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By Alameda County Environmental Health 2:13 pm, Sep 11, 2017

Keith Nowell, P.G., C.HG
Alameda County Environmental Health (ACEH)
1131 Harbor Bay Parkway
Alameda, California 94502

Subject: **TRANSMITTAL LETTER & CERTIFICATION STATEMENT**

Location: **Former Exxon Station, 3055 35th Avenue, Oakland**

ACEH LOP#: **RO-0000271; GeoTracker #: T0600100538;**

As the legally authorized representative for the responsible party, I certify the following statement to satisfy regulatory requirements for technical report submittals:

- ***I declare, under penalty of perjury, that the information and/or recommendations contained in the aforementioned report, prepared on my behalf by WEBER, HAYES AND ASSOCIATES, are true and correct to the best of my knowledge.***

Sincerely,

Lynn A. Worthington

Lynn Worthington

c: **Golden Empire Properties, Inc.**
5942 MacArthur Blvd # B
Oakland. California 94605-1698

Weber, Hayes & Associates
Hydrogeology and Environmental Engineering
120 Westgate Drive, Watsonville, CA 95076
(831) 722-3580 // www.weber-hayes.com

September 8, 2017

Keith Nowell, PG, CHG
Alameda County Department of Environmental Health
Local Oversight Program (LOP) for Hazardous Materials Releases
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Subject: **Investigation for Shallow Groundwater**

Site: **Former Exxon, 3055 35th Avenue, Oakland, CA, Fuel Leak Case RO0000271**
GeoTracker Global ID T0600100538

Dear Mr. Nowell:

This report describes the installation and sampling of four (4) piezometers to investigate shallow groundwater at the Former Exxon, 3055 35th Avenue, Oakland, California (the Site, Figure 1). This investigation was completed in accordance with our *Work Plan Addendum* dated June 27, 2017[1] and e-mail modification on July 5, 2017.[2] The *Work Plan Addendum* and modification were approved by Alameda County Department of Environmental Health (ACDEH) on July 10, 2017. The investigation was conducted in response to the directive issued during the *Underground Storage Tank Expedited Claim Account Pilot Project Joint Execution Team (JET) Meeting* on June 1, 2017.[3] The work and results of this investigation complement our *Work Plan for Additional Site Investigation*,[4] which was approved by ACDEH on March 7, 2017.

Background information regarding the release, previous investigations, and clean-up can be found in the *Work Plan for Additional Site Investigation*.

[1] Weber, Hayes, and Associates, *Work Plan Addendum*, June 28, 2017
[2] Weber, Hayes, and Associates, *Proposal to Modify the Work Plan Addendum*, July 5, 2017.
[3] *Underground Storage Tank Expedited Claim Account Pilot Project (ECAP) Joint Execution Team (JET) Meeting Agenda with Notes, UST Claim #1275, Exxon, 3055 35th Ave, Alameda County,* June 1, 2017
[4] Weber, Hayes, and Associates, *Work Plan for Additional Site Investigation,* December 16, 2016

Weber, Hayes and Associates field staff initially mobilized to the site on July 28, 2017 to oversee the installation of two (2) shallow piezometers (screened from 9.5 feet to 12.5 feet below ground surface) and two (2) intermediate piezometers (screened from 17 feet to 20 feet below ground surface). Piezometer locations (see Figure 2) and construction were chosen based upon the lithology observed in boring DP-13 and the proximity to monitoring well MW-3, which has the highest concentration of hydrocarbons at the site. Field inspections of the piezometers followed on August 18, August 31, and September 1, 2017 to measure the depth to water and attempt to develop the piezometers and collect groundwater samples from them.

Results of the investigation indicate:

- **Shallow screened piezometers PZ-1A and PZ-2A are dry (screened 9 to 12 feet below ground surface [bgs])**
- **Though some water came into the intermediate screened piezometers PZ-1B and PZ-2B, there is not a viable water bearing zone at 17 to 20 feet bgs at the site**

1.0 Field Work

Field work activities related to the groundwater investigation included:

- Obtained drilling permits from Alameda County Department of Public Works (Approved Application ID Numbers: 1499719891941 & 1499721738234) and notifying regulatory staff before commencing field work

- July 28, 2017: Installing a total of four (4) ¾-inch diameter piezometers with a California C-57 Licensed drilling contractor, Environmental Control Associates (License #: 695970), drilling under our supervision. Two (2) piezometers were installed to a depth of approximately 12.5 feet bgs (PZ-1A & PZ-2A) and two (2) piezometers were installed to a depth of approximately 20 feet bgs (PZ-1B & PZ-2B), using a Geoprobe® hydraulic driven direct-push drill rig. Piezometer installation was in accordance with our standard field

methodologies, which are presented in Appendix A. Each piezometer was constructed using a pre-packed 3-foot long screened section at its' base:

- PZ-1A & PZ-2A: Shallow Screened - approximately 9.5 to 12.5 feet bgs with 9.5 feet of blank casing to the ground surface.
- PZ-1B & PZ-2B: Screened from approximately 17 to 20 feet bgs with 17 feet of blank casing to the ground surface.

The piezometers were completed with flush-mounted vaults at the ground surface. Geologic logs of the piezometers are presented in Appendix B. The locations of the piezometers are shown on Figure 2 – PZ-1A and B are upgradient of well MW-3 and PZ-2A and B are downgradient of the site at 3033 35th Avenue.

As discussed in the June 1, 2017 JET phone meeting, the design of the piezometers was based on the lithology observed in direct-push soil boring DP-13, which was drilled upgradient of well MW-3 in April 2017, and the proximity to MW-3, which has the highest concentration of hydrocarbons at the site. The Geologic Log of Boring DP-13 is also presented in Appendix B.

- August 18, 2017: Weber Hayes field staff returned to the site after at least forty-eight hours had elapsed following piezometer construction (to allow the seal to set) to examine the piezometers for water presence and attempt to develop the piezometers and collect groundwater samples. Due to dewatering after removing approximately one casing and filter pack volume of water, the piezometers could not be properly developed or sampled. Depth to water measurements were recorded at each monitoring and remediation well at the site. Results are presented in section 2.0.

- August 31 and September 1, 2017: Weber Hayes field staff returned to the site to inspect the piezometers, measure the depth to groundwater, and attempt to develop and collect samples from the piezometers. As in the previous field event, the water

levels in the piezometers did not return to 80% of the initial height following purging, even after 24-hours had elaspsed.

2.0 Results and Observations

The following results and observations were recorded during field operations:

- All four of the Piezometers were dry after installation on July 28, 2017
- Shallow screened Piezometers PZ-1A and PZ-2A (9.5 to 12.5 feet bgs) were dry upon inspection on August 18, August 31, and September 1, 2017
- Intermediate screened piezometers PZ-1B and PZ-2B (17 to 20 feet bgs) contained approximately 2.5-3 feet of water on August 18 and August 31, 2017. On both occasions, these piezometers dewatered after an initial purge of approximately one casing and filter pack volume of water was removed.
- Comparing water levels in PZ-1B and 2B on August 31 and September 1, 2017 (24-hours after dewatering) indicated that the waters levels *did not* return to 80% of the initial water height within 24 hours (see the Table below):
    - PZ-1B recovered to 34 % of its' initial water level (18.65 feet bgs vs. 16.90 feet bgs)
    - PZ-2B recovered to 36 % of its' initial water level (18.61 feet bgs vs. 16.54 feet bgs)
- Depth to water measurements at nearby monitoring and remediation wells during these field investigations are summarized in the Table below:

Well ID	Date Sampled	Depth to Water (ft. bgs)	Screened Interval (ft. bgs)
MW-1	8/18/2017	15.01*	10 - 25
MW-2	8/18/2017	14.78*	10 - 25
MW-3	8/18/2017	15.09	10 - 25
	8/31/2017	15.35	
MW-4	8/18/2017	15.93	10 - 30
MW-5	8/18/2017	15.64	20 - 30
MW-6	8/18/2017	14.76	20 - 30
RW-5	8/18/2017	14.27	5 - 25.7
RW-6	8/18/2017	14.40	5 - 25.5
RW-7	8/18/2017	14.93	5 - 29.5
RW-8	8/18/2017	16.32	5 - 29.5
RW-9	8/18/2017	16.01	5 - 25
RW-10	8/18/2017	14.99	5 - 25
RW-11	8/18/2017	14.93	5 - 25
RW-12	8/18/2017	14.39	5 - 27
RW-13	8/18/2017	15.41	5 - 25
RW-14	8/18/2017	15.06	5 - 25
PZ-1A	8/18/2017	Dry	9.5 - 12.5
	8/31/2017	Dry	
	9/1/2017	Dry	
PZ-1B	8/18/2017	17.57	17 - 20
	8/31/2017	16.90	
	9/1/2017	18.65	
PZ-2A	8/18/2017	Dry	9.5 - 12.5
	8/31/2017	Dry	
	9/1/2017	Dry	
PZ-2B	8/18/2017	16.97	17 - 20
	8/31/2017	16.54	
	9/1/2017	18.61	

Note:

*= Depth to water is approximate based on well construction with monument surface completion

3.0 Conclusions and Recommedations

The shallow screened piezometers were dry on the date of construction (July 28, 2017) and during subsequent filed inspections on August 18 and 31 and September 1, 2017. There was no evidence of groundwater to a depth of 12.5 feet bgs at the site during this investigation. Multiple lines of evidence indicate that **the intermediate zone between 17 feet and 20 feet bgs is not a viable water bearing zone**:

1) In site monitoring wells, which are all screened to *at least* twenty-five (25) feet bgs, stabilized groundwater was observed at depths ranging from 14.27 feet bgs to 16.32 feet bgs. In intermediate screened piezometers PZ-1B and 2B, which do not penetrate the confining clay layer found at approximately 20 feet bgs, stabilized groundwater was observed at depths ranging from 16.54 to 17.57 feet bgs.
2) The intermediate zone piezometers contained approximately 2.5-3 feet of water upon initial inspection after sitting undisturbed for several weeks. These piezometers could not be properly developed or sampled because they dewatered after purging approximately one casing and filter pack volume of water. Water levels in these piezometers did not recover to 80% of the initial "stabilized" water level within 24-hours as described in the LUFT Manual – they only recovered to approximately 35 % of the initial water level.

The poor correlation between the depth-to-groundwater observed in the intermediate screened piezometers and the monitoring and remediation wells at the site and the slow recharge rate of the intermediate screened piezometers indicate that the intermediate screened piezometers are not screened in a viable water bearing zone.

The water observed in piezometers PZ-1B and 2B may be either percolating groundwater, or more likely is due to leakage from nearby monitoring and remediation wells that allow water to rise through the confining clay later and escape into the permeable formation at these depths. This leaking groundwater may be transporting residual hydrocarbons downgradient of the site.

We recommend that the monitoring and remediation wells be properly destroyed to eliminate this source of hydrocarbon contaminant transport.

A discussion of this work will be incorporated into the *Technical Report of Additional Site Investigation / Feasibility Study / Corrective Action Plan* required by ACDEH and due by September 29, 2017.

4.0 Limitations

Our service consists of professional opinions and recommendations made in accordance with generally accepted engineering and geologic principles and practices. This warranty is in lieu of all others, either expressed or implied. The analysis and conclusions in this report are based on sampling and testing which are necessarily limited. Additional data from future work may lead to modifications of the opinions expressed herein. All work was conducted under the direct supervision of a Professional Engineer and/or Geologist, registered in the state of California, and experienced in environmental assessment and remediation.

If you have any questions or comments regarding this *Investigation for Shallow Groundwater* please contact us at our offices at 831-722-3580, or by electronic mail at craig@weber-hayes.com.

Sincerely yours,

WEBER, HAYES AND ASSOCIATES

A California Corporation

By: _____

Harrison Hucks
Staff Scientist

And: _____

Craig B. Drizin
Senior Engineer

Attachments:

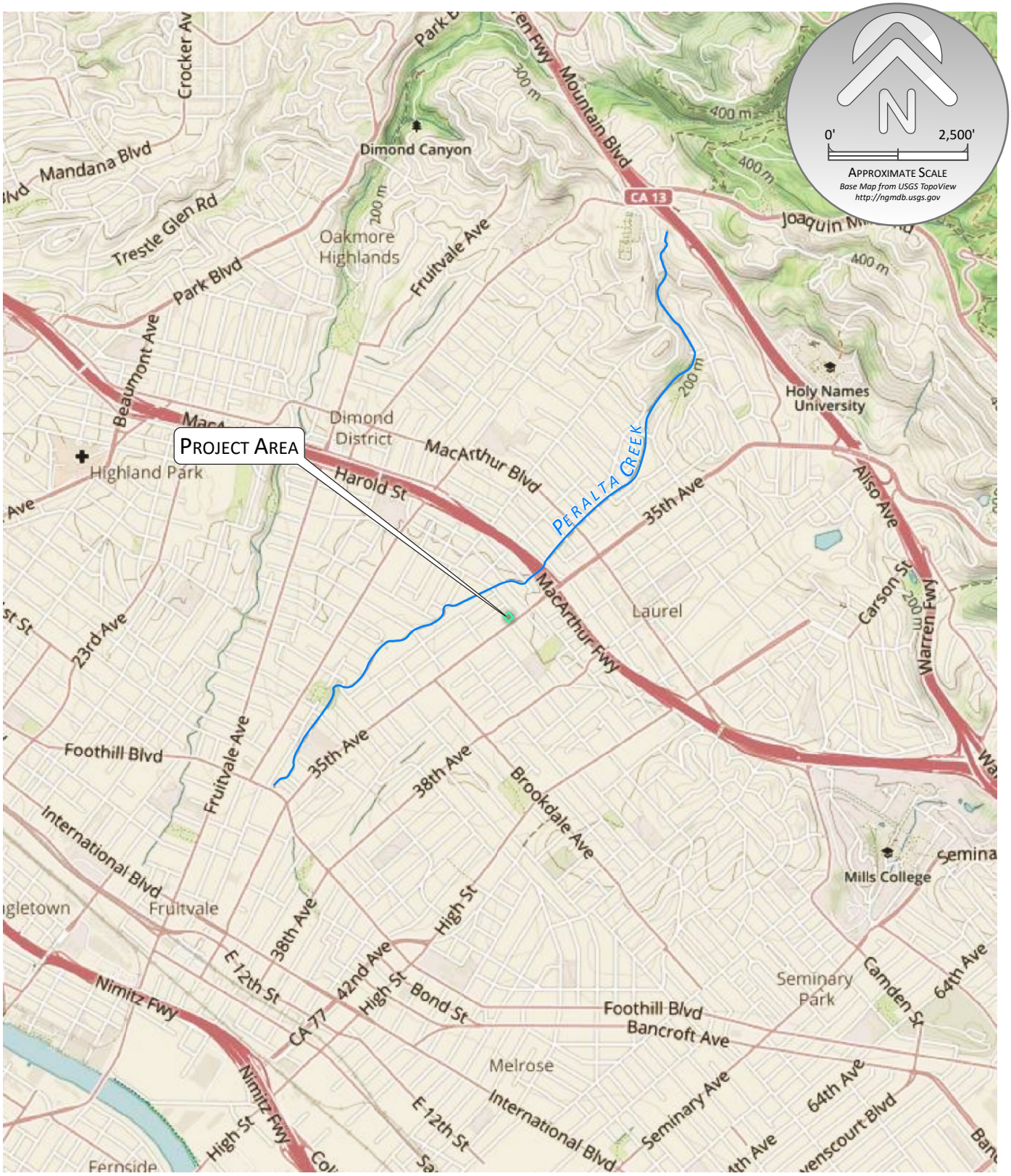
Figure 1: Location Map

Figure 2: Site and Vicinity Map with Piezometer Locations

Appendix A: Field Methodologies

Appendix B: Field Documentation – Field Notes and Geologic Logs

FIGURES



WEBER, HAYES & ASSOCIATES
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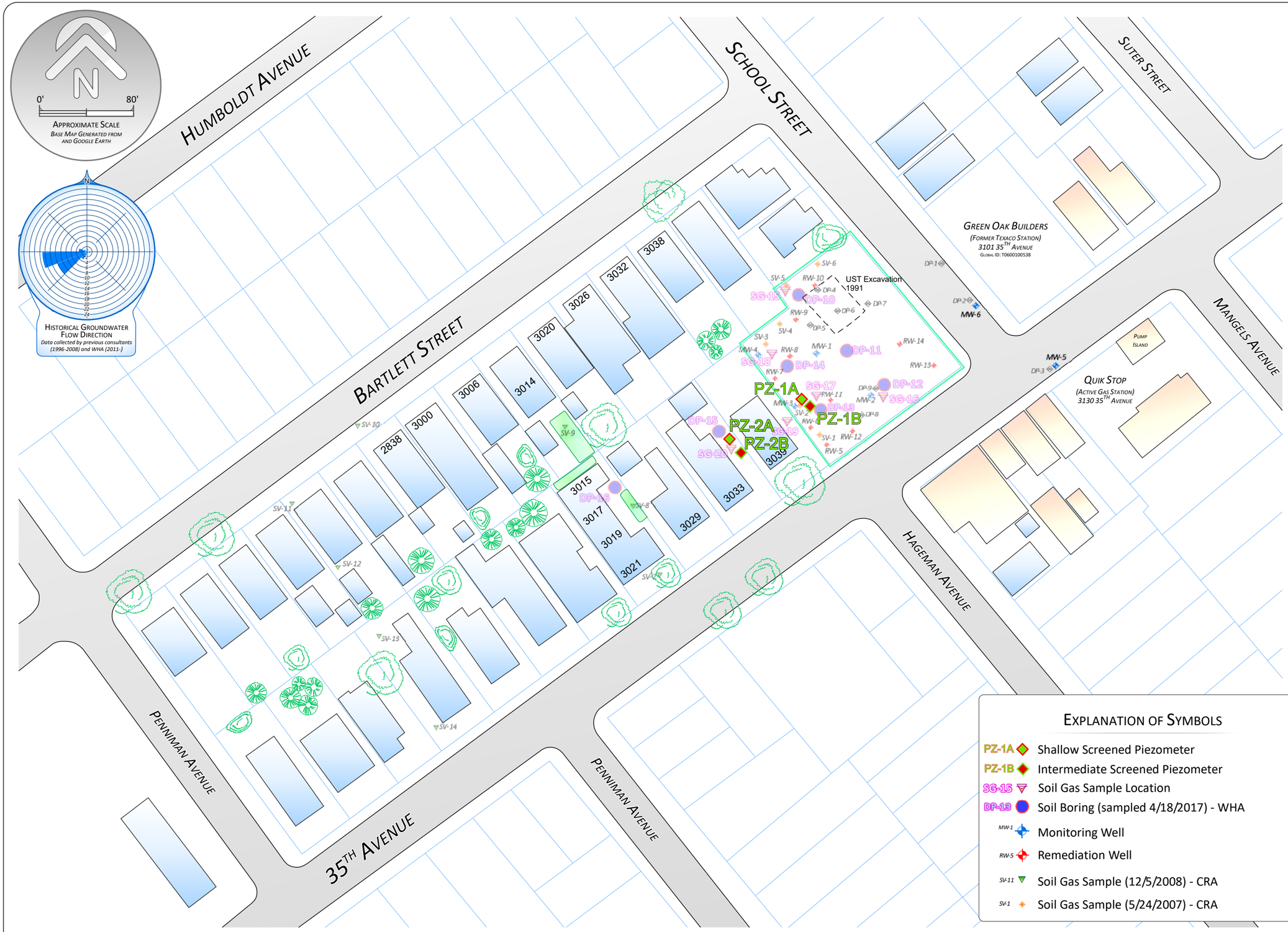
LOCATION MAP

SITE: FORMER EXXON STATION
ADDRESS: 3055 35TH AVENUE, OAKLAND, CA

DATE: SEPTEMBER 2015

REVISIONS/NOTES: 08/26/2015 - JA

FIGURE 1
Project 2X103.C



2X103.Oakland-35th WP\Reports\2017_Addendum WP\Figures\2017-07 Proposed Piezometers Revision 1.cvx

Figure 2

Project 2X103.G

Site and Vicinity Map with Piezometer Locations

Site: Former Exxon Station
Address: 3055 35th Avenue, Oakland, CA

Revisions/Notes:

Date: August 2017

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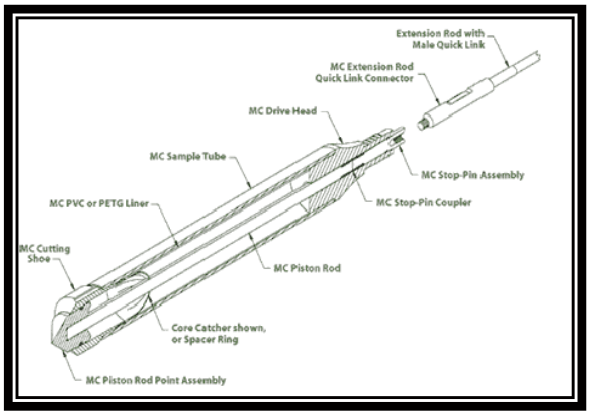
APPENDIX A

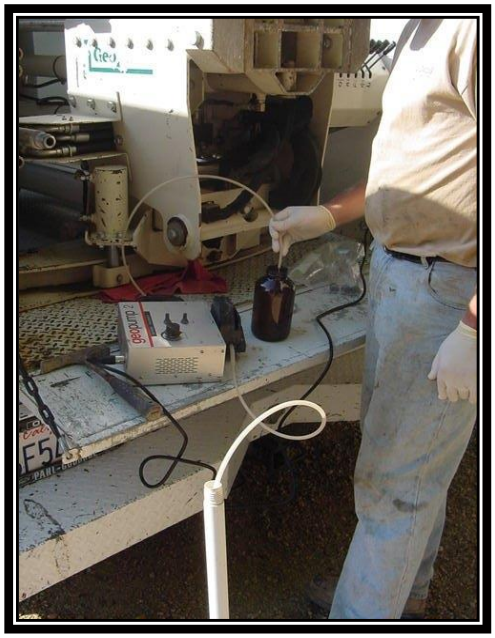
Field Methodologies

APPENDIX B: Field Methodology for Hydraulic Driven Probes Using Macro-Core®, Large Bore® or Dual Tube® Hydraulic Driven Probes

Direct push exploratory borings are "drilled" with a Hydraulic Driven Probe drill rig, which hydraulically vibrates and drives a steel sample probe and rods into the soil. This sampling technology has the ability for either continuous or discrete sampling using a 4-foot long nickel-plated sampling probe fitted with clear acetate liners. For continuous cores, the sampler remains open as it is driven into undisturbed soil over its entire 4-foot sampling interval.



The soil cores are retrieved and logged by an experienced geologist using the Unified Soil Classification System (USCS), noting, the lithology of the soils, moisture content, and any unusual odor or discoloration. Relatively undisturbed soil samples are obtained for both lithologic logging and laboratory analysis. A portion of each individual soil core is stored in a sealed plastic bag for field screening of hydrocarbons and/or volatile organic compounds by a Photoionization Detector (PID). Vapor readings in parts per million (ppm) are recorded on the boring logs. The PID is also used during drilling for monitoring the work area for site safety.



All drilling equipment is decontaminated prior to arriving on-site to prevent possible transfer of contamination from another site. The sampling probe, rods, and all other soil sampling equipment are thoroughly cleaned between each borehole by washing in a Liqui-Nox or Alconox solution followed by double rinsing with distilled water to prevent the cross-contamination.

After drilling, the direct push boreholes are grouted with continuous pour neat cement grout from the bottom of the borehole to the ground surface, or completed as shallow screened piezometers.

Samples Targeted for Laboratory Analysis:

Soil samples targeted for laboratory analysis are immediately cut from the acetate sample liner and protected at both ends with Teflon tape, sealed with non-reactive caps, taped, labeled, placed in a

plastic Ziploc baggie, and immediately stored in an insulated container chilled to a temperature of 4 degree Celsius.

Groundwater samples are collected after temporary PVC casing is placed in the hole and at least one borehole volume is purged and groundwater is visually observed to be free of sediment. Groundwater samples are either: 1) collected with a peristaltic pump and dedicated polyethylene tubing and dispensed directly into containers specifically prepared for the analyses (groundwater encountered at depths of less than 27 feet bgs) or 2) collected by mechanically lifting groundwater through a clean stainless steel foot valve and dedicated polyethylene and dispensed directly into containers specifically prepared for the analyses (groundwater encountered at depths greater than 27 feet bgs where a peristaltic pump cannot be used). Samples being analyzed for dissolved metals will be preserved and acidified by the testing laboratory following their receipt of samples. Once collected, groundwater sample containers are placed in Ziploc bags and are stored in an insulated container chilled to a temperature of 4 degree Celsius.

All samples are transported in chilled coolers to a State-certified laboratory under appropriate chain-of-custody documents. Soil samples that may be put on "hold" for potential future analysis will be stored in a dedicated sample freezer, be frozen, and stored under chain-of-custody documentation. Hold times will be confirmed with the testing laboratory to ensure that potential analysis of any "hold" samples will be analyzed within the laboratory hold times.

FIELD METHODOLOGY FOR INSTALLING SHALLOW PIEZOMETERS

Soil borings for piezometer installation will be drilled by a California C-57 licensed well drilling contractor using hydraulic direct push technology (see above). The borings will initially be continuously-cored to the target depth using hydraulic driven probes in accordance with our standard field methodology. The target depth for the bottom of the piezometers at this site is 12 feet below ground surface (bgs).

Extracted soil cores will be logged by an experienced field geologist using the Unified Soil Classification System. A Photoionization Detector (PID), calibrated for benzene, will be used to field-screen the extracted soil cores for potential volatile organic vapors. Lithologic observations and PID readings will be recorded on the boring log.

Following soil coring to approximately 12.5 feet bgs, a pre-packed piezometer consisting of a ¾-inch diameter Schedule 40 Polyvinyl Chloride (Sch 40 PVC) inner casing with 5 feet of 0.010-inch width slots at the base surrounded by #3 sand in a nominal 2-inch diameter stainless steel mesh, with approximately 7 feet of blank Sch 40 PVC casing above, will be constructed in the boring either by:

A. Removing the drill rods and installing the pre-pack piezometer in the open borehole (if the hole stays open), or

B. Installing the pre-pack piezometer through the GeoProbe® Rods using an expendable anchor point

In either case, the piezometer will be completed by placing #2/12 sand in the annulus around the pre-pack screen from the base of the borehole at 12 feet bgs to approximately 5 feet bgs (2-feet above the screen section), placing and hydrating a 1-foot thick bentonite seal above the sand, and placing a cement grout sanitary seal above the bentonite seal (from approximately 4-feet bgs to the base of the piezometer vault. A 4- or 8-inch diameter bolt-down, flush mounted vault will be set at the ground surface above the piezometer. The ¾-inch diameter inner casing will be sealed with a locking cap inside the vault. A piezometer construction diagram is shown in the attached Figure.

After a minimum of 48-hours has elapsed following piezometer installation, the piezometers will be developed to remove suspended materials and assist in establishing good hydraulic conductivity with the surrounding formation (if water is present). Piezometer development will consist of removing up to 10 saturated volumes with a peristaltic pump. During development, the physical parameters of temperature, conductivity, pH, dissolved oxygen concentration, and Oxidation-Reduction Potential of the development water will be monitored with a calibrated, QED MP20 Micropurge flow-through cell and meter to ensure that these parameters have stabilized (are within approximately 10 percent of the previous measurement). Development will be complete (stabilized groundwater conditions reached) after the removal of approximately ten piezometer volumes of water, when groundwater turbidity is observed to be low or absent, and/or when the physical parameters have stabilized.

When development is complete, groundwater samples will be collected according to our standard Field Methodology for Groundwater Monitoring at this site, which is described below.

Field Methodology for Groundwater Monitoring

Weber, Hayes and Associates' groundwater monitoring field methodology at this site is based on procedures specified in the LUFT Field Manual and US EPA Groundwater Sampling Procedure - Low Stress (Low Flow) Purging and Sampling. The first step in groundwater monitoring is for Weber, Hayes and Associates field personnel to measure the depth-to-groundwater to the nearest hundredth (0.01) of a foot with an electric sounder. If the well appears to be pressurized, or the groundwater level is fluctuating, measurements are made until the groundwater levels stabilize, and a final depth-to groundwater measurement is taken and recorded. After the depth-to-groundwater is measured, the piezometer or well is then checked for the presence of free product with a clear, disposable polyethylene bailer. If free product is present, the thickness of the layer is recorded, and the product is bailed to a sheen. All field data (depth-to-groundwater, well purge volume, physical parameters, and sampling method) is recorded on field data sheets. Because removing free product may skew the data, wells that contain free product are not used in groundwater elevation and gradient calculations.

After measuring the depth-to-groundwater, each piezometer or well is purged with a low flow peristaltic pump and dedicated sample tubing at a rate of less than 500 mL/min. The sample tubing intake is positioned at the center of the water column within the screened portion of the well. During purging, the water level in the well is monitored to maintain a drawdown of 0.33 feet or less if possible. The flow rate is adjusted to maintain minimal drawdown. During purging the physical parameters of temperature, conductivity, pH, dissolved oxygen (D.O.) concentration, and Oxidation-Reduction Potential (ORP) of the purge water are monitored with a QED MP20 Micropurge Flow Through Cell equipped meter to insure these parameters have stabilized (i.e. +/- 0.1 for pH, +/- 3% for specific conductance, +/- 10 mV for redox potential, and +/- 10% for D.O.). The QED MP20 meter is capable of continuously monitoring the physical parameters of the purge water via the flow through cell and providing an alarm to indicate when the physical parameters have stabilized to the user's specifications. Purging is determined to be complete (stabilized aquifer conditions reached) after the removal of approximately three to five piezometer or well volumes of water, or when the physical parameters have stabilized. Samples will be collected immediately after development if physical parameters have stabilized. Dissolved oxygen and ORP measurements may be used as an indicator of intrinsic bioremediation within the contaminant plume. All field instruments are calibrated before use.

All purge water is stored on site in DOT-approved, 55-gallon drums for disposal by a state-licensed contractor pending laboratory analysis for fuel hydrocarbons.

After purging, and when groundwater parameters have stabilized, a groundwater sample is collected from each piezometer or well with dedicated sample tubing, and decanted into the appropriate laboratory-supplied sample container(s). The sample containers for the piezometers will be three (3) 40-milliliter VOA vials. Vials are filled until a convex meniscus formed above the vial rim, then sealed with a Teflon®-septum cap, and inverted to insure there are no air bubbles or headspace in the vial. All samples will be labeled in the field and transported in insulated containers cooled with blue ice to a State-certified laboratory under proper chain of custody procedures.

All field and sampling equipment will be decontaminated before, between, and after measurements or sampling by washing in a Liqui-Nox and tap water solution, rinsing with tap water, and rinsing with distilled water.

APPENDIX B

Field Documentation – Field Notes and Geologic Logs

Weber, Hayes & Associates
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120 Westgate Dr., Watsonville, CA 95076
PH: (831) 722-3580 FAX: (831) 722-1159
www.weber-hayes.com

INDICATE ATTACHMENTS THAT APPLY
___ Site Map
___ Data Sheets
___ Geologic Logs
___ Photo Sheets
___ COC's
___ Chargeable Materials

Client: **Golden Empire Properties**		Date: **July 28, 2017**
Site Location: **3055 35th Avenue, Oakland, CA**		Study #: **2X103.G**
Field Tasks: ☑ Drilling	☑ Sampling ☑ Other (see below):	Weather Conditions: Foggy + Cool
Piezometer Installations		
Personnel / Company On-Site:	**Jered Chaney (Weber, Hayes and Associates: WHA)**	

TIME:

0710 => Arrive onsite.
- ECA (Jeff Edmond) onsite; Prep for drilling and piezometer installations.

0730 • Romero Concrete onsite – Prep to core 10" diameter cores in concrete drive way at 3033.

0745 => Romero begins coring concrete to remove SG-20 vault.
↳ Will re install
- Coastwide utility locators onsite to clear PZ-2A and -2B Proposed locations prior to drilling.

0810 => Commence continuous core at PZ-1B (to 20' bgs).
- Macro Core to 4'; Dual wall to 20'
- See log and well construction diagram for details

0815 => PZ-2A and -2B clear of underground utilities
- Romero cores those locations.

0830 => Bore out top 5' at each pizo. location w/ 6" diameter solid flight augers for well seal.

0900 => PZ-1B cored to 20' bgs. Insert prepack well through 2.25" rods (expendable tip knocked out). Retract rods √ and construct annulus. Screened interval from 17-20' bgs
- See geologic log and well construction diagram for details.
↳ Moderate to high hydrocarbon odor below ~9.5' bgs; persists to 20'

0920 => PZ-1B installation complete – Will wait for grout inspector (ACPW) to witness neat cement seal

- Begin coring and construction PZ-1A to 12.5'
- pre-pack screen from 9.5-12.5
- See log and well construction diagram for details.

0940 => Contact ACPW inspector Marcilino regarding destruction and reinstallation of SG-20. Will notify 1 hr prior to installing seal

1015 => ACPW grout inspector onsite. Will wait until driller is ready to grout

7/28/17
Signature of Field Personnel & Date

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Client: **Golden Empire Properties**	Date: **July 28, 2017**
Site Location: **3055 35th Avenue, Oakland, CA**	Study #: **2X103.G**
Field Tasks: ☑ Drilling ☑ Sampling ☑ Other (see below):	Weather Conditions:
Piezometer Installations	Mostly Clear, fair
Personnel / Company On-Site: **Jered Chaney (Weber, Hayes and Associates: WHA)**	

TIME:

1020	=> Keith Nowell (ACDEH) onsite to inspect and observe.
	- PZ-1A installation complete.
1035	=> Install neat cement grout seals at PZ-1A & 1B
1045	=> ACPW inspector leaves site. Will return to witness seal installation at PZ-2A/B and SG-20
	↳ Set Well boxes.
1115	=> Well boxes installed
	- Tag piezometers — No Water / Dry.
1125	=> Stage rig @ PZ-2a → Commence coring to 12.5'
	- Keith Nowell leaves Site.
	• PZ-2A/B will be installed identical to PZ-1A/B.
	↳ See geologic log and well construction diagram for details.
1200	=> PZ-2A cored to 12.5' → No Hydrocarbon odors observed
	→ Install Piezometer - identical construction as PZ-1A
	↳ Pre-pack screen from 9.5 - 12.5' bgs
	- Wait for ACPW grout inspector for neat cement seal installation
1230	=> Piezometer installed.
	- Auger out to 3.5' SG-20; ~~remove~~ then core w/ 2.85" core barrel from 3.5-55' => remove annulus and tubing, and reinstall vapor well — identical construction as SG-20.
	• Use dedicated teflon tubing and ceramic filter tip designated for this project (equipment blank data obtained)
1320	=> Soil vapor well SG-20 drill-out and reinstallation complete
	- Wait to seal until grout inspector shows up.
	• Commence continuous core at PZ-2B to 20' bgs; then construct piezometer identical to PZ-2A (Pre-pack screen from 17'-20'). See geologic log and well construction diagram for details.
1430	=> At 20' bgs (2.25" core). No hydrocarbon odors observed.
	• Construct piezometer
	• ACPW inspector onsite to witness sealing of PZ-2A/B & SG-20.

7/28/17
Signature of Field Personnel & Date

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INDICATE ATTACHMENTS THAT APPLY
- ___ Site Map
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- ___ Chargeable Materials

Client: **Golden Empire Properties**	Date: **July 28, 2017**
Site Location: **3055 35th Avenue, Oakland, CA**	Study #: **2X103.G**
Field Tasks: ☑ Drilling ☑ Sampling ☑ Other (see below): **Piezometer Installations**	Weather Conditions: Sunny + Warm
Personnel / Company On-Site: **Jered Chaney (Weber, Hayes and Associates: WHA)**	

TIME:

1515 => All grout seals installed (PZ-2A/2B + SG-2O)
- ACPW inspector tags wells + leaves site.

1530 => Tag PZ-2A/B -> DRY

-Set well boxes.

1555 => All well boxes set.

- All soil cuttings / Decon water containerized on site in 55-gal drums.

- Clean up / Prep to Demob.

1615 => Demob.
ECA Demobs.

JC 7/28/17

7/28/17
Signature of Field Personnel & Date

WEBER, HAYES & ASSOCIATES
Hydrogeology and Environmental Engineering
120 Westgate Drive, Watsonville, CA 95076
831.722.3580 // www.weber-hayes.com

INDICATE ATTACHMENTS THAT APPLY
- ___ Site Map
- ___ Data Sheets
- ___ Geologic Logs
- ___ Photo Sheets
- ___ COC's
- ___ Chargeable Materials

Client: Oakland	Date: 8/18/17
Site Location: 3055 35th Ave, Oakland, CA	Study #: 2x103.G
Field Tasks: ☐ Drilling ☒ Sampling ☒ Other (see below): SV sampling + DTW	Weather Conditions: Sunny
Personnel / Company On-Site: Sean (WHA)	

TIME:

0900 – Arrive onsite. Begin w/ DTW @ PZ-1A and 1B. Notice the labeling on the well vault lids is incorrect based on both the map and well Logs. Switch lids to correct.

DTW in PZ-1A = Dry @ 12.31'
PZ-1B = 17.57' w/ total well depth of 19.56'
2' of water @ 0.1L/ft = 0.2L or 200mL of water

1000 – Attempt to develop PZ-1B.
All thread connectors came apart. Had to leave to buy another link to reach lost section and reconnect by Reel.

10:30 – Return to site. Reconnect all threads and add tallon tape to prevent unintentional disconnects. Complete development.

1145 – Purge well. Get ~300mL, as anticipated, before dewater. Will wait for potential recharge. Get other well Depths

MW-1: 19.61'	MW-2: 17.78'	MW-3: 15.09'
MW-4: 15.97'	MW-5: 15.64'	MW-6: 14.76'
RW-5: 14.27'	RW-6: 14.40'	RW-7: 14.93'
RW-8: 16.32'	RW-9: 16.01'	RW-10: 14.99'
RW-11: 14.93'	RW-12: 14.39'	RW-13: ~~14.97'~~ 15.41'
RW-14: ~~14.37'~~ 15.06'		

1330 – Basit w/ McCampbell arrived w/ SV Equipment. Move to sample PZ-2A, 2B, & SG-30
DTW: PZ-2A: Dry @ 13.07'
PZ-2B: Water @ 16.97'

1340 – Begin collecting SV samples w/ Sorbent and Summa. See Field sheets

1430 – Begin Developing PZ-2B. When purged, only produces 300mL before dewatering. Very brown, muddy, water produced. Only 600 mL

1515 – Only 600mL purged after 45min, go back to collecting GW depths. Called WHA office

1620 – ~~PZ-1B~~ PZ-1B only recovered to 19.21' of 19.56'. Not enough to sample

1635 – Return to PZ-2B, only recovered to 19.51 of 19.77'. Not enough to sample

Signature of Field Personnel & Date

GROUNDWATER MONITORING WELL SAMPLING FIELD DATA SHEET

Project Name/No.: *Former Exxon Station / 2X103.Q* **Date:** ~~March 28, 2017~~ August 31

Sample No.: PZ-1B **Sample Location:** PZ-1B

Samplers Name: *Sean Abbey (Weber, Hayes, & Associates)* **Recorded by:** SA

Purge Equipment:

_____ Bailer: Disposable or Acrylic
_____ Whaler # _____
X Peristaltic Pump
_____ Redi-flow Pump (Grundfus)

Sample Equipment:

_____ Disposable Bailer
_____ Whaler # _____
X Peristaltic Pump
_____ Submersible Pump

Analyses Requested :

TPH-gas, BTEX, Fuel Oxygenates, Lead Scavengers by EPA Method 8260B
~~TPH-diesel by EPA Method 8015M~~

Number and Types of Bottle Used:

3 x 40 mL VOA's (HCL preservative)
2 x 1 L Amber

Well Number: PZ-1B
Depth to Water: 16.90' TOC
Well Depth: 20' BGS or TOC (19.56 actual)
Height W-Column: 3.10' feet (well depth - depth to water)

Pump Intake Depth: \ feet
Pump Flow Rate: 100 mL/min

Lab: ~~Torrent~~ BC Labs **Transportation:** *Courier*

Time (24 hr.)	Depth to Water (TOC)	Drawdown (feet)	Volume Purged (mL)	Temperature (°C)	Conductivity (ms/cm)	D.O. (ppm)	pH	ORP (mV)	Turbidity: Color, Fines	Micropurge Paramaters Stabilized
1055	16.90'		0	23.2	34.1	6.22	6.15	245.2	Tannish Brown, opaque	
1057			200	22.0	4074	3.40	6.69	119.4	chocolate Milk	
		\ Dewatered. Stop purge								
			450 (when YSI emptied.)							
	19.30'	~~19.30'~~	after dewatering							
		Will wait for 80% recovery to sample (=17.08' DTW)								
1120	19.00'	~~19.00'~~	After	~20min.	Potentially recovered in 2.5 hrs, if linear.					
1220	18.90'		After	1:20.	Would take ~19 hr to reach 80% recovery at this rate.					
			Will return in 24 hrs to collect sample, if recovered.							
							SKA			
0930	18.65'	Not recovered to 80%. Will not sample.							Discussed w/ office. Will collect sample	

Sample Well

Time: 1015 Sample ID: PZ-1B Depth: 18.65' feet below TOC

Comments: MW-3 DTW: 15.35' Only Two VOAs Filled due to limited volume.
Bubbles Formed when 1st added. None after clearing

Well Condition: Good

GROUNDWATER MONITORING WELL SAMPLING FIELD DATA SHEET

Project Name/No.: *Former Exxon Station / 2X103.Q* **Date:** ~~March 28, 2017~~ August 31

Sample No.: PZ-2B **Sample Location:** PZ-2B

Samplers Name: *Sean Abbey (Weber, Hayes, & Associates)* **Recorded by:** SA

Purge Equipment:

_____ Bailer: Disposable or Acrylic
_____ Whaler # _____
_____ ~~Peristaltic Pump~~
_____ Redi-flow Pump (Grundfus)

Sample Equipment:

_____ Disposable Bailer
_____ Whaler #
_____ Peristaltic Pump
_____ Submersible Pump

Analyses Requested :

~~TPH-gas, BTEX, Fuel Oxygenates, Lead Scavengers by EPA Method 8260B~~
TPH-diesel by EPA Method 8015M

Number and Types of Bottle Used:

~~3 x 40 mL VOA's (HCL preservative)~~
2 x 1 L Amber

Well Number: PZ-2B

Depth to Water: 16.54 TOC **Pump Intake Depth:** _____ feet

Well Depth: 19.72' BGS or TOC **Pump Flow Rate:** ~ 100 mL/min

Height W-Column: 3.23' feet (well depth - depth to water)

Lab: Torrent **Transportation:** *Courier*

Time (24 hr.)	Depth to Water (TOC)	Drawdown (feet)	Volume Purged (mL)	Temperature (°C)	Conductivity (ms/cm)	D.O. (ppm)	pH	ORP (mV)	Turbidity: Color, Fines	Micropurge Paramaters Stabilized
1145	16.54		0	25.2	1434	5.14	7.75	151.7	Yellowish, semi clear	
1146			100	21.3	1086	7.27	7.83	152.1	Chocolate milk	
		\	Dewatered.							
	19.29'	immediately after sample								
			500ml after YSI is emptied.							
12:00	19.06'	after	~15min.	Should recover to 17.19' in		~ 2.3 hrs				
0940	18.61'	Not Recovered to 80%.			Will not recover within 24hrs.				~~No Sample~~ *	
					space w/ office. will collect				Sample anyway	

Sample Well

Time: 1030 Sample ID: PZ-2B Depth: 18.61' feet below TOC

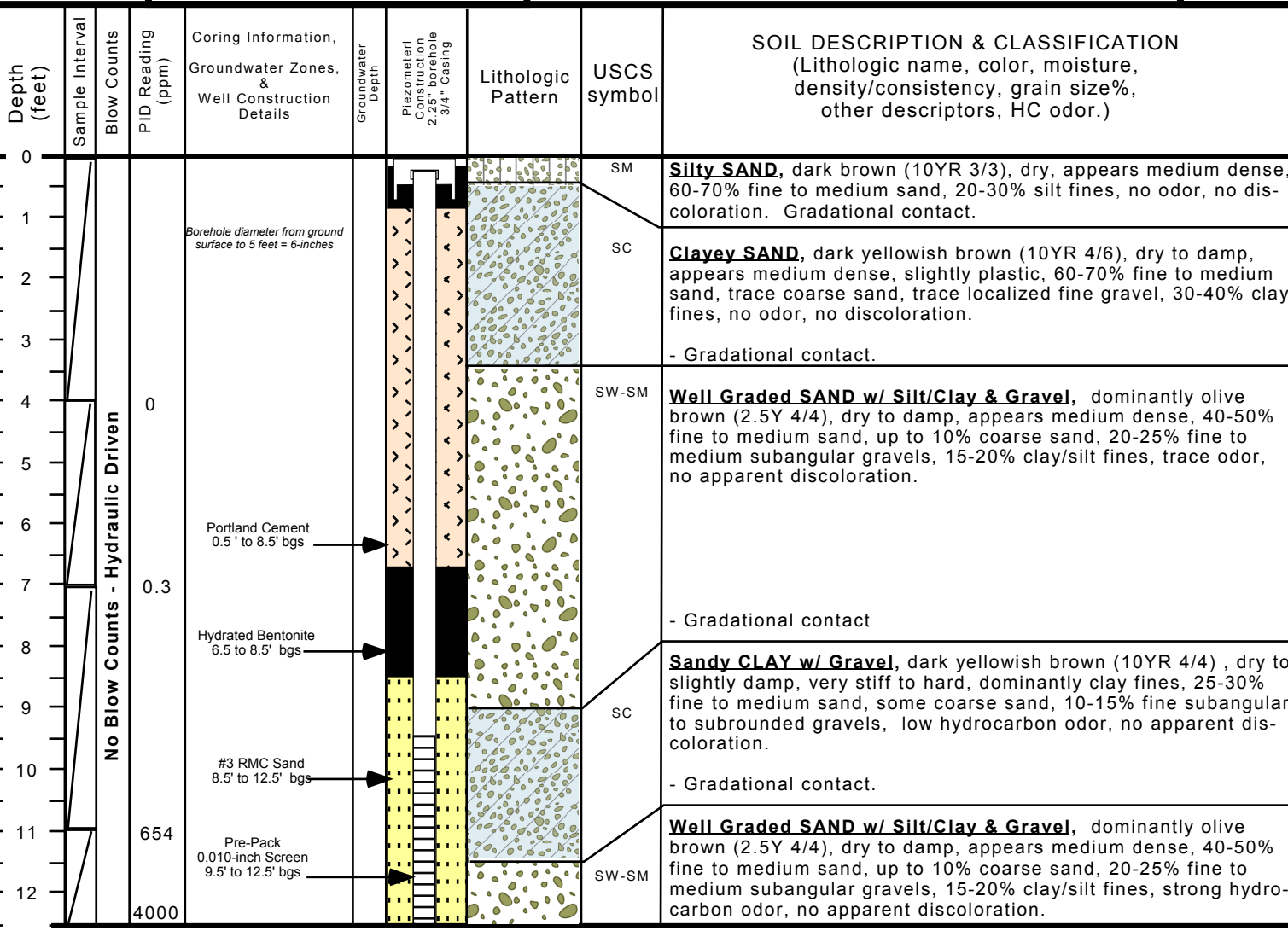
Comments: Only Two VOAs Filled due to limited volume. No Bubbles Formed.

Well Condition: Good

GEOLOGIC LOG
Piezometer

JOB NO.: 2X103.G DATE: July 28, 2017
CLIENT: Golden Empire Properties
LOCATION:3033 35th Avenue, Oakland, CA
LOGGED BY: J. Chaney, PG #8452
DRILLER: Environmental Control Associates (Jeff Edmond)
DRILL METHOD: Hydraulic Driven Dual Wall Probes

Well # **PZ-1A**
Sheet 1 of 1



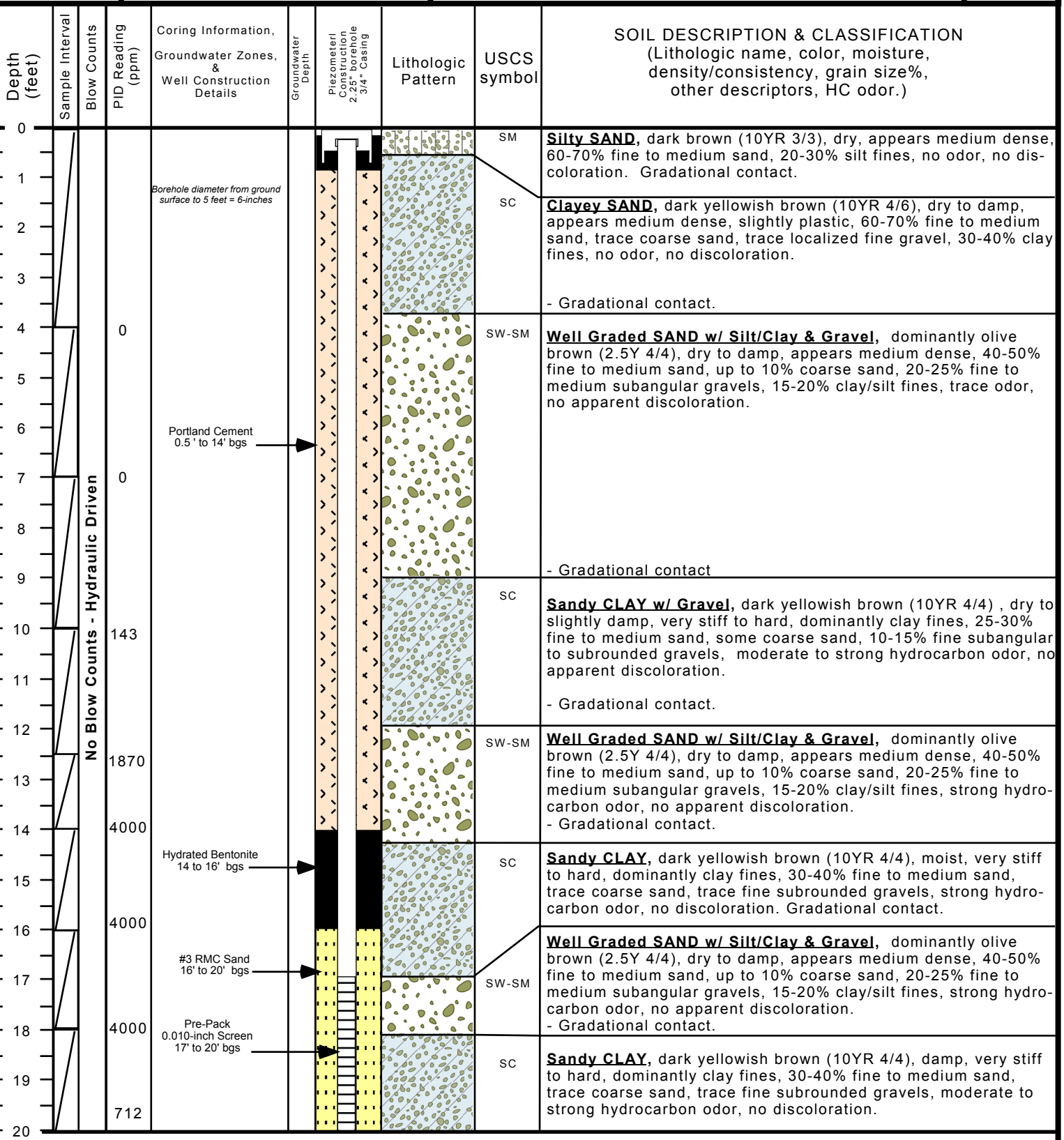
SOIL DESCRIPTION & CLASSIFICATION (Lithologic name, color, moisture, density/consistency, grain size%, other descriptors, HC odor.)
Silty SAND, dark brown (10YR 3/3), dry, appears medium dense, 60-70% fine to medium sand, 20-30% silt fines, no odor, no discoloration. Gradational contact.
Clayey SAND, dark yellowish brown (10YR 4/6), dry to damp, appears medium dense, slightly plastic, 60-70% fine to medium sand, trace coarse sand, trace localized fine gravel, 30-40% clay fines, no odor, no discoloration. - Gradational contact.
Well Graded SAND w/ Silt/Clay & Gravel, dominantly olive brown (2.5Y 4/4), dry to damp, appears medium dense, 40-50% fine to medium sand, up to 10% coarse sand, 20-25% fine to medium subangular gravels, 15-20% clay/silt fines, trace odor, no apparent discoloration. - Gradational contact
Sandy CLAY w/ Gravel, dark yellowish brown (10YR 4/4) , dry to slightly damp, very stiff to hard, dominantly clay fines, 25-30% fine to medium sand, some coarse sand, 10-15% fine subangular to subrounded gravels, low hydrocarbon odor, no apparent discoloration. - Gradational contact.
Well Graded SAND w/ Silt/Clay & Gravel, dominantly olive brown (2.5Y 4/4), dry to damp, appears medium dense, 40-50% fine to medium sand, up to 10% coarse sand, 20-25% fine to medium subangular gravels, 15-20% clay/silt fines, strong hydrocarbon odor, no apparent discoloration.

AJOB\2X103\FIGURES\LOGS\PZ-1A.CNV

GEOLOGIC LOG
Piezometer

JOB NO.: 2X103.G DATE: July 28, 2017
CLIENT: Golden Empire Properties
LOCATION:3033 35th Avenue, Oakland, CA
LOGGED BY: J. Chaney, PG #8452
DRILLER: Environmental Control Associates (Jeff Edmond)
DRILL METHOD: Hydraulic Driven Dual Wall Probes

Well # **PZ-1B**
Sheet 1 of 1



SOIL DESCRIPTION & CLASSIFICATION
(Lithologic name, color, moisture, density/consistency, grain size%, other descriptors, HC odor.)

Silty SAND, dark brown (10YR 3/3), dry, appears medium dense, 60-70% fine to medium sand, 20-30% silt fines, no odor, no discoloration. Gradational contact.

Clayey SAND, dark yellowish brown (10YR 4/6), dry to damp, appears medium dense, slightly plastic, 60-70% fine to medium sand, trace coarse sand, trace localized fine gravel, 30-40% clay fines, no odor, no discoloration.

- Gradational contact.

Well Graded SAND w/ Silt/Clay & Gravel, dominantly olive brown (2.5Y 4/4), dry to damp, appears medium dense, 40-50% fine to medium sand, up to 10% coarse sand, 20-25% fine to medium subangular gravels, 15-20% clay/silt fines, trace odor, no apparent discoloration.

- Gradational contact

Sandy CLAY w/ Gravel, dark yellowish brown (10YR 4/4) , dry to slightly damp, very stiff to hard, dominantly clay fines, 25-30% fine to medium sand, some coarse sand, 10-15% fine subangular to subrounded gravels, moderate to strong hydrocarbon odor, no apparent discoloration.

- Gradational contact.

Well Graded SAND w/ Silt/Clay & Gravel, dominantly olive brown (2.5Y 4/4), dry to damp, appears medium dense, 40-50% fine to medium sand, up to 10% coarse sand, 20-25% fine to medium subangular gravels, 15-20% clay/silt fines, strong hydrocarbon odor, no apparent discoloration.
- Gradational contact.

Sandy CLAY, dark yellowish brown (10YR 4/4), moist, very stiff to hard, dominantly clay fines, 30-40% fine to medium sand, trace coarse sand, trace fine subrounded gravels, strong hydrocarbon odor, no discoloration. Gradational contact.

Well Graded SAND w/ Silt/Clay & Gravel, dominantly olive brown (2.5Y 4/4), dry to damp, appears medium dense, 40-50% fine to medium sand, up to 10% coarse sand, 20-25% fine to medium subangular gravels, 15-20% clay/silt fines, strong hydrocarbon odor, no apparent discoloration.
- Gradational contact.

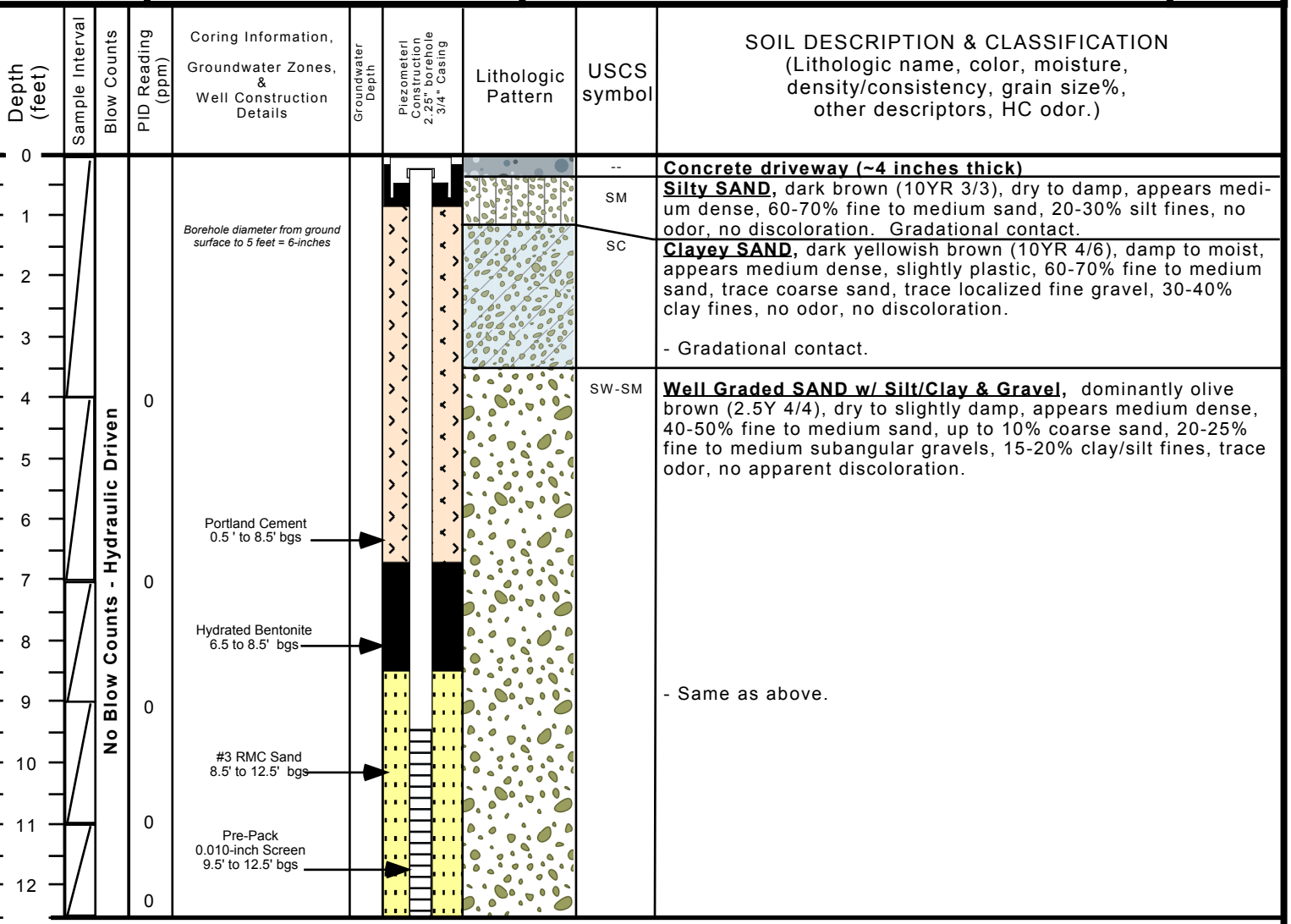
Sandy CLAY, dark yellowish brown (10YR 4/4), damp, very stiff to hard, dominantly clay fines, 30-40% fine to medium sand, trace coarse sand, trace fine subrounded gravels, moderate to strong hydrocarbon odor, no discoloration.

AJOB\2X103\FIGURES\LOGS\PZ-2B.CNV

GEOLOGIC LOG
Piezometer

JOB NO.: 2X103.G DATE: July 28, 2017
CLIENT: Golden Empire Properties
LOCATION:3033 35th Avenue, Oakland, CA
LOGGED BY: J. Chaney, PG #8452
DRILLER: Environmental Control Associates (Jeff Edmond)
DRILL METHOD: Hydraulic Driven Dual Wall Probes

Well # **PZ-2A**
Sheet 1 of 1



Concrete driveway (~4 inches thick)

Silty SAND, dark brown (10YR 3/3), dry to damp, appears medium dense, 60-70% fine to medium sand, 20-30% silt fines, no odor, no discoloration. Gradational contact.

Clayey SAND, dark yellowish brown (10YR 4/6), damp to moist, appears medium dense, slightly plastic, 60-70% fine to medium sand, trace coarse sand, trace localized fine gravel, 30-40% clay fines, no odor, no discoloration.

- Gradational contact.

Well Graded SAND w/ Silt/Clay & Gravel, dominantly olive brown (2.5Y 4/4), dry to slightly damp, appears medium dense, 40-50% fine to medium sand, up to 10% coarse sand, 20-25% fine to medium subangular gravels, 15-20% clay/silt fines, trace odor, no apparent discoloration.

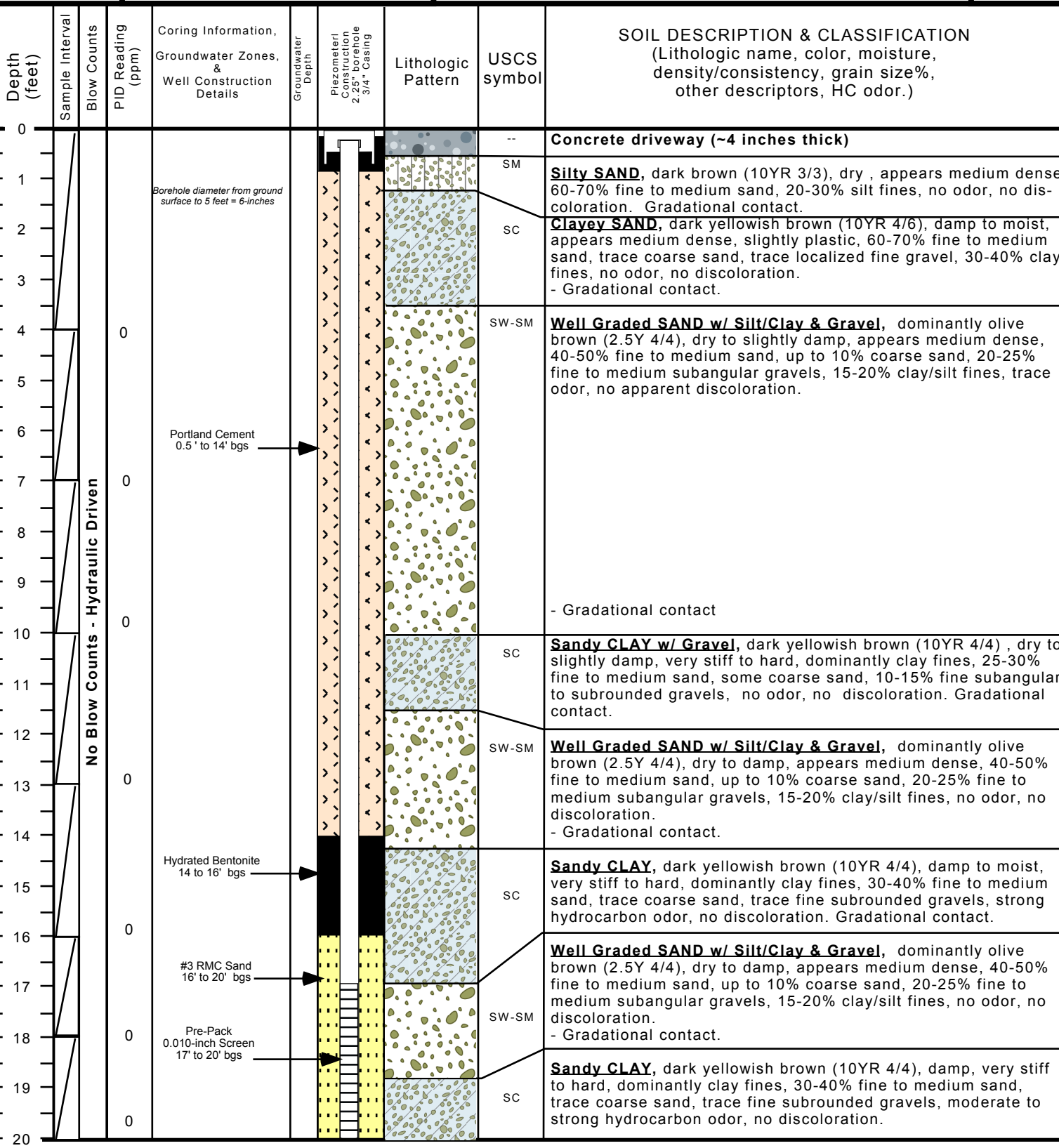
- Same as above.

AJOB\2X103\FIGURES\LOGS\PZ-2A.CNV

GEOLOGIC LOG
Piezometer

JOB NO.: 2X103.G DATE: July 28, 2017
CLIENT: Golden Empire Properties
LOCATION:3033 35th Avenue, Oakland, CA
LOGGED BY: J. Chaney, PG #8452
DRILLER: Environmental Control Associates (Jeff Edmond)
DRILL METHOD: Hydraulic Driven Dual Wall Probes

Well # **PZ-2B**
Sheet 1 of 1



Concrete driveway (~4 inches thick)

Silty SAND, dark brown (10YR 3/3), dry , appears medium dense 60-70% fine to medium sand, 20-30% silt fines, no odor, no discoloration. Gradational contact.

Clayey SAND, dark yellowish brown (10YR 4/6), damp to moist, appears medium dense, slightly plastic, 60-70% fine to medium sand, trace coarse sand, trace localized fine gravel, 30-40% clay fines, no odor, no discoloration.
- Gradational contact.

Well Graded SAND w/ Silt/Clay & Gravel, dominantly olive brown (2.5Y 4/4), dry to slightly damp, appears medium dense, 40-50% fine to medium sand, up to 10% coarse sand, 20-25% fine to medium subangular gravels, 15-20% clay/silt fines, trace odor, no apparent discoloration.

- Gradational contact

Sandy CLAY w/ Gravel, dark yellowish brown (10YR 4/4) , dry to slightly damp, very stiff to hard, dominantly clay fines, 25-30% fine to medium sand, some coarse sand, 10-15% fine subangular to subrounded gravels, no odor, no discoloration. Gradational contact.

Well Graded SAND w/ Silt/Clay & Gravel, dominantly olive brown (2.5Y 4/4), dry to damp, appears medium dense, 40-50% fine to medium sand, up to 10% coarse sand, 20-25% fine to medium subangular gravels, 15-20% clay/silt fines, no odor, no discoloration.
- Gradational contact.

Sandy CLAY, dark yellowish brown (10YR 4/4), damp to moist, very stiff to hard, dominantly clay fines, 30-40% fine to medium sand, trace coarse sand, trace fine subrounded gravels, strong hydrocarbon odor, no discoloration. Gradational contact.

Well Graded SAND w/ Silt/Clay & Gravel, dominantly olive brown (2.5Y 4/4), dry to damp, appears medium dense, 40-50% fine to medium sand, up to 10% coarse sand, 20-25% fine to medium subangular gravels, 15-20% clay/silt fines, no odor, no discoloration.
- Gradational contact.

Sandy CLAY, dark yellowish brown (10YR 4/4), damp, very stiff to hard, dominantly clay fines, 30-40% fine to medium sand, trace coarse sand, trace fine subrounded gravels, moderate to strong hydrocarbon odor, no discoloration.

AJOB\2X103\FIGURES\LOGS\PZ-2B.CNV

GEOLOGIC LOG

Hydraulic Driven Geo-Probe Boring

JOB NO.: 2X103.G DATE: April 18, 2017
CLIENT: Golden Empire Properties
LOCATION: 3055 35th Avenue, Oakland, CA
LOGGED BY: J. Chaney, PG #8452
DRILLER: Cascade (Juan & Carlos)
DRILL METHOD: Hydraulic Driven Dual Wall Probes

BORING # **DP-13**

Sheet 1 of 2

Depth (feet)	Sample Interval	Sample Analyzed	Sample Identification & Field PID Data Calibrated for TVOC (ppm)	Groundwater Depth	Lithologic Pattern	USCS symbol	SOIL DESCRIPTION & CLASSIFICATION (Lithologic name, color, moisture, density/consistency, grain size%, other descriptors, chemical odor.)
0						SM	**Silty SAND w/ Gravel,** dark brown (10YR 3/3), wet to saturated, appears medium dense, 60-70% fine to medium sand, 20-30% silt fines, ~10% fine to medium gravels, no odor, no discoloration.
1							- Gradational contact.
2			DP-13-d2 @ 0 ppm			SC	**Clayey SAND,** very dark brown (10YR 2/2), damp, appears medium dense, slightly plastic, 60-70% fine to medium sand, trace coarse sand, trace localized fine gravel, 30-40% clay fines, no odor, no discoloration. Gradational contact.
3						SW	**Well Graded SAND w/ Silt/Clay & Gravel,** dominantly olive brown (2.5Y 4/4), dry to damp, appears medium dense, 40-50% fine to medium sand, up to 10% coarse sand, 20-25% fine to medium subangular gravels, 15-20% clay/silt fines, no odor, no discoloration.
4			DP-13-d4 @ 0 ppm				
5							
6							
7			DP-13-d7 @ 0 ppm				- Generally same as above.
8			DP-13-d8 @ 0 ppm				
9							
10			DP-13-d10 @ 22.8 ppm				
11			Depth to groundwater ~1.5 hours following boring completion measured at ~11.5 feet bgs.	▼			- Low hydrocarbon odor.
12							- Gradational contact
13						SW	**Sandy CLAY w/ Gravel,** dark yellowish brown (10YR 4/4) , dry to slightly damp, very stiff to hard, dominantly clay fines, 25-30% fine to medium sand, some coarse sand, 10-15% fine subangular to subrounded gravels, low to moderate odor, no discoloration.
14							
15			DP-13-d15 @ 340 ppm				- Moderate to strong hydrocarbon odor.
16							
17							- Gradational contact.
18						SC	**Well Graded SAND w/ Silt/Clay & Gravel,** dominantly olive brown (2.5Y 4/4), dry to damp, appears medium dense, 40-50% fine to medium sand, up to 10% coarse sand, 20-25% fine to medium subangular gravels, 15-20% clay/silt fines, moderate odor, no apparent discoloration.
19							
20							

AJOB\2X103\FIGURES\LOGS\DP-13.CNV

GEOLOGIC LOG

Hydraulic Driven Geo-Probe Boring

JOB NO.: 2X103.G DATE: April 18, 2017
CLIENT: Golden Empire Properties
LOCATION: 3055 35th Avenue, Oakland, CA
LOGGED BY: J. Chaney, PG #8452
DRILLER: Cascade (Jose & Carlos)
DRILL METHOD: Hydraulic Driven Dual Wall Probes

BORING # **DP-13**

Sheet 2 of 2

Depth (feet)	Sample Interval	Sample Analyzed	Sample Identification & Field PID Data Calibrated for TVOC (ppm)	Groundwater Depth	Lithologic Pattern	USCS symbol	SOIL DESCRIPTION & CLASSIFICATION (Lithologic name, color, moisture, density/consistency, grain size%, other descriptors, chemical odor.)
20			DP-13-d20 @ 3.1 ppm			SW	**Well Graded SAND w/ Silt/Clay & Gravel,** dominantly olive brown (2.5Y 4/4), dry to damp, appears medium dense, 40-50% fine to medium sand, up to 10% coarse sand, 20-25% fine to medium subangular gravels, 15-20% clay/silt fines, trace odor, no discoloration. Gradational contact.
21							
22						SC	**Sandy CLAY,** dark yellowish brown (10YR 4/4), dry to slightly damp, very stiff to hard, dominantly clay fines, 30-40% fine to medium sand, trace coarse sand, trace fine subrounded gravels, low to moderate odor, no discoloration.
23							
24							
25			DP-13-d25 @ 0.9 ppm				- Coarse sand content increasing with depth; 10-15%
26							
27			First groundwater encountered under confined conditions at ~27.5 feet bgs.				- Gradational contact.
28						SW	**Clayey SAND,** dominantly olive brown (2.5Y 4/4), very moist to slightly wet, appears medium dense, 50-60% fine to medium sand, up to 10-15% coarse sand, 20-25% clay/silt fines, trace fine gravels, no odor, no apparent discoloration.
29							
30			0 ppm				
31							- Terminate boring at 30 feet bgs.
32							- Insert 5 feet of 3/4-inch PVC 0.010-slot screen (screened interval from 25-30 feet bgs). Collect grab groundwater sample via peristaltic pump and new poly tubing.
33							
34							- Seal borehole with neat cement grout following sample collection.
35							
36							
37							
38							
39							
40							