

**Type of Services** Soil Quality Evaluation

**Location** Pilgrim Haven Redevelopment  
Los Altos, California

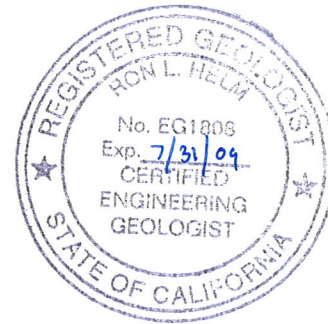
**Client** American Baptist Homes of the West


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**Project Number** 221-1-1

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## Table of Contents

<b>SECTION 1: INTRODUCTION .....</b>	<b>3</b>
1.1 PURPOSE.....	3
1.2 SCOPE OF WORK .....	4
<b>SECTION 2.0: SOIL QUALITY EVALUATION .....</b>	<b>4</b>
2.1 SOIL SAMPLING.....	4
2.2 SOIL SAMPLE COLLECTION AND LABORATORY ANALYSES.....	4
Table 1. Laboratory Analytical Results of Selected Soil Samples for Organochlorine Pesticides, Lead, Mercury, and Arsenic (concentrations in ppm) .....	5
<b>SECTION 3: CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>6</b>
<b>SECTION 4: LIMITATIONS .....</b>	<b>6</b>
<b>SECTION 5: REFERENCES .....</b>	<b>7</b>

FIGURE 1 – VICINITY MAP

FIGURE 2 – SITE PLAN, SAMPLING LOCATIONS

FIGURE 3 – SITE PLAN, SOIL QUALITY - ½ TO 1 FOOT DEPTH

FIGURE 4 – SITE PLAN, SOIL QUALITY - 2 TO 2 ½ FOOT DEPTH

APPENDIX – SAMPLING PROTOCOL, CHAIN OF CUSTODY AND LABORATORY  
DATA SHEETS

**Type of Services** | **Soil Quality Evaluation**

**Location** | **Pilgrim Haven**  
**Los Altos, California**

## **SECTION 1: INTRODUCTION**

This report presents the results of the soil quality evaluation performed at the planned Pilgrim Haven redevelopment (Site), located at 373 and 323 Pine Lane in Los Altos, California as shown on Figures 1 and 2. This work was performed for American Baptist Homes of the West in accordance with our January 25, 2008 Agreement (Agreement).

### **1.1 PURPOSE**

The approximately 6 acre Site is occupied by the Pilgrim Haven Facility (373 Pine Lane), which consists of 14 apartment and support buildings, paved driveways and parking areas, sidewalks and landscaped areas, and the Spagnoli Parcel (323 Pine Lane) that is occupied by a residence and orchard.

We understand that most of the existing buildings (with exception of Buildings 2, 3, and 4) will be demolished and a new community will be built in their place. A 34,172 square foot Assisted Living, Skilled Nursing and Memory Support Facility (two levels above grade) and a 46,661 square foot Independent Living Building (two to three levels above grade and one level below grade) will be constructed at the Site.

Based on Phase I Environmental Site Assessment prepared by others in November 2006, the Site was used for agricultural and rural residential uses until the early 1960s when the Pilgrim Haven Facility was reportedly built. The residence at 323 Pine Lane reportedly was constructed in the late 1930s.

Pesticides (such as organochlorine pesticides and associated heavy metals) may have been applied to the former on-Site crops in the normal course of farming operations. Because the Site will be capped by the proposed development, risk to human health from residual pesticides, if any, will be significantly reduced. If elevated concentrations of agricultural chemicals are present, off-haul and disposal of this soil (if required due to excess soil generated during construction activities) would be substantially more

expensive than non-impacted soil; this soil will require appropriate testing, handling, transportation and disposal.

The purpose of the work in the area planned for excavation is to evaluate if selected locations of the near surface soil contain residual organochlorine pesticides and pesticide containing metals. This information could be used by third parties for evaluation of soil excavated for re-use or off-Site disposal.

## **1.2 SCOPE OF WORK**

As presented in our Agreement, the scope of work performed for this soil quality investigation the following:

- Collection of selected soil samples for laboratory analyses.
- Preparation of a written report summarizing our findings and recommendations.

The limitations for the soil quality investigation are presented in Section 4.

## **SECTION 2.0: SOIL QUALITY EVALUATION**

### **2.1 SOIL SAMPLING**

Soil sampling activities were performed on February 13 and March 5, 2008. To evaluate soil quality, nine exploratory borings were hand sampled to an approximate depth of 2 ½ feet in selected areas proposed for excavation at the Spagnoli Parcel (seven locations) and at the Pilgrim Haven facility (two locations). To further evaluate the extent of organochlorine pesticides and lead detected during the first round of laboratory analyses, eight additional borings were hand sampled to 2 ½ feet on the Spagnoli Parcel, mainly in areas currently used for planters and near a storage shed. Figure 2 presents the sampling locations. Soil sampling protocols are presented in the Appendix.

### **2.2 SOIL SAMPLE COLLECTION AND LABORATORY ANALYSES**

The 17 soil samples collected from the ½ to 1 foot depth and the 4 soil samples collected from the 2 to 2 ½ foot depths were submitted to a state certified laboratory and analyzed for organochlorine pesticides (EPA Test Method 8081). Selected soil samples were analyzed for total lead and arsenic (EPA Test Method 6010B), mercury (EPA Test Method 7471A) and soluble lead (EPA Test Method 6010B, STLC).

Laboratory analytical results are summarized in Table 1 and presented on Figures 3 and 4. Chain of custody documentation and laboratory analytical reports are presented in the Appendix.

**Table 1. Laboratory Analytical Results of Selected Soil Samples for Organochlorine Pesticides, Lead, Mercury, and Arsenic (concentrations in ppm)**

Sample ID	DDE	DDT	Total DDT	Alpha-Chlordane	Gamma-Chlordane	Chlordane	Arsenic	Lead	Mercury
SS-1 at ½ to 1 foot	0.277	0.0487	0.3257	0.036	0.0232	0.251	2.6	33	ND
SS-2 at ½ to 1 foot	0.325	0.0571	0.3821	0.035	0.0206	0.236	2.2	43	ND
SS-3 at ½ to 1 foot	0.736	0.321	1.057 <sup>e</sup>	0.276	0.218	1.930	3.6	300 <sup>a</sup>	ND
SS-3A at 2 to 2 ½ feet	ND	ND	ND	ND	ND	ND	---	4.0	---
SS-4 at ½ to 1 foot	0.0204	0.00566	0.02606	ND	ND	ND	1.7	15	ND
SS-5 at ½ to 1 foot	0.0356	0.0396	0.0752	0.0135	ND	0.133	2.4	29	0.10
SS-6 at ½ to 1 foot	0.00268	ND	0.00268	ND	ND	ND	ND	6.8	ND
SS-7 at ½ to 1 foot	0.00418	ND	0.00418	ND	ND	ND	3.6	15	ND
SS-8 at ½ to 1 foot	0.299	0.128	0.427	0.127	0.0461	0.411	---	74	---
SS-8 at 2 to 2 ½ feet	ND	ND	ND	ND	ND	ND	---	4.8	---
SS-9 at ½ to 1 foot	0.00315	ND	0.00315	ND	ND	ND	---	4.9	---
SS-10 at ½ to 1 foot	0.413	0.153	0.566	0.131	0.0842	0.684	---	110 <sup>b</sup>	---
SS-10 at 2 to 2 ½ feet	0.00385	ND	0.00385	ND	ND	ND	---	21	---
SS-11 at ½ to 1 foot	0.252	0.0593	0.3113	0.0641	0.0338	0.545	---	57	---
SS-11 at 2 to 2 ½ feet	ND	ND	ND	ND	ND	ND	---	4.9	---
SS-12 at ½ to 1 foot	0.291	0.0212	0.3122	0.052	0.0219	0.306	---	48	---
SS-13 at ½ to 1 foot	0.317	0.0498	0.3668	0.0812	0.0366	0.486	---	46	---
SS-14 at ½ to 1 foot	0.00601	ND	0.00601	ND	ND	ND	---	13	---
SS-15 at ½ to 1 foot	ND	ND	ND	ND	ND	ND	---	4.4	---
EB-5 at ½ to 1 foot	0.00848	ND	0.00848	ND	ND	ND	1.8	31	ND
EB-12 at ½ to 1 foot	0.452	0.0536	0.5056	0.0397	0.0179	0.285	4.4	34	ND
Residential Screening Levels <sup>c</sup>	1.6	1.6	1.6	---	---	0.43	d	150	18
Commercial Screening Levels <sup>c</sup>	6.3	6.3	6.3	---	---	1.7	d	3,500	180

a. California's Soluble Threshold Limit Concentration (STLC) or California's hazardous waste criteria for soluble lead is 5 ppm. Soluble Lead was reported at 2.9 ppm.

b. Soluble Lead (STLC extraction) was reported at 2.4 ppm.

c. California Human Health Screening Level (CHHSL), CalEPA, January 2005.

d. Ambient background concentrations of arsenic in Bay Area soils typically exceed risk-based screening levels for direct-exposure concerns. Alternative screening levels based on site-specific or regionally-specific established background concentrations may represent a more appropriate screening level. CalEPA generally does not require cleanup of naturally occurring chemicals to less than background. Based on the soil samples analyzed, arsenic appeared to be at background concentrations.

e. California's Total Threshold Limit Concentrations (TTLIC) for total DDT is 1 ppm, California's hazardous waste criteria.

ND Not detected above laboratory detection limits.

### **SECTION 3: CONCLUSIONS AND RECOMMENDATIONS**

Metals concentrations detected appeared consistent with typical background levels, based on published literature (Bradford, et.al., 1996). However, lead appeared to exceed background concentrations in two samples: SS-3 and SS-10 at the ½ to 1 foot depth interval. To help evaluate disposal alternatives, these soil samples were additionally analyzed for soluble lead (STLC); soluble lead was not detected above California's hazardous waste standard of 5 ppm.

Laboratory analyses of selected soil samples detected organochlorine pesticides (Total DDT and chlordane). The maximum concentrations of total DDT and chlordane detected were 1.057 ppm and 1.930 ppm, respectively, in soil sample SS-3. The residential CHHSLs for total DDT and chlordane are 1.6 ppm and 0.43 ppm, respectively. In addition to SS-3, three other sample locations (SS-10, SS-11 and SS-13) also contained chlordane at concentrations exceeding the residential CHHSL on the Spagnoli Parcel. Based on these results, shallow soil on this parcel in the area currently being used for planters likely exceeds the residential CHHSL. The top 2 feet of soil in this area should be separately handled from other soil excavated at the Site since this soil may not be acceptable for unrestricted use. We recommend contacting disposal facilities or a soil broker to evaluate cost effective disposal alternatives for this soil.

Due to the elevated concentrations of total DDT (greater than 1 ppm - California's hazardous waste criteria) and chlordane (1.930 ppm) reported in soil sample SS-3, which was collected on the Spagnoli Parcel between the shed and planters, we recommend that soil in an approximately 10 foot by 10 foot by 2 foot area centered on SS-3 be disposed separately from the remaining soil. The disposal facility accepting this soil likely will require a composite soil sample be collected and analyzed for chemicals of concern. Verification samples should also be collected to confirm the over-excavation of this soil. This soil may require disposal as a California hazardous waste.

The remaining soil appears acceptable for unrestricted use based on the selected soil samples analyzed. If landfill disposal is being considered, the selected landfill's acceptance criteria should be obtained and compared to the data collected. We recommend this report be provided to the facility or property owner that will receive the soil and that written approval to dispose of the soil be obtained.

### **SECTION 4: LIMITATIONS**

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## **SECTION 5: REFERENCES**

Baseline Environmental Consulting. November 29, 2006. Phase I Environmental Site Assessment, Pilgrim Haven Project, Los Altos, California.

Bradford, G.R., Chang, A.C., Page, A.L., Bakhtar, D., Frampton, J.A., Wright, H. Background Concentrations of Trace and Major Elements in California Soils. Kearney Foundation of Soil Science. March 1996.

## APPENDIX – SAMPLING PROTOCOLS, CHAIN OF CUSTODY, LABORATORY DATA SHEETS

### Subsurface Exploration Method

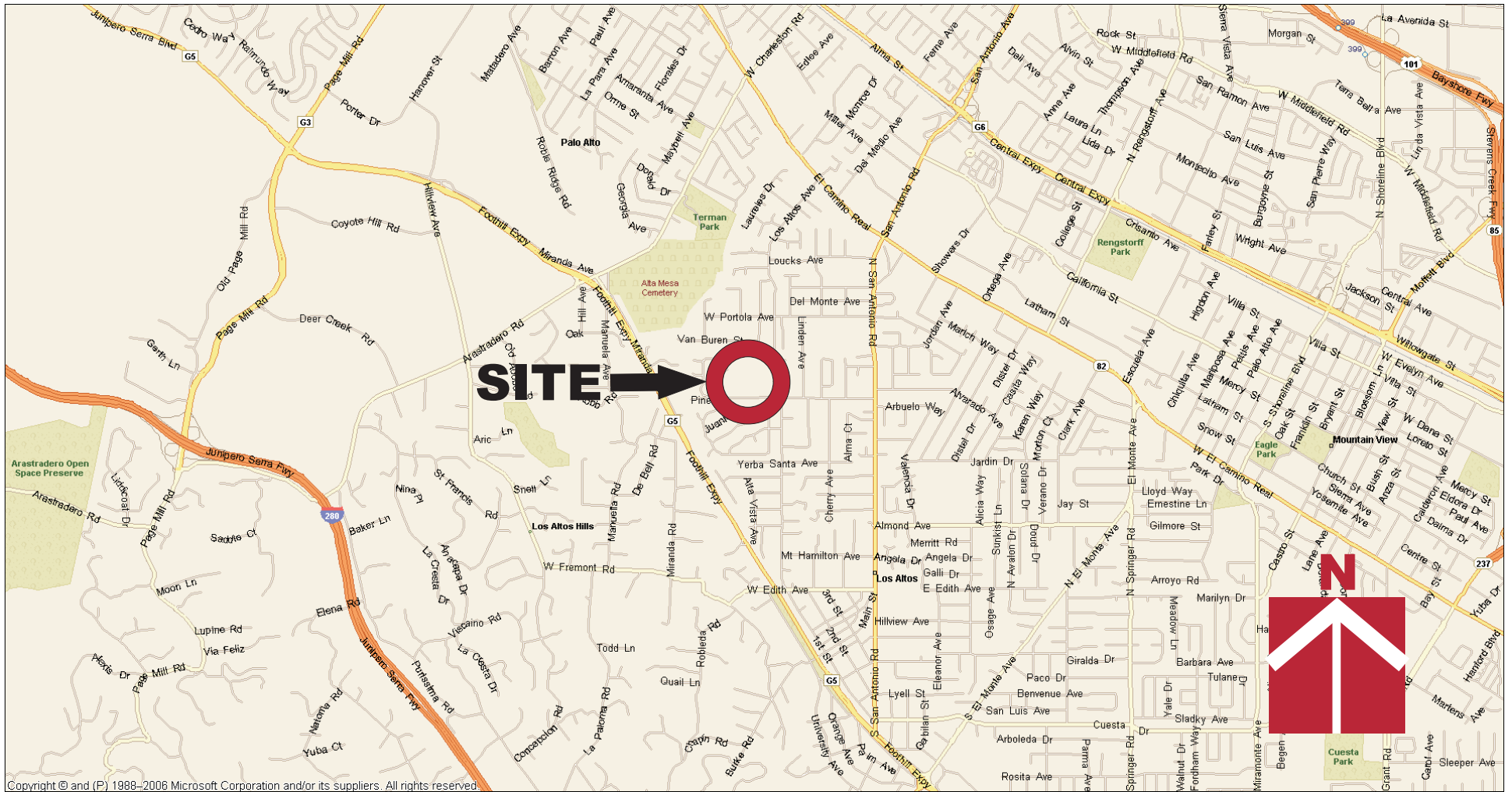
Method
Hand sampled.
Soils observed in the borings were logged in general accordance with the Unified Soil Classification System (ASTM D-2487).
Soil samples were collected continuously.

### Soil Sample Collection Method

Method
Soil samples for laboratory analyses were collected in stainless steel liners
Ends of soil samples for laboratory analyses were covered in a Teflon film, fitted with plastic end caps, taped, and labeled with a unique sample identification number.
Samples for laboratory analyses were placed in an ice-chilled cooler and transported to a state-certified laboratory with chain of custody documentation.

### Equipment Decontamination

Method
All sampling equipment was cleaned in a solution of laboratory grade detergent and rinsed with distilled water prior to use at each sample point.



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### Vicinity Map

**Pilgrim Haven Redevelopment**  
**323 and 373 Pine Avenue**  
**Los Altos, CA**

Project Number

221-1-1

Figure Number

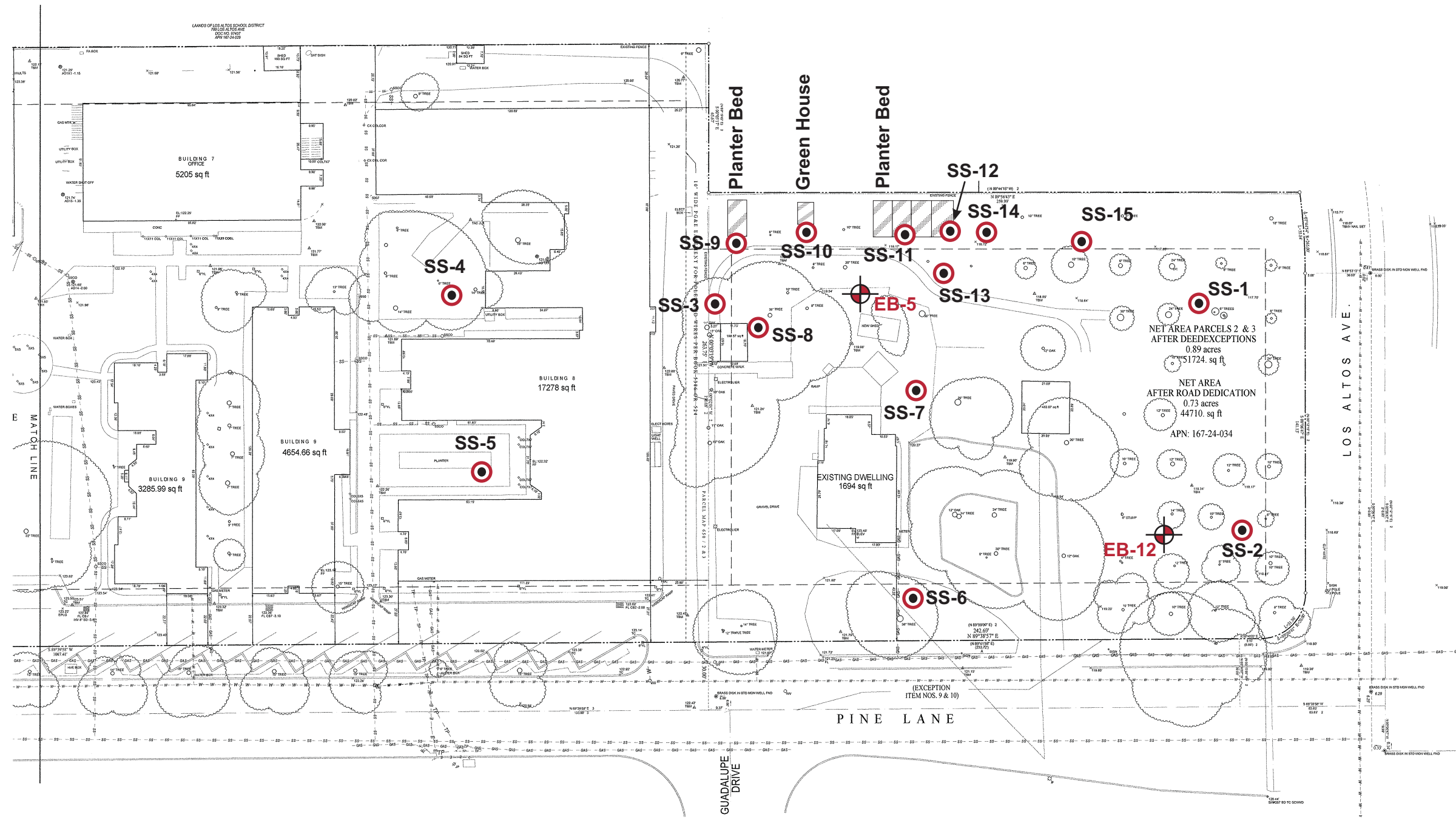
Figure 1



Date

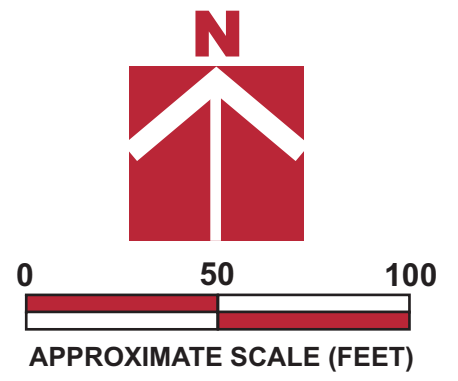
March 2008

Drawn By

MGV



-  Approximate Location of Exploratory Boring
-  Approximate Location of 50ft Vertical Boring



Project Number 221-1-1

Figure Number Figure 2

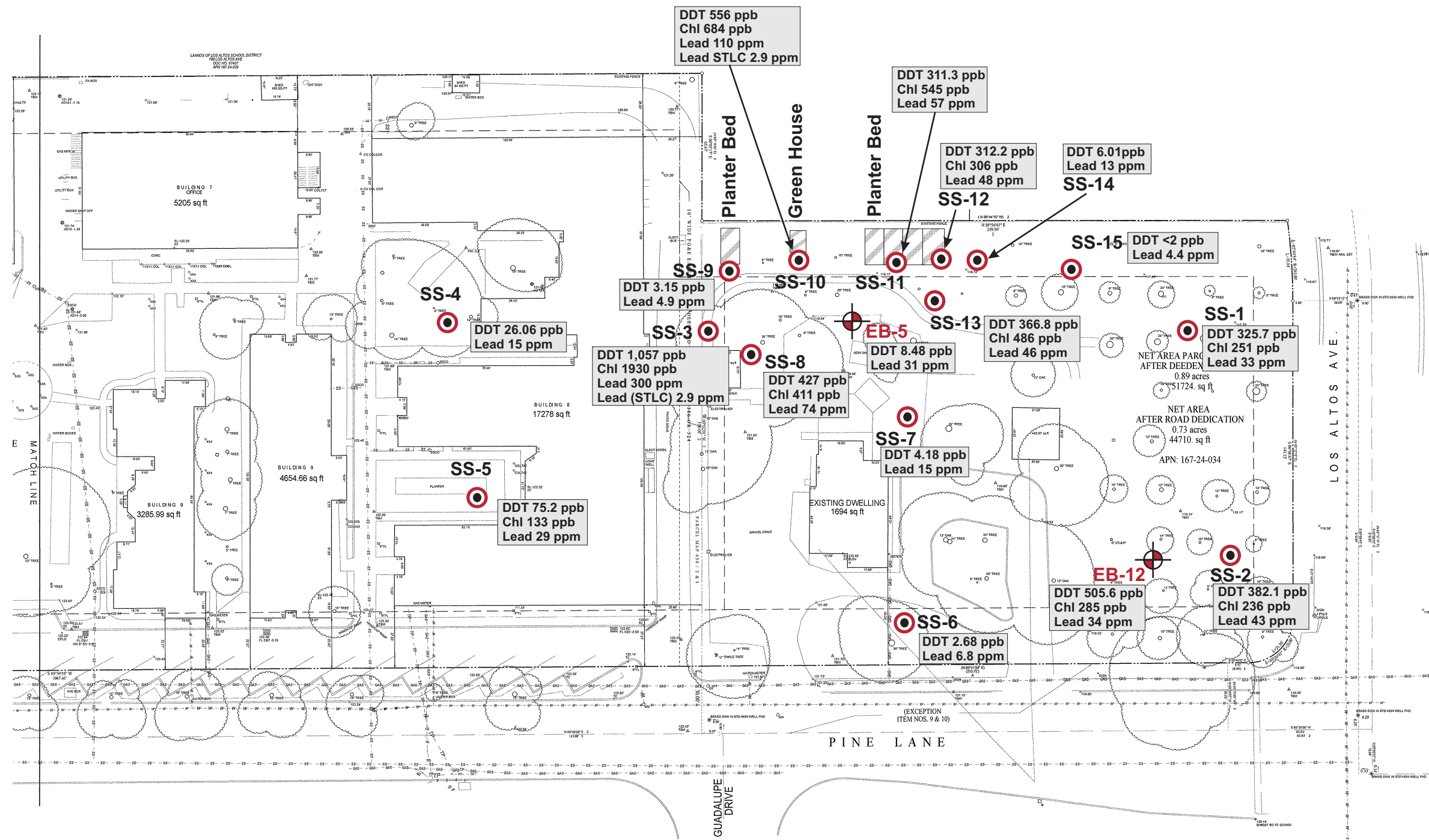
Date March 2008

Drawn By MG

Site Plan

**Pilgrim Haven Redevelopment**  
**323 and 373 Pine Avenue**  
**Los Altos, CA**

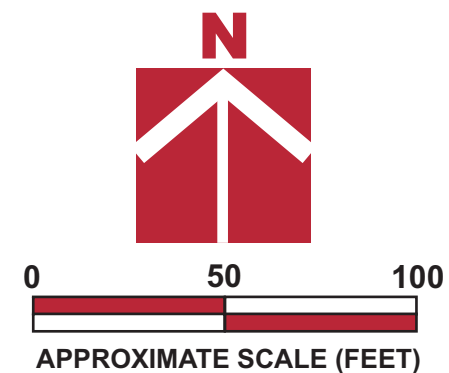




- Approximate Location of Exploratory Boring
- Approximate Location of Soil Sample

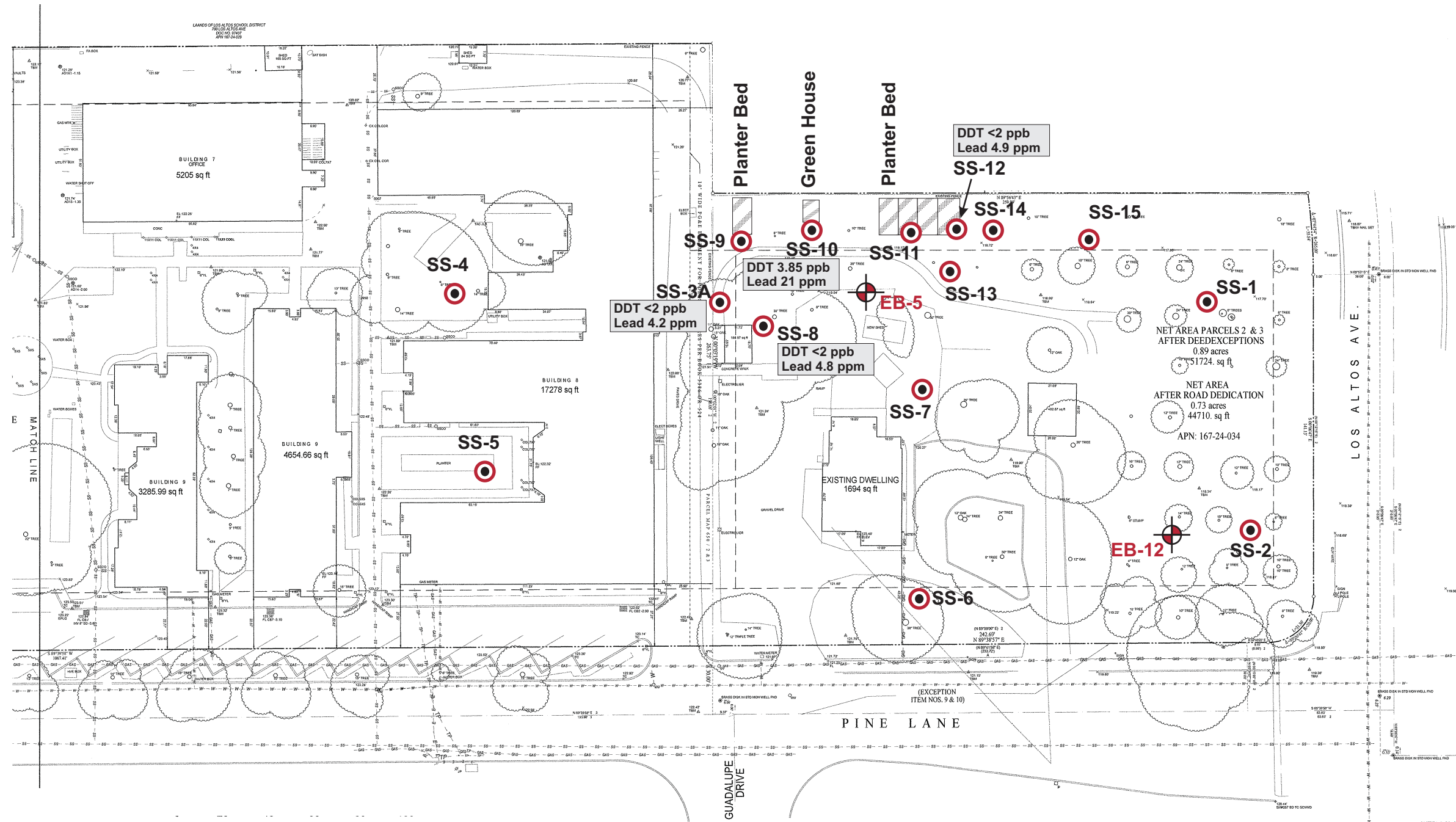
DDT  
 CHL  
 Lead  
 Lead (STLC)  
 <2 ppb



Total DDT - results in parts per billion (ppb)  
 Chlordane - results in ppb  
 results in parts per million (ppm)  
 Soluble lead - results in ppm  
 Less than the laboratory detection limit of 2 ppb



Soil Quality - 1/2 to 1 Foot  
 Pilgrim Haven Redevelopment  
 323 and 373 Pine Avenue  
 Los Altos, CA

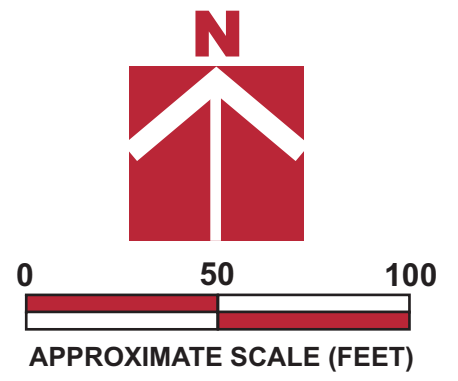




-  Approximate Location of Exploratory Boring
-  Approximate Location of Soil Sample

DDT  
CHL  
Lead  
Lead (STLC)  
<2 ppb

Total DDT - results in parts per billion (ppb)  
Chlordane - results in ppb  
results in parts per million (ppm)  
Soluble lead - results in ppm  
Less than the laboratory detection limit of 2 ppb



Soil Quality - 2 to 2-1/2 Feet

**Pilgrim Haven Redevelopment  
323 and 373 Pine Avenue  
Los Altos, CA**



Project Number  
221-1-1

Figure Number  
Figure 4

Date  
March 2008

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