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By Alameda County Environmental Health at 2:26 pm, May 23, 2013

Ms. Barbara Jakub, P.G.  
Alameda County Environmental Health Services  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577

Re: Gritmit Auto Repair and Service, 1970 Seminary Boulevard, Oakland, California  
(Fuel Leak Case No. RO0000413)

Dear Ms. Jakub:

Stratus Environmental, Inc. (Stratus) has recently prepared a document entitled *Technical Memorandum* on my behalf. The report was prepared in regards to Alameda County Fuel Leak Case No. RO0000413, for Gritmit Auto Repair and Service, 1970 Seminary Boulevard, Oakland, California.

I have reviewed a copy of this document, sent to me by representatives of Stratus, and “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.”

If you have any questions, please contact me via electronic mail at [peggy.h.garcia@sbcglobal.net](mailto:peggy.h.garcia@sbcglobal.net), or my daughter Angel LaMarca at [angelcpt@gmail.com](mailto:angelcpt@gmail.com).

Sincerely,



Ms. Peggy Garcia, Trustee, Gritmit Family Trust

cc: Angel LaMarca



3330 Cameron Park Drive, Ste 550  
Cameron Park, California 95682  
(530) 676-6004 ~ Fax: (530) 676-6005

May 22, 2013  
Project No. 2090-1970-01

Ms. Barbara Jakub, P.G.  
Alameda County Environmental Health Department  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577  
(via GeoTracker & Alameda County FTP site)

Re: Technical Memorandum  
Former Gritit Auto Repair and Service  
1970 Seminary Avenue  
Oakland, California  
(Fuel Leak Case No. RO0000413)

Dear Ms. Jakub:

Stratus Environmental, Inc. (Stratus) has prepared this *Technical Memorandum*, on behalf of the Gritit Family Trust, for the Former Gritit Auto Repair and Service facility (the Site), located at 1970 Seminary Avenue, Oakland, California. Alameda County Environmental Health Department (ACEHD) currently regulates an environmental case at the subject property relating to the presence of petroleum hydrocarbons and volatile organic compounds (VOCs). In August 2012, Stratus prepared and submitted a Feasibility Study/Corrective Action Plan (FS/CAP) for the subject property. After reviewing the FS/CAP, ACEHD personnel requested that supplemental information to support the FS/CAP be prepared for agency review; Stratus submitted the requested information in a document dated December 31, 2012,.

On May 2, 2013, Stratus met with ACEHD personnel to discuss the proposed remedial project, and other issues related to the site's environmental case. During this meeting, ACEHD requested that a technical memorandum be prepared to address a list of items that were verbally conveyed to Stratus during the meeting. Stratus has therefore prepared this document to provide the information requested by ACEHD during this meeting. It is our understanding that once this *Technical Memorandum* is reviewed, a formal letter from ACEHD will be issued that will include authorization to begin implementation of remedial efforts described in the August and December 2012 documents.

In the following subsections of this document, information requested by ACEHD is specified (in italicized text), followed by a discussion of each specific topic prepared by Stratus.

*ACEHD expressed concern regarding groundwater elevation contour maps prepared by Stratus during quarterly/semi-annual groundwater monitoring and sampling. Currently, there are 9 groundwater monitoring wells located onsite, on a relatively small parcel of land (approximately 100 feet in length by 50 feet in width dimensions). The wells are constructed to various depths, with various screening intervals, but within what has been termed the 'upper water bearing interval' at the site. Despite the small size of the land parcel and flat topography of the area, water levels in the wells can vary widely, often up to 10 vertical feet. Given this condition, Stratus submits two groundwater elevation contour maps in quarterly/semi-annual groundwater monitoring reports, segregating data on a basis of well screen depth. Often, groundwater flow on the two contour maps are depicted in different directions, and despite many years of groundwater monitoring and sampling, ACEHD is concerned that the groundwater flow direction beneath the property is poorly understood.*

Assessment of petroleum hydrocarbon distribution at properties that have released motor vehicle fuels to the subsurface in California is governed by tasks outlined in a report prepared by the California Regional Water Quality Control Board titled *Appendix A-Recommendations for Preliminary Investigation and Evaluation of Underground Tank Sites* (April 16, 2004). This report, and the resulting industry standards for this type of work, dictate that groundwater flow direction be studied and evaluated by groundwater elevation data. At this site, due to the drastic differences in groundwater elevations within the monitoring well network, assessing shallow groundwater flow by preparing groundwater elevation contour maps from available monitoring well water level data does not appear to be very helpful in providing a conceptual understanding of the 'upper water bearing interval'.

Instead of evaluating shallow groundwater flow direction using groundwater elevation contour maps at the subject property, we believe that more useful information can be obtained by reviewing petroleum hydrocarbon groundwater analytical data reported from the site's network of monitoring wells. Stratus has attached Figures A through C that summarize petroleum hydrocarbon concentrations in the site's monitoring wells during the first and third quarters of 2012 and the first quarter 2013, respectively (see Appendix A). Also shown on these figures are the results of direct push groundwater sampling performed in January 2012 (the same data is shown on all figures), and the locations of the former underground storage tanks in the eastern property corner. A review of the available data illustrates that three wells located near the western property corner (MW-2, MW-5, and MW-6), approximately 80 feet from the former USTs are impacted with petroleum hydrocarbons (intermittent impact observed at well MW-2). In addition, petroleum hydrocarbons were detected at one offsite boring location located west-northwest of the former USTs (DP-2).

In our opinion, groundwater flow beneath the property is not in a single, uniform direction. However, based on the available data, petroleum hydrocarbons appear to have migrated further from the former USTs in the west, northwest, and southwest directions; given this condition, we believe that northwest, west, and southwest are the predominant groundwater flow directions in the site vicinity. If this is the case, shallow groundwater flow would be towards San Francisco Bay.

It should be noted that motor vehicle fuels were stored at the property from the 1930's through 1989. Given this timeframe, only minimal lateral transport of fuel contaminants has occurred at the site, indicating slow migration rates and relative plume stability in the lateral direction.

*In addition to petroleum hydrocarbon impact to the subsurface, VOCs are present at the site. In shallow groundwater, VOCs are noted in the eastern portion of the property (see Figures D through F in Appendix B). Of particular concern, tetrachloroethene (PCE) has been detected beyond the 'upper water bearing interval', in samples collected in January 2012, and no monitoring wells are in place to allow for regular assessment of deeper VOC impact.*

*In the FS/CAP, Stratus proposed utilizing dual phase extraction (DPE) technology to remove contaminant mass situated above approximately 35 feet below ground surface (bgs). DPE is capable of remediating both petroleum hydrocarbons and many VOCs. After DPE was utilized, Stratus recommended that the site be evaluated in regards to the possibility of using ozone injection (OI) as a possible second phase of remediation, if supplemental remedial work were necessary in order to manage the environmental case to eventual closure.*

ACEHD agreed conceptually to allow for implementation of DPE remediation, but insisted that offsite groundwater monitoring wells be installed for 'performance monitoring' purposes. Two locations were selected at the meeting, and these locations are shown on Figure G presented in Appendix C. These locations (proposed wells MW-10 and MW-11) are generally west/northwest of the former USTs. A review of Figure G illustrates that both of the proposed wells are situated along a City of Oakland right-of-way. Stratus has informed ACEHD that we expect that a significant period of time (estimated at 6 to 9 months) will be necessary in order to obtain the necessary permits from the City of Oakland to install these wells, and ACEHD is aware of this situation.

Groundwater levels at the site have exhibited a wide fluctuation range, varying from about 3.4 to 5.8 feet bgs in well MW-8, while ranging from about 11.8 to 21.5 feet bgs in well MW-1. Despite these groundwater levels, it appears, based on available data, that a significant portion of the petroleum hydrocarbon mass at the site is present between

approximately 20 and 30 feet bgs (documented in December 2011 by laser induced fluorescence [LIF]). Despite possible well screen submergence, Stratus is recommending that wells MW-10 and MW-11 be installed with well screens situated between approximately 22 and 32 feet bgs. This should allow for 'performance monitoring' of groundwater conditions within the interval targeted for remediation by DPE (above 35 feet bgs).

Stratus acknowledges that the presence of PCE in groundwater, in particular beyond the 'upper water bearing interval', is problematic. At this time, it is our opinion that remediating shallow contaminants (both petroleum hydrocarbons and VOCs) should be the highest priority work for the site, as this should both remove contaminant mass (including free product) from the subsurface, and reduce the future likelihood of vertical contaminant transport (in particular PCE).

ACEHD has indicated that a phased implementation of work activities is acceptable to them. In addition to prioritizing work, performing vertical assessment and well installation to deeper water bearing intervals will be much 'safer' if drilling is not performed through significantly impacted shallow soils and groundwater. While some drilling technologies, such as air rotary casing hammer and sonic drilling with casing advancement, would limit the possibility of vertically translocating contaminants during drilling, any drilling method used to assess deeper water bearing intervals will be much less risky to perform once most of the shallower contaminants have been remediated to lower levels.

## **CLOSING**

We hope you find this information useful, and that this submittal will allow for ACEHD to complete the necessary review of the August 2012 FS/CAP. Stratus' intention is to provide an accurate written account of items discussed in the May 2, 2013 meeting, and provide data that can be used to supplement the topics of discussion.

## **LIMITATIONS**

This document was prepared in general accordance with accepted standards of care that existed at the time this work was performed. No other warranty, expressed or implied, is made. Conclusions and recommendations are based on field observations and data obtained from this work and previous investigations. It should be recognized that definition and evaluation of geologic conditions is a difficult and somewhat inexact science. Judgments leading to conclusions and recommendations are generally made with an incomplete knowledge of the subsurface conditions present. More extensive studies may be performed to reduce uncertainties. This document is solely for the use and information of our client unless otherwise noted.

Ms. Barbara Jakub, ACEHD  
Technical Memorandum  
Former Gritit Auto Repair & Service, Oakland, California  
Page 5

May 22, 2013  
Project No. 2090-1970-01

If you have any questions or comments concerning this *Technical Memorandum*, or require anything further to enable a review of the FS/CAP, please contact Scott Bittinger at (530) 676-2062.

Sincerely,

*STRATUS ENVIRONMENTAL, INC.*



Scott G. Bittinger, P.G.  
Project Manager

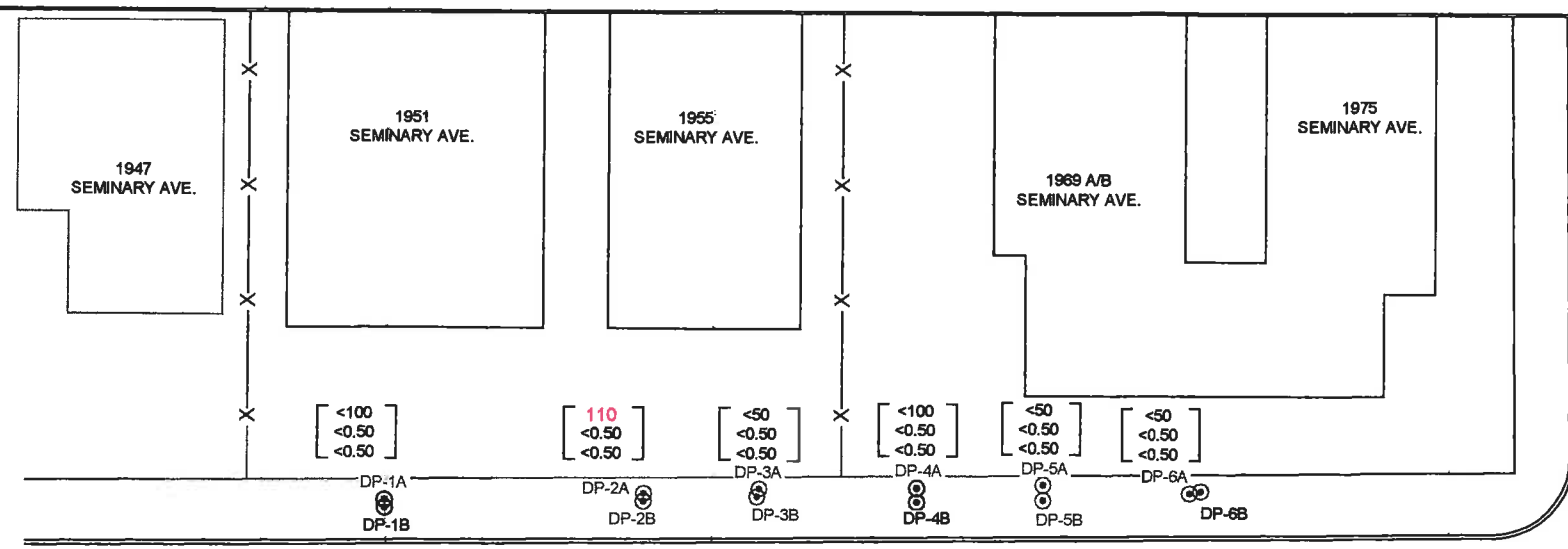
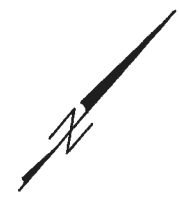


Attachments:

- Appendix A Petroleum Hydrocarbon Analytical Summary Maps, Above 40 Feet bgs, 2012 and 2013 (Figures A through C)
- Appendix B Halogenated VOC Analytical Summary Maps, Above 40 Feet bgs, 2012 and 2013 (Figures D through F)
- Appendix C Map Depicting Locations of Proposed Wells MW-10 and MW-11 (Figure G)

cc: Ms. Angel LaMarca and Ms. Peggy Garcia, Trustee, Gritit Family Trust

## **APPENDIX A**

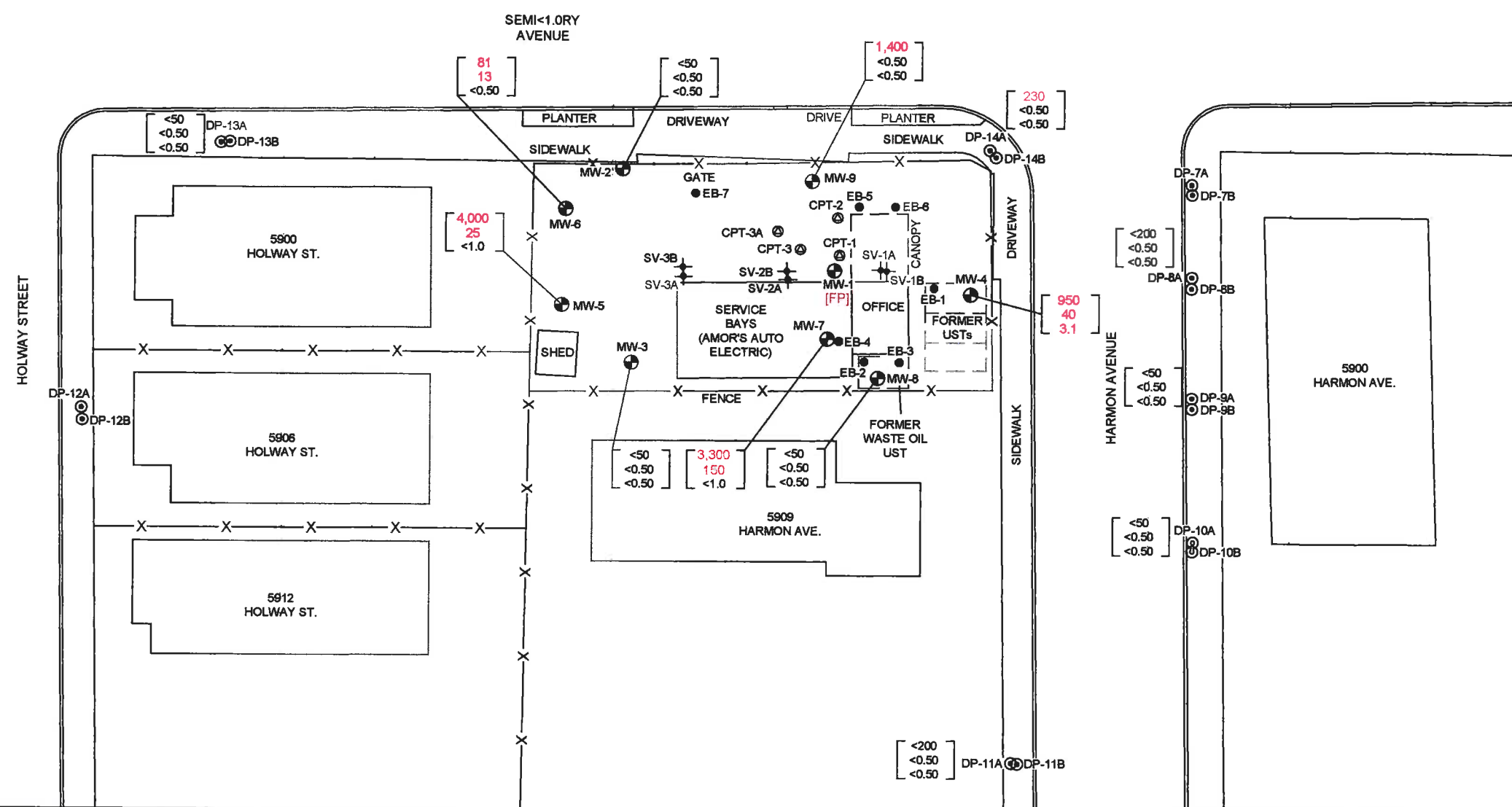


**LEGEND**

- MW-1 GROUNDWATER MONITORING WELL LOCATION
- EB-1 APPROXIMATE EXPLORATORY BORING LOCATION
- ⊕ CPT-1 CPT/LIF BORING LOCATION
- ⊕ SV-1A SOIL VAPOR SAMPLING WELL LOCATION
- ⊕ DP-1A DIRECT PUSH BORING LOCATION

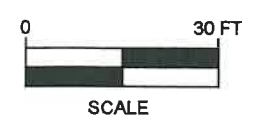
[ <50 ] GASOLINE RANGE ORGANICS (GRO) IN µg/L  
 [ <0.50 ] BENZENE CONCENTRATION IN µg/L  
 [ <0.50 ] METHYL TERTIARY BUTYL ETHER (MTBE) IN µg/L

DIRECT PUSH SAMPLES COLLECTED IN JANUARY 2012  
 WELL SAMPLES COLLECTED ON 1/17/12  
 GRO ANALYZED BY EPA METHOD 8015B  
 BENZENE & MTBE ANALYZED BY EPA METHOD 8260B  
 [FP] = FREE PRODUCT



Grimit Auto Assessment 020312 IMP REV May 14, 2013 Grimit Site Vicinity Map

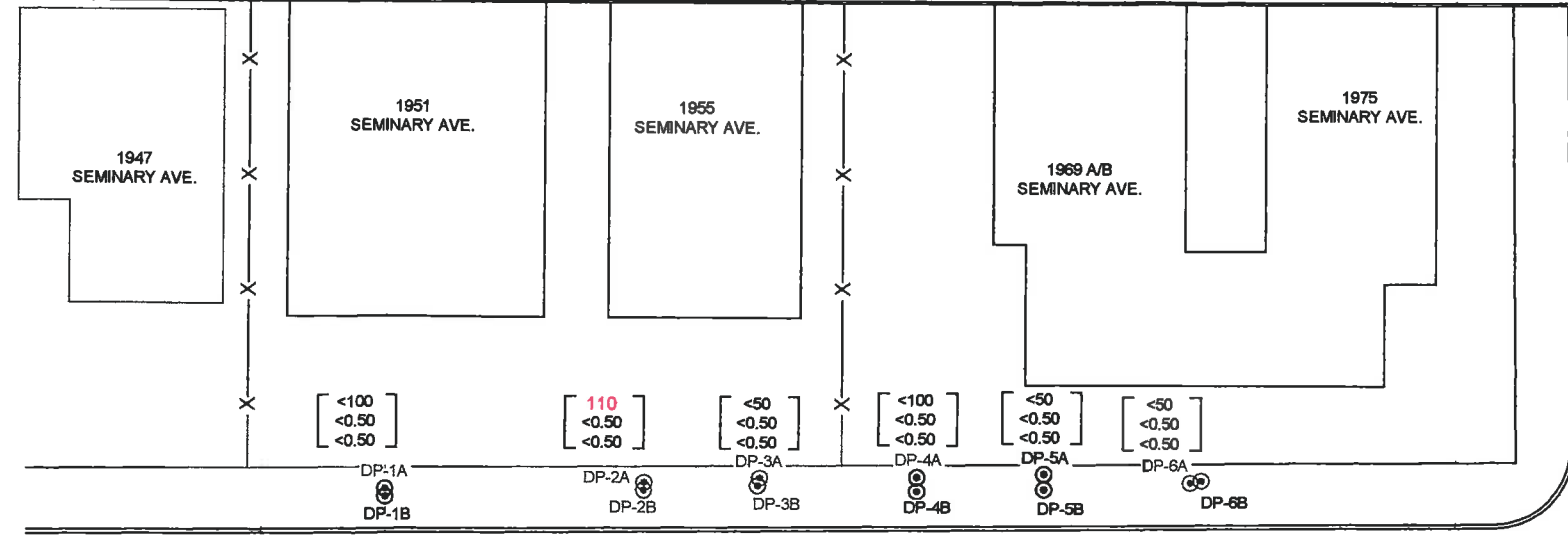
**STRATUS**  
 ENVIRONMENTAL, INC.



FORMER GRIMIT AUTO  
 1970 SEMINARY AVENUE  
 OAKLAND, CALIFORNIA  
 PETROLEUM HYDROCARBON  
 GROUNDWATER ANALYTICAL SUMMARY  
 ABOVE 40' bgs

FIGURE  
**A**  
 PROJECT NO.  
 2090-1970-1



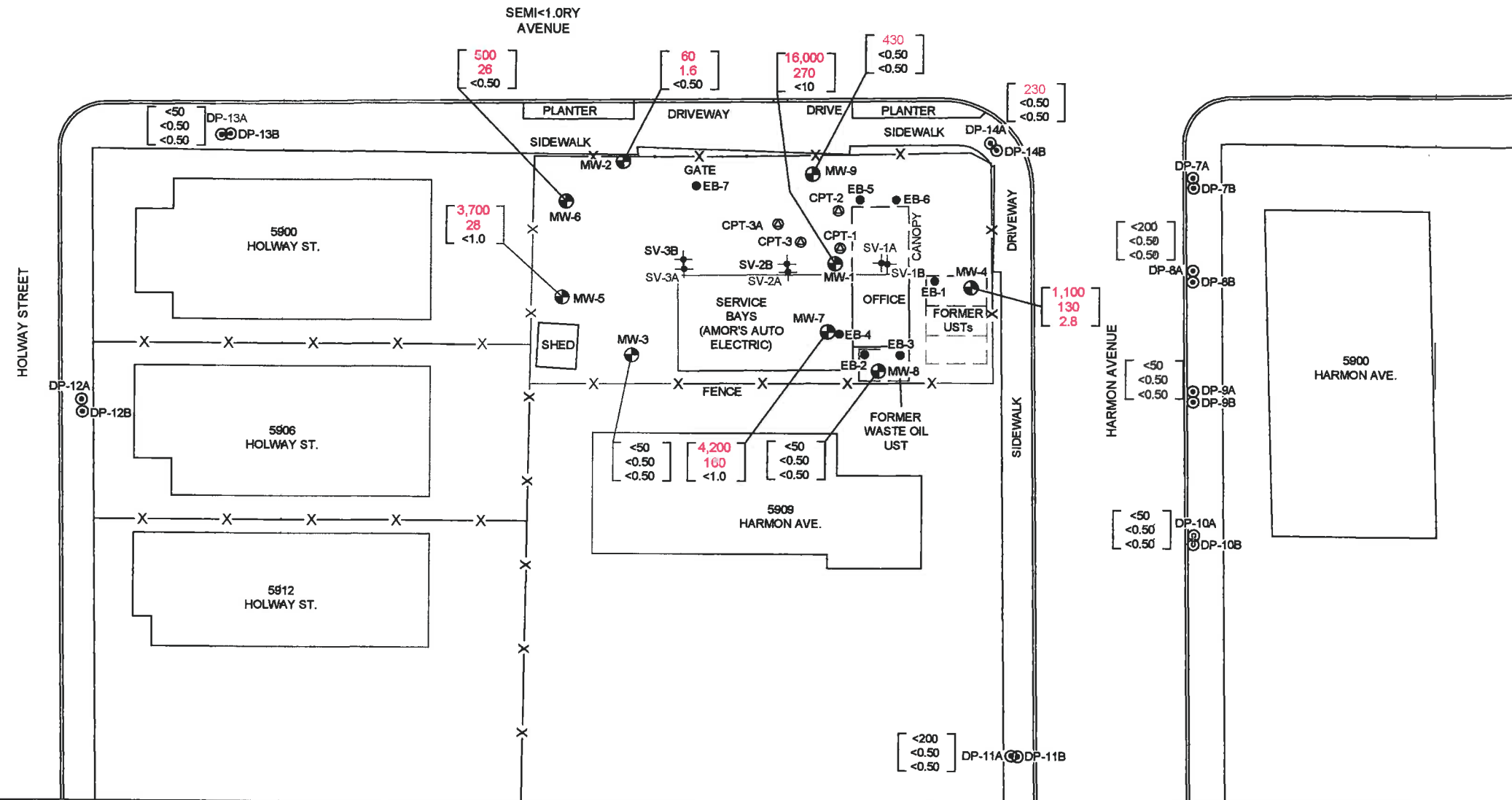


**LEGEND**

- MW-1 GROUNDWATER MONITORING WELL LOCATION
- EB-1 APPROXIMATE EXPLORATORY BORING LOCATION
- ⊕ CPT-1 CPT/LIF BORING LOCATION
- ✦ SV-1A SOIL VAPOR SAMPLING WELL LOCATION
- ⊙ DP-1A DIRECT PUSH BORING LOCATION

[ <50 ] GASOLINE RANGE ORGANICS (GRO) IN µg/L  
 [ <0.50 ] BENZENE CONCENTRATION IN µg/L  
 [ <0.50 ] METHYL TERTIARY BUTYL ETHER (MTBE) IN µg/L

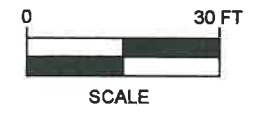
DIRECT PUSH SAMPLES COLLECTED IN JANUARY 2012  
 WELL SAMPLES COLLECTED ON 7/16/12  
 GRO ANALYZED BY EPA METHOD 8015B  
 BENZENE & MTBE ANALYZED BY EPA METHOD 8260B1



**NOTE:**  
 DIRECT PUSH BORINGS SAMPLED IN JANUARY 2012  
 WELLS SAMPLED ON 7/16/12

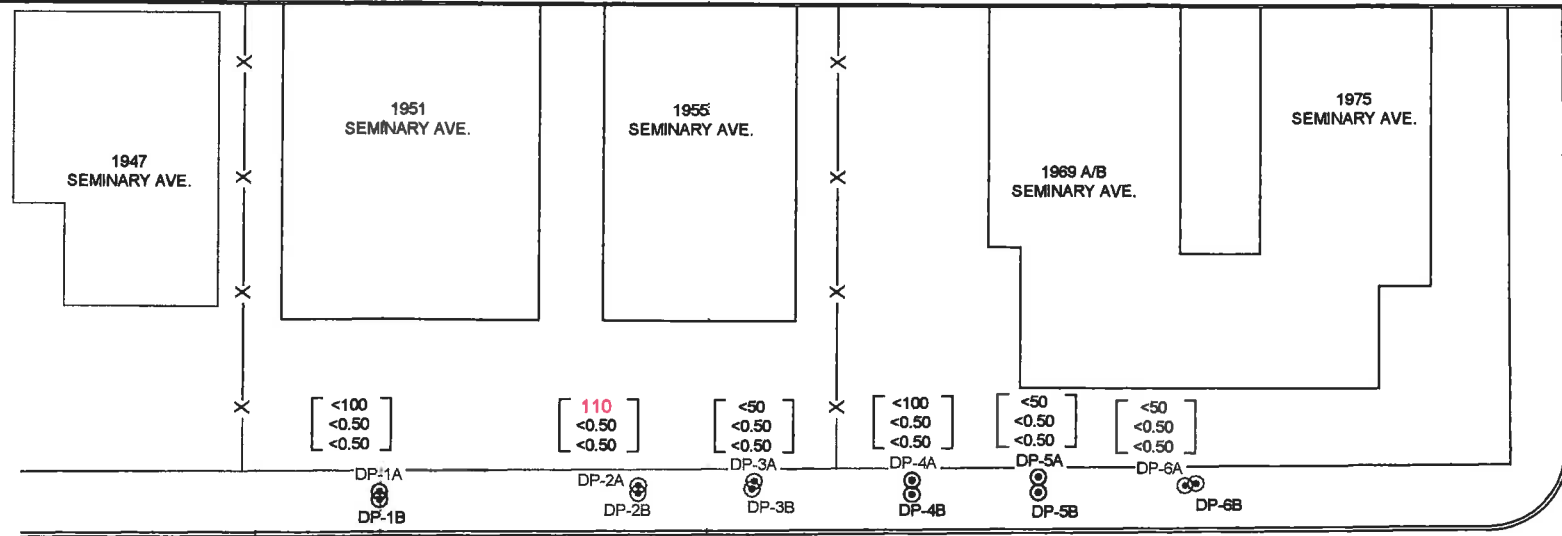
Grimt AutoAssessment020312 JMP REV May 14, 2013 Grimt Site Vicinity Map

**STRATUS**  
 ENVIRONMENTAL, INC.



FORMER GRIMIT AUTO  
 1970 SEMINARY AVENUE  
 OAKLAND, CALIFORNIA  
 PETROLEUM HYDROCARBON  
 GROUNDWATER ANALYTICAL SUMMARY  
 ABOVE 40' bgs

FIGURE  
**B**  
 PROJECT NO.  
 2090-1970-1

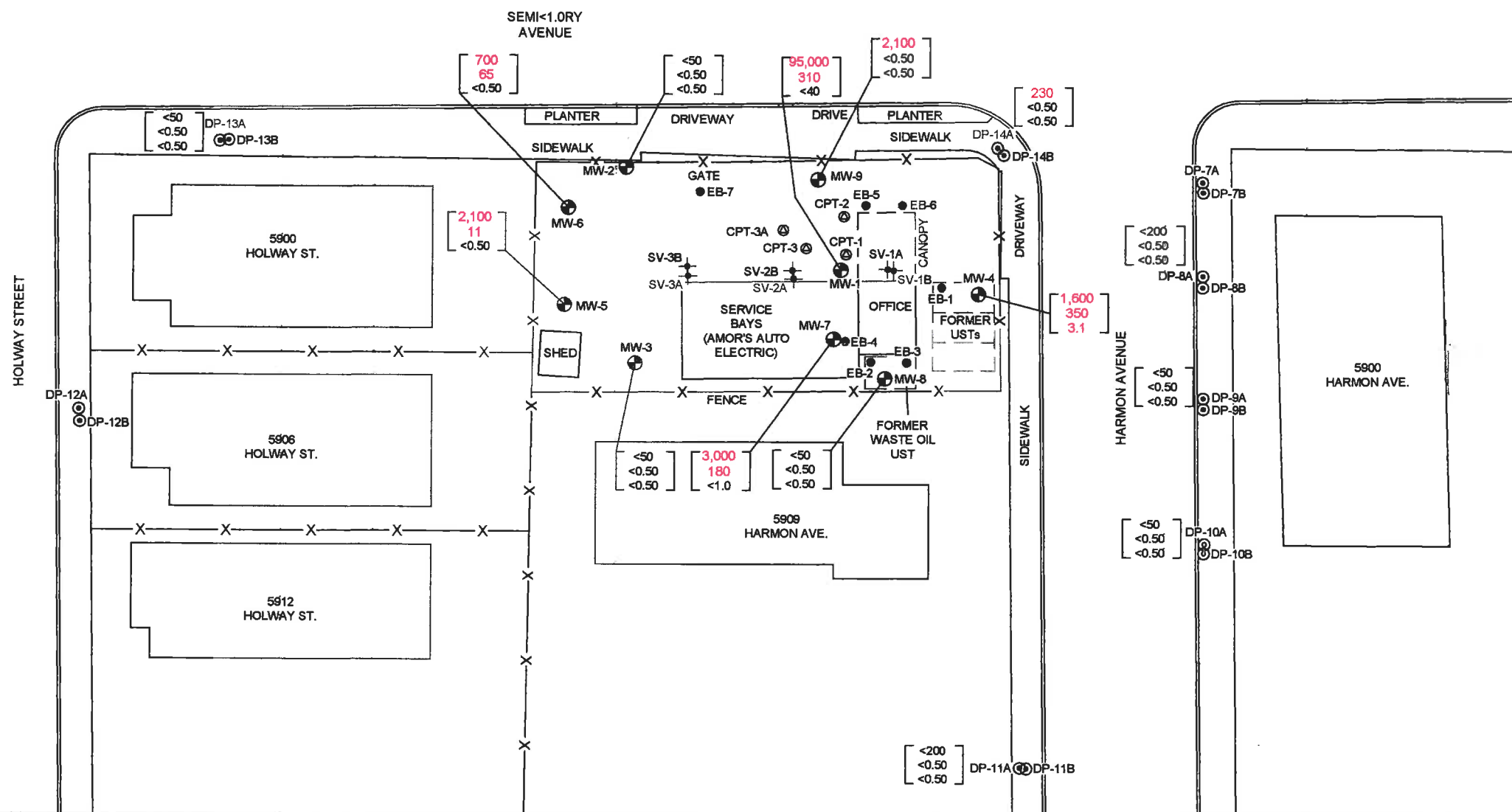


**LEGEND**

- ⊕ MW-1 GROUNDWATER MONITORING WELL LOCATION
- EB-1 APPROXIMATE EXPLORATORY BORING LOCATION
- ⊕ CPT-1 CPT/LIF BORING LOCATION
- ⊕ SV-1A SOIL VAPOR SAMPLING WELL LOCATION
- ⊕ DP-1A DIRECT PUSH BORING LOCATION

[ <50 ] GASOLINE RANGE ORGANICS (GRO) IN µg/L  
 [ <0.50 ] BENZENE CONCENTRATION IN µg/L  
 [ <0.50 ] METHYL TERTIARY BUTYL ETHER (MTBE) IN µg/L

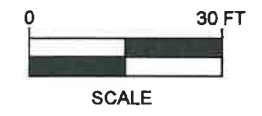
DIRECT PUSH SAMPLES COLLECTED IN JANUARY 2012  
 WELL SAMPLES COLLECTED ON 1/14/13  
 GRO ANALYZED BY EPA METHOD 8015B  
 BENZENE & MTBE ANALYZED BY EPA METHOD 8260B



**NOTE:**  
 DIRECT PUSH BORINGS SAMPLED IN JANUARY 2012  
 WELLS SAMPLED ON 1/14/13

Grimt Auto Assessment 000012 JIMP REV May 14, 2013 Grimt Site Vicinity Map

**STRATUS**  
 ENVIRONMENTAL, INC.



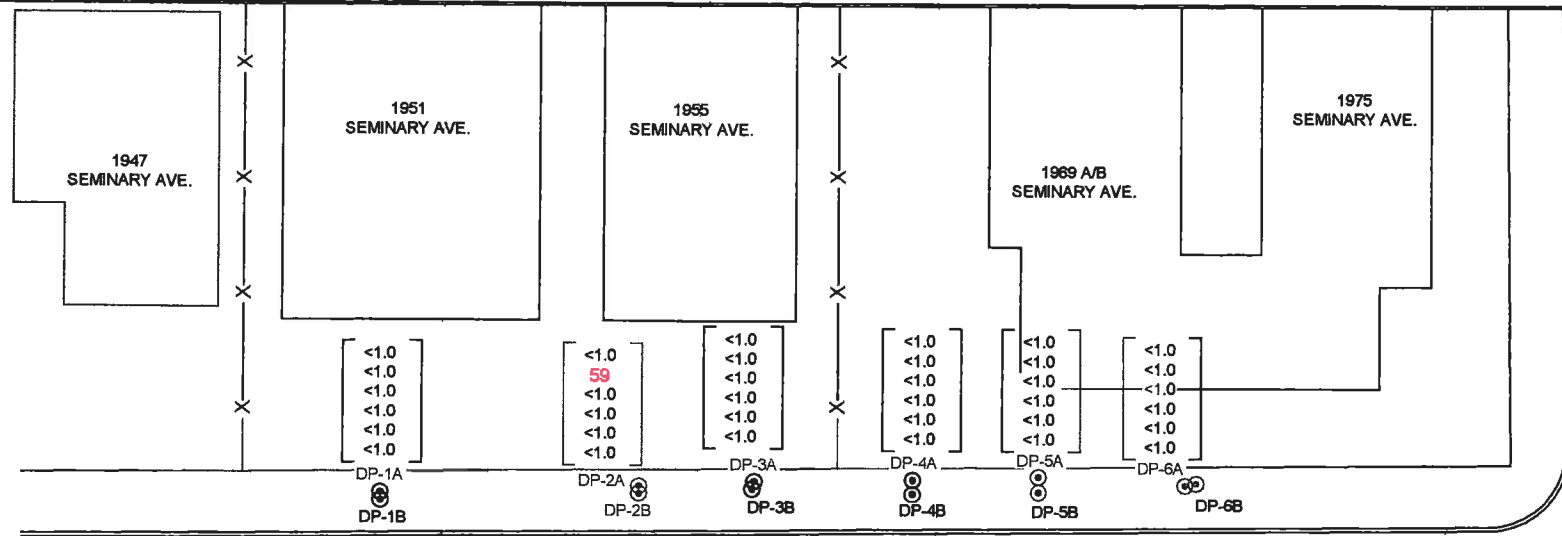
FORMER GRIMT AUTO  
 1970 SEMINARY AVENUE  
 OAKLAND, CALIFORNIA  
 PETROLEUM HYDROCARBON  
 GROUNDWATER ANALYTICAL SUMMARY  
 ABOVE 40' bgs

FIGURE  
**C**  
 PROJECT NO.  
 2090-1970-1

## **APPENDIX B**

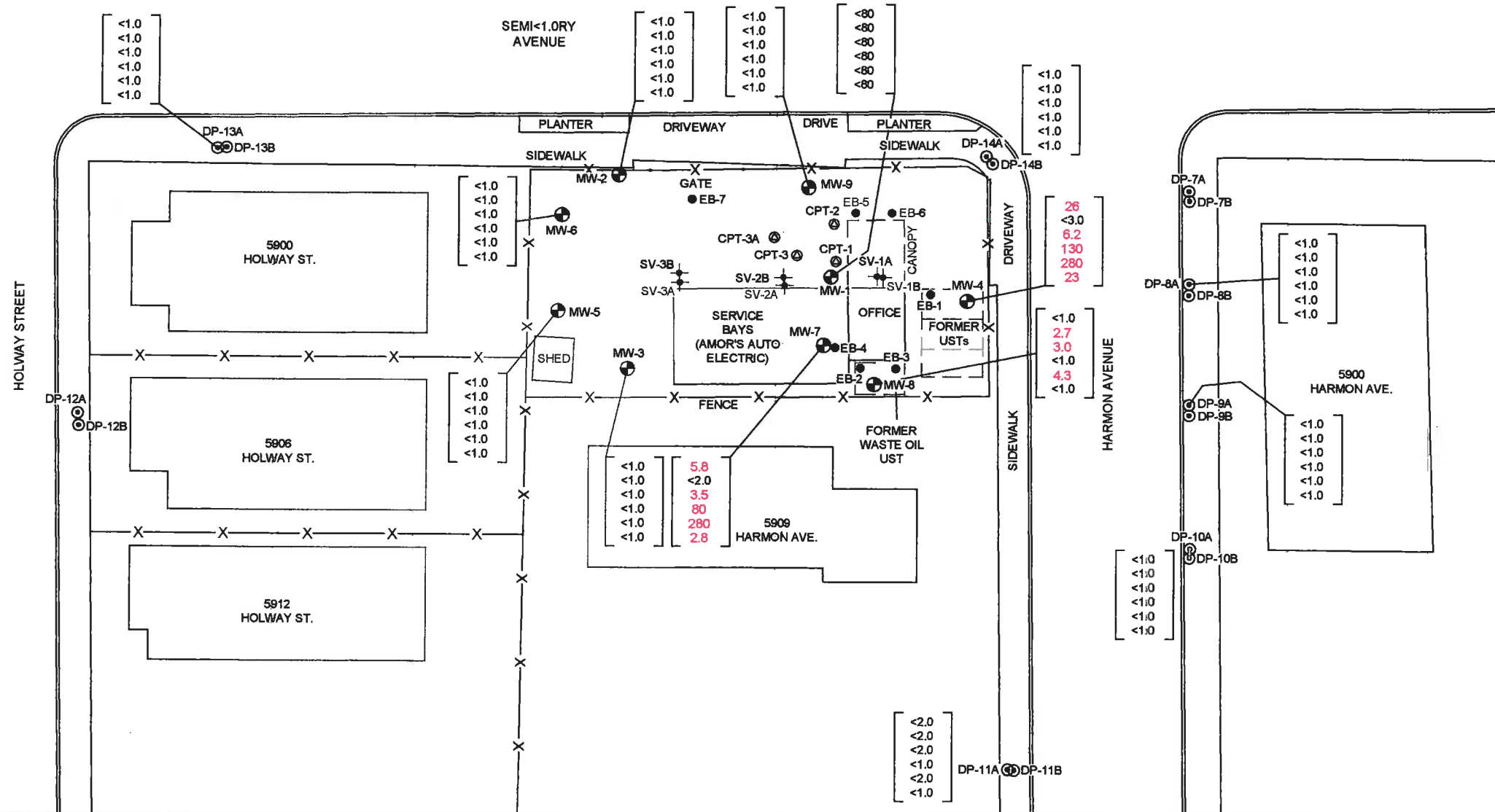






- LEGEND**
- MW-1 GROUNDWATER MONITORING WELL LOCATION
  - EB-1 APPROXIMATE EXPLORATORY BORING LOCATION
  - ⊙ CPT-1 CPT/LIF BORING LOCATION
  - ✦ SV-1A SOIL VAPOR SAMPLING WELL LOCATION
  - ⊙ DP-1A DIRECT PUSH BORING LOCATION
- [ <math><1.0</math> ] 1,2 DICHLORO BENZENE (1,2 DCB) IN  $\mu\text{g/L}$   
 [ <math><1.0</math> ] TETRACHLOROETHENE (PCE) IN  $\mu\text{g/L}$   
 [ <math><1.0</math> ] TRICHLOROETHENE (TCE) IN  $\mu\text{g/L}$   
 [ <math><1.0</math> ] VINYL CHLORIDE (VC) IN  $\mu\text{g/L}$   
 [ <math><1.0</math> ] cis-1,2 DICHLOROETHENE (cis-1,2 DCE) IN  $\mu\text{g/L}$   
 [ <math><1.0</math> ] trans-1,2 DICHLOROETHENE (trans-1,2 DCE) IN  $\mu\text{g/L}$

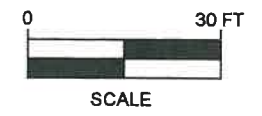
DIRECT PUSH SAMPLES COLLECTED IN JANUARY 2012  
 WELL SAMPLES COLLECTED ON 1/14/13  
 1,2 DCB, PCE, TCE, VC, cis-1,2 DCE,  
 & trans-1,2 DCE ANALYZED BY EPA METHOD 8260B



**NOTE:**  
 DIRECT PUSH BORINGS SAMPLED IN JANUARY 2012  
 WELLS SAMPLED ON 1/14/13

Grimit Auto Assessment 000312 JHP REV. May 14, 2013

**STRATUS**  
 ENVIRONMENTAL, INC.

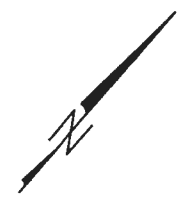


FORMER GRIMIT AUTO  
 1970 SEMINARY AVENUE  
 OAKLAND, CALIFORNIA  
 HALOGENATED VOC  
 GROUNDWATER ANALYTICAL SUMMARY  
 ABOVE 40' bgs

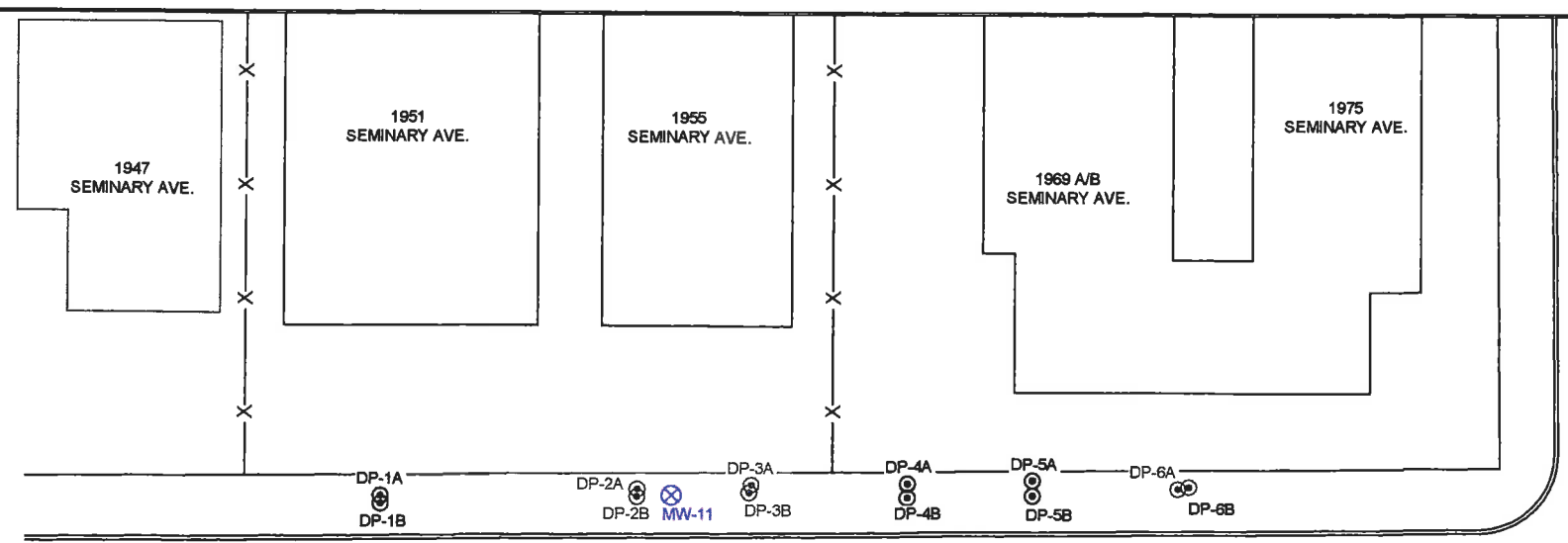
FIGURE  
**F**  
 PROJECT NO.  
 2090-1970-1

## **APPENDIX C**

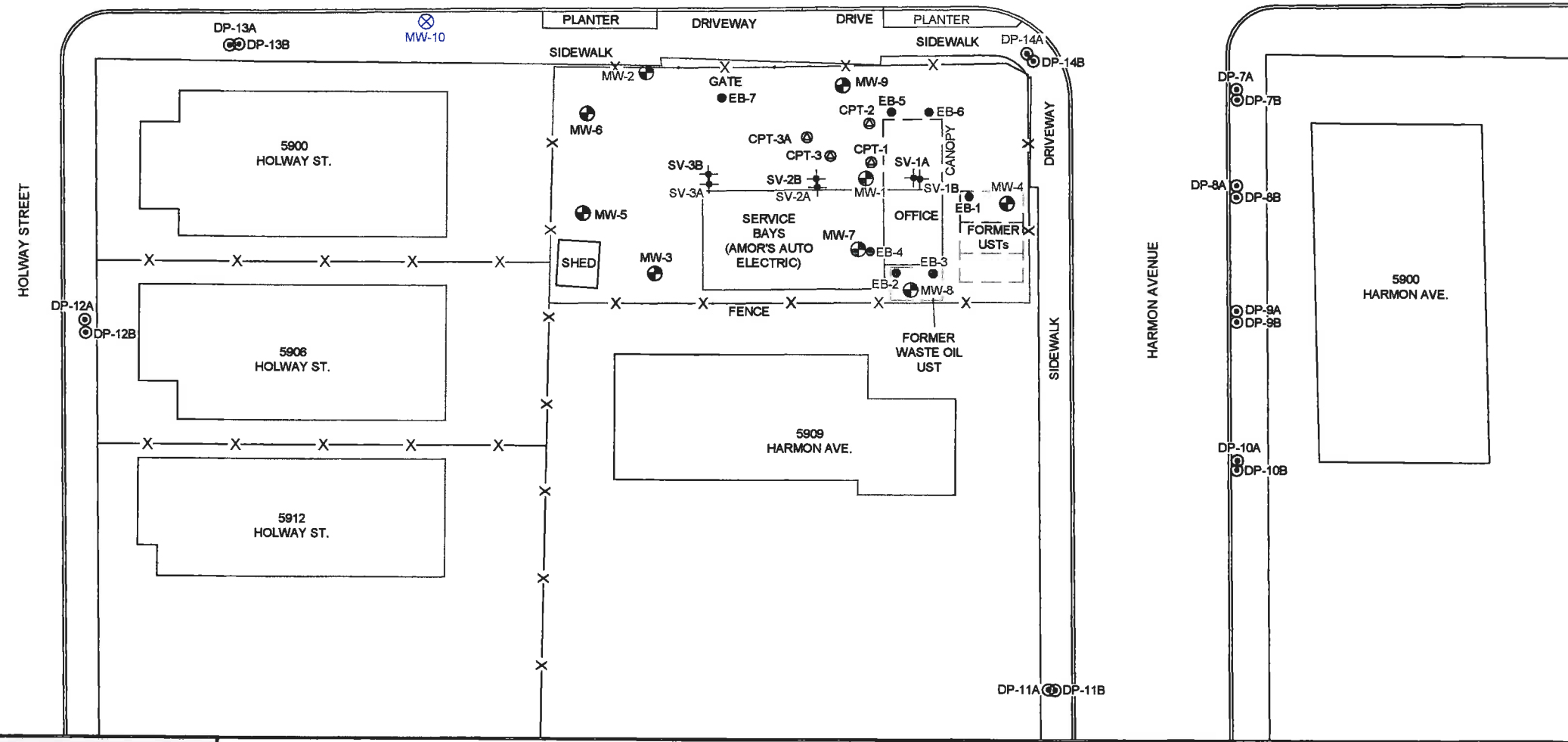




- LEGEND**
- MW-1 GROUNDWATER MONITORING WELL LOCATION
  - EB-1 APPROXIMATE EXPLORATORY BORING LOCATION
  - ⊕ CPT-1 CPT/LIF BORING LOCATION
  - ⊕ SV-1A SOIL VAPOR SAMPLING WELL LOCATION
  - ⊕ DP-1A DIRECT PUSH BORING LOCATION
  - ⊗ MW-10 PROPOSED GROUNDWATER MONITORING WELL LOCATION



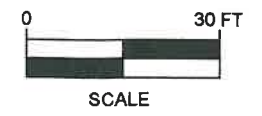
SEMINARY AVENUE



HOLWAY STREET

HARMON AVENUE

**STRATUS**  
ENVIRONMENTAL, INC.



FORMER GRITIT AUTO  
1970 SEMINARY AVENUE  
OAKLAND, CALIFORNIA

PROPOSED GROUNDWATER MONITORING  
WELL LOCATIONS

FIGURE  
**G**  
PROJECT NO.  
2090-1970-1

Gritit Auto Assessment 020312 - JIMP REV - May 13, 2013 - Gritit Site Vicinity Map