Atlantic Richfield Company

Chuck Carmel
Remediation Management Project Manager

PO Box 1257
San Ramon, CA 94583
Phone: (925) 275-3804
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November 25, 2014

Re: Well Destruction Report
Atlantic Richfield Company Service Station #601
712 Lewelling Boulevard, San Leandro, California
ACEH Case #RO0000309

"I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct.

Submitted by,

Chuck Carmel

Remediation Management Project Manager

Attachment

WELL DESTRUCTION REPORT
Atlantic Richfield Company Station No. 601
712 Lewelling Boulevard
San Leandro, Alameda County, California

Prepared for:

Mr. Chuck Carmel
Atlantic Richfield Company
P.O. Box 1257
San Ramon, CA 94583

Prepared by:

Broadbent & Associates, Inc.
4820 Business Center Drive, Suite 110
Fairfield, California 94534
(707) 455-7290

November 25, 2014

Project No. 06-88-605

BROADBENT
875 Cotting Ln., Suite G, Vacaville, CA 95688
[T] 707-455-7290 [F] 707-455-7295
broadbentinc.com

CREATING SOLUTIONS. BUILDING TRUST.

November 25, 2014

Project No. 06-88-605

Atlantic Richfield Company
P.O. Box 1257
San Ramon, CA 94583
Submitted via ENFOS

Attn.: Mr. Chuck Carmel

Re: Well Destruction Report, Atlantic Richfield Company Station No. 601
712 Lewelling Boulevard, San Leandro, Alameda County, California
ACEH Case No. RO0000309

Dear Mr. Carmel:

Broadbent & Associates, Inc. (Broadbent) is pleased to submit this *Well Destruction Report* (Report) for Atlantic Richfield Company Station No. 601 located at 712 Lewelling Boulevard, San Leandro, California (Site). This Report documents the permanent decommissioning of nineteen groundwater monitoring wells and eight soil vapor extraction wells. These activities were carried out in accordance with the Alameda County Environmental Health Agency's directive letter dated October 22, 2014.

Should you have questions or require additional information, please do not hesitate to contact us at (707) 455-7290.

Sincerely,

BROADBENT & ASSOCIATES, INC.

Kristene Tidwell, P.G., C.HG.
Associate Hydrogeologist

PROFESSIONAL GEOLOGIST
KRISTENE TIDWELL
No. 969
CERTIFIED HYDRO GEOLOGIST
11/25/14
STATE OF CALIFORNIA

Enclosures

cc: Mr. Jerry Wickham, Alameda County Environmental Health (Submitted via ACEH ftp Site)
Electronic copy uploaded to GeoTracker

TABLE OF CONTENTS

WELL DESTRUCTION REPORT

Atlantic Richfield Company Station No. 601
712 Lewelling Boulevard, California
ACEH Case #RO0000309

1.0 INTRODUCTION

On behalf of the Atlantic Richfield Company, RM (a BP affiliated company) Broadbent & Associates, Inc. (Broadbent) has prepared this *Well Destruction Report* (Report) documenting case closure activities at Atlantic Richfield Company Station No. 601, located at 712 Lewelling Boulevard, San Leandro, California (Site). Case Closure was recommended by Alameda County Environmental Health (ACEH) in their October 22, 2014 *Well Decommissioning Letter* (Appendix A). This Report presents details of the field activities performed.

2.0 SITE BACKGROUND

The Site is located at 712 Lewelling Boulevard, San Leandro, California. It is an active ARCO-brand gasoline station (Station No. 601) with an AM/PM convenience store. Current structures on the Site include four underground storage tanks (USTs), two fuel dispenser islands with a total of eight dispensers, and a small building. The majority of the Site is paved with asphalt and concrete. Limited planter islands are present along the perimeter of the Site. A Site location map is included as Drawing 1. A Site Plan depicting current building, UST, and, well locations is presented as Drawing 2.

The Site is bound by Lewelling Boulevard to the northwest, Washington Avenue to the east, multi-family residential dwellings of the Chateau Manor Apartments adjacent to the southwest, and a commercial building (Dentist's Office) and parking lot adjacent to the southeast. Across Washington Avenue to the east is a large parking lot and Walgreens store. Across Lewelling Boulevard to the northwest are a Speedy Smog smog check station at the corner of Washington Avenue, Salel's Mobile Home Park, and the parking lot and playground for Lewelling School farther southwest. The smog check station at 15275 Washington Avenue is the former Shell Gasoline Service Station #129460, an active release site (ACEH Case # RO0000372 / GeoTracker Global ID T0600101226).

The Site has operated as a gasoline fueling station since the environmental case was open in 1989. The Site is likely to remain a service station for the foreseeable future. A detailed Site history is included in Appendix B.

3.0 FIELD ACTIVITIES PERFORMED

During November 10 through 12, 2014, Broadbent oversaw Cascade Drilling, L.P. (Cascade), pressure grout monitoring wells MW-1 through MW-19 and destroy vapor extraction wells SG-9 through SG-14, plus SG-15A and SG-15B. The top two feet of well casing was also removed from each monitoring well following completion of pressure grouting. A Site map depicting abandoned well locations is provided as Drawing 2.

3.1 Preliminary Field Activities

Necessary permits from Alameda County Public Works Agency (ACPWA) and an encroachment permit (for well MW-13 along Washington Avenue and MW-15 along Lewelling Boulevard – see Drawing 2) from the City of San Leandro were secured prior to performing the field investigation. Copies of these

permits are included in Appendix C. All borings were marked and areas were outlined with white spray paint, and an Underground Service Alert (USA) ticket was secured to notify all member utility companies of the planned field activities. Additionally, all boring locations were cleared for underground utilities by NORCAL Geophysical Consultants, Inc. (NORCAL) on October 30 and 31, 2014. NORCAL's survey report is included in Appendix D.

3.2 Well Destruction Activities

During November 10 through 12, 2014, monitoring wells MW-1 through MW-19 were destroyed by pressure grouting. Additionally, vapor extraction wells SG-9 through SG-14, plus SG-15A and SG-15B were destroyed by removing the tubing and well boxes and finishing the surface to match the existing grade. Following completion of pressure grouting, the top two feet of each monitoring well casing was removed from each well then finished with concrete to match the existing grade. Each well was destroyed in accordance with ACPWA requirements. California Department of Water Resources Well Completion Reports have been completed, but are not published in this Report due to confidentiality of the records.

3.3 Excess Soil Produced

Excess soil produced during investigation activities was temporarily being stored onsite in Department of Transportation-approved 55-gallon drums until November 19, 2014, when they were removed and transported to appropriate California-regulated facilities by Belshire Environmental Services, Inc. of Foothill Ranch, CA.

4.0 CONCLUSIONS & RECOMMENDATIONS

Monitoring, groundwater extraction, soil vapor extracion and soil vapor probes wells were abandoned in general accordance ACPWA monitoring well destruction requirements. Well abandonment work activities complete the Site case closure process. No further actions are recommended. We anticipate that following submittal of this report, Atlantic Richfield Company will be issued a "Remedial Action Completion Certificate."

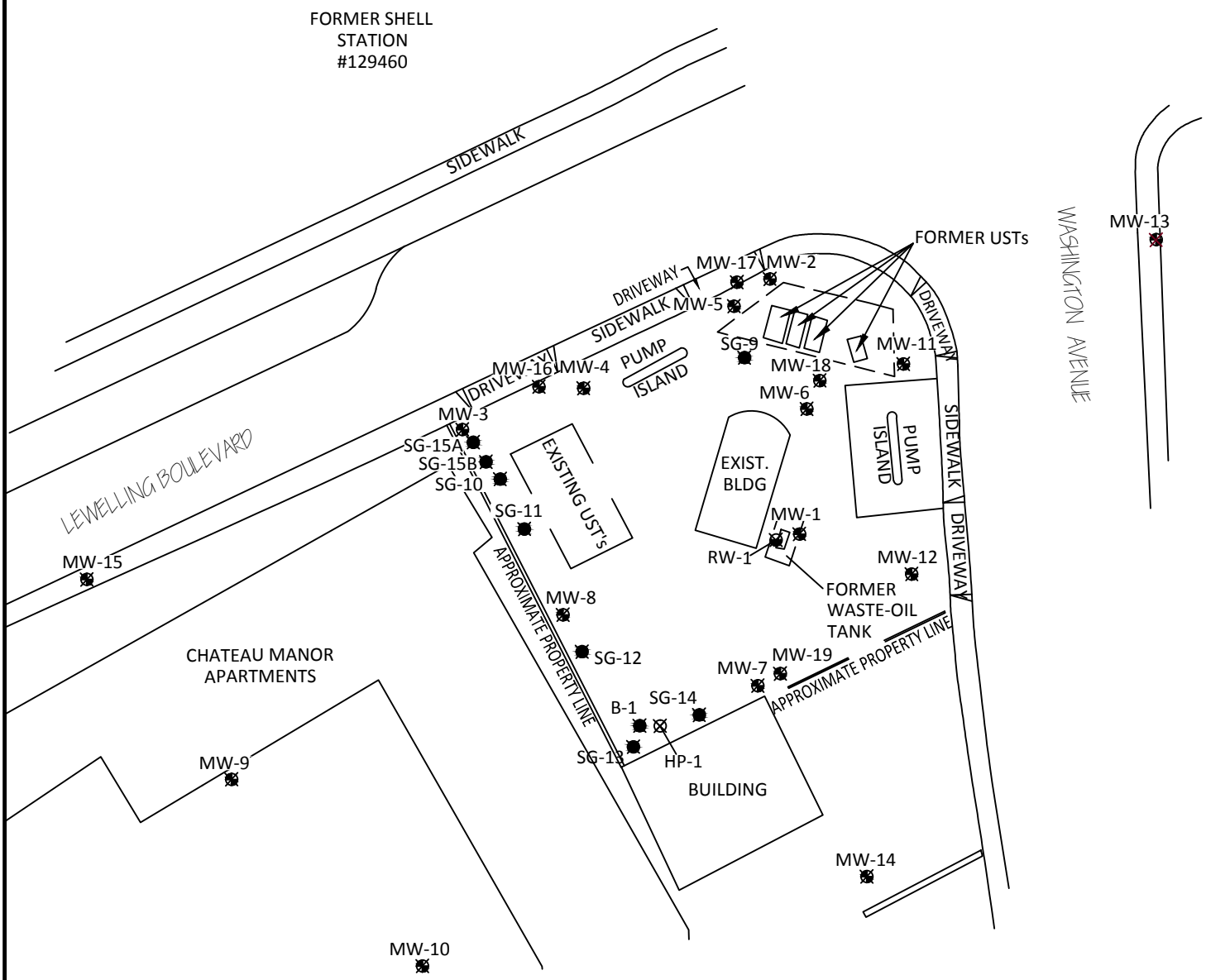
5.0 LIMITATIONS

This document has been prepared for the exclusive use of Atlantic Richfield Company. The findings presented in this report are based upon the observations of Broadbent field personnel. Services were performed in accordance with the generally accepted standard of practice at the time this report was written. No warranty, expressed or implied, is intended.

DRAWINGS

IMAGE SOURCE: USGS

BROADBENT 1324 Mangrove Ave., Suite 212 Chico, California 95626 Project No.: 06-88-605 Date: 3/5/2013	Station #601 712 Lewelling Boulevard San Leandro, California	Site Location Map	Drawing 1



LEGEND

- Decommissioned Monitor Well Location
- Decommissioned Soil-Gas Boring/Temporary Vapor Implant Location
- Decommissioned Soil Vapor Extraction Well Location
- Decommissioned Hydropunch Location

N

0 60 120

SCALE (ft)

NOTE: SITE MAP ADAPTED FROM DELTA ENVIRONMENTAL FIGURES. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

BROADBENT
1324 Mangrove Ave., Suite 212
Chico, California 95626
Project No.: 06-88-605 Date: 11/10/2014

Station #601
712 Lewelling Boulevard
San Leandro, California

Decommissioned Well Location Map

Drawing
2

APPENDIX A

REGULATORY CORRESPONDENCE

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

October 22, 2014

Charles Carmel
Atlantic Richfield Company
P.O. Box 1257
San Ramon CA 94583
(*Sent via E-mail to: charles.carmel@bp.com*)

Subject: Well Decommissioning for Fuel Leak Case No. RO0000309 and GeoTracker Global ID T0600100108, ARCO #0601, 712 Lewelling Boulevard, San Leandro, CA 94579

Dear Mr. Carmel:

Alameda County Environmental Health (ACEH) staff have reviewed the fuel leak case file for the above-referenced site and concur that no further action related to the underground storage tank fuel release is required at this time. One comment from an adjacent property owner was received on the proposed case closure during a public comment period that ended October 21, 2014. The comment from the adjacent property owner was adequately addressed in correspondence dated September 9, 2014. Therefore, the case closure process can proceed.

Please destroy the monitoring wells and provide documentation of the well destruction and waste disposal to this office no later than February 14, 2015. Remedial action completion certification will be issued following receipt of the documentation. Well destruction permits may be obtained from the Alameda County Public Works Agency (http://www.acgov.org/pwa/wells/index.shtml). If you have any questions, please call me at (510) 567-6791 or send me an electronic mail message at jerry.wickham@acgov.org.

TECHNICAL REPORT REQUEST

Please upload technical reports to the ACEH ftp site (Attention: Jerry Wickham), and to the State Water Resources Control Board's GeoTracker website according to the following schedule and file-naming convention:

- **February 14, 2015** – Well Destruction Report
  File to be named: WELL_DCM_R_yyyy-mm-dd RO309

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

If you have any questions, please call me at (510) 567-6791 or send me an electronic mail message at jerry.wickham@acgov.org. Case files can be reviewed online at the following website: http://www.acgov.org/aceh/index.htm. If your email address does not appear on the cover page of this notification ACEH is requesting you provide your email address so that we can correspond with you quickly and efficiently regarding your case

Sincerely,

Jerry Wickham, California PG 3766, CEG 1177, and CHG 297
Senior Hazardous Materials Specialist

Attachment: Responsible Party(ies) Legal Requirements/Obligations

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Leroy Griffin, Oakland Fire Department, 250 Frank H. Ogawa Plaza, Ste. 3341, Oakland, CA 94612-2032 2032 (*Sent via E-mail to: lgriffin@oaklandnet.com*)

Kristene Tidwell, Broadbent, 875 Cotting Lane, Suite G, Vacaville, CA 95688 (*Sent via E-mail to: ktidwell@broadbentinc.com*)

Jerry Wickham, ACEH (*Sent via E-mail to: jerry.wickham@acgov.org*)

GeoTracker, eFile

Attachment 1

Responsible Party(ies) Legal Requirements / Obligations

REPORT REQUESTS

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/).

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC)	**REVISION DATE:** May 15, 2014
	ISSUE DATE: July 5, 2005
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010, July 25, 2010
SECTION: Miscellaneous Administrative Topics & Procedures	**SUBJECT:** Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- **Please do not submit reports as attachments to electronic mail.**
- Entire report including cover letter must be submitted to the ftp site as **a single portable document format (PDF) with no password protection**.
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- **Signature pages and perjury statements must be included and have either original or electronic signature.**
- **Do not password protect the document**. Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted**.
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:

  RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Submission Instructions

1) Obtain User Name and Password
   a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
      i) Send an e-mail to deh.loptoxic@acgov.org
   b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses**, and the **Case Numbers (RO# available in Geotracker) you will be posting for**.

2) Upload Files to the ftp Site
   a) Using Internet Explorer (IE4+), go to ftp://alcoftp1.acgov.org
      (i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
   b) Click on Page located on the Command bar on upper right side of window, and then scroll down to Open FTP Site in Windows Explorer.
   c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
   d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
   e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.

3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
   a) Send email to deh.loptoxic@acgov.org notify us that you have placed a report on our ftp site.
   b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
   c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
   d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.

APPENDIX B

DETAILED SITE HISTORY

Previous Environmental Activities at Site

In 1989, Applied GeoSystems, Inc. (AGS) conducted a subsurface evaluation in the vicinity of the then present USTs, including two 6,000-gallon and two 4,000-gallon single-walled steel gasoline USTs located in the northern corner of the Site, and one smaller waste oil UST located at the southeast corner of the Station Building (historically reported as to have been of 550-gallon, 300-gallon or 280-gallon capacity). Five soil borings (B-1 through B-5) were advanced in the vicinity of theses USTs with borings B-1 through B-4 advanced in the vicinity of the gasoline USTs and B-5 advanced near the waste oil UST. Borings B-1 through B-5 were advanced to first-encountered groundwater. In the area of the former gasoline USTs, soil samples from borings B-1 through B-4 contained Gasoline Range Organics (GRO) up to 12,000 milligrams per kilogram (mg/Kg) and Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX) up to 60 mg/Kg, 450 mg/Kg, 110 mg/Kg and 660 mg/K-g, respectively. Soil samples from boring B-5 in the area of the former waste oil UST contained GRO up to 2,600 mg/Kg, Total Oil & Grease (TOG) up to 4,800 mg/Kg, and BTEX up to 10 mg/Kg, 90 mg/Kg, 21 mg/Kg, and 130 mg/Kg, respectively. No halogenated volatile organic compounds (HVOCs) were detected above the laboratory reporting limits. Reportedly, separate-phase hydrocarbons (SPH, or free product) were encountered in each of the five borings (AGS, 1989). Historical data is included in Appendix C.

In January 1990, GeoStrategies, Inc. (GSI) removed the five former USTs and product lines from the Site, which had reportedly been installed in 1974. Approximately 588 cubic yards (yd^3) of soil were removed with the former gasoline USTs and product line trenching excavation. The excavation size of approximately 35 feet by 60 feet was reportedly constrained by existing structures. Approximately 288 yd^3 of this soil contained GRO exceeding 1,000 mg/Kg, while the remaining 300 yd^3 contained GRO exceeding 100 mg/Kg. Approximately 15 yd^3 of soil were excavated during removal of the waste oil UST. Finally, approximately 950 yd^3 of soil was removed from the excavation for the replacement USTs in the southwestern portion of the Site. Reportedly the 950 yd^3 contained less than 10 mg/Kg GRO. The former excavations were reportedly backfilled with pea gravel. However, a six-inch diameter recovery well RW-1 was installed in the pea gravel backfill for the former waste oil UST (GSI, 1990). Data including m maps and tables from these activities is included in Appendix C.

In June of 1990, AGS advanced soil borings B-6 through B-8) at the Site and completed these borings as monitoring wells MW-1, MW-2 and MW-3. Thin layers (less than 1½ feet thick) of sandy clay and/or clayey sands were observed between eight and twelve feet below ground surface (feet bgs). Soil samples from boring B-6 near the former waste oil UST indicated the following maximum concentrations:

- GRO at 420 mg/Kg
- Diesel range organics (DRO) at 280 mg/Kg
- TOG at 190 mg/Kg, and
- BTEX at 6.0 mg/Kg, 27 mg/Kg, 8.8 mg/Kg, and 52 mg/Kg, respectively
- Naphthalene at 2.9 mg/Kg
- 2-methylnaphthalene at 2.6 mg/Kg
- HVOCs were not detected above reporting limits.

Soil samples from boring B-7 contained maximum concentrations GRO at 9.3 mg/Kg, and maximum BTEX concentrations at 0.99 mg/Kg, 0.71 mg/Kg, 0.50 mg/Kg and 1.3 mg/Kg, respectively. Soil samples from boring B-8 in the southwest corner of the Site contained a maximum GRO of 620 mg/Kg, maximum BTEX concentrations of 11 mg/Kg, 30 mg/Kg, 16 mg/Kg and 82 mg/Kg, respectively. Wells MW-1 through MW-3 were developed on July 11, 1990 and sampled on July 17, 1990. Samples from these wells were not analyzed due to the presence of SPH (AGS, 1990). Data including m maps and tables from these activities is included in Appendix C.

In May of 1991, RESNA Industries, Inc. (RESNA)/AGS advanced six soil borings onsite (B-9 through B-13 plus B-11A), and completed five into wells MW-4 through MW-8. Maximum GRO concentration were reported at 2,700 mg/Kg in boring B-10 (MW-5) located immediately west of the former USTs. Samples of groundwater were collected from wells MW-2, MW-5 and MW-8. Wells MW-1 and MW-3 were not sampled due to the presence of SPH, and remaining wells were not sampled due to insufficient water. A soil vapor extraction test was performed from wells MW-1 through MW-6. The results of this test indicated that vapor extraction efficiency was limited by the thin vadose zone and low permeability soils. A well search conducted to a half-mile radius found 69 wells: two domestic (both upgradient), one cathodic protection (upgradient at an Exxon Station), 27 monitoring wells, 32 irrigation wells (most to the west and northwest), four test wells (three to the north and one to the south), two abandoned wells (north and south), and one of unidentified use (to the northeast). Finally, records research for possible secondary sources of contamination found Shell Station #129460 at 15275 Washington Avenue, Greenhouse Plaza at 699 Lewelling Boulevard, GASCO Station #798 at 15201 Washington Avenue, and a Mobil Station at 15119 Washington Avenue, and California Department of Transportation site at 600 Lewelling Boulevard (Located across Lewelling Boulevard upgradient across intersection).

RESNA oversaw field activities where where onsite borings and (B-16, B-17, and B-20 through B-22) and two offsite borings (B-18 and B-19) were advanced. Onsite borings B-16 and B-17 were advanced in October 1992 and converted into wells MW-11 and MW-12. Subsequently offsite borings B-18 and B-19 were advanced and completed as monitoring wells MW-13 and MW-14, respectively. RESNA reported lithology comprised of interbedded sand within silty clay (RESNA, 1993), which was consistent with previous data.

Also in October 1992, RESNA as a result of petroleum-impacted soil being observed by Pacific Gas & Electric Company (PG&E) during a trenching operation to replace gas lines in the public right of way along the northwestern border of the Site. Nine soil borings (B-23 through B-31) were advanced in Lewelling Boulevard adjacent to the Site. Lithology observed in these borings included native silts and clays, with the exception of boring B-23 were sandy trench backfill was encountered. A limited number of sand lenses encountered above the water table appeared to contain perched groundwater. Subsurface soils in the vadose zone contained low concentrations of GRO at maximum concentration of 20 mg/Kg, and BTEX up to 2.7 mg/Kg in borings B-23 through B-28 and B-31. Subsurface soils in the capillary fringe zone, above first encountered ground water (depths of seven to ten feet bgs) in borings B-24, B-27 and B-31 contained GRO concentrations greater than 100 mg/Kg. Borings B-29 and B-30 appeared to have delineated the lateral extent of subsurface contamination. The vertical extent of contamination was delineated

to a depth of 15½ feet bgs (RESNA, 1993). The locations of these borings are presented in Drawings 2 and 8.

In December 1992, the California Regional Water Quality Control Board (RWQCB) issued Cleanup and Abatement Order # 92-147 (CAO 92-147) to Atlantic Richfield Company and Mr. John J. Sullivan, owner of the adjacent downgradient property. This order required an access agreement be made between Atlantic Richfield Company and Mr. Sullivan for the purpose of allowing the required additional investigation of ground water and soil downgradient of the Site, or for Mr. Sullivan to submit a work plan to conduct the investigation himself.

In March 1993, RESNA advanced offsite borings B-32A and B-32B, and completed boring B-32B into monitoring well MW-15. In May 1993, RESNA advanced offsite borings B-33 and B-34 on the Sullivan property downgradient from the Site. Borings B-33 and B-34 were competed as wells MW-10 and MW-9, respectively. The results of this investigation delineated GRO concentrations in soil to less than 1.0 mg/Kg offsite to the east, southeast, west, and southwest, and onsite in the southeastern portion of the Site. A review of all previous data and the March 1993 investigation indicated that soil was delineated to less than 100 mg/kg at a depth of about 15 feet beneath the Site in the silty clay confining layer beneath thin, water-bearing sandy layers. RESNA also performed step-drawdown pumping tests on wells MW-8 and MW-12, and performed two 12-hour pumping tests on well MW-8 at different pumping rates. Based on their findings from the pumping tests, RESNA concluded that pump and treat would not be a viable technology for groundwater remediation at the Site.

In 1997, EMCON conducted a soil gas investigation and risk-based corrective action (RBCA) analysis. Seven soil gas borings were collected at 1½ feet bgs and 4 feet bgs. No BTEX were detected at 1½ feet bgs. Benzene was detected at 0.5 milligrams per cubic meter (mg/m^3) at 4 feet bgs behind the station building. The RBCA evaluation was reportedly conducted consistent with guidelines then established by the American Society of Testing and Materials (ASTM). EMCON concluded that the results showed that concentrations of BTEX detected in soil and ground water at the Site did not exceed concentrations that correspond to acceptable levels of risk (EMCON, 1997).

In May 2002, Delta Environmental Consultants, Inc. (Delta) advanced three hand-auger borings (HB-2 through HB-4) to approximately 10½ feet bgs adjacent to the Oro Loma sanitary sewer pipeline within Lewelling Boulevard. Upgradient hand-auger boring HB-1 was not advanced due to potential conflict with the traffic signal. Grab samples of water collected from HB-2, HB-3, and HB-4 contained GRO at 28,000 micrograms per liter (µg/L), 38,000 µg/L, and 630 µg/L, respectively. Benzene was detected in HB-2, HB-3, and HB-4 samples at 570 µg/L, 1,200 µg/L, and 62 µg/L, respectively. Methyl-Tertiary Butyl Ether (MTBE) was detected in the sample from HB-4 at a concentration of 160 µg/L (Delta, 2002).

In June 2003, Wilcon Builders removed the dispensers and product piping and excavated soils in their vicinity. URS Consultants, Inc. (URS) reported no obvious soil staining at the soil sample locations. Slight hydrocarbon odors were reported beneath the pipelines at sample locations PL-2, PL-7 and PL-13. Strong hydrocarbon odors were reported at dispenser sample location D-6 with photo-ionization detector (PID) measurements up to 685 parts per million (ppm) at D-6. Eight soil samples designated D-1 through D-8 were collected between 4-5 feet bgs.

Sample D-6 contained BTEX at 7 mg/Kg, 230 mg/Kg, 55 mg/Kg, and 350 mg/Kg, respectively. Twelve soil samples designated PL-1 through PL-4, and PL-7 through PL-14 were collected between four to six feet bgs. Samples PL-2 and PL-3 contained very low concentrations of BTEX. No MTBE was detected in soil samples. Groundwater was encountered during dewatering of the pit and stored in a 21,000 gallon Baker tank. A sample of water from the Baker tank did not contain BTEX above the laboratory reporting limits, but did contain MTBE at 290 µg/L (URS, 2003).

In 2004, URS administered an oxygen release compound (ORC) to onsite wells MW-2, MW-3, MW-5, and MW-8.

In November 2006, Stratus Environmental, Inc. (Stratus), under direction from BAI, advanced one soil boring and one Hydropunch boring both to a depth of 58 feet bgs in the southern portion of the for vertical characterization and delineation of hydrocarbons in soil and groundwater. The lithology encountered included thin layers of clayey sand at 24½-26½ feet bgs, 46½-47 feet bgs, and 53-54 feet. Sand with clay was encountered from 55-58 feet bgs (the total depth). Samples collected from the sand layers did not contain BTEX, MTBE, GRO or Oil-Range Organics (ORO) above the laboratory reporting limits. Low concentrations of a contaminant reported in the Diesel Range Organics (C10-C28) were detected, however, the laboratory reported that the chromatogram profiles did not resemble the referenced fuel standard (BAI, 2007).

An *Initial Site Conceptual Model with Soil & Groundwater Investigation Work Plan* was submitted to ACEH on March 24, 2009 per request in a letter dated November 14, 2008. In June 2009, six soil vapor sampling wells (SG-9 through SG-14) were installed at the Site (Drawing 2) to assess vapor intrusion as a potential migration pathway. One minor concentration of Toluene (0.0033 milligrams per cubic meter) was detected in soil vapor sampling point SG-11. No other constituents were detected above their respective laboratory reporting limits. The detected Toluene concentration was below the Environmental Screening Level (ESL) established by the San Francisco Regional Water Quality Control Board (SFRWQCB). Oxygen and Carbon Dioxide were also detected in the soil gas at levels indicating subsurface biodegradation was occurring. A detailed description of field activities and results associated with this vapor intrusion assessment can be found in the *Vapor Intrusion Assessment and Soil & Groundwater Investigation Report* (BAI, 2009a).

In June 2009, four soil borings were advanced onsite and completed as wells MW-16 through MW-19 to replace existing wells MW-4 through MW-7, which were often observed to be dry. A total of 24 soil samples were collected. GRO concentrations were detected above laboratory reporting limits in 15 of the 24 soil samples collected. Minimal BTEX concentrations were also observed in several of the soil samples collected. A detailed description of field activities and results associated with this soil and ground-water investigation can be found in the *Vapor Intrusion Assessment and Soil & Groundwater Investigation Report* (BAI, 2009b).

In March 2011, BAI oversaw the advancement of four direct-push technology (DPT) borings (identified as SB-1 through SB-4) on the Site to evaluate potential residual petroleum hydrocarbon impacts to soil and groundwater (Drawing 9). Soil samples were collected as each borehole was advanced. When first groundwater was encountered a grab-groundwater sample was collected from each borehole. Concentrations of GRO were detected above the laboratory

reporting limits in 11 of the 12 soil samples collected, with concentrations a maximum concentration of 250 mg/Kg in boring SB-2 at 9.0 feet bgs. BTEX, MTBE, TBA, TAME, 1,2-DCA, EDB, DIPE, ETBE and Ethanol were not detected above their respective laboratory reporting limit all other soil samples. In grab-groundwater samples, residual petroleum compounds were reported as follows:

- GRO in all four samples ranging from 9,400 µg/L in SB-3 to 140,000 µg/L in SB-2
- Benzene in three samples, from 2.5 µg/L in SB-3 to 380 µg/L in SB-2
- Toluene in one sample, at 2.3 µg/L in SB-3
- Ethylbenzene in four samples, from 1.9 µg/L in SB-3 to 130 µg/L in SB-2
- Total Xylenes in one sample at 3.4 µg/L in SB-3
- MTBE in two samples collected, from 2.1 µg/L in SB-3 to 2.2 µg/L in SB-
- TBA in one sample at of 250 µg/L in SB-2

Concentrations of TAME, 1,2-DCA, EDB, DIPE, ETBE and Ethanol were not detected above their respective laboratory reporting limits for each sample. Details of this investigation are presented in BAI's *Soil & Groundwater Investigation and First Quarter 2011 Monitoring Report* dated April 6, 2011 (BAI, 2011).

Quarterly ground-water monitoring at the Site was initiated in June 1990. Recent ground-water monitoring data is provided in Tables 1-5. Historic groundwater and soil analytical data, are included in Appendix C.

Previous Environmental Activities at Adjacent Former Shell Station

As mentioned in Above, the Site is located south of Former Shell Station #129460, an active release site (ACEH Case # RO0000372 / GeoTracker Global ID T0600101226). The former Shell Station is located immediately north of Lewelling Boulevard, on the northwest corner of Lewelling Boulevard and Washington Avenue at 15275 Washington Avenue. Background and specific historical information useful with respect to the Site is summarized below.

According to GeoTracker, the leak at the former Shell Station was discovered on in July 1985 reported in August 1986, and stopped in June 1987. In November 1988, several additional monitoring wells were installed to support subsurface characterization associated with the former Shell Station, including wells S-8, S-10, S-11 and S-12. In March 1989, several additional monitoring wells were including wells S-13 and S-14 adjacent to the Site. Monitoring wells S-8 and S-10 are located just northwest of Lewelling Boulevard, across the street from Station No. 601. Monitoring wells S-11, S-12 and S-13 are located near the center of Lewelling Boulevard, between the former Shell Station and Station No. 601. Well S-14 is located within the southeastern side of Lewelling Boulevard, just northwest of Station No. 601. Locations of Shell wells S-8, S-10, S-11, S-12, S-13, and S-14 are exhibited in Drawings 2 and 3.

References

Applied GeoSystems, November 9, 1989. *Limited Environmental Site Assessment at ARCO Service Station # 601, Southwest Corner of Washington Avenue and Lewelling Boulevard, San Leandro, California*.

Applied GeoSystems Inc., December 14, 1990. *Subsurface Environmental Assessment at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California.*

BAI, March 28, 2007. *Soil and Water Investigation Report, Atlantic Richfield Company Station #601, 712 Lewelling Boulevard, San Leandro, California*.

BAI, March 24, 2009. *Initial Site Conceptual Model With Soil and Ground-Water Investigation Work Plan, Atlantic Richfield Company Station #601, 712 Lewelling Boulevard, San Leandro, California.*

BAI, August 6, 2009. *Vapor Intrusion Assessment and Soil & Ground-Water Investigation Report, Atlantic Richfield Company Station #601, 712 Lewelling Boulevard, San Leandro, California.*

BAI, April 6, 2011. *Soil and Groundwater Investigation and First Quarter Monitoring and Sampling Report. Atlantic Richfield Company Station #601, 712 Lewelling Boulevard, San Leandro, California.*

California Regional Water Quality Control Board, San Francisco Bay Region, December 7, 1992. *Cleanup & Abatement Order # 92-147*. Issued to Atlantic Richfield Company and Mr. John J. Sullivan.

Delta Environmental Consultants, Inc., July 31, 2002. *Hand Auger Boring Installation Report, ARCO Service Station 601, 712 Lewelling Boulevard, San Leandro, California*.

EMCON, June 9, 1997. *Tier I, Tier II Risk-Based Corrective Action Evaluation for, ARCO Service Station 601, 712 Lewelling Boulevard, San Leandro, California*.

RESNA/Applied GeoSystems, Inc., October 17, 1991. *Subsurface Environmental Assessment and Vapor Extraction Test at ARCO Service Station 601, 712 Lewelling Boulevard, San Leandro, California.*

RESNA, February 3, 1993, Limited Offsite Subsurface Investigation at ARCO Station 601, *712 Lewelling Boulevard, San Leandro, California*.

RESNA, March 3, 1993. Additional Subsurface Investigation at ARCO Station 601, *712 Lewelling Boulevard, San Leandro, California*.

RESNA, August 5, 1993. *Additional Offsite Subsurface Investigation, Aquifer Pumping Test and Remedial Alternatives Feasibility Study at ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California*.

URS, October 9, 2003. *Dispenser and Product Line Removal and Upgrade Soil Sampling Report, ARCO Service Station #0601, 712 Lewelling Boulevard, San Leandro, California*.

APPENDIX C

PERMITS

Alameda County Public Works Agency - Water Resources Well Permit

Public Works Agency
Alameda County

399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 10/22/2014 By jamesy

Permit Numbers: W2014-0963 to W2014-0981
Permits Valid from 11/10/2014 to 11/12/2014

Application Id: 1411417395102
City of Project Site: San Leandro
Site Location: 712 Lewelling Blvd.
Project Start Date: 11/10/2014
Completion Date: 11/12/2014
Assigned Inspector: Contact Steve Miller at (510) 670-5517 or stevem@acpwa.org

Applicant: Broadbent - Lu Damerell
4820 Business Center Drive #110, Fairfield, CA 94534
Phone: 510-364-2079

Property Owner: Chuck Carmel
PO Box 1257, San Ramon, CA 94583
Phone: --

Client: Chuck Carmel
PO Box 1257, San Ramon, CA 94583
Phone: --

Total Due: $7543.00
Receipt Number: WR2014-0422 **Total Amount Paid:** $7543.00
Payer Name : Broadbent & Associates, Inc. Paid By: CHECK **PAID IN FULL**

Works Requesting Permits:

Well Destruction-Monitoring - 19 Wells
Driller: Cascade - Lic #: 938110 - Method: press

Work Total: $7543.00

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth	State Well #	Orig. Permit #	DWR #
W2014-0963	10/22/2014	02/08/2015	MW-1	10.00 in.	4.00 in.	5.00 ft	11.00 ft	3S/3W12G20	No Records	No Records
W2014-0964	10/22/2014	02/08/2015	MW-10	10.00 in.	2.00 in.	5.00 ft	19.00 ft	3S/3W12G	93253	403586
W2014-0965	10/22/2014	02/08/2015	MW-11	10.00 in.	4.00 in.	5.00 ft	12.00 ft	3S/3W12G32	92500	403560
W2014-0966	10/22/2014	02/08/2015	MW-12	10.00 in.	4.00 in.	5.00 ft	12.00 ft	3S/3W12G33	92500	403561
W2014-0967	10/22/2014	02/08/2015	MW-13	10.00 in.	2.00 in.	5.00 ft	13.00 ft	3S/3W12G34	92560	40371
W2014-0968	10/22/2014	02/08/2015	MW-14	10.00 in.	2.00 in.	5.00 ft	13.00 ft	3S/3W12G35	No Records	No Records
W2014-0969	10/22/2014	02/08/2015	MW-15	10.00 in.	2.00 in.	5.00 ft	10.00 ft	3S/3W12G30	No Records	No Records
W2014-0970	10/22/2014	02/08/2015	MW-16	10.00 in.	4.00 in.	5.00 ft	15.00 ft	3S/3W12G	W2009-0441	e0092306
W2014-0971	10/22/2014	02/08/2015	MW-17	10.00 in.	4.00 in.	5.00 ft	15.00 ft	3S/3W12G	W2009-0442	e0092307
W2014-0972	10/22/2014	02/08/2015	MW-18	10.00 in.	4.00 in.	5.00 ft	15.00 ft	3S/3W12G	W2009-0443	e0092308
W2014-0973	10/22/2014	02/08/2015	MW-19	10.00 in.	4.00 in.	5.00 ft	15.00 ft	3S/3W12G	W2009-0444	e0092309
W2014-0974	10/22/2014	02/08/2015	MW-2	10.00 in.	4.00 in.	5.00 ft	11.00 ft	3S/3W12G21	No Records	No Records
W2014-0975	10/22/2014	02/08/2015	MW-3	10.00 in.	4.00 in.	5.00 ft	12.00 ft	3S/3W12G22	No Records	No Records
W2014-0976	10/22/2014	02/08/2015	MW-4	10.00 in.	4.00 in.	5.00 ft	8.00 ft	3S/3W12G23	No Records	No Records
W2014-	10/22/2014	02/08/2015	MW-5	10.00 in.	4.00 in.	5.00 ft	10.00 ft	3S/3W12G2	No Records	No Records

Alameda County Public Works Agency - Water Resources Well Permit

0977								4		
W2014-0978	10/22/2014	02/08/2015	MW-6	10.00 in.	4.00 in.	5.00 ft	9.00 ft	3S/3W12G25	No Records	No Records
W2014-0979	10/22/2014	02/08/2015	MW-7	10.00 in.	4.00 in.	5.00 ft	10.00 ft	3S/3W12G26	No Records	No Records
W2014-0980	10/22/2014	02/08/2015	MW-8	10.00 in.	4.00 in.	5.00 ft	11.00 ft	3S/3W12G27	No Records	No Records
W2014-0981	10/22/2014	02/08/2015	MW-9	10.00 in.	2.00 in.	5.00 ft	16.00 ft	3S/3W12G	93253	403585

Specific Work Permit Conditions

1. Drilling Permit(s) can be voided/ cancelled only in writing. It is the applicant's responsibility to notify Alameda County Public Works Agency, Water Resources Section in writing for an extension or to cancel the drilling permit application. No drilling permit application(s) shall be extended beyond ninety (90) days from the original start date. Applicants may not cancel a drilling permit application after the completion date of the permit issued has passed.

2. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

3. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well construction or destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 60 days. Include permit number and site map.

4. Applicant shall submit the copies of the approved encroachment permit to this office within 60 days.

5. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost and liability in connection with or resulting from the exercise of this Permit including, but not limited to, property damage, personal injury and wrongful death.

6. Applicant shall contact assigned inspector listed on the top of the permit at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

7. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.

8. Remove the Christy box or similar structure.

Destroy well by grouting neat cement with a tremie pipe or pressure grouting (25 psi for 5min.) to the bottom of the well and by filling with neat cement to three (3-5) feet below surface grade. Allow the sealing material to spill over the top of the casing to fill any annular space between casing and soil.

After the seal has set, backfill the remaining hole with concrete or compacted material to match existing conditions.

9. Remove the Christy box or similar structure. Destroy wells MW-13, MW-15 and MW-17 by overdrilling the upper 5ft. bgs & Tremie Grouting with Cement. After the seal has set, backfill the remaining hole with concrete or compacted material to match existing.

10. Remove the Christy box or similar structure. Destroy all other wells by grouting neat cement with a tremie pipe or pressure grouting (25 psi for 5min.) to the bottom of the well and by filling with neat cement to three (3-5) feet below surface grade. Allow the sealing material to spill over the top of the casing to fill any annular space between casing and soil. After the seal has set, backfill the remaining hole with concrete or compacted material to match existing conditions.

11. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of $500.00.

Alameda County Public Works Agency - Water Resources Well Permit

Public Works Agency
Alameda County

399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 11/21/2014 By jamesy

Permit Numbers: W2014-1135
Permits Valid from 11/24/2014 to 11/24/2014

Application Id: 1416592125593 **City of Project Site:** San Leandro
Site Location: 712 Lewelling Blvd, San Leandro, CA
Active ARCO gas station.
Project Start Date: 11/24/2014 **Completion Date:** 11/24/2014
Assigned Inspector: Contact Steve Miller at (510) 670-5517 or stevem@acpwa.org

Applicant: Broadbent and Associates, Inc. - Kristene Tidwell
4820 Business Center Drive, Suite 110, Fairfield, CA 94534 **Phone:** 707-455-7290
Property Owner: Charles Carmel
PO Box 1257, San Ramon, CA 94583 **Phone:** --
Client: ** same as Property Owner **
Contact: Nicholas Vrdoljak **Phone:** 707-455-7290
Cell: --

Total Due: $265.00
Receipt Number: WR2014-0488 **Total Amount Paid:** $265.00
Payer Name : Kristene Tidwell Paid By: VISA **PAID IN FULL**

Works Requesting Permits:

Well Destruction-Vapor monitoring well - 9 Wells
Driller: Cascade Drilling, L.P. - Lic #: 938110 - Method: other **Work Total: $265.00**

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth	State Well #	Orig. Permit #	DWR #
W2014-1135	11/21/2014	02/22/2015	RW-1	12.00 in.	6.00 in.	0.00 ft	15.00 ft	3S/3W12G	No Records	No Records
W2014-1135	11/21/2014	02/22/2015	SG-10	12.00 in.	0.13 in.	1.00 ft	5.00 ft	3S/3W12G	W2009-0445	No Records
W2014-1135	11/21/2014	02/22/2015	SG-11	12.00 in.	0.13 in.	1.00 ft	5.00 ft	3S/3W12G	W2009-0445	No Records
W2014-1135	11/21/2014	02/22/2015	SG-12	12.00 in.	0.13 in.	1.00 ft	5.00 ft	3S/3W12G	W2009-0445	No Records
W2014-1135	11/21/2014	02/22/2015	SG-13	12.00 in.	0.13 in.	1.00 ft	5.00 ft	3S/3W12G	W2009-0445	No Records
W2014-1135	11/21/2014	02/22/2015	SG-14	12.00 in.	0.13 in.	1.00 ft	5.00 ft	3S/3W12G	W2009-0445	No Records
W2014-1135	11/21/2014	02/22/2015	SG-15A	12.00 in.	0.13 in.	1.00 ft	5.00 ft	3S/3W12G	W2014-0394	No Records
W2014-1135	11/21/2014	02/22/2015	SG-15B	12.00 in.	0.13 in.	1.00 ft	5.00 ft	3S/3W12G	W2014-0394	No Records
W2014-1135	11/21/2014	02/22/2015	SG-9	12.00 in.	0.13 in.	1.00 ft	5.00 ft	3S/3W12G	W2014-0394	No Records

Specific Work Permit Conditions

1. Drilling Permit(s) can be voided/ cancelled only in writing. It is the applicant's responsibility to notify Alameda County Public Works Agency, Water Resources Section in writing for an extension or to cancel the drilling permit application. No drilling permit application(s) shall be extended beyond ninety (90) days from the original start date. Applicants may not cancel a drilling permit application after the completion date of the permit issued has passed.

2. Compliance with the above well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate state reporting-requirements related to well destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 60 days, including permit number and site map.

3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

4. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.

5. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

6. No changes in construction procedures or well type shall change, as described on this permit application. This permit may be voided if it contains incorrect information.

7. Applicant shall submit the copies of the approved encroachment permit to this office within 10 days.

8. Applicant shall contact assigned inspector listed on the top of the permit at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

9. Remove the Christy box or similar structure. Overdrill or clean out to original depth. After the seal has set, backfill the remaining hole with concrete or compacted material to match existing.

10. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of $500.00.

11. Vapor monitoring wells constructed with tubing shall be decomissioned by complete removal of tubing, grout seal, and fill material of sand or bentonite. Fill material may be removed by hand auger if material can be removed completely.

Vapor monitoring wells constructed with pvc pipe less than 2" shall be overdrilled to total depth.

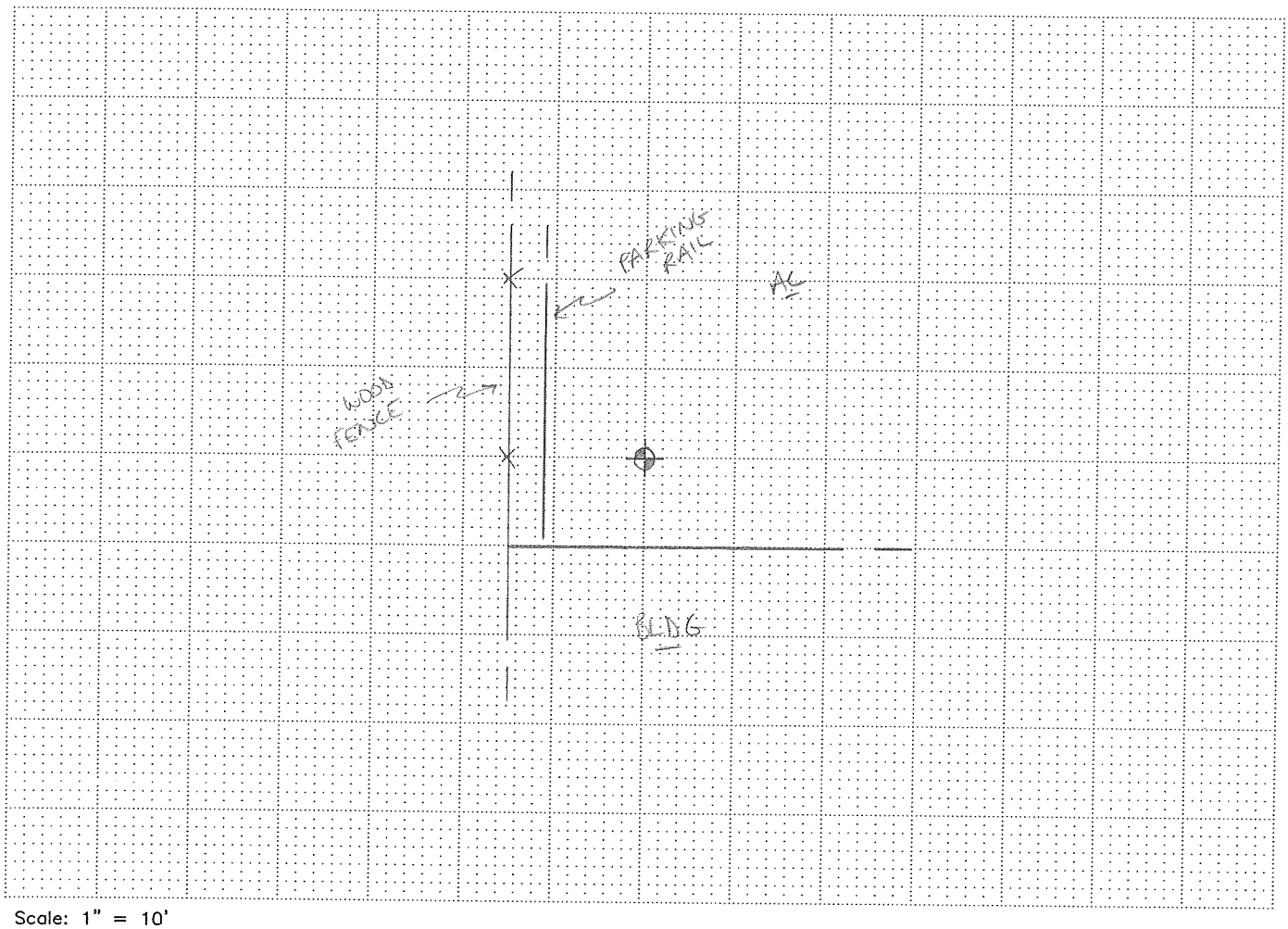
Vapor monitoring wells constructed with 2" pvc pipe or larger may be grouted by tremie pipe (any depth) or pressure grouted (less than 30', 25 psi for 5 min).

12. "After the Fact" Permit. Work was conducted during the Nov 10 to the 12th 2014.

APPENDIX D

UTILITY CLEARANCE SURVEY

PERSONNEL: DJK CB	CLIENT: BROADBENT
JOB: 14-1034, 38 / DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: SG-13



Scale: 1" = 10'

EXPLANATION

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- OR — Localized GPR Anomaly
- Utility Alignment

Utilities

- _ T (Telephone, Comm.)
- _ E (Electric)
- _ NG (Natural Gas)
- _ CA (Compressed Air)
- _ STM (Steam)
- _ SS (Sanitary Sewer)
- _ SD (Storm Drain)
- _ W (Water)
- _ FS (Fire Supression)
- _ UU (Undifferentiated Utility)

Surface

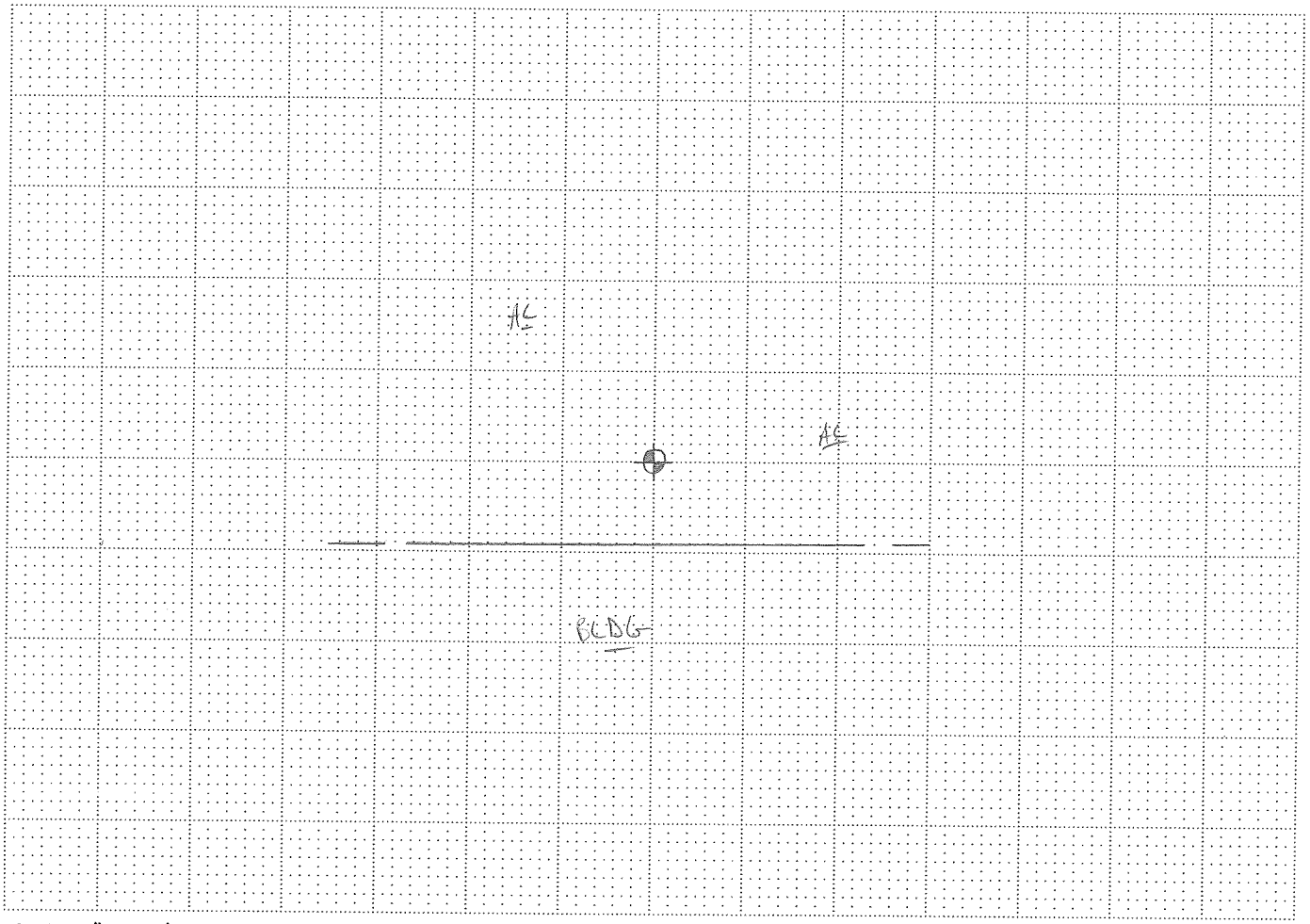
- _ RC (Reinforced Concrete)
- _ AC (Asphalt)
- _ C (Concrete)
- _ Soil
- _ Gravel
- _ other

NOTES

Equipment:	Procedure:	Surface Conditions:
✓ GPR (Radar)	_ EMC (Conduction)	_ Wet
✓ RD 4000	✓ EMI (Induction)	✓ Dry
✓ M Scope	✓ Ambient	_ other
_ other	✓ GPR	

REMARKS

PERSONNEL: DJK CB	CLIENT: BROADBENT
JOB: 14-1034,38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: SG-14



Scale: 1" = 10'

EXPLANATION

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- OR — Localized GPR Anomaly
- Utility Alignment

Utilities

- _ T (Telephone, Comm.)
- _ E (Electric)
- _ NG (Natural Gas)
- _ CA (Compressed Air)
- _ STM (Steam)
- _ SS (Sanitary Sewer)
- _ SD (Storm Drain)
- _ W (Water)
- _ FS (Fire Supression)
- _ UU (Undifferentiated Utility)

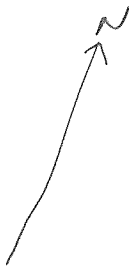
Surface

- _ RC (Reinforced Concrete)
- _ AC (Asphalt)
- _ C (Concrete)
- _ Soil
- _ Gravel
- _ other

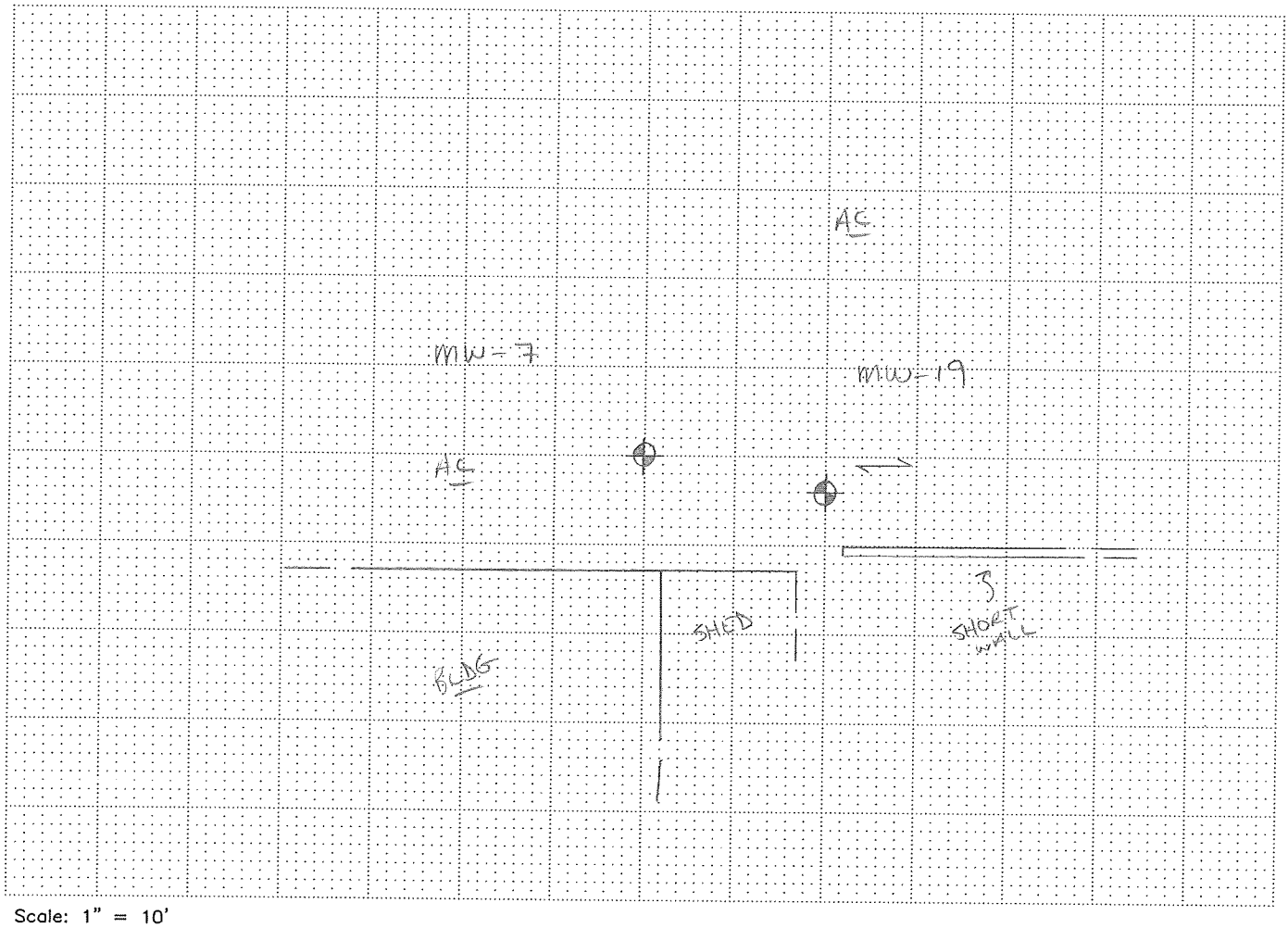
NOTES

Equipment:	Procedure:	Surface Conditions:
✓ GPR (Radar)	_ EMC (Conduction)	_ Wet
✓ RD 4000	✓ EMI (Induction)	✓ Dry
✓ M Scope	✓ Ambient	_ other
_ other	✓ GPR	

REMARKS



PERSONNEL: BJK CB	CLIENT: BROADBENT
JOB: 14-1034.38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: MW-7, MW-19



Scale: 1" = 10'

EXPLANATION

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- OR — Localized GPR Anomaly
- Utility Alignment

Utilities

- _ T (Telephone, Comm.)
- _ E (Electric)
- _ NG (Natural Gas)
- _ CA (Compressed Air)
- _ STM (Steam)
- _ SS (Sanitary Sewer)
- _ SD (Storm Drain)
- _ W (Water)
- _ FS (Fire Supression)
- _ UU (Undifferentiated Utility)

Surface

- _ RC (Reinforced Concrete)
- ✓ AC (Asphalt)
- _ C (Concrete)
- _ Soil
- _ Gravel
- _ other

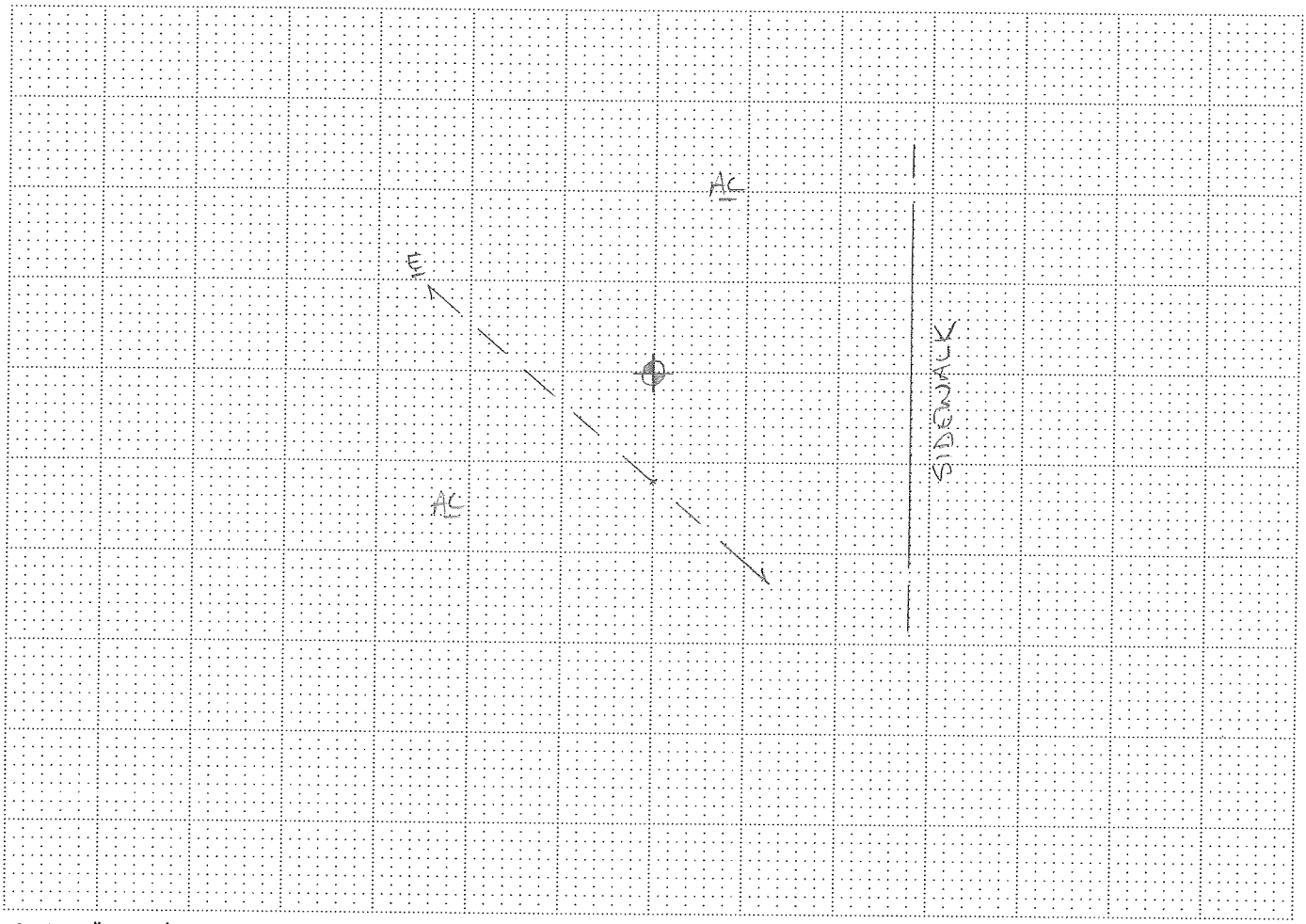
NOTES

Equipment:	Procedure:	Surface Conditions:
✓ GPR (Radar)	_ EMC (Conduction)	_ Wet
✓ RD 4000	✓ EMI (Induction)	✓ Dry
✓ M Scope	✓ Ambient	_ other
_ other	✓ GPR	

REMARKS

N

PERSONNEL: DJK CB	CLIENT: BROADBENT
JOB: 14-1034.38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: MW-12



Scale: 1" = 10'

EXPLANATION

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- OR Localized GPR Anomaly
- Utility Alignment

Utilities

- _ T (Telephone, Comm.)
- _ E (Electric)
- _ NG (Natural Gas)
- _ CA (Compressed Air)
- _ STM (Steam)
- _ SS (Sanitary Sewer)
- _ SD (Storm Drain)
- _ W (Water)
- _ FS (Fire Supression)
- _ UU (Undifferentiated Utility)

Surface

- _ RC (Reinforced Concrete)
- ✓ AC (Asphalt)
- _ C (Concrete)
- _ Soil
- _ Gravel
- _ other

NOTES

Equipment:	Procedure:	Surface Conditions:
✓ GPR (Radar)	_ EMC (Conduction)	_ Wet
✓ RD 4000	✓ EMI (Induction)	✓ Dry
✓ M Scope	✓ Ambient	_ other
_ other	✓ GPR	

REMARKS

PERSONNEL: DJK CB

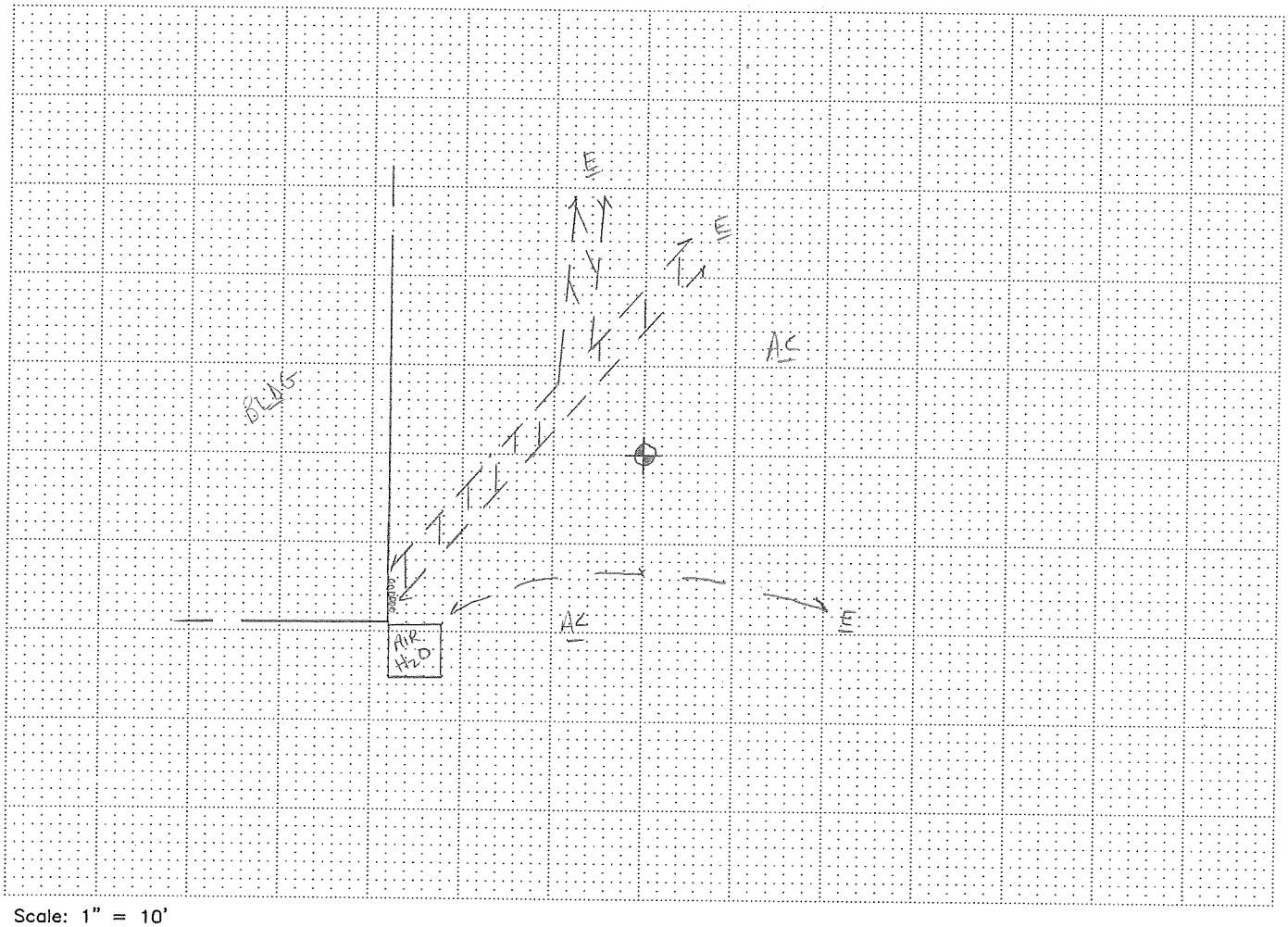
JOB: 14-1034.38 DATE: 10-30-14

NORCAL GEOPHYSICAL CONSULTANTS INC.

CLIENT: BROADBENT

LOCATION: ARCO, SAN LEANDRO

BORING: MW-1



Scale: 1" = 10'

EXPLANATION

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- OR — Localized GPR Anomaly
- Utility Alignment

Utilities

- _ T (Telephone, Comm.)
- ✓ E (Electric)
- _ NG (Natural Gas)
- _ CA (Compressed Air)
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- _ SD (Storm Drain)
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- _ FS (Fire Supression)
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Surface

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- ✓ AC (Asphalt)
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- _ Soil
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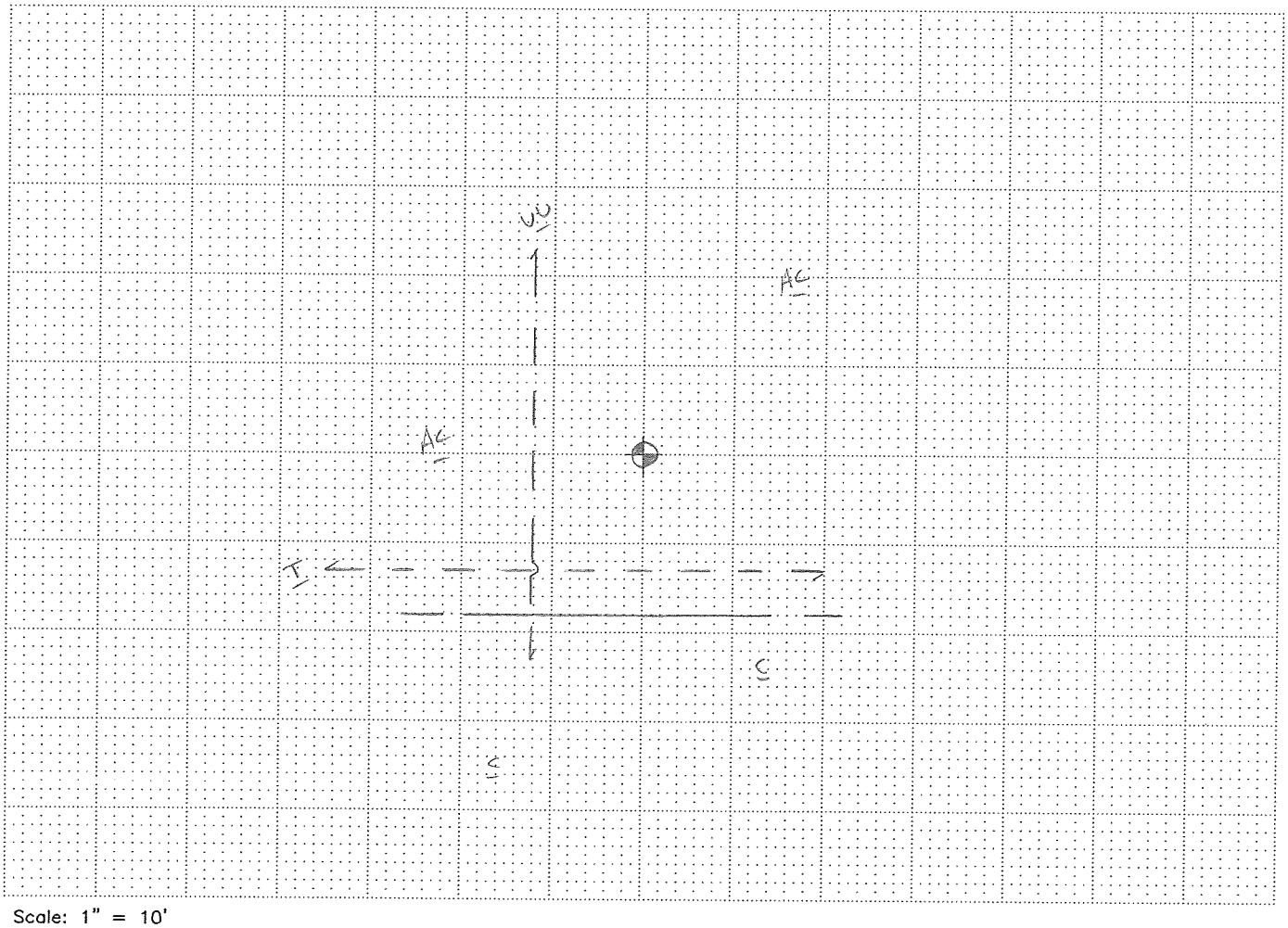
NOTES

Equipment:	Procedure:	Surface Conditions:
✓ GPR (Radar)	_ EMC (Conduction)	_ Wet
✓ RD 4000	✓ EMI (Induction)	✓ Dry
✓ M Scope	✓ Ambient	_ other
_ other	✓ GPR	

REMARKS

N

PERSONNEL: DJK CB	CLIENT: BROADBENT
JOB: 14-1034.38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: MW-11



Scale: 1" = 10'

EXPLANATION

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- OR — Localized GPR Anomaly
- Utility Alignment

Utilities

- ✓ T (Telephone, Comm.)
- _ E (Electric)
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- _ STM (Steam)
- _ SS (Sanitary Sewer)
- _ SD (Storm Drain)
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- ✓ UU (Undifferentiated Utility)

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- _ AC (Asphalt)
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- _ Soil
- _ Gravel
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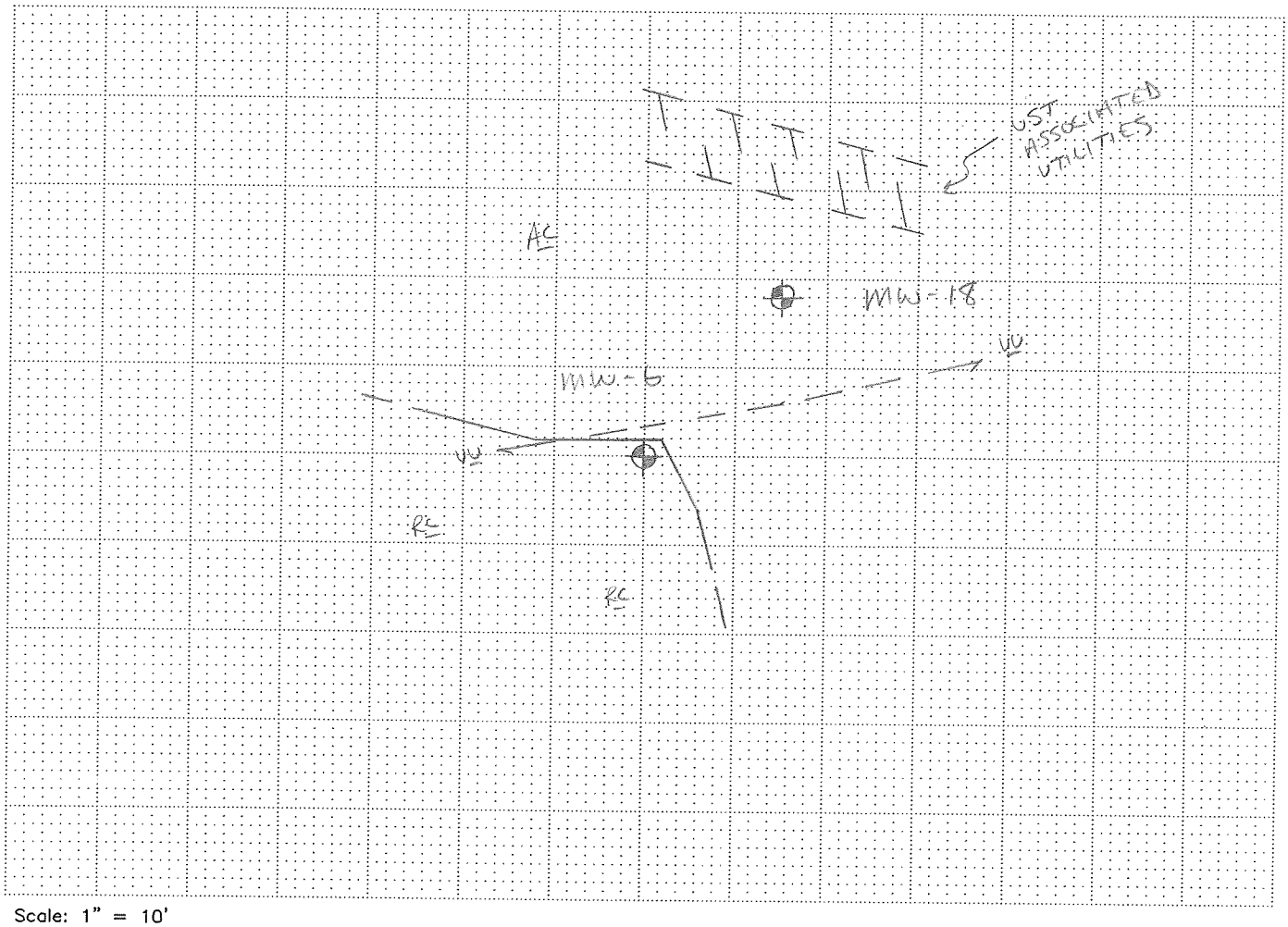
NOTES

Equipment:	Procedure:	Surface Conditions:
✓ GPR (Radar)	_ EMC (Conduction)	_ Wet
✓ RD 4000	✓ EMI (Induction)	✓ Dry
✓ M Scope	✓ Ambient	_ other
_ other	✓ GPR	

REMARKS

N

PERSONNEL: BJK CB	CLIENT: BROADBENT
JOB: 14-1034.38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: MW-6, MW-18



Scale: 1" = 10'

EXPLANATION

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- OR Localized GPR Anomaly
- Utility Alignment

Utilities

- _ T (Telephone, Comm.)
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- _ NG (Natural Gas)
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- _ STM (Steam)
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- _ FS (Fire Supression)
- ✓ UU (Undifferentiated Utility)

Surface

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- _ Soil
- _ Gravel
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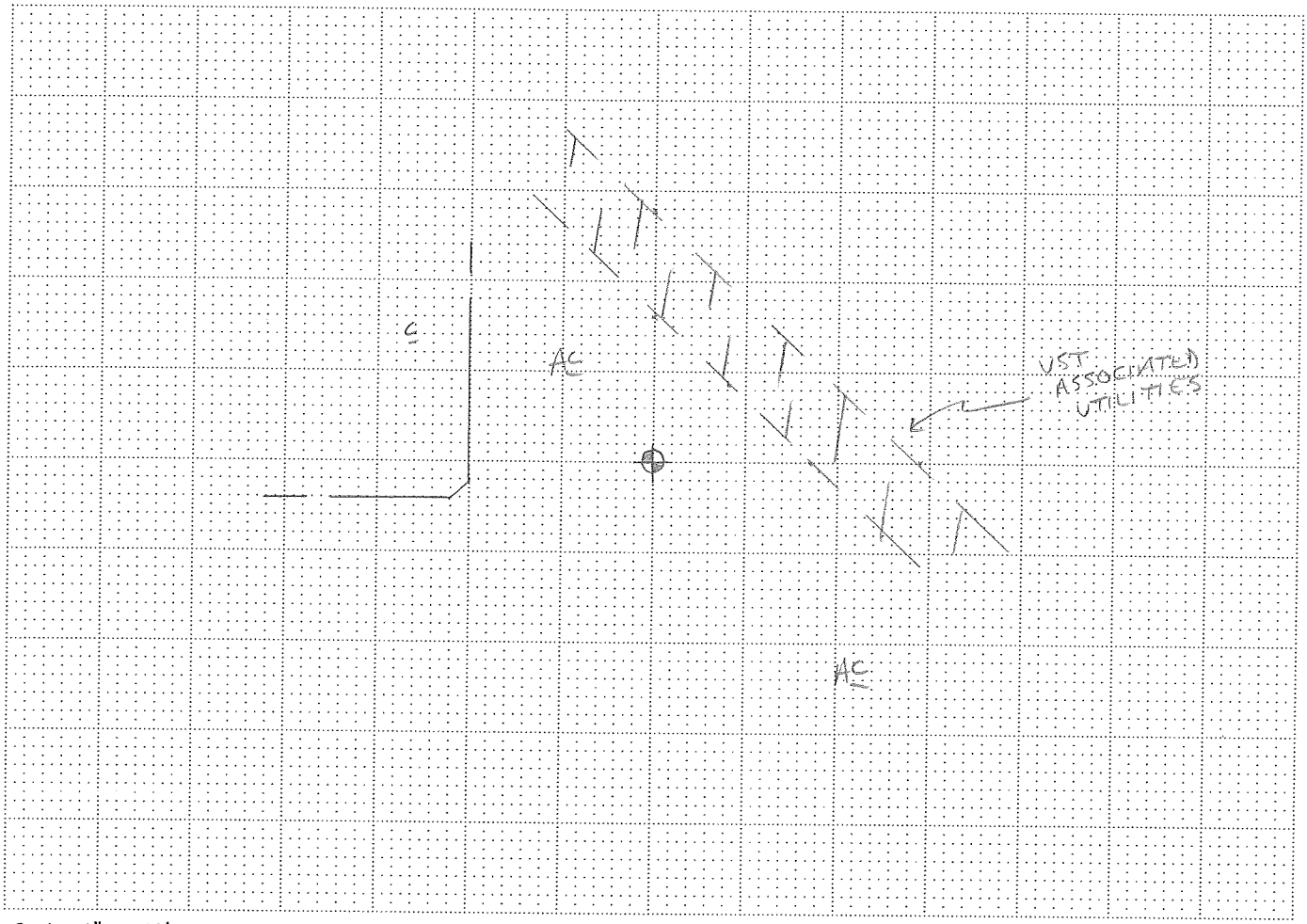
NOTES

Equipment:	Procedure:	Surface Conditions:
✓ GPR (Radar)	_ EMC (Conduction)	_ Wet
✓ RD 4000	✓ EMI (Induction)	✓ Dry
_ M Scope	✓ Ambient	_ other
_ other	✓ GPR	

REMARKS

N

PERSONNEL: BJK CB	CLIENT: BROADBENT
JOB: 14-1034.38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: SG-9



Scale: 1" = 10'

EXPLANATION

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- OR — Localized GPR Anomaly
- Utility Alignment

Utilities

- _ T (Telephone, Comm.)
- _ E (Electric)
- _ NG (Natural Gas)
- _ CA (Compressed Air)
- _ STM (Steam)
- _ SS (Sanitary Sewer)
- _ SD (Storm Drain)
- _ W (Water)
- _ FS (Fire Supression)
- ✓ UU (Undifferentiated Utility)

Surface

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- _ C (Concrete)
- _ Soil
- _ Gravel
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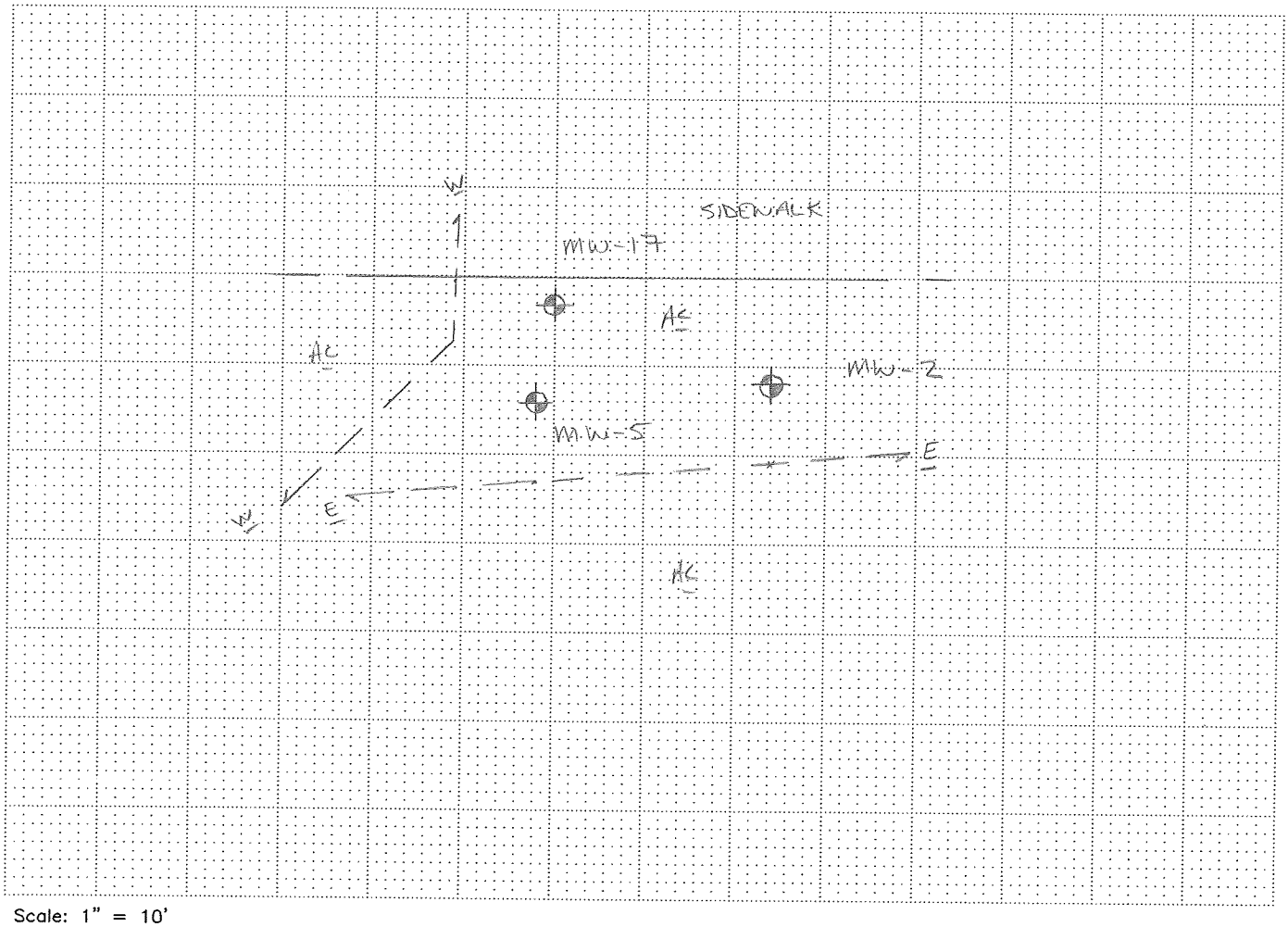
NOTES

Equipment:	Procedure:	Surface Conditions:
✓ GPR (Radar)	_ EMC (Conduction)	_ Wet
✓ RD 4000	✓ EMI (Induction)	✓ Dry
✓ M Scope	✓ Ambient	_ other
_ other	✓ GPR	

REMARKS

N

PERSONNEL: DJK CB	CLIENT: BROADBENT
JOB: 14-1034.38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: MW-17, MW-5, MW-2



Scale: 1" = 10'

EXPLANATION

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- OR — Localized GPR Anomaly
- Utility Alignment

Utilities

- _ T (Telephone, Comm.)
- ✓ E (Electric)
- _ NG (Natural Gas)
- _ CA (Compressed Air)
- _ STM (Steam)
- _ SS (Sanitary Sewer)
- _ SD (Storm Drain)
- ✓ W (Water)
- _ FS (Fire Supression)
- _ UU (Undifferentiated Utility)

Surface

- _ RC (Reinforced Concrete)
- ✓ AC (Asphalt)
- _ C (Concrete)
- _ Soil
- _ Gravel
- _ other

NOTES

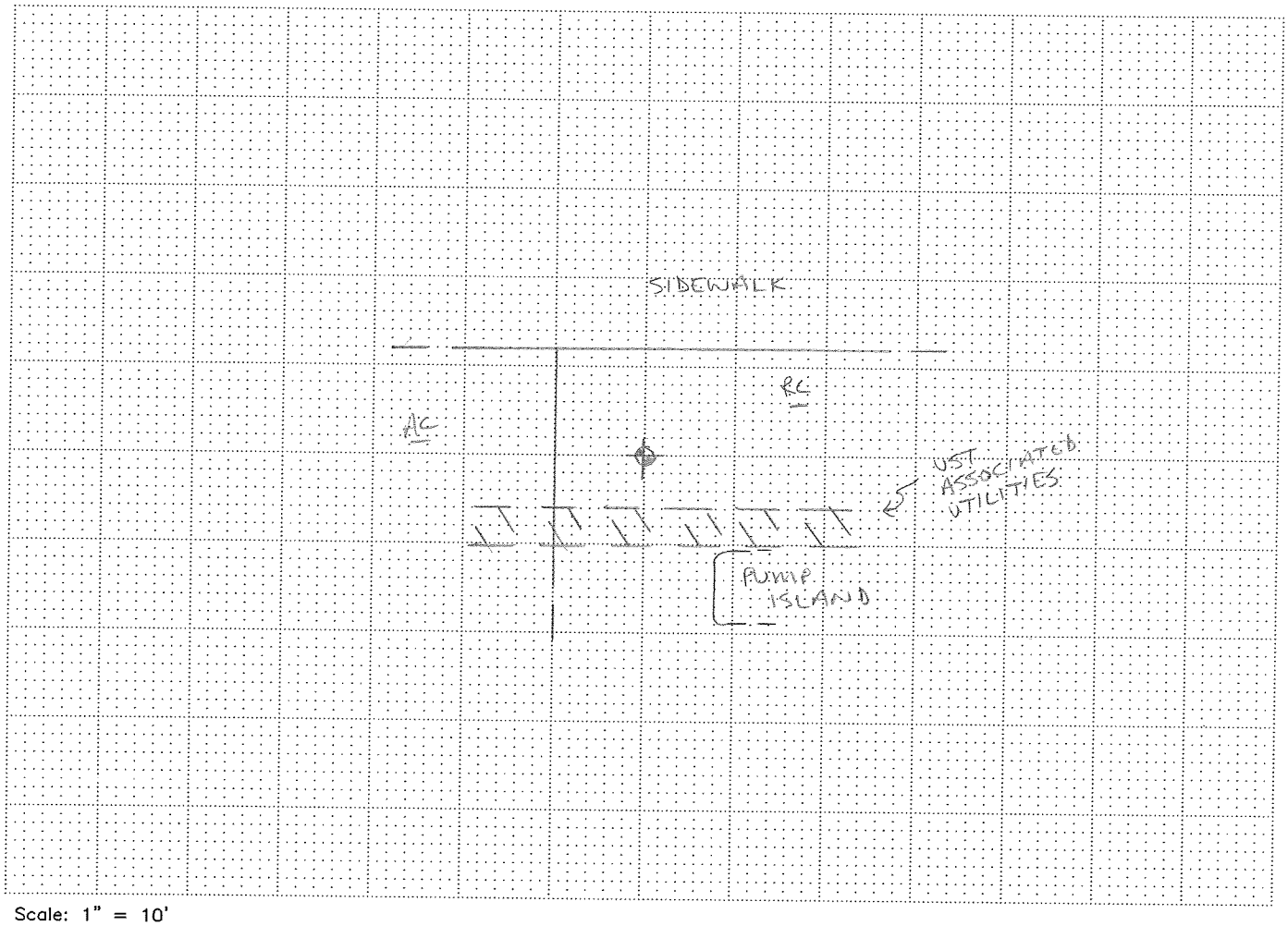
Equipment:
- ✓ GPR (Radar)
- _ RD 4000
- ✓ M Scope
- _ other

Procedure:
- _ EMC (Conduction)
- ✓ EMI (Induction)
- ✓ Ambient
- ✓ GPR

Surface Conditions:
- _ Wet
- ✓ Dry
- _ other

REMARKS

PERSONNEL: BJK CB	CLIENT: BROADBENT
JOB: 14-1034.38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: MW-4



Scale: 1" = 10'

EXPLANATION

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- OR — Localized GPR Anomaly
- Utility Alignment

Utilities

- _ T (Telephone, Comm.)
- _ E (Electric)
- _ NG (Natural Gas)
- _ CA (Compressed Air)
- _ STM (Steam)
- _ SS (Sanitary Sewer)
- _ SD (Storm Drain)
- _ W (Water)
- _ FS (Fire Supression)
- _ UU (Undifferentiated Utility)

Surface

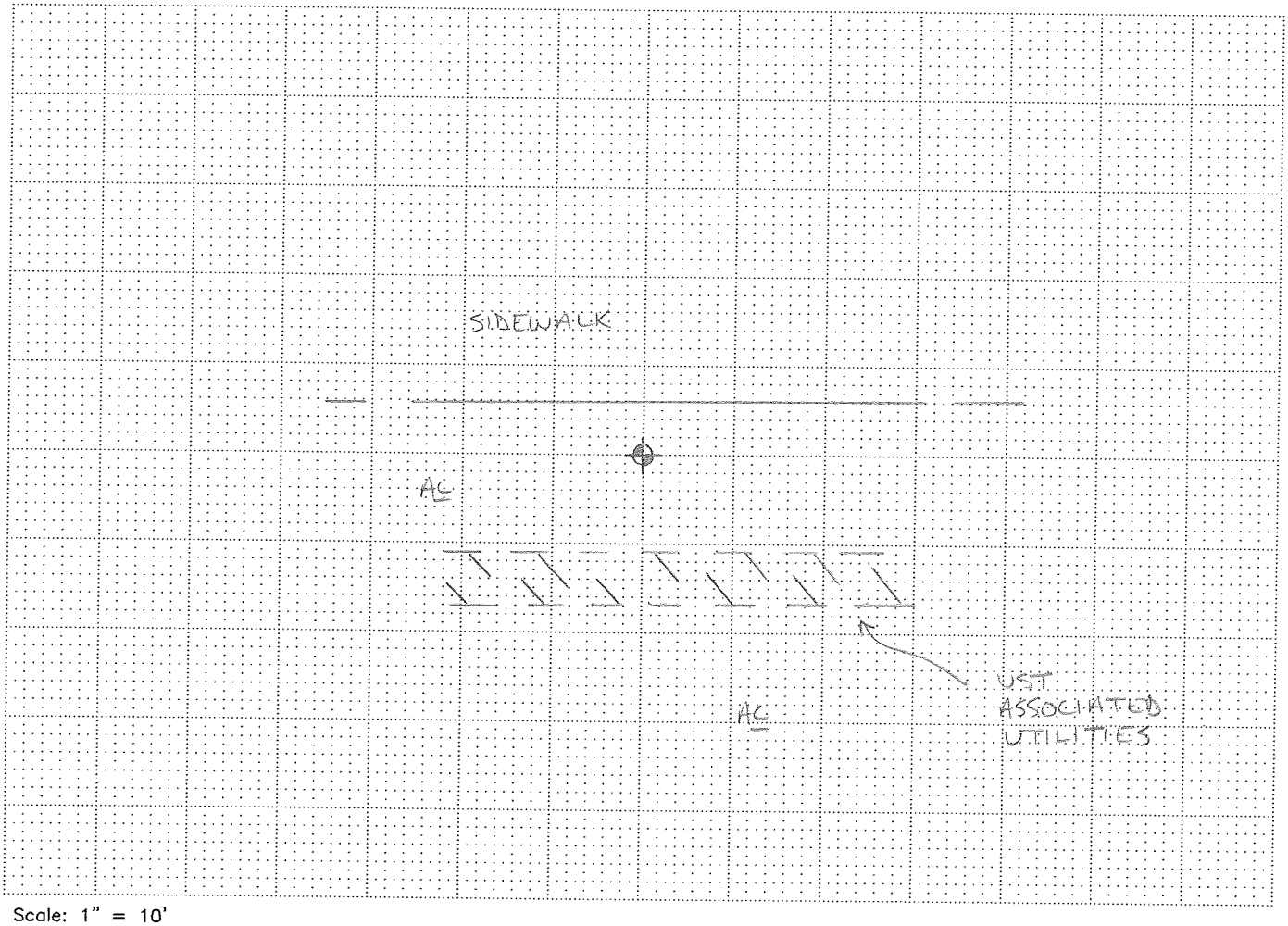
- _ RC (Reinforced Concrete)
- ✓ AC (Asphalt)
- _ C (Concrete)
- _ Soil
- _ Gravel
- _ other

NOTES

Equipment:	Procedure:	Surface Conditions:
✓ GPR (Radar)	_ EMC (Conduction)	_ Wet
✓ RD 4000	✓ EMI (Induction)	✓ Dry
_ M Scope	✓ Ambient	_ other
_ other	✓ GPR	

REMARKS

PERSONNEL: DJK CB	CLIENT: BROADBENT
JOB: 14-1034.38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: MW-16



Scale: 1" = 10'

EXPLANATION

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- OR — Localized GPR Anomaly
- Utility Alignment

Utilities

- _ T (Telephone, Comm.)
- _ E (Electric)
- _ NG (Natural Gas)
- _ CA (Compressed Air)
- _ STM (Steam)
- _ SS (Sanitary Sewer)
- _ SD (Storm Drain)
- _ W (Water)
- _ FS (Fire Supression)
- ✓ UU (Undifferentiated Utility)

Surface

- _ RC (Reinforced Concrete)
- ✓ AC (Asphalt)
- _ C (Concrete)
- _ Soil
- _ Gravel
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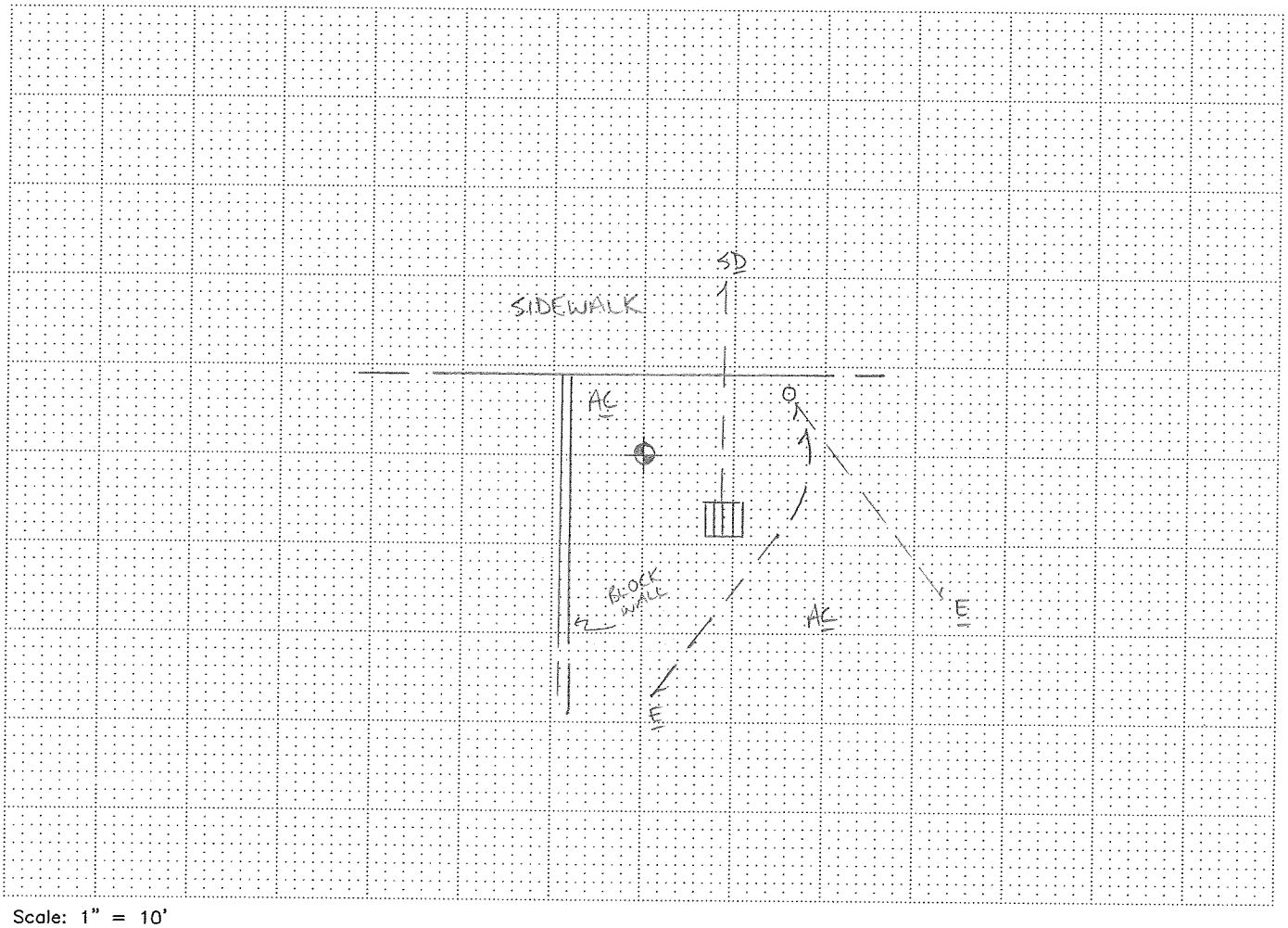
NOTES

Equipment:	Procedure:	Surface Conditions:
✓ GPR (Radar)	_ EMC (Conduction)	_ Wet
✓ RD 4000	✓ EMI (Induction)	✓ Dry
✓ M Scope	✓ Ambient	_ other
_ other	✓ GPR	

REMARKS

PERSONNEL: DJK CB	CLIENT: BROADBENT
JOB: 14-1034.38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: MW-3



Scale: 1" = 10'

EXPLANATION

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- OR — Localized GPR Anomaly
- Utility Alignment

Utilities

- _ T (Telephone, Comm.)
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Surface

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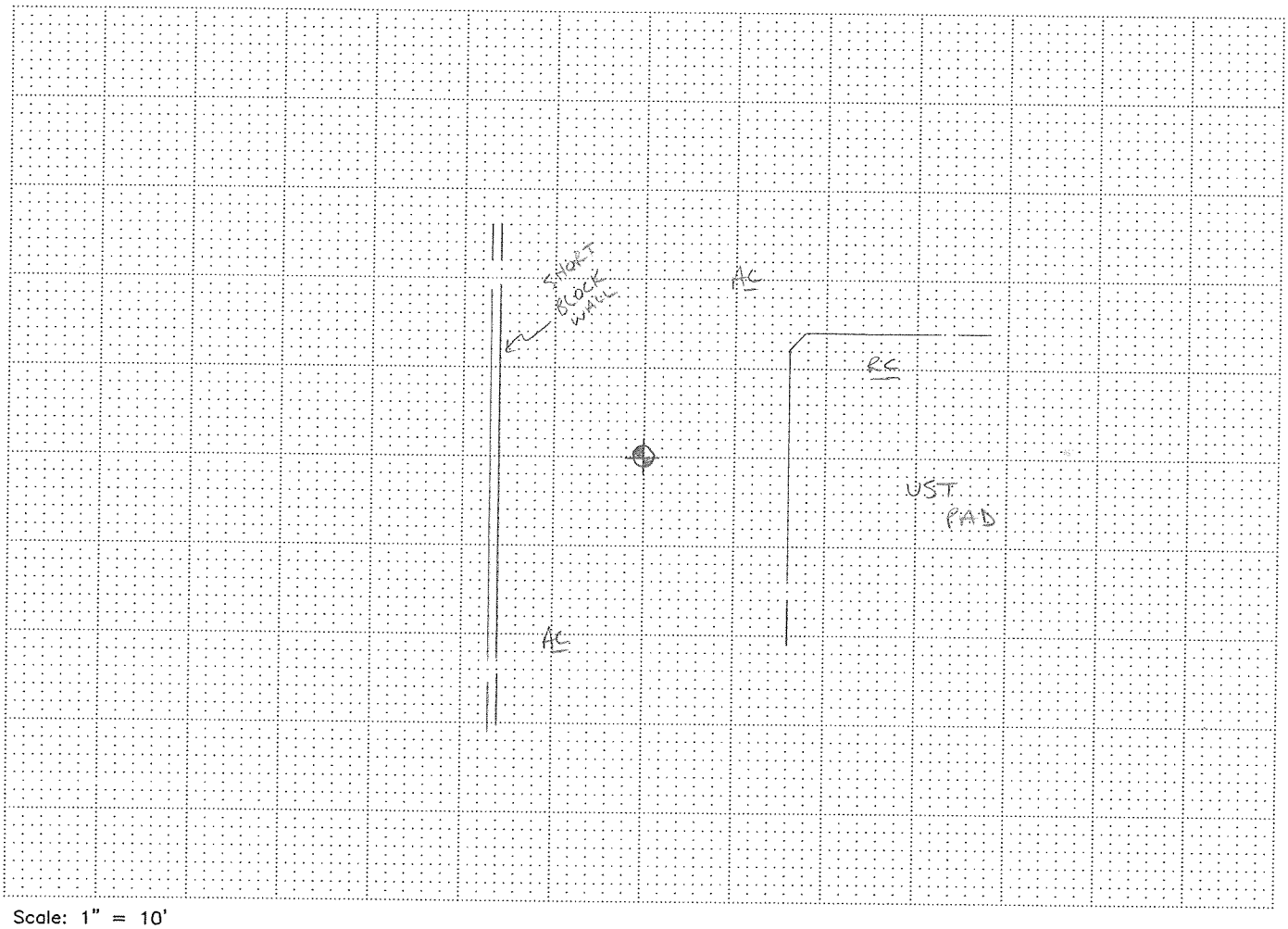
NOTES

Equipment:	Procedure:	Surface Conditions:
✓ GPR (Radar)	_ EMC (Conduction)	_ Wet
✓ RD 4000	✓ EMI (Induction)	✓ Dry
✓ M Scope	✓ Ambient	_ other
_ other	✓ GPR	

REMARKS

PERSONNEL: DJK CB	CLIENT: BROADBENT
JOB: 14-1034.38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: SG-10



Scale: 1" = 10'

EXPLANATION

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- Final Boring Location
- Existing Well Location
- GPR Traverse
- OR — Localized GPR Anomaly
- Utility Alignment

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Surface

- _ RC (Reinforced Concrete)
- ✓ AC (Asphalt)
- _ C (Concrete)
- _ Soil
- _ Gravel
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NOTES

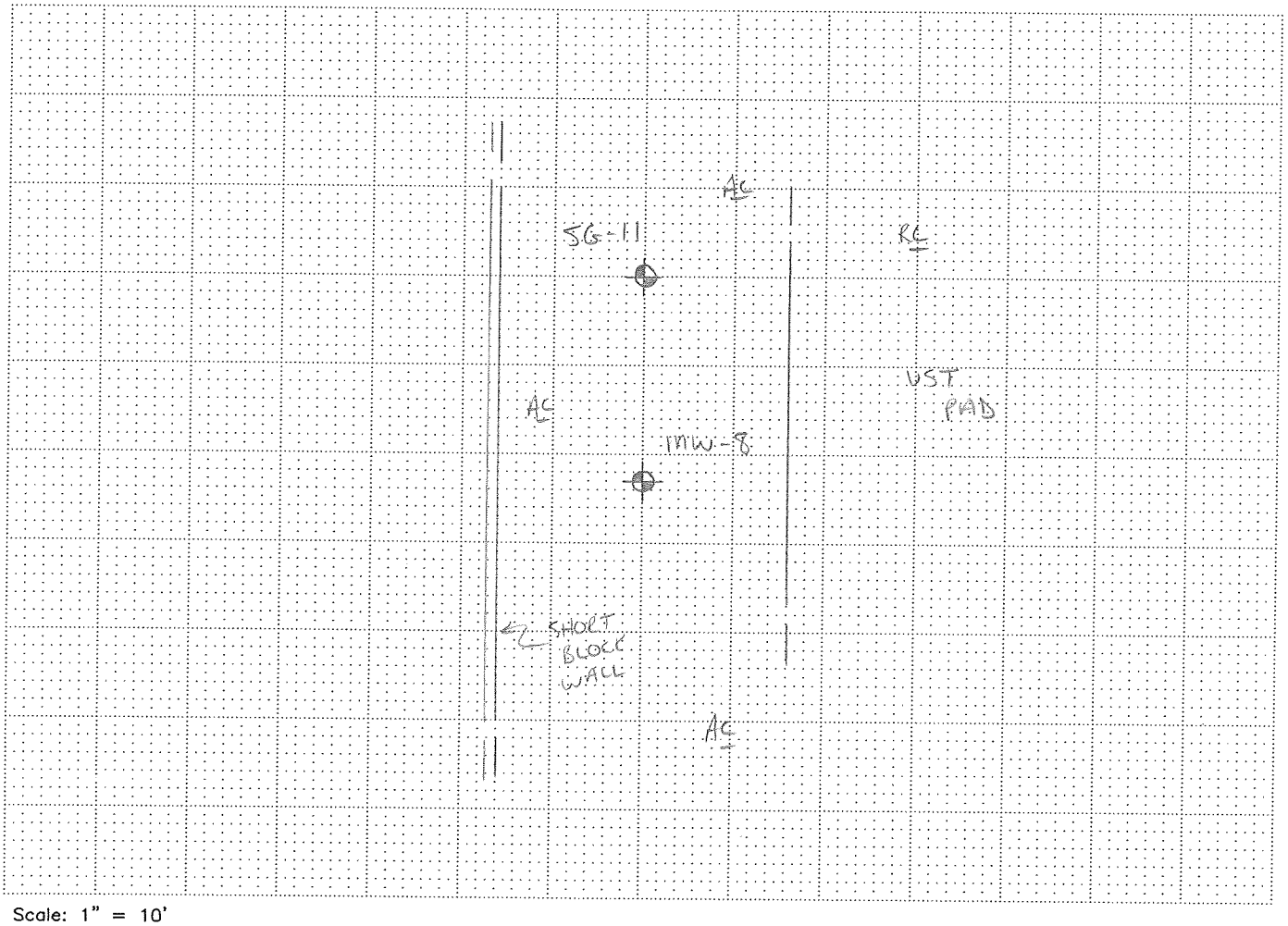
Equipment:
- ✓ GPR (Radar)
- ✓ RD 4000
- ✓ M Scope
- _ other

Procedure:
- _ EMC (Conduction)
- ✓ EMI (Induction)
- ✓ Ambient
- ✓ GPR

Surface Conditions:
- _ Wet
- ✓ Dry
- _ other

REMARKS

PERSONNEL: BJK CB	CLIENT: BROADBENT
JOB: 14-1034.38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: SG-11, MW-8



Scale: 1" = 10'

EXPLANATION

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✓ GPR (Radar)	_ EMC (Conduction)	_ Wet
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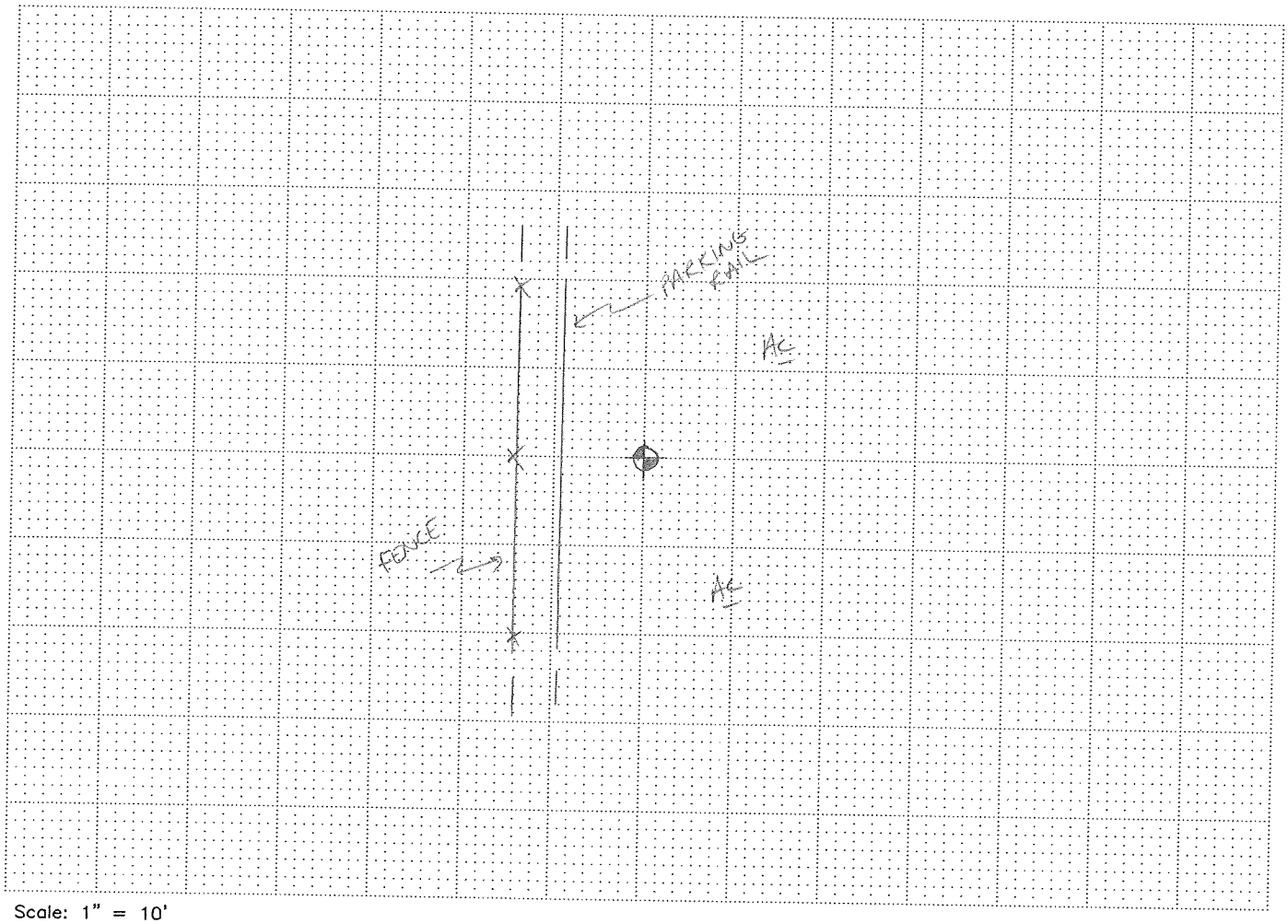
REMARKS

N

PERSONNEL: DJK CB	CLIENT: BROADBENT
JOB: 14-1034.38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: SG-12



Scale: 1" = 10'

EXPLANATION

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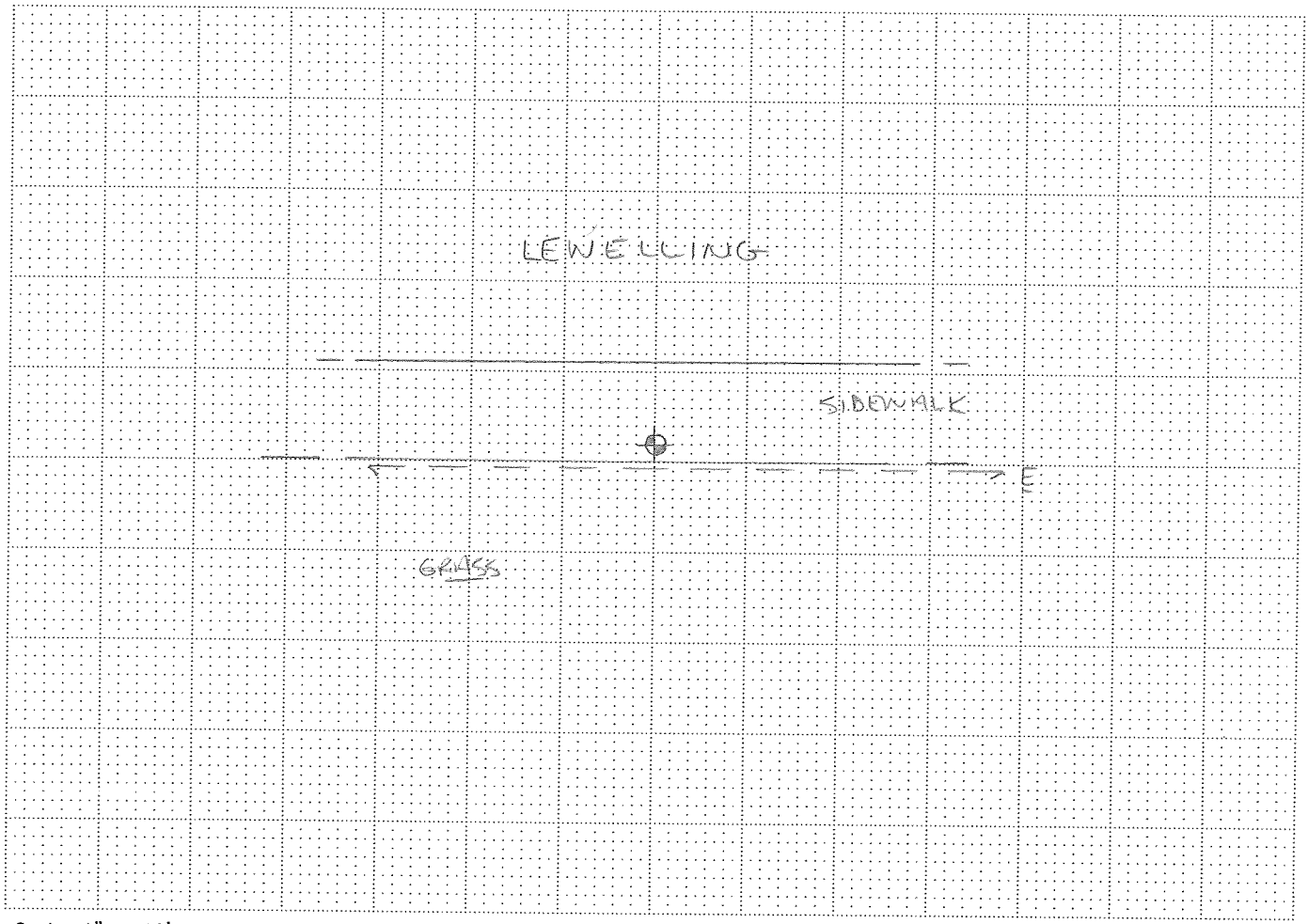
REMARKS

N

PERSONNEL: BJK CB	CLIENT: BROADBENT
JOB: 14-1034.38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: MW-15



Scale: 1" = 10'

EXPLANATION

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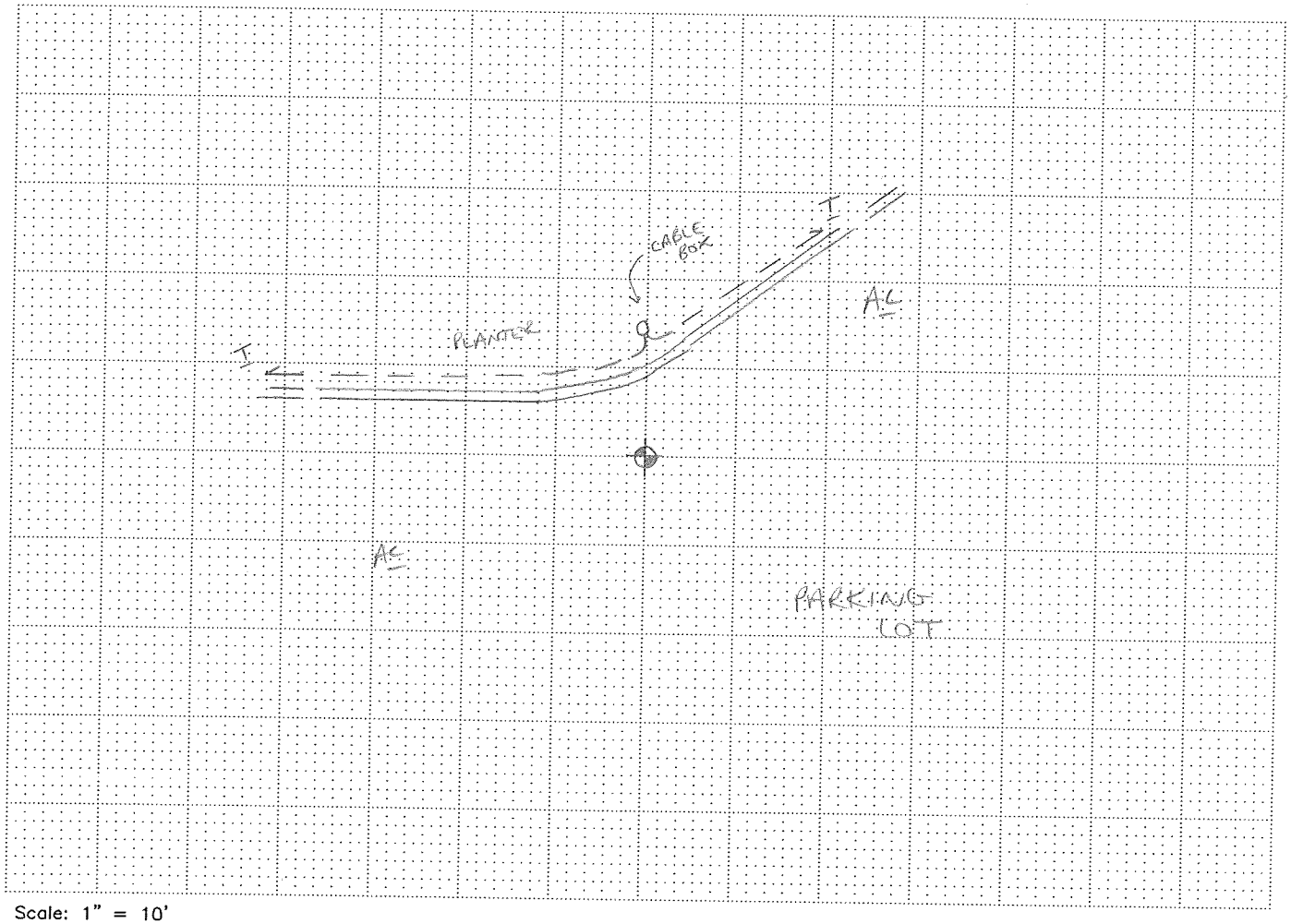
REMARKS

PERSONNEL: DJK CB	CLIENT: BROADBENT
JOB: 14-1034.38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: MW-9



Scale: 1" = 10'

EXPLANATION

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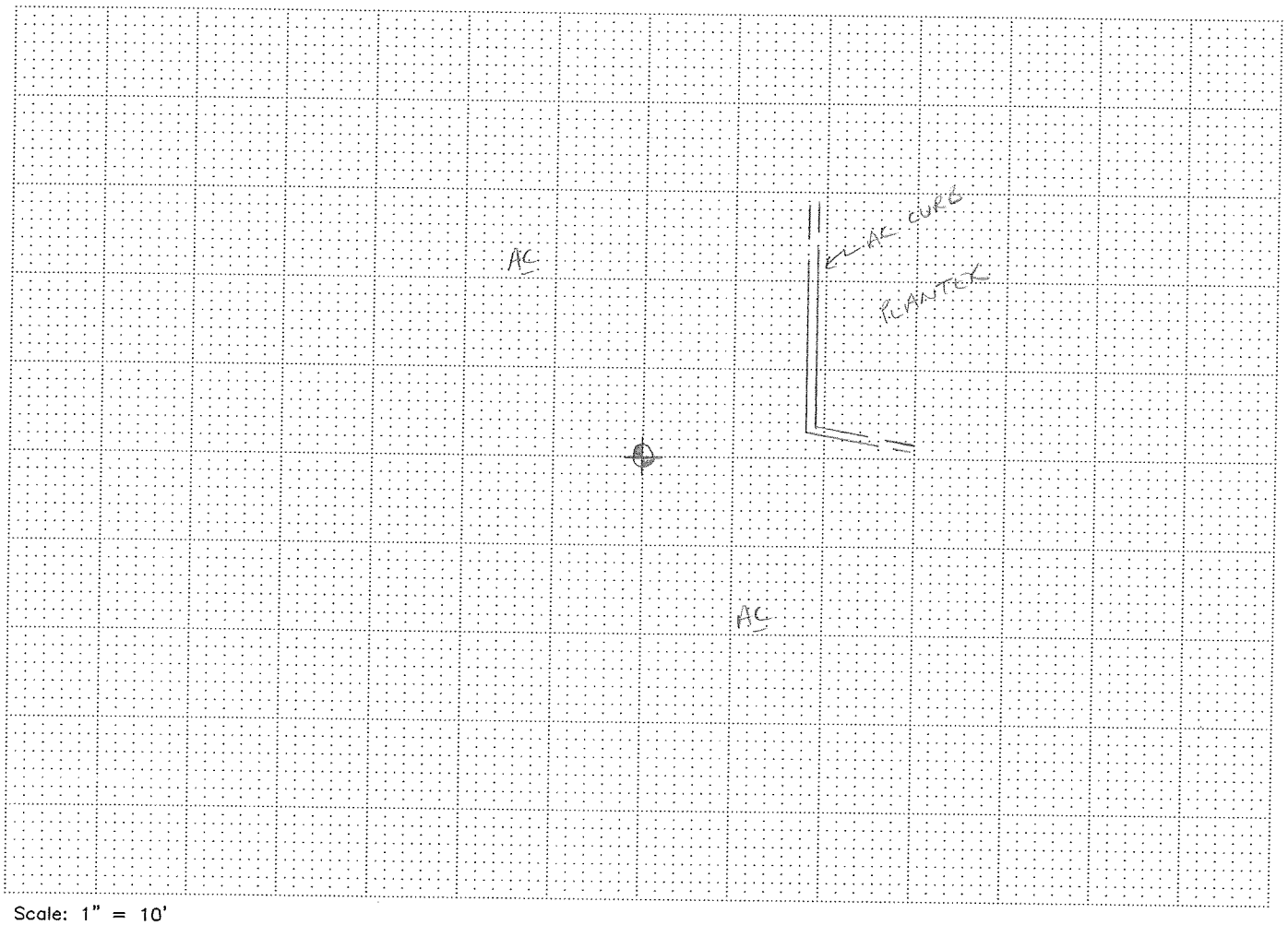
REMARKS

PERSONNEL: DJK CB	CLIENT: BROADBENT
JOB: 14-1034.38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: MW-10



Scale: 1" = 10'

EXPLANATION

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✓ GPR (Radar)	_ EMC (Conduction)	_ Wet
✓ RD 4000	✓ EMI (Induction)	✓ Dry
✓ M Scope	✓ Ambient	_ other
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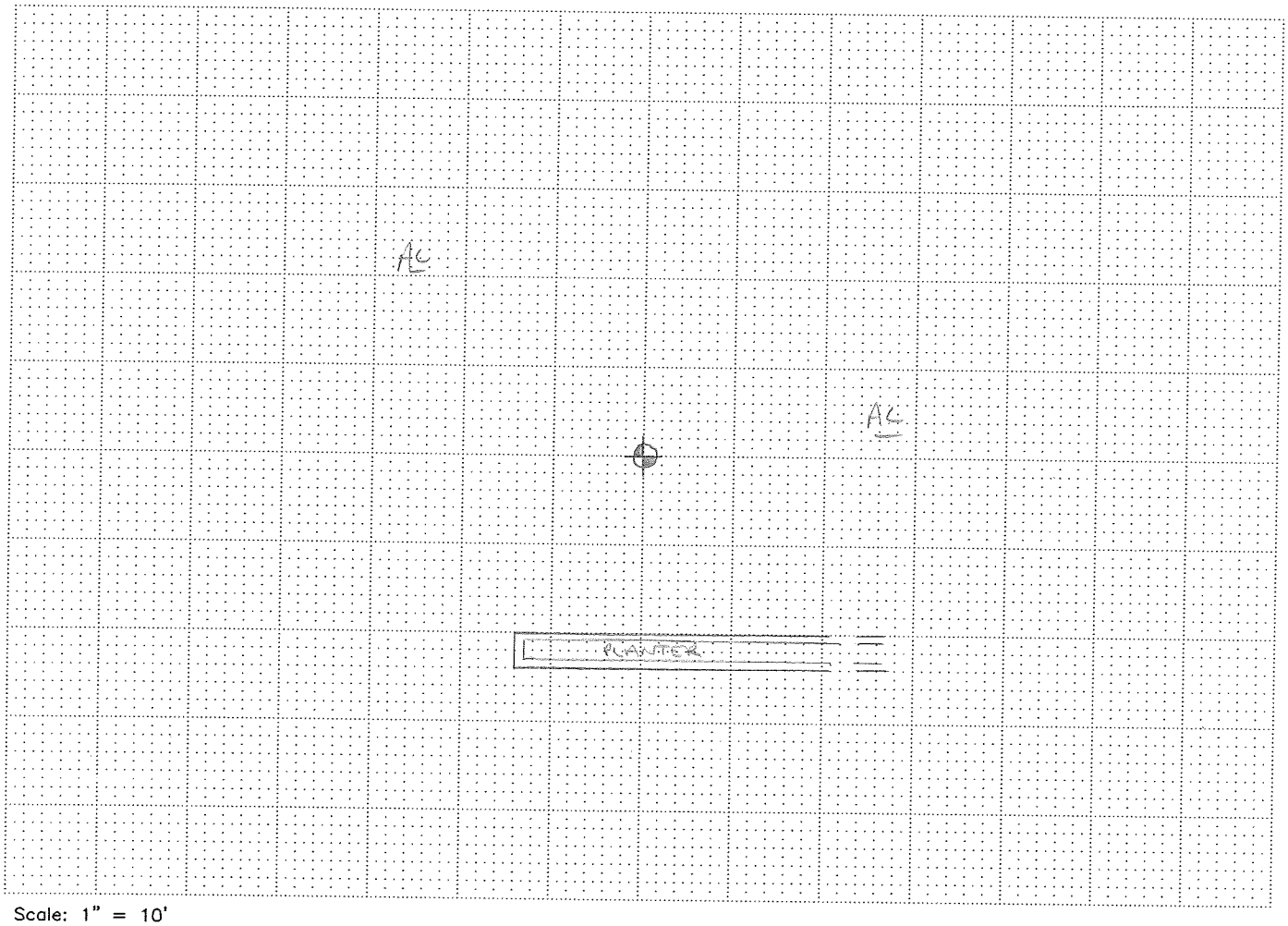
REMARKS

PERSONNEL: BJK CB	CLIENT: BROADBENT
JOB: 14-1034.38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: MW-14



Scale: 1" = 10'

EXPLANATION

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- Existing Well Location
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- OR — Localized GPR Anomaly
- Utility Alignment

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Surface

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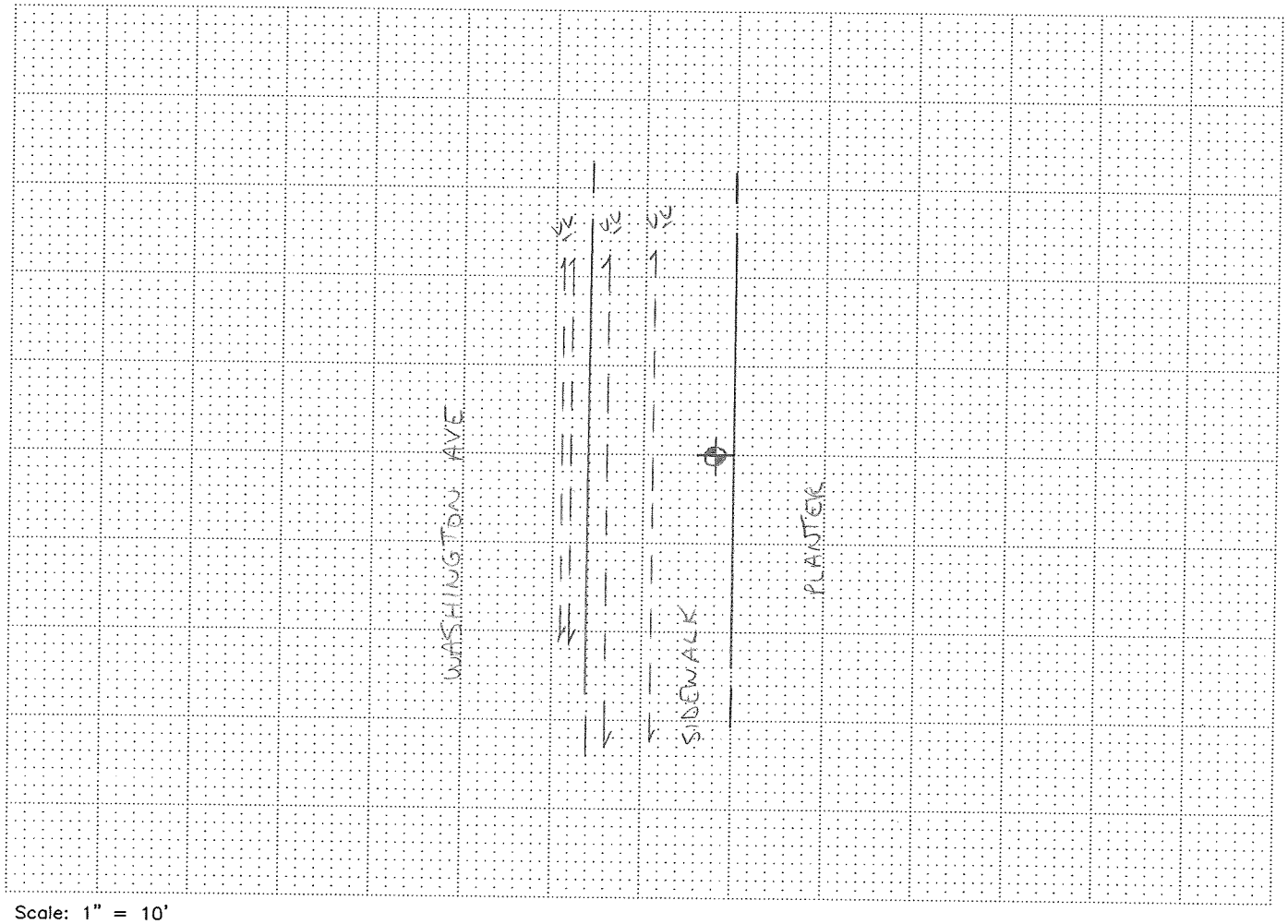
NOTES

Equipment:	Procedure:	Surface Conditions:
✓ GPR (Radar)	_ EMC (Conduction)	_ Wet
✓ RD 4000	✓ EMI (Induction)	✓ Dry
✓ M Scope	✓ Ambient	_ other
_ other	✓ GPR	

REMARKS

PERSONNEL: DJK CB	CLIENT: BROADBENT
JOB: 14-1034.38 DATE: 10-30-14	LOCATION: ARCO, SAN LEANDRO
NORCAL GEOPHYSICAL CONSULTANTS INC.	BORING: MW-13



Scale: 1" = 10'

EXPLANATION

- Original Boring Location
- Final Boring Location
- Existing Well Location
- GPR Traverse
- OR — Localized GPR Anomaly
- Utility Alignment

Utilities

- _ T (Telephone, Comm.)
- _ E (Electric)
- _ NG (Natural Gas)
- _ CA (Compressed Air)
- _ STM (Steam)
- _ SS (Sanitary Sewer)
- _ SD (Storm Drain)
- _ W (Water)
- _ FS (Fire Supression)
- ✓ UU (Undifferentiated Utility)

Surface

- _ RC (Reinforced Concrete)
- ✓ AC (Asphalt)
- ✓ C (Concrete)
- _ Soil
- _ Gravel
- _ other

NOTES

Equipment:
- ✓ GPR (Radar)
- ✓ RD 4000
- ✓ M Scope
- _ other

Procedure:
- _ EMC (Conduction)
- ✓ EMI (Induction)
- ✓ Ambient
- ✓ GPR

Surface Conditions:
- _ Wet
- ✓ Dry
- _ other

REMARKS

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