Erler & Kalinowski, Inc.

Report on Drilling, Construction, and Testing of the Pad D Test Well

Prepared for:

City of East Palo Alto
Community Development Department

Prepared by:

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Consulting engineers and scientists

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LIST OF ABBREVIATIONS

BAWSCA	Bay Area Water Supply & Conservation Agency
CCSF	City and County of San Francisco
CEPA	City of East Palo Alto
EKI	Erler & Kalinowski, Inc.
ft bgs	feet below ground surface
ft^2/d	feet squared per day
gpd/ft	gallons per day per foot
gpm	gallons per minute
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
MGD	million gallons per day
NAVD88	North American Vertical Datum of 1988
NPDES	National Pollution Discharge Elimination System
NTU	nephelometric turbidity units
PVC	polyvinyl chloride
SFPUC	San Francisco Public Utilities Commission
SGM	Strategy Groundwater Model
SLS	Subdynamic Locating Services
TDS	total dissolved solids
USA	Underground Services Alert
WSA	Water Supply Agreement

1 EXECUTIVE SUMMARY

Recognizing the value in having a local water supply source to supplement its existing Hetch-Hetchy supply, the City of East Palo Alto ("City") is pursuing a multi-pronged strategy with respect to the development and use of local groundwater: (1) bring the City's existing Gloria Way well back into operation through a refurbishment of the well head treatment system, and (2) constructing a new water supply well. This report describes the drilling, construction, and testing of a new 6-inch diameter test well ("test well") at the Pad D site in East Palo Alto, California for the purposes of assessing local aquifer characteristics, water quality, and the potential yield of a municipal supply well at the Pad D site. The work described herein was performed by Erler & Kalinowski, Inc. ("EKI") and its subcontractors in accordance with EKI's agreement with the City, dated 22 April 2014, and pursuant to the *Work Plan for Drilling, Construction, and Testing of a New Test Well at the Pad D Site* ("Work Plan"), dated 20 June 2014, with deviations from the Work Plan as noted. Results of this work are intended to assist the City in its decision and planning process related to the potential construction of a municipal supply well at the Pad D site.

Upon approval of the Work Plan, the following work was performed as part of the test well drilling, construction, and testing program:

1. Mobilization
2. Utility clearance
3. Pilot borehole drilling and geologic logging
4. Borehole geophysical logging
5. Test well design
6. Borehole reaming
7. Test well construction
8. Test well development
9. Step-drawdown testing
10. Constant-rate pumping test
11. Water quality sampling
12. Well head surveying
13. Data analysis
14. Development of recommendations and reporting

Details of each of these phases of work are described herein.

The pilot borehole was drilled to a total depth of 600 feet below ground surface ("ft bgs"), as planned. Drill cuttings and observations indicated the presence of an upper unconfined aquifer, a thick clay aquitard, and several stratified, confined aquifers at depth, which is consistent with the geology observed in nearby wells and boreholes. The test well was constructed from 6-inch diameter PVC casing to a total depth of 540 feet and includes five screened intervals totaling 125 feet. The screened intervals are placed opposite the most permeable and potentially productive aquifers based on observations of lithology encountered during drilling and the geophysical logs.

The test well was constructed with a sanitary seal of cement-bentonite grout that extends from ground surface to a depth of 140 ft bgs, which is well within the major aquitard.

The test well was developed for three days using repeated cycles of surging, bailing, and purging. Water quality parameters were measured during development and stabilized to within acceptable tolerances, indicating that the test well was sufficiently developed for aquifer testing. A temporary test pump was installed to facilitate a 6-hour step-drawdown test ranging between 23 and 124 gallons per minute ("gpm") and a 24-hour constant-rate aquifer test at 97 gpm. These tests were performed to evaluate the test well performance and aquifer parameters. Following aquifer testing, groundwater quality samples were collected and analyzed for the suite of constituents called for in the City's Request for Proposals, including all major drinking water constituents.

Results from the testing and water quality analyses indicate that the site is underlain by a number of stratified aquifers that are relatively productive and have good water quality. The concentration of all measured water quality constituents were less than (i.e., better than) applicable drinking water standards. Notably, the total dissolved solids ("TDS"), iron, and manganese concentrations were below secondary Maximum Contaminant Levels ("MCLs") and substantially lower than concentrations measured at the City's Gloria Way well. This indicates that, based on current groundwater conditions, a municipal water supply well could be developed at the Pad D site with little or no treatment necessary, at least initially.

The estimated transmissivity of the combined aquifers screened by the test well is between approximately 600 and 1,200 feet-squared per day ("ft^2/d"), equivalent to 4,500 to 9,000 gallons per day per foot ("gpd/ft"). Specific capacity after 24 hours of pumping was 4.1 gpm per foot of drawdown. Based on a reasonable assumption about when drawdown would stabilize under constant pumping conditions, the aquifer test results indicate that a properly constructed and developed municipal supply well at this location would likely produce yield of between 350 and 500 gpm.

The actual long-term yield of such a well will depend on other factors in addition to the local aquifer properties, including: pumping duration and schedule, maximum allowable drawdown in the pumping well, water level drawdown at a distance from the well, potential water quality changes (i.e., saline water intrusion), land subsidence, interference with other groundwater pumpers, and the more regional aquifer water balance. Groundwater simulations were performed to assess regional and long-term impacts of pumping from a well installed at the Pad D site. The preliminary results indicate that sustained pumping from this well will likely cause several feet of drawdown even at distances of more than a mile from the site. As such, future plans to develop local groundwater as a supply source should be closely integrated into the Groundwater Management Plan that the City is currently developing and include a monitoring component to provide early detection of any potentially undesirable effects.

2 INTRODUCTION

2.1 Project Background and Objectives

The City of East Palo Alto ("City") is pursuing development of groundwater as a supplemental source of supply to meet its current and anticipated future needs, to increase local, dry year water supply, and to improve the City's overall water supply reliability during peak water demand times and in the event of a catastrophic supply interruption.

Currently, the City receives all of its water supply from the City and County of San Francisco ("CCSF") via the Hetch-Hetchy Regional Water System. The City has a contractual allocation, or Supply Assurance, of 1.96 million gallons per day ("MGD"), that survives in perpetuity, as documented in its 2009 Water Supply Agreement ("WSA") with the CCSF. The San Francisco Public Utilities Commission ("SFPUC") acts as the CCSF's agent in administration of the WSA and is responsible for the operations of the Regional Water System. Actual water use by the City in recent years has been close to, or in excess of, its Supply Assurance[1], and projections indicate that the City's normal year demand will increase to over 3 MGD by 2035[2]. This future normal year supply deficit will put a significant constraint on the City's ability to develop economically and otherwise.

The City's supply deficit is exacerbated in drought years, when supplies from the Regional Water System can be decreased significantly. For example, if the SFPUC were to declare a 20% system shortfall this year, the City would receive a drought allocation reflecting a 14% cutback to its supply[3]. The City already has among the lowest per capita water use of the Bay Area Water Supply and Conservation Agency ("BAWSCA") agencies and the State, making additional dry year cutbacks difficult to achieve.

The City also faces the challenge of limited water supply options in the event of an emergency disruption of supplies from the Regional Water System. The City owns another municipal supply well, the Gloria Way well with a rated capacity of 300 gpm (Todd Engineers, 2012), but that well has been disconnected from the potable supply system since 1989 due to aesthetic water quality (i.e., taste and odor) concerns and is currently undergoing a well head treatment system re-design. The City does not have any appreciable water storage infrastructure. Therefore, the City recognizes the value in development of a local groundwater source for use in times of shortage or catastrophic supply interruption.

This report describes the drilling, construction, installation, development, and testing (hydraulic and water quality) of a 6-inch diameter PVC test well ("test well") at the City-selected Pad D location ("Pad D site"; see Figure 1) for the purposes of evaluating the local geology, potential aquifer yield, and groundwater quality and to assess if the City could install a municipal production well at the Pad D site that would be capable of pumping up to 500 gpm. This work was performed pursuant to the *Work Plan for Drilling, Construction, and Testing of a New Test*

[1] BAWSCA FY 2011-12 Annual Survey, May, 2013.
[2] City of East Palo Alto 2010 Urban Water Management Plan, June 2011.
[3] BAWSCA Draft DRIP Implementation Table, February 2014.

Well at the Pad D Site ("Work Plan"), prepared by EKI and dated 20 June 2014. Based on results of this work, the City may consider construction of a new municipal production well at the Pad D site.

2.2 Site Description

The test well was constructed at the Pad D site, a 0.46-acre parcel located at the intersection of Clarke Avenue and East Bayshore Road, immediately east of U.S. Highway 101 (APN 063-511-580). The Pad D site is mostly unpaved, with a large commercial sign at the southern end, and a paved area in the northern portion which includes a total of 19 parking spaces for the adjacent Home Depot store. Bordering the Pad D site are a commercial parking lot to the north, and city streets to the east, south, and west. Across Clarke Avenue to the east and southeast are residential properties, located approximately 100 feet from the edge of the site. The Pad D site is also the potential future location of the northeastern landing of a pedestrian bridge that will span Highway 101. A site layout map, including the potential footprint of the pedestrian bridge and the test well location, is shown on Figure 2.

The test well was drilled and constructed in the unpaved portion of the site, approximately 15 feet from the northwestern curb line. This location was selected to allow for (1) the proposed location of a future pedestrian overpass, (2) access for construction and maintenance of the overpass, and (3) access, construction, and maintenance for a larger diameter production well and associated infrastructure.

3 WORK PERFORMED

This section describes the work performed in support of the construction and testing of the test well at the Pad D Site. Except where noted below, all work was conducted in accordance of the City-approved Work Plan.

3.1 Permits

A well drilling and construction permit was obtained from the County of San Mateo for the test well, and is included in Attachment A of this Report.

Based on discussions with City staff on 29 May 2014 and with California Regional Water Quality Control Board ("Water Board") staff on 16 June 2014, it was determined that since discharges from aquifer testing associated with this project would consist of groundwater from a drinking water aquifer, the discharge was exempt from special discharge requirements under section C.15.a.i of the City's existing municipal stormwater permit, and no additional National Pollution Discharge Elimination System ("NPDES") permit was required. On behalf of the City, EKI notified the Water Board via email of the planned discharges on 16 June 2014, and received affirmative authorization to proceed with the planned discharge via email on 20 June 2014; see the Water Board correspondence included in Attachment A of this Report.

3.2 Traffic Control and Site Fencing

Since the Pad D site is located in the corner of a parking lot and is not within any public right-of-way, no traffic control measures or encroachment permits were necessary to perform the construction work. The City notified the tenants of the shopping center, in particular the nearby Home Depot store, of the planned project construction activities pursuant to the terms of the City's agreement with those tenants.

On 2 July 2014 temporary chain link fencing was set up at the Pad D site which, in conjunction with the existing permanent fencing, allowed the site to be fully enclosed, as shown on Figure 2. During construction activities the northwestern portion of the fence was left open to allow for access by construction vehicles. At all other times, the fencing was closed and locked.

3.3 Noise Control

Because the test well drilling and construction falls within the definition of "construction" per City Municipal Code 8.52.050, such activities are exempt from special requirements for noise abatement as long as work is done between 7:00 a.m. and 8:00 p.m. (Municipal Code Section 8.52.350 - Exemptions, Item E). On July 8, the first day of pilot borehole drilling following installation of the temporary conductor casing (see below), City staff observed the construction activities and obtained approximate noise level readings from various locations, including the sidewalk across Clarke Avenue adjacent to the closest residential properties. The City staff determined that the noise levels were not above typical background levels associated with freeway noise and loading dock activities at the Home Depot. Therefore, no additional noise control measures were taken during construction activities at the Pad D site.

3.4 Utility Clearance

Prior to final selection of the borehole and test well location, EKI marked the location of the borehole and contacted Underground Services Alert ("USA"), as required by law, and USA member agencies marked their underground utilities; none were located at the proposed borehole location. In addition, EKI retained the services of Subdynamic Locating Services ("SLS") of San Jose, California, who performed a geophysical survey on 1 July 2014 to detect subsurface utilities or features that could interfere with drilling operations. Subsequently, the borehole location was selected in an area where no interfering features were mapped by USA member agencies or detected by SLS. As a final precautionary measure, the first five feet of borehole were advanced using a hand auger.

3.5 Pilot Borehole Drilling

Pilot borehole drilling took place between 7 July 2014 and 11 July 2014. Prior to drilling of the pilot borehole to the planned total depth of 600 feet below ground surface ("ft bgs"), a 14-inch diameter borehole was drilled to 20 ft bgs to allow for installation of a 20-foot section of 12-inch diameter steel temporary conductor casing. The conductor casing was installed to help (a) reduce and control borehole erosion at the surface, and (b) contain potential flowing artesian conditions, in the event that they were encountered during pilot borehole drilling, which they were not.

The test well borehole was drilled in two stages, pursuant to the approved Work Plan. First, a 6½-inch diameter pilot borehole was drilled to the target depth of 600 ft bgs. Then, after borehole geophysical testing, the pilot borehole was reamed to a diameter of 12 inches to a depth of 550 ft bgs. The final reamed borehole depth was selected based on results from the geologic logs developed during drilling and the results of the borehole geophysical logging (see below) and included an additional 10 feet of depth below the selected total casing depth (i.e., 540 ft bgs) to ensure proper vertical placement of the well casing.

Drilling was performed by Pitcher Drilling Company of East Palo Alto, California using a Fraste Multidrill XL rig and the direct mud-rotary drilling method with an above-ground mud circulation tank and shaker system in order to separate cuttings from drilling fluid. Drill cuttings were contained on-site within steel roll-off bins and sampled and tested for chemical characteristics to determine hazardous/non-hazardous waste classification. Results from testing indicated that the drill cuttings were non-hazardous. Upon completion of drilling activities the bins were hauled away by the driller's waste disposal contractor, Ponder Environmental Services, Inc. of Benicia, California, for disposal as non-hazardous waste in accordance with applicable laws and regulations.

During pilot borehole drilling, mud density, viscosity, and sand content were monitored regularly by EKI, and any changes in rig behavior, downhole pressures, or drilling fluid circulation were noted by the driller and documented by EKI. EKI also collected soil samples for geologic logging purposes every 5 feet from returned cuttings and assembled a "chip tray" for easy visual display and comparison of the encountered subsurface materials. Cuttings were described by an

EKI geologist under the supervision of a California-licensed Professional Geologist. A lithologic description is included in the well log included in Attachment B of this Report.

3.6 Aquifer Grain Size Distribution Testing

Samples of drill cuttings were collected at five foot intervals over the entire 600-foot depth of the pilot borehole. In a departure from the Work Plan, no samples were sent to the geotechnical laboratory for grain-size analysis because the City has not yet decided to pursue construction of the larger diameter municipal production well at the Site. If the City decides to proceed with production well construction, it is recommended that samples from potential target aquifer intervals be collected from the production well borehole using discrete sampling methods, such as split spoon sampling, to provide more accurate and representative samples.

3.7 Borehole Geophysical Logging

Downhole geophysical logging was performed by West Coast Well Logging Services of Rancho Cordova, California on 14 July 2014 after a period of drilling fluid circulation within the pilot borehole to remove cuttings and stabilize the boring. Geophysical logs were collected to a total borehole depth of 600 ft bgs. The following geophysical logs were collected:

- Short- and Long-Normal Resistivity;
- Single Point Resistivity;
- Spontaneous Potential ("SP");
- Natural Gamma Radiation;
- Temperature;
- 3-Arm Caliper (with additional Gamma Log); and
- Borehole Deviation.

Copies of the geophysical logs are included in Attachment C. Field copies of the logs were evaluated by EKI in conjunction with the borehole geologic log, the chip tray, and notes regarding drilling rate and rig behavior. Based on EKI's interpretation of these multiple data sets, a total of five potentially productive aquifers were identified. Further discussion of the encountered lithology is provided in the "Findings" section below. The depths of the identified aquifers are presented in Table 1. Based on these aquifers, and discussions with the City, the design of the test well was finalized. Screened intervals and depths are also provided in Table 1.

The final well design included two intermediate seals to isolate different screened intervals. The two intermediate seals were specified at 210 to 230 ft bgs (i.e., between aquifers 1 and 2) and 410 to 420 ft bgs (i.e., between aquifers 3 and 4).

3.8 Borehole Reaming

Once the aquifers were identified and the well design finalized, the pilot borehole was reamed to a depth of 550 ft bgs and a final diameter of 12 inches, using direct mud-rotary drilling methods between 16 July 2014 and 22 July 2014. Prior to reaming, the bottom 50 feet of the pilot borehole was backfilled on 15 July 2014 with neat cement grout with approval from the San Mateo County Environmental Health Department.

3.9 Well Construction

Well construction activities took place between 23 July 2014 and 24 July 2014. Well construction details are shown on the well log included in Attachment B. Per the Work Plan and the final well design, the test well was constructed with new 6-inch nominal diameter Schedule 80 threaded flush-joint PVC well casing. Screened intervals were constructed using 6-inch nominal diameter factory-slotted Schedule 80 casing with a 0.030-inch slot size ("30 slot"). According to the manufacturer, this type of screen has a transmitting capacity of 4.04 gpm per foot of screen. Centralizers were attached to the casing approximately two feet above and below each screened interval, for a total of ten centralizers. A 15-foot blank casing sump was included below the lowermost well screen, and a threaded stainless steel well cap was attached at the bottom.

Backfilling of the annular space between the reamed borehole wall and the well casing was performed using a tremie pipe. The filter pack material used adjacent to each screen was #2/12 Lapis Lustre Monterey Sand. The material used for the two intermediate seals and the 10-foot transition seal between the filter pack and the grout seal was hydrated Pel Plug ¼-inch bentonite pellets. The sanitary seal extending from 140 ft bgs to 2 ft bgs was placed in accordance with the drilling permit and was a neat cement grout made with Basalite Type II-V cement.

The test well was completed at the surface using a traffic-rated flush-mount locking vault, set in concrete, and finished to approximately 2 inches above existing (dirt) grade. Within the vault, a locking expansion plug was furnished to seal the top of well casing.

3.10 Well Development

Well development was performed between 28 July 2014 and 30 July 2014, after the grout seal had cured for approximately 72 hours. Well development consisted of five cycles of bailing with a stainless steel bailer, surging using a vented surge-block, and purging using a submersible development pump. All development activities were performed using a Smeal rig by Gregg Drilling from Signal Hill, California. A total of approximately 9 hours of surging was performed on the 125 feet of well screen, corresponding to approximately 4 minutes per foot of screen.

During development, water quality parameters were monitored and recorded, including temperature, pH, specific conductivity, and turbidity. Field logs from well development activities are included in Attachment D. At the end of the final cycle of well development, all parameters had stabilized to within the goals specified in the Work Plan, with the exception of turbidity which stabilized at approximately 8 nephelometric turbidity units ("NTU") (the original proposed goal was 5 NTU). However, since additional well development was expected to occur

as a result of test pumping, the slight exceedance of the turbidity goal was not considered sufficient reason to continue the bail/surge/purge cycles of development.

Water produced during development was contained on-site in the same roll-off bins used to contain the drilling fluids and cuttings. As described above, this waste was eventually hauled off-site for disposal as non-hazardous waste.

3.11 Aquifer Testing

After the five cycles of bail/surge/purge development were complete, preparations were made for performance of two aquifer tests: a step-drawdown test and a constant rate pumping test. These preparations took place on 31 July 2014 and included:

- Installation of nominal 4-inch diameter Grundfos submersible test pump at a depth of 153 feet (i.e., 12 feet above the top of the uppermost well screen). The pump was equipped with a backflow-prevention valve;
- Connection of pump discharge piping from the well head through a totalizing flow meter to the existing storm drain catch basin located in the unpaved portion of the site (see Figure 2);
- Connection of a WhisperWatt diesel-powered generator to supply electric power to the pump; and
- Installation of two sounding tubes within the well, one for manual depth to water measurement and the other with a data-logging pressure transducer.

After the above preparations were made, the test pump was run for several hours to confirm all connections and preliminarily evaluate the well's specific capacity (i.e., the ratio between pumping rate and water level drawdown in the well). During this initial testing, water quality parameters were monitored.

On 1 August 2014, a step-drawdown test was performed. During this test, a total of four 90-minute pumping "steps" were run, with discharge increasing between successive steps. The pumping rates for the four steps were measured to be approximately 23 gpm, 44 gpm, 99 gpm, and 124 gpm.[4] Drawdown in the pumped well was monitored both manually and with the pressure transducer logging at 5 second intervals. After a total of six hours of pumping, the pump was shut off and the recovery period began. Figure 3 shows the drawdown versus time during the step-drawdown test.

Starting at 8:10 AM on 4 August 2014, a constant-rate pumping test was performed at a discharge of approximately 97 gpm for a total duration of 24 hours. As with the step drawdown

[4] Pumping rates measured by the totalizing flow meter were consistently lower than pumping rates measured using a known fixed volume and timer. The flow meter was biased approximately 14 percent low. For this reason, the fixed volume-based flow rates were relied on primarily for this analysis, and the flow meter data were used to verify that the rate was held steady during each step of the step-drawdown test and also during the constant rate test.

test, drawdown during the constant rate test was monitored both manually and with the data-logging pressure transducer. The transducer logging interval was set to increase logarithmically from a starting interval of 0.25 seconds to a maximum of 1 minute. Discharge was monitored with the totalizing flow meter and manually using a fixed volume and timer. Figure 4 shows the drawdown versus time during the constant-rate pumping test.

At 8:10 AM on 5 August 2014, the pump was shut down and an 8-hour recovery period was initiated. The pressure transducer was reset to again record on a logarithmically-increasing time scale and manual depth-to-water measurements were collected for the first 80 minutes. After 8 hours of recovery, during which the water level recovered approximately 90 percent of the total pumping drawdown, the pump, conveyance piping, pressure transducer, sounding tubes, and other equipment were disassembled and demobilized from the site. Figure 5 shows the drawdown versus time during the recovery portion of the constant-rate pumping test. Transducer data files for the step-drawdown test, the constant rate pumping test, and the 8-hour recovery are included on a CD in Attachment E.

3.12 Water Quality Sampling

Prior to shutdown of the pump at the end of the 24-hour constant rate pumping test, a set of groundwater samples was collected on 5 August 2014 into sample bottles provided by the analytical laboratory, K-Prime Inc., of Santa Rosa, California, for water-quality characterization. Each bottle was labeled and placed into an ice-filled cooler and transported under chain-of-custody protocols to the laboratory. The water quality analyses were performed as specified in the Work Plan. The chain-of-custody and the laboratory reports are included in Attachment F.

3.13 Aquifer Test Analysis

Analysis of the water level data collected during aquifer testing consisted of the following:

- Pre-processing of water level and pumping rate data including:
  - Downloading water level data from the pressure transducer to the hand-held field computer and then to a desktop computer;
  - Checking the recorded transducer water level data against manually-collected depth-to-water data (Figures 3 through 5);
  - Conversion of “water depth above transducer” data into drawdown data; and
  - Calculation of pumping rates from the flow meter data and from data collected using a fixed volume and timer.

- Analysis of the time versus drawdown data using several analytical solutions based on equations governing groundwater flow to a well, including:
  - The Hantush-Bierschenk method for step-drawdown tests;
  - The Kawecki method for recovery of tests with stepped discharge;
  - The Cooper-Jacob “straight line” method for constant rate pumping in a confined aquifer;
  - The Theis method for pumping in a confined aquifer; and
  - The Theis method for recovery of tests with constant discharge.

The aquifer test analysis was performed using standard Microsoft Excel-based calculations and a specialized aquifer test analysis software called AQTESOLV version 4.50 (HydroSolve, Inc., 2007). Graphs of the AQTESOLV solutions are included in Attachment G.

3.14 Well Surveying

The test well was surveyed by MacLeod and Associates, Inc. of San Carlos, California on 26 August 2014 using the global positioning system ("GPS") method. Surveying involved measurement of the horizontal coordinates and vertical elevation of a mark on the northern edge of the top of the 6-inch diameter casing within the well box. The elevation of the top-of-casing measuring point is 17.93 feet above the North American Vertical Datum of 1988 ("NAVD88"). A copy of the survey report is included in Attachment H.

3.15 Deviations from the Work Plan

This section summarizes the changes from the City-approved Work Plan. All changes were brought to the City's attention and the work was completed with City staff approval.

1. No noise control measures were taken. It was determined by City staff that noise due to construction activities was not significantly greater than the ambient noise from the freeway and activities at the nearby Home Depot loading dock, and therefore noise control was not necessary.
2. Cuttings from pilot borehole drilling were collected every 5 feet, not every 10 feet. This increased frequency of cuttings collection allowed for better delineation of and description of subsurface lithology.
3. No cuttings samples were sent for geotechnical (grain size) analysis. Samples were collected and placed in storage for future analysis.
4. No pressure transducer was used to record water levels during the purging phase of well development. Instead, manual depth-to-water measurements were collected. After development was completed, the pressure transducer was installed in preparation for aquifer testing.
5. Background water level data were collected for one day rather than three days. Given the schedule for step-drawdown testing and the desire to have complete recovery after the step-drawdown test before performing the constant rate test, the background period prior to step-drawdown testing was reduced so that a longer recovery period before the constant rate testing could be observed.
6. The constant rate pumping test was run for 24 hours rather than 12 hours. This increase of the duration of the pumping phase was intended to impose a longer "stress" on the aquifer so that aquifer parameters obtained from the testing would be representative of a larger area around the well and to identify any barrier boundaries.
7. No barometric pressure data were collected during aquifer testing. Given that the pumped well provides a strong and clear drawdown signal on the order of tens of feet, the collection of additional barometric pressure data to correct for the likely minor impacts

on groundwater level due to variations in atmospheric pressure over the period of testing was deemed unnecessary.

4 KEY FINDINGS

4.1 Site Geology

The drilling, lithologic logging, geophysical logging, and aquifer testing activities described in this Report provided site-specific information to supplement existing information on basin-scale geology and hydrogeology. This section summarizes the key new information gained from these efforts.

1. The regional aquitard exists beneath the site from approximately 90 to 160 ft bgs (i.e., approximately 70 to 140 feet below NAVD88). Lithologic logging suggests increasing clay content starting at approximately 70 ft bgs to 100 ft bgs and predominantly clay from 100 ft bgs to 170 ft bgs, with the exception of a sandy interval from approximately 125 to 140 ft bgs. Geophysical logging shows substantial clay at approximately 100 ft bgs and 130 ft bgs.
2. The stratified aquifer sequence beneath the confining layer consist of poorly-sorted, fining-upwards channel or possibly debris flow sequences separated by finer-grained (very fine to fine sand) intervals. These sequences of grain size are consistent with the alluvial fan depositional environment. The coarser units which were selected for the screened intervals consisted of mixtures of medium to coarse sand and gravel.
3. The intervals screened by the test well comprise one or more artesian confined aquifers resulting in a composite hydraulic head value (i.e., static water level) at the time of aquifer testing of approximately 14 ft bgs, or nearly 150 feet above the top of the shallowest screen.
4. Basement bedrock was not encountered at the total drilled depth of 600 ft bgs.

4.2 Aquifer Properties

The only aquifer parameter that can be estimated from single well pumping test data is transmissivity. Transmissivity, with units of feet-squared per day ("ft^2/d") or gallons per day per ft ("gpd/ft"), is the product of the aquifer's hydraulic conductivity and its thickness, and describes the rate at which groundwater will flow through an aquifer under a unit hydraulic gradient per unit width of aquifer. The total transmissivity, which is the quantity determined by the pumping test for this test well, is the sum of the individual transmissivities of each screened interval.

Results from analysis of the step-drawdown test, the constant rate test, and the recovery tests are summarized in Table 2. As shown in Table 2, the estimated transmissivity may be as high as 1,100 ft^2/d, or approximately 8,200 gpd/ft. This value is based on the early time drawdown data (i.e., before approximately 5 minutes). An increase in the slope on the drawdown versus logarithm of time plot (see Figure 6) takes place between 5 minutes and approximately 40 minutes, indicating the presence of a potential barrier boundary within one or more of the screened aquifer units. The transmissivity estimated on the basis of the late time data is approximately 600 ft^2/d, or 4,500 gpd/ft. These pumping test results indicate that, even though the aquifer may have a transmissivity of 1,100 ft^2/d, it may be limited in spatial extent and therefore, perform more like a lower transmissivity aquifer. As can be seen in Table 2, this

notion is confirmed by the Theis method that includes a barrier boundary specified to be a short distance away from the well; the transmissivity derived from that method is approximately 1,200 ft^2/d, or 9,000 gpd/ft. The transmissivity estimated based on analysis of the recovery data is approximately 900 ft^2/d, in the middle of the range estimated from the early and late pumping drawdown data.

Another aquifer property that controls aquifer responses to pumping stresses is the storage coefficient or storativity (dimensionless), which is the product of the aquifer specific storage in inverse feet and the aquifer thickness in feet. Storativity is the amount of water that will be removed from storage per foot of drawdown. Single well pumping tests, in which water level response is only measured in the pumped well, cannot provide an estimate of storativity due to well head losses during pumping which cannot be separated from the effect of storage properties. Storativity values shown in the analytical solutions in Attachment G, therefore, are not to be relied upon. However, since the aquifer screened by the test well is confined, as suggested by the static water level being substantially higher than the top of the regional aquitard, storativity is likely on the order of less than 0.005 (Freeze and Cherry, 1979).

4.3 Specific Capacity

Specific capacity is the pumping rate per foot of drawdown ("gpm/ft") after a given pumping duration, and is often used as a measure of the performance of a groundwater well. Specific capacity is a function of both the aquifer transmissivity and the well efficiency. A pumped well typically experiences additional head losses (i.e., drawdown) above and beyond normal aquifer losses due to near-well effects associated with turbulent flow through the filter pack and well screen and possible formation damage due to infiltration of drilling mud. These additional losses reduce the well's efficiency. Conversely, a well that has undergone extensive development may have increased near-well permeability and an increase in well efficiency. The step-drawdown and constant rate pumping tests performed at the test well provided specific capacity values for 1.5 hours of pumping for a total of five different pumping rates (see "Notes" column in Table 2). The 1.5-hour specific capacity ranged from 8.58 gpm/ft at 23 gpm to 5.23 gpm/ft at 124 gpm. The 24-hour specific capacity from the constant-rate test was 4.12 gpm/ft at 97 gpm.

4.4 Potential Well Yield

The amount of groundwater that could be pumped from a production well at the Pad D site depends on many factors, including well construction, well efficiency, maximum allowable drawdown, and pumping schedules. Factors to consider when developing an operational plan for a production well include pumping costs (directly related to the drawdown within the well), groundwater level drawdown at a distance resulting in potential migration of poorer quality water (either contaminant plumes or saline water intrusion), and the intended use of the groundwater supply (i.e., to serve peak water demands, fire flows, as standby backup, or as a regular constant source).

Based on the drawdown at the end of the 24-hour pumping test (23.5 feet), the drawdown per log cycle of time (6 ft at the 97 gpm pumping rate), and an a reasonable assumption as to when drawdown in the pumping well would stabilize due to recharge (i.e., 10 days to 100 days), it is

estimated that a well at the Pad D site could yield between 350 and 500 gpm with approximately 150 feet of drawdown.[5]

To assess potential long-term well yield under a more conservative scenario, such as might be encountered during extended drought conditions, a hypothetical pumping scenario was also evaluated to estimate the maximum continuous pumping that could be sustained for 11 months from a 12-inch diameter well with 75 percent efficiency with no recharge (i.e., a very conservative assumption) and assuming a maximum allowable drawdown in the well of between 100 and 200 feet. The calculations were made using the Theis non-equilibrium equation, modified to account for well efficiency. Transmissivity was set to range from 600 ft^2/d to 1,200 ft^2/d. Storativity was set to range between 0.001 and 0.005.

Results of this evaluation, presented in Table 3, show that the maximum pumping rate under this conservative scenario ranges from approximately 140 gpm under the low transmissivity/low storativity/low allowable drawdown case to approximately 580 gpm under the high transmissivity/high storativity/high allowable drawdown case. Clearly, aquifer properties are not controllable, but the allowable drawdown is, and the analysis demonstrates that allowing greater drawdown in the pumping well allows for higher yields. Drawbacks include greater pumping costs and greater drawdown at a distance, with the associated well interference and water quality risks, and higher entrance velocities resulting in potentially reduced well-life expectancy.

Overall, the lithologic, geophysical, and pumping test data indicate that the Pad D site is underlain by aquifers that would be capable of providing a properly designed and constructed production well with yields on the order of 350 to 500 gpm. This range of yields is reasonable based on the dynamics and recharge sources to the aquifer system, and is consistent with the range reported by Todd (2012) for large diameter municipal wells in this area.

4.5 Potential Regional Impacts

The City authorized EKI to proceed with a preliminary evaluation of potential regional impacts of a future production well at the Pad D site, which was an optional task under the Work Plan. This evaluation was conducted by EKI's subconsultant, HydroFocus, Inc. HydroFocus had previously developed a generalized, regional, numerical groundwater flow model to provide a planning-level assessment of groundwater yield and hydraulic effects on both local and regional groundwater levels. This model was developed for BAWSCA and is known as the Strategy Groundwater Model ("SGM"). The model grid represents the alluvial aquifer system of the entire southern San Francisco Bay area. The lateral extent of active model cells coincides with the surficial contact between bedrock and alluvium as defined by the boundaries of existing local models and maps of surficial geology. In the vertical direction, the top of the grid is land surface and the bottom of the grid is the top of the underlying bedrock surface. This depth interval is represented by four layers: the uppermost layer (layer 1) represents the shallow water-bearing zone; layer 2 primarily represents the regional confining bed; layer 3 represents the "main"

[5] The yield calculation, if drawdown is assumed to stabilize after 10 days, is as follows: potential yield (gpm) = pumping test rate (97 gpm) * stabilized drawdown (150 ft) / [drawdown after 24 hours (23.5 ft) + one additional log cycle of drawdown (6 ft)]

production zone; and, layer 4 represents the remaining water-bearing zone down to bedrock. A simulated production well at the Pad D site is screened within the depth interval represented by model layer 3.

For this evaluation, the SGM was utilized, again at the preliminary planning level, to simulate the incremental hydraulic effect (drawdown) of possible future extractions from a production well located at the Pad D site. The analysis uses the superposition modeling approach to isolate the impact of groundwater pumping from a well installed at the Pad D site on water levels within the local and regional groundwater system. Two ten-year pumping schedules were simulated:

(1) Ten years of six months of pumping at 350 gpm followed by six months of recovery.
(2) Ten years with 11 months of pumping at 500 gpm followed by 1 month of recovery.

The first pumping schedule represents a relatively low level of groundwater extraction and the second pumping scenario represents a higher level of extraction. Therefore, the two schedules could be considered end members in terms of the City's likely potential future use of its groundwater supply and, therefore, the potential regional impacts.

These two pumping schedules were simulated under "Base Case" and "Reduced Hydraulic Conductivity" scenarios. The base case scenario utilizes the SGM without any modification to existing model hydraulic parameters. The Reduced Hydraulic Conductivity scenario involved decreasing the hydraulic conductivity of the Bay Plain model zone by 50 percent. The hydraulic conductivity of this zone in the Reduced Hydraulic Conductivity scenario more closely matches the estimated aquifer properties from the test well pumping tests conducted at the Pad D site.

Figures 7 and 8 depict simulated drawdown at the end of the 10 year pumping period for the two pumping schedules under the Base Case scenario and the Reduced Hydraulic Conductivity scenario, respectively. On all simulated drawdown snapshots, a cone of depression centered around a production well at the Pad D site is evident. Drawdown is greatest close to the well and decreases at greater distances. To facilitate comparison between the different pumping schedules and hydraulic property scenarios, and because of its significance to the question of saline water intrusion, the nearest point on the shoreline of San Francisco Bay, approximately 1.2 miles to the northeast of the Pad D site, was selected as a point of interest.

Figures 7 and 8 indicate that under the less intensive pumping schedule, drawdown at the bay margin at the end of the 10 year pumping period is approximately 4 feet under the Base Case scenario and approximately 4.4 feet under the Reduced Hydraulic Conductivity scenario. Under the more intensive pumping schedule, the simulated drawdown at the bay margin is approximately 7 feet under the Base Case scenario and 8 feet under the Reduced Hydraulic Conductivity scenario. It should be noted that these simulated drawdowns are in layer 3 of the confined aquifer, which is separated hydraulically from the shallow unconfined water bearing system by the regional aquitard. Nevertheless, these results indicate that sustained groundwater extraction from a production well at the Pad D site would likely cause a lowering of the groundwater table locally, and regionally in the deeper, confined aquifer. Potential impacts associated with lowering the groundwater levels should be considered in the planned operation of a future production well and as part of the overall management of the groundwater basin.

As with all numerical groundwater models, the model predictions presented here involve certain inherent uncertainties related to model discretization, parameterization, boundary conditions, and assumptions. It should be noted that the SGM is a project screening tool for simulating potential water level drawdown in areas located adjacent to San Francisco Bay. Additional data analysis and processing could be necessary before using it for other purposes such as design of individual extraction well projects or determining potential impacts on existing groundwater users as part of a CEQA analysis. It is important to be aware of these limitations when evaluating SGM simulations, and to recognize that future data collection guided by model results is recommended for managing groundwater storage volumes and water levels beneath and in the vicinity of proposed East Palo Alto extraction wells.

4.6 Groundwater Quality

Water quality analytical results from the groundwater sample collected from the test well are shown on Table 4. The water quality results are compared against drinking water standards (i.e., primary and secondary Maximum Contaminant Levels, or "MCLs") and against results from sampling at the Gloria Way well in 2003 and 2012 (Todd Engineers, 2012), as summarized below.

Manganese: Manganese was detected in the Pad D test well sample at a concentration of 0.038 milligrams per liter ("mg/L"), below the secondary MCL of 0.05 mg/L. Manganese concentrations in groundwater produced from the Gloria Way Well range from 0.16 to 0.19 mg/L.

Chloride: The chloride concentration in groundwater from the Pad D test well was 33.3 mg/L, well below the secondary MCL of 250 mg/L. Chloride was detected at 280 and 350 mg/L in samples collected from the Gloria Way well.

Total Dissolved Solids ("TDS"): The TDS concentration in groundwater from the Pad D test well was 359 mg/L, below the secondary MCL of 500 mg/L. TDS was detected at 840 and 820 mg/L in samples collected from the Gloria Way well.

Ionic Composition: The ionic composition of the sample from the Pad D test well indicates that groundwater is of the sodium-bicarbonate type. The ionic composition of groundwater samples collected from the Gloria Way well indicates that groundwater in that location is of a sodium-chloride type.

Overall, the water quality from the test well samples was good from the standpoint of not requiring treatment, at least in the near term, to meet drinking water standards. There were no exceedances of primary or secondary MCLs. However, it should be noted that water quality measured in the test well samples is a snapshot of the groundwater in the vicinity of the test well at the time of sampling. If a production well is constructed and operated at this site, the water quality may change as groundwater flow directions are altered by the well's drawdown. For this reason, it is recommended that consideration be given to the possible need for future treatment and/or blending with higher quality sources (i.e., the City's existing supply from the Hetch-

Hetchy Regional Water System). The major constituent of concern, based on analytical results from this well and historical water quality issues at the Gloria Way well, is manganese.

5 SUMMARY RECOMMENDATIONS

Results from this test well investigation indicate that, from a hydrogeologic perspective, the Pad D site is a suitable location for construction of a municipal supply well. Aquifer hydraulic properties and groundwater quality indicate that the aquifers underlying the site appear to be capable of providing at least 350 gpm of good quality water. Longer-term responses cannot easily be predicted but would likely result in drawdown of several feet at distances up to a mile or more from the well. The project should recognize and evaluate potential undesirable effects such as well interference, saline water intrusion, and land subsidence. Nevertheless, the benefits to the City of having a local water supply source for use in times of extended drought or emergency supply disruption make development of a municipal supply well an attractive option, especially if the groundwater use is managed in accordance with the Groundwater Management Plan that the City is developing.

If the City decides to pursue construction of a municipal supply well at the Pad D site, the following further work is recommended:

- Decision Support Analysis:
    - Develop an estimate of probable cost for the design and construction of a municipal supply well;
    - Perform cost/benefit analysis of a new groundwater supply well against other water supply options the City may have (i.e., continued reliance on the Hetch-Hetchy Regional Water System as the sole source of supply, water conservation, recycled water, construction of surface storage), including consideration of capital costs and operations and maintenance ("O&M") costs;
- Engineering:
    - Develop a Conceptual Operations Plan for the new well, describing how the well would be incorporated into the City's existing water supply system. This Conceptual Operations Plan could be incorporated into the City's Water System Master Plan and the Groundwater Management Plan;
    - Engage an engineering firm to perform design, bid support, and construction management services for construction of the new production well;
    - The test well will serve as an observation and monitoring well once the production well has been installed; Consider constructing an additional monitoring well further away to monitor potential offsite impacts associated with groundwater extraction at the Pad D site (e.g., water level decline, salt water intrusion);
    - Develop and participate in a local or regional aquifer storage and recovery ("ASR") and conjunctive use program;
- Financing:
    - Incorporate the new well project into the City's Capital Improvement Program ("CIP") and future water rate studies;
    - Identify and apply for grant monies that may be available to the City for this project;

- Planning:
    - Confer with county and state agencies (i.e., the County of San Mateo Environmental Health Department, the California Department of Public Health, and the State Water Resources Control Board) regarding health and permitting requirements for a new groundwater source;
    - Confer with the City Planning Department regarding zoning and ownership issues of the property where Pad D is located, and accommodations for multiple potential uses (i.e., a new municipal supply well and the proposed pedestrian bridge across Highway 101);
    - Coordinate with California American Water Company regarding O&M activities for the new groundwater well;
    - Update the City's Urban Water Management Plan to incorporate the new groundwater source.

6 REFERENCES

City of East Palo Alto, 2014, *Request for Proposals for A New Groundwater Test Well, City of East Palo Alto Project No. WS-04-2013/14,* dated 29 January 2014.

Freeze, R.A., and Cherry, J.A., 1979, *Groundwater,* Prentice Hall, Englewood Cliffs, NJ.

Todd Engineers, 2012, *Gloria Way Water Well Production Alternatives Analysis and East Palo Alto Water Security Feasibility Study,* dated November 2012.

Table 1
Aquifers Identified and Screened Intervals
City of East Palo Alto Pad D Test Well Project
East Palo Alto, California

Aquifer Zone	Aquifer Zone Depth (ft bgs)	Screened Interval Depth (ft bgs)	Lithologic Description
1	170 - 180	165 - 185	Sand with gravel
2	320 - 345	315 - 350	Sand with gravel
3	375 - 385	375 - 390	Sand
4	435 - 460	435 - 465	Sand with gravel
5	505 - 525	500 - 525	Sand

Abbreviation:
ft bgs = feet below ground surface

Table 2
Summary of Aquifer Parameters Estimated From Aquifer Pumping Tests
City of East Palo Alto Pad D Test Well Project
East Palo Alto, California

Pumping Test and Analytical Method	Transmissivity (ft^2/d)	Linear Loss Coefficient (ft/gpm)	Non-linear Loss Coefficient (min^2/ft^5)	Barrier Boundary Invoked	Reference	Notes	Page in Attachment G
Step-Drawdown Test						Pumping rates (gpm): Step 1 = 23, Step 2 = 44, Step 3 = 99, Step 4 =124; Specific capacity at 90 minutes (gpm/ft): Step 1 = 8.58 , Step 2 = 7.14, Step 3 = 5.61, Step 4 = 5.23;	
Hantush-Bierschenk	-	0.104	0.041	No	A	linear losses range from 86% at 23 gpm to 54% at 124 gpm	1
Step-Drawdown Test Recovery							
Kawecki	880	-	-	No	C	slope match to all step-drawdown test recovery data	2
Constant Rate Test						Pumping rate = 97 gpm; Specific capacity at 90 minutes = 5.84 gpm/ft; Specific capacity at 24 hours = 4.12 gpm/ft; drawdown at 24 hours = 23.5 ft; slope of drawdown vs time curve = 6 ft per log cycle of time	
Cooper-Jacob	1,070	-	-	No	B	slope match between 0.5 min and 10 min (early time)	3
Cooper-Jacob	590	-	-	No	B	slope match between 40 min and end of test (late time)	4
Theis	1,160	-	-	Yes	B	slope match all data after 0.5 min; linear boundary 20 feet away	5
Constant-Rate Test Recovery		-	-				
Theis (Recovery)	880	-	-	No	B, D	slope match to all recovery data	6

Abbreviations:

d = days
ft = feet
gpm = gallons per minute
min = minutes

References:

A = Kruseman and de Ridder, 1994, *Analysis and Evaluation of Pumping Test Data, Second Edition* , Procedure 14.1.
B = method built into AQTESOLV software.
C = Kawecki, 1993, Recovery Analysis from Pumping Tests with Stepped Discharge, *Groundwater* , vol. 31, no. 4, pp. 585-592.
D = Kruseman and de Ridder, 1994, *Analysis and Evaluation of Pumping Test Data, Second Edition* , Procedure 15.7.

Table 3
Maximum Pumping Rate Under a Conservative Pumping and Recharge Scenario
City of East Palo Alto Pad D Test Well Project
East Palo Alto, California

	Maximum Pumping Rate (gpm) [1]					
	Maximum Allowable Drawdown in Pumping Well = 200 feet		Maximum Allowable Drawdown in Pumping Well = 150 feet		Maximum Allowable Drawdown in Pumping Well = 100 feet	
Transmissivity [2]	S = 0.005	S = 0.001	S = 0.005	S = 0.001	S = 0.005	S = 0.001
600 ft^2/d	298	276	224	207	149	138
900 ft^2/d	439	406	329	305	219	203
1,200 ft^2/d	576	534	432	401	288	267

Abbreviations:

d = days
ft = feet
gpm = gallons per minute

Notes:

1. Assumptions include pumping duration of 330 days, well diameter of 12 inches, and well efficiency of 75 percent, and no recharge. The assumption of no recharge is conservative. Yield estimates based on observed drawdown after 24 hours of pumping, drawdown per log cycle of time, and including recharge resulting in drawdown stabilization after a reasonable time (10 to 100 days), indicates a yield between approximately 350 and 500 gpm.
2. Transmissivity (T) values are based on the range of T values estimated by analysis of aquifer tests conducted at the Pad D test well (see Table 2).
3. Storativity (S) values estimated based on typical values for a confined aquifer (e.g., Freeze and Cherry, 1979).

References:

Freeze, R.A., and Cherry, J.A., 1979, Groundwater, Prentice-Hall, Englewood Cliffs, NJ

Table 4
Summary of Water Quality Results
City of East Palo Alto Pad D Test Well Project
East Palo Alto, California

Constituents	Concentration [1]			Drinking Water Standard [5]	
	Pad D Test Well	Gloria Way Well			
	8/5/2014 [2]	12/15/2003 [3]	5/22/2012 [4]		
Major Cations (mg/L)					
Calcium	12 [13] [6]	57	59		
Magnesium	4.7 [5.1] [6]	26	25		
Sodium	120	230	240		
Potassium	<2.0	<2.0	1.1		
Major Anions (mg/L)					
Chloride	33.3	**280**	**350**	250-500-600 [7]	s
Sulfate	19.1	30	33	250-500-600 [7]	s
Bicarbonate Alkalinity	245	200 [8]	250		
Minor Ions (mg/L)					
Total Iron	<0.03	0.14	0.13	0.3	s
Dissolved Iron	<0.03	--	--		
Manganese	0.038	**0.19**	**0.16**	0.05	s
Fluoride	<0.1	0.33	0.14	2	p
Nitrite (as Nitrogen)	<0.1	<5 [9]	<0.4	1	p
Nitrate (as Nitrate)	<0.1 [10]	<5	<2.0	45	p
Cyanide	<0.005	<0.005	<0.10	0.15	p
Physical Properties (mg/L, unless noted otherwise)					
Total Hardness	50	250	251		
Total Alkalinity as $CaCO_3$	245	210	200		
CO_3 Alkalinity	<10.0	8.2	<5.0		
OH Alkalinity	<10.0	<5.0	<1.0		
pH units	8.22	7.95	7.98		
Specific Conductance (µS/cm)	624 [620] [6]	**1,500**	**1,500**	900-1,600-2,200 [7]	s
Total Dissolved Solids	359	**840**	**820**	500-1,000-1,500 [7]	s
Color units	<5.0	10	<5.0	15	s
Odor units	<1.0	<1.000	<1.0	3	s
MBAS	<0.05	<0.05	<0.05	0.5	s
Turbidity (NTU)	0.13	0.5	0.44	5	s
Trace Ions (µg/L)					
Aluminum	1.57	5.4	<50	1,000 p / 200 s	
Antimony	<1.00	<1.0	<6.0	6	p
Arsenic	3.58	1.4	2.8	10	p
Barium	88.8	350	380	1,000	p
Beryllium	<1.00	<1.0	<1.0	4	p
Cadmium	<1.00	<1.0	<1.0	5	p
Chromium	<1.00	<5.0	<10	50	p
Copper	<1.00	<10	<50	1,000 s / 1,300 AL [11]	

Table 4
Summary of Water Quality Results
City of East Palo Alto Pad D Test Well Project
East Palo Alto, California

Constituents	Concentration [1]			Drinking Water Standard [5]	
	Pad D Test Well	Gloria Way Well			
	8/5/2014 [2]	12/15/2003 [3]	5/22/2012 [4]		
Lead	<1.00	<5.0	<5.0	15	p
Mercury	<0.200	<0.20	<1	2	p
Nickel	<1.00	1.4	<10	100	p
Selenium	<1.00	3.1	7.5	50	p
Silver	<1.00	<1.0	<1.0	100	s
Thallium	<1.00	<1.0	<1.0	2	p
Zinc	5.96	<50	<50	5,000	s
Radiological					
Uranium (μg/L)	<1.0	--	--		
Uranium (pCi/L)	<0.67	--	0.27 ± 0.020	20	p
Gross Alpha (pCi/L)	0.319 ± 1.31	--	<3 ± 1.370	15	p
Gross Beta (pCi/L)	0.030 ± 0.605	--	2.69 ± 1.120		
Organic Suites (μg/L)					
Perchlorate	<2.0		<4.0	6	p
Volatile Organic Compounds	<MDL [12] except:	<MDL [12]	<MDL [12]	varies	
Toluene	0.65			150	p
Semi-Volatile Organic Compounds	<MDL [12]	<MDL [12]	<MDL [12]	varies	

Abbreviations:

-- = not analyzed.
MBAS = methylene-blue active substances
MDL = method detection limit
mg/L milligrams per liter
μg/L = micrograms per liter
μS/cm - microSiemens per centimeter
NTU = nephelometric turbidity units
PCBs = polychlorinated biphenyls
pCi/L = picoCuries per liter

Notes:

1. <MDL = not detected at concentration above method detection limit (MDL). Concentrations exceeding the drinking water standard are shown in **bold**.
2. Laboratories: K-Prime, Inc., Alpha Analytical Laboratories, Inc, BSK Associates Engineers and Laboratories, and Pace Analytical.
3. Data from Table 1 of HDR report (April 2004); laboratories unknown.
4. Laboratories: Alpha Analytical Laboratories, Inc., Underwriters Laboratories, Weck Laboratories, Inc., McCampbell Analytical, Inc. Asbestos TEM Laboratories, Inc., and GEL Laboratories LLC.
5. Drinking Water Standard: p = primary, s = secondary.
6. [13] = duplicate analysis from another laboratory.
7. Secondary drinking water standard: recommended-upper-short term.
8. Reported as bicarbonate.
9. Nitrite as Nitrite.
10. Nitrate as Nitrogen.
11. Copper has a secondary drinking water standard of 1,000 μg/L and an Action Level ("AL") of 1,300 μg/L.
12. Method detection limit varies for volatile organic compounds and semi-volatile organic compounds.

Notes:

1. All locations are approximate.
2. Basemap source: The Thomas Guide Digital Edition, State of California, 2011/2012.

0 2000 4000

(Approximate Scale in Feet)

N

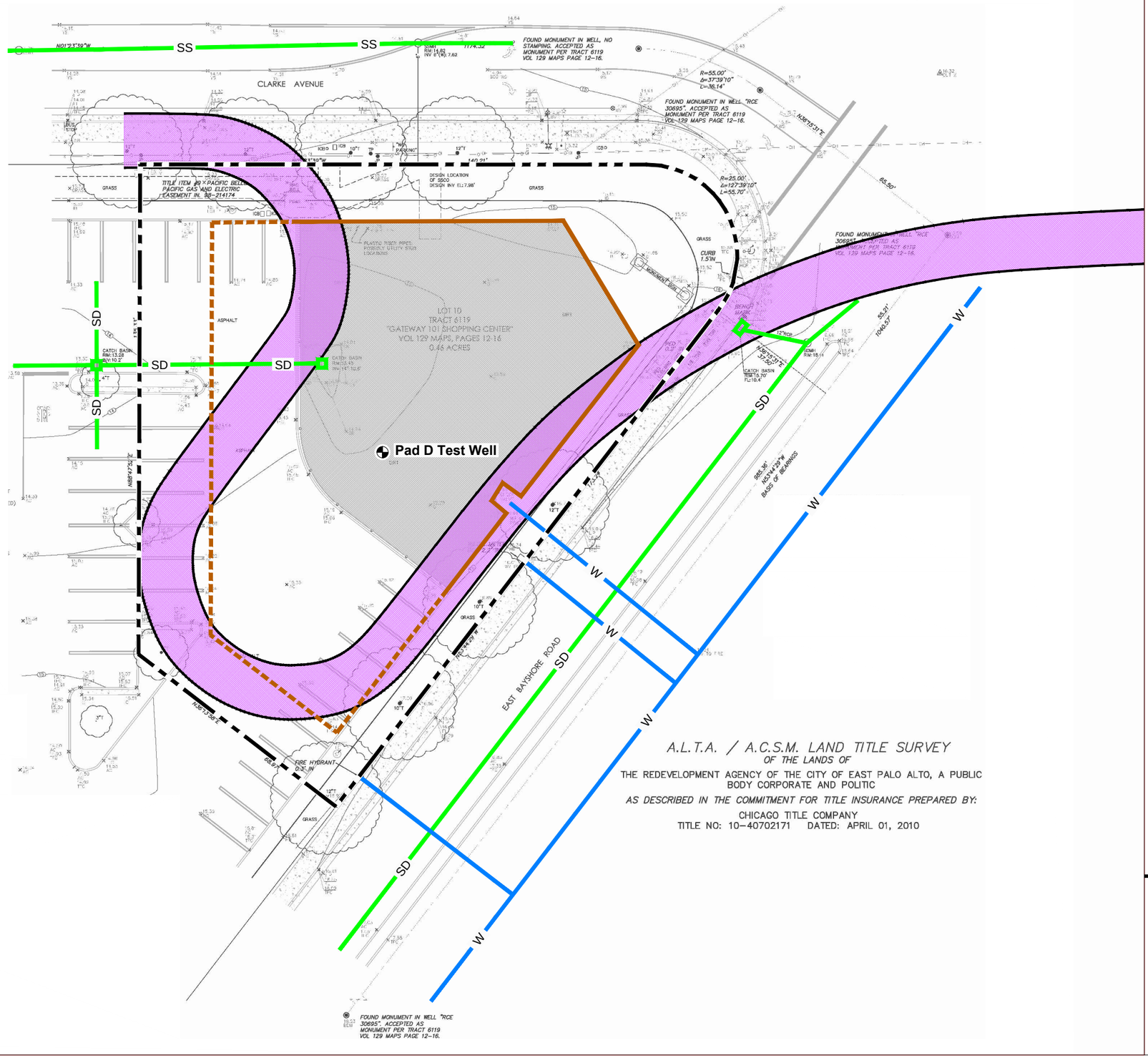
Erler & Kalinowski, Inc.

Site Location Map

East Palo Alto Test Well
East Palo Alto, CA

October 2014
EKI B40016.00

Figure 1



N

0 30 60

(Approximate Scale in Feet)

Legend:

- Property Boundary
- Existing Chain Link Fence
- Temporary Chain Link Fence
- W — Water Mains
- SS — Sanitary Sewer
- SD — Storm Drain and Catch Basin
- Unpaved Area
- Preliminary Alignment of Proposed Pedestrian/Bicycle Over-Crossing
- Pad D Test Well

Notes:

1. All locations are approximate.
2. Basemap source: ALTA/ACSM Land Title Survey.

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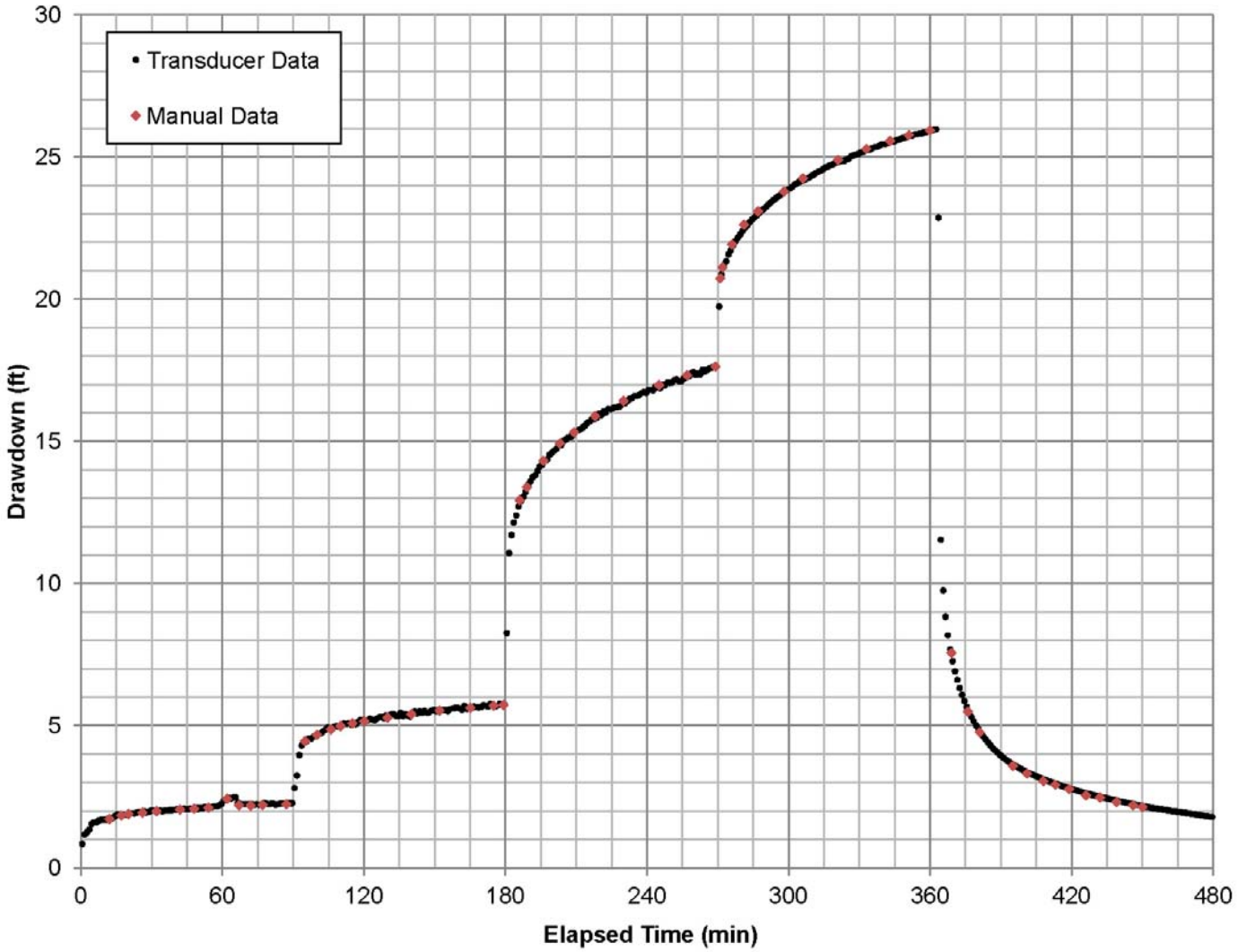
Site Layout

East Palo Alto Test Well
East Palo Alto, CA
October 2014
EKI B40016.00
Figure 2

G:\B40016.00\2014-09\Figure 2.dwg 9-10-14



Abbreviations:

ft = feet
gpm = gallons per minute
min = minutes

Notes:

1. Test performed on 1 August 2014.
2. Pumping rates were 23 gpm, 44 gpm, 99 gpm, and 124 gpm.

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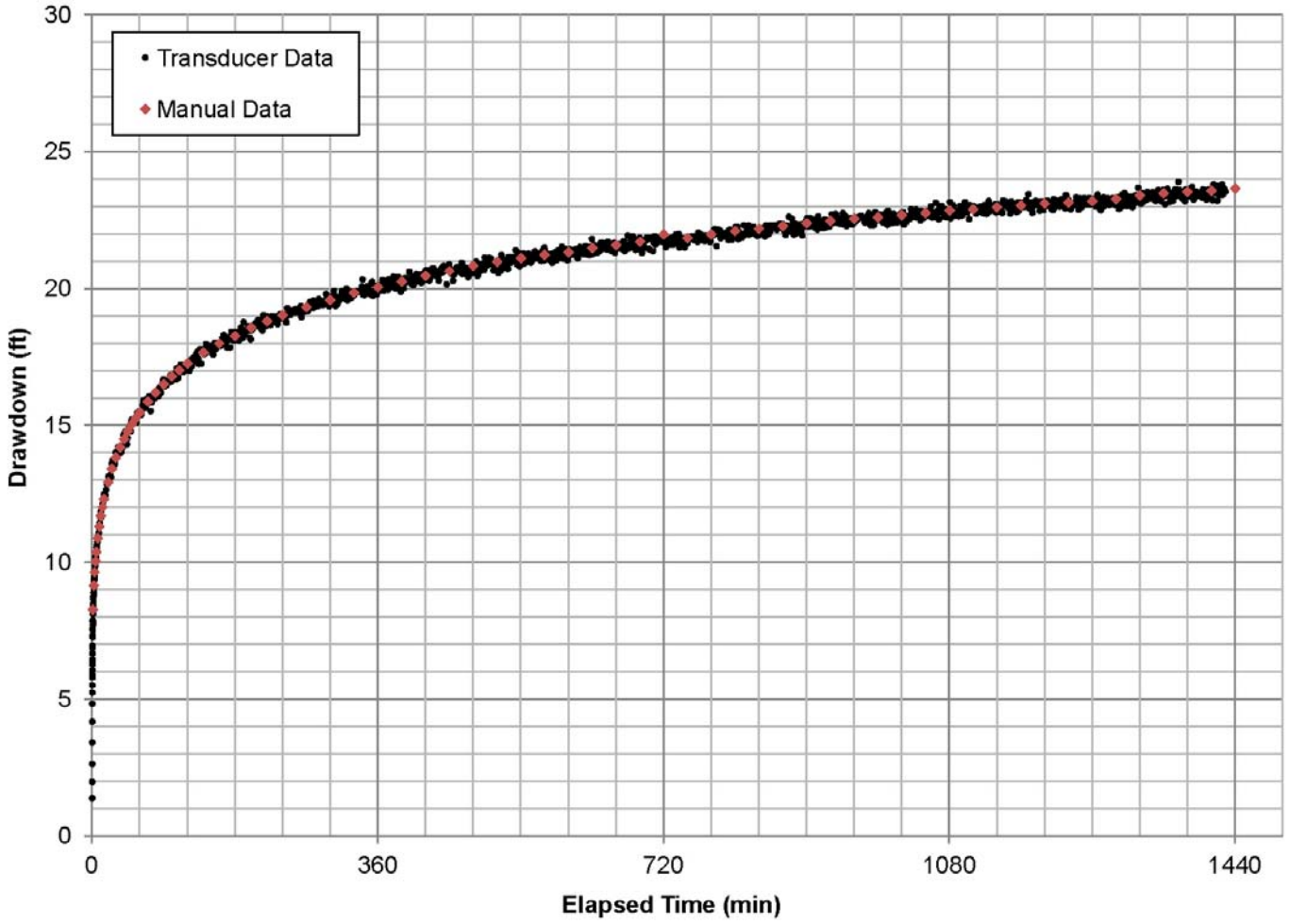
Drawdown Versus Time During Step-Drawdown Test

Pad D Test Well
East Palo Alto, CA
October 2014
EKI B40016.00
Figure 3



Abbreviations:

ft = feet
gpm = gallons per minute
min = minutes

Notes:

1. Test performed starting 8:10 AM on 4 August 2014.
2. Pumping rate is 97 gpm.

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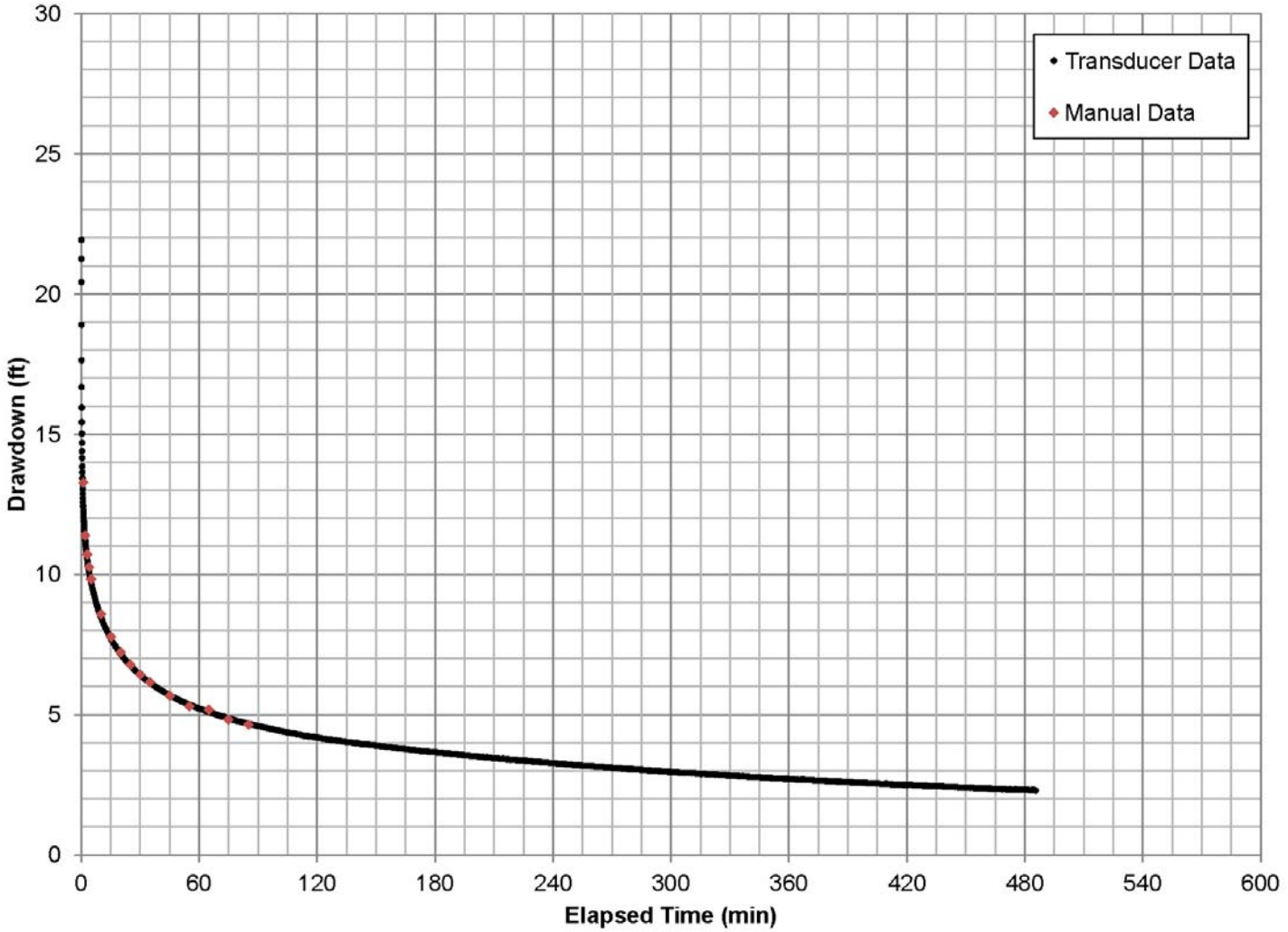
Drawdown Versus Time During Constant-Rate Pumping Test

Pad D Test Well
East Palo Alto, CA
October 2014
EKI B40016.00
Figure 4



Abbreviations:

ft = feet

min = minutes

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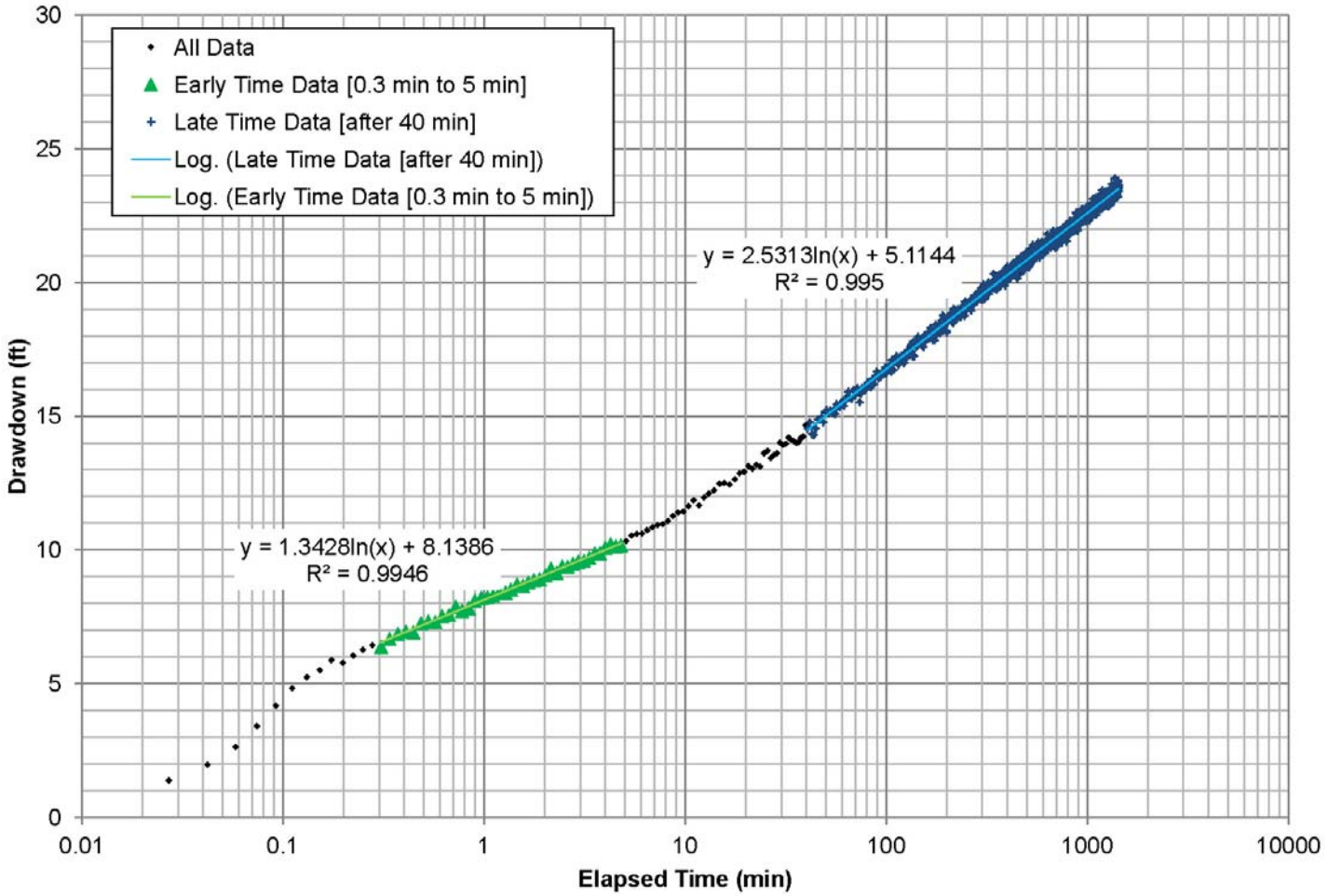
Drawdown Versus Time During Constant-Rate Test Recovery

Pad D Test Well
East Palo Alto, CA
October 2014
EKI B40016.00

Figure 5



Abbreviations:

ft = feet

gpm = gallons per minute

min = minutes

Notes:

1. Test performed starting 8:10 AM on 4 August 2014.
2. Pumping rate is 97 gpm.

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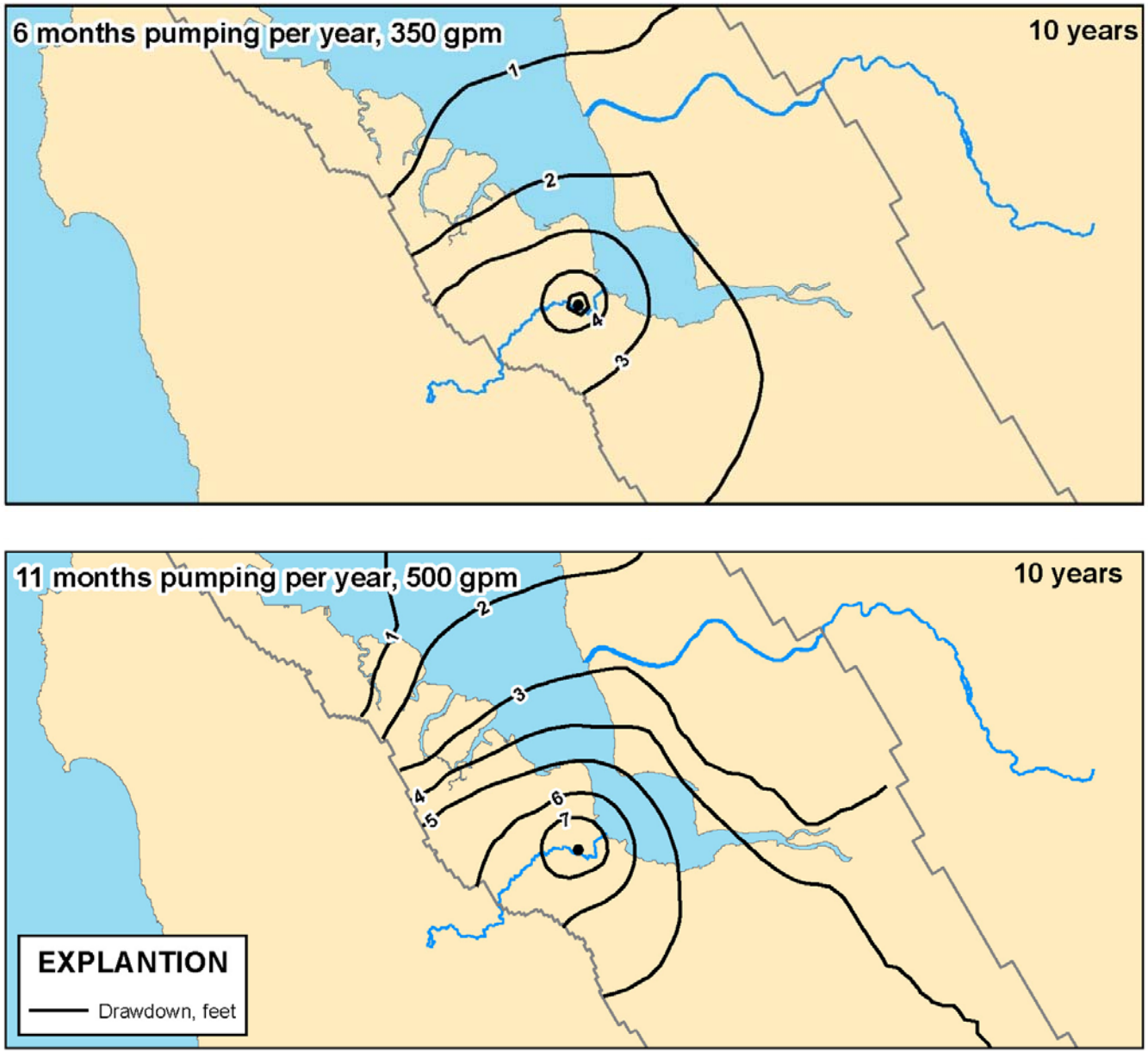
Drawdown Versus Logarithm of Time During Constant-Rate Pumping Test

Pad D Test Well
East Palo Alto, CA
October 2014
EKI B40016.00
Figure 6



Abbreviations:

BAWSCA SGM = Bay Area Water Supply and Conservation Agency Strategy Groundwater Model

gpm = gallons per minute

Notes:

1. Contours depict simulated groundwater level drawdown, in feet, at the end of the 10th year pumping phase.
2. Base case scenario assumes no changes to the hydraulic property distribution in the BAWSCA SGM.

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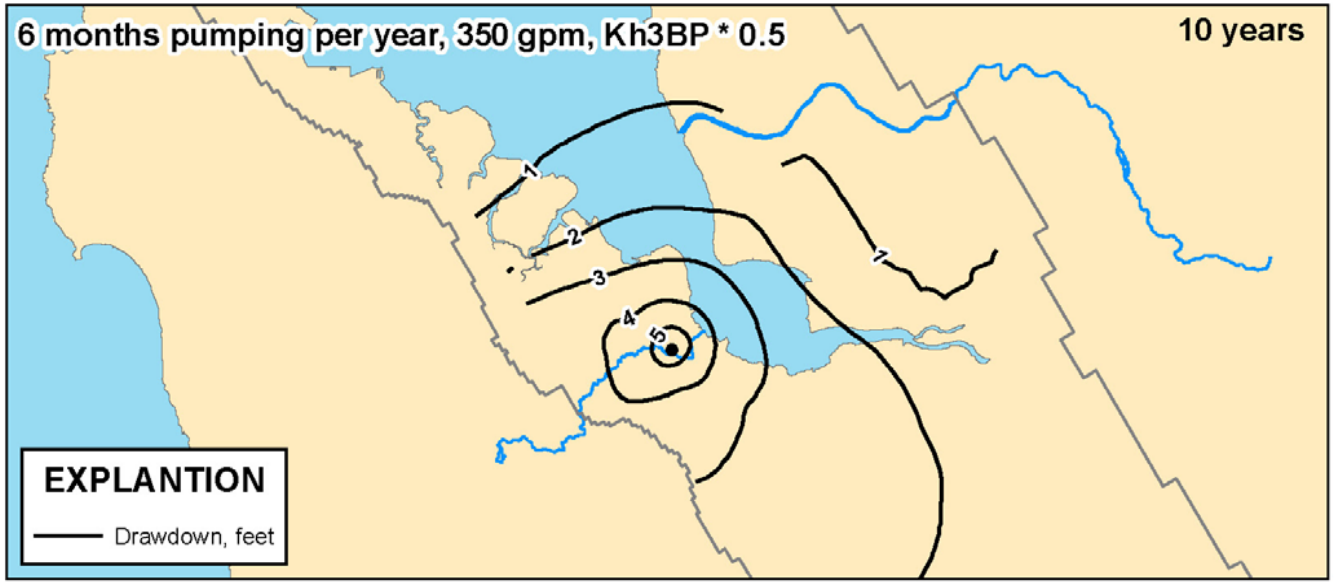
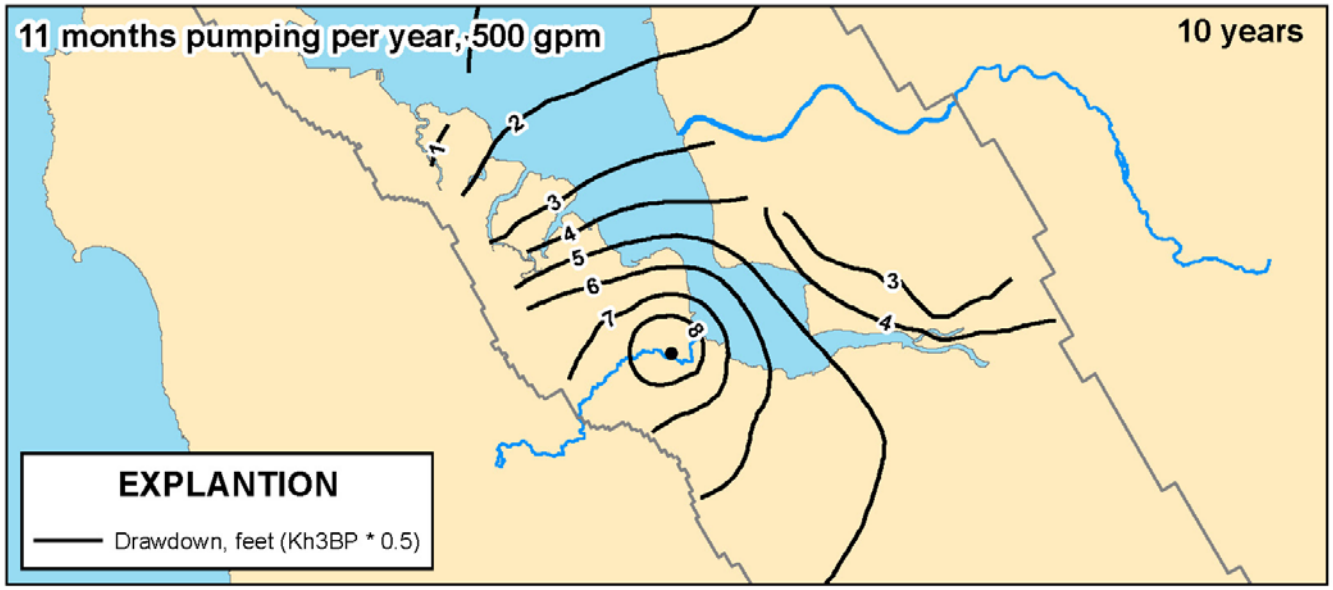
Simulated Regional Drawdown Under Base Case Scenario

Pad D Test Well
East Palo Alto, CA
October 2014
EKI B40016.00

Figure 7





Abbreviations:

BAWSCA SGM = Bay Area Water Supply and Conservation Agency Strategy Groundwater Model

gpm = gallons per minute

Notes:

1. Contours depict simulated groundwater level drawdown, in feet, at the end of the 10th year pumping phase.
2. Reduced hydraulic conductivity scenario assumes a 50 percent reduction in the hydraulic conductivity of the Bay Plain subarea in which the simulated production well is located, relative to the base case values in the BAWSCA SGM.

Erler & Kalinowski, Inc.

Simulated Regional Drawdown Under Reduced Hydraulic Conductivity Scenario

Pad D Test Well
East Palo Alto, CA
October 2014
EKI B40016.00

Figure 8

Attachment A

San Mateo County Subsurface Drilling Permit;

Email Authorization to Discharge to Storm Drain from Regional Water Quality Control Board

ENVIRONMENTAL HEALTH
SAN MATEO COUNTY

Protecting Our Health and Environment

ORDINANCE: 04023

PERMIT 14- 1371

P/E: 2010 **MONITORING WELLS - INSTALLATION/DESTRUCTION**

FACILITY:
INT OF BAYSHORE RD & CLARKE AVE, EPA

OWNER:
CITY OF EAST PALO ALTO
1960 TATE STREET
EAST PALO ALTO

WP0009933 FA0055802
063511580
AMOUNT PAID: 577.00

CONTRACTOR:
PITCHER DRILLING COMPANY

TERMS & CONDITIONS:

MONITORING/ VAPOR WELL INSTALL (1)
CONSULTANT: ERLER & KALINOWSKI
PROJECT MGR: ANONA DUTTON
SEE SPECIAL CONDITIONS NOTED ON APPLICATION

ALLISON FANG

ENVIRONMENTAL HEALTH SPECIALIST

DATE ISSUED: 6/26/2014

EXPIRATION DATE: 10/26/2014

THIS PERMIT IS NONTRANSFERABLE AND MUST BE POSTED ON-SITE IN A CONSPICUOUS PLACE

SAN MATEO COUNTY ENVIRONMENTAL HEALTH

JUN 23 2014

RECEIVED

PAID

CK. NO. 29788

DATE $577.00 6/23/2014

2014 SUBSURFACE DRILLING PERMIT APPLICATION

SAN MATEO COUNTY ENVIRONMENTAL HEALTH SERVICES DIVISION
2000 ALAMEDA DE LAS PULGAS, SUITE 100, SAN MATEO, CA 94403
VOICE (650) 372-6200 FAX (650) 627-8244 WWW.SMCHEALTH.ORG

FEES:
$577.00 (env. borings or any wells)
$361.00 (geotechnical borings only)

ALLOW 3 FULL WORKING DAYS FOR PROCESSING PERMIT, GROUTING DATE & TIME MUST BE SCHEDULED WITH COUNTY STAFF OR AT drilling@smcgov.org AT LEAST 2 FULL WORKING DAYS IN ADVANCE BUT AT LEAST 1 FULL WORKING DAY AFTER APPLICATION SUBMITTAL

PURPOSE OF APPLICATION
☒ GROUNDWATER MONITORING / VAPOR WELL INSTALLATION ☐ CONSTRUCT SOIL BORINGS
☐ GROUNDWATER MONITORING / VAPOR WELL DESTRUCTION ☐ EXTENSION OF PERMIT #
NO. OF WELLS 1 NO. OF BORINGS WELL/BORING NAMES TW-1

PURPOSE OF DRILLING ☒ ENVIRONMENTAL ☐ GEOTECHNICAL

LEAD AGENCY
☐ COUNTY GPP (permit approval is not to be considered work plan approval)
☐ RWQCB/DTSC/USEPA (Provide approval letter) ☒ NONE (i.e. voluntary)

SITE/ DRILLING INFORMATION

AGENCY CASE# N/A ASSESSOR'S PARCEL # (REQUIRED) 063-511-580 (one per permit)

DRILLING LOCATION ADDRESS Lot 10 Tract 6119 Gateway 101 Shopping Center CITY East Palo Alto ZIP 94303

Int of Bayshore Rd and Clarke Ave.

To Be Constructed In: ☒ Public Property ☐ Private Property ☐ Refuse

Maximum Proposed Depth Wells/Borings 600 (feet) Drilling Method direct mud rotary

Boring Diameter 12 inches Casing Diameter 6 inches Filter Pack Interval not yet known Screen Interval not yet known

Destruction Method(6 gallons water max per 94 lb cement, up to 5% bentonite): ☐ Pressure Grouting (provide well construction logs) ☐ Overdrilling (guide rods for total depth prior to starting required)

WELL/ BORING OWNER: (WELL/BORING OWNER NAME OR CONTACT PERSON SHOULD MATCH SIGNATURE)

NAME City of East Palo Alto CONTACT PERSON Kamal Fallaha, City Engineer
ADDRESS 1960 Tate Street CITY, STATE, ZIP East Palo Alto, California, 94303
TELEPHONE 650-853-3117 EMAIL kfallaha@cityofepa.org

It is my responsibility to notify the County of any known changes in the purpose of this well/boring from that which is indicated on this application and to notify the County of any known damage to the well, and to maintain the well in good condition. *(Letter signed by well/boring owner/contact person, containing above language and attesting to knowledge of all permit requirements and conditions, may be substituted for signature.)*

Well/Boring Owner's/Contact Person's Signature: Kamal Fallah Date: 6-18-14

PROPERTY OWNER: (NAME AS APPEARS ON ASSESSOR'S ROLES SHOULD MATCH SIGNATURE)

NAME City of East Palo Alto CONTACT PERSON Kamal Fallaha, City Engineer
ADDRESS 1960 Tate Street CITY, STATE, ZIP East Palo Alto, California, 94303
TELEPHONE 650-853-3117 EMAIL kfallaha@cityofepa.org

I understand that a well/boring is being installed on my property. I agree to notify the County and Well Owner of any known damage to the well. (Letter signed by property owner, containing above language, or encroachment permit may be substituted for signature on permit application.)

Property Owner's Signature: Kamal Fallah Date: 6-18-14

DRILLING COMPANY:

DRILLING COMPANY Pitcher Drilling Company CONTACT PERSON Terry Shewchuk
ADDRESS 218 Demeter Street CITY, STATE, ZIP East Palo Alto, California, 94303
Telephone 650-328-8910 EMAIL pitcher@pitcherdrilling.com C57 DRILLERS LICENSE # 263085

I certify that the well/boring will be constructed in compliance with the conditions of this permit (see reverse), the San Mateo County Well Ordinance, and the State Water Well Standards, and that the license listed above is considered current and active by the Contractors State License Board.

Driller's Signature: Terry Shewchuk Date: June 11 2014

CONSULTANT COMPANY:

CONSULTANT COMPANY Erler & Kalinowski, Inc. PROJECT MANAGER Anona Dutton
ADDRESS 1870 Ogden Drive TELEPHONE 650-292-9100
CITY, STATE, ZIP Burlingame, California, 94044 EMAIL adutton@ekiconsult.com

FIELD CONTACT NAME AND NUMBER (if known) Jeff Shaw, 650-759-0535

I certify that this application is correct to the best of my knowledge and the well/boring will be constructed/destroyed in compliance with the conditions of this permit (see reverse), the San Mateo County Well Ordinance, and the State Water Well Standards. I understand that I am responsible for General Conditions "D and E" of this permit and if I indicated the purpose of drilling is geotechnical, then no one will use the boring to collect any samples for environmental analyses. *(Responsible Professional must be a California Professional Geologist or Civil Engineer.)*

Responsible Professional's Name (Please print legibly) Anona Dutton

Responsible Professional's Signature Anona Dutton Date: 6/11/2014

California Professional Geologist (PG) No. 7683 or Civil Engineer (PE) No.

Please see additional pages of application for requirements, general permit conditions, instructions, and fees.

Revised every January 1

FA 55802

 2013 SUBSURFACE DRILLING PERMIT APPLICATION

REQUIREMENTS:

An accurate & correct map of existing and proposed well/boring locations **must** be included with the permit application. The well/boring location map **must** include the following.

1. North arrow, existing & historic site features, wells, approximate property lines and any other pertinent existing & historic features and information.
2. Proposed well/boring locations to scale.

A work plan describing the drilling and construction/destruction methodology may be requested by County staff. Upon review of information on this application, and subject to approval noted below, a permit will be issued allowing well/boring owner, driller, and responsible professional to perform the specified work. The permit is subject to both General and Special Conditions stated below. A copy of the approved Subsurface Drilling Permit **must** be available on site while work related to the permit is being performed. Drilling may begin at the notified date and time whether County staff is present or not.

GENERAL CONDITIONS:

A. Well and boring construction and destruction under this permit is subject to the Standards for the Construction of Wells in San Mateo County, County Groundwater Protection Program (GPP) Guidelines, Policies & Procedures, the State Water Well Standards, and any instructions by a Health Department representative.

B. Well/Boring Owner, Driller, and Responsible Professional assume responsibility for all activities and uses under the permit, including compliance with Workmen's Compensation Laws, and indemnify, defend and save the County of San Mateo, its' officers, agents and employees, free and harmless from any and all expense, cost, or liability in connection with or resulting from work or stopped-work associated with the permit, including, but not limited to, property damage, personal injury, wrongful death, and loss of income.

C. All borings **must** be properly destroyed (grouted/sealed) within 24 hours of drilling unless special conditions are approved in writing as part of this permit. Borings lasting longer than 24 hours without a variance are considered wells.

D. Analytical results of all soil, vapor, and groundwater samples collected during the execution of drilling under this permit **must** be submitted to County GPP staff by the Responsible Professional within 60 days of sample collection. If contamination is discovered during drilling, verbal notification to County GPP by the Responsible Professional is **required** within 72 hours of discovery. Proper storage, labeling & disposal of investigation-derived residual wastes are the responsibility of the consultant unless stated otherwise contractually.

E. A copy of the State DWR Form 188, boring logs and well construction details for all borings/wells except geotechnical borings, signed by a Responsible Professional, **must** be submitted to County GPP by the Responsible Professional within 60 days of drilling/construction/destruction. As-built locations/dimensions **must** be finalized in subsequent report of findings submitted to County GPP by the Responsible Professional within 60 days of drilling/construction/destruction.

F. Permit is valid only for the purpose specified herein. No change in purpose or required procedures, as described on this permit application, in the associated workplan, or in the special conditions below, will be allowed except upon written permission from the County. Construction aspects can be changed based on conditions encountered in the field.

G. Permit is valid for a mobilization associated with originally permitted boring/well locations only, including contingency locations, and is automatically canceled if not exercised, or if an extension is not applied for and granted within 120 days of the original permit issuance date. Failure to notify staff of cancellation or delay in start time will result in the Consultant being billed an Inspection Cancellation fee of $264 for 2013 if GPP staff attempted to perform an inspection.

H. Wells installed under this permit may not be used for domestic, municipal, commercial, or irrigation water supply.

I. All work performed **must** conform to Business and Profession Codes and State Water Well Standards.

J. Top-of-casing elevation of all wells **must** be surveyed to the nearest 0.01-foot relative to Mean Sea Level or NAVD88 and submitted to County GPP within 60 days of drilling, and to State GeoTracker as appropriate. Geotechnical wells are exempt from this requirement if a written variance from GPP is obtained prior to drilling.

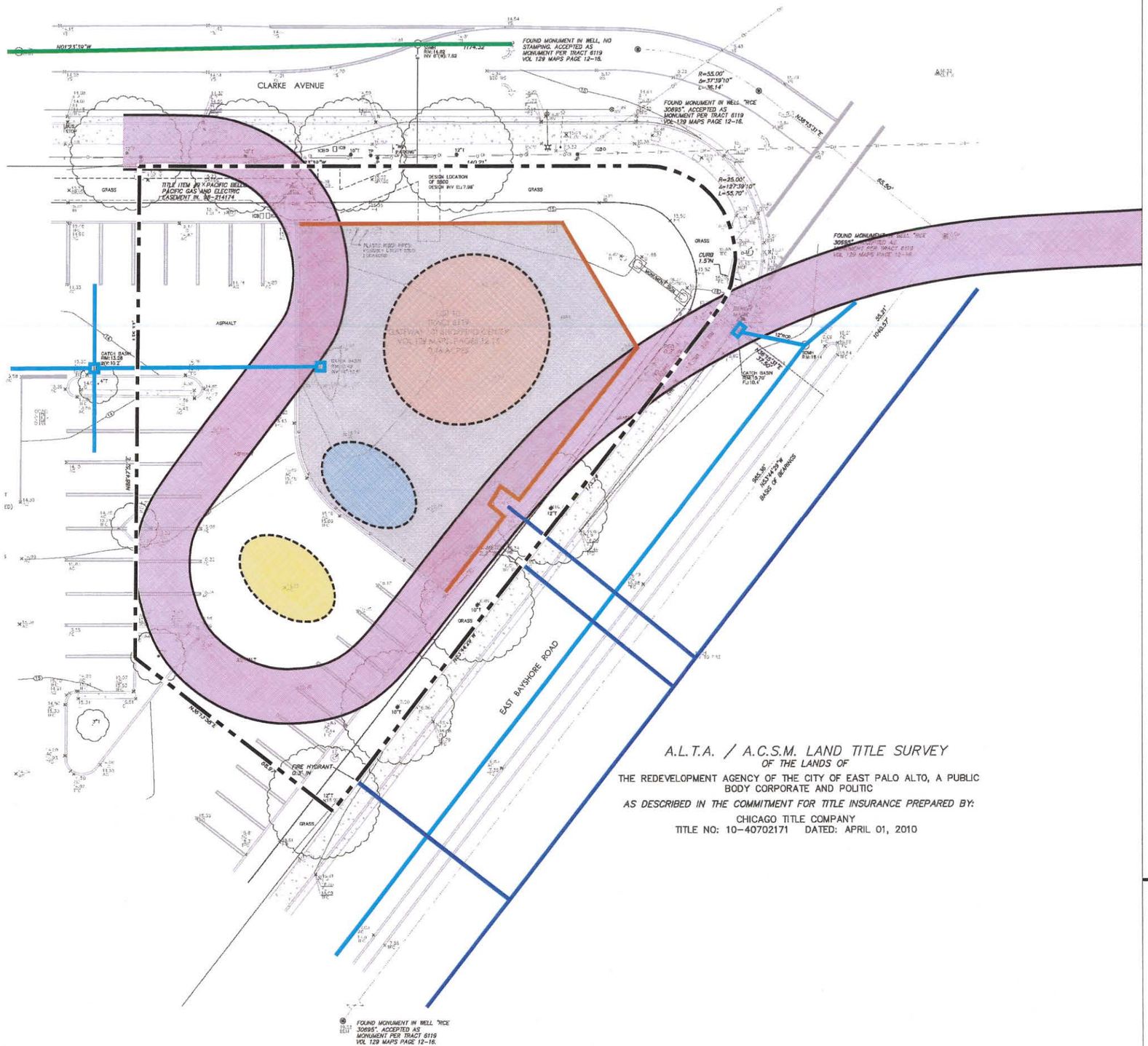
K. Latitude and longitude of all wells **must** be surveyed with sub-meter accuracy relative to NAD83 and submitted to County GPP within 60 days of drilling, and to State GeoTracker as appropriate.

L. Violation of any requirement or general or special permit condition may result in an order by GPP staff to cease work under this permit, correct the violation, and potentially re-permit the work as a new mobilization.

SPECIAL CONDITIONS: A site map with the final proposed well location must be submitted prior to drilling.

Please e-mail drilling@smcgov.org at least 48 hours prior to drilling to notify us of your start date and time. Please note conditions J and K of this permit.

County Approval: [signature] RO/FA# _____ Date: 6/23/14



A.L.T.A. / A.C.S.M. LAND TITLE SURVEY
OF THE LANDS OF
THE REDEVELOPMENT AGENCY OF THE CITY OF EAST PALO ALTO, A PUBLIC BODY CORPORATE AND POLITIC
AS DESCRIBED IN THE COMMITMENT FOR TITLE INSURANCE PREPARED BY:
CHICAGO TITLE COMPANY
TITLE NO: 10-40702171 DATED: APRIL 01, 2010

N

0 30 60

(Approximate Scale in Feet)

Legend:

- Property Boundary
- Existing Chain Link Fence
- Water Mains
- Sanitary Sewer
- Storm Drain and Catch Basin
- Unpaved Area
- Preliminary Alignment of Proposed Pedestrian/Bicycle Over-Crossing
- Potential Boring/Test Well Location on Unpaved Area
- Possible Future Production Well Location
- Potential Boring/Test Well Location on Paved Area

Notes:

1. All locations are approximate.
2. Basemap source: ALTA/ACSM Land Title Survey.

Erler & Kalinowski, Inc.

Site Map with Proposed Boring/Test Well Location

East Palo Alto Test Well
East Palo Alto, CA
June 2014
EKI B40016.00
Figure 1

C:\Users\rlcsacto\appdata\local\temp\AcPublish_1948\Figure 2.dwg 6-06-14

heppner, christopher

From: Johnson, Mark@Waterboards [Mark.Johnson@waterboards.ca.gov]
Sent: Friday, June 20, 2014 10:35 AM
To: heppner, christopher
Cc: Michelle Daher (mdaher@cityofepa.org); dutton, anona; Johnson, Mark@Waterboards
Subject: RE: East Palo Alto test well project

Chris, Michelle

The water you will be producing should be clean. As long as it meets the water quality objectives (per our Basin Plan) for the receiving the waters, you would not need a permit. That being the case, you may go ahead with the discharge without a permit.

Let me know if there are any questions.
Mark

From: heppner, christopher [mailto:cheppner@EKICONSULT.COM]
Sent: Monday, June 16, 2014 2:52 PM
To: Johnson, Mark@Waterboards
Cc: Michelle Daher (mdaher@cityofepa.org); dutton, anona
Subject: East Palo Alto test well project

Hi Mark,

Thanks for speaking with me just now. As you know from our discussion and your previous discussion with Michelle Daher at the City of East Palo Alto, we are assisting the City with its test well program which will involve the drilling, construction, development, and aquifer testing of a 6-inch monitoring well at the "Pad D" site located at the intersection of Clarke Avenue and East Bayshore Avenue. The purpose of this project is to assess groundwater quality and potential aquifer yields in this area to assist the City in potential future groundwater development for water supply.

As we discussed, the City plans to discharge groundwater produced during well development and aquifer testing to its storm drain system. Well development water will be first directed towards a settling tank to remove any suspended materials. As we discussed, it is the City's opinion that this discharge of groundwater from a drinking water aquifer is exempt under Provision C.15.a.i(7) of the City's Municipal Regional Stormwater Permit (R2-2009-0074). During our conversation you had indicated that you concur with this opinion. Therefore, please consider this email to be our notification of the City's intent to conduct the discharge as described above. It is our understanding that your affirmative response to this email will constitute authorization to proceed with the discharge. If there is any other information you need, please let us know. Thanks again.

Regards,
Chris

Christopher Heppner, Ph.D.
Erler & Kalinowski, Inc.
1870 Ogden Drive
Burlingame, CA 94010
T: (650) 292-9075
F: (650) 552-9012
cheppner@ekiconsult.com

Attachment B

Borehole and Well Construction Log and Well Completion Report

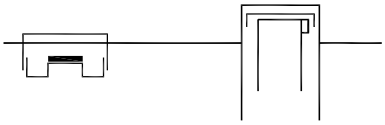
Key to Borehole and Well Construction Logs

Blow Count (Penetration Resistance)

Recorded as the number of blows required to drive the sampler 0.5 feet into undisturbed sediment. Sample drive hammer weight ≈ 140 pounds; fall ≈ 30 inches.

Well Cover Types

Flush mount Stove pipe



Organic Vapor Meter (OVM) Readings

Locations Monitored

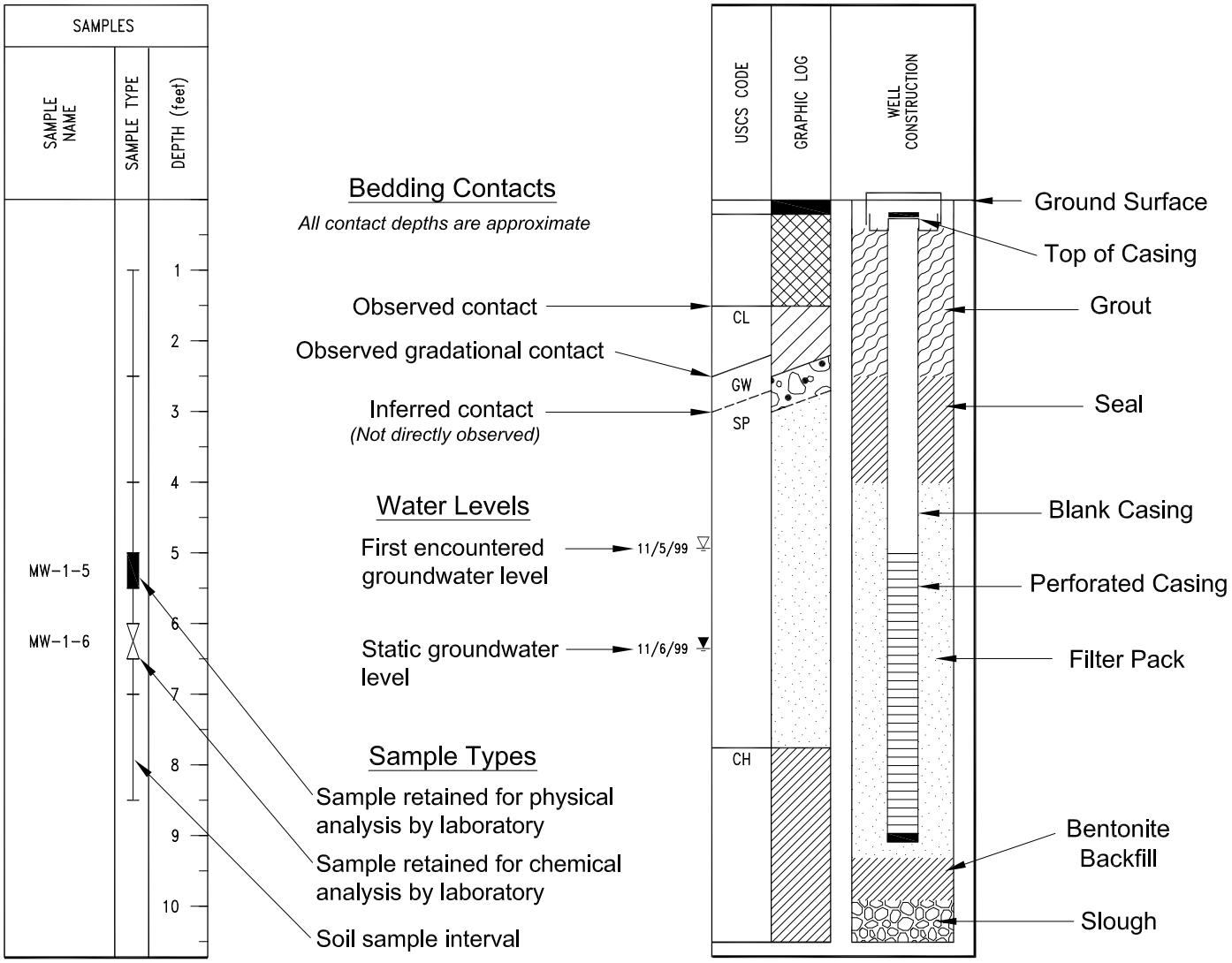
BZ - Breathing zone C - Drill cuttings

A - Top of auger S - Sample

Reported in volumetric parts per million (ppmv).

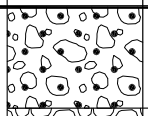
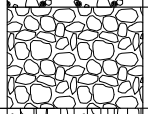
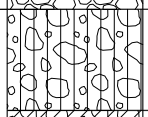
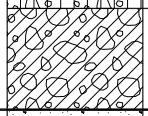
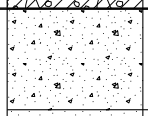
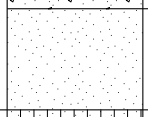
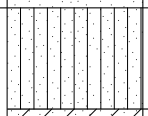
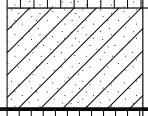
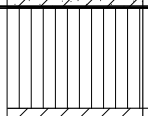
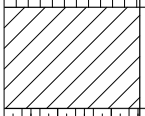
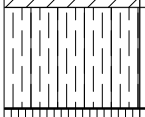
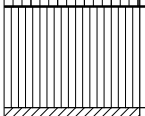
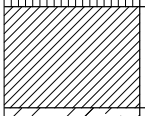
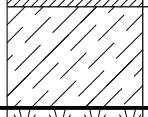
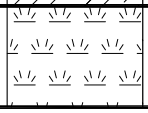
Color Description

10YR 4/3 Munsell® alphanumeric system
Description of soil or rock color



G:\EKI_WELL CONST\WELL_CONST_LEGEND.dwg 9-12-14

Key to Borehole and Well Construction Logs
SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPHIC	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED BY NO. 4 SIEVE	GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	SANDS WITH FINES		SM	SILTY SANDS, SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
				MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENT

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

Borehole & Well Construction Log Cover Page

Erler & Kalinowski, Inc.

BOREHOLE LOCATION	Clarke Avenue & East Bayshore Road, East Palo Alto, California			BOREHOLE / WELL NAME	**Pad D Test Well**
DRILLING COMPANY	Pitcher / Gregg Drilling			PROJECT NAME	**East Palo Alto Test Well**
DRILLING METHOD	Mud Rotary	DRILLING RIG	Fraste Multidrill XL	PROJECT NUMBER	**B40016.00**
CONDUCTOR CASING	Mild steel, 12" diam.			DATE STARTED	7/7/14
				DATE COMPLETED	7/11/14
BLANK CASING	Sched. 80 PVC, 6" diam.			BOREHOLE DIAM (inches)	12.0
				TOTAL DEPTH (feet)	600
PERFORATED CASING	Sched. 80 PVC, 6" diam 0.030" slots			LATITUDE & LONGITUDE	(37.4576610 N, 122.1349398 W)
SCREENED INTERVAL(S)	165'-185', 315'-350', 375'-390', 435'-465', 500'-525' (ft bgs)			TOP OF CASING	17.93 ft NAVD88
				GROUND SURFACE	18.47 ft NAVD88
GROUT SEAL	Basalite Type II/V neat cement			LOGGED BY	Daniel Correia
TRANSITION SEAL	Bentonite			CHECKED BY	Chris Heppner, PG #9188
FILTER PACK	Cemex Lapis Lustre #2/12 Monterey Sand			GEOPHYS. LOGS	GR, 64N, 16N, SP, SPR, T, Cal (14 Jul 2014)
INTERMED. SEAL(S)	Bentonite			PUMPING TEST	24-hr Const Q @ 97gpm (4-5 Aug 2014)

REMARKS

3-MULTISCREEN WELL COVER PAGE_EPA TEST WELL DATABASE.GPJ EPA TEST WELL TEMPLATE.GDT 10/10/14

Erler & Kalinowski, Inc.

BOREHOLE or WELL LOCATION: Clarke Avenue & East Bayshore Road, East Palo Alto, California

BOREHOLE / WELL NAME: **Pad D Test Well**

DRILLING START DATE: 7/7/14

DRILLING FINISH DATE: 7/11/14

DEPTH (feet)	USCS CODE	MATERIAL DESCRIPTION AND DRILLING NOTES
0	SM	SAND; dark yellowish brown (10YR 3/4) fine grained sand; dry to moist; unconsolidated, well sorted
10	SC	SAND WITH CLAY; very dark grayish brown (10YR 3/2); moist
10	SW	SAND WITH GRAVEL; very dark grayish brown (10YR 3/2); 20% gravel; 70% fine to medium grained sand; 10% silt; 10% clay; wet; some cobbles
30	SW	light yellowish brown (2.5Y 6/3); observed clay
40	SP	SAND; dark olive brown (2.5Y 3/3); 90% medium to coarse grained sand; wet; sub-angular sand
60	SP	increase of clay 5%, slight greenish hue
70	SC	SAND WITH CLAY; olive (5Y 4/3); 70% fine to medium grained sand; 25% clay; wet; sub-angular gravel, poorly sorted, slight green hues, reducing conditions
80	SC	olive gray (5Y 4/2)
85	SP	SAND dark olive gray (5Y 3/2) medium to coarse grained sand; wet; sub-angular to sub-rounded sand grains
90	SC	SAND WITH CLAY dark olive gray (5Y 3/2) fine to medium grained sand; 65% fine to medium grained sand; 35% clay; wet; fat clay, reducing conditions
100	CL	CLAY WITH SAND olive (5Y 4/3); 60% fine grained sand; 40% clay; wet; consolidated soil, fat clay, clay observed as fragments instead of little balls, clay has slight gleyed color, some sub-angular sand.
110		

GAMMA (API units) and SP (10 mV/division) — Gamma, SP; 10 to 110

RESISTIVITY (Ohm-m) — 16N, 64N; 0 to 60

CALIPER (inches); 4 to 14

TEMPERATURE (deg F); 85 to 86

2-WELL LOG W/ GAMMA SP 16N 64N CAL TEMP EPA TEST WELL DATABASE.GPJ EPA TEST WELL TEMPLATE.GDT 10/10/14

Erler & Kalinowski, Inc.

BOREHOLE or WELL LOCATION: Clarke Avenue & East Bayshore Road, East Palo Alto, California

BOREHOLE / WELL NAME: **Pad D Test Well**

DRILLING START DATE: 7/7/14

DRILLING FINISH DATE: 7/11/14

DEPTH (feet)	USCS CODE	MATERIAL DESCRIPTION AND DRILLING NOTES
130	CL / SP	SAND; olive (5Y 4/3); 15% gravel; 70% fine to medium grained sand; 15% clay; wet; well sorted sand
140	CL	CLAY WITH SAND olive (5Y 4/3); 60% fine grained sand; 35% clay; wet; clay observed as balls, gley coloration, sub-rounded to sub-angular sand grains
150		
160		5% gravel; 5% fine grained sand; gravel clasts of sub-angular chert
170	SW	SAND WITH GRAVEL; olive gray (5Y 4/2); 30% gravel; 65% coarse grained sand to fine gravel; 5% clay; wet; sub-angular to sub-rounded sand and gravel, some clay, gravel clasts of chert, quartz, and feldspar
180		
190		5% clay
200	SC	SAND WITH CLAY; olive gray (5Y 4/2); 70% fine to medium grained sand; 30% clay; wet; sub-angular sand grains
210		
220		5% fine grained sand
230	SP	Fine Sand olive gray (5Y 4/2); 85% fine to medium grained sand; 15% clay; wet; well sorted
		5% medium grained sand

GAMMA (API units) and SP (10 mV/division) — Gamma, SP; 10 to 110

RESISTIVITY (Ohm-m) — 16N, 64N; 0 to 60

CALIPER (inches); 4 to 14

TEMPERATURE (deg F); 85 to 86

2-WELL LOG W/ GAMMA SP 16N 64N CAL TEMP EPA TEST WELL DATABASE.GPJ EPA TEST WELL TEMPLATE.GDT 10/10/14

Erler & Kalinowski, Inc.

BOREHOLE or WELL LOCATION: Clarke Avenue & East Bayshore Road, East Palo Alto, California

BOREHOLE / WELL NAME: **Pad D Test Well**

DRILLING START DATE: 7/7/14

DRILLING FINISH DATE: 7/11/14

DEPTH (feet)	USCS CODE	MATERIAL DESCRIPTION AND DRILLING NOTES
250	SP	Fine Sand olive gray (5Y 4/2); 85% fine to medium grained sand; 15% clay; wet; well sorted *(Continued)* 5% gravel Clay color change: 10YR 5/3 5% gravel
260		SAND; olive gray (5Y 4/2); 5% gravel; 90% medium to coarse grained sand; 5% clay; wet; sand is angular to sub-angular, well sorted
270		5% gravel
280		fine grained sand
290	SP	
300		sequence is becoming more fine, less medium sand, mostly fine sand and some clay
310		15% gravel, 70% fine to medium grained sand; 15% clay; poorly sorted
320		
330		SAND WITH GRAVEL; olive gray (5Y 4/2); 25% gravel; 75% medium to coarse grained sand; angular to sub-angular sand grains, very little fines
340	SW	
350		

GAMMA (API units) and SP (10 mV/division) — Gamma, SP — 10 to 110

RESISTIVITY (Ohm-m) — 16N, 64N — 0 to 60

CALIPER (inches) — 4 to 14

TEMPERATURE (deg F) — 85 to 86

2-WELL LOG W/ GAMMA SP 16N 64N CAL TEMP EPA TEST WELL DATABASE.GPJ EPA TEST WELL TEMPLATE.GDT 10/10/14

Erler & Kalinowski, Inc.

BOREHOLE or WELL LOCATION: Clarke Avenue & East Bayshore Road, East Palo Alto, California

BOREHOLE / WELL NAME: **Pad D Test Well**

DRILLING START DATE: 7/7/14

DRILLING FINISH DATE: 7/11/14

DEPTH (feet)	USCS CODE	MATERIAL DESCRIPTION AND DRILLING NOTES
370	SW	SAND WITH GRAVEL; olive gray (5Y 4/2); 25% gravel; 75% medium to coarse grained sand; angular to sub-angular sand grains, very little fines *(continued)*
		SAND; olive gray (5Y 4/2); 85% fine to coarse grained sand; 10% clay; sand grains are sub-angular to sub-rounded, some fine gravel
380		
390		5% clay
400	SP	5% gravel; mostly fine to medium sand
410		well sorted fine sand
		mostly fine sand, very compact and hard sand
420		
430		10% clay; hard compact clay, feels dry
440	SC	SAND WITH CLAY; dark gray / olive gray (5Y 4/1); 5% gravel; 65% fine to medium grained sand; sub-angular to sub-rounded; 5% silt; 25% clay; clay is very compact and hard
450		
460	SW	SAND WITH GRAVEL; olive gray (5Y 4/2); 30% gravel; 65% medium to coarse grained sand; 5% clay; sand grains are sub-rounded to sub-angular, very little fines, some medium gravel
470		

GAMMA (API units) and SP (10 mV/division) — Gamma, SP — 10 to 110

RESISTIVITY (Ohm-m) — 16N, 64N — 0 to 60

CALIPER (inches) — 4 to 14

TEMPERATURE (deg F) — 85 to 86

2-WELL LOG W/ GAMMA SP 16N 64N CAL TEMP EPA TEST WELL DATABASE.GPJ EPA TEST WELL TEMPLATE.GDT 10/10/14

Erler & Kalinowski, Inc.

BOREHOLE or WELL LOCATION: Clarke Avenue & East Bayshore Road, East Palo Alto, California

BOREHOLE / WELL NAME: **Pad D Test Well**

DRILLING START DATE: 7/7/14

DRILLING FINISH DATE: 7/11/14

DEPTH (feet)	USCS CODE	MATERIAL DESCRIPTION AND DRILLING NOTES
490	SW	SAND WITH GRAVEL; olive gray (5Y 4/2); 30% gravel; 65% medium to coarse grained sand; 5% clay; sand grains are sub-rounded to sub-angular, very little fines, some medium grave *(Continued)*
		more fine sand with some clay
500		15% clay
		SAND WITH CLAY; dark gray / olive gray (5Y 4/1); 70% fine to medium grained sand; 25% clay; mostly fine sand, clay is very hard and compact
510	SC	
520		hard compacted fine sand
		SAND; olive gray (5Y 4/2); 85% fine to medium grained sand; 5% silt; 5% clay; mostly fine sand with sub-rounded to sub-angular grains, moderately sorted, some clay and silt, trace gravel
530		
540		fine - very fine sand
		5% clay
550		
560	SP	fine sand, some clay
570		
580		5% clay
590		5% gravel; 5% medium to coarse grained sand; unit is coarsening

Total Depth = 600 feet.

GAMMA (API units) and SP (10 mV/division) — Gamma, SP; 10 to 110

RESISTIVITY (Ohm-m) — 16N, 64N; 0 to 60

CALIPER (inches); 4 to 14

TEMPERATURE (deg F); 85 to 86

2-WELL LOG W/ GAMMA SP 16N 64N CAL TEMP EPA TEST WELL DATABASE.GPJ EPA TEST WELL TEMPLATE.GDT 10/10/14

*The free Adobe Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form.

File Original with DWR

State of California

Well Completion Report

Refer to Instruction Pamphlet

No. e0231330

Page 1 of 2

Owner's Well Number Pad D Test Well

Date Work Began 07/07/2014 Date Work Ended 8/5/2014

Local Permit Agency Environmental Health San Mateo County

Permit Number 14-1371 Permit Date 6/26/14

DWR Use Only – Do Not Fill In

State Well Number/Site Number

N W

Latitude Longitude

APN/TRS/Other

Geologic Log

Orientation ◉ Vertical ○ Horizontal ○ Angle Specify

Drilling Method Direct Rotary Drilling Fluid Bentonite mud

Depth from Surface Feet	to Feet	Description (Describe material, grain size, color, etc)
0	7	Sand, dark yellowish brown, dry to moist
7	11	Sand with Clay, very dark grayish brown
11	40	Sand with Gravel, 20% gravel,70% fine to medium
		grained sand, 10% silt, 10% clay, wet
40	67	Sand, dark olive brown, medium to coarse, wet
67	85	Sand with Clay, wet, slight green hues
85	90	Sand, dark olive gray, medium to coarse, wet
90	100	Sand w/Clay, dark olive gray, wet, 65/35 sand/clay
100	128	Clay w/Sand, 60/40 clay/sand, olive, wet
128	140	Sand, olive, 70% gravels, 15% clay, 15% gravel
140	170	Clay w/Sand, olive, fine grained sand and clay, wet
170	200	Sandw/Gravel,30/gravel,65/coarse sand,5/clay,wet
200	225	Sand w/Clay, olive gray, 70/30 sand/clay, wet
225	260	Fine Sand,olive gray, 85% fine sand 15% clay, wet
260	330	Sand,90% sand,5% clay,5% gravel, olive gray, wet
330	365	Sand w/Gravel, olive gray, 75/25 sand/gravel
365	439	Sand, 85% sand, 10% clay, 5% gravel
439	455	Sand w/Clay, dark/olive gray, 65% sand, 25% clay,
		clay is very hard, 5% gravel, 5% silt
455	500	Sand w/Gravel,olive gray, 65/30/5 sand/gravel/clay
500	525	Sand w/Clay, dark/olive gray, fine to medium sand
525	600	Sand, olive gray, 85% fine to medium grained
		sand, 5% silt, 5% clay

Total Depth of Boring 600 Feet

Total Depth of Completed Well 550 Feet

Well Owner

Name City of East Palo Alto

Mailing Address 1960 Tate Street

City East Palo Alto State CA Zip 94303

Well Location

Address Intersection of Bayshore Rd and Clarke Ave

City East Palo Alto County San Mateo

Latitude ___ Deg. ___ Min. ___ Sec. N Longitude ___ Deg. ___ Min. ___ Sec. W

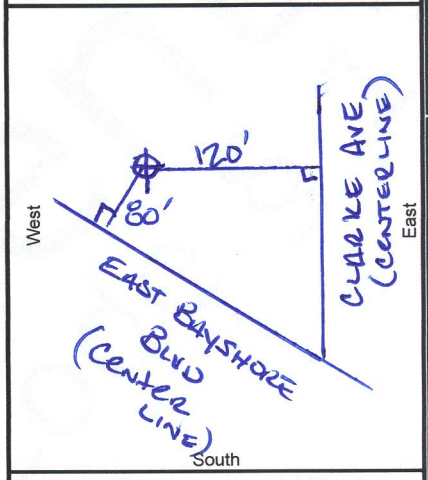
Datum NAD83 Dec. Lat. 37.457661 Dec. Long. 122.1349398

APN Book ___ Page ___ Parcel ___

Township ___ Range ___ Section ___

Location Sketch

(Sketch must be drawn by hand after form is printed.)



Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. **Please be accurate and complete.**

Activity

◉ New Well
○ Modification/Repair
○ Deepen
○ Other ___
○ Destroy
Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses

○ Water Supply
☐ Domestic ☐ Public
☐ Irrigation ☐ Industrial
○ Cathodic Protection
○ Dewatering
○ Heat Exchange
○ Injection
◉ Monitoring
○ Remediation
○ Sparging
○ Test Well
○ Vapor Extraction
○ Other ___

Water Level and Yield of Completed Well

Depth to first water ___ (Feet below surface)

Depth to Static Water Level 8 (Feet) Date Measured 07/31/2014

Estimated Yield * 97 (GPM) Test Type Constant Rate

Test Length 24.0 (Hours) Total Drawdown 24 (Feet)

*May not be representative of a well's long term yield.

Casings

Depth from Surface Feet	to Feet	Borehole Diameter (Inches)	Type	Material	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size if Any (Inches)
0	165	12	Blank	PVC Sch. 80	.432	6.625		
165	185	12	Screen	PVC Sch. 80	.432	6.625	Milled Slots	0.030
185	315	12	Blank	PVC Sch. 80	.432	6.625		
315	350	12	Screen	PVC Sch. 80	.432	6.625	Milled Slots	0.030
350	375	12	Blank	PVC Sch. 80	.432	6.625		
375	390	12	Screen	PVC Sch. 80	.432	6.625	Milled Slots	0.030

Annular Material

Depth from Surface Feet	to Feet	Fill	Description
0	150	Cement	
150	210	Filter Pack	#3 Sand
210	230	Bentonite	
230	410	Filter Pack	#3 Sand
410	420	Bentonite	
420	550	Filter Pack	#3 Sand

Attachments

☐ Geologic Log
☐ Well Construction Diagram
☐ Geophysical Log(s)
☐ Soil/Water Chemical Analyses
☐ Other ___

Attach additional information, if it exists.

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name Pitcher Drilling Co.
Person, Firm or Corporation

218 Demeter Street Address, East Palo Alto City, CA State, 94526 Zip

Signed ___ C-57 Licensed Water Well Contractor

09/09/2014 Date Signed

263085 C-57 License Number

DWR 188 REV. 1/2006

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

CASING

Depth from surface		Borehole Diameter	Type	Material	Wall Thickness	Outside Diameter	Screen Type	Slot Size
Feet to	Feet	inches			inches	inches		
390	435	12	Blank	PVC Sch 80	0.432	6.625		
435	465	12	Screen	PVC Sch 80	0.432	6.625	Milled Slots	0.03
465	500	12	Blank	PVC Sch 80	0.432	6.625		
500	525	12	Screen	PVC Sch 80	0.432	6.625	Milled Slots	0.03
525	540	12	Blank	PVC Sch 80	0.432	6.625		

ANNULAR MATERIAL

Depth from suface		Fill	Desciption
Feet to	Feet		
550	600	Cement	Tremie Grout

Attachment C

Borehole Geophysical Logs

ELECTRIC - GAMMA RAY-TEMPERATURE LOG

P.O.Box 2797, Rancho Cordova CA 95741 · Phone: 916-224-3810 Fax: 916-822-4661

FILING NO.
B40016.00

JOB NO.
0511

COMPANY **Erler & Kalinowski, Inc.**

WELL **Pad D Site Test Well**

FIELD **East Palo Alto**

STATE **California** COUNTY **San Mateo**

LOCATION:
Bayshore Ave. & Clarke Ave.

OTHER SERVICES:
Caliper
Deveation

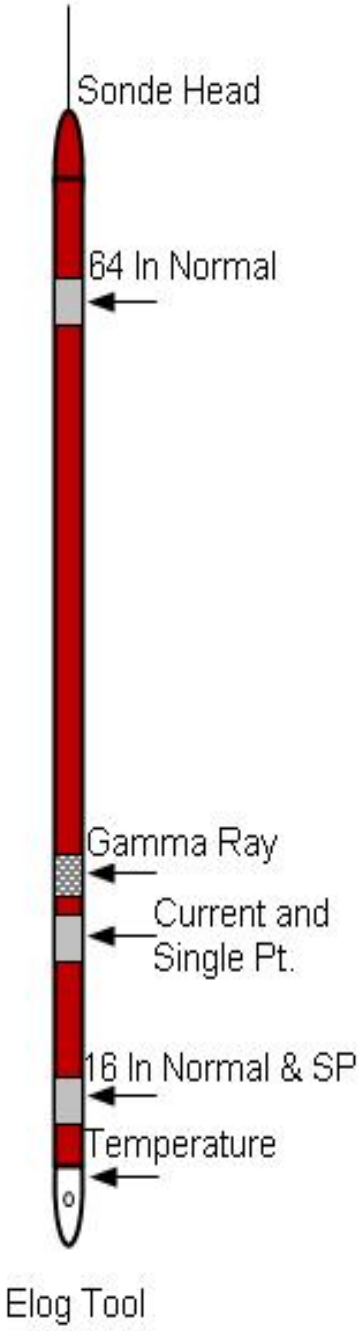
SEC: **36** TWP: **5S** RGE: **3W** LAT.: **37.45773** LONG.: **122.13504**

Permanent Datum: **Ground Level**, Elev. **35** Ft. Elev.: K.B. _____ Ft.
Log Measured From: **Ground Level** , **0** Ft. Above Perm. Datum D.F. _____ Ft.
Drilling Measured From: **Ground Level** G.L. _____ Ft.

Run	**One**			
Date	**Jul 14, 2014**			
Depth-Driller	**600** Ft	Ft	Ft	Ft
Depth-Logger	**600** Ft	Ft	Ft	Ft
Top Logged Interval	**10** Ft	Ft	Ft	Ft
Btm. Logged Interval	**600** Ft	Ft	Ft	Ft
Casing-Driller	**8** In @ **25** Ft	In @ Ft	In @ Ft	In @ Ft
Casing-Logger	**8** In @ **25** Ft	In @ Ft	In @ Ft	In @ Ft
Bit Size	**6.5** In	In	In	In
Time On Bottom	**13:42**			
Type Fluid In Hole	**Bentonite**			
Density / Viscosity	**10.3** / **37**	/	/	/
pH / Fluid Loss	**n/a** / **n/a** ml	/ ml	/ ml	/ ml
Source of Sample	**Well Head**			
Rm @ Measured Temp.	**16.6** @ **75** °F	@ °F	@ °F	@ °F
Rmf @ Measured Temp.	**12.5** @ **75** °F	@ °F	@ °F	@ °F
Rmc @ Measured Temp.	**n/a** @ °F	@ °F	@ °F	@ °F
Source Rmf / Rmc	**Meas** /	/	/	/
Rm @ BHT	**n/a** @ °F	@ °F	@ °F	@ °F
Time Since Circulation	**1.75** Hr	Hr	Hr	Hr
Max. Rec. Temp.	**85.5** °F	°F	°F	°F
Van No. / Location	**WC-1** /	/	/	/
Recorded By	**Sharpless**			
Witnessed By	**J. Shaw**			

This Heading Conforms To API RP 31A-----Eagle Plot

ELECTRIC - GAMMA RAY-TEMPERATURE LOG



Elog Tool

ELECTRIC LOG SPECIFICATIONS:

Diameter	1.73 Inches
Length	8.37 Feet
Weight	21.7 Lbs
Max. Temp	158° F
Resist. Range	0 - 10,000 ohm-m
Gamma Ray	1.97 inches long x .98 inches diameter Scintillation crystal

SPONTANEOUS POTENTIAL LOGS:
SP Logs record potentials or voltages developed between the borehole fluid and the surrounding formation and are representations of lithology and water quality. Recording of SP logs are limited to water-filled or mud-filled open holes.

NORMAL RESISTIIVITY LOGS:
Normal Resistivity Logs record the electrical resistivity of the borehole environment with higher resistivities indicative of clays with lower resistivities being sands and gravels. Normal resistivity logs are affected by bed thickness, Borehole diameter and borehole fluid.

SINGLE POINT RESISTIVITY LOGS:
Single Point Resistivity Logs record the electrical resistance from points within the borehole to an electrical ground at land surface. Single-point resistance logs are useful in the determination of lithology, water quality, and location of fracture zones.

GAMMA RAY LOGS:
Gamma Ray Logs record the amount of natural gamma radiation emitted by the rocks surrounding the borehole. The most significant naturally occurring sources of gamma radiation are potassium 40 and daughter products of the uranium and thorium decay series. Clay and shale bearing rocks commonly emit relatively high gamma radiation because they include weathering products of potassium feldspar and mica and tend to concentrate uranium and thorium by ion absorption and exchange.

TEMPERATURE LOGS:
Temperature Logs record the water temperature in the borehole. Temperature logs are useful for delineating water-bearing zones and identifying vertical flow in the borehole between zones of differing hydraulic head penetrated by wells. Borehole flow between zones is indicated by temperature gradients that are less than the regional geothermal gradient.

Erler & Kalinowski, Inc.
Pad D Site Test Well
Jul 14, 2014

ELECTRIC - GAMMA RAY-TEMPERATURE LOG

Multiple Pages
5"/100'

DEPTHS
(Feet)

< - S.P. (10 mV/div) S.P. + >

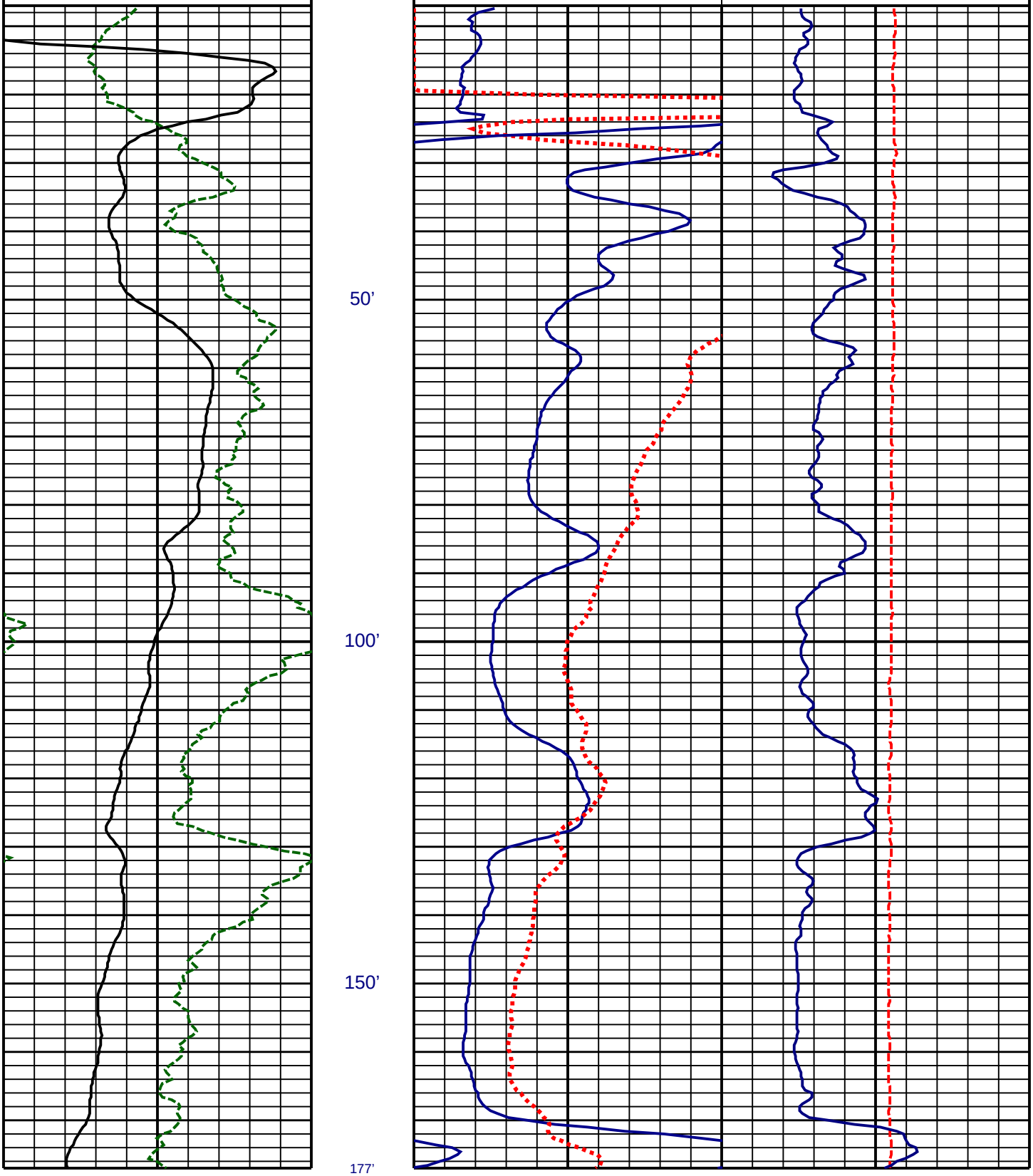
0 Gamma Ray(api) 100

0 64 Inch Normal(ohm.m) 50

0 16 Inch Normal(ohm.m) 50

0 Single Point(ohms) 50

80 Temperature (F°) 90



Erler & Kalinowski, Inc.
Pad D Site Test Well
Jul 14, 2014

ELECTRIC - GAMMA RAY-TEMPERATURE LOG

Multiple Pages
5"/100'

DEPTHS
(Feet)

< - S.P. (10 mV/div) S.P. + >

0 Gamma Ray(api) 100

0 64 Inch Normal(ohm.m) 50

0 16 Inch Normal(ohm.m) 50

0 Single Point(ohms) 50

80 Temperature (F°) 90

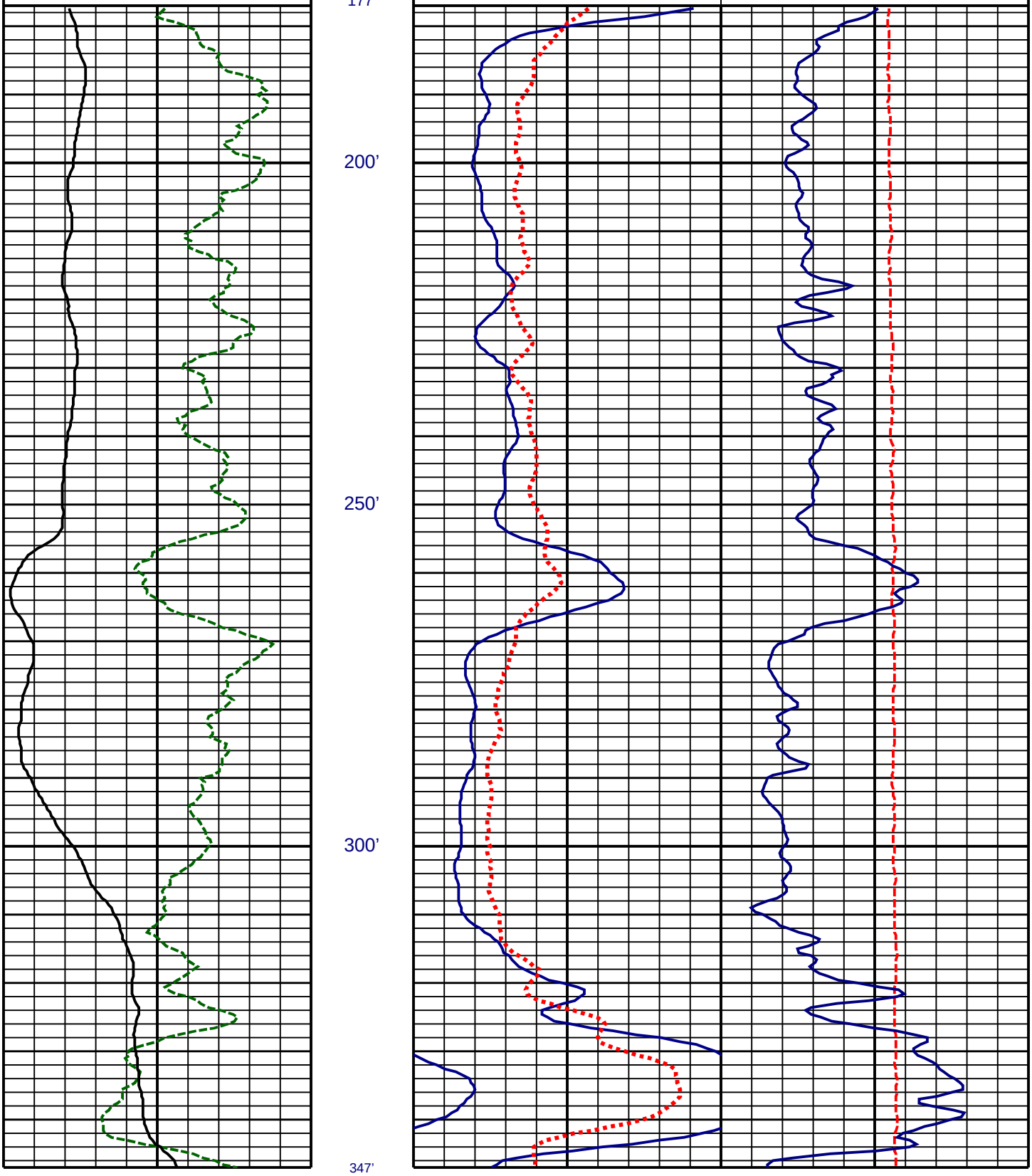
177'

200'

250'

300'

347'



Erler & Kalinowski, Inc.
Pad D Site Test Well
Jul 14, 2014

ELECTRIC - GAMMA RAY-TEMPERATURE LOG

Multiple Pages
5"/100'

DEPTHS
(Feet)

< - S.P. (10 mV/div) S.P. + >

0 Gamma Ray(api) 100

0 64 Inch Normal(ohm.m) 50

0 16 Inch Normal(ohm.m) 50

0 Single Point(ohms) 50

80 Temperature (F°) 90

347'

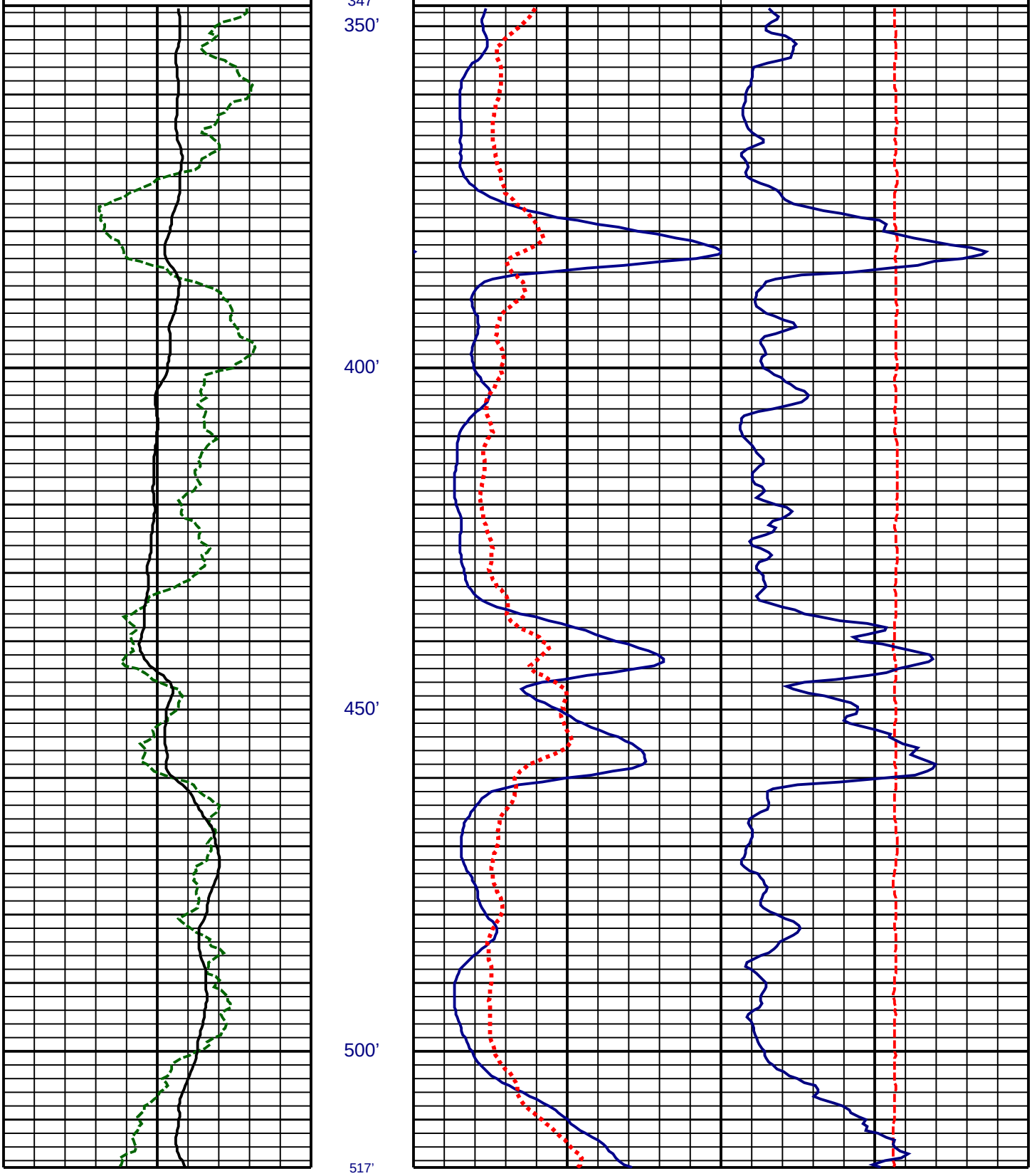
350'

400'

450'

500'

517'



Erler & Kalinowski, Inc.
Pad D Site Test Well
Jul 14, 2014

ELECTRIC - GAMMA RAY-TEMPERATURE LOG

Multiple Pages
5"/100'

DEPTHS
(Feet)

< - S.P. (10 mV/div) S.P. + >

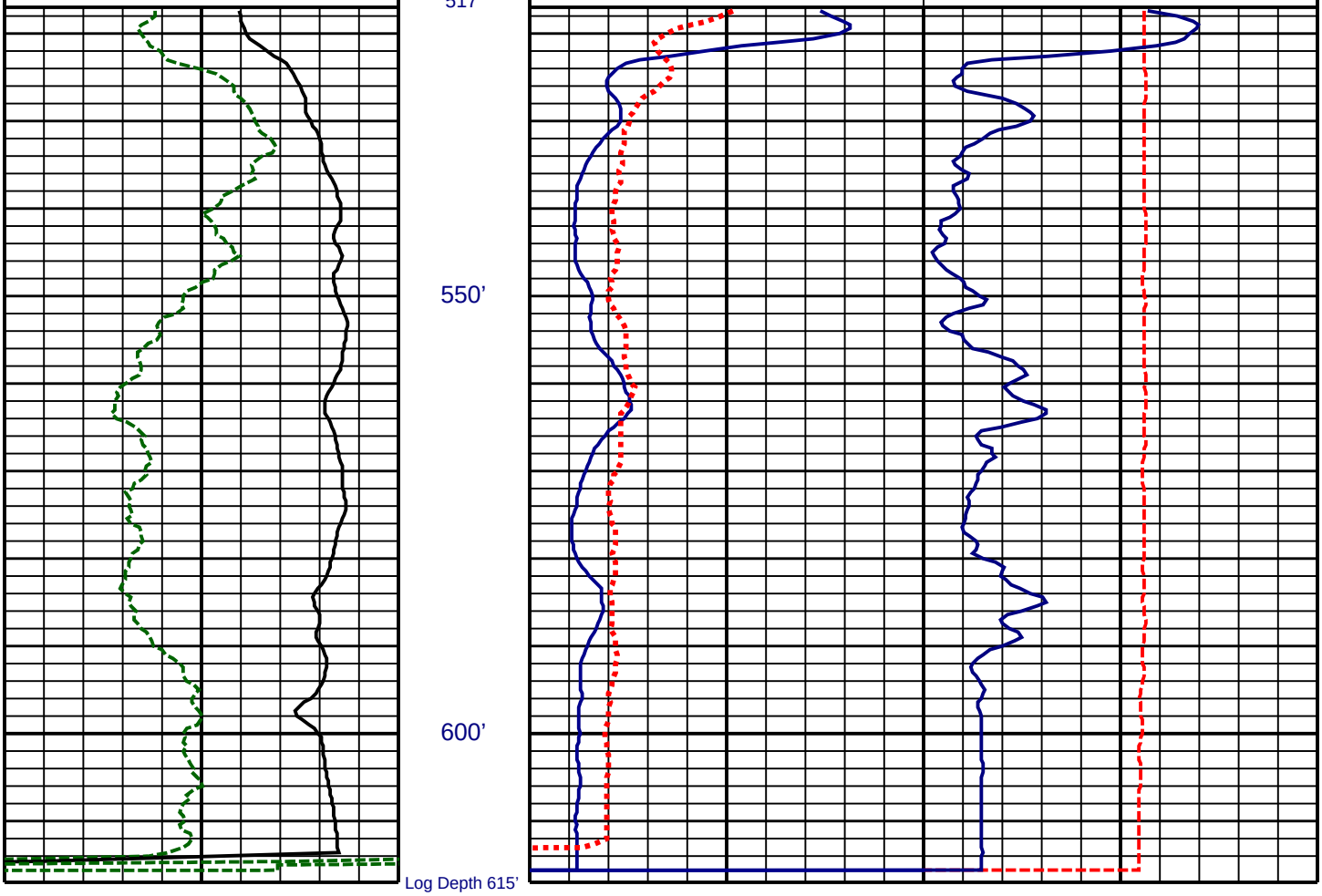
0 Gamma Ray(api) 100

0 64 Inch Normal(ohm.m) 50

0 16 Inch Normal(ohm.m) 50

0 Single Point(ohms) 50

80 Temperature (F°) 90



Log Depth 615'

Erler & Kalinowski, Inc.
Pad D Site Test Well
Jul 14, 2014

ELECTRIC - GAMMA RAY-TEMPERATURE LOG

Single Page

DEPTHS
(Feet)

< - S.P. (10 mV/div) S.P. + >

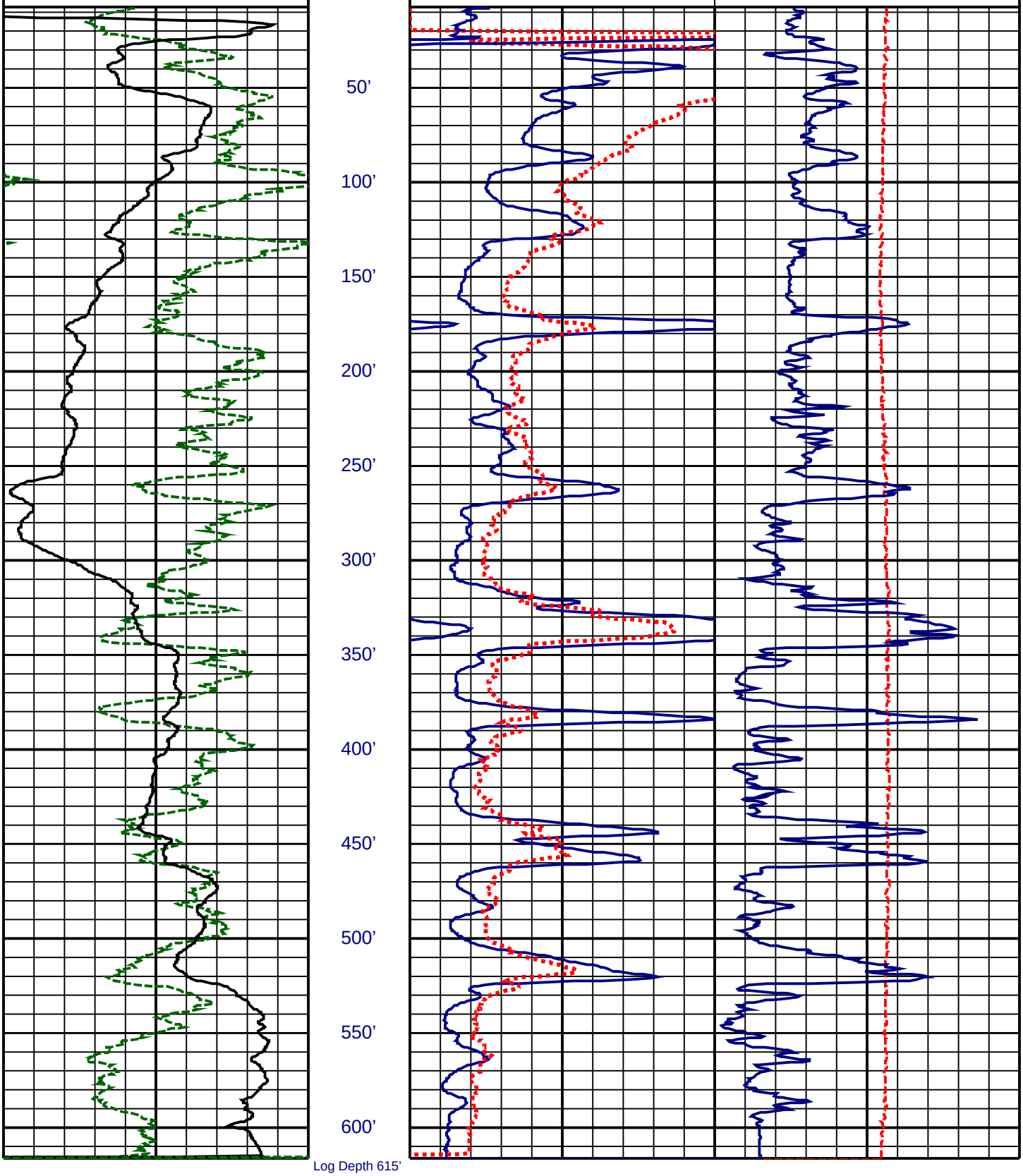
0 Gamma Ray(api) 100

0 64 Inch Normal(ohm.m) 50

0 16 Inch Normal(ohm.m) 50

0 Single Point(ohms) 50

80 Temperature (F°) 90



Log Depth 615’

3-ARM CALIPER LOG

WEST COAST WELL LOGGING SERVICES
GEOPHYSICAL & VIDEO LOGGING

P.O.Box 2797, Rancho Cordova CA 95741 · Phone: 916-224-3810 Fax: 916-822-4661

FILING NO.
B40016.00

JOB NO.
0511

COMPANY **Erler & Kalinowski, Inc.**

WELL **Pad D Site Test Well**

FIELD **East Palo Alto**

STATE **California** COUNTY **San Mateo**

LOCATION:
Bayshore Ave. & Clarke Ave.

SEC: **36** TWP: **5S** RGE: **3W** LAT.: **37.45773** LONG.: **122.13504**

OTHER SERVICES:
E-Log
Deveation

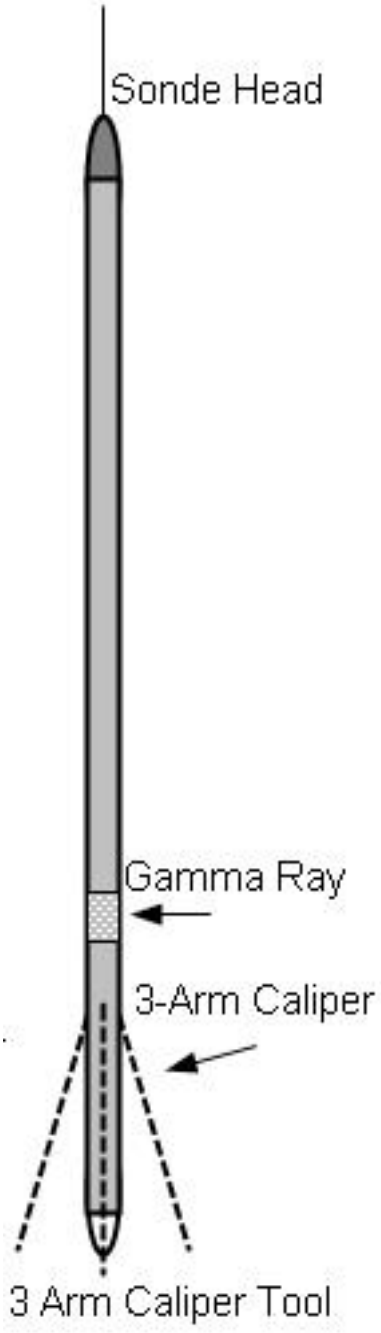
Permanent Datum: **Ground Level**, Elev. **35** Ft. Elev.: K.B. _____ Ft.
Log Measured From: **Ground Level** , **0** Ft. Above Perm. Datum D.F. _____ Ft.
Drilling Measured From: **Ground Level** G.L. _____ Ft.

Date	**Jul 14, 2014**			
Type Of Log	**Caliper**			
Run	**One**			
Depth-Driller	**600** Ft	Ft	Ft	Ft
Depth-Logger	**600** Ft	Ft	Ft	Ft
Top Logged Interval	**8** Ft	Ft	Ft	Ft
Btm. Logged Interval	**600** Ft	Ft	Ft	Ft
Type Fluid In Hole	**Bentonite**			
Fluid Level	**20** Ft	Ft	Ft	Ft
Max Temp	**85.6** °F	°F	°F	°F
Operating Rig Time	**1** Hr	Hr	Hr	Hr
Van No. / Location	**WC-1** / **RC**			
Recorded By	**Sharpless**			
Witnessed By	**J. Shaw**			

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	TYPE	FROM	TO
1	**6.5** In	**25** Ft	**600** Ft	**8** In		**0** Ft	**25** Ft
2	In	Ft	Ft	In		Ft	Ft
3	In	Ft	Ft	In		Ft	Ft

This Heading Conforms To API RP 31A-----Eagle Plot

3-ARM CALIPER LOG



3 ARM CALIPER SPECIFICATIONS:

Diameter	2.36 Inches
Range	2.95 - 42 Inches
Length	8.2 Feet
Weight	28.7 Lbs
Max. Temp	158° F
Gamma Ray	1.97 inches long x .98 inches diameter Scintillation crystal

GAMMA RAY LOGS:

Gamma Ray Logs record the amount of natural gamma radiation emitted by the rocks surrounding the borehole. The most significant naturally occurring sources of gamma radiation are potassium 40 and daughter products of the uranium and thorium decay series. Clay and shale bearing rocks commonly emit relatively high gamma radiation because they include weathering products of potassium feldspar and mica and tend to concentrate uranium and thorium by ion absorption and exchange.

CALIPER LOGS:

Caliper Logs provide a continuous measurement of the size and shape of a borehole along its depth and is commonly used to determine the annular hole volume of wells. The measurements that are recorded can be an important indicator of voids and swelling clay in the borehole. Three Arm Caliper Logs measures the movement of the arm reflecting the smallest diameter of the borehole. Four Arm Caliper Logs measure the borehole on two perpendicular planes resulting in more accurate measurements and especially more accurate annular volumes when washouts occur during the drilling process.

Erler & Kalinowski, Inc.
Pad D Site Test Well
Jul 14, 2014

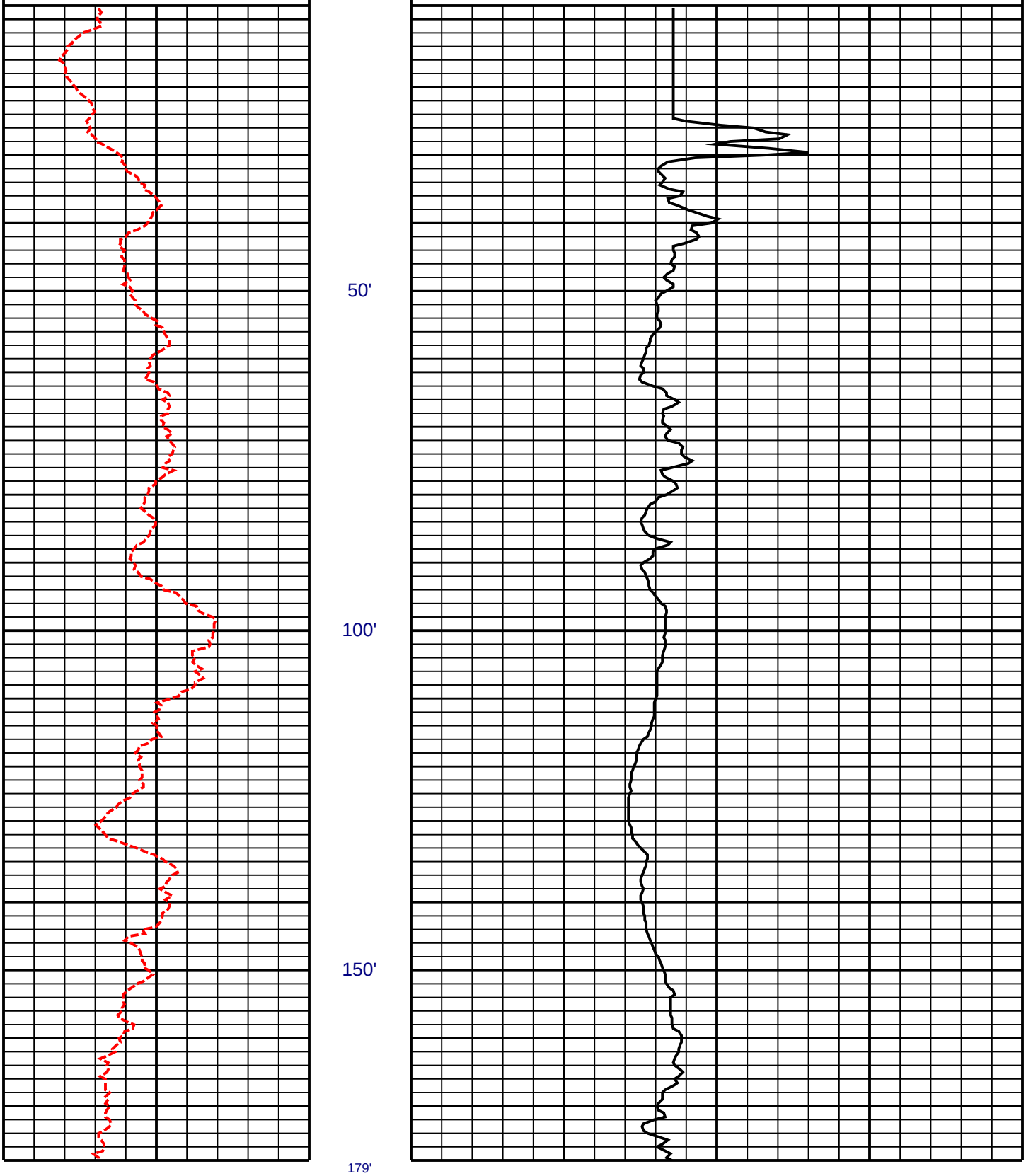
3-ARM CALIPER LOG

Multiple Pages
5"/100'

DEPTHS
(Feet)

0 Gamma Ray(api) 100

0 3-Arm Caliper(inches) 20



Erler & Kalinowski, Inc.
Pad D Site Test Well
Jul 14, 2014

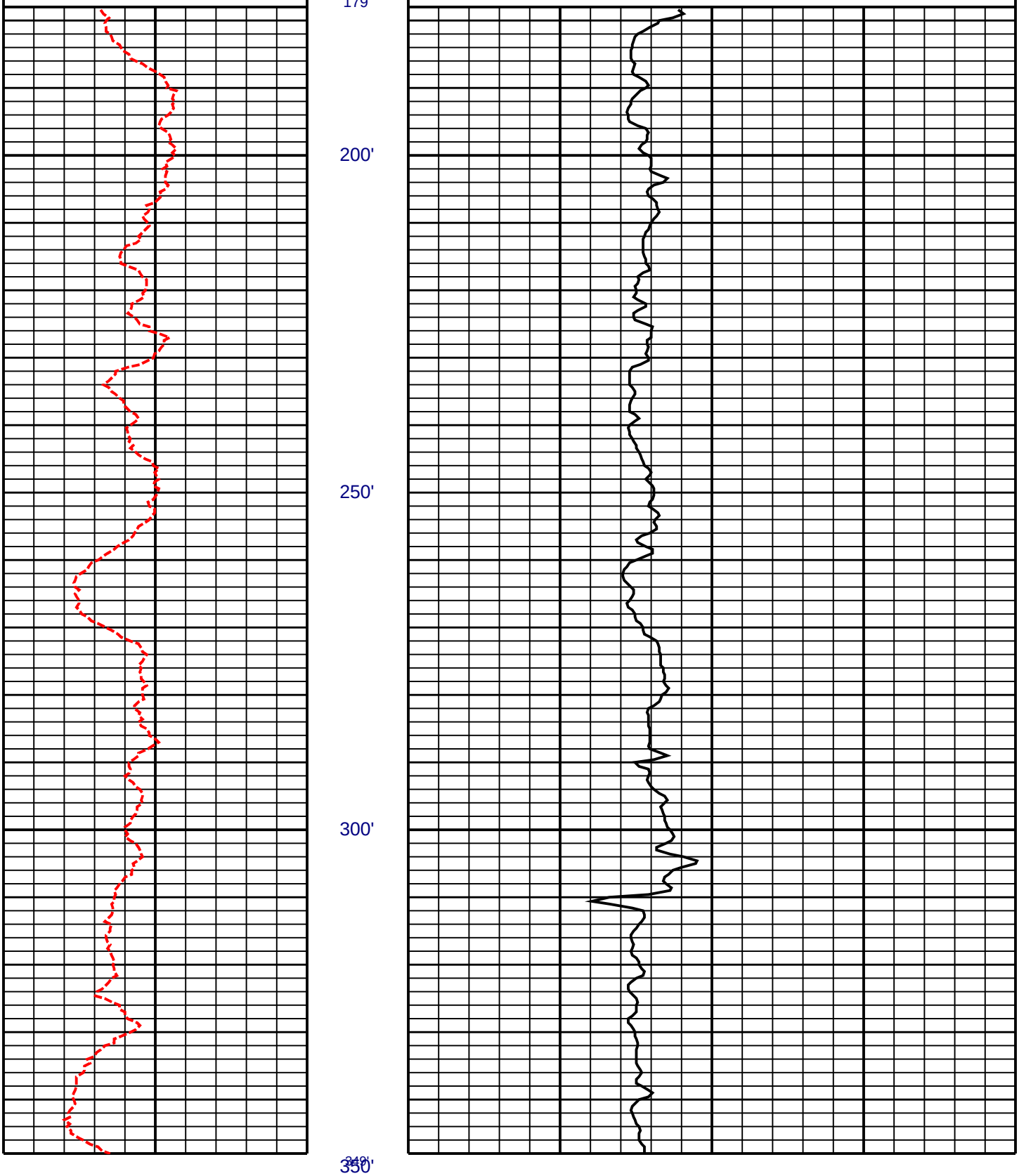
Multiple Pages
5"/100'

DEPTHS
(Feet)

3-ARM CALIPER LOG

0 Gamma Ray(api) 100

0 3-Arm Caliper(inches) 20



Erler & Kalinowski, Inc.
Pad D Site Test Well
Jul 14, 2014

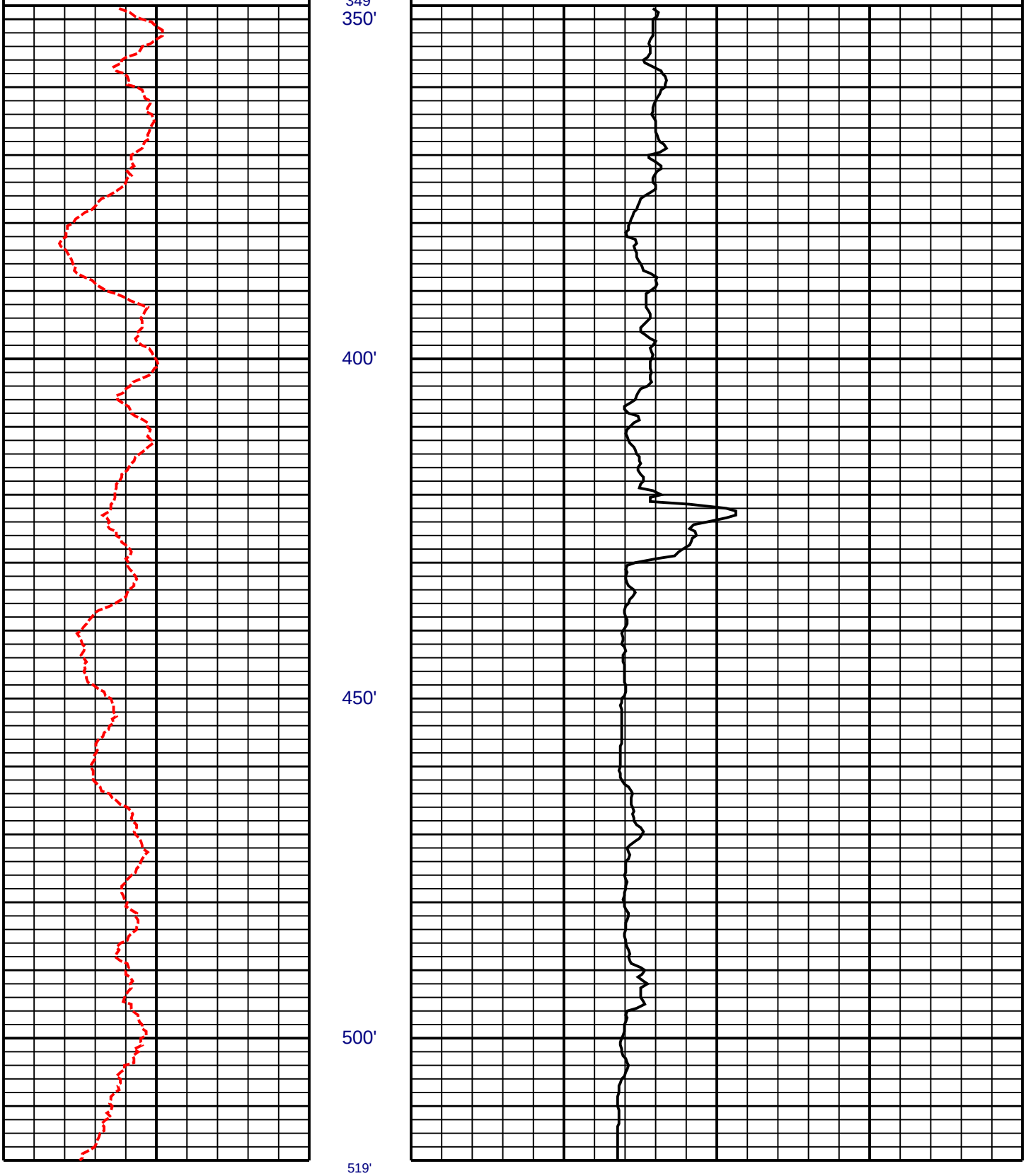
Multiple Pages
5"/100'

DEPTHS
(Feet)

3-ARM CALIPER LOG

0 Gamma Ray(api) 100

0 3-Arm Caliper(inches) 20



Erler & Kalinowski, Inc.
Pad D Site Test Well
Jul 14, 2014

3-ARM CALIPER LOG

Multiple Pages
5"/100'

DEPTHS
(Feet)

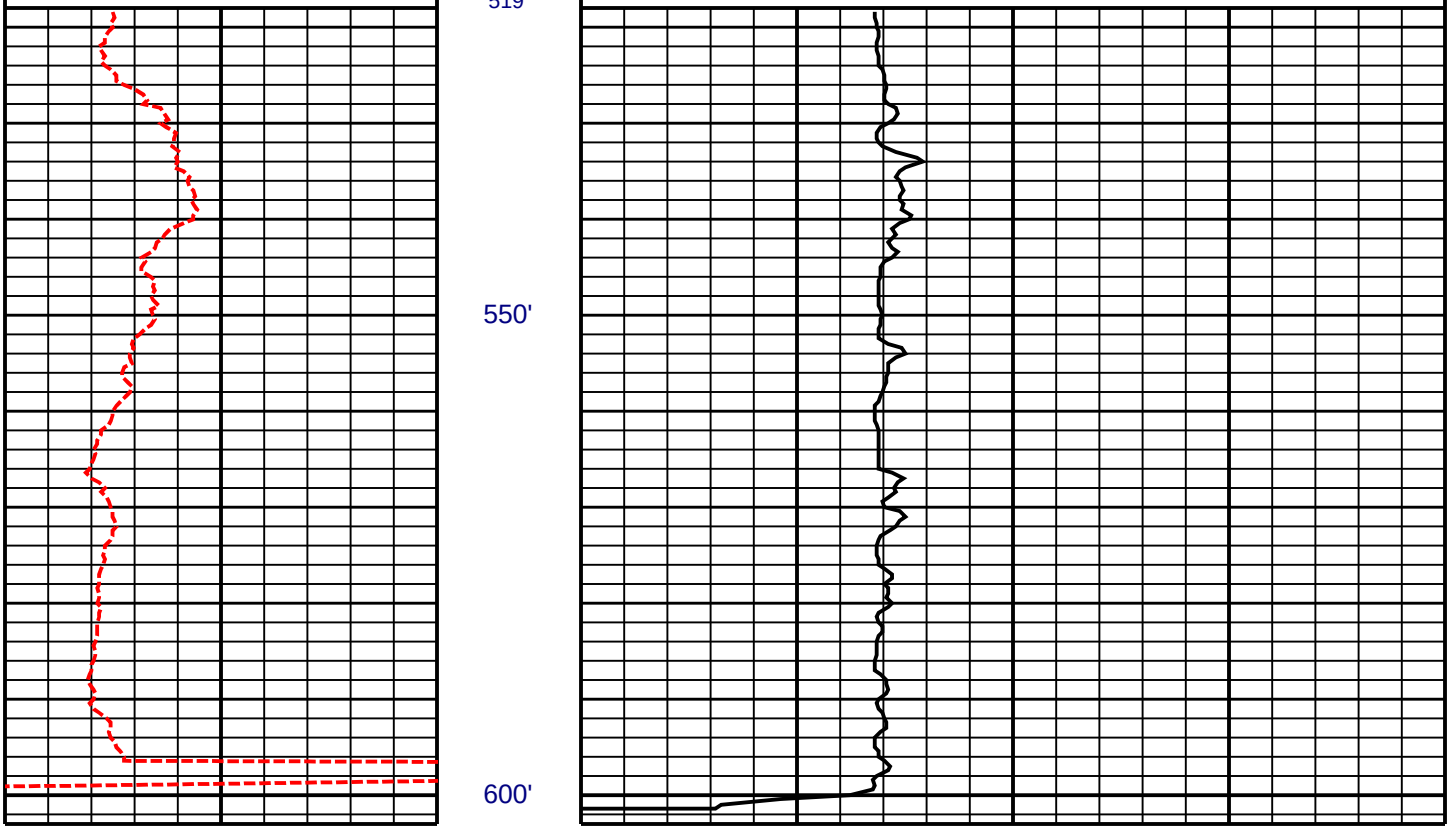
0 Gamma Ray(api) 100

0 3-Arm Caliper(inches) 20

519'

550'

600'



Log Depth 602'

DEVIATION / PLUMBNESS SURVEY

Erler & Kalinowski, Inc.

Pad D Site Test Well

Jul 14, 2014

This Wellbore Interpretation Package represents our best efforts to provide a correct interpretation. Nevertheless, since all interpretations are opinions based on inferences from electrical or other types of measurements, we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by Customer resulting from any interpretation made by this document. We do not warrant or guarantee the accuracy of the data, specifically including (but without limitations) the accuracy of data transmitted by electronic process, and we will not be responsible for accidental or intentional interception of such data by third parties. Our employees are not empowered to change or otherwise modify the attached interpretation.

Furthermore, along with Eagle Professional Software we do not warrant or guarantee the accuracy of the programming techniques employed to produce this document. By accepting this Interpretation Package, the Customer agrees to the foregoing, and to our General Terms and Conditions.

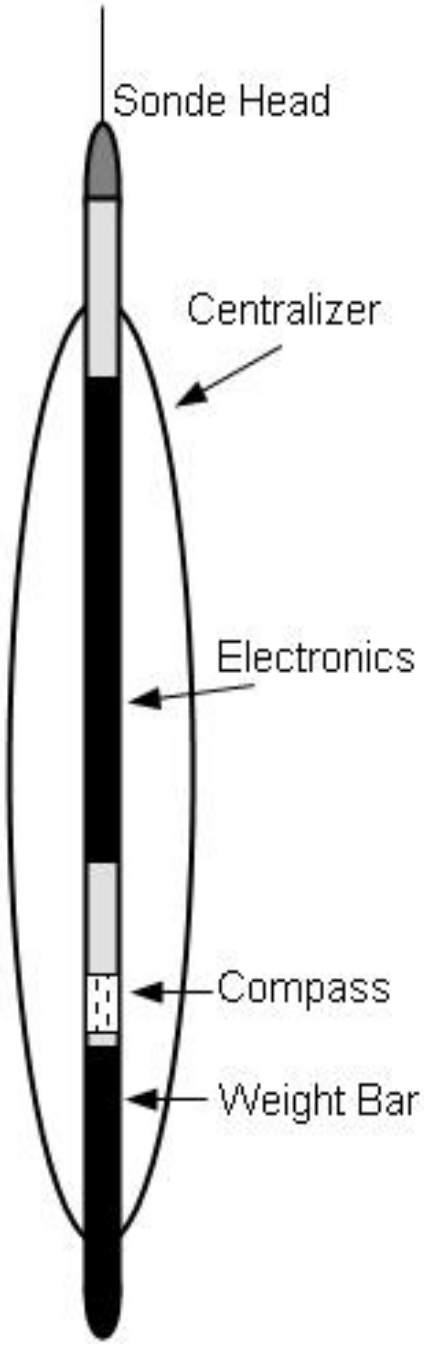
West Coast Well Logging Services
916-224-3810

Well Information

Company: Erler & Kalinowski, Inc.

Well No: Pad D Site Test Well
Field: East Palo Alto
State: California **County:** San Mateo
Location:
Bayshore Ave. & Clarke Ave.
Other Services:
E-Log Caliper
Sec: 36 **Twp:** 5S **Rge:** 3W
Permanent Datum: Ground Level **Elev.:** 35 Ft.
Log Measured From: Ground Level 0 Ft. Above Perm. Datum
Drilling Measured From: Ground Level
Run No.: 1
Driller's Depth: 600
Logger's Depth: 600
Top Logged Interval: 0
Btm. Logged Interval: 600
Type Fluid In Hole: Bentonite
Fluid Level: 20
Max Temp: 85.6 F
Rig Time: 1
Vehicle: WC-1
Location: RC
Operator: Mark F. Sharpless
Witness: J. Shaw
Casing Diameter: 8 Inches 0 Ft. To 25 Ft.
Remarks:
A recreational GPS accurate to +/- 45 feet set for Datum WGS84 was used to calculate Latitude, Longitude, and Elevation values.
Survey Tool Serial Number: 3221
Type Of Tool: Magnetic

Magnetic Tool



DEVIATION / PLUMBNESS SURVEY DATA

Pad D Site Test Well | **West Coast Well Logging Services** | **Jul 14, 2014**

MEASURED DATA			CALCULATIONS using Minimum Curvature Methodology					
DEPTHS, feet	INCLINATIONS, degees	AZIMUTHS, degees	COURSE DEV., feet	TOTAL LATITUDE feet	TOTAL LONGITUDE feet	TVD, feet	DRIFT DIST., feet	DRIFT BEARING degrees
20	0.07	119.54	0.00	0.0000	0.000	0.00	0.00	0.00
40	0.20	101.49	0.05	-0.0142	0.049	40.00	0.05	106.14
60	0.35	67.89	0.10	0.0033	0.148	59.99	0.15	88.71
80	0.33	55.82	0.13	0.0638	0.262	79.98	0.27	76.31
100	0.53	51.55	0.16	0.1620	0.393	99.98	0.43	67.61
120	0.49	44.92	0.19	0.2910	0.538	119.97	0.61	61.61
140	0.41	46.64	0.17	0.4109	0.661	139.96	0.78	58.15
160	0.36	52.12	0.15	0.5067	0.772	159.95	0.92	56.73
180	0.47	43.91	0.16	0.6134	0.889	179.94	1.08	55.38
200	0.42	41.86	0.17	0.7376	1.004	199.93	1.25	53.70
220	0.66	49.43	0.21	0.8792	1.153	219.92	1.45	52.68
240	0.81	50.05	0.28	1.0602	1.367	239.91	1.73	52.21
260	0.77	45.86	0.30	1.2616	1.591	259.90	2.03	51.59
280	0.77	41.58	0.29	1.4737	1.794	279.89	2.32	50.60
300	0.88	53.47	0.31	1.6834	2.026	299.88	2.63	50.28
320	1.10	59.19	0.38	1.8907	2.341	319.87	3.01	51.08
340	0.93	62.18	0.39	2.0809	2.678	339.86	3.39	52.15
360	0.91	61.74	0.35	2.2459	2.988	359.85	3.74	53.07
380	1.04	60.51	0.37	2.4257	3.313	379.84	4.11	53.79
400	1.02	60.08	0.39	2.6203	3.655	399.83	4.50	54.36
420	1.05	51.06	0.39	2.8431	3.979	419.82	4.89	54.45
440	1.06	50.40	0.40	3.0978	4.290	439.81	5.29	54.17
460	1.18	40.11	0.43	3.3987	4.591	459.80	5.71	53.49
480	0.84	47.44	0.38	3.6792	4.854	479.79	6.09	52.84
500	0.59	46.89	0.27	3.8644	5.054	499.78	6.36	52.60
520	0.67	50.65	0.24	4.0223	5.235	519.77	6.60	52.46
540	0.74	49.49	0.27	4.1950	5.441	539.76	6.87	52.37
560	0.77	47.65	0.29	4.3855	5.657	559.75	7.16	52.21
580	0.71	42.38	0.28	4.5845	5.857	579.74	7.44	51.95

Final Vertical Depth: 599.73 Feet Final Drift Distance: 7.72 Feet Final Drift Bearing: 51.7 Degrees

DEVIATION / PLUMBNESS SURVEY DATA

Pad D Site Test Well | **West Coast Well Logging Services** | **Jul 14, 2014**

MEASURED DATA			CALCULATIONS using Minimum Curvature Methodology					
DEPTHS, feet	INCLINATIONS, degees	AZIMUTHS, degees	COURSE DEV., feet	TOTAL LATITUDE feet	TOTAL LONGITUDE feet	TVD, feet	DRIFT DIST., feet	DRIFT BEARING degrees
600	0.76	45.34	0.00	4.7863	6.051	599.73	7.72	51.66

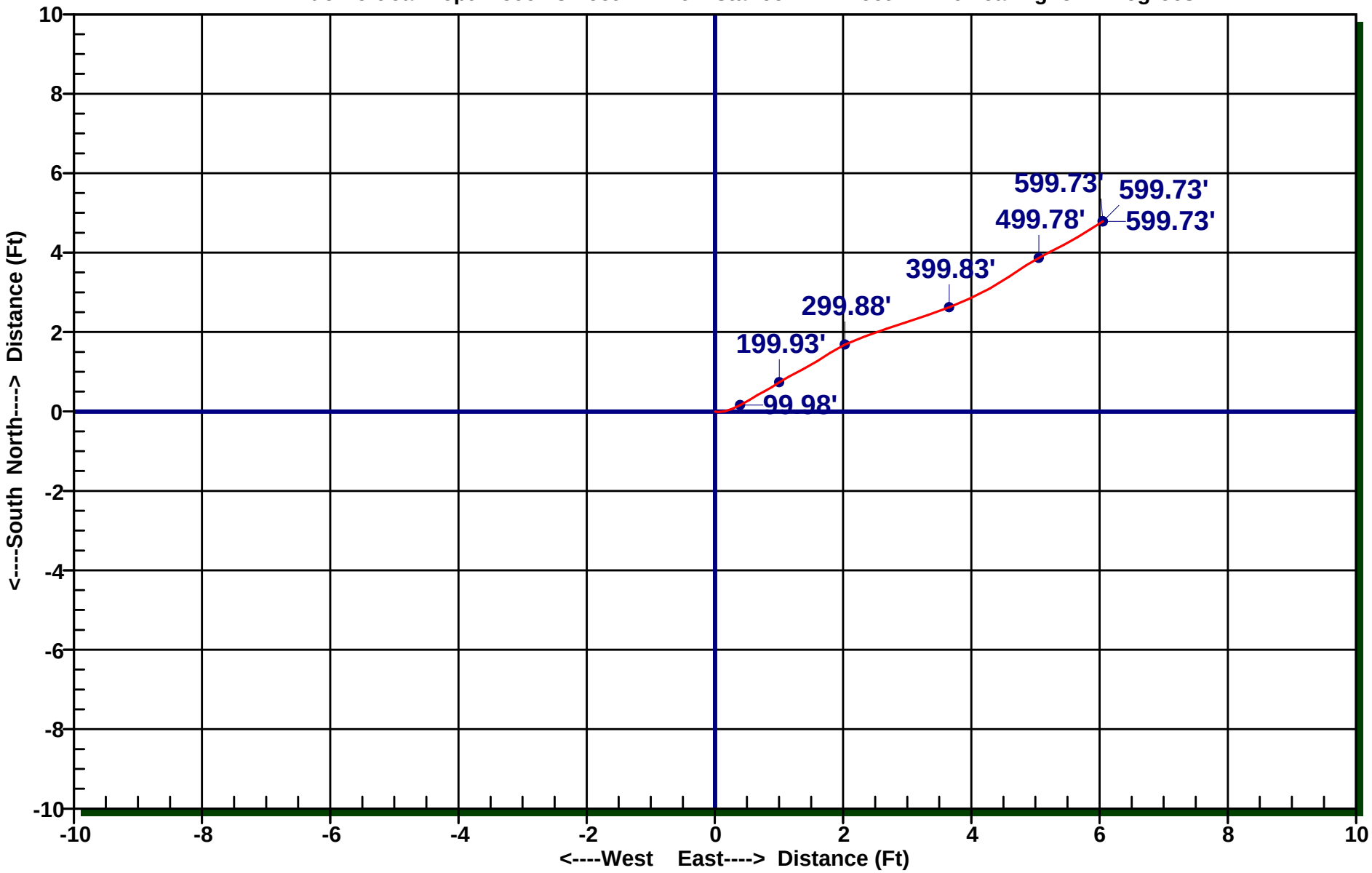
Final Vertical Depth: 599.73 Feet

Final Drift Distance: 7.72 Feet

Final Drift Bearing: 51.7 Degrees

GROUND LEVEL GRAPH - Pad D Site Test Well

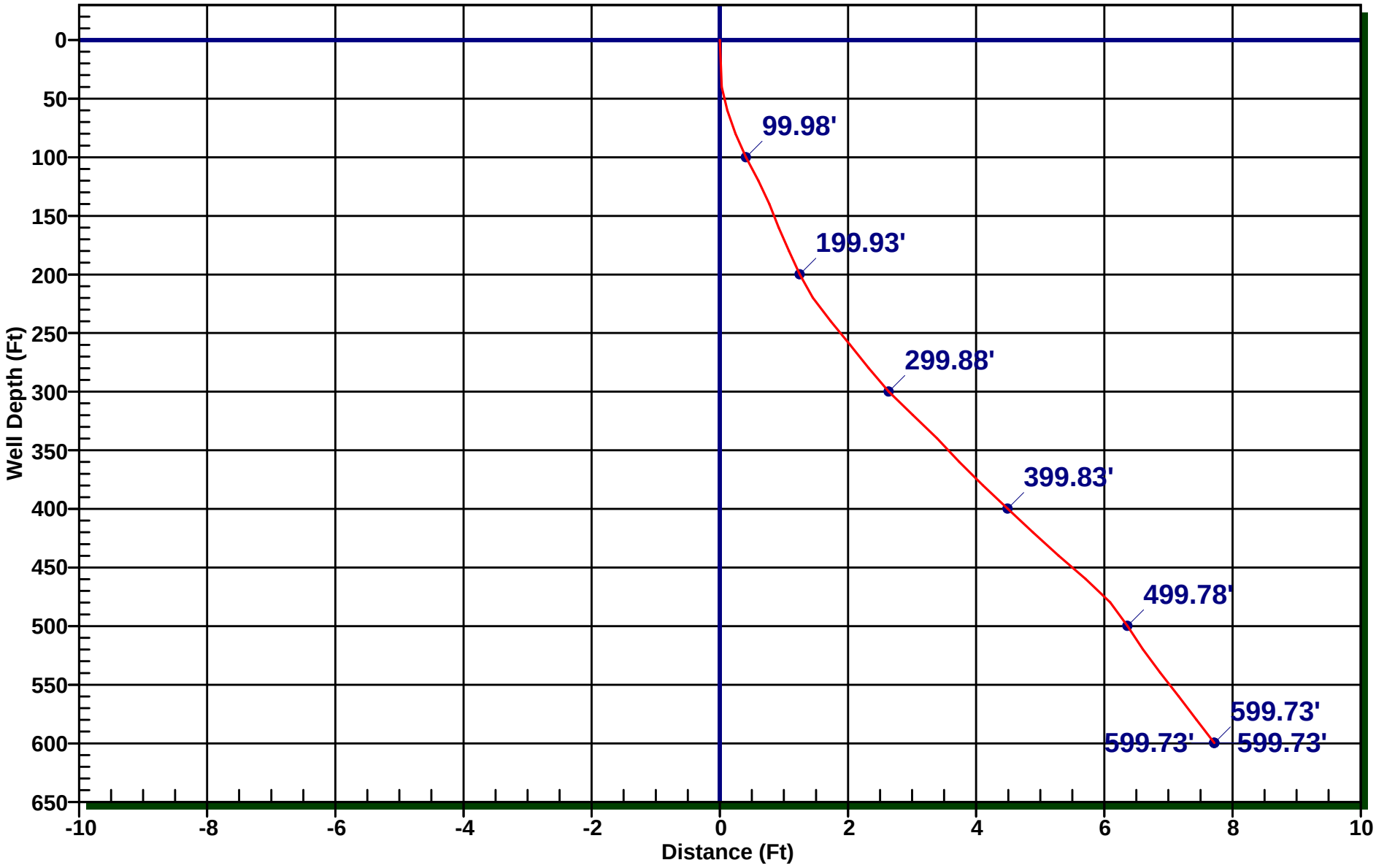
True Vertical Depth: 599.73 Feet Drift Distance: 7.72 Feet Drift Bearing: 51.7 Degrees



Survey By: West Coast Well Logging Services
Date of Survey: Jul 14, 2014
Method of Calculation: Minimum Curvature Methodology

PLANE OF DEVIATION GRAPH - Pad D Site Test Well

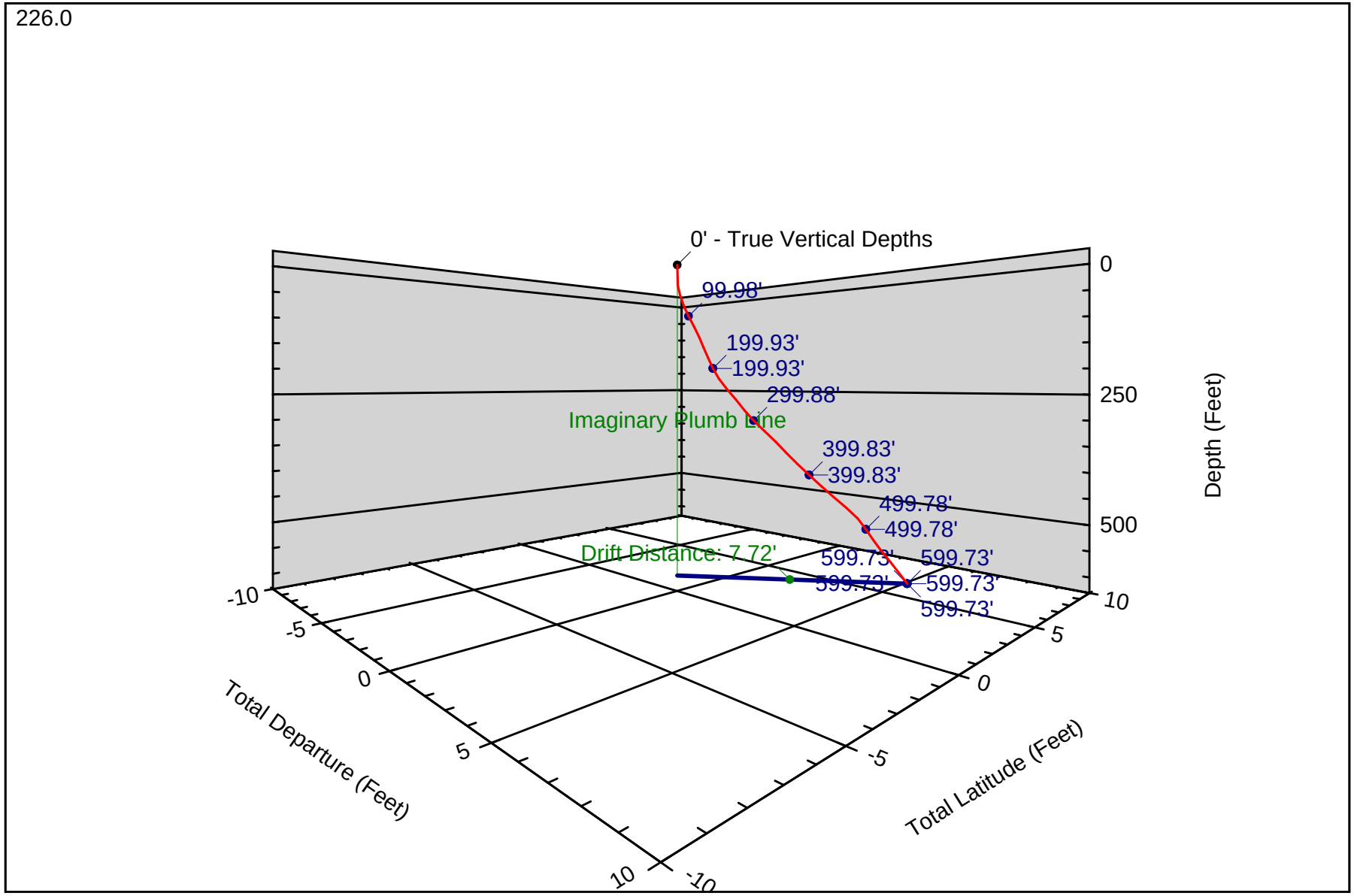
True Vertical Depth: 599.73 Feet Drift Distance: 7.72 Feet Drift Bearing: 51.7 Degrees



Survey By: West Coast Well Logging Services
Date of Survey: Jul 14, 2014
Method of Calculation: Minimum Curvature Methodology

THREE DIMENSIONAL GRAPH- Pad D Site Test Well

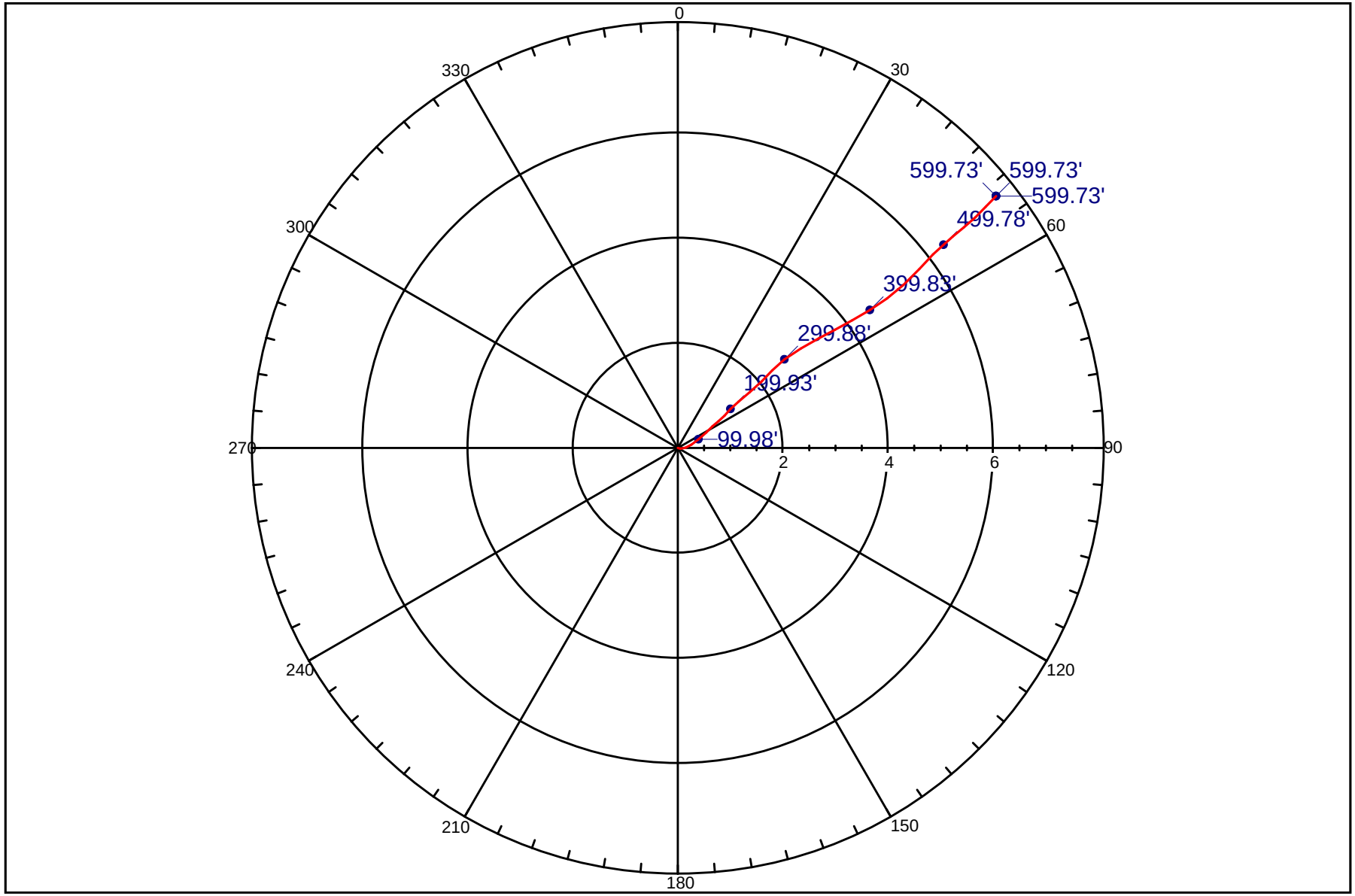
True Vertical Depth: 599.73 Feet Drift Distance: 7.72 Feet Drift Bearing: 51.7 Degrees



Survey By: West Coast Well Logging Services
Date of Survey: Jul 14, 2014
Method of Calculation: Minimum Curvature Methodology

TARGET GRAPH - Pad D Site Test Well

True Vertical Depth: 599.73 Feet Drift Distance: 7.72 Feet Drift Bearing: 51.7 Degrees



Survey By: West Coast Well Logging Services
Date of Survey: Jul 14, 2014
Method of Calculation: Minimum Curvature Methodology

Attachment D

Well Development Logs

Well Purging & Sampling Data

PROJECT: EPA Test Well	DATE: 7/28/14	Well ID: Pad D Test well
PROJECT No: 340016.00	PERSONNEL: DJC	PURPOSE: ☐ Sampling ☒ Development
Pump: 4" Grundfos	FIELD INSTRUMENT CALIBRATION:	WELL VOLUME CALCULATION:
Intake Depth: 164 ft bgs	Parameter / Standard / Field Measurement	Well Casing Diameter = 6 (in.)
Tubing Type: ?	pH (1): 4.0 / 4.0	Total Casing Depth: = 550 (ft)
Sounder: Keck - 300' Part # 82050014	pH (2):	Initial Depth to Water: - 37.52 (ft)
WQ Meter #1: Horiba U-10 S/N# 106012	Elec Cond: 4.49 / 4.49	Water Column: = 512.48 (ft)
WQ Meter #2:	Turbidity: 0 / 0	Multiplier (gal / ft): x 1.5 (2"=0.17; 4"=0.66; 6"=1.5; 8"=2.6; 10.25"=4.3; 12.75"=6.1)
Start & End Time: 7/28 @ 1605 / 1644	Other:	Casing Volume: = 768.72 (gals)
[Sp. Cap.]$_1$ (gpm/ft): @ t_1 (min):	[Sp. Cap.]$_2$ (gpm/ft): @ t_2 (min):	Volume Purged: (gals) (CVs)
Well Location / Site Conditions / Weather / Other notes:		Well Casing & Completion: Flush box in concrete pad
		Screened Interval: 165-185; 315-350; 375-390; 435-465; 500-525
		Final Depth to Water: 8.65

Clock Time	Purge Rate (gal/min)	Depth to water (feet)	Volume Purged (gal)	Temp. (°C) [± 0.2]	Elec. Cond. (µS/cm) [±5% if≤100] [±3% if>100]	pH [± 0.1]	Turbidity (NTU) [±10% if<100]	DO (mg/L) [± 10%]	ORP (mV) [± 10%]	Activity / Notes / Other
0839	0.5	37.52	5	22.5	1.04	9.57	279			bailing
0910	0.5			23.6	0.65	9.78	280			bailing
0930	-	-	-	-	-	-	-	-	-	"
1000	-	-	-	-	-	-	-	-	-	"
1030	-	-	-	-	-	-	-	-	-	"
1100	0.5	32.23	~75	-	-	-	-	-	-	Done bailing
1210	-	-	-	-	-	-	-	-	-	Surging
1236/1256	-	-	-	-	-	-	-	-	-	surge 165' - 185'
1306/1350	-	-	-	-	-	-	-	-	-	surge 315' - 350'
1400/1415	-	-	-	-	-	-	-	-	-	surge 375' - 390'
1420/1450	-	-	-	-	-	-	-	-	-	surge 435' - 465'
1452/1520	-	-	-	-	-	-	-	-	-	surge 500' 525'
1605	-	-	-	-	-	-	-	-	-	Begin pumping
1613	17.44	22	128.0	23.4	0.850	9.23	218	-	-	
1615	17.24	20.9	160.76	23.5	0.849	9.22	218	-	-	
1620	16.93	16.28	260.84	23.7	0.847	9.25	218	-	-	
7/28 1635	17.28	12.6	480.15	23.8	0.851	9.26	245	-	-	Done for the day 7/28
1644	-	8.65	-		-	-	-	-	-	Final for today

Additional Notes:

1 gal ≈ 3785 mL

Well Purging & Sampling Data

EKI

PROJECT: EPA Test Well	DATE: 7/29/14	Well ID: Pad D Test well
PROJECT No: B40016.00	PERSONNEL: DJC + Gregg (Bernix)	PURPOSE: ☐ Sampling ☑ Development
Pump: 4" Grundfos	FIELD INSTRUMENT CALIBRATION:	WELL VOLUME CALCULATION:
Intake Depth: 164 ft bgs	Parameter / Standard / Field Measurement	Well Casing Diameter = 6 (in.)
Tubing Type: S/S Frack pipe	pH (1): 4.0 / 4.0	Total Casing Depth: = 540 (ft)
Sounder: Keck 300 Part# 82050014	pH (2):	Initial Depth to Water: - 8.5 (ft)
WQ Meter #1: Horiba U-10 S/N A 10692	Elec Cond: 4.49 / 4.48	Water Column: = 531.5 (ft)
WQ Meter #2:	Turbidity: 0 / 0	Multiplier (gal / ft): x 1.5 (2"=0.17; 4"=0.66; 6"=1.5; 8"=2.6; 10.25"=4.3; 12.75"=6.1)
Start & End Time: 0745 /	Other:	Casing Volume: = 797.25 (gals)
[Sp. Cap.]$_1$ (gpm/ft): @ t_1 (min):	[Sp. Cap.]$_2$ (gpm/ft): @ t_2 (min):	Volume Purged: (gals) (CVs)
Well Location / Site Conditions / Weather / Other notes:		Well Casing & Completion: flush box in concrete pad
		Screened Interval: 165-185; 315-350; 375-390; 435-465; 500-525
	mS/cm	Final Depth to Water:

Clock Time	Purge Rate ( )	Depth to water (feet)	Volume Purged ( )	Temp. (°C) [± 0.2]	Elec. Cond. (µS/cm) [±5% if≤100] [±3% if>100]	pH [± 0.1]	Turbidity (NTU) [±10% if<100]	DO (mg/L) [± 10%]	ORP (mV) [± 10%]	Activity / Notes / Other
0730	-	8.5	-	-	-	-	-	-	-	Initial reading
0745	-	-	-	-	-	-	-	-	-	Begin pumping
0750	16.42	11.12								
0755	16.20	12.31	661.4	23.5	0.563	7.93	141	—	—	
0800	16.30	12.53	726.8	23.7	0.564	8.00	123	—	—	no sand
0805	16.36	12.71	800.4	23.8	0.566	8.01	118	—	—	
0810	-	-	-	-	-	-	-	-	-	Raise pump to 15 ft bgs
0815	18.62	12.17	873.6	22.9	0.659	9.06	246	—	—	
0825	18.55	12.39	981.4	23.7	0.585	8.62	345	—	—	
0830	-	-	-	-	-	-	-	-	-	Done pumping
0840/900	—	—	—	—	—	—	—	—	—	Surge 165'-185'
915/950	—	—	—	—	—	—	—	—	—	Surge 315'-350'
10:00/1015	—	—	—	—	—	—	—	—	—	Surge 375' 390'
10.20/1050	—	—	—	—	—	—	—	—	—	Surge 435' 465'
1055/1125	—	—	—	—	—	—	—	—	—	Surg 500' 525'
1130										total depth 540.15
1140										Bail
1150	19.2	13.95	50	23.9	.543	8.35	999	7.53	—	Started Pumping
1200	18.9	13.93	240	24.0	.565	8.36	999	—	—	
1210	18.9	13.90	429	24.1	.563	8.31	250	—	—	
1220	18.9	13.89	618	24.0	.566	8.30	80	—	—	
1230	18.9	13.91	809	24.1	.565	8.30	32	—	—	Stop pumping → lunch.
1:05/125	—	—	—	—	—	—	—	—	—	Surge 165'-185'
1:30/205	—	—	—	—	—	—	—	—	—	Surge 315'-350'
2:09/230	—	—	—	—	—	—	—	—	—	Surge 375'-390'
2:34/310	—	—	—	—	—	—	—	—	—	Surge 435'-465'
315/340	—	—	—	—	—	—	—	—	—	Surge 500-525
413/	18.9	13.4	65	23.9	.562	803	269	—	—	Started Pumping
423	18.16	13.4	247	23.6	.566	7.83	999	—	—	
433	18.16	13.4	428	23.8	.563	7.85	999	—	—	
448	18.16	13.4	682	24.1	.561	787	333	—	—	Stop pump.

Additional Notes:

Final water Level 12.49

1 gal ≈ 3785 mL

Well Purging & Sampling Data

PROJECT: EPA Test Well	DATE: 7/30/14.	Well ID: PAD D test well
PROJECT No: B40016.00	PERSONNEL: Benwix (Gregg)	PURPOSE: ☐ Sampling ☒ Development

Clock Time	Purge Rate ( )	Depth to water (feet)	Volume Purged ( )	Temp. (°C) [± 0.2]	Elec. Cond. (µS/cm) [±5% if≤100] [±3% if>100]	pH [± 0.1]	Turbidity (NTU) [±10% if<100]	DO (mg/L) [± 10%]	ORP (mV) [± 10%]	Activity / Notes / Other
7:00	Collect water level then Bail							Diller	ANS	INICIAL water Level
	Finish Pumping then started Swabing							→		11.4
9:00	18.5	13.65	50	22.5	.580	7.75	999	—	—	
915	18.42	13.74	328	22.7	.566	7.72	720	—	—	
925	18.42	13.85	515	22.8	.562	7.77	369	—	—	
935	18.54	14.10	700	23.8	.560	8.01	120	—	—	
9:45	18.44	14.55	885	23.8	.560	8.06	15	—	—	
9:55	18.44	14.65	1069	23.8	.560	8.06	7	—	—	
1013/	1033	—	—	—	—	—	—	—	—	Surge → 165'-185'
1040/	1115	—	—	—	—	—	—	—	—	Surge → 315'-350'
1120/	1135	—	—	—	—	—	—	—	—	Surge → 375'-390'
1140/	1210	—	—	—	—	—	—	—	—	Surge — 435'-465'
1215/	1240	—	—	—	—	—	—	—	—	Surge → 500-525'
12:50/	1330	→		→		→		→		Bail, Brush →
W/L → 1:48	18.94	12.7	50	23.4	.560	8.23	8	—	—	Start Pumping
8.4. 2:00	18.76	14.31	280	23.5	.560	8.25	90.	—	—	
2:12	18.67	13.62	489	23.5	.560	8.20	50	—	—	
222	18.82	13.97	670	23.6	.560	8.21	10	—	—	
230	18.77	1420	819	23.7	.560	8.21	7	—	—	Stop pump.
2:40/	310	—						→		SWAB - Broke.
320/	340	—						→		Bail.
3.48	18.4	12.72	60.	23.8	.558	8.22	20	—	—	Turn on Pump
1616	18.23	13.61	525	24.0	0.557	8.27	144	—	—	
1620	18.23	13.68	586	24.0	0.557	8.27	125	—	—	
1625	18.22	13.86	695	23.9	0.558	8.29	41	—	—	
1632	18.36	14.01	822	23.9	0.559	8.20	9	—	—	
1641	18.32	14.19	978	23.9	0.561	8.24	9	—	—	
1648	18.31	14.31	1117	23.9	0.558	8.25	8	—	—	
1655	18.32	14.38	1233	23.9	0.587	8.25	9	—	—	
1700	18.32	14.43	1350	23.9	0.555	8.25	8	—	—	
7/31/14 7:00									→	Set up pump.
										Initial water level 7.76
										Client took over

Additional Notes:

Attachment E

Transducer Data Files from Aquifer Testing (attached separately)

Attachment F

Laboratory Analytical Reports

K PRIME, Inc.

CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

TRANSMITTAL

DATE: 8/15/2014

TO: MR. CHRIS HEPPNER
MS. ANONA DUTTON
MR. DANIEL CORREIA
ERLER & KALINOWSKI, INC.
1870 OGDEN DRIVE
BURLINGAME, CA 94010

Phone: 650-292-9100
Email: labs@ekiconsult.com
cheppner@ekiconsult.com
adutton@ekiconsult.com
dcorreia@ekiconsult.com

ACCT: 9115
PROJ: B40016.00

FROM: Richard A. Kagel, Ph.D.
Laboratory Director

RAK 8/15/2014

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT B40016.00

Enclosed please find K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	TIME	KPI LAB #
EPA TEST WELL - DW-080514	WATER	08/05/14	7:50	123712

The above listed sample group was received on 08/05/14 and tested as requested on the chain of custody document.

Please call me if you have any questions or need further information.
Thank you for this opportunity to be of service.

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: B40016.00

METHOD: TOTAL METALS BY ICP/MS
REFERENCE: EPA 200.8

SAMPLE ID: EPA TEST WELL - DW-080514
LAB NO: 123712
DATE SAMPLED: 08/05/2014
TIME SAMPLED: 7:50
BATCH ID: 081414W1

SAMPLE TYPE: WATER
UNITS: ug/L

ELEMENT NAME		DATE ANALYZED	REPORTING LIMIT	SAMPLE CONC
ALUMINUM	Al	08/15/2014	1.00	1.57
ARSENIC	As	08/15/2014	1.00	3.58
BARIUM	Ba	08/15/2014	1.00	88.8
CADMIUM	Cd	08/15/2014	1.00	ND
CHROMIUM	Cr	08/15/2014	1.00	ND
LEAD	Pb	08/15/2014	1.00	ND
MERCURY	Hg	08/15/2014	0.200	ND
SELENIUM	Se	08/15/2014	1.00	ND
SILVER	Ag	08/15/2014	1.00	ND
ANTIMONY	Sb	08/15/2014	1.00	ND
BERYLLIUM	Be	08/15/2014	1.00	ND
NICKEL	Ni	08/15/2014	1.00	ND
THALLIUM	Tl	08/15/2014	1.00	ND
MANGANESE	Mn	08/15/2014	1.00	38.0
COPPER	Cu	08/15/2014	1.00	ND
ZINC	Zn	08/15/2014	1.00	5.96

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: _____
DATE: 8/15/2014

K PRIME, INC.

LABORATORY BATCH QC REPORT

SAMPLE ID: L081414W1
DUPLICATE ID: D081414W1
METHOD BLANK ID: B081414W1
BATCH #: 081414W1
DATE ANALYZED: 08/14/2014

METHOD: TOTAL METALS BY ICP/MS
REFERENCE: EPA 200.8

SAMPLE TYPE: WATER
UNITS: ug/L

ELEMENT		MB ug/L	SA ug/L	SR ug/L	SP ug/L	SPD ug/L	SP %R	RPD %
ALUMINUM	Al	<1.00	50.0	0.0	46.2	45.8	92	1.0
ARSENIC	As	<1.00	50.0	0.0	48.4	48.3	97	0.3
BARIUM	Ba	<1.00	50.0	0.0	49.5	49.4	99	0.2
CADMIUM	Cd	<1.00	50.0	0.0	48.9	49.0	98	0.1
CHROMIUM	Cr	<1.00	50.0	0.0	48.2	48.0	96	0.5
LEAD	Pb	<1.00	50.0	0.0	47.1	46.8	94	0.6
MERCURY	Hg	<0.200	1.00	0.0	1.03	1.03	103	0.2
SELENIUM	Se	<1.00	50.0	0.0	48.2	48.3	96	0.2
SILVER	Ag	<1.00	25.0	0.0	24.2	24.3	97	0.5
ANTIMONY	Sb	<1.00	50.0	0.0	48.8	48.7	98	0.0
BERYLLIUM	Be	<1.00	50.0	0.0	48.7	48.5	97	0.5
NICKEL	Ni	<1.00	50.0	0.0	48.3	48.2	97	0.2
THALLIUM	Tl	<1.00	50.0	0.0	44.3	44.3	89	0.0
MANGANESE	Mn	<1.00	50.0	0.0	49.0	48.9	98	0.1
COPPER	Cu	<1.00	50.0	0.0	49.1	48.9	98	0.3
ZINC	Zn	<1.00	50.0	0.0	50.0	49.6	100	0.8

NOTES:
ND: NOT DETECTED
MB: METHOD BLANK
SA: SPIKE ADDED
SR: SAMPLE RESULT
SP: SPIKE RESULT
SPD: SPIKE DUPLICATE RESULT
SP(%R): SPIKE % RECOVERY
RPD: RELATIVE PERCENT DIFFERENCE

K PRIME, INC.

LABORATORY BATCH QC REPORT

SAMPLE ID: MS123712
DUPLICATE ID: SD123712
METHOD BLANK ID: B081414W1
BATCH #: 081414W1
DATE ANALYZED: 08/15/2014

METHOD: TOTAL METALS BY ICP/MS
REFERENCE: EPA 200.8

SAMPLE TYPE: WATER
UNITS: ug/L

ELEMENT		MB ug/L	SA ug/L	SR ug/L	SP ug/L	SPD ug/L	SP %R	RPD %
ALUMINUM	Al	<1.00	100	1.57	90.4	91.9	89	1.7
ARSENIC	As	<1.00	100	3.58	101	101	97	0.1
BARIUM	Ba	<1.00	100	88.8	186	186	97	0.2
CADMIUM	Cd	<1.00	100	<1.00	91.7	92.0	92	0.3
CHROMIUM	Cr	<1.00	100	<1.00	93.2	93.2	93	0.0
LEAD	Pb	<1.00	100	<1.00	89.3	89.3	89	0.1
MERCURY	Hg	<0.200	2.00	<0.200	1.66	1.51	77	9.8
SELENIUM	Se	<1.00	100	<1.00	96.7	99.0	97	2.3
SILVER	Ag	<1.00	50.0	<1.00	27.8	29.6	56	6.1
ANTIMONY	Sb	<1.00	100	<1.00	98.5	99.2	99	0.6
BERYLLIUM	Be	<1.00	100	<1.00	93.7	95.5	94	1.9
NICKEL	Ni	<1.00	100	<1.00	91.3	91.5	91	0.2
THALLIUM	Tl	<1.00	100	<1.00	85.4	85.5	85	0.1
MANGANESE	Mn	<1.00	100	38.0	136	136	98	0.0
COPPER	Cu	<1.00	100	<1.00	92.6	93.3	92	0.8
ZINC	Zn	<1.00	100	5.96	98.7	98.6	93	0.1

NOTES:
ND: NOT DETECTED
MB: METHOD BLANK
SA: SPIKE ADDED
SR: SAMPLE RESULT
SP: SPIKE RESULT
SPD: SPIKE DUPLICATE RESULT
SP(%R): SPIKE % RECOVERY
RPD: RELATIVE PERCENT DIFFERENCE

Erler & Kalinowski, Inc.

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

CONSULTING ENGINEERS AND SCIENTISTS 1870 Ogden Drive, Burlingame CA 940 PHONE: 650-292-9100 FAX: 650-552-9012

Project Name: East Palo Alto Test Well	**Project No.** B40016.00
Location: East Palo Alto, CA	**Sampled By:** Daniel Correia
Reporting: Electronic Format: EDF Hard Copy Format: PDF EPA Data Report Level: II Reporting Basis: As Rec'd Please report results to the following: (1) **EKI:** labs@ekiconsult.com (2)**Chris Heppner:** cheppner@ekiconsult.com (3) **Anona Dutton:** adutton@ekiconsult.com (4) **Daniel Correia:** dcorreia@ekiconsult.com	**Laboratory:** K Prime, Inc. 3621 Westwind Blvd Santa Rosa, CA 95403 (707) 527-7574

ANALYSES REQUESTED

Method No.	EPA 200.8	SM 2320 B	EPA 300	EPA150.1	SM 2510 B	EPA 160.1	SM 2340 B	SM 4500-CN E	SM 5540 C	EPA 200.7	EPA 200.7	SM 2120B 2130B	EPA 00-02	EPA 900	EPA 314.0	EPA 524.2a	EPA 525.2	EPA 200.8			
Analyte Group	Metals	Alkalinity	Anions	pH	Specific Conductance	TDS	Total Hardness	Cyanide	MBAS	Dissolved and Total Iron	Cations	Color, Odor, Turbility	Gross Alpha	Gross Beta	Perchlorate	VOCs	SVOCs	Uranium	PLACE ON HOLD	EXPECTED T.A.T	REMARKS
EPA Test Well - DW-080514	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		Standard	

Field Sample Identification	Lab Sample No.	Date	Time	Matrix	Number / Type of Container (Preservative)
EPA Test Well - DW-080514	123712	8/5/2014	0750	Drinking water	250 ml Poly w/ HNO3 (Field filtered); 1L poly, unpreserved; 250 ml poly w/NaOH; 1L Amber, unpreserved; 1L poly, unpreserved; 500 ml poly w/HNO3; 500 ml poly w/HNO3; 1L poly w/HNO3; 500 ml poly, unpreserved 3X40 ml VOA w/HCL; 2 X 1L amber w/ sodium thiosulfate

EKI COC No.: 20140805-1

Revision: _____ (A, B, C, D, etc.)

Date: By:

Special Instructions:

Relinquished by:	(Signature/Affiliation) EKI	Date 8/5/14	Time 1504	Received by:	(Signature/Affiliation or Carrier/Air Bill No.) 8/5/14 3:04
Relinquished by:	(Signature/Affiliation)	Date 8/5/14	Time 17:24	Received by: Rec-Cools KPI	(Signature/Affiliation)
Relinquished by:	(Signature/Affiliation)	Date	Time	Received by:	(Signature/Affiliation)

K PRIME, Inc.

CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

TRANSMITTAL

DATE: 8/22/2014

TO: MR. CHRIS HEPPNER
MS. ANONA DUTTON
MR. DANIEL CORREIA
ERLER & KALINOWSKI, INC.
1870 OGDEN DRIVE
BURLINGAME, CA 94010

Phone: 650-292-9100
Email: labs@ekiconsult.com
cheppner@ekiconsult.com
adutton@ekiconsult.com
dcorreia@ekiconsult.com

ACCT: 9115
PROJ: B40016.00

FROM: Richard A. Kagel, Ph.D.
Laboratory Director

RAK/mj CT 8/22/2014

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT B40016.00

Enclosed please find K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	TIME	KPI LAB #
EPA TEST WELL - DW-080514	WATER	08/05/14	7:50	123712

The above listed sample group was received on 08/05/14 and tested as requested on the chain of custody document.

Please call me if you have any questions or need further information.
Thank you for this opportunity to be of service.

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: B40016.00

SAMPLE ID: EPA TEST WELL - DW-080514
LAB NO: 123712
DATE SAMPLED: 08/05/2014
TIME SAMPLED: 07:50

METHOD: ANIONS
REFERENCE: EPA 300.0

SAMPLE TYPE: WATER
UNITS: mg/L

COMPOUND NAME	BATCH ID	DATE ANALYZED	REPORTING LIMIT	SAMPLE CONC
FLUORIDE	080614W1	08/06/2014	0.100	ND
CHLORIDE	080614W1	08/06/2014	1.00	33.3
NITRITE (AS N)	080614W1	08/06/2014	0.100	ND
SULFATE	080614W1	08/06/2014	1.00	19.1
NITRATE (AS N)	080614W1	08/06/2014	0.100	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE
MRL - METHOD REPORTING LIMIT

APPROVED BY: CW
DATE: 08/21/2014

K PRIME, INC.
LABORATORY REPORT

METHOD: SPECIFIC CONDUCTANCE
REFERENCE: EPA 120.1

K PRIME PROJECT: 9115
CLIENT PROJECT: B40016.00

SAMPLE TYPE: WATER
UNITS: umhos/cm

SAMPLE ID	LAB ID #	DATE SAMPLED	BATCH ID	DATE ANALYZED	MRL	SAMPLE CONDUCTIVITY
EPA TEST WELL - DW-080514	123712	8/5/2014	081114W1	8/11/2014	1.00	624

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE
MRL - METHOD REPORTING LIMIT

APPROVED BY: AW

DATE: 08/21/2014

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: B40016.00

METHOD: ALKALINITY SPECIES
REFERENCE: SM 2320B

SAMPLE ID: EPA TEST WELL - DW-080514
LAB NO: 123712
BATCH ID: 081114W1
SAMPLE TYPE: WATER
DATE SAMPLED: 8/5/2014
TIME SAMPLED: 7:50
DATE RECEIVED: 8/5/2014
DATE ANALYZED: 8/11/2014

UNITS: mg/L as CaCO3

COMPOUND NAME	MRL	SAMPLE CONC
TOTAL ALKALINITY	10.0	245
CARBONATE ALKALINITY	10.0	ND
BICARBONATE ALKALINITY	10.0	245
HYDROXIDE ALKALINITY	10.0	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE
MRL - METHOD REPORTING LIMIT

APPROVED BY: CW
DATE: 08/21/2014

K PRIME, INC.
LABORATORY REPORT

METHOD: pH
REFERENCE: SM4500-H+B

K PRIME PROJECT: 9115
CLIENT PROJECT: B40016.00

SAMPLE TYPE: WATER
UNITS: pH UNITS

SAMPLE ID	LAB ID #	DATE SAMPLED	BATCH ID	DATE ANALYZED	SAMPLE RESULT
EPA TEST WELL - DW-080514	123712	08/05/2014	080514W1	08/05/2014	8.22

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: _____

DATE: 08/21/2014

K PRIME, INC.

LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: B40016.00

METHOD: TDS
REFERENCE: SM 2540C
SAMPLE TYPE: WATER
UNITS: mg/L

SAMPLE ID	LAB ID #	DATE SAMPLED	BATCH ID	DATE ANALYZED	MRL	SAMPLE RESULT
EPA TEST WELL - DW-080514	123712	8/5/2014	081114W1	8/11/2014	10.0	359

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE
MRL - METHOD REPORTING LIMIT

APPROVED BY: CW

DATE: 08/21/2014

K PRIME, INC.
LABORATORY BATCH QC REPORT

BATCH ID: 080614W1
DATE ANALYZED: 08/06/2014

METHOD: ANIONS
REFERENCE: EPA 300.0

SAMPLE ID: L080614W1
DUPLICATE ID: D080614W1
BLANK ID: B080614W1

SAMPLE TYPE: WATER
UNITS: mg/L

ANION NAME	MDL mg/L	MB mg/L	SA mg/L	SP mg/L	SPD mg/L	SP %R	RPD %
FLUORIDE	0.100	ND	10.0	9.56	9.66	96	1.0
CHLORIDE	0.100	ND	10.0	9.31	9.41	93	1.1
NITRITE (AS N)	0.100	ND	10.0	9.53	9.61	95	0.9
SULFATE	0.100	ND	10.0	9.44	9.54	94	1.1
BROMIDE	0.100	ND	10.0	9.42	9.47	94	0.6
NITRATE (AS N)	0.100	ND	10.0	9.20	9.27	92	0.8
PHOSPHATE (AS P)	0.100	ND	10.0	9.87	10.0	99	1.6

NOTES:

ND:	NOT DETECTED
MB:	METHOD BLANK
SA:	SPIKE ADDED
SR:	SAMPLE RESULT
SP:	SPIKE RESULT
SPD:	SPIKE DUPLICATE RESULT
SP(%R):	SPIKE % RECOVERY
RPD:	RELATIVE PERCENT DIFFERENCE
MDL:	METHOD DETECTION LEVEL

K PRIME, INC.
LABORATORY BATCH QC REPORT

BATCH ID: 080614W1
DATE ANALYZED: 08/06/2014

METHOD: ANIONS
REFERENCE: EPA 300.0

SAMPLE ID: 123712
MATRIX SPIKE: 123712MS
MATRIX SPIKE DUPLICATE: 123712SD

SAMPLE TYPE: WATER
UNITS: mg/L

ANION NAME	MDL mg/L	SA mg/L	SR mg/L	SP mg/L	SPD mg/L	SP %R	RPD %
FLUORIDE	1.00	50.0	ND	51.1	51.3	102	0.4
CHLORIDE	1.00	50.0	33.3	84.9	85.2	103	0.3
NITRITE (AS N)	1.00	50.0	ND	54.2	54.5	108	0.6
SULFATE	1.00	50.0	19.1	70.8	71.3	103	0.7
BROMIDE	1.00	50.0	ND	49.1	50.0	98	1.7
NITRATE (AS N)	1.00	50.0	ND	47.2	47.7	94	0.9
PHOSPHATE (AS P)	1.00	50.0	ND	52.1	52.3	104	0.4

NOTES:

ND:	NOT DETECTED
MB:	METHOD BLANK
SA:	SPIKE ADDED
SR:	SAMPLE RESULT
SP:	SPIKE RESULT
SPD:	SPIKE DUPLICATE RESULT
SP(%R):	SPIKE % RECOVERY
RPD:	RELATIVE PERCENT DIFFERENCE
MDL:	METHOD DETECTION LEVEL

K PRIME, INC.

LABORATORY BATCH QC REPORT

METHOD: pH
REFERENCE: SM4500-H+B

BATCH ID: 080514W1
SAMPLE TYPE: WATER
UNITS: pH UNITS

I. PRECISION (DUPLICATE)

SAMPLE ID: 123712
DUPLICATE ID 123712DUP

COMPOUND NAME	REPORTING LIMIT	PRIMARY RESULT	DUPLICATE RESULT	RPD (%)
pH	NA	8.22	8.23	0.1

II. ACCURACY

REFERENCE ID: L080514W1

COMPOUND NAME	REPORTING LIMIT	CERTIFIED VALUE	FOUND VALUE	ACCURACY (%)
pH	NA	8.94	8.95	100

NOTES:

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE

K PRIME, INC.

LABORATORY BATCH QC REPORT

BATCH ID: 081114W1
SAMPLE TYPE: WATER
METHOD: ALKALINITY **DATE ANALYZED:** 8/11/2014
REFERENCE: SM2320B **UNITS:** mg/L $CaCO_3$

I. PRECISION (DUPLICATE)

SAMPLE ID: 123835
DUPLICATE ID: 123835DUP

ANALYTE	REPORTING LIMIT	PRIMARY RESULT	DUPLICATE RESULT	RPD (%)
ALKALINITY	10.0	135	132	1.9

II. ACCURACY

REFERENCE ID: L081114W1

ANALYTE	REPORTING LIMIT	CERTIFIED VALUE	FOUND VALUE	ACCURACY (%)
ALKALINITY	10.0	37.1	39.5	106

NOTES:

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE

K PRIME, INC.

LABORATORY BATCH QC REPORT

BATCH ID: 081114W1
DATE ANALYZED: 8/11/2014

METHOD: SPECIFIC CONDUCTANCE (EC)
REFERENCE: EPA 120.1

SAMPLE TYPE: WATER
UNITS: umhos/cm

I. METHOD BLANK **BLANK ID:** B081114W1

COMPOUND NAME	REPORTING LIMIT	SAMPLE RESULT
EC	1.00	ND

II. ACCURACY (LCS) **SPIKE ID:** L081114W1

COMPOUND NAME	REPORTING LIMIT	SPIKE ADDED	SPIKE RESULT	% RECOVERY
EC	1.00	511	510	100

III. PRECISION (DUPLICATE) **SAMPLE ID:** 123835
DUPLICATE ID: 123835DUP

COMPOUND NAME	REPORTING LIMIT	PRIMARY RESULT	DUPLICATE RESULT	RPD (%)
EC	1.00	975	975	0.0

NOTES:

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE

K PRIME, INC.
LABORATORY QC REPORT

METHOD: TDS - TOTAL DISSOLVED SOLIDS
REFERENCE: SM 2540C

BATCH ID: 081114W1
SAMPLE TYPE: WATER
UNITS: mg/L

I. METHOD BLANK

BLANK ID: B081114W1

COMPOUND NAME	REPORTING LIMIT	SAMPLE RESULT
TDS	10.0	ND

II. PRECISION (DUPLICATE)

SAMPLE ID: 123712
DUPLICATE ID: 123712DUP

COMPOUND NAME	REPORTING LIMIT	PRIMARY RESULT	DUPLICATE RESULT	RPD (%)
TDS	10.0	359	374	4.1

NOTES:

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE

Alpha Analytical Laboratories Inc.
e-mail: clientservices@alpha-labs.com
Corporate: 208 Mason St., Ukiah, CA 95482 • Phone: (707) 468-0401 • Fax: (707) 468-5267
Bay Area: 6398 Dougherty Rd., Suite 35, Dublin, CA 94568 • Phone: (925) 828-6226 • Fax: (925) 828-6309
Central Valley: 9090 Union Park Way, Suite 113, Elk Grove, CA 95624 • Phone: (916) 686-5190 • Fax: (916) 686-5192

ELAP Certificates 1551, 2728, and 2922

19 August 2014

K Prime
Attn: Carla Kagel
3621 Westwind Blvd.
Santa Rosa, CA 95403
RE: 9115
Work Order: 14H0424

Enclosed are the results of analyses for samples received by the laboratory on 08/06/14 16:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jeanette Poplin

Jeanette L. Poplin For Sheri L. Speaks
Project Manager

Alpha Analytical Laboratories Inc.
e-mail: clientservices@alpha-labs.com
Corporate: 208 Mason St., Ukiah, CA 95482 • Phone: (707) 468-0401 • Fax: (707) 468-5267
Bay Area: 6398 Dougherty Rd., Suite 35, Dublin, CA 94568 • Phone: (925) 828-6226 • Fax: (925) 828-6309
Central Valley: 9090 Union Park Way, Suite 113, Elk Grove, CA 95624 • Phone: (916) 686-5190 • Fax: (916) 686-5192

CHEMICAL EXAMINATION REPORT

K Prime
3621 Westwind Blvd.
Santa Rosa, CA 95403
Attn: Carla Kagel

Report Date: 08/19/14 10:51
Project No: 9115
Project ID: 9115

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
14H0424	08/06/2014 16:40	KPRIME	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
123712	14H0424-01	Water	08/05/14 07:50	08/06/14 16:40

Alpha Analytical Laboratories Inc.
e-mail: clientservices@alpha-labs.com
Corporate: 208 Mason St., Ukiah, CA 95482 • Phone: (707) 468-0401 • Fax: (707) 468-5267
Bay Area: 6398 Dougherty Rd., Suite 35, Dublin, CA 94568 • Phone: (925) 828-6226 • Fax: (925) 828-6309
Central Valley: 9090 Union Park Way, Suite 113, Elk Grove, CA 95624 • Phone: (916) 686-5190 • Fax: (916) 686-5192

CHEMICAL EXAMINATION REPORT

K Prime
3621 Westwind Blvd.
Santa Rosa, CA 95403
Attn: Carla Kagel

Report Date: 08/19/14 10:51
Project No: 9115
Project ID: 9115

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
14H0424	08/06/2014 16:40	KPRIME	

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
123712 (14H0424-01)			**Sample Type: Water**			**Sampled: 08/05/14 07:50**		
Metals by EPA 200 Series Methods								
Calcium	EPA 200.7	AH41426	08/14/14 09:28	08/15/14 15:17	1	**12 mg/L**	**1.0**	
Magnesium	"	"	"	"	"	**4.7 "**	**1.0**	
Conventional Chemistry Parameters by APHA/EPA Methods								
Color	SM2120B	AG42436	08/07/14 07:20	08/07/14 07:20	1	ND Color Units	5.0	
MBAS, calculated as LAS, mw 340	SM5540C	AH40530	08/07/14 07:15	08/15/14 11:30	"	ND mg/L	0.050	
Odor	EPA 140.1	AG42436	08/07/14 07:45	08/07/14 07:45	"	ND T.O.N.	1.0	T-1
Turbidity	SM2130B	AH40712	08/06/14 17:00	08/06/14 17:00	"	**0.13 NTU**	**0.10**	
Hardness, Total	SM2340B	AH41426	08/14/14 09:28	08/15/14 15:17	"	**50 mg/L**	**5**	

Alpha Analytical Laboratories Inc.
e-mail: clientservices@alpha-labs.com
Corporate: 208 Mason St., Ukiah, CA 95482 • Phone: (707) 468-0401 • Fax: (707) 468-5267
Bay Area: 6398 Dougherty Rd., Suite 35, Dublin, CA 94568 • Phone: (925) 828-6226 • Fax: (925) 828-6309
Central Valley: 9090 Union Park Way, Suite 113, Elk Grove, CA 95624 • Phone: (916) 686-5190 • Fax: (916) 686-5192

CHEMICAL EXAMINATION REPORT

K Prime
3621 Westwind Blvd.
Santa Rosa, CA 95403
Attn: Carla Kagel

Report Date: 08/19/14 10:51
Project No: 9115
Project ID: 9115

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
14H0424	08/06/2014 16:40	KPRIME	

Metals by EPA 200 Series Methods - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch AH41426 - Metals Digest										
Blank (AH41426-BLK1)				Prepared: 08/14/14 Analyzed: 08/15/14						
Calcium	ND	1.0	mg/L							
Magnesium	ND	1.0	"							
LCS (AH41426-BS1)				Prepared: 08/14/14 Analyzed: 08/15/14						
Calcium	7.61	1.0	mg/L	8.00		95.2	85-115			
Magnesium	7.71	1.0	"	8.00		96.3	85-115			
Duplicate (AH41426-DUP1)	**Source: 14H0814-01**			Prepared: 08/14/14 Analyzed: 08/15/14						
Calcium	51.8	1.0	mg/L		50.2			3.26	20	
Magnesium	34.6	1.0	"		32.7			5.73	20	
Matrix Spike (AH41426-MS1)	**Source: 14H0814-01**			Prepared: 08/14/14 Analyzed: 08/15/14						
Calcium	56.7	1.0	mg/L	8.00	50.2	81.8	70-130			
Magnesium	37.6	1.0	"	8.00	32.7	60.8	70-130			QM-4X
Matrix Spike (AH41426-MS2)	**Source: 14H0838-01**			Prepared: 08/14/14 Analyzed: 08/15/14						
Calcium	45.9	1.0	mg/L	8.00	41.6	53.8	70-130			QM-4X
Magnesium	23.0	1.0	"	8.00	17.1	73.9	70-130			
Matrix Spike Dup (AH41426-MSD1)	**Source: 14H0814-01**			Prepared: 08/14/14 Analyzed: 08/15/14						
Calcium	54.9	1.0	mg/L	8.00	50.2	59.5	70-130	3.19	20	QM-4X
Magnesium	38.9	1.0	"	8.00	32.7	76.7	70-130	3.34	20	

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CHEMICAL EXAMINATION REPORT

K Prime
3621 Westwind Blvd.
Santa Rosa, CA 95403
Attn: Carla Kagel

Report Date: 08/19/14 10:51
Project No: 9115
Project ID: 9115

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
14H0424	08/06/2014 16:40	KPRIME	

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch AH40530 - General Preparation										
Blank (AH40530-BLK1)				Prepared: 08/05/14 Analyzed: 08/15/14						
MBAS, calculated as LAS, mw 340	ND	0.050	mg/L							
LCS (AH40530-BS1)				Prepared: 08/05/14 Analyzed: 08/15/14						
MBAS, calculated as LAS, mw 340	0.216	0.050	mg/L	0.200		108	80-120			
LCS Dup (AH40530-BSD1)				Prepared: 08/05/14 Analyzed: 08/15/14						
MBAS, calculated as LAS, mw 340	0.213	0.050	mg/L	0.200		106	80-120	1.68	20	
Duplicate (AH40530-DUP1)		Source: 14H0424-01		Prepared: 08/05/14 Analyzed: 08/15/14						
MBAS, calculated as LAS, mw 340	ND	0.050	mg/L		ND				20	
Matrix Spike (AH40530-MS1)		Source: 14H0424-01		Prepared: 08/05/14 Analyzed: 08/15/14						
MBAS, calculated as LAS, mw 340	0.207	0.050	mg/L	0.200	ND	104	80-120			
Matrix Spike Dup (AH40530-MSD1)		Source: 14H0424-01		Prepared: 08/05/14 Analyzed: 08/15/14						
MBAS, calculated as LAS, mw 340	0.202	0.050	mg/L	0.200	ND	101	80-120	2.64	20	
Batch AH41426 - Metals Digest										
Blank (AH41426-BLK1)				Prepared: 08/14/14 Analyzed: 08/15/14						
Hardness, Total	ND	5	mg/L							
Duplicate (AH41426-DUP1)		Source: 14H0814-01		Prepared: 08/14/14 Analyzed: 08/15/14						
Hardness, Total	272	5	mg/L		260			4.55	20	

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CHEMICAL EXAMINATION REPORT

K Prime
3621 Westwind Blvd.
Santa Rosa, CA 95403
Attn: Carla Kagel

Report Date: 08/19/14 10:51
Project No: 9115
Project ID: 9115

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
14H0424	08/06/2014 16:40	KPRIME	

Notes and Definitions

QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
T-1	This sample was received outside recommended holding time.
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
PQL	Practical Quantitation Limit

BSK Associates Engineers & Laboratories

Fresno Analytical Laboratory
1414 Stanislaus St
Fresno, CA93706
559-497-2888 (Main)
559-485-6935 (FAX)

Partial - A4H0770

08/21/2014

Carla Kagel
K Prime Laboratory
3621 Westwind Blvd
Santa Rosa, CA 95403

RE: Report for A4H0770 General Chemistry

Dear Carla Kagel,

The results listed on this Partial report reflect only a subset of those requested on the Chain of Custody. The results may not be inclusive of all qualifications, narrations, and rightness review. The results are not intended as a substitute for our final report, the Certificate of Analysis, with all information contained therein. All data presented in this report must be considered preliminary and subject to change unless presented on a final Certificate of Analysis. Only the final Certificate of Analysis, either in hardcopy or Adobe PDF format with an authorizing signature, shall be considered the official version of our analytical results.

If additional clarification of any information is required, please contact your Client Services Representative, Renea Rangell at (800) 877-8310 or (559) 497-2888 x233.

BSK ANALYTICAL LABORATORIES

Case Narrative

Project and Report Details		Invoice Details	
Client:	K Prime Laboratory	**Invoice To:**	K Prime Laboratory
Report To:	Carla Kagel	**Invoice Attn:**	Shelly Albertson
Project #:	9115	**Project PO#:**	-
Received:	8/07/2014 - 12:02		
Report Due:	8/21/2014		

Sample Receipt Conditions

Cooler: Default Cooler
Temperature on Receipt °C: 4.6

Containers Intact
COC/Labels Agree
Received On Blue Ice
Packing Material - Other
Sample(s) were received in temperature range.
Initial receipt at BSK-FAL

Data Qualifiers

The following qualifiers have been applied to one or more analytical results:

B2.0	Analyte present in the method blank above the method detection limit (MDL). Laboratory does not determine batch acceptance on detections below the reporting limit (RL).
BS	Blank spike recoveries did not meet acceptance limits.
BS1.0	Blank spike recovery for this analyte was biased high; no material impact on reported result as sample is ND for this parameter.
CV0.0	CCV recovery was above method acceptance limits; no material impact on reported result as sample is ND for this parameter.
MS1.0	Matrix spike recoveries exceed control limits.

Report Distribution

Recipient(s)	Report Format	CC:
Carla Kagel	FINAL.RPT	
Shelly Albertson	FINAL.RPT	

Certificate of Analysis

Sample ID: A4H0770-01
Sampled By: Client
Sample Description: 123712

Sample Date - Time: 08/05/14 - 07:50
Matrix: Water
Sample Type: Grab

BSK Associates Fresno

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Cyanide (total)	SM 4500-CN E	ND	0.0050	mg/L	1	A410010	08/08/14	08/11/14	
Conductivity @ 25C	SM 2510B	620	1.0	umhos/cm	1	A410005	08/08/14	08/08/14	
Perchlorate	EPA 314.0	ND	2.0	ug/L	1	A410249	08/14/14	08/14/14	

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Calcium	EPA 200.7	13	0.10	mg/L	1	A410103	08/11/14	08/18/14	
Iron	EPA 200.7	ND	0.030	mg/L	1	A410103	08/11/14	08/18/14	
Iron - Dissolved (1)	EPA 200.7	ND	0.030	mg/L	1	A410272	08/14/14	08/18/14	
Magnesium	EPA 200.7	5.1	0.10	mg/L	1	A410103	08/11/14	08/18/14	
Potassium	EPA 200.7	ND	2.0	mg/L	1	A410103	08/11/14	08/18/14	
Sodium	EPA 200.7	120	1.0	mg/L	1	A410103	08/11/14	08/18/14	
Uranium	EPA 200.8	ND	1.0	ug/L	1	A410103	08/11/14	08/19/14	
Uranium, Radiological		< 0.67		pCi/L					

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
1,1,1,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,1,1-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,1,2,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 524.2	ND	10	ug/L	1	A409983	08/08/14	08/08/14	
1,1,2-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,1-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,1-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,1-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,2,3-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,2,4-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,2,4-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,2-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,2-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,3,5-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,3-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,3-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,4-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
2,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
2-Butanone	EPA 524.2	ND	5.0	ug/L	1	A409983	08/08/14	08/08/14	BS1.0, CV0.0
2-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	

Certificate of Analysis

Sample ID: A4H0770-01
Sampled By: Client
Sample Description: 123712

Sample Date - Time: 08/05/14 - 07:50
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
2-Hexanone	EPA 524.2	ND	10	ug/L	1	A409983	08/08/14	08/08/14	
4-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
4-Methyl-2-pentanone	EPA 524.2	ND	5.0	ug/L	1	A409983	08/08/14	08/08/14	
Acetone	EPA 524.2	ND	10	ug/L	1	A409983	08/08/14	08/08/14	BS1.0, CV0.0
Benzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Bromobenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Bromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	BS1.0
Bromodichloromethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Bromomethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	BS1.0, CV0.0
Carbon Tetrachloride	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Chlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Chloroethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Chloroform	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Chloromethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
cis-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
cis-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Dibromomethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Dichlorodifluoromethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	BS1.0, CV0.0
Dichloromethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Di-isopropyl ether (DIPE)	EPA 524.2	ND	3.0	ug/L	1	A409983	08/08/14	08/08/14	
Ethyl tert-Butyl Ether (ETBE)	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Ethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Hexachlorobutadiene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Isopropylbenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
m,p-Xylenes	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Methyl-t-butyl ether	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Naphthalene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
n-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
n-Propylbenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
o-Xylene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
p-Isopropyltoluene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
sec-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Styrene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	BS1.0
tert-Amyl Methyl Ether (TAME)	EPA 524.2	ND	3.0	ug/L	1	A409983	08/08/14	08/08/14	
tert-Butyl alcohol (TBA)	EPA 524.2	ND	2.0	ug/L	1	A409983	08/08/14	08/08/14	
tert-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Tetrachloroethene (PCE)	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Toluene	EPA 524.2	**0.65**	0.50	ug/L	1	A409983	08/08/14	08/08/14	

Certificate of Analysis

Sample ID: A4H0770-01
Sampled By: Client
Sample Description: 123712

Sample Date - Time: 08/05/14 - 07:50
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
trans-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
trans-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Trichloroethene (TCE)	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Trichlorofluoromethane	EPA 524.2	ND	5.0	ug/L	1	A409983	08/08/14	08/08/14	BS1.0
Vinyl Chloride	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	BS1.0, CV0.0
Surrogate: 1,2-Dichlorobenzene-d4	EPA 524.2	107 %	*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 524.2	111 %	*Acceptable range: 70-130 %*						
Total 1,3-Dichloropropene, EPA 524.2		ND	0.50	ug/L					
Total Trihalomethanes, EPA 524.2		ND	0.50	ug/L					
Total Xylenes, EPA 524.2		ND	0.50	ug/L					
Semi-Volatile Organics by GC-MS									
Alachlor	EPA 525.2	ND	1.0	ug/L	1	A410269	08/14/14	08/14/14	
Atrazine	EPA 525.2	ND	0.50	ug/L	1	A410269	08/14/14	08/14/14	
Benzo(a)pyrene	EPA 525.2	ND	0.10	ug/L	1	A410269	08/14/14	08/14/14	
Bis(2-ethylhexyl) adipate	EPA 525.2	ND	3.0	ug/L	1	A410269	08/14/14	08/14/14	
Bis(2-ethylhexyl) phthalate	EPA 525.2	ND	3.0	ug/L	1	A410269	08/14/14	08/14/14	
Bromacil	EPA 525.2	ND	10	ug/L	1	A410269	08/14/14	08/14/14	
Butachlor	EPA 525.2	ND	0.38	ug/L	1	A410269	08/14/14	08/14/14	
Diazinon	EPA 525.2	ND	0.25	ug/L	1	A410269	08/14/14	08/14/14	
Dimethoate	EPA 525.2	ND	10	ug/L	1	A410269	08/14/14	08/14/14	
Metolachlor	EPA 525.2	ND	0.50	ug/L	1	A410269	08/14/14	08/14/14	
Metribuzin	EPA 525.2	ND	0.50	ug/L	1	A410269	08/14/14	08/14/14	
Molinate	EPA 525.2	ND	2.0	ug/L	1	A410269	08/14/14	08/14/14	
Propachlor	EPA 525.2	ND	0.50	ug/L	1	A410269	08/14/14	08/14/14	
Simazine	EPA 525.2	ND	1.0	ug/L	1	A410269	08/14/14	08/14/14	
Thiobencarb	EPA 525.2	ND	1.0	ug/L	1	A410269	08/14/14	08/14/14	
Surrogate: 1,3-Dimethyl-2-nitrobenzene	EPA 525.2	102 %	*Acceptable range: 70-130 %*						

BSK Associates Fresno

General Chemistry Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 314.0 - Quality Control											
Batch: A410249										Prepared: 08/14/2014	
Prep Method: Method Specific Preparation										Analyst: RCN	
Blank (A410249-BLK1)											
Perchlorate	ND	2.0	ug/L							08/14/14	
Blank Spike (A410249-BS1)											
Perchlorate	26	2.0	ug/L	25		102	85-115			08/14/14	
Blank Spike Dup (A410249-BSD1)											
Perchlorate	26	2.0	ug/L	25		102	85-115	0	15	08/14/14	
Matrix Spike (A410249-MS1), Source: A4H1151-01											
Perchlorate	12	2.0	ug/L	15	ND	78	80-120			08/14/14	MS1.0 *Low*
Matrix Spike (A410249-MS2), Source: A4H0831-01											
Perchlorate	5.9	2.0	ug/L	7.5	ND	79	80-120			08/14/14	MS1.0 *Low*
Matrix Spike Dup (A410249-MSD1), Source: A4H1151-01											
Perchlorate	12	2.0	ug/L	15	ND	77	80-120	1	15	08/14/14	MS1.0 *Low*
Matrix Spike Dup (A410249-MSD2), Source: A4H0831-01											
Perchlorate	5.1	2.0	ug/L	7.5	ND	68	80-120	14	15	08/14/14	MS1.0 *Low*
SM 2510B - Quality Control											
Batch: A410005										Prepared: 08/08/2014	
Prep Method: Method Specific Preparation										Analyst: CEG	
Blank (A410005-BLK1)											
Conductivity @ 25C	ND	1.0	umhos/cm							08/08/14	
Duplicate (A410005-DUP1), Source: A4H0678-01											
Conductivity @ 25C	800	1.0	umhos/cm		800			0	20	08/08/14	
Duplicate (A410005-DUP2), Source: A4H0770-01											
Conductivity @ 25C	620	1.0	umhos/cm		620			0	20	08/08/14	
SM 4500-CN E - Quality Control											
Batch: A410010										Prepared: 08/08/2014	
Prep Method: Total Cyanide Distillation										Analyst: KKC	
Blank (A410010-BLK1)											
Cyanide (total)	ND	0.0050	mg/L							08/11/14	
Blank Spike (A410010-BS1)											
Cyanide (total)	0.24	0.0050	mg/L	0.25		98	80-120			08/11/14	

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General Chemistry Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
SM 4500-CN E - Quality Control											
Batch: A410010										Prepared: 08/08/2014	
Prep Method: Total Cyanide Distillation										Analyst: KKC	
Blank Spike Dup (A410010-BSD1)											
Cyanide (total)	0.24	0.0050	mg/L	0.25		98	80-120	1	20	08/11/14	
Matrix Spike (A410010-MS1), Source: A4H0491-01											
Cyanide (total)	0.24	0.0050	mg/L	0.25	ND	97	80-120			08/11/14	
Matrix Spike (A410010-MS2), Source: A4H0775-01											
Cyanide (total)	0.26	0.0050	mg/L	0.25	0.020	95	80-120			08/11/14	
Matrix Spike Dup (A410010-MSD1), Source: A4H0491-01											
Cyanide (total)	0.24	0.0050	mg/L	0.25	ND	96	80-120	1	20	08/11/14	
Matrix Spike Dup (A410010-MSD2), Source: A4H0775-01											
Cyanide (total)	0.27	0.0050	mg/L	0.25	0.020	99	80-120	4	20	08/11/14	

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Metals Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 200.7 - Quality Control											
Batch: A410103										Prepared: 08/11/2014	
Prep Method: EPA 200.2										Analyst: NYY	
Blank (A410103-BLK2)											
Calcium	ND	0.10	mg/L							08/18/14	
Iron	ND	0.030	mg/L							08/18/14	
Magnesium	ND	0.10	mg/L							08/18/14	
Potassium	ND	2.0	mg/L							08/18/14	
Sodium	ND	1.0	mg/L							08/18/14	
Blank Spike (A410103-BS2)											
Calcium	9.2	0.10	mg/L	10		92	85-115			08/18/14	
Iron	2.0	0.030	mg/L	2.0		98	85-115			08/18/14	
Magnesium	9.3	0.10	mg/L	10		93	85-115			08/18/14	
Potassium	9.3	2.0	mg/L	10		93	85-115			08/18/14	
Sodium	9.8	1.0	mg/L	10		98	85-115			08/18/14	
Blank Spike Dup (A410103-BSD2)											
Calcium	9.3	0.10	mg/L	10		93	85-115	1	20	08/18/14	
Iron	2.0	0.030	mg/L	2.0		100	85-115	2	20	08/18/14	
Magnesium	9.4	0.10	mg/L	10		94	85-115	1	20	08/18/14	
Potassium	9.4	2.0	mg/L	10		94	85-115	1	20	08/18/14	
Sodium	10	1.0	mg/L	10		100	85-115	2	20	08/18/14	
Matrix Spike (A410103-MS3), Source: A4H0749-01											
Calcium	9.3	0.10	mg/L	10	ND	93	70-130			08/18/14	
Iron	2.0	0.030	mg/L	2.0	ND	99	70-130			08/18/14	
Magnesium	9.4	0.10	mg/L	10	ND	94	70-130			08/18/14	
Potassium	9.5	2.0	mg/L	10	ND	95	70-130			08/18/14	
Sodium	28	1.0	mg/L	10	18	100	70-130			08/18/14	
Matrix Spike (A410103-MS4), Source: A4H0909-01											
Calcium	26	0.10	mg/L	10	18	83	70-130			08/18/14	
Iron	1.9	0.030	mg/L	2.0	0.032	96	70-130			08/18/14	
Magnesium	11	0.10	mg/L	10	2.1	91	70-130			08/18/14	
Potassium	11	2.0	mg/L	10	ND	92	70-130			08/18/14	
Sodium	16	1.0	mg/L	10	5.9	98	70-130			08/18/14	
Matrix Spike Dup (A410103-MSD3), Source: A4H0749-01											
Calcium	9.1	0.10	mg/L	10	ND	91	70-130	3	20	08/18/14	
Iron	1.9	0.030	mg/L	2.0	ND	95	70-130	3	20	08/18/14	
Magnesium	9.1	0.10	mg/L	10	ND	91	70-130	3	20	08/18/14	
Potassium	9.1	2.0	mg/L	10	ND	91	70-130	4	20	08/18/14	
Sodium	27	1.0	mg/L	10	18	87	70-130	5	20	08/18/14	
Matrix Spike Dup (A410103-MSD4), Source: A4H0909-01											
Calcium	27	0.10	mg/L	10	18	90	70-130	3	20	08/18/14	
Iron	2.0	0.030	mg/L	2.0	0.032	97	70-130	1	20	08/18/14	
Magnesium	11	0.10	mg/L	10	2.1	92	70-130	1	20	08/18/14	

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Metals Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 200.7 - Quality Control											
Batch: A410103										Prepared: 08/11/2014	
Prep Method: EPA 200.2										Analyst: NYY	
Matrix Spike Dup (A410103-MSD4), Source: A4H0909-01											
Potassium	11	2.0	mg/L	10	ND	92	70-130	0	20	08/18/14	
Sodium	16	1.0	mg/L	10	5.9	99	70-130	1	20	08/18/14	
EPA 200.7 - Quality Control											
Batch: A410272										Prepared: 08/14/2014	
Prep Method: Filtration - Metals										Analyst: NYY	
Blank (A410272-BLK2)											
Iron - Dissolved (1)	ND	0.030	mg/L							08/18/14	
Blank Spike (A410272-BS2)											
Iron - Dissolved (1)	1.9	0.030	mg/L	2.0		97	85-115			08/18/14	
Blank Spike Dup (A410272-BSD2)											
Iron - Dissolved (1)	2.0	0.030	mg/L	2.0		98	85-115	1	20	08/18/14	
Matrix Spike (A410272-MS3), Source: A4H0739-01											
Iron - Dissolved (1)	2.0	0.030	mg/L	2.0	ND	98	70-130			08/18/14	
Matrix Spike (A410272-MS4), Source: A4H0861-01											
Iron - Dissolved (1)	1.9	0.030	mg/L	2.0	ND	96	70-130			08/18/14	
Matrix Spike Dup (A410272-MSD3), Source: A4H0739-01											
Iron - Dissolved (1)	2.0	0.030	mg/L	2.0	ND	98	70-130	0	20	08/18/14	
Matrix Spike Dup (A410272-MSD4), Source: A4H0861-01											
Iron - Dissolved (1)	1.9	0.030	mg/L	2.0	ND	96	70-130	0	20	08/18/14	
EPA 200.8 - Quality Control											
Batch: A410103										Prepared: 08/11/2014	
Prep Method: EPA 200.2										Analyst: MAS	
Blank (A410103-BLK1)											
Uranium	ND	1.0	ug/L							08/19/14	
Blank Spike (A410103-BS1)											
Uranium	100	1.0	ug/L	100		103	85-115			08/19/14	
Blank Spike Dup (A410103-BSD1)											
Uranium	95	1.0	ug/L	100		95	85-115	8	20	08/19/14	
Matrix Spike (A410103-MS1), Source: A4H0749-01											
Uranium	97	1.0	ug/L	100	ND	97	70-130			08/19/14	

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Metals Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 200.8 - Quality Control											
Batch: A410103										Prepared: 08/11/2014	
Prep Method: EPA 200.2										Analyst: MAS	
Matrix Spike Dup (A410103-MSD1), Source: A4H0749-01											
Uranium	97	1.0	ug/L	100	ND	97	70-130	0	20	08/19/14	

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Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual

EPA 524.2 - Quality Control

Batch: A409983 Prepared: 08/08/2014

Prep Method: EPA 524.2 Analyst: JGB

Blank (A409983-BLK1)

1,1,1,2-Tetrachloroethane	ND	0.50	ug/L							08/08/14	
1,1,1-Trichloroethane	ND	0.50	ug/L							08/08/14	
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L							08/08/14	
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	10	ug/L							08/08/14	
1,1,2-Trichloroethane	ND	0.50	ug/L							08/08/14	
1,1-Dichloroethane	ND	0.50	ug/L							08/08/14	
1,1-Dichloroethene	ND	0.50	ug/L							08/08/14	
1,1-Dichloropropene	ND	0.50	ug/L							08/08/14	
1,2,3-Trichlorobenzene	ND	0.50	ug/L							08/08/14	
1,2,4-Trichlorobenzene	ND	0.50	ug/L							08/08/14	
1,2,4-Trimethylbenzene	ND	0.50	ug/L							08/08/14	
1,2-Dichlorobenzene	ND	0.50	ug/L							08/08/14	
1,2-Dichloroethane	ND	0.50	ug/L							08/08/14	
1,2-Dichloropropane	ND	0.50	ug/L							08/08/14	
1,3,5-Trimethylbenzene	ND	0.50	ug/L							08/08/14	
1,3-Dichlorobenzene	ND	0.50	ug/L							08/08/14	
1,3-Dichloropropane	ND	0.50	ug/L							08/08/14	
1,4-Dichlorobenzene	ND	0.50	ug/L							08/08/14	
2,2-Dichloropropane	ND	0.50	ug/L							08/08/14	
2-Butanone	ND	5.0	ug/L							08/08/14	
2-Chlorotoluene	ND	0.50	ug/L							08/08/14	
2-Hexanone	ND	10	ug/L							08/08/14	
4-Chlorotoluene	ND	0.50	ug/L							08/08/14	
4-Methyl-2-pentanone	ND	5.0	ug/L							08/08/14	
Acetone	ND	10	ug/L							08/08/14	
Benzene	ND	0.50	ug/L							08/08/14	
Bromobenzene	ND	0.50	ug/L							08/08/14	
Bromochloromethane	ND	0.50	ug/L							08/08/14	
Bromodichloromethane	ND	0.50	ug/L							08/08/14	
Bromoform	ND	0.50	ug/L							08/08/14	B2.0
Bromomethane	ND	0.50	ug/L							08/08/14	
Carbon Tetrachloride	ND	0.50	ug/L							08/08/14	
Chlorobenzene	ND	0.50	ug/L							08/08/14	
Chloroethane	ND	0.50	ug/L							08/08/14	
Chloroform	ND	0.50	ug/L							08/08/14	
Chloromethane	ND	0.50	ug/L							08/08/14	
cis-1,2-Dichloroethene	ND	0.50	ug/L							08/08/14	
cis-1,3-Dichloropropene	ND	0.50	ug/L							08/08/14	
Dibromochloromethane	ND	0.50	ug/L							08/08/14	B2.0
Dibromomethane	ND	0.50	ug/L							08/08/14	
Dichlorodifluoromethane	ND	0.50	ug/L							08/08/14	
Dichloromethane	ND	0.50	ug/L							08/08/14	
Di-isopropyl ether (DIPE)	ND	3.0	ug/L							08/08/14	
Ethyl tert-Butyl Ether (ETBE)	ND	0.50	ug/L							08/08/14	
Ethylbenzene	ND	0.50	ug/L							08/08/14	

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 524.2 - Quality Control											
Batch: A409983										Prepared: 08/08/2014	
Prep Method: EPA 524.2										Analyst: JGB	
Blank (A409983-BLK1)											
Hexachlorobutadiene	ND	0.50	ug/L							08/08/14	
Isopropylbenzene	ND	0.50	ug/L							08/08/14	
m,p-Xylenes	ND	0.50	ug/L							08/08/14	
Methyl-t-butyl ether	ND	0.50	ug/L							08/08/14	
Naphthalene	ND	0.50	ug/L							08/08/14	
n-Butylbenzene	ND	0.50	ug/L							08/08/14	B2.0
n-Propylbenzene	ND	0.50	ug/L							08/08/14	
o-Xylene	ND	0.50	ug/L							08/08/14	
p-Isopropyltoluene	ND	0.50	ug/L							08/08/14	
sec-Butylbenzene	ND	0.50	ug/L							08/08/14	
Styrene	ND	0.50	ug/L							08/08/14	
tert-Amyl Methyl Ether (TAME)	ND	3.0	ug/L							08/08/14	
tert-Butyl alcohol (TBA)	ND	2.0	ug/L							08/08/14	
tert-Butylbenzene	ND	0.50	ug/L							08/08/14	
Tetrachloroethene (PCE)	ND	0.50	ug/L							08/08/14	
Toluene	ND	0.50	ug/L							08/08/14	
trans-1,2-Dichloroethene	ND	0.50	ug/L							08/08/14	
trans-1,3-Dichloropropene	ND	0.50	ug/L							08/08/14	
Trichloroethene (TCE)	ND	0.50	ug/L							08/08/14	
Trichlorofluoromethane	ND	5.0	ug/L							08/08/14	
Vinyl Chloride	ND	0.50	ug/L							08/08/14	
Surrogate: 1,2-Dichlorobenzene-d4	*5.1*			*5.0*		*102*	*70-130*			08/08/14	
Surrogate: Bromofluorobenzene	*53*			*50*		*106*	*70-130*			08/08/14	
Blank Spike (A409983-BS1)											
1,1,1,2-Tetrachloroethane	11	0.50	ug/L	10		110	70-130			08/08/14	
1,1,1-Trichloroethane	12	0.50	ug/L	10		116	70-130			08/08/14	
1,1,2,2-Tetrachloroethane	11	0.50	ug/L	10		112	70-130			08/08/14	
1,1,2-Trichloro-1,2,2-trifluoroethane	11	10	ug/L	10		111	70-130			08/08/14	
1,1,2-Trichloroethane	11	0.50	ug/L	10		114	70-130			08/08/14	
1,1-Dichloroethane	12	0.50	ug/L	10		119	70-130			08/08/14	
1,1-Dichloroethene	12	0.50	ug/L	10		116	70-130			08/08/14	
1,1-Dichloropropene	12	0.50	ug/L	10		120	70-130			08/08/14	
1,2,3-Trichlorobenzene	9.5	0.50	ug/L	10		95	70-130			08/08/14	
1,2,4-Trichlorobenzene	9.7	0.50	ug/L	10		97	70-130			08/08/14	
1,2,4-Trimethylbenzene	11	0.50	ug/L	10		113	70-130			08/08/14	
1,2-Dichlorobenzene	11	0.50	ug/L	10		107	70-130			08/08/14	
1,2-Dichloroethane	11	0.50	ug/L	10		112	70-130			08/08/14	
1,2-Dichloropropane	12	0.50	ug/L	10		118	70-130			08/08/14	
1,3,5-Trimethylbenzene	12	0.50	ug/L	10		117	70-130			08/08/14	
1,3-Dichlorobenzene	11	0.50	ug/L	10		109	70-130			08/08/14	
1,3-Dichloropropane	11	0.50	ug/L	10		113	70-130			08/08/14	
1,4-Dichlorobenzene	11	0.50	ug/L	10		108	70-130			08/08/14	
2,2-Dichloropropane	11	0.50	ug/L	10		112	70-130			08/08/14	
2-Butanone	13	5.0	ug/L	10		126	70-130			08/08/14	

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Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual	
EPA 524.2 - Quality Control												
Batch: A409983										Prepared: 08/08/2014		
Prep Method: EPA 524.2										Analyst: JGB		
Blank Spike (A409983-BS1)												
2-Chlorotoluene	11	0.50	ug/L	10		112	70-130			08/08/14		
2-Hexanone	11	10	ug/L	10		114	70-130			08/08/14		
4-Chlorotoluene	11	0.50	ug/L	10		113	70-130			08/08/14		
4-Methyl-2-pentanone	11	5.0	ug/L	10		114	70-130			08/08/14		
Acetone	13	10	ug/L	10		127	70-130			08/08/14		
Benzene	12	0.50	ug/L	10		117	70-130			08/08/14		
Bromobenzene	11	0.50	ug/L	10		112	70-130			08/08/14		
Bromochloromethane	13	0.50	ug/L	10		129	70-130			08/08/14		
Bromodichloromethane	12	0.50	ug/L	10		117	70-130			08/08/14		
Bromoform	12	0.50	ug/L	10		117	70-130			08/08/14		
Bromomethane	15	0.50	ug/L	10		149	70-130			08/08/14	BS	*High*
Carbon Tetrachloride	12	0.50	ug/L	10		120	70-130			08/08/14		
Chlorobenzene	11	0.50	ug/L	10		111	70-130			08/08/14		
Chloroethane	12	0.50	ug/L	10		121	70-130			08/08/14		
Chloroform	12	0.50	ug/L	10		116	70-130			08/08/14		
Chloromethane	12	0.50	ug/L	10		120	70-130			08/08/14		
cis-1,2-Dichloroethene	12	0.50	ug/L	10		115	70-130			08/08/14		
cis-1,3-Dichloropropene	12	0.50	ug/L	10		116	70-130			08/08/14		
Dibromochloromethane	12	0.50	ug/L	10		115	70-130			08/08/14		
Dibromomethane	11	0.50	ug/L	10		114	70-130			08/08/14		
Dichlorodifluoromethane	14	0.50	ug/L	10		136	70-130			08/08/14	BS	*High*
Dichloromethane	12	0.50	ug/L	10		116	70-130			08/08/14		
Di-isopropyl ether (DIPE)	11	3.0	ug/L	10		115	70-130			08/08/14		
Ethyl tert-Butyl Ether (ETBE)	11	0.50	ug/L	10		112	70-130			08/08/14		
Ethylbenzene	11	0.50	ug/L	10		113	70-130			08/08/14		
Hexachlorobutadiene	10	0.50	ug/L	10		101	70-130			08/08/14		
Isopropylbenzene	11	0.50	ug/L	10		113	70-130			08/08/14		
m,p-Xylenes	23	0.50	ug/L	20		116	70-130			08/08/14		
Methyl-t-butyl ether	23	0.50	ug/L	20		114	70-130			08/08/14		
Naphthalene	9.6	0.50	ug/L	10		96	70-130			08/08/14		
n-Butylbenzene	11	0.50	ug/L	10		113	70-130			08/08/14		
n-Propylbenzene	12	0.50	ug/L	10		116	70-130			08/08/14		
o-Xylene	11	0.50	ug/L	10		113	70-130			08/08/14		
p-Isopropyltoluene	11	0.50	ug/L	10		111	70-130			08/08/14		
sec-Butylbenzene	11	0.50	ug/L	10		113	70-130			08/08/14		
Styrene	13	0.50	ug/L	10		129	70-130			08/08/14		
tert-Amyl Methyl Ether (TAME)	11	3.0	ug/L	10		114	70-130			08/08/14		
tert-Butyl alcohol (TBA)	11	2.0	ug/L	10		111	70-130			08/08/14		
tert-Butylbenzene	11	0.50	ug/L	10		112	70-130			08/08/14		
Tetrachloroethene (PCE)	10	0.50	ug/L	10		104	70-130			08/08/14		
Toluene	12	0.50	ug/L	10		115	70-130			08/08/14		
trans-1,2-Dichloroethene	12	0.50	ug/L	10		118	70-130			08/08/14		
trans-1,3-Dichloropropene	11	0.50	ug/L	10		113	70-130			08/08/14		
Trichloroethene (TCE)	11	0.50	ug/L	10		111	70-130			08/08/14		
Trichlorofluoromethane	13	5.0	ug/L	10		126	70-130			08/08/14		

BSK Associates Fresno
Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual	
EPA 524.2 - Quality Control												
Batch: A409983										Prepared: 08/08/2014		
Prep Method: EPA 524.2										Analyst: JGB		
Blank Spike (A409983-BS1)												
Vinyl Chloride	14	0.50	ug/L	10		144	70-130			08/08/14	BS	*High*
Surrogate: 1,2-Dichlorobenzene-d4	*5.6*			*5.0*		*112*	*70-130*			08/08/14		
Surrogate: Bromofluorobenzene	*57*			*50*		*113*	*70-130*			08/08/14		
Blank Spike Dup (A409983-BSD1)												
1,1,1,2-Tetrachloroethane	11	0.50	ug/L	10		115	70-130	4	30	08/08/14		
1,1,1-Trichloroethane	12	0.50	ug/L	10		118	70-130	2	30	08/08/14		
1,1,2,2-Tetrachloroethane	12	0.50	ug/L	10		122	70-130	8	30	08/08/14		
1,1,2-Trichloro-1,2,2-trifluoroethane	12	10	ug/L	10		115	70-130	4	30	08/08/14		
1,1,2-Trichloroethane	12	0.50	ug/L	10		119	70-130	5	30	08/08/14		
1,1-Dichloroethane	12	0.50	ug/L	10		122	70-130	2	30	08/08/14		
1,1-Dichloroethene	12	0.50	ug/L	10		121	70-130	4	30	08/08/14		
1,1-Dichloropropene	12	0.50	ug/L	10		123	70-130	2	30	08/08/14		
1,2,3-Trichlorobenzene	10	0.50	ug/L	10		102	70-130	7	30	08/08/14		
1,2,4-Trichlorobenzene	10	0.50	ug/L	10		103	70-130	7	30	08/08/14		
1,2,4-Trimethylbenzene	12	0.50	ug/L	10		120	70-130	6	30	08/08/14		
1,2-Dichlorobenzene	11	0.50	ug/L	10		112	70-130	5	30	08/08/14		
1,2-Dichloroethane	12	0.50	ug/L	10		117	70-130	4	30	08/08/14		
1,2-Dichloropropane	12	0.50	ug/L	10		123	70-130	4	30	08/08/14		
1,3,5-Trimethylbenzene	12	0.50	ug/L	10		123	70-130	5	30	08/08/14		
1,3-Dichlorobenzene	11	0.50	ug/L	10		113	70-130	4	30	08/08/14		
1,3-Dichloropropane	12	0.50	ug/L	10		119	70-130	5	30	08/08/14		
1,4-Dichlorobenzene	11	0.50	ug/L	10		112	70-130	4	30	08/08/14		
2,2-Dichloropropane	11	0.50	ug/L	10		114	70-130	2	30	08/08/14		
2-Butanone	14	5.0	ug/L	10		138	70-130	9	30	08/08/14	BS	*High*
2-Chlorotoluene	12	0.50	ug/L	10		116	70-130	3	30	08/08/14		
2-Hexanone	13	10	ug/L	10		125	70-130	9	30	08/08/14		
4-Chlorotoluene	12	0.50	ug/L	10		117	70-130	3	30	08/08/14		
4-Methyl-2-pentanone	12	5.0	ug/L	10		123	70-130	8	30	08/08/14		
Acetone	14	10	ug/L	10		143	70-130	12	30	08/08/14	BS	*High*
Benzene	12	0.50	ug/L	10		120	70-130	3	30	08/08/14		
Bromobenzene	12	0.50	ug/L	10		118	70-130	5	30	08/08/14		
Bromochloromethane	14	0.50	ug/L	10		137	70-130	6	30	08/08/14	BS	*High*
Bromodichloromethane	12	0.50	ug/L	10		121	70-130	4	30	08/08/14		
Bromoform	12	0.50	ug/L	10		123	70-130	4	30	08/08/14		
Bromomethane	16	0.50	ug/L	10		156	70-130	5	30	08/08/14	BS	*High*
Carbon Tetrachloride	12	0.50	ug/L	10		122	70-130	2	30	08/08/14		
Chlorobenzene	11	0.50	ug/L	10		115	70-130	3	30	08/08/14		
Chloroethane	12	0.50	ug/L	10		124	70-130	3	30	08/08/14		
Chloroform	12	0.50	ug/L	10		120	70-130	3	30	08/08/14		
Chloromethane	13	0.50	ug/L	10		127	70-130	5	30	08/08/14		
cis-1,2-Dichloroethene	12	0.50	ug/L	10		119	70-130	3	30	08/08/14		
cis-1,3-Dichloropropene	12	0.50	ug/L	10		122	70-130	5	30	08/08/14		
Dibromochloromethane	12	0.50	ug/L	10		120	70-130	4	30	08/08/14		
Dibromomethane	12	0.50	ug/L	10		119	70-130	4	30	08/08/14		

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Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual	
EPA 524.2 - Quality Control												
Batch: A409983										Prepared: 08/08/2014		
Prep Method: EPA 524.2										Analyst: JGB		
Blank Spike Dup (A409983-BSD1)												
Dichlorodifluoromethane	13	0.50	ug/L	10		133	70-130	3	30	08/08/14	BS	*High*
Dichloromethane	12	0.50	ug/L	10		121	70-130	4	30	08/08/14		
Di-isopropyl ether (DIPE)	12	3.0	ug/L	10		119	70-130	4	30	08/08/14		
Ethyl tert-Butyl Ether (ETBE)	12	0.50	ug/L	10		116	70-130	4	30	08/08/14		
Ethylbenzene	12	0.50	ug/L	10		117	70-130	3	30	08/08/14		
Hexachlorobutadiene	11	0.50	ug/L	10		105	70-130	4	30	08/08/14		
Isopropylbenzene	12	0.50	ug/L	10		118	70-130	4	30	08/08/14		
m,p-Xylenes	24	0.50	ug/L	20		118	70-130	2	30	08/08/14		
Methyl-t-butyl ether	24	0.50	ug/L	20		119	70-130	5	30	08/08/14		
Naphthalene	11	0.50	ug/L	10		107	70-130	11	30	08/08/14		
n-Butylbenzene	12	0.50	ug/L	10		118	70-130	4	30	08/08/14		
n-Propylbenzene	12	0.50	ug/L	10		118	70-130	2	30	08/08/14		
o-Xylene	12	0.50	ug/L	10		118	70-130	4	30	08/08/14		
p-Isopropyltoluene	12	0.50	ug/L	10		117	70-130	5	30	08/08/14		
sec-Butylbenzene	12	0.50	ug/L	10		117	70-130	3	30	08/08/14		
Styrene	14	0.50	ug/L	10		135	70-130	5	30	08/08/14	BS	*High*
tert-Amyl Methyl Ether (TAME)	12	3.0	ug/L	10		121	70-130	5	30	08/08/14		
tert-Butyl alcohol (TBA)	12	2.0	ug/L	10		120	70-130	8	30	08/08/14		
tert-Butylbenzene	12	0.50	ug/L	10		117	70-130	4	30	08/08/14		
Tetrachloroethene (PCE)	11	0.50	ug/L	10		107	70-130	2	30	08/08/14		
Toluene	12	0.50	ug/L	10		118	70-130	3	30	08/08/14		
trans-1,2-Dichloroethene	12	0.50	ug/L	10		121	70-130	3	30	08/08/14		
trans-1,3-Dichloropropene	12	0.50	ug/L	10		119	70-130	5	30	08/08/14		
Trichloroethene (TCE)	11	0.50	ug/L	10		114	70-130	3	30	08/08/14		
Trichlorofluoromethane	13	5.0	ug/L	10		134	70-130	6	30	08/08/14	BS	*High*
Vinyl Chloride	14	0.50	ug/L	10		144	70-130	0	30	08/08/14	BS	*High*
Surrogate: 1,2-Dichlorobenzene-d4	*5.5*			*5.0*		*110*	*70-130*			08/08/14		
Surrogate: Bromofluorobenzene	*54*			*50*		*109*	*70-130*			08/08/14		
EPA 525.2 - Quality Control												
Batch: A410269										Prepared: 08/14/2014		
Prep Method: EPA 525.2										Analyst: KHH		
Blank (A410269-BLK1)												
Alachlor	ND	1.0	ug/L							08/14/14		
Atrazine	ND	0.50	ug/L							08/14/14		
Benzo(a)pyrene	ND	0.10	ug/L							08/14/14		
Bis(2-ethylhexyl) adipate	ND	3.0	ug/L							08/14/14		
Bis(2-ethylhexyl) phthalate	ND	3.0	ug/L							08/14/14		
Bromacil	ND	10	ug/L							08/14/14		
Butachlor	ND	0.38	ug/L							08/14/14		
Diazinon	ND	0.25	ug/L							08/14/14		
Dimethoate	ND	10	ug/L							08/14/14		
Metolachlor	ND	0.50	ug/L							08/14/14		
Metribuzin	ND	0.50	ug/L							08/14/14		

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Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 525.2 - Quality Control											
Batch: A410269										Prepared: 08/14/2014	
Prep Method: EPA 525.2										Analyst: KHH	
Blank (A410269-BLK1)											
Molinate	ND	2.0	ug/L							08/14/14	
Propachlor	ND	0.50	ug/L							08/14/14	
Simazine	ND	1.0	ug/L							08/14/14	
Thiobencarb	ND	1.0	ug/L							08/14/14	
Surrogate: 1,3-Dimethyl-2-nitrobenzene	*4.7*			*5.0*		*93*	*70-130*			08/14/14	
Blank Spike (A410269-BS1)											
Alachlor	0.47	1.0	ug/L	0.50		95	70-130			08/14/14	
Atrazine	0.51	0.50	ug/L	0.50		102	70-130			08/14/14	
Benzo(a)pyrene	0.11	0.10	ug/L	0.10		111	70-130			08/14/14	
Bis(2-ethylhexyl) adipate	2.7	3.0	ug/L	3.0		91	70-130			08/14/14	
Bis(2-ethylhexyl) phthalate	2.9	3.0	ug/L	3.0		97	70-130			08/14/14	
Bromacil	2.3	10	ug/L	2.0		117	70-130			08/14/14	
Butachlor	1.2	0.38	ug/L	1.2		98	70-130			08/14/14	
Diazinon	0.041	0.25	ug/L	0.050		82	70-130			08/14/14	
Dimethoate	0.51	10	ug/L	0.50		102	70-130			08/14/14	
Metolachlor	2.5	0.50	ug/L	2.5		100	70-130			08/14/14	
Metribuzin	2.8	0.50	ug/L	2.5		111	70-130			08/14/14	
Molinate	2.7	2.0	ug/L	2.5		107	70-130			08/14/14	
Propachlor	2.5	0.50	ug/L	2.5		99	70-130			08/14/14	
Simazine	0.36	1.0	ug/L	0.35		101	70-130			08/14/14	
Thiobencarb	0.56	1.0	ug/L	0.50		112	70-130			08/14/14	
Surrogate: 1,3-Dimethyl-2-nitrobenzene	*4.8*			*5.0*		*95*	*70-130*			08/14/14	
Blank Spike Dup (A410269-BSD1)											
Alachlor	0.49	1.0	ug/L	0.50		98	70-130	3	30	08/14/14	
Atrazine	0.50	0.50	ug/L	0.50		100	70-130	2	30	08/14/14	
Benzo(a)pyrene	0.12	0.10	ug/L	0.10		122	70-130	9	30	08/14/14	
Bis(2-ethylhexyl) adipate	2.6	3.0	ug/L	3.0		85	70-130	7	30	08/14/14	
Bis(2-ethylhexyl) phthalate	2.8	3.0	ug/L	3.0		92	70-130	5	30	08/14/14	
Bromacil	2.4	10	ug/L	2.0		121	70-130	3	30	08/14/14	
Butachlor	1.2	0.38	ug/L	1.2		100	70-130	1	30	08/14/14	
Diazinon	0.044	0.25	ug/L	0.050		88	70-130	7	30	08/14/14	
Dimethoate	0.50	10	ug/L	0.50		101	70-130	2	30	08/14/14	
Metolachlor	2.5	0.50	ug/L	2.5		98	70-130	2	30	08/14/14	
Metribuzin	2.8	0.50	ug/L	2.5		110	70-130	0	30	08/14/14	
Molinate	2.8	2.0	ug/L	2.5		110	70-130	3	30	08/14/14	
Propachlor	2.8	0.50	ug/L	2.5		110	70-130	11	30	08/14/14	
Simazine	0.37	1.0	ug/L	0.35		107	70-130	5	30	08/14/14	
Thiobencarb	0.55	1.0	ug/L	0.50		109	70-130	2	30	08/14/14	
Surrogate: 1,3-Dimethyl-2-nitrobenzene	*4.8*			*5.0*		*97*	*70-130*			08/14/14	
Matrix Spike (A410269-MS1), Source: A4H0491-01											
Alachlor	0.48	1.0	ug/L	0.50	ND	96	70-130			08/14/14	
Atrazine	0.49	0.50	ug/L	0.50	ND	99	70-130			08/14/14	

BSK Associates Fresno
Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 525.2 - Quality Control											
Batch: A410269										Prepared: 08/14/2014	
Prep Method: EPA 525.2										Analyst: KHH	
Matrix Spike (A410269-MS1), Source: A4H0491-01											
Benzo(a)pyrene	0.12	0.10	ug/L	0.10	ND	101	70-130			08/14/14	
Bis(2-ethylhexyl) adipate	2.9	3.0	ug/L	3.0	ND	95	70-130			08/14/14	
Bis(2-ethylhexyl) phthalate	3.1	3.0	ug/L	3.0	ND	102	70-130			08/14/14	
Bromacil	2.3	10	ug/L	2.0	ND	115	70-130			08/14/14	
Butachlor	1.3	0.38	ug/L	1.2	ND	104	70-130			08/14/14	
Diazinon	0.051	0.25	ug/L	0.050	ND	102	70-130			08/14/14	
Dimethoate	0.51	10	ug/L	0.50	ND	101	70-130			08/14/14	
Metolachlor	2.7	0.50	ug/L	2.5	ND	107	70-130			08/14/14	
Metribuzin	2.8	0.50	ug/L	2.5	ND	113	70-130			08/14/14	
Molinate	2.7	2.0	ug/L	2.5	ND	110	70-130			08/14/14	
Propachlor	2.8	0.50	ug/L	2.5	ND	111	70-130			08/14/14	
Simazine	0.36	1.0	ug/L	0.35	ND	104	70-130			08/14/14	
Thiobencarb	0.59	1.0	ug/L	0.50	ND	118	70-130			08/14/14	
Surrogate: 1,3-Dimethyl-2-nitrobenzene	*5.4*			*5.0*		*109*	*70-130*			08/14/14	

Certificate of Analysis

Notes:

- The Chain of Custody document and Sample Integrity Sheet are part of the analytical report.
- Any remaining sample(s) for testing will be disposed of according to BSK's sample retention policy unless other arrangements are made in advance.
- All positive results for EPA Methods 504.1 and 524.2 require the analysis of a Field Reagent Blank (FRB) to confirm that the results are not a contamination error from field sampling steps. If Field Reagent Blanks were not submitted with the samples, this method requirement has not been performed.
- Samples collected by BSK Analytical Laboratories were collected in accordance with the BSK Sampling and Collection Standard Operating Procedures.
- J-value is equivalent to DNQ (Detected, not quantified) which is a trace value. A trace value is an analyte detected between the MDL and the laboratory reporting limit. This result is of an unknown data quality and is only qualitative (estimated). Baseline noise, calibration curve extrapolation below the lowest calibrator, method blank detections, and integration artifacts can all produce apparent DNQ values, which contribute to the un-reliability of these values.
- (1) - Residual chlorine and pH analysis have a 15 minute holding time for both drinking and waste water samples as defined by the EPA and 40 CFR 136. Waste water and ground water (monitoring well) samples must be field filtered to meet the 15 minute holding time for dissolved metals.
- Summations of analytes (i.e. Total Trihalomethanes) may appear to add individual amounts incorrectly, due to rounding of analyte values occurring before or after the total value is calculated, as well as rounding of the total value.
- RL Multiplier is the factor used to adjust the reporting limit (RL) due to variations in sample preparation procedures and dilutions required for matrix interferences.
- Due to the subjective nature of the Threshold Odor Method, all characterizations of the detected odor are the opinion of the panel of analysts. The characterizations can be found in Standard Methods 2170B Figure 2170:1.
- The MCLs provided in this report (if applicable) represent the primary MCLs for that analyte.

Definitions

mg/L:	Milligrams/Liter (ppm)	MDL:	Method Detection Limit	MDA95:	Min. Detected Activity
mg/Kg:	Milligrams/Kilogram (ppm)	RL:	Reporting Limit: DL x Dilution	MPN:	Most Probable Number
µg/L:	Micrograms/Liter (ppb)	ND:	None Detected at RL	CFU:	Colony Forming Unit
µg/Kg:	Micrograms/Kilogram (ppb)	pCi/L:	Picocuries per Liter	Absent:	Less than 1 CFU/100mLs
%:	Percent Recovered (surrogates)	RL Mult:	RL Multiplier	Present:	1 or more CFU/100mLs
NR:	Non-Reportable	MCL:	Maximum Contaminant Limit		

BSK is not accredited under the NELAC program for the following parameters: **NA**

Certifications: **Please refer to our website for a copy of our Accredited Fields of Testing under each certification.**

Fresno

State of California - ELAP	1180	State of Hawaii	4021
State of Nevada	CA000792014-1	State of Oregon - ORELAP	4021
EPA - UCMR3	CA00079	State of Washington	C997-14

Sacramento

State of California - ELAP	2435

Vancouver

State of Oregon - ORELAP	WA100008	State of Washington	C824-13

A4H0770

K Prime Laboratory

KPrim7574

08072014

Turnaround: Standard
Due Date: 8/21/2014

Printed: 8/7/2014 6:22:58PM
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SUBCONTRACT TO: BSK

A4H0770
KPrim7574
08/07/2014
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K PRIME INC. 4.6

CHAIN OF CUSTODY RECORD

CONSULTING ANALYTICAL CHEMISTS 3621 Westwind Blvd., Santa Rosa, CA 95403 Phone: 707-527-7574 Fax: 707-527-7879

Client/Project ID: K PRIME INC.	Client Project No.: 9115
Send PDF to: carlakagel@sbcglobal.net shellyalbertson@sbcglobal.net	Contact: Carla Kagel
Please send PDF by:	☐ EDF Global ID #: Log Code:

Sample Identification No.	Date	Time	Lab Sample No.	Sample Type	No. of Containers	Cyanide (SM4500-CN E)	Dissolved* and Total Iron (EPA 200.7)	Cations (Ca, K, Mg, Na) (EPA 200.7)	Gross alpha (EPA 00-02)	Gross Beta (EPA 900)	Perchlorate (EPA 314.0)	Uranium (EPA 200.8)	SVOCs (EPA 525.2)	VOCs (EPA 524.2)	Expected Turnaround Time	Remarks
123712	8/5/2014	0730		W	9	X	X	X	X	X	X	X	X	X	Std	*Dissolved Iron is Field-Filtered

Relinquished by: (signature)	Received by: (signature)	Date:	Time:
Myrtle Rachels	On Trac	8/6/2014	1600
Relinquished by: (signature)	Received by: (signature)	Date:	Time:
	Michael Johnson	8/7/14	12:02

On time, Blue

Sample Integrity

BSK Bottles: (Yes) No Page 1 of 1

COC Info

Was temperature within range? Chemistry ≤ 6°C Micro < 10°C	(Yes) No NA	Were correct containers and preservatives received for the tests requested?	(Yes) No NA
If samples were taken today, is there evidence that chilling has begun?	(Yes) No NA	Were there bubbles in the VOA vials? (Volatiles Only)	Yes No (NA)
Did all bottles arrive unbroken and intact?	(Yes) No	Was a sufficient amount of sample received?	(Yes) No
Did all bottle labels agree with COC?	(Yes) No	Do samples have a hold time <72 hours?	Yes (No)
Was sodium thiosulfate added to CN sample(s) until chlorine was no longer present?	Yes No (NA)	Was PM notified of discrepancies? PM: By/Time:	Yes No (NA)

Bottles Received ("I" means preservation/chlorine checks are either N/A or are performed in the lab)

250ml(A) 500ml(B) 1Liter(C) 40ml VOA(V)	Checks	Passed?	
Bacti $Na_2S_2O_3$	—	—	1
None (P) White Cap	—	—	1B
Cr6 Buffer (P) Blue Cap **Drinking Water**	pH 9.3-9.7	Y N	
Cr6 Buffer (P) Blue Cap **Wastewater**	pH 9.3-9.7	Y N	
HNO_3 (P) Red Cap	—	—	1C, 2B
H_2SO_4 (P) or (AG) Yellow Cap/Label	pH < 2	Y N	
NaOH (P) Green Cap	Cl, pH >10	(Y) N	1A
NaOH + ZnAc (P)	pH > 9	Y N	
Dissolved Oxygen 300ml (g)	—	—	
None (AG) 608/8081/8082, 625, 632/8321, 8151, 8270	—	—	
HCl (AG) Lt. Blue Label: O&G, Diesel	—	—	
$Na_2S_2O_3$ 1 Liter (Brown P) 549	—	—	
$Na_2S_2O_3$ (AG) Blue Label 547, 515, 525, 548	—	—	2C
$Na_2S_2O_3$ (AG) Blue Label THMs 524.2 or 524.3	—	—	
$Na_2S_2O_3$ (CG) Blue Label 504, 505	—	—	
$Na_2S_2O_3$ + MCAA (CG) Orange Label 531	pH < 3	Y N	
NH_4Cl (AG) Purple Label 552	—	—	
EDA (AG) Brown Label DBPs	—	—	
Ascorbic + Maleic (AG) Lt Green Label 524.3	—	—	
HCL (CG) 524.2,BTEX,Gas, MTBE, 8260/524	—	—	2V
Buffer pH 4 (CG)	—	—	
None (CG)	—	—	
H_3PO_4 (CG) Salmon Label	—	—	
Other:			
Asbestos 1Liter Plastic w/ Foil	—	—	
Low Level Hg / Metals Double Baggie	—	—	
Bottled Water	—	—	
Clear Glass Jar 250 / 500 / 1 Liter	—	—	
Soil Tube Brass / Steel / Plastic	—	—	
Tedlar Bag / Plastic Bag	—	—	

Split

	Container	Preservative	Date/Time/Initials		Container	Preservative	Date/Time/Initials
S P				S P			
S P				S P			

Comments

Labeled by: NC @ 1745 Labels checked by: JH @ 17:58 RUSH Paged by: _____ @ _____

Erler & Kalinowski, Inc.

CONSULTING ENGINEERS AND SCIENTISTS

CHAIN OF CUSTODY RECORD

1870 Ogden Drive, Burlingame CA 940 PHONE: 650-292-9100

FAX: 650-552-9012

PAGE 1 OF 1

Project Name: East Palo Alto Test Well

Project No. B40016.00

Location: East Palo Alto, CA

Sampled By: Daniel Correia

Reporting:

Electronic Format: EDF Hard Copy Format: PDF

EPA Data Report Level: II Reporting Basis: As Rec'd

Please report results to the following:

(1) **EKI**: labs@ekiconsult.com

(2)**Chris Heppner**: cheppner@ekiconsult.com

(3) **Anona Dutton**: adutton@ekiconsult.com

(4) **Daniel Correia**: dcorreia@ekiconsult.com

Laboratory:

K Prime, Inc.
3621 Westwind Blvd
Santa Rosa, CA 95403
(707) 527-7574

EKI COC No.: 20140805-1

Revision: _____ (A, B, C, D, etc.)

Date: By:

ANALYSES REQUESTED

Method No.	EPA 200.8	SM 2320 B	EPA 300	EPA150.1	SM 2510 B	EPA 160.1	SM 2340 B	SM 4500-CN E	SM 5540 C	EPA 200.7	EPA 200.7	SM 2120B 2130B	EPA 00-02	EPA 900	EPA 314.0	EPA 524.2a	EPA 525.2	EPA 200.8			
Analyte Group	Metals	Alkalinity	Anions	pH	Specific Conductance	TDS	Total Hardness	Cyanide	MBAS	Dissolved and Total Iron	Cations	Color, Odor, Turbility	Gross Alpha	Gross Beta	Perchlorate	VOCs	SVOCs	Uranium	PLACE ON HOLD	EXPECTED T.A.T	REMARKS
EPA Test Well - DW-080514	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		Standard	

Field Sample Identification	Lab Sample No.	Date	Time	Matrix	Number / Type of Container (Preservative)
EPA Test Well - DW-080514	123712	8/5/2014	0750	Drinking water	250 ml Poly w/ HNO3 (Field filtered); 1L poly, unpreserved; 250 ml poly w/NaOH; 1L Amber, unpreserved; 1L poly, unpreserved; 500 ml poly w/HNO3; 500 ml poly w/HNO3; 1L poly w/HNO3; 500 ml poly, unpreserved 3X40 ml VOA w/HCL; 2 X 1L amber w/ sodium thiosulfate

Special Instructions:

Relinquished by:	(Signature/Affiliation) EKI	Date 8/5/14	Time 1504	Received by:	(Signature/Affiliation or Carrier/Air Bill No.) 8/5/14 3:04
Relinquished by:	(Signature/Affiliation)	Date 8/5/14	Time 17:24	Received by: Rw-Cools KPI	(Signature/Affiliation)
Relinquished by:	(Signature/Affiliation)	Date	Time	Received by:	(Signature/Affiliation)

K PRIME, Inc.

CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

TRANSMITTAL

DATE: 9/4/2014

TO: MR. CHRIS HEPPNER
MS. ANONA DUTTON
MR. DANIEL CORREIA
ERLER & KALINOWSKI, INC.
1870 OGDEN DRIVE
BURLINGAME, CA 94010

Phone: 650-292-9100
Email: labs@ekiconsult.com
cheppner@ekiconsult.com
adutton@ekiconsult.com
dcorreia@ekiconsult.com

ACCT: 9115
PROJ: B40016.00

FROM: Richard A. Kagel, Ph.D.
Laboratory Director RAK/MCA 9/4/2014

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT B40016.00

Enclosed please find K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	TIME	KPI LAB #
EPA TEST WELL - DW-080514	WATER	08/05/14	7:50	123712

The above listed sample group was received on 08/05/14 and tested as requested on the chain of custody document.

Please call me if you have any questions or need further information.
Thank you for this opportunity to be of service.

BSK Associates Fresno
1414 Stanislaus St
Fresno, CA93706
559-497-2888 (Main)
559-485-6935 (FAX)

A4H0770
9/04/2014
Invoice: A419106

Carla Kagel
K Prime Laboratory
3621 Westwind Blvd
Santa Rosa, CA 95403

RE: Report for A4H0770 General Chemistry

Dear Carla Kagel,

Thank you for using BSK Associates for your analytical testing needs. In the following pages, you will find the test results for the samples submitted to our laboratory on 8/7/2014. The results have been approved for release by our Laboratory Director as indicated by the authorizing signature below.

The samples were analyzed for the test(s) indicated on the Chain of Custody (see attached) and the results relate only to the samples analyzed. BSK certifies that the testing was performed in accordance with the quality system requirements specified in the 2009 TNI Standard. Any deviations from this standard or from the method requirements for each test procedure performed will be annotated alongside the analytical result or noted in the Case Narrative. Unless otherwise noted, the sample results are reported on an "as received" basis.

Thanks again for using BSK Associates. We value your business and appreciate your loyalty.

Sincerely,

Adam Trevarrow, Project Coordinator

If additional clarification of any information is required, please contact your Project Manager, Renea Rangell , at (800) 877-8310 or (559) 497-2888 x233.

Accredited in Accordance with NELAP
ORELAP #4021

Case Narrative

Project and Report Details		Invoice Details	
Client:	K Prime Laboratory	**Invoice To:**	K Prime Laboratory
Report To:	Carla Kagel	**Invoice Attn:**	Shelly Albertson
Project #:	9115	**Project PO#:**	-
Received:	8/07/2014 - 12:02		
Report Due:	8/21/2014		

Sample Receipt Conditions

Cooler: Default Cooler
Temperature on Receipt °C: 4.6

Containers Intact
COC/Labels Agree
Received On Blue Ice
Packing Material - Other
Sample(s) were received in temperature range.
Initial receipt at BSK-FAL

Data Qualifiers

The following qualifiers have been applied to one or more analytical results:

B2.0	Analyte present in the method blank above the method detection limit (MDL). Laboratory does not determine batch acceptance on detections below the reporting limit (RL).
BS	Blank spike recoveries did not meet acceptance limits.
BS1.0	Blank spike recovery for this analyte was biased high; no material impact on reported result as sample is ND for this parameter.
CV0.0	CCV recovery was above method acceptance limits; no material impact on reported result as sample is ND for this parameter.
MS1.0	Matrix spike recoveries exceed control limits.

Report Distribution

Recipient(s)	Report Format	CC:
Carla Kagel	FINAL.RPT	
Shelly Albertson	FINAL.RPT	

Certificate of Analysis

Sample ID: A4H0770-01
Sampled By: Client
Sample Description: 123712

Sample Date - Time: 08/05/14 - 07:50
Matrix: Water
Sample Type: Grab

BSK Associates Fresno

General Chemistry

Analyte	Method	Result	RL	Units	RL Multi	Batch	Prepared	Analyzed	Qual
Cyanide (total)	SM 4500-CN E	ND	0.0050	mg/L	1	A410010	08/08/14	08/11/14	
Conductivity @ 25C	SM 2510B	**620**	1.0	umhos/cm	1	A410005	08/08/14	08/08/14	
Perchlorate	EPA 314.0	ND	2.0	ug/L	1	A410249	08/14/14	08/14/14	

Metals

Analyte	Method	Result	RL	Units	RL Multi	Batch	Prepared	Analyzed	Qual
Calcium	EPA 200.7	**13**	0.10	mg/L	1	A410103	08/11/14	08/18/14	
Iron	EPA 200.7	ND	0.030	mg/L	1	A410103	08/11/14	08/18/14	
Iron - Dissolved (1)	EPA 200.7	ND	0.030	mg/L	1	A410272	08/14/14	08/18/14	
Magnesium	EPA 200.7	**5.1**	0.10	mg/L	1	A410103	08/11/14	08/18/14	
Potassium	EPA 200.7	ND	2.0	mg/L	1	A410103	08/11/14	08/18/14	
Sodium	EPA 200.7	**120**	1.0	mg/L	1	A410103	08/11/14	08/18/14	
Uranium	EPA 200.8	ND	1.0	ug/L	1	A410103	08/11/14	08/19/14	
Uranium, Radiological		**< 0.67**		pCi/L					

Organics

Analyte	Method	Result	RL	Units	RL Multi	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
1,1,1,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,1,1-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,1,2,2-Tetrachloroethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 524.2	ND	10	ug/L	1	A409983	08/08/14	08/08/14	
1,1,2-Trichloroethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,1-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,1-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,1-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,2,3-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,2,4-Trichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,2,4-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,2-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,2-Dichloroethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,3,5-Trimethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,3-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,3-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
1,4-Dichlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
2,2-Dichloropropane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
2-Butanone	EPA 524.2	ND	5.0	ug/L	1	A409983	08/08/14	08/08/14	BS1.0, CV0.0
2-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	

Certificate of Analysis

Sample ID: A4H0770-01
Sampled By: Client
Sample Description: 123712

Sample Date - Time: 08/05/14 - 07:50
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
2-Hexanone	EPA 524.2	ND	10	ug/L	1	A409983	08/08/14	08/08/14	
4-Chlorotoluene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
4-Methyl-2-pentanone	EPA 524.2	ND	5.0	ug/L	1	A409983	08/08/14	08/08/14	
Acetone	EPA 524.2	ND	10	ug/L	1	A409983	08/08/14	08/08/14	BS1.0, CV0.0
Benzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Bromobenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Bromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	BS1.0
Bromodichloromethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Bromomethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	BS1.0, CV0.0
Carbon Tetrachloride	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Chlorobenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Chloroethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Chloroform	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Chloromethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
cis-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
cis-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Dibromomethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Dichlorodifluoromethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	BS1.0, CV0.0
Dichloromethane	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Di-isopropyl ether (DIPE)	EPA 524.2	ND	3.0	ug/L	1	A409983	08/08/14	08/08/14	
Ethyl tert-Butyl Ether (ETBE)	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Ethylbenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Hexachlorobutadiene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Isopropylbenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
m,p-Xylenes	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Methyl-t-butyl ether	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Naphthalene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
n-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
n-Propylbenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
o-Xylene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
p-Isopropyltoluene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
sec-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Styrene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	BS1.0
tert-Amyl Methyl Ether (TAME)	EPA 524.2	ND	3.0	ug/L	1	A409983	08/08/14	08/08/14	
tert-Butyl alcohol (TBA)	EPA 524.2	ND	2.0	ug/L	1	A409983	08/08/14	08/08/14	
tert-Butylbenzene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Tetrachloroethene (PCE)	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Toluene	EPA 524.2	**0.65**	0.50	ug/L	1	A409983	08/08/14	08/08/14	

Certificate of Analysis

Sample ID: A4H0770-01
Sampled By: Client
Sample Description: 123712

Sample Date - Time: 08/05/14 - 07:50
Matrix: Water
Sample Type: Grab

Organics

Analyte	Method	Result	RL	Units	RL Multi	Batch	Prepared	Analyzed	Qual
Volatile Organics by GC-MS									
trans-1,2-Dichloroethene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
trans-1,3-Dichloropropene	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Trichloroethene (TCE)	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	
Trichlorofluoromethane	EPA 524.2	ND	5.0	ug/L	1	A409983	08/08/14	08/08/14	BS1.0
Vinyl Chloride	EPA 524.2	ND	0.50	ug/L	1	A409983	08/08/14	08/08/14	BS1.0, CV0.0
Surrogate: 1,2-Dichlorobenzene-d4	EPA 524.2	107 %	*Acceptable range: 70-130 %*						
Surrogate: Bromofluorobenzene	EPA 524.2	111 %	*Acceptable range: 70-130 %*						
Total 1,3-Dichloropropene, EPA 524.2		ND	0.50	ug/L					
Total Trihalomethanes, EPA 524.2		ND	0.50	ug/L					
Total Xylenes, EPA 524.2		ND	0.50	ug/L					
Semi-Volatile Organics by GC-MS									
Alachlor	EPA 525.2	ND	1.0	ug/L	1	A410269	08/14/14	08/14/14	
Atrazine	EPA 525.2	ND	0.50	ug/L	1	A410269	08/14/14	08/14/14	
Benzo(a)pyrene	EPA 525.2	ND	0.10	ug/L	1	A410269	08/14/14	08/14/14	
Bis(2-ethylhexyl) adipate	EPA 525.2	ND	3.0	ug/L	1	A410269	08/14/14	08/14/14	
Bis(2-ethylhexyl) phthalate	EPA 525.2	ND	3.0	ug/L	1	A410269	08/14/14	08/14/14	
Bromacil	EPA 525.2	ND	10	ug/L	1	A410269	08/14/14	08/14/14	
Butachlor	EPA 525.2	ND	0.38	ug/L	1	A410269	08/14/14	08/14/14	
Diazinon	EPA 525.2	ND	0.25	ug/L	1	A410269	08/14/14	08/14/14	
Dimethoate	EPA 525.2	ND	10	ug/L	1	A410269	08/14/14	08/14/14	
Metolachlor	EPA 525.2	ND	0.50	ug/L	1	A410269	08/14/14	08/14/14	
Metribuzin	EPA 525.2	ND	0.50	ug/L	1	A410269	08/14/14	08/14/14	
Molinate	EPA 525.2	ND	2.0	ug/L	1	A410269	08/14/14	08/14/14	
Propachlor	EPA 525.2	ND	0.50	ug/L	1	A410269	08/14/14	08/14/14	
Simazine	EPA 525.2	ND	1.0	ug/L	1	A410269	08/14/14	08/14/14	
Thiobencarb	EPA 525.2	ND	1.0	ug/L	1	A410269	08/14/14	08/14/14	
Surrogate: 1,3-Dimethyl-2-nitrobenzene	EPA 525.2	102 %	*Acceptable range: 70-130 %*						

BSK Associates Fresno

General Chemistry Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 314.0 - Quality Control											
Batch: A410249										Prepared: 08/14/2014	
Prep Method: Method Specific Preparation										Analyst: RCN	
Blank (A410249-BLK1)											
Perchlorate	ND	2.0	ug/L							08/14/14	
Blank Spike (A410249-BS1)											
Perchlorate	26	2.0	ug/L	25		102	85-115			08/14/14	
Blank Spike Dup (A410249-BSD1)											
Perchlorate	26	2.0	ug/L	25		102	85-115	0	15	08/14/14	
Matrix Spike (A410249-MS1), Source: A4H1151-01											
Perchlorate	12	2.0	ug/L	15	ND	78	80-120			08/14/14	MS1.0 *Low*
Matrix Spike (A410249-MS2), Source: A4H0831-01											
Perchlorate	5.9	2.0	ug/L	7.5	ND	79	80-120			08/14/14	MS1.0 *Low*
Matrix Spike Dup (A410249-MSD1), Source: A4H1151-01											
Perchlorate	12	2.0	ug/L	15	ND	77	80-120	1	15	08/14/14	MS1.0 *Low*
Matrix Spike Dup (A410249-MSD2), Source: A4H0831-01											
Perchlorate	5.1	2.0	ug/L	7.5	ND	68	80-120	14	15	08/14/14	MS1.0 *Low*
SM 2510B - Quality Control											
Batch: A410005										Prepared: 08/08/2014	
Prep Method: Method Specific Preparation										Analyst: CEG	
Blank (A410005-BLK1)											
Conductivity @ 25C	ND	1.0	umhos/cm							08/08/14	
Duplicate (A410005-DUP1), Source: A4H0678-01											
Conductivity @ 25C	800	1.0	umhos/cm		800			0	20	08/08/14	
Duplicate (A410005-DUP2), Source: A4H0770-01											
Conductivity @ 25C	620	1.0	umhos/cm		620			0	20	08/08/14	
SM 4500-CN E - Quality Control											
Batch: A410010										Prepared: 08/08/2014	
Prep Method: Total Cyanide Distillation										Analyst: KKC	
Blank (A410010-BLK1)											
Cyanide (total)	ND	0.0050	mg/L							08/11/14	
Blank Spike (A410010-BS1)											
Cyanide (total)	0.24	0.0050	mg/L	0.25		98	80-120			08/11/14	

BSK Associates Fresno

General Chemistry Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
SM 4500-CN E - Quality Control											
Batch: A410010										Prepared: 08/08/2014	
Prep Method: Total Cyanide Distillation										Analyst: KKC	
Blank Spike Dup (A410010-BSD1)											
Cyanide (total)	0.24	0.0050	mg/L	0.25		98	80-120	1	20	08/11/14	
Matrix Spike (A410010-MS1), Source: A4H0491-01											
Cyanide (total)	0.24	0.0050	mg/L	0.25	ND	97	80-120			08/11/14	
Matrix Spike (A410010-MS2), Source: A4H0775-01											
Cyanide (total)	0.26	0.0050	mg/L	0.25	0.020	95	80-120			08/11/14	
Matrix Spike Dup (A410010-MSD1), Source: A4H0491-01											
Cyanide (total)	0.24	0.0050	mg/L	0.25	ND	96	80-120	1	20	08/11/14	
Matrix Spike Dup (A410010-MSD2), Source: A4H0775-01											
Cyanide (total)	0.27	0.0050	mg/L	0.25	0.020	99	80-120	4	20	08/11/14	

BSK Associates Fresno
Metals Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 200.7 - Quality Control											
Batch: A410103										Prepared: 08/11/2014	
Prep Method: EPA 200.2										Analyst: NYY	
Blank (A410103-BLK2)											
Calcium	ND	0.10	mg/L							08/18/14	
Iron	ND	0.030	mg/L							08/18/14	
Magnesium	ND	0.10	mg/L							08/18/14	
Potassium	ND	2.0	mg/L							08/18/14	
Sodium	ND	1.0	mg/L							08/18/14	
Blank Spike (A410103-BS2)											
Calcium	9.2	0.10	mg/L	10		92	85-115			08/18/14	
Iron	2.0	0.030	mg/L	2.0		98	85-115			08/18/14	
Magnesium	9.3	0.10	mg/L	10		93	85-115			08/18/14	
Potassium	9.3	2.0	mg/L	10		93	85-115			08/18/14	
Sodium	9.8	1.0	mg/L	10		98	85-115			08/18/14	
Blank Spike Dup (A410103-BSD2)											
Calcium	9.3	0.10	mg/L	10		93	85-115	1	20	08/18/14	
Iron	2.0	0.030	mg/L	2.0		100	85-115	2	20	08/18/14	
Magnesium	9.4	0.10	mg/L	10		94	85-115	1	20	08/18/14	
Potassium	9.4	2.0	mg/L	10		94	85-115	1	20	08/18/14	
Sodium	10	1.0	mg/L	10		100	85-115	2	20	08/18/14	
Matrix Spike (A410103-MS3), Source: A4H0749-01											
Calcium	9.3	0.10	mg/L	10	ND	93	70-130			08/18/14	
Iron	2.0	0.030	mg/L	2.0	ND	99	70-130			08/18/14	
Magnesium	9.4	0.10	mg/L	10	ND	94	70-130			08/18/14	
Potassium	9.5	2.0	mg/L	10	ND	95	70-130			08/18/14	
Sodium	28	1.0	mg/L	10	18	100	70-130			08/18/14	
Matrix Spike (A410103-MS4), Source: A4H0909-01											
Calcium	26	0.10	mg/L	10	18	83	70-130			08/18/14	
Iron	1.9	0.030	mg/L	2.0	0.032	96	70-130			08/18/14	
Magnesium	11	0.10	mg/L	10	2.1	91	70-130			08/18/14	
Potassium	11	2.0	mg/L	10	ND	92	70-130			08/18/14	
Sodium	16	1.0	mg/L	10	5.9	98	70-130			08/18/14	
Matrix Spike Dup (A410103-MSD3), Source: A4H0749-01											
Calcium	9.1	0.10	mg/L	10	ND	91	70-130	3	20	08/18/14	
Iron	1.9	0.030	mg/L	2.0	ND	95	70-130	3	20	08/18/14	
Magnesium	9.1	0.10	mg/L	10	ND	91	70-130	3	20	08/18/14	
Potassium	9.1	2.0	mg/L	10	ND	91	70-130	4	20	08/18/14	
Sodium	27	1.0	mg/L	10	18	87	70-130	5	20	08/18/14	
Matrix Spike Dup (A410103-MSD4), Source: A4H0909-01											
Calcium	27	0.10	mg/L	10	18	90	70-130	3	20	08/18/14	
Iron	2.0	0.030	mg/L	2.0	0.032	97	70-130	1	20	08/18/14	
Magnesium	11	0.10	mg/L	10	2.1	92	70-130	1	20	08/18/14	

BSK Associates Fresno
Metals Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 200.7 - Quality Control											
Batch: A410103										Prepared: 08/11/2014	
Prep Method: EPA 200.2										Analyst: NYY	
Matrix Spike Dup (A410103-MSD4), Source: A4H0909-01											
Potassium	11	2.0	mg/L	10	ND	92	70-130	0	20	08/18/14	
Sodium	16	1.0	mg/L	10	5.9	99	70-130	1	20	08/18/14	
EPA 200.7 - Quality Control											
Batch: A410272										Prepared: 08/14/2014	
Prep Method: Filtration - Metals										Analyst: NYY	
Blank (A410272-BLK2)											
Iron - Dissolved (1)	ND	0.030	mg/L							08/18/14	
Blank Spike (A410272-BS2)											
Iron - Dissolved (1)	1.9	0.030	mg/L	2.0		97	85-115			08/18/14	
Blank Spike Dup (A410272-BSD2)											
Iron - Dissolved (1)	2.0	0.030	mg/L	2.0		98	85-115	1	20	08/18/14	
Matrix Spike (A410272-MS3), Source: A4H0739-01											
Iron - Dissolved (1)	2.0	0.030	mg/L	2.0	ND	98	70-130			08/18/14	
Matrix Spike (A410272-MS4), Source: A4H0861-01											
Iron - Dissolved (1)	1.9	0.030	mg/L	2.0	ND	96	70-130			08/18/14	
Matrix Spike Dup (A410272-MSD3), Source: A4H0739-01											
Iron - Dissolved (1)	2.0	0.030	mg/L	2.0	ND	98	70-130	0	20	08/18/14	
Matrix Spike Dup (A410272-MSD4), Source: A4H0861-01											
Iron - Dissolved (1)	1.9	0.030	mg/L	2.0	ND	96	70-130	0	20	08/18/14	
EPA 200.8 - Quality Control											
Batch: A410103										Prepared: 08/11/2014	
Prep Method: EPA 200.2										Analyst: MAS	
Blank (A410103-BLK1)											
Uranium	ND	1.0	ug/L							08/19/14	
Blank Spike (A410103-BS1)											
Uranium	100	1.0	ug/L	100		103	85-115			08/19/14	
Blank Spike Dup (A410103-BSD1)											
Uranium	95	1.0	ug/L	100		95	85-115	8	20	08/19/14	
Matrix Spike (A410103-MS1), Source: A4H0749-01											
Uranium	97	1.0	ug/L	100	ND	97	70-130			08/19/14	

BSK Associates Fresno
Metals Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 200.8 - Quality Control											
Batch: A410103										Prepared: 08/11/2014	
Prep Method: EPA 200.2										Analyst: MAS	
Matrix Spike Dup (A410103-MSD1), Source: A4H0749-01											
Uranium	97	1.0	ug/L	100	ND	97	70-130	0	20	08/19/14	

BSK Associates Fresno
Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual

EPA 524.2 - Quality Control

Batch: A409983 Prepared: 08/08/2014

Prep Method: EPA 524.2 Analyst: JGB

Blank (A409983-BLK1)

1,1,1,2-Tetrachloroethane	ND	0.50	ug/L							08/08/14	
1,1,1-Trichloroethane	ND	0.50	ug/L							08/08/14	
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L							08/08/14	
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	10	ug/L							08/08/14	
1,1,2-Trichloroethane	ND	0.50	ug/L							08/08/14	
1,1-Dichloroethane	ND	0.50	ug/L							08/08/14	
1,1-Dichloroethene	ND	0.50	ug/L							08/08/14	
1,1-Dichloropropene	ND	0.50	ug/L							08/08/14	
1,2,3-Trichlorobenzene	ND	0.50	ug/L							08/08/14	
1,2,4-Trichlorobenzene	ND	0.50	ug/L							08/08/14	
1,2,4-Trimethylbenzene	ND	0.50	ug/L							08/08/14	
1,2-Dichlorobenzene	ND	0.50	ug/L							08/08/14	
1,2-Dichloroethane	ND	0.50	ug/L							08/08/14	
1,2-Dichloropropane	ND	0.50	ug/L							08/08/14	
1,3,5-Trimethylbenzene	ND	0.50	ug/L							08/08/14	
1,3-Dichlorobenzene	ND	0.50	ug/L							08/08/14	
1,3-Dichloropropane	ND	0.50	ug/L							08/08/14	
1,4-Dichlorobenzene	ND	0.50	ug/L							08/08/14	
2,2-Dichloropropane	ND	0.50	ug/L							08/08/14	
2-Butanone	ND	5.0	ug/L							08/08/14	
2-Chlorotoluene	ND	0.50	ug/L							08/08/14	
2-Hexanone	ND	10	ug/L							08/08/14	
4-Chlorotoluene	ND	0.50	ug/L							08/08/14	
4-Methyl-2-pentanone	ND	5.0	ug/L							08/08/14	
Acetone	ND	10	ug/L							08/08/14	
Benzene	ND	0.50	ug/L							08/08/14	
Bromobenzene	ND	0.50	ug/L							08/08/14	
Bromochloromethane	ND	0.50	ug/L							08/08/14	
Bromodichloromethane	ND	0.50	ug/L							08/08/14	
Bromoform	ND	0.50	ug/L							08/08/14	B2.0
Bromomethane	ND	0.50	ug/L							08/08/14	
Carbon Tetrachloride	ND	0.50	ug/L							08/08/14	
Chlorobenzene	ND	0.50	ug/L							08/08/14	
Chloroethane	ND	0.50	ug/L							08/08/14	
Chloroform	ND	0.50	ug/L							08/08/14	
Chloromethane	ND	0.50	ug/L							08/08/14	
cis-1,2-Dichloroethene	ND	0.50	ug/L							08/08/14	
cis-1,3-Dichloropropene	ND	0.50	ug/L							08/08/14	
Dibromochloromethane	ND	0.50	ug/L							08/08/14	B2.0
Dibromomethane	ND	0.50	ug/L							08/08/14	
Dichlorodifluoromethane	ND	0.50	ug/L							08/08/14	
Dichloromethane	ND	0.50	ug/L							08/08/14	
Di-isopropyl ether (DIPE)	ND	3.0	ug/L							08/08/14	
Ethyl tert-Butyl Ether (ETBE)	ND	0.50	ug/L							08/08/14	
Ethylbenzene	ND	0.50	ug/L							08/08/14	

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Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 524.2 - Quality Control											
Batch: A409983										Prepared: 08/08/2014	
Prep Method: EPA 524.2										Analyst: JGB	
Blank (A409983-BLK1)											
Hexachlorobutadiene	ND	0.50	ug/L							08/08/14	
Isopropylbenzene	ND	0.50	ug/L							08/08/14	
m,p-Xylenes	ND	0.50	ug/L							08/08/14	
Methyl-t-butyl ether	ND	0.50	ug/L							08/08/14	
Naphthalene	ND	0.50	ug/L							08/08/14	
n-Butylbenzene	ND	0.50	ug/L							08/08/14	B2.0
n-Propylbenzene	ND	0.50	ug/L							08/08/14	
o-Xylene	ND	0.50	ug/L							08/08/14	
p-Isopropyltoluene	ND	0.50	ug/L							08/08/14	
sec-Butylbenzene	ND	0.50	ug/L							08/08/14	
Styrene	ND	0.50	ug/L							08/08/14	
tert-Amyl Methyl Ether (TAME)	ND	3.0	ug/L							08/08/14	
tert-Butyl alcohol (TBA)	ND	2.0	ug/L							08/08/14	
tert-Butylbenzene	ND	0.50	ug/L							08/08/14	
Tetrachloroethene (PCE)	ND	0.50	ug/L							08/08/14	
Toluene	ND	0.50	ug/L							08/08/14	
trans-1,2-Dichloroethene	ND	0.50	ug/L							08/08/14	
trans-1,3-Dichloropropene	ND	0.50	ug/L							08/08/14	
Trichloroethene (TCE)	ND	0.50	ug/L							08/08/14	
Trichlorofluoromethane	ND	5.0	ug/L							08/08/14	
Vinyl Chloride	ND	0.50	ug/L							08/08/14	
Surrogate: 1,2-Dichlorobenzene-d4	*5.1*			*5.0*		*102*	*70-130*			08/08/14	
Surrogate: Bromofluorobenzene	*53*			*50*		*106*	*70-130*			08/08/14	
Blank Spike (A409983-BS1)											
1,1,1,2-Tetrachloroethane	11	0.50	ug/L	10		110	70-130			08/08/14	
1,1,1-Trichloroethane	12	0.50	ug/L	10		116	70-130			08/08/14	
1,1,2,2-Tetrachloroethane	11	0.50	ug/L	10		112	70-130			08/08/14	
1,1,2-Trichloro-1,2,2-trifluoroethane	11	10	ug/L	10		111	70-130			08/08/14	
1,1,2-Trichloroethane	11	0.50	ug/L	10		114	70-130			08/08/14	
1,1-Dichloroethane	12	0.50	ug/L	10		119	70-130			08/08/14	
1,1-Dichloroethene	12	0.50	ug/L	10		116	70-130			08/08/14	
1,1-Dichloropropene	12	0.50	ug/L	10		120	70-130			08/08/14	
1,2,3-Trichlorobenzene	9.5	0.50	ug/L	10		95	70-130			08/08/14	
1,2,4-Trichlorobenzene	9.7	0.50	ug/L	10		97	70-130			08/08/14	
1,2,4-Trimethylbenzene	11	0.50	ug/L	10		113	70-130			08/08/14	
1,2-Dichlorobenzene	11	0.50	ug/L	10		107	70-130			08/08/14	
1,2-Dichloroethane	11	0.50	ug/L	10		112	70-130			08/08/14	
1,2-Dichloropropane	12	0.50	ug/L	10		118	70-130			08/08/14	
1,3,5-Trimethylbenzene	12	0.50	ug/L	10		117	70-130			08/08/14	
1,3-Dichlorobenzene	11	0.50	ug/L	10		109	70-130			08/08/14	
1,3-Dichloropropane	11	0.50	ug/L	10		113	70-130			08/08/14	
1,4-Dichlorobenzene	11	0.50	ug/L	10		108	70-130			08/08/14	
2,2-Dichloropropane	11	0.50	ug/L	10		112	70-130			08/08/14	
2-Butanone	13	5.0	ug/L	10		126	70-130			08/08/14	

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Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual	
EPA 524.2 - Quality Control												
Batch: A409983										Prepared: 08/08/2014		
Prep Method: EPA 524.2										Analyst: JGB		
Blank Spike (A409983-BS1)												
2-Chlorotoluene	11	0.50	ug/L	10		112	70-130			08/08/14		
2-Hexanone	11	10	ug/L	10		114	70-130			08/08/14		
4-Chlorotoluene	11	0.50	ug/L	10		113	70-130			08/08/14		
4-Methyl-2-pentanone	11	5.0	ug/L	10		114	70-130			08/08/14		
Acetone	13	10	ug/L	10		127	70-130			08/08/14		
Benzene	12	0.50	ug/L	10		117	70-130			08/08/14		
Bromobenzene	11	0.50	ug/L	10		112	70-130			08/08/14		
Bromochloromethane	13	0.50	ug/L	10		129	70-130			08/08/14		
Bromodichloromethane	12	0.50	ug/L	10		117	70-130			08/08/14		
Bromoform	12	0.50	ug/L	10		117	70-130			08/08/14		
Bromomethane	15	0.50	ug/L	10		149	70-130			08/08/14	BS	*High*
Carbon Tetrachloride	12	0.50	ug/L	10		120	70-130			08/08/14		
Chlorobenzene	11	0.50	ug/L	10		111	70-130			08/08/14		
Chloroethane	12	0.50	ug/L	10		121	70-130			08/08/14		
Chloroform	12	0.50	ug/L	10		116	70-130			08/08/14		
Chloromethane	12	0.50	ug/L	10		120	70-130			08/08/14		
cis-1,2-Dichloroethene	12	0.50	ug/L	10		115	70-130			08/08/14		
cis-1,3-Dichloropropene	12	0.50	ug/L	10		116	70-130			08/08/14		
Dibromochloromethane	12	0.50	ug/L	10		115	70-130			08/08/14		
Dibromomethane	11	0.50	ug/L	10		114	70-130			08/08/14		
Dichlorodifluoromethane	14	0.50	ug/L	10		136	70-130			08/08/14	BS	*High*
Dichloromethane	12	0.50	ug/L	10		116	70-130			08/08/14		
Di-isopropyl ether (DIPE)	11	3.0	ug/L	10		115	70-130			08/08/14		
Ethyl tert-Butyl Ether (ETBE)	11	0.50	ug/L	10		112	70-130			08/08/14		
Ethylbenzene	11	0.50	ug/L	10		113	70-130			08/08/14		
Hexachlorobutadiene	10	0.50	ug/L	10		101	70-130			08/08/14		
Isopropylbenzene	11	0.50	ug/L	10		113	70-130			08/08/14		
m,p-Xylenes	23	0.50	ug/L	20		116	70-130			08/08/14		
Methyl-t-butyl ether	23	0.50	ug/L	20		114	70-130			08/08/14		
Naphthalene	9.6	0.50	ug/L	10		96	70-130			08/08/14		
n-Butylbenzene	11	0.50	ug/L	10		113	70-130			08/08/14		
n-Propylbenzene	12	0.50	ug/L	10		116	70-130			08/08/14		
o-Xylene	11	0.50	ug/L	10		113	70-130			08/08/14		
p-Isopropyltoluene	11	0.50	ug/L	10		111	70-130			08/08/14		
sec-Butylbenzene	11	0.50	ug/L	10		113	70-130			08/08/14		
Styrene	13	0.50	ug/L	10		129	70-130			08/08/14		
tert-Amyl Methyl Ether (TAME)	11	3.0	ug/L	10		114	70-130			08/08/14		
tert-Butyl alcohol (TBA)	11	2.0	ug/L	10		111	70-130			08/08/14		
tert-Butylbenzene	11	0.50	ug/L	10		112	70-130			08/08/14		
Tetrachloroethene (PCE)	10	0.50	ug/L	10		104	70-130			08/08/14		
Toluene	12	0.50	ug/L	10		115	70-130			08/08/14		
trans-1,2-Dichloroethene	12	0.50	ug/L	10		118	70-130			08/08/14		
trans-1,3-Dichloropropene	11	0.50	ug/L	10		113	70-130			08/08/14		
Trichloroethene (TCE)	11	0.50	ug/L	10		111	70-130			08/08/14		
Trichlorofluoromethane	13	5.0	ug/L	10		126	70-130			08/08/14		

BSK Associates Fresno

Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual	
EPA 524.2 - Quality Control												
Batch: A409983										Prepared: 08/08/2014		
Prep Method: EPA 524.2										Analyst: JGB		
Blank Spike (A409983-BS1)												
Vinyl Chloride	14	0.50	ug/L	10		144	70-130			08/08/14	BS	*High*
Surrogate: 1,2-Dichlorobenzene-d4	*5.6*			*5.0*		*112*	*70-130*			08/08/14		
Surrogate: Bromofluorobenzene	*57*			*50*		*113*	*70-130*			08/08/14		
Blank Spike Dup (A409983-BSD1)												
1,1,1,2-Tetrachloroethane	11	0.50	ug/L	10		115	70-130	4	30	08/08/14		
1,1,1-Trichloroethane	12	0.50	ug/L	10		118	70-130	2	30	08/08/14		
1,1,2,2-Tetrachloroethane	12	0.50	ug/L	10		122	70-130	8	30	08/08/14		
1,1,2-Trichloro-1,2,2-trifluoroethane	12	10	ug/L	10		115	70-130	4	30	08/08/14		
1,1,2-Trichloroethane	12	0.50	ug/L	10		119	70-130	5	30	08/08/14		
1,1-Dichloroethane	12	0.50	ug/L	10		122	70-130	2	30	08/08/14		
1,1-Dichloroethene	12	0.50	ug/L	10		121	70-130	4	30	08/08/14		
1,1-Dichloropropene	12	0.50	ug/L	10		123	70-130	2	30	08/08/14		
1,2,3-Trichlorobenzene	10	0.50	ug/L	10		102	70-130	7	30	08/08/14		
1,2,4-Trichlorobenzene	10	0.50	ug/L	10		103	70-130	7	30	08/08/14		
1,2,4-Trimethylbenzene	12	0.50	ug/L	10		120	70-130	6	30	08/08/14		
1,2-Dichlorobenzene	11	0.50	ug/L	10		112	70-130	5	30	08/08/14		
1,2-Dichloroethane	12	0.50	ug/L	10		117	70-130	4	30	08/08/14		
1,2-Dichloropropane	12	0.50	ug/L	10		123	70-130	4	30	08/08/14		
1,3,5-Trimethylbenzene	12	0.50	ug/L	10		123	70-130	5	30	08/08/14		
1,3-Dichlorobenzene	11	0.50	ug/L	10		113	70-130	4	30	08/08/14		
1,3-Dichloropropane	12	0.50	ug/L	10		119	70-130	5	30	08/08/14		
1,4-Dichlorobenzene	11	0.50	ug/L	10		112	70-130	4	30	08/08/14		
2,2-Dichloropropane	11	0.50	ug/L	10		114	70-130	2	30	08/08/14		
2-Butanone	14	5.0	ug/L	10		138	70-130	9	30	08/08/14	BS	*High*
2-Chlorotoluene	12	0.50	ug/L	10		116	70-130	3	30	08/08/14		
2-Hexanone	13	10	ug/L	10		125	70-130	9	30	08/08/14		
4-Chlorotoluene	12	0.50	ug/L	10		117	70-130	3	30	08/08/14		
4-Methyl-2-pentanone	12	5.0	ug/L	10		123	70-130	8	30	08/08/14		
Acetone	14	10	ug/L	10		143	70-130	12	30	08/08/14	BS	*High*
Benzene	12	0.50	ug/L	10		120	70-130	3	30	08/08/14		
Bromobenzene	12	0.50	ug/L	10		118	70-130	5	30	08/08/14		
Bromochloromethane	14	0.50	ug/L	10		137	70-130	6	30	08/08/14	BS	*High*
Bromodichloromethane	12	0.50	ug/L	10		121	70-130	4	30	08/08/14		
Bromoform	12	0.50	ug/L	10		123	70-130	4	30	08/08/14		
Bromomethane	16	0.50	ug/L	10		156	70-130	5	30	08/08/14	BS	*High*
Carbon Tetrachloride	12	0.50	ug/L	10		122	70-130	2	30	08/08/14		
Chlorobenzene	11	0.50	ug/L	10		115	70-130	3	30	08/08/14		
Chloroethane	12	0.50	ug/L	10		124	70-130	3	30	08/08/14		
Chloroform	12	0.50	ug/L	10		120	70-130	3	30	08/08/14		
Chloromethane	13	0.50	ug/L	10		127	70-130	5	30	08/08/14		
cis-1,2-Dichloroethene	12	0.50	ug/L	10		119	70-130	3	30	08/08/14		
cis-1,3-Dichloropropene	12	0.50	ug/L	10		122	70-130	5	30	08/08/14		
Dibromochloromethane	12	0.50	ug/L	10		120	70-130	4	30	08/08/14		
Dibromomethane	12	0.50	ug/L	10		119	70-130	4	30	08/08/14		

BSK Associates Fresno
Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual	
EPA 524.2 - Quality Control												
Batch: A409983										Prepared: 08/08/2014		
Prep Method: EPA 524.2										Analyst: JGB		
Blank Spike Dup (A409983-BSD1)												
Dichlorodifluoromethane	13	0.50	ug/L	10		133	70-130	3	30	08/08/14	BS	*High*
Dichloromethane	12	0.50	ug/L	10		121	70-130	4	30	08/08/14		
Di-isopropyl ether (DIPE)	12	3.0	ug/L	10		119	70-130	4	30	08/08/14		
Ethyl tert-Butyl Ether (ETBE)	12	0.50	ug/L	10		116	70-130	4	30	08/08/14		
Ethylbenzene	12	0.50	ug/L	10		117	70-130	3	30	08/08/14		
Hexachlorobutadiene	11	0.50	ug/L	10		105	70-130	4	30	08/08/14		
Isopropylbenzene	12	0.50	ug/L	10		118	70-130	4	30	08/08/14		
m,p-Xylenes	24	0.50	ug/L	20		118	70-130	2	30	08/08/14		
Methyl-t-butyl ether	24	0.50	ug/L	20		119	70-130	5	30	08/08/14		
Naphthalene	11	0.50	ug/L	10		107	70-130	11	30	08/08/14		
n-Butylbenzene	12	0.50	ug/L	10		118	70-130	4	30	08/08/14		
n-Propylbenzene	12	0.50	ug/L	10		118	70-130	2	30	08/08/14		
o-Xylene	12	0.50	ug/L	10		118	70-130	4	30	08/08/14		
p-Isopropyltoluene	12	0.50	ug/L	10		117	70-130	5	30	08/08/14		
sec-Butylbenzene	12	0.50	ug/L	10		117	70-130	3	30	08/08/14		
Styrene	14	0.50	ug/L	10		135	70-130	5	30	08/08/14	BS	*High*
tert-Amyl Methyl Ether (TAME)	12	3.0	ug/L	10		121	70-130	5	30	08/08/14		
tert-Butyl alcohol (TBA)	12	2.0	ug/L	10		120	70-130	8	30	08/08/14		
tert-Butylbenzene	12	0.50	ug/L	10		117	70-130	4	30	08/08/14		
Tetrachloroethene (PCE)	11	0.50	ug/L	10		107	70-130	2	30	08/08/14		
Toluene	12	0.50	ug/L	10		118	70-130	3	30	08/08/14		
trans-1,2-Dichloroethene	12	0.50	ug/L	10		121	70-130	3	30	08/08/14		
trans-1,3-Dichloropropene	12	0.50	ug/L	10		119	70-130	5	30	08/08/14		
Trichloroethene (TCE)	11	0.50	ug/L	10		114	70-130	3	30	08/08/14		
Trichlorofluoromethane	13	5.0	ug/L	10		134	70-130	6	30	08/08/14	BS	*High*
Vinyl Chloride	14	0.50	ug/L	10		144	70-130	0	30	08/08/14	BS	*High*
Surrogate: 1,2-Dichlorobenzene-d4	*5.5*			*5.0*		*110*	*70-130*			08/08/14		
Surrogate: Bromofluorobenzene	*54*			*50*		*109*	*70-130*			08/08/14		
EPA 525.2 - Quality Control												
Batch: A410269										Prepared: 08/14/2014		
Prep Method: EPA 525.2										Analyst: KHH		
Blank (A410269-BLK1)												
Alachlor	ND	1.0	ug/L							08/14/14		
Atrazine	ND	0.50	ug/L							08/14/14		
Benzo(a)pyrene	ND	0.10	ug/L							08/14/14		
Bis(2-ethylhexyl) adipate	ND	3.0	ug/L							08/14/14		
Bis(2-ethylhexyl) phthalate	ND	3.0	ug/L							08/14/14		
Bromacil	ND	10	ug/L							08/14/14		
Butachlor	ND	0.38	ug/L							08/14/14		
Diazinon	ND	0.25	ug/L							08/14/14		
Dimethoate	ND	10	ug/L							08/14/14		
Metolachlor	ND	0.50	ug/L							08/14/14		
Metribuzin	ND	0.50	ug/L							08/14/14		

BSK Associates Fresno
Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 525.2 - Quality Control											
Batch: A410269										Prepared: 08/14/2014	
Prep Method: EPA 525.2										Analyst: KHH	
Blank (A410269-BLK1)											
Molinate	ND	2.0	ug/L							08/14/14	
Propachlor	ND	0.50	ug/L							08/14/14	
Simazine	ND	1.0	ug/L							08/14/14	
Thiobencarb	ND	1.0	ug/L							08/14/14	
Surrogate: 1,3-Dimethyl-2-nitrobenzene	*4.7*			*5.0*		*93*	*70-130*			08/14/14	
Blank Spike (A410269-BS1)											
Alachlor	0.47	1.0	ug/L	0.50		95	70-130			08/14/14	
Atrazine	0.51	0.50	ug/L	0.50		102	70-130			08/14/14	
Benzo(a)pyrene	0.11	0.10	ug/L	0.10		111	70-130			08/14/14	
Bis(2-ethylhexyl) adipate	2.7	3.0	ug/L	3.0		91	70-130			08/14/14	
Bis(2-ethylhexyl) phthalate	2.9	3.0	ug/L	3.0		97	70-130			08/14/14	
Bromacil	2.3	10	ug/L	2.0		117	70-130			08/14/14	
Butachlor	1.2	0.38	ug/L	1.2		98	70-130			08/14/14	
Diazinon	0.041	0.25	ug/L	0.050		82	70-130			08/14/14	
Dimethoate	0.51	10	ug/L	0.50		102	70-130			08/14/14	
Metolachlor	2.5	0.50	ug/L	2.5		100	70-130			08/14/14	
Metribuzin	2.8	0.50	ug/L	2.5		111	70-130			08/14/14	
Molinate	2.7	2.0	ug/L	2.5		107	70-130			08/14/14	
Propachlor	2.5	0.50	ug/L	2.5		99	70-130			08/14/14	
Simazine	0.36	1.0	ug/L	0.35		101	70-130			08/14/14	
Thiobencarb	0.56	1.0	ug/L	0.50		112	70-130			08/14/14	
Surrogate: 1,3-Dimethyl-2-nitrobenzene	*4.8*			*5.0*		*95*	*70-130*			08/14/14	
Blank Spike Dup (A410269-BSD1)											
Alachlor	0.49	1.0	ug/L	0.50		98	70-130	3	30	08/14/14	
Atrazine	0.50	0.50	ug/L	0.50		100	70-130	2	30	08/14/14	
Benzo(a)pyrene	0.12	0.10	ug/L	0.10		122	70-130	9	30	08/14/14	
Bis(2-ethylhexyl) adipate	2.6	3.0	ug/L	3.0		85	70-130	7	30	08/14/14	
Bis(2-ethylhexyl) phthalate	2.8	3.0	ug/L	3.0		92	70-130	5	30	08/14/14	
Bromacil	2.4	10	ug/L	2.0		121	70-130	3	30	08/14/14	
Butachlor	1.2	0.38	ug/L	1.2		100	70-130	1	30	08/14/14	
Diazinon	0.044	0.25	ug/L	0.050		88	70-130	7	30	08/14/14	
Dimethoate	0.50	10	ug/L	0.50		101	70-130	2	30	08/14/14	
Metolachlor	2.5	0.50	ug/L	2.5		98	70-130	2	30	08/14/14	
Metribuzin	2.8	0.50	ug/L	2.5		110	70-130	0	30	08/14/14	
Molinate	2.8	2.0	ug/L	2.5		110	70-130	3	30	08/14/14	
Propachlor	2.8	0.50	ug/L	2.5		110	70-130	11	30	08/14/14	
Simazine	0.37	1.0	ug/L	0.35		107	70-130	5	30	08/14/14	
Thiobencarb	0.55	1.0	ug/L	0.50		109	70-130	2	30	08/14/14	
Surrogate: 1,3-Dimethyl-2-nitrobenzene	*4.8*			*5.0*		*97*	*70-130*			08/14/14	
Matrix Spike (A410269-MS1), Source: A4H0491-01											
Alachlor	0.48	1.0	ug/L	0.50	ND	96	70-130			08/14/14	
Atrazine	0.49	0.50	ug/L	0.50	ND	99	70-130			08/14/14	

BSK Associates Fresno

Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 525.2 - Quality Control											
Batch: A410269										Prepared: 08/14/2014	
Prep Method: EPA 525.2										Analyst: KHH	
Matrix Spike (A410269-MS1), Source: A4H0491-01											
Benzo(a)pyrene	0.12	0.10	ug/L	0.10	ND	101	70-130			08/14/14	
Bis(2-ethylhexyl) adipate	2.9	3.0	ug/L	3.0	ND	95	70-130			08/14/14	
Bis(2-ethylhexyl) phthalate	3.1	3.0	ug/L	3.0	ND	102	70-130			08/14/14	
Bromacil	2.3	10	ug/L	2.0	ND	115	70-130			08/14/14	
Butachlor	1.3	0.38	ug/L	1.2	ND	104	70-130			08/14/14	
Diazinon	0.051	0.25	ug/L	0.050	ND	102	70-130			08/14/14	
Dimethoate	0.51	10	ug/L	0.50	ND	101	70-130			08/14/14	
Metolachlor	2.7	0.50	ug/L	2.5	ND	107	70-130			08/14/14	
Metribuzin	2.8	0.50	ug/L	2.5	ND	113	70-130			08/14/14	
Molinate	2.7	2.0	ug/L	2.5	ND	110	70-130			08/14/14	
Propachlor	2.8	0.50	ug/L	2.5	ND	111	70-130			08/14/14	
Simazine	0.36	1.0	ug/L	0.35	ND	104	70-130			08/14/14	
Thiobencarb	0.59	1.0	ug/L	0.50	ND	118	70-130			08/14/14	
Surrogate: 1,3-Dimethyl-2-nitrobenzene	*5.4*			*5.0*		*109*	*70-130*			08/14/14	

Certificate of Analysis

Notes:

- The Chain of Custody document and Sample Integrity Sheet are part of the analytical report.
- Any remaining sample(s) for testing will be disposed of according to BSK's sample retention policy unless other arrangements are made in advance.
- All positive results for EPA Methods 504.1 and 524.2 require the analysis of a Field Reagent Blank (FRB) to confirm that the results are not a contamination error from field sampling steps. If Field Reagent Blanks were not submitted with the samples, this method requirement has not been performed.
- Samples collected by BSK Analytical Laboratories were collected in accordance with the BSK Sampling and Collection Standard Operating Procedures.
- J-value is equivalent to DNQ (Detected, not quantified) which is a trace value. A trace value is an analyte detected between the MDL and the laboratory reporting limit. This result is of an unknown data quality and is only qualitative (estimated). Baseline noise, calibration curve extrapolation below the lowest calibrator, method blank detections, and integration artifacts can all produce apparent DNQ values, which contribute to the un-reliability of these values.
- (1) - Residual chlorine and pH analysis have a 15 minute holding time for both drinking and waste water samples as defined by the EPA and 40 CFR 136. Waste water and ground water (monitoring well) samples must be field filtered to meet the 15 minute holding time for dissolved metals.
- Summations of analytes (i.e. Total Trihalomethanes) may appear to add individual amounts incorrectly, due to rounding of analyte values occurring before or after the total value is calculated, as well as rounding of the total value.
- RL Multiplier is the factor used to adjust the reporting limit (RL) due to variations in sample preparation procedures and dilutions required for matrix interferences.
- Due to the subjective nature of the Threshold Odor Method, all characterizations of the detected odor are the opinion of the panel of analysts. The characterizations can be found in Standard Methods 2170B Figure 2170:1.
- The MCLs provided in this report (if applicable) represent the primary MCLs for that analyte.

Definitions

mg/L:	Milligrams/Liter (ppm)	MDL:	Method Detection Limit	MDA95:	Min. Detected Activity
mg/Kg:	Milligrams/Kilogram (ppm)	RL:	Reporting Limit: DL x Dilution	MPN:	Most Probable Number
µg/L:	Micrograms/Liter (ppb)	ND:	None Detected at RL	CFU:	Colony Forming Unit
µg/Kg:	Micrograms/Kilogram (ppb)	pCi/L:	Picocuries per Liter	Absent:	Less than 1 CFU/100mLs
%:	Percent Recovered (surrogates)	RL Mult:	RL Multiplier	Present:	1 or more CFU/100mLs
NR:	Non-Reportable	MCL:	Maximum Contaminant Limit		

BSK is not accredited under the NELAC program for the following parameters: **NA**

Certifications: **Please refer to our website for a copy of our Accredited Fields of Testing under each certification.**

Fresno

State of California - ELAP	1180	State of Hawaii	4021
State of Nevada	CA000792014-1	State of Oregon - ORELAP	4021
EPA - UCMR3	CA00079	State of Washington	C997-14

Sacramento

State of California - ELAP	2435

Vancouver

State of Oregon - ORELAP	WA100008	State of Washington	C824-13

A4H0770

K Prime Laboratory

KPrim7574

08072014

Turnaround: Standard
Due Date: 8/21/2014

Printed: 8/7/2014 6:22:58PM
Page 1 of 1

SUBCONTRACT TO: BSK

A4H0770
KPrim7574

08/07/2014
10

PAGE 1 OF 1

K PRIME INC. 4.6

CHAIN OF CUSTODY RECORD

CONSULTING ANALYTICAL CHEMISTS 3621 Westwind Blvd., Santa Rosa, CA 95403 Phone: 707-527-7574 Fax: 707-527-7879

Client/Project ID: K PRIME INC.	Client Project No.: 9115
Send PDF to: carlakagel@sbcglobal.net, shellyalbertson@sbcglobal.net	Contact: Carla Kagel
Please send PDF by:	☐ EDF Global ID #: Log Code:

Sample Identification No.	Date	Time	Lab Sample No.	Sample Type	No. of Containers	Cyanide (SM4500-CN E)	Dissolved and Total Iron (EPA 200.7)	Cations (Ca, K, Mg, Na) (EPA 200.7)	Gross Alpha (EPA 900.0)	Gross Beta (EPA 900)	Perchlorate (EPA 314.0)	Uranium (EPA 200.8)	SVOCs (EPA 525.2)	VOCs (EPA 524.2)	Expected Turnaround Time	Remarks
						Method	Method	Method	Method				Method	Method		
123712	8/5/2014	0750		W	9	X	X	X	X	X	X	X	X	X	Std	*Dissolved Iron is Field-Filtered

Relinquished by: (signature)	Received by: (signature)	Date:	Time:
Myrtle Radish	On Trac	8/6/2014	1600
Relinquished by: (signature)	Received by: (signature)	Date:	Time:
	Michael Gilman	8/7/14	1202

On trac, Blue

Sample Integrity

BSK Bottles: (Yes) No Page 1 of 1

COC Info

Was temperature within range? Chemistry ≤ 6°C Micro < 10°C	(Yes) No NA	Were correct containers and preservatives received for the tests requested?	(Yes) No NA
If samples were taken today, is there evidence that chilling has begun?	(Yes) No NA	Were there bubbles in the VOA vials? (Volatiles Only)	Yes No (NA)
Did all bottles arrive unbroken and intact?	(Yes) No	Was a sufficient amount of sample received?	(Yes) No
Did all bottle labels agree with COC?	(Yes) No	Do samples have a hold time <72 hours?	Yes (No)
Was sodium thiosulfate added to CN sample(s) until chlorine was no longer present?	Yes No (NA)	Was PM notified of discrepancies? PM: By/Time:	Yes No (NA)

Bottles Received — "—" means preservation/chlorine checks are either N/A or are performed in the lab

250ml(A) 500ml(B) 1Liter(C) 40ml VOA(V)	Checks	Passed?	
Bacti $Na_2S_2O_3$	—	—	1
None (P) White Cap	—	—	1B
Cr6 Buffer (P) Blue Cap **Drinking Water**	pH 9-9.5	Y N	
Cr6 Buffer (P) Blue Cap **Wastewater**	pH 9.3-9.7	Y N	
HNO_3 (P) Red Cap	—	—	1C, 2B
H_2SO_4 (P) or (AG) Yellow Cap/Label	pH < 2	Y N	
NaOH (P) Green Cap	Cl pH >10	(Y) N	1A
NaOH + ZnAc (P)	pH > 9	Y N	
Dissolved Oxygen 300ml (g)	—	—	
None (AG) 608/8081/8082, 625, 632/8321, 8151, 8270	—	—	
HCl (AG) Lt Blue Label O&G, Diesel	—	—	
$Na_2S_2O_3$ 1 Liter (Brown P) 549	—	—	
$Na_2S_2O_3$ (AG) Blue Label 547, 515, 525, 548	—	—	2C
$Na_2S_2O_3$ (AG) Blue Label THMs 524.2 or 524.3	—	—	
$Na_2S_2O_3$ (CG) Blue Label 504, 505	—	—	
$Na_2S_2O_3$ + MCAA (CG) Orange Label 531	pH < 3	Y N	
NH_4Cl (AG) Purple Label 552	—	—	
EDA (AG) Brown Label DBPs	—	—	
Ascorbic + Maleic (AG) Lt Green Label 524.3	—	—	
HCL (CG) 524.2,BTEX,Gas, MTBE, 8260/624	—	—	2V
Buffer pH 4 (CG)	—	—	
None (CG)	—	—	
H_3PO_4 (CG) Salmon Label	—	—	
Other:			
Asbestos 1Liter Plastic w/ Foil	—	—	
Low Level Hg / Metals Double Baggie	—	—	
Bottled Water	—	—	
Clear Glass Jar 250 / 500 / 1 Liter	—	—	
Soil Tube Brass / Steel / Plastic	—	—	
Tedlar Bag / Plastic Bag	—	—	

Split

	Container	Preservative	Date/Time/Initials		Container	Preservative	Date/Time/Initials
S P				S P			
S P				S P			

Comments

Labeled by: NC @ 1745 Labels checked by: JH @ 1758 RUSH Paged by: _____ @ _____

External

A4H0770

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

September 03, 2014

Ms. Renea Rangell
BSK Analytical Laboratories
1414 Stanislaus Street
Fresno, CA 93706

RE: Project: A4H0770
Pace Project No.: 30127523

Dear Ms. Rangell:
Enclosed are the analytical results for sample(s) received by the laboratory on August 18, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Jacquelyn Collins
jacquelyn.collins@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3 4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: A4H0770
Pace Project No.: 30127523

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4 Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87663
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification # 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification # 8TMS-Q

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: A4H0770
Pace Project No.: 30127523

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30127523001	A4H0770-01	Drinking Water	08/05/14 07:50	08/18/14 09:55

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: A4H0770
Pace Project No.: 30127523

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30127523001	A4H0770-01	EPA 900.0	FCC	2

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: A4H0770
Pace Project No.: 30127523

Sample: A4H0770-01 **Lab ID: 30127523001** Collected: 08/05/14 07:50 Received: 08/18/14 09:55 Matrix: Drinking Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**0.319 ± 1.31 (2.81) C:NA T:NA**	pCi/L	08/28/14 18:41	12587-46-1	
Gross Beta	EPA 900.0	**0.030 ± 0.605 (1.26) C:NA T:NA**	pCi/L	08/28/14 18:41	12587-47-2	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: A4H0770
Pace Project No.: 30127523

QC Batch: RADC/21039 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30127523001

METHOD BLANK: 776804 Matrix: Water
Associated Lab Samples: 30127523001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.025 ± 0.830 (2.17) C:NA T:NA	pCi/L	08/29/14 07:28	
Gross Beta	0.756 ± 0.781 (1.64) C:NA T:NA	pCi/L	08/29/14 07:28	

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.

Pace Analytical Services, Inc.
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Greensburg PA 15601
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QUALIFIERS

Project: A4H0770
Pace Project No.: 30127523

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

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.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

BSK Analytical Laboratories
Engineers & Laboratories

SUBCONTRACT ORDER

A4H0770

SENDING LABORATORY:

BSK Associates Fresno
1414 Stanislaus St
Fresno, CA 93706
Phone: 559-497-2888
Fax: 559-485-6935
Project Manager: Renea Rangell
E-mail: rrangell@bskinc.com

RECEIVING LABORATORY:

Pace Analytical-Radiochem
1638 Roseytown Rd Ste 2,3,4
Greensburg, PA 15601
Phone :(724) 850-5600
Fax: (724) 722-5208
Turnaround (Days): Standard
QC Deliverables: I Std II III IV

30127523

Sample ID	Samp Desc	Sample Date
A4H0770-01	123712	08/05/2014 07:50

Matrix: Water

Analysis: (1) 1 L p w/ HNO3
EXT-Gross Alpha and Beta

Released By	Date	Received By	Date
	5/12/14		0855
Released By	Date	Received By	Date

Pace Analytical

Client Name: BSK

Project # 30127523

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 1Z709X9 03592306 7

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no Biological Tissue is Frozen: Yes No

Packing Material: Bubble Wrap X Bubble Bags ___ None ___ Other foam

Thermometer Used NA Type of ice: Wet Blue (None) ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.: NA °C Correction Factor: NA °C Final Temp: NA °C

Date and Initials of person examining contents: SPA 8-19-14

Temp should be above freezing to 6°C

		Comments:
Chain of Custody Present:	☒Yes ☐No ☐N/A	1
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3
Sampler Name & Signature on COC:	☐Yes ☒No ☐N/A	4
Samples Arrived within Hold Time:	☒Yes ☐No ☐N/A	5
Short Hold Time Analysis (<72hr):	☐Yes ☒No ☐N/A	6
Rush Turn Around Time Requested:	☐Yes ☒No ☐N/A	7
Sufficient Volume	☒Yes ☐No ☐N/A	8
Correct Containers Used:	☒Yes ☐No ☐N/A	9
-Pace Containers Used	☐Yes ☒No ☐N/A	
Containers Intact:	☒Yes ☐No ☐N/A	10
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11
Sample Labels match COC.	☐Yes ☒No ☐N/A	12. No date or time on samples
-Includes date/time/ID/Analysis Matrix: WT		
All containers needing preservation have been checked	☒Yes ☐No ☐N/A	13. pH<2
All containers needing preservation are found to be in compliance with EPA recommendation	☒Yes ☐No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☒No	Initial when completed SPA / Lot # of added preservative
Samples checked for dechlorination.	☐Yes ☐No ☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☒N/A	15.
Trip Blank Present:	☐Yes ☒No ☐N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: ___ Date/Time: ___

Comments/ Resolution: ___

Project Manager Review: [signature] **Date:** 8/19/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

page 2

30127523

Project Number:

Client Name: BSK

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other	Other
001	wt																		1					

SCURF Back (C016-4 15May2012).xls

Quality Control Sample Performance Assessment

PaceAnalytical
www.pacelabs.com

Analyst:	FCC		
Date:	8/28/2014	Method:	EPA 900.0
Worklist:	21039	SOP:	PGH-R-001
Matrix:	DW	MB Sample ID:	776834

Method Blank Assessment

Analyte	Activity	1.96 Sig Unc	MDC	Critical Value	Flag	Assessment
Gross Alpha	0.0250	0.8300	2.1660	0.69400		
Gross Beta	0.7560	0.7590	1.6360	0.54900		

Laboratory Control Sample Assessment

	LCS	LCSD	LCS	LCSD	LCS	LCSD
Analyte:	Gross Alpha		Gross Beta			
Count Date:	8/29/14 7:29	8/29/14 7:29	8/29/14 7:29	8/29/14 7:29		
Spike I.D.:	13-048GA	13-048GA	13-047GB	13-047GB		
Spike Concentration (pCi/L):	64.598	64.598	84.410	84.410		
Volume Used (mL):	0.050	0.050	0.050	0.050		
Aliquot Volume (L, g, F):	0.201	0.199	0.201	0.199		
Target Conc. (pCi/L, g, F):	16.080	16.154	21.021	21.161		
1.96 Sigma Uncertainty (Calculated):	0.566	0.571	1.277	1.296		
Result (pCi/L, g, F):	13.563	14.312	24.339	23.098		
1.96 Sigma Unc:	2.426	2.477	2.617	2.547		
% Recovery:	84.31%	88.38%	115.88%	109.16%		
Assessment:	Pass	Pass	Pass	Pass		
Upper % Recovery Limits:	121.00%	121.00%	130.00%	130.00%		
Lower % Recovery Limits:	69.00%	69.00%	79.00%	79.00%		

Duplicate Sample Assessment

LCS/LCSD Y or N?:	Y	Y
Analyte:	Gross Alpha	Gross Beta
Sample I.D.:	LCS21039	LCS21039
Duplicate Sample I.D.:	LCSD21039	LCSD21039
Sample Result (pCi/L, g, F):	13.5630	24.3590
1.96 Sigma Unc:	2.4260	2.6170
Sample Duplicate Result (pCi/L, g, F):	14.3120	23.0980
Duplicate Sample 1.96 Sigma Unc.:	2.4770	2.5470
Either results below MDC?:	NO	NO
Relative Percent Difference:	5.37%	5.31%
Assessment:	Pass	Pass
% RPD Limit:	34.00%	29.00%

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC

Sample Matrix Spike Control Assessment

Analyte:	Gross Alpha	Gross Beta
Sample Collection Date:	8/7/2014	8/7/2014
Sample I.D:	30127579001	30127579001
Sample MS I.D:	30127579001MS	30127579001MS
Sample MSD I.D:		
Spike I.D.:	13-048GA	13-047GB
MS/MSD Decay Corrected Spike Conc. (pCi/L):	64.598	84.534
Spike Volume Used in MS (mL):	0.10	0.10
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.2070	0.2070
MS Target Conc.(pCi/L, g, F):	31.210	40.842
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike uncertainty (calculated):	1.103	2.487
MSD Spike uncertainty (calculated):		
Sample Result:	-0.021	0.288
Sample 1.96 Sigma Unc.:	0.332	1.043
Sample Value Spike Recvr.:	27.625	41.936
Sample MS 1.96 Sigma Unc.:	3.479	3.209
Sample Matrix Spike Duplicate Result:		
Sample MSD 1.96 Sigma Unc.:		
MS % Recovery:	88.56%	101.97%
MSD % Recovery:		
MS Assessment:	Pass	Pass
MSD Assessment:		
MS/MSD Upper % Recovery Limits:	121.00%	130.00%
MS/MSD Lower % Recovery Limits:	69.00%	79.00%

Matrix Spike/Matrix Spike Duplicate Sample Assessment

Analyte:	
Sample I.D:	
Sample MS I.D:	
Sample MSD I.D:	
Sample Matrix Spike Result:	
Sample Matrix Spike 1.96 Sigma Unc.:	
Sample Matrix Spike Duplicate Result:	
Sample Matrix Spike Duplicate 1.96 Sigma Unc.:	
MS/MSD Relative Percent Difference:	
MS/ MSD RPD Assessment:	
% RPD Limit:	

Comments:

Erler & Kalinowski, Inc.

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

CONSULTING ENGINEERS AND SCIENTISTS 1870 Ogden Drive, Burlingame CA 940 PHONE: 650-292-9100 FAX: 650-552-9012

Project Name: East Palo Alto Test Well

Project No. B40016.00

Location: East Palo Alto, CA

Sampled By: Daniel Correia

Reporting:

Electronic Format: EDF Hard Copy Format: PDF

EPA Data Report Level: II Reporting Basis: As Rec'd

Please report results to the following:
(1) **EKI**: labs@ekiconsult.com
(2)**Chris Heppner**: cheppner@ekiconsult.com
(3) **Anona Dutton**: adutton@ekiconsult.com
(4) **Daniel Correia**: dcorreia@ekiconsult.com

Laboratory:

K Prime, Inc.
3621 Westwind Blvd
Santa Rosa, CA 95403
(707) 527-7574

ANALYSES REQUESTED

Method No.	EPA 200.8	SM 2320 B	EPA 300	EPA150.1	SM 2510 B	EPA 160.1	SM 2340 B	SM 4500-CN E	SM 5540 C	EPA 200.7	EPA 200.7	SM 2120B 2130B	EPA 00-02	EPA 900	EPA 314.0	EPA 524.2a	EPA 525.2	EPA 200.8			
Analyte Group	Metals	Alkalinity	Anions	pH	Specific Conductance	TDS	Total Hardness	Cyanide	MBAS	Dissolved and Total Iron	Cations	Color, Odor, Turbitiy	Gross Alpha	Gross Beta	Perchlorate	VOCs	SVOCs	Uranium	PLACE ON HOLD	EXPECTED T.A.T	REMARKS
EPA Test Well - DW-080514	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		Standard	

EKI COC No.: 20140805-1

Revision: _____ (A, B, C, D, etc.)

Date: By:

Field Sample Identification	Lab Sample No.	Date	Time	Matrix	Number / Type of Container (Preservative)
EPA Test Well - DW-080514	123712	8/5/2014	0750	Drinking water	250 ml Poly w/ HNO3 (Field filtered); 1L poly, unpreserved; 250 ml poly w/NaOH; 1L Amber, unpreserved; 1L poly, unpreserved; 500 ml poly w/HNO3; 500 ml poly w/HNO3; 1L poly w/HNO3; 500 ml poly, unpreserved 3X40 ml VOA w/HCL; 2 X 1L amber w/ sodium thiosulfate

Special Instructions:

Relinquished by:	(Signature/Affiliation) EKI	Date 8/5/14	Time 1504	Received by:	(Signature/Affiliation or Carrier/Air Bill No.)	
Relinquished by:	(Signature/Affiliation)	Date 8/5/14	Time 17:24	Received by: Rec-Cools KPI	(Signature/Affiliation)	
Relinquished by:	(Signature/Affiliation)	Date	Time	Received by:	(Signature/Affiliation)	

Attachment G

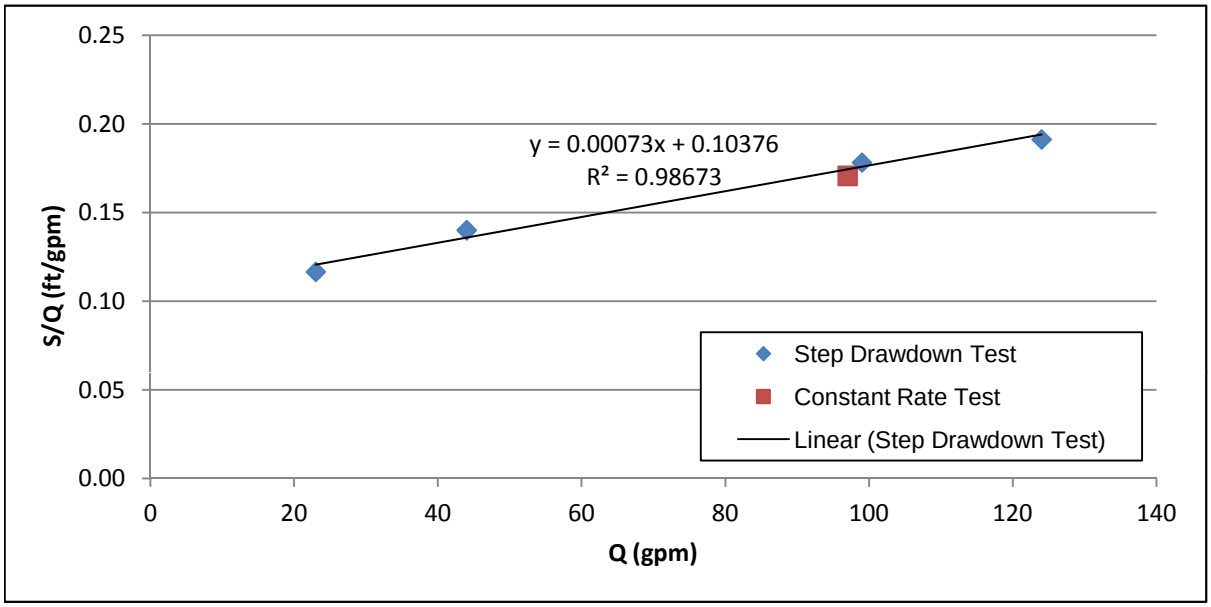
Aquifer Test Analysis Back-up

Step-Drawdown Test Analysis by the Hantush-Bierschenk Method

Step	Flow Rate, Q (gpm)	Drawdown, S (ft)	Specific Capacity, Q/S (gpm/ft)	Inverse Specific Capacity, S/Q (ft/gpm)
1	23	2.68	8.58	0.117
2	44	6.16	7.14	0.140
3	99	17.64	5.61	0.178
4	124	23.71	5.23	0.191
CRT	97	16.56	5.86	0.171

linear loss coefficient 0.10376 ft/gpm

non-linear loss coefficient 0.00073 ft/(gpm^2) = 0.04069 min^2/ft^5



Abbreviations:

ft = feet
gpm = gallons per minute
min = minutes
Q = pumping rate
S = drawdown

Notes:

1. Method reference: Kruseman and de Ridder, 1994, *Analysis and Evaluation of Pumping Test Data, Second Edition* , Procedure 14.1.
2. Drawdown and specific capacity values are for a 90 minute pumping duration.

Step-Drawdown Test Recovery Analysis

Reference: Kawecki, 1993, Recovery Analysis from Pumping Tests with Stepped Discharge, *Groundwater* , vol. 31, no. 4, pp. 585-592.

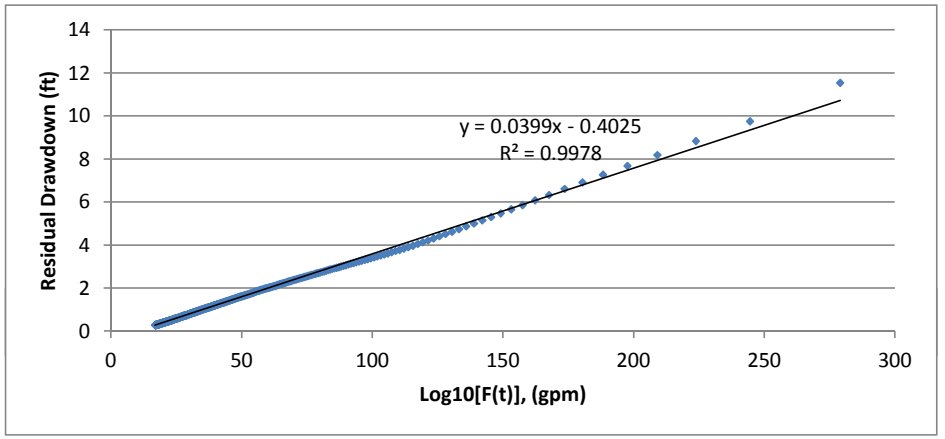
Period	tn (min)	tn (day)	Q (gpm) (gpm)	Q (ft^3/d)
t1	0	0	23	4,427
t2	90	0.0625	44	8,470
t3	180	0.125	99	19,057
t4	270	0.1875	124	23,870
t5	363.4	0.25236111	0	0

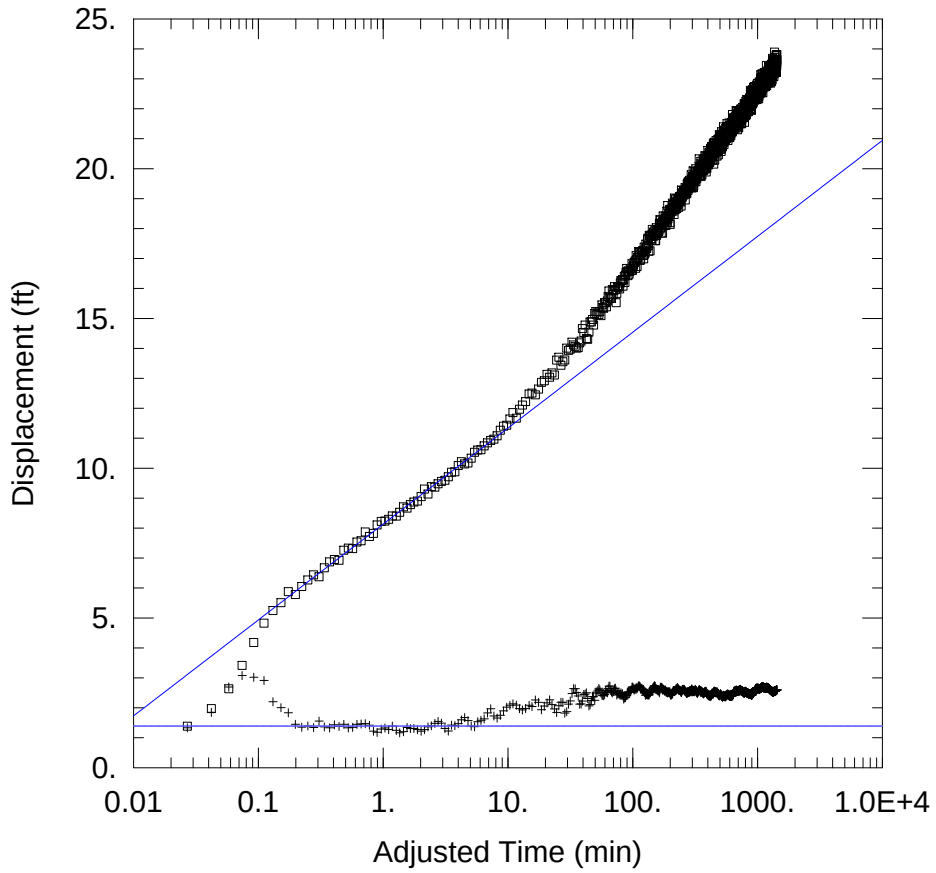
	slope (ft/gpm)	slope (ft/gpd)	T (gpd/ft)	T (ft^2/d)
T (all data)	0.0399	2.77E-05	6,609	884
T (early; s' between 6 and 4)	0.0453	3.14E-05	5,822	778
T (mid; s' between 4 and 2)	0.0350	2.43E-05	7,529	1,006
T (late; s' b less than 2)	0.0408	2.83E-05	6,460	864

Abbreviations:

d = days
ft = feet
gpd = gallons per day
gpm = gallons per minute
T = transmissivity

t (min)	t (day)	F(t)	log10(F(t))	residual drawdown (ft)
364.5	0.25313	1.026E+279	279.0113	11.54
365.5	0.25382	3.11E+244	244.4928	9.7525
366.5	0.25451	6.622E+223	223.821	8.83475
367.5	0.25521	1.16E+209	209.0644	8.18675
368.5	0.2559	4.062E+197	197.6087	7.6825
369.5	0.2566	1.83E+188	188.2623	7.26925
370.5	0.25729	2.405E+180	180.3811	6.9143333
371.5	0.25799	3.775E+173	173.5769	6.6126
372.5	0.25868	3.962E+167	167.5979	6.3315
373.5	0.25938	1.868E+162	162.2714	6.08575
374.5	0.26007	2.975E+157	157.4736	5.8655
375.5	0.26076	1.296E+153	153.1128	5.6641667
376.5	0.26146	1.316E+149	149.1193	5.4785
377.5	0.26215	2.746E+145	145.4387	5.30825





CONSTANT RATE TEST

PROJECT INFORMATION

Company: EKI
Client: East Palo Alto
Project: B40016.00
Location: East Palo Alto, CA
Test Well: Pad D Test Well
Test Date: 4 Aug 2014

AQUIFER DATA

Saturated Thickness: 125. ft

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
Pad D Test Well	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ Pad D Test Well	0	0

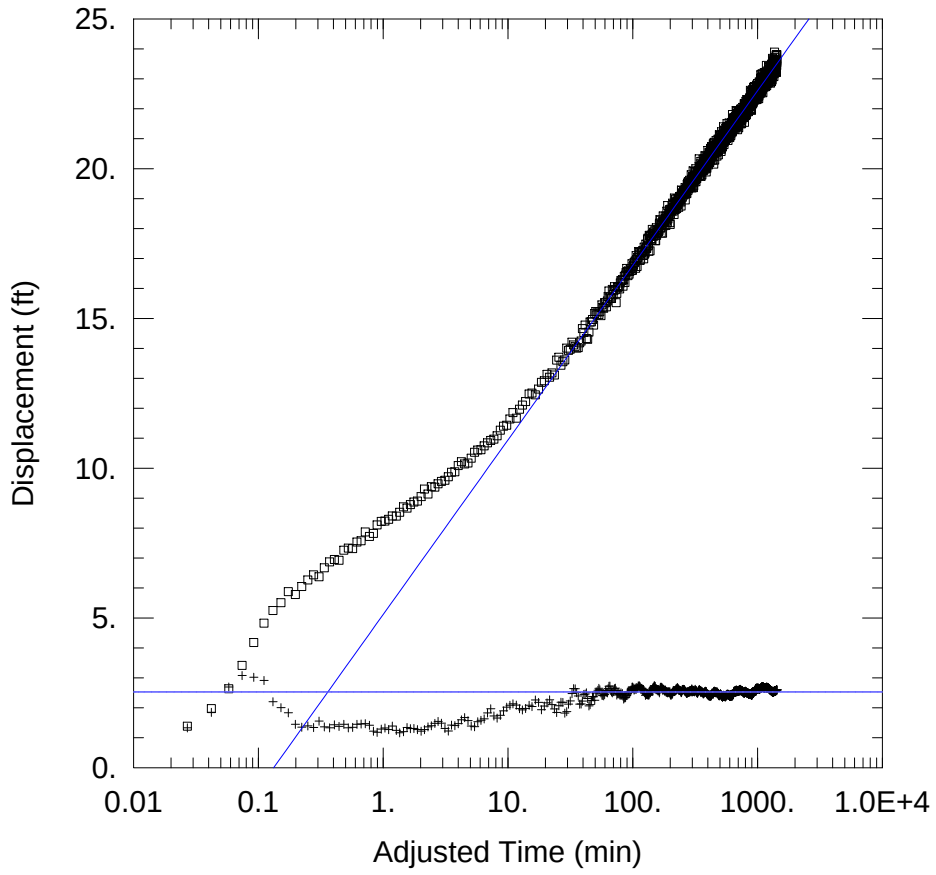
SOLUTION

Aquifer Model: Confined

Solution Method: Cooper-Jacob

T = 1068.7 ft^2/day

S = 0.0192



CONSTANT RATE TEST

PROJECT INFORMATION

Company: EKI
Client: East Palo Alto
Project: B40016.00
Location: East Palo Alto, CA
Test Well: Pad D Test Well
Test Date: 4 Aug 2014

AQUIFER DATA

Saturated Thickness: 125. ft

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
Pad D Test Well	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ Pad D Test Well	0	0

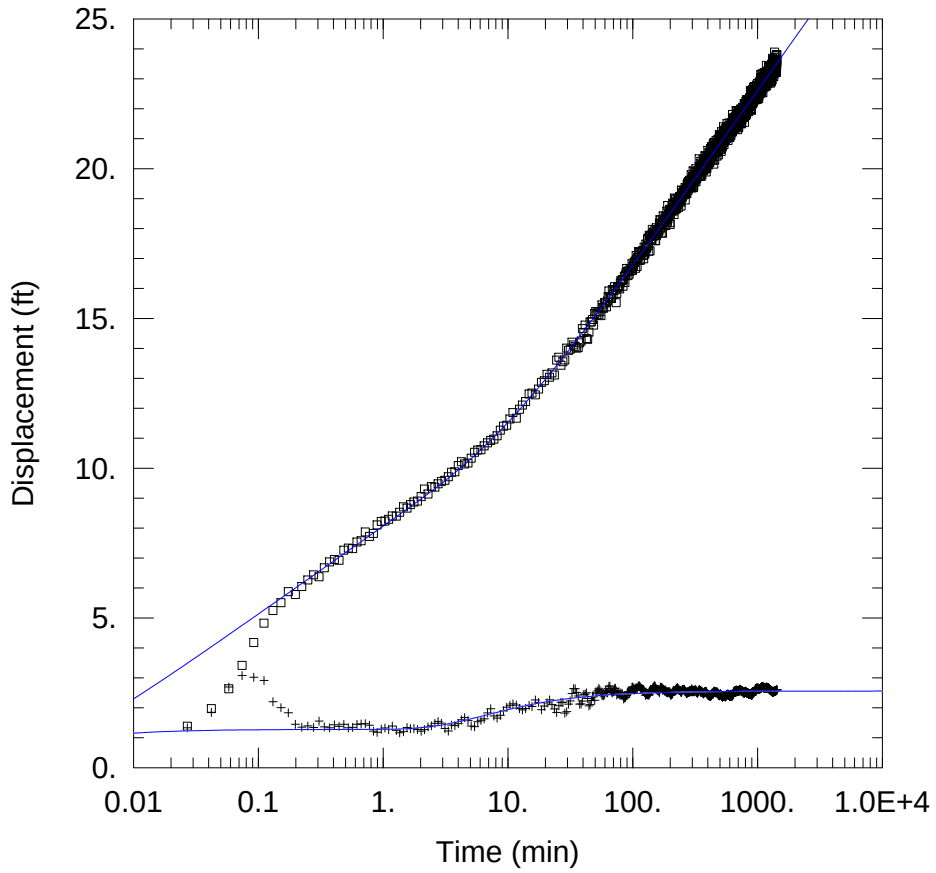
SOLUTION

Aquifer Model: Confined

Solution Method: Cooper-Jacob

T = 586.9 ft^2/day

S = 0.486



CONSTANT RATE TEST

PROJECT INFORMATION

Company: EKI
Client: East Palo Alto
Project: B40016.00
Location: East Palo Alto, CA
Test Well: TW
Test Date: 4 Aug 2014

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
Pad D Test Well	0	0

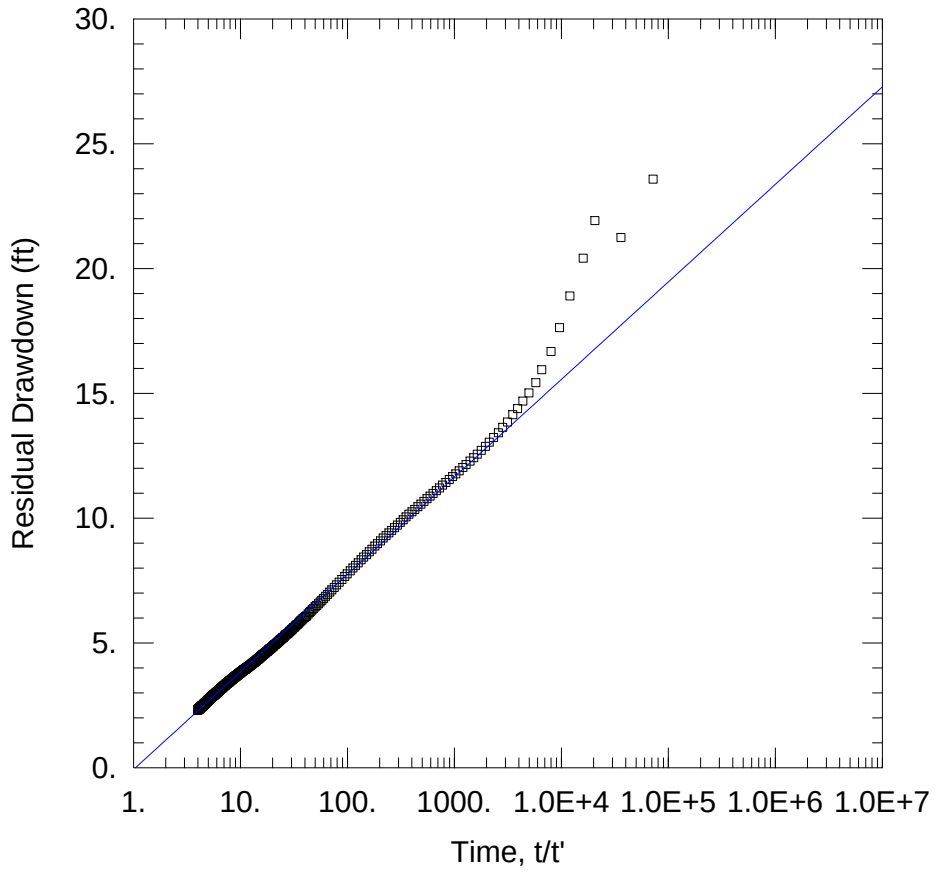
Observation Wells

Well Name	X (ft)	Y (ft)
▫ Pad D Test Well	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 1161. ft^2/day
Kz/Kr = 0.1
S = 0.01328
b = 125. ft



CRT RECOVERY

PROJECT INFORMATION

Company: EKI
Client: East Palo Alto
Project: B40016.00
Location: East Palo Alto, CA
Test Well: Pad D Test Well
Test Date: 5 Aug 2014

AQUIFER DATA

Saturated Thickness: 125. ft

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
Pad D Test Well	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ Pad D Test Well	0	0

SOLUTION

Aquifer Model: Confined

Solution Method: Theis (Recovery)

T = 875.9 ft^2/day

S/S' = 1.043

Attachment H

Survey Report

MacLeod and Assoc., Inc. September 5, 2014
EKI Project B40016.00
Survey of Pad D Test Well
For Field Survey dated August 26, 2104

Pt. #	Northing	Easting	Elev.	Description
202	1993156.17	6087179.15	18.47	CB CL
203	1993209.48	6087229.31	21.16	FH CL TOP
204	1993254.86	6087139.57	17.93	TOP OF CASING PAD D TEST WELL
205	1993255.02	6087139.59	18.52	LID OF PAD D TEST WELL
206	1993253.32	6087138.18	18.47	GD @ PAD D TEST WELL
207	1993209.52	6087228.03	17.93	GD @ FH

MacLeod and Assoc., Inc. September 5, 2014
EKI Project B40016.00
Survey of Pad D Test Well

Survey Date: August 26, 2014
XY Survey Method: CGPS
XY Datum: NAD83
XY ACC VAL - 3 cm
GPS Equip: L510
Elev. Method: CGPS
Elev. Datum: NAVD88
Elev. ACC VAL: 3 cm

Pt. #	Latidude	Longitude	Elev.	Description
202	37.4573919	-122.1347975	18.47	CB CL
203	37.4575407	-122.1346279	21.16	FH CL TOP
204	37.4576610	-122.1349398	17.93	TOP OF CASING PAD D TEST WELL
205	37.4576615	-122.1349397	18.52	LID OF PAD D TEST WELL
206	37.4576567	-122.1349445	18.47	GD @ PAD D TEST WELL
207	37.4575408	-122.1346323	17.93	GD @ FH