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APPENDIX K

GEOSYNTEC'S SUPPLEMENTARY GROUNDWATER INVESTIGATION IN THE PIT F AREA REPORT (REVISION 1.0) DATED JUNE 14, 2007

Prepared for:

Ascon Site Responsible Parties
Atlantic Richfield Company; Chevron, U.S.A. Inc. and Texaco Inc.
Conoco Phillips Inc., The Dow Chemical Company; Shell Oil Company
Southern California Edison Company; TRW Inc.; and Exxon Mobil Corporation

SUPPLEMENTARY GROUNDWATER INVESTIGATION IN THE PIT F AREA (REVISION 1.0) ASCON LANDFILL SITE HUNTINGTON BEACH, CALIFORNIA

Submitted to:

California Department of Toxic Substances Control

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1. INTRODUCTION

1.1 Preface

This report is an addendum to the Groundwater Remedial Investigation (RI) dated February 28, 2005, and presents the results of a supplementary groundwater investigation that was conducted in the Pit F area at the Ascon Landfill Site (Site) in Huntington Beach, California (**Figure 1**). The supplementary groundwater investigation was conducted in general accordance with the Groundwater RI/FS Workplan Revision 1.0 Addendum dated April 20, 2006 (**Appendix A**). The addendum Workplan was conditionally approved by the Department of Toxic Substance Control (DTSC) in their letter dated May 8, 2006 (**Appendix A**). This report was prepared by Geosyntec Consultants, Inc. (Geosyntec), on behalf of the Ascon Landfill Site Responsible Parties (RPs) for submittal to the DTSC. Revision 1 of this report contains revisions in response to comments from DTSC dated October 27, 2006, and November 22, 2006, and includes incorporation of the groundwater data from the DTSC analyses from split samples collected during this investigation.

1.2 Objectives

The objective of the supplementary investigation was to further delineate groundwater impacts from Pit F waste material. The investigation focused on impacts to the relatively permeable Semi-Perched Aquifer (SPA) that occurs directly beneath a fine-grained clay/silt zone in the Pit F area. The investigation was conducted in response to a comment letter prepared by DTSC (letter dated January 12, 2006)[1] and various e-mail and telephone correspondence with DTSC between January and April 2006[2]. In their comments and correspondence, DTSC requested that shallow groundwater impacts be further delineated in the near vicinity of Pit F using hydropunch groundwater sampling techniques.

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[1] DTSC originally presented comments on the Groundwater RI in their letter dated June 3, 2005. The RPs submitted a response to DTSC's June 3, 2005, comments in a letter dated June 30, 2005. The January 12, 2006, comment letter was prepared by DTSC in response to the RP's letter dated June 30, 2005.

[2] Meeting with DTSC and the RPs on January 26, 2006; e-mail from DTSC on March 7, 2006; , conference call with DTSC and the RPs on March 8, 2006; conference call with DTSC and the RPs on April 5, 2006.

1.3 Background

Previous investigations at the Site, including both soil and groundwater investigations, indicate that known impacts from Pit F materials generally occur in areas directly adjacent to Pit F. Previous soil and groundwater investigation results are summarized in several reports including:

- Pit F Data Package from Pilot Study No. 3 activities (Project Navigator, Ltd. [PNL], September 10, 2004).
- Phase VIII (Pit F Soil Sampling Program) of Pilot Study No. 3, documented in the Second Feasibility Study (PNL, draft submitted on November 15, 2005).
- Groundwater Remedial Investigation Report, Ascon Landfill (Geosyntec, draft submitted on February 28, 2005).
- Pit F Offsite Investigation Addendum Letter Report, Pilot Study No. 3, Ascon Landfill (PNL and Geosyntec, January 31, 2005).

Results of the previous investigations indicate that soil impacts of Pit F waste are limited to an area approximately 50 feet to 125 feet around Pit F location (see **Appendix A**) and occur mostly beneath the fine-grained silt/clay layer that overlies the SPA. This occurrence of impacted soils under the fine-grained silt/clay layer near Pit F is in contrast to other areas of the Site where the waste is believed to occur above the fine-grained silt/clay layer. Groundwater results from monitoring wells surrounding the location of Pit F (AW-1, AW-1A, MW-13, MW-18, and GP-12 – see **Figure 2**) also indicate that Pit F impacts to shallow groundwater are laterally limited (Geosyntec, 2003).[3] Limitations in the impacts to groundwater in the Pit F area have been attributed to several factors including: (1) the occurrence of a fine grained silt/clay layer above the SPA that impedes the potential downward movement of storm water and any waste found above the layer; (2) the generally flat groundwater gradients in the Pit F area that would preclude the rapid transport of dissolved waste constituents away from the Pit F area, and (3) the apparent attenuation of waste constituents in groundwater.

[3] Groundwater Remedial Investigation, Geosyntec, February 28, 2005.

With regard to the generally flat gradients in the Pit F area, past comments and discussions with DTSC led to revisions of the groundwater contours in the vicinity of Pit F. Previous contour maps presented in the Groundwater RI dated February 28, 2005, showed variable groundwater directions in the vicinity of Pit F. The contour maps were revised by excluding water level data collected from two monitoring locations (GP-10 and GP-12) because of the placement of the screen intervals in these wells in relationship to the location of the SPA (i.e., it is possible that the screens in these monitoring wells were above the SPA). The revised contour maps, presented in **Appendix B**, indicate that the groundwater flow directions and gradients in the Pit F area are less variable than presented in the 2005 Draft Groundwater RI, although the revised maps show that groundwater flow direction is still relatively variable compared to the rest of the Site. Using three point methodology and groundwater data collected from B-7, MW-13, and MW-18, groundwater flow directions in the near vicinity of Pit F generally range from north-northwest to north-northeast, and gradients ranged from approximately 0.0008 to 0.002 (**Table 1)**. Groundwater data collected from more widely spaced wells GP-22, MW-13 and MW-15 (see **Appendix B** for well locations) indicate that overall groundwater flow directions in the southeastern quadrant of the site generally range from the northwest to northeast and gradients range from 0.0004 to 0.0008 (**Table 1)**.

1.4 Report Organization

This report has been organized as follows.

- Section 1.0 – "Introduction" -- presents background information and objectives.
- Section 2.0 – "Field Methodology and Analytical Program" -- outlines field methodology and the analytical program.
- Section 3.0 – "Investigation Results" -- presents the results of the investigation, including QA/QC results.
- Section 4.0- "Discussion and Recommendations" – presents the salient findings of the investigation and recommendations for further work.

2. FIELD METHODOLOGY AND ANALYTICAL PROGRAM

The field investigation and analytical program were performed in general accordance the Groundwater RI/FS Workplan Revision 1.0 Addendum dated April 20, 2006, and PNL's response to comment letter dated May 16, 2006. Copies of the Workplan and response to comment letter are presented in **Appendix A**.

2.1 Field Procedures

The field investigation was conducted from May 23, 2006, to May 25, 2006. Twelve hydropunch groundwater samples (HP-1 through HP-12) were collected in the vicinity of Pit F. The sampling locations are shown on **Figure 2** with previous soil boring locations and groundwater monitoring wells. The groundwater samples were collected from the uppermost portion of the SPA that occurs directly beneath the base of a fine-grained silt/clay unit that extends across the Site, including the Pit F area. This uppermost portion of the SPA is where most known Pit F impacts to soil occur.

At each of the twelve sampling locations, the top of the SPA was identified by completing a continuously cored borehole using a hydraulic push drill rig operated by Gregg Drilling of Signal Hill, California. The borings were continuously cored using a macro-core continuous sampling system. The cores were inspected and logged by a field geologist working under the supervision of a California Professional Geologist. The field geologist completed a borehole log (**Appendix C**) and identified the depth of the top portion of the SPA. As requested by DTSC, prior to the start of coring activities, groundwater levels were gauged in monitoring wells B-7, AW-1, AW-1A, and MW-13. The measured groundwater levels were within the range of past groundwater measurements in these wells (see **Appendix B - Table B1**). More detailed drilling and logging procedures are presented in **Appendix A**.

Once the depth of the top portion of the SPA was identified, a groundwater sample was collected at approximately a 2-foot radial distance from the initial borehole using a Hydropunch groundwater sampling system. The groundwater sampler was operated by advancing a 1¾-inch hollow push rod with a steel cone tip and an encased stainless steel screen to approximately three feet past the top of the SPA. Once this depth was achieved, the push rod was retracted exposing a three-foot section of screen (i.e., the top section of the screen was located adjacent to the top of the SPA). The temporary screen intervals completed for each location are presented in **Tables 2 and 3**.

When the hydropunch screen was exposed, groundwater from the formation was allowed to infiltrate the screened casing. Groundwater was sampled from the hydropunch system by using a ¾-inch diameter stainless steel bailer. The groundwater samples were collected in appropriate sample bottles supplied by the laboratory. A duplicate sample was collected from location HP-9. Once the samples were collected, the sample containers were stored and shipped to the laboratory in a cooler with wet ice. More detailed information regarding sampling, laboratory bottles, and sample shipment is presented in **Appendix A**.

Duplicate groundwater samples (i.e., splits) were collected by DTSC ("DTSC samples") from HP-5, HP-7, HP-8, and HP-12 for analysis.

Significant deviations from procedures outlined in the Workplan that occurred in the field are as follows:

(1) An additional hydropunch sample location was completed (i.e., 12 locations rather than the initially proposed eleven) based on field observations. Pit F impacts found in soils at HP-11 necessitated completing this additional sample location (HP-12) further to the south to better achieve delineation of the groundwater impacts.

(2) At the request of DTSC, the samples collected for VOCs were not preserved with hydrochloric acid (HCL) due to a frothing reaction that occurred when the HCL preservative was mixed with the hydropunch water samples. The observed reaction is thought to be the result of HCL preservative reacting with the suspended sediments in the hydropunch samples that are collected from non-developed screen intervals. DTSC's request was made during the first day of field operations. HP-10 and HP-11 were the only samples that were preserved with HCL. Sample locations HP-4 and HP-8 were resampled to collect VOC samples without HCL preservative in these locations.

(3) Four soil samples (HP-2@13', HP-6@22', HP-9@13', and HP-11@19') were analyzed for total organic carbon (TOC) concentration. These data may be used for a natural attenuation evaluation.

2.2 Analytical Program

Groundwater samples collected during this investigation were shipped to Del Mar Analytical in Irvine, California or, in the case of the DTSC samples, to Advanced Technology Laboratories for laboratory analyses. Del Mar Analytical is a State of California certified laboratory. The non-DTSC samples were analyzed for Volatile Organic Compounds (VOCs) using EPA Method 8260B and Semi-Volatile Organic Compounds (SVOCs) using EPA Method 8270C. The DTSC samples were analyzed for VOCs using EPA Method 8260B. Trip blanks, equipment blanks, and field blank samples collected during the investigation were analyzed using EPA Method 8260B.

3. RESULTS

3.1 Soil Coring Results

Borings logs for HP-1 through HP-12 are presented in **Appendix C**. The fine-grained clay/silt layer occurring above the SPA was observed in all 12 locations. The top of the clay/silt was first observed at depths ranging from 0 to 6 feet. The bottom of the clay/silt layer was observed to extend down to a depth ranging from approximately 12 to 23 feet. The location of the fine-grained silt/clay layer in the site subsurface is shown on cross-sections C-C' and D-D' (**Figures 3 and 4**).[4]

During drilling, groundwater was first encountered at or near the bottom of the silt/clay layer. Generally, groundwater was observed to rise in the borings indicating groundwater occurs under confined or semi-confined conditions. In some cases (HP-5, HP-7, and HP-10), groundwater was first observed in the fine/grained silt layer and above the point to which groundwater was measured in the boring. Groundwater level information is presented on the boring logs in **Appendix C**.

Evidence of styrene waste (i.e., a constituent in Pit F waste) was observed in several borings including HP-7, HP-8, HP-9, HP-10, and HP-11, evidenced by its distinctive odor and, in some cases, by the observation of a product with honey-like texture and viscosity. The highest photoionization detector (PID) readings (i.e., PID readings above 100 ppm) were observed in HP-6, HP-7, HP-10, and HP-11. The high PID readings in HP-6 are believed to be the result of petroleum hydrocarbons and not styrene waste (see boring log in **Appendix C**). A summary of depths where evidence of styrene waste was observed in HP-1 through HP-12 and other soil borings in the vicinity of Pit F is presented in **Table 4**.

The projected limits of Pit F impacted subsurface soil material based on visual field observations is presented on **Figure 2**. From the middle of Pit F, the area extends approximately 50 feet west, 100 feet north, 150 feet east, and 150 south. The projected

[4] Figures 3 and 4 also present soil field observation information collected during previous investigations completed in the vicinity of Pit F (see Section 1.3).

limits of Pit F waste (i.e., styrene waste) in the site subsurface are shown on **Figures 3 and 4.**

3.2 Analytical Results

Laboratory reports are presented in **Appendix D.** The laboratory results are summarized in **Tables 2, 3, and 5**.

3.2.1 VOCs in Groundwater

Detected VOC concentrations in groundwater samples collected during this investigation are presented in **Table 2**. The distribution of VOCs in the vicinity of Pit F is presented in **Figure 5**.

VOCs were detected in eight of the twelve hydropunch samples collected (**Table 2**). A total of twelve VOCs were detected of which five have State of California Maximum Contaminant Levels for drinking water (MCLs): benzene, ethylbenzene, xylene, styrene, and toluene (see **Table 2).** Benzene concentrations were detected above the MCL in five hydropunch samples: HP-3, HP-4, HP-6, HP-7, and HP-10. Ethylbenzene and styrene were detected above the MCL in HP-10. Concentrations of xylene and toluene were not detected above their respective MCLs (**Table 2**).

For those chemicals not having MCLs, concentrations are compared to the chemical's tap water Preliminary Remediation Goal (PRG, EPA Reg IX, 2004), per DTSC's request that comparisons be made to risk-based values. 1,2,4-Trimethylbenzene was found above its tap water PRG in HP-3. Isopropylbenzene was found above its tap water PRG in HP-9. Naphthalene was found above its California-modified tap water PRG (0.093 ug/L) in HP-3, HP-4, HP-6, HP-7, HP-9, and HP-10.

The highest total VOCs were detected in HP-7, HP-9, and HP-10. All three of these locations are within approximately 50 to 100 feet of Pit F and are located within the projected Pit F soil impacted area shown in **Figure 2**. VOCs were not detected or detected at very low levels in HP-1, HP-2, HP-5, HP-8, HP-11, and HP-12. These locations are at the edge or outside of the Pit F soil impacted area as shown in **Figure 2**. Generally, VOC concentrations decrease as distance from Pit F increases. VOC concentrations detected in HP-3 and HP-6 are likely more related to petroleum hydrocarbons observed in these locations during drilling rather than Pit F materials. The distinct odor of styrene waste was not observed in HP-3 and HP-6, and no

dissolved styrene was observed in groundwater sampled at these locations. HP-4 and HP-5 have dissolved styrene, indicating likely Pit F impacts, and are the only such impacted sampling locations outside of the projected Pit F soil impacted area. This is corroborating evidence that HP-4 and HP-5 are hydraulically downgradient from Pit F (i.e., northward of Pit F), as is indicated based on the groundwater flow analysis (see Section 1.3).

3.2.2 SVOCs in Groundwater

Detected SVOC concentrations in groundwater samples collected during this investigation are presented in **Table 3**. The distribution of SVOCs in the vicinity of Pit F is presented in **Figure 6**.

The SVOCs detected are generally lighter-end SVOC petroleum hydrocarbons. None of the SVOCs detected have MCLs. Dibenzo(a,h)anthracene was found above its tap water PRG in HP-10, and naphthalene (measured as SVOC) was found above its California-modified tap water PRG in HP-3, HP-6, HP-7, HP-9, and HP-10. Phenanthrene has no tap water PRG or MCL but was detected at a concentration of 170 ug/l in HP-10 and at lower concentrations in all other impacted groundwater samples.

3.2.3 TOC in Soil

Four soil samples collected in the SPA were analyzed for TOC. Analytical results for TOC in soil are presented in **Table 5**. TOC was less than 0.5% in all four samples.

3.2.4 QA/QC Results

To evaluate the groundwater data reported from Del Mar Analytical, several steps were taken to verify the quality of the data and the consistency between field and laboratory activities. Chain-of-custody forms were checked daily before final delivery of the samples to the laboratory. Upon receipt of the laboratory reports, the chain-of-custody documentation was checked against the analyses conducted to ensure that all requested samples had been analyzed. Results reported by the laboratory were compiled in tabular form, and the data input to the tables were verified. The QA/QC documentation for the analytical data reported by Del Mar Analytical is incorporated with the laboratory report copies provided in **Appendix D**. Review of this QA/QC documentation and other related observations are detailed in **Appendix E**, the Data

Validation Report prepared by Geosyntec. The following is a summary of the QA/QC results.

Holding Times

Sample holding times are determined by comparing the field sample date and times noted on a COC to the laboratory reported analysis time. An exception is the EPA Method 8270C analysis, where the sample preparation time is used. All technical holding times were met with the exception of EPA analysis 8260 for sample HP-11. The sampling time was missed by one day because the sample had a high pH, as measured by the laboratory, and therefore the sample is considered non-preserved (see **Appendix E**).

Laboratory Quality Control Samples:

- Method blank results were reviewed to ensure that no laboratory contamination of the groundwater analytical data had occurred. All method blank results were found to be non-detect.

- Surrogate recoveries were reviewed to ensure that laboratory equipment was accurately measuring contaminant concentrations within acceptable ranges. Surrogate recoveries for primary data samples and QA/QC samples were generally found to be within acceptable ranges except for those noted in **Appendix E**.

- Laboratory Control Samples (LCS), Matrix Spikes (MS), Post Spikes (PS), and their associated duplicates were reviewed for method validation purposes. Review of the method validation data included: spike and percent recovery, upper and lower control limits, upper and lower warning limits for each analyte, and relative percent difference of duplicate recoveries. Samples were found to be within acceptable ranges by the laboratory, with the exception of those listed in **Appendix E**.

Field Quality Control Samples:

- Three equipment blank samples (EB) were collected in the field by pouring or pumping de-ionized water through the sampling device and then transferring the water into a sample bottle. These blanks were handled as samples and

transported to the laboratory for VOC analysis. Laboratory results indicated non-detect for all analytes tested.

- One field blank (FB) was derived from the sampling of source water used for decontamination of field sampling equipment. The field blank was collected in the field and transported to the laboratory for VOC analysis. Laboratory results indicated non-detect for all analytes tested.

- Trip blanks are used to detect contamination by volatile organics during sample shipping and handling. Trip blanks are 40-mL volatile organic analysis (VOA) vials of ASTM Type II water (or equivalent) that are filled in the laboratory, preserved with hydrochloric acid, transported to the sampling site, and returned to the laboratory with VOA samples. Three trip blank samples were analyzed for the presence of VOCs. Laboratory results indicated non-detect for all analytes tested.

Field duplicate samples were collected from HP-9 and analyzed for VOCs and SVOCs. Comparison of the primary and duplicate sample results indicates that the concentrations are reasonably similar (**Tables 2 and 3**).

For the four DTSC split samples that were collected and analyzed, **Appendix D** contains the laboratory report that includes all corresponding QA/QC documentation.

4. DISCUSSION AND RECOMMENDATIONS

Twelve hydropunch samples were collected in the near vicinity of the Pit F area. Soil observations from this investigation support the delineation of Pit F waste, as outlined in **Figure 2**. The groundwater samples were collected in the top portion of the SPA where groundwater impacts, if present, were expected to be the highest due the close proximity to any waste occurring above. Results indicate elevated concentrations of VOCs and SVOCs in several hydropunch groundwater samples. The most significant concentrations were detected in locations HP-7, HP-9, and HP-10. All three of these locations are located relatively close to Pit F and are located within the projected Pit F soil impacted area shown on **Figure 2**. VOCs and SVOCs were not detected or were detected at very low levels in six hydropunch samples: HP-1, HP-2, HP-5, HP-8, HP-11, and HP-12. These locations are located at the edge or outside of the Pit F soil impacted area as shown on **Figures 2** and **5**. Generally VOC and SVOC concentrations decrease as distance from Pit F increases. Elevated concentrations of benzene (1.8 ug/l to 6.5 ug/l) were detected in HP-3, HP-4, and HP-6, which are located outside of the projected Pit F area as shown on **Figure 2**. VOCs detected in HP-3 and HP-6 appear to be related to petroleum hydrocarbon impacts observed during drilling and not to styrene waste, based on odor observations and the lack of dissolved styrene in groundwater at these locations (see **Figure 3** and **Appendix C**). Because of the dissolved styrene detected in HP-4 and HP-5, VOCs detected in these locations are attributed, at least in part, to Pit F materials.

Comparison of hydropunch sample results with monitoring well data in the vicinity of Pit F indicates that VOC and SVOC concentrations detected in those samples collected near Pit F (HP-7, HP-9 and HP-10) are higher than concentrations previously detected in monitoring wells completed in the near vicinity of Pit F (i.e., higher than concentrations detected in B-7 and GP-12). This is not entirely surprising since these hydropunch samples were collected in the very top portion of the SPA, which is closest to or in contact with Pit F waste material (see **Figures 3** and **4**). These hydropunch results can therefore be considered conservative or biased high, when compared to monitoring well data. A means to directly compare concentrations, without the conservatism, would be to collect data from a developed well with a full screen interval (i.e., approximately 10 feet) installed in the impacted area.

Hydropunch locations where no or low levels of VOCs and SVOCs were detected compare well with monitoring data collected in MW-13, AW-1, and AW-1A that

previously indicated very low or no impacts to groundwater. Analytical results for hydropunch samples collected near these three monitoring wells, specifically HP-2, HP-5, HP-8, HP-11, and HP-12, would appear to confirm that impacts to groundwater in these locations are not significant.

Based on the above results the following is recommended:

(1) Groundwater data collected from MW-13 and MW-18 indicate that eastward transport of dissolved contamination in groundwater is not significant. However, based on the VOC concentrations detected in HP-9, it is recommended that one monitoring well be installed east-northeast of HP-9 as part of the long-term groundwater monitoring program for the Site.

(2) Monitor groundwater at the perimeter following completion of any Pit F removal action in order to determine if any residual concentrations are at the Site perimeter.

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If you have any questions or require further information please call us.

Sincerely,

Geosyntec Consultants, Inc. **Project Navigator, Ltd**

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TABLES

TABLE 1
Groundwater Flow Directions and Gradients in the Southeastern Portion of Site
Ascon Landfill

Site Area	Wells	General GW Flow Direction	GW Flow Direction/Estimated Gradient						
			Oct. 2003	Nov. 2003	Dec. 2003	Mar. 2004	June 2004	Sept. 2004	Dec. 2004
SE Area	B-7, MW-13, and MW-18	NNW-NNE	NNW/0.0014	N/0.0017	NNE/0.0020	N/0.0010	NNE/0.0012	NNE/0.0015	NNE/0.0008
	GP-22, MW-13 and MW-15	NW-NE	NW/0.0005	NNW/0.0006	NNE/0.0008	NE/0.0004	NE/0.0004	NE/0.0006	N/0.0004

Table 2
VOC Results in Groundwater
Ascon Landfill Site
Huntington Beach, California

Site Location	Screen Depth (feet bgs)	Sample Date	1,2,4-Trimethylbenzene (ug/l)	1,3,5-Trimethylbenzene (ug/l)	Benzene (ug/l)	Ethylbenzene (ug/l)	Isopropylbenzene (ug/l)	m,p-Xylenes (ug/l)	Naphthalene (ug/l)	n-Propylbenzene (ug/l)	p-Isopropyltoluene (ug/l)	sec-Butylbenzene (ug/l)	Styrene	Toluene (ug/l)
MCL or *Tap Water PRG*	--	--	*12*	*12*	1	300	*660*	1750	*0.093*	*240*	--	*240*	100	150
HP-1	12'-15'	05/24/06	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1
HP-2	13'-16'	05/24/06	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1
HP-3	23'-26'	05/25/06	**13**	3.5	**6.5**	18	7.4	9.4	**23**	8.7	3.1	2.3	<1	<1
HP-4	13'-16'	05/24/06	<1	<1	**1.8**	51	2.8	<1	**47 J**	2.7	<1	17	24	3.1
HP-5	14'-17'	05/24/06	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1
HP-5 DTSC SPLIT	14'-17'	05/24/06	<0.5	<0.5	0.5	2	<0.5	2.5	<0.5	<0.5	--	0.5	1.1	<0.5
HP-6	21'-24'	05/25/06	2.5	<1	**5.7**	6.8	8.7	1.4	**31**	9.8	<1	2.8	<1	<1
HP-7	12'-15'	05/24/06	<4	<4	**21**	170	7.7	<4	**83**	<4	<4	34	99	19
HP-7 DTSC SPLIT	12'-15'	05/24/06	1.6	0.84	**21**	210	6.9	<1.0	**73**	6.5	--	33	98	20
HP-8	13'-16'	05/24/06	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1
HP-8 DTSC SPLIT	13'-16'	05/24/06	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	--	<0.5	<0.5	<0.5
HP-9	13'-16'	05/24/06	<50	<50	<25	<50	**4000**	<50	**68**	<50	<50	62	<50	<50
HP-9-DUP	13'-16'	05/24/06	<50	<50	<25	<50	**4500**	<50	**80**	<50	<50	72	<50	<50
HP-10*	19'-22'	05/23/06	<20	<20	**70**	**1100**	250	<20	**330**	31	<20	160	**680**	63
HP-11*	19'-22'	05/23/06	<1 UJ	<1 UJ	<0.5 UJ	2.2 J	<1 UJ	<1 UJ	<1 UJ	<1 UJ	<1 UJ	<1 UJ	<1 UJ	<1 UJ
HP-12	13'-16'	05/25/06	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1
HP-12 DTSC SPLIT	13'-16'	05/25/06	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	--	<0.5	<0.5	<0.5

ug/l: micrograms per liter
DUP: Duplicate
DTSC SPLIT: Department of Substance Control Split Sample
* : Sample preserved with HCL in field
: Exceedances of the MCL are shaded.
--: Compound not reported by DTSC laboratory.
Notes:
Only detected analytes are shown.
UJ and J: Estimate. See Appendix E for explanation.
Tap Water PRGs: Tap Water Preliminary Remediation Goals calculated by US-EPA, Region 9, October 2004, and posted in *italics*
Exceedences of the the MCL and Tap Water PRG are posted in **bold**
When both a MCL or PRG is available for a compound the MCL is reported on the table.
No MCL or Tap Water PRG available for p-Isopropyltoluene
The Tap Water PRG for naphthalene is a"CAL-Modified PRG"

Table 3
SVOC Results in Groundwater
Ascon Landfill Site
Huntington Beach, California

Site Location	Screen Depth (feet bgs)	Sample Date	Acenaphthene (ug/l)	Acenaphthylene (ug/l)	Dibenz(a,h) anthracene (ug/l)	Dibenzofuran (ug/l)	Fluorene (ug/l)	2-Methylnaphthalene (ug/l)	Naphthalene (ug/l)	Phenanthrene (ug/l)
MCL or *Tap Water PRG*	--	--	*370*	--	*0.0092*	*12*	*240*	--	*0.093*	--
HP-1	12'-15'	05/24/06	<0.47	<0.47	<0.47	<0.47	<0.47	<0.94	<0.94	<0.47
HP-2	13'-16'	05/24/06	<0.47	<0.47	<0.47	<0.47	<0.47	<0.94	<0.94	<0.47
HP-3	23'-26'	05/25/06	0.78	0.93	<0.49	0.56	1.2	22	**17**	1.9
HP-4	13'-16'	05/23/06	<0.48	<0.48	<0.48	<0.48	<0.48	<0.95	<0.95	<0.48
HP-5	14'-17'	05/24/06	<0.94	<0.94	<0.94	<0.94	<0.94	<1.9	<1.9	<0.94
HP-6	21'-24'	05/25/06	<4.8	<4.8	<4.8	<4.8	<4.8	56	**28**	9.8
HP-7	12'-15'	05/24/06	<4.7	<4.7	<4.7	<4.7	9.1	12	**160**	84
HP-8	13'-16'	05/23/06	<0.48	<0.48	<0.48	<0.48	<0.48	<0.95	<0.95	0.5
HP-9	13'-16'	05/24/06	<4.7	<4.7	<4.7	<4.7	<4.7	<9.4	**61**	5.1
HP-9-DUP	13'-16'	05/24/06	<1.2	<1.2	<1.2	<1.2	<1.2	<2.4	**60**	8.2
HP-10	19'-22'	05/23/06	<4.7	<4.7	**7.5**	<4.7	13	14	**190**	170
HP-11	19'-22'	05/23/06	<0.47	<0.47	<0.47	<0.47	<0.47	<0.94	<0.94	2.5
HP-12	13'-16'	05/25/06	<0.49	<0.49	<0.49	<0.49	<0.49	<0.97	<0.97	<0.49

ug/l: micrograms per liter
DUP: Duplicate
: Exceedances of the MCL are shaded.
Notes:
Only detected analytes shown
Tap Water PRGs: Tap Water Preliminary Remediation Goals calculated by US-EPA, Region 9, October 2004, and posted in *italics*
Exceedences of either the MCL or Tap Water PRG are posted in **bold**
When both a MCL or PRG is available for a compound the MCL is reported on the table.
No MCLs or Tap Water PRGs available for Acenaphthylene, 2-Methylenaphthalene, or Phenanthrene
The Tap Water PRG for naphthalene is a"CAL-Modified PRG"

Table 4
Field Observations
Pit F Drilling and Sampling Program
Ascon Landfill Site

Borehole Location	Date Drilled	Total Depth (ft-bgs)	Depth of Styrene Waste (ft-bgs)	Styrene Waste Thickness (ft)	Top of Native (ft-bgs)	First Water Encountered (ft bgs)
PNL-F01	06/30/04	19.0	5.5 to 13.5	8.0	5.5	14.5
PNL-F03	06/29/04	19.0	12 to 17.5	5.5	10.5	NE
PNL-F04	06/28/04	21.0	17.5 to 20	2.5	11.0	18.0
PNL-F05	06/28/04	21.0	--	NA	11.5	16.5
PNL-F06	06/28/04	16.5	10.5 to 16.5*	> 6.0	10.5	13.5
PNL-F07	06/28/04	15.0	8.5 to 12.0	3.5	8.5	13.5
PNL-F11	06/29/04	12.0	trace	ND	2.5	10.5
PNL-F12 [1]	06/30/04	26 [2]	5.5 to 26 [2]	> 21 [2]	5.5 [2]	13.5 [2]
PNL-F13	07/02/04	20.0	--	NA	7.0	8.0
PNL-F16	07/02/04	29.5	--	NA	5.0	8.0
PNL-F17	06/29/04	12.0	--	NA	4.0	9.0
PNL-F18	06/29/04	13.5	9.5 to 10.5	1.0	2.0	9.5
PNL-F19	06/30/04	14.5	10.0 to 10.5	0.5	5.0	10.5
PNL-F21	06/29/04	12.0	9.0 to 12.0*	> 3.0	5.0	9.0
PNL-F22	07/01/04	20.0	17.0 to 20 *	> 3.0	10.0	15.5
PNL-F25	07/01/04	21.5	10.0 to 21.5 *	>11.5	14.0	17.0
PNL-F26	07/01/04	21.5	--	NA	18.0	18.0
PNL-F27	06/29/04	13.5	--	NA	5.0	9.0
PNL-F28	07/01/04	19.5	18.0 to 19.5 *	> 1.5	ND	16.5
PNL-F29	07/01/04	19.5	16.5 to 19.5 *	> 3.0	ND	16.5
PNL-F30	07/01/04	21.0	--	NA	ND	15.0
PNL-F31	07/02/04	24.5	--	NA	ND	15.0
PNL-F32	07/02/04	29.5	--	NA	ND	9.5
SS-01	12/12/04	12	--	NA	2.0	8.0
SS-02	12/12/04	12	--	NA	3.0	8.0
SS-03	12/12/04	12	--	NA	2.0	7.5
SS-04	12/12/04	12	--	NA	2.5	10.0
SS-05	12/12/04	12	--	NA	2.0	9.5
HP-1	05/24/06	17.0	--	NA	6.0	11.5
HP-2	05/24/06	17.0	--	NA	4.0	12.5
HP-3	05/25/06	25.0	--	NA	4.0	23.0
HP-4	05/23/06	17.0	--	NA	6.0	13.0
HP-5	05/24/06	17.0	--	NA	0.0	10.0
HP-6	05/25/06	25.0	--	NA	4.0	18.0
HP-7	05/24/06	17.0	9.5 to 13.0	3.5	0.0	9.5
HP-8	05/23/06	17.0	12.5 to 17.0*	>4.5	0.0	10.0
HP-9	05/24/06	17.0	10.5 to 12.0	1.5	6.0	10.5
HP-10	05/23/06	21.0	18.0 to 21.0*	>3.0	0.0	14.5
HP-11	05/23/06	21.0	18.0 to 21.0*	>3.0	3.0	14.0
HP-12	05/25/06	17.0	--	NA	0.0	13.0

Note: ft-bgs is feet below ground surface.
NA is Not Applicable
ND is Not Determined
* downward vertical extent of styrene waste not delineated
(1) 45 degree angle boring
(2) depths are ft bgs calculated based upon 45 degree angle boring, (total drilled footage on angle was 36.5 ft)

Table 5
Total Organic Carbon Results in Soil
Ascon Landfill Site
Huntington Beach, California

Site Location	Depth (feet bgs)	Sample Date	Total Organic Carbon (mg/kg)
HP-2	13'	05/24/06	<5000
HP-6	22'	05/25/06	<5000
HP-9	13'	05/24/06	<5000
HP-11	19'	05/23/06	<5000

mg/kg: milligrams per kilogram

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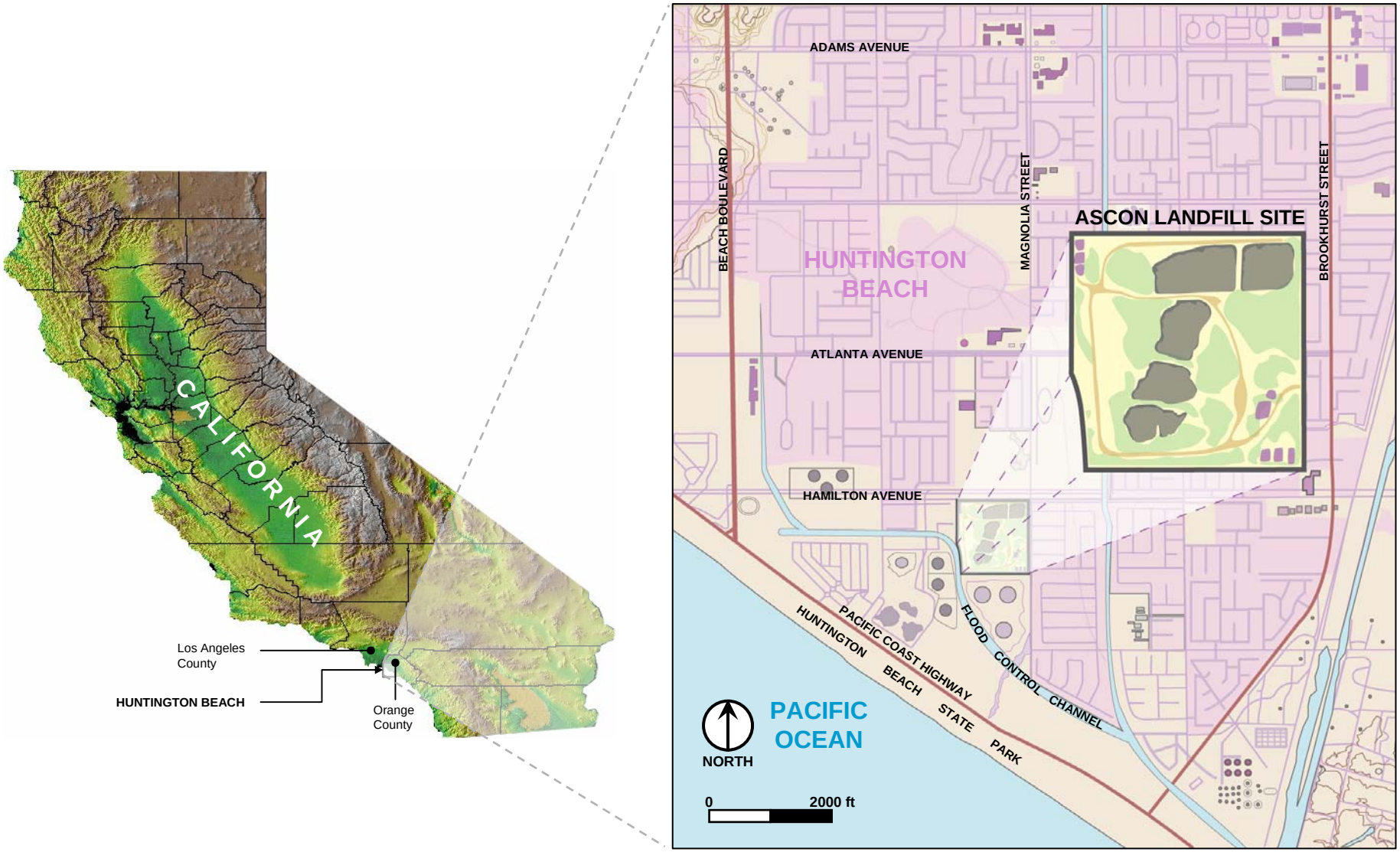
FIGURES



Site Location Map		Figure 1
Base Map Source: PNL, Second Feasibility Study Ascon Landfill Site, Huntington Beach, California	April 2006	PROJECT NAVIGATOR, LTD.®

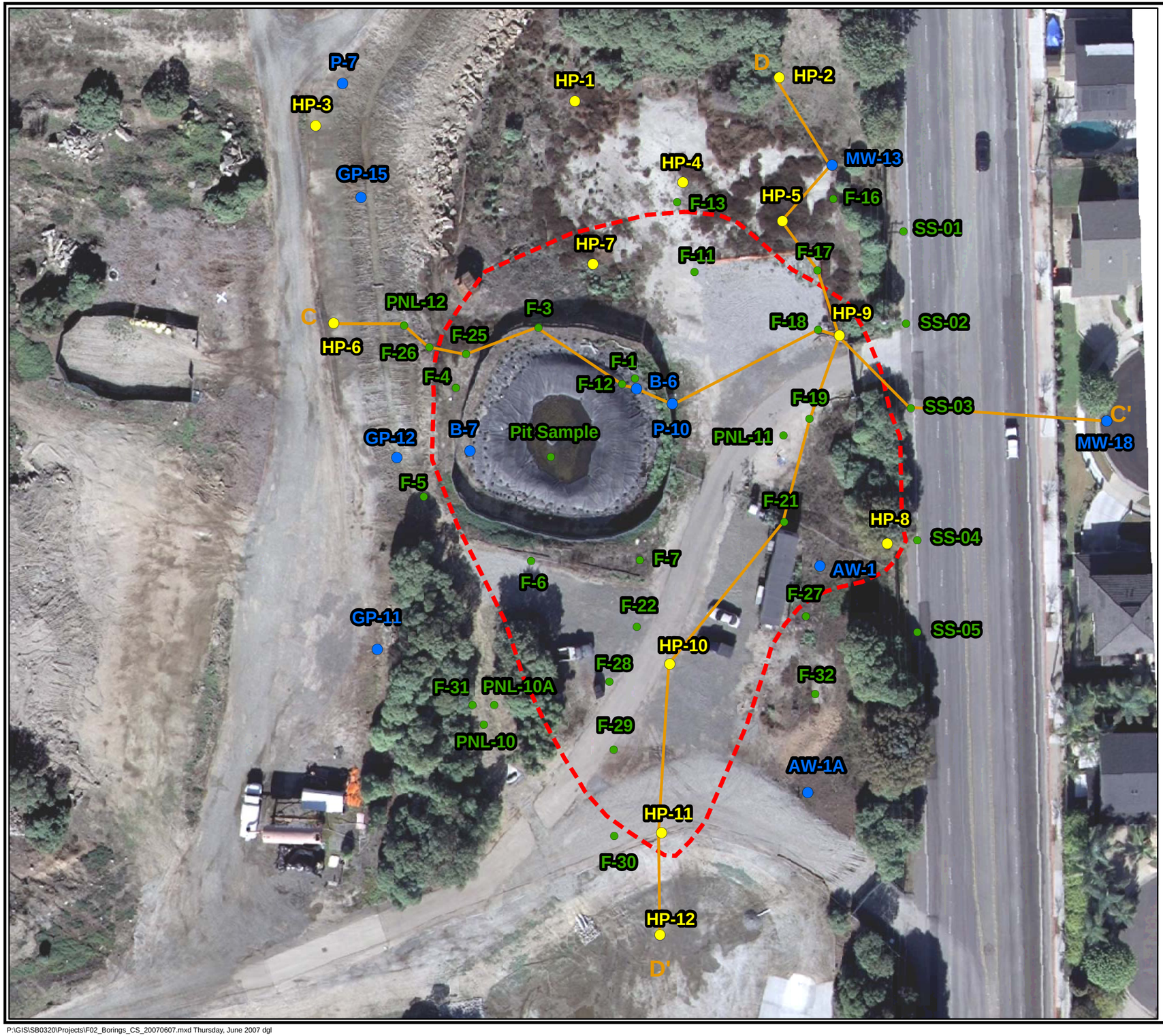


Figure 2
Boring Locations
And Extent of Pit F Waste
Observed in Soil

Explanation

- Soil Boring Location
- Soil Boring and Monitoring Well Location
- Soil Boring and Hydropunch Groundwater Location
- C — C' Cross-Section
- Projected Limit of Pit F Impacted Soil Based on Visual Indication, Odors, and PID Readings

N

0 25 50 Feet

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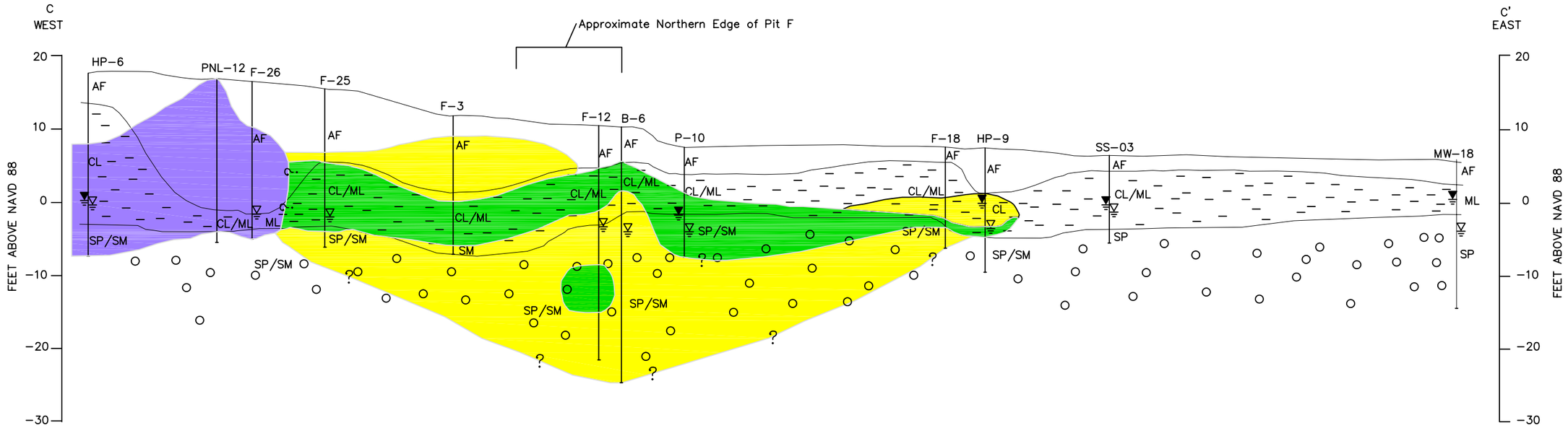

EXPLANATION

- FILL
- CLAY AND SILT
- SAND
- OBSERVED PETROLEUM HYDROCARBON IMPACTS
- OBSERVED STYRENE ODORS OR CHEMICAL ODORS
- OBSERVED STYRENE IMPACTED SOILS
- ? QUESTIONABLE CONTACT OR BOUNDARY

- FIRST OBSERVED GROUNDWATER DURING DRILLING
- MEASURED POTENTIOMETRIC SURFACE
- APPROXIMATE LITHOLOGIC CONTACT

AF	FILL
SP	SAND
SC	CLAYEY SAND
SM	SILTY SAND
ML	SILT
CL	CLAY

0 — 50

SCALE IN FEET

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924 ANACAPAC STREET SUITE 4A
SANTA BARBARA, CALIFORNIA 93101
TELEPHONE: (805) 897−3800

FIGURE 3
CROSS SECTION C−C'

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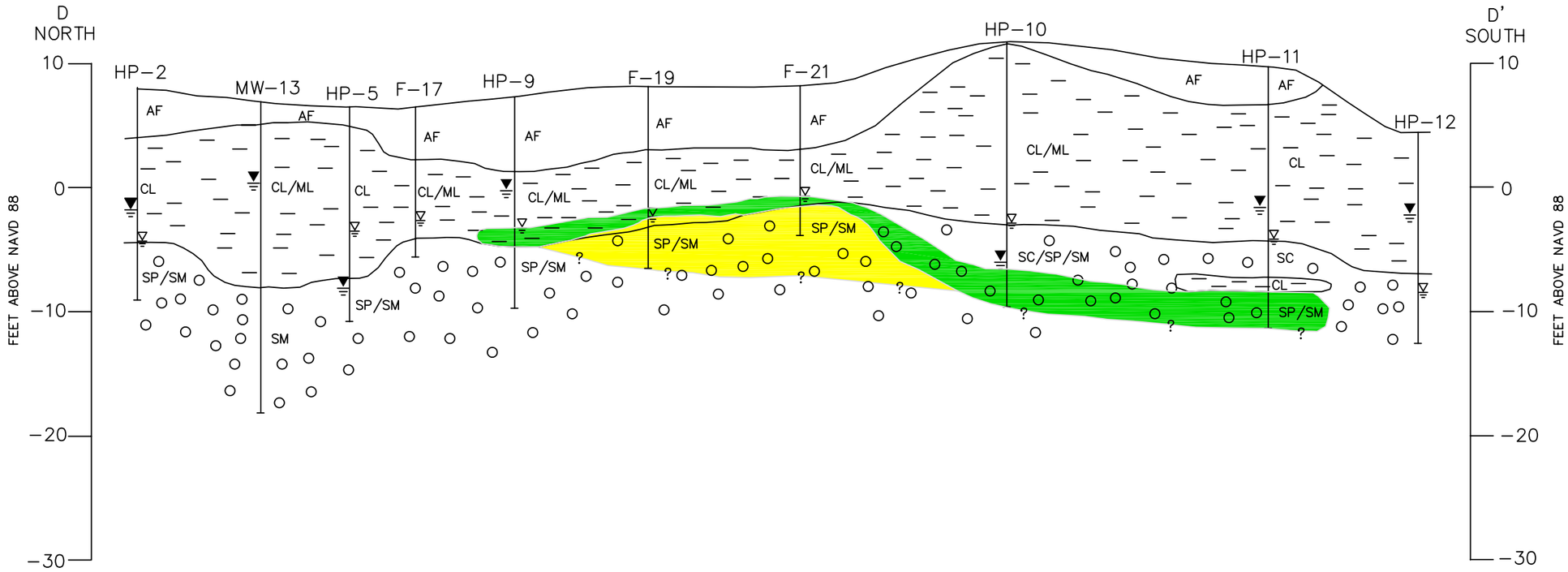

EXPLANATION

- FILL
- CLAY AND SILT
- SAND
- OBSERVED STYRENE ODORS OR CHEMICAL ODORS
- OBSERVED STYRENE IMPACTED SOILS
- ? QUESTIONABLE CONTACT OR BOUNDARY
- FIRST OBSERVED GROUNDWATER DURING DRILLING
- MEASURED POTENTIOMETRIC SURFACE
- APPROXIMATE LITHOLOGIC CONTACT

AF	FILL
SP	SAND
SC	CLAYEY SAND
SM	SILTY SAND
ML	SILT
CL	CLAY

0 — 50
SCALE IN FEET

GEOSYNTEC CONSULTANTS
924 ANACAPAC STREET SUITE 4A
SANTA BARBARA, CALIFORNIA 93101
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FIGURE 4
CROSS SECTION D−D'

DRAWN BY: D LANGERE	DATE: JUNE 2006	JOB NO.: SB0320

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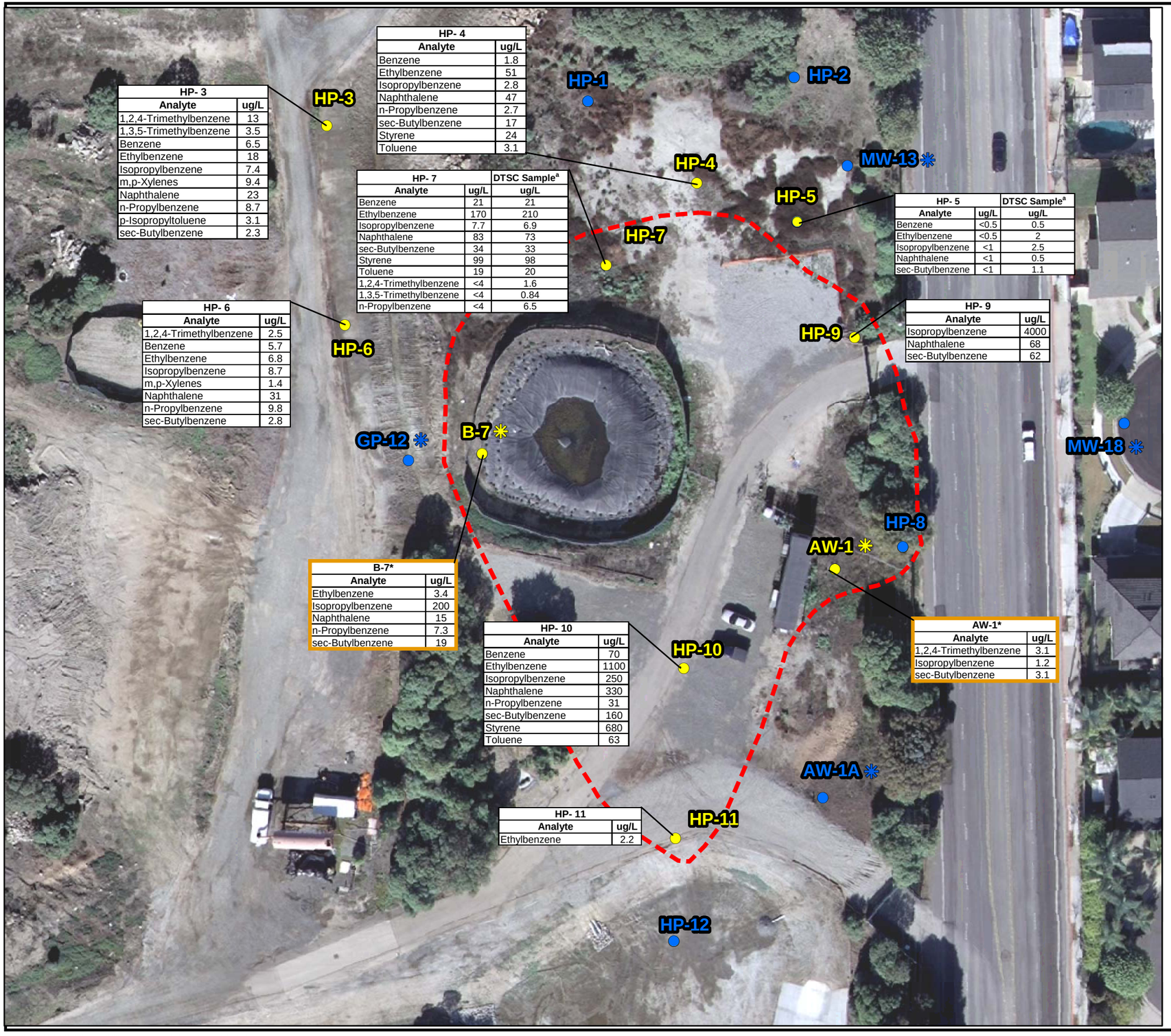

Figure 5
VOCs in Groundwater Samples

Explanation

- VOCs Not Detected at Location
- VOCs Detected at Location
- Projected Limit of Pit F Impacted Soil Based on Visual Indication, odors, and PID Readings
- Sample Collected From Monitoring Well
- Groundwater Sample Collected in December 2004 From Developed Monitoring Well

Note- [a] :HP-5 and HP-7 Data Box Shows Results of DTSC Split Sample Analyses

N

0 25 50 Feet

Date: June 2007 | Project No. SB0320

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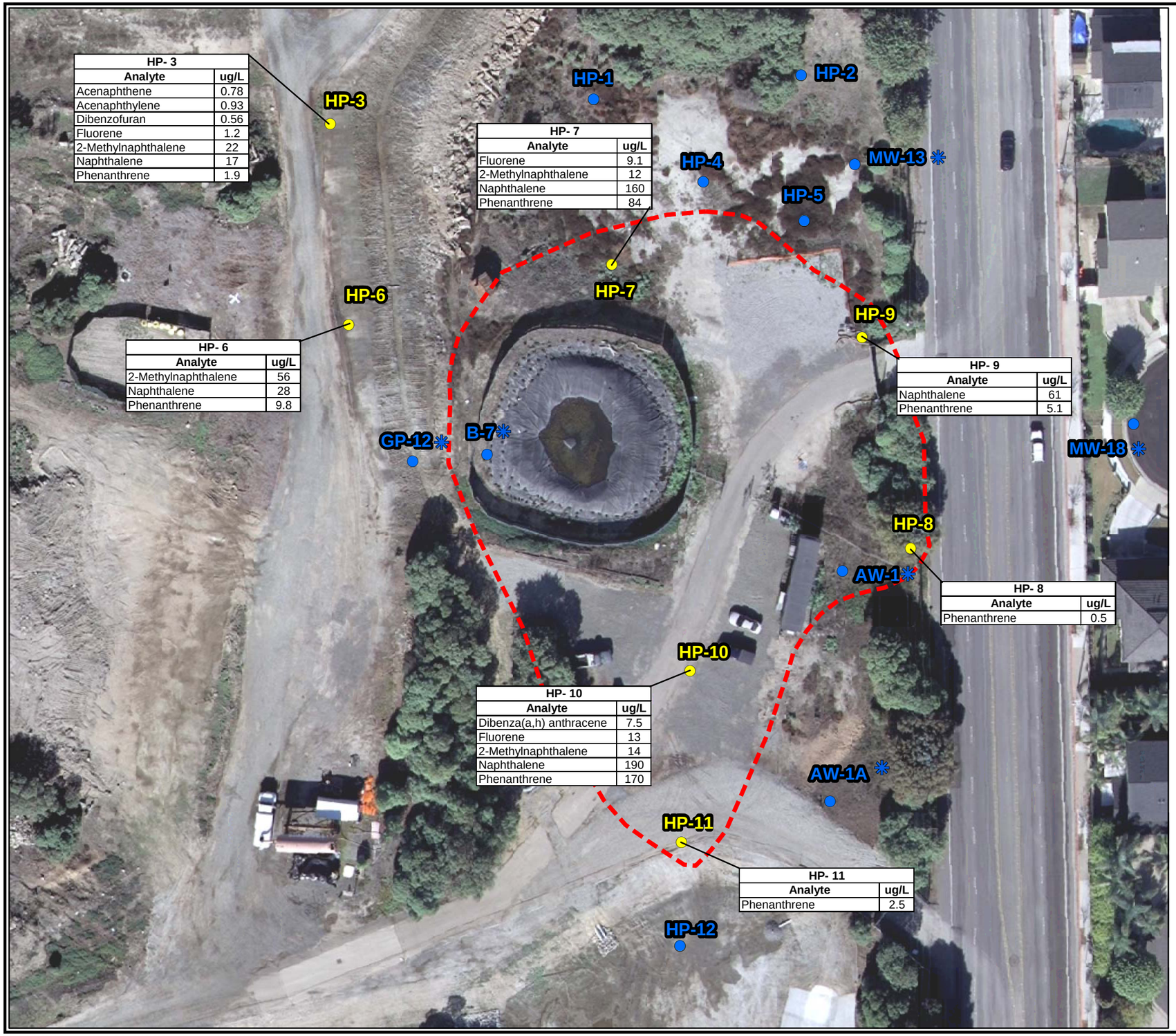

Figure 6
SVOCs In Groundwater Samples

Explanation

- VOCs Not Detected at Location
- VOCs Detected at Location
- Projected Limit of Pit F Impacted Soil Based on Visual Indication, odors, and PID Readings
- Groundwater Sample Collected in December 2004 From Developed Monitoring Well

N

0 25 50 Feet

Date: June 2007 | Project No. SB0320

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APPENDIX A

WORKPLAN AND APPROVAL LETTERS

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APPENDIX B

REVISED GROUNDWATER CONTOUR MAPS

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APPENDIX C

BORING LOGS

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APPENDIX D

LABORATORY REPORTS

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APPENDIX E

DATA VALIDATION REPORT