PSW-7B	10/22/2001		--	153
PSW-7B	PSW-7B	11/12/2001		--	118
PSW-7B	PSW-7B	12/10/2001		--	2.3
PSW-7B	PSW-7B	01/08/2002		--	13
PSW-7B	PSW-7B	01/14/2002		--	2.4
PSW-7B	PSW-7B	03/18/2002		--	13.5
PSW-7B	PSW-7B	04/17/2002		--	2
PSW-7B	PSW-7B	05/22/2002		--	86
PSW-7B	PSW-7B	06/19/2002		--	101
PSW-7B	PSW-7B	07/11/2002		--	87
PSW-7B	PSW-7B	08/21/2002		--	67
PSW-7B	PSW-7B	11/07/2002		--	36
PSW-7B	PSW-7B	02/11/2003		--	0.29
PSW-7B	PSW-7B	05/12/2003		--	0.46
PSW-7B	PSW-7B	08/12/2003		--	0.34
PSW-7B	PSW-7B	11/11/2003		--	0.96
PSW-7B	PSW-7B	01/17/2004		--	0.95
PSW-7B	PSW-7B	05/20/2004		--	0.92
PSW-7B	PSW-7B	08/16/2004		--	1.7
PSW-7B	PSW-7B	11/15/2004		--	0.15
PSW-7B	PSW-7B	01/21/2005		--	0.79
PSW-7B	PSW-7B	05/17/2005		--	0.47
PSW-7B	PSW-7B	08/17/2005		--	0.36
PSW-7B	PSW-7B	11/16/2005		--	0.33
PSW-7B	PSW-7B	02/14/2006		--	0.33
PSW-7B	PSW-7B	05/22/2006		--	0.48
PSW-7B	PSW-7B	08/21/2006		--	0.79
PSW-7B	PSW-7B	11/09/2006		--	1.1
PSW-7B	PSW-7B	02/20/2007		--	1.1
PSW-7B	PSW-7B	05/22/2007		--	2.87
PSW-7B	PSW-7B	08/20/2007		--	0.14
PSW-7B	PSW-7B	11/08/2007		--	2.87
PSW-7B	PSW-7B	02/19/2008		--	1.52
PSW-7B	PSW-7B	05/14/2008		--	1

**Historical Groundwater Analytical Results Summary
Farmland Remediation Project
Lawrence, KS**

Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units Sample Type:	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
PSW-7B2	PSW-7B2	08/12/2008		--	0.13
PSW-7B2	PSW-7B2	11/18/2008		--	0.54
PSW-7B2	PSW-7B2	01/23/2009		--	0.47
PSW-7B2	PSW-7B2	05/20/2009		--	0.5
PSW-7B2	PSW-7B2	08/11/2009		--	0.2
PSW-7B2	PSW-7B2	11/11/2009		--	0.45
PSW-7B2	PSW-7B2	02/16/2010		--	0.2
PSW-7B2	PSW-7B2	05/24/2010		--	0.25 U
PSW-7B2	PSW-7B2	08/09/2010		--	0.25 U
PSW-7B2	PSW-7B2	11/16/2010		--	0.4
PSW-7B2	PSW-7B2	02/17/2011		1.7	0.2
PSW-7B2	PSW-7B2	05/23/2011		1.4	0.69
PSW-7B2	PSW-7B2	08/16/2011		1.4	0.11
PSW-7B2	PSW-7B2	11/17/2011		1.5	2.3
PSW-7B2	PSW-7B2	02/16/2012		1.5	4.4
PSW-7B2	PSW-7B2	11/13/2012		0.82	0.3
PSW-7B2	PSW-7B2	02/19/2013		0.6	0.4
PSW-7B2	PSW-7B2	05/15/2013		1.6	1.8
PSW-7B2	PSW-7B2	08/15/2013		1.3	0.63
PSW-7B2	PSW-7B2	11/13/2013		1.2	1
PSW-7B2	PSW-7B2	02/19/2014		1.3	1.5
PSW-7B2	PSW-7B2	05/13/2014		1.3	3
PSW-7B2	PSW-7B2	08/19/2014		1.626	0.42
PSW-7B2	PSW-7B2	11/10/2014		--	0.37
PSW-7B2	PSW-7B2	11/20/2014		1.55	--
PSW-7B2	PSW-7B2	02/09/2015		1.42	1.03
PSW-7B2	PSW-7B2	05/12/2015		1.67	0.41
PSW-7B2	PSW-7B2	08/17/2015		1.42	0.3
PSW-7B2	PSW-7B2	11/09/2015		1.47	0.25 U
PSW-7B2	PSW-7B2	02/11/2016		1.47	0.252
PSW-7B2	PSW-7B2	05/19/2016		1.64	0.13
PSW-7B2	PSW-7B2	08/24/2016		1.64	0.25 U
PSW-7B2	PSW-7B2	11/10/2016		1.58	0.25 U
PSW-7B2	PSW-7B2	02/06/2017		1.49	0.326
PSW-7B2	PSW-7B2	05/24/2017		1.5	0.25 U
PSW-7B2	PSW-7B2	08/10/2017		1.6	0.251
PSW-7B2	PSW-7B2	11/08/2017		1.6	0.25 U
PSW-7B2	PSW-7B2	02/08/2018		1.5	0.25 U
PSW-7B2	PSW-7B2	05/10/2018		1.6	0.376
PSW-7B2	PSW-7B2	08/06/2018		1.375	0.25 U
PSW-7B2	PSW-7B2	11/13/2018		1.632	0.474
PSW-7B2	PSW-7B2	02/05/2019		1.55	0.673
PSW-7B2	PSW-7B2	06/12/2019		1.56	0.586
PSW-7B2	PSW-7B2	08/27/2019		1.28	0.25 U
PSW-7B2	PSW-7B2	11/18/2019		1.19	0.25 U
PSW-7B2	PSW-7B2	02/24/2020		1.38	0.25 U
PSW-7B2	PSW-7B2	08/17/2020		1.46	0.25 U
PSW-7B2	PSW-7B2	11/23/2020		1.62	0.25 U

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
PSW-7B2	PSW-7B2	02/22/2021		1.67	0.25 U
PSW-7B2	PSW-7B2	05/24/2021		1.6	0.254
PSW-7B2	WG-061621-SM-005	06/16/2021		0.300 U	0.250 U
PSW-9A	PSW-9A	11/25/1997		--	9.56
PSW-9A	PSW-9A	12/18/1997		--	7.17
PSW-9A	PSW-9A	01/27/1998		--	5.79
PSW-9A	PSW-9A	05/04/1998		--	6.2
PSW-9A	PSW-9A	08/18/1998		--	3.43
PSW-9A	PSW-9A	11/11/1998		--	3.47
PSW-9A	PSW-9A	02/08/1999		--	3.61
PSW-9A	PSW-9A	05/18/1999		--	2.8
PSW-9A	PSW-9A	08/10/1999		--	3.1
PSW-9A	PSW-9A	11/17/1999		--	5.41
PSW-9A	PSW-9A	02/15/2000		--	6.45
PSW-9A	PSW-9A	05/09/2000		--	3.68
PSW-9A	PSW-9A	11/14/2000		--	3.7
PSW-9A	PSW-9A	05/16/2001		--	1.8
PSW-9A	PSW-9A	08/16/2001		--	2.3
PSW-9A	PSW-9A	11/12/2001		--	2.8
PSW-9A	PSW-9A	01/14/2002		--	3.8
PSW-9A	PSW-9A	05/22/2002		--	1.7
PSW-9A	PSW-9A	08/21/2002		--	2.6
PSW-9A	PSW-9A	05/20/2004		--	2.31
PSW-9A	PSW-9A	08/16/2004		--	0.65
PSW-9A	PSW-9A	11/15/2004		--	0.33
PSW-9A	PSW-9A	01/21/2005		--	0.66
PSW-9A	PSW-9A	05/17/2005		--	2.04
PSW-9A	PSW-9A	08/17/2005		--	2.8
PSW-9A	PSW-9A	11/16/2005		--	2.78
PSW-9A	PSW-9A	02/14/2006		--	6.3
PSW-9A	PSW-9A	05/22/2006		--	3.4
PSW-9A	PSW-9A	08/21/2006		--	5.08
PSW-9A	PSW-9A	11/09/2006		--	4.34
PSW-9A	PSW-9A	02/20/2007		--	3
PSW-9A	PSW-9A	05/22/2007		--	0.9
PSW-9A	PSW-9A	08/20/2007		--	4.13
PSW-9A	PSW-9A	11/08/2007		--	4.9
PSW-9A	PSW-9A	02/19/2008		--	5.4
PSW-9A	PSW-9A	05/14/2008		--	2.4
PSW-9A	PSW-9A	08/12/2008		--	1.66
PSW-9A	PSW-9A	11/18/2008		--	2.17
PSW-9A	PSW-9A	01/23/2009		--	4.18
PSW-9A	PSW-9A	05/20/2009		--	3.5
PSW-9A	PSW-9A	08/11/2009		--	1.5
PSW-9A	PSW-9A	11/11/2009		--	1.8
PSW-9A	PSW-9A	02/16/2010		--	5
PSW-9A	PSW-9A	05/24/2010		--	6.6

**Historical Groundwater Analytical Results Summary
Farmland Remediation Project
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-9A	PSW-9A	08/09/2010		--	7
PSW-9A	PSW-9A	11/16/2010		--	5.3
PSW-9A	PSW-9A	02/17/2011		0.3 U	2.6
PSW-9A	PSW-9A	05/23/2011		0.3 U	3.1
PSW-9A	PSW-9A	08/16/2011		0.3 U	2.4
PSW-9A	PSW-9A	11/17/2011		0.3 U	2.7
PSW-9A	PSW-9A	02/16/2012		0.3 U	1.7
PSW-9A	PSW-9A	05/21/2012		0.3 U	2.6
PSW-9A	PSW-9A	08/20/2012		0.3 U	2.2
PSW-9A	PSW-9A	08/15/2013		0.3 U	2.1
PSW-9A	PSW-9A	11/13/2013		0.3 U	2.1
PSW-9A	PSW-9A	11/10/2014		--	1.72
PSW-9A	PSW-9A	11/20/2014		0.3 U	--
PSW-9A	PSW-9A	02/09/2015		0.3 U	2.41
PSW-9A	PSW-9A	08/17/2015		0.3 U	0.78
PSW-9A	PSW-9A	11/09/2015		0.3 U	1.2
PSW-9A	PSW-9A	02/11/2016		0.3 U	1.83
PSW-9A	PSW-9A	05/19/2016		0.3 U	1.25
PSW-9A	PSW-9A	08/24/2016		0.3 U	2.94
PSW-9A	PSW-9A	11/10/2016		0.3 U	6.95
PSW-9A	PSW-9A	05/24/2017		0.3 U	10.1
PSW-9A	PSW-9A	08/10/2017		0.3 U	7.81
PSW-9A	PSW-9A	11/08/2017		0.3 U	8.29
PSW-9A	PSW-9A	05/10/2018		0.3 U	6.48
PSW-9A	PSW-9A	02/05/2019		0.3 U	7.94
PSW-9A	PSW-9A	06/12/2019		0.3 U	4.06
PSW-9A	PSW-9A	08/27/2019		0.3 U	3.62
PSW-9A	PSW-9A	11/18/2019		0.3 U	3.8
PSW-9A	PSW-9A	02/24/2020		0.3 U	2.08
PSW-9A	PSW-9A	05/26/2020		0.3 U	4.98
PSW-9A	PSW-9A	08/17/2020		0.3 U	2.59
PSW-9A	PSW-9A	11/23/2020		0.3 U	3
PSW-9A	PSW-9A	02/22/2021		0.3 U	4.27
PSW-9A	PSW-9A	05/24/2021		0.3 U	8.13
PSW-9A	WG-061621-NL-013	06/16/2021		0.300 U	7.38
PSW-9B	PSW-9B	11/25/1997		--	32.3
PSW-9B	PSW-9B	12/18/1997		--	34.5
PSW-9B	PSW-9B	01/27/1998		--	33.8
PSW-9B	PSW-9B	05/04/1998		--	30
PSW-9B	PSW-9B	08/18/1998		--	23.8
PSW-9B	PSW-9B	11/11/1998		--	26.4
PSW-9B	PSW-9B	02/08/1999		--	22.9
PSW-9B	PSW-9B	05/18/1999		--	30.6
PSW-9B	PSW-9B	08/10/1999		--	20.5
PSW-9B	PSW-9B	11/17/1999		--	17.5
PSW-9B	PSW-9B	02/15/2000		--	16.5
PSW-9B	PSW-9B	05/09/2000		--	15.6

**Historical Groundwater Analytical Results Summary
Farmland Remediation Project
Lawrence, KS**

Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-9B	PSW-9B	11/14/2000		--	7.1
PSW-9B	PSW-9B	05/16/2001		--	13.9
PSW-9B	PSW-9B	08/16/2001		--	13.6
PSW-9B	PSW-9B	11/12/2001		--	13
PSW-9B	PSW-9B	01/14/2002		--	7.7
PSW-9B	PSW-9B	05/22/2002		--	6.3
PSW-9B	PSW-9B	08/21/2002		--	3.7
PSW-9B	PSW-9B	11/07/2002		--	2.3
PSW-9B	PSW-9B	02/11/2003		--	1.5
PSW-9B	PSW-9B	05/12/2003		--	0.84
PSW-9B	PSW-9B	08/12/2003		--	0.88
PSW-9B	PSW-9B	11/11/2003		--	0.45
PSW-9B	PSW-9B	01/17/2004		--	0.31
PSW-9B	PSW-9B	05/20/2004		--	0.76
PSW-9B	PSW-9B	11/15/2004		--	2.84
PSW-9B	PSW-9B	01/21/2005		--	8.9
PSW-9B	PSW-9B	05/17/2005		--	7.5
PSW-9B	PSW-9B	08/17/2005		--	8.56
PSW-9B	PSW-9B	11/16/2005		--	14
PSW-9B	PSW-9B	02/14/2006		--	6.8
PSW-9B	PSW-9B	05/22/2006		--	13.7
PSW-9B	PSW-9B	08/21/2006		--	10.2
PSW-9B	PSW-9B	11/09/2006		--	6.34
PSW-9B	PSW-9B	02/20/2007		--	2
PSW-9B	PSW-9B	05/22/2007		--	5.33
PSW-9B	PSW-9B	08/20/2007		--	4.83
PSW-9B	PSW-9B	11/08/2007		--	3.8
PSW-9B	PSW-9B	02/19/2008		--	2.7
PSW-9B	PSW-9B	05/14/2008		--	5
PSW-9B	PSW-9B	08/12/2008		--	7.41
PSW-9B	PSW-9B	11/18/2008		--	4.8
PSW-9B	PSW-9B	01/23/2009		--	3.96
PSW-9B	PSW-9B	05/20/2009		--	5.6
PSW-9B	PSW-9B	08/11/2009		--	7.9
PSW-9B	PSW-9B	11/11/2009		--	6.8
PSW-9B	PSW-9B	02/16/2010		--	10.7
PSW-9B	PSW-9B	05/24/2010		--	22.2
PSW-9B	PSW-9B	08/09/2010		--	14.1
PSW-9B	PSW-9B	11/16/2010		--	11.3
PSW-9B	PSW-9B	02/17/2011		0.2	7.7
PSW-9B	PSW-9B	05/23/2011		0.3 U	5.6
PSW-9B	PSW-9B	08/16/2011		0.3 U	5.4
PSW-9B	PSW-9B	11/17/2011		0.3 U	4.2
PSW-9B	PSW-9B	02/16/2012		0.3 U	2.5
PSW-9B	PSW-9B	05/21/2012		0.3 U	2.8
PSW-9B	PSW-9B	08/20/2012		0.3 U	2.1
PSW-9B	PSW-9B	11/13/2012		0.3 U	1.5
PSW-9B	PSW-9B	02/19/2013		0.3 U	0.8

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-9B	PSW-9B	05/15/2013		0.3 U	0.45
PSW-9B	PSW-9B	08/15/2013		0.3 U	0.74
PSW-9B	PSW-9B	11/13/2013		0.3 U	0.52
PSW-9B	PSW-9B	02/19/2014		0.3 U	0.11
PSW-9B	PSW-9B	05/13/2014		0.3 U	0.1 U
PSW-9B	PSW-9B	08/19/2014		0.161	0.1 U
PSW-9B	PSW-9B	11/10/2014		--	0.73
PSW-9B	PSW-9B	11/20/2014		0.3 U	--
PSW-9B	PSW-9B	02/09/2015		0.3 U	0.25 U
PSW-9B	PSW-9B	05/12/2015		0.3 U	0.25 U
PSW-9B	PSW-9B	08/17/2015		0.3 U	3.6
PSW-9B	PSW-9B	11/09/2015		0.3 U	1
PSW-9B	PSW-9B	02/11/2016		0.3 U	3.08
PSW-9B	PSW-9B	05/19/2016		0.3 U	2.22
PSW-9B	PSW-9B	08/24/2016		0.3 U	2.1
PSW-9B	PSW-9B	11/10/2016		0.3 U	2.24
PSW-9B	PSW-9B	02/06/2017		0.3 U	0.453
PSW-9B	PSW-9B	05/24/2017		0.3 U	1.8
PSW-9B	PSW-9B	08/10/2017		0.3 U	1.44
PSW-9B	PSW-9B	11/08/2017		0.3 U	2.41
PSW-9B	PSW-9B	02/08/2018		0.3 U	1.11
PSW-9B	PSW-9B	05/10/2018		0.3 U	0.25 U
PSW-9B	PSW-9B	08/06/2018		0.3 U	0.25 U
PSW-9B	PSW-9B	11/13/2018		0.3 U	0.605
PSW-9B	PSW-9B	02/05/2019		0.3 U	0.813
PSW-9B	PSW-9B	06/12/2019		0.3 U	8.95
PSW-9B	PSW-9B	08/27/2019		0.3 U	10.7
PSW-9B	PSW-9B	11/18/2019		0.3 U	10.2
PSW-9B	PSW-9B	02/24/2020		0.3 U	12.1
PSW-9B	PSW-9B	05/26/2020		0.3 U	12.7
PSW-9B	PSW-9B	08/17/2020		0.3 U	11.3
PSW-9B	PSW-9B	11/23/2020		0.3 U	7.73
PSW-9B	PSW-9B	02/22/2021		0.3 U	3.07
PSW-9B	PSW-9B	05/24/2021		0.3 U	7.86
PSW-9B	WG-061721-NL-020	06/17/2021		0.300 U	9.16
PSW-13A	PSW-13A	08/15/2013		343	868
PSW-13A	PSW-13A	02/19/2014		336	1170
PSW-13A	PSW-13A	05/13/2014		341	887
PSW-13A	PSW-13A	08/19/2014		374.4	1100
PSW-13A	PSW-13A	11/10/2014		--	936
PSW-13A	PSW-13A	11/20/2014		418	--
PSW-13A	PSW-13A	02/09/2015		373	1160
PSW-13A	PSW-13A	05/12/2015		301	783
PSW-13A	PSW-13A	08/17/2015		294	620
PSW-13A	PSW-13A	11/09/2015		327	876
PSW-13A	PSW-13A	02/11/2016		272	780
PSW-13A	PSW-13A	05/19/2016		267	682

**Historical Groundwater Analytical Results Summary
Farmland Remediation Project
Lawrence, KS**

Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units Sample Type:	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
PSW-13A	PSW-13A	08/24/2016		241	688
PSW-13A	PSW-13A	11/10/2016		303	654
PSW-13A	PSW-13A	02/06/2017		258	752
PSW-13A	PSW-13A	05/24/2017		237	468
PSW-13A	PSW-13A	08/10/2017		216	639
PSW-13A	PSW-13A	11/08/2017		2380	436
PSW-13A	PSW-13A	02/08/2018		266	755
PSW-13A	PSW-13A	05/10/2018		255	619
PSW-13A	PSW-13A	08/06/2018		320.149	774
PSW-13A	PSW-13A	11/13/2018		171.16	325
PSW-13A	PSW-13A	02/05/2019		120	196
PSW-13A	PSW-13A	06/12/2019		142	264
PSW-13A	PSW-13A	08/27/2019		223	350
PSW-13A	PSW-13A	11/18/2019		256	492
PSW-13A	PSW-13A	02/24/2020		219	501
PSW-13A	PSW-13A	05/26/2020		174	335
PSW-13A	PSW-13A	08/17/2020		209	746
PSW-13A	PSW-13A	11/23/2020		205	440
PSW-13A	PSW-13A	02/22/2021		155	325
PSW-13A	PSW-13A	05/24/2021		135	251
PSW-13A	WG-061721-SM-016	06/17/2021		150	271
PSW-13B	PSW-13B	08/15/2013		21.8	748
PSW-13B	PSW-13B	02/19/2014		13.9	822
PSW-13B	PSW-13B	05/13/2014		24.9	869
PSW-13B	PSW-13B	08/19/2014		6.696	860
PSW-13B	PSW-13B	11/10/2014		--	705
PSW-13B	PSW-13B	11/20/2014		31.1	--
PSW-13B	PSW-13B	02/09/2015		25.6	661
PSW-13B	PSW-13B	05/12/2015		31.9	605
PSW-13B	PSW-13B	08/17/2015		0.602	563
PSW-13B	PSW-13B	11/09/2015		16.5	502
PSW-13B	PSW-13B	05/19/2016		19.2	--
PSW-13B	PSW-13B	08/24/2016		30.3	542
PSW-13B	PSW-13B	11/10/2016		11.7	692
PSW-13B	PSW-13B	02/06/2017		11.9	545
PSW-13B	PSW-13B	05/24/2017		26.5	490
PSW-13B	PSW-13B	08/10/2017		11.9	681
PSW-13B	PSW-13B	11/08/2017		7.7	586
PSW-13B	PSW-13B	02/08/2018		8.4	720
PSW-13B	PSW-13B	05/10/2018		9.6	540
PSW-13B	PSW-13B	08/06/2018		10.48	626
PSW-13B	PSW-13B	11/13/2018		13.981	659
PSW-13B	PSW-13B	02/05/2019		16.8	703
PSW-13B	PSW-13B	06/12/2019		23.7	532
PSW-13B	PSW-13B	08/27/2019		24.8	585
PSW-13B	PSW-13B	11/18/2019		24	510
PSW-13B	PSW-13B	02/24/2020		23.7	667

**Historical Groundwater Analytical Results Summary
Farmland Remediation Project
Lawrence, KS**

		General Chemistry Units		Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
Sample Location:	Sample Identification:	Sample Date:	Sample Type:		
PSW-13B	PSW-13B	05/26/2020		27.2	669
PSW-13B	PSW-13B	08/17/2020		28.4	645
PSW-13B	PSW-13B	11/23/2020		25.4	762
PSW-13B	PSW-13B	02/22/2021		20	598
PSW-13B	PSW-13B	05/24/2021		22.3	721
PSW-13B	WG-061721-SM-017	06/17/2021		33.8	512
PSW-13B	WG-061721-SM-018	06/17/2021	Duplicate	35.1	517
PSW-15	PSW-15	12/18/1997		--	0.25 U
PSW-15	PSW-15	01/27/1998		--	0.25 U
PSW-15	PSW-15	05/04/1998		--	0.25 U
PSW-15	PSW-15	08/18/1998		--	0.25 U
PSW-15	PSW-15	11/11/1998		--	0.25 U
PSW-15	PSW-15	02/08/1999		--	0.25 U
PSW-15	PSW-15	05/18/1999		--	0.25 U
PSW-15	PSW-15	08/10/1999		--	0.25 U
PSW-15	PSW-15	11/17/1999		--	0.25 U
PSW-15	PSW-15	02/15/2000		--	0.25 U
PSW-15	PSW-15	05/09/2000		--	0.25 U
PSW-15	PSW-15	11/14/2000		--	0.25 U
PSW-15	PSW-15	05/16/2001		--	0.25 U
PSW-15	PSW-15	06/18/2001		--	0.25 U
PSW-15	PSW-15	07/12/2001		--	0.25 U
PSW-15	PSW-15	08/16/2001		--	0.25 U
PSW-15	PSW-15	09/24/2001		--	0.25 U
PSW-15	PSW-15	10/22/2001		--	0.25 U
PSW-15	PSW-15	11/12/2001		--	0.25 U
PSW-15	PSW-15	12/10/2001		--	0.25 U
PSW-15	PSW-15	01/08/2002		--	0.25 U
PSW-15	PSW-15	01/14/2002		--	0.25 U
PSW-15	PSW-15	03/18/2002		--	0.25 U
PSW-15	PSW-15	04/17/2002		--	0.25 U
PSW-15	PSW-15	05/22/2002		--	0.25 U
PSW-15	PSW-15	06/19/2002		--	0.25 U
PSW-15	PSW-15	07/11/2002		--	0.25 U
PSW-15	PSW-15	08/21/2002		--	0.25 U
PSW-15	PSW-15	11/07/2002		--	0.08
PSW-15	PSW-15	02/11/2003		--	0.1
PSW-15	PSW-15	05/12/2003		--	0.06
PSW-15	PSW-15	08/12/2003		--	1.25
PSW-15	PSW-15	11/11/2003		--	0.25 U
PSW-15	PSW-15	01/17/2004		--	0.25 U
PSW-15	PSW-15	05/20/2004		--	0.25 U
PSW-15	PSW-15	08/16/2004		--	0.12
PSW-15	PSW-15	11/15/2004		--	0.25 U
PSW-15	PSW-15	01/21/2005		--	0.25 U
PSW-15	PSW-15	05/17/2005		--	0.25 U
PSW-15	PSW-15	08/17/2005		--	0.25 U

**Historical Groundwater Analytical Results Summary
Farmland Remediation Project
Lawrence, KS**

Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-15	PSW-15	11/16/2005		--	0.25 U
PSW-15	PSW-15	02/14/2006		--	0.25 U
PSW-15	PSW-15	05/22/2006		--	0.25 U
PSW-15	PSW-15	08/21/2006		--	0.25 U
PSW-15	PSW-15	11/09/2006		--	0.25 U
PSW-15	PSW-15	02/20/2007		--	0.25 U
PSW-15	PSW-15	05/22/2007		--	0.14
PSW-15	PSW-15	08/20/2007		--	0.25 U
PSW-15	PSW-15	11/08/2007		--	0.25 U
PSW-15	PSW-15	02/19/2008		--	0.25 U
PSW-15	PSW-15	05/14/2008		--	0.25 U
PSW-15	PSW-15	08/12/2008		--	0.25 U
PSW-15	PSW-15	11/18/2008		--	0.25 U
PSW-15	PSW-15	01/23/2009		--	0.25 U
PSW-15	PSW-15	05/20/2009		--	0.25 U
PSW-15	PSW-15	08/11/2009		--	0.25 U
PSW-15	PSW-15	11/11/2009		--	0.25 U
PSW-15	PSW-15	02/16/2010		--	0.25 U
PSW-15	PSW-15	05/24/2010		--	0.25 U
PSW-15	PSW-15	08/09/2010		--	0.25 U
PSW-15	PSW-15	11/16/2010		--	0.25 U
PSW-15	PSW-15	02/17/2011		2	0.25 U
PSW-15	PSW-15	05/23/2011		1.2	0.10 U
PSW-15	PSW-15	08/16/2011		1.5	0.10 U
PSW-15	PSW-15	11/17/2011		1.5	0.10 U
PSW-15	PSW-15	02/16/2012		1.5	0.10 U
PSW-15	PSW-15	05/21/2012		1.3	0.1 U
PSW-15	PSW-15	08/20/2012		1.5	0.1
PSW-15	PSW-15	11/13/2012		1.1	0.10 U
PSW-15	PSW-15	02/19/2013		0.65	0.10 U
PSW-15	PSW-15	05/15/2013		1	0.10 U
PSW-15	PSW-15	08/15/2013		1.1	0.25 U
PSW-15	PSW-15	11/13/2013		1.1	0.10 U
PSW-15	PSW-15	02/19/2014		1.3	0.10 U
PSW-15	PSW-15	05/13/2014		1.4	0.10 U
PSW-15	PSW-15	08/19/2014		2.141	0.1 U
PSW-15	PSW-15	11/10/2014		--	0.47
PSW-15	PSW-15	11/20/2014		1.75	--
PSW-15	PSW-15	02/09/2015		1.81	0.47
PSW-15	PSW-15	05/12/2015		1.84	0.25 U
PSW-15	PSW-15	08/17/2015		1.58	0.25 U
PSW-15	PSW-15	11/09/2015		1.87	0.25 U
PSW-15	PSW-15	02/11/2016		1.7	0.25 U
PSW-15	PSW-15	05/19/2016		1.63	0.25 U
PSW-15	PSW-15	08/24/2016		2	0.25 U
PSW-15	PSW-15	11/10/2016		1.01	0.25 U
PSW-15	PSW-15	02/06/2017		1.74	0.25 U
PSW-15	PSW-15	05/24/2017		1.5	0.25 U

**Historical Groundwater Analytical Results Summary
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Lawrence, KS**

Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-15	PSW-15	08/10/2017		1.8	0.25 U
PSW-15	PSW-15	11/08/2017		1.7	0.25 U
PSW-15	PSW-15	02/08/2018		1.6	0.25 U
PSW-15	PSW-15	05/10/2018		1.8	0.25 U
PSW-15	PSW-15	08/06/2018		1.745	0.25 U
PSW-15	PSW-15	11/13/2018		1.884	0.25 U
PSW-15	PSW-15	02/05/2019		1.77	0.25 U
PSW-15	PSW-15	06/12/2019		1.36	0.25 U
PSW-15	PSW-15	08/27/2019		1.38	0.25 U
PSW-15	PSW-15	11/18/2019		1.42	0.25 U
PSW-15	PSW-15	02/24/2020		1.26	0.25 U
PSW-15	PSW-15	05/26/2020		1.32	0.25 U
PSW-15	PSW-15	08/17/2020		1.33	0.25 U
PSW-15	PSW-15	11/23/2020		1.57	0.25 U
PSW-15	PSW-15	02/22/2021		1.57	0.25 U
PSW-15	PSW-15	05/24/2021		1.22	0.25 U
PSW-15	WG-061821-SM-023	06/18/2021		1.80 J+	0.250 U
PSW-17	PSW-17	11/25/1997		--	610
PSW-17	PSW-17	12/18/1997		--	723
PSW-17	PSW-17	01/27/1998		--	633
PSW-17	PSW-17	05/04/1998		--	698
PSW-17	PSW-17	08/18/1998		--	605
PSW-17	PSW-17	11/11/1998		--	788
PSW-17	PSW-17	02/08/1999		--	587
PSW-17	PSW-17	05/18/1999		--	540
PSW-17	PSW-17	08/10/1999		--	604
PSW-17	PSW-17	11/17/1999		--	457
PSW-17	PSW-17	02/15/2000		--	426
PSW-17	PSW-17	05/09/2000		--	502
PSW-17	PSW-17	11/14/2000		--	502
PSW-17	PSW-17	05/16/2001		--	380
PSW-17	PSW-17	08/16/2001		--	510
PSW-17	PSW-17	11/12/2001		--	288
PSW-17	PSW-17	01/14/2002		--	251
PSW-17	PSW-17	05/22/2002		--	351
PSW-17	PSW-17	08/21/2002		--	311
PSW-17	PSW-17	11/07/2002		--	307
PSW-17	PSW-17	02/11/2003		--	320
PSW-17	PSW-17	05/12/2003		--	254
PSW-17	PSW-17	08/12/2003		--	585
PSW-17	PSW-17	11/11/2003		--	326
PSW-17	PSW-17	01/17/2004		--	278
PSW-17	PSW-17	05/20/2004		--	379
PSW-17	PSW-17	08/16/2004		--	180
PSW-17	PSW-17	11/15/2004		--	248
PSW-17	PSW-17	01/21/2005		--	322
PSW-17	PSW-17	05/17/2005		--	329

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-17	PSW-17	08/17/2005		--	223
PSW-17	PSW-17	11/16/2005		--	238
PSW-17	PSW-17	02/14/2006		--	243
PSW-17	PSW-17	05/22/2006		--	279
PSW-17	PSW-17	08/21/2006		--	367
PSW-17	PSW-17	11/09/2006		--	310
PSW-17	PSW-17	02/20/2007		--	184
PSW-17	PSW-17	05/22/2007		--	299
PSW-17	PSW-17	08/20/2007		--	302
PSW-17	PSW-17	11/08/2007		--	250
PSW-17	PSW-17	02/19/2008		--	220
PSW-17	PSW-17	05/14/2008		--	240
PSW-17	PSW-17	08/12/2008		--	199
PSW-17	PSW-17	11/18/2008		--	226
PSW-17	PSW-17	01/23/2009		--	186
PSW-17	PSW-17	05/20/2009		--	203
PSW-17	PSW-17	08/11/2009		--	236
PSW-17	PSW-17	11/11/2009		--	190
PSW-17	PSW-17	02/16/2010		--	223
PSW-17	PSW-17	05/24/2010		--	192
PSW-17	PSW-17	08/09/2010		--	194
PSW-17	PSW-17	11/16/2010		--	187
PSW-17	PSW-17	02/17/2011		36.4	230
PSW-17	PSW-17	05/23/2011		24.3	173
PSW-17	PSW-17	08/16/2011		33.6	193
PSW-17	PSW-17	11/17/2011		42.8	303
PSW-17	PSW-17	02/16/2012		16.9	242
PSW-17	PSW-17	05/21/2012		24.3	192
PSW-17	PSW-17	08/20/2012		21.2	136
PSW-17	PSW-17	11/13/2012		159	212
PSW-17	PSW-17	02/19/2013		4.3	331
PSW-17	PSW-17	05/15/2013		10.6	24
PSW-17	PSW-17	08/15/2013		18.8	207
PSW-17	PSW-17	11/13/2013		16.1	202
PSW-17	PSW-17	02/19/2014		5.5	194
PSW-17	PSW-17	05/13/2014		3.1	156
PSW-17	PSW-17	08/19/2014		0.3 U	170
PSW-17	PSW-17	11/10/2014		--	192
PSW-17	PSW-17	11/20/2014		13.7	--
PSW-17	PSW-17	02/09/2015		8.39	146
PSW-17	PSW-17	05/12/2015		4.6	140
PSW-17	PSW-17	08/17/2015		8.12	112
PSW-17	PSW-17	11/09/2015		21	113
PSW-17	PSW-17	02/11/2016		5.13	122
PSW-17	PSW-17	05/19/2016		4.91	85.4
PSW-17	PSW-17	08/24/2016		6.12	96.7
PSW-17	PSW-17	11/10/2016		8.46	85.1
PSW-17	PSW-17	02/06/2017		4.11	114

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units Sample Type:	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
PSW-17	PSW-17	05/24/2017		4.4	82.6
PSW-17	PSW-17	08/10/2017		3.5	63.7
PSW-17	PSW-17	11/08/2017		0.5	51.9
PSW-17	PSW-17	02/08/2018		1.2	100
PSW-17	PSW-17	05/10/2018		0.9	145
PSW-17	PSW-17	08/06/2018		12.842	87.8
PSW-17	PSW-17	11/13/2018		1.857	113
PSW-17	PSW-17	02/05/2019		0.825	107
PSW-17	PSW-17	06/12/2019		0.766	37.5
PSW-17	PSW-17	08/27/2019		1.34	23.8
PSW-17	PSW-17	11/18/2019		5.2	74.6
PSW-17	PSW-17	02/24/2020		0.56	71.6
PSW-17	PSW-17	05/26/2020		0.3 U	41.9
PSW-17	PSW-17	08/17/2020		0.3 U	28.7
PSW-17	PSW-17	11/23/2020		4.73	86.4
PSW-17	PSW-17	02/22/2021		1.1	88
PSW-17	PSW-17	05/24/2021		0.91	27.5
PSW-17	WG-061821-SM-019	06/18/2021		0.615 J+	31.4
PSW-17	WG-061821-SM-019A	06/18/2021	Split	0.65	39.4
PSW-17	WG-061821-SM-020	06/18/2021	Duplicate	0.631	30.1
PSW-18	PSW-18	11/25/1997		--	510
PSW-18	PSW-18	12/18/1997		--	397
PSW-18	PSW-18	01/27/1998		--	274
PSW-18	PSW-18	05/04/1998		--	355
PSW-18	PSW-18	08/18/1998		--	277
PSW-18	PSW-18	11/11/1998		--	163
PSW-18	PSW-18	02/08/1999		--	158
PSW-18	PSW-18	05/18/1999		--	77.5
PSW-18	PSW-18	08/10/1999		--	73.4
PSW-18	PSW-18	11/17/1999		--	151
PSW-18	PSW-18	02/15/2000		--	152
PSW-18	PSW-18	05/09/2000		--	95
PSW-18	PSW-18	11/14/2000		--	85
PSW-18	PSW-18	05/16/2001		--	40
PSW-18	PSW-18	08/16/2001		--	38
PSW-18	PSW-18	11/12/2001		--	16
PSW-18	PSW-18	01/14/2002		--	23
PSW-18	PSW-18	05/22/2002		--	15
PSW-18	PSW-18	08/21/2002		--	30
PSW-18	PSW-18	11/07/2002		--	83
PSW-18	PSW-18	02/11/2003		--	112
PSW-18	PSW-18	05/12/2003		--	72
PSW-18	PSW-18	08/12/2003		--	65
PSW-18	PSW-18	11/11/2003		--	69
PSW-18	PSW-18	01/17/2004		--	45
PSW-18	PSW-18	05/20/2004		--	12.5
PSW-18	PSW-18	08/16/2004		--	5.4

**Historical Groundwater Analytical Results Summary
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Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
PSW-18	PSW-18	11/15/2004		--	4.63
PSW-18	PSW-18	01/21/2005		--	11
PSW-18	PSW-18	05/17/2005		--	11.6
PSW-18	PSW-18	08/17/2005		--	6.1
PSW-18	PSW-18	11/16/2005		--	1.58
PSW-18	PSW-18	02/14/2006		--	3.69
PSW-18	PSW-18	05/22/2006		--	7.7
PSW-18	PSW-18	08/21/2006		--	12.2
PSW-18	PSW-18	11/09/2006		--	26.5
PSW-18	PSW-18	02/20/2007		--	35.5
PSW-18	PSW-18	05/22/2007		--	16
PSW-18	PSW-18	08/20/2007		--	9.61
PSW-18	PSW-18	11/08/2007		--	51
PSW-18	PSW-18	02/19/2008		--	31
PSW-18	PSW-18	05/14/2008		--	20.3
PSW-18	PSW-18	08/12/2008		--	7.46
PSW-18	PSW-18	11/18/2008		--	8.8
PSW-18	PSW-18	01/23/2009		--	2.6
PSW-18	PSW-18	05/20/2009		--	2.9
PSW-18	PSW-18	08/11/2009		--	1.6
PSW-18	PSW-18	11/11/2009		--	1
PSW-18	PSW-18	02/16/2010		--	1
PSW-18	PSW-18	05/24/2010		--	0.6
PSW-18	PSW-18	08/09/2010		--	0.25 U
PSW-18	PSW-18	11/16/2010		--	43.1
PSW-18	PSW-18	02/17/2011		2	97
PSW-18	PSW-18	05/23/2011		0.3 U	9.2
PSW-18	PSW-18	08/16/2011		0.44	0.8
PSW-18	PSW-18	11/17/2011		0.22	9
PSW-18	PSW-18	02/16/2012		0.3 U	97.7
PSW-18	PSW-18	05/21/2012		0.3 U	40.2
PSW-18	PSW-18	08/20/2012		0.3 U	32.8
PSW-18	PSW-18	11/13/2012		0.3 U	39.6
PSW-18	PSW-18	02/19/2013		0.3 U	43.1
PSW-18	PSW-18	05/15/2013		0.24	64.6
PSW-18	PSW-18	08/15/2013		0.3 U	45.2
PSW-18	PSW-18	11/13/2013		0.12	63.4
PSW-18	PSW-18	02/19/2014		0.78	225
PSW-18	PSW-18	05/13/2014		0.37	89.3
PSW-18	PSW-18	08/19/2014		0.3 U	76
PSW-18	PSW-18	11/10/2014		--	69.7
PSW-18	PSW-18	11/20/2014		0.3 U	--
PSW-18	PSW-18	02/09/2015		0.3 U	37.5
PSW-18	PSW-18	05/12/2015		0.3 U	21.8
PSW-18	PSW-18	08/17/2015		0.3 U	8.1
PSW-18	PSW-18	11/09/2015		0.3 U	4
PSW-18	PSW-18	02/11/2016		0.3 U	7.13
PSW-18	PSW-18	05/19/2016		0.3 U	8.96

**Historical Groundwater Analytical Results Summary
Farmland Remediation Project
Lawrence, KS**

Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units Sample Type:	Ammonia	Nitrite/Nitrate
				(mg/L)	(mg/L)
PSW-18	PSW-18	08/24/2016		0.303	3.99
PSW-18	PSW-18	11/10/2016		0.3 U	4.3
PSW-18	PSW-18	02/06/2017		0.3 U	5.37
PSW-18	PSW-18	05/24/2017		0.3 U	4.05
PSW-18	PSW-18	08/10/2017		0.3 U	2.54
PSW-18	PSW-18	11/08/2017		0.3 U	1.35
PSW-18	PSW-18	02/08/2018		0.3 U	0.43
PSW-18	PSW-18	05/10/2018		0.3 U	0.351
PSW-18	PSW-18	08/06/2018		0.3 U	0.25 U
PSW-18	PSW-18	11/13/2018		0.3 U	7.41
PSW-18	PSW-18	02/05/2019		0.3 U	6.37
PSW-18	PSW-18	06/12/2019		0.3 U	0.25 U
PSW-18	PSW-18	08/27/2019		0.3 U	1.2
PSW-18	PSW-18	11/18/2019		0.3 U	0.776
PSW-18	PSW-18	02/24/2020		0.3 U	0.25 U
PSW-18	PSW-18	05/26/2020		1.2	0.25 U
PSW-18	PSW-18	08/17/2020		0.3 U	0.25 U
PSW-18	PSW-18	11/23/2020		0.375	1.34
PSW-18	PSW-18	02/22/2021		4.78	1.14
PSW-18	PSW-18	05/24/2021		1.5	0.466
PSW-18	WG-061821-SM-021	06/18/2021		0.300 UJ	0.893
PSW-18	WG-061821-SM-021A	06/18/2021	Split	1.9 J	1.2
PSW-18	WG-061821-SM-022	06/18/2021	Duplicate	1.82 J	0.829
PSW-19B	PSW-19B	04/01/2013		--	136
PSW-19B	PSW-19B	04/09/2013		--	268
PSW-19B	PSW-19B	04/15/2013		--	101
PSW-19B	PSW-19B	04/22/2013		--	236
PSW-19B	PSW-19B	05/15/2013		45.2	208
PSW-19B	PSW-19B	06/18/2013		--	204 Dup 176
PSW-19B	PSW-19B	08/15/2013		48.4	165
PSW-19B	PSW-19B	09/11/2013		--	190
PSW-19B	PSW-19B	10/13/2013		--	187
PSW-19B	PSW-19B	11/13/2013		53.5	198
PSW-19B	PSW-19B	02/19/2014		55	208
PSW-19B	PSW-19B	05/13/2014		68	187
PSW-19B	PSW-19B	08/19/2014		71.48	150
PSW-19B	PSW-19B	11/10/2014		--	129
PSW-19B	PSW-19B	11/20/2014		60.4	--
PSW-19B	PSW-19B	02/09/2015		61.6	153
PSW-19B	PSW-19B	05/12/2015		63	186
PSW-19B	PSW-19B	08/17/2015		39.1	128
PSW-19B	PSW-19B	11/09/2015		40.7	102
PSW-19B	PSW-19B	02/11/2016		39.7	114
PSW-19B	PSW-19B	05/19/2016		53.1	138
PSW-19B	PSW-19B	08/24/2016		36.5	110
PSW-19B	PSW-19B	11/10/2016		36.6	114
PSW-19B	PSW-19B	02/06/2017		33.8	116

**Historical Groundwater Analytical Results Summary
Farmland Remediation Project
Lawrence, KS**

		General Chemistry	Ammonia	Nitrite/Nitrate
		Units	(mg/L)	(mg/L)
Sample	Sample	Sample		
Location:	Identification:	Date:		
		Type:		
PSW-19B	PSW-19B	05/24/2017	37.3	133
PSW-19B	PSW-19B	08/10/2017	31.2	113
PSW-19B	PSW-19B	11/08/2017	34	113
PSW-19B	PSW-19B	02/08/2018	43.2	117
PSW-19B	PSW-19B	05/10/2018	49	154
PSW-19B	PSW-19B	08/06/2018	38.344	146
PSW-19B	PSW-19B	11/13/2018	38.453	146
PSW-19B	PSW-19B	02/05/2019	35.8	133
PSW-19B	PSW-19B	06/12/2019	37.2	111
PSW-19B	PSW-19B	08/27/2019	12.1	71.6
PSW-19B	PSW-19B	11/18/2019	21.9	80.6
PSW-19B	PSW-19B	02/24/2020	20.8	83.8
PSW-19B	PSW-19B	05/26/2020	22.7	95.9
PSW-19B	PSW-19B	08/17/2020	24.9	88.5
PSW-19B	PSW-19B	11/23/2020	26.4	83.4
PSW-19B	PSW-19B	02/22/2021	37.4	118
PSW-19B	PSW-19B	05/24/2021	29.5	116
PSW-19B	WG-061721-SM-014	06/17/2021	31.5	64.9
PSW-20B	PSW-20B	04/01/2013	--	79.1
PSW-20B	PSW-20B	04/09/2013	--	60.9
PSW-20B	PSW-20B	04/15/2013	--	51.4
PSW-20B	PSW-20B	04/22/2013	--	54
PSW-20B	PSW-20B	05/15/2013	26.5	46
PSW-20B	PSW-20B	06/18/2013	--	156 Dup 126
PSW-20B	PSW-20B	08/15/2013	43	105
PSW-20B	PSW-20B	09/11/2013	--	123
PSW-20B	PSW-20B	10/13/2013	--	124
PSW-20B	PSW-20B	11/13/2013	38.2	108
PSW-20B	PSW-20B	02/19/2014	39.8	114
PSW-20B	PSW-20B	05/13/2014	63.4	154
PSW-20B	PSW-20B	08/19/2014	60.26	150
PSW-20B	PSW-20B	11/10/2014	--	116
PSW-20B	PSW-20B	11/20/2014	48.9	--
PSW-20B	PSW-20B	02/09/2015	48.2	150
PSW-20B	PSW-20B	05/12/2015	43.2	143
PSW-20B	PSW-20B	08/17/2015	44.3	124
PSW-20B	PSW-20B	11/09/2015	41.2	126
PSW-20B	PSW-20B	02/11/2016	33.7	128
PSW-20B	PSW-20B	05/19/2016	34.1	112
PSW-20B	PSW-20B	08/24/2016	33.5	120
PSW-20B	PSW-20B	11/10/2016	28.9	102
PSW-20B	PSW-20B	02/06/2017	27.8	97.6
PSW-20B	PSW-20B	05/24/2017	26.2	89.9
PSW-20B	PSW-20B	08/10/2017	24	85.4
PSW-20B	PSW-20B	11/08/2017	7.4	42.2
PSW-20B	PSW-20B	02/08/2018	23.7	79.8
PSW-20B	PSW-20B	05/10/2018	20.7	73.8

**Historical Groundwater Analytical Results Summary
Farmland Remediation Project
Lawrence, KS**

		General Chemistry Units		Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
Sample Location:	Sample Identification:	Sample Date:	Sample Type:		
PSW-20B	PSW-20B	08/06/2018		22.843	79
PSW-20B	PSW-20B	11/13/2018		22.014	71.1
PSW-20B	PSW-20B	02/05/2019		25.1	79
PSW-20B	PSW-20B	06/12/2019		19.1	70.6
PSW-20B	PSW-20B	08/27/2019		2.96	9.87
PSW-20B	PSW-20B	11/18/2019		6	32
PSW-20B	PSW-20B	02/24/2020		14.8	46
PSW-20B	PSW-20B	05/26/2020		15.2	27.7
PSW-20B	PSW-20B	08/17/2020		8	14.8
PSW-20B	PSW-20B	11/23/2020		12.1	13.7
PSW-20B	PSW-20B	02/22/2021		11.8	8.8
PSW-20B	PSW-20B	05/24/2021		4.53	2.6
PSW-20B	WG-061721-SM-013	06/17/2021		5.77 J+	2.87
PW-9	PW-9	05/13/2014		36.5	185
PW-9	PW-9	08/19/2014		29.08	110
PW-9	PW-9	11/10/2014		--	86
PW-9	PW-9	11/20/2014		25.6	--
PW-9	PW-9	02/09/2015		28.6	102
PW-9	PW-9	05/12/2015		29.2	110
PW-9	PW-9	08/17/2015		14	54
PW-9	PW-9	11/09/2015		19.6	67
PW-9	PW-9	02/11/2016		16.9	62.9
PW-9	PW-9	05/19/2016		20.5	72.1
PW-9	PW-9	08/24/2016		17.6	69.1
PW-9	PW-9	11/10/2016		16.8	67.4
PW-9	PW-9	02/06/2017		17.3	77.2
PW-9	PW-9	05/24/2017		16.4	75
PW-9	PW-9	08/10/2017		15.8	68.3
PW-9	PW-9	11/08/2017		11.2	46.5
PW-9	PW-9	02/08/2018		16.8	69.1
PW-9	PW-9	05/10/2018		21.9	94.6
PW-9	PW-9	08/06/2018		22.203	88.4
PW-9	PW-9	11/13/2018		19.523	87.3
PW-9	PW-9	02/05/2019		19.2	88
PW-9	PW-9	06/12/2019		10.4	47.9
PW-9	PW-9	08/27/2019		6.44	27.1
PW-9	PW-9	02/24/2020		11.3	51.4
PW-9	PW-9	05/26/2020		12.5	60.8
PW-9	PW-9	08/17/2020		11.9	50.3
PW-9	PW-9	11/23/2020		14.5	64.8
PW-9	PW-9	02/22/2021		14.5	58.3
PW-9	PW-9	05/24/2021		10.7	53.8
PW-9	WG-061721-SM-015	06/17/2021		10.4	47.5

**Historical Groundwater Analytical Results Summary
Farmland Remediation Project
Lawrence, KS**

Sample Location:	Sample Identification:	Sample Date:	General Chemistry Units	Ammonia (mg/L)	Nitrite/Nitrate (mg/L)
			Sample Type:		
SW-10	SW-10	02/19/2008		--	62
SW-10	SW-10	05/14/2008		--	74.2
SW-10	SW-10	08/12/2008		--	69.8
SW-10	SW-10	11/18/2008		--	69.4
SW-10	SW-10	01/23/2009		--	59.5
SW-10	SW-10	05/20/2009		--	60.5
SW-10	SW-10	08/11/2009		--	65
SW-10	SW-10	11/11/2009		--	54.3
SW-10	SW-10	02/16/2010		--	57
SW-10	SW-10	05/24/2010		--	60
SW-10	SW-10	08/09/2010		--	61.3
SW-10	SW-10	11/16/2010		--	61.4
SW-10	SW-10	02/17/2011		39.7	62.3
SW-10	SW-10	05/23/2011		42.2	58.8
SW-10	SW-10	08/16/2011		46	41.1
SW-10	SW-10	11/17/2011		40.3	54.9
SW-10	SW-10	02/16/2012		39.1	54.3
SW-10	SW-10	05/21/2012		40.3	53
SW-10	SW-10	08/20/2012		3.8	45.8
SW-10	SW-10	11/13/2012		24.6	67.2
SW-10	SW-10	02/19/2013		20.2	44.4
SW-10	SW-10	05/15/2013		32.1	31.1
SW-10	SW-10	08/15/2013		46.6	38.1
SW-10	SW-10	11/13/2013		31	45.3
SW-10	SW-10	02/19/2014		32.3	42.4
SW-10	SW-10	05/13/2014		32.2	40.1
SW-10	SW-10	08/19/2014		26.5	39
SW-10	SW-10	11/10/2014		--	22.3
SW-10	SW-10	11/20/2014		18.9	--
SW-10	SW-10	02/09/2015		16.8	25.3
SW-10	SW-10	05/12/2015		13.4	13.2
SW-10	SW-10	08/17/2015		11.8	22.9
SW-10	SW-10	11/09/2015		14.1	24
SW-10	SW-10	02/11/2016		12.4	33.7
SW-10	SW-10	05/19/2016		10.1	17.3
SW-10	SW-10	08/24/2016		10	19.1
SW-10	SW-10	11/10/2016		9.37	19.8
SW-10	SW-10	02/06/2017		7.49	12.1
SW-10	SW-10	05/24/2017		7.3	5.99
SW-10	SW-10	08/10/2017		6.3	12.6
SW-10	SW-10	11/08/2017		6.8	19.3
SW-10	SW-10	02/08/2018		8	32.6
SW-10	SW-10	05/10/2018		6.9	19.7
SW-10	SW-10	08/06/2018		5.846	7.33
SW-10	SW-10	11/13/2018		6.119	2.15
SW-10	SW-10	02/05/2019		5.42	3.67
SW-10	SW-10	06/12/2019		5.8	2.74
SW-10	SW-10	08/27/2019		3.68	2.99

**Historical Groundwater Analytical Results Summary
Farmland Remediation Project
Lawrence, KS**

Sample Location:	Sample Identification:	Sample Date:	General Chemistry	Ammonia	Nitrite/Nitrate
			Units	(mg/L)	(mg/L)
SW-10	SW-10	11/18/2019		3.88	3.38
SW-10	SW-10	02/24/2020		4.53	3.29
SW-10	SW-10	05/26/2020		3.92	2.44
SW-10	SW-10	08/17/2020		3.45	0.25 U
SW-10	SW-10	11/23/2020		3.63	3.31
SW-10	SW-10	02/22/2021		3.53	3.08
SW-10	SW-10	05/24/2021		3.13	3.18
SW-10	WG-061721-SM-012	06/17/2021		4.32 J+	0.971

Notes

- U - Not detected at the associated reporting limit.
- J - Estimated concentration.
- UJ - Not detected; associated reporting limit is estimated.
- R - Rejected.
- J- - Estimated concentration, result may be biased low
- J+ - Estimated concentration, result may be biased high.

Table 8

**Hydraulic Summary
Farmland Remediation Project
Lawrence, KS**

MW ID			MW-22A			MW-27A			MW-27B		
Test Performed			Falling Head	Rising Head	Average	Falling Head	Rising Head	Average	Falling Head	Rising Head	Average
Hydraulic Conductivity	<i>K</i>	(cm/sec)	2.14E-03	2.14E-04	1.18E-03	2.12E-05	9.86E-04	5.03E-04	2.82E-03	2.52E-03	2.67E-03
		(ft/min)	4.21E-03	4.21E-04	2.31E-03	4.17E-05	1.94E-03	9.90E-04	5.56E-03	4.97E-03	5.26E-03
Hydraulic Gradient	<i>i</i>	(ft/ft)	0.02	0.02	--	0.02	0.02	--	0.01	0.01	--
Groundwater Flow Velocity	<i>v</i>	(ft/min)	3.37E-04	3.37E-05	1.85E-04	3.34E-06	1.55E-04	7.92E-05	2.22E-04	1.99E-04	2.11E-04
Saturated Unit Thickness	<i>b</i>	(ft)	4.5	4.5	--	3	3	--	30	30	--
Assumed Effective Porosity	<i>n_e</i>		0.25	0.25	--	0.25	0.25	--	0.25	0.25	--
Solution			Bouwer-Rice ¹²³			Bouwer-Rice			Bouwer-Rice		

Notes

¹ Bouwer, H., 1989. The Bouwer and Rice slug test--an update, Ground Water, vol. 27, no. 3, pp. 304-309.

² Bouwer, H. and R.C. Rice, 1976. A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, Water Resources Research, vol. 12, no. 3, pp. 423-428.

³ Zlotnik, V., 1994. Interpretation of slug and packer tests in anisotropic aquifers, Ground Water, vol. 32, no. 5, pp. 761-766.

**Vertical Gradients Summary
Farmland Remediation Project
Lawrence, KS**

Location ID	Depth to Water (ft)	Screen Length (ft)	Screen Elevation (ft amsl)	Screen Midpoint Elevation (ft amsl)	Vertical Gradient (ft/ft)	Gradient Direction
MW-21A	Dry	10	805.27 - 795.27	800.27	--	--
MW-21B	24.20	15	779.34 - 764.34	771.84		
MW-22A	13.79	10	800.94 - 790.94	795.94	-0.431962	down
MW-22B	24.51	15	778.62 - 763.62	771.12		
MW-23A	8.52	10	810.69 - 800.69	805.69	-0.551897	down
MW-23B	28.13	15	777.66 - 762.66	770.16		
MW-24A	4.64	10	810.29 - 800.29	805.29	-0.635682	down
MW-24B	27.44	15	776.92 - 761.92	769.42		
PSW-9A	12.41	15	815.09 - 800.09	807.59	-0.408945	down
MW-25B	26.93	15	779.58 - 764.58	772.08		
MW-26A	7.80	10	818.05 - 808.05	813.05	-1.141347	down
MW-26B	36.74	15	795.19 - 780.19	787.69		
MW-27A	22.62	15	820.14 - 805.14	812.64	-0.52831	down
MW-27B	35.31	15	796.12 - 781.12	788.62		
MW-28A	13.10	10	811.80 - 801.80	806.80	-0.438834	down
MW-28B	29.49	15	776.95 - 761.95	769.45		
MW-29A	21.92	15	810.40 - 795.40	802.90	-0.171919	down
MW-29B	27.79	15	776.25 - 761.25	768.75		

Appendices

Appendix A

Stratigraphic and Well Instrumentation Logs



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-22A
DATE COMPLETED: 12 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
2	CL-CLAY, trace silt, blocky, plastic, firm, 10YR 4/2, dry							0.0
4								
6								
8								
8.50	CL-CLAY, trace silt, small blocky, plastic, moderately firm, 10YR 4/3, dry	8.50	Bentonite					0.1
10								
12								
13.50	CL-CLAY, with silt, fine blocky, low plasticity, soft, very dark greyish brown, damp	13.50	Well Screen					0.3
14								
16								
18								
18.50	CL-CLAY, with trace silt, blocky, plastic, firm, 10YR 3/1, with black clay infill seams, oxide staining, damp	18.50	Sand Pack					0.1
20	END OF BOREHOLE @ 20.00ft BGS	20.00						
22								
24								
26								
28								
30								
32								
34								

WELL DETAILS
Screened interval:
10.00 to 20.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Sand Pack:
18.00 to 20.00ft BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

File: C:\USERS\CACHILDS\DESKTOP\11224213-MI.GPJ Library File: GHD_ENVIRO_V04.GLB Report: OVERBURDEN LOG Date: 12/7/21



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 2

PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-22B
DATE COMPLETED: 11 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
2	TOPSOIL							
4	CL-CLAY, with trace silt, plastic, fine blocky structure, firm, dark brown, dry	3.50 4.00 4.50						0.0 0.1 0.0
6	CL-CLAY with trace silt, larger blocky structure, plastic, firm, grey-dark brown, dry							
8	CL-CLAY, with silt, smaller blocky structure, firm, low plasticity, grey-brown, dry							
10	CL-CLAY, with silt, blocky structure, plastic, firm, brown-grey, dry	8.50						0.3
12								
14	CL-CLAY, with trace silt, small blocky structure, low plasticity, firm, brown-grey, dry	13.50						0.0
16								
18								
20	CL-CLAY, trace silt, large blocky structure, low plasticity, soft, dark brown-grey, damp - softer at 19.00ft BGS	18.50						0.1
22								
24	CL-CLAY, trace silty, trace fine sand, blocky structure, firm, low plasticity, grey with oxide staining, dry, black clay infills in seams	23.50 25.00						0.3 0.3
26	CL-CLAY, with trace silt and fine sand, no plastic, organics, faint layered structure, dark brown-black, damp							
28								
30	SAND, with fine and medium, sub-rounded and sub-angular grains, loose, grey, wet	28.50						-
32								
34								-

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-22B
DATE COMPLETED: 11 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
36								
38								
40	SM-SAND, fine grained, with rock flecks, loose, grey, wet	38.50						
42								
44	SP-SAND, medium to fine grained, sub-angular to sub-rounded, compact, grey, wet	43.50						
46								
48	No recovery, refusal, weathered shale	48.50						
50								
52								
54	- fine silty sand, compact, cohesive, mica flecks, wet at 53.25ft BGS SAND, unsorted, ungraded, fine to coarse grained, loose, grey, wet END OF BOREHOLE @ 53.50ft BGS	53.00 53.50						
56								
58								
60								
62								
64								
66								
68								

WELL DETAILS
Screened interval:
38.00 to 53.00ft BGS
Length: 15ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Sand Pack:
35.00 to 53.00ft BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

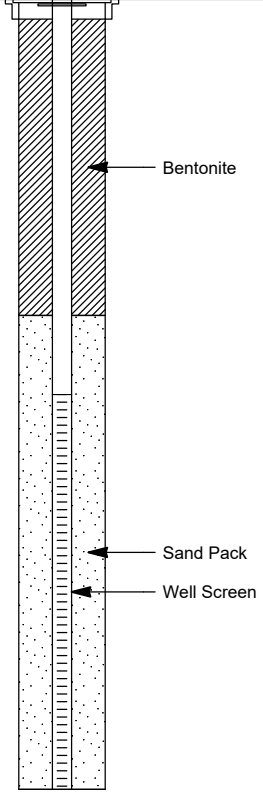


STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-23A
DATE COMPLETED: 13 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
2	TOPSOIL							
4	CL-CLAY, with silt and trace fine sand, low plasticity, layered, dark brown, dry	3.50	 Bentonite Sand Pack Well Screen					0.0
6								
8	CL-CLAY, with silt, faintly layered, plastic, firm, brown-grey, damp - softer from 9.50 to 10.00ft BGS	8.50						0.1 0.3
10								
12								
14	CL-CLAY, with trace silt, trace fine sand, low plasticity, blocky, firm, grey/brown, dry	13.50						0.0
16	CL-CLAY, with trace fine sand, blocky, firm, grey-brown, dry	14.50						
18								
20	CL-CLAY, with trace silt, plastic, soft, dark brown, wet	18.50						0.0
22	END OF BOREHOLE @ 20.00ft BGS	20.00						
24								
26								
28								
30								
32								
34								

WELL DETAILS
Screened interval:
10.00 to 20.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Sand Pack:
8.00 to 20.00ft BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-23B
DATE COMPLETED: 12 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
2	TOPSOIL							
4	CL-CLAY, with silt, blocky, plastic, firm, 10YR 5/2, dry	3.50						0.0
6								0.3
8	CL-CLAY, with silt, faintly blocky, low plasticity, 10YR 5/2, dry	8.50						
10	CL-CLAY, with silt, blocky, low plasticity, soft, 10YR 5/3, damp	9.00						
12								
14	CL-CLAY, with trace silt, blocky, firm, low plasticity, dry	13.50						0.1
16	CL-CLAY, with trace silt, flecks of clay, root traces, blocky, 10YR 4/2, dry	14.50						
18								
20	CL-CLAY, trace silt, plastic, soft, 10YR 5/2, wet	18.50						0.7
22								
24	CL-CLAY, trace silt, blocky, plastic, firm, grey with infill black clay and oxide staining, wet	23.50						-
26								
28	CL-CLAY, with silt, layered, non plastic, medium firm, 10YR 3/1, dry	28.50						0.3
30	CL-CLAY, with silt, trace fine sand, layered, organic plant material, low plasticity, soft, damp	29.50						0.1
32								
34	CL-CLAY, with silt, trace fine sand, blocky, low plasticity, GLEY 14/N, damp	33.50						0.1
		34.50						0.7

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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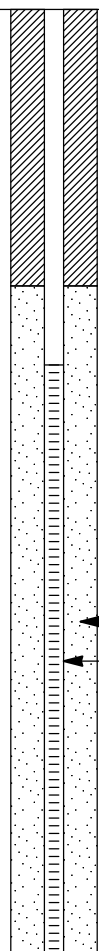
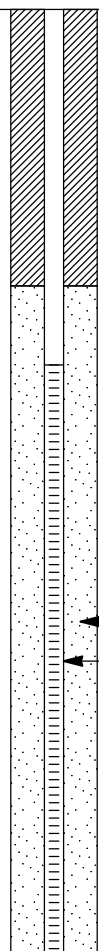


STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-23B
DATE COMPLETED: 12 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
36	CL-CLAY, with trace silt, soft, plastic, blocky, blue-white precipitate, GLEY 14/N, damp	35.50	 Sand Pack Well Screen					
38	CL-CLAY, with silt and fine sand, soft, non plastic, 10YR 3/1, wet							
40								
42								
44	SP-SAND, fine to medium grained, compact, grey, wet	43.50						
46								
48								
50	SM-SAND, fine to medium grained, with silt, sub-rounded to sub-angular, loose, dark grey, wet	48.50	 Sand Pack Well Screen					
52								
54	SAND, fine to coarse grained, sub-angular to sub-rounded, un-graded, wet	53.50						
56								
58	- Refusal, weathered shale at 58.75ft BGS	58.50 58.75						
60	SC-CLAYEY SILTY SAND, fine grained, very dense, layered, grey, wet							
62	END OF BOREHOLE @ 58.75ft BGS							
64								
66								
68								

WELL DETAILS

Screened interval:
44.00 to 59.00ft BGS
Length: 15ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Sand Pack:
42.00 to 59.00ft BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-24A
DATE COMPLETED: 13 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
2	TOPSOIL							
4	CL-CLAY, with silt, faintly blocky, firm, root traces, low plasticity, grey-black, dry	3.50	Bentonite					0.0
8	CL-SILTY CLAY, low plasticity, soft, brown-grey, damp	8.50						0.1
14	CL-CLAY, with trace silt, blocky, plastic, firm, root traces, brownish-grey, dry	13.50	Sand Pack Well Screen					0.0
20	END OF BOREHOLE @ 20.00ft BGS	20.00						

WELL DETAILS
Screened interval:
10.00 to 20.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Sand Pack:
8.00 to 20.00ft BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 2

PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-24B
DATE COMPLETED: 13 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
2	TOPSOIL							
4	CL-CLAY, with silt, faintly blocky, moderately firm, root traces, low plasticity, grey-black, dry	3.50						0.0
6								
8	CL-SILTY CLAY, low plasticity, soft, brown-grey, damp	8.50						0.0
10								
12								
14	CL-CLAY, trace silt, blocky, plastic, soft, brownish-grey, dry, root traces	13.50						0.1
16								
18								
20	CL-CLAY, with trace silt, trace fine sand, faintly blocky, firm, low plasticity, grey with oxide staining and black clay infill in cracks/seams, dry	18.50 19.50						0.0 0.1
22	CL-SANDY CLAY, fine sand, with silt, layered, low plasticity, root traces, firm, grey-brown, dry		Bentonite					
24	CL-SILTY CLAY, layered with organic plant matter, non plastic, soft, dark grey, damp	23.50 24.50						0.3 0.1
26	CL-SANDY SILTY CLAY, fine, layered, organic plant matter, non plastic, firm, dark brown-grey, damp							
28								
30								0.1
32								
34	CL-SANDY CLAY, silty, fine, non plastic, soft, dark grey, wet	33.50						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-24B
DATE COMPLETED: 13 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
36								
38								
40	CL-SILTY CLAY, fine sand, layered, soft, non plastic, dark grey, wet	38.50						
42								
44	CL-SANDY CLAY, with silt, fine, layered, soft, non plastic, grey-brown, wet	43.50						
46	SC-CLAYEY SAND, silty, fine to medium grained, layered, cohesive, dark grey, wet	44.75						
48								
50	- well graded sands with trace silt, loose, sub-angular to sub-rounded, dark grey, wet from 49.00 to 50.00ft BGS							
52								
54	SP-SAND, well graded, fine to coarse grained, sub-rounded to sub-angular, loose, grey, wet	53.50						
56								
58	- clayey, fine sand with silt, compact, grey, wet at 58.50ft BGS							
60	- Refusal at 59.00ft BGS	59.00						
62	END OF BOREHOLE @ 59.00ft BGS							
64								
66								
68								

Sand Pack
Well Screen

WELL DETAILS

Screened interval:
43.00 to 58.00ft BGS
Length: 15ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Sand Pack:
41.00 to 59.00ft BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-25B
DATE COMPLETED: 14 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
2	TOPSOIL							
4	CL-CLAY, with silt and trace fine sand, blocky, low plasticity, firm, roots, brown-grey, dry	3.50 4.50						0.0 0.0
6	CL-CLAY, trace silt, blocky, low plasticity, firm, mottled dark grey, dry							
8								
10	CL-CLAY, trace silt, blocky, low plasticity, firm, mottled grey/brown, dry	8.50						0.1
12								
14	CL-CLAY, with silt, plastic, moderately firm, tan-brown, dry	13.50						0.0
16								
18								
20	CL-CLAY, with silt, firm, blocky, low plasticity, grey with oxide staining and dark clay infill in cracks, dry	18.50						0.0
22								
24	CL-CLAY, with silt, soft, plastic, dark grey, damp	23.50 24.50						
26	CL-SANDY CLAY, fine, with silt, soft, non plastic, grey, damp, root traces							
28								
30	CL-CLAY, trace silt, trace fine sand, faintly blocky, plastic, soft, dark grey, damp	28.50						
32								
34	CL-SANDY CLAY, fine, with silt, layered, soft, grey, wet	33.50						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-25B
DATE COMPLETED: 14 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
36								
38	- fine sand, loose, brown, wet at 38.50ft BGS							
40								
42								
44	- fine sand with silt, loose, brown, wet at 43.50ft BGS - fine sand with trace silt, loose, brown, wet at 44.00ft BGS							
46								
48	- well graded sand, fine to coarse grained with trace silt, sub-rounded to sub-angular at 48.50ft BGS							
50								
52								
54								
56	SHALE, weathered, with sometight clayey silt overlaying - Refusal at 55.00ft BGS END OF BOREHOLE @ 55.00ft BGS	54.50 55.00						
58								
60								
62								
64								
66								
68								

Sand Pack
Well Screen

WELL DETAILS

Screened interval:
41.00 to 56.00ft BGS
Length: 15ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Sand Pack:
39.00 to 56.00ft BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-26A
DATE COMPLETED: 25 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
2	TOPSOIL							
4	CL-CLAY, with silt, plastic, soft, layered, brown, damp	3.50	Bentonite					0.0
8	CL-CLAY, with silt, blocky, plastic, soft, brown, damp	8.50						0.2
14	CL-CLAY, with trace silt, firm, blocky, plastic, with some fine silt lithics, grey with oxide staining	13.50	Sand Pack Well Screen					0.3
20	END OF BOREHOLE @ 20.00ft BGS	20.00						0.1

WELL DETAILS
Screened interval:
10.00 to 20.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Sand Pack:
8.00 to 20.00ft BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-26B
DATE COMPLETED: 24 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
2	TOPSOIL							
4	CL-CLAY, with silt, soft, non plastic, blocky, light brown, damp	3.50						0.0
6								
8	CL-SILTY CLAY, non plastic, soft, blocky, brown, damp	8.50						0.0
10								
12								
14	CL-CLAY, trace silt, blocky, non plastic, firm, grey with tan mottling, dry	13.50						0.1
16								
18								
20	CL-CLAY, with silt, trace fine sand layers, moderately firm, non plastic, grey with oxide staining, damp	18.50						0.3
22								
24	CL-CLAY, with silt, some fine sand lithics, layered with oxide staining, soft, plastic, dark grey, damp	23.50						0.1
26	CLAYEY SILT, fine, layered, soft, dark grey, wet	25.50						
28								
30	ML-SANDY CLAY, shale, fine, compact, dark grey-green, damp	29.50						
32								
34		34.50						

Bentonite

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-26B
DATE COMPLETED: 24 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
36	CL-CLAY, with silt, silty fine sand lithics, soft, plastic, dark grey, wet							
38								
40								
42								
44	SC-SAND, with clay, fine, dense, trace silt, low cohesion, light grey, dry	43.50						
46								
48	SM-SAND, fine, trace silt and clay, compact, cohesive, grey-tan, wet	48.50						
50								
52								
54	SP-SAND, fine to medium grained, sub-rounded to sub-angular, grey-tan, wet	53.50 54.00						
56	SM-SAND, with silt and trace clay, cohesive, compact, tan-grey, wet							
58								
60	SM-SILTY SAND, fine, compact, layered, tan-brown, wet	58.50						
62	END OF BOREHOLE @ 60.00ft BGS	60.00						
64								
66								
68								

Sand Pack
Well Screen

WELL DETAILS

Screened interval:
45.00 to 60.00ft BGS
Length: 15ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Sand Pack:
43.00 to 60.00ft BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

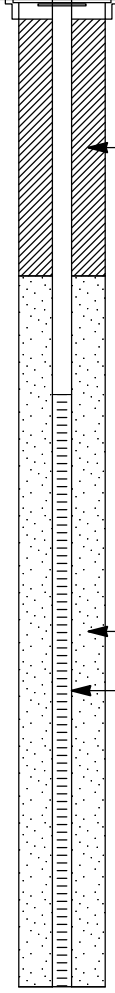


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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-27A
DATE COMPLETED: 25 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
2	TOPSOIL							
4	CL-SILTY CLAY, layered, non plastic, soft, brown and light brown layers, damp	3.50						0.0
4.50		4.50						0.0
5.00	CL-CLAY, with silt, blocky, non plastic, soft, dry, organics	5.00						0.1
6	CL-CLAY, with silt, trace fine sand, blocky, low plasticity, grey-brown, dry							
8								
10								
12								
14	No recovery	13.50						
16								
18								
18.50	CL-CLAY, with silt, trace fine sand, layered, soft, non plastic, grey with red-brown layers, wet	18.50						0.3
20								
22	- silty fine sand layered, very dense, biotite flecks, tan, dry from 21.50 to 25.00ft BGS							
24								
25.00	END OF BOREHOLE @ 25.00ft BGS	25.00						
26								
28								
30								
32								
34								

WELL DETAILS

Screened interval:

10.00 to 25.00ft BGS

Length: 15ft

Diameter: 2in

Slot Size: 0.010

Material: PVC

Sand Pack:

7.00 to 25.00ft BGS

Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-27B
DATE COMPLETED: 25 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
2	TOPSOIL							
4	CL-CLAY, silt, blocky, non plastic, soft, brown, dry, organics	3.50						0.0
6								
8	CL-CLAY, with silt and trace fine sand, blocky, root traces, low plasticity, grey-brown, damp	8.50						0.1
10								
12								
14	CL-SILTY CLAY, with trace fine sand, low plasticity, moderately firm, blocky, grey with oxide staining around root traces, dry	13.50						0.0
16								
18								
20	CL-CLAY, silty, layered, low plasticity, soft, grey and red-brown, wet	18.50						0.1
22	CL-SILTY CLAY, with fine sand, layered, low plasticity, soft, grey, damp	19.50						0.2
24	CL-SANDY SILTY CLAY, layered, non-plastic, grey with red and brown sand, wet	19.75						0.1
26								
28	- fine sand, very dense, yellow, dry at 23.50ft BGS							0.0
30								
32	- silty, fine sand layered, very dense, grey and tan, damp at 28.50ft BGS							0.0
34	- oxide alternating layers at 30.00ft BGS							0.0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-27B
DATE COMPLETED: 25 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
36								
38	- fine sand with silt, very dense, tan-brown, wet at 38.50ft BGS							0.1
40								
42								
44	SM-SILTY SAND, fine, layered, very dense, tan and dark brown layers, wet	43.50						
46								
48								
50	- Refusal on weathered/poorly cemented sandstone at 49.00ft BGS END OF BOREHOLE @ 49.00ft BGS	49.00						
52								
54								
56								
58								
60								
62								
64								
66								
68								

WELL DETAILS
Screened interval:
34.00 to 49.00ft BGS
Length: 15ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Sand Pack:
31.00 to 49.00ft BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

File: C:\USERS\CACHILDS\DESKTOP\11224213-MI.GPJ Library File: GHD_ENVIRO_V04.GLB Report: OVERBURDEN LOG Date: 12/7/21



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-28A
DATE COMPLETED: 27 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
2	TOPSOIL							
4	CL-CLAY, with silt, blocky, plastic, moderately firm, brown-grey, dry	3.50	Bentonite					0.0
6								
8								
10								
12								
14	CL-CLAY, with trace silt, trace fine sand, firm, blocky, plastic, light brown, dry	13.50	Sand Pack					0.3
16			Well Screen					
18								
18.50	CL-SILTY CLAY, layered, soft, non plastic, light brown, wet	18.50						-
19.00		19.00						0.0
19.50	CL-SILTY CLAY, layered, low plasticity, moderately firm, light brownish grey, damp	19.50						0.0
20.00	CL-CLAY, trace silt, blocky, firm, low plasticity, light brown-grey, dry	20.00						
22	END OF BOREHOLE @ 20.00ft BGS							
24								
26								
28								
30								
32								
34								

WELL DETAILS
Screened interval:
10.00 to 20.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Sand Pack:
7.00 to 20.00ft BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-28B
DATE COMPLETED: 27 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
2	TOPSOIL							
4	CL-CLAY, with silt, blocky, plastic, moderately firm, brown-grey, dry	3.50						0.0
6								
8	CL-CLAY, with silt and trace fine sand, low plasticity, soft, light brown-grey, damp	8.50						0.1
10	CL-SILTY CLAY, soft, non plastic, lightly layered, light brown-grey, wet	9.50						
12								
14	CL-CLAY, with trace silt, trace fine sand, firm, plastic, blocky, light brown, dry	13.50						0.0
16								
18	CL-SILTY CLAY, layered, soft, non plastic, light brown-grey, wet	18.50						0.1
20	CL-SILTY CLAY, layered, low plasticity, moderately firm, light brown-grey, damp	19.00						0.3
22	CL-CLAY, with trace silt, blocky, low plasticity, firm, light brownish-grey, dry	19.50						0.0
24	CL-CLAY, with silt and trace fine sand, small blocky, firm, low plasticity, grey with oxide staining, dry, root traces	23.50						0.0
26								
28	CL-CLAY, trace silt, plastic, blocky, firm, dark grey with oxide staining, dry	28.50						0.1
30								
32								
34	CL-SILTY CLAY, soft, plastic, grey, damp	33.50						0.0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 2

PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-28B
DATE COMPLETED: 27 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
36								
38								
40	CL-CLAY, with silt, soft, plastic, layered, dark grey, damp	38.50						0.3
42								
44	SILTY SAND, fine, with trace clay, loose, dark grey, wet	43.50						
46								
48								
50	SC-SAND, fine, medium grained, with trace silt, sub-rounded to sub-angular, loose, grey, wet	48.50						
52								
54	- medium grained sand, sub-angular to sub-rounded, with trace coarse sand, loose, grey, wet at 53.50ft BGS							
56								
58								
60	- silty sand, very dense, layered, grey, wet at 58.75ft BGS - Refusal at 59.00ft BGS END OF BOREHOLE @ 59.00ft BGS	59.00						
62								
64								
66								
68								

WELL DETAILS

Screened interval:

45.00 to 60.00ft BGS

Length: 15ft

Diameter: 2in

Slot Size: 0.010

Material: PVC

Sand Pack:

42.00 to 60.00ft BGS

Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE



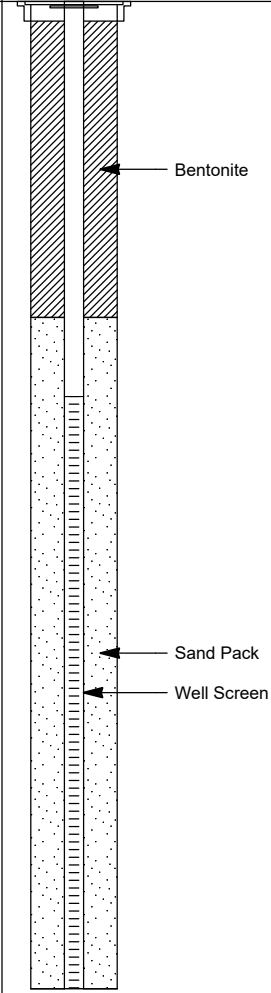
STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-29A
DATE COMPLETED: 28 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
2	TOPSOIL							
4	CL-CLAY, with silt, small blocky, low plasticity, soft, root traces, grey-brown, dry	3.50						0.0
6	CL-CLAY, with silt, blocky, low plasticity, firm, dark grey, dry	4.50						
8								
10	CL-CLAY, trace silt, small blocky, plastic, firm, dark brown-grey, dry	8.50						0.0
12	CL-CLAY, with silt, trace fine sand, small blocky, low plasticity, soft, tan-grey, damp	9.50						
14								
16	CL-CLAY, with trace silt, blocky, plastic, firm, tan-grey, dry	13.50						0.0
18								
20	CL-CLAY, with silt and fine sand, layered, soft, low plasticity, tan-brown, dry	18.50						0.1
22	CL-CLAY, with trace silt, blocky, low plasticity, firm, tan-brown, dry	19.50						
24	CL-SILTY CLAY, low plasticity, soft, dark grey-brown, dry	19.75						
26								
28	CL-CLAY, with silt and fine sand, blocky, non plastic, grey with oxide staining and root traces, damp	23.50						0.0
30		25.00						
32	END OF BOREHOLE @ 25.00ft BGS							
34								



WELL DETAILS
Screened interval:
10.00 to 25.00ft BGS
Length: 15ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Sand Pack:
8.00 to 25.00ft BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-29B
DATE COMPLETED: 28 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
2	TOPSOIL							
4	CL-CLAY, with silt, small blocky, soft, organics (root traces), low plasticity, grey-brown, dry	3.50 4.00						0.0 0.0
6	CL-CLAY, with silt, blocky, firm, low plasticity, dark grey, dry							
8	CL-CLAY, with trace silt, small blocky, plastic, firm, dark brown-grey, dry	8.50 9.50						0.1 0.0 0.0
10	CL-CLAY, with silt, trace fine sand, small blocky, low plasticity, soft, tan-grey, damp							
12								
14	CL-CLAY, with trace silt, blocky, plastic, firm, tan-grey, dry	13.50						0.1
16								
18	CL-CLAY, with silt and fine sand, layered, moderately soft, low plasticity, tan-brown, dry	18.50 19.50 19.75						0.0
20	CL-CLAY, with trace silt, blocky, low plasticity, firm, tan-brown, dry							
22	CL-SILTY CLAY, soft, low plasticity, dark grey-brown, damp							
24	CL-CLAY, with silt and fine sand, blocky, non plastic, firm, grey with oxide staining and root traces, dry	23.50						0.2
26								
28	CL-CLAY (FILL), with trace silt, layered, plastic, moderately soft, dark grey with root traces and oxide stained, damp	28.50						0.1
30								
32								
34	No recovery	33.50						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-29B
DATE COMPLETED: 28 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
36								
38								
	CL-SILTY CLAY, finely layered, non plastic, soft, dark grey, wet	38.50						0.3
		39.00						
		39.50						
40	CL-SILTY CLAY, with fine sand, non plastic, dark grey, damp							
	CL-SILTY CLAY, layered, firm, light grey, dry							
42								
44	CL-SILTY CLAY, layered, non plastic, moderately soft, grey, wet	43.50						
		44.50						
	CL-SILTY CLAY, with fine sand, non plastic, layered, soft, grey, wet							
46								
48								
		48.50						
50	SAND, fine to medium grained, sub-angular to sub-rounded, trace coarse grained, wet							
52								
54	- loose at 53.50ft BGS							
56								
58	- silty, trace clay, very dense, some fine sand, layered, grey, dry at 58.50ft BGS							
		59.00						
60	END OF BOREHOLE @ 59.00ft BGS							
62								
64								
66								
68								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

File: C:\USERS\CACHILDS\DESKTOP\11224213-MI.GPJ Library File: GHD_ENVIRO_V04.GLB Report: OVERBURDEN LOG Date: 12/7/21

WELL DETAILS
Screened interval:
44.00 to 59.00ft BGS
Length: 15ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Sand Pack:
41.00 to 59.00ft BGS
Material: Silica



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-21A
DATE COMPLETED: 11 May 2021
DRILLING METHOD: HSA
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
2	TOPSOIL							
4	CL-CLAY, trace silt, blocky, plastic, firm, dark brown-grey, dry	3.50						0.0
6	CL-CLAY, with trace silt and fine sand, small blocky structure, low plasticity, firm, dark brown, dry	4.50						0.3
8	CL-SILTY SANDY CLAY, soft, non plastic, grey-brown, damp	8.00						0.1
10	- clayey, silty, fine sand, compact, brown-grey, damp at 9.00ft BGS							0.0
14	CL-CLAY, with silt, trace fine sand, non plastic, soft, brown-grey, damp	13.50						0.3
16	- wet at 14.00ft BGS	14.50						-
18	SAND, clayey, silty, fine grained, layered, compact, dark brown-grey, wet							
20	SAND, fine to medium grained, loose, sub-rounded to sub-angular, tan, dry	18.50						0.0
20	END OF BOREHOLE @ 20.00ft BGS	20.00						
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-21B
DATE COMPLETED: 11 May 2021
DRILLING METHOD: SS
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
2	TOPSOIL							
4	CL-CLAY, with trace silt, blocky, low plasticity, root traces, dark brown, dry	3.00						0.0
6	CL-CLAY, with trace fine sand, small blocky, low plasticity, dark brown-black, dry	4.50						0.1
8								
10	CL-CLAY, with fine and medium grained sand, sub-angular to sub-rounded, faintly layered, non plastic, soft, dark brown-grey, damp	8.50						0.0
12								
14	SC-SAND, fine grained, sub-angular to sub-rounded, with silt, trace clay, low cohesion, layered, tan, dry	13.50						0.4
16								
18		18.50					24	0.0
20	SAND, medium to fine grained, sub-angular to sub-rounded, layered, trace coarse grains, tan, damp, low cohesion							
22								
24	SP-SAND, fine to coarse grained, sub-rounded to sub-angular, poorly graded, low cohesion, tan-grey, wet	23.50					15	0.7
26								
28	- fine to medium grained, with silt at 28.50ft BGS							
30							12	-
32								
34	- fine to coarse grained sand, poorly sorted, poorly graded, massive, grey-tan, wet at 33.50ft BGS						18	-

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

File: C:\USERS\CACHILDS\DESKTOP\11224213-MI.GPJ Library File: GHD_ENVIRO_V04.GLB Report: OVERBURDEN LOG Date: 12/7/21



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: Farmland Remediation
PROJECT NUMBER: 11224213
CLIENT: City of Lawrence
LOCATION: Lawrence, Kansas

HOLE DESIGNATION: MW-21B
DATE COMPLETED: 11 May 2021
DRILLING METHOD: SS
FIELD PERSONNEL: N. Laskares

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH BGS	MONITOR INSTALLATION	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
36	- clay lense, plastic, firm, grey-brown, wet at 34.50ft BGS							
38	- poorly graded sands, loose, grey-tan, wet at 38.50ft BGS							
40								
42								
44	CL-CLAY, trace silt, plastic, firm, layered, dark grey, dry	44.00 44.50					17	
46	SAND, poorly graded, sub-rounded, loose, grey, wet							
48	- poorly graded, sub-rounded, loose, grey, wet at 48.50ft BGS							
50							15	
52	- Refusal, weathered shale at 52.75ft BGS	52.75						
54	END OF BOREHOLE @ 52.75ft BGS							
56								
58								
60								
62								
64								
66								
68								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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Appendix B

Low-Flow Sampling Forms

Project Data:

Project Name: IARMLAND
Ref. No.: 11224213

Date: 6/14/2021
Personnel: S. Murphy
N. Ashares

Monitoring Well Data:

Well No.: MW-26B

Vapour PID (ppm):

Measurement Point: T.O.C.

Constructed Well Depth (m/ft): _____

Measured Well Depth (m/ft):

Depth of Sediment (m/ft): _____

Saturated Screen Length (m/ft):

Depth to Pump Intake (m/ft)⁽¹⁾: .

Well Diameter, D (cm/in): 2"

Well Screen Volume, V_s (L)⁽²⁾: _____

Initial Depth to Water (m/ft): 36.74

Notes:

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r ($=D/2$) and L are in cm. For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing). No. of Well Screen Volumes Purged = V_p/V_s .
- (5) For conductivity, the average value of three readings < 1 mS/cm ± 0.005 mS/cm or where conductivity > 1 mS/cm ± 0.01 mS/cm.

NEA-061421-NL-001 @ 14:50

Ammonia: NO^- ; NO^-

Project Data:

Project Name: FARM LAND
Ref. No.: 11224213

Date: 6/14/2021
Personnel: S - MURPHY
N - LASKARIS

Monitoring Well Data:

Monitoring Well Data:

Well No.:	MW-216A
Vapour PID (ppm):	-
Measurement Point:	T.O.C.
Constructed Well Depth (m/ft):	
Measured Well Depth (m/ft):	23.43
Depth of Sediment (m/ft):	

Saturated Screen Length (m/ft): _____
 Depth to Pump Intake (m/ft)⁽¹⁾: _____
 Well Diameter, D (cm/in): 2"
 Well Screen Volume, V_s (L)⁽²⁾: _____
 Initial Depth to Water (m/ft): 7.80

[illegible]

Notes:

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (=D/2) and L are in cm. For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm ± 0.005 mS/cm or where conductivity >1 mS/cm ± 0.01 mS/cm.

NG-061421-NL-002
@ 16:00

Wadden

Project Name: FARMLAND
Ref. No.: 11224213

Date: 6/14/21
Personnel: N-LASKARIS

Well No.: NW-22B

Vapour PID (ppm):

Measurement Point: T.O.C.

Constructed Well Depth (m/ft): _____

Measured Well Depth (m/ft): 55.12

Depth of Sediment (m/ft): _____

Saturated Screen Length (m/ft):

Depth-to Pump Intake (m/ft)⁽¹⁾: _____

Well Diameter, D (cm/in): 2"

Well Screen Volume, V_s (L)⁽²⁾: _____

Initial Depth to Water (m/ft): 24.51

[illegible]

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi(r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s = \pi(r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing). No. of Well Screen Volumes Purged = V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm $\pm$ 0.005 mS/cm or where conductivity >1 mS/cm $\pm$ 0.01 mS/cm.

WG-061421-NL-004
C 18:30

Project Data:

Project Name: FARMLAND
Ref. No.: 11224213

Date: 6/14/21
Personnel: S. MURPHY
N. LASKARIS

bladder

Weil No.: MN-22A

Vapour PID (ppm): _____

Measurement Point: T.O.C.

Constructed Well Depth (m/ft): _____

Measured Well Depth (m/ft): 27.71

Depth of Sediment (m/ft): _____

Saturated Screen Length (m/ft): _____

Depth-to Pump Intake (m/ft)⁽¹⁾: _____

Well Diameter, D (cm/in): 2"

Well Screen Volume, V_s (L)⁽²⁾: _____

Initial Depth to Water (m/ft): 13.77

[illegible]

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.31 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= V_p/V_s .
- (5) For conductivity, the average value of three readings $< 1 \text{ mS/cm} \pm 0.005 \text{ mS/cm}$ or where conductivity $> 1 \text{ mS/cm} \pm 0.01 \text{ mS/cm}$.

WG-06421-NL-005
@ 19.05

bædder

Date: 6/15/21
Personnel: N. LASKAROS

Depth of Sediment (m/ft): _____

Notes:

- WGA-061521-NL-006
@ 10-30

[illegible]

Project Name: FARMLAND
Ref. No.: 11224213

Date: 6/15/21
Personnel: N. LASKARES

Well No.: MW-28A

Saturated Screen Length (m/ft):

Depth-to Pump Intake (m/ft)⁽¹⁾: _____

Well Diameter, D (cm/in): 2"

Well Screen Volume, V_s (L)⁽²⁾: _____

Initial Depth to Water (m/ft): 13.10

[illegible]

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi(r^2) \cdot L$ in mL, where r ($=D/2$) and L are in cm. For Imperial units, $V_s = \pi(r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing). No. of Well Screen Volumes Purged = V_p/V_s .
- (5) For conductivity, the average value of three readings < 1 mS/cm ± 0.005 mS/cm or where conductivity > 1 mS/cm ± 0.01 mS/cm.

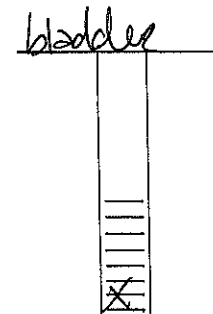
WG-061521-NL-007
@ 11:30

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: INARMAN
Ref. No.: 11224213

Date: 4/15/21
Personnel: N. LASKARIS



Monitoring Well Data:

Well No.: CPMW-1D
Vapour PID (ppm): -
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): -
Measured Well Depth (m/ft): 47.53
Depth of Sediment (m/ft): -

Saturated Screen Length (m/ft): -
Depth to Pump Intake (m/ft): -
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L): -
Initial Depth to Water (m/ft): 20.48

$$PV = (TD - DTW) \cdot 0.163 = (47.53 - 20.48) \cdot 0.163 = 4.4 \approx 13.2 \text{ WV}$$

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Purged, Vp (L)	No. of Well Screen Volumes Purged ⁽⁵⁾
		Precision Required ⁽³⁾ :		±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV	(L)	
12:15	180	0.07	20.55	22.49	88.115	Turbid	2.07	8.43	114.9	.9	
20	"	0.64	21.12	22.40	87.204	"	1.48	8.46	118.0	1.8	
25	"	1.02	21.50	22.86	87.954	"	1.34	8.46	123.5	2.7	
30	"	1.39	21.87	19.39	82.800	"	0.93	8.55	122.4	3.6	
35	250	2.00	22.48	19.25	81.692	"	1.01	8.67	125.4	4.5	
40	"	2.05	23.53	19.00	78.563	Clearing	1.06	8.62	124.9	5.4	6.1
45	450	3.87	24.35	16.94	77.636	"	0.59	8.64	125.0	6.3	
50	450	5.77	26.25	16.50	78.678	"	0.51	8.62	125.6	8.1	10.6 L
13:00	pump failure										
14:00	Grab Sample 26.59										

Notes:

- The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches.
- The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing). No. of Well Screen Volumes Purged = Vp/Vs.
- For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

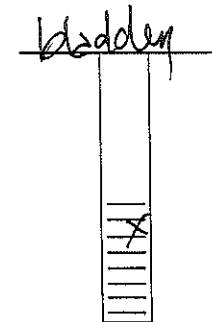
WG-061521-NL-008
@ 14:00

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: FARMLAND
Ref. No.: 11224213

Date: 6/15/21
Personnel: N. LASKARES



Monitoring Well Data:

Well No.: CPMW-15
Vapour PID (ppm): -
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): -
Measured Well Depth (m/ft): -
Depth of Sediment (m/ft): -

Saturated Screen Length (m/ft): -
Depth to Pump Intake (m/ft)⁽¹⁾: -
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)⁽²⁾: -
Initial Depth to Water (m/ft): 12.28

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁵⁾	±10 %	±10 %	±0.1 Units	±10 mV		
15:30	200	12.71	0.43	36.01	58.312	TURBID	2.15	8.08	116.1		
35	150	12.81	0.53	31.83	42.155	"	1.79	8.22	115.6		
40	"	12.99	0.71	30.41	37.935	"	1.68	8.19	114.0		
45	"	13.40	1.12	29.1	30.303	"	1.53	8.27	111.7		
50	"	13.61	1.33	28.06	28.304	"	1.01	8.35	112.9		
55	"	13.63	1.35	28.19	28.333	"	1.00	8.33	113.6		
16:00	100	13.67	1.39	28.37	28.354	CLEARING	6.05	8.35	113.9		
05	"	13.70	1.42	28.65	28.369	HAZY	1.07	8.31	114.2		
10	"	13.71	1.43	28.71	28.386	"	1.09	8.31	115.7		
15	"	13.71	1.43	28.72	28.394	"	1.10	8.31	116.3		
20	100	13.72	1.44	28.74	28.401	HAZY	1.17	8.32	117.7		

Notes:

- The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where $r = (D/2)$ and L are in cm. For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches.
- The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing). No. of Well Screen Volumes Purged = V_p/V_s .
- For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

WG-061521-NL-009
@ 16:25

Project Data:

Date: 4/15/21
Personnel: N. LASKARIS

bleiden

Well No.: MW-24A

Saturated Screen Length (m/ft): _____

Depth-to Pump Intake (m/ft)⁽¹⁾: _____

Well Diameter, D (cm/in): 2¹/₂

Well Screen Volume, V_s (L)⁽²⁾: _____

Initial Depth to Water (m/ft): 4.64

Notes:

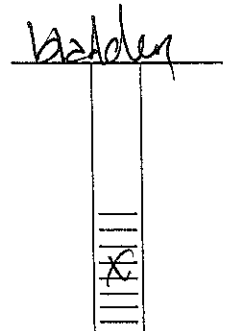
- WG-061521-NL-011
@1900

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: FARMLAND
Ref. No.: 11224213

Date: 6/16/21
Personnel: N. CASKAROS



Monitoring Well Data:

Well No.: MW-PSW-9A
Vapour PID (ppm): -
Measurement Point: T.O.C
Constructed Well Depth (m/ft): -
Measured Well Depth (m/ft): 22.80
Depth of Sediment (m/ft): -

Saturated Screen Length (m/ft): -
Depth to Pump Intake (m/ft)⁽¹⁾: -
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)⁽²⁾: -
Initial Depth to Water (m/ft): 12.41

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
10:50	300	12.43	0.02	18.77	0.349	CLEAR	0.11	6.52	-221.0		
:55	240	12.52	0.11	19.00	0.342	"	0.12	6.50	-205.8		
11:00	200	12.60	0.19	19.60	0.333	"	0.10	6.49	-197.7		
:05	"	12.61	0.26	20.77	0.338	"	0.10	6.48	-194.7		
10	"	12.63	0.22	21.51	0.340	"	0.09	6.46	-190.5		
15	200	12.64	0.23	21.73	0.344	CLEAR	0.10	6.45	-181.2		

Notes:

- The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches.
- The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged = V_p/V_s .
- For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

WG-061621-NL-013
@ 11:20

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: FARMLAND
Ref. No.: 11224213

Date: 6-17-2021
Personnel: N. LASKARIS

bladder

Monitoring Well Data:

Well No.: MW-27A
Vapour PID (ppm): -
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): -
Measured Well Depth (m/ft): 26.72
Depth of Sediment (m/ft): -

Saturated Screen Length (m/ft): -
Depth to Pump Intake (m/ft)⁽¹⁾: -
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)⁽²⁾: -
Initial Depth to Water (m/ft): 22.62



$$PV = (TD - DW) \cdot 0.163 = (26.72 - 22.62) \cdot 0.163 = 0.66 \text{ gallons} \approx 2500 \text{ mL}$$

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
10:05	150	23.65	0.03	18.03	0.316	HAZY	0.61	6.34	-178.9	0.750	
10	"	23.08		17.48	0.269	TURBID	0.41	6.39	-177.9	1.500	
15	125 125	23.20		17.60	0.256	"	0.28	6.44	-177.7	2.125	
20	100	23.35		17.39	0.302	"	0.32	6.50	-174.7	2.625	
25	100	23.51		17.78	0.302	CLEAR	0.30	6.50	-174.7	3.125	
30	100	23.76		17.36	0.253	"	0.28	6.61	-177.5	3.625	
35	100	23.81		17.22	0.249	"	0.28	6.57	-178.4	4.125	
40	100	24.07		17.84	0.251	HAZY	0.27	6.69	-179.7	4.625	
45	100	24.21		17.45	0.274	"	0.26	6.69	-177.1	5.125	
50	100	24.33		17.35	0.287	"	0.26	6.69	-176.3	5.625	
55	100	24.46		17.49	0.274	"	0.26	6.72	-176.5	6.125	
11:00	100	24.50		17.66	0.270	"	0.25	6.73	-177.0	6.625	
11:05	100	24.54		17.80	0.268	HAZY	0.25	6.71	-178.6	7.125	3

Notes:

- The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (=D/2) and L are in cm. For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches.
- The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged = V_p/V_s .
- For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

WG-061721-NL-019
@ 11:10

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: FARMLAND
Ref. No.: 11224213

Date: 6-17-21
Personnel: N. LASKARIS

bladder

Monitoring Well Data:

Well No.: FWN-9B
Vapour PID (ppm): -
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): -
Measured Well Depth (m/ft): 57.63
Depth of Sediment (m/ft): -

Saturated Screen Length (m/ft): -
Depth to Pump Intake (m/ft)⁽¹⁾: -
Well Diameter, D (cm/in): 2K
Well Screen Volume, V_s (L)⁽²⁾: -
Initial Depth to Water (m/ft): 28.11

$$PV = (57.63 - 28.11) \cdot 0.163 = 4.89 \text{ m} / PV \approx 14.5 \text{ well volume}$$

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Purged, Vp (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
12:36	300	28.12	0.01	13.16	0.202	FAIRLY	8.43	7.19	-95.9		
35	"	"	"	12.64	0.202	"	0.41	7.48	-203.9		
40	"	"	"	12.45	0.200	"	0.56	7.09	-164.7		
45	"	"	"	12.24	0.199	"	0.76	7.85	-160.6		
50	"	"	"	12.28	0.200	CLOUDY	0.126	6.70	-153.2		
55	"	"	"	12.17	0.200	"	1.99	6.63	-152.5		
13:00	"	"	"	11.99	0.200	"	1.57	6.52	-157.0		
05	"	"	"	12.05	0.201	"	1.29	6.47	-145.1		
10	"	"	"	12.04	0.201	HAZY	1.26	6.46	-167.3		
15	"	"	"	12.01	0.201	"	1.13	6.44	-169.9		
13:20	300	28.12	0.01	11.93	0.202	HAZY	1.09	6.41	-174.1		

Notes:

- The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.
- For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

WG-061721 - NL-020
@ 13:30

Project Data:

Project Name:

Ref. No.:

Date: 4-17-21

Personnel:

Monitoring Well Data:

Well No.:

Vapour PID (ppm):

Measurement Point:

Constructed Well Depth (m/ft):

Measured Well Depth (m/ft):

Depth of Sediment (m/ft):

Saturated Screen Length (m/ft):

Depth-to Pump Intake (m/ft)⁽¹⁾:

Well Diameter, D (cm/in):

Well Screen Volume, V_s (L)⁽²⁾:

Initial Depth to Water (m/ft): 25.41

$$PV = (57.42 - 25.41) \cdot 0.163 = 5.2 \text{ gal} \approx 15.6 \text{ gal/WV}$$

Notes:

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi(r^2) \cdot L$ in mL, where r (=D/2) and L are in cm. For Imperial units, $V_s = \pi(r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing). No. of Well Screen Volumes Purged= V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm $\pm$ 0.005 mS/cm or where conductivity >1 mS/cm $\pm$ 0.01 mS/cm.

WG-061721-NL-021
@16:30

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: FARMLAND
Ref. No.: 11224213

Date: 6-18-2021
Personnel: N. LASKAVES

bladder

Monitoring Well Data:

Well No.: C PMW-2s
Vapour PID (ppm): -
Measurement Point: to T.O.C.
Constructed Well Depth (m/ft): -
Measured Well Depth (m/ft): 35.03
Depth of Sediment (m/ft): -

Saturated Screen Length (m/ft): -
Depth to Pump Intake (m/ft)⁽¹⁾: -
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L)⁽²⁾: -
Initial Depth to Water (m/ft): 3.93

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
10:00	220	3.93	0.00	20.37	0.055	CLOUDY	6.91	7.35	-214.0		
05	"	"	"	23.90	85.091	CLEARING	2.46	7.33	-168.4		
10	"	"	"	21.60	77.270	"	0.93	7.96	-161.0		
15	"	3.95	0.02	21.36	77.062	CLEAR	1.27	7.92	-160.5		
20	"	"	"	21.00	76.258	"	1.87	7.84	-155.8		
20	"	3.96	0.03	21.36	76.610	"	1.68	7.80	-149.2		
25	"	"	"	21.41	76.933	"	1.50	7.79	-152.4		
30	"	3.98	0.05	21.55	77.251	"	1.41	7.73	-154.9		
35	"	"	"	21.86	77.655	"	1.28	7.75	-156.7		
40	"	4.00	0.07	21.98	77.699	"	1.00	7.73	-158.1		
45	220	4.02	0.09	21.99	77.715	CLEAR	0.79	7.70	-151.5		

Notes:

- The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches.
- The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged = V_p/V_s .
- For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

WGI-061821-NL-022 @ 10:50
 Dup to Craig: WGI-061821-NL-023 @ 10:55
 Dup to PACE: WGI-061821-NL-022A @ 10:50

Project Data:

Project Name:

Farmland

Ref. No.:

11224215

Date:

6/6/2

Personnel:

S. M. plm

Monitoring Well Data:

Well No.:

PSW-2B

Vapour PID (ppm):

Saturated Screen Length (m/ft):

Measurement Point:

Depth-to Pump Intake (m/ft)⁽¹⁾:

Constructed Well Depth (m/ft):

Well Diameter, D (cm/in):

Measured Well Depth (m/ft):

Well Screen Volume, V_s (L)⁽²⁾:

Depth of Sediment (m/ft):

Initial Depth to Water (m/ft):

[illegible]

Notes:

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi(r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s = \pi(r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm ± 0.005 mS/cm or where conductivity >1 mS/cm ± 0.01 mS/cm.

WG-061621-SM-003 @
1305

Project Data:

Project Name: Farmloan
Ref. No.: 11224215

Date: 6/16/21
Personnel: S. Murphy

SS Sub

Monitoring Well Data:

Well No.: 5W-7A

Vapour PID (ppm): 1

Measurement Point: _____

Constructed Well Depth (m/ft):

Measured Well Depth (m/ft): 21.85

Depth of Sediment (m/ft): —

Saturated Screen Length (m/ft):

Depth to Pump Intake (m/ft)⁽¹⁾: ~ .

Well Diameter, D (cm/in): 24

Well Screen Volume, V_s (L)⁽²⁾: _____

Initial Depth to Water (m/ft): 3.98

[illegible]

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi(r^2)L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s = \pi(r^2)L (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing). No. of Well Screen Volumes Purged= V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm ± 0.005 mS/cm or where conductivity >1 mS/cm ± 0.01 mS/cm.

WG-061621-SM-004 @ 1345

Project Data:

Project Name: Farm lands
Ref. No.: 11224213

Date: 6/16/21
Personnel: S. Muzny

Monitoring Well Data:

Well No.: PSW-7B2

Vapour PID (ppm):

Measurement Point: _____

Constructed Well Depth (m/ft):

Measured Well Depth (m/ft):

Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): \

Depth to Pump Intake (m/ft)⁽¹⁾: _____

Well Diameter, D (cm/in): _____

Well Screen Volume, V_s (L)⁽²⁾: _____

Initial Depth to Water (m/ft): _____

[illegible]

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi r^2 (r^2) L$ in mL, where r ($r = D/2$) and L are in cm. For Imperial units, $V_s = \pi r^2 (r^2) L$ (2.54)³, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing). No. of Well Screen Volumes Purged = V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm ± 0.005 mS/cm or where conductivity >1 mS/cm ± 0.01 mS/cm.

WG-061621-SM-005
@ 1355

Project Data:

Project Name: farmland
Ref. No.: 11224215

Date: 6/16/21
Personnel: S. Murphy

SS	Subj
	X

Monitoring Well Data:

Well No.: PSW-6A

Vapour PID (ppm):

Measurement Point:

Constructed Well Depth (m/ft): _____

Measured Well Depth (m/ft): 27.80

Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): _____

Depth to Pump Intake (m/ft)⁽¹⁾: ~ .

Well Diameter, D (cm/in): 24

Well Screen Volume, V_s (L)⁽²⁾: _____Initial Depth to Water (m/ft): 4.24[illegible]

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm ± 0.005 mS/cm or where conductivity >1 mS/cm ± 0.01 mS/cm.

WG -061621-SM-006 @1440

Project Data:

Project Name: Farmland
Ref. No.: 11224213

Date: 6/16/21
Personnel: S. McLaughlin

Monitoring Well Data:

Monitoring Well Data:

Well No.:	PSW-604
Vapour PID (ppm):	
Measurement Point:	
Constructed Well Depth (m/ft):	
Measured Well Depth (m/ft):	
Depth of Sediment (m/ft):	

Saturated Screen Length (m/ft): 1
 Depth to Pump Intake (m/ft)⁽¹⁾: 6
 Well Diameter, D (cm/in): 2 in 5 in
 Well Screen Volume, V_s (L)⁽²⁾: _____
 Initial Depth to Water (m/ft): _____

[illegible]

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot r^2 \cdot L$ in mL, where r ($r = D/2$) and L are in cm. For Imperial units, $V_s = \pi \cdot (r')^2 \cdot L' \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm ± 0.005 mS/cm or where conductivity >1 mS/cm ± 0.01 mS/cm.

WU-061621-SM-0070 1455

Project Data:

Project Name:

Farmland

Date:

6/1.6/21

Personnel:

S. Murphy

Monitoring Well Data:

Well No.:

PSW-5 B

Vapour PID (ppm):

Measurement Point:

Constructed Well Depth (m/ft):

Measured Well Depth (m/ft):

Depth of Sediment (m/ft):

Saturated Screen Length (m/ft):

Depth-to Pump Intake (m/ft)⁽¹⁾:

Well Diameter, D (cm/in):

Well Screen Volume, V_s (L)⁽²⁾:

Initial Depth to Water (m/ft):

Notes:

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi(r^2) \cdot L$ in mL, where r (=D/2) and L are in cm. For Imperial units, $V_s = \pi(r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.
- (5) For conductivity, the average value of three readings <1 mS/cm $\pm$ 0.005 mS/cm or where conductivity >1 mS/cm $\pm$ 0.01 mS/cm.

WG - 061621-SM-010 @ 1715

Project Data:

Project Name: Formland
Ref. No.: 1929213

Date: 6/17/21
Personnel: S. Murphy

Well No.: SW-10

Vapour PID (ppm): 1

Measurement Point: _____

Constructed Well Depth (m/ft): _____

Measured Well Depth (m/ft): 62.17

Depth of Sediment (m/ft):

Saturated Screen Length (m/ft):

Depth-to Pump Intake (m/ft)⁽¹⁾:

Well Diameter, D (cm/in): 21

Well Screen Volume, V_s (L)^[2]:

Initial Depth to Water (m/ft): 35.74

Notes:

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing). No. of Well Screen Volumes Purged= Vp/Vs.
- (5) For conductivity, the average value of three readings <1 mS/cm $\pm$ 0.005 mS/cm or where conductivity >1 mS/cm $\pm$ 0.01 mS/cm.

W6-061721-SM-012@1300

Project Data:

Project Name:

Farm/arb

Ref. No.: 11224213

Date:

6/17/20

Personnel:

S. Murphy

Monitoring Well Data:

Well No.:

BW- 20 B

Vapour PID (ppm):

Measurement Point:

Constructed Well Depth (m/ft):

Measured Well Depth (m/ft):

Depth of Sediment (m/ft):

Saturated Screen Length (m/ft):

Depth-to Pump Intake (m/ft)⁽¹⁾:

Well Diameter, D (cm/in):

Well Screen Volume, V_s (L)⁽²⁾:

Initial Depth to Water (m/ft):

Notes:

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r ($r = D/2$) and L are in cm. For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged = V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm ± 0.005 mS/cm or where conductivity >1 mS/cm ± 0.01 mS/cm.

WG-061721-SM-013@1430

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

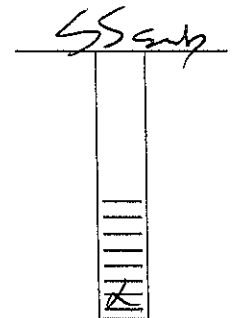
Project Name: Farm 1416
Ref. No.: 1124413

Date: 6/17/21
Personnel: S. Murphy

Monitoring Well Data:

Well No.: PBW-19B
Vapour PID (ppm): -
Measurement Point: -
Constructed Well Depth (m/ft): -
Measured Well Depth (m/ft): 54.32
Depth of Sediment (m/ft): -

Saturated Screen Length (m/ft): -
Depth to Pump Intake (m/ft): -
Well Diameter, D (cm/in): 5"
Well Screen Volume, V_s (L): -
Initial Depth to Water (m/ft): 25.62



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁵⁾	±10 %	±10 %	±0.1 Units	±10 mV		
1510	200 300			18.82	568		1.93	6.36	81.8		
1515											
1520				18.41	777		1.25	6.19	92.0		
1525		25.56	- .06	17.40	831		1.31	6.17	92.4		
1530		25.56	- .06	17.72	862		1.43	6.17	91.8		
1535		25.55	- .07	17.72	888		1.44	6.16	96.1		
1540		25.55	- .07	17.61	938		1.44	6.16	97.1		
1545		25.56	- .06	17.76	1032		1.39	6.16	97.4		
1550		25.55	- .07	18.73	1091		1.29	6.18	98.8		
1555				19.02	1100		1.34	6.16	99.8		
1600											
well volume = 4.68 gal											

Notes:

- The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi(r^2)L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s = \pi(r^2)L$ (2.54)³, where r and L are in inches.
- The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= V_p/V_s.
- For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

WG-061721-SM-014 @ 1600

Project Data:

Project Name: Farm
Ref. No.: 11224213

Date: 6/11/21
Personnel: S. Murphy

Well No.: FW 221

Vapour PID (ppm): _____
 Measurement Point: _____
 Constructed Well Depth (m/ft): _____
 Measured Well Depth (m/ft): _____
 Depth of Sediment (m/ft): _____

Saturated Screen Length (m/ft):
 Depth to Pump Intake (m/ft)⁽¹⁾:
 Well Diameter, D (cm/in): 2"
 Well Screen Volume, V_s (L)⁽²⁾:
 Initial Depth to Water (m/ft):

[illegible]

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot r^2 \cdot L$ in mL, where r ($=D/2$) and L are in cm. For imperial units, $V_s = \pi \cdot r^2 \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged = V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm ± 0.005 mS/cm or where conductivity >1 mS/cm ± 0.01 mS/cm.

WG-06721-SM-015@163

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: LARMING
Ref. No.: 1224213

Date: 6/17/21
Personnel:

Monitoring Well Data:

Well No.: VSW-12A

Vapour PID (ppm): —

Measurement Point: _____

Constructed Well Depth (m/ft):

Measured Well Depth (m/ft): 24.85

Depth of Sediment (m/ft):

Saturated Screen Length (m/ft): —

Depth to Pump Intake (m/ft)⁽¹⁾: —

Well Diameter, D (cm/in): 24

Well Screen Volume, V_s (L)⁽²⁾: ✓

Initial Depth to Water (m/ft): 1.30

[illegible]

Notes:

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi r^2 (\pi^2) L$ in mL, where $r = (D/2)$ and L are in cm. For Imperial units, $V_s = \pi r^2 (\pi^2) L^3$ (2.54)³, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm $\pm$ 0.005 mS/cm or where conductivity >1 mS/cm $\pm$ 0.01 mS/cm.

WG-061721-SM-016 @ 172e

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: Farmland
Ref. No.: 11224213

Date: 2/17/21
Personnel: _____

Monitoring Well Data:

Well No.: PSW-17D

Vapour PID (ppm): /

Measurement Point: _____

Constructed Well Depth (m/ft):

Measured Well Depth (m/ft): 39.85

Depth of Sediment (m/ft): _____

Saturated Screen Length (m/ft): 1

Depth to Pump Intake (m/ft)⁽¹⁾: /

Well Diameter, D (cm/in): 2.54

Well Screen Volume, V_s (L)⁽²⁾:

Initial Depth to Water (m/ft): 2.5

[illegible]

Notes:

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi r^2 L$ in mL, where $r = (D/2)$ and L are in cm. For Imperial units, $V_s = \pi r^2 L (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.3 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged = V_p / V_s .
- (5) For conductivity, the average value of three readings < 1 mS/cm ± 0.005 mS/cm or where conductivity > 1 mS/cm ± 0.01 mS/cm.

WG-061721-SM-017 @ 1755
WG-061721-SM-018 @ 1800

SS Sub

Date: 6/18/21
Personnel: S. Murphy

Depth of Sediment (m/ft):

Initial Depth to Water (m/ft): 8 m

well value - 2.54 ga

WG-061821-SM-019@1045
WG-061821-SM-020@1050
WG-061821-SM-019A@1045

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: Farm lane b
Ref. No.: 11224213

Date: 6/18/21
Personnel: S. Murphy

SS Sub

Monitoring Well Data:

Well No.: Psw-18
Vapour PID (ppm): -
Measurement Point: -
Constructed Well Depth (m/ft): -
Measured Well Depth (m/ft): 26.22 28.08
Depth of Sediment (m/ft): -

Saturated Screen Length (m/ft): -
Depth to Pump Intake (m/ft): -
Well Diameter, D (cm/in): 2"
Well Screen Volume, V_s (L): -
Initial Depth to Water (m/ft): 28.08 5.83

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽¹⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽²⁾
Precision Required ⁽³⁾ :				±3 %	±0.005 or 0.01 ⁽⁴⁾	±10 %	±10 %	±0.1 Units	±10 mV		
Notable to not pump down well SM											
1115	250	2.65		17.95	259		2.43	6.35	97.8		
1120		8.07	2.24	18.00	265		78	5.97	92.8		
1125		8.32	2.69	17.86	253		78	5.95	92.1		
1130		8.85	3.07	17.56	252		77	5.95	92.2		
1135	Sample										
well volume = 3.63 gal											

Notes:

- The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged = V_p/V_s.
- For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Dup - WG-061821-SM-021@1135
WG-061821-SM-022@1140
 Page → WG-061821-SM-021A@1135

SS Sup

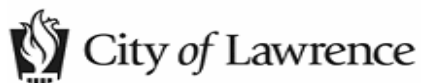
Saturated Screen Length (m/ft): /
 Depth to Pump Intake (m/ft)⁽¹⁾: /
 Well Diameter, D (cm/in): 2"
 Well Screen Volume, V_s (L)⁽²⁾: /
 Initial Depth to Water (m/ft): 27.87

well volume - 5.12 gal	
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WV-061821-SM-023 @1235

Appendix C

Laboratory Analytical Reports



City of Lawrence Laboratories - Municipal Services and Operations
P.O. Box 708
Lawrence, KS 66044
785-832-7817

July 01, 2021

Josh Toevs
City of Lawrence - Municipal Services and Operations
P.O Box 708
Lawrence, KS 66044

RE: Farmland - Miscellaneous

Enclosed are the results of analyses for samples received at the laboratory on 06/14/21 08:33-06/21/21 06:04. The results herein unless otherwise noted, conform to the TNI standards and the laboratory's procedures. The quantitative results in this report relate only to the samples tested.

If you have any questions concerning this report, please feel free to contact me.

Josh Toevs
Water Quality
(785) 832-7800

Your feedback for the laboratory services we provide will be greatly appreciated . If you have any input, both positive or negative, let us know by contacting us at jtoevs@lawrenceks.org. Your feedback will be used to improve our management system, testing, and services.

Reported: 07/01/21 16:31

NELAP Laboratory Accreditation: E-60665

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WW-060921-NL-001	W1F0369-01	Water	06/09/21 18:00	06/14/21 08:33
WW-061021-NL-002	W1F0369-02	Water	06/10/21 11:25	06/14/21 08:33
WW-061021-NL-003	W1F0369-03	Water	06/11/21 07:45	06/14/21 08:33
WW-061121-NL-004	W1F0369-04	Water	06/11/21 12:30	06/14/21 08:33
WW-061121-NL-005	W1F0369-05	Water	06/11/21 15:30	06/14/21 08:33
WG-061421-NL-001	W1F0542-01	Water	06/14/21 14:50	06/21/21 06:04
WG-061421-NL-002	W1F0542-02	Water	06/14/21 16:00	06/21/21 06:04
WG-061421-NL-003	W1F0542-03	Water	06/14/21 17:15	06/21/21 06:04
WG-061421-NL-004	W1F0542-04	Water	06/14/21 18:30	06/21/21 06:04
WG-061421-NL-005	W1F0542-05	Water	06/14/21 19:05	06/21/21 06:04
WG-061521-NL-006	W1F0542-06	Water	06/15/21 10:30	06/21/21 06:04
WG-061521-NL-007	W1F0542-07	Water	06/15/21 11:30	06/21/21 06:04
WG-061521-NL-008	W1F0542-08	Water	06/15/21 14:00	06/21/21 06:04
WG-061521-NL-009	W1F0542-09	Water	06/15/21 16:25	06/21/21 06:04
WG-061521-NL-010	W1F0542-10	Water	06/15/21 18:00	06/21/21 06:04
WG-061521-NL-011	W1F0542-11	Water	06/15/21 19:00	06/21/21 06:04
WG-061621-NL-012	W1F0542-12	Water	06/16/21 10:30	06/21/21 06:04
WG-061621-NL-013	W1F0542-13	Water	06/16/21 11:20	06/21/21 06:04
WG-061621-NL-014	W1F0542-14	Water	06/16/21 12:35	06/21/21 06:04
WG-061621-NL-015	W1F0542-15	Water	06/16/21 13:20	06/21/21 06:04
WG-061621-NL-016	W1F0542-16	Water	06/16/21 15:30	06/21/21 06:04
WG-061621-NL-017	W1F0542-17	Water	06/16/21 16:40	06/21/21 06:04
WG-061721-NL-018	W1F0542-18	Water	06/17/21 09:40	06/21/21 06:04

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Josh Toevs, Water Quality



Reported: 07/01/21 16:31

NELAP Laboratory Accreditation: E-60665

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WG-061721-NL-019	W1F0542-19	Water	06/17/21 11:10	06/21/21 06:04
WG-061721-NL-020	W1F0542-20	Water	06/17/21 13:30	06/21/21 06:04
WG-061721-NL-021	W1F0542-21	Water	06/17/21 16:30	06/21/21 06:04
WG-061821-NL-022	W1F0542-22	Water	06/18/21 10:50	06/21/21 06:04
WG-061821-NL-023	W1F0542-23	Water	06/18/21 10:55	06/21/21 06:04
WG-061621-SM-001	W1F0542-24	Water	06/16/21 11:40	06/21/21 06:04
WG-061621-SM-002	W1F0542-25	Water	06/16/21 12:40	06/21/21 06:04
WG-061621-SM-003	W1F0542-26	Water	06/16/21 13:05	06/21/21 06:04
WG-061621-SM-004	W1F0542-27	Water	06/16/21 13:45	06/21/21 06:04
WG-061621-SM-005	W1F0542-28	Water	06/16/21 13:55	06/21/21 06:04
WG-061621-SM-006	W1F0542-29	Water	06/16/21 14:40	06/21/21 06:04
WG-061621-SM-007	W1F0542-30	Water	06/16/21 14:55	06/21/21 06:04
WG-061621-SM-008	W1F0542-31	Water	06/16/21 15:35	06/21/21 06:04
WG-061621-SM-009	W1F0542-32	Water	06/16/21 15:50	06/21/21 06:04
WG-061621-SM-010	W1F0542-33	Water	06/16/21 17:15	06/21/21 06:04
WG-061621-SM-011	W1F0542-34	Water	06/16/21 17:55	06/21/21 06:04
WG-061721-SM-012	W1F0542-35	Water	06/17/21 13:00	06/21/21 06:04
WG-061721-SM-013	W1F0542-36	Water	06/17/21 14:30	06/21/21 06:04
WG-061721-SM-014	W1F0542-37	Water	06/17/21 16:00	06/21/21 06:04
WG-061721-SM-015	W1F0542-38	Water	06/17/21 16:30	06/21/21 06:04
WG-061721-SM-016	W1F0542-39	Water	06/17/21 17:20	06/21/21 06:04
WG-061721-SM-017	W1F0542-40	Water	06/17/21 17:55	06/21/21 06:04
WG-061721-SM-018	W1F0542-41	Water	06/17/21 18:00	06/21/21 06:04

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Reported: 07/01/21 16:31**NELAP Laboratory Accreditation:** E-60665**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WG-061821-SM-019	W1F0542-42	Water	06/18/21 10:45	06/21/21 06:04
WG-061821-SM-020	W1F0542-43	Water	06/18/21 10:50	06/21/21 06:04
WG-061821-SM-021	W1F0542-44	Water	06/18/21 11:35	06/21/21 06:04
WG-061821-SM-022	W1F0542-45	Water	06/18/21 11:40	06/21/21 06:04
WG-061821-SM-023	W1F0542-46	Water	06/18/21 12:35	06/21/21 06:04
WG-061821-SM-024	W1F0542-47	Water	06/18/21 13:40	06/21/21 06:04
WG-061821-SM-025	W1F0542-48	Water	06/18/21 13:45	06/21/21 06:04
WG-061821-SM-026	W1F0542-49	Water	06/18/21 14:15	06/21/21 06:04
WG-061821-SM-027	W1F0542-50	Water	06/18/21 14:20	06/21/21 06:04
WG-061821-NC-028	W1F0542-51	Water	06/18/21 16:20	06/21/21 06:04

Reported: 07/01/21 16:31

NELAP Laboratory Accreditation: E-60665

WW-060921-NL-001

Collected: 6/9/21 18:00

W1F0369-01 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	ND	0.300	mg/L	1062318	06/23/21 16:06	KMG	EPA 350.1	
Nitrate/Nitrite as N	7.29	0.250	mg/L	1062410	06/24/21 11:01	qc	EPA 353.2	

WW-061021-NL-002

Collected: 6/10/21 11:25

W1F0369-02 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	11.8	0.300	mg/L	1062318	06/23/21 16:57	KMG	EPA 350.1	
Nitrate/Nitrite as N	12.5	0.250	mg/L	1062410	06/24/21 11:05	qc	EPA 353.2	

WW-061021-NL-003

Collected: 6/11/21 7:45

W1F0369-03 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	0.641	0.300	mg/L	1062318	06/23/21 16:15	KMG	EPA 350.1	
Nitrate/Nitrite as N	0.441	0.250	mg/L	1062410	06/24/21 11:10	qc	EPA 353.2	

WW-061121-NL-004

Reported: 07/01/21 16:31

NELAP Laboratory Accreditation: E-60665

Collected: 6/11/21 12:30

W1F0369-04 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	30.0	0.300	mg/L	1062318	06/23/21 17:00	KMG	EPA 350.1	
Nitrate/Nitrite as N	17.2	0.250	mg/L	1062410	06/24/21 11:11	qc	EPA 353.2	

WW-061121-NL-005

Collected: 6/11/21 15:30

W1F0369-05 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	0.896	0.300	mg/L	1062318	06/23/21 16:19	KMG	EPA 350.1	
Nitrate/Nitrite as N	18.7	0.250	mg/L	1062410	06/24/21 11:40	qc	EPA 353.2	

WG-061421-NL-001

Collected: 6/14/21 14:50

W1F0542-01 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	ND	0.300	mg/L	1062219	06/22/21 14:48	NAM	EPA 350.1	
Nitrate/Nitrite as N	133	0.250	mg/L	1062410	06/24/21 12:03	qc	EPA 353.2	

WG-061421-NL-002

Collected: 6/14/21 16:00

W1F0542-02 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					

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Collected: 6/14/21 16:00

W1F0542-02 (Water)

Analyte	Result	Reporting		Units	Batch	Analyzed	Analyst	Method	Qualifiers
		Limit							
Ammonia as N	ND	0.300		mg/L	1062219	06/22/21 14:26	NAM	EPA 350.1	
Nitrate/Nitrite as N	20.4	0.250		mg/L	1062410	06/24/21 11:42	qc	EPA 353.2	

WG-061421-NL-003

Collected: 6/14/21 17:15

W1F0542-03 (Water)

Analyte	Result	Reporting		Units	Batch	Analyzed	Analyst	Method	Qualifiers
		Limit							
Ammonia as N	ND	0.300		mg/L	1062219	06/22/21 14:40	NAM	EPA 350.1	
Nitrate/Nitrite as N	0.946	0.250		mg/L	1062410	06/24/21 11:14	qc	EPA 353.2	

WG-061421-NL-004

Collected: 6/14/21 18:30

W1F0542-04 (Water)

Analyte	Result	Reporting		Units	Batch	Analyzed	Analyst	Method	Qualifiers
		Limit							
Nitrate/Nitrite as N	ND	0.250		mg/L	1062410	06/24/21 11:15	qc	EPA 353.2	

WG-061421-NL-004

Collected: 6/14/21 18:30

W1F0542-04RE1 (Water)

Analyte	Result	Reporting		Units	Batch	Analyzed	Analyst	Method	Qualifiers
		Limit							
Ammonia as N	3.31	0.300		mg/L	1062311	06/23/21 12:19	KMG	EPA 350.1	

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WG-061421-NL-005

Collected: 6/14/21 19:05

W1F0542-05 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Ammonia as N	ND	0.300	mg/L	1062219	06/22/21 14:39	NAM	EPA 350.1	
Nitrate/Nitrite as N	7.98	0.250	mg/L	1062410	06/24/21 11:16	qc	EPA 353.2	

WG-061521-NL-006

Collected: 6/15/21 10:30

W1F0542-06 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Ammonia as N	ND	0.300	mg/L	1062108	06/21/21 12:02	NAM	EPA 350.1	
Nitrate/Nitrite as N	ND	0.250	mg/L	1062426	06/24/21 13:12	KMG	EPA 353.2	

WG-061521-NL-007

Collected: 6/15/21 11:30

W1F0542-07 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Ammonia as N	ND	0.300	mg/L	1062315	06/23/21 14:45	KMG	EPA 350.1	
Nitrate/Nitrite as N	34.3	0.250	mg/L	1062426	06/24/21 13:46	KMG	EPA 353.2	

WG-061521-NL-008

Reported: 07/01/21 16:31

NELAP Laboratory Accreditation: E-60665

Collected: 6/15/21 14:00

W1F0542-08 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	18000	0.300	mg/L	1063012	06/30/21 14:21	KMG	EPA 350.1	
Nitrate/Nitrite as N	10600	0.250	mg/L	1062426	06/24/21 15:17	KMG	EPA 353.2	

WG-061521-NL-009

Collected: 6/15/21 16:25

W1F0542-09 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	4200	0.300	mg/L	1062315	06/23/21 14:47	KMG	EPA 350.1	
Nitrate/Nitrite as N	4420	0.250	mg/L	1062426	06/24/21 13:22	KMG	EPA 353.2	

WG-061521-NL-010

Collected: 6/15/21 18:00

W1F0542-10 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	3.91	0.300	mg/L	1062311	06/23/21 12:23	KMG	EPA 350.1	
Nitrate/Nitrite as N	ND	0.250	mg/L	1062426	06/24/21 13:23	KMG	EPA 353.2	

WG-061521-NL-011

Collected: 6/15/21 19:00

W1F0542-11 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					

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Collected: 6/15/21 19:00

W1F0542-11 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	ND	0.300	mg/L	1062210	06/22/21 08:09	NAM	EPA 350.1	
Nitrate/Nitrite as N	72.5	0.250	mg/L	1062426	06/24/21 13:49	KMG	EPA 353.2	

WG-061621-NL-012

Collected: 6/16/21 10:30

W1F0542-12 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	0.310	0.300	mg/L	1062210	06/22/21 08:09	NAM	EPA 350.1	
Nitrate/Nitrite as N	ND	0.250	mg/L	1062426	06/24/21 13:24	KMG	EPA 353.2	

WG-061621-NL-013

Collected: 6/16/21 11:20

W1F0542-13 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	ND	0.300	mg/L	1062219	06/22/21 14:46	NAM	EPA 350.1	
Nitrate/Nitrite as N	7.38	0.250	mg/L	1062426	06/24/21 13:25	KMG	EPA 353.2	

WG-061621-NL-014

Collected: 6/16/21 12:35

W1F0542-14 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					

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Collected: 6/16/21 12:35

W1F0542-14 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	ND	0.300	mg/L	1062210	06/22/21 08:09	NAM	EPA 350.1	
Nitrate/Nitrite as N	ND	0.250	mg/L	1062426	06/24/21 13:26	KMG	EPA 353.2	

WG-061621-NL-015

Collected: 6/16/21 13:20

W1F0542-15 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	ND	0.300	mg/L	1062108	06/21/21 13:07	NAM	EPA 350.1	
Nitrate/Nitrite as N	1.12	0.250	mg/L	1062426	06/24/21 13:27	KMG	EPA 353.2	

WG-061621-NL-016

Collected: 6/16/21 15:30

W1F0542-16 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	29.3	0.300	mg/L	1062210	06/22/21 08:09	NAM	EPA 350.1	

WG-061621-NL-016

Collected: 6/16/21 15:30

W1F0542-16RE1 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Nitrate/Nitrite as N	ND	0.250	mg/L	1062432	06/25/21 15:06	KMG	EPA 353.2	

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WG-061621-NL-017

Collected: 6/16/21 16:40

W1F0542-17 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Ammonia as N	ND	0.300	mg/L	1062315	06/23/21 14:48	KMG	EPA 350.1	

WG-061621-NL-017

Collected: 6/16/21 16:40

W1F0542-17RE1 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Nitrate/Nitrite as N	14.1	0.250	mg/L	1062432	06/25/21 15:10	KMG	EPA 353.2	

WG-061721-NL-018

Collected: 6/17/21 9:40

W1F0542-18 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Ammonia as N	ND	0.300	mg/L	1062318	06/23/21 16:21	KMG	EPA 350.1	

WG-061721-NL-018

Reported: 07/01/21 16:31

NELAP Laboratory Accreditation: E-60665

Collected: 6/17/21 9:40
W1F0542-18RE1 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Nitrate/Nitrite as N	20.9	0.250	mg/L	1062432	06/25/21 15:15	KMG	EPA 353.2	

WG-061721-NL-019

Collected: 6/17/21 11:10
W1F0542-19 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Ammonia as N	ND	0.300	mg/L	1062318	06/23/21 16:23	KMG	EPA 350.1	

WG-061721-NL-019

Collected: 6/17/21 11:10
W1F0542-19RE1 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Nitrate/Nitrite as N	2.40	0.250	mg/L	1062432	06/25/21 15:16	KMG	EPA 353.2	

WG-061721-NL-020

Collected: 6/17/21 13:30
W1F0542-20 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Ammonia as N	ND	0.300	mg/L	1062318	06/23/21 16:24	KMG	EPA 350.1	

Reported: 07/01/21 16:31

NELAP Laboratory Accreditation: E-60665

WG-061721-NL-020
 Collected: 6/17/21 13:30
W1F0542-20RE1 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Nitrate/Nitrite as N	9.16	0.250	mg/L	1062432	06/25/21 15:17	KMG	EPA 353.2	

WG-061721-NL-021
 Collected: 6/17/21 16:30
W1F0542-21 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Ammonia as N	1.18	0.300	mg/L	1062315	06/23/21 14:50	KMG	EPA 350.1	

WG-061721-NL-021
 Collected: 6/17/21 16:30
W1F0542-21RE1 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Nitrate/Nitrite as N	ND	0.250	mg/L	1062432	06/25/21 15:18	KMG	EPA 353.2	

WG-061821-NL-022
 Collected: 6/18/21 10:50
W1F0542-22 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Ammonia as N	17300	0.300	mg/L	1063012	06/30/21 15:01	KMG	EPA 350.1	

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Reported: 07/01/21 16:31

NELAP Laboratory Accreditation: E-60665

WG-061821-NL-022
 Collected: 6/18/21 10:50
W1F0542-22RE1 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Nitrate/Nitrite as N	15100	0.250	mg/L	1062432	06/25/21 15:18	KMG	EPA 353.2	

WG-061821-NL-023
 Collected: 6/18/21 10:55
W1F0542-23 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Ammonia as N	19700	0.300	mg/L	1062210	06/22/21 08:09	NAM	EPA 350.1	

WG-061821-NL-023
 Collected: 6/18/21 10:55
W1F0542-23RE1 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Nitrate/Nitrite as N	16700	0.250	mg/L	1062432	06/25/21 15:19	KMG	EPA 353.2	

WG-061621-SM-001

Reported: 07/01/21 16:31

NELAP Laboratory Accreditation: E-60665

Collected: 6/16/21 11:40

W1F0542-24 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Ammonia as N	ND	0.300	mg/L	1062318	06/23/21 16:26	KMG	EPA 350.1	

WG-061621-SM-001

Collected: 6/16/21 11:40

W1F0542-24RE1 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Nitrate/Nitrite as N	7.86	0.250	mg/L	1062432	06/25/21 15:20	KMG	EPA 353.2	

WG-061621-SM-002

Collected: 6/16/21 12:40

W1F0542-25 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Ammonia as N	ND	0.300	mg/L	1062108	06/21/21 12:06	NAM	EPA 350.1	

WG-061621-SM-002

Collected: 6/16/21 12:40

W1F0542-25RE1 (Water)

Analyte	Result	Reporting Limit	Units	Batch	Analyzed	Analyst	Method	Qualifiers
Nitrate/Nitrite as N	142	0.250	mg/L	1062432	06/25/21 15:21	KMG	EPA 353.2	

Reported: 07/01/21 16:31

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WG-061621-SM-003

Collected: 6/16/21 13:05

W1F0542-26 (Water)

Analyte	Result	Reporting		Units	Batch	Analyzed	Analyst	Method	Qualifiers
		Limit							
Ammonia as N	ND	0.300		mg/L	1062311	06/23/21 12:27	KMG	EPA 350.1	
Nitrate/Nitrite as N	ND	0.250		mg/L	1062508	06/25/21 11:58	KMG	EPA 353.2	

WG-061621-SM-004

Collected: 6/16/21 13:45

W1F0542-27 (Water)

Analyte	Result	Reporting		Units	Batch	Analyzed	Analyst	Method	Qualifiers
		Limit							
Ammonia as N	32.4	0.300		mg/L	1062311	06/23/21 12:29	KMG	EPA 350.1	
Nitrate/Nitrite as N	348	0.250		mg/L	1062508	06/25/21 12:43	KMG	EPA 353.2	

WG-061621-SM-005

Collected: 6/16/21 13:55

W1F0542-28 (Water)

Analyte	Result	Reporting		Units	Batch	Analyzed	Analyst	Method	Qualifiers
		Limit							
Ammonia as N	ND	0.300		mg/L	1062219	06/22/21 14:44	NAM	EPA 350.1	
Nitrate/Nitrite as N	ND	0.250		mg/L	1062508	06/25/21 12:07	KMG	EPA 353.2	

WG-061621-SM-006

Reported: 07/01/21 16:31

NELAP Laboratory Accreditation: E-60665

Collected: 6/16/21 14:40

W1F0542-29 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	386	0.300	mg/L	1062108	06/21/21 13:11	NAM	EPA 350.1	
Nitrate/Nitrite as N	253	0.250	mg/L	1062508	06/25/21 12:08	KMG	EPA 353.2	

WG-061621-SM-007

Collected: 6/16/21 14:55

W1F0542-30 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	ND	0.300	mg/L	1062219	06/22/21 14:34	NAM	EPA 350.1	
Nitrate/Nitrite as N	1.76	0.250	mg/L	1062508	06/25/21 12:45	KMG	EPA 353.2	

WG-061621-SM-008

Collected: 6/16/21 15:35

W1F0542-31 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	ND	0.300	mg/L	1062219	06/22/21 14:42	NAM	EPA 350.1	
Nitrate/Nitrite as N	262	0.250	mg/L	1062508	06/25/21 12:46	KMG	EPA 353.2	

WG-061621-SM-009

Collected: 6/16/21 15:50

W1F0542-32 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					

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Collected: 6/16/21 15:50

W1F0542-32 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	4.63	0.300	mg/L	1062108	06/21/21 12:19	NAM	EPA 350.1	
Nitrate/Nitrite as N	6.27	0.250	mg/L	1062508	06/25/21 12:11	KMG	EPA 353.2	

WG-061621-SM-010

Collected: 6/16/21 17:15

W1F0542-33 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	137	0.300	mg/L	1062311	06/23/21 12:31	KMG	EPA 350.1	
Nitrate/Nitrite as N	ND	0.250	mg/L	1062508	06/25/21 12:47	KMG	EPA 353.2	

WG-061621-SM-011

Collected: 6/16/21 17:55

W1F0542-34 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	ND	0.300	mg/L	1062315	06/23/21 14:29	KMG	EPA 350.1	
Nitrate/Nitrite as N	ND	0.250	mg/L	1062508	06/25/21 12:13	KMG	EPA 353.2	

WG-061721-SM-012

Collected: 6/17/21 13:00

W1F0542-35 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					

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Collected: 6/17/21 13:00

W1F0542-35 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	4.32	0.300	mg/L	1062311	06/23/21 12:33	KMG	EPA 350.1	
Nitrate/Nitrite as N	0.971	0.250	mg/L	1062508	06/25/21 12:14	KMG	EPA 353.2	

WG-061721-SM-013

Collected: 6/17/21 14:30

W1F0542-36 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	5.77	0.300	mg/L	1062311	06/23/21 12:35	KMG	EPA 350.1	
Nitrate/Nitrite as N	2.87	0.250	mg/L	1062513	06/25/21 13:26	KMG	EPA 353.2	

WG-061721-SM-014

Collected: 6/17/21 16:00

W1F0542-37 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	31.5	0.300	mg/L	1062315	06/23/21 14:33	KMG	EPA 350.1	
Nitrate/Nitrite as N	64.9	0.250	mg/L	1062513	06/25/21 13:31	KMG	EPA 353.2	

WG-061721-SM-015

Collected: 6/17/21 16:30

W1F0542-38 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					

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Collected: 6/17/21 16:30

W1F0542-38 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	10.4	0.300	mg/L	1063012	06/30/21 14:21	NAM	EPA 350.1	
Nitrate/Nitrite as N	47.5	0.250	mg/L	1062513	06/25/21 14:08	KMG	EPA 353.2	

WG-061721-SM-016

Collected: 6/17/21 17:20

W1F0542-39 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	150	0.300	mg/L	1062315	06/23/21 14:37	KMG	EPA 350.1	
Nitrate/Nitrite as N	271	0.250	mg/L	1062513	06/25/21 13:36	KMG	EPA 353.2	

WG-061721-SM-017

Collected: 6/17/21 17:55

W1F0542-40 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	33.8	0.300	mg/L	1062315	06/23/21 14:39	KMG	EPA 350.1	
Nitrate/Nitrite as N	512	0.250	mg/L	1062513	06/25/21 14:09	KMG	EPA 353.2	

WG-061721-SM-018

Collected: 6/17/21 18:00

W1F0542-41 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					

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Collected: 6/17/21 18:00

W1F0542-41 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	35.1	0.300	mg/L	1062315	06/23/21 14:41	KMG	EPA 350.1	
Nitrate/Nitrite as N	517	0.250	mg/L	1062513	06/25/21 14:10	KMG	EPA 353.2	

WG-061821-SM-019

Collected: 6/18/21 10:45

W1F0542-42 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	0.615	0.300	mg/L	1062311	06/23/21 12:37	KMG	EPA 350.1	
Nitrate/Nitrite as N	31.4	0.250	mg/L	1062513	06/25/21 14:10	KMG	EPA 353.2	

WG-061821-SM-020

Collected: 6/18/21 10:50

W1F0542-43 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	0.631	0.300	mg/L	1062315	06/23/21 14:43	KMG	EPA 350.1	
Nitrate/Nitrite as N	30.1	0.250	mg/L	1062513	06/25/21 14:11	KMG	EPA 353.2	

WG-061821-SM-021

Collected: 6/18/21 11:35

W1F0542-44 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					

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Collected: 6/18/21 11:35

W1F0542-44 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	ND	0.300	mg/L	1062219	06/22/21 14:37	NAM	EPA 350.1	
Nitrate/Nitrite as N	0.893	0.250	mg/L	1062513	06/25/21 13:41	KMG	EPA 353.2	

WG-061821-SM-022

Collected: 6/18/21 11:40

W1F0542-45 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	1.82	0.300	mg/L	1062318	06/23/21 16:28	KMG	EPA 350.1	
Nitrate/Nitrite as N	0.829	0.250	mg/L	1062513	06/25/21 13:42	KMG	EPA 353.2	

WG-061821-SM-023

Collected: 6/18/21 12:35

W1F0542-46 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	1.80	0.300	mg/L	1062311	06/23/21 12:38	KMG	EPA 350.1	
Nitrate/Nitrite as N	ND	0.250	mg/L	1062518	06/25/21 15:58	KMG	EPA 353.2	

WG-061821-SM-024

Collected: 6/18/21 13:40

W1F0542-47 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					

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Collected: 6/18/21 13:40

W1F0542-47 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	7.28	0.300	mg/L	1062311	06/23/21 12:40	KMG	EPA 350.1	
Nitrate/Nitrite as N	42.0	0.250	mg/L	1062518	06/25/21 16:32	KMG	EPA 353.2	

WG-061821-SM-025

Collected: 6/18/21 13:45

W1F0542-48 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	7.80	0.300	mg/L	1062108	06/21/21 12:22	NAM	EPA 350.1	
Nitrate/Nitrite as N	51.1	0.250	mg/L	1062518	06/25/21 16:02	KMG	EPA 353.2	

WG-061821-SM-026

Collected: 6/18/21 14:15

W1F0542-49 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					
Ammonia as N	44200	0.300	mg/L	1062210	06/22/21 08:09	NAM	EPA 350.1	
Nitrate/Nitrite as N	32600	0.250	mg/L	1062518	06/25/21 16:34	KMG	EPA 353.2	

WG-061821-SM-027

Collected: 6/18/21 14:20

W1F0542-50 (Water)

Analyte	Result	Reporting		Batch	Analyzed	Analyst	Method	Qualifiers
		Limit	Units					

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Collected: 6/18/21 14:20

W1F0542-50 (Water)

Analyte	Result	Reporting		Units	Batch	Analyzed	Analyst	Method	Qualifiers
		Limit							
Ammonia as N	41200	0.300		mg/L	1062210	06/22/21 08:09	NAM	EPA 350.1	
Nitrate/Nitrite as N	29400	0.250		mg/L	1062518	06/25/21 16:35	KMG	EPA 353.2	

WG-061821-NC-028

Collected: 6/18/21 16:20

W1F0542-51 (Water)

Analyte	Result	Reporting		Units	Batch	Analyzed	Analyst	Method	Qualifiers
		Limit							
Ammonia as N	62.6	0.300		mg/L	1062210	06/22/21 08:09	NAM	EPA 350.1	
Nitrate/Nitrite as N	164	0.250		mg/L	1062518	06/25/21 16:05	KMG	EPA 353.2	

Reported: 07/01/21 16:31

NELAP Laboratory Accreditation: E-60665

General Chemistry Parameters - Quality Control
City of Lawrence

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch 1062108 - Ammonia (EPA 350.1)										
Blank (1062108-BLK1)				Prepared & Analyzed: 06/21/21						
Ammonia as N	ND	0.300	mg/L							
Blank (1062108-BLK2)				Prepared & Analyzed: 06/21/21						
Ammonia as N	ND	0.300	mg/L							
LCS (1062108-BS1)				Prepared & Analyzed: 06/21/21						
Ammonia as N	4.92	0.300	mg/L	5.00		98.5	90-110			
LCS (1062108-BS2)				Prepared & Analyzed: 06/21/21						
Ammonia as N	4.98	0.300	mg/L	5.00		99.7	90-110			
Duplicate (1062108-DUP1)				Source: W1F0542-06		Prepared & Analyzed: 06/21/21				
Ammonia as N	ND	0.300	mg/L		ND				20	
Matrix Spike (1062108-MS1)				Source: W1F0542-25		Prepared & Analyzed: 06/21/21				
Ammonia as N	5.34	0.300	mg/L	5.30	ND	101	90-110			
Batch 1062210 - Ammonia (EPA 350.1)										
Blank (1062210-BLK1)				Prepared & Analyzed: 06/22/21						
Ammonia as N	ND	0.300	mg/L							
Blank (1062210-BLK2)				Prepared & Analyzed: 06/22/21						
Ammonia as N	ND	0.300	mg/L							
Blank (1062210-BLK3)				Prepared & Analyzed: 06/22/21						
Ammonia as N	ND	0.300	mg/L							

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General Chemistry Parameters - Quality Control
City of Lawrence

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch 1062210 - Ammonia (EPA 350.1)										
Blank (1062210-BLK4)				Prepared & Analyzed: 06/22/21						
Ammonia as N	ND	0.300	mg/L							
LCS (1062210-BS1)				Prepared & Analyzed: 06/22/21						
Ammonia as N	4.90	0.300	mg/L	5.00		98.1	90-110			
LCS (1062210-BS2)				Prepared & Analyzed: 06/22/21						
Ammonia as N	5.01	0.300	mg/L	5.00		100	90-110			
LCS (1062210-BS3)				Prepared & Analyzed: 06/22/21						
Ammonia as N	4.99	0.300	mg/L	5.00		99.8	90-110			
LCS (1062210-BS4)				Prepared & Analyzed: 06/22/21						
Ammonia as N	5.05	0.300	mg/L	5.00		101	90-110			
Duplicate (1062210-DUP1)				Source: W1F0542-11		Prepared & Analyzed: 06/22/21				
Ammonia as N	ND	0.300	mg/L		ND				20	
Matrix Spike (1062210-MS1)				Source: W1F0542-12		Prepared & Analyzed: 06/22/21				
Ammonia as N	5.74	0.300	mg/L	5.30	0.310	102	90-110			
Batch 1062219 - Ammonia (EPA 350.1)										
Blank (1062219-BLK1)				Prepared & Analyzed: 06/22/21						
Ammonia as N	ND	0.300	mg/L							
Blank (1062219-BLK2)				Prepared & Analyzed: 06/22/21						
Ammonia as N	ND	0.300	mg/L							

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General Chemistry Parameters - Quality Control
City of Lawrence

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch 1062219 - Ammonia (EPA 350.1)										
Blank (1062219-BLK3)				Prepared & Analyzed: 06/22/21						
Ammonia as N	ND	0.300	mg/L							
Blank (1062219-BLK4)				Prepared & Analyzed: 06/22/21						
Ammonia as N	ND	0.300	mg/L							
LCS (1062219-BS1)				Prepared & Analyzed: 06/22/21						
Ammonia as N	5.14	0.300	mg/L	5.00		103	90-110			
LCS (1062219-BS2)				Prepared & Analyzed: 06/22/21						
Ammonia as N	5.10	0.300	mg/L	5.00		102	90-110			
LCS (1062219-BS3)				Prepared & Analyzed: 06/22/21						
Ammonia as N	5.10	0.300	mg/L	5.00		102	90-110			
LCS (1062219-BS4)				Prepared & Analyzed: 06/22/21						
Ammonia as N	5.13	0.300	mg/L	5.00		103	90-110			
Duplicate (1062219-DUP1)		Source: W1F0542-02		Prepared & Analyzed: 06/22/21						
Ammonia as N	ND	0.300	mg/L		ND				20	
Matrix Spike (1062219-MS1)		Source: W1F0542-04		Prepared & Analyzed: 06/22/21						
Ammonia as N	5.94	0.300	mg/L	5.30	ND	112	90-110			QM-07
Batch 1062311 - Ammonia (EPA 350.1)										
Blank (1062311-BLK1)				Prepared & Analyzed: 06/23/21						
Ammonia as N	ND	0.300	mg/L							

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General Chemistry Parameters - Quality Control
City of Lawrence

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch 1062311 - Ammonia (EPA 350.1)										
Blank (1062311-BLK2)				Prepared & Analyzed: 06/23/21						
Ammonia as N	ND	0.300	mg/L							
LCS (1062311-BS1)				Prepared & Analyzed: 06/23/21						
Ammonia as N	5.29	0.300	mg/L	5.00		106	90-110			
LCS (1062311-BS2)				Prepared & Analyzed: 06/23/21						
Ammonia as N	5.28	0.300	mg/L	5.00		106	90-110			
Duplicate (1062311-DUP1)				Source: W1F0542-04RE1		Prepared & Analyzed: 06/23/21				
Ammonia as N	3.32	0.300	mg/L		3.31			0.513	20	
Matrix Spike (1062311-MS1)				Source: W1F0542-10		Prepared & Analyzed: 06/23/21				
Ammonia as N	9.17	0.300	mg/L	5.30	3.91	99.3	90-110			
Batch 1062315 - Ammonia (EPA 350.1)										
Blank (1062315-BLK1)				Prepared & Analyzed: 06/23/21						
Ammonia as N	ND	0.300	mg/L							
Blank (1062315-BLK2)				Prepared & Analyzed: 06/23/21						
Ammonia as N	ND	0.300	mg/L							
LCS (1062315-BS1)				Prepared & Analyzed: 06/23/21						
Ammonia as N	5.37	0.300	mg/L	5.00		107	90-110			
LCS (1062315-BS2)				Prepared & Analyzed: 06/23/21						
Ammonia as N	5.37	0.300	mg/L	5.00		107	90-110			

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General Chemistry Parameters - Quality Control
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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch 1062315 - Ammonia (EPA 350.1)										
Duplicate (1062315-DUP1)		Source: W1F0542-37			Prepared & Analyzed: 06/23/21					
Ammonia as N	31.3	0.300	mg/L		31.5			0.742	20	
Matrix Spike (1062315-MS1)		Source: W1F0542-34			Prepared & Analyzed: 06/23/21					
Ammonia as N	5.19	0.300	mg/L	5.30	ND	97.9	90-110			
Batch 1062318 - Ammonia (EPA 350.1)										
Blank (1062318-BLK1)		Prepared & Analyzed: 06/23/21								
Ammonia as N	ND	0.300	mg/L							
Blank (1062318-BLK2)		Prepared & Analyzed: 06/23/21								
Ammonia as N	ND	0.300	mg/L							
Blank (1062318-BLK3)		Prepared & Analyzed: 06/23/21								
Ammonia as N	ND	0.300	mg/L							
LCS (1062318-BS1)		Prepared & Analyzed: 06/23/21								
Ammonia as N	5.40	0.300	mg/L	5.00		108	90-110			
LCS (1062318-BS2)		Prepared & Analyzed: 06/23/21								
Ammonia as N	5.45	0.300	mg/L	5.00		109	90-110			
LCS (1062318-BS3)		Prepared & Analyzed: 06/23/21								
Ammonia as N	4.98	0.300	mg/L	5.00		99.7	90-110			
Duplicate (1062318-DUP1)		Source: W1F0369-01			Prepared & Analyzed: 06/23/21					
Ammonia as N	0.0740	0.300	mg/L		0.0930			22.8	20	

Reported: 07/01/21 16:31

NELAP Laboratory Accreditation: E-60665

General Chemistry Parameters - Quality Control
City of Lawrence

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch 1062318 - Ammonia (EPA 350.1)										
Matrix Spike (1062318-MS1)		Source: W1F0369-02			Prepared & Analyzed: 06/23/21					
Ammonia as N	16.9	0.300	mg/L	5.30	11.8	97.3	90-110			
Batch 1062410 - Nitrate+Nitrite (EPA 353.2)										
Blank (1062410-BLK1)		Prepared & Analyzed: 06/24/21								
Nitrate/Nitrite as N	ND	0.250	mg/L							
Blank (1062410-BLK2)		Prepared & Analyzed: 06/24/21								
Nitrate/Nitrite as N	ND	0.250	mg/L							
Blank (1062410-BLK3)		Prepared & Analyzed: 06/24/21								
Nitrate/Nitrite as N	ND	0.250	mg/L							
Blank (1062410-BLK4)		Prepared & Analyzed: 06/24/21								
Nitrate/Nitrite as N	ND	0.250	mg/L							
Blank (1062410-BLK5)		Prepared & Analyzed: 06/24/21								
Nitrate/Nitrite as N	ND	0.250	mg/L							
Blank (1062410-BLK6)		Prepared & Analyzed: 06/24/21								
Nitrate/Nitrite as N	ND	0.250	mg/L							
LCS (1062410-BS1)		Prepared & Analyzed: 06/24/21								
Nitrate/Nitrite as N	5.73	0.250	mg/L	5.56		103	90-110			
LCS (1062410-BS2)		Prepared & Analyzed: 06/24/21								
Nitrate/Nitrite as N	5.61	0.250	mg/L	5.56		101	90-110			

Reported: 07/01/21 16:31

NELAP Laboratory Accreditation: E-60665

General Chemistry Parameters - Quality Control
City of Lawrence

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch 1062410 - Nitrate+Nitrite (EPA 353.2)										
LCS (1062410-BS3)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	5.67	0.250	mg/L	5.56		102	90-110			
LCS (1062410-BS4)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	5.67	0.250	mg/L	5.56		102	90-110			
LCS (1062410-BS5)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	5.69	0.250	mg/L	5.56		102	90-110			
LCS (1062410-BS6)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	5.74	0.250	mg/L	5.56		103	90-110			
Duplicate (1062410-DUP1)		Source: W1F0369-02		Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	12.9	0.250	mg/L		12.5			2.94	20	
Matrix Spike (1062410-MS1)		Source: W1F0369-01		Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	14.5	0.250	mg/L	7.50	7.29	95.5	90-110			
Batch 1062426 - Nitrate+Nitrite (EPA 353.2)										
Blank (1062426-BLK1)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	ND	0.250	mg/L							
Blank (1062426-BLK2)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	ND	0.250	mg/L							
Blank (1062426-BLK3)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	26.5	0.250	mg/L							

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NELAP Laboratory Accreditation: E-60665

General Chemistry Parameters - Quality Control
City of Lawrence

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch 1062426 - Nitrate+Nitrite (EPA 353.2)										
Blank (1062426-BLK4)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	ND	0.250	mg/L							
Blank (1062426-BLK5)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	ND	0.250	mg/L							
Blank (1062426-BLK6)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	ND	0.250	mg/L							
Blank (1062426-BLK7)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	ND	0.250	mg/L							
LCS (1062426-BS1)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	5.71	0.250	mg/L	5.56		103	90-110			
LCS (1062426-BS2)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	5.73	0.250	mg/L	5.56		103	90-110			
LCS (1062426-BS3)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	11.7	0.250	mg/L	5.56		210	90-110			
LCS (1062426-BS4)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	5.22	0.250	mg/L	5.56		93.8	90-110			
LCS (1062426-BS5)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	4.93	0.250	mg/L	5.56		88.6	90-110			
LCS (1062426-BS6)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	4.87	0.250	mg/L	5.56		87.6	90-110			

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NELAP Laboratory Accreditation: E-60665

General Chemistry Parameters - Quality Control
City of Lawrence

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch 1062426 - Nitrate+Nitrite (EPA 353.2)										
LCS (1062426-BS7)				Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	5.18	0.250	mg/L	5.56		93.1	90-110			
Duplicate (1062426-DUP1)				Source: W1F0542-07 Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	33.6	0.250	mg/L		34.3			2.00	20	
Matrix Spike (1062426-MS1)				Source: W1F0542-06 Prepared & Analyzed: 06/24/21						
Nitrate/Nitrite as N	7.93	0.250	mg/L	7.50	ND	106	90-110			
Batch 1062432 - Nitrate+Nitrite (EPA 353.2)										
Blank (1062432-BLK4)				Prepared: 06/24/21 Analyzed: 06/25/21						
Nitrate/Nitrite as N	ND	0.250	mg/L							
Blank (1062432-BLK5)				Prepared: 06/24/21 Analyzed: 06/25/21						
Nitrate/Nitrite as N	ND	0.250	mg/L							
LCS (1062432-BS4)				Prepared: 06/24/21 Analyzed: 06/25/21						
Nitrate/Nitrite as N	5.37	0.250	mg/L	5.56		96.5	90-110			
LCS (1062432-BS5)				Prepared: 06/24/21 Analyzed: 06/25/21						
Nitrate/Nitrite as N	5.28	0.250	mg/L	5.56		95.1	90-110			
Duplicate (1062432-DUP2)				Source: W1F0542-16RE1 Prepared: 06/24/21 Analyzed: 06/25/21						
Nitrate/Nitrite as N	ND	0.250	mg/L		ND				20	
Matrix Spike (1062432-MS2)				Source: W1F0542-17RE1 Prepared: 06/24/21 Analyzed: 06/25/21						
Nitrate/Nitrite as N	21.5	0.250	mg/L	7.50	14.1	98.4	90-110			

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NELAP Laboratory Accreditation: E-60665

General Chemistry Parameters - Quality Control
City of Lawrence

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch 1062508 - Nitrate+Nitrite (EPA 353.2)										
Blank (1062508-BLK1)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	ND	0.250	mg/L							
Blank (1062508-BLK2)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	ND	0.250	mg/L							
Blank (1062508-BLK3)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	ND	0.250	mg/L							
LCS (1062508-BS1)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	5.46	0.250	mg/L	5.56		98.3	90-110			
LCS (1062508-BS2)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	5.46	0.250	mg/L	5.56		98.3	90-110			
LCS (1062508-BS3)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	5.45	0.250	mg/L	5.56		98.1	90-110			
Duplicate (1062508-DUP1)		Source: W1F0542-27		Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	376	0.250	mg/L		348			7.75	20	
Matrix Spike (1062508-MS1)		Source: W1F0542-26		Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	7.00	0.250	mg/L	7.50	ND	93.4	90-110			
Batch 1062513 - Nitrate+Nitrite (EPA 353.2)										
Blank (1062513-BLK1)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	ND	0.250	mg/L							

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NELAP Laboratory Accreditation: E-60665

General Chemistry Parameters - Quality Control
City of Lawrence

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch 1062513 - Nitrate+Nitrite (EPA 353.2)										
Blank (1062513-BLK2)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	ND	0.250	mg/L							
Blank (1062513-BLK3)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	ND	0.250	mg/L							
LCS (1062513-BS1)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	5.41	0.250	mg/L	5.56		97.3	90-110			
LCS (1062513-BS2)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	5.44	0.250	mg/L	5.56		97.8	90-110			
LCS (1062513-BS3)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	5.37	0.250	mg/L	5.56		96.5	90-110			
Duplicate (1062513-DUP1)				Source: W1F0542-37		Prepared & Analyzed: 06/25/21				
Nitrate/Nitrite as N	63.1	0.250	mg/L		64.9			2.86	20	
Matrix Spike (1062513-MS1)				Source: W1F0542-36		Prepared & Analyzed: 06/25/21				
Nitrate/Nitrite as N	10.3	0.250	mg/L	7.50	2.87	99.0	90-110			
Batch 1062518 - Nitrate+Nitrite (EPA 353.2)										
Blank (1062518-BLK1)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	ND	0.250	mg/L							
Blank (1062518-BLK2)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	ND	0.250	mg/L							

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NELAP Laboratory Accreditation: E-60665

General Chemistry Parameters - Quality Control
City of Lawrence

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch 1062518 - Nitrate+Nitrite (EPA 353.2)										
Blank (1062518-BLK3)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	ND	0.250	mg/L							
LCS (1062518-BS1)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	5.69	0.250	mg/L	5.56		102	90-110			
LCS (1062518-BS2)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	5.38	0.250	mg/L	5.56		96.8	90-110			
LCS (1062518-BS3)				Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	5.17	0.250	mg/L	5.56		93.1	90-110			
Duplicate (1062518-DUP1)		Source: W1F0542-46		Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	ND	0.250	mg/L		ND				20	
Matrix Spike (1062518-MS1)		Source: W1F0542-47		Prepared & Analyzed: 06/25/21						
Nitrate/Nitrite as N	49.4	0.250	mg/L	7.50	42.0	97.5	90-110			
Batch 1063012 - Ammonia (EPA 350.1)										
Blank (1063012-BLK1)				Prepared & Analyzed: 06/30/21						
Ammonia as N	ND	0.300	mg/L							
Blank (1063012-BLK2)				Prepared & Analyzed: 06/30/21						
Ammonia as N	ND	0.300	mg/L							
Blank (1063012-BLK3)				Prepared & Analyzed: 06/30/21						
Ammonia as N	ND	0.300	mg/L							

Reported: 07/01/21 16:31

NELAP Laboratory Accreditation: E-60665

General Chemistry Parameters - Quality Control
City of Lawrence

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch 1063012 - Ammonia (EPA 350.1)										
LCS (1063012-BS1)				Prepared & Analyzed: 06/30/21						
Ammonia as N	4.93	0.300	mg/L	5.00		98.7	90-110			
LCS (1063012-BS2)				Prepared & Analyzed: 06/30/21						
Ammonia as N	5.30	0.300	mg/L	5.00		106	90-110			
LCS (1063012-BS3)				Prepared & Analyzed: 06/30/21						
Ammonia as N	5.12	0.300	mg/L	5.00		102	90-110			
Duplicate (1063012-DUP1)				Source: W1F0640-01		Prepared & Analyzed: 06/30/21				
Ammonia as N	8.08	0.300	mg/L		8.05			0.273	20	
Matrix Spike (1063012-MS1)				Source: W1F0641-01		Prepared & Analyzed: 06/30/21				
Ammonia as N	13.7	0.300	mg/L	5.30	7.98	108	90-110			

Reported: 07/01/21 16:31

NELAP Laboratory Accreditation: E-60665

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Work Order #::		Sample ID	Matrix (DW = Drinking Water WT = Water WW = Wastewater S = Soil / Solid/Sludge O = Other)	Sample Type (G=Grab) (C=Composite)	COLLECTION		# Containers	Unpreserved Sulfuric Acid-H ₂ SO ₄ [Micro] Sterile - Na ₂ S ₂ O ₃	PRESERVATION	ANALYSIS REQUEST	Comments
					Date	Time					
-01	W4-060421-NL-001	WT	GA	6/14	14:50		X			Alkalinity	
-02	W4-060421-NL-002				16:00					Ammonia (NH ₃ as N)	
-03	W4-060421-NL-003				17:15					BOD ₅	
-04	W4-060421-NL-004				18:30					CBOD ₅	
-05	W4-060421-NL-005				19:05					Calcium Hardness	
-06	W4-060521-NL-006			6/15	10:30					COD	
-07	W4-060521-NL-007				11:30					Conductivity	
-08	W4-060521-NL-008				14:00					<i>E. coli</i>	

NOTE: If person collecting the sample also analyzes the sample, relinquished information is not required.

PERSON COLLECTING THE SAMPLE (PRINT)	REINQUISHED BY	Date	Time	ACCEPTED BY	Date	Time
N. L. S. H. A. D. S.	<i>[Signature]</i>	6/18	16:30	<i>[Signature]</i> T. 2005	11-18-2	1642
				<i>[Signature]</i>	06/10/02	0610

Sample Condition Upon Receipt					
Trip Blank Temp: _____ °C					
Were Samples:		Y	N	NA	Comment
Received on Ice?	☒	☐	☐	☐	
Intact?	☒	☐	☐	☐	
Preserved within 15 min of collection?	☐	☐	☒	☐	
Analyzed within 15 min of collection?	☐	☐	☒	☐	

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[illegible]

NOTE: If person collecting the sample also analyzes the sample, relinquished information is not required

Sample Condition Upon Receipt				
Trip Blank Temp: _____ °C				
Were Samples:		Y	N	NA
Received on Ice?				
Intact?				
Preserved within 15 min of collection?				
Analyzed within 15 min of collection?				

702

NOTE: If person collecting the sample also analyzes the sample, relinquished information is not required

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PERSON COLLECTING THE SAMPLE (PRINT)	RELINQUISHED BY	Date	Time	ACCEPTED BY	Date	Time

[illegible]

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PERSON COLLECTING THE SAMPLE (PRINT)	RELINQUISHED BY	Date	Time	ACCEPTED BY	Date	Time

Analyzed within 15 min of collection?			
---------------------------------------	--	--	--

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PERSON COLLECTING THE SAMPLE (PRINT)	RELINQUISHED BY	Date	Time	ACCEPTED BY	Date	Time

NOTE: If space is not sufficient, attach additional sheets.

Analysed within 15 min of collection?	Yes	No
1	1	0
2	1	0
3	1	0
4	1	0
5	1	0
6	1	0
7	1	0
8	1	0
9	1	0
10	1	0
11	1	0
12	1	0
13	1	0
14	1	0
15	1	0
16	1	0
17	1	0
18	1	0
19	1	0
20	1	0
21	1	0
22	1	0
23	1	0
24	1	0
25	1	0
26	1	0
27	1	0
28	1	0
29	1	0
30	1	0
31	1	0
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34	1	0
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38	1	0
39	1	0
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82	1	0
83	1	0
84	1	0
85	1	0
86	1	0
87	1	0
88	1	0
89	1	0
90	1	0
91	1	0
92	1	0
93	1	0
94	1	0
95	1	0
96	1	0
97	1	0
98	1	0
99	1	0
100	1	0

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CV

PERSON COLLECTING THE SAMPLE (PRINT)	RELINQUISHED BY	Date	Time	ACCEPTED BY	Date	Time

Received on Ice?
Intact?
Preserved within 15 min of collection?
Analyzed within 15 min of collection?

June 30, 2021

Jeff Scott
City of Lawrence
6 E. 6th St
PO Box 708
Lawrence, KS 66044

RE: Project: LAWRENCE GW
Pace Project No.: 60372697

Dear Jeff Scott:

Enclosed are the analytical results for sample(s) received by the laboratory on June 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Kansas City

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Hank Kapka
hank.kapka@pacelabs.com
(913)599-5665
PM Lab Management

Enclosures

cc: Nick Laskaras, GHD Services, Inc.
Water Quality
Carolyn Woodhead, City of Lawrence
Karen Zimmerly, City of Lawrence



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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CERTIFICATIONS

Project: LAWRENCE GW

Pace Project No.: 60372697

Pace Analytical Services Kansas

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Inorganic Drinking Water Certification #: 10090

Arkansas Drinking Water

Arkansas Certification #: 20-020-0

Arkansas Drinking Water

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212020-2

Oklahoma Certification #: 9205/9935

Florida: Cert E871149 SEKS WET

Texas Certification #: T104704407-19-12

Utah Certification #: KS000212019-9

Illinois Certification #: 004592

Kansas Field Laboratory Accreditation: # E-92587

Missouri SEKS Micro Certification: 10070

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: LAWRENCE GW

Pace Project No.: 60372697

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60372697001	WG-061821-SM-019A	Water	06/18/21 10:45	06/18/21 16:00
60372697002	WG-061821-SM-021A	Water	06/18/21 11:35	06/18/21 16:00
60372697003	WG-061821-SM-024A	Water	06/18/21 13:40	06/18/21 16:00
60372697004	WG-061821-SM-026A	Water	06/18/21 14:15	06/18/21 16:00
60372697005	WG-061821-NL-022A	Water	06/18/21 10:50	06/18/21 16:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: LAWRENCE GW

Pace Project No.: 60372697

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60372697001	WG-061821-SM-019A	EPA 350.1	JWR	1	PASI-K
		EPA 353.2	JDS	3	PASI-K
60372697002	WG-061821-SM-021A	EPA 350.1	JWR	1	PASI-K
		EPA 353.2	JDS	3	PASI-K
60372697003	WG-061821-SM-024A	EPA 350.1	JWR	1	PASI-K
		EPA 353.2	JDS	3	PASI-K
60372697004	WG-061821-SM-026A	EPA 350.1	JWR	1	PASI-K
		EPA 353.2	JDS	3	PASI-K
60372697005	WG-061821-NL-022A	EPA 350.1	JWR	1	PASI-K
		EPA 353.2	JDS	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: LAWRENCE GW

Pace Project No.: 60372697

Sample: WG-061821-SM-019A		Lab ID: 60372697001		Collected: 06/18/21 10:45		Received: 06/18/21 16:00		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
350.1 Ammonia		Analytical Method: EPA 350.1 Pace Analytical Services - Kansas City							
Nitrogen, Ammonia		0.65	mg/L	0.10	1		06/24/21 14:42	7664-41-7	
353.2 Nitrogen, NO2/NO3 unpres		Analytical Method: EPA 353.2 Pace Analytical Services - Kansas City							
Nitrogen, NO2 plus NO3		39.4	mg/L	2.0	20		06/19/21 12:39		1e,CH
Nitrogen, NO2 plus NO3		33.2	mg/L	2.0	20		06/23/21 14:05		H5
Nitrogen, Nitrate		38.0	mg/L	2.0	20		06/19/21 12:39	14797-55-8	
Nitrogen, Nitrate		32.7	mg/L	2.0	20		06/23/21 14:05	14797-55-8	H5
Nitrogen, Nitrite		ND	mg/L	2.0	20		06/19/21 12:39	14797-65-0	
Nitrogen, Nitrite		ND	mg/L	2.0	20		06/23/21 14:05	14797-65-0	H5

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ANALYTICAL RESULTS

Project: LAWRENCE GW

Pace Project No.: 60372697

Sample: WG-061821-SM-021A		Lab ID: 60372697002		Collected: 06/18/21 11:35		Received: 06/18/21 16:00		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
350.1 Ammonia		Analytical Method: EPA 350.1 Pace Analytical Services - Kansas City							
Nitrogen, Ammonia		1.9	mg/L	0.10	1		06/24/21 15:32	7664-41-7	
353.2 Nitrogen, NO2/NO3 unpres		Analytical Method: EPA 353.2 Pace Analytical Services - Kansas City							
Nitrogen, NO2 plus NO3		1.2	mg/L	0.50	5		06/19/21 12:51		1e,CH
Nitrogen, NO2 plus NO3		2.8	mg/L	0.20	2		06/23/21 14:10		H5
Nitrogen, Nitrate		1.2	mg/L	0.50	5		06/19/21 12:51	14797-55-8	
Nitrogen, Nitrate		2.4	mg/L	0.20	2		06/23/21 14:10	14797-55-8	H5
Nitrogen, Nitrite		ND	mg/L	0.50	5		06/19/21 12:51	14797-65-0	
Nitrogen, Nitrite		0.46	mg/L	0.20	2		06/23/21 14:10	14797-65-0	H5

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ANALYTICAL RESULTS

Project: LAWRENCE GW

Pace Project No.: 60372697

Sample: WG-061821-SM-024A		Lab ID: 60372697003		Collected: 06/18/21 13:40		Received: 06/18/21 16:00		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
350.1 Ammonia		Analytical Method: EPA 350.1 Pace Analytical Services - Kansas City							
Nitrogen, Ammonia	7.5	mg/L	0.10	1			06/24/21 14:48	7664-41-7	
353.2 Nitrogen, NO2/NO3 unpres		Analytical Method: EPA 353.2 Pace Analytical Services - Kansas City							
Nitrogen, NO2 plus NO3	53.9	mg/L	2.0	20			06/19/21 12:52		CH
Nitrogen, NO2 plus NO3	46.2	mg/L	2.0	20			06/23/21 14:08		H5
Nitrogen, Nitrate	52.5	mg/L	2.0	20			06/19/21 12:52	14797-55-8	
Nitrogen, Nitrate	45.5	mg/L	2.0	20			06/23/21 14:08	14797-55-8	H5
Nitrogen, Nitrite	ND	mg/L	2.0	20			06/19/21 12:52	14797-65-0	
Nitrogen, Nitrite	ND	mg/L	2.0	20			06/23/21 14:08	14797-65-0	H5

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ANALYTICAL RESULTS

Project: LAWRENCE GW

Pace Project No.: 60372697

Sample: WG-061821-SM-026A		Lab ID: 60372697004		Collected: 06/18/21 14:15		Received: 06/18/21 16:00		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
350.1 Ammonia		Analytical Method: EPA 350.1 Pace Analytical Services - Kansas City							
Nitrogen, Ammonia		39600	mg/L	500	5000		06/24/21 16:52	7664-41-7	
353.2 Nitrogen, NO2/NO3 unpres		Analytical Method: EPA 353.2 Pace Analytical Services - Kansas City							
Nitrogen, NO2 plus NO3		44400	mg/L	1000	10000		06/19/21 12:53		1e,CH, M1
Nitrogen, NO2 plus NO3		45700	mg/L	1000	10000		06/23/21 14:08		H5
Nitrogen, Nitrate		38900	mg/L	1000	10000		06/19/21 12:53	14797-55-8	H5
Nitrogen, Nitrate		45700	mg/L	1000	10000		06/23/21 14:08	14797-55-8	H5
Nitrogen, Nitrite		5550	mg/L	1000	10000		06/19/21 12:53	14797-65-0	M1
Nitrogen, Nitrite		ND	mg/L	1000	10000		06/23/21 14:08	14797-65-0	H5

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ANALYTICAL RESULTS

Project: LAWRENCE GW

Pace Project No.: 60372697

Sample: WG-061821-NL-022A		Lab ID: 60372697005		Collected: 06/18/21 10:50		Received: 06/18/21 16:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
350.1 Ammonia		Analytical Method: EPA 350.1 Pace Analytical Services - Kansas City							
Nitrogen, Ammonia	17800	mg/L	200	2000		06/24/21 16:55	7664-41-7		
353.2 Nitrogen, NO2/NO3 unpres		Analytical Method: EPA 353.2 Pace Analytical Services - Kansas City							
Nitrogen, NO2 plus NO3	28500	mg/L	1000	10000		06/23/21 14:06		H1	
Nitrogen, Nitrate	28500	mg/L	1000	10000		06/23/21 14:06	14797-55-8	H1	
Nitrogen, Nitrite	ND	mg/L	1000	10000		06/23/21 14:06	14797-65-0	H1	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: LAWRENCE GW

Pace Project No.: 60372697

QC Batch:	728464	Analysis Method:	EPA 350.1
QC Batch Method:	EPA 350.1	Analysis Description:	350.1 Ammonia
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60372697001, 60372697002, 60372697003, 60372697004, 60372697005

METHOD BLANK: 2926081

Matrix: Water

Associated Lab Samples: 60372697001, 60372697002, 60372697003, 60372697004, 60372697005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	06/24/21 14:22	

LABORATORY CONTROL SAMPLE: 2926082

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.0	100	90-110	

MATRIX SPIKE SAMPLE: 2926083

Parameter	Units	60372428005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	ND	5	5.2	102	90-110	

MATRIX SPIKE SAMPLE: 2926085

Parameter	Units	60372697004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	39600	25000	62700	93	90-110	

SAMPLE DUPLICATE: 2926084

Parameter	Units	60372428006 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Ammonia	mg/L	0.49	0.47	4	18	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: LAWRENCE GW
Pace Project No.: 60372697

QC Batch:	727429	Analysis Method:	EPA 353.2
QC Batch Method:	EPA 353.2	Analysis Description:	353.2 Nitrate + Nitrite, Unpres.
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60372697001, 60372697002, 60372697003, 60372697004

METHOD BLANK: 2922559 Matrix: Water
Associated Lab Samples: 60372697001, 60372697002, 60372697003, 60372697004, 60372697005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Nitrate	mg/L	ND	0.10	06/19/21 10:58	
Nitrogen, Nitrite	mg/L	ND	0.10	06/19/21 10:58	
Nitrogen, NO2 plus NO3	mg/L	ND	0.10	06/19/21 10:58	

LABORATORY CONTROL SAMPLE: 2922560

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	1	1.0	103	70-130	
Nitrogen, Nitrite	mg/L	1	1.0	100	90-110	
Nitrogen, NO2 plus NO3	mg/L	2	2.0	102	90-110	

MATRIX SPIKE SAMPLE: 2922561

Parameter	Units	60372728005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	ND	1	0.90	90	70-130	
Nitrogen, Nitrite	mg/L	0.12	1	1.1	94	90-110	
Nitrogen, NO2 plus NO3	mg/L	ND	2	2.0	94	90-110	

MATRIX SPIKE SAMPLE: 2922563

Parameter	Units	60372697004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	45700	20000	86100	236	70-130	
Nitrogen, Nitrite	mg/L	ND	20000	834J	-24	90-110	M1
Nitrogen, NO2 plus NO3	mg/L	45700	40000	86100	104	90-110	CH,E,M1

SAMPLE DUPLICATE: 2922562

Parameter	Units	60372728007 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate	mg/L	ND	ND		20	
Nitrogen, Nitrite	mg/L	0.11	0.11	1	20	
Nitrogen, NO2 plus NO3	mg/L	ND	ND		20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: LAWRENCE GW
Pace Project No.: 60372697

QC Batch: 728227 Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, Unpres.
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60372697001, 60372697002, 60372697003, 60372697004, 60372697005

METHOD BLANK: 2925043 Matrix: Water
Associated Lab Samples: 60372697001, 60372697002, 60372697003, 60372697004, 60372697005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Nitrate	mg/L	ND	0.10	06/23/21 14:03	
Nitrogen, Nitrite	mg/L	ND	0.10	06/23/21 14:03	
Nitrogen, NO2 plus NO3	mg/L	ND	0.10	06/23/21 14:03	

LABORATORY CONTROL SAMPLE: 2925044

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	1	1.0	103	70-130	
Nitrogen, Nitrite	mg/L	1	0.94	94	90-110	
Nitrogen, NO2 plus NO3	mg/L	2	2.0	99	90-110	

MATRIX SPIKE SAMPLE: 2925045

Parameter	Units	60372956001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	10.5	5	14.7	83	70-130	
Nitrogen, Nitrite	mg/L	ND	5	5.0	99	90-110	
Nitrogen, NO2 plus NO3	mg/L	10.5	10	19.7	92	90-110	

MATRIX SPIKE SAMPLE: 2925047

Parameter	Units	60372984017 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	ND	1	1.0	104	70-130	
Nitrogen, Nitrite	mg/L		1	1.0	97	90-110	H5
Nitrogen, NO2 plus NO3	mg/L		2	2.1	104	90-110	H5

SAMPLE DUPLICATE: 2925046

Parameter	Units	60372952001 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate	mg/L	0.13	0.13	2	20	
Nitrogen, Nitrite	mg/L	<0.079	ND		20	
Nitrogen, NO2 plus NO3	mg/L	0.13	0.13	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: LAWRENCE GW

Pace Project No.: 60372697

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

1e	The zero point in the calibration was removed to improve linearity because of carry over issue with high target analytes within this workorder.
CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
H1	Analysis conducted outside the EPA method holding time.
H5	Reanalysis conducted in excess of EPA method holding time. Results confirm original analysis performed in hold time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: LAWRENCE GW

Pace Project No.: 60372697

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60372697001	WG-061821-SM-019A	EPA 350.1	728464		
60372697002	WG-061821-SM-021A	EPA 350.1	728464		
60372697003	WG-061821-SM-024A	EPA 350.1	728464		
60372697004	WG-061821-SM-026A	EPA 350.1	728464		
60372697005	WG-061821-NL-022A	EPA 350.1	728464		
60372697001	WG-061821-SM-019A	EPA 353.2	727429		
60372697001	WG-061821-SM-019A	EPA 353.2	728227		
60372697002	WG-061821-SM-021A	EPA 353.2	727429		
60372697002	WG-061821-SM-021A	EPA 353.2	728227		
60372697003	WG-061821-SM-024A	EPA 353.2	727429		
60372697003	WG-061821-SM-024A	EPA 353.2	728227		
60372697004	WG-061821-SM-026A	EPA 353.2	727429		
60372697004	WG-061821-SM-026A	EPA 353.2	728227		
60372697005	WG-061821-NL-022A	EPA 353.2	728227		

REPORT OF LABORATORY ANALYSIS

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**Sample Condition Upon Receipt****WO# : 60372697**Client Name: City of LawrenceCourier: FedEx ☐ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☒ Xroads ☐ Client ☐ Other ☐Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☒Custody Seal on Cooler/Box Present: Yes ☐ No ☒ Seals intact: Yes ☐ No ☐Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ appleThermometer Used: T298 Type of Ice: ☒ Wet ☐ Blue ☐ NoneCooler Temperature (°C): As-read 5.5 Corr. Factor 0.0 Corrected 5.5Date and initials of person examining contents: 6/1/8
ML

Temperature should be above freezing to 6°C

Chain of Custody present:	☒ Yes ☐ No ☐ N/A	
Chain of Custody relinquished:	☒ Yes ☐ No ☐ N/A	
Samples arrived within holding time:	☒ Yes ☐ No ☐ N/A	
Short Hold Time analyses (<72hr):	☒ Yes ☐ No ☐ N/A	<u>NOX</u>
Rush Turn Around Time requested:	☐ Yes ☒ No ☐ N/A	
Sufficient volume:	☒ Yes ☐ No ☐ N/A	
Correct containers used:	☒ Yes ☐ No ☐ N/A	
Pace containers used:	☒ Yes ☐ No ☐ N/A	
Containers intact:	☒ Yes ☐ No ☐ N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐ Yes ☐ No ☒ N/A	
Filtered volume received for dissolved tests?	☐ Yes ☐ No ☒ N/A	
Sample labels match COC: Date / time / ID / analyses	☒ Yes ☒ No ☐ N/A	<u>no time on SM-026A containers</u>
Samples contain multiple phases? Matrix: <u>WT</u>	☒ Yes ☐ No ☐ N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT# <u>603173</u>	☒ Yes ☐ No ☐ N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added. <u>BP3S SM 026A = 8.5</u> <u>BP3S SM 022A = 7.5</u>
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	☐ Yes ☐ No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐ Yes ☐ No	
Trip Blank present:	☐ Yes ☐ No ☒ N/A	
Headspace in VOA vials (>6mm):	☐ Yes ☐ No ☒ N/A	
Samples from USDA Regulated Area: State:	☐ Yes ☐ No ☒ N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐ Yes ☐ No ☒ N/A	

Client Notification/ Resolution:

Copy COC to Client? Y ☒ NField Data Required? Y ☐ N

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: _____

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately. Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at <https://info.pacelabs.com/hubs/pas-standard-terms.pdf>.

Section A Required Client Information: Company: City of Lawrence Address: 1502 SW 41st Topeka, KS 66609 Email: nick.laskaras@ghd.com Phone: 785-783-8982 Requested Due Date:		Section B Required Project Information: Report To: Nick Laskaras Copy To: Purchase Order #: Project Name: Lawrence GW Project #:		Section C Invoice Information: Attention: Company Name: Address: Pace Quote: Pace Project Manager: hank.kapka@pacelabs.com, Pace Profile #: x		Page : 1 Of 1
Regulatory Agency		State / Location KS				

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	DATE		TIME	# OF CONTAINERS	Requested Analysis Filtered (Y/N)										Preservatives	Y/N	Analyses Test	ammonia	NO3 or NO2	Residual Chlorine (Y/N)	Samples Intact (Y/N)
			START	END			DATE	TIME																			
1	Water	DW	6/18/15				6/18/15	1345	2	XX																	60372697
2	Water	WT						135	1	XX																	1BP3N, 1BP3S
3	Water	WW						1340	1	XX																	
4	Water	P						1415	1	XX																	
5	Water	SL						0 1000	0	XX																	
6	Water	OL																									
7	Water	WP																									
8	Water	AR																									
9	Water	OT																									
10	Water	TS																									
11	Water																										
12	Water																										

ADDITIONAL COMMENTS Sean Murphy	RELINQUISHED BY / AFFILIATION Sean Murphy	DATE 6/18	TIME 1420	ACCEPTED BY / AFFILIATION Sean Murphy / PACE	DATE 6/18/21	TIME 1600	SAMPLE CONDITIONS 5.5 y N y	TEMP in C 5.5	Received on 6/18/21	Ice (Y/N) y	Custody (Y/N) y	Sealed (Y/N) y	Cooler (Y/N) y	Samples Intact (Y/N) y
	SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: Sean Murphy SIGNATURE of SAMPLER: Sean Murphy DATE Signed: 6/18/21													

Appendix D

Data Validation Memorandum

Technical Memorandum

22 July 2021

To	Travis Kogl		
Copy to	Angela Bown		
From	Chris G. Knight/eew/1-NF	Tel	512 506 8803
Subject	Analytical Results and Reduced Validation Data Gap Study City of Lawrence Kansas/Former Farmland Nitrogen Plant Lawrence, Kansas June 2021	Project no.	11224213

1. Introduction

This document details a reduced validation of analytical results for groundwater samples collected in support of the Data Gap Study at the City of Lawrence Kansas/Former Farmland Nitrogen Plant site during June 2021. Samples were submitted to City of Lawrence Laboratory - Municipal Services and Operations (City of Lawrence Laboratory) laboratory located in Lawrence, Kansas and are included in data package W1F0542. Samples were also submitted to Pace Analytical Services LLC (Pace) located in Lenexa, Kansas and are included in data package 60372697. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2A, Table 2B, and Table 2C. A summary of the analytical methodology is presented in Table 3.

Standard GHD report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, recovery data from laboratory control samples (LCS)/matrix spikes (MS)/duplicate analyses, field quality assurance/quality control (QA/QC) samples, and split samples analyses.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the document entitled:

1. "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review", EPA 540-R-2016-001, September 2016.

Item 1 will subsequently be referred to as the "Guidelines" in this Memorandum.

2. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in Table 3. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times with the following exceptions:

- i) The following samples were re-analyzed outside of the established holding time for nitrate (as N) and nitrite (as N) to confirm original analyses performed within holding time: WG-061821-SM-019A, WG-061821-SM-021A, WG-061821-SM-022A WG-061821-SM-024A, and WG-061821-SM-026A. These data are included in analytical report 60372697 but were not used for assessment in the data validation. No further action was required

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

3. Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

4. Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS contained all analytes of interest. LCS recoveries were assessed per the "Guidelines". All LCS recoveries were within the control limits, demonstrating acceptable analytical accuracy.

5. Matrix Spike Analyses

To evaluate the effects of sample matrices on the preparation, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS samples. For this study, MS samples were prepared and analyzed by the laboratory as specified in Table 1. The laboratory also performed additional MS analyses on non-site samples. These cannot be used to assess accuracy for the site samples.

The MS results were evaluated per the "Guidelines". All MS analyses performed were acceptable, demonstrating acceptable analytical accuracy with the following exceptions (see Table 4):

- i) An MS was reported with an elevated recovery for ammonia analysis. Associated non-detect sample results would not be affected by the indicated high bias. No further action was required. Associated detected sample results were qualified as estimated with a possible high bias.
- ii) An MS was reported with an elevated recovery for nitrate (as N) analysis. Associated non-detect sample results would not be affected by the indicated high bias. No further action was required. Associated detected sample results were qualified as estimated with a possible high bias.

- iii) An MS was reported with a low recovery for nitrite (as N). Associated detected sample results were qualified as estimated with a possible low bias. Associated non-detect sample results were rejected due to a recovery of less than 30 percent.

6. Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory for analyses as specified in Table 1. The laboratory also performed additional duplicate analyses on non-site samples. These cannot be used to assess precision for the site samples.

The duplicate results were evaluated per the "Guidelines". All duplicate analyses performed were acceptable, demonstrating acceptable analytical precision with the following exception (see Table 5):

- i) A duplicate analysis was reported with an elevated RPD for ammonia analysis. Associated non-detect sample results were not affected by the indicated variability. No further action was required. Associated detected sample results were qualified as estimated.

7. Field QA/QC Samples

The field QA/QC consisted of 6 field duplicate sample sets and 5 split samples.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, 6 field duplicate sample sets were collected and submitted to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent for water samples. The RPDs are only used when sample concentrations are above the estimated regions of detection.

Field duplicate summary data are presented in Table 2A. All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision with the following exception (see Table 6):

- i) WG-061821-SM-021 and WG-061821-SM-021 did show some variability in ammonia results and were qualified as estimated.

Split Sample Analysis

To evaluate the comparability of the analytical methodologies between the City of Lawrence Laboratory and Pace laboratories, 5 split samples were collected and submitted to both laboratories. The RPDs associated with these split samples must be less than 50 percent for water samples. The RPDs are only used when sample concentrations are above the estimated regions of detection.

Split sample summary data are presented in Table 2C. All split sample results were within acceptable agreement, demonstrating acceptable analytical methodology and precision with the following exceptions (see Table 7):

- i) WG-061821-SM-021 and WG-061821-SM-021A did show some variability in ammonia results and were qualified as estimated.
- ii) WG-061821-NL-022 and WG-061821-NL-022A did show some variability in nitrite/nitrate results and were qualified as estimated.

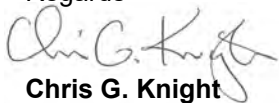
8. Analyte Reporting

The laboratory reported detected results down to the laboratory's reporting limit (RL) for each analyte. Non-detect results were presented as non-detect at the RL in Table 2A, Table 2B, and Table 2C.

9. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2A, Table 2B, and Table 2C are acceptable with the specific exceptions and qualifications noted herein.

Regards



Chris G. Knight
Data Management Team – Data Validator

Table 1

Sample Collection and Analysis Summary
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters				Comments
					Ammonia	Nitrate (as N)	Nitrite (as N)	Nitrite/Nitrate	
WW-060921-NL-001	Development Water Composite	Water	06/09/2021	18:00	X			X	
WW-061021-NL-002	Development Water Composite	Water	06/10/2021	11:25	X			X	
WW-061121-NL-003	Development Water Composite	Water	06/11/2021	07:45	X			X	
WW-061121-NL-004	Development Water Composite	Water	06/11/2021	12:30	X			X	
WW-061121-NL-005	Development Water Composite	Water	06/11/2021	15:30	X			X	
WG-061421-NL-001	MW-26B	Water	06/14/2021	14:50	X			X	MS-P
WG-061421-NL-002	MW-26A	Water	06/14/2021	16:00	X			X	
WG-061421-NL-003	MW-21B	Water	06/14/2021	17:15	X			X	
WG-061421-NL-004	MW-22B	Water	06/14/2021	18:30	X			X	
WG-061421-NL-005	MW-22A	Water	06/14/2021	19:05	X			X	
WG-061521-NL-006	MW-28B	Water	06/15/2021	10:30	X			X	
WG-061521-NL-007	MW-28A	Water	06/15/2021	11:30	X			X	
WG-061521-NL-008	CPMW-1D	Water	06/15/2021	14:00	X			X	
WG-061521-NL-009	CPMW-1S	Water	06/15/2021	16:25	X			X	

Table 1

Sample Collection and Analysis Summary
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>				Comments
					Ammonia	Nitrate (as N)	Nitrite (as N)	Nitrite/Nitrate	
WG-061521-NL-010	MW-24B	Water	06/15/2021	18:00	X			X	DUP-P
WG-061521-NL-011	MW-24A	Water	06/15/2021	19:00	X			X	MS-P; DUP-P
WG-061621-NL-012	MW-25B	Water	06/16/2021	10:30	X			X	
WG-061621-NL-013	PSW-9A	Water	06/16/2021	11:20	X			X	MS-P
WG-061621-SM-001	PSW-1A	Water	06/16/2021	11:40	X			X	MS-P
WG-061621-NL-014	MW-29B	Water	06/16/2021	12:35	X			X	DUP-P
WG-061621-SM-002	PSW-2A	Water	06/16/2021	12:40	X			X	MS-P
WG-061621-SM-003	PSW-2B	Water	06/16/2021	13:05	X			X	DUP
WG-061621-NL-015	MW-29A	Water	06/16/2021	13:20	X			X	
WG-061621-SM-004	PSW-7A	Water	06/16/2021	13:45	X			X	
WG-061621-SM-005	PSW-7B2	Water	06/16/2021	13:55	X			X	DUP-P
WG-061621-SM-006	PSW-6A	Water	06/16/2021	14:40	X			X	
WG-061621-SM-007	PSW-6B4	Water	06/16/2021	14:55	X			X	
WG-061621-NL-016	MW-23B	Water	06/16/2021	15:30	X			X	

Table 1

Sample Collection and Analysis Summary
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>				Comments
					Ammonia	Nitrate (as N)	Nitrite (as N)	Nitrite/Nitrate	
WG-061621-SM-008	PSW-3A	Water	06/16/2021	15:35	X			X	
WG-061621-SM-009	PSW-3B3	Water	06/16/2021	15:50	X			X	
WG-061621-NL-017	MW-23A	Water	06/16/2021	16:40	X			X	MS-P; DUP-P
WG-061621-SM-010	PSW-5B	Water	06/16/2021	17:15	X			X	
WG-061621-SM-011	PSW-5A	Water	06/16/2021	17:55	X			X	
WG-061721-NL-018	MW-27B	Water	06/17/2021	09:40	X			X	MS-P
WG-061721-NL-019	MW-27A	Water	06/17/2021	11:10	X			X	DUP-P
WG-061721-SM-012	SW-10	Water	06/17/2021	13:00	X			X	
WG-061721-NL-020	PSW-9B	Water	06/17/2021	13:30	X			X	
WG-061721-SM-013	PSW-20B	Water	06/17/2021	14:30	X			X	
WG-061721-SM-014	PSW-19B	Water	06/17/2021	16:00	X			X	
WG-061721-NL-021	PSW-4	Water	06/17/2021	16:30	X			X	
WG-061721-SM-015	PW-9	Water	06/17/2021	16:30	X			X	
WG-061721-SM-016	PSW-13A	Water	06/17/2021	17:20	X			X	

Table 1

Sample Collection and Analysis Summary
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters				Comments
					Ammonia	Nitrate (as N)	Nitrite (as N)	Nitrite/Nitrate	
WG-061721-SM-017	PSW-13B	Water	06/17/2021	17:55	X			X	
WG-061721-SM-018	PSW-13B	Water	06/17/2021	18:00	X			X	Field duplicate of PSW-13B; MS-P
WG-061821-SM-019	PSW-17	Water	06/18/2021	10:45	X			X	
WG-061821-SM-019A	PSW-17	Water	06/18/2021	10:45	X	X	X	X	Split sample of PSW-17; DUP-P
WG-061821-NL-022	CPMW-2S	Water	06/18/2021	10:50	X			X	
WG-061821-NL-022A	CPMW-2S	Water	06/18/2021	10:50	X	X	X	X	Split sample of CPMW-2S
WG-061821-SM-020	PSW-17	Water	06/18/2021	10:50	X			X	Field duplicate of PSW-17
WG-061821-NL-023	CPMW-2S	Water	06/18/2021	10:55	X			X	Field duplicate of CPMW-2S
WG-061821-SM-021	PSW-18	Water	06/18/2021	11:35	X			X	
WG-061821-SM-021A	PSW-18	Water	06/18/2021	11:35	X	X	X	X	Split sample of PSW-18
WG-061821-SM-022	PSW-18	Water	06/18/2021	11:40	X			X	Field duplicate of PSW-18
WG-061821-SM-023	PSW-15	Water	06/18/2021	12:35	X			X	MS-P
WG-061821-SM-024	N-1	Water	06/18/2021	13:40	X			X	
WG-061821-SM-024A	N-1	Water	06/18/2021	13:40	X	X	X	X	Split sample of N-1; MS-P

Table 1

Sample Collection and Analysis Summary
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>				Comments
					Ammonia	Nitrate (as N)	Nitrite (as N)	Nitrite/Nitrate	
WG-061821-SM-025	N-1	Water	06/18/2021	13:45	X			X	Field duplicate of N-1
WG-061821-SM-026	N-2	Water	06/18/2021	14:15	X			X	
WG-061821-SM-026A	N-2	Water	06/18/2021	14:15	X	X	X	X	Split sample of N-2; MS
WG-061821-SM-027	N-2	Water	06/18/2021	14:20	X			X	Field duplicate of N-2
WG-061821-NL-028	Purge Water Composite	Water	06/18/2021	16:20	X			X	

Notes:

- N - Nitrogen
- DUP - Laboratory Duplicate
- DUP-P - Laboratory Duplicate (partial parameters)
- MS - Matrix Spike/Matrix Spike Duplicate
- MS-P - Matrix Spike (partial parameters)

Table 2A

Analytical Results Summary
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021

Location ID:		CPMW-1D	CPMW-1S	CPMW-2S	CPMW-2S	Development Water Composite	Development Water Composite
Sample Name:		WG-061521-NL-008	WG-061521-NL-009	WG-061821-NL-022	WG-061821-NL-023	WW-060921-NL-001	WW-061021-NL-002
Sample Date:		06/15/2021	06/15/2021	06/18/2021	06/18/2021	06/09/2021	06/10/2021
					Duplicate		
Parameters	Unit						
General Chemistry							
Ammonia	mg/L	18000	4200	17300	19700	0.300 U	11.8 J
Nitrite/Nitrate	mg/L	10600	4420	15100 J	16700	7.29	12.5

Table 2A

Analytical Results Summary
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021

Location ID:	Development Water Composite	Development Water Composite	Development Water Composite	MW-21B	MW-22A	MW-22B
Sample Name:	WW-061121-NL-003	WW-061121-NL-004	WW-061121-NL-005	WG-061421-NL-003	WG-061421-NL-005	WG-061421-NL-004
Sample Date:	06/11/2021	06/11/2021	06/11/2021	06/14/2021	06/14/2021	06/14/2021

Parameters	Unit
-------------------	-------------

General Chemistry

Ammonia	mg/L	0.641 J	30.0 J	0.896 J	0.300 U	0.300 U	3.31 J+
Nitrite/Nitrate	mg/L	0.441	17.2	18.7	0.946	7.98	0.250 U

Table 2A

**Analytical Results Summary
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021**

Location ID:	MW-23A	MW-23B	MW-24A	MW-24B	MW-25B	MW-26A	MW-26B
Sample Name:	WG-061621-NL-017	WG-061621-NL-016	WG-061521-NL-011	WG-061521-NL-010	WG-061621-NL-012	WG-061421-NL-002	WG-061421-NL-001
Sample Date:	06/16/2021	06/16/2021	06/15/2021	06/15/2021	06/16/2021	06/14/2021	06/14/2021

Parameters	Unit
-------------------	-------------

General Chemistry

Ammonia	mg/L	0.300 U	29.3	0.300 U	3.91 J+	0.310	0.300 U	0.300 U
Nitrite/Nitrate	mg/L	14.1	0.250 U	72.5	0.250 U	0.250 U	20.4	133

Table 2A

Analytical Results Summary
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021

Location ID:		MW-27A	MW-27B	MW-28A	MW-28B	MW-29A	MW-29B	N-2
Sample Name:		WG-061721-NL-019	WG-061721-NL-018	WG-061521-NL-007	WG-061521-NL-006	WG-061621-NL-015	WG-061621-NL-014	WG-061821-SM-024
Sample Date:		06/17/2021	06/17/2021	06/15/2021	06/15/2021	06/16/2021	06/16/2021	06/18/2021
Parameters	Unit							
General Chemistry								
Ammonia	mg/L	0.300 U	0.300 U	0.300 U	0.300 U	0.300 U	0.300 U	7.28 J+
Nitrite/Nitrate	mg/L	2.40	20.9	34.3	0.250 U	1.12	0.250 U	42.0

Table 2A

Analytical Results Summary
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021

Location ID:		N-2	N-1	N-1	PSW-1A	PSW-2A	PSW-2B	PSW-3A
Sample Name:		WG-061821-SM-025	WG-061821-SM-026	WG-061821-SM-027	WG-061621-SM-001	WG-061621-SM-002	WG-061621-SM-003	WG-061621-SM-008
Sample Date:		06/18/2021	06/18/2021	06/18/2021	06/16/2021	06/16/2021	06/16/2021	06/16/2021
		Duplicate		Duplicate				
Parameters	Unit							
General Chemistry								
Ammonia	mg/L	7.80	44200	41200	0.300 U	0.300 U	0.300 U	0.300 U
Nitrite/Nitrate	mg/L	51.1	32600	29400	7.89	142	0.250 U	262

Table 2A

Analytical Results Summary
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021

Location ID:	PSW-3B3	PSW-4	PSW-5A	PSW-5B	PSW-6A	PSW-6B4	PSW-7A
Sample Name:	WG-061621-SM-009	WG-061721-NL-021	WG-061621-SM-011	WG-061621-SM-010	WG-061621-SM-006	WG-061621-SM-007	WG-061621-SM-004
Sample Date:	06/16/2021	06/17/2021	06/16/2021	06/16/2021	06/16/2021	06/16/2021	06/16/2021

Parameters	Unit							
General Chemistry								
Ammonia	mg/L	4.63	1.18	0.300 U	137 J+	386	0.300 U	32.4 J+
Nitrite/Nitrate	mg/L	6.27	0.250 U	0.250 U	0.250 U	253	1.76	348

Table 2A

**Analytical Results Summary
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021**

Location ID:	PSW-7B2	PSW-9A	PSW-9B	PSW-13A	PSW-13B
Sample Name:	WG-061621-SM-005	WG-061621-NL-013	WG-061721-NL-020	WG-061721-SM-016	WG-061721-SM-017
Sample Date:	06/16/2021	06/16/2021	06/17/2021	06/17/2021	06/17/2021

Parameters	Unit
-------------------	-------------

General Chemistry

Ammonia	mg/L	0.300 U	0.300 U	0.300 U	150	33.8
Nitrite/Nitrate	mg/L	0.250 U	7.38	9.16	271	512

Table 2A

**Analytical Results Summary
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021**

Location ID:		PSW-13B	PSW-15	PSW-17	PSW-17	PSW-18
Sample Name:		WG-061721-SM-018	WG-061821-SM-023	WG-061821-SM-019	WG-061821-SM-020	WG-061821-SM-021
Sample Date:		06/17/2021	06/18/2021	06/18/2021	06/18/2021	06/18/2021
		Duplicate			Duplicate	
Parameters	Unit					
General Chemistry						
Ammonia	mg/L	35.1	1.80 J+	0.615 J+	0.631	0.300 UJ
Nitrite/Nitrate	mg/L	517	0.250 U	31.4	30.1	0.893

Table 2A

**Analytical Results Summary
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021**

Location ID:		PSW-18	PSW-19B	PSW-20B	PW-9	Purge Water Composite	SW-10
Sample Name:		WG-061821-SM-022	WG-061721-SM-014	WG-061721-SM-013	WG-061721-SM-015	WG-061821-NL-028	WG-061721-SM-012
Sample Date:		06/18/2021	06/17/2021	06/17/2021	06/17/2021	06/18/2021	06/17/2021
		Duplicate					
Parameters	Unit						
General Chemistry							
Ammonia	mg/L	1.82 J	31.5	5.77 J+	10.4	62.6	4.32 J+
Nitrite/Nitrate	mg/L	0.829	64.9	2.87	47.5	164	0.971

Notes:

U - Not detected at the associated reporting limit

J - Estimated concentration

UJ - Not detected; associated reporting limit is estimated

Table 2B

Analytical Results Summary (Split Samples)
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021

Location ID:	CPMW-2S	N-2	N-1	PSW-17	PSW-18
Sample Name:	WG-061821-NL-022A	WG-061821-SM-024A	WG-061821-SM-026A	WG-061821-SM-019A	WG-061821-SM-021A
Sample Date:	06/18/2021	06/18/2021	06/18/2021	06/18/2021	06/18/2021

Parameters**Unit****General Chemistry**

Ammonia	mg/L	17800	7.5	39600	0.65	1.9 J
Nitrate (as N)	mg/L	28500 J-	52.5 J+	38900 J+	38.0 J+	1.2 J+
Nitrite (as N)	mg/L	R	R	5550 J-	R	R
Nitrite/Nitrate	mg/L	28500 J	53.9	44400	39.4	1.2

Notes:

N - Nitrogen

J - Estimated concentration

J+ - Estimated concentration with a possible high bias

R -Rejected

Table 2C

Analytical Results Summary (Split Sample Comparison)
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021

Location ID:	CPMW-2S	CPMW-2S	N-2	N-2	N-1
Sample Name:	WG-061821-NL-022	WG-061821-NL-022A	WG-061821-SM-024	WG-061821-SM-024A	WG-061821-SM-026
Sample Date:	06/18/2021	06/18/2021	06/18/2021	06/18/2021	06/18/2021

Parameters**Unit****General Chemistry**

Ammonia	mg/L	17300	17800	7.28 J+	7.5	44200
Nitrate (as N)	mg/L	--	28500 J-	--	52.5 J+	--
Nitrite (as N)	mg/L	--	R	--	R	--
Nitrite/Nitrate	mg/L	15100 J	28500 J	42.0	53.9	32600

Table 2C

Analytical Results Summary (Split Sample Comparison)
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021

Location ID:	N-1	PSW-17	PSW-17	PSW-18	PSW-18
Sample Name:	WG-061821-SM-026A	WG-061821-SM-019	WG-061821-SM-019A	WG-061821-SM-021	WG-061821-SM-021A
Sample Date:	06/18/2021	06/18/2021	06/18/2021	06/18/2021	06/18/2021

Parameters**Unit****General Chemistry**

Ammonia	mg/L	39600	0.615 J+	0.65	0.300 UJ	1.9 J
Nitrate (as N)	mg/L	38900 J+	--	38.0 J+	--	1.2 J+
Nitrite (as N)	mg/L	5550 J-	--	R	--	R
Nitrite/Nitrate	mg/L	44400	31.4	39.4	0.893	1.2

Notes:

N - Nitrogen

J - Estimated concentration

"J-" - Estimated concentration; implied low bias

"J+" - Estimated concentration; implied high bias

R -Rejected

"--" - Not applicable

Table 3

Analytical Methods
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021

Parameter	Method	Matrix	Holding Time
			Collection to Analysis (Days)
Ammonia	EPA 350.1	Water	28
Nitrate (as N)	EPA 353.2	Water	2
Nitrite (as N)	EPA 353.2	Water	2
Nitrite/Nitrate	EPA 353.2	Water	28

Notes:

N - Nitrogen

Method References:

EPA - U.S. Environmental protection Agency. Analytical Methodology (October, 2007)

Table 4

Qualified Sample Data Due to Outlying Matrix Spike Recoveries
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021

Parameter	Spiked Sample ID	Analyte	MS % Recovery	Control Limits % Recovery	Associated Sample IDs	Qualified Result	Units
General Chemistry	WG-061421-NL-004	Ammonia	112	90-110	WG-061421-NL-004	3.31 J+	mg/L
					WG-061521-NL-010	3.91 J+	mg/L
					WG-061621-SM-004	32.4 J+	mg/L
					WG-061621-SM-010	137 J+	mg/L
					WG-061721-SM-012	4.32 J+	mg/L
					WG-061721-SM-013	5.77 J+	mg/L
					WG-061821-SM-019	0.615 J+	mg/L
					WG-061821-SM-023	1.80 J+	mg/L
					WG-061821-SM-024	7.28 J+	mg/L
General Chemistry	WG-061821-SM-026A	Nitrate (as N)	236	70-130	WG-061821-SM-019A	38.0 J+	mg/L
					WG-061821-SM-021A	1.2 J+	mg/L
					WG-061821-SM-024A	52.5 J+	mg/L
					WG-061821-SM-026A	38900 J+	mg/L
		Nitrite (as N)	0	90-110	WG-061821-SM-019A	R	
					WG-061821-SM-021A	R	
					WG-061821-SM-024A	R	
					WG-061821-SM-026A	5550 J-	mg/L

Notes:

- MS - Matrix Spike
- N - Nitrogen
- "J+" - Estimated concentration; implied high bias
- R - Rejected
- "J-" - Estimated concentration; implied low bias

Table 5

Qualified Sample Data Due to Outlying Laboratory Duplicate Results
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021

Parameter	Sample ID	Analyte	RPD (percent)	RPD Control Limit (percent)	Associated Sample IDs	Qualified Result	Units
General Chemistry	WW-060921-NL-001	Ammonia	22.8	20	WG-061821-SM-022	1.82 J	mg/L
					WW-061021-NL-002	11.8 J	mg/L
					WW-061121-NL-003	0.641 J	mg/L
					WW-061121-NL-004	30.0 J	mg/L
					WW-061121-NL-005	0.896 J	mg/L

Notes:

RPD - Relative Percent Difference

J - Estimated concentration

Table 6

**Qualified Sample Data Due to Variability in Field Duplicate Results
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021**

Parameter	Analyte	RPD	Diff	Sample ID	Qualified Result	Field Duplicate Sample ID	Qualified Result	Units
General Chemistry	Ammonia	143	1.52	WG-061821-SM-021	0.300 UJ	WG-061821-SM-022	1.82 J	mg/L

Notes:

RPD - Relative Percent Difference

Diff - Difference

UJ - Not detected; associated reporting limit is estimated

J - Estimated concentration

Table 7

Qualified Sample Data Due to Variability in Split Sample Results
Data Gap Study
City of Lawrence Kansas/Former Farmland Nitrogen Plant
Lawrence, Kansas
June 2021

Parameter	Analyte	RPD	Diff	Sample ID	Qualified Result	Split Sample ID	Qualified Result	Units
General Chemistry	Ammonia	145	1.6	WG-061821-SM-021	0.300 UJ	WG-061821-SM-021A	1.9 J	mg/L
General Chemistry	Nitrite/Nitrate	61.5	13400	WG-061821-NL-022	15100 J	WG-061821-NL-022A	28500 J	mg/L

Notes:

RPD - Relative Percent Difference

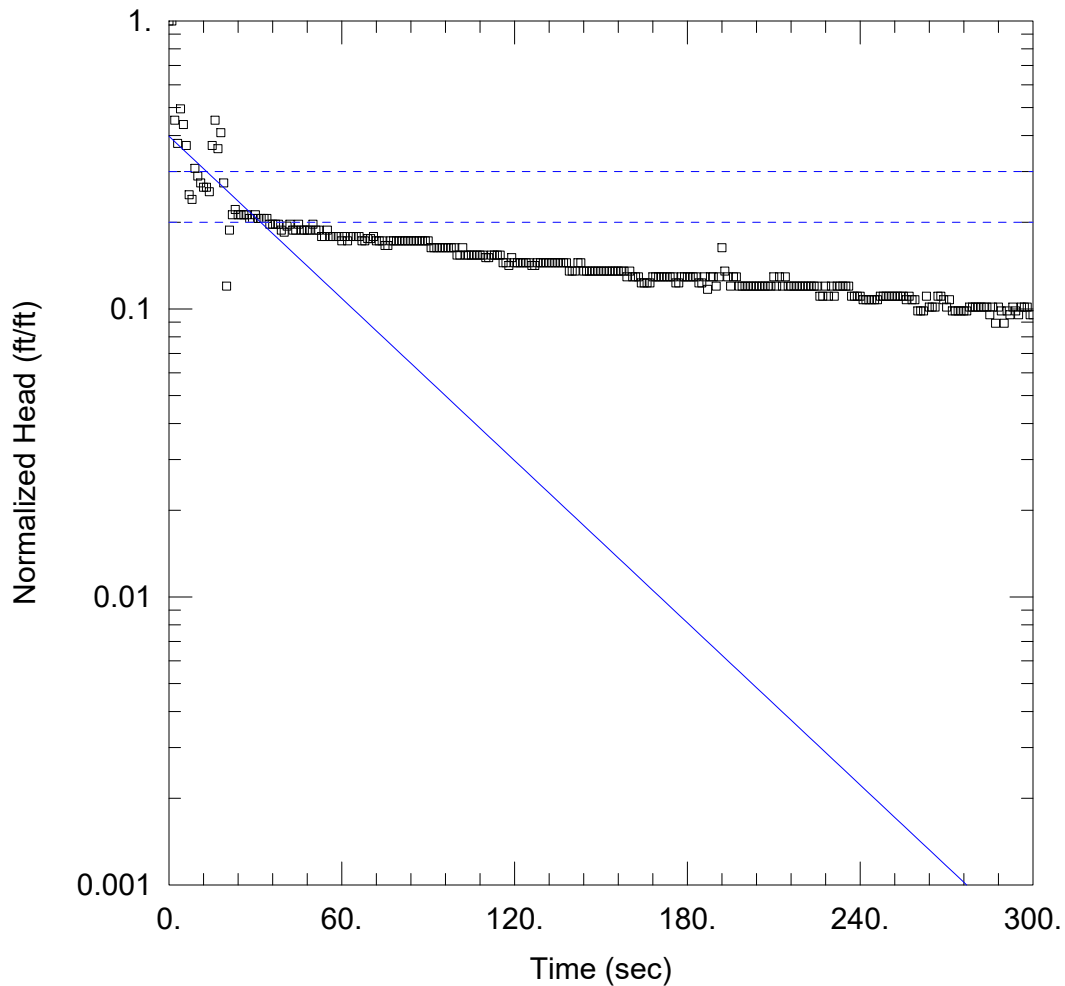
Diff - Difference

UJ - Not detected; associated reporting limit is estimated

J - Estimated concentration

Appendix E

AQTESOLV® plots



WELL TEST ANALYSIS

Data Set: N:\...\22A - Slug-in.aqt
Date: 09/30/21

Time: 11:37:21

PROJECT INFORMATION

Company: GHD
Client: City of Lawrence
Project: 11224213
Location: Farmland
Test Well: Slug-in
Test Date: 6/18/21

AQUIFER DATA

Saturated Thickness: 4.5 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (New Well)

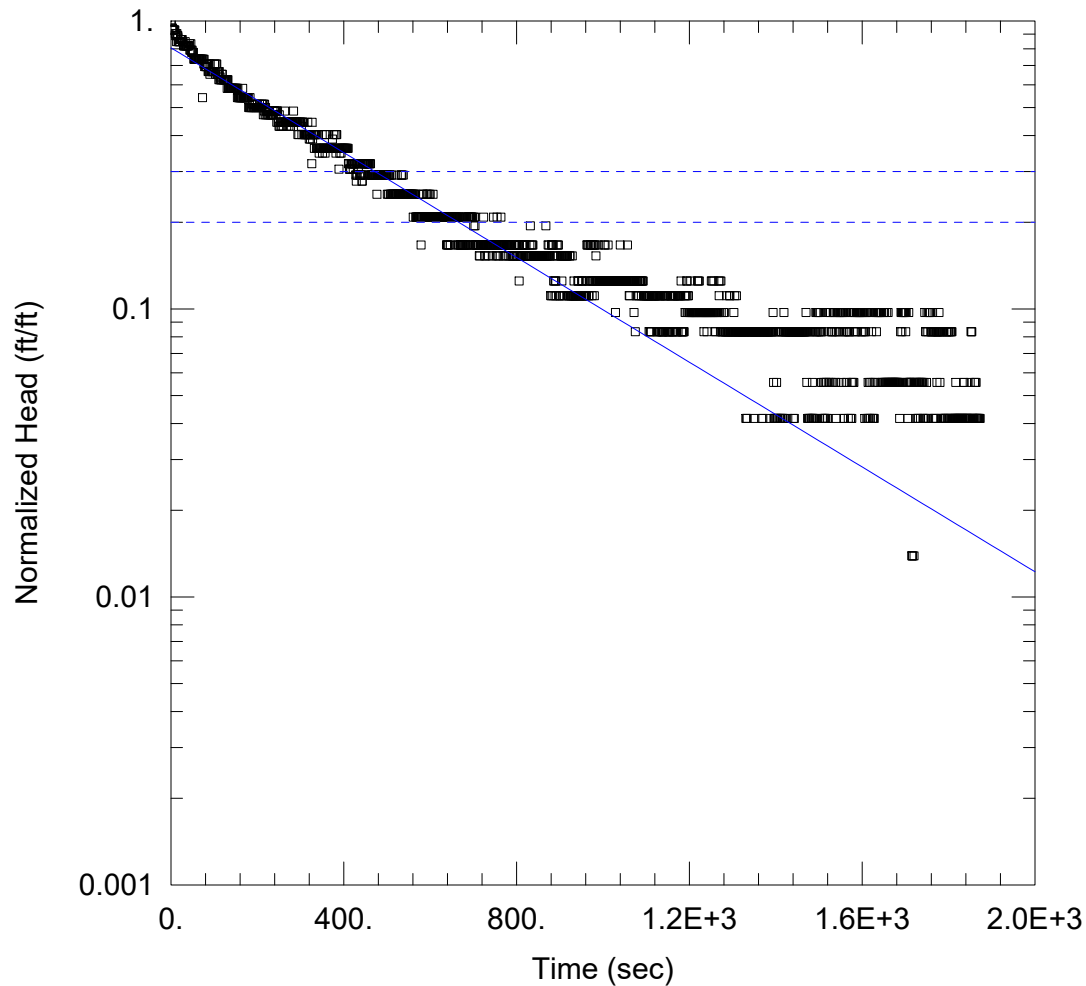
Initial Displacement: 0.622 ft
Total Well Penetration Depth: 20. ft
Casing Radius: 0.08612 ft

Static Water Column Height: 13.51 ft
Screen Length: 10. ft
Well Radius: 0.08612 ft

SOLUTION

Aquifer Model: Confined
 $K = 0.004208$ ft/min

Solution Method: Bouwer-Rice
 $y_0 = 0.2473$ ft



WELL TEST ANALYSIS

Data Set: N:\...\22A - Slug-out.aqt
Date: 09/30/21

Time: 11:43:54

PROJECT INFORMATION

Company: GHD
Client: City of Lawrence
Project: 11224213
Location: Farmland
Test Well: Slug-out
Test Date: 6/18/21

AQUIFER DATA

Saturated Thickness: 4.5 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (New Well)

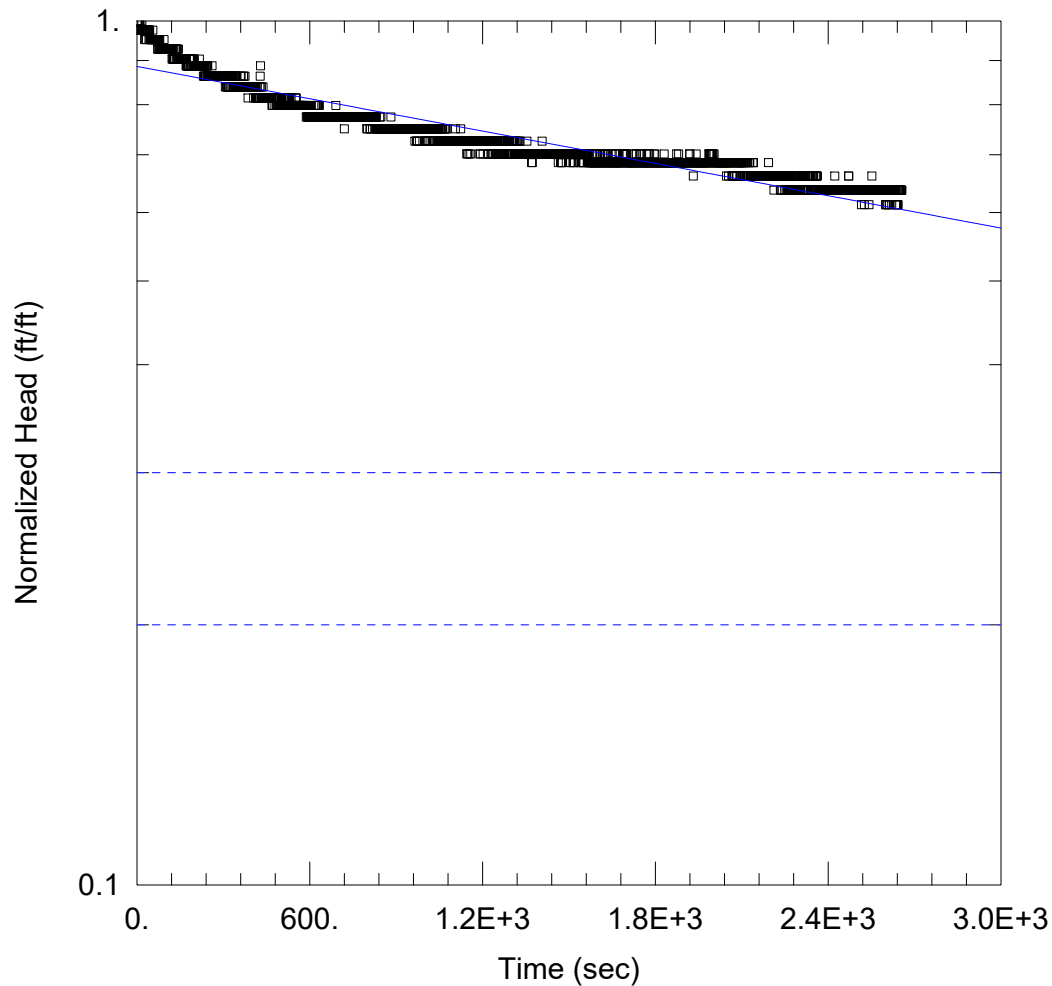
Initial Displacement: 0.1378 ft
Total Well Penetration Depth: 25. ft
Casing Radius: 0.08612 ft

Static Water Column Height: 13.51 ft
Screen Length: 10. ft
Well Radius: 0.08612 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Confined
 $K = 0.000421$ ft/min

Solution Method: Bouwer-Rice
 $y_0 = 0.1111$ ft



WELL TEST ANALYSIS

Data Set: N:\...\27A - Slug-in.aqt
Date: 09/30/21

Time: 11:46:52

PROJECT INFORMATION

Company: GHD
Client: City of Lawrence
Project: 11224213
Location: Farmland
Test Well: Slug-in
Test Date: 6/18/21

AQUIFER DATA

Saturated Thickness: 3. ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (New Well)

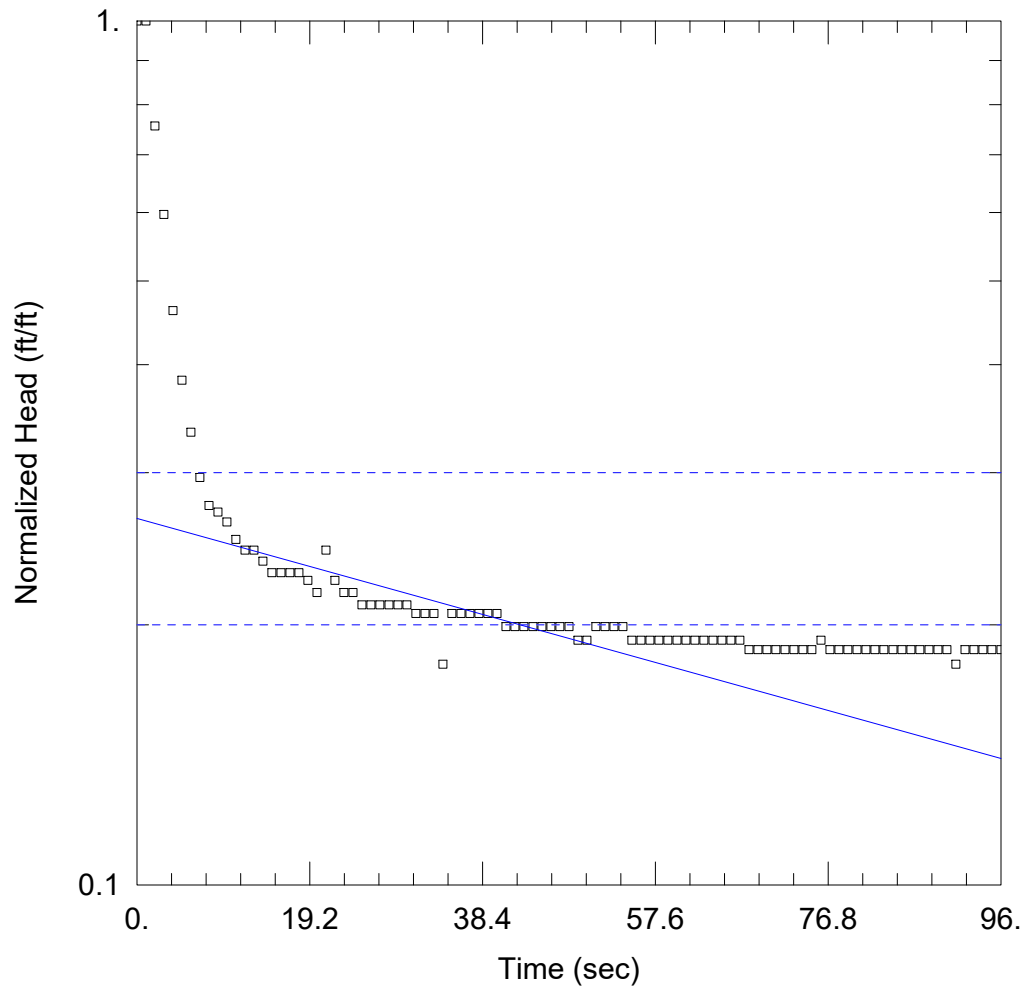
Initial Displacement: 0.2373 ft
Total Well Penetration Depth: 25. ft
Casing Radius: 0.08612 ft

Static Water Column Height: 3.91 ft
Screen Length: 15. ft
Well Radius: 0.08612 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Confined
 $K = 4.178E-5$ ft/min

Solution Method: Bouwer-Rice
 $y_0 = 0.2102$ ft



WELL TEST ANALYSIS

Data Set: N:\...\27A - Slug-out.aqt
Date: 09/30/21

Time: 11:48:27

PROJECT INFORMATION

Company: GHD
Client: City of Lawrence
Project: 11224213
Location: Farmland
Test Well: Slug-out
Test Date: 6/18/21

AQUIFER DATA

Saturated Thickness: 3. ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (New Well)

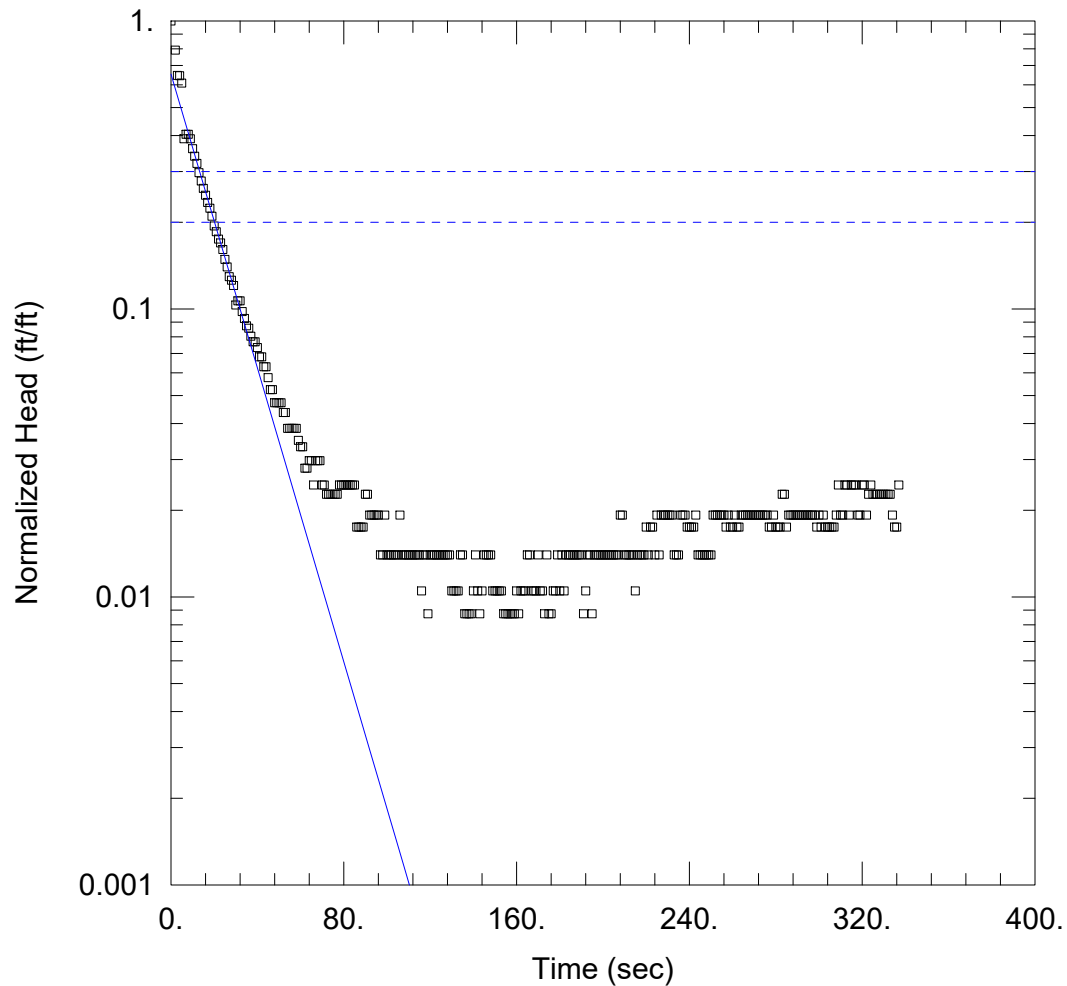
Initial Displacement: 0.8076 ft
Total Well Penetration Depth: 25. ft
Casing Radius: 0.08612 ft

Static Water Column Height: 3.91 ft
Screen Length: 15. ft
Well Radius: 0.08612 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Confined
K = 0.001938 ft/min

Solution Method: Bouwer-Rice
 y_0 = 0.2145 ft



WELL TEST ANALYSIS

Data Set: N:\...\\MW-27B - Slug-in.aqt
Date: 09/30/21

Time: 11:49:32

PROJECT INFORMATION

Company: GHD
Client: City of Lawrence
Project: 11224213
Location: Farmland
Test Well: Slug-in
Test Date: 6/18/21

AQUIFER DATA

Saturated Thickness: 11. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

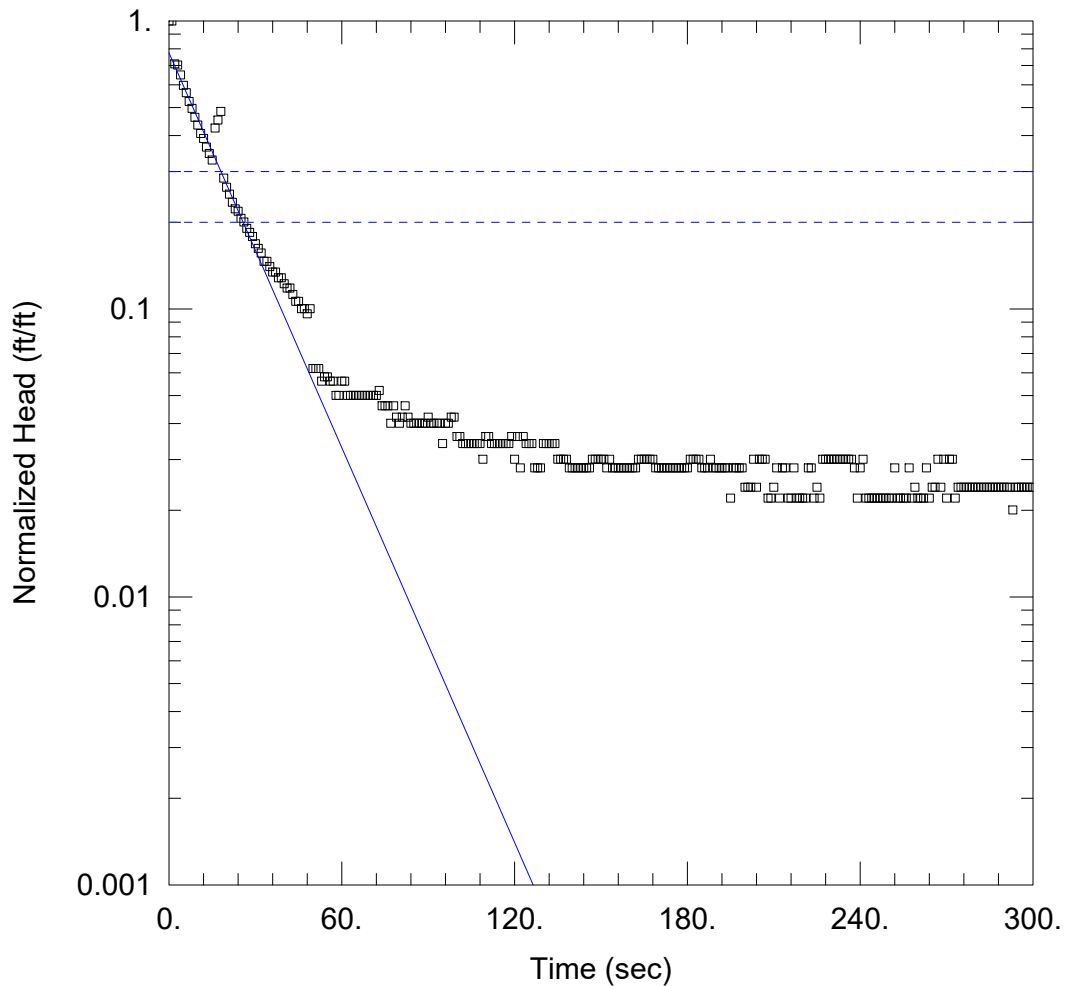
Initial Displacement: 1.095 ft
Total Well Penetration Depth: 49. ft
Casing Radius: 0.08612 ft

Static Water Column Height: 15.7 ft
Screen Length: 15. ft
Well Radius: 0.08612 ft

SOLUTION

Aquifer Model: Unconfined
K = 0.005557 ft/min

Solution Method: Bouwer-Rice
y0 = 0.7152 ft



WELL TEST ANALYSIS

Data Set: N:\...MW-27B - Slug-out.aqt

Date: 09/30/21

Time: 11:51:15

PROJECT INFORMATION

Company: GHD

Client: City of Lawrence

Project: 11224213

Location: Farmland

Test Well: Slug-out

Test Date: 6/18/21

AQUIFER DATA

Saturated Thickness: 11. ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (New Well)

Initial Displacement: 0.955 ft

Static Water Column Height: 15.7 ft

Total Well Penetration Depth: 49. ft

Screen Length: 15. ft

Casing Radius: 0.08612 ft

Well Radius: 0.08612 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 0.004979$ ft/min

$y_0 = 0.7398$ ft

Appendix F

Geotechnical Test Report

August 31, 2021

Mr. Travis Kogl
GHD Services Inc.
1502 SW 41st St.
Topeka, KS 66609

Transmitted via e-mail

Subject: Laboratory Test Report
Wichita, Kansas
GSI Project No. 2172196

Dear Mr. Kogl:

The GSI Engineering, LLC (GSI) laboratory received three soil samples for testing as summarized in the table below. Test results are summarized on the enclosed reports.

Sample ID	ASTM Test Method
MW-24 A, 18.5' – 20'	D5084
MW-27A, 15'	D5084
MW-28A, 8.5' – 10'	D5084

ASTM D5084: Measurement of Hydraulic Conductivity of Saturated Porous Materials

Please contact our office if you have any questions, or if you would like further information.

Respectfully submitted,
GSI Engineering, LLC



Taylor Boone
Project Manager

TB/ej
Enclosures (3)

g:\shared folder\jobs\wichita\217\2172\2172193 - ghd lab testing\lab reports\lab rpt perm 08-31.docx

PERMEABILITY TEST REPORT

Sample Identification:

MW-24A 18.5-20'

Sample Description:

Dark grayish brown fat clay

Preparation Remarks:

SPECIMEN DATA

SAMPLE INFORMATION	WET UNIT WEIGHT	DRY UNIT WEIGHT	MOISTURE CONTENT	VOID RATIO	SATURATION	POROSITY
	(pcf)	(pcf)	(%)			
INITIAL DATA	126.8	102.3	24.0	0.648	100%	0.393
DURING TEST DATA			24.0		100%	
FINAL DATA	125.8	100.9	24.7	0.670	100%	0.401
INITIAL SPECIMEN DIMENSIONS:		Diameter=	7.227	cm		
		Length=	6.017	cm		
FINAL SPECIMEN DIMENSIONS:		Diameter=	7.261	cm		
		Length=	6.047	cm		

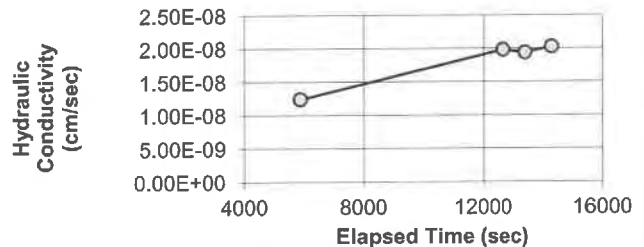
TEST INFORMATION

PERMEANT LIQUID USED: De-aired Water
MAGNITUDE OF TOTAL BACK PRESSURE: 40.0 psi
EFFECTIVE CONSOLIDATION STRESS: MAX= 7.0 psi
MIN= 5.4 psi
HYDRAULIC GRADIENT RANGE: HIGH= 28.90
LOW= 27.55

AVERAGE HYDRAULIC CONDUCTIVITY

corrected to 20°C

1.80E-08 cm/sec



Test conducted according to ASTM D5084-16.



GSI Engineering, LLC
4503 E. 47th Street South
Wichita, KS 67210
(316) 554-0725
www.gsinetwork.com

Project

GHD Lab Testing

Location

Wichita, Kansas

Job Number

2172193

Date

8/31/2021

PERMEABILITY TEST REPORT

Sample Identification:

MW-27A 15'

Sample Description:

Grayish brown fat clay w/ reddish brown clay

Preparation Remarks:

SPECIMEN DATA

SAMPLE INFORMATION	WET UNIT WEIGHT (pcf)	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	VOID RATIO	SATURATION	POROSITY
INITIAL DATA	129.3	103.6	24.8	0.627	100%	0.385
DURING TEST DATA			23.2		100%	
FINAL DATA	124.0	97.2	27.5	0.734	100%	0.423
INITIAL SPECIMEN DIMENSIONS:		Diameter=	6.943	cm		
		Length=	6.342	cm		
FINAL SPECIMEN DIMENSIONS:		Diameter=	6.976	cm		
		Length=	6.316	cm		

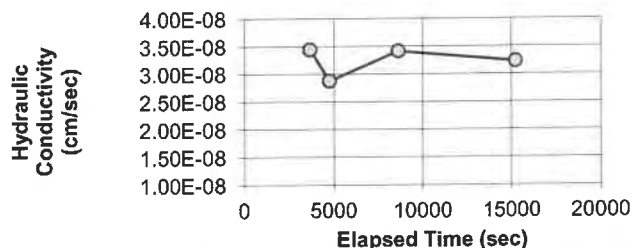
TEST INFORMATION

PERMEANT LIQUID USED: De-aired Water
 MAGNITUDE OF TOTAL BACK PRESSURE: 45.0 psi
 EFFECTIVE CONSOLIDATION STRESS: MAX= 7.0 psi
 MIN= 5.2 psi
 HYDRAULIC GRADIENT RANGE: HIGH= 26.96
 LOW= 24.71

AVERAGE HYDRAULIC CONDUCTIVITY

corrected to 20°C

3.24E-08 cm/sec



Test conducted according to ASTM D5084-16.



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 4503 E. 47th Street South
 Wichita, KS 67210
 (316) 554-0725
 www.gsinetwork.com

Project

GHD Lab Testing

Location

Wichita, Kansas

Job Number

2172193

Date

8/31/2021

PERMEABILITY TEST REPORT

Sample Identification:

MW-28A 8.5-10'

Sample Description:

Yellowish brown lean clay

Preparation Remarks:

SPECIMEN DATA

SAMPLE INFORMATION	WET UNIT WEIGHT (pcf)	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	VOID RATIO	SATURATION POROSITY
INITIAL DATA	126.0	99.4	26.8	0.695	100%
DURING TEST DATA			25.7		100%
FINAL DATA	127.6	103.5	23.3	0.628	100%
INITIAL SPECIMEN DIMENSIONS:		Diameter=	7.153	cm	
		Length=	6.375	cm	
FINAL SPECIMEN DIMENSIONS:		Diameter=	7.037	cm	
		Length=	6.319	cm	

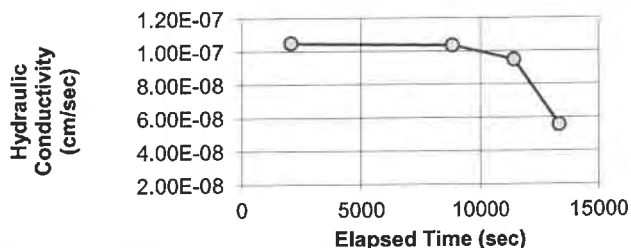
TEST INFORMATION

PERMEANT LIQUID USED: De-aired Water
 MAGNITUDE OF TOTAL BACK PRESSURE: 65.0 psi
 EFFECTIVE CONSOLIDATION STRESS: MAX= 7.0 psi
 MIN= 5.0 psi
 HYDRAULIC GRADIENT RANGE: HIGH= 28.13
 LOW= 22.28

AVERAGE HYDRAULIC CONDUCTIVITY

corrected to 20°C

8.97E-08 cm/sec



Test conducted according to ASTM D5084-16.



GSI

GSI Engineering, LLC
 4503 E. 47th Street South
 Wichita, KS 67210
 (316) 554-0725
 www.gsinetwork.com

Project

GHD Lab Testing

Location

Wichita, Kansas

Job Number

2172193

Date

8/31/2021

September 3, 2021

Mr. Travis Kogl
GHD Services Inc.
1502 SW 41st St.
Topeka, KS 66609

Transmitted via e-mail

Subject: Laboratory Test Report
Wichita, Kansas
GSI Project No. 2172196

Dear Mr. Kogl:

The GSI Engineering, LLC (GSI) laboratory received four soil samples for testing as summarized in the table below. Test results are summarized on the enclosed reports.

Sample No.	Sample Depth (ft.)	ASTM Test Method
MW27B	23.5 - 25	D422 and D1140
MW24B	53.5 - 55	D422 and D1140
MW25	54.5 - 55	D422 and D1140
MW27B	23.5 - 25	D422 and D1140

ASTM D422: Particle-Size Analysis of Soils

ASTM D1140: Amount of Material Finer than the No. 200 Sieve

Please contact our office if you have any questions, or if you would like further information.

Respectfully submitted,
GSI Engineering, LLC

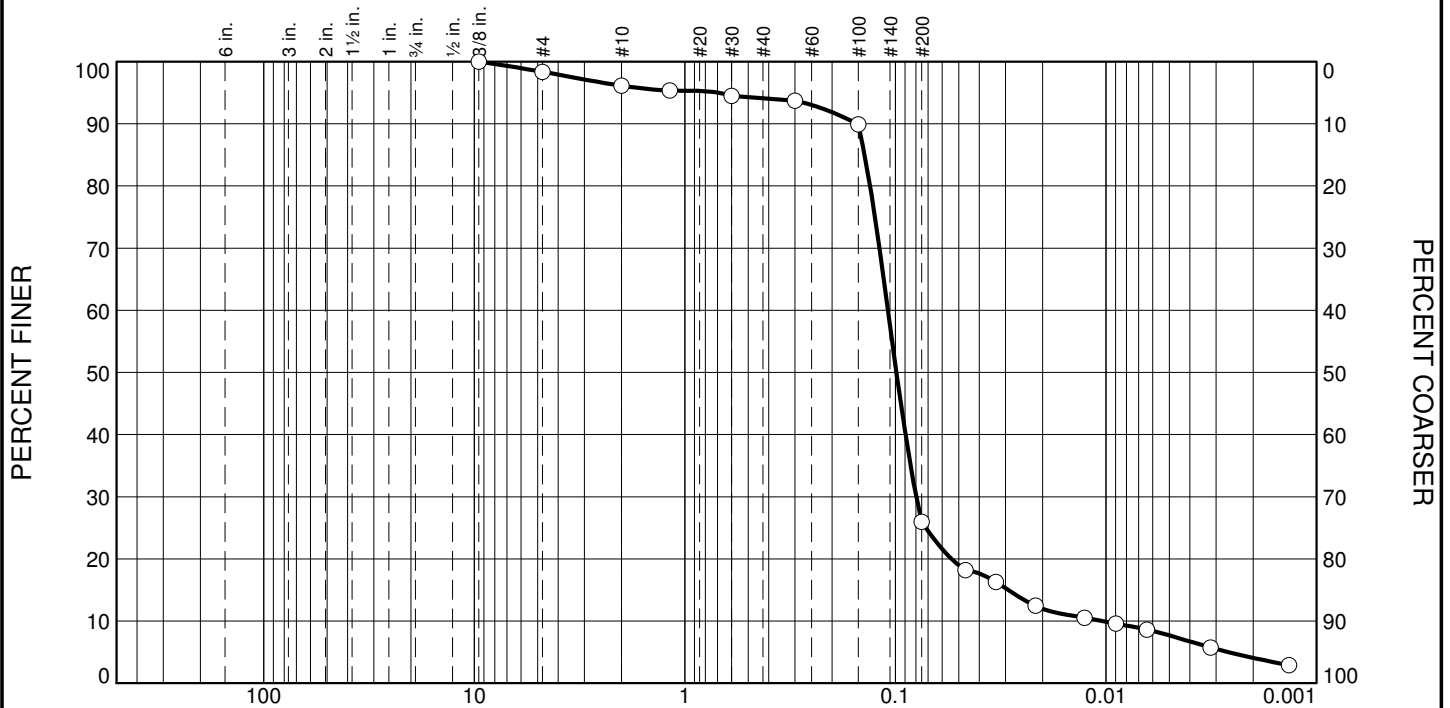


Taylor Boone
Project Manager

TB/ej
Enclosures (4)

g:\shared folder\jobs\wichita\217\2172\2172193 - ghd lab testing\lab reports\lab test rpt 09-03.docx

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.6	2.3	2.0	68.2	18.2	7.7

Test Results (ASTM D 422 & ASTM D 1140)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3/8"	100.0		
#4	98.4		
#10	96.1		
#16	95.4		
#30	94.5		
#50	93.7		
#100	89.9		
#200	25.9		
0.0465 mm.	18.2		
0.0333 mm.	16.3		
0.0216 mm.	12.4		
0.0126 mm.	10.5		
0.0090 mm.	9.6		
0.0064 mm.	8.6		
0.0032 mm.	5.7		
0.0013 mm.	2.9		

* (no specification provided)

Material Description

Reddish brown clayey sand

Classification

USCS (D 2487)=

AASHTO (M 145)=

Coefficients

D₉₀= 0.1521

D₈₅= 0.1400

D₆₀= 0.1084

D₅₀= 0.0988

D₃₀= 0.0797

D₁₅= 0.0291

D₁₀= 0.0104

C_u= 10.41

C_c= 5.63

Remarks

Date Received: NA Date Tested: 8-16-21

Tested By: TB

Checked By:

Title:

Location: MW27B

Sample Number: MW27B

Depth: 23.5-25

Date Sampled: NP



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Wichita, KS 67210
316-554-0725

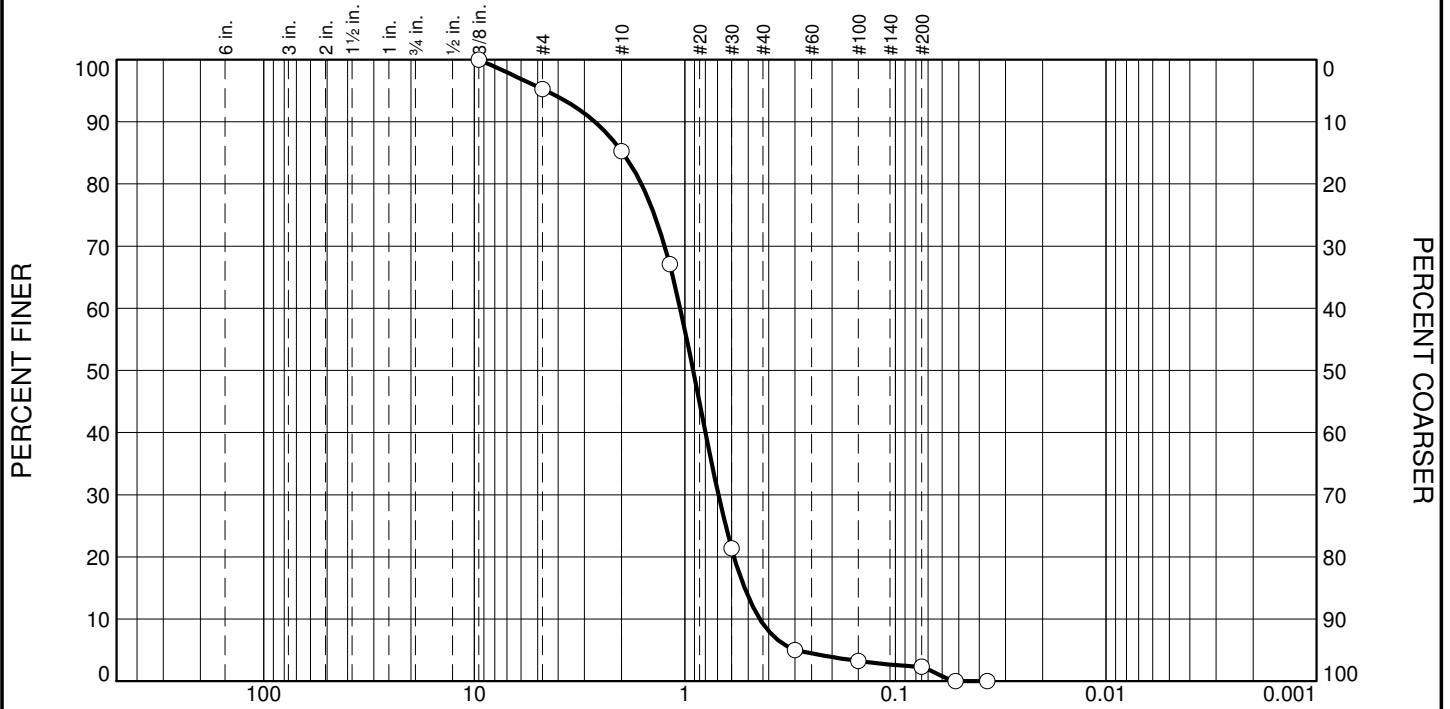
Client: GHD Services Inc.

Project: GHD Lab Testing

Project No: 2172193

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	4.7	10.0	76.1	6.9	2.3	0.0

Test Results (ASTM D 422 & ASTM D 1140)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3/8"	100.0		
#4	95.3		
#10	85.3		
#16	67.1		
#30	21.4		
#50	5.0		
#100	3.3		
#200	2.3		
0.0517 mm.	0.0		
0.0366 mm.	0.0		

* (no specification provided)

Material Description

Grey poorly graded sand

Classification

USCS (D 2487)= SP AASHTO (M 145)=

Coefficients

D₉₀= 2.6771 **D₈₅**= 1.9729 **D₆₀**= 1.0526
D₅₀= 0.9134 **D₃₀**= 0.6922 **D₁₅**= 0.5206
D₁₀= 0.4407 **C_u**= 2.39 **C_c**= 1.03

Remarks

Date Received: NA Date Tested: 8-19-21
 Tested By: MD
 Checked By: _____
 Title: _____

Location: MW24B

Sample Number: MW24B

Depth: 53.5-55

Date Sampled: NP



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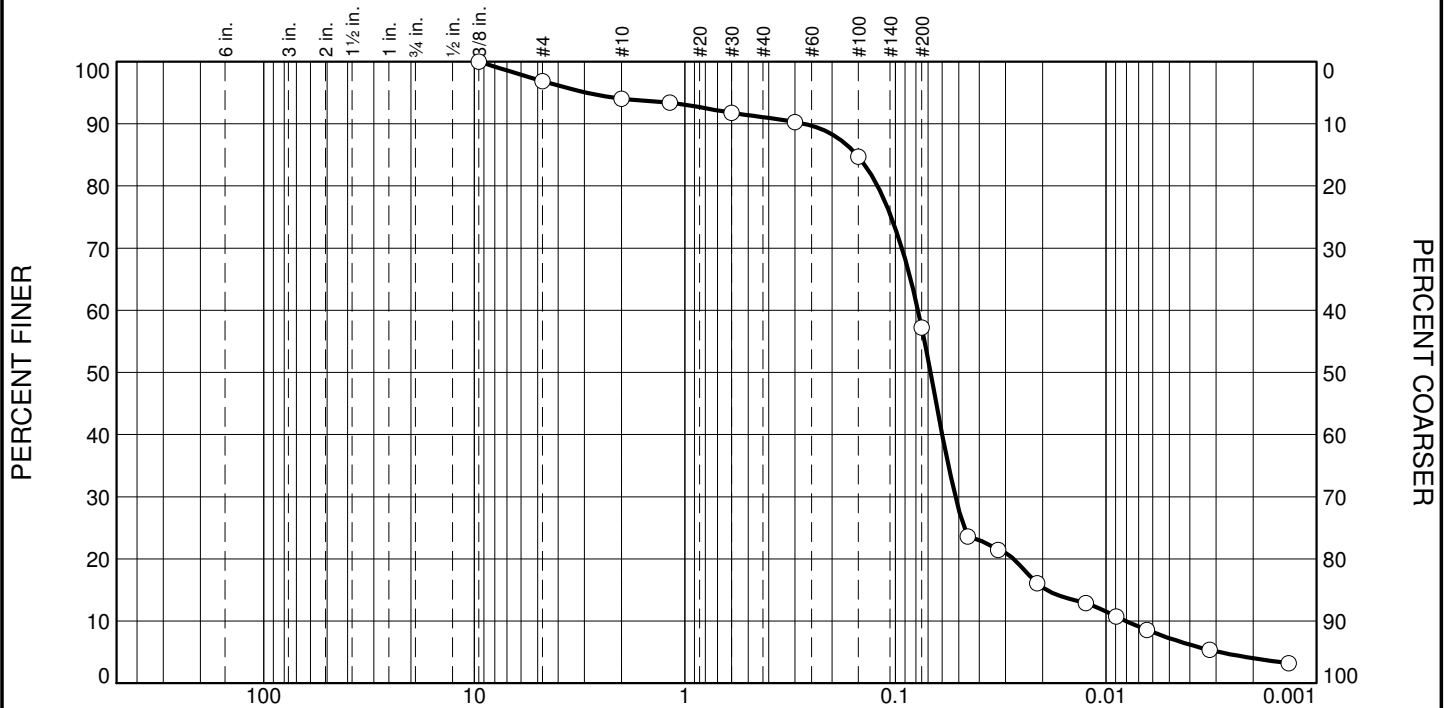
Client: GHD Services Inc.

Project: GHD Lab Testing

Project No: 2172193

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	3.1	2.9	2.9	33.9	50.0	7.2

Test Results (ASTM D 422 & ASTM D 1140)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3/8"	100.0		
#4	96.9		
#10	94.0		
#16	93.4		
#30	91.8		
#50	90.3		
#100	84.7		
#200	57.2		
0.0453 mm.	23.6		
0.0325 mm.	21.5		
0.0212 mm.	16.1		
0.0125 mm.	12.9		
0.0089 mm.	10.7		
0.0064 mm.	8.6		
0.0032 mm.	5.4		
0.0014 mm.	3.2		

* (no specification provided)

Material Description

Grey clayey sand

Classification

USCS (D 2487)=

AASHTO (M 145)=

Coefficients

D₉₀= 0.2739

D₈₅= 0.1527

D₆₀= 0.0781

D₅₀= 0.0681

D₃₀= 0.0519

D₁₅= 0.0192

D₁₀= 0.0080

C_u= 9.74

C_c= 4.30

Remarks

Date Received: NA Date Tested: 8-19-21

Tested By: MD

Checked By:

Title:

Location: MW25

Sample Number: MW25

Depth: 54.5-55

Date Sampled: NP



4503 East 47th Street South
Wichita, KS 67210
316-554-0725

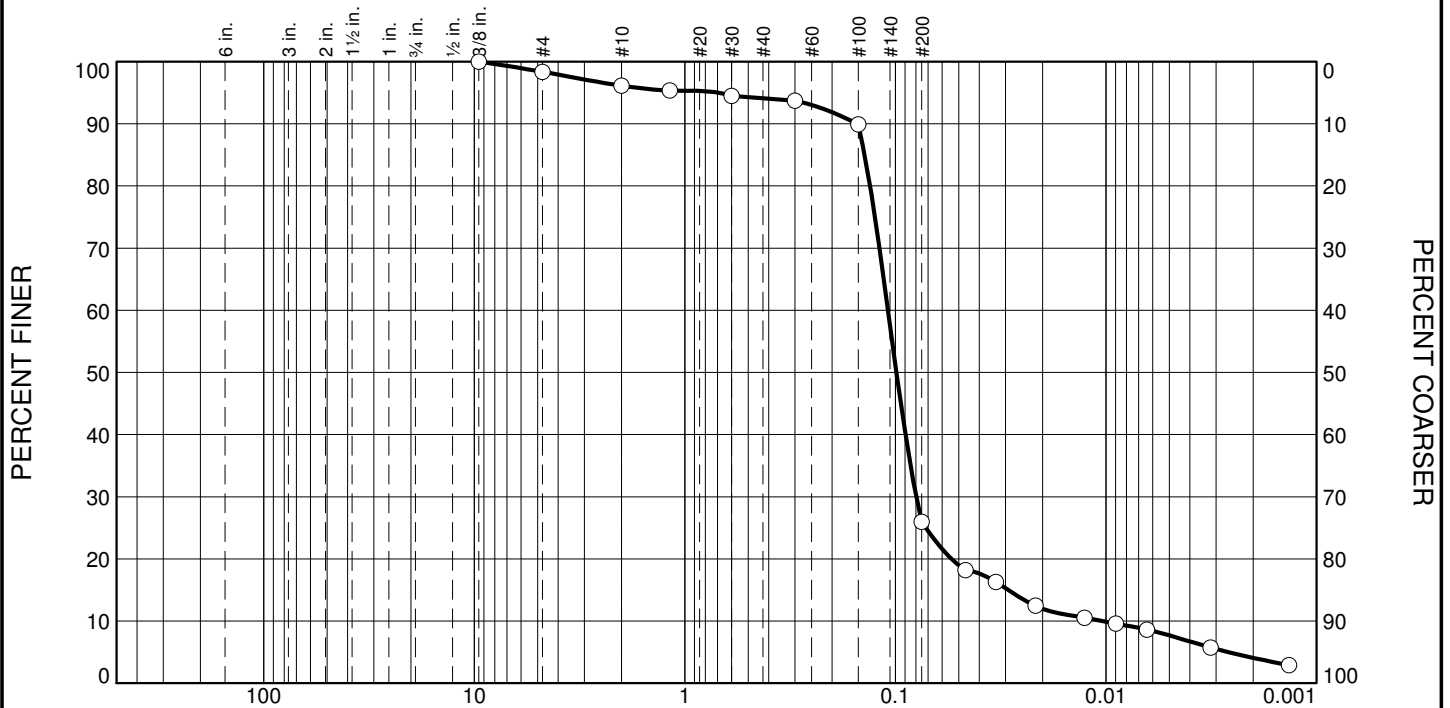
Client: GHD Services Inc.

Project: GHD Lab Testing

Project No: 2172193

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.6	2.3	2.0	68.2	18.2	7.7

Test Results (ASTM D 422 & ASTM D 1140)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3/8"	100.0		
#4	98.4		
#10	96.1		
#16	95.4		
#30	94.5		
#50	93.7		
#100	89.9		
#200	25.9		
0.0465 mm.	18.2		
0.0333 mm.	16.3		
0.0216 mm.	12.4		
0.0126 mm.	10.5		
0.0090 mm.	9.6		
0.0064 mm.	8.6		
0.0032 mm.	5.7		
0.0013 mm.	2.9		

* (no specification provided)

Material Description

Reddish brown clayey sand

Classification

USCS (D 2487)=

AASHTO (M 145)=

Coefficients

D₉₀= 0.1521

D₈₅= 0.1400

D₆₀= 0.1084

D₅₀= 0.0988

D₃₀= 0.0797

D₁₅= 0.0291

D₁₀= 0.0104

C_u= 10.41

C_c= 5.63

Remarks

Date Received: NA Date Tested: 8-16-21

Tested By: TB

Checked By:

Title:

Location: MW27B

Sample Number: MW27B

Depth: 23.5-25

Date Sampled: NP



4503 East 47th Street South
Wichita, KS 67210
316-554-0725

Client: GHD Services Inc.

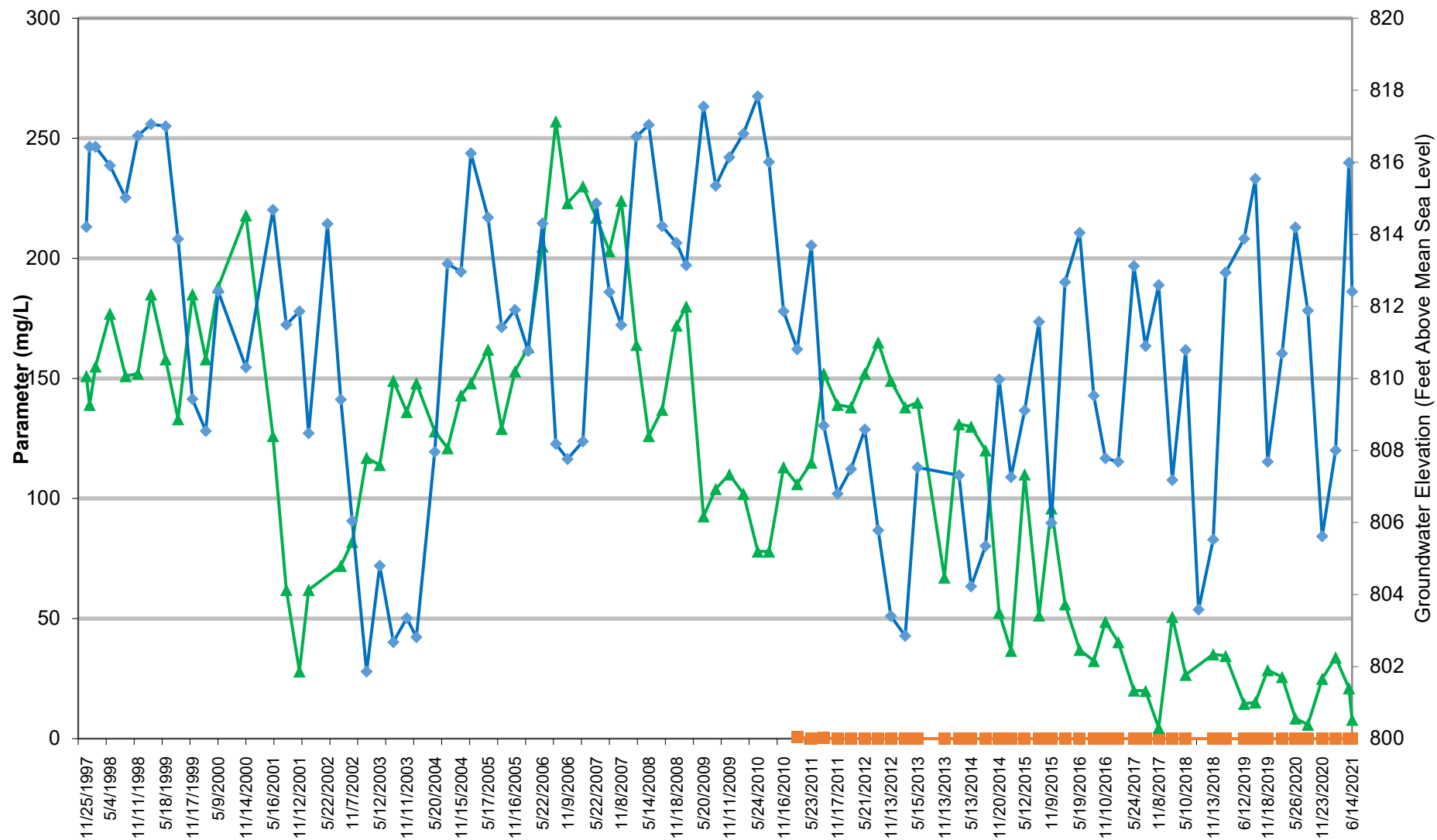
Project: GHD Lab Testing

Project No: 2172193

Figure

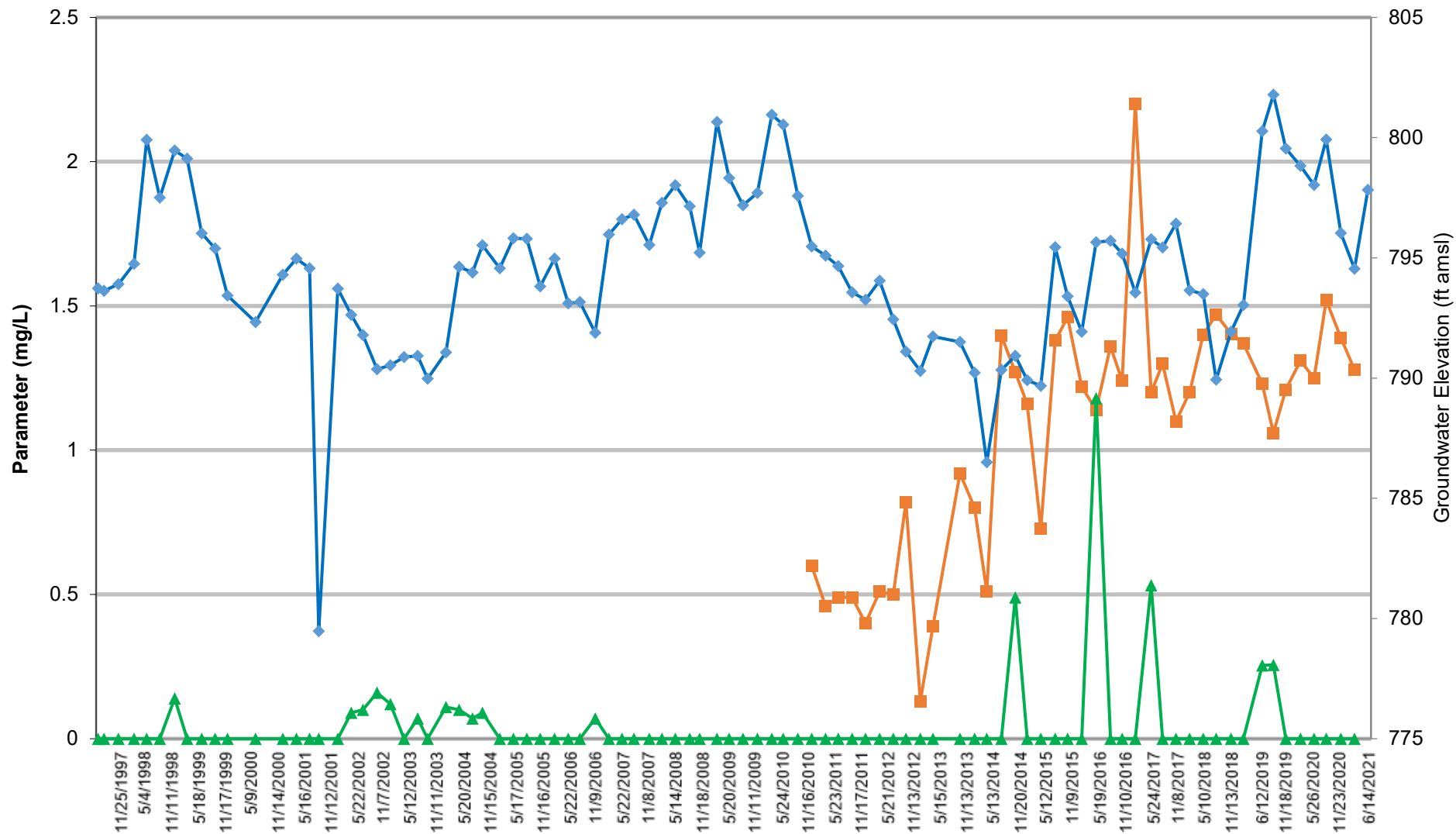
Appendix G

**Graphs - Concentrations and Groundwater
Elevations over Time**



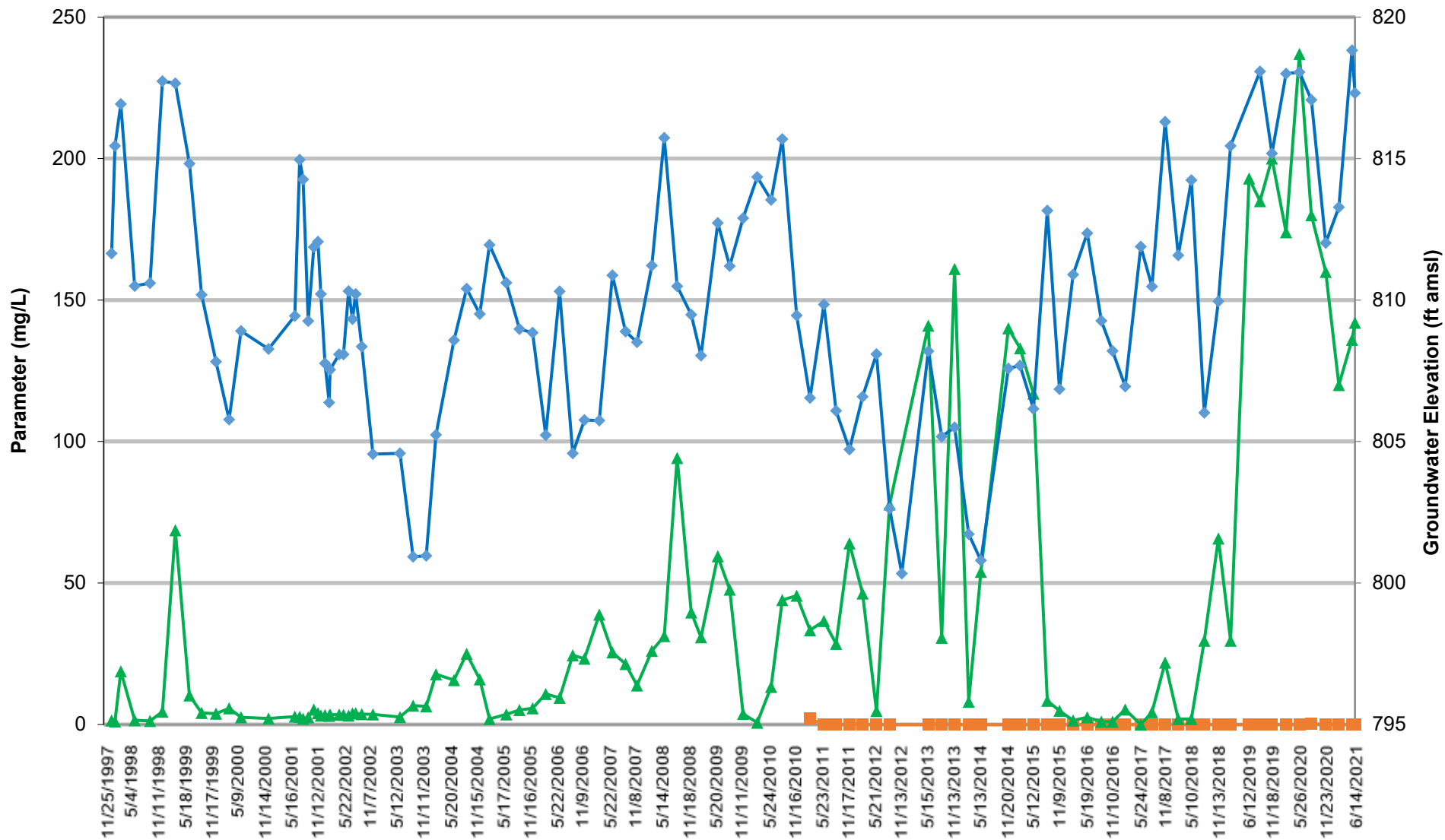
- Ammonia Concentration
- Nitrite/Nitrate Concentration
- Groundwater Elevation

PSW-1A
Concentrations and Groundwater Elevation vs. Time



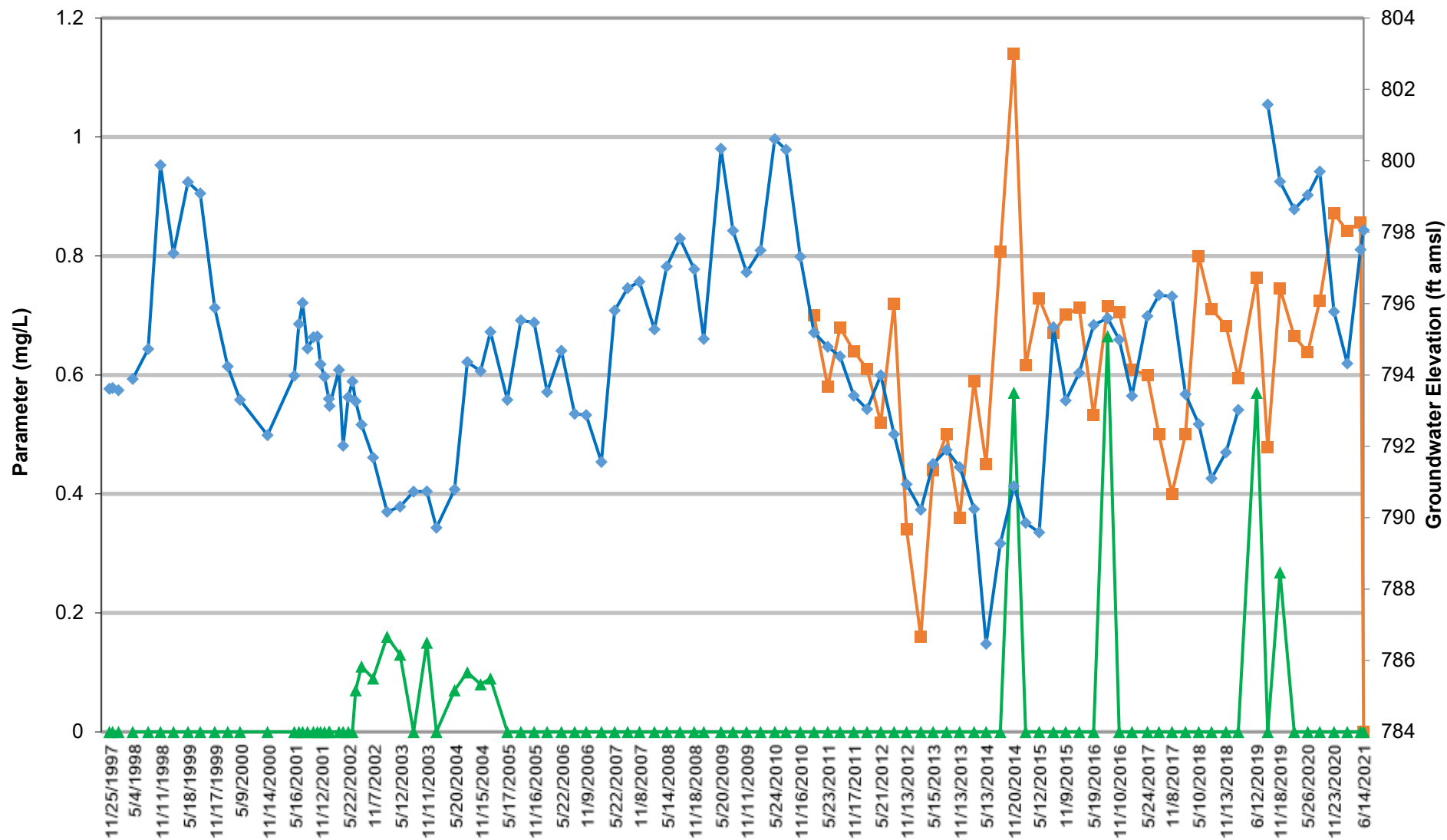
- Ammonia Concentration
- ▲— Nitrite/Nitrate Concentration
- ◆— Groundwater Elevation

PSW-1B
Concentrations and Groundwater Elevation vs. Time



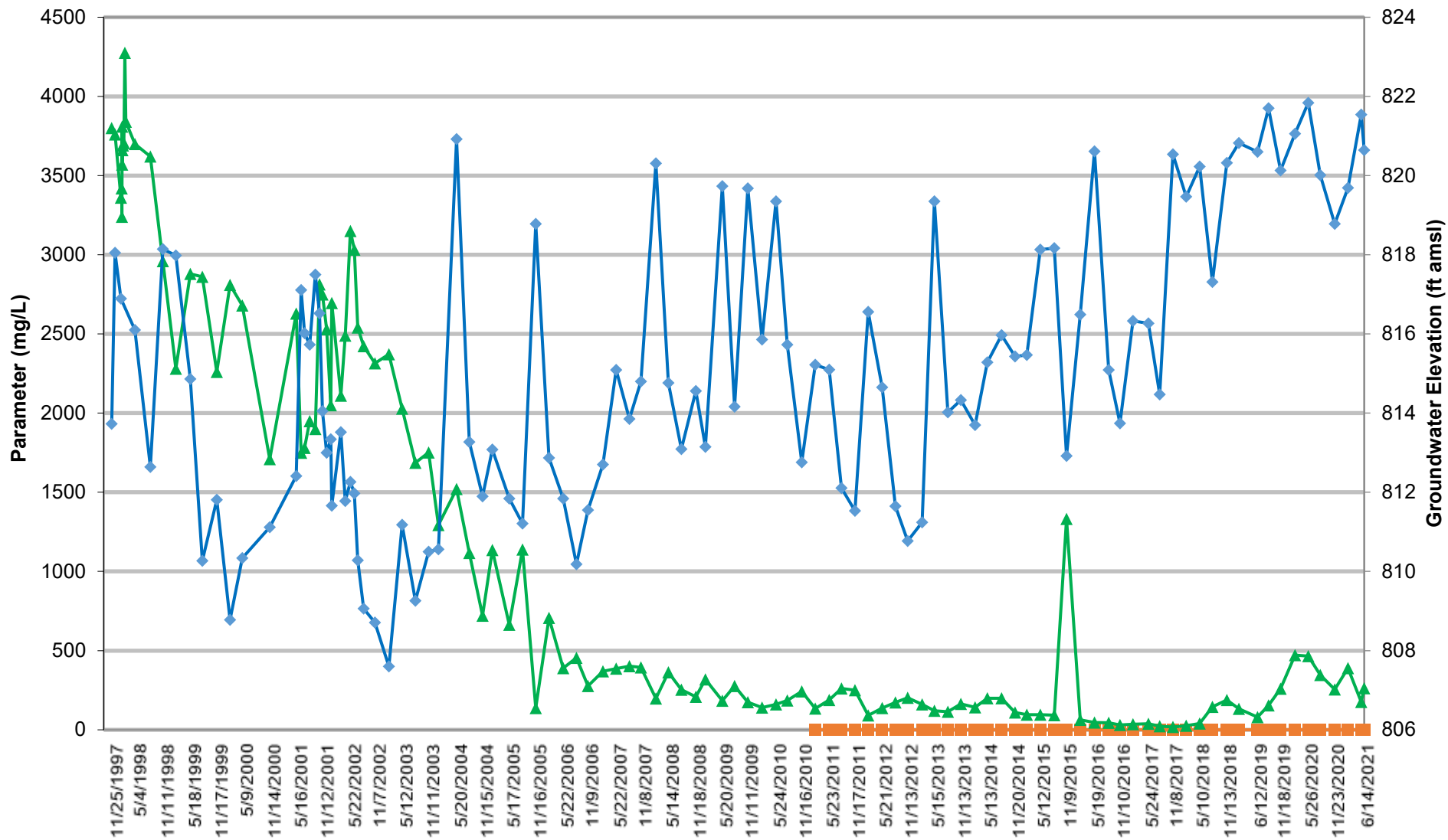
- Ammonia Concentration
- ▲— Nitrite/Nitrate Concentration
- ◆— Groundwater Elevation

PSW-2A
Concentrations and Groundwater Elevation vs. Time



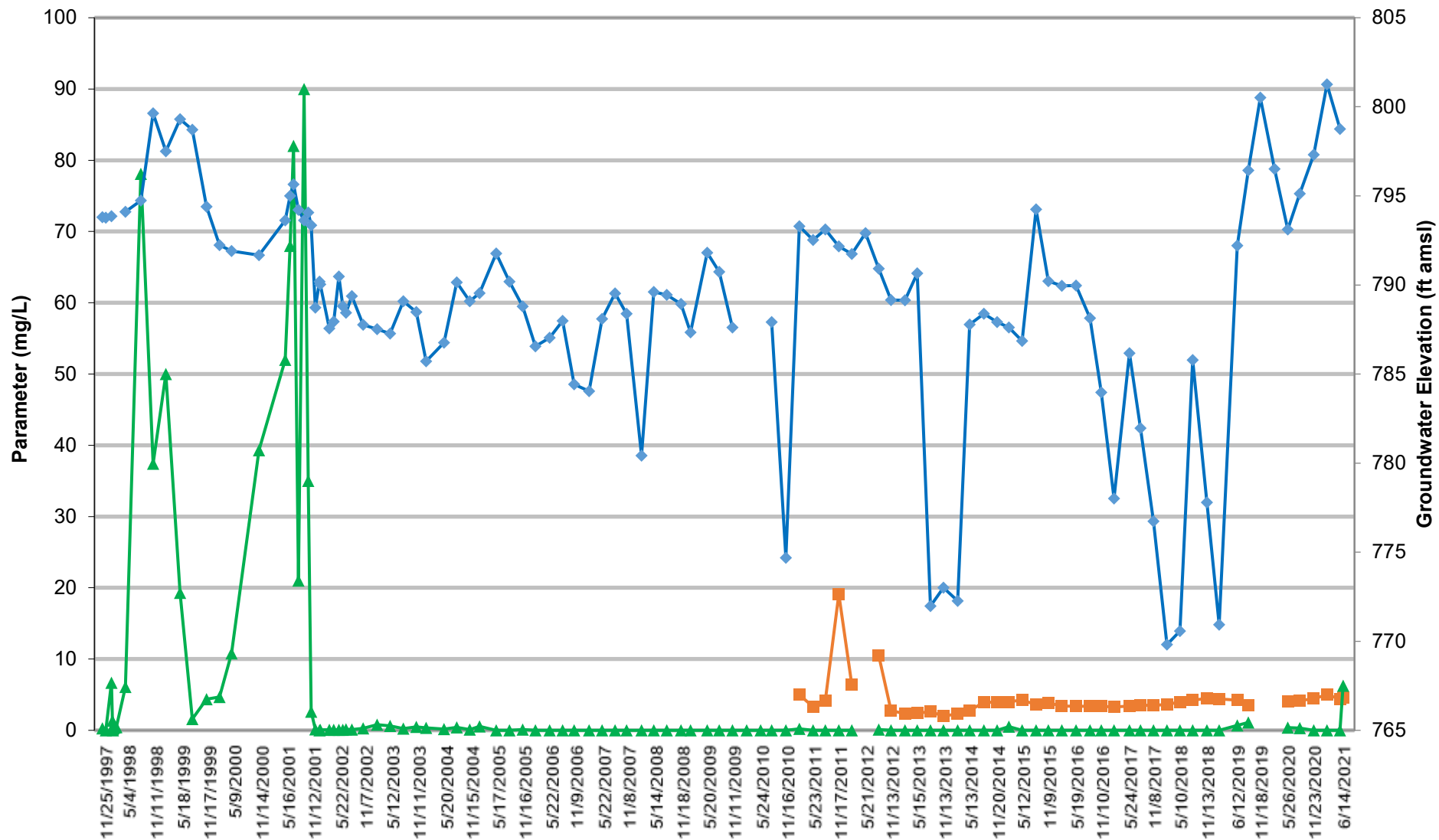
- Ammonia Concentration
- ▲— Nitrite/Nitrate Concentration
- ◆— Groundwater Elevation

PSW-2B
Concentrations and Groundwater Elevation vs. Time



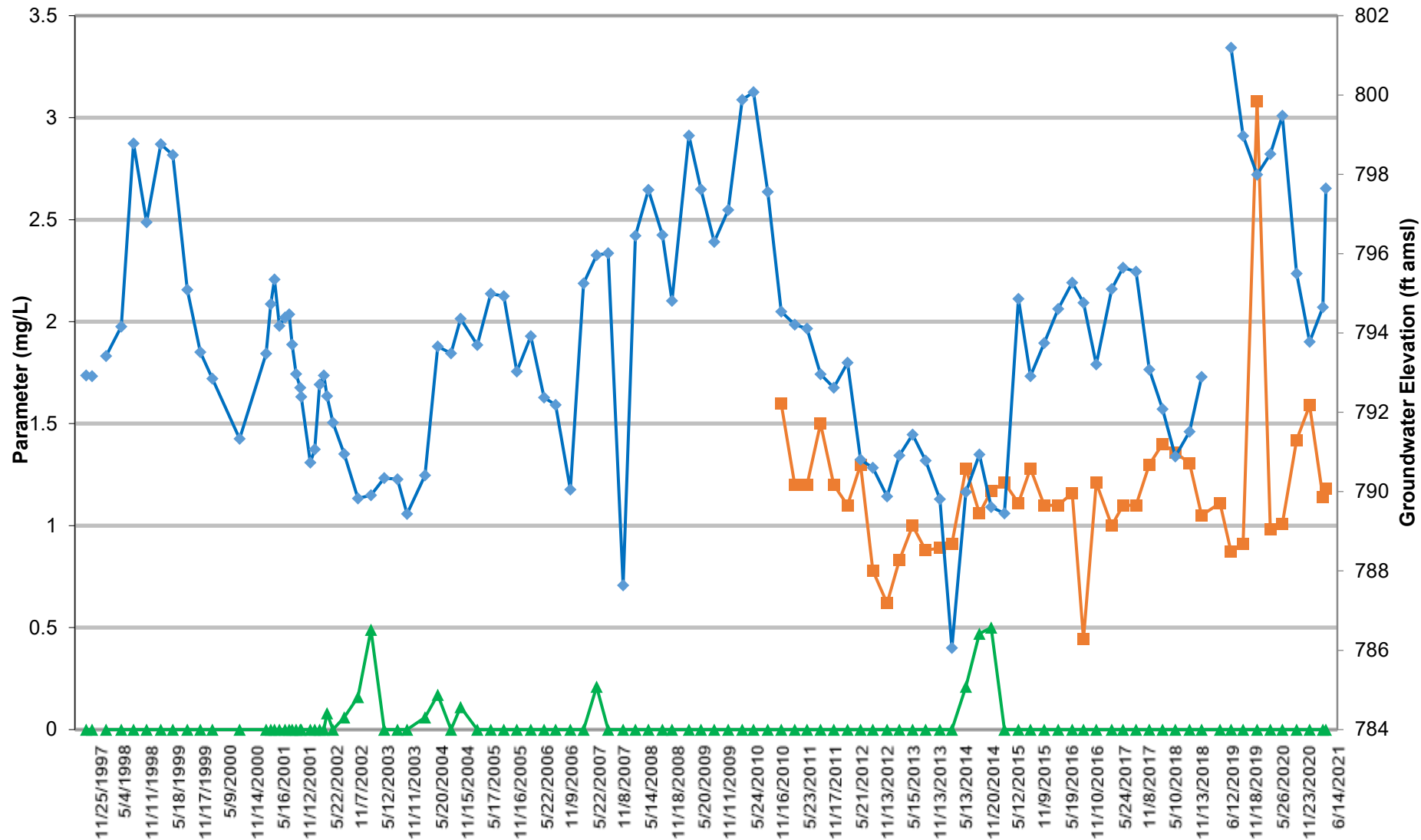
- Ammonia Concentration
- Nitrite/Nitrate Concentration
- Groundwater Elevation

PSW-3A
Concentrations and Groundwater Elevation vs. Time



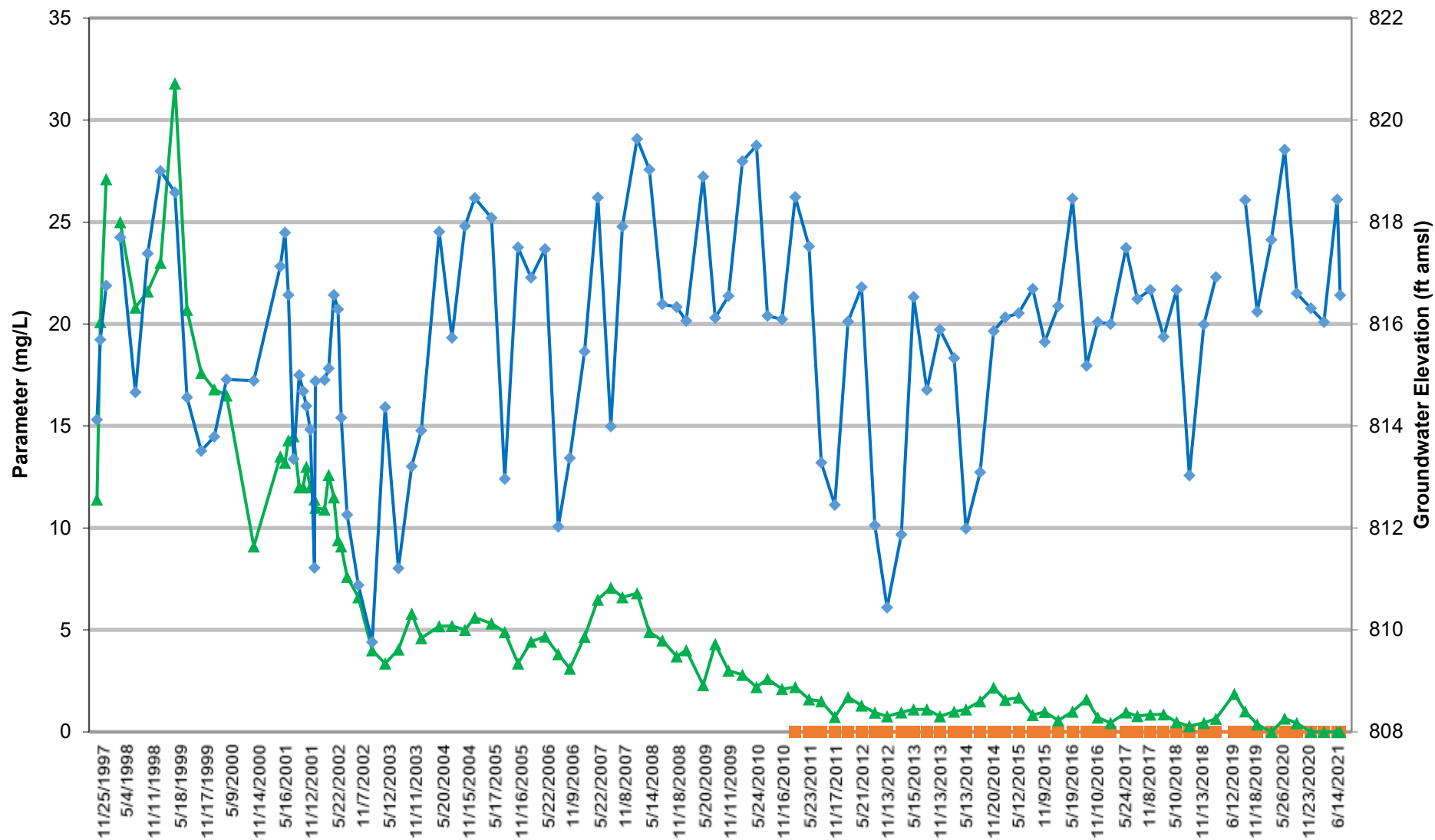
—■— Ammonia Concentration
—▲— Nitrite/Nitrate Concentration
—◆— Groundwater Elevation

PSW-3B3
 Concentrations and Groundwater Elevation vs. Time



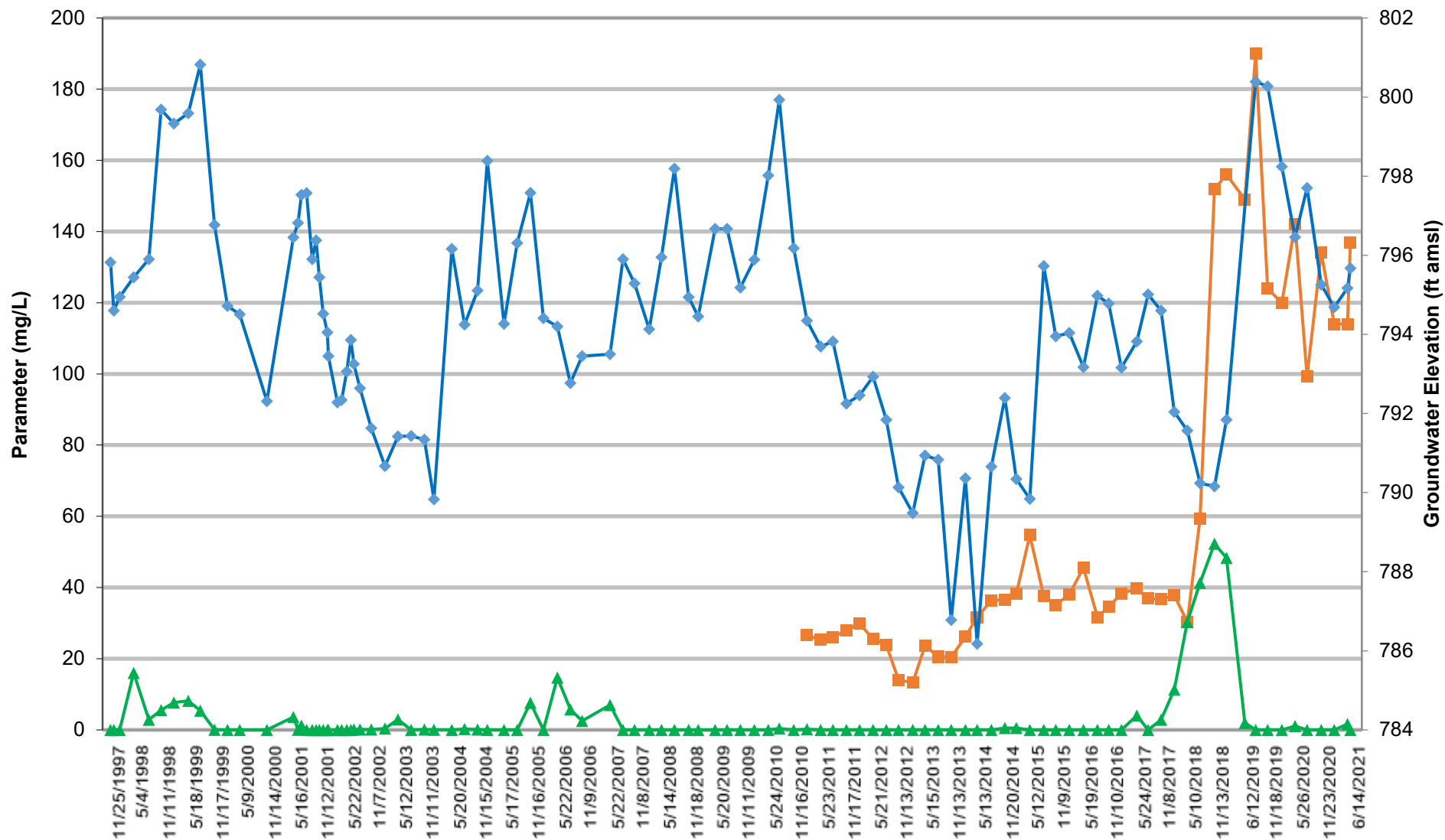
- Ammonia Concentration
- ▲ Nitrite/Nitrate Concentration
- ◆ Groundwater Elevation

PSW-4
Concentrations and Groundwater Elevation vs. Time



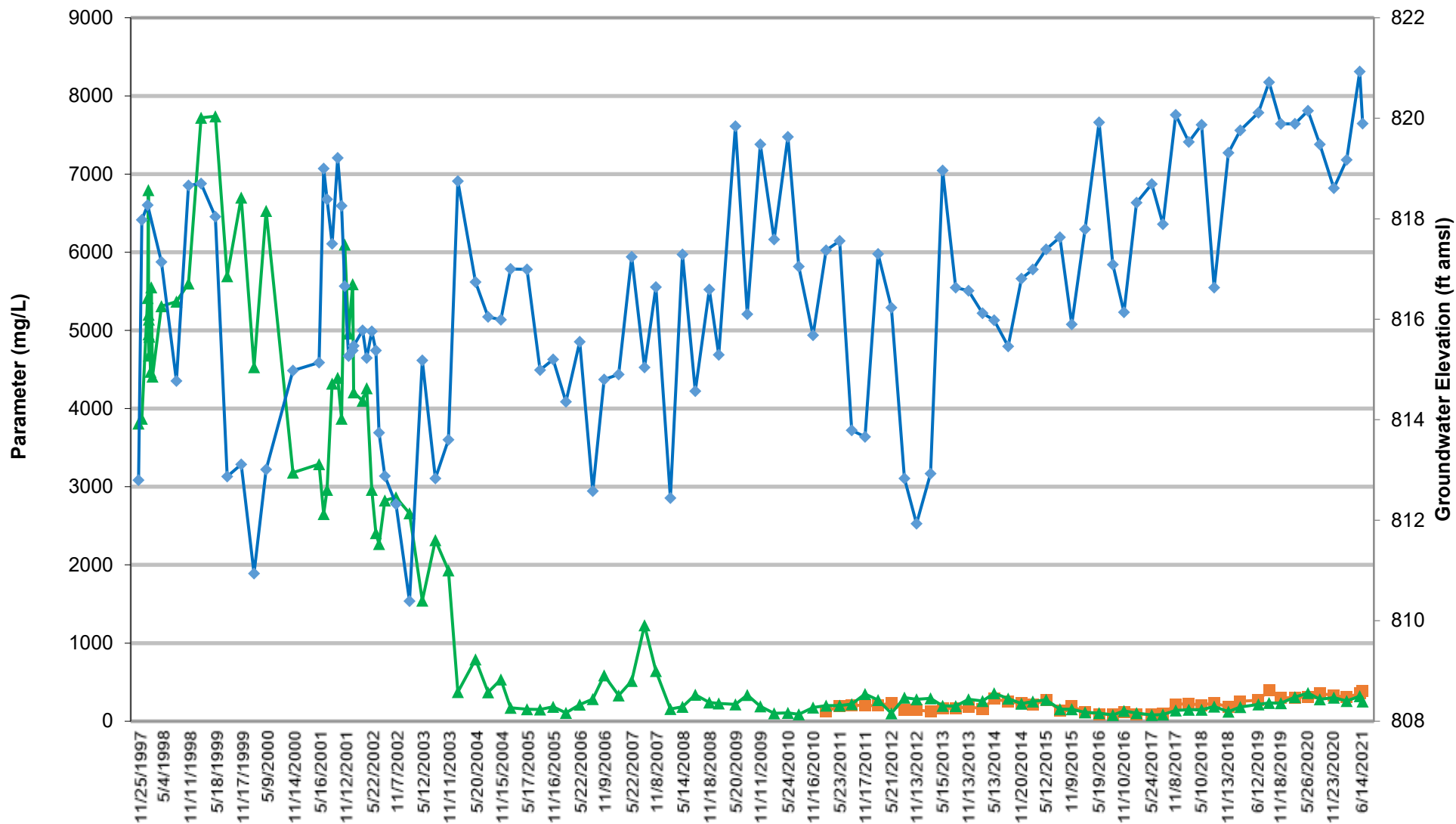
- Ammonia Concentration
- Nitrite/Nitrate Concentration
- Groundwater Elevation

PSW-5A
Concentrations and Groundwater Elevation vs. Time



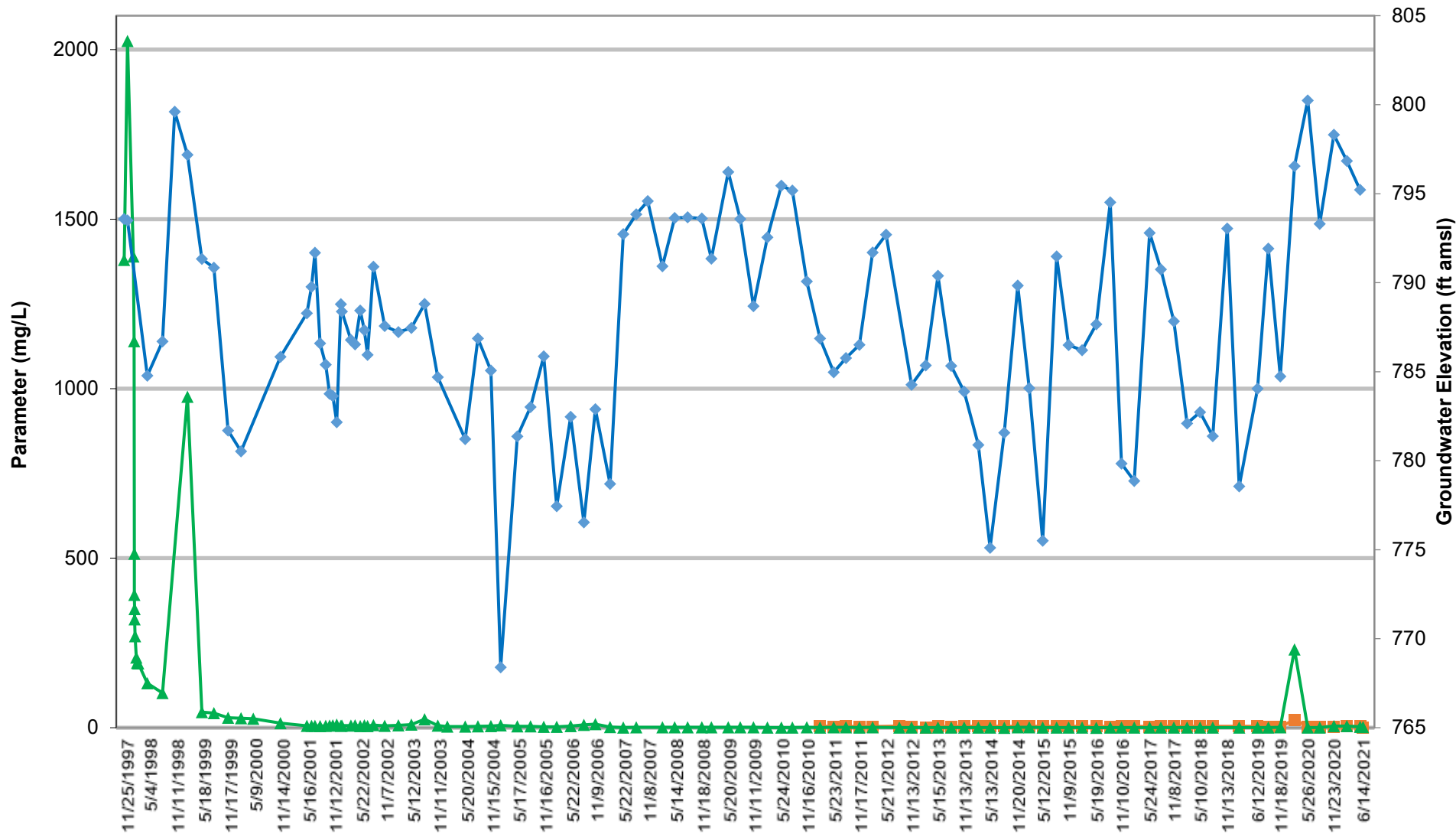
- Ammonia Concentration
- Nitrite/Nitrate Concentration
- Groundwater Elevation

PSW-5B/PSW-5B2
Concentrations and Groundwater Elevation vs. Time



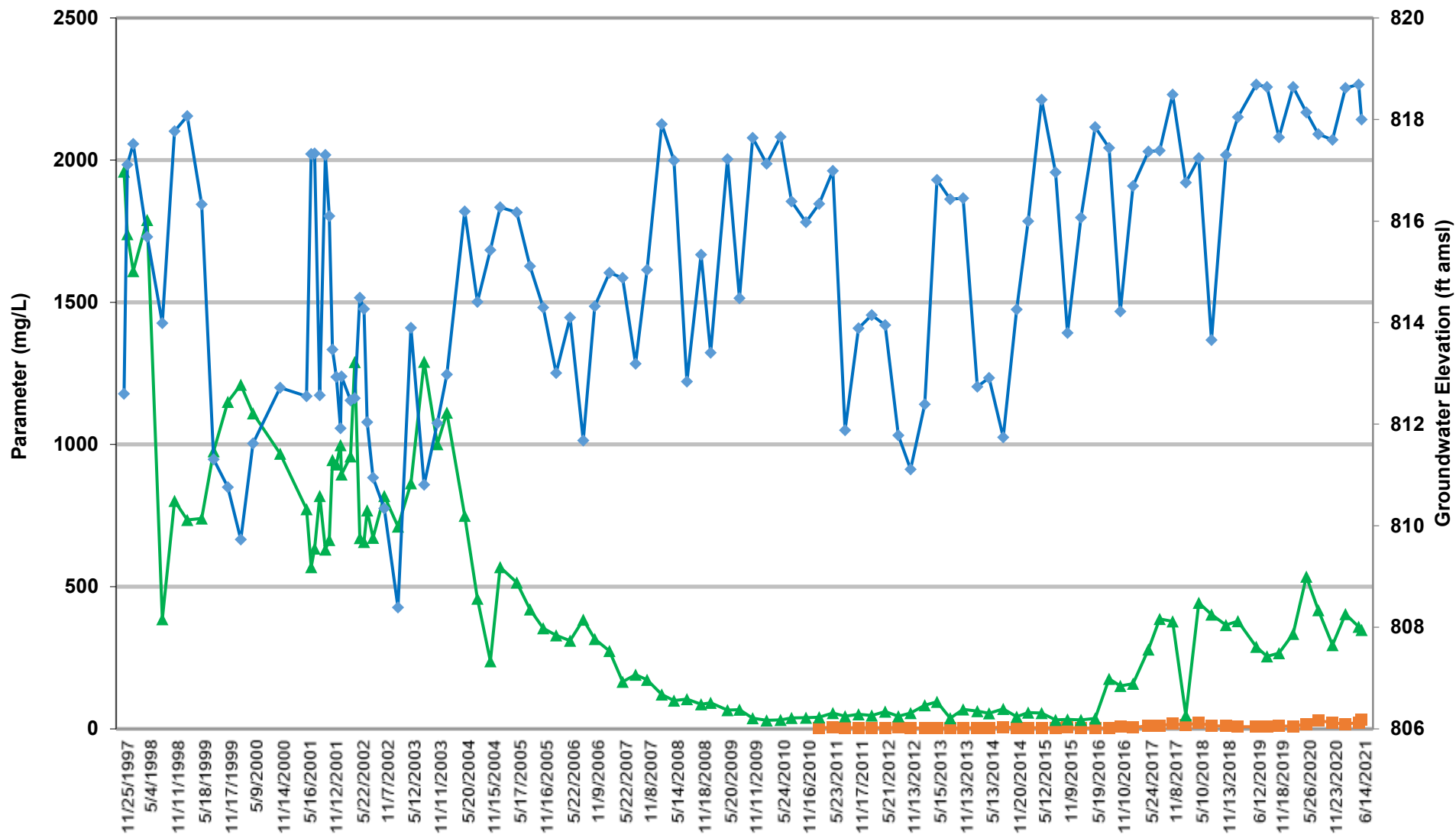
- Ammonia Concentration
- ▲ Nitrite/Nitrate Concentration
- ◆ Groundwater Elevation

PSW-6A
Concentrations and Groundwater Elevation vs. Time



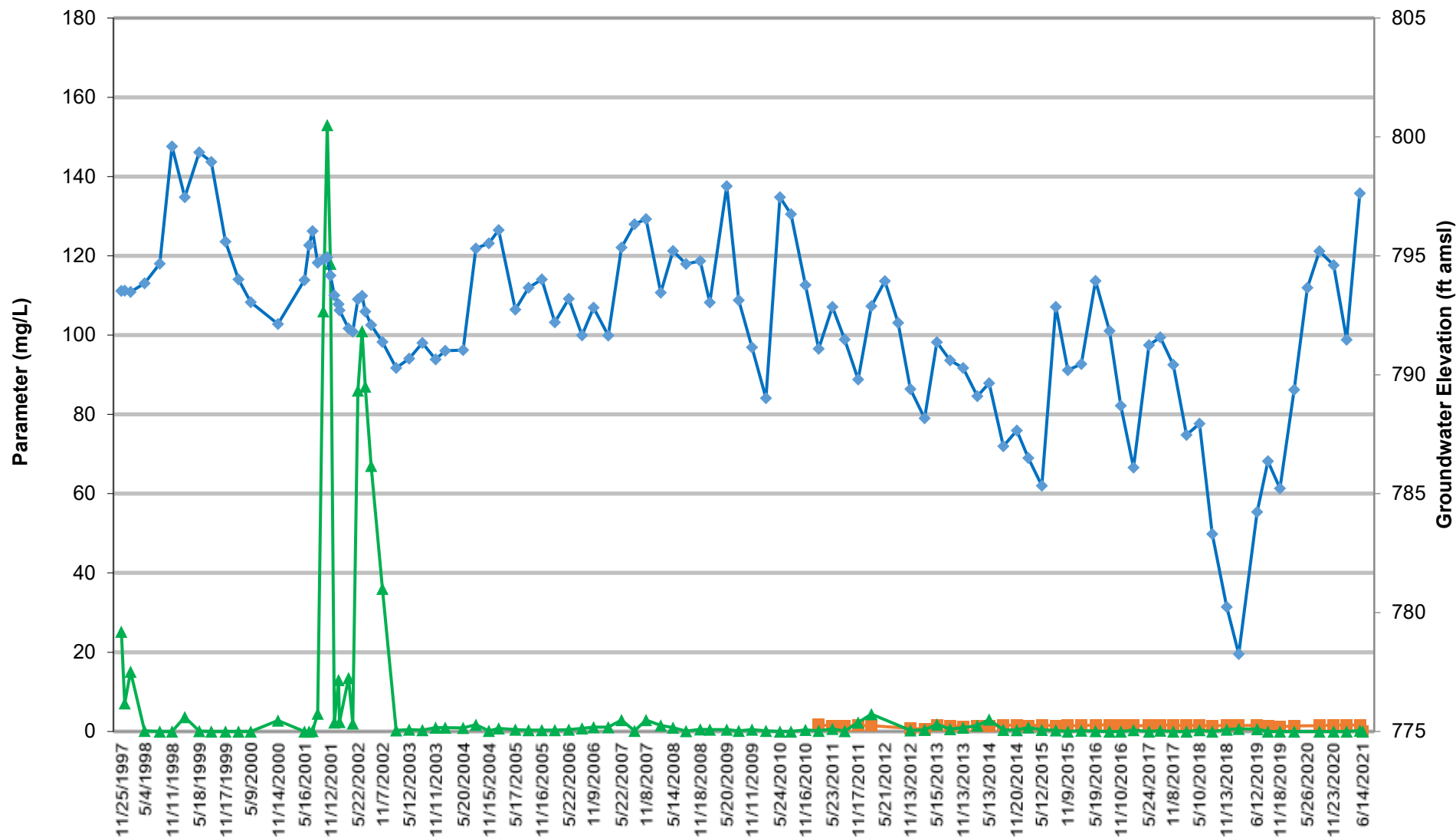
— Ammonia Concentration
 — Nitrite/Nitrate Concentration
 — Groundwater Elevation

PSW-6B/B2/B3/B4
Concentrations and Groundwater Elevation vs. Time



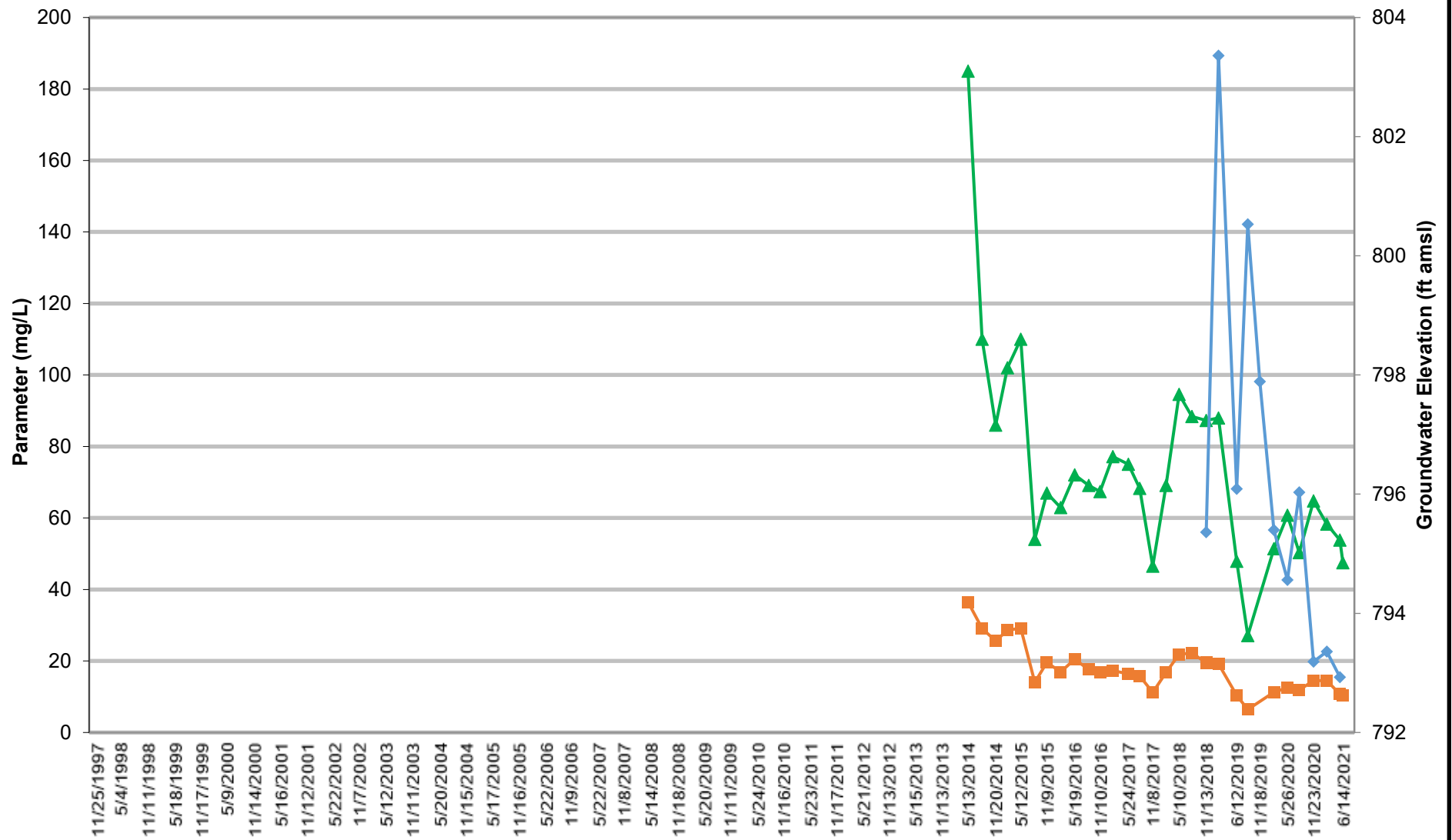
- Ammonia Concentration
- ▲— Nitrite/Nitrate Concentration
- ◆— Groundwater Elevation

PSW-7A
Concentrations and Groundwater Elevation vs. Time



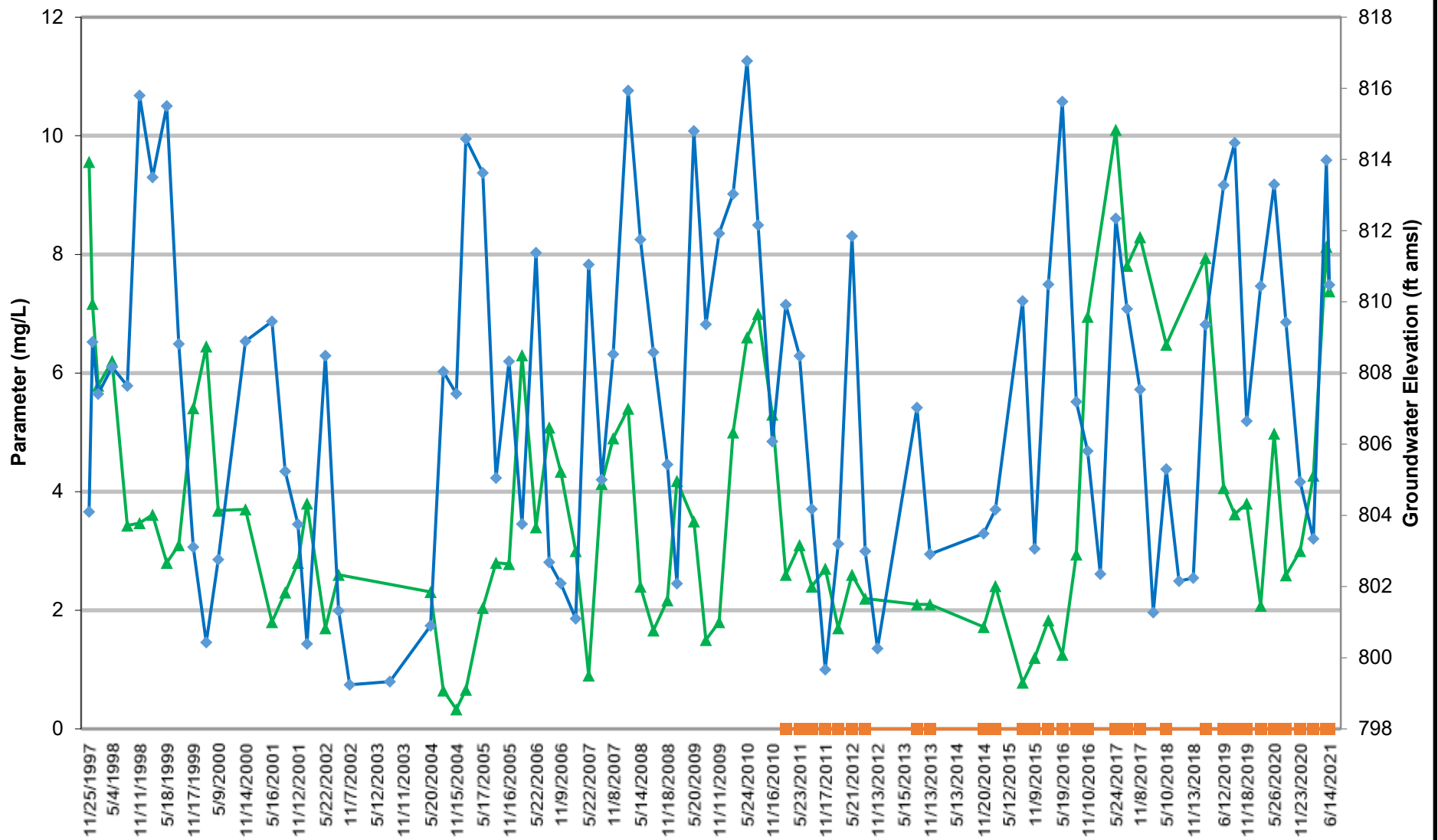
- Ammonia Concentration
- Nitrite/Nitrate Concentration
- Groundwater Elevation

PSW-7B/PSW-7B2
Concentrations and Groundwater Elevation vs. Time



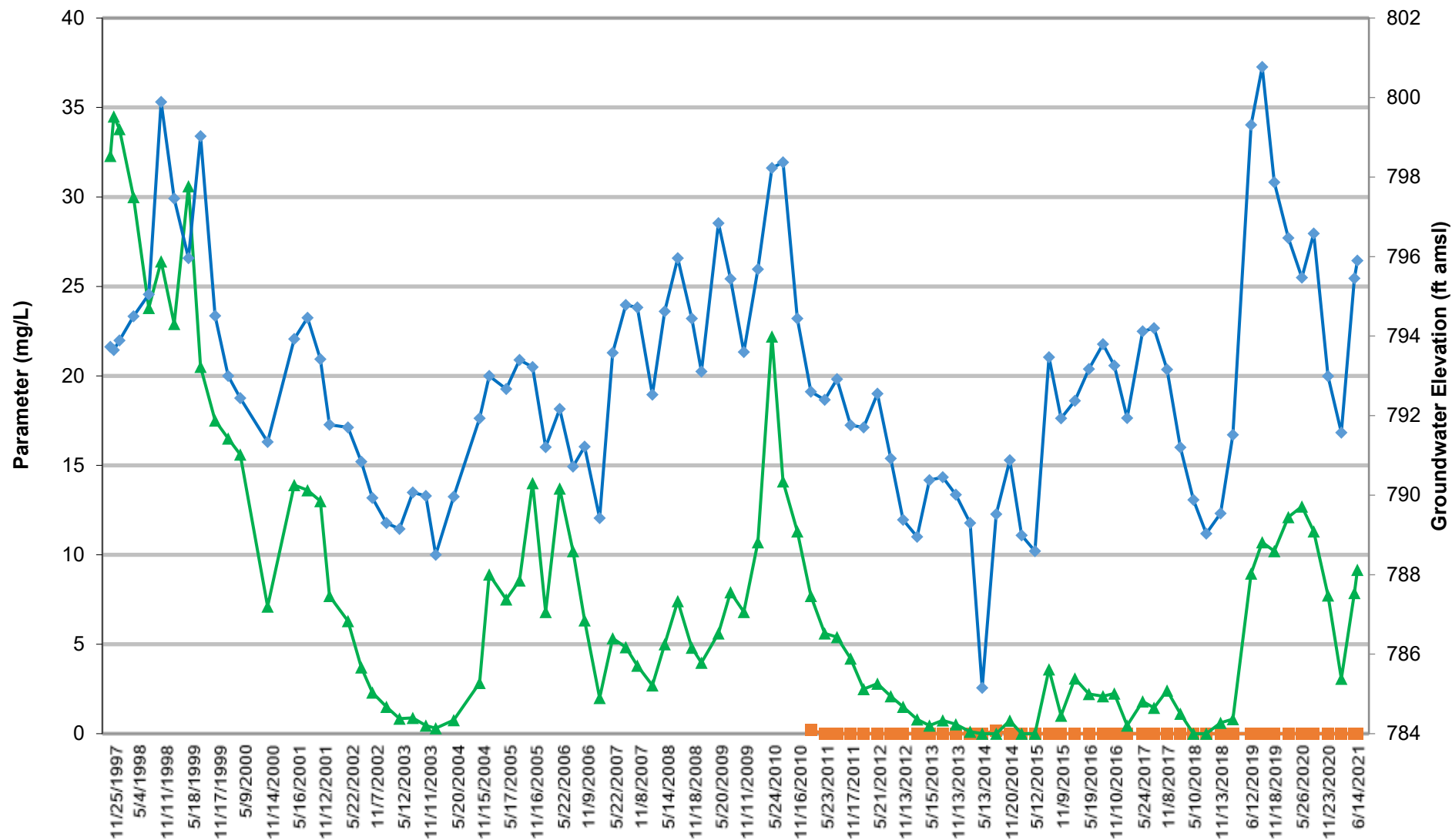
- Ammonia Concentration
- Nitrite/Nitrate Concentration
- Groundwater Elevation

PW-9
Concentrations and Groundwater Elevation vs. Time



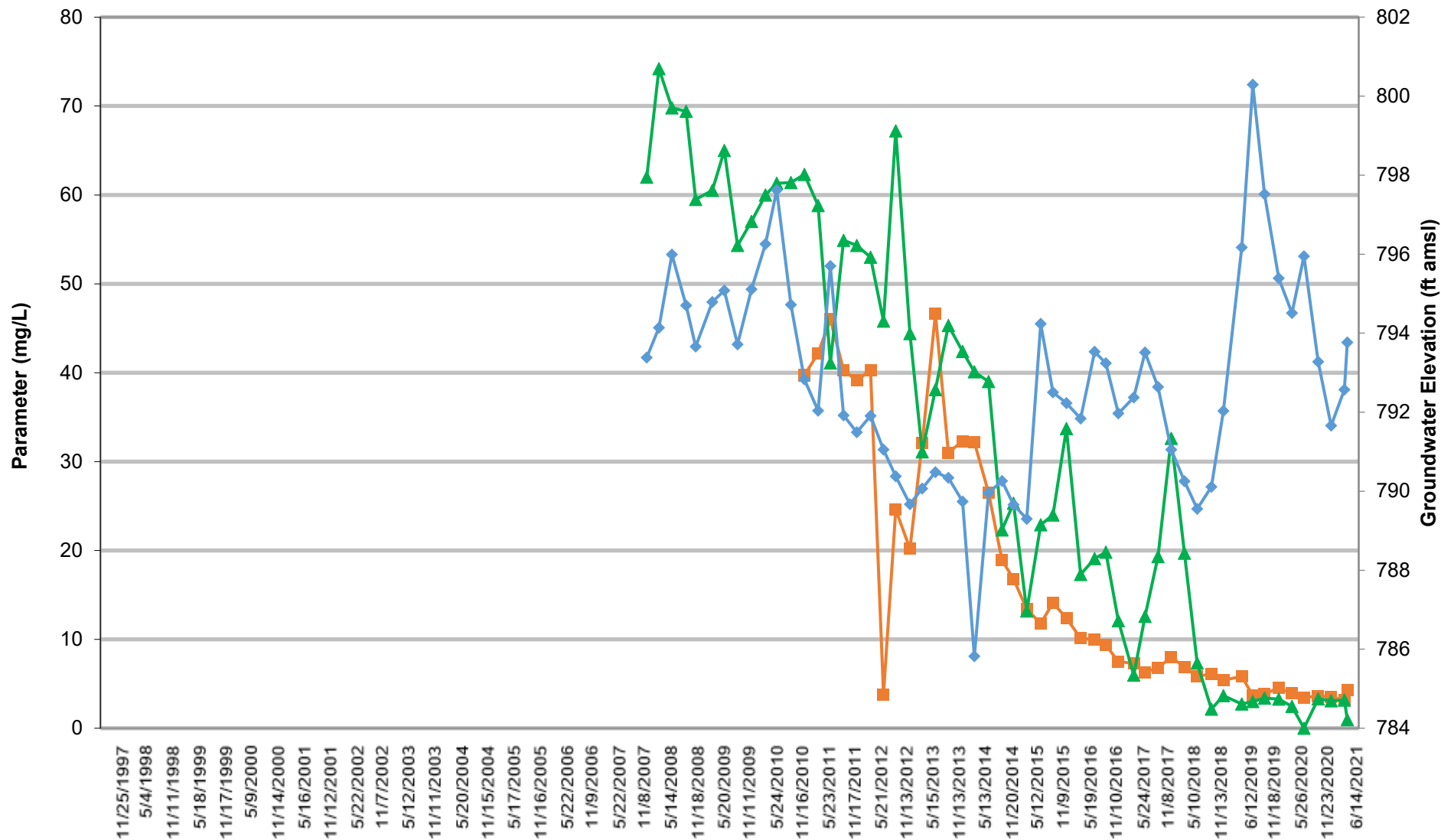
- Ammonia Concentration
- Nitrite/Nitrate Concentration
- Groundwater Elevation

PSW-9A
Concentrations and Groundwater Elevation vs. Time



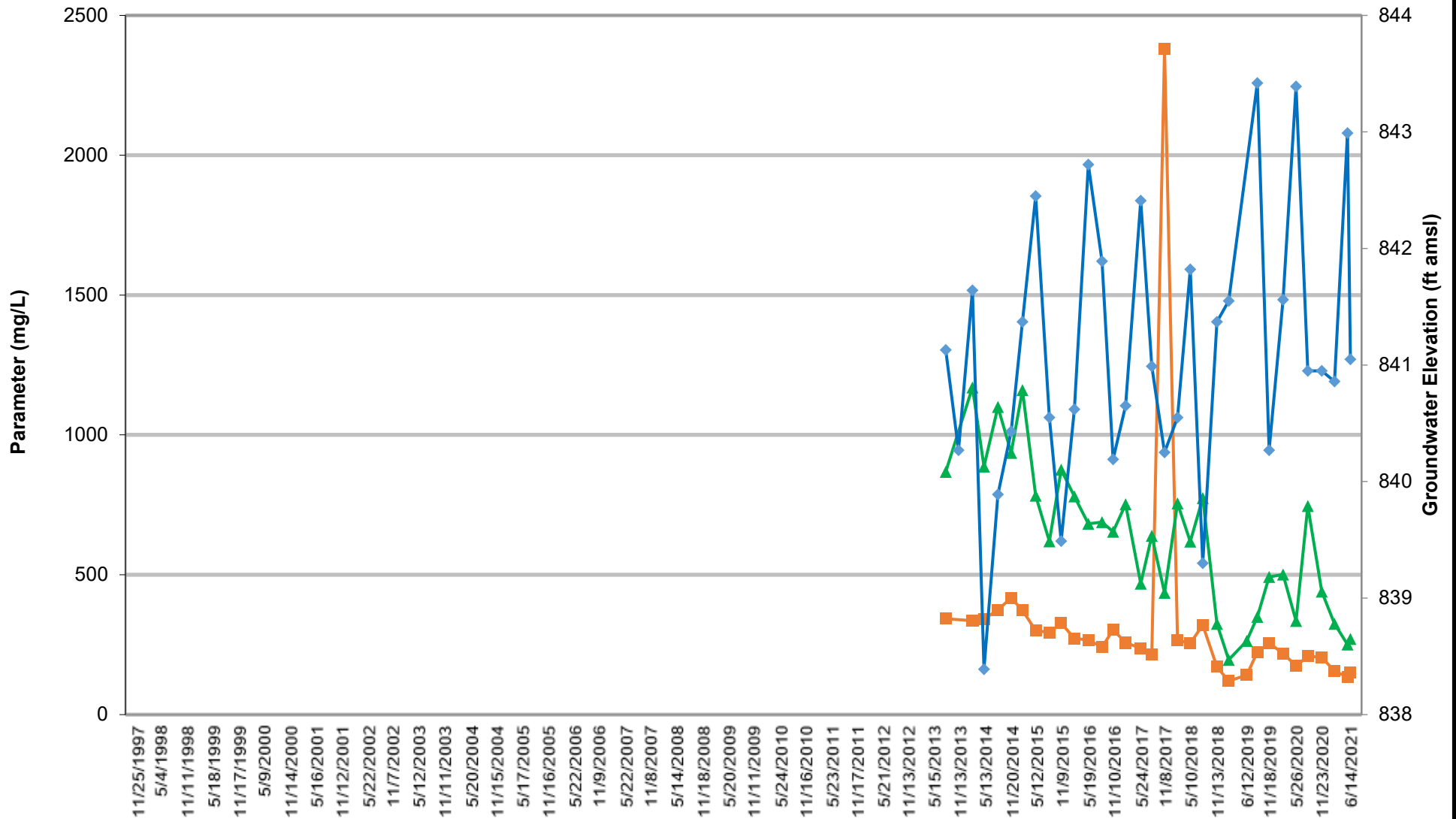
- Ammonia Concentration
- Nitrite/Nitrate Concentration
- Groundwater Elevation

PSW-9B
Concentrations and Groundwater Elevation vs. Time



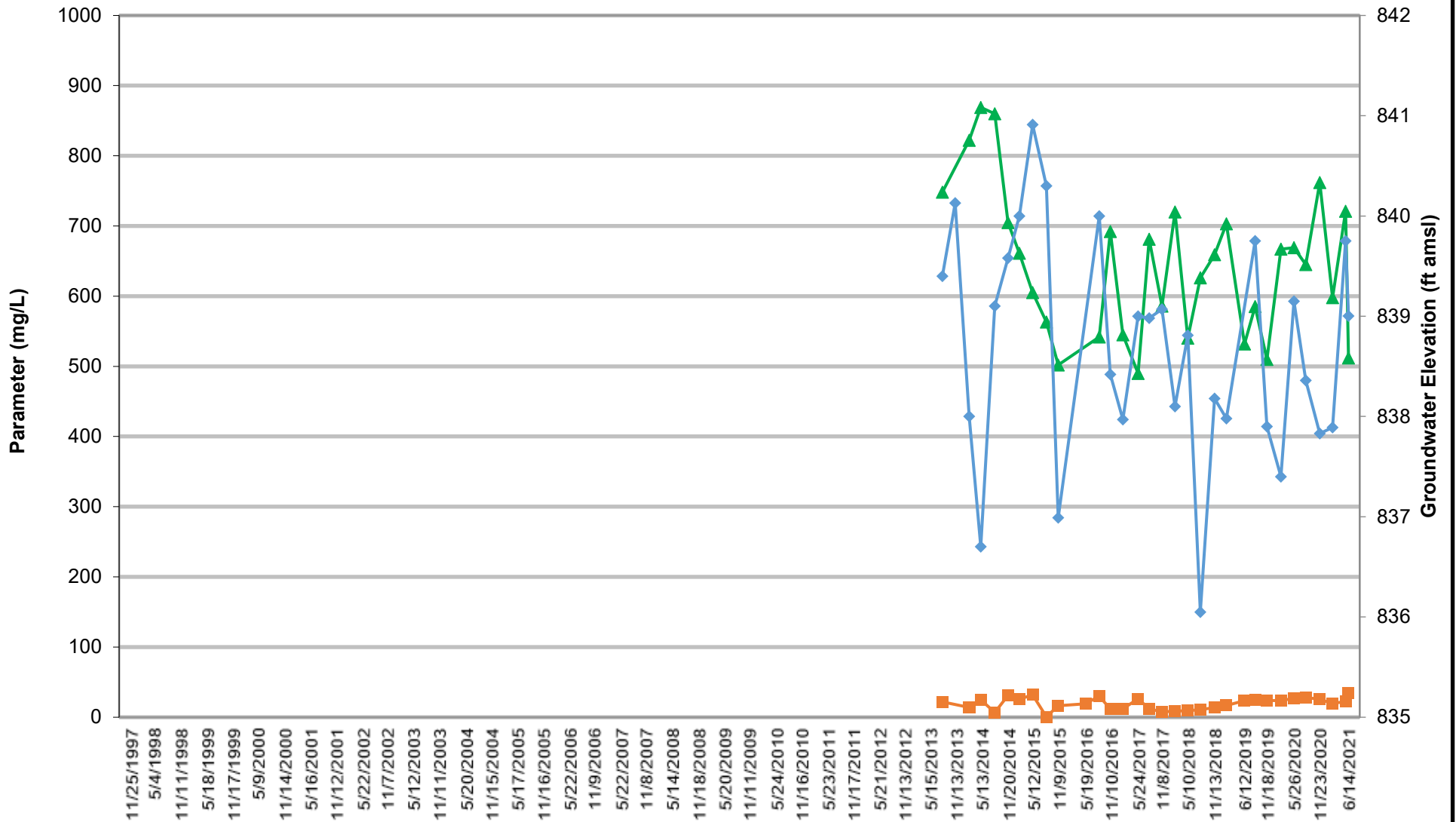
■ Ammonia Concentration
▲ Nitrite/Nitrate Concentration
◆ Groundwater Elevation

SW-10
 Concentrations and Groundwater Elevation vs. Time



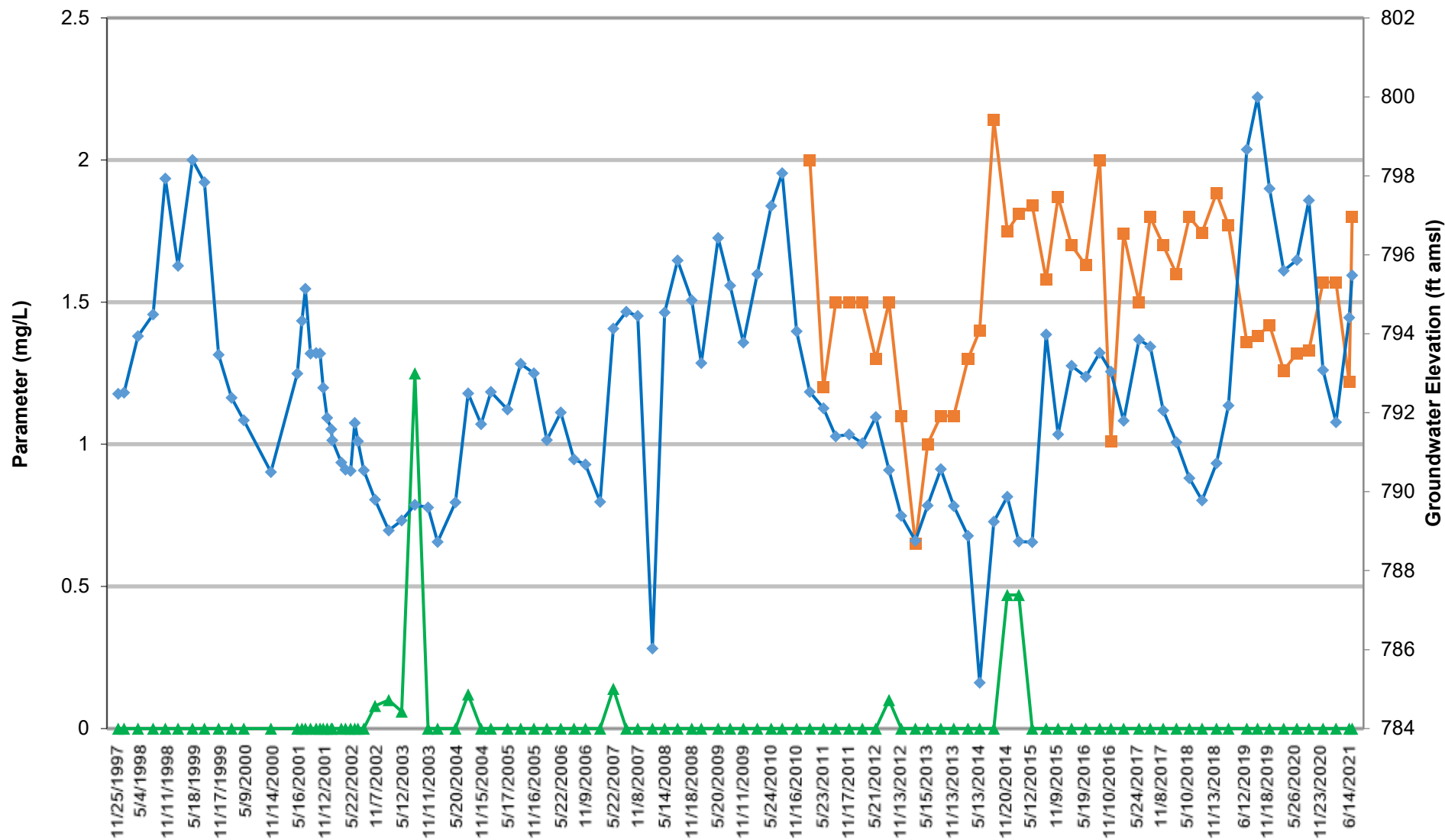
- Ammonia Concentration
- Nitrite/Nitrate Concentration
- Groundwater Elevation

PSW-13A
Concentrations and Groundwater Elevation vs. Time



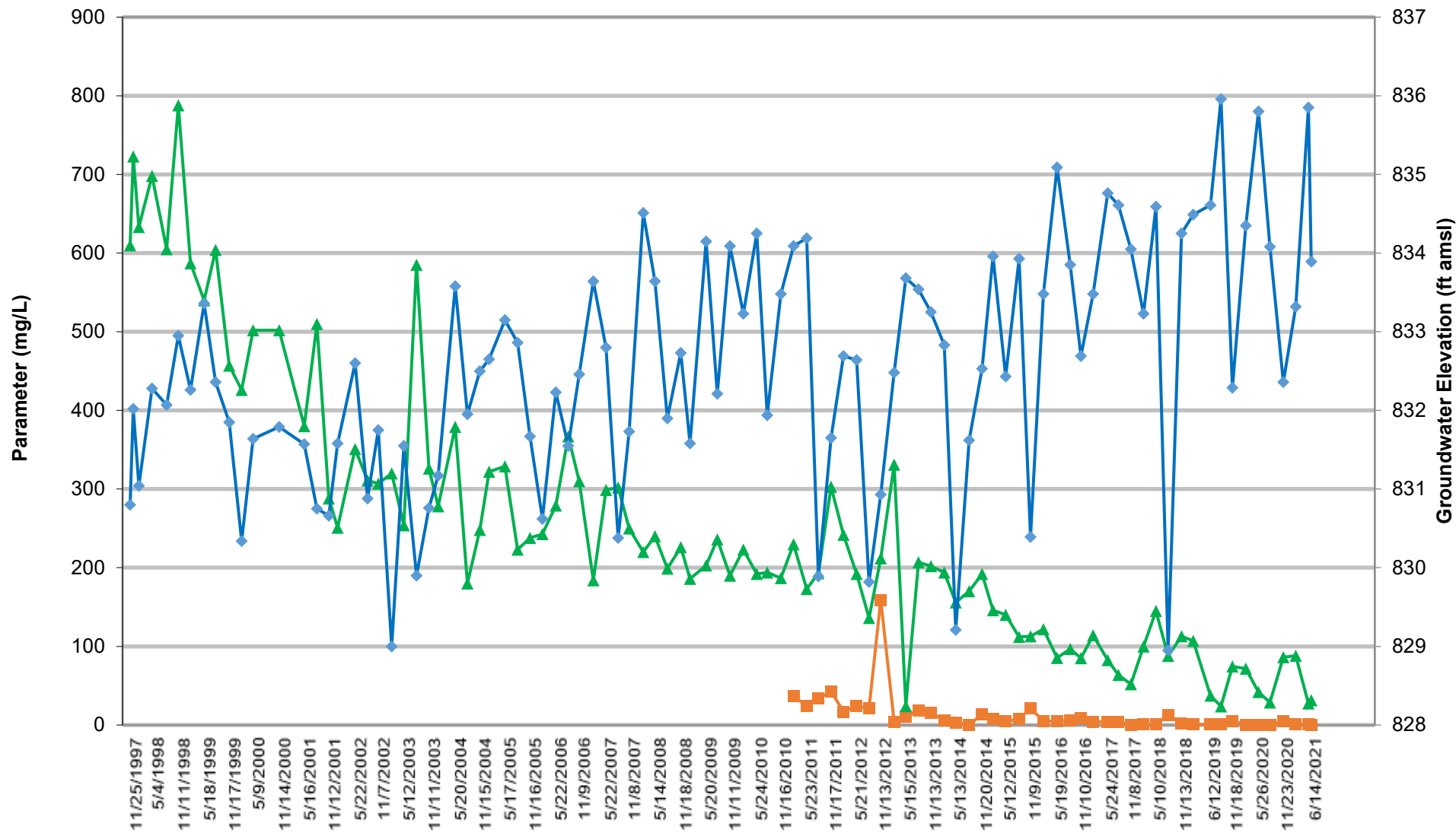
- Ammonia Concentration
- Nitrite/Nitrate Concentration
- Groundwater Elevation

PSW-13B
Concentrations and Groundwater Elevation vs. Time



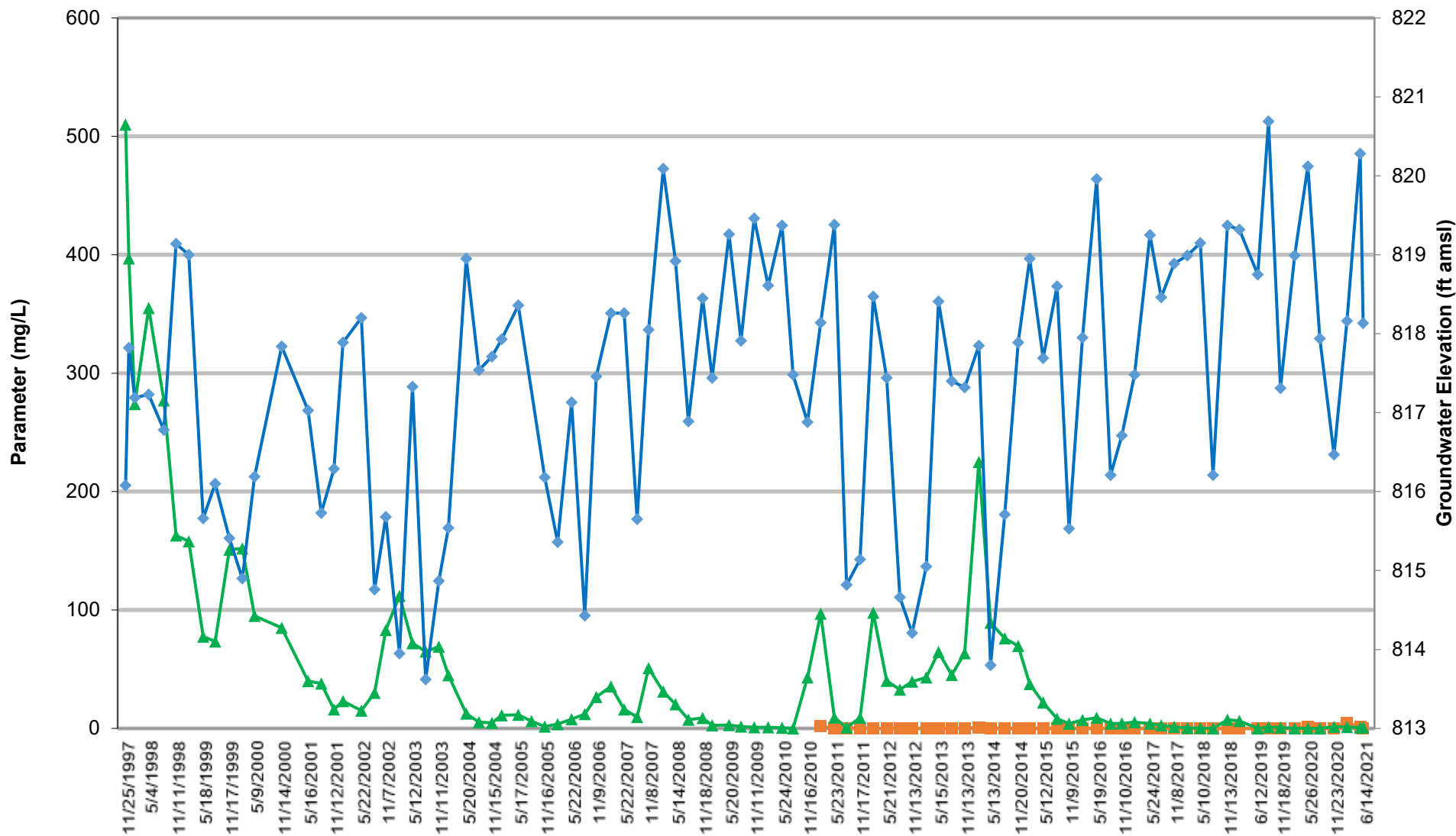
—■— Ammonia Concentration
—▲— Nitrite/Nitrate Concentration
—◆— Groundwater Elevation

PSW-15
Concentrations and Groundwater Elevation vs. Time



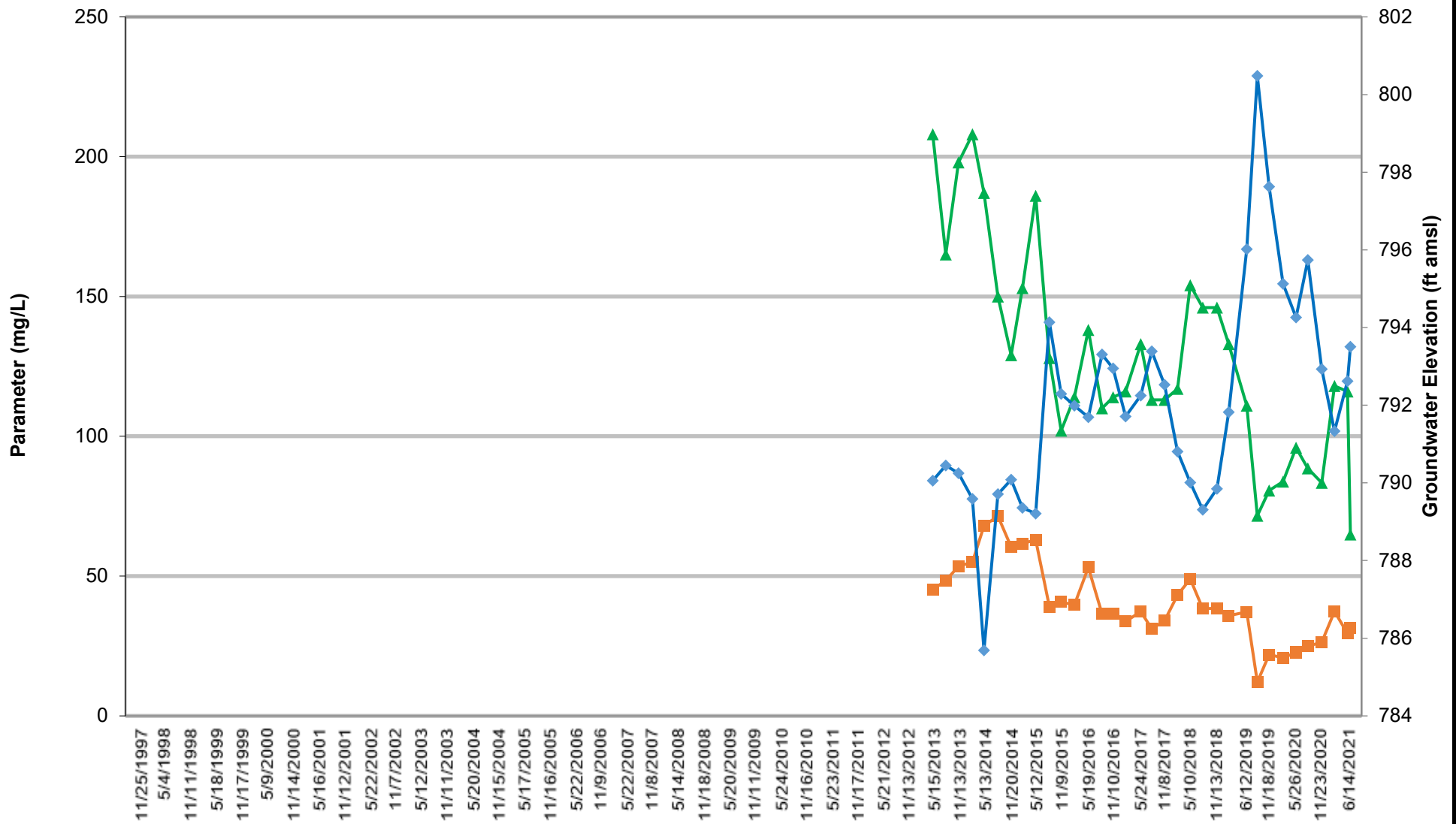
- Ammonia Concentration
- Nitrite/Nitrate Concentration
- Groundwater Elevation

PSW-17
Concentrations and Groundwater Elevation vs. Time



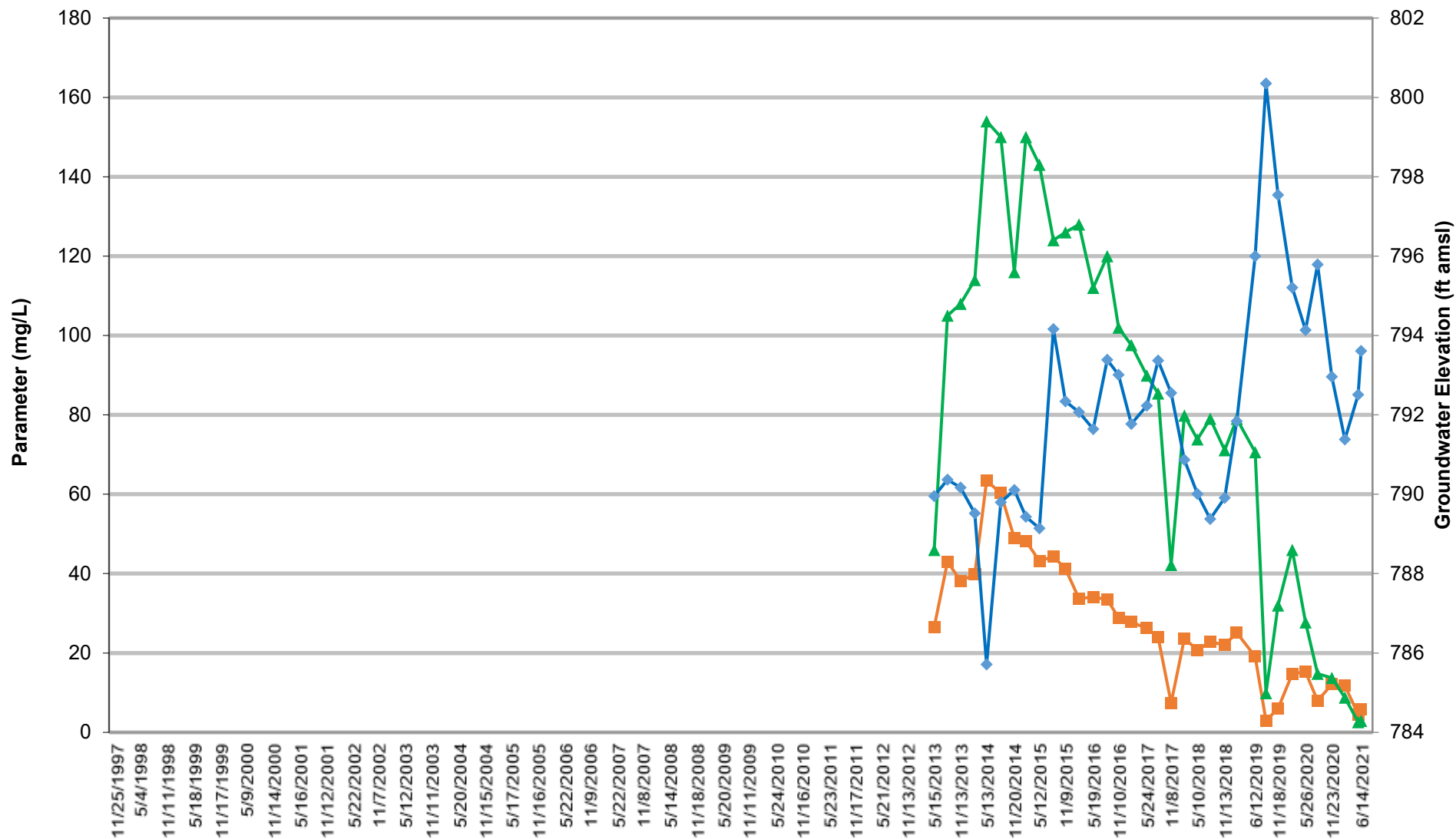
- Ammonia Concentration
- ▲— Nitrite/Nitrate Concentration
- ◆— Groundwater Elevation

PSW-18
Concentrations and Groundwater Elevation vs. Time



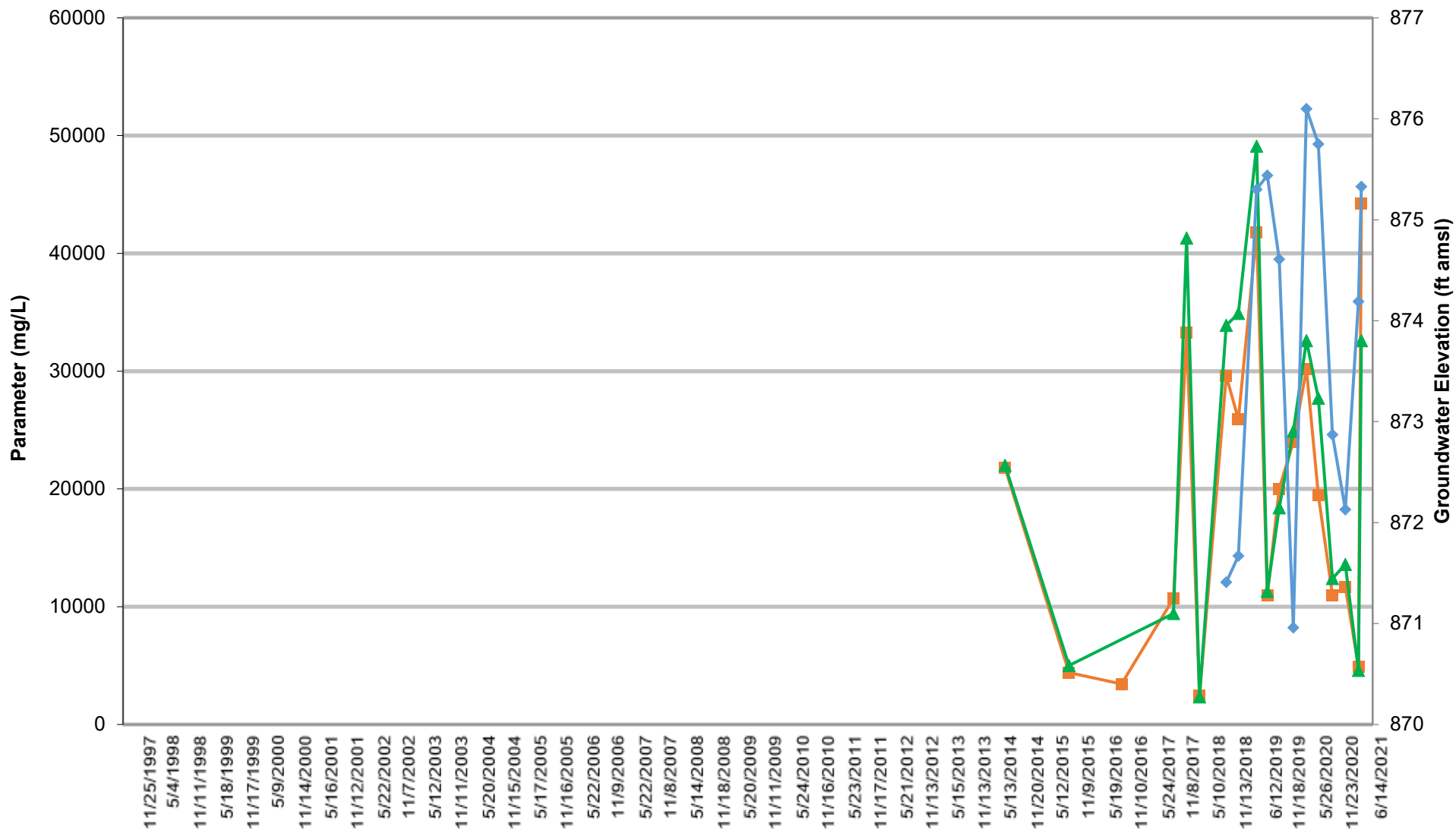
■ Ammonia Concentration
▲ Nitrite/Nitrate Concentration
◆ Groundwater Elevation

PSW-19B
 Concentrations and Groundwater Elevation vs. Time



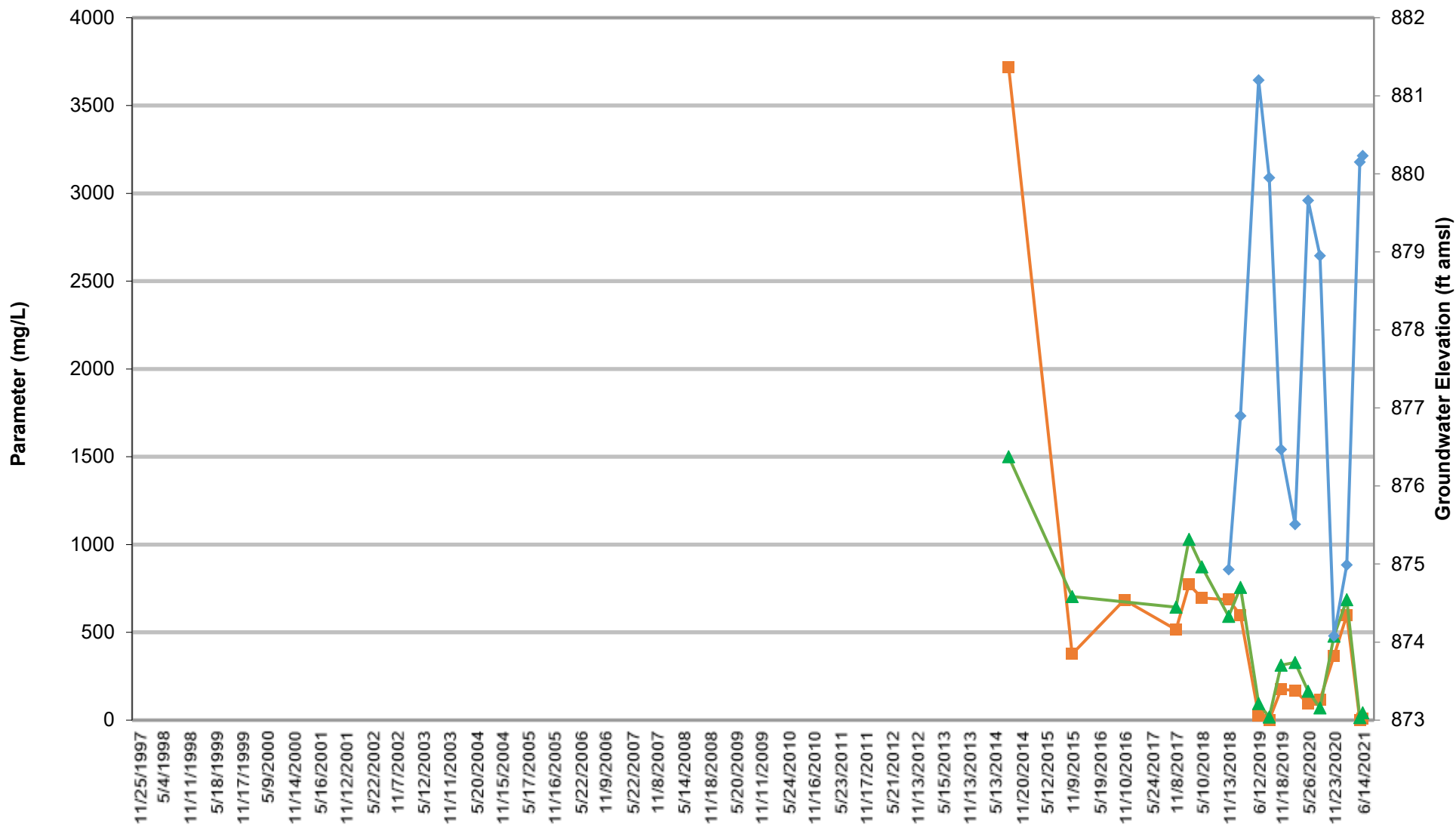
- Ammonia Concentration
- ▲— Nitrite/Nitrate Concentration
- ◆— Groundwater Elevation

PSW-20B
Concentrations and Groundwater Elevation vs. Time



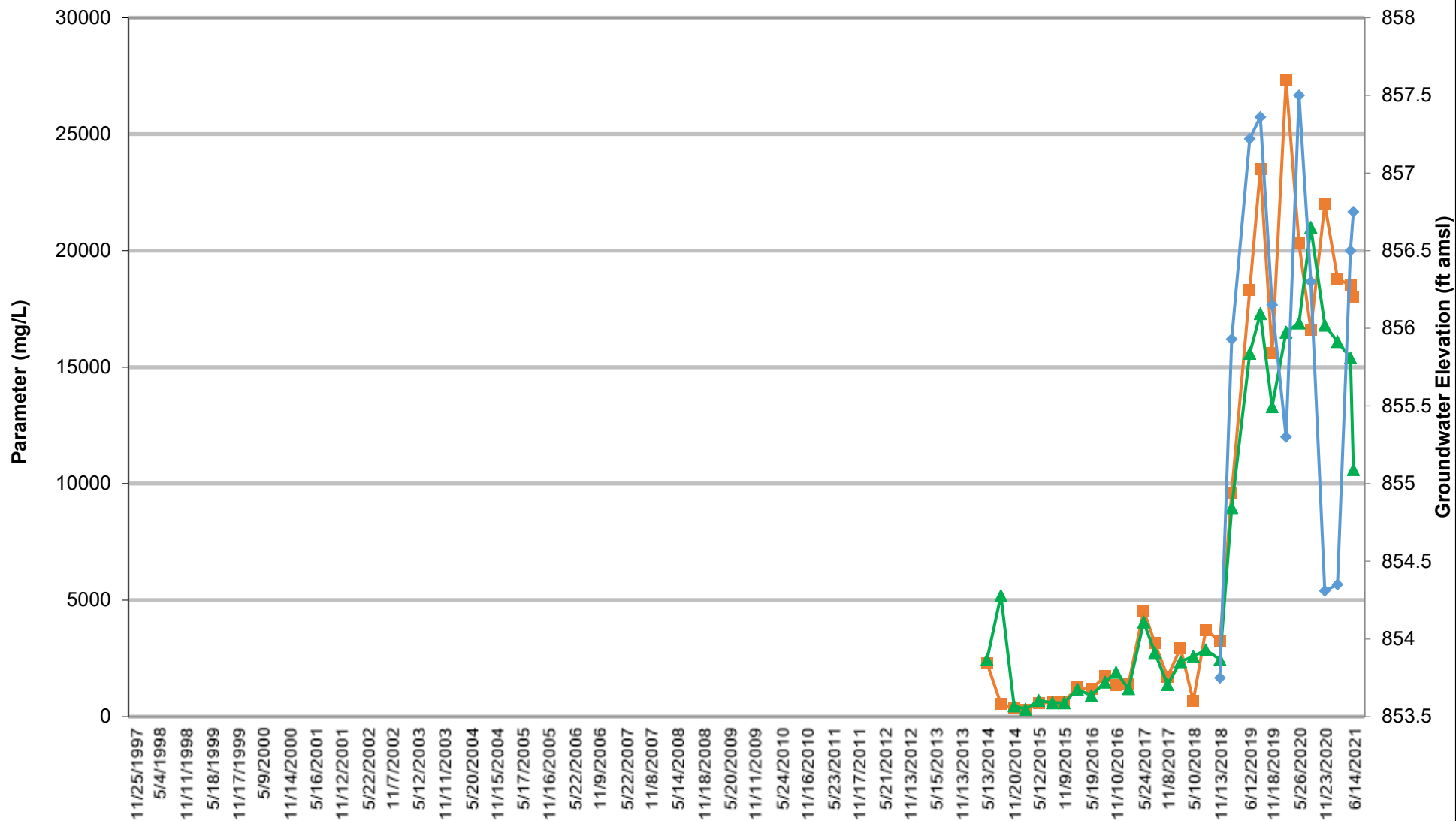
- Ammonia Concentration
- ▲ Nitrite/Nitrate Concentration
- ◆ Groundwater Elevation

N-1
Concentrations and Groundwater Elevation vs. Time



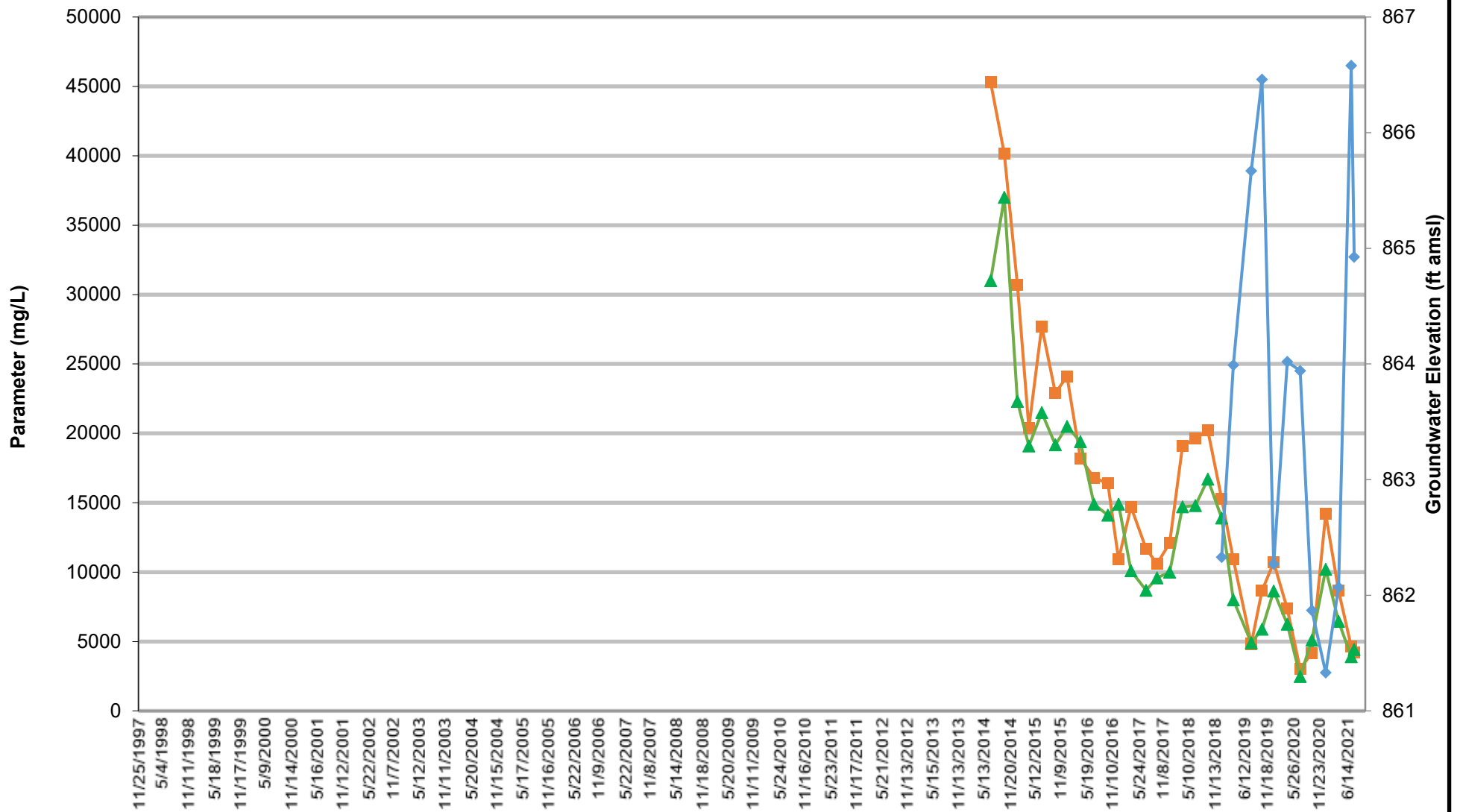
■ Ammonia Concentration
▲ Nitrite/Nitrate Concentration
◆ Groundwater Elevation

N-2
Concentrations and Groundwater Elevation vs. Time



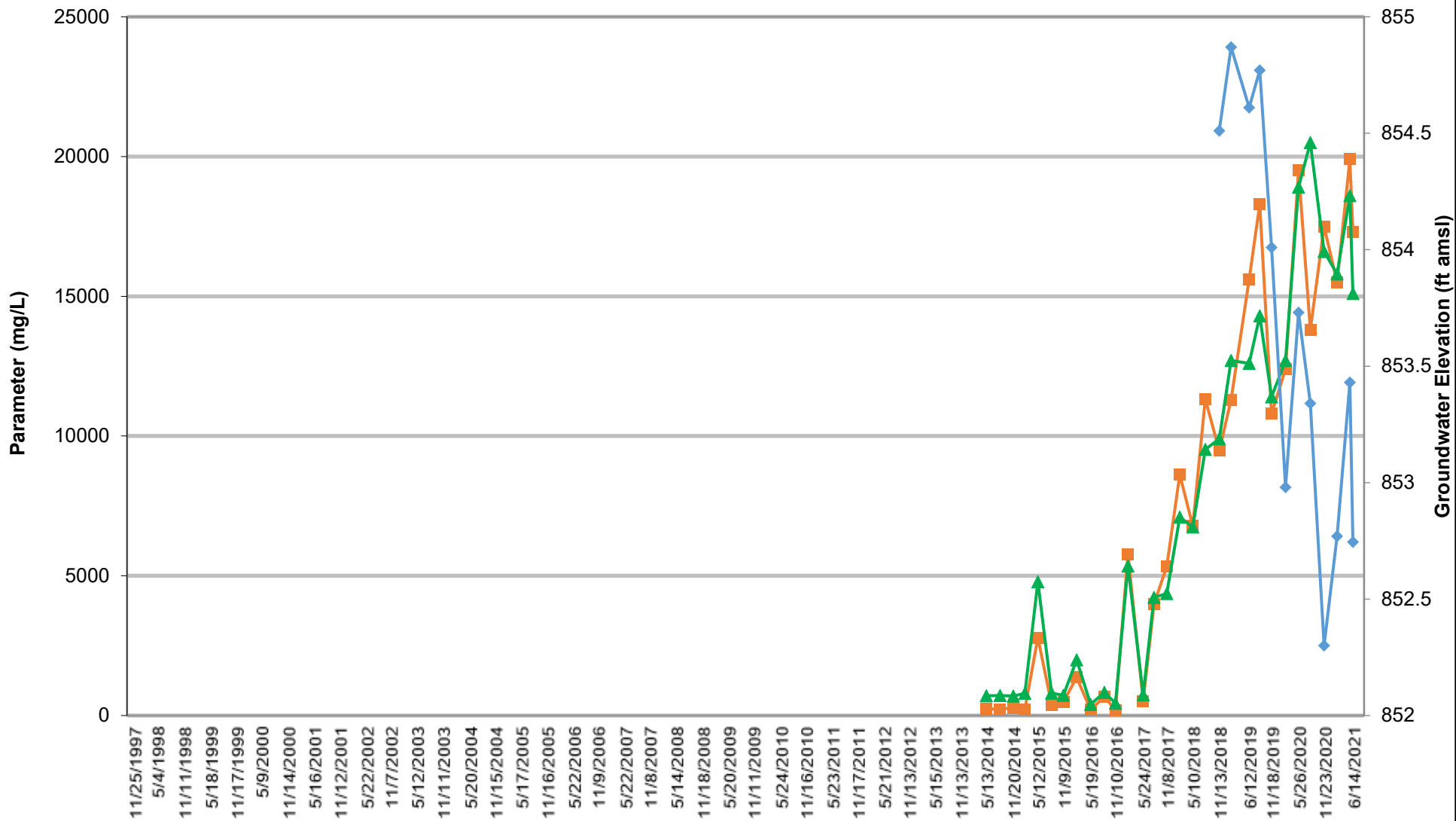
- Ammonia Concentration
- Nitrite/Nitrate Concentration
- Groundwater Elevation

CPMW-1D
Concentrations and Groundwater Elevation vs. Time



- Ammonia Concentration
- Nitrite/Nitrate Concentration
- Groundwater Elevation

CPMW-1S
Concentrations and Groundwater Elevation vs. Time



- Ammonia Concentration
- Nitrite/Nitrate Concentration
- Groundwater Elevation

CPMW-2SR
Concentrations and Groundwater Elevation vs. Time

