# DATA SUMMARY AND CONCEPTUAL SITE MODEL
# TAYLOR WAY AND ALEXANDER AVENUE FILL SITE
# TACOMA, WASHINGTON

**JULY 1, 2008**

**FOR**
**PORT OF TACOMA**

GeoEngineers

*File No. 0454-116-00*

# Data Summary and Conceptual Site Model
# Taylor Way and Alexander Avenue Fill Site
# Tacoma, Washington
# File No. 0454-116-00

## July 1, 2008

**Prepared for:**

**Port of Tacoma**
**P.O. Box 1837**
**Tacoma, Washington 98401**

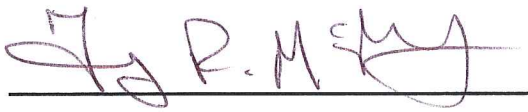
**Attention: Mr. Scott Hooton**

**Prepared by:**

**GeoEngineers, Inc.**
**1101 South Fawcett Avenue, Suite 200**
**Tacoma, Washington 98402**
**(253) 383-4940**

**GeoEngineers, Inc.**

**Chris W. Breemer, LG**
**Senior Geologist**



**Terry R. McPhetridge, LG, LHG**
**Associate, Geologist**

CWB:TRM:tt
TACO:\0\0454116\00\Finals\045411600R.doc

# TABLE OF CONTENTS

# TABLE OF CONTENTS (CONTINUED)



**List of Tables**



**List of Figures**

# TABLE OF CONTENTS (CONTINUED)



**APPENDIX**

# DATA SUMMARY AND CONCEPTUAL SITE MODEL
# TAYLOR WAY AND ALEXANDER AVENUE FILL SITE
# TACOMA, WASHINGTON
# FOR
# PORT OF TACOMA

## 1.0 INTRODUCTION

The Port of Tacoma (Port) is developing a marine terminal on the peninsula that is bounded by the Hylebos and Blair Waterways within Commencement Bay. The Port plans to acquire a number of parcels to develop the marine terminal, including several contaminated parcels that are identified by the Washington Department of Ecology (Ecology) as the Taylor Way and Alexander Avenue Fill Area (hereafter referred to as "site"). The site includes the following four properties: 1) the CleanCare property, 2) the Philip Services Corporation (PSC) property, 3) the Potter property, and 4) the ProLogis property. The site layout is shown on Figure 1.

The Port intends to negotiate an Agreed Order or other appropriate remedial mechanism with Ecology as part of the acquisition process. The Port contracted (Professional Services Agreement [PSA] No. 067291) with GeoEngineers, Inc. to begin work to compile and summarize existing data and develop a schedule and fee estimate to complete a Remedial Investigation/Feasibility Study (RI/FS) and a Cleanup Action Plan (CAP) for the site. Our scope of services included the following specific tasks.

- Compile existing data and documents describing environmental and hydrogeological conditions at the site.
- Develop a preliminary Conceptual Site Model (CSM) showing the contaminant sources, subsurface conditions, migration and exposure pathways and potential receptors at the site.
- Identify remedial alternatives that may be appropriate for the site.
- Identify data gaps (as needed) that should be addressed to define the nature and extent of site contamination and/or to support a future FS and CAP.
- Develop a schedule and fee estimate for completing a remedial investigation (RI), feasibility study (FS), and CAP for the subject site.

## 2.0 SITE BACKGROUND

The site encompasses all or portions of four properties that were occupied by the Don Oline Landfill. The entire site was constructed over tidal mudflats that were filled with dredge sand between the 1920s and the 1950s. The Don Oline Landfill began operations in the 1960s and accepted many different types of waste that include lime solvent sludge, lime waste, wood debris, demolition debris, auto fluff and dredge sands. Oil, oil sludge and oily water were also reportedly discharged on the ground surface and in unlined ponds over portions of the landfill as part of the operations at the CleanCare and PSC properties. The largest pond, "Lilyblad Pond," was located near the center of the site. The ponds have been filled. The site layout is shown on Figure 2.

We reviewed environmental investigation reports, either provided by the Port or stored by Ecology, to develop an understanding of historic land uses and the nature and extent of contamination at the site. Detailed descriptions of historic site development and past environmental investigations are presented in Appendix A and references are presented in Section 13.0.

Site uses and significant features are briefly summarized below and shown on Figure 2.

## 2.1 DON OLINE LANDFILL

The lime solvent sludge placed into the Don Oline Landfill was produced at the Hooker Chemical Corporation (Occidental) facility located at the south[1] end of the Blair Hylebos Peninsula.

The lime waste is a powdered hydrated limestone produced by Domtar Industries (now Graymont Western US Inc.) at a facility located northeast of the site, across Taylor Way. The lime waste is apparently free of solvent, based on testing conducted by PSC (2005).

The auto fluff was generated by General Metals during vehicle recycling activities. Auto fluff consists of pulverized/fragmented auto debris that typically includes wire, glass shards, upholstery, tire shreds, paint chips, metal, string, plastic and rubber intermixed with sand, gravel or silt.

Fill material from other sources was also likely placed at the site but the sources of other fill material are poorly documented.

## 2.2 CLEANCARE FACILITY

CleanCare operated a chemical waste treatment, storage and disposal (TSD) facility that encompassed approximately 4 acres near the center of the site. Waste solvents, petroleum and antifreeze were stored and recycled at the facility. Soil and groundwater have been impacted by petroleum mixtures, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals and other chemicals at the CleanCare property.

## 2.3 PHILIP SERVICES CORPORATION PROPERTY

PSC operates a chemical waste TSD facility encompassing approximately 17 acres near the northwestern portion of the site. Waste solvents, petroleum and antifreeze were stored and recycled at the facility. At least one unlined pond was used for waste oil storage and disposal. Soil and groundwater at the PSC facility have been impacted by petroleum mixtures, VOCs, SVOCs, metals and other chemicals. The most significant impacts to soil and groundwater are present: 1) near the former waste oil pond(s), 2) in the vicinity of the former process area at the southeast side of the PSC facility, and 3) in areas that include buried lime solvent waste and auto fluff.

## 2.4 PROLOGIS PROPERTY

The ProLogis property is a vacant 10.6-acre property. A wood products manufacturer and industrial warehouse company formerly operated at this property. Hazardous substances associated with the Don Oline Landfill appear primarily limited to the western portion of the property. Contaminant concentrations appear to be low on the ProLogis property, relative to other properties at the site.

## 2.5 POTTER PROPERTY

The Potter property is a 9-acre property located at the southwest corner of the site. The property has been used for light manufacturing (furniture and boats) and truck trailer maintenance. The former waste oil

[1] Compass directions in this report are referenced to "Project North", not magnetic north. Project North was established to simplify planning for a number of projects the Port of Tacoma is undertaking at the Blair Hylebos Peninsula.

pond(s) described in Section 2.3 occupied the eastern portion of the Potter property. The Potter property has been impacted by many of the same chemicals present at the PSC property with the greatest concentrations of contaminants present near the former waste oil ponds.

# 3.0 SITE GEOLOGY AND HYDROGEOLOGY

## 3.1 GEOLOGY

Four shallow geologic units are present at the site (surface fill unit, silt unit, sand unit, sand and silt unit). These geologic units are typically widespread throughout the Blair-Hylebos Peninsula (PSC, 2005). The four geologic units are discussed below from shallowest to deepest.

### *3.1.1 Surface Fill Unit*

The fill unit is highly heterogeneous and includes one or more of the following fill types: 1) gravel road base, 2) dredge spoils, 3) fill soil, 4) lime wastes, 5) auto fluff and 6) other solid debris such as wood waste and demolition debris. The thickness of the fill unit ranges between approximately 5 and 26 feet, with the greatest thickness at the western portion of the PSC property.

### *3.1.2 Silt Unit*

The silt unit is a naturally emplaced unit containing various amounts of clay, sand and organic matter consistent with deltaic deposits. The silt unit is an aquitard that appears laterally continuous and varies in thickness between approximately 1 and 10 feet at the site.

### *3.1.3 Sand Unit*

The sand unit consists of fine to medium sand with silt and abundant shell fragments. The sand unit appears laterally continuous and varies in thickness between approximately 11 and 14 feet at the site.

### *3.1.4 Sand and Silt Unit*

The sand and silt unit consists of interbedded sand and silt, with beds typically ranging in thickness from thin laminae to several inches. The sand and silt unit has been encountered beneath the PSC facility and likely underlies most, if not all of the site.

## 3.2 HYDROGEOLOGY

Groundwater is present in multiple water-bearing zones at the site. PSC (2005) identified the following water-bearing units that appear to underlie the entire site.

### *3.2.1 Shallow Aquifer*

The shallow aquifer corresponds to the surface fill unit and exhibits unconfined conditions. The saturated thickness of the shallow aquifer ranges between approximately 2 to 12 feet. The depth to groundwater ranges between approximately 2 and 10 feet. A groundwater mound is located near the center of the site. Groundwater flows radially outward from the groundwater high located near the center of the site.

### *3.2.2 Silt Aquitard*

The silt unit (described above) is an aquitard that separates the shallow aquifer from the lower deep aquifer.

### *3.2.3 Deep Aquifer*

The deep aquifer corresponds to the sand unit and the sand and silt unit. The deep aquifer exhibits semi-confined to confined conditions. Groundwater within the deep aquifer flows to the east and west and discharges to the Hylebos and Blair Waterways. The deep aquifer has an upward flow gradient.

### *3.2.4 Deeper Drinking Water Aquifer*

Multiple aquitards separate the shallow and deep aquifers from a deeper aquifer that is a regional source of potable water (PSC, 2005). Wells have not been advanced to the deeper aquifers at the site. The deeper drinking water aquifer has an upward flow gradient (PSC, 2005).

## 4.0 MAGNITUDE AND EXTENT OF CONTAMINATION

Soil and groundwater at the site are contaminated with several constituents. The primary sources of contamination include: 1) lime solvent sludge, 2) auto fluff, 3) waste oil placed in unlined ponds and on the ground surface including light non-aqueous phase liquid [LNAPL], and 4) releases at the TSD facilities. Lesser sources of contamination may include imported fill soil and other incidental releases. The approximate lateral extent of lime waste, lime solvent sludge, auto fluff and LNAPL are shown on Figure 2.

## 4.1 LIME SOLVENT SLUDGE

Lime solvent sludge generated during the manufacture of chlorinated solvents by Hooker Chemical Company was placed at the site between the late 1960s and approximately 1976. The lime solvent sludge appears to be a source of tetrachloroethene, trichloroethene, 1,1,1-trichloroethane, and vinyl chloride. Approximately 1 to 8 feet of lime solvent sludge has been encountered at the site. Most of the lime solvent sludge is present at the CleanCare property, with lesser quantities present at the PSC property near the northwest and southwest sides of the CleanCare property.

Five to 15 feet of buried lime waste (powdered hydrated limestone) that was produced during the manufacture of gypsum products, is also present at the site; however, the lime waste does not appear to be a source of hazardous substances, based on testing performed by PSC (2005). The lime waste has been encountered at the central and western portions of the PSC property, the northwestern portion of the CleanCare property, the Potter property, and a small area at the northwest side of the ProLogis property.

The lime solvent sludge and the lime waste have high pH, which can adversely affect water quality.

## 4.2 AUTO FLUFF

Auto fluff, consisting of pulverized/fragmented auto debris (wire, glass shards, upholstery, tire shreds, paint chips, metal, string, plastic and rubber) was placed at the site in the late 1960s through mid-1976. The auto fluff appears to be a source of metals and phthalates contamination. One to 10 feet of auto fluff has been encountered at the central and western portions of the PSC property, the north portion of the CleanCare property and the Potter property.

## 4.3 WASTE OIL AND LNAPL

Waste oil was discharged to the ground surface and into unlined ponds that occupied portions of the western portion of the PSC property, the western portion of the CleanCare property and the eastern portion of the Potter property. LNAPL associated with the historic waste oil discharges is present in soil in the vicinity of the former discharge areas and to the west of the former discharge areas. The waste oil

and LNAPL is generally immobile but appears to be a source of petroleum (gasoline, diesel and oil), VOC, SVOC and metals contamination.

### 4.4 TSD FACILITY RELEASES

Several releases were reported at the TSD facilities at the CleanCare and PSC properties. Reported releases are summarized in Appendix A.

### 4.5 OTHER FILL

Other fill material and debris including dredge sands, wood debris (logs, chips and sawdust), and other miscellaneous materials (bricks, metal, soil, etc.) have been placed over a large portion of the site. The dredge sands, wood debris and other miscellaneous fill materials are not a known significant source of contamination.

## 5.0 CONCEPTUAL SITE MODEL

PSC (2005) developed CSMs for the PSC property for human and ecological exposure scenarios. To conservatively evaluate the potential risks posed by contaminants, PSC identified the "most highly exposed receptor[2]" for each exposure route and calculated a corresponding cleanup level considered protective of the most highly exposed receptor. The CSMs developed for the PSC property are applicable to all four properties that comprise the greater site because contaminant conditions, the physical settings, and the current and reasonably likely future contaminant exposure scenarios are generally consistent site-wide as summarized below.

- The four properties that compose the site are generally flat and covered with asphalt, concrete, buildings, and some ruderal vegetation.
- Stormwater at all of the properties is either managed on site (ProLogis property) and/or discharged to the municipal storm drain system that conveys stormwater to the Blair Waterway, via a municipal stormwater ditch.
- The hydrogeologic system is generally consistent site-wide.
- The properties are currently zoned for industrial purposes. The properties are either currently used as industrial properties or vacant. These properties will likely be used for industrial purposes in the future.
- Nearby off-site properties are all used for industrial purposes with the exception of a wetland located adjacent to and northwest of the site.

CSMs developed by PSC (2005) for current and reasonably likely future exposure scenarios for both humans and ecological receptors are presented in Figures 3 though 5.

## 6.0 RISK SCREENING

PSC (2005) proposed screening criteria that are appropriate for identifying contaminants at the site that may pose an unacceptable risk to human and ecological health. The screening criteria were selected by: 1) identifying the receptors (human and ecological) and contaminant exposure pathways that are currently complete or are reasonably likely to be complete in the future; 2) identifying state and federal screening

[2] The most highly exposed receptor is the receptor that is likely to be more exposed to contaminants than other receptors for a specific exposure route.

criteria that correspond to the applicable exposure scenarios; and 3) selecting the most conservative applicable screening level for each contaminant that has been detected at the site.

The soil screening levels evaluated by PSC (2005) include:

- Washington Model Toxics Control Act (MTCA) Method C ingestion cleanup levels.
- Dermal contact screening levels.
- Fugitive dust screening levels.
- MTCA Method C leaching-to-groundwater screening levels.
- Soil vapor screening levels.
- Ecologically-based screening levels.

The groundwater screening levels evaluated by PSC (2005) include:

- Inhalation of volatile chemicals migrating from groundwater to indoor air.
- Direct contact (dermal contact and incidental ingestion) with groundwater during excavation activities.
- Protection of surface water.

## 7.0 CONTAMINANTS OF POTENTIAL CONCERN

Contaminants of potential concern (COPC) are hazardous substances (including petroleum mixtures) that have been detected at the site at concentrations that exceed one or more of the screening criteria identified in Section 6.0. COPC at the site include petroleum mixtures (gasoline, diesel, and oil), VOCs, SVOCs, PCBs, pesticides and metals.

Metals, gasoline- and diesel-range petroleum hydrocarbons, benzene, and chlorinated solvents (tetrachloroethene, trichloroethene and vinyl chloride) are the primary COPC at the site, based on the frequency that those compounds were detected at concentrations exceeding the screening criteria. Tables 1 through 4 list the COPC in shallow soil (0 to 6 feet bgs), deep soil (greater than 6 feet bgs) and in the shallow and deep groundwater aquifers. Table 5 lists the frequency that COPC were detected at concentrations greater than the respective screening criteria at the site.

The greatest concentrations of COPC in soil and groundwater are generally present in the vicinity of the former waste oil discharge areas, lime solvent sludge, auto fluff and chemical storage areas at the PSC and CleanCare properties and the Potter property. COPC were detected at generally lower concentrations at the ProLogis property as compared to the PSC and CleanCare properties.

Soil and groundwater sample locations from the previous investigations are shown on Figures 6 through 8. The nature and extent of contamination in soil and groundwater for all COPC at the site are shown on Figures 9 through 63.

## 8.0 FATE AND TRANSPORT OF COPC

PSC evaluated the long-term fate of COPC and the potential that COPC will migrate off site in the future. PSC's study was focused on the PSC property and to a lesser extent the Potter and CleanCare properties. PSC's conclusions are likely valid for the greater site because the geologic/hydrogeologic/geochemical

conditions and the types and concentrations of COPC appear to be similar site-wide. PSC (2005) concluded the following.

- Petroleum mixtures in soil are generally immobile and biodegradation is likely occurring.
- Chlorinated organic compounds are not migrating from source areas in the central portion of the site and are likely undergoing reductive dechlorination.
- SVOCs exhibit very low mobility in the environment and degrade under aerobic and anaerobic conditions indicating that SVOCs are unlikely to migrate significant distances from source areas (in auto fluff).
- The fate of metals in groundwater is difficult to predict due to the lack of analytical data for dissolved metals in groundwater and the complexity of geochemical conditions at the site. PSC concluded that arsenic does not appear to be migrating significantly to off-site areas.
- PCBs and pesticides exhibit low mobility and are not expected to migrate off site.

In summary, most COPC are not expected to significantly migrate off site due to natural limitations on the mobility of contaminants and natural attenuation and biodegradation processes. The mobility of metals in groundwater is unclear due to the geochemical complexity of metals in natural systems and due to the lack of dissolved metals data. Additional groundwater analytical data for metals may be sufficient to demonstrate that most of the metals detected in groundwater are a result of naturally occurring metals in the subsurface.

# 9.0 DATA GAPS

The magnitude and extent of contamination in soil and groundwater at the site were generally defined during previous investigations; however, some data gaps remain. These data gaps are summarized below.

## 9.1 DATA GAP 1 – MAGNITUDE AND EXTENT OF SOIL CONTAMINATION

**Data Gap –** Extensive soil testing has been conducted that provides a general understanding of the horizontal and vertical extent of contamination at the site. The existing soil dataset is likely sufficient for evaluating human and ecological risk at the site and for completing a FS (with the exception of the data gaps described below); however, the existing dataset may be inadequate for preparing a CAP and implementing a remedy. Additionally, it may be difficult to plan for some components of site cleanup and redevelopment (i.e., site grading and groundwater control) without more information about the vertical distribution of contaminants.

Specific data gaps include the following.

### *9.1.1 Petroleum Hydrocarbons*

- The extent of diesel and oil contamination in soil has not been defined to the east, south and west of sample point SRI-20 and to the south of sample point SRI-5, located on the PSC property (see Figures 6, 35 and 37).
- The extent of diesel and oil contamination in soil has not been adequately defined at the south side of the PSC property in the vicinity of monitoring wells CTMW-5 and CTMW-20 (see Figures 6, 35 and 37). This area is located near the boundary of the subject site, in the vicinity of past oil dumping areas.

### *9.1.2 Tetrachloroethene*

- The extent of tetrachloroethene in soil has not been adequately defined near the northwest side of the CleanCare property. For example, tetrachloroethene was detected in soil from sample locations SRI-1 and CTMW-17 at concentrations of 9,700 to 11,800 (micrograms per kilogram (µg/kg) (approximately 200 times the screening criterion); but, little data are available to define the northwestern, northeastern, and southwestern extent of tetrachloroethene contamination in soil in that area (see Figures 7 and 10).

### *9.1.3 Metals*

- Limited evaluation of metals in deep (greater than 6 feet) soil has been conducted at the southwestern portion of the CleanCare property, near areas where metals have been detected in shallow soil or in deep soil on adjacent properties at concentrations exceeding screening criteria. For example, arsenic is present in shallow soil (less than 6 feet) at concentrations exceeding the screening criteria (background concentration) at much of the CleanCare property (see Figure 13); however, little arsenic data are available for deep soil at the CleanCare property. Groundwater in that area also contains arsenic at concentrations that consistently exceed the screening criterion.

**Remedy –** Collect and analyze a number of soil and groundwater samples from locations where soil data gaps remain, including portions of the ProLogis property, the CleanCare property, and the PSC property.

## 9.2 DATA GAP 2 – GROUNDWATER QUALITY CHARACTERIZATION

**Data Gap –** The existing monitoring well network is inadequate to evaluate whether, and to what extent, contaminants are migrating off site in some areas. For example, 1,4-dichlorobenzene (Figure 56), benzene (Figure 58), gasoline (Figure 55) and diesel (Figure 54) have been detected in groundwater at concentrations exceeding the screening criteria in monitoring well CCW-7B, located at the southeastern boundary of the CleanCare property; however, there are no monitoring points southeast of monitoring well CCW-7B to evaluate whether contaminants are migrating off site. Similarly, diesel is widespread in groundwater at the northwestern portion of the PSC property. There are no groundwater monitoring sample points located along the southwest boundary of the PSC property between monitoring wells CTMW-14 and CTMW-24.

Groundwater monitoring has been performed by different parties at various portions of the site at different times. As a result, monitoring has been inconsistent with respect to individual well sampling schedules, constituents analyzed and reporting limits. A systematic groundwater monitoring program is recommended to better document the extent of contamination and for monitoring natural attenuation.

**Remedy –** Install two to three groundwater monitoring wells near the site boundaries. Specifically, monitoring wells should be installed at the southern boundary of the PSC property, near the western boundary of the ProLogis property and near the southeast end of the stormwater detention pond.

Implement a comprehensive quarterly groundwater monitoring program. The monitoring program should be implemented site-wide and include analysis of all COPC, groundwater physical parameters (i.e., pH, Eh, conductivity, dissolved oxygen, temperature and turbidity), groundwater levels, and natural attenuation parameters (*i.e.*, total organic carbon, sulfate/sulfide, ferrous/ferric iron, methane/ethene/ethane, nitrate/nitrite, and bacteria species counts) at selected locations.

## 9.3 DATA GAP 3 – GEOCHEMICAL CHARACTERIZATION

**Data Gap –** Metals have been detected at concentrations greater than the respective screening criteria in groundwater within extensive areas of the site commonly absent of obvious sources of metals contamination. PSC (2005) reported that metals detected in some groundwater samples are likely the result of turbidity in water samples and that the metals are naturally occurring. Additional information is necessary to confirm that the elevated metals concentrations in groundwater (outside of known metals source areas) are a result of naturally occurring metals in soil because it is not necessary to remediate groundwater that contains elevated concentrations of metals when those metals are derived from naturally occurring sources (rather than anthropogenic sources).

**Remedy –** Integrate a geochemical analytical program into the proposed quarterly groundwater monitoring program to obtain additional data to evaluate the effect of naturally occurring metals in soil on groundwater quality. Specifically, collect paired filtered and non-filtered groundwater samples and analyze water samples for aluminum and iron to evaluate geochemical correlations indicative of naturally occurring metals.

## 9.4 DATA GAP 4 – VAPOR INTRUSION RISK

**Data Gap –** COPCs in soil and groundwater include a number of VOCs. The risks that VOCs pose to human health via inhalation of indoor air subject to vapor intrusion will depend on the location of future structures to VOC sources.

**Remedy –** Determine proximity of VOC sources to planned structures. Assess human health risk associated with vapor exposure or recommend engineering controls to prevent such exposures from occurring.

# 10.0 POTENTIAL REMEDIAL ALTERNATIVES

The magnitude and extent of contamination at the site have been mostly defined although some data gaps remain as discussed in Section 9.0. Current and future contaminant exposure scenarios are also generally understood (Section 5.0). Therefore, it is possible to present a preliminary description of some remedial alternatives that may be suitable for protection of human and ecological health and are compatible with the Port's future development plans for the site.

## 10.1 SOIL

COPC in soil pose a potential risk to people and ecological receptors that are exposed via direct contact, ingestion, inhalation of fugitive dust, volatilization to indoor or outdoor air with subsequent inhalation and leaching to groundwater.

### *10.1.1 Direct Contact, Ingestion and Inhalation of Fugitive Dust*

The Port plans to develop a marine terminal at the site. The terminal area will be primarily paved with asphalt or asphaltic concrete although small landscaped areas may be established. The pavement will function as a remedial cap if properly designed, preventing direct contact, ingestion and inhalation of fugitive dust for industrial workers, site visitors and ecological receptors. The remedial cap will also minimize rainwater infiltration reducing the potential for COPC to mobilize in groundwater. Construction and utility workers may still be exposed to contaminants in areas beneath the remedial cap. The risk to construction and utility workers can be managed by utilizing properly trained workers and implementing a contaminated media management plan (CMMP).

### *10.1.2 Vapor Intrusion*

A properly engineered asphalt/concrete cap will reduce the risks of vapor intrusion. It may be possible to construct buildings outside of areas affected by VOCs that pose a vapor intrusion risk. Additional measures may be necessary to manage vapor intrusion risks. Soil gas sampling or modeling may be sufficient to demonstrate that vapor intrusion is not a significant risk at the site. Alternative vapor mitigation systems (vapor barriers or sub-slab ventilation systems) could be installed beneath buildings that will be occupied by workers.

### *10.1.3 Leaching to Groundwater*

COPC in soil are degrading groundwater quality at the site. It is impracticable to remove all of the COPC that are degrading groundwater. Groundwater at the site is not a source of drinking water and it is unlikely that site groundwater will be utilized as a drinking water source in the future. It appears that significant concentrations of COPC are not migrating off site. Therefore, the risks posed by COPC leaching from soil to groundwater could be managed by: 1) implementing an institutional control precluding the use of shallow groundwater as a source of drinking water; and 2) implementing a long-term groundwater monitoring program. The purposes of the program would be to confirm that significant concentrations of COPC are not migrating.

If data indicate that significant migration is occurring, it may be necessary to conduct limited source removal, install a barrier wall and/or install a groundwater extraction and treatment system.

## 10.2 GROUNDWATER

We anticipate that groundwater contamination can be managed by implementing institutional controls combined with a groundwater monitoring program, and the installation of barrier materials in preferential pathways (i.e., deep utility corridors) as necessary, and possibly focused in-situ treatment of selected COPC.

Groundwater monitoring is necessary to determine whether COPC are migrating off site and for evaluating natural attenuation processes. Barrier materials are necessary to block preferential pathways to reduce the lateral extent of contamination in groundwater. In-situ treatment may include one or more of the following approaches: 1) injection of organic materials to stimulate reductive dechlorination of chlorinated hydrocarbons; 2) installation of permeable reactive barrier(s) near one or more hot spots; and 3) other in-situ remedies. The location and scope of any in-situ treatment would be selected after the remedial investigation is complete.

Planned development will include covering most of the site with asphalt and/or concrete pavement that will significantly reduce the infiltration of groundwater.

# 11.0 SUMMARY AND CONCLUSIONS

The Taylor Way and Alexander Avenue Fill Area is impacted by many chemical contaminants, including petroleum hydrocarbons, VOCs, SVOCs, metals, PCBs, phthalates and pesticides. The primary COPC at the site are metals, gasoline- and diesel-range petroleum hydrocarbons, and VOCs (tetrachloroethene, trichloroethene and vinyl chloride). COPC were detected at concentrations greater than the screening criteria in soil and groundwater contamination in the vicinity of source areas containing auto fluff, lime solvent waste and LNAPL. The thickest deposits of contaminated fill appear to be generally centered on the PSC and CleanCare properties.

Groundwater in the shallow and intermediate water-bearing units is contaminated by many of the contaminants detected in soil at the site. The contaminated fill material appears to serve as an ongoing source of contamination to groundwater.

Human exposure to contaminants in soil and/or groundwater can most likely occur through direct dermal contact, inhalation of vapors or particulates and incidental ingestion. The highest exposures would likely be associated with construction workers, or future workers following property redevelopment.

Future development plans include installation of asphalt/concrete pavement over a majority or the entire site. The planned pavement will form a semi-impermeable cover that will: 1) reduce the potential for human or ecological contact with the contaminants, and 2) reduce stormwater infiltration and the potential for off-site migration of contaminants in groundwater.

There are a number of data gaps that should be addressed as part of the RI/FS process and for site redevelopment planning purposes. Most significantly, there is a lack of information about the extent, types, and quality of fill at the site and the types and magnitude of contamination in some areas. The data gaps can be addressed by conducting further explorations at the site.

## 12.0 LIMITATIONS

We have prepared this report for use by the Port of Tacoma. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. No warranty or other conditions express or implied should be understood.

## 13.0 REFERENCES


CH2M Hill, April, 2004. "Annual Groundwater Data Analysis Report."

CH2M Hill, May 2000. "Tacoma Facility Groundwater and Soil Investigation for Emerald Petroleum Services, Inc."

Conestoga-Rovers & Associates Limited, February 1984. "Tacoma Off-Plant Disposal Sites Groundwater Investigation."

CH2M Hill, August 16, 2001. "Probe Rig Soil and Groundwater Sampling Results for Bioswale Area, Emerald Services, Inc., Tacoma."

Creative Environmental Technologies, Inc., December 13, 1999. "Report of Release and Cleanup of Sol-Pro Diesel Fuel Release."

Creative Environmental Technologies, Inc., April 17, 2000. "Sol-Pro Remedial Investigation Report-Draft"

Ecology and Environment, Inc., October 2, 2000. "CleanCare Facility, Subsurface Soil Data."

Floyd Snider, October 3, 2006. "ProLogis Taylor Way Property Remedial Investigation."

Floyd Snider, November 1, 2007. "Educator Building Phase I Environmental Assessment."

Floyd Snider, November 1, 2007. "Freeway Containers Phase I Environmental Assessment."

Floyd Snider, November 1, 2007. "Potter Property (Handan Containers) Phase I Environmental Assessment."

Floyd Snider, November 1, 2007. "Handan Containers Phase I Environmental Assessment".

Floyd Snider, November 1, 2007. "Rangar Building Phase I Environmental Assessment".

GeoMatrix, August 2005. "Draft Feasibility Study Work Plan, Philip Services Corporation, Tacoma Facility, Tacoma, Washington."

Pacific Groundwater Group, July 13, 1995. "Soil Sampling Below New Building Foundation Pad."

Philip Services Corporation, October 10, 2007. "Quarterly Progress Report July-September 2007."

Science Applications International Corporation, February 1990. "RCRA Facility Assessment PR/VSI Report".

Tacoma/Pierce County Health Department, February 2002. "Site Hazard Assessment Report."

U.S. Environmental Protection Agency, December 2000. "Superfund Fact Sheet: CleanCare."

Washington Department of Ecology, March 4, 1982. "Analysis of Water Samples from Commencement Bay, Tacoma and International Paper, Longview, Washington."

Washington Department of Ecology, November 8, 1989. "TSD Alley Baseline Information."

# TABLE 1

## SUMMARY OF CHEMICALS OF POTENTIAL CONCERN (COPCs) - SHALLOW SOIL[1]

TAYLOR WAY AND ALEXANDER AVENUE FILL SITE
TACOMA, WASHINGTON

| COPC | Property | | | | PSC Screening Criteria[2] (mg/kg) | Basis for Screening Criteria[3] |
|---|---|---|---|---|---|---|
| | Philip Service Corporation (PSC) | ProLogis | Potter | CleanCare | | |
| **Petroleum Hydrocarbons** | | | | | | |
| Gasoline Range | X | | | X | 30 | MTCA Method A Industrial |
| Diesel-Range | X | | | X | 2,000 | MTCA Method A Industrial |
| Oil-Range | X | X | X | X | 2,000 | MTCA Method A Industrial |
| **Metals** | | | | | | |
| Arsenic | X | X | | X | 7.3 | Natural background |
| Barium | X | X | X | X | 102 | Protection of ecological receptors |
| Cadmium | X | X | X | X | 5.52 | Protection of groundwater |
| Chromium | X | X | X | X | 48.2 | Natural background |
| Copper | X | X | X | X | 36.4 | Natural background |
| Cyanide | X | | | | 10.1 | Protection of groundwater |
| Lead | X | X | X | X | 24 | Natural background |
| Manganese | X | | | | 1,500 | Protection of ecological receptors |
| Mercury | X | X | | X | 2.09 | Protection of groundwater |
| Nickel | X | | X | X | 48.2 | Natural background |
| Selenium | X | | | X | 0.5 | Practical quantitation limit |
| Silver | X | | | | 4.41 | Protection of groundwater |
| Zinc | X | X | X | X | 101 | Protection of groundwater |
| **VOCs** | | | | | | |
| Benzene | X | | | | 0.128 | Protection of groundwater |
| 1,1 Dichloroethene | | | | | 0.0358 | Protection of groundwater |
| Hexachlorobutadiene | | | | | 200 | Protection of human health |
| Trichloroethene (TCE) | X | | | | 0.368 | Protection of groundwater |
| Tetrachloroethene (PCE) | X | | | X | 0.053 | Protection of groundwater |
| Pentachlorophenol (PCP) | | X | | | 0.792 | Protection of groundwater |
| Toluene | | | | X | 15.5 | Protection of groundwater |
| Vinyl Chloride | | X | | | 0.0630 | Protection of groundwater |
| **SVOCs** | | | | | | |
| bis(2-Ethylhexyl)-phthalate | X | | X | | 22.3 | Protection of groundwater |
| Di-n-butyl phthalate | X | | | | 0.865 | Protection of ecological receptors |
| 2-Methylnaphthalene | X | | | X | 27.7 | Protection of groundwater |
| N-Nitrosodi-phenylamine | X | | | | 0.33 | Practical quantitation limit |
| **Pesticides/PCBs** | | | | | | |
| Aldrin | X | | | | 0.0391 | Protection of groundwater |
| Aroclor 1242 | X | | | X | 0.025 | Practical quantation limit |
| Aroclor 1254 | X | | | X | 0.65 | Protection of ecological receptors |
| Aroclor 1260 | X | | | X | 0.0375 | Protection of groundwater |
| Dieldrin | X | | | | 0.0103 | Protection of groundwater |
| Endrin | X | | | | 0.0132 | Protection of groundwater |

Notes:

[1] Shallow soil includes the interval between 0 and 6 feet below ground surface.

[2] Presented in Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

mg/kg = milligram per kilogram

VOCs = volatile organic compounds

SVOCs = semivolatile organic compounds

PCBs = polychlorinated biphenyls

X = COPCs

# TABLE 2

## SUMMARY OF CHEMICALS OF POTENTIAL CONCERN (COPCs) - DEEP SOIL[1]

TAYLOR WAY AND ALEXANDER AVENUE FILL SITE
TACOMA, WASHINGTON

| COPC | Property | | | | PSC Screening Criteria[2] (mg/kg) | Basis for Screening Criteria[2] |
|---|---|---|---|---|---|---|
| | Philip Service Corporation (PSC) | Prologis | Potter | CleanCare | | |
| **Petroleum Hydrocarbons** | | | | | | |
| Gasoline Range | X | | X | X | 30 | MTCA Method A Industrial |
| Diesel-Range | X | | X | X | 2,000 | MTCA Method A Industrial |
| Oil-Range | X | | X | X | 2,000 | MTCA Method A Industrial |
| **Metals** | | | | | | |
| Arsenic | X | | X | X | 7.3 | Natural background |
| Barium | X | | X | | 102 | Protection of ecological receptors |
| Cadmium | X | | X | | 5.52 | Protection of groundwater |
| Chromium | X | | | | 48.2 | Natural background |
| Copper | X | | X | X | 36.4 | Natural background |
| Cyanide | | | | | 10.1 | Protection of groundwater |
| Lead | X | | X | X | 24 | Natural background |
| Manganese | X | | | | 1,500 | Protection of ecological receptors |
| Mercury | | | | | 2.09 | Protection of groundwater |
| Nickel | X | | X | | 48.2 | Natural background |
| Selenium | X | | X | X | 0.5 | Practical quantitation limit |
| Silver | | | | | 4.41 | Protection of groundwater |
| Zinc | X | | X | X | 101 | Protection of groundwater |
| **VOCs** | | | | | | |
| Benzene | X | | X | X | 0.128 | Protection of groundwater |
| 1,1 Dichloroethene | | | | X | 0.0358 | Protection of groundwater |
| Hexachlorobutadiene | X | | | X | 200 | Protection of human health |
| Trichloroethene (TCE) | X | | | X | 0.368 | Protection of groundwater |
| Tetrachloroethene (PCE) | | | | X | 0.053 | Protection of groundwater |
| Toluene | | | | X | 15.5 | Protection of groundwater |
| Vinyl Chloride | | | | X | 0.063 | Protection of groundwater |
| **SVOCs** | | | | | | |
| bis(2-Ethylhexyl)-phthalate | X | | | | 22.3 | Protection of groundwater |
| Di-n-butyl phthalate | X | | | | 0.865 | Protection of ecological receptors |
| N-Nitrosodi-phenylamine | X | | | | 0.33 | Practical quantitation limit |
| **Pesticides/PCBs** | | | | | | |
| Aldrin | | | | | 0.0391 | Protection of groundwater |
| Aroclor 1242 | X | | | | 0.025 | Practical quantation limit |
| Aroclor 1254 | | | | | 0.65 | Protection of ecological receptors |
| Aroclor 1260 | X | | | | 0.0375 | Protection of groundwater |
| Dieldrin | | | | | 0.0103 | Protection of groundwater |
| Endrin | | | | | 0.0132 | Protection of groundwater |

Notes:

[1] Deep soil includes soil more than 6 feet below ground surface

[2] Presented in Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

mg/kg = milligram per kilogram

VOCs = volatile organic compounds

SVOCs = semivolatile organic compounds

PCBs = polychlorinated biphenyls

x = COPCs

# TABLE 3
# SUMMARY OF CHEMICALS OF POTENTIAL CONCERN (COPCs) - SHALLOW GROUNDWATER
## TAYLOR WAY AND ALEXANDER AVENUE FILL SITE
## TACOMA, WASHINGTON

| COPC | Property | | | | PSC Screening Criteria[2] (µg/l) | Basis for Screening Criteria[2] |
|---|---|---|---|---|---|---|
| | Philip Service Corporation (PSC) | Prologis | Potter | CleanCare | | |
| **Petroleum Hydrocarbons** | | | | | | |
| Gasoline Range | X | X | X | X | 800 | Protection of groundwater |
| Diesel-Range | X | | X | X | 500 | Protection of groundwater |
| Oil-Range | X | | X | X | 500 | Protection of groundwater |
| **Metals** | | | | | | |
| Arsenic | X | X | X | X | 20 | Practical quantitation limit |
| Barium | | | | X | 105,000 | Protection of surface water |
| Cadmium | X | | | | 40 | Practical quantitation limit |
| Chromium | X | | X | X | 11 | Protection of surface water |
| Copper | X | | X | X | 10 | Practical quantitation limit |
| Lead | X | X | X | X | 10 | Practical quantitation limit |
| Mercury | X | | | X | 2 | Practical quantitation limit |
| Nickel | X | X | X | X | 10 | Practical quantitation limit |
| Selenium | X | | X | X | 20 | Practical quantitation limit |
| Silver | | | | X | 2 | Practical quantitation limit |
| Zinc | X | X | X | X | 81 | Protection of surface water |
| **VOCs** | | | | | | |
| Benzene | X | X | | X | 22.7 | Protection of surface water |
| Chloromethane | X | | | | 0.852 | Protection of surface water |
| 1,1 Dichloroethene | X | | | X | 5 | Practical quantitation limit |
| 1,4-Dichlorobenzene | X | | | X | 10 | Practical quantitation limit |
| Trichloroethene (TCE) | X | | | X | 56 | Protection of surface water |
| Tetrachloroethene (PCE) | X | | | X | 5 | Practical quantitation limit |
| 1,2,4-Trimethylbenzene | X | | | | 3,870 | Protection of on-site groundwater exposure |
| Vinyl chloride | X | | | X | 10 | Practical quantitation limit |
| **SVOCs** | | | | | | |
| bis(2-Ethylhexyl)-phthalate | X | X | | | 10 | Practical quantitation limit |
| Di-n-octyl phthalate | X | | | | 10 | Practical quantitation limit |
| **Pesticides/PCBs** | | | | | | |
| Aldrin | X | | | | 0.04 | Practical quantitation limit |
| Aroclor 1242 | | | | | 0.65 | Practical quantitation limit |
| Aroclor 1254 | | | | | 1.3 | Practical quantitation limit |
| Aroclor 1260 | X | | | | 0.006 | Protection of surface water |
| Dieldrin | | | | | 0.02 | Practical quantitation limit |
| Endrin | | | | | 0.06 | Practical quantitation limit |
| Lindane | X | | | | 0.0384 | Protection of surface water |

Notes:

[1] Shallow groundwater is less than 12 feet below ground surface.

[2] Presented in Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

µg/l = microgram per liter

VOCs = volatile organic compounds

SVOCs = semivolatile organic compounds

PCBs = polychlorinated biphenyls

X = COPCs

# TABLE 4
# SUMMARY OF CHEMICALS OF POTENTIAL CONCERN (COPCs) - DEEP GROUNDWATER
## TAYLOR WAY AND ALEXANDER AVENUE FILL SITE
## TACOMA, WASHINGTON

| COPC | Property | | | | PSC Screening Criteria[2] (µg/l) | Basis for Screening Criteria[2] |
|---|---|---|---|---|---|---|
| | Philip Service Corporation (PSC) | Prologis | Potter | CleanCare | | |
| **Petroleum Hydrocarbons** | | | | | | |
| Gasoline Range | | | | X | 800 | Protection of groundwater |
| Diesel-Range | X | | X | X | 500 | Protection of groundwater |
| Oil-Range | X | | X | X | 500 | Protection of groundwater |
| **Metals** | | | | | | |
| Arsenic | X | X | | X | 20 | Practical quantitation limit |
| Cadmium | | | | | 40 | Practical quantitation limit |
| Chromium | X | | X | X | 11 | Protection of surface water |
| Copper | X | | X | X | 10 | Practical quantitation limit |
| Lead | X | | X | X | 10 | Practical quantitation limit |
| Mercury | | | | X | 2 | Practical quantitation limit |
| Nickel | X | | X | X | 10 | Practical quantitation limit |
| Selenium | X | | X | | 20 | Practical quantitation limit |
| Silver | | | | X | 2 | Practical quantitation limit |
| Zinc | X | | X | X | 81 | Protection of surface water |
| **VOCs** | | | | | | |
| Benzene | | | | X | 22.7 | Protection of surface water |
| **SVOCs** | | | | | | |
| bis(2-Ethylhexyl)-phthalate | X | X | | | 10 | Practical quantitation limit |
| Pentachlorophenol | | X | | | 50 | Practical quantitation limit |
| **Pesticides/PCBs** | | | | | | |
| Aldrin | | | | | 0.04 | Practical quantitation limit |
| Aroclor 1242 | | | | | 0.65 | Practical quantitation limit |
| Aroclor 1254 | | | | | 1.3 | Practical quantitation limit |
| Aroclor 1260 | | | | | 0.006 | Protection of surface water |
| Dieldrin | | | | | 0.02 | Practical quantitation limit |
| Endrin | | | | | 0.06 | Practical quantitation limit |

Notes:

[1] Deep groundwater is more than 12 feet below ground surface.

[2] Presented in Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

µg/l = microgram per liter

VOCs = volatile organic compounds

SVOCs = semivolatile organic compounds

PCBs = polychlorinated biphenyls

X = COPCs

TACO:\0\0454116\00\Finals\045411600Tables1_8.xls

# TABLE 5
## SUMMARY OF CHEMICAL DATA - SHALLOW SOIL[1]
### TAYLOR WAY AND ALEXANDER AVENUE FILL SITE
### TACOMA, WASHINGTON

| Analyte | Units | Screening Level | Minimum Concentration | Maximum Concentration | Average Concentration | Number of Exceedances | Total Samples Tested |
|---|---|---|---|---|---|---|---|
| **Metals** | | | | | | | |
| Arsenic | mg/kg | 7.3 | 7.4 | 5,400 | 131 | 64 | 241 |
| Barium | mg/kg | 102 | 103 | 20,000 | 1,202 | 42 | 233 |
| Cadmium | mg/kg | 5.52 | 5.7 | 146 | 25 | 33 | 262 |
| Chromium | mg/kg | 48.2 | 48.7 | 3,600 | 240 | 59 | 309 |
| Copper | mg/kg | 36.4 | 37.1 | 39,400 | 806 | 65 | 250 |
| Cyanide | mg/kg | 10.1 | 16 | 16 | 16 | 1 | 32 |
| Lead | mg/kg | 24 | 25 | 44,800 | 1,041 | 104 | 275 |
| Manganese | mg/kg | 1,500 | 9,040 | 9,040 | 9,040 | 1 | 22 |
| Mercury | mg/kg | 2.09 | 2.5 | 12 | 6 | 7 | 197 |
| Nickel | mg/kg | 48.2 | 49 | 2,840 | 338 | 19 | 261 |
| Selenium | mg/kg | 0.5 | 0.6 | 45 | 10 | 10 | 86 |
| Silver | mg/kg | 4.41 | 4.9 | 11 | 7 | 5 | 85 |
| Zinc | mg/kg | 101 | 105 | 89,900 | 1,997 | 69 | 293 |
| **Polychlorinated Biphenyls** | | | | | | | |
| Aroclor 1242 | mg/kg | 0.025 | 9.19 | 9.19 | 9.2 | 1 | 30 |
| Aroclor 1254 | mg/kg | 0.65 | 2.05 | 5.8 | 4.1 | 4 | 34 |
| Aroclor 1260 | mg/kg | 0.0375 | 0.048 | 1.94 | 0.521 | 8 | 34 |
| **Pesticides** | | | | | | | |
| Aldrin | mg/kg | 0.0391 | 0.31 | 0.31 | 0.310 | 1 | 10 |
| Dieldrin | mg/kg | 0.0103 | 0.35 | 0.35 | 0.350 | 1 | 10 |
| Endrin | mg/kg | 0.0132 | 0.25 | 0.25 | 0.250 | 1 | 10 |
| **Semivolatile Organic Compounds** | | | | | | | |
| Bis(2-ethylhexyl)phthalate | mg/kg | 22.3 | 33.2 | 240 | 128 | 6 | 128 |
| Di-n-butyl phthalate | mg/kg | 0.865 | 1 | 8 | 3.8 | 7 | 99 |
| N-Nitrosodiphenylamine | mg/kg | 0.33 | 0.69 | 0.69 | 0.690 | 1 | 97 |
| **Petroleum Mixtures** | | | | | | | |
| Diesel | mg/kg | 2000 | 2,300 | 45,000 | 9,725 | 8 | 85 |
| Gasoline | mg/kg | 30 | 71 | 3,300 | 730 | 12 | 72 |
| **Volatile Organic Compounds** | | | | | | | |
| Benzene | mg/kg | 0.128 | 0.15 | 6.6 | 1.7 | 5 | 153 |
| Tetrachloroethene | mg/kg | 0.053 | 0.63 | 79.5 | 12.4 | 7 | 153 |
| Toluene | mg/kg | 15.5 | 32.8 | 77.6 | 55 | 2 | 154 |
| Trichloroethene | mg/kg | 0.368 | 19.1 | 19.1 | 19 | 1 | 153 |

Notes:

[1] Shallow Soil = Less than 6 feet below ground surface.

mg/km = milligram per kilogram

TACO:\0\0454116\00\Finals\045411600Tables1_8.xls

# TABLE 6

## SUMMARY OF CHEMICAL DATA - DEEP SOIL[1]

TAYLOR WAY AND ALEXANDER AVENUE FILL SITE
TACOMA, WASHINGTON

| Analyte | Units | Screening Level | Minimum Concentration | Maximum Concentration | Average Concentration | Number of Exceedances | Total Samples Tested |
|---|---|---|---|---|---|---|---|
| **Metals** | | | | | | | |
| Arsenic | mg/kg | 7.3 | 8.36 | 150 | 30 | 16 | 54 |
| Barium | mg/kg | 102 | 120 | 1,510 | 329 | 10 | 30 |
| Cadmium | mg/kg | 5.52 | 6.93 | 59 | 22.0 | 6 | 55 |
| Chromium | mg/kg | 48.2 | 76.6 | 136 | 106 | 2 | 55 |
| Copper | mg/kg | 36.4 | 41 | 808 | 145 | 16 | 53 |
| Lead | mg/kg | 24 | 24.4 | 1,780 | 291 | 26 | 55 |
| Manganese | mg/kg | 1,500 | 2270 | 2,270 | 2,270 | 1 | 22 |
| Mercury | mg/kg | 2.09 | 3.2 | 3.2 | 3.200 | 1 | 54 |
| Nickel | mg/kg | 48.2 | 52 | 444 | 212 | 4 | 54 |
| Selenium | mg/kg | 0.5 | 0.527 | 12 | 2.2 | 10 | 34 |
| Zinc | mg/kg | 101 | 110 | 4,200 | 836 | 18 | 54 |
| **Polychlorinated Biphenyls** | | | | | | | |
| Aroclor 1260 | mg/kg | 0.0375 | 4.1 | 4.1 | 4.1 | 1 | 13 |
| **Semivolatile Organic Compounds** | | | | | | | |
| Bis(2-ethylhexyl)phthalate | mg/kg | 22.3 | 120 | 130 | 125 | 2 | 26 |
| Di-n-butyl phthalate | mg/kg | 0.865 | 2.3 | 2.3 | 2.3 | 1 | 23 |
| N-Nitrosodiphenylamine | mg/kg | 0.33 | 1 | 1 | 1.0 | 1 | 21 |
| **Petroleum Mixtures** | | | | | | | |
| Diesel | mg/kg | 2,000 | 2,460 | 33,000 | 11,944 | 5 | 26 |
| Gasoline | mg/kg | 30 | 39.8 | 2,000 | 740 | 6 | 26 |
| **Volatile Organic Compounds** | | | | | | | |
| Benzene | mg/kg | 0.128 | 0.22 | 0.34 | 0.280 | 2 | 43 |
| Tetrachloroethene | mg/kg | 0.053 | 0.089 | 12 | 4.7 | 3 | 43 |
| Toluene | mg/kg | 15.5 | 20 | 20 | 20 | 1 | 43 |

Notes:

[1] Deep Soil = More than 6 feet below ground surface.

mg/kg = milligram per kilogram

TACO:\0\0454116\00\Finals\045411600Tables1_8.xls

# TABLE 7
# SUMMARY OF CHEMICAL DATA - SHALLOW GROUNDWATER[1]
## TAYLOR WAY AND ALEXANDER AVENUE FILL SITE
## TACOMA, WASHINGTON

| Analyte | Units | Screening Level | Minimum Concentration | Maximum Concentration | Average Concentration | Number of Exceedances | Total Samples Tested |
|---|---|---|---|---|---|---|---|
| **Metals** | | | | | | | |
| Arsenic | ug/L | 20 | 20.3 | 5,680 | 188 | 91 | 501 |
| Cadmium | ug/L | 40 | 61.2 | 257 | 164 | 3 | 498 |
| Chromium | ug/L | 11 | 11.1 | 719 | 107 | 80 | 499 |
| Copper | ug/L | 10 | 10.6 | 1,500 | 200 | 72 | 498 |
| Lead | ug/L | 10 | 10.6 | 23,800 | 592 | 105 | 499 |
| Mercury | ug/L | 2 | 2.9 | 6 | 5 | 2 | 486 |
| Nickel | ug/L | 10 | 10.1 | 6,790 | 257 | 188 | 500 |
| Selenium | ug/L | 20 | 23.9 | 57 | 35 | 19 | 369 |
| Silver | ug/L | 2 | 2.2 | 30 | 17 | 4 | 406 |
| Zinc | ug/L | 81 | 90.5 | 204,000 | 6,176 | 85 | 504 |
| **Polychlorinated Biphenyls** | | | | | | | |
| Aroclor 1242 | ug/L | 0.025 | 4.6 | 5.62 | 5.110 | 2 | 147 |
| Aroclor 1254 | ug/L | 1.3 | 1.69 | 2.44 | 2.065 | 2 | 147 |
| Aroclor 1260 | ug/L | 0.006 | 0.12 | 2.34 | 0.791 | 4 | 147 |
| **Pesticides** | | | | | | | |
| Aldrin | ug/L | 0.04 | 0.0638 | 0.262 | 0.163 | 2 | 142 |
| **Semivolatile Organic Compounds** | | | | | | | |
| 1,4-Dichlorobenzene | ug/L | 10 | 11 | 65.9 | 32 | 7 | 379 |
| Bis(2-ethylhexyl)phthalate (BEHP) | ug/L | 10 | 11 | 8,900 | 333 | 34 | 230 |
| Di-n-octyl phthalate | ug/L | 10 | 12 | 51 | 29 | 4 | 199 |
| **Petroleum Mixtures** | | | | | | | |
| Diesel | ug/l | 500 | 520 | 32,000 | 4,839 | 136 | 342 |
| Gasoline | ug/L | 800 | 857 | 6,620 | 2,026 | 15 | 315 |
| **Volatile Organic Compounds** | | | | | | | |
| 1,1-Dichloroethene | ug/L | 5 | 6.1 | 31 | 16 | 8 | 446 |
| 1,2,4-Trimethylbenzene | ug/L | 3,870 | 13,700 | 13,700 | 13,700 | 1 | 89 |
| Benzene | ug/L | 22.7 | 25 | 1,320 | 167 | 39 | 477 |
| Chloromethane | ug/L | 133 | 190 | 900 | 545 | 2 | 443 |
| Tetrachloroethene | ug/L | 5 | 5.1 | 12,000 | 1,902 | 12 | 451 |
| Trichloroethene | ug/L | 56 | 120 | 5,740 | 2,356 | 5 | 453 |
| Vinyl chloride | ug/L | 10 | 12.9 | 1,360 | 294 | 14 | 448 |

Notes:

[1] Shallow Groundwater = Less than 12 feet below ground surface.

ug/L = microgram per liter

TACO:\0\0454116\00\Finals\045411600Tables1_8.xls

# TABLE 8

## SUMMARY OF CHEMICAL DATA - DEEP GROUNDWATER[1]

TAYLOR WAY AND ALEXANDER AVENUE FILL SITE
TACOMA, WASHINGTON

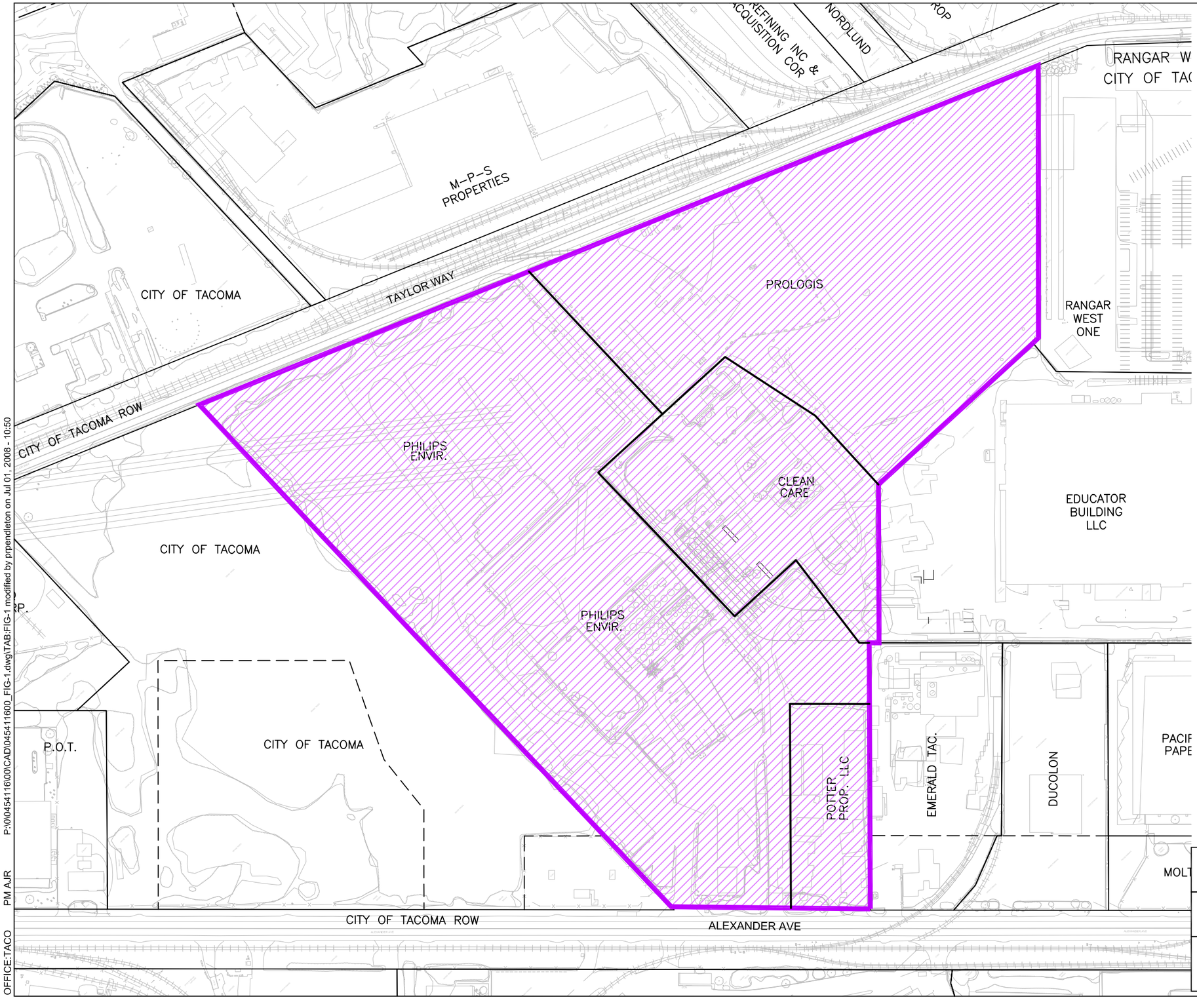
| Analyte | Units | Screening Level | Minimum Concentration | Maximum Concentration | Average Concentration | Number of Exceedances | Total Samples Tested |
|---|---|---|---|---|---|---|---|
| **Metals** | | | | | | | |
| Arsenic | ug/l | 20 | 20.2 | 2,148 | 133 | 66 | 440 |
| Cadmium | ug/L | 40 | 100 | 220 | 160 | 2 | 436 |
| Chromium | ug/l | 11 | 11.4 | 485 | 67 | 55 | 436 |
| Copper | ug/l | 10 | 10.1 | 2,940 | 119 | 60 | 435 |
| Lead | ug/l | 10 | 10.5 | 11,200 | 539 | 49 | 436 |
| Mercury | ug/L | 2 | 5.8 | 10 | 8 | 2 | 436 |
| Nickel | ug/l | 10 | 10.2 | 747 | 38 | 136 | 436 |
| Selenium | ug/l | 20 | 20.8 | 893 | 85 | 20 | 418 |
| Silver | ug/L | 2 | 2.3 | 30 | 12 | 5 | 422 |
| Zinc | ug/l | 81 | 84 | 24,200 | 1,116 | 55 | 436 |
| **Semivolatile Organic Compounds** | | | | | | | |
| 1,4-Dichlorobenzene | ug/L | 10 | 62 | 62 | 62 | 1 | 76 |
| **Petroleum Mixtures** | | | | | | | |
| Diesel | ug/l | 500 | 504 | 18,800 | 3,418 | 65 | 349 |
| Gasoline | ug/L | 800 | 860 | 7,600 | 4,318 | 6 | 345 |
| **Volatile Organic Compounds** | | | | | | | |
| 1,1-Dichloroethene | ug/L | 5 | 15 | 15 | 15 | 1 | 334 |
| Benzene | ug/L | 22.7 | 24 | 180 | 73 | 12 | 360 |
| Tetrachloroethene | ug/L | 5 | 212 | 2,200 | 1,237 | 3 | 340 |
| Trichloroethene | ug/L | 56 | 900 | 7,400 | 4,150 | 2 | 339 |
| Vinyl chloride | ug/L | 10 | 32 | 110 | 71 | 2 | 338 |

Notes:

[1] Deep Groundwater = Greater than 12 feet below ground surface.

ug/L = microgram per liter

TACO:\0\0454116\00\Finals\045411600Tables1_8.xls




PORT of TACOMA U.S.A.

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

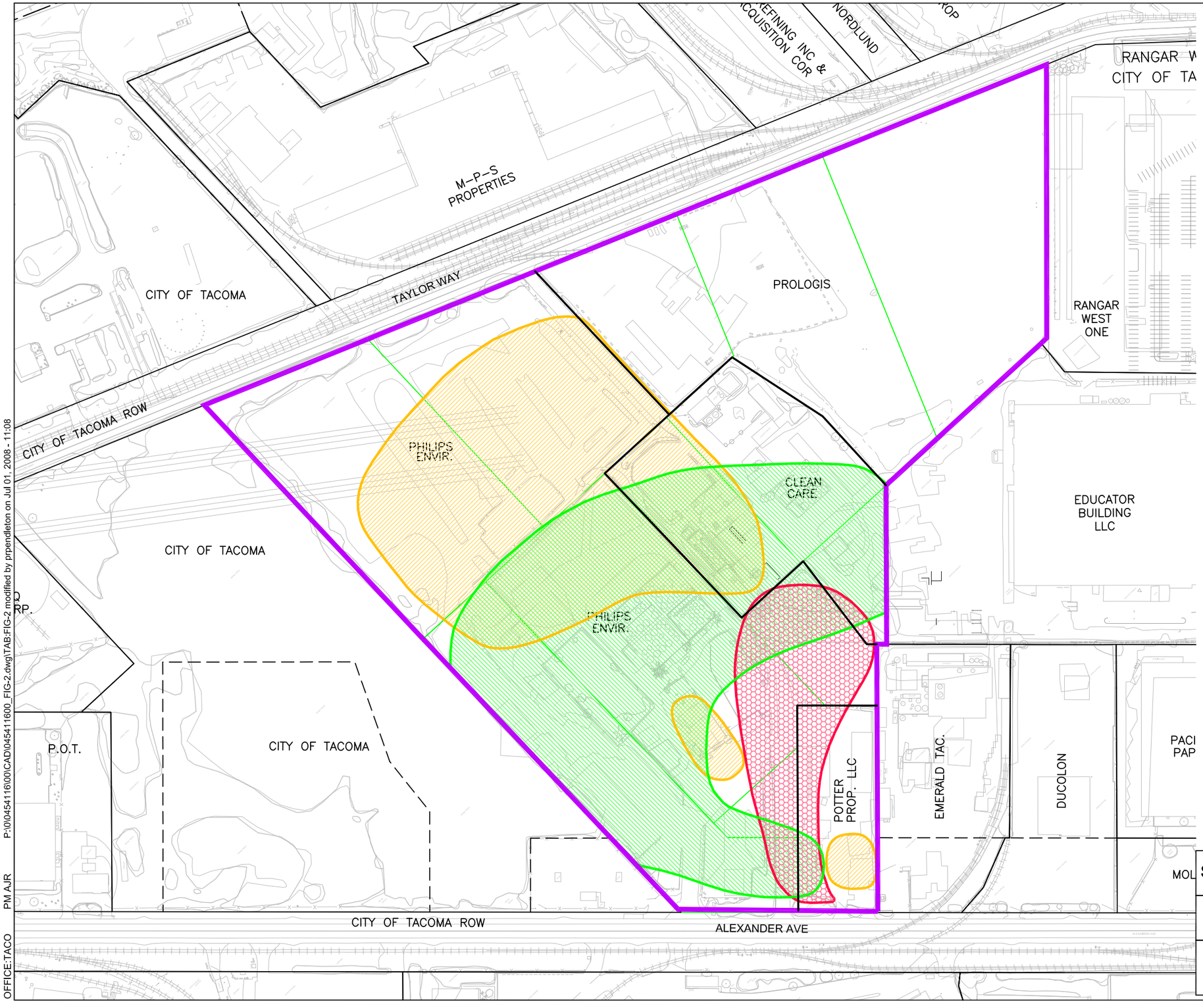
Reference: Survey base drawing provided by Port of Tacoma.

**Site and Vicinity Map**

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 1**




**Legend**

- AUTO FLUFF
- LNAPL
- LIME WASTE / LIME SOLVENT SLUDGE
- SITE BOUNDARY
- PROPERTY BOUNDARY

TRUE NORTH

PROJECT NORTH

200 0 200

Feet

PORT of TACOMA U.S.A.

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Survey base drawing provided by Port of Tacoma.

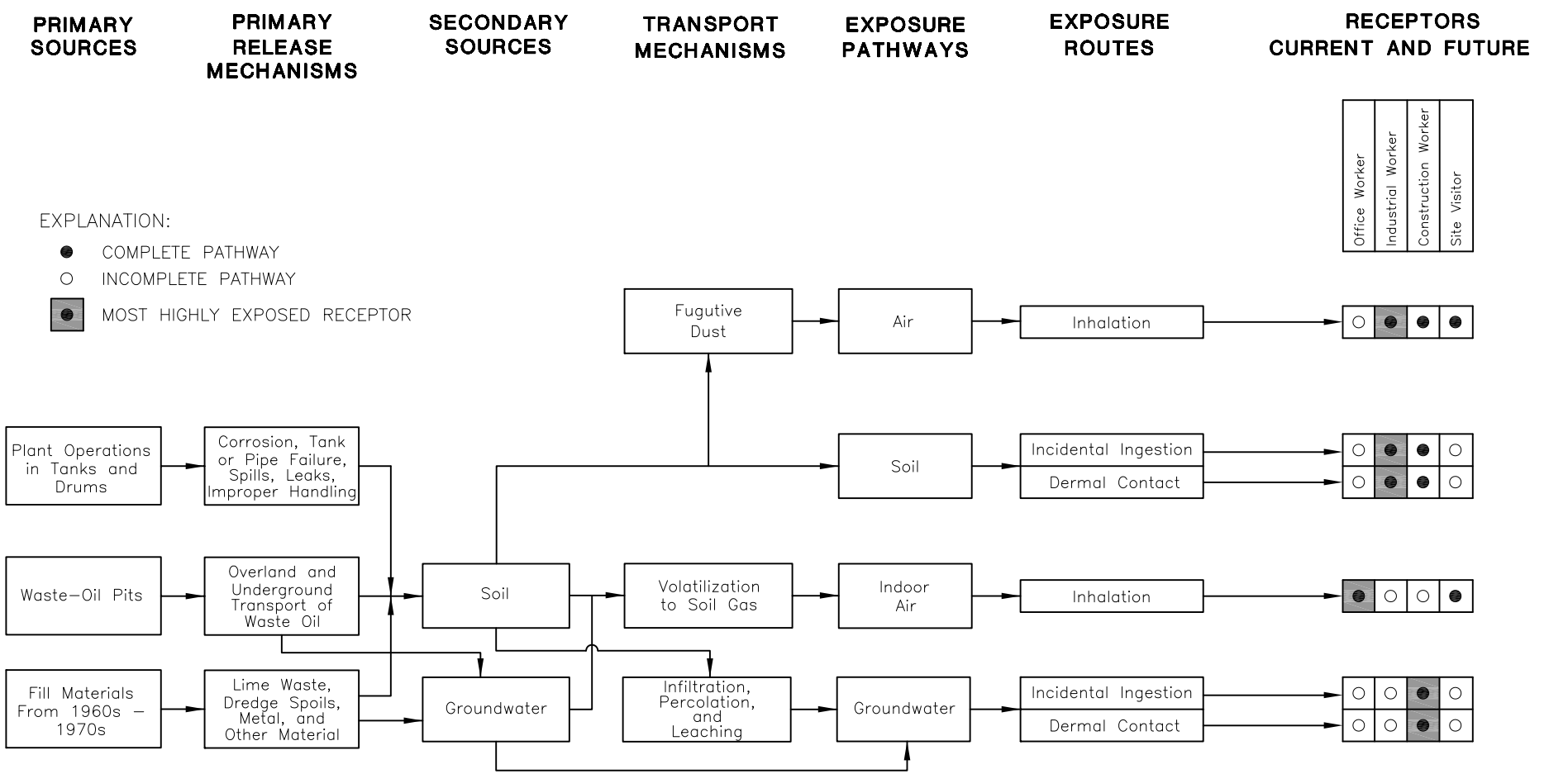
**Site Plan Showing Estimated Landfill Extent**

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 2**

P:\0\0454116\00\CAD\045411600CSM_F-3.dwg CWB:SCY 06/16/08




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

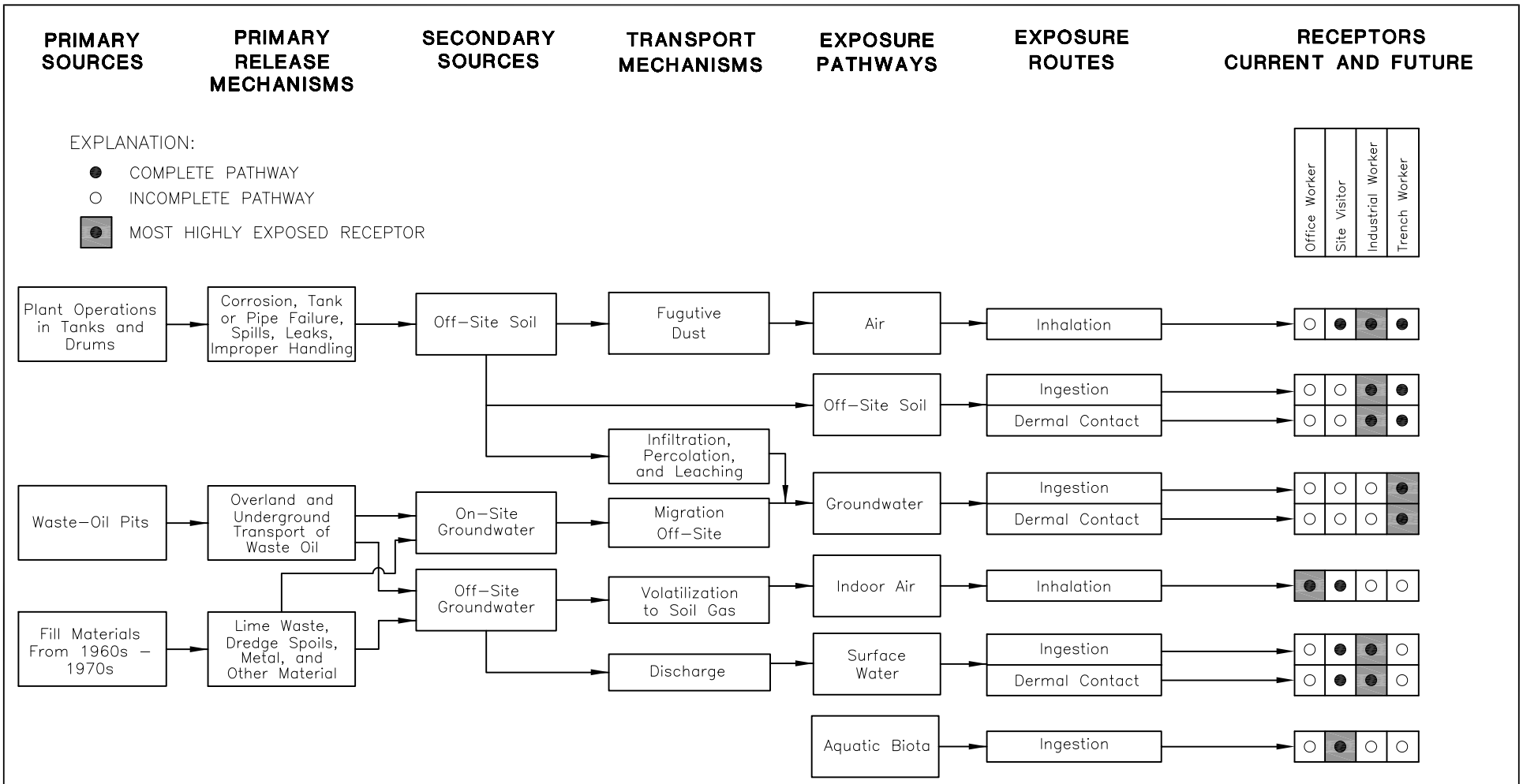
**Conceptual Exposure Model**

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 3**

P:\0\0454116\00\CAD\045411600CSM_F-4.dwg CWB:SCY 06/16/08




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

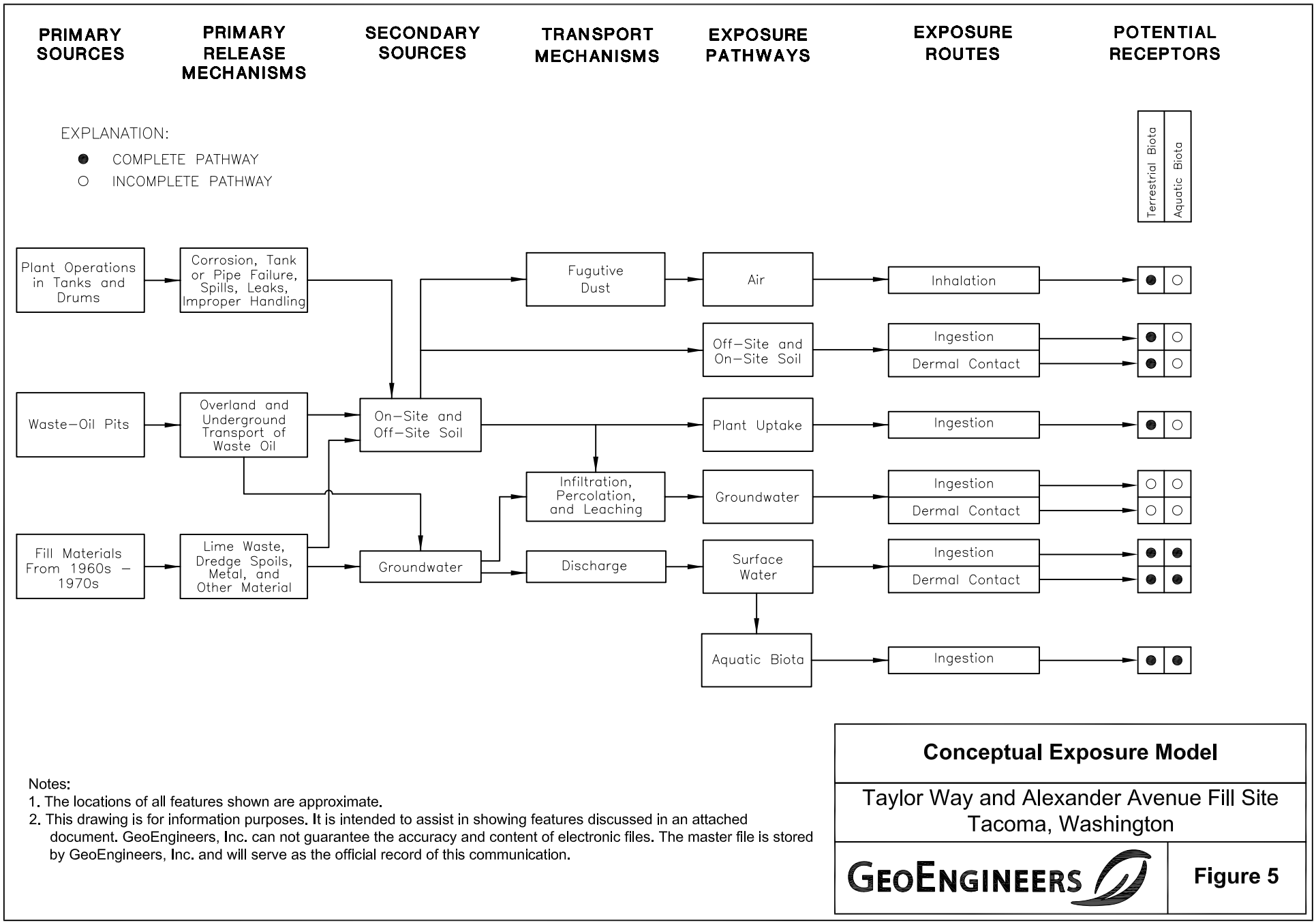
**Conceptual Exposure Model**

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 4**

P:\0\0454116\00\CAD\045411600CSM_F-5.dwg CWB:SCY 06/16/08



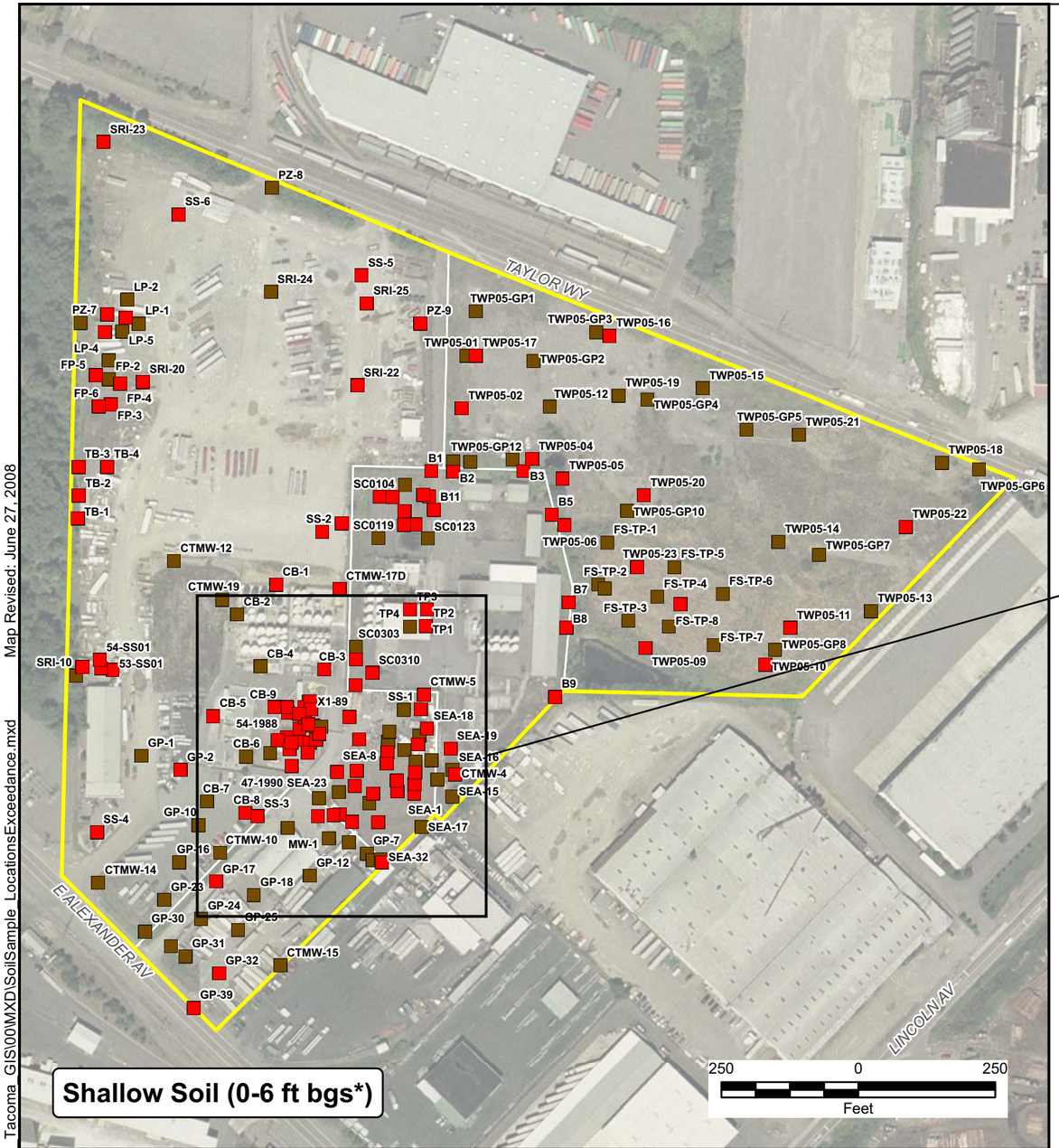

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

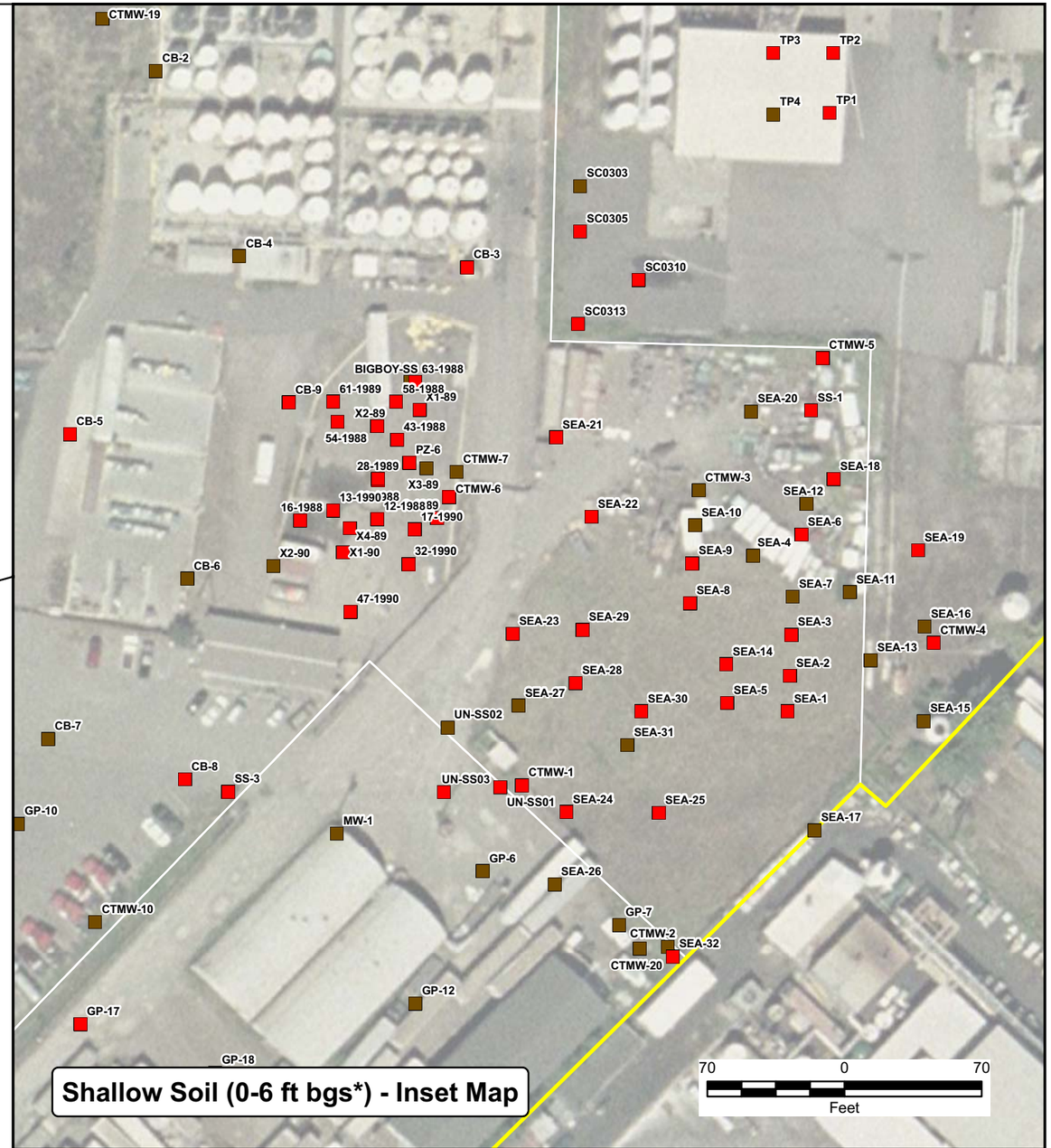
**Conceptual Exposure Model**

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 5**




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

Lambert Conformal Conic, Washington State Plane North, North American Datum 1983

## Explanation

- Sample location exceeding PSC screening value
- Sample locations
- Approximate site boundary

*Below ground surface (bgs)

PROJECT NORTH

TRUE NORTH

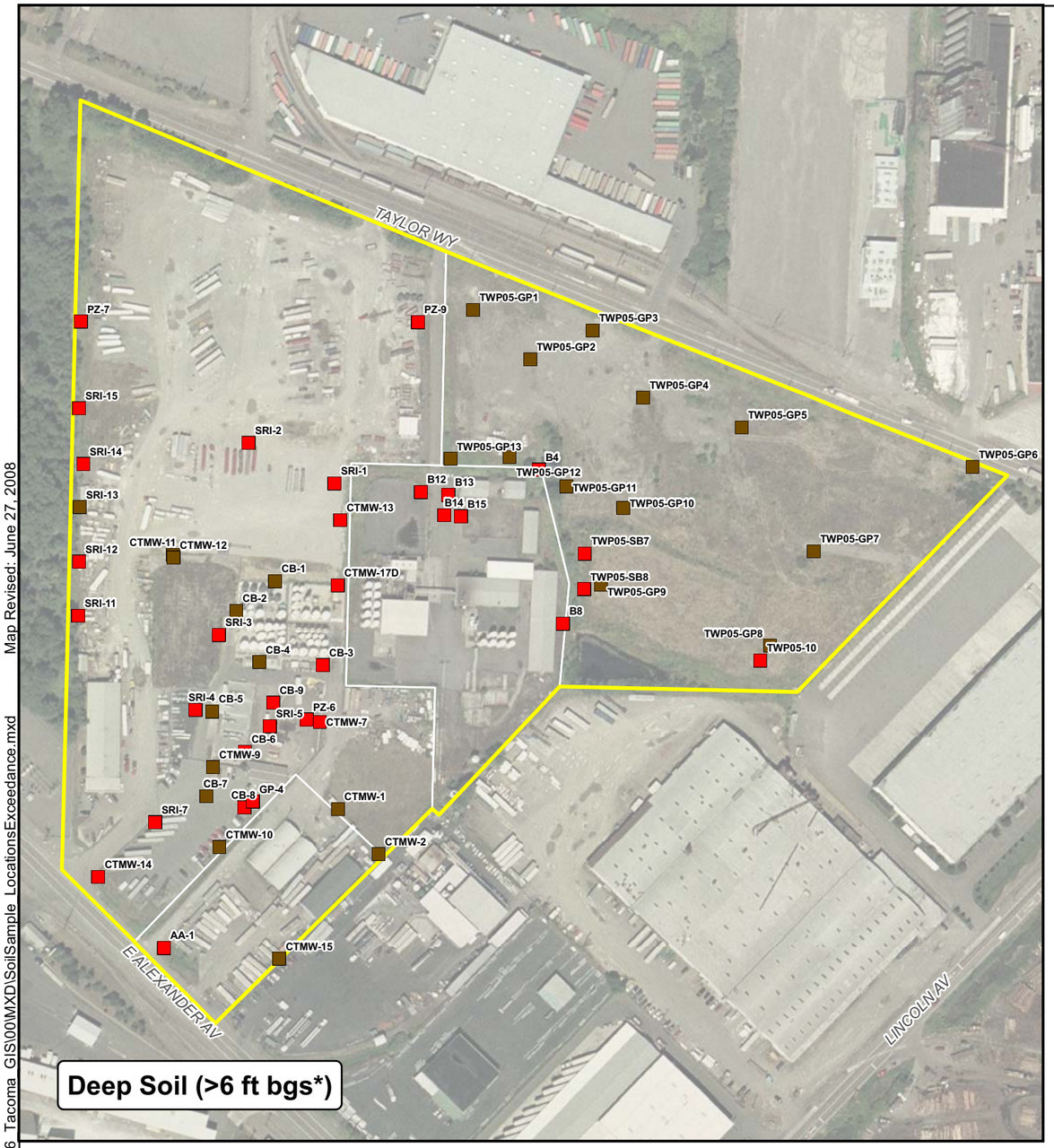
# Soil Sample and Exceedance Locations

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 6**

Map Revised: June 27, 2008
Path: P:\0\0454116 Tacoma GIS\00MXD\SoilSample_LocationsExceedance.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

Lambert Conformal Conic, Washington State Plane North, North American Datum 1983

## Explanation

- Sample location exceeding PSC screening value
- Sample locations
- Approximate site boundary

*Below ground surface (bgs)

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

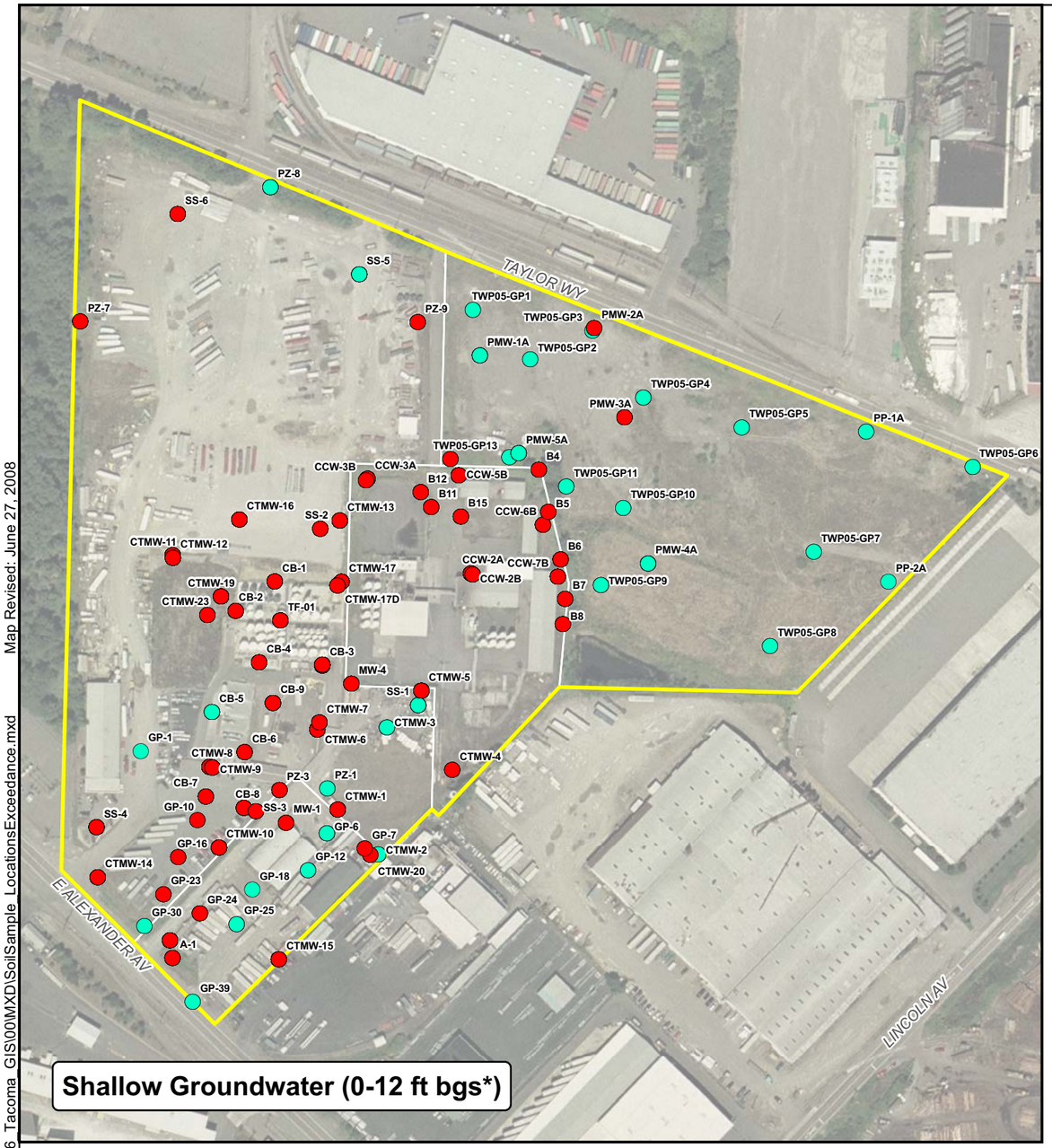
# Soil Sample and Exceedance Locations

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

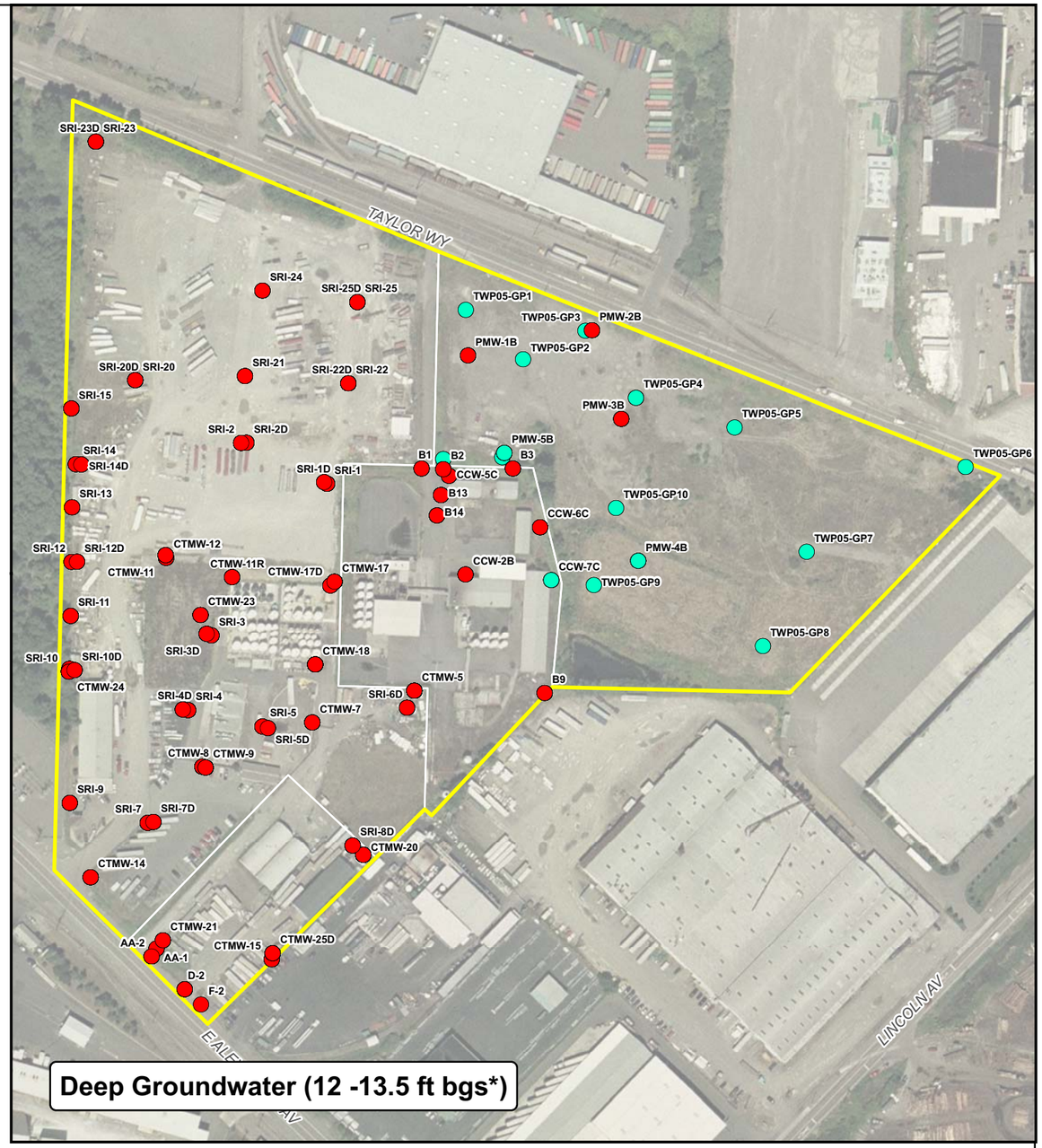
GeoEngineers

**Figure 7**

Office: TAC Path: P:\0\0454116 Tacoma GIS\00\MXD\SoilSample LocationsExceedance.mxd Map Revised: June 27, 2008




**Shallow Groundwater (0-12 ft bgs*)**




**Deep Groundwater (12 -13.5 ft bgs*)**

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

Lambert Conformal Conic, Washington State Plane North, North American Datum 1983

## Explanation

- Sample location exceeding PSC screening value
- Sample locations
- Approximate site boundary

*Below ground surface (bgs)

PROJECT NORTH

TRUE NORTH

250 0 250

Feet

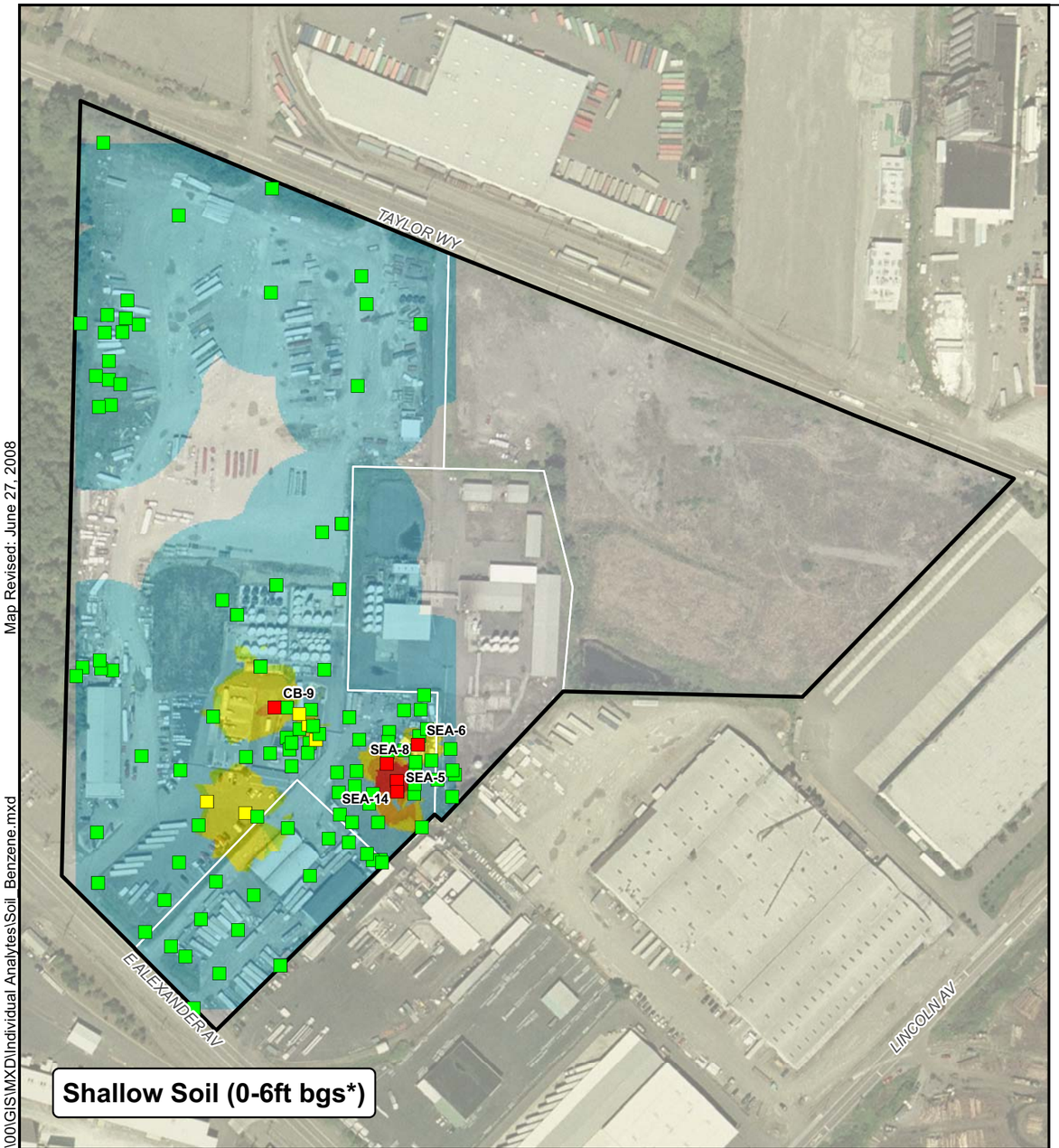
**Groundwater Sample and Exceedance Locations**

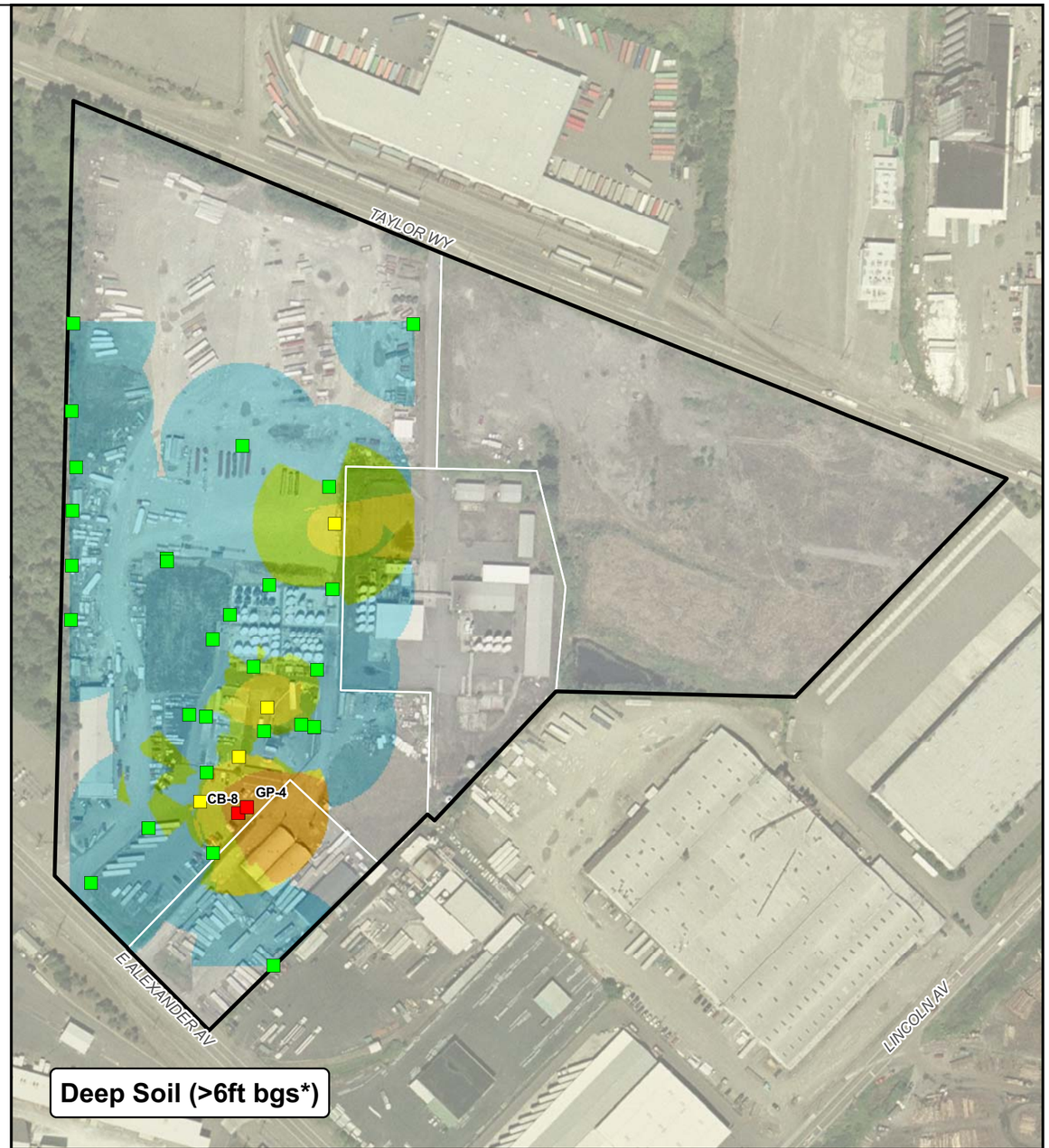
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 8**

Office: TAC Path: P:\0\0454116 Tacoma GIS\00\MXD\SoilSample LocationsExceedance.mxd Map Revised: June 27, 2008




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis: protection of groundwater

**Benzene (mg/kg)**

- <0.001
- 0.001 - 0.01
- 0.01 - 0.128
- 0.128** - 1
- >1

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

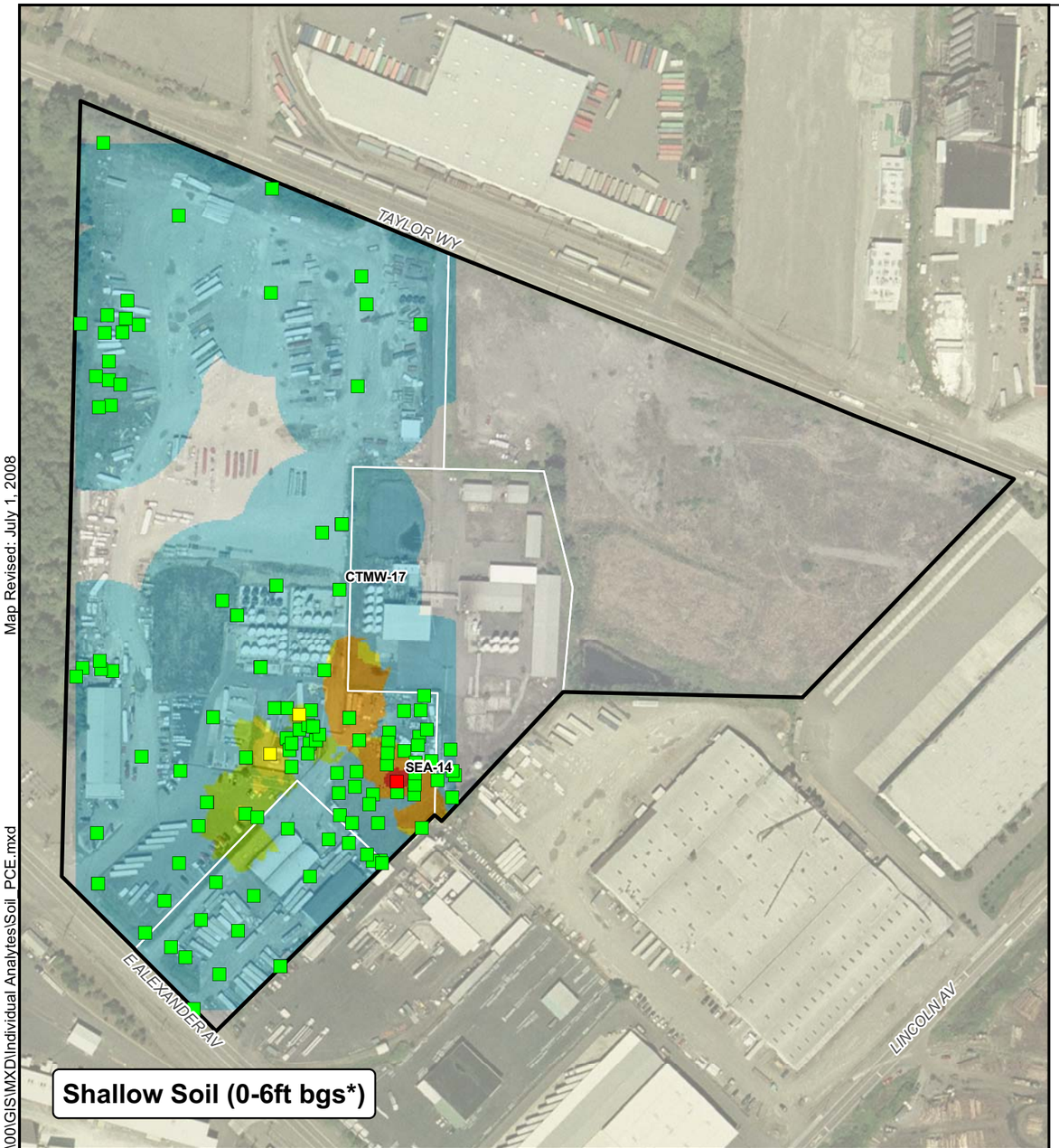
# Benzene in Soil

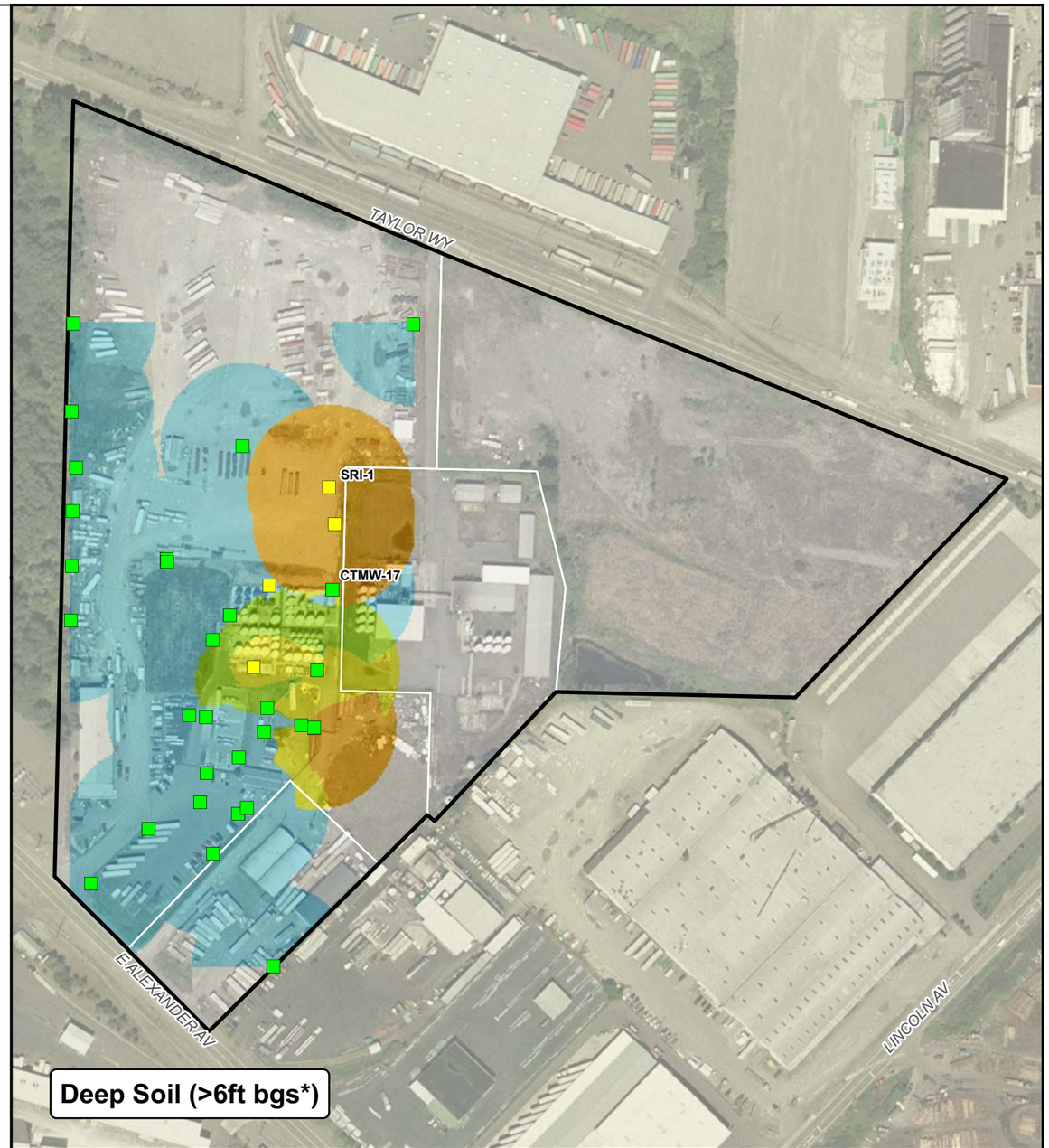
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 9**

Map Revised: June 27, 2008
Path: P:\0\04541116\00\GIS\MXD\Individual Analytes\Soil_Benzene.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis: protection of groundwater

**Tetrachloroethene (mg/kg)**

- <0.0001
- 0.0001 - 0.001
- 0.001 - 0.053
- 0.053** - 25
- >25

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

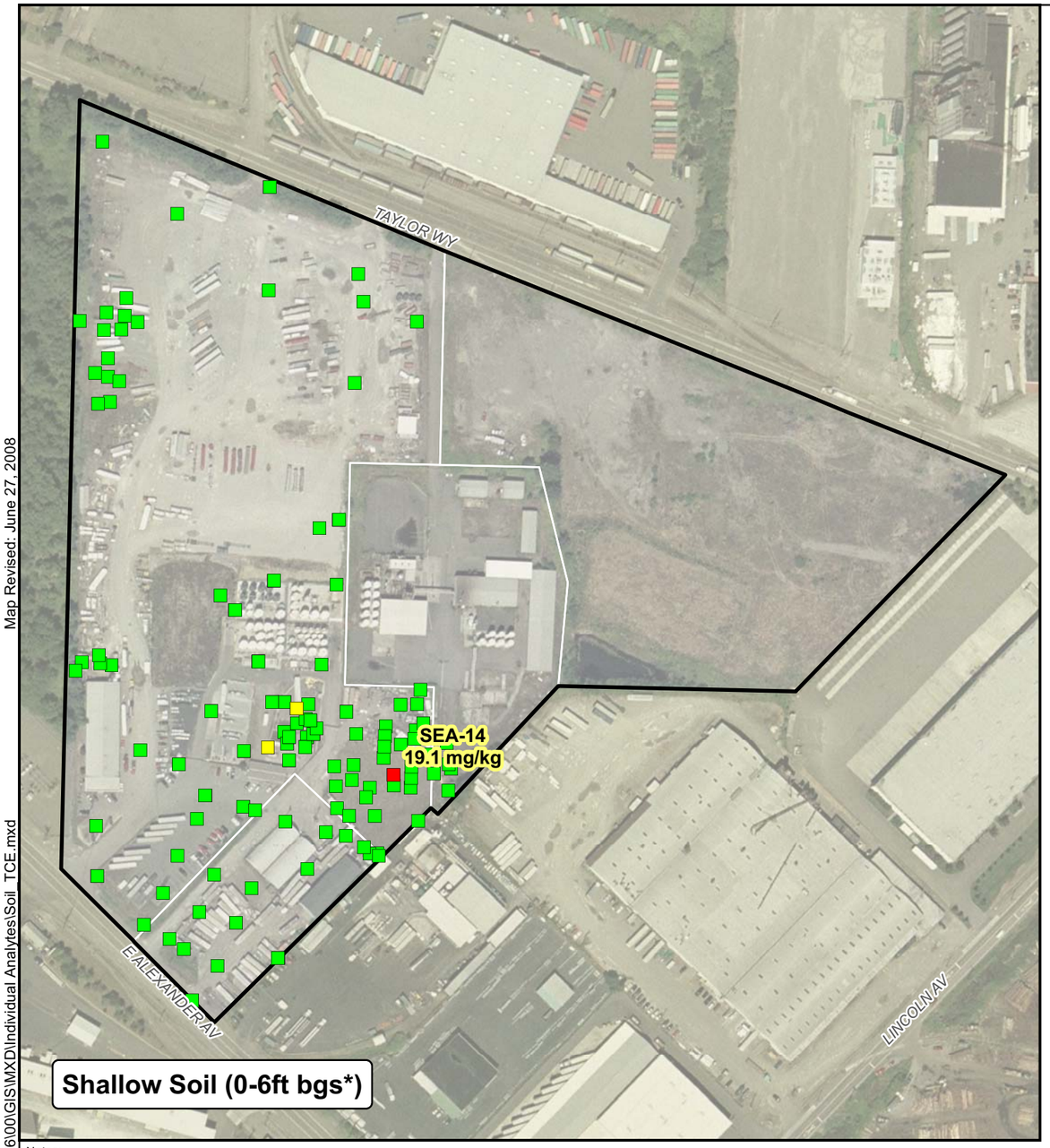
# Tetrachloroethene in Soil

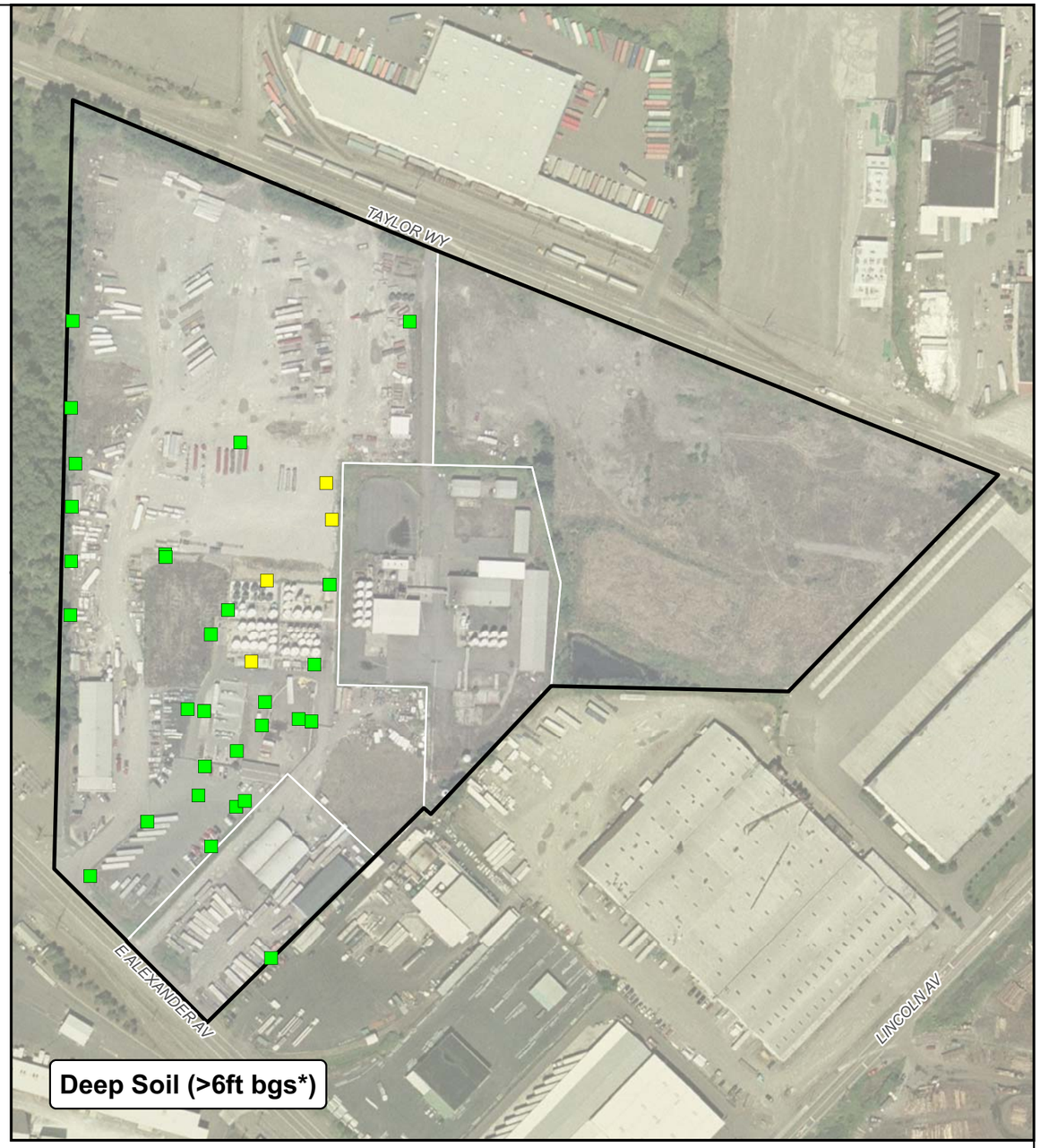
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 10**

Map Revised: July 1, 2008
Path: P:\00454116\00\GIS\MXD\Individual Analytes\Soil_PCE.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

PSC screening level = 0.368 mg/kg
Screening level basis: protection of water

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

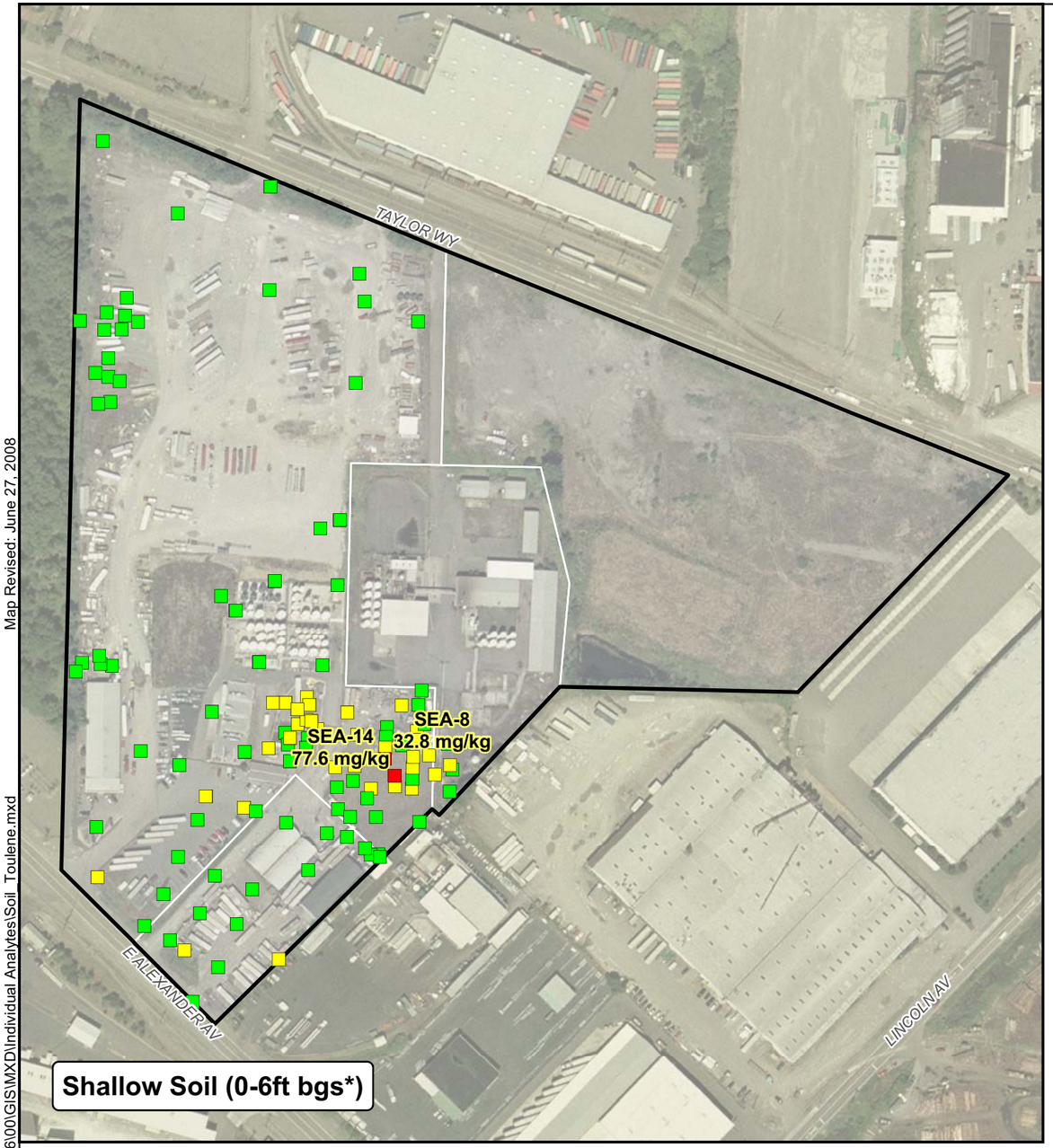
**Trichloroethene in Soil**

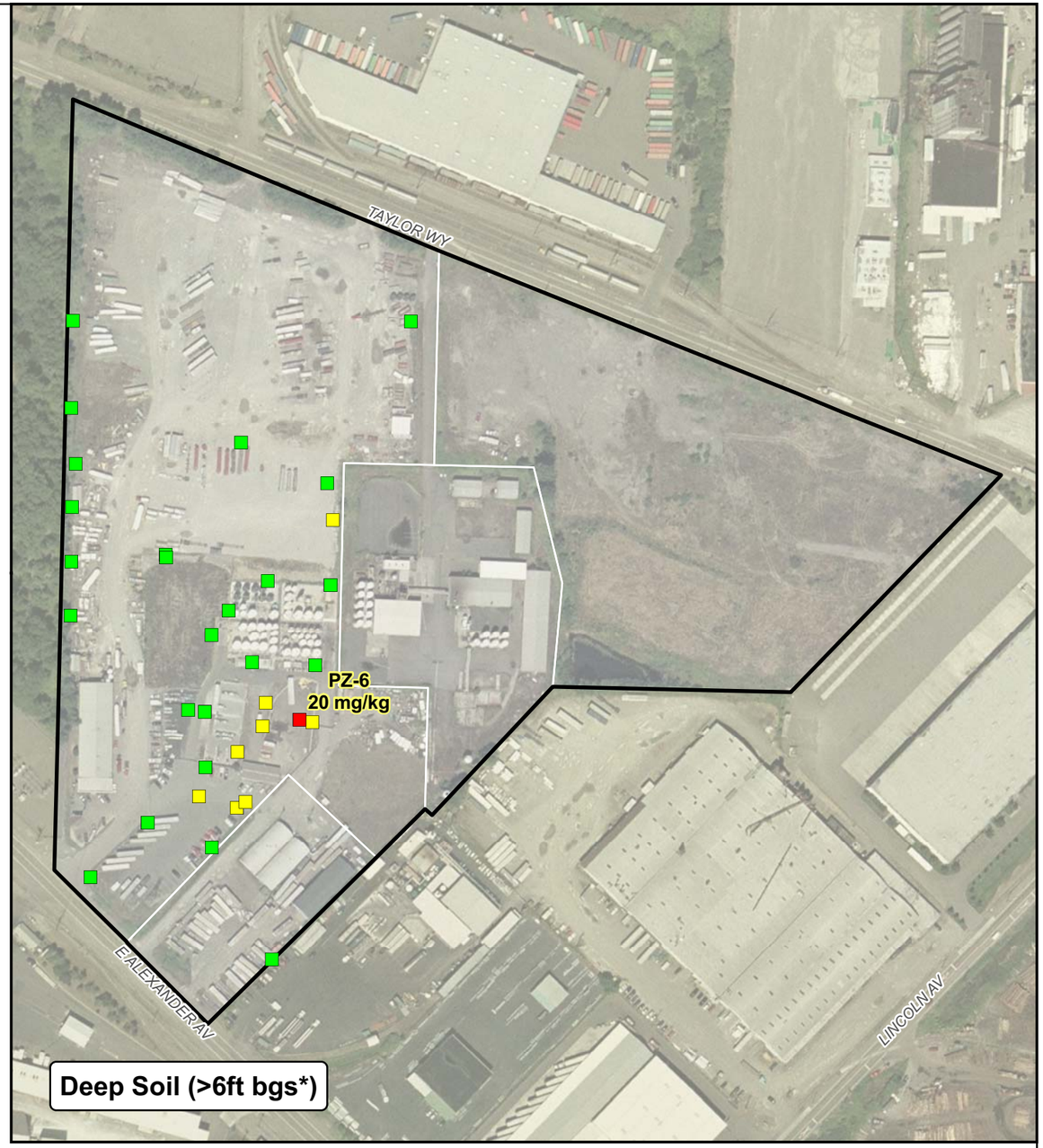
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 11**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Soil_TCE.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 15.5 mg/kg
Screening level basis: protection of groundwater

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

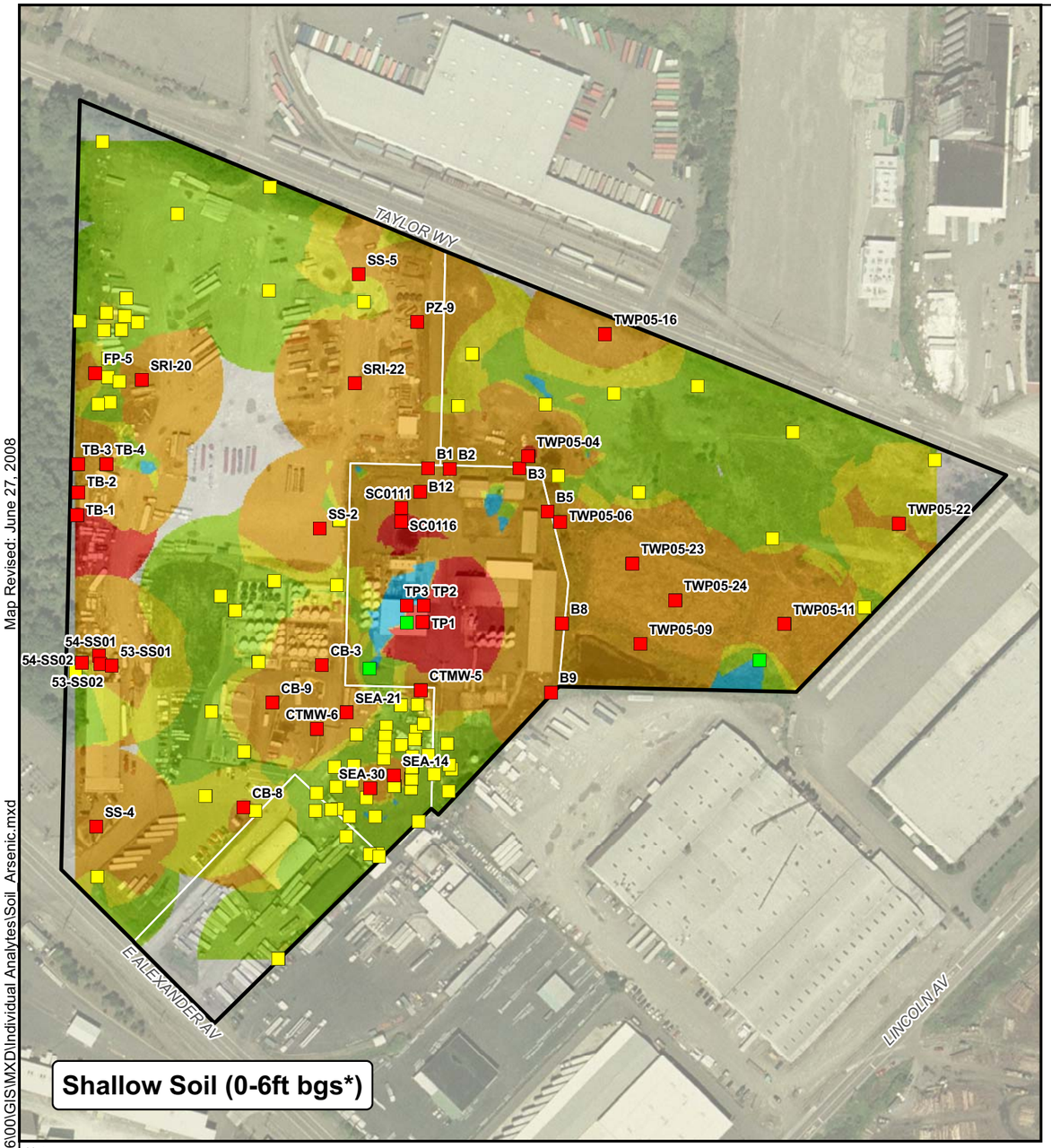
# Toluene in Soil

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

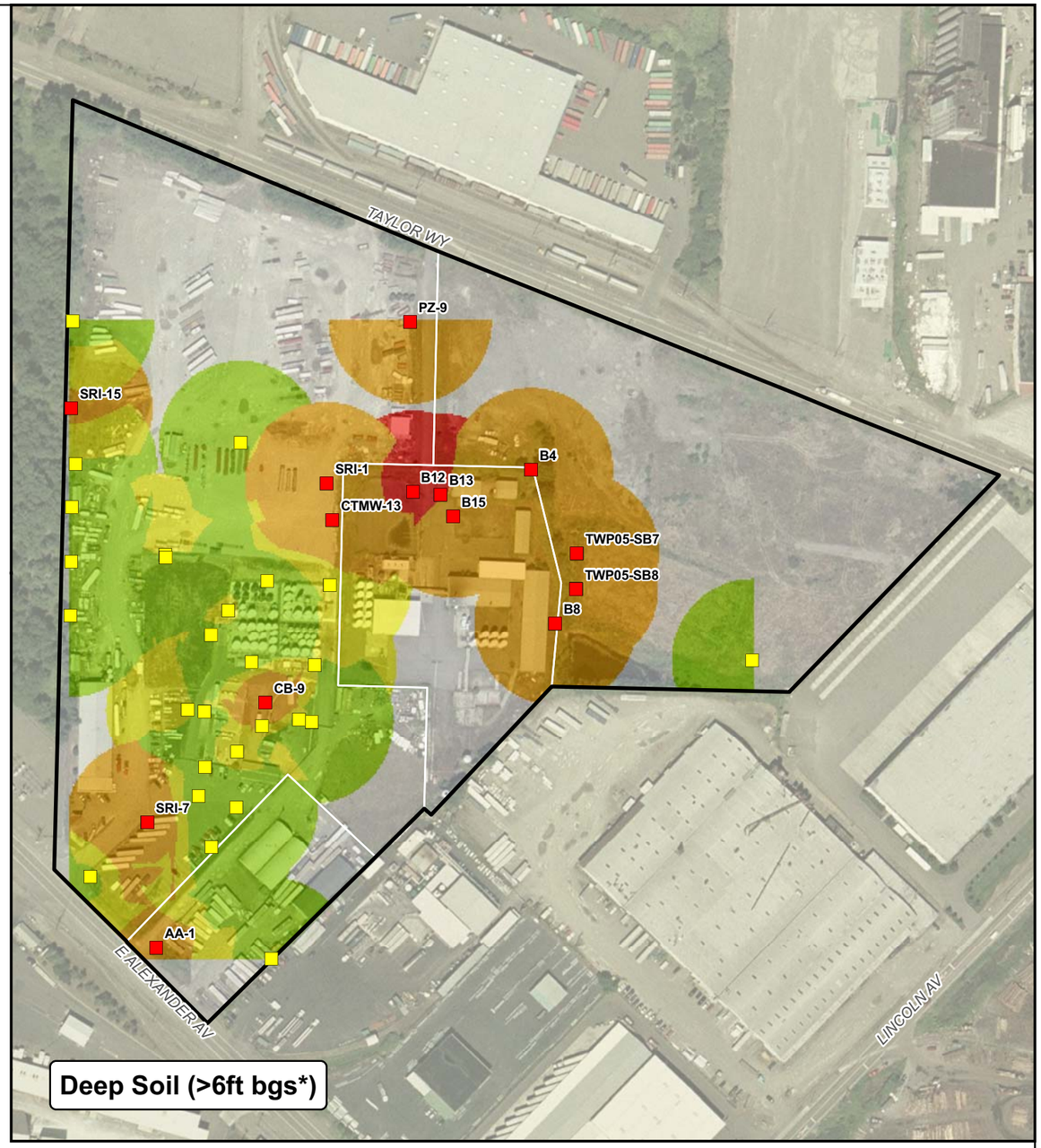
GeoEngineers

**Figure 12**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Soil_Toulene.mxd
Office: TAC




**Shallow Soil (0-6ft bgs*)**




**Deep Soil (>6ft bgs*)**

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis: natural background

Arsenic (mg/kg)
- <1
- 1 - 5
- 5 - 7.3
- 7.3** - 100
- >100

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

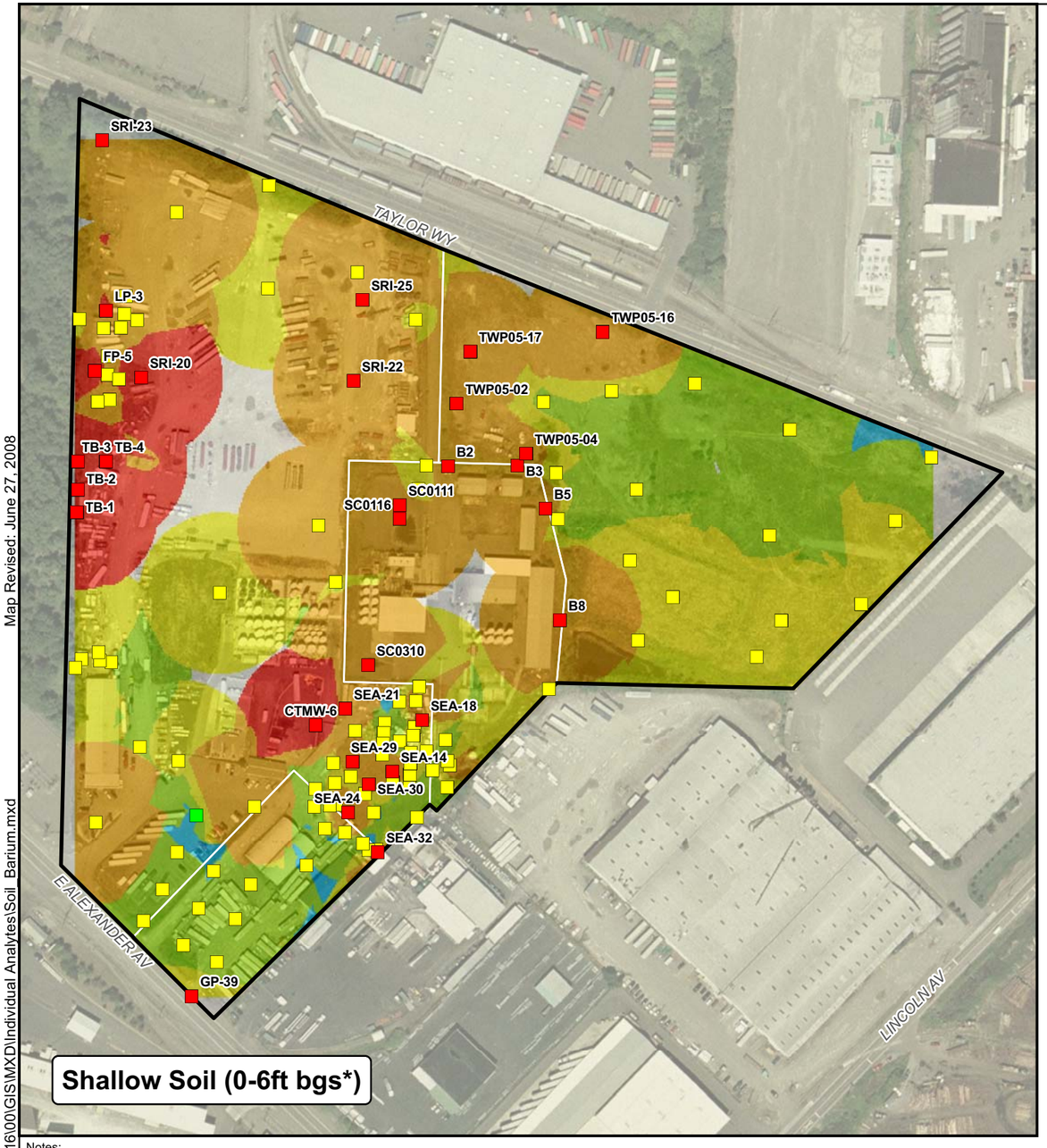
# Arsenic in Soil

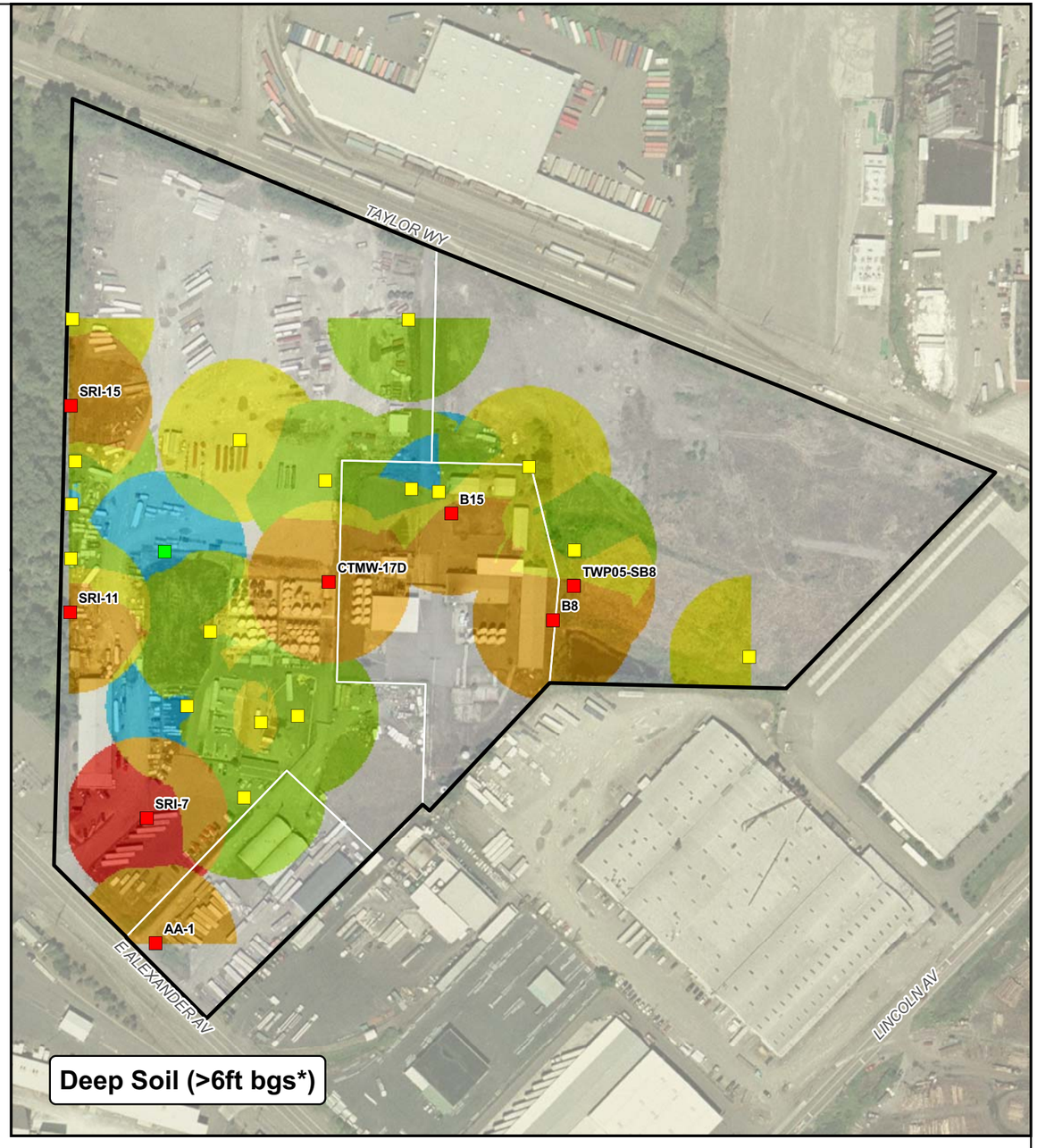
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 13**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Soil_Arsenic.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis:
protection of ecological receptors

**Barium (mg/kg)**

- <10
- 10 - 50
- 50 - 102
- 102** - 1,000
- >1,000

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

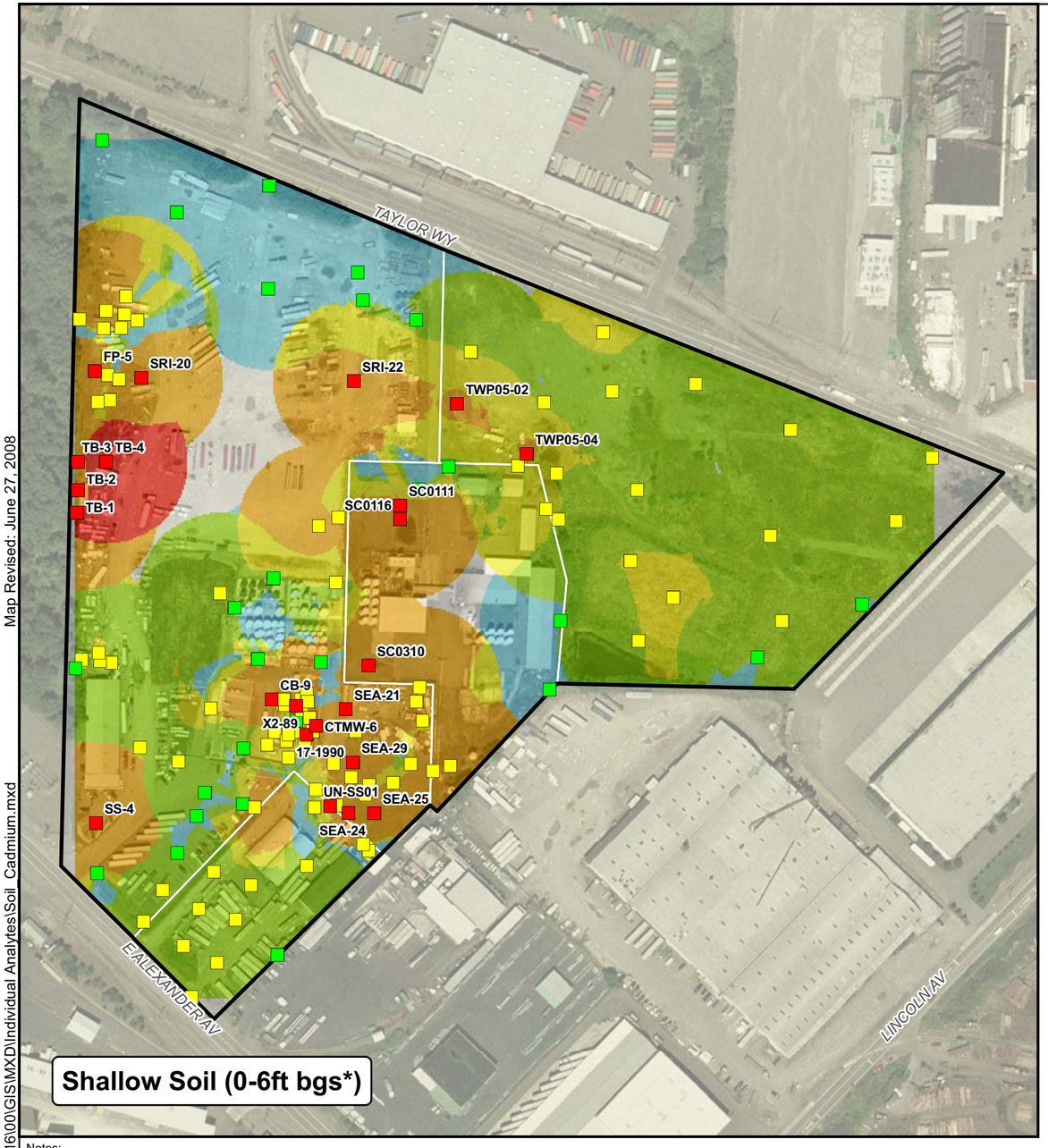
# Barium in Soil

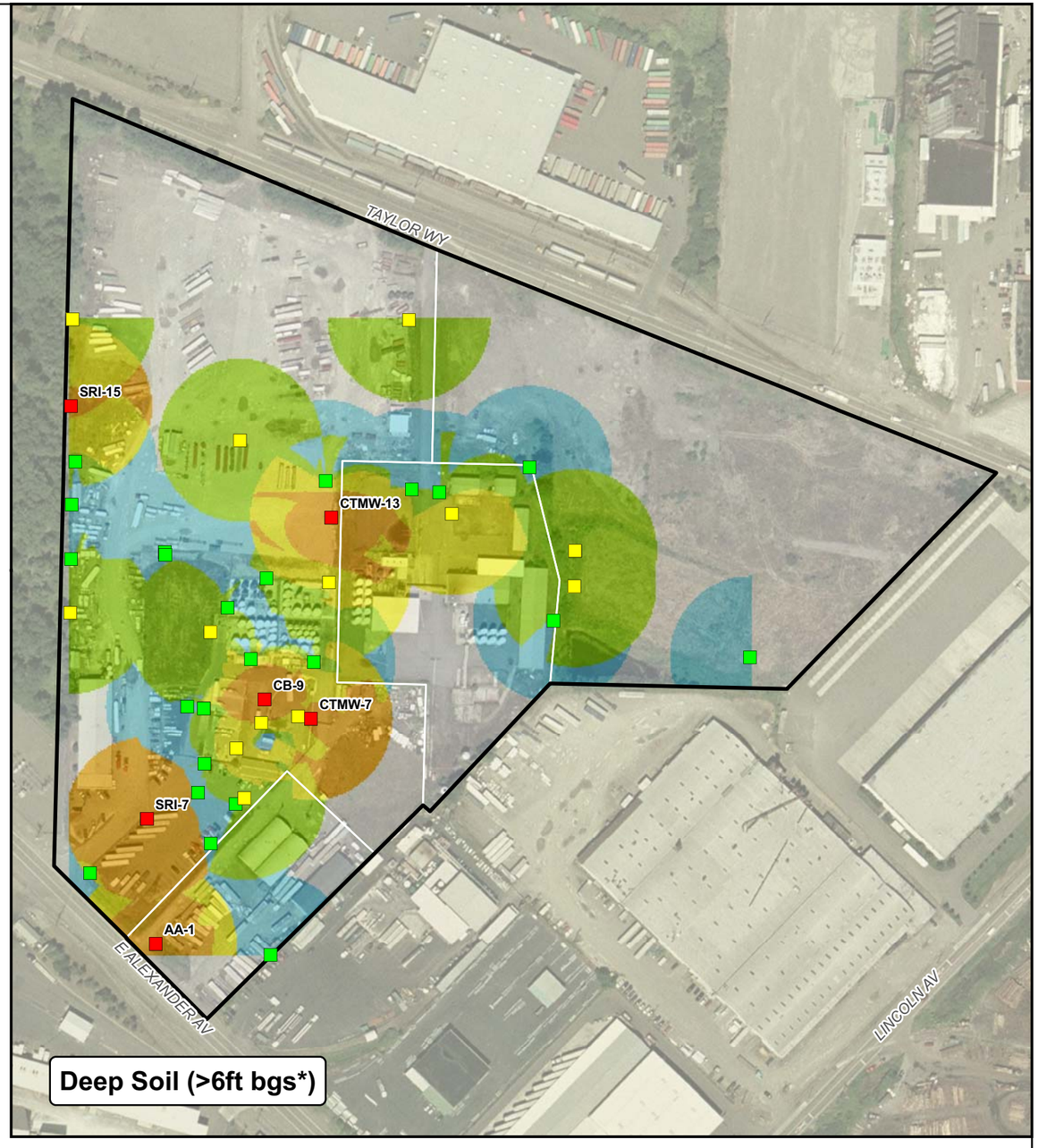
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 14**

Map Revised: June 27, 2008
Path: P:\0\045411 6\00\GIS\MXD\Individual Analytes\Soil_Barium.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis: protection of groundwater

**Cadmium (mg/kg)**

- <0.01
- 0.01 - 1
- 1 - 5.52
- 5.52** - 1,000
- >1,000

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

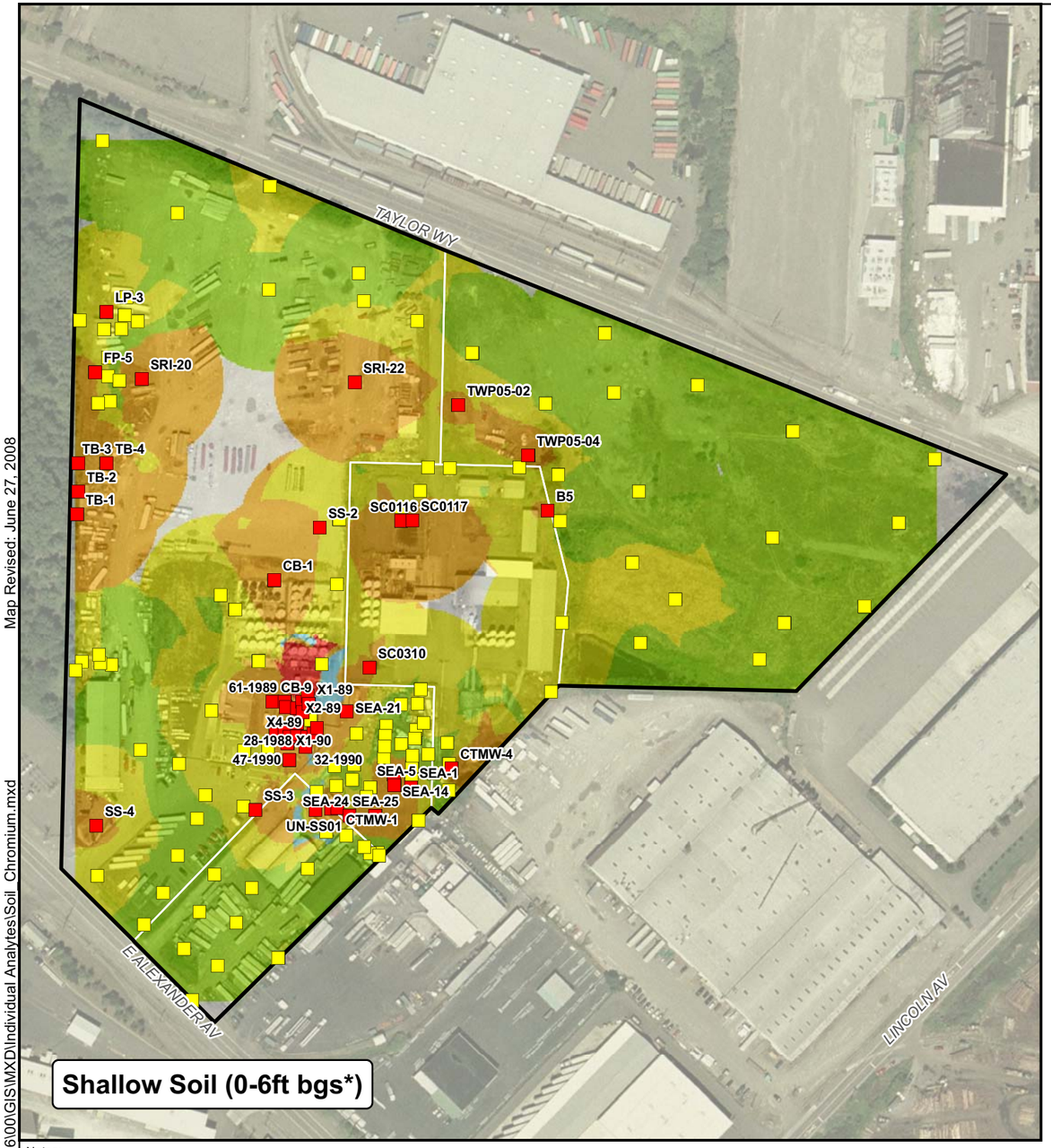
# Cadmium in Soil

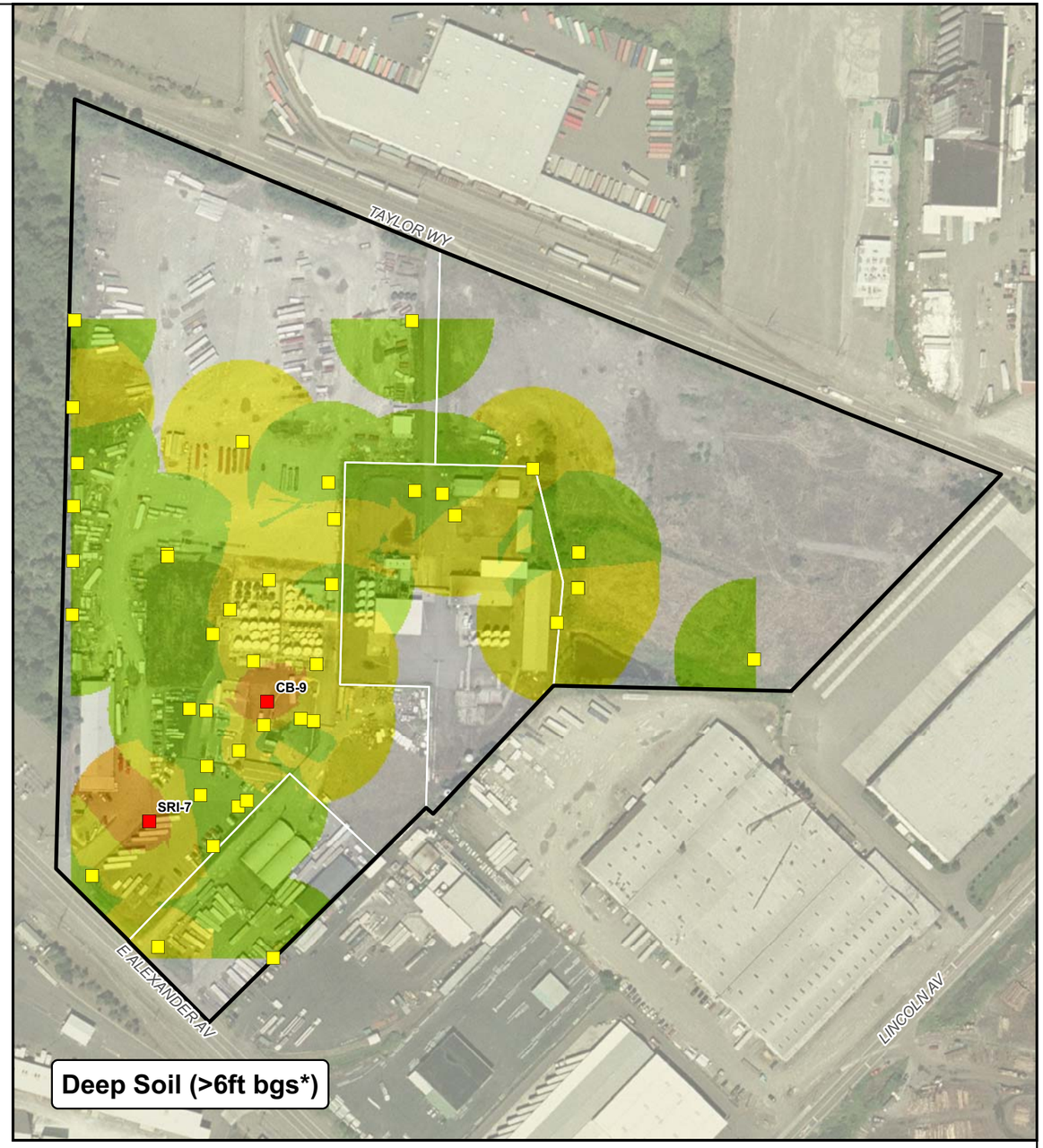
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 15**

Map Revised: June 27, 2008
Path: P:\0\045411 6\00\GIS\MXD\Individual Analytes\Soil_Cadmium.mxd
Office: TAC




Map Revised: June 27, 2008

Path: P:\00\045416\00\GIS\MXD\Individual Analytes\Soil_Chromium.mxd

Office: TAC

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis: natural background

**Chromium (mg/kg)**

- <0.1
- 0.1 - 20
- 20 - 48.2
- 48.2** - 1,000
- >1,000

PROJECT NORTH

TRUE NORTH

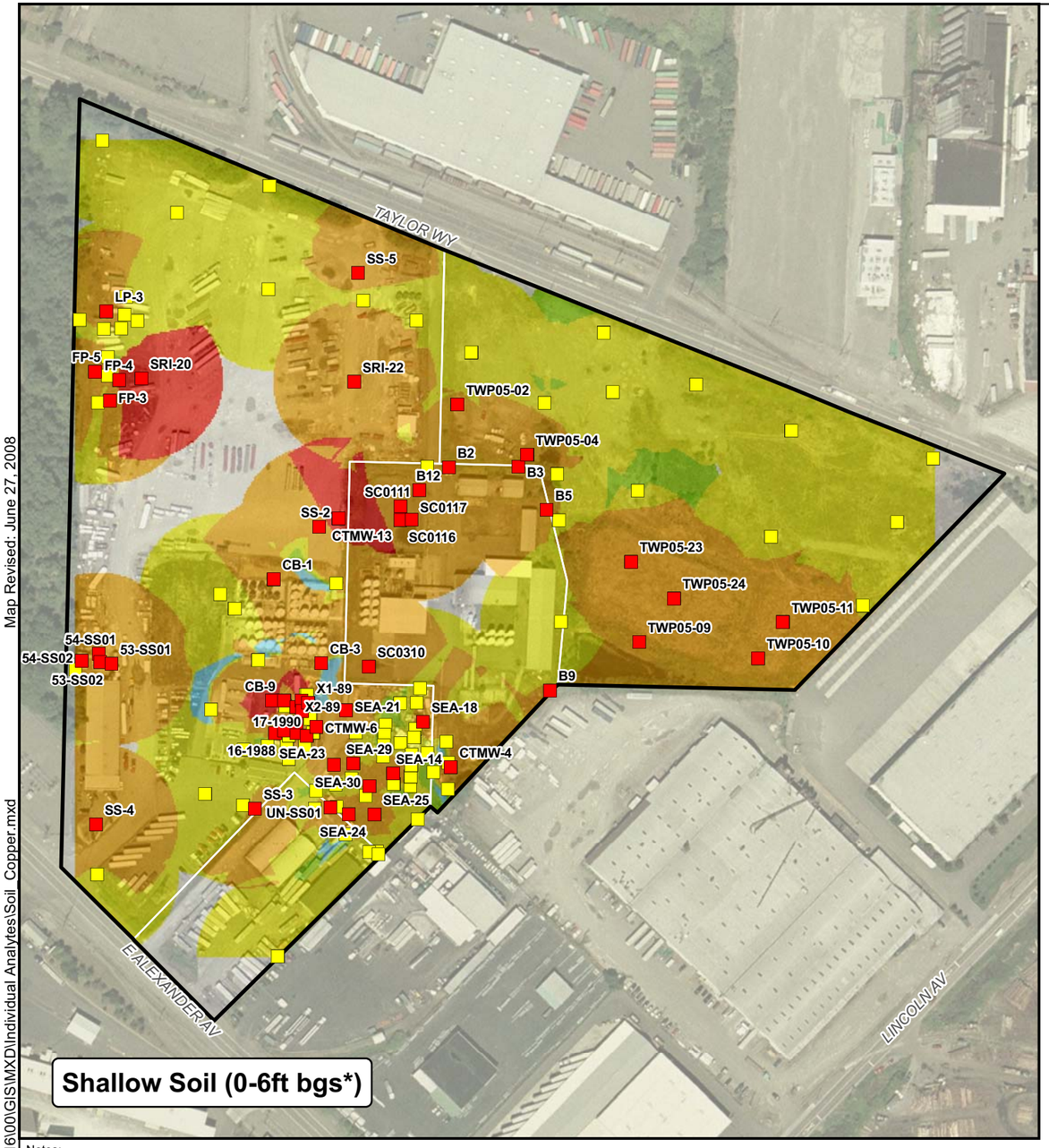
250 0 250
Feet

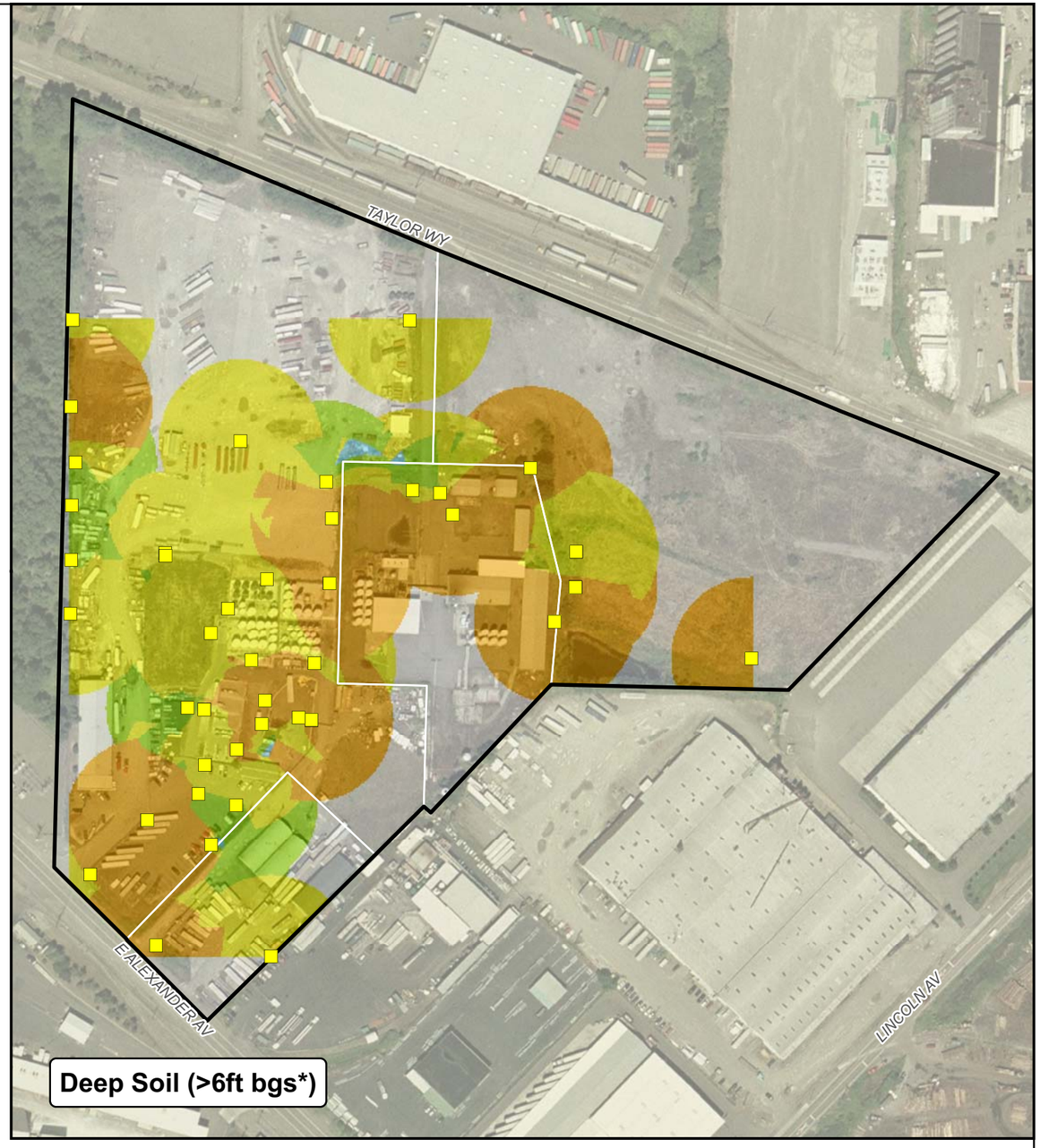
# Chromium in Soil

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 16**




Map Revised: June 27, 2008

Path: P:\0\045411\6\00\GIS\MXD\Individual Analytes\Soil_Copper.mxd

Office: TAC

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis: natural background

**Copper (mg/kg)**

- <0.1
- 0.1 - 10
- 10 - 36.4
- 36.4** - 1,000
- >1,000

PROJECT NORTH

TRUE NORTH

250 0 250

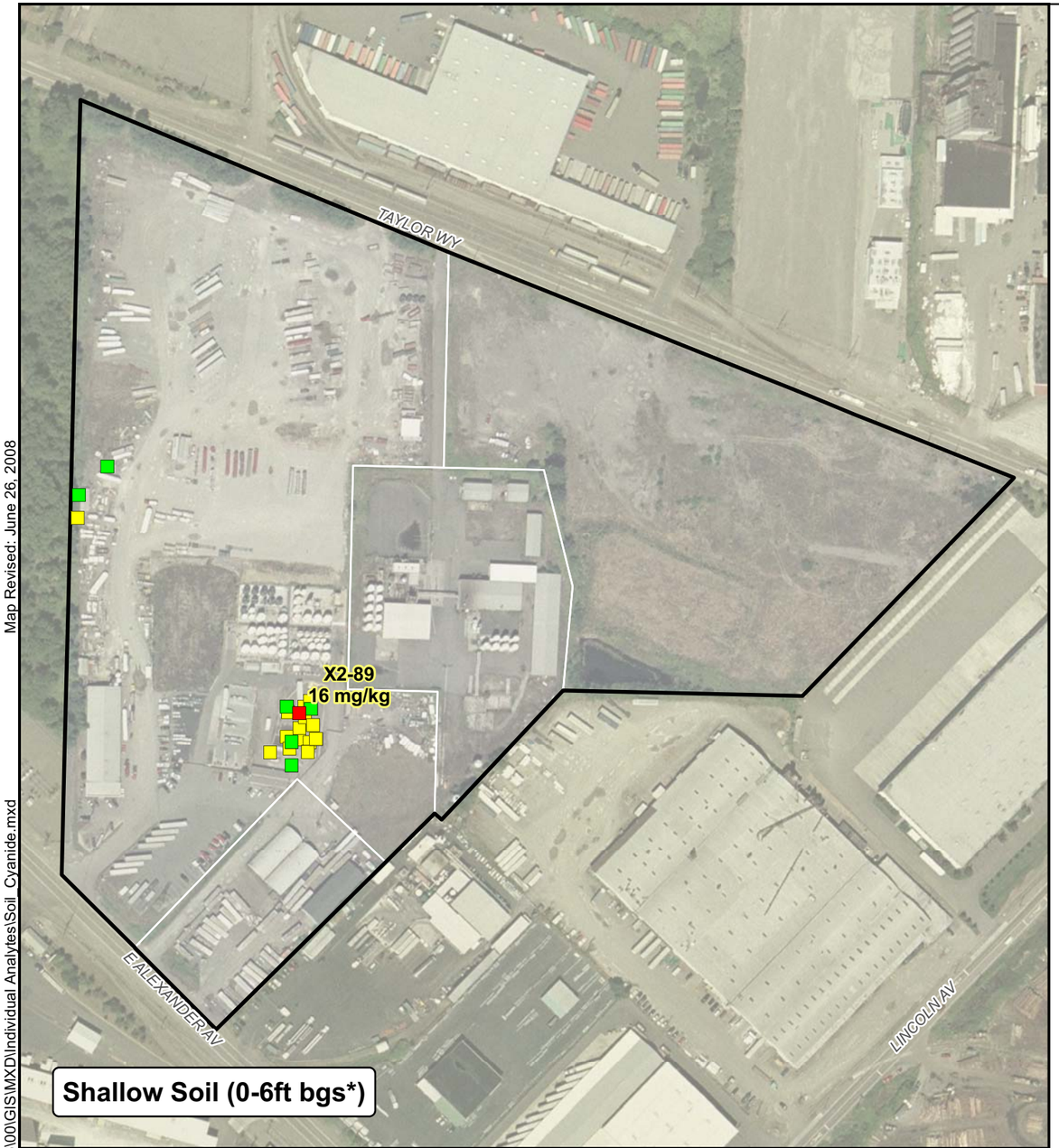
Feet

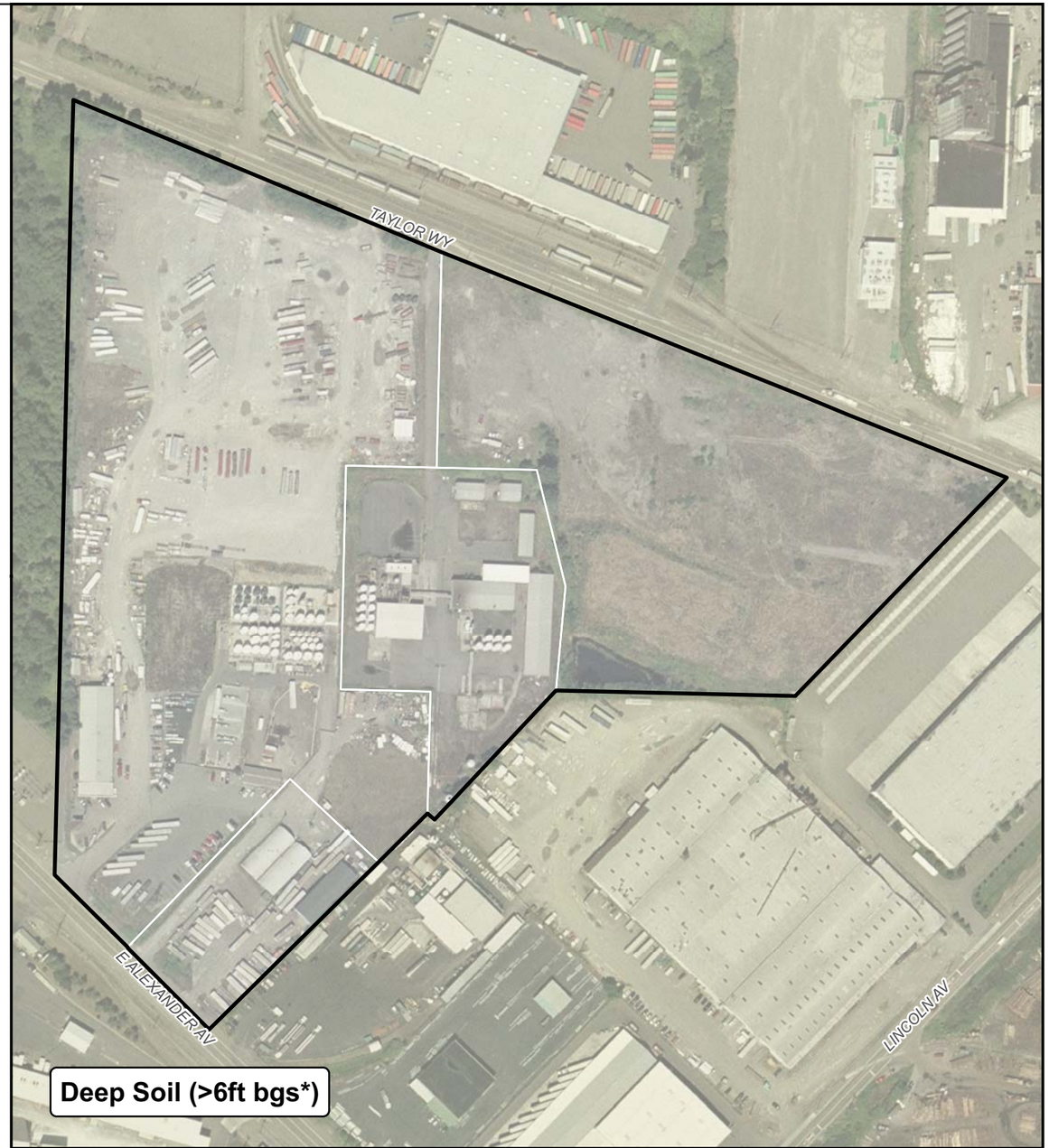
# Copper in Soil

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 17**




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 10.1 mg/kg
Screening level basis: protection of groundwater

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

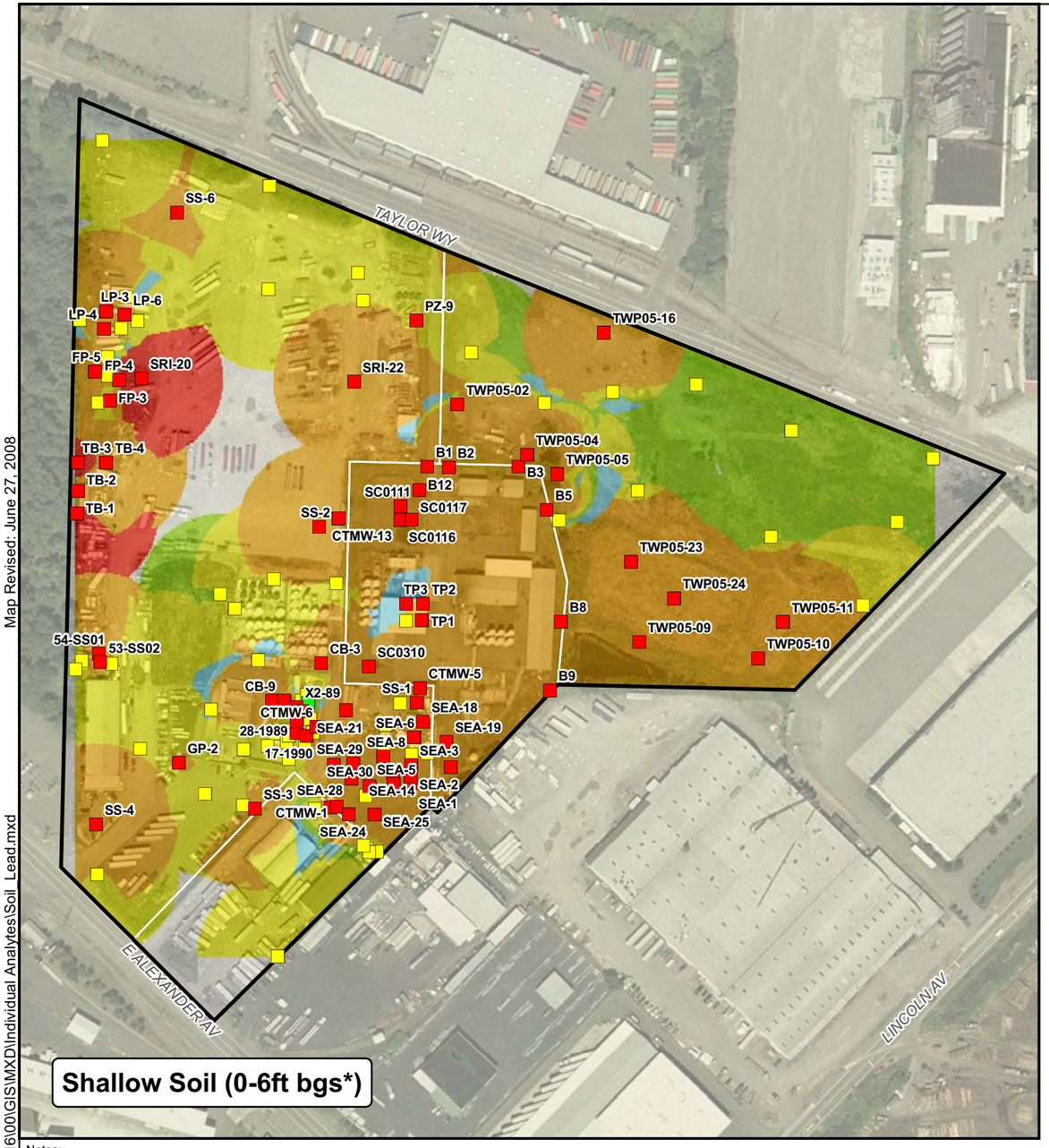
**Cyanide in Soil**

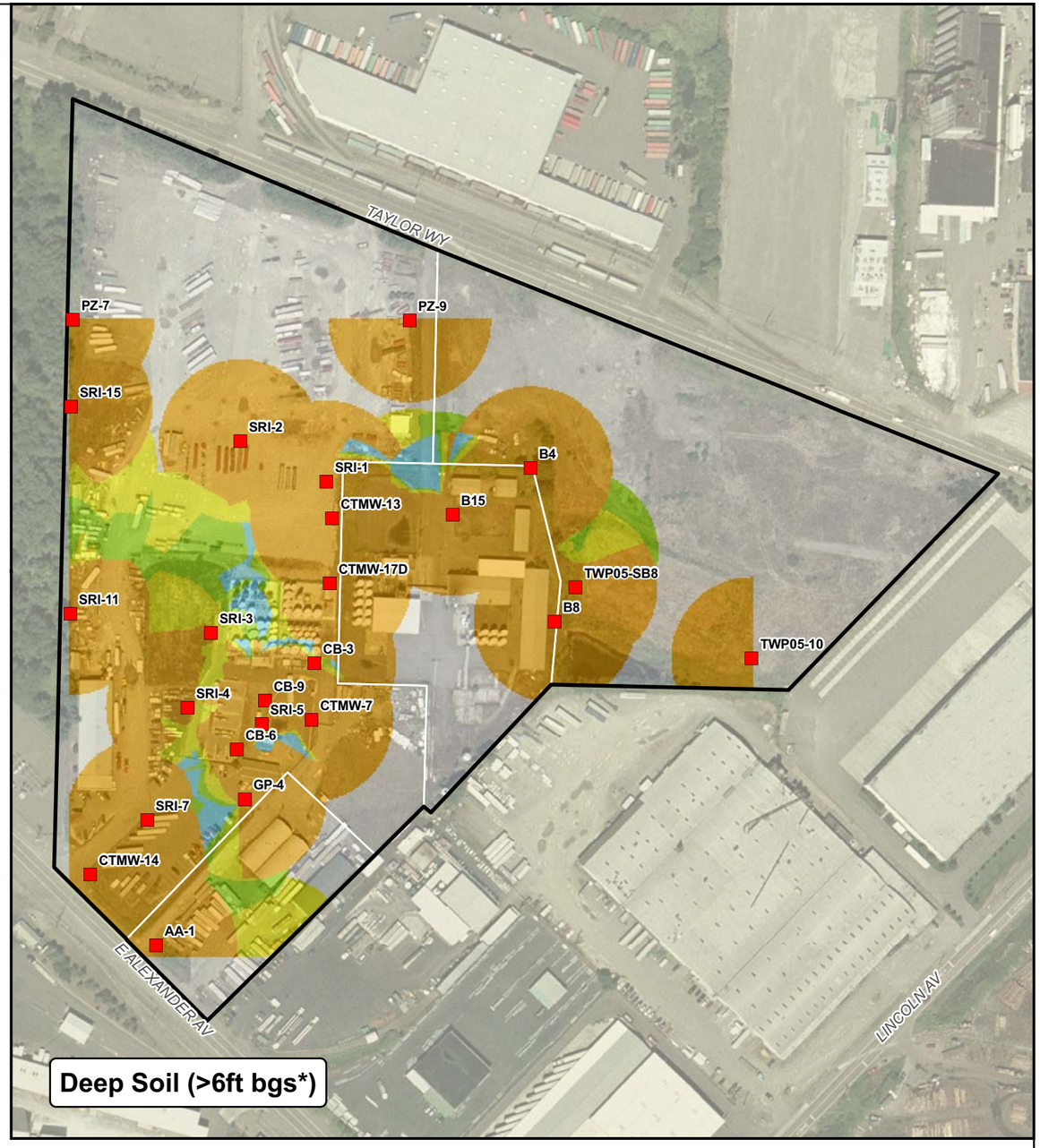
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 18**

Map Revised: June 26, 2008
Path: P:\0\00454116\00\GIS\MXD\Individual Analytes\Soil_Cyanide.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis: natural background

**Lead (mg/kg)**

- <0.1
- 0.1 - 5
- 5 - 24
- 24** - 5,000
- >5,000

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

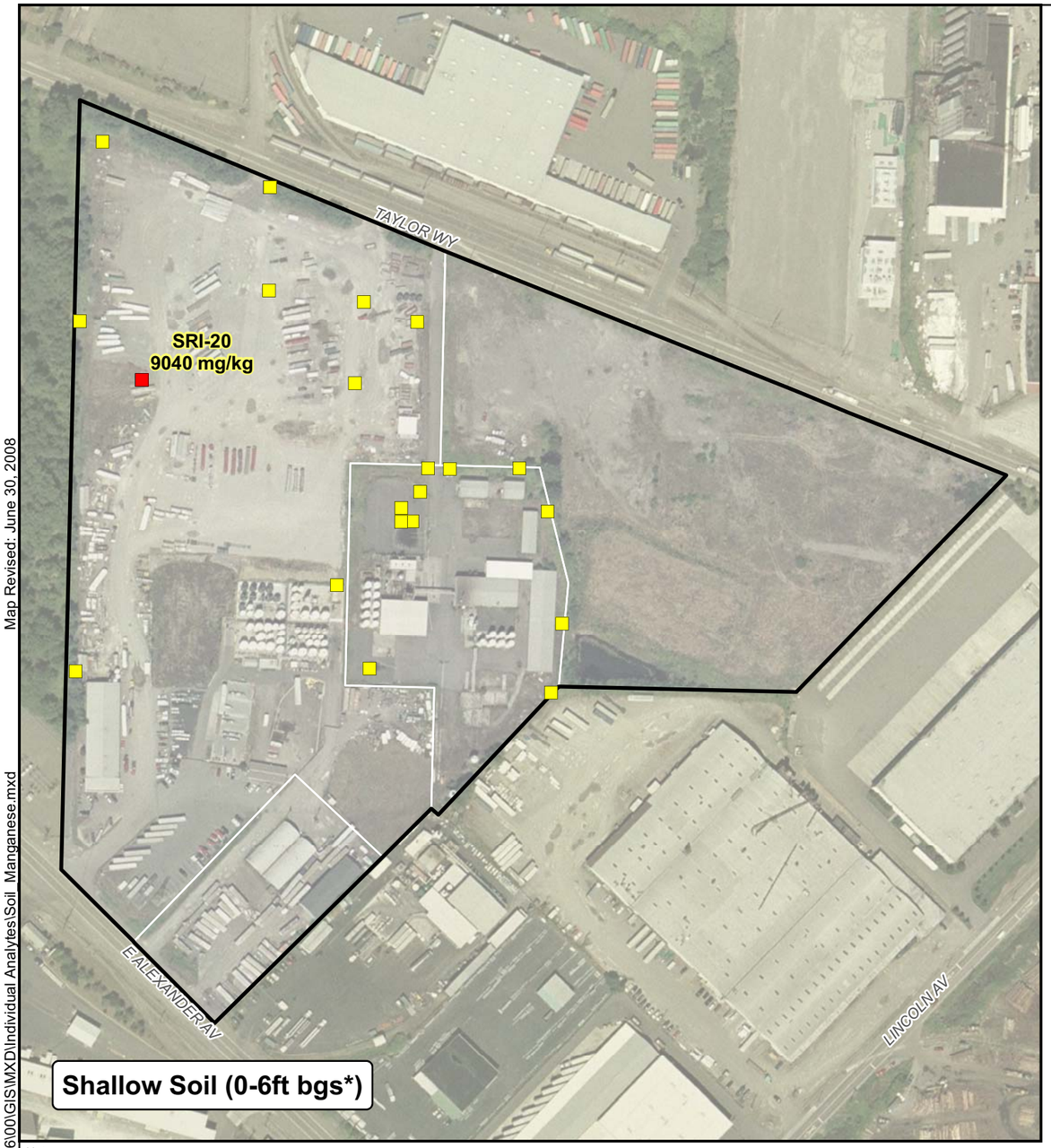
# Lead in Soil

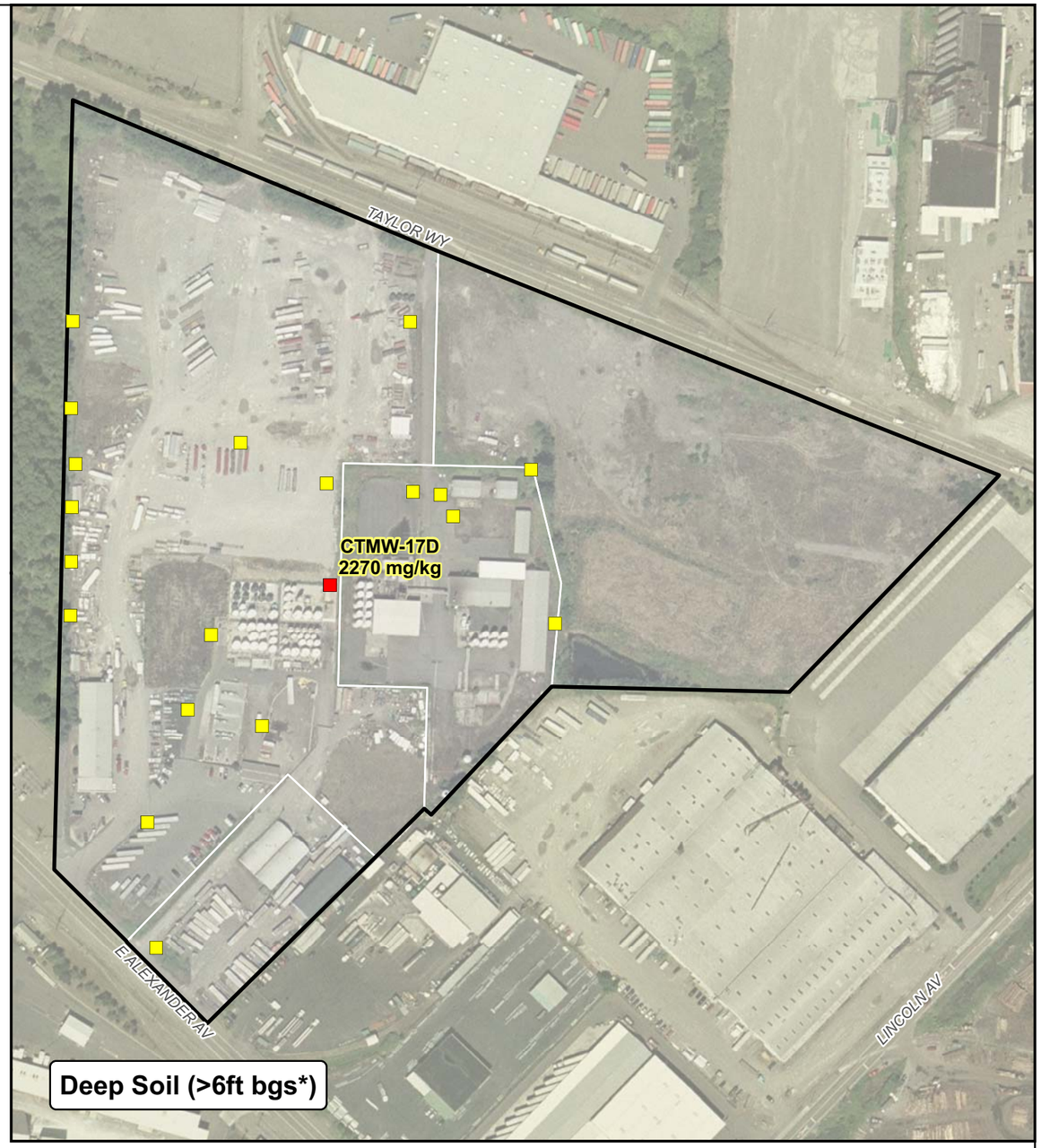
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 19**

Map Revised: June 27, 2008
Path: P:\0\045411\6\00\GIS\MXD\Individual Analytes\Soil_Lead.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 1,500 mg/kg
Screening level basis: protection of ecological receptors

N
W E
S

250 0 250
Feet

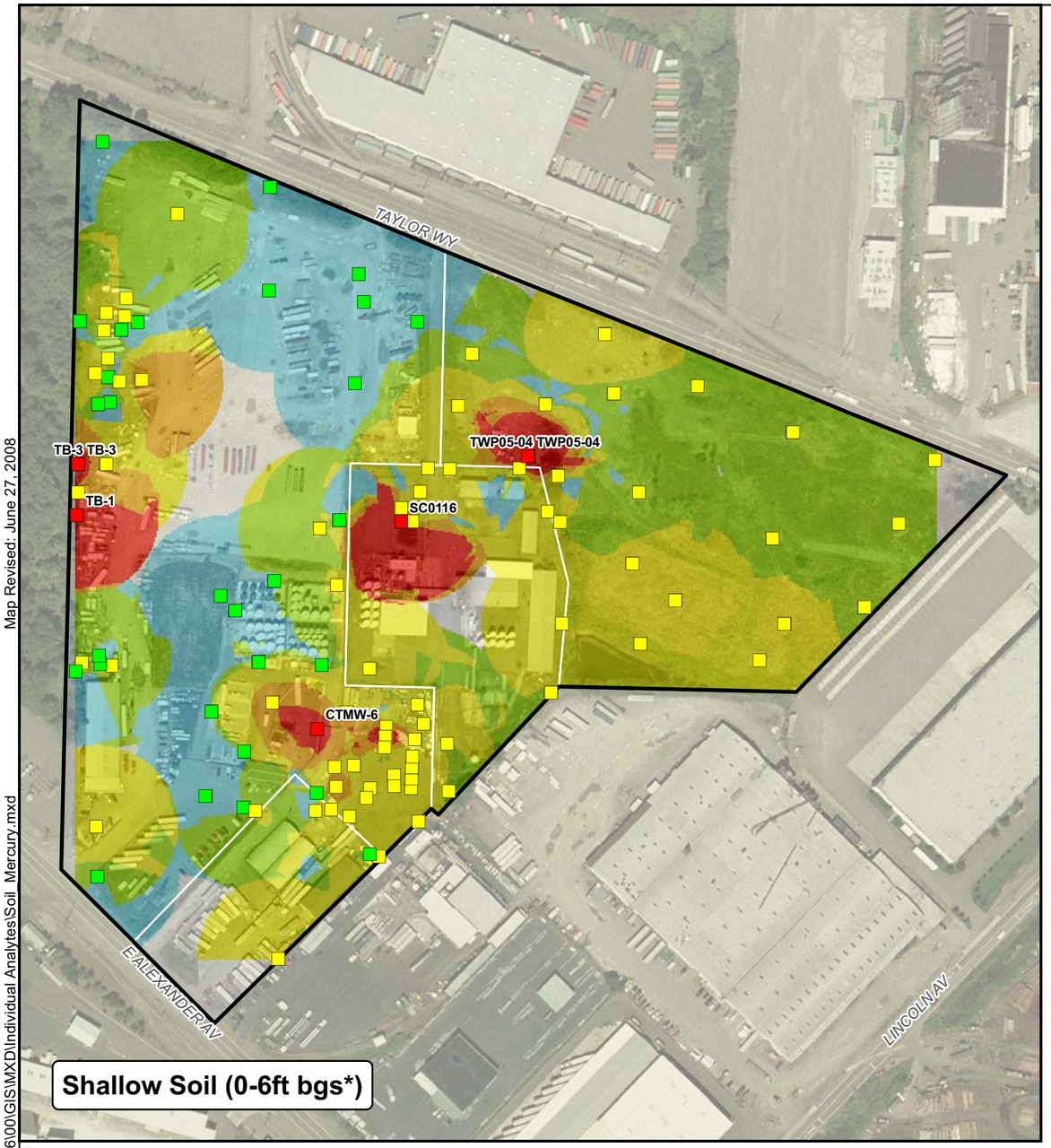
# Manganese in Soil

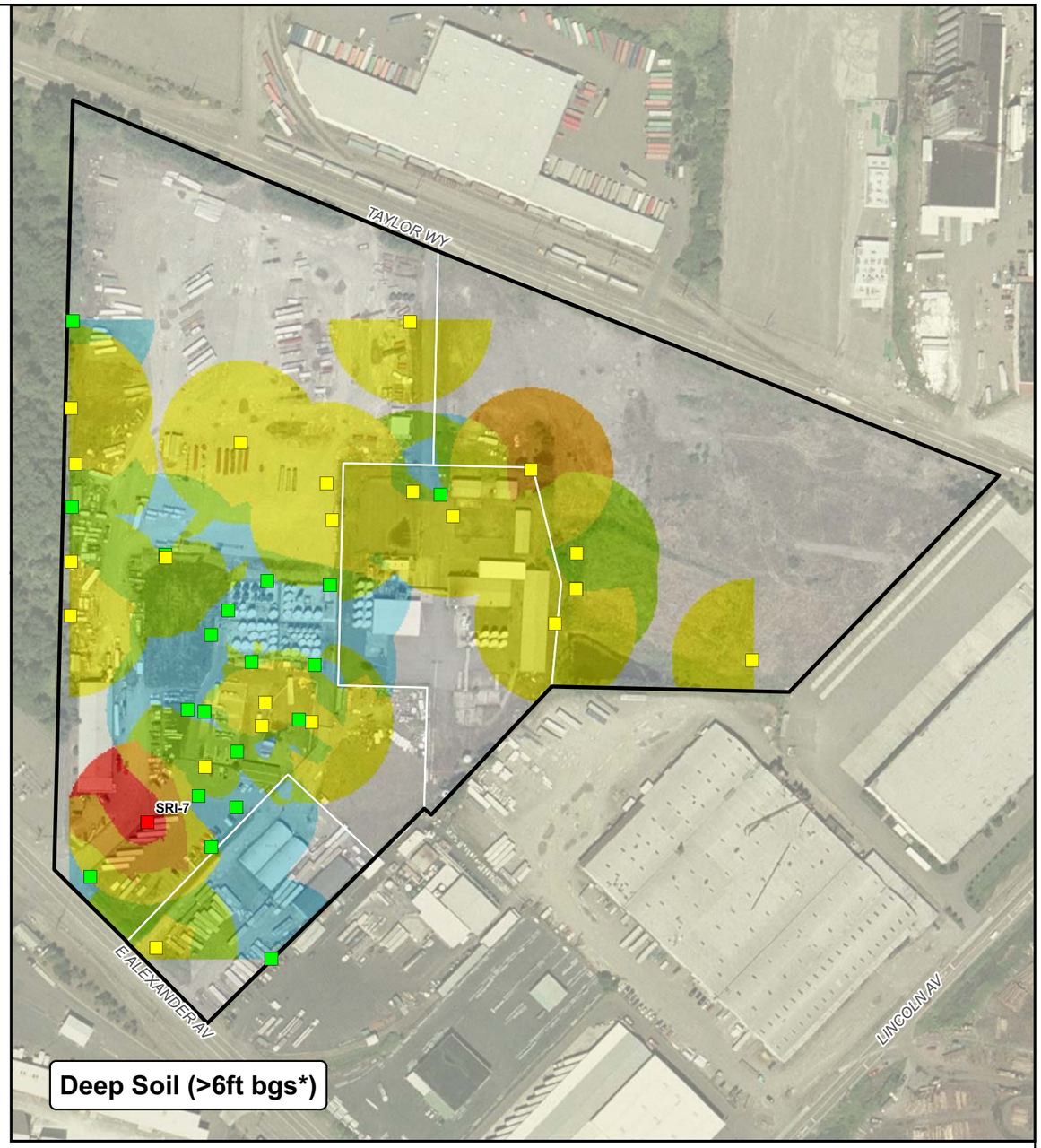
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 20**

Map Revised: June 30, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Soil_Manganese.mxd
Office: TAC




Map Revised: June 27, 2008

Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Soil_Mercury.mxd

Office: TAC

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis: protection of groundwater

**Mercury (mg/kg)**

- <0.01
- 0.01 - 0.1
- 0.1 - 1
- 1 - 2.09
- >2.09**

PROJECT NORTH

TRUE NORTH

250 0 250

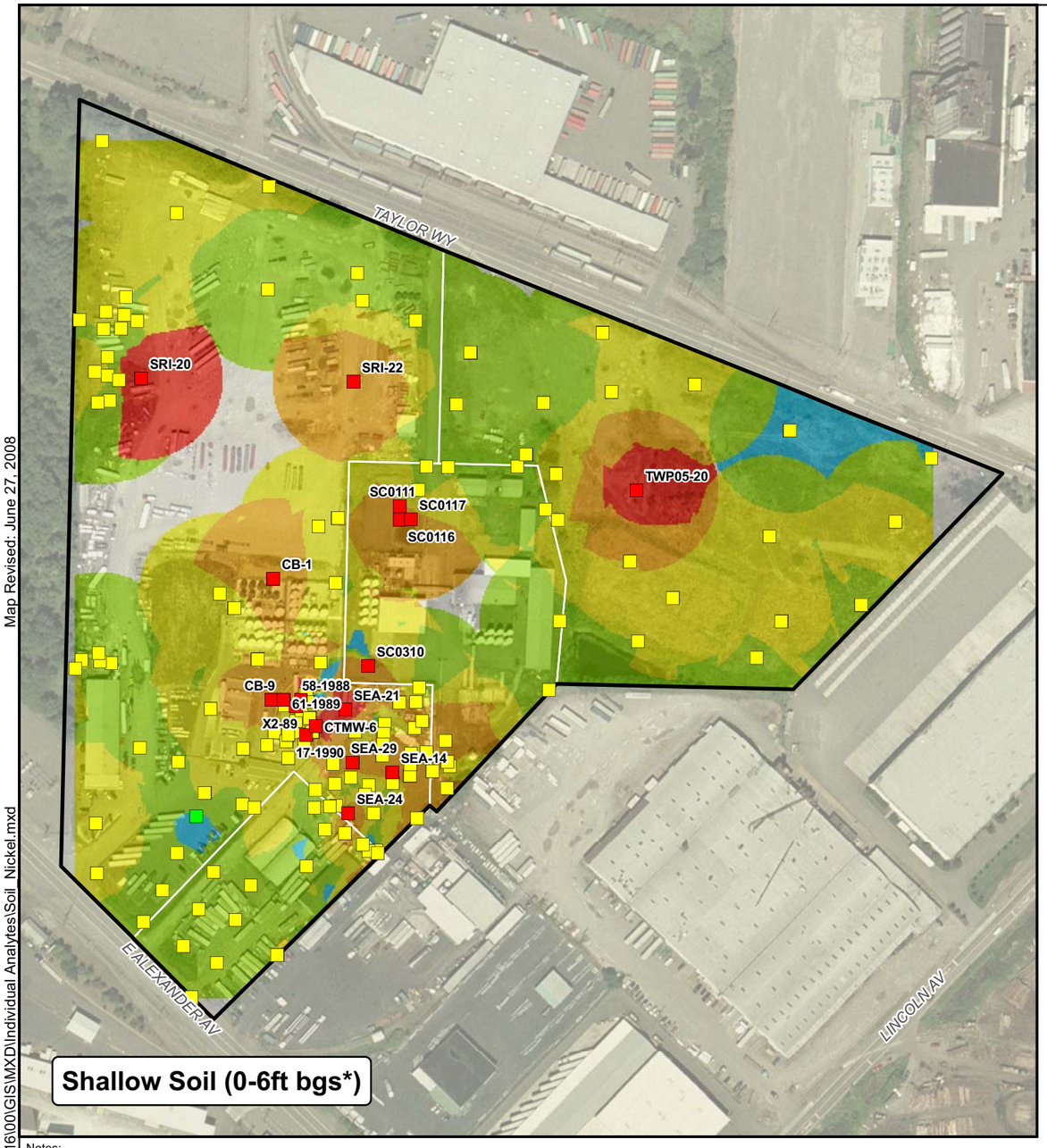
Feet

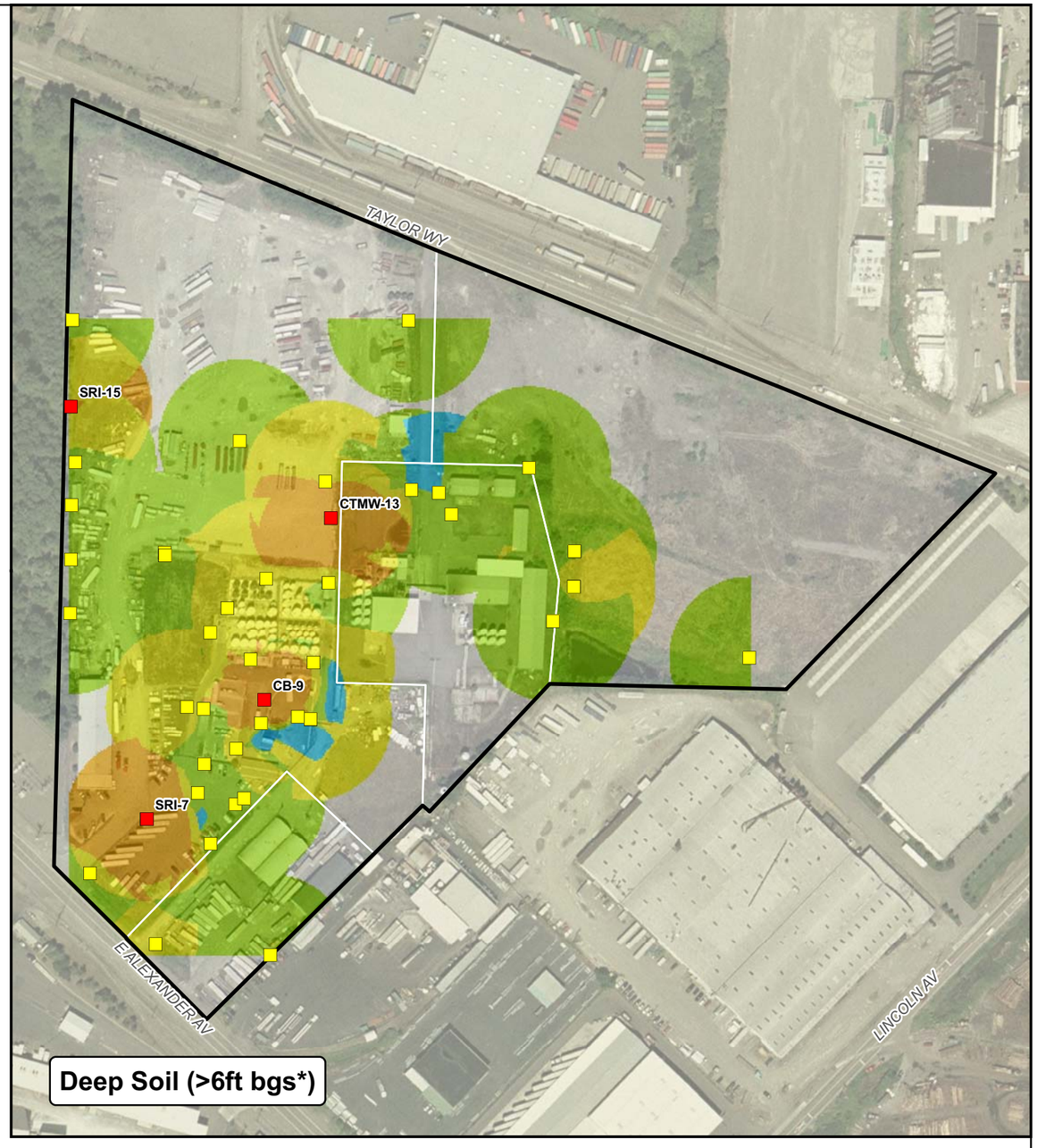
# Mercury in Soil

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 21**




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis: natural background

**Nickel (mg/kg)**

- <5
- 5 - 20
- 20 - 48.2
- 48.2** - 500
- >500

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

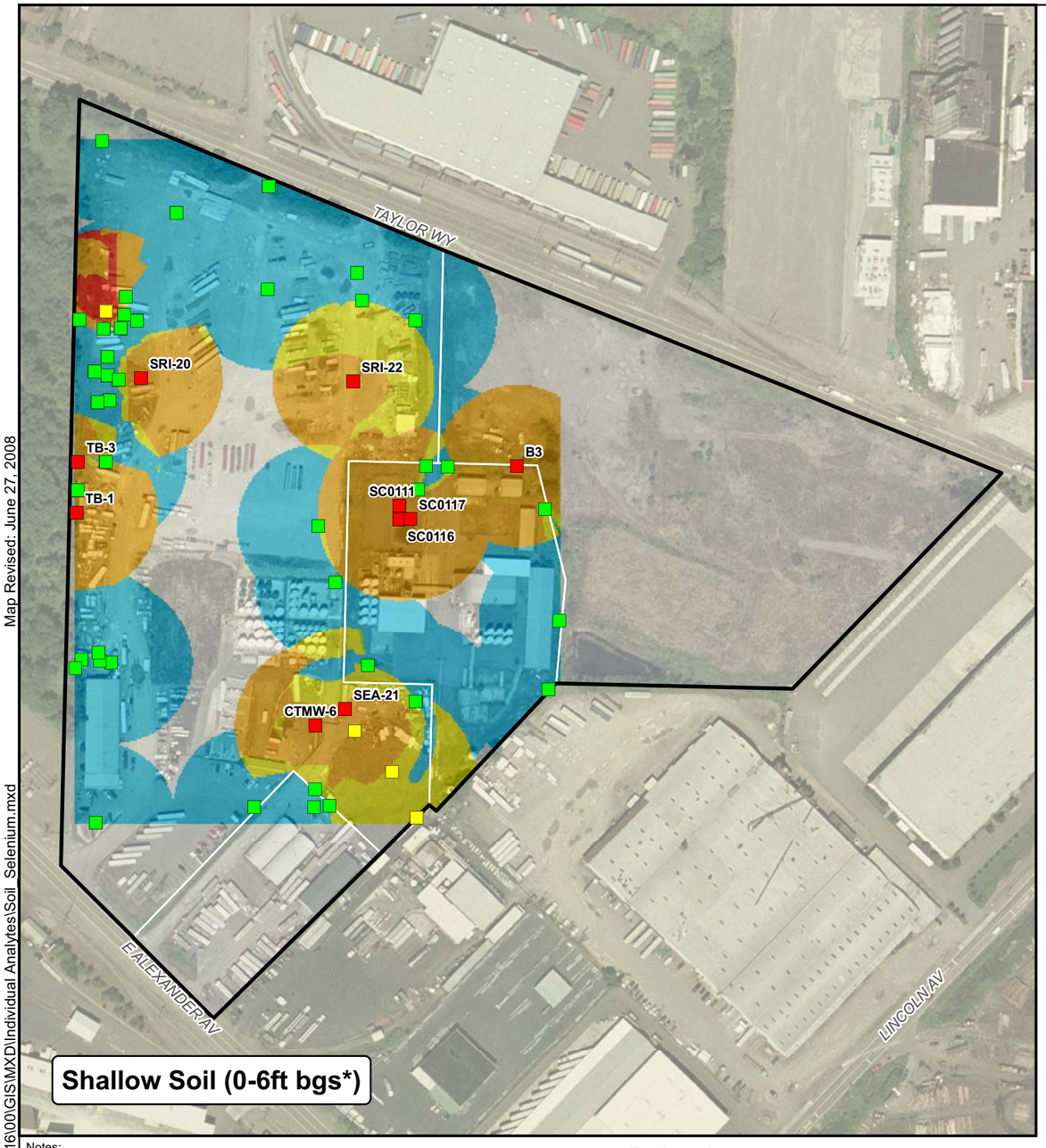
# Nickel in Soil

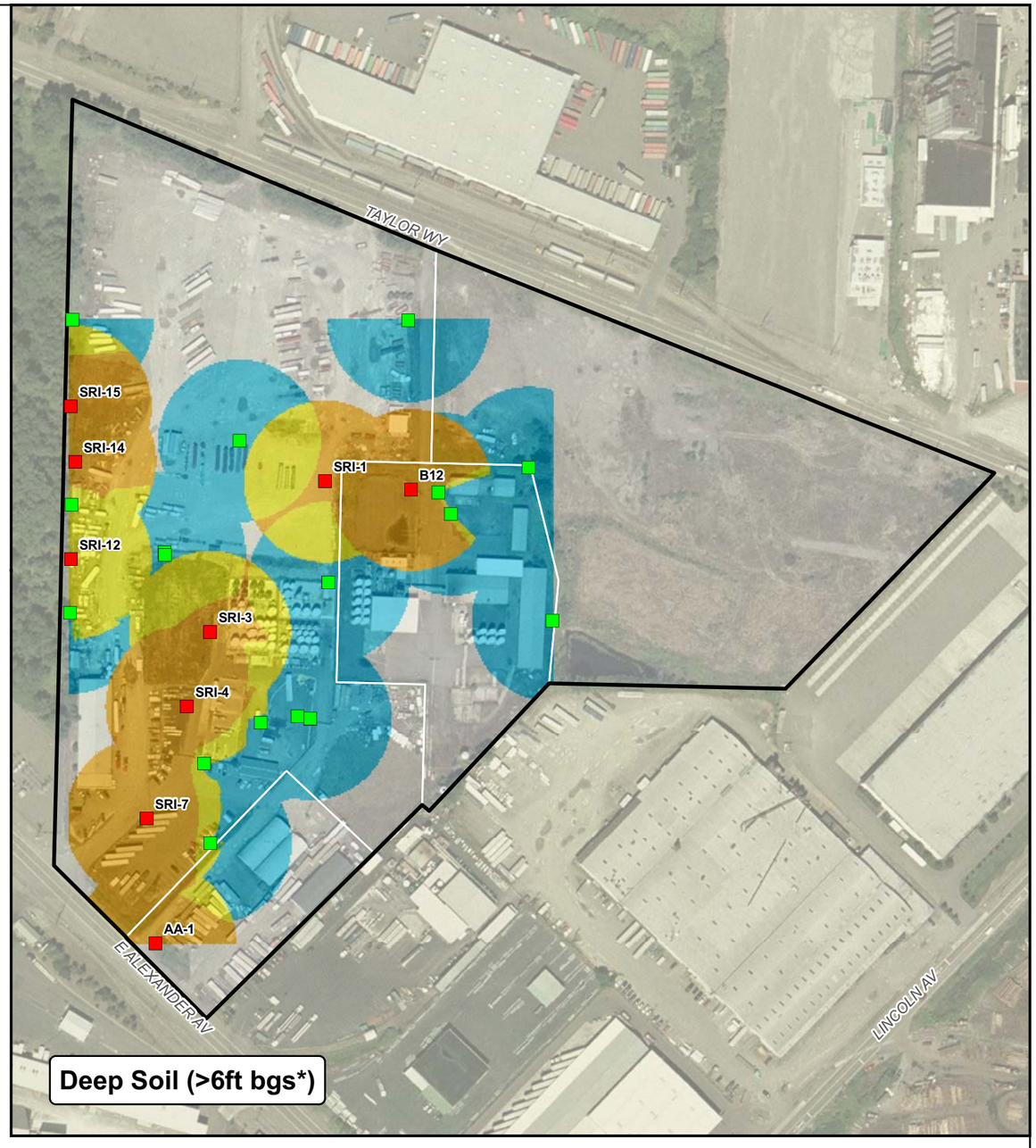
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 22**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Soil_Nickel.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis: practical quantitation limit

**Selenium (mg/kg)**

- <0.001
- 0.001 - 0.01
- 0.01 - 0.5
- 0.5** - 100
- >100

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

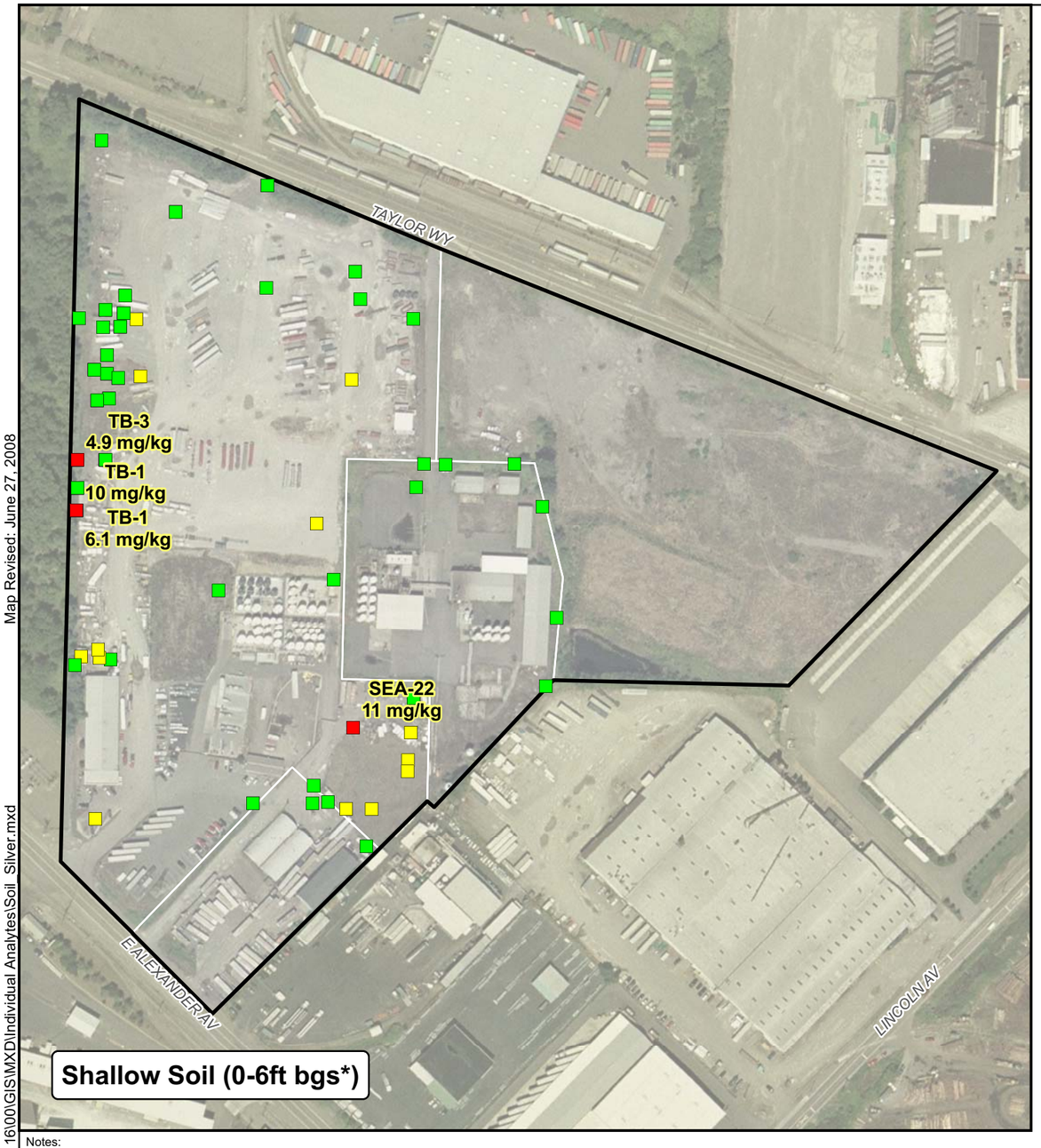
**Selenium in Soil**

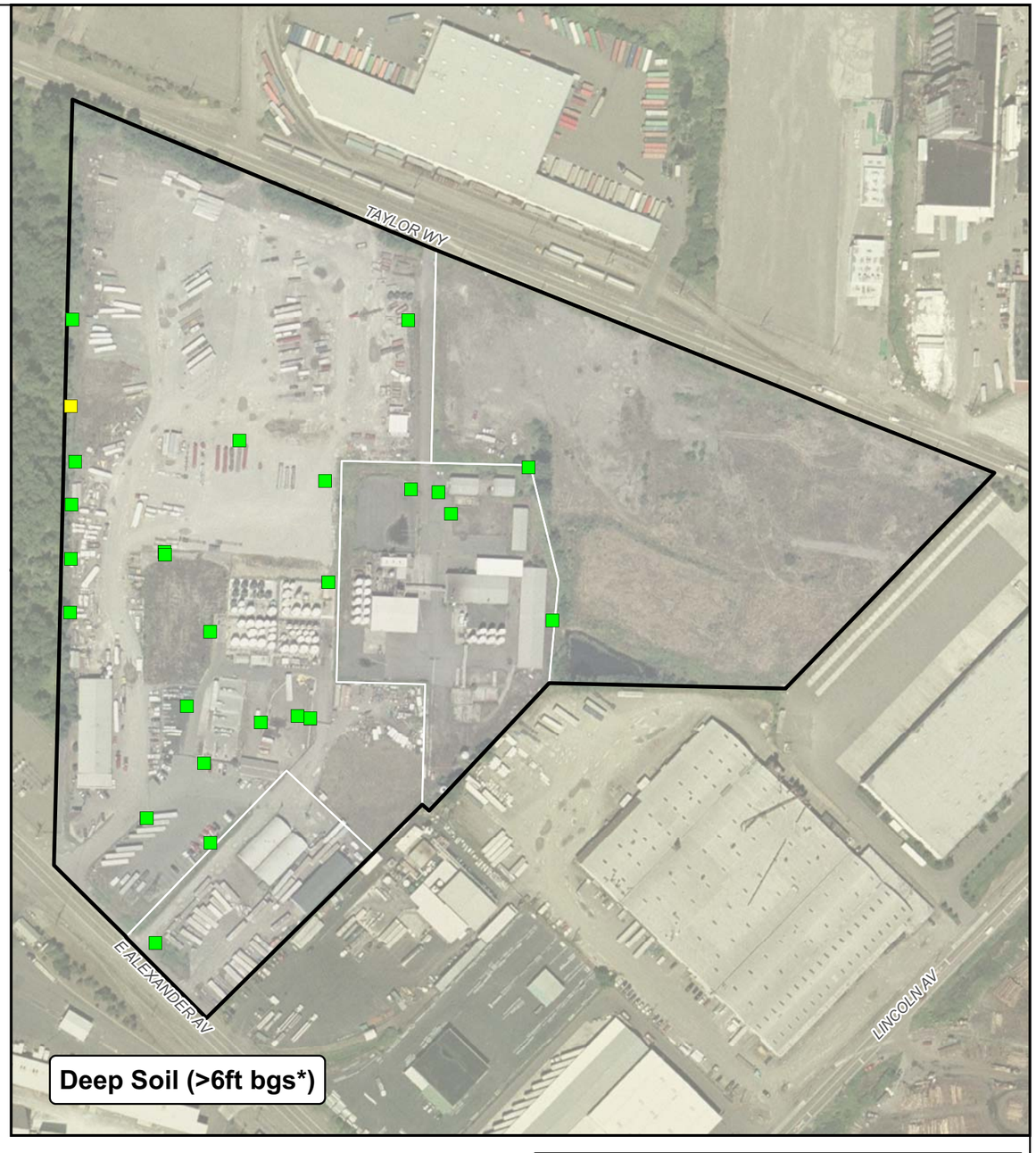
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 23**

Map Revised: June 27, 2008
Path: P:\0\045416\00\GIS\MXD\Individual Analytes\Soil_Selenium.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 4.41 mg/kg
Screening level basis: protection of groundwater

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

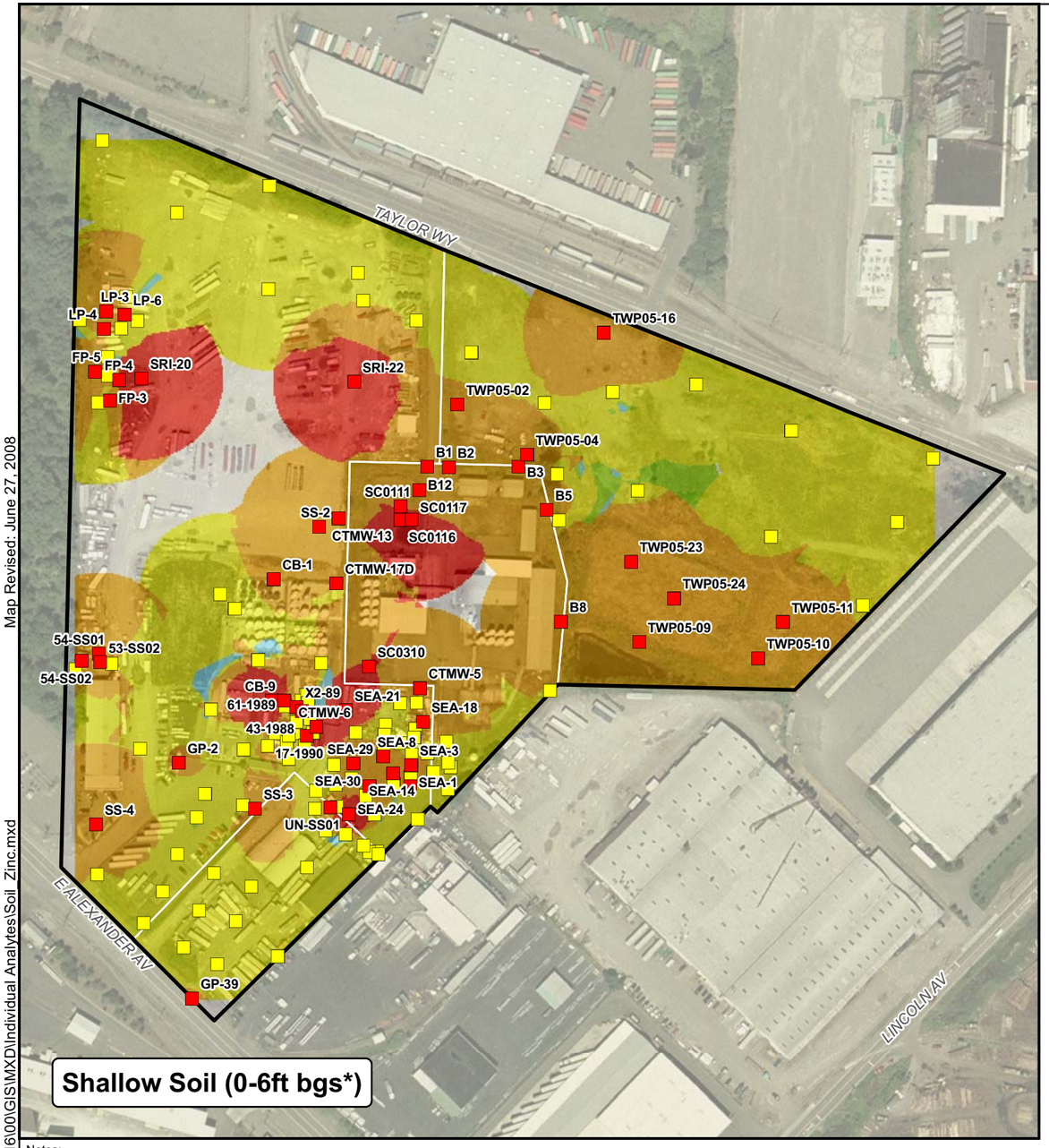
**Silver in Soil**

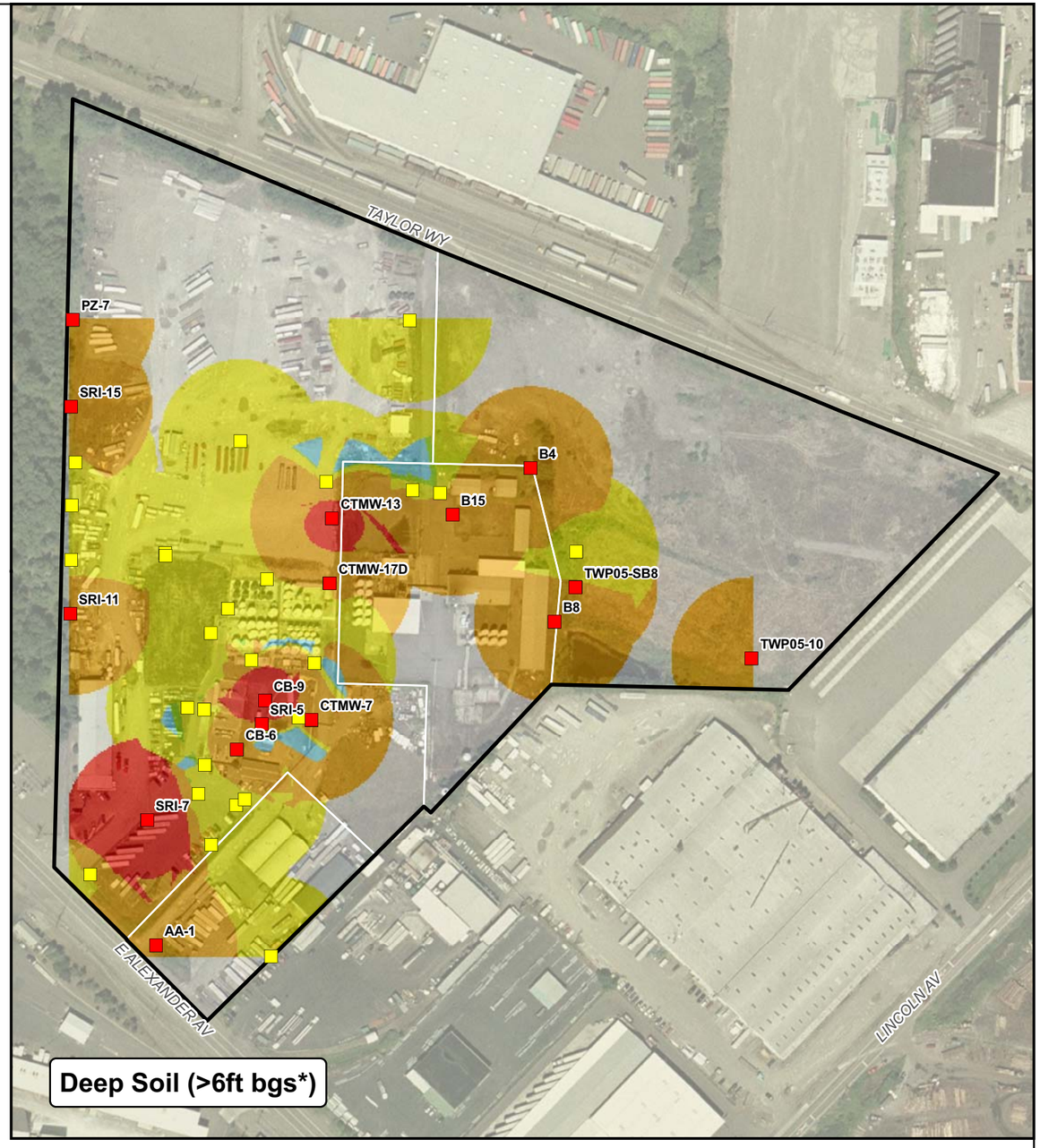
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 24**

Map Revised: June 27, 2008
Path: P:\0\045416\00\GIS\MXD\Individual Analytes\Soil_Silver.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis: protection of groundwater

**Zinc (mg/kg)**

- <0.1
- 0.1 - 10
- 10 - 101
- 101** - 1,000
- >1,000

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

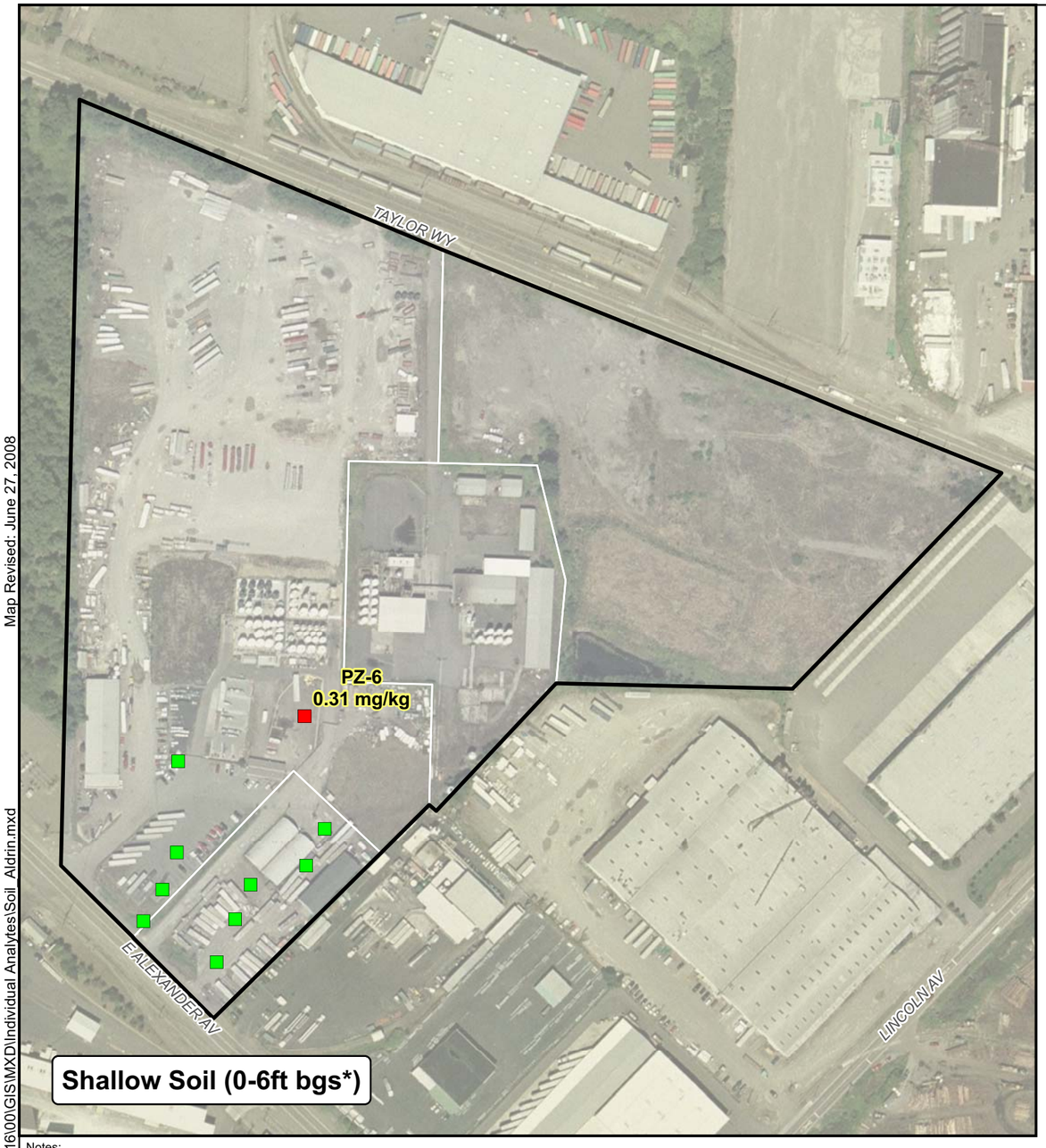
# Zinc in Soil

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

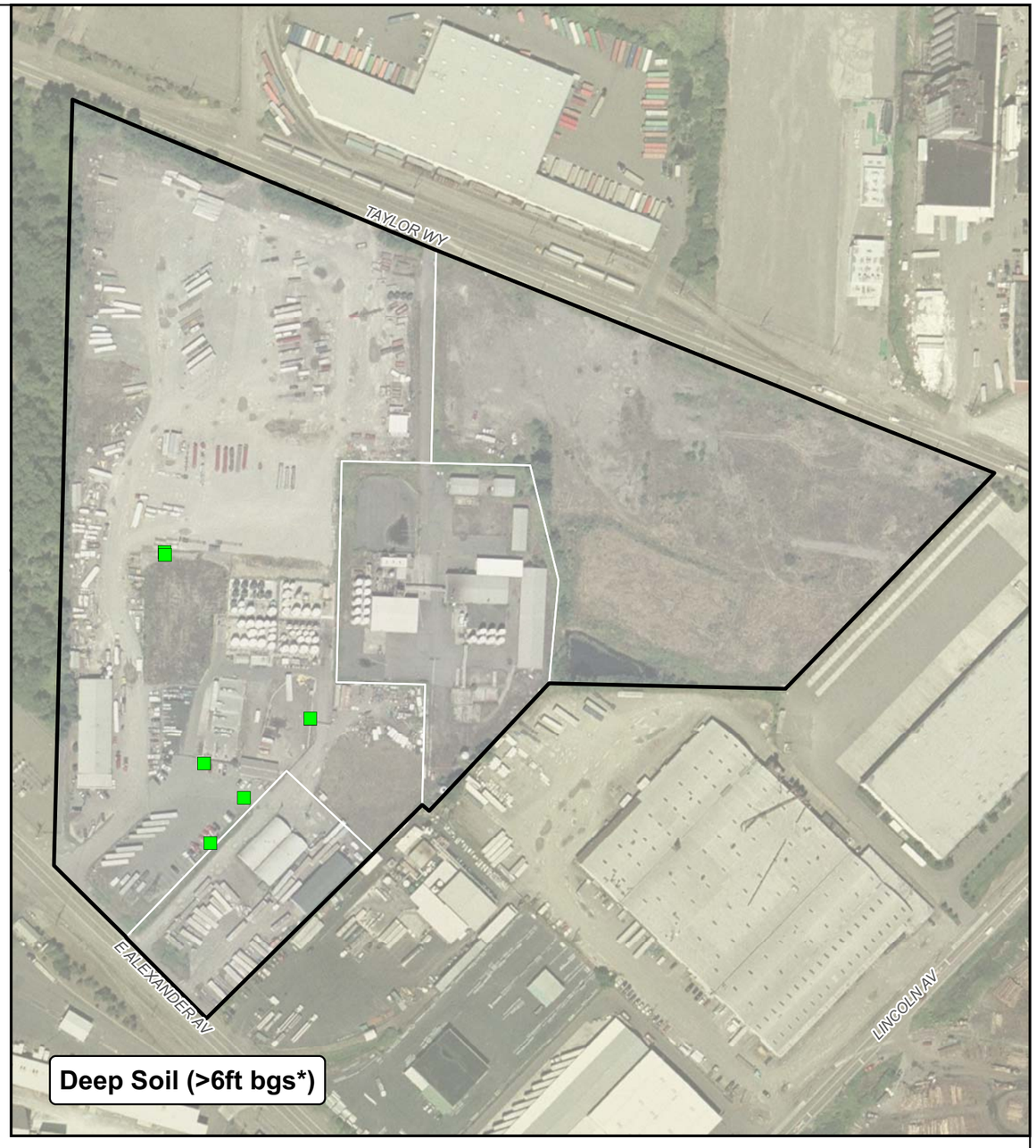
GeoEngineers

**Figure 25**

Map Revised: June 27, 2008
Path: P:\0\045411\6\00\GIS\MXD\Individual Analytes\Soil_Zinc.mxd
Office: TAC




**Shallow Soil (0-6ft bgs*)**




**Deep Soil (>6ft bgs*)**

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 0.0391 mg/kg
Screening level basis: protection of groundwater

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

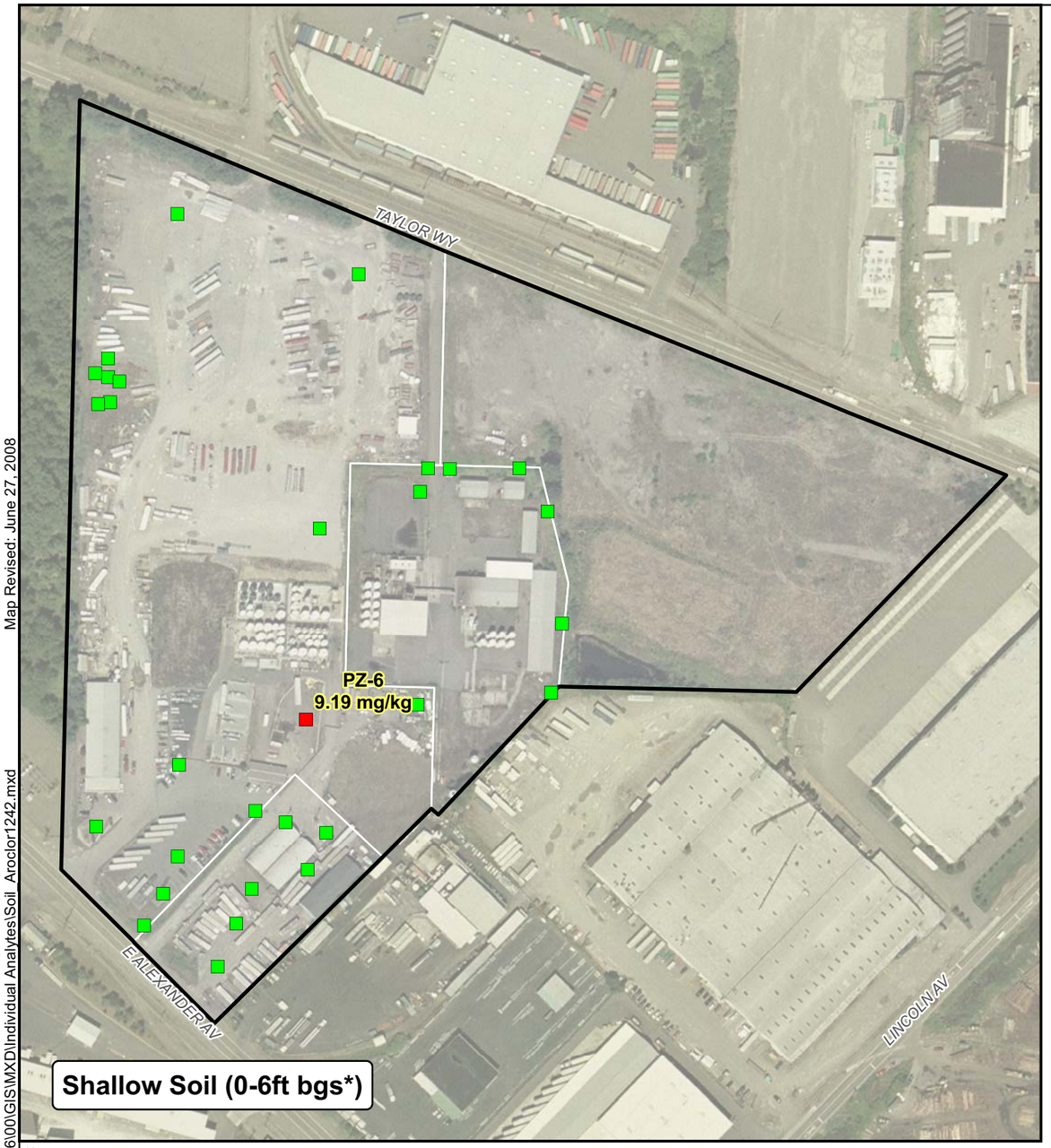
**Aldrin in Soil**

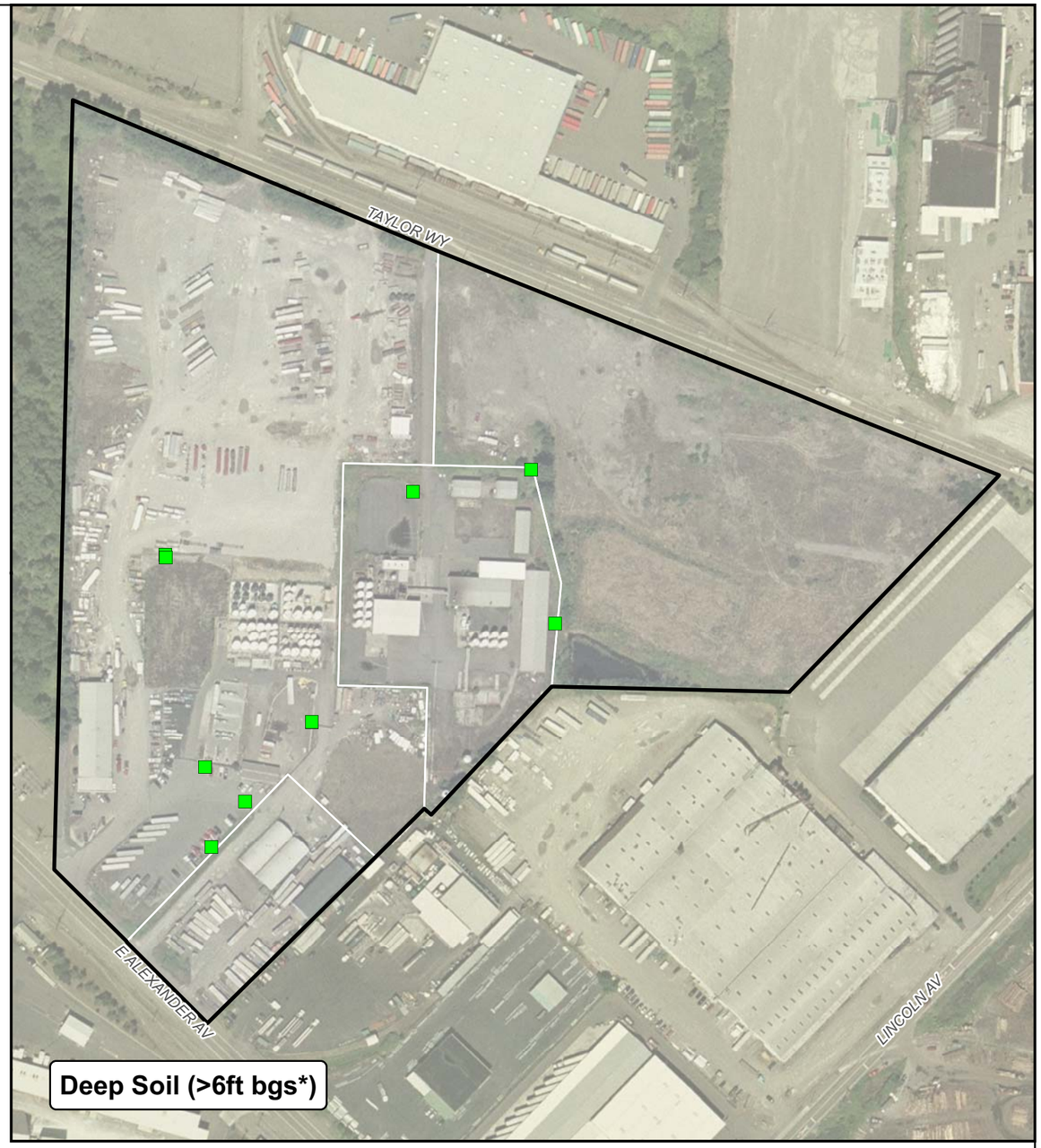
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 26**

Map Revised: June 27, 2008
Path: P:\0\045411 6\00\GIS\MXD\Individual Analytes\Soil_Aldrin.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 0.025 mg/kg
Screening level basis: pratical quantitation limit

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

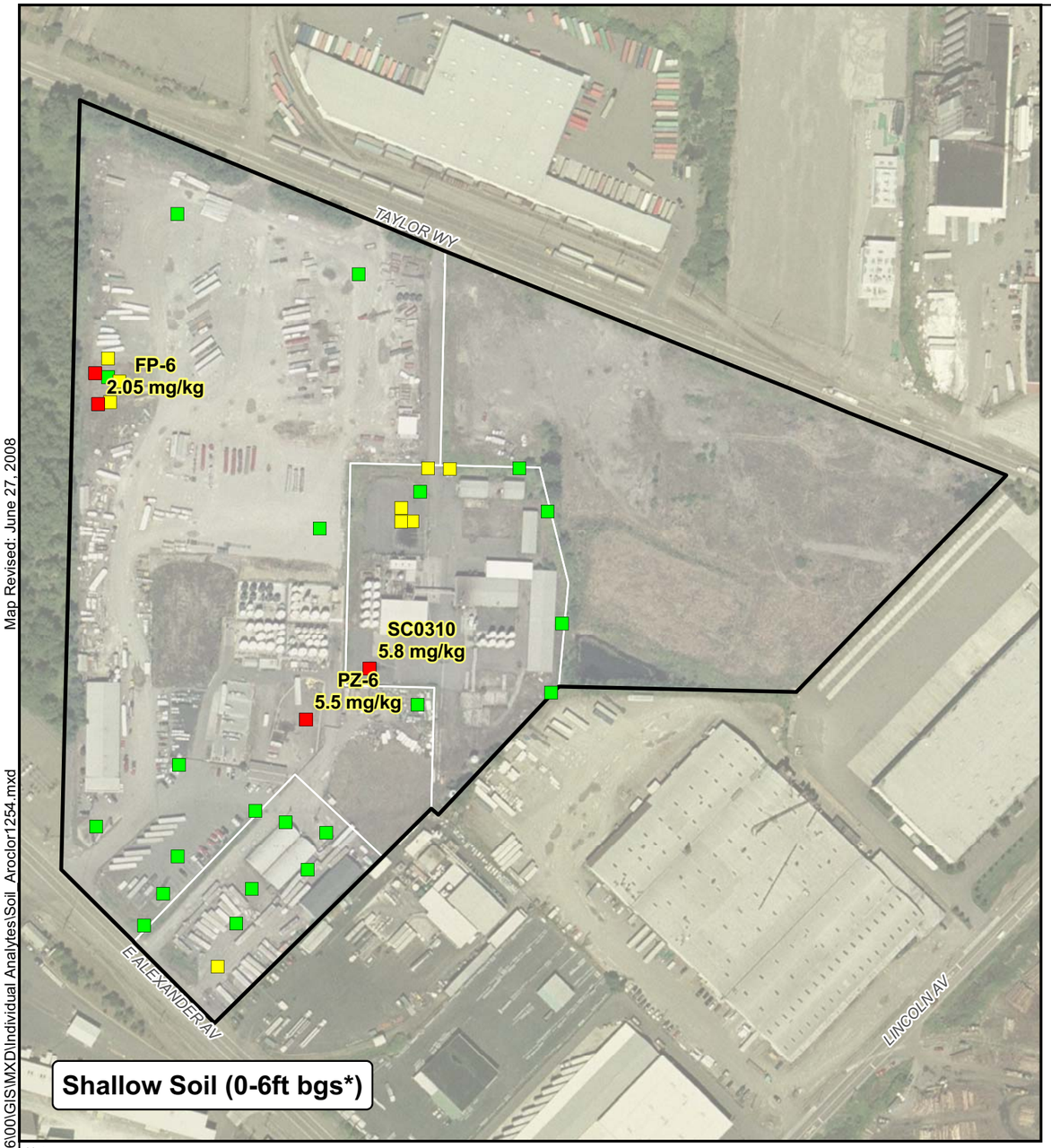
**Aroclor 1242 in Soil**

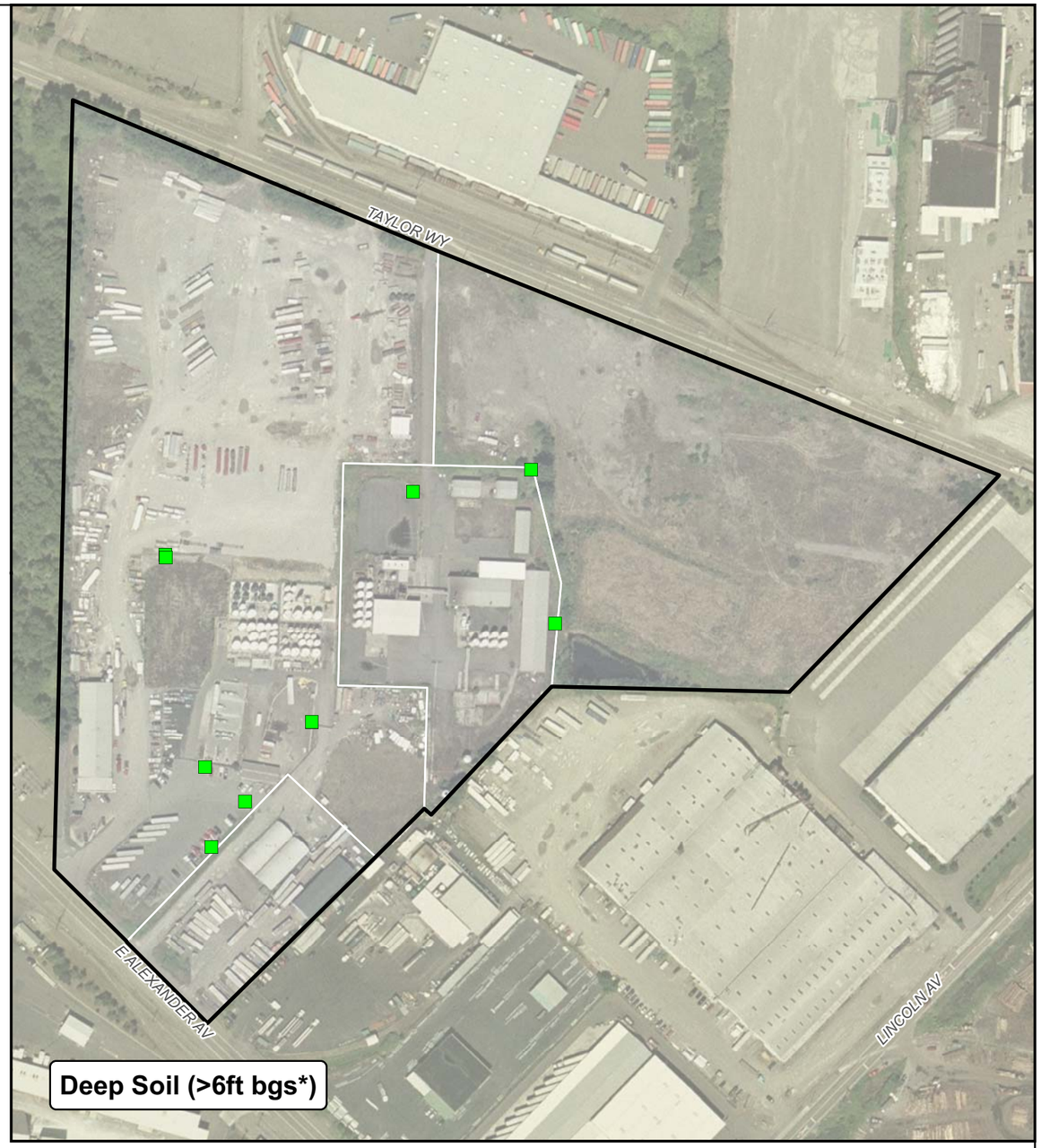
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 27**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Soil_Aroclor1242.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 0.65 mg/kg
Screening level basis: protection of ecological receptors

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

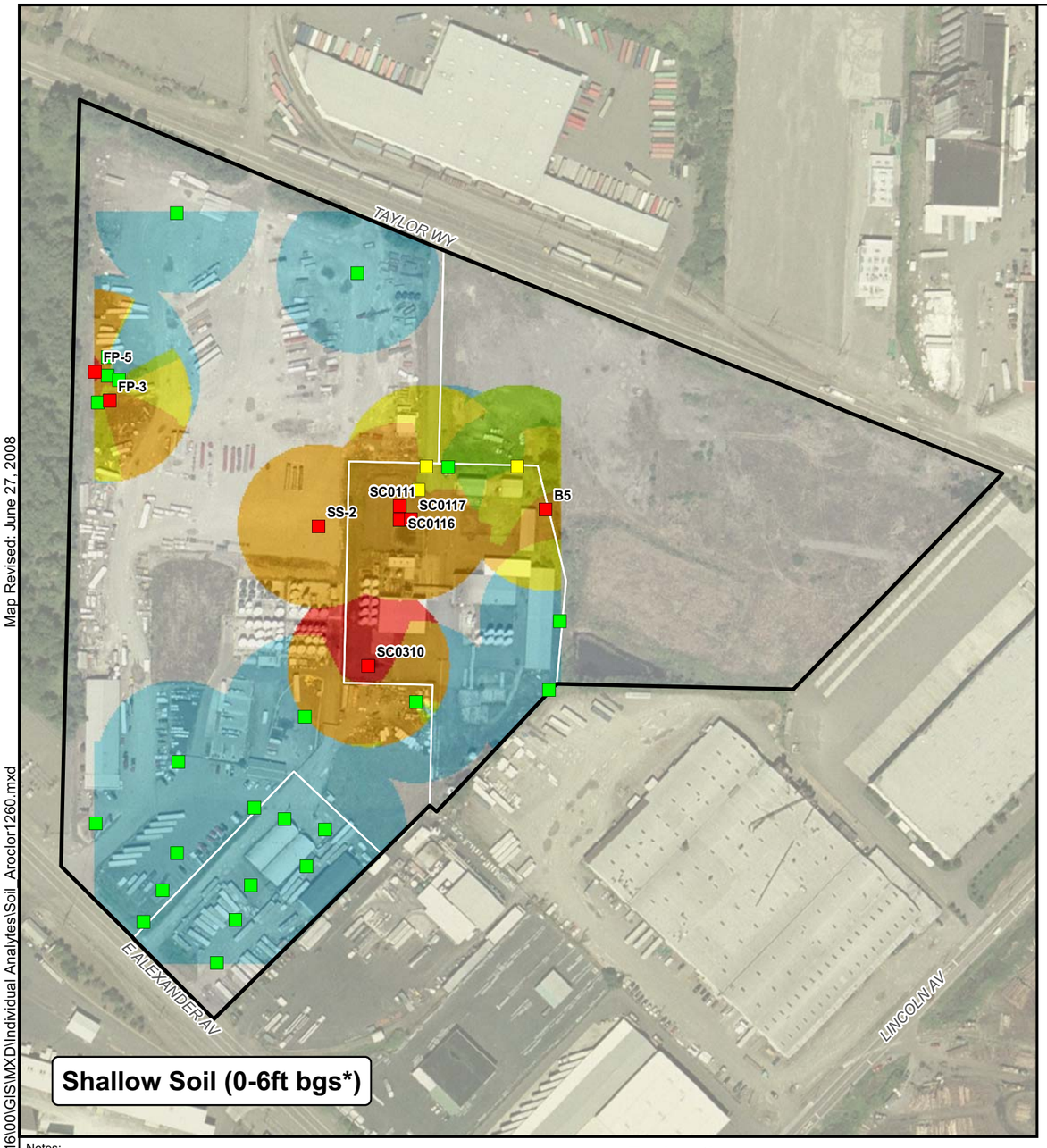
# Aroclor 1254 in Soil

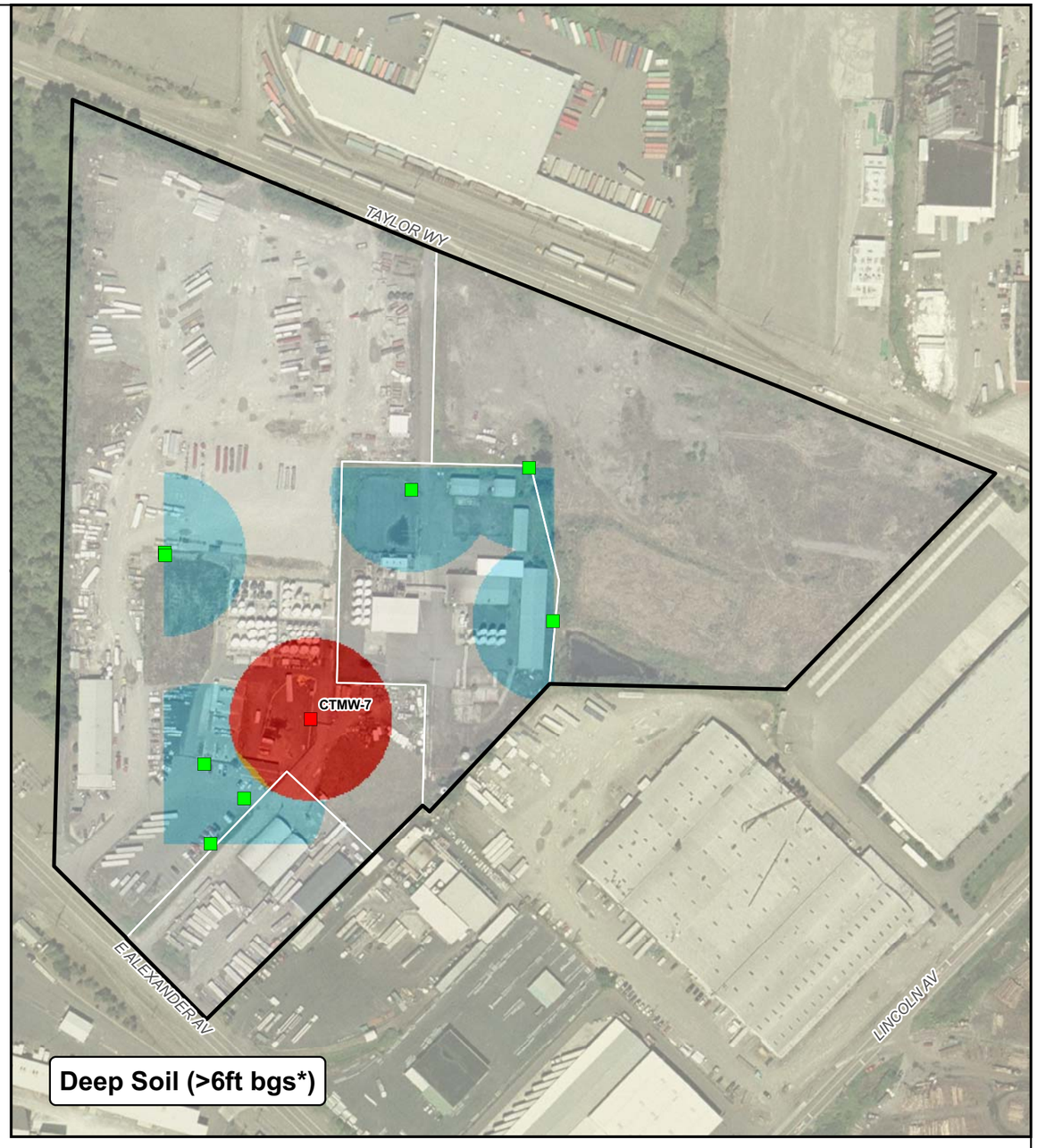
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 28**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Soil_Aroclor1254.mxd
Office: TAC




Map Revised: June 27, 2008

Path: P:\0\045411 6\00\GIS\MXD\Individual Analytes\Soil_Aroclor1260.mxd

Office: TAC

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis: protection of groundwater

**Aroclor-1260 (mg/kg)**

- <0.001
- 0.001 - 0.01
- 0.01 - 0.0375
- 0.0375** - 1
- >1

PROJECT NORTH

TRUE NORTH

250 0 250

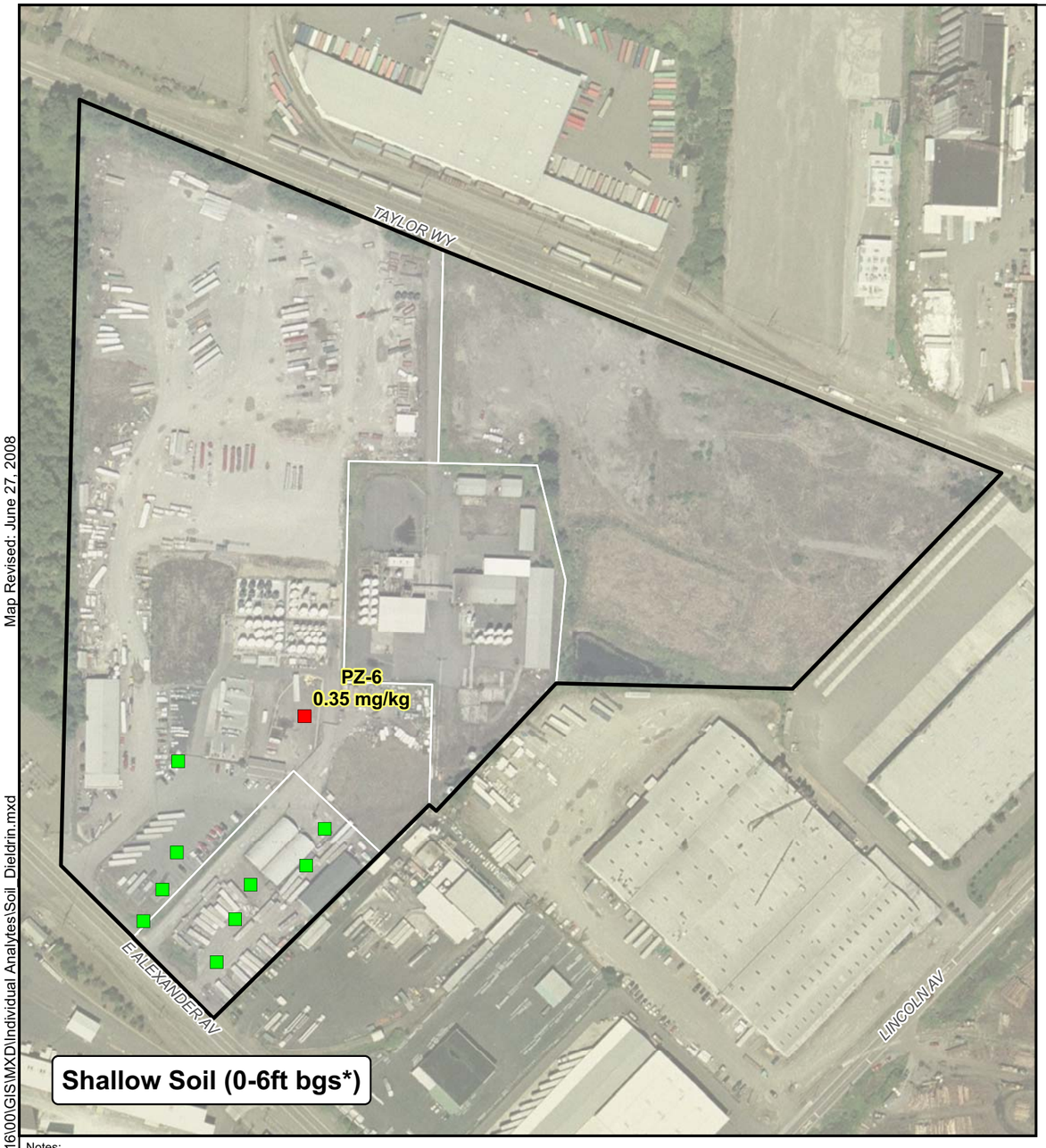
Feet

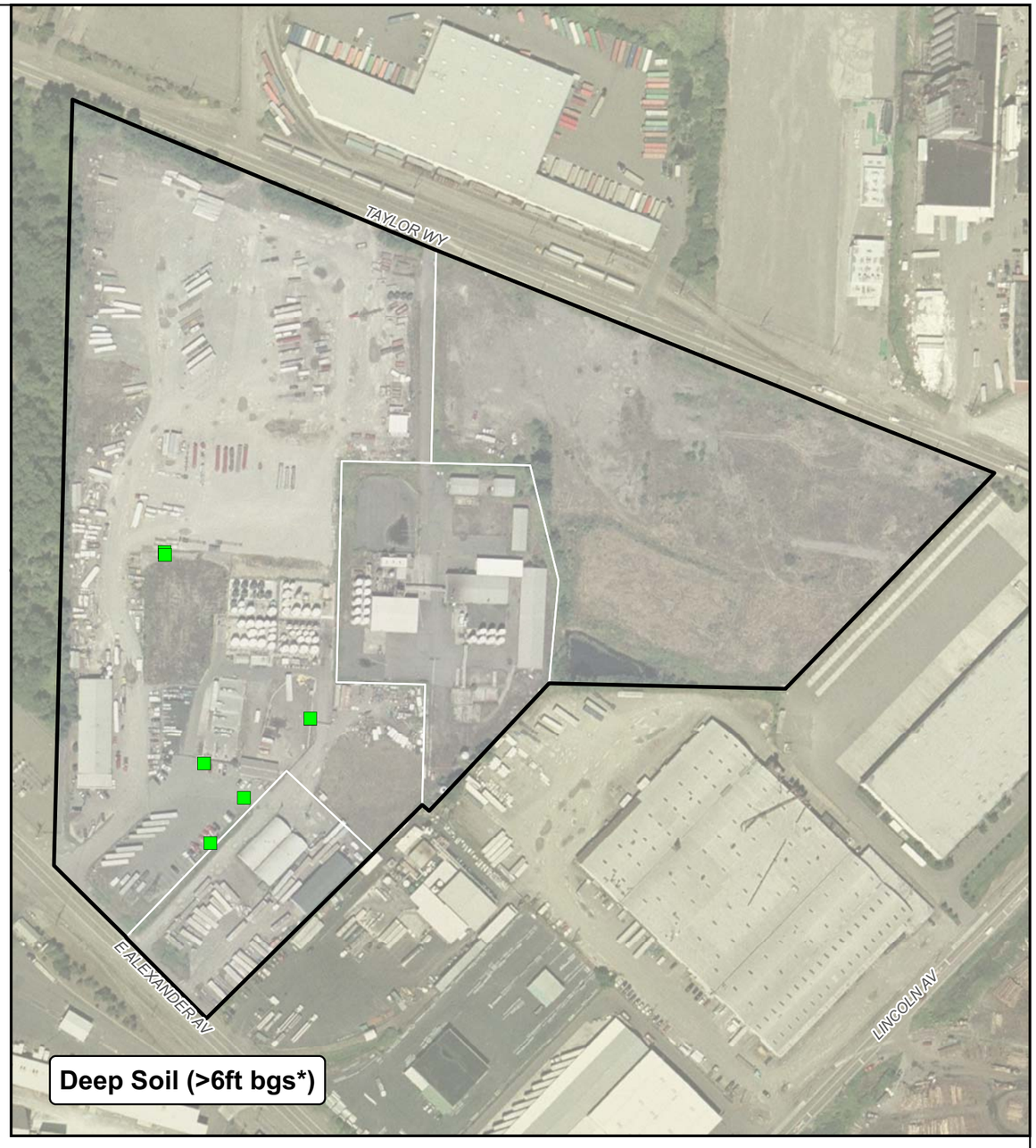
# Aroclor-1260 in Soil

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 29**




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources:
Sample data obtained from CC, Prologis and PSC. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 0.0103 mg/kg
Screening level basis: protection of groundwater

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

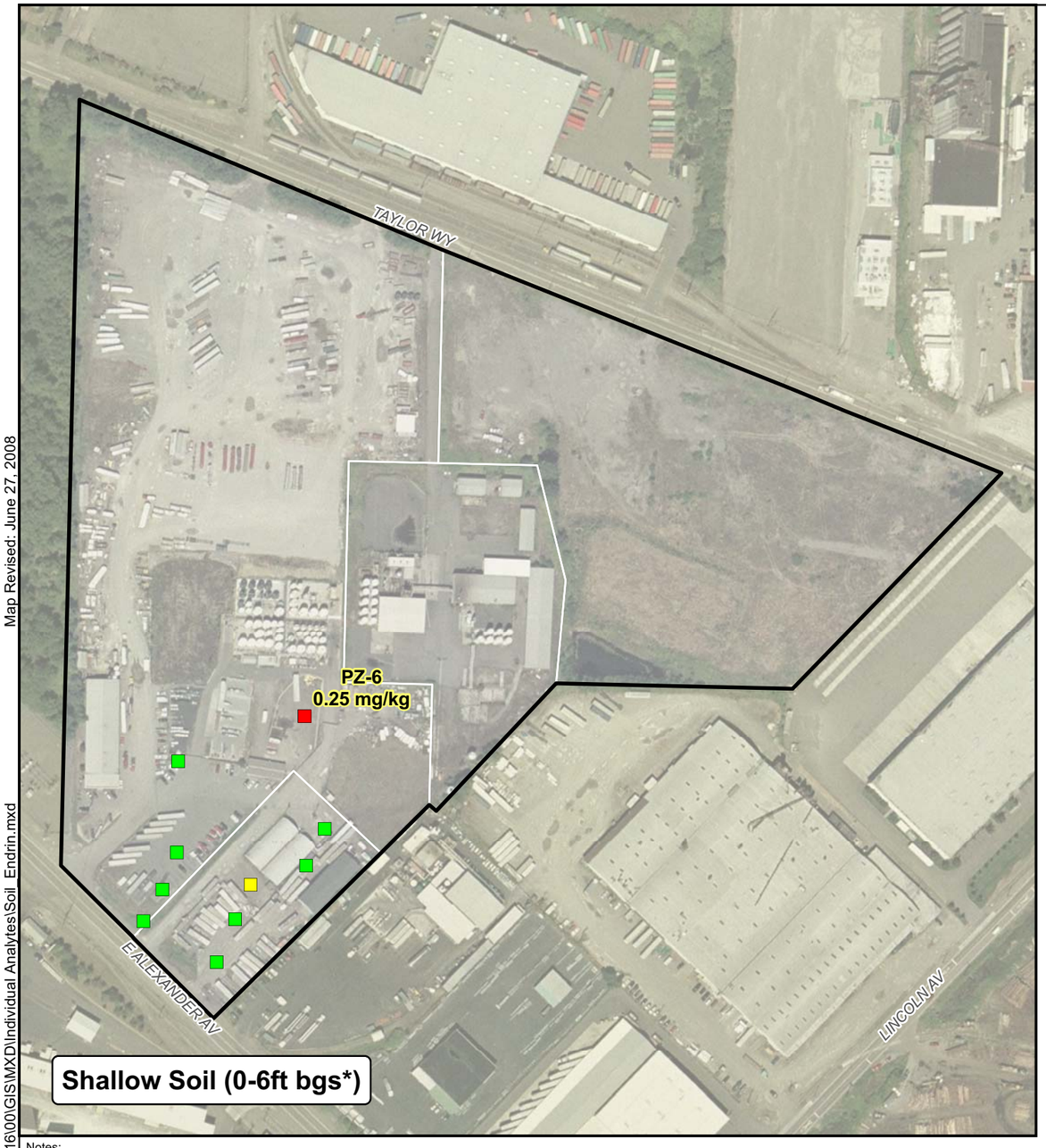
**Dieldrin in Soil**

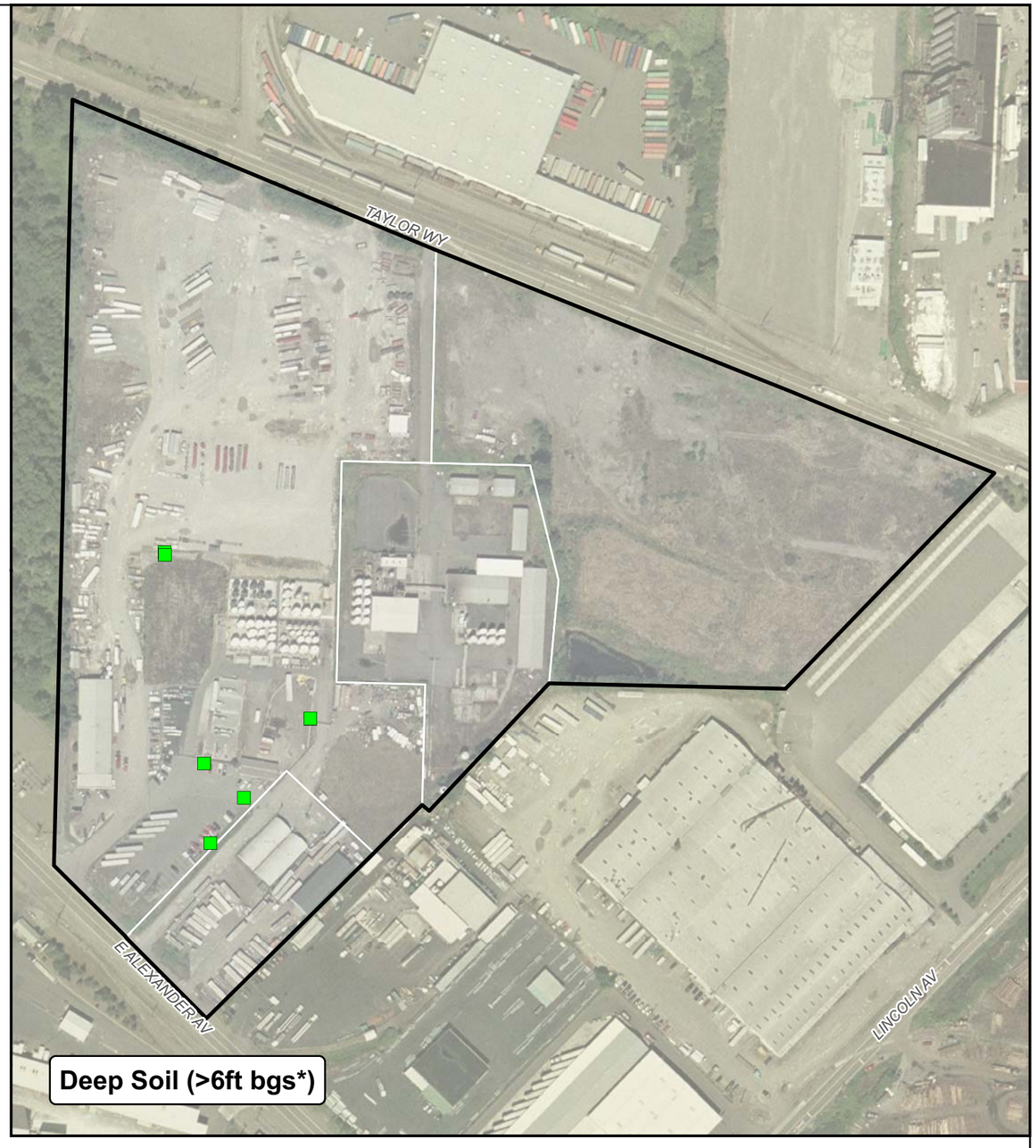
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 30**

Map Revised: June 27, 2008
Path: P:\0\045411\6\00\GIS\MXD\Individual Analytes\Soil_Dieldrin.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 0.0132 mg/kg
Screening level basis: protection of groundwater

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

# Endrin in Soil

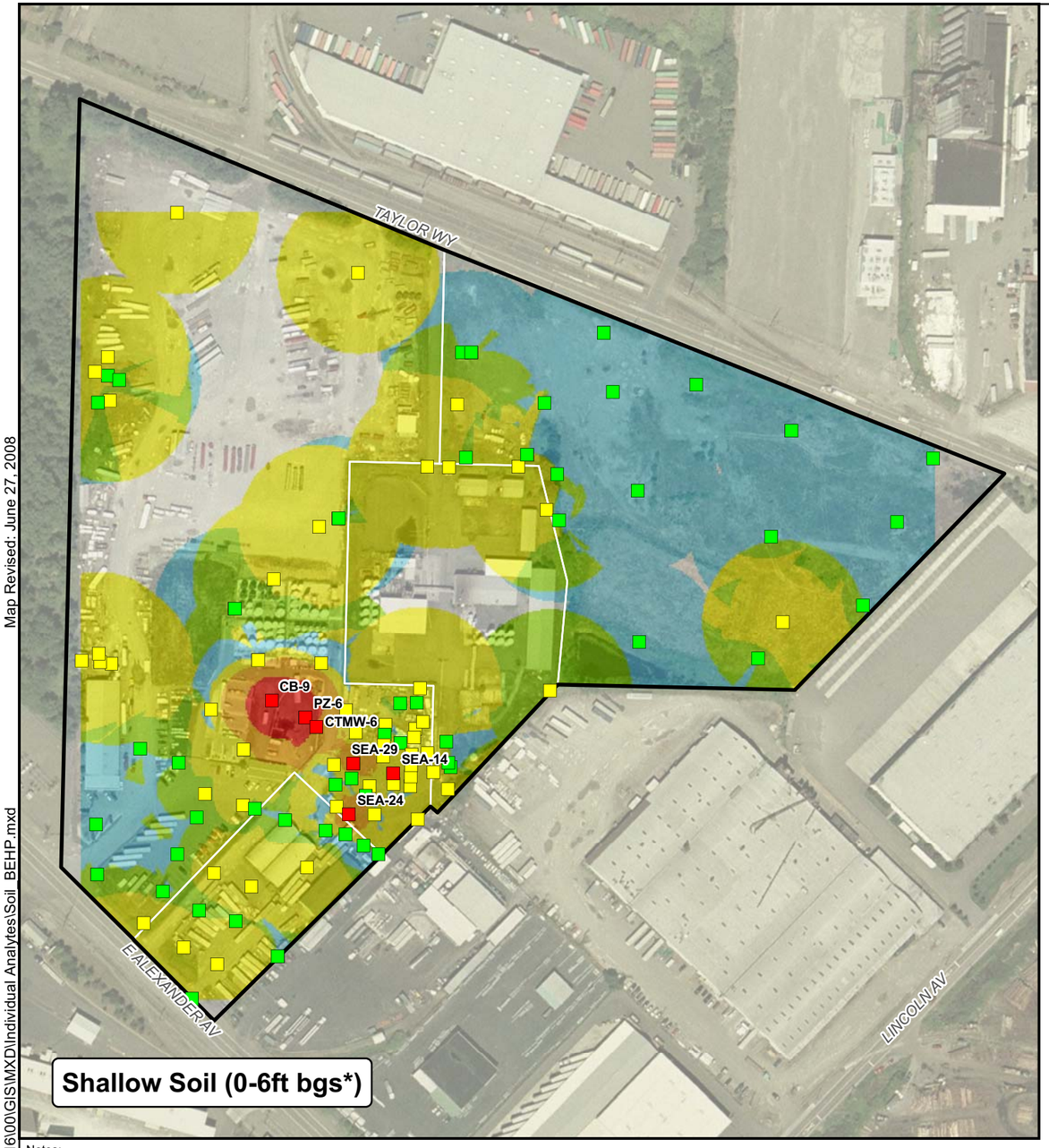
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

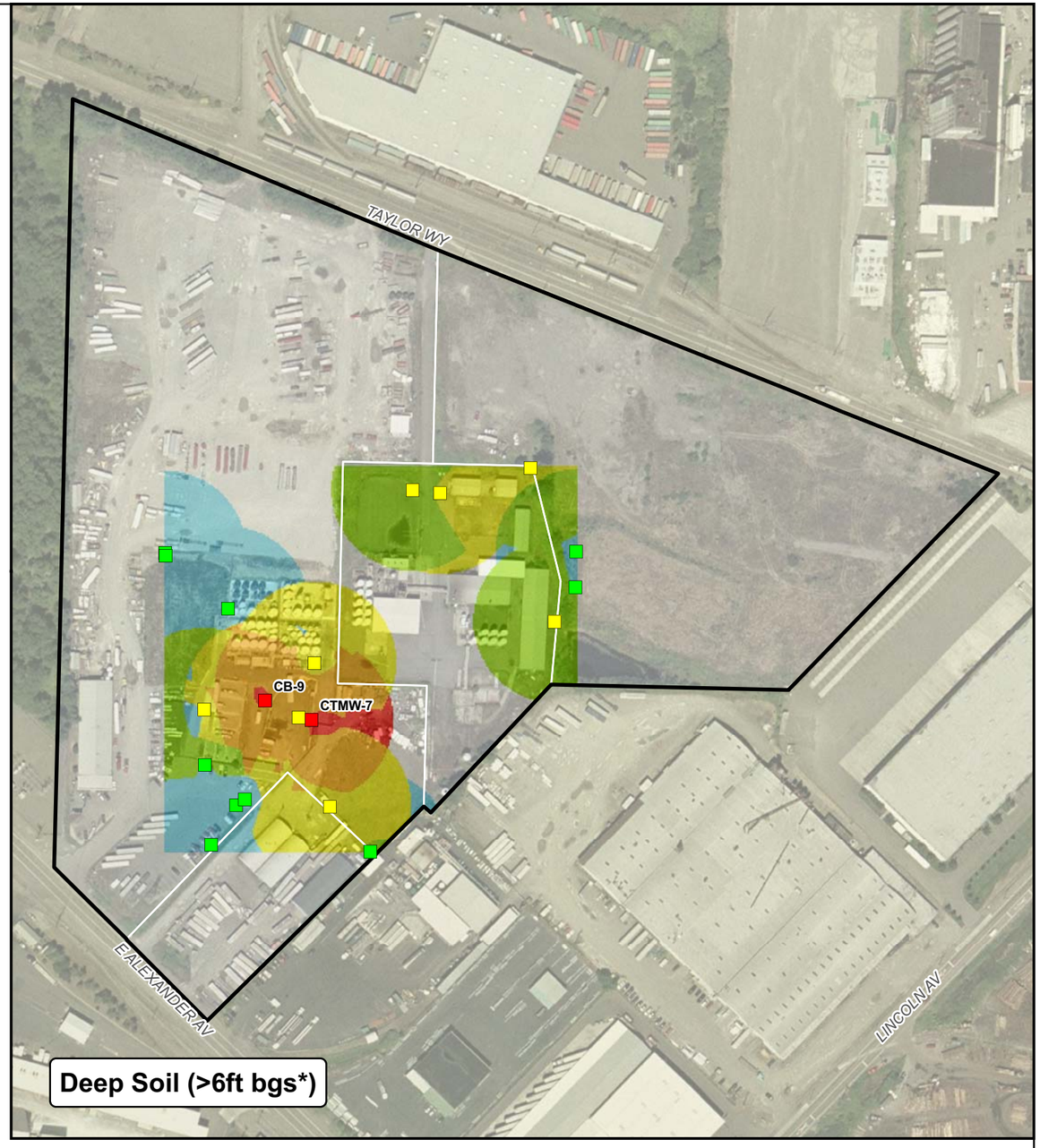
GeoEngineers

**Figure 31**

Map Revised: June 27, 2008

Office: TAC Path: P:\0\045416\00\GIS\MXD\Individual Analytes\Soil_Endrin.mxd




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis: protection of groundwater

**Bis(2-ethylhexyl)phthalate (mg/kg)**

- <0.001
- 0.001 - 0.1
- 0.1 - 22.3
- 22.3** - 100
- >100

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

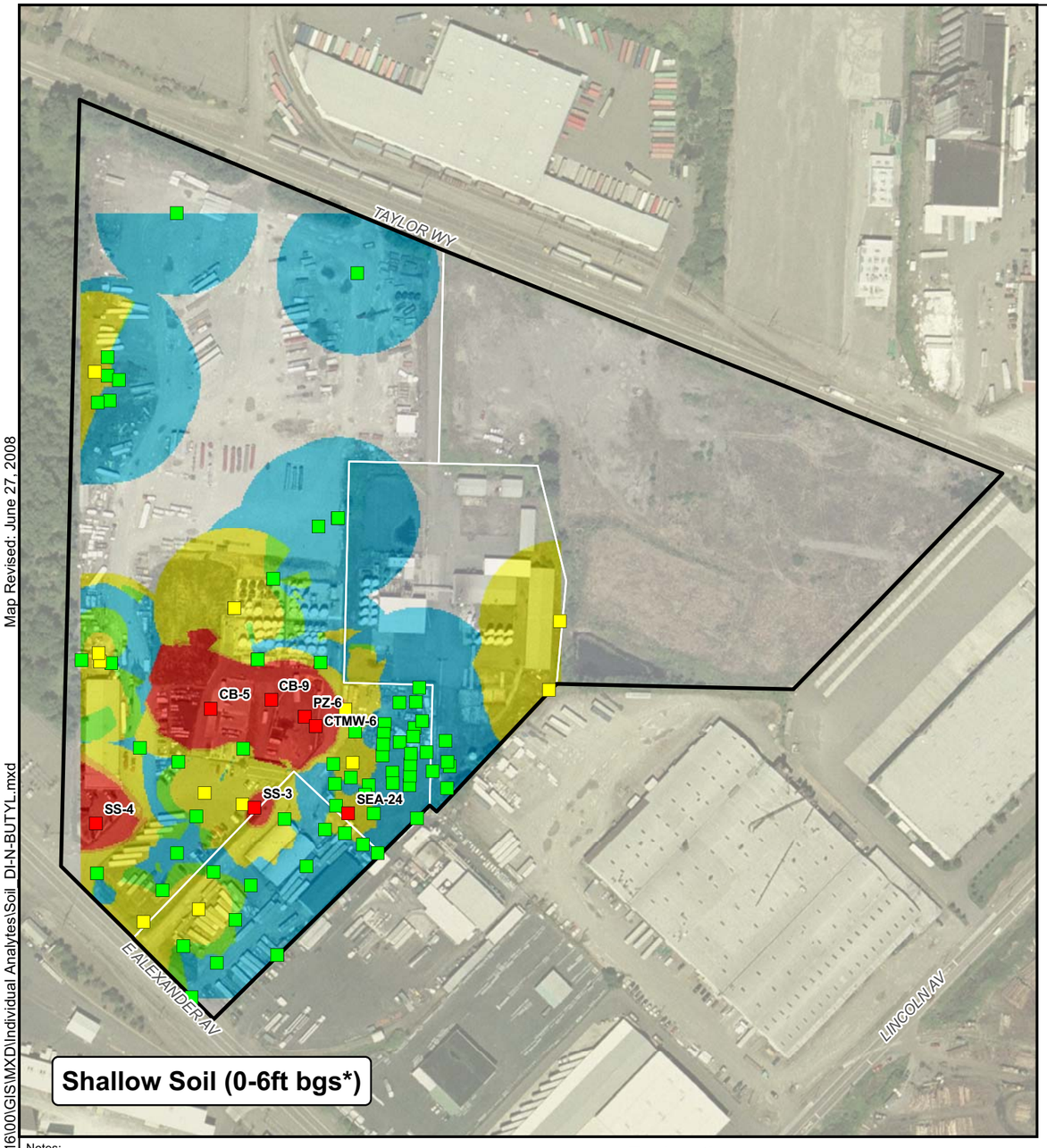
# Bis(2-Ethylhexyl)phalate in Soil

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

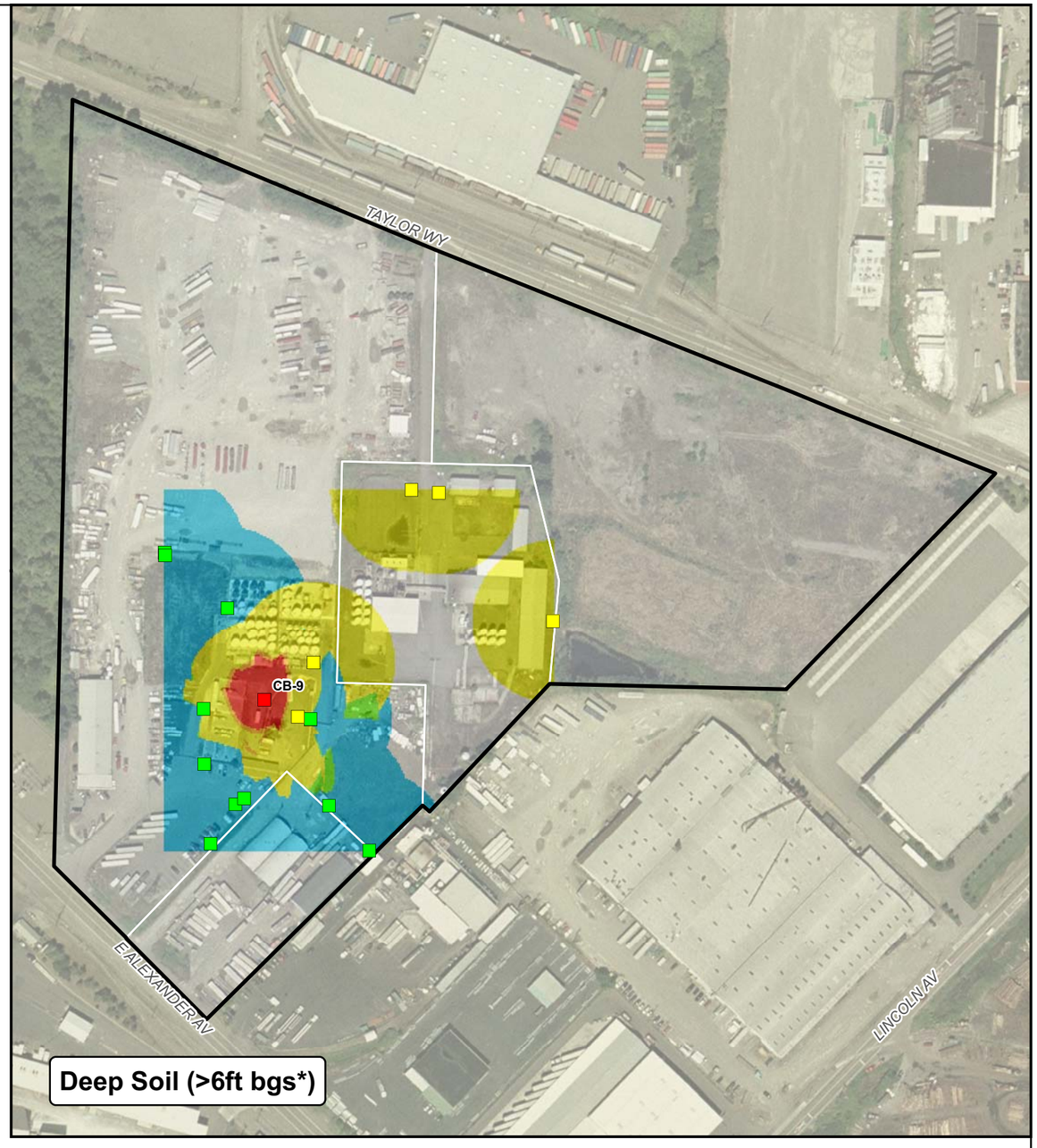
GeoEngineers

**Figure 32**

Map Revised: June 27, 2008
Path: P:\0\045411\6\00\GIS\MXD\Individual Analytes\Soil_BEHP.mxd
Office: TAC




**Shallow Soil (0-6ft bgs*)**




**Deep Soil (>6ft bgs*)**

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis:
protection of ecological receptors

**Di-n-butylphthalate (mg/kg)**

- <0.001
- 0.001 - 0.01
- 0.01 - 0.865
- 0.865** - 1
- >1

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

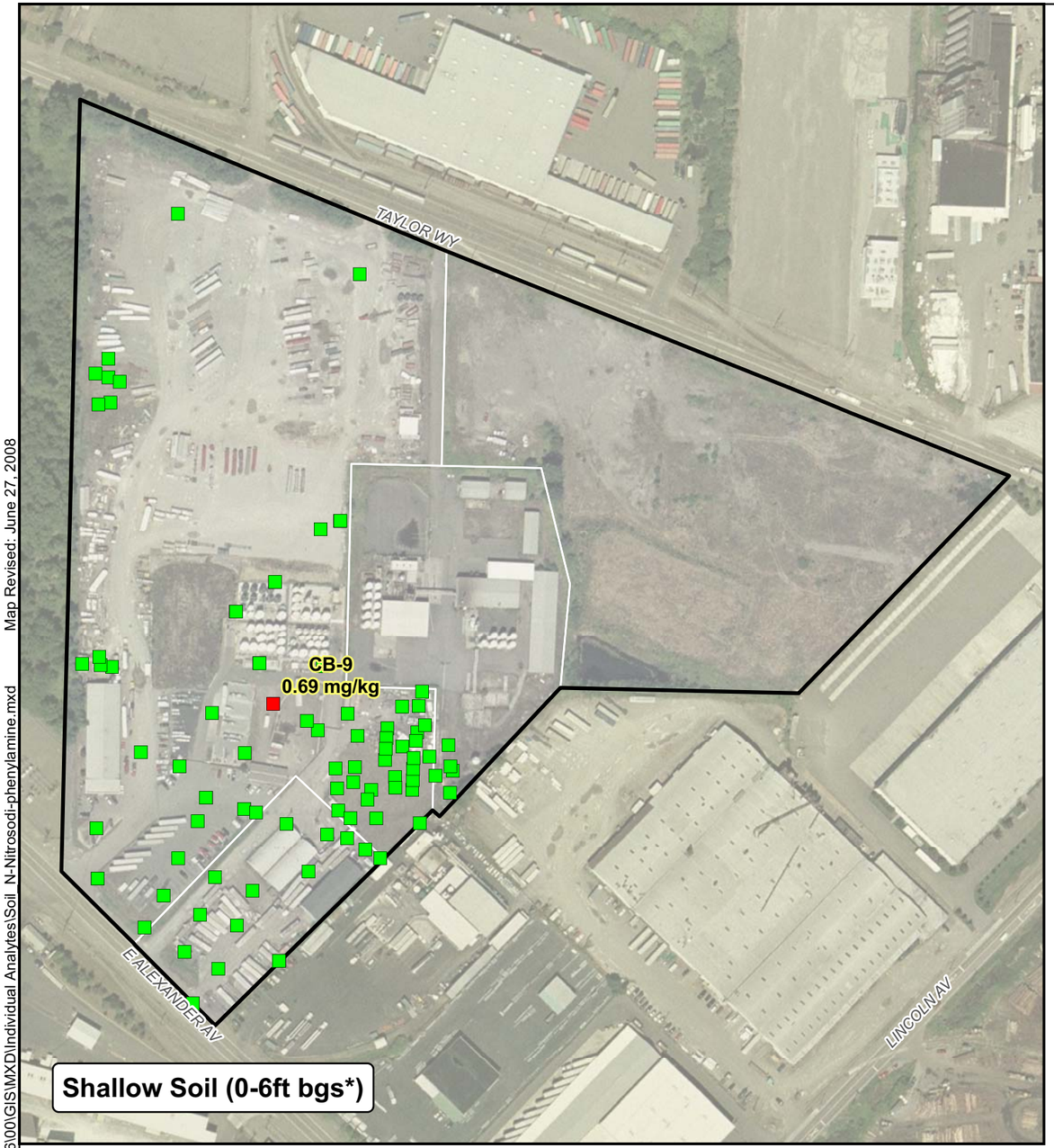
**Di-n-butylphthalate in Soil**

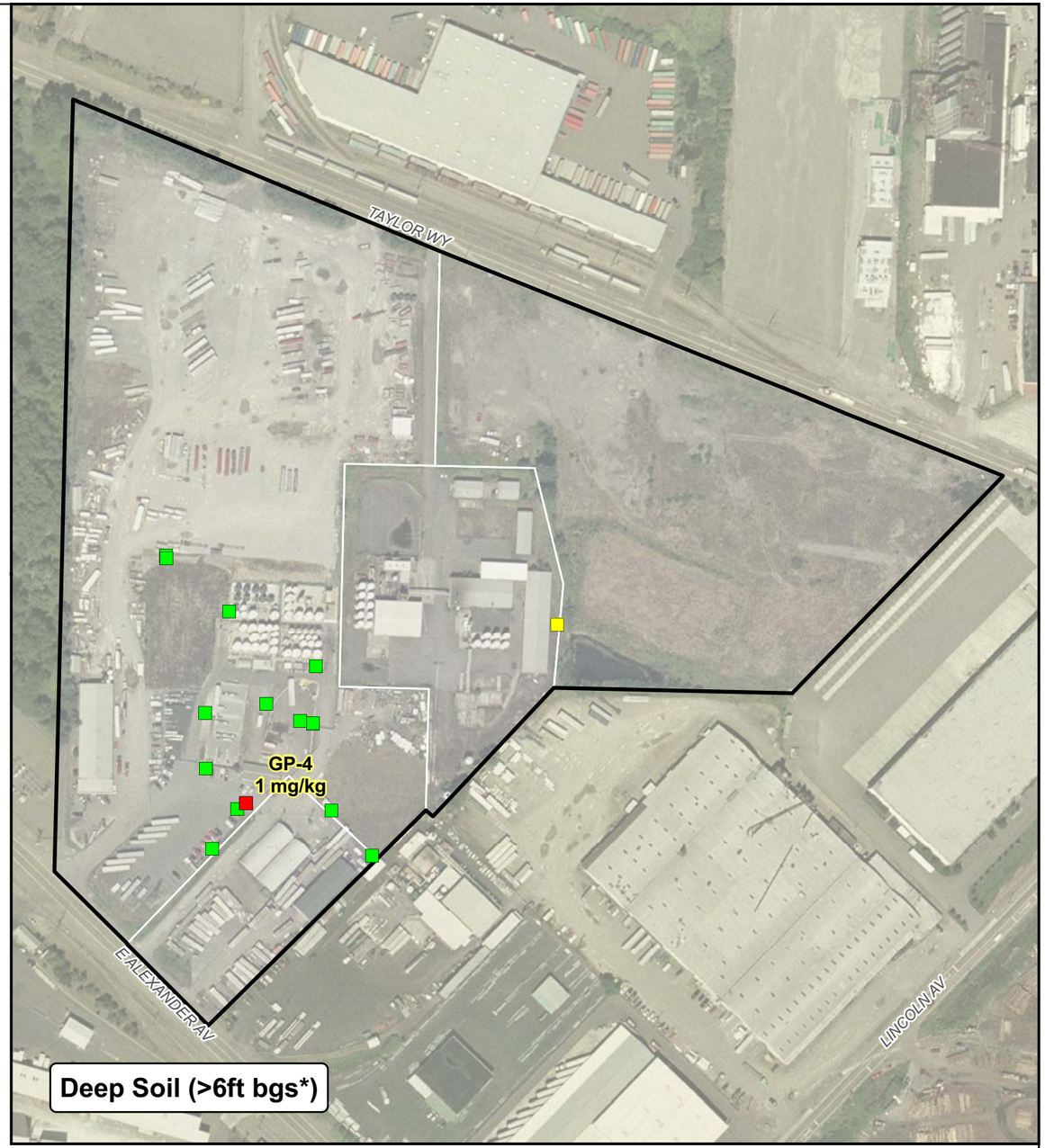
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 33**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Soil_DI-N-BUTYL.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Results exceeding PSC value
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 0.33 mg/kg
Screening level basis: practical quantitation limit

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

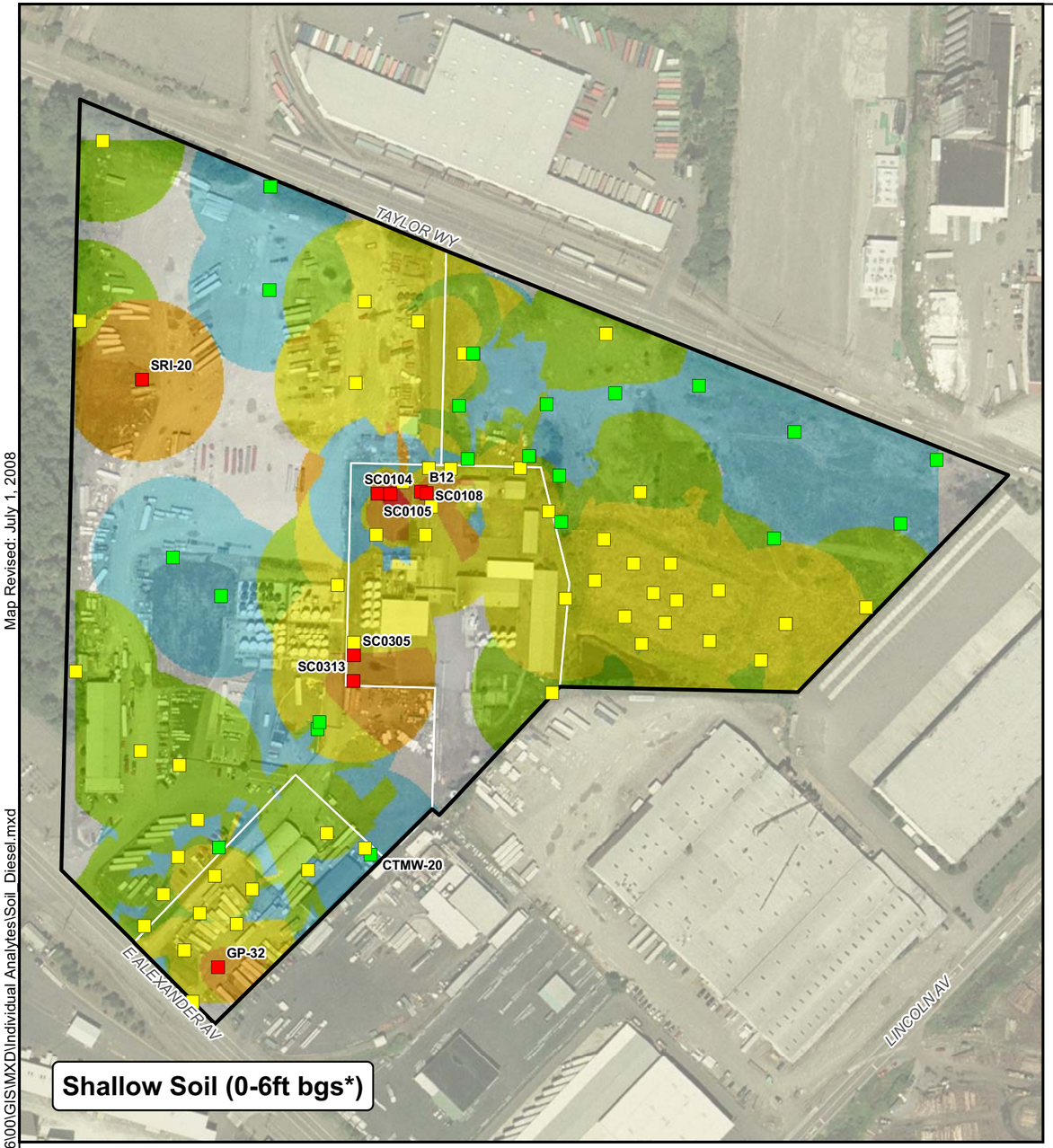
# N-Nitrosodiphenylamine in Soil

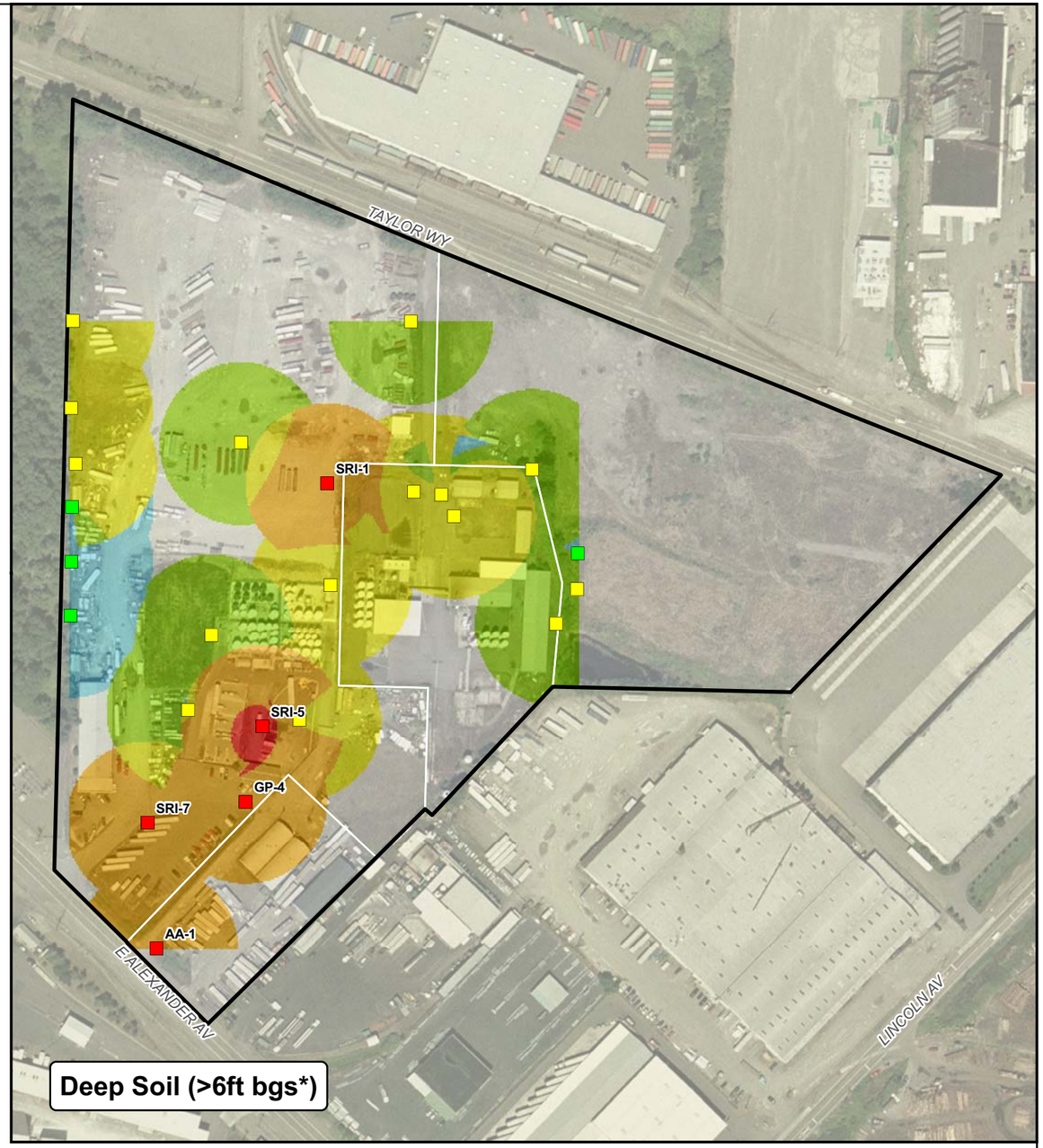
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 34**

Office: TAC Path: P:\0\045416\00\GIS\MXD\Individual Analytes\Soil_N-Nitrosodi-phenylamine.mxd Map Revised: June 27, 2008




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis: MTCA method A industrial

**Diesel (mg/kg)**

- <5
- 5 - 100
- 100 - 2,000
- 2,000** - 20,000
- >20,000

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

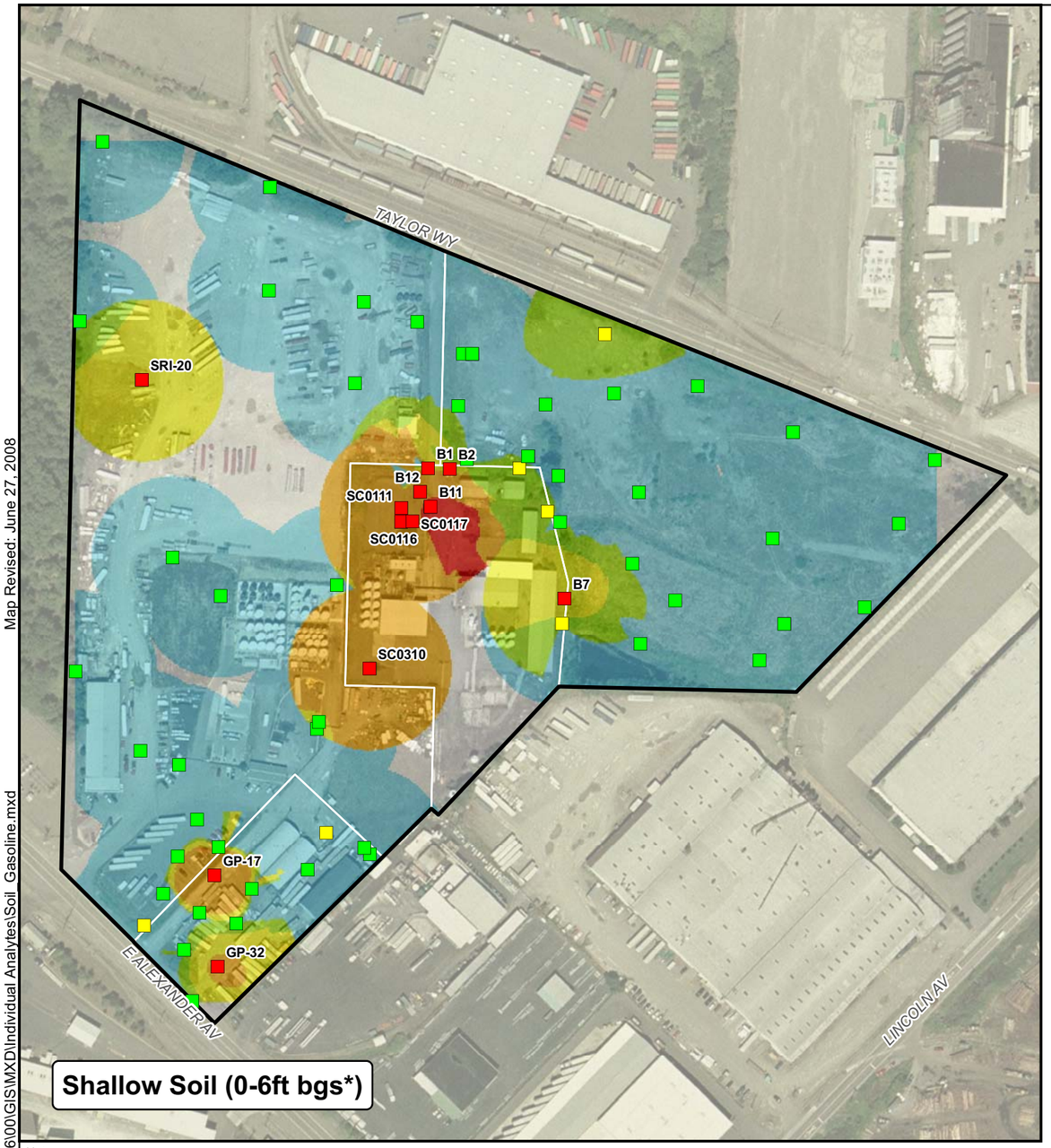
# Diesel in Soil

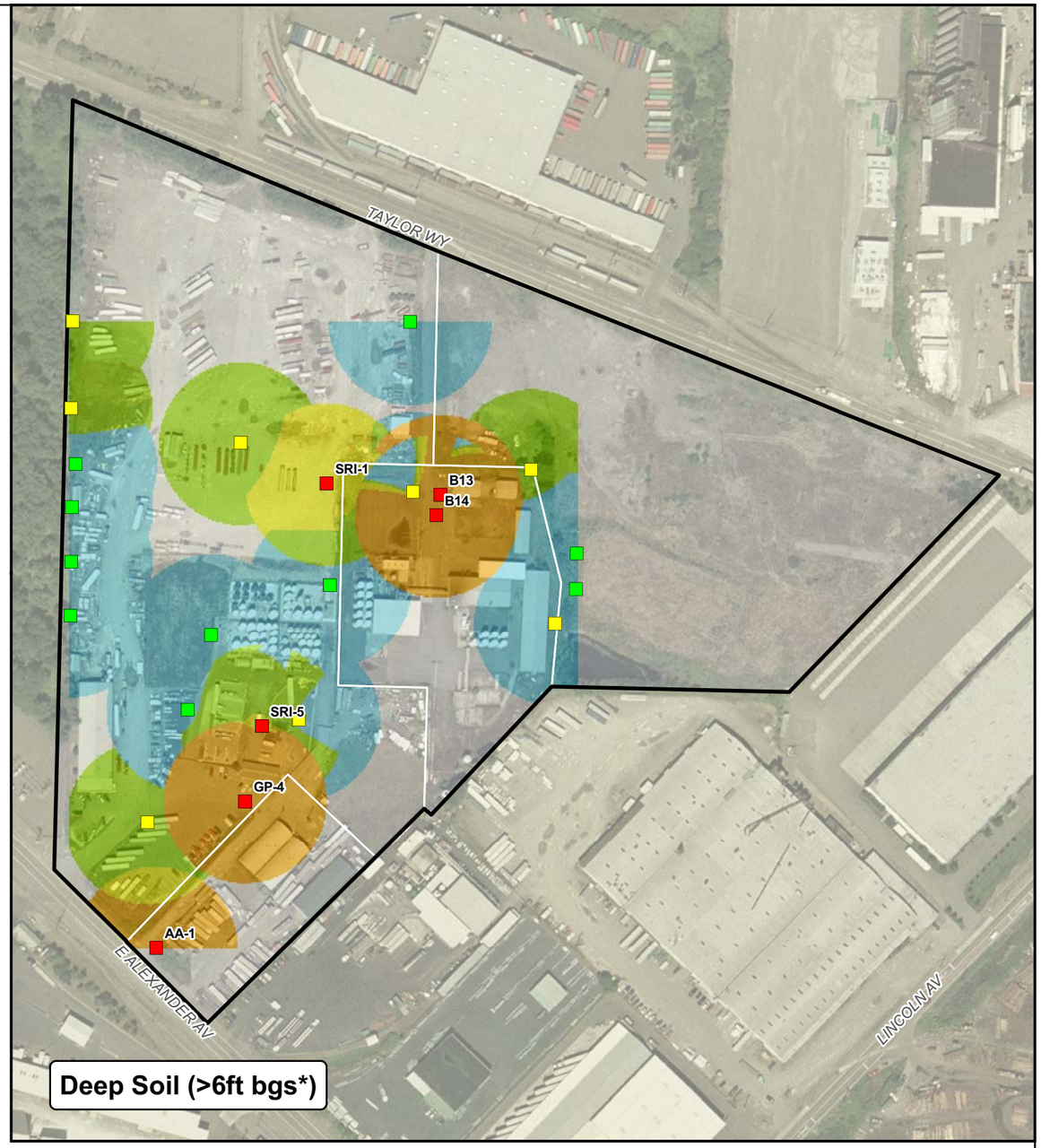
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 35**

Map Revised: July 1, 2008
Path: P:\0\045416\00\GIS\MXD\Individual Analytes\Soil_Diesel.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis: MTCA method A industrial

**Gasoline (mg/kg)**

- <5
- 5 - 30
- 30** - 100
- 100 - 2,000
- >2,000

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

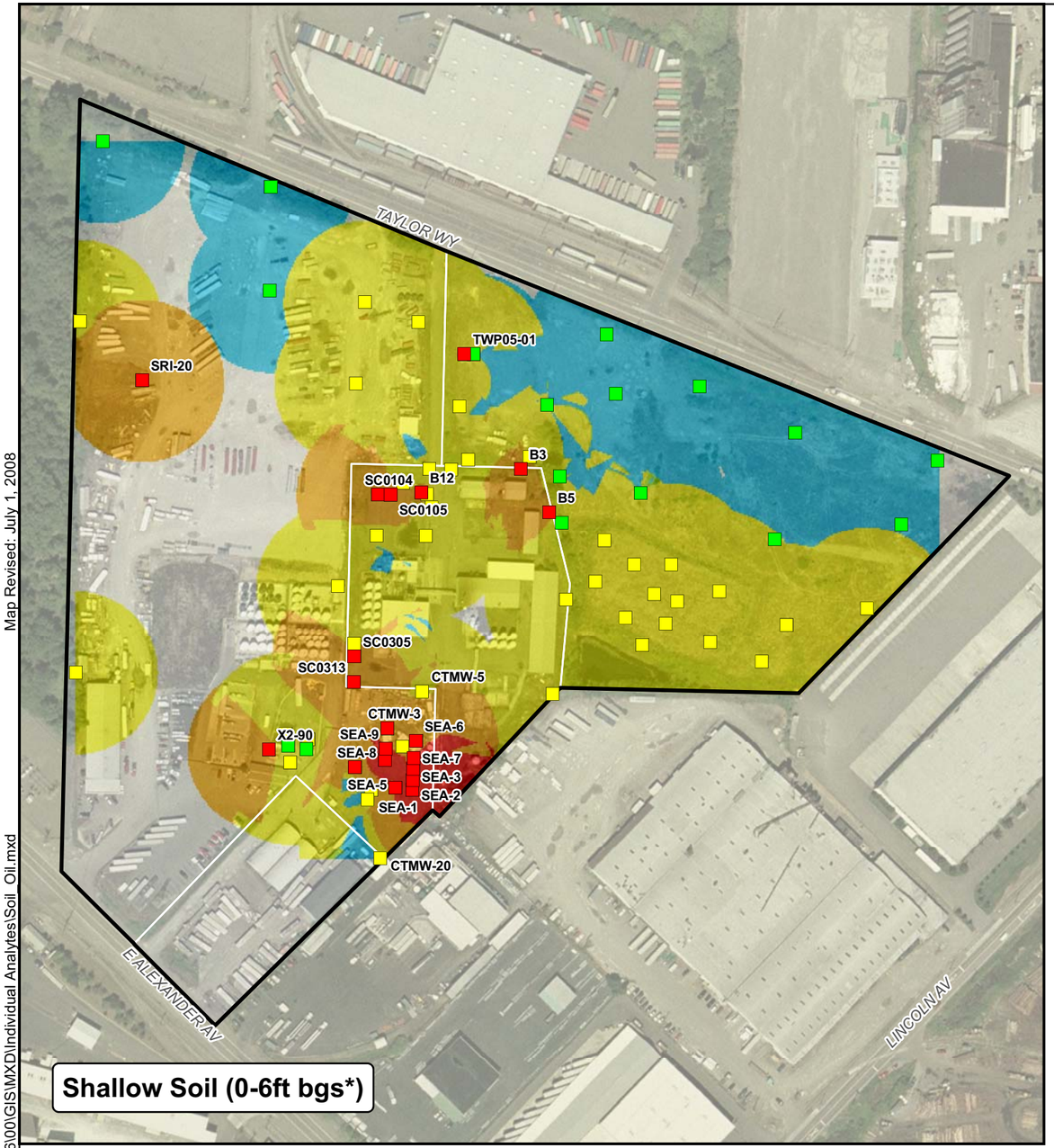
**Gasoline in Soil**

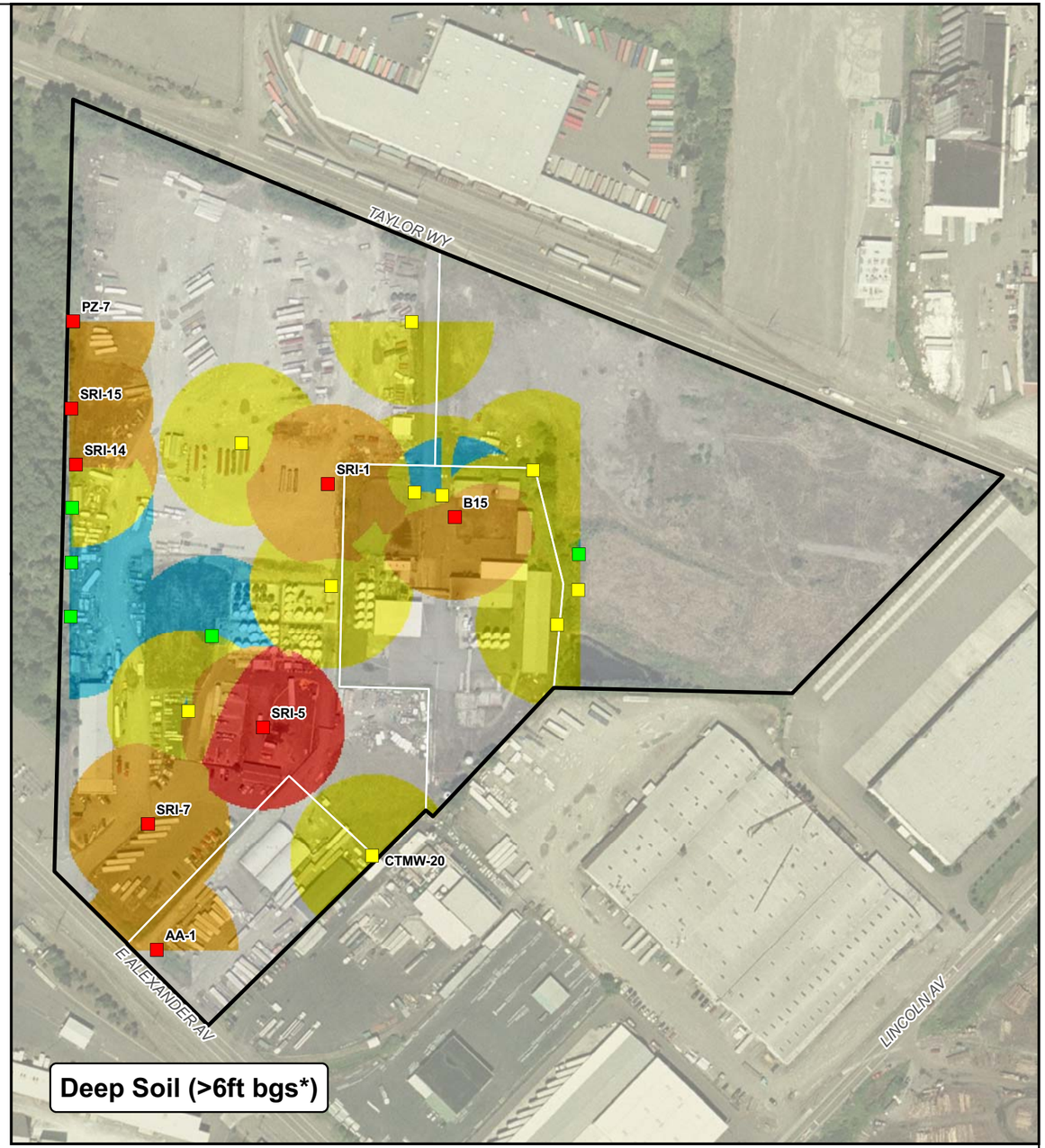
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 36**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Soil_Gasoline.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-7 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC Screening Level
Screening level basis: MTCA method A industrial

**Heavy Oil (mg/kg)**

- <0.1
- 0.1 - 5
- 5 - 2,000
- 2,000** - 20,000
- >20,000

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

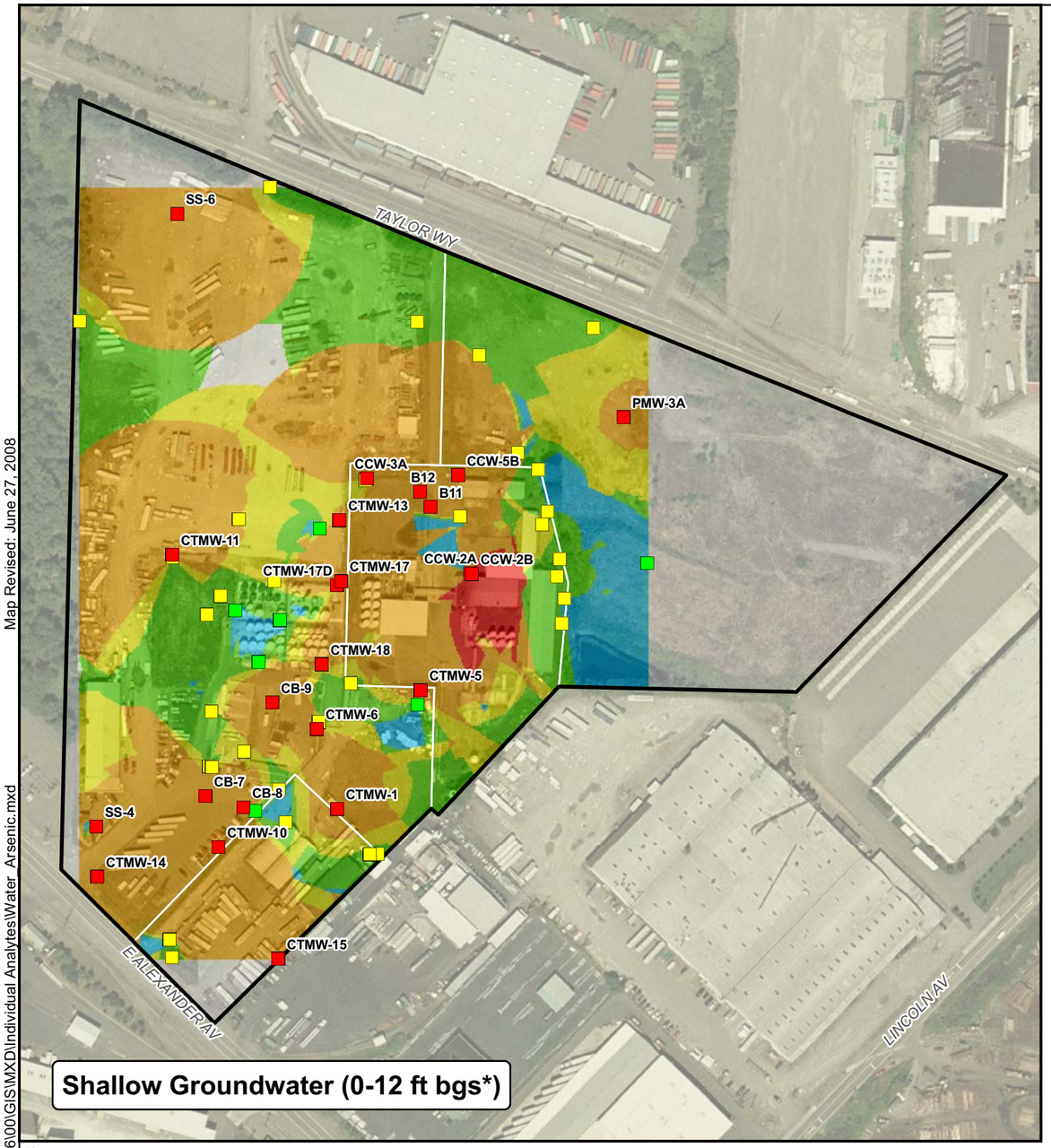
# Heavy Oil in Soil

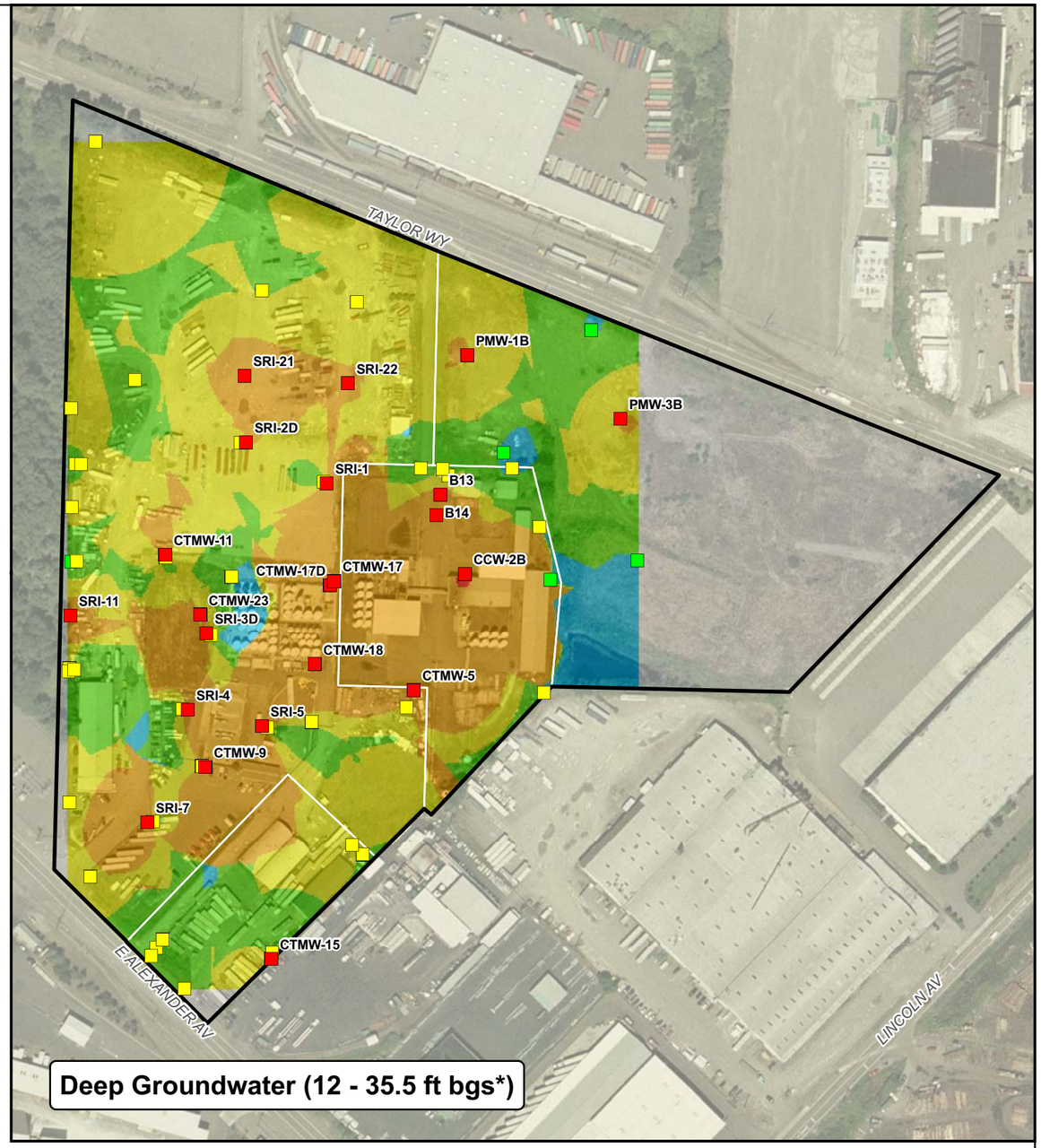
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 37**

Map Revised: July 1, 2008
Path: P:\0\045411\00\GIS\MXD\Individual Analytes\Soil_Oil.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC screening level
Screening level basis: practical quantitation limits

**Arsenic (ug/L)**

- <1
- 1 - 10
- 10 - 20
- 20** - 2,000
- >20,000

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

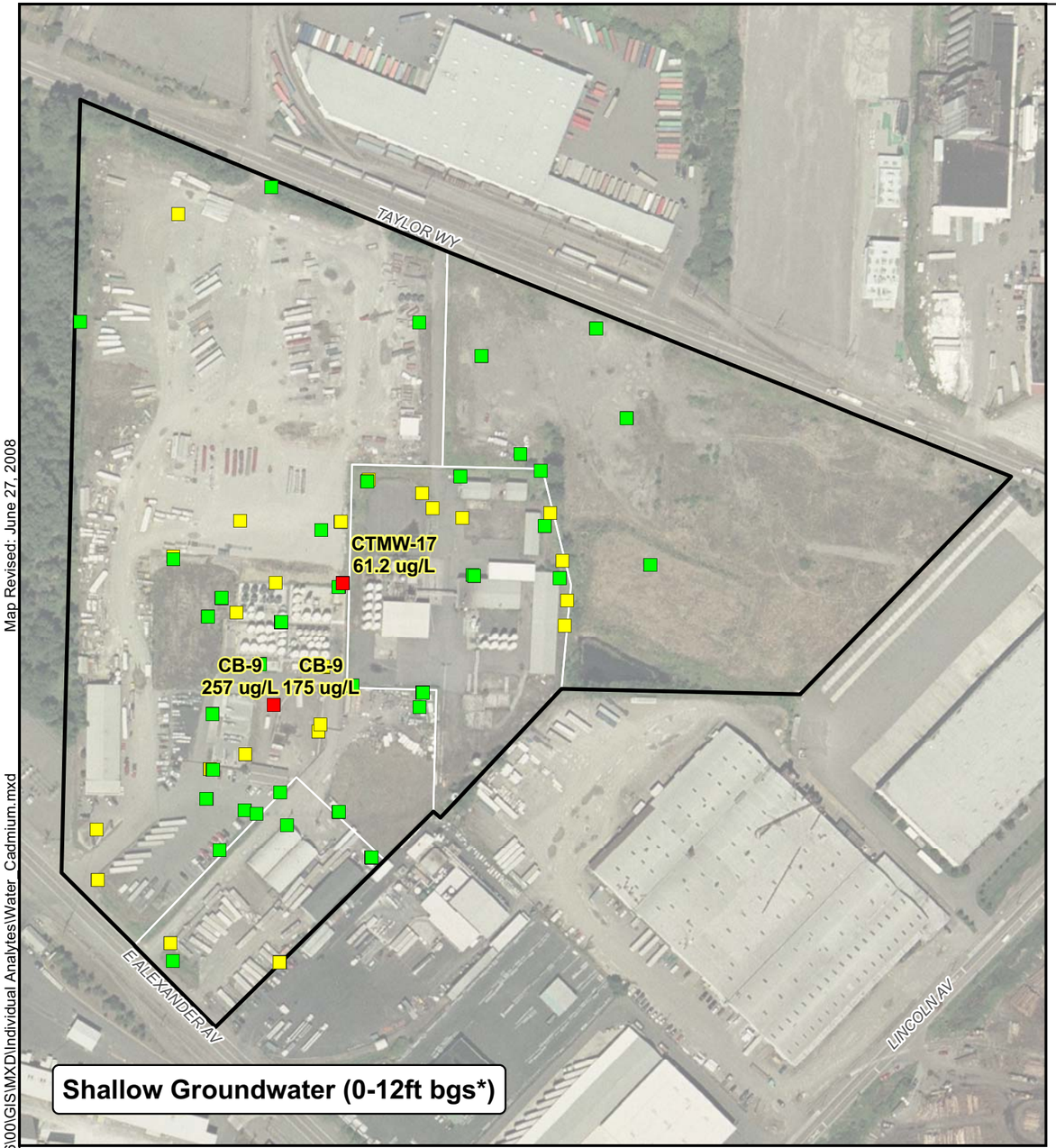
# Arsenic in Groundwater

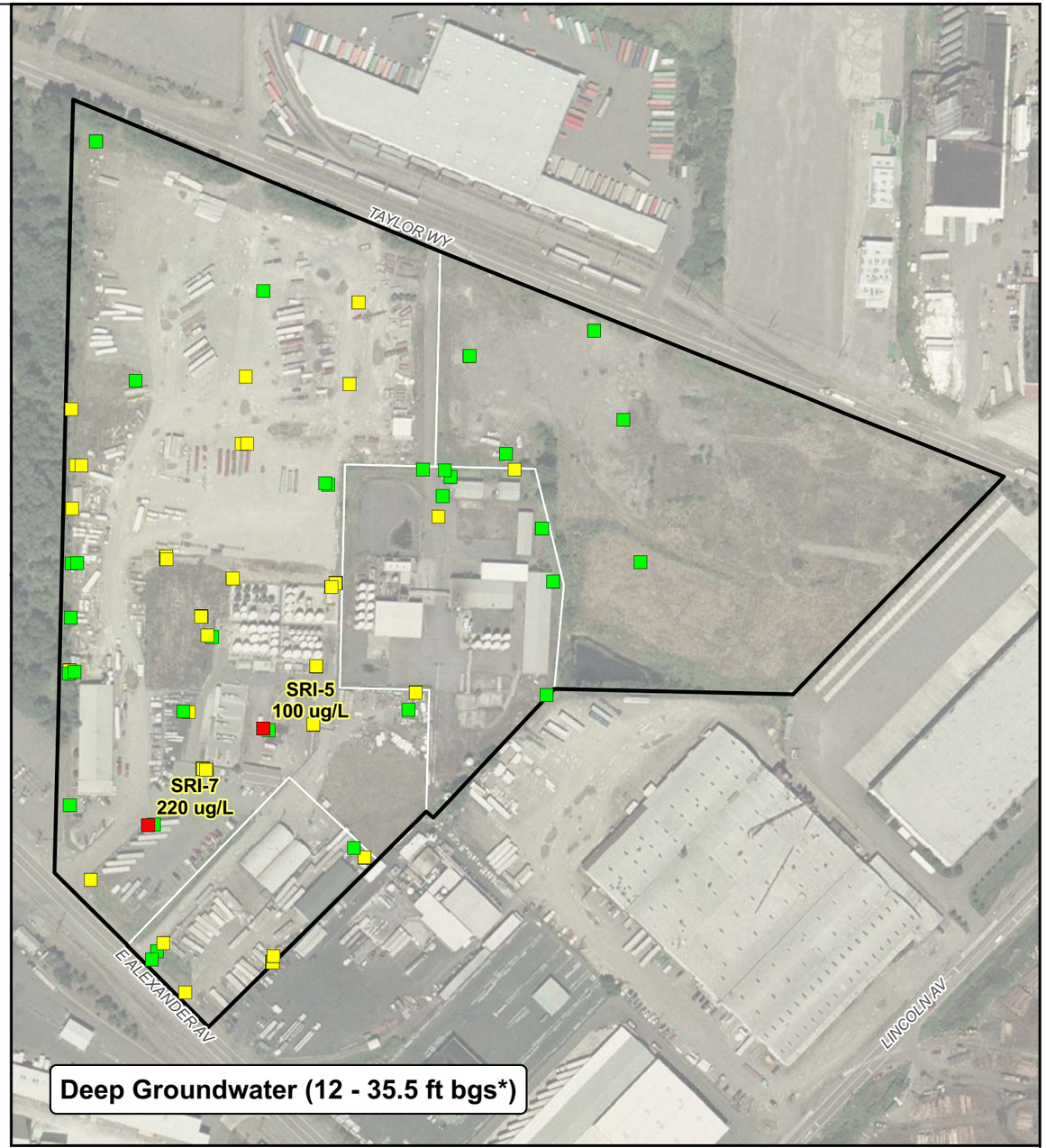
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 38**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Water_Arsenic.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 40 ug/L
Screening level basis: practical quantitation limits

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

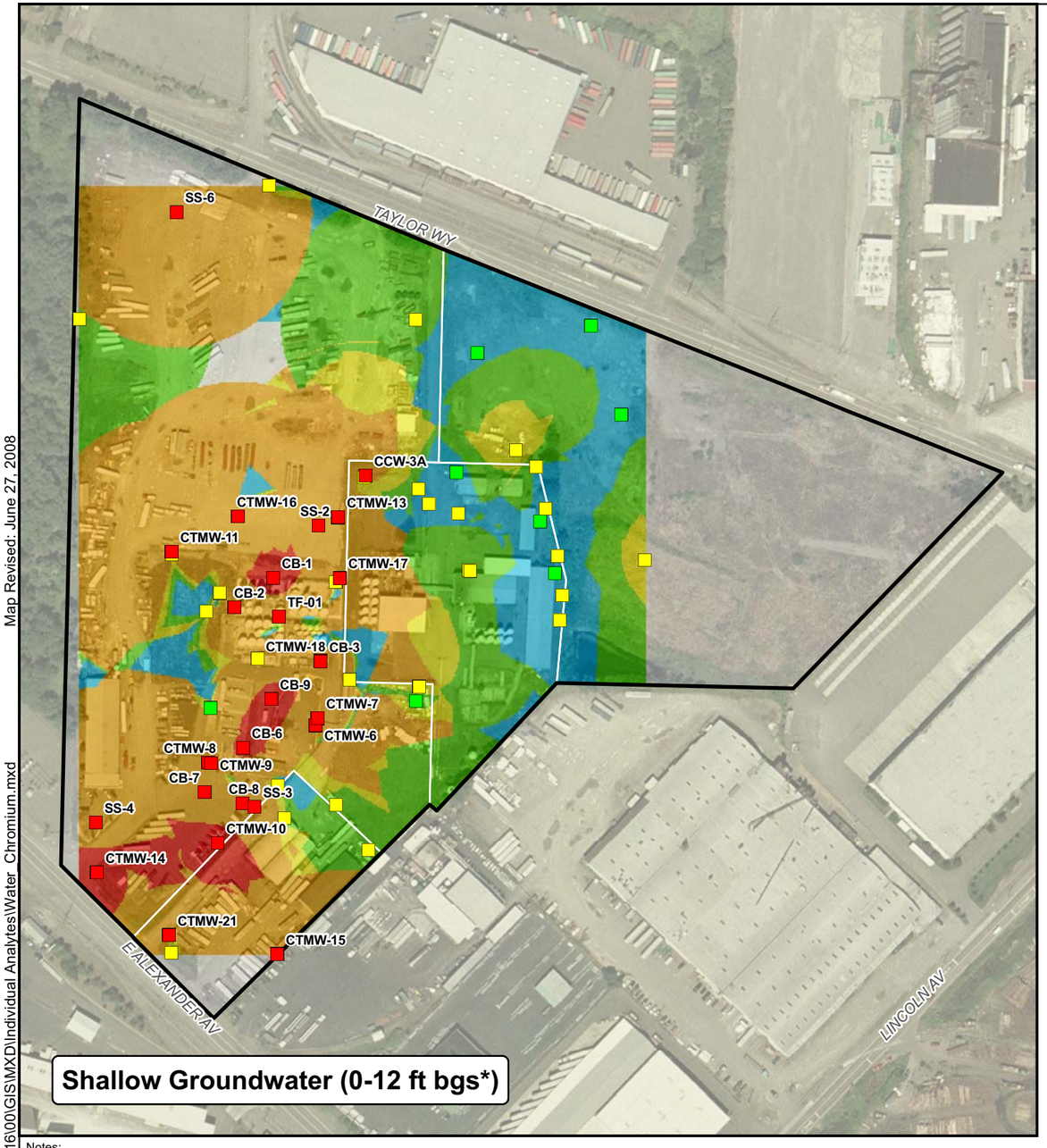
# Cadmium in Groundwater

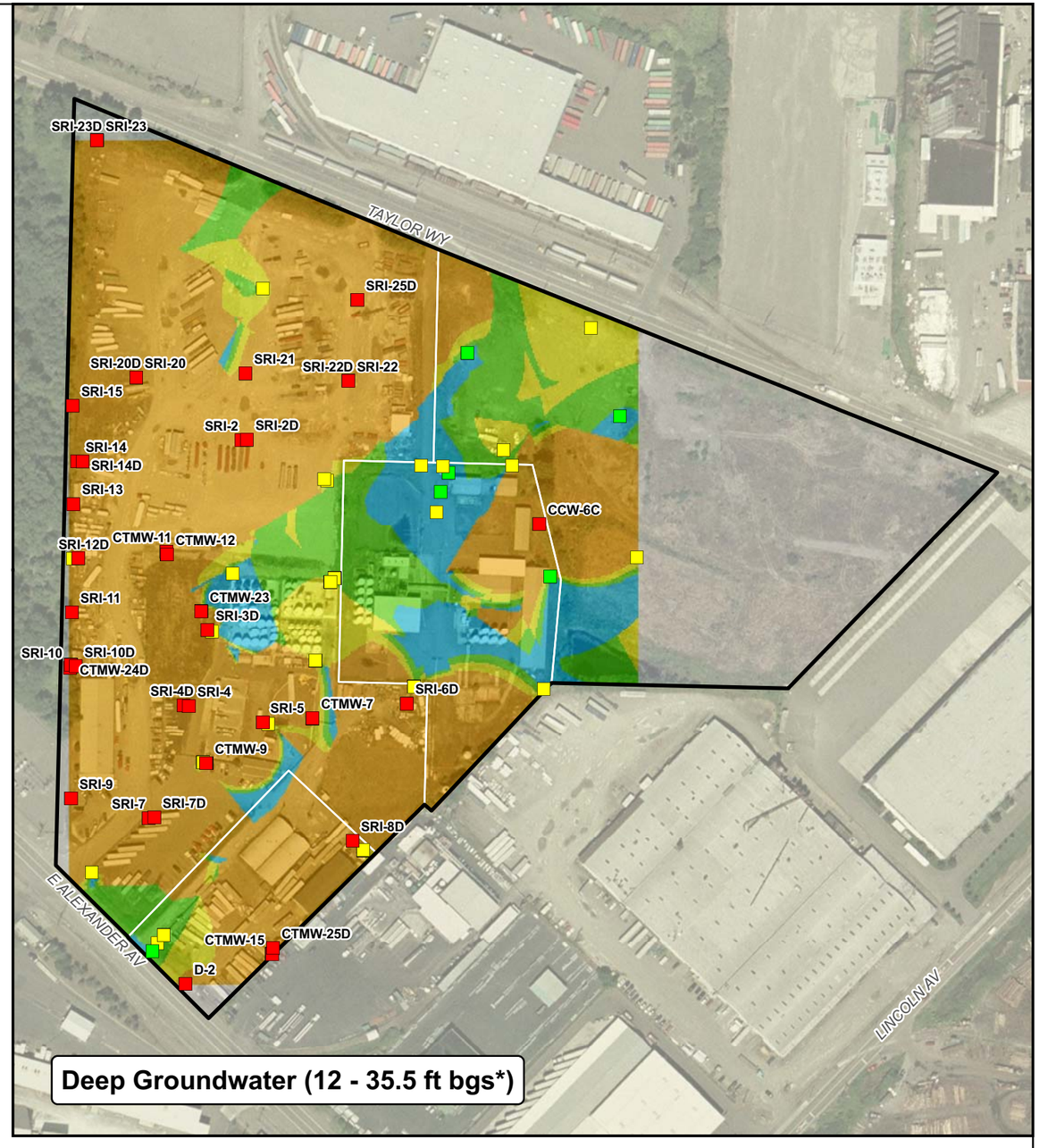
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 39**

Map Revised: June 27, 2008
Path: P:\0\045416\00\GIS\MXD\Individual Analytes\Water_Cadmium.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC screening level
Screening level basis: protection of surface water

**Chromium (ug/L)**

- <1
- 1 - 5
- 5 - 11
- 11** - 400
- >400

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

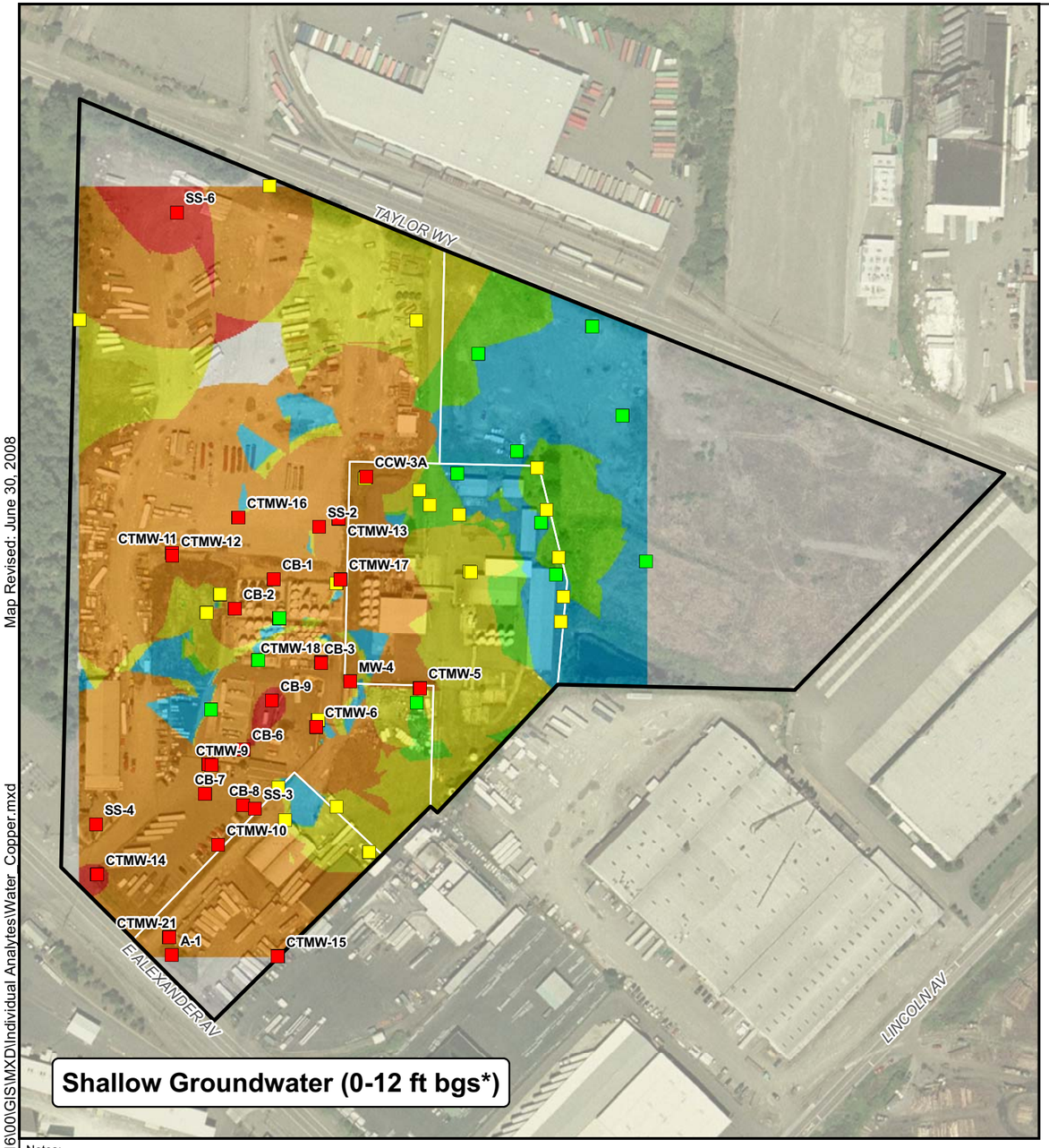
# Chromium in Groundwater

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

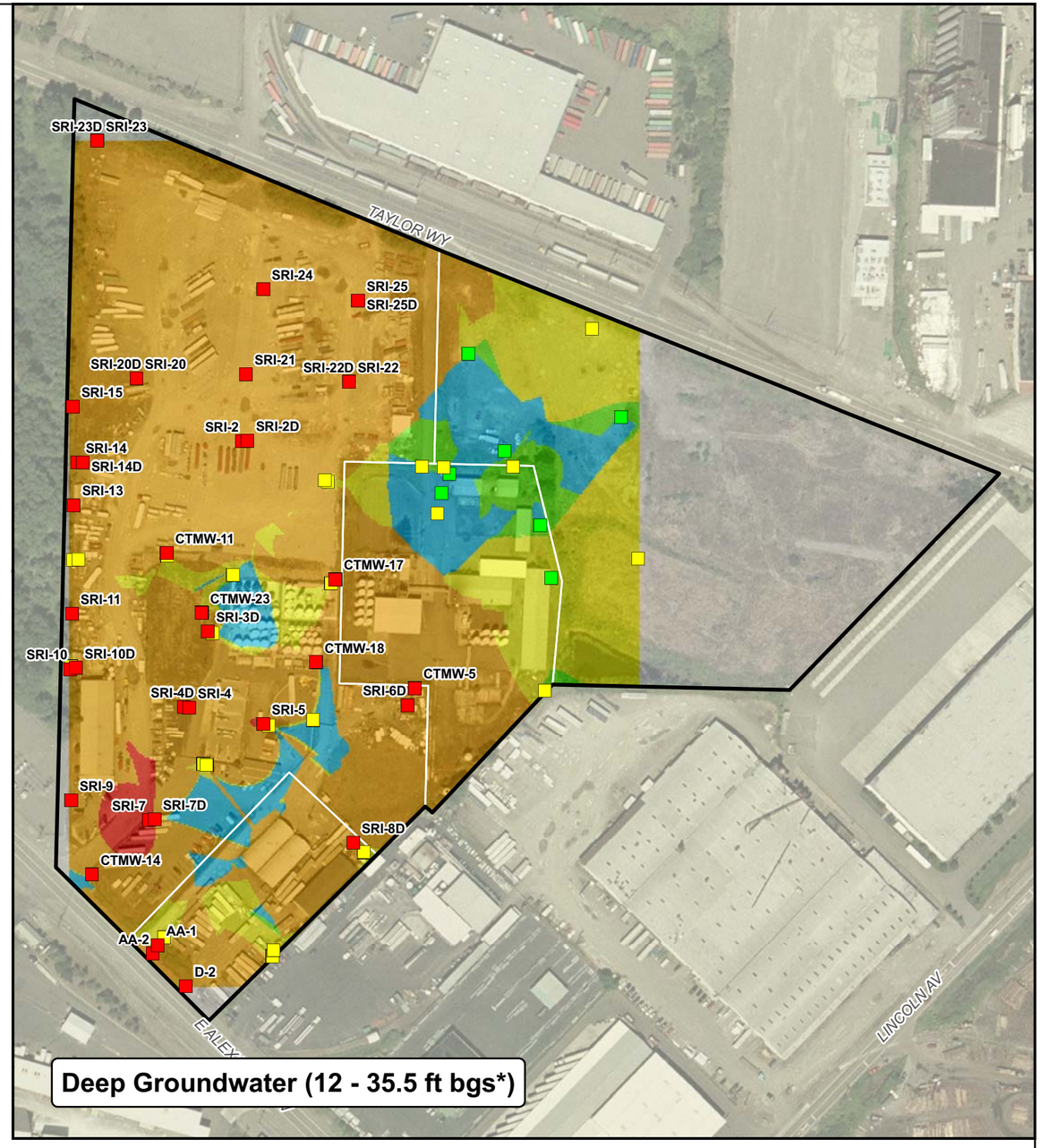
GeoEngineers

**Figure 40**

Map Revised: June 27, 2008
Path: P:\0\045416\00\GIS\MXD\Individual Analytes\Water Chromium.mxd
Office: TAC




**Shallow Groundwater (0-12 ft bgs*)**




**Deep Groundwater (12 - 35.5 ft bgs*)**

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC screening level
Screening level basis: practical quantitation limits

**Copper (ug/L)**

- < 0.1
- 0.1 - 1
- 1 - 10
- 10** - 1,000
- > 1,500

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

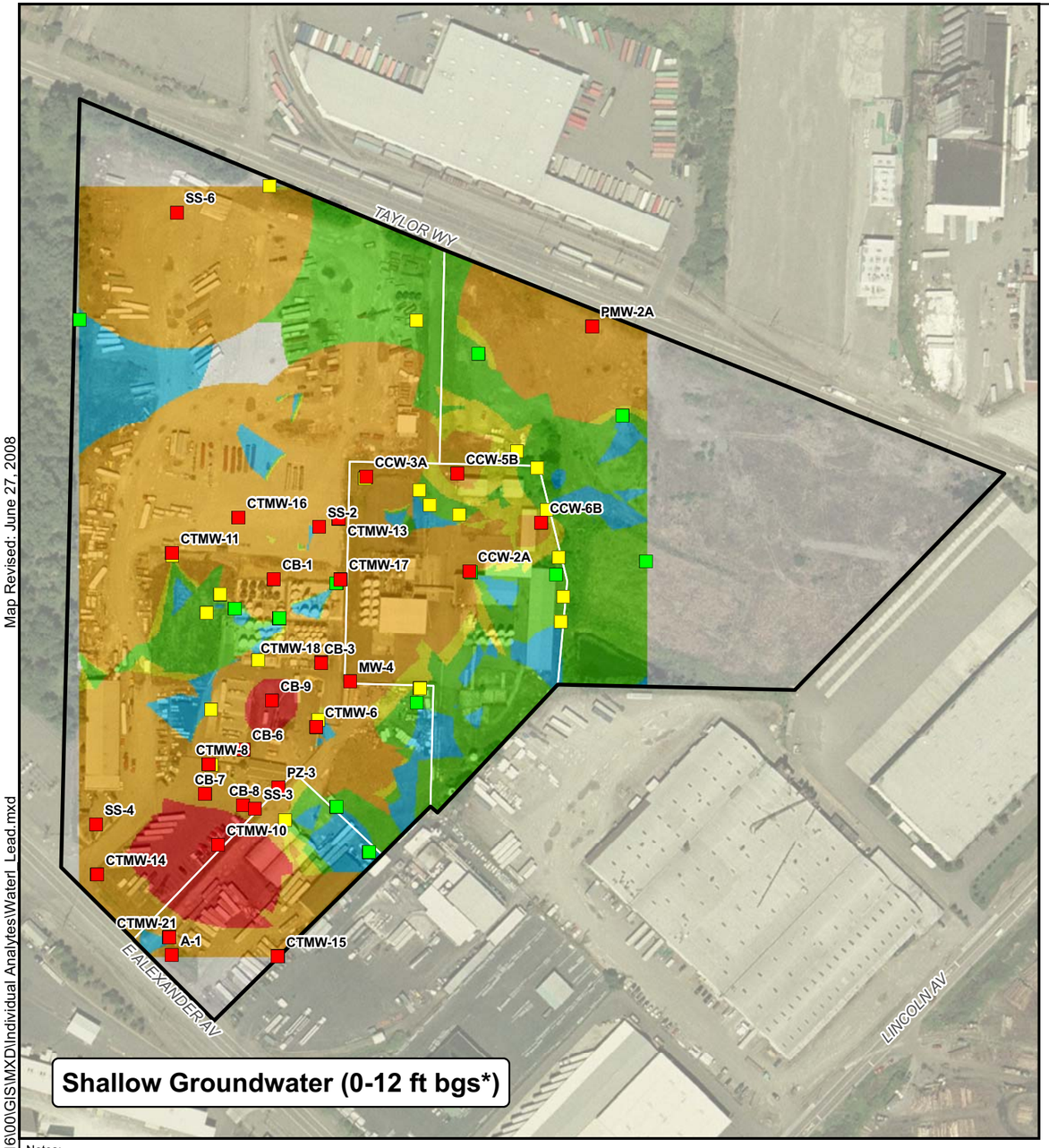
# Copper in Groundwater

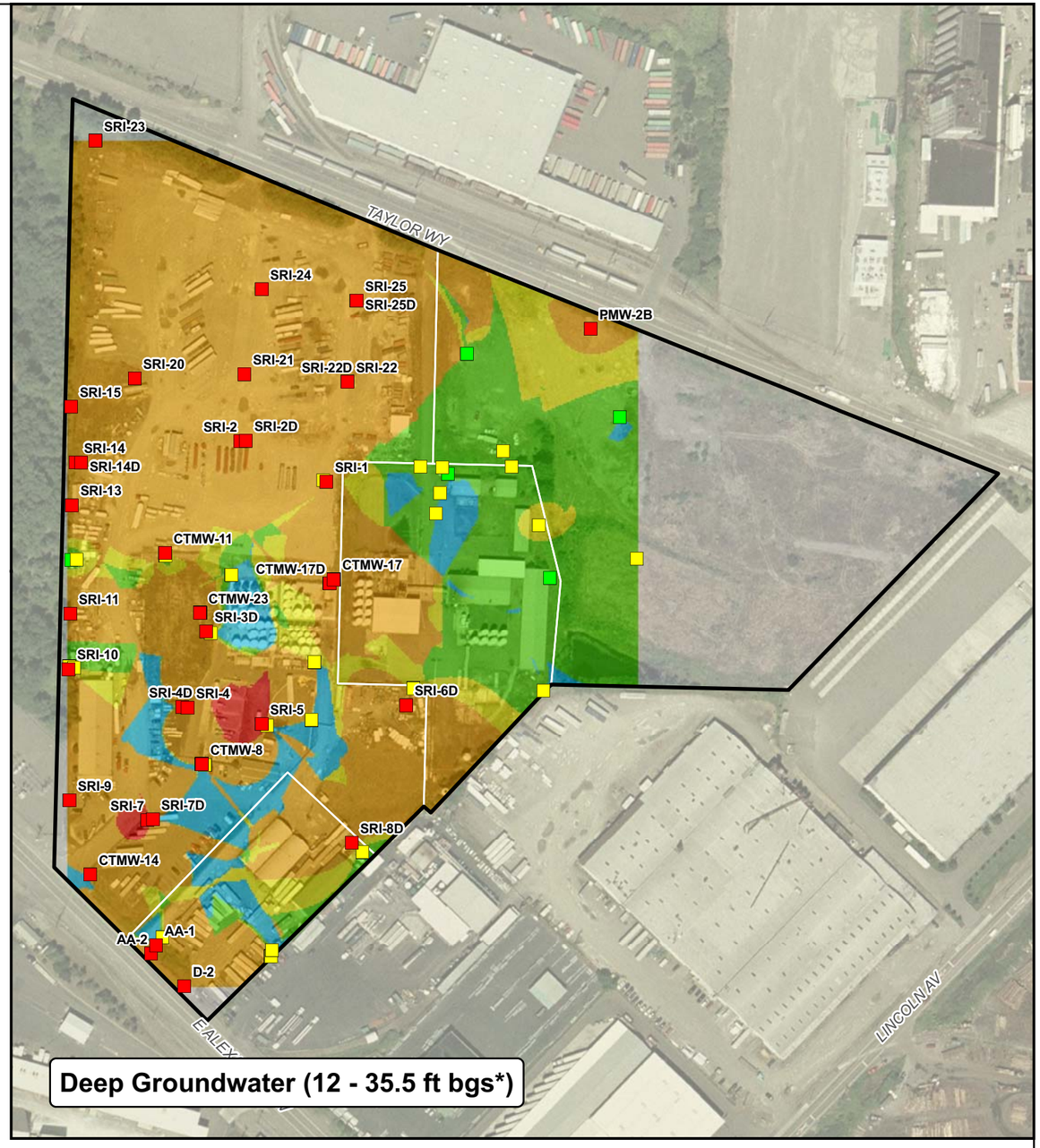
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 41**

Map Revised: June 30, 2008
Path: P:\0\045411\00\GIS\MXD\Individual Analytes\Water Copper.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC screening level
Screening level basis: practical quantitation limits

**Lead (ug/L)**

- <,0.01
- 0.01 - 5
- 5 - 10
- 10** - 5,000
- >5,000

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

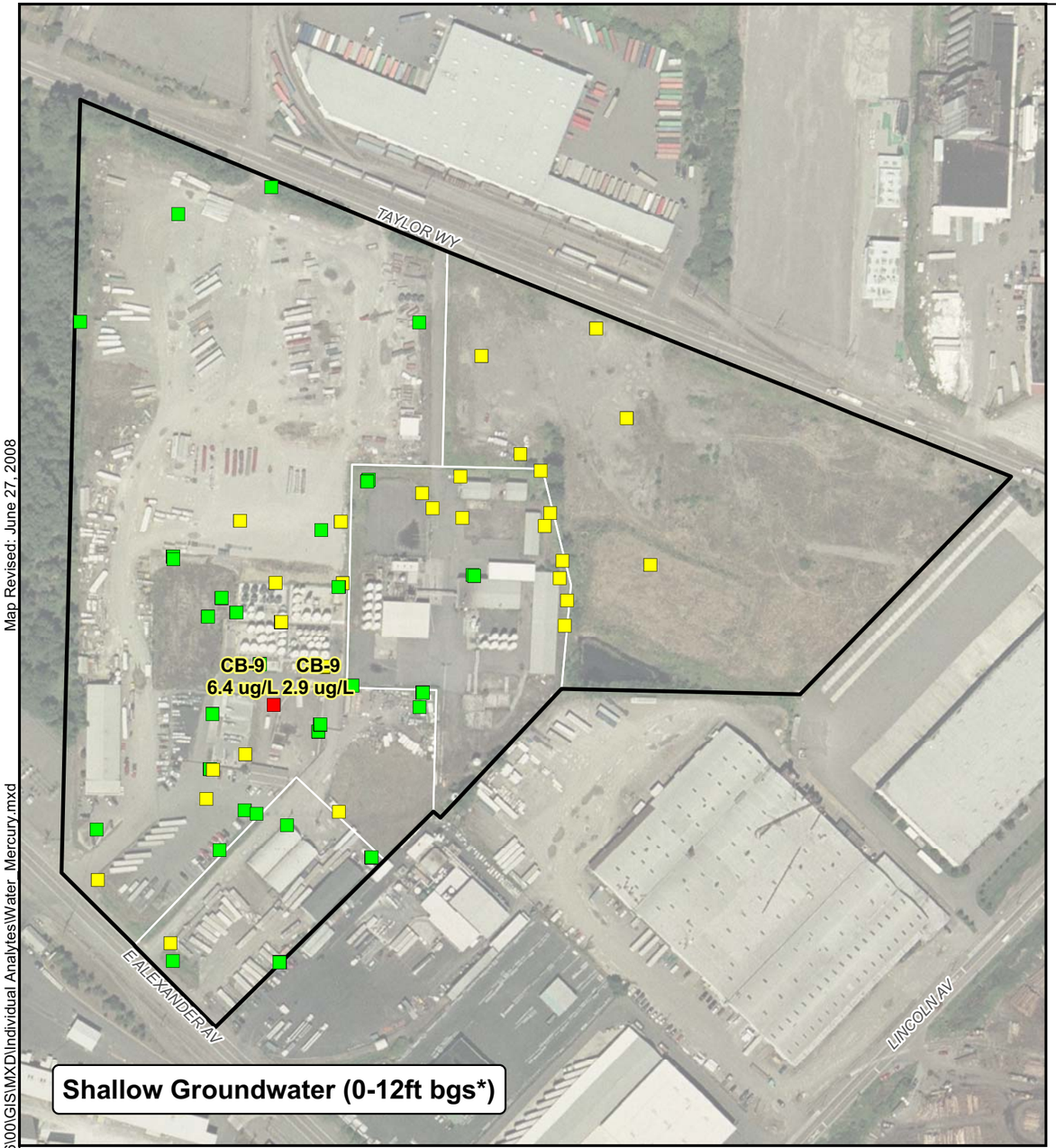
# Lead in Groundwater

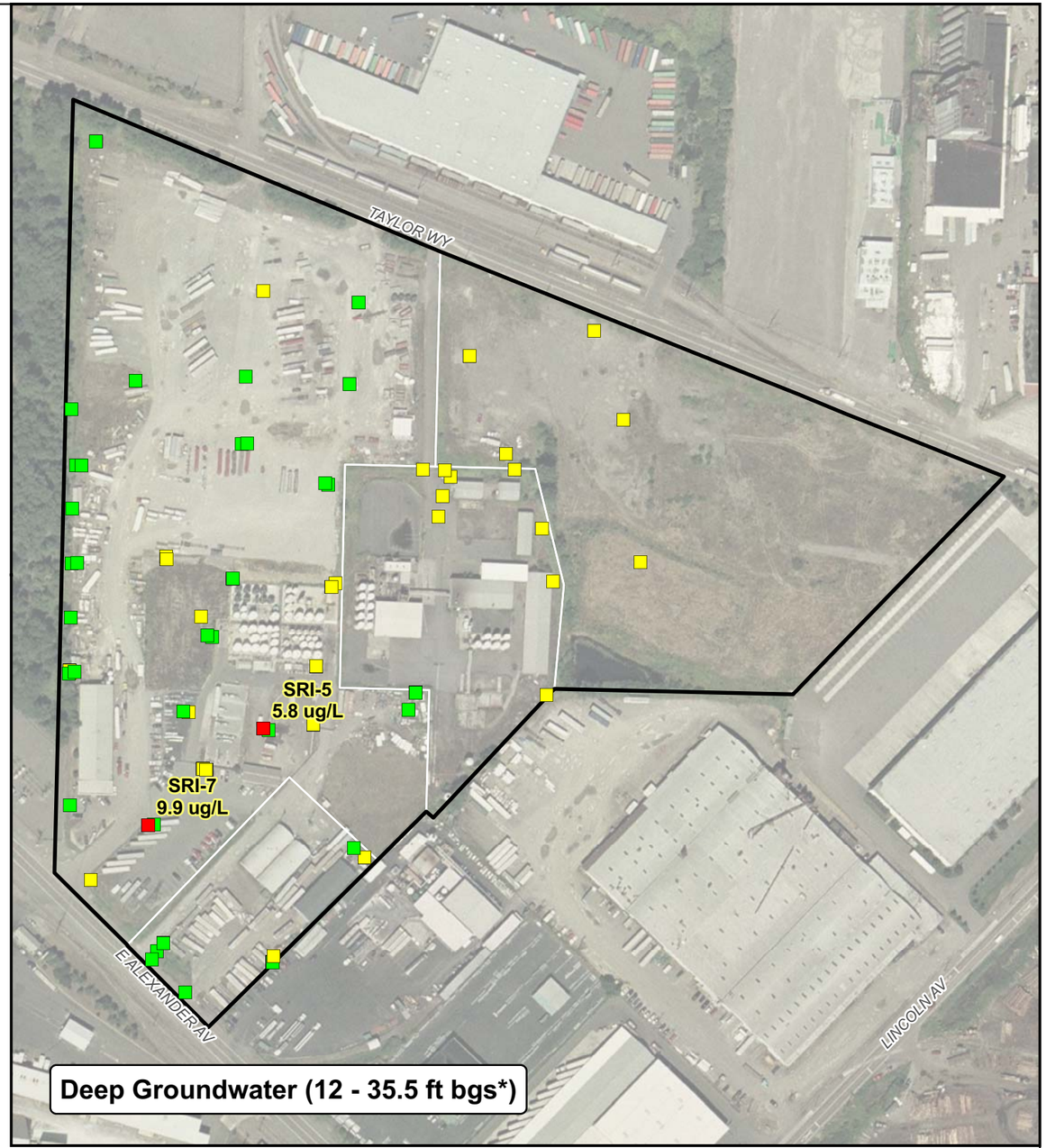
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 42**

Map Revised: June 27, 2008
Path: P:\0\045411\6\00\GIS\MXD\Individual Analytes\Water\ Lead.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources:
Sample data obtained from CC, Prologis and PSC. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 2 ug/L
Screening level basis: practical quantitation limits

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

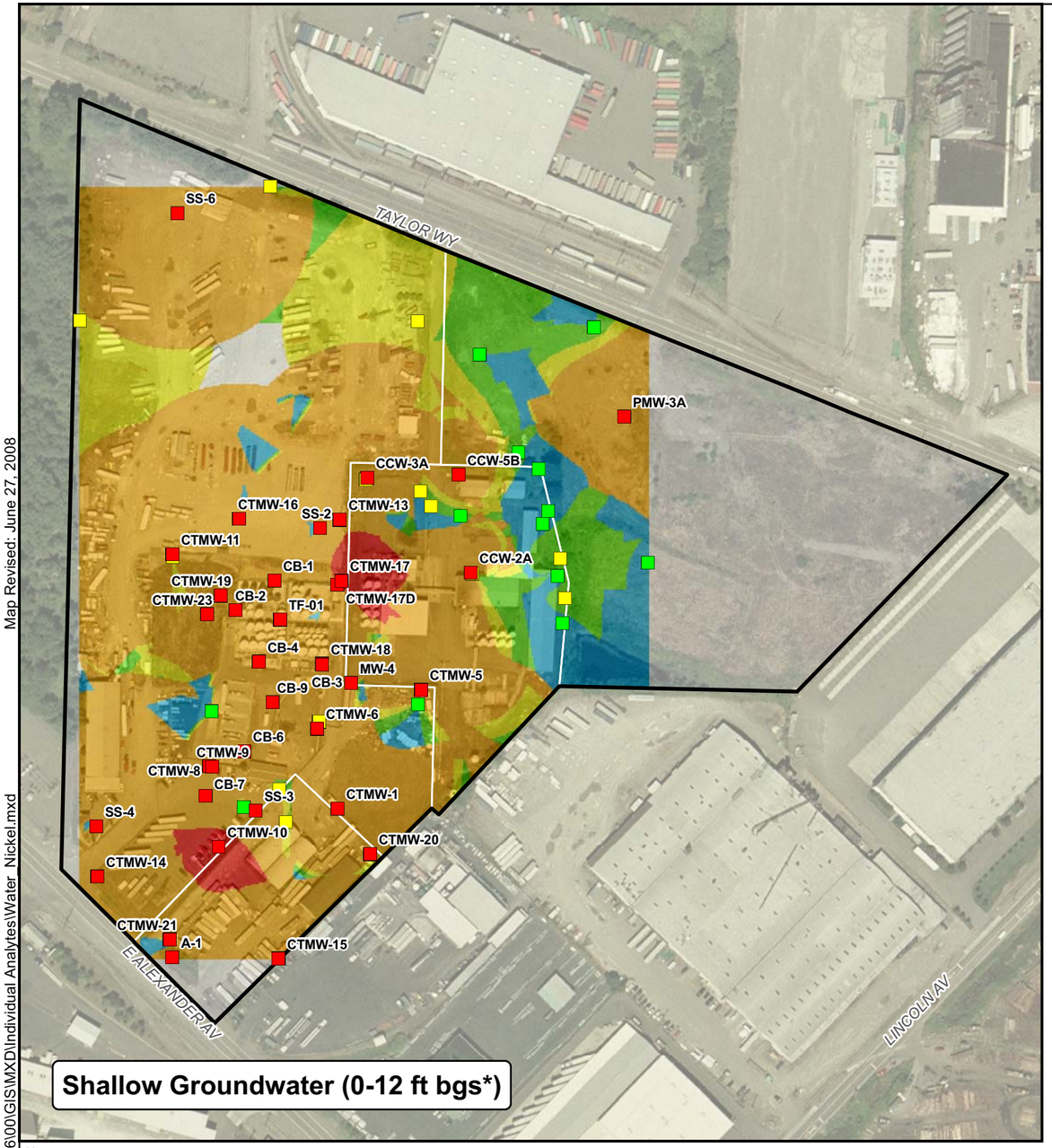
# Mercury in Groundwater

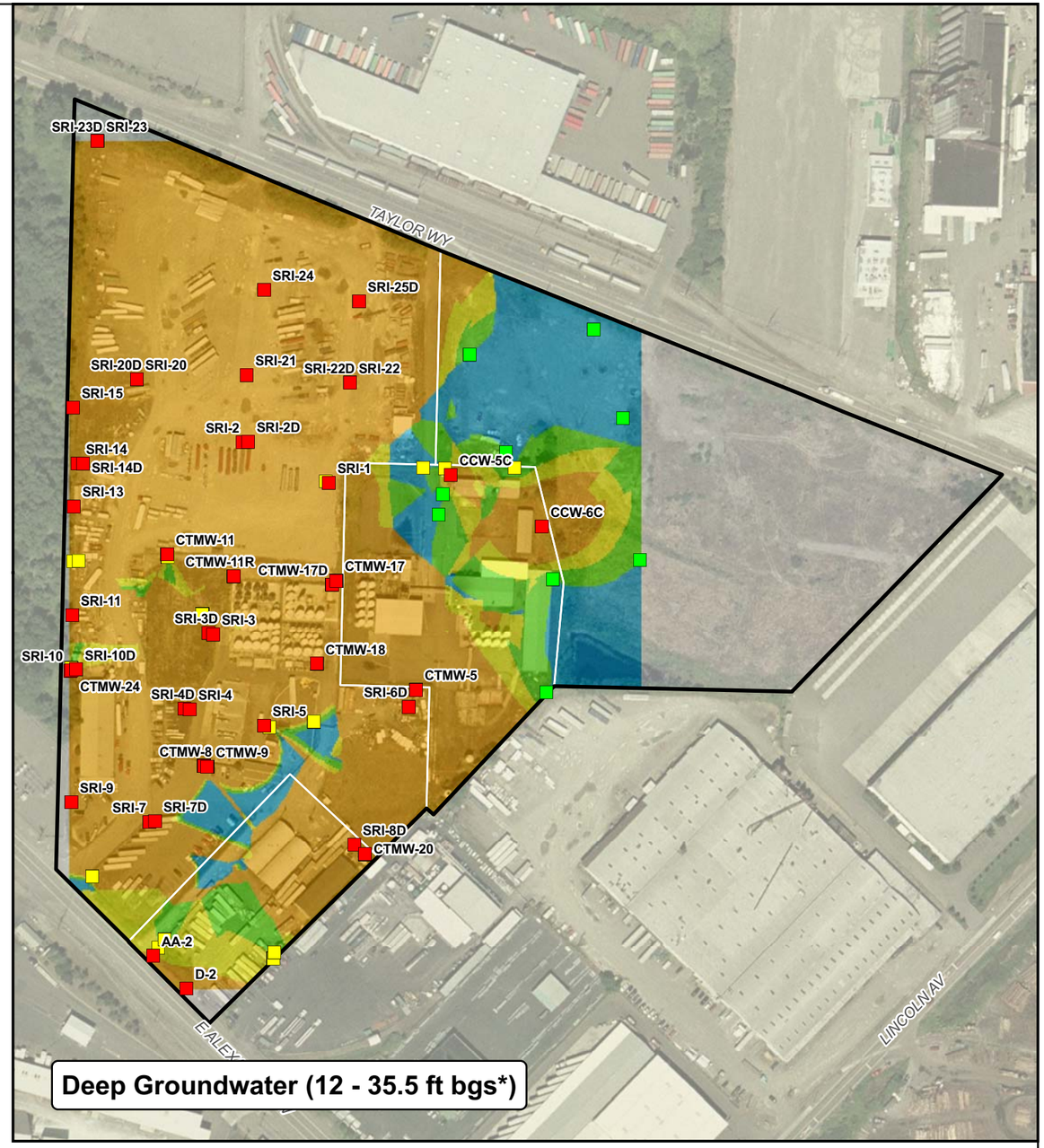
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 43**

Map Revised: June 27, 2008
Path: P:\0\045416\00\GIS\MXD\Individual Analytes\Water_Mercury.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC screening level
Screening level basis: practical quantitation limits

**Nickel (ug/L)**

| |
|---|
| <0.01 |
| 0.01 - 5 |
| 5 - 10 |
| 10** - 3,000 |
| >3,000 |

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

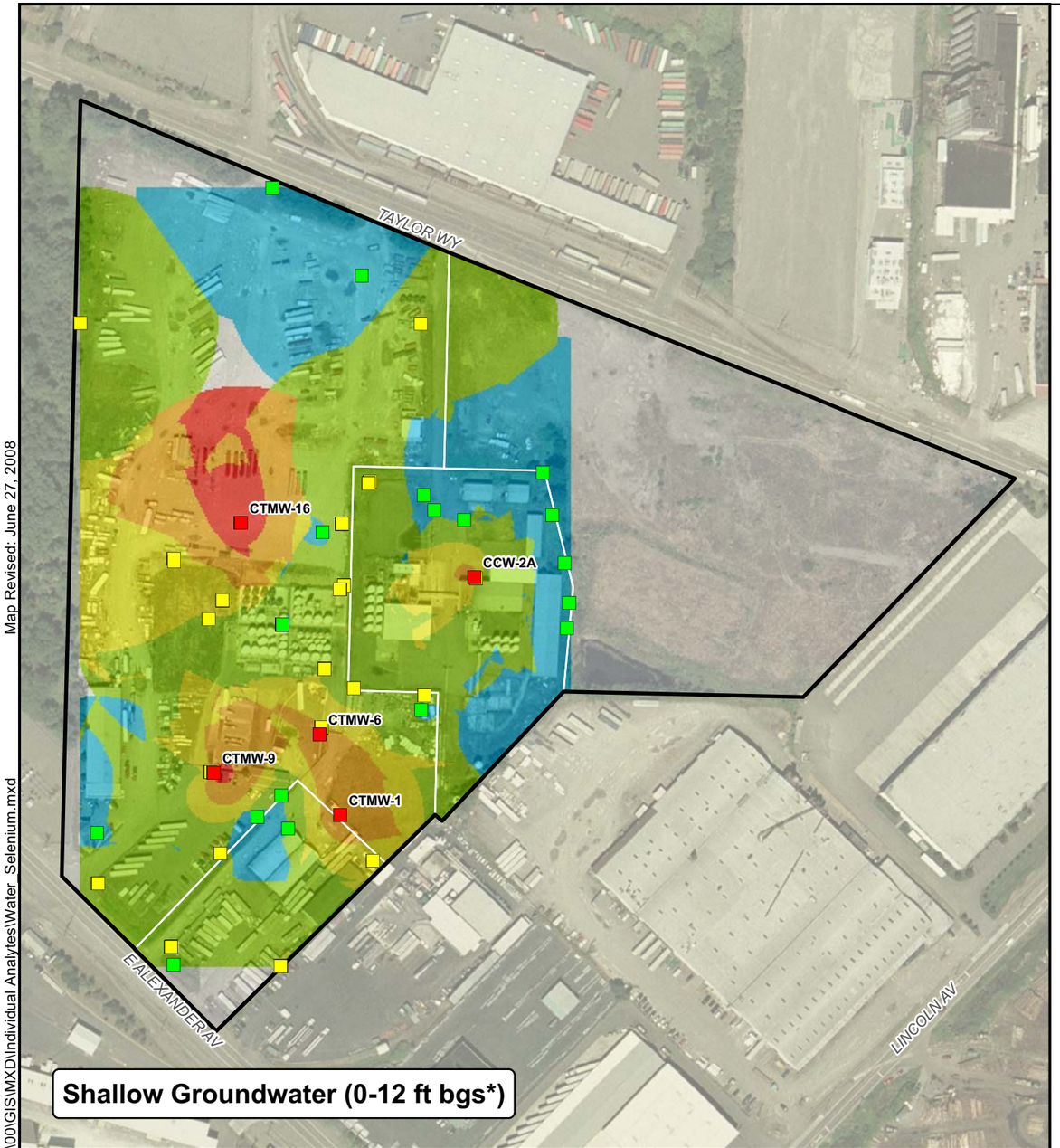
# Nickel in Groundwater

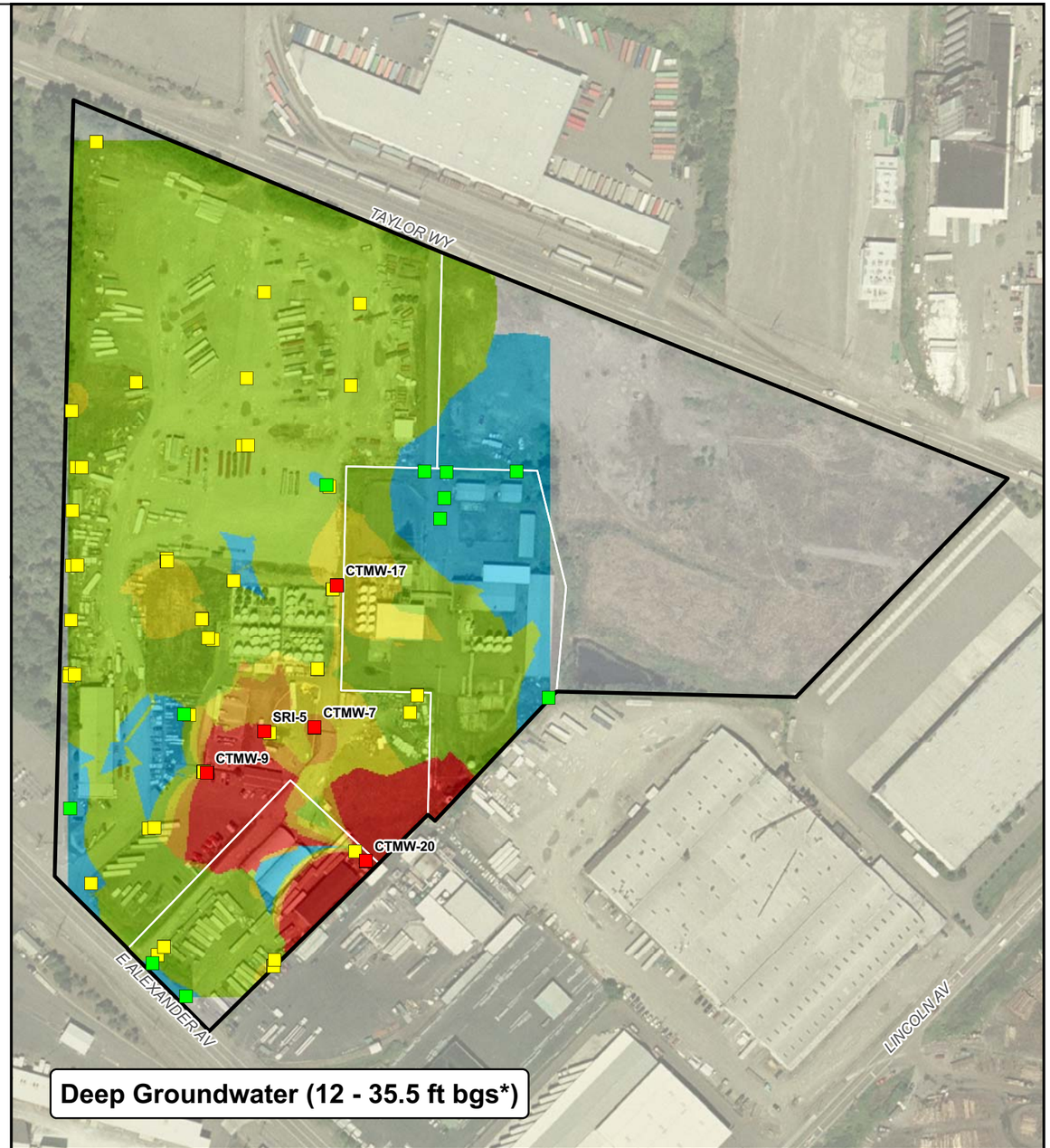
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 44**

Map Revised: June 27, 2008
Path: P:\0045411600\GIS\MXD\Individual Analytes\Water_Nickel.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC screening level
Screening level basis: practical quantitation limits

**Selenium (ug/L)**

- <1
- 1 - 10
- 10 - 20
- 20** - 40
- >40

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

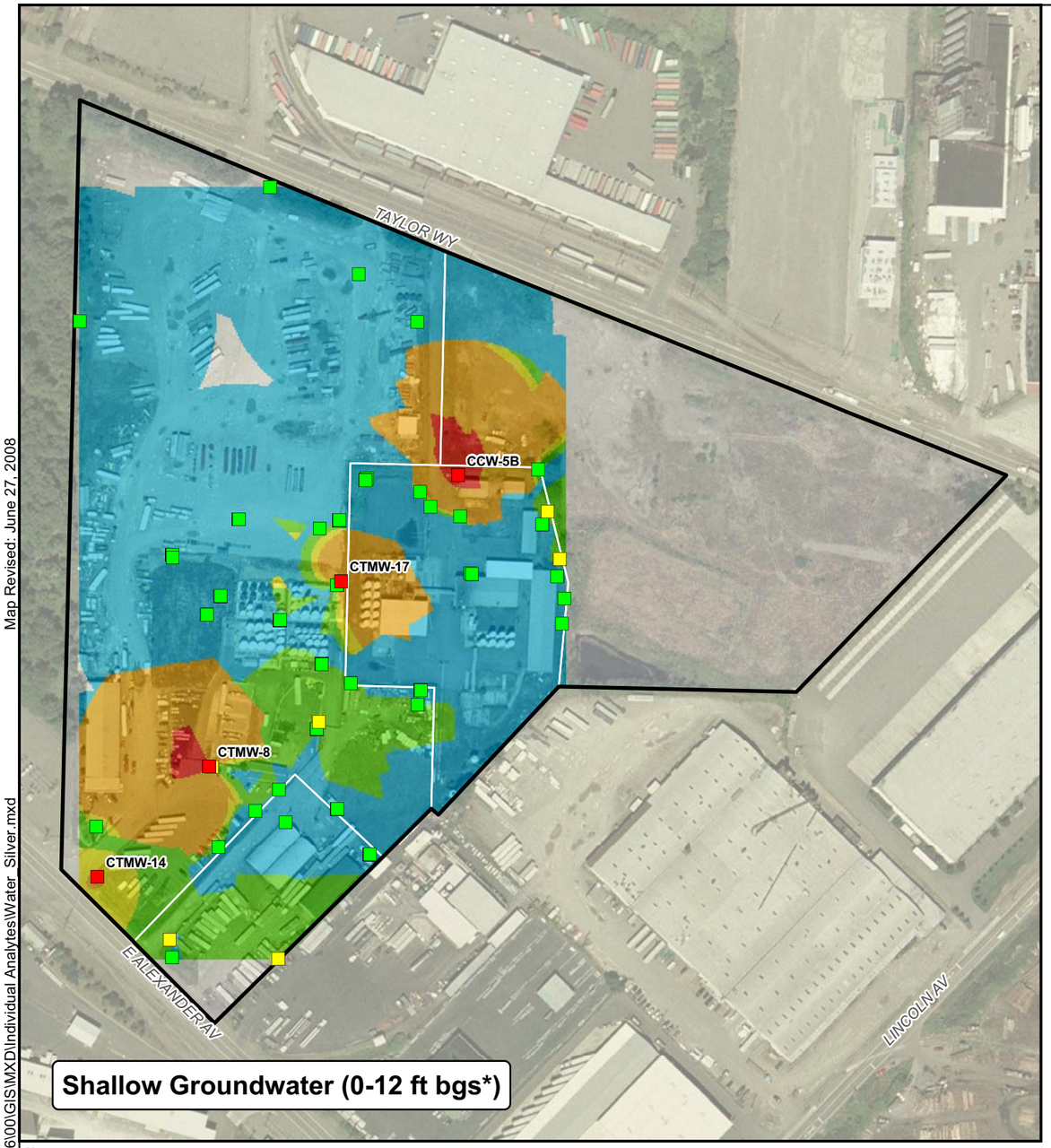
**Selenium in Groundwater**

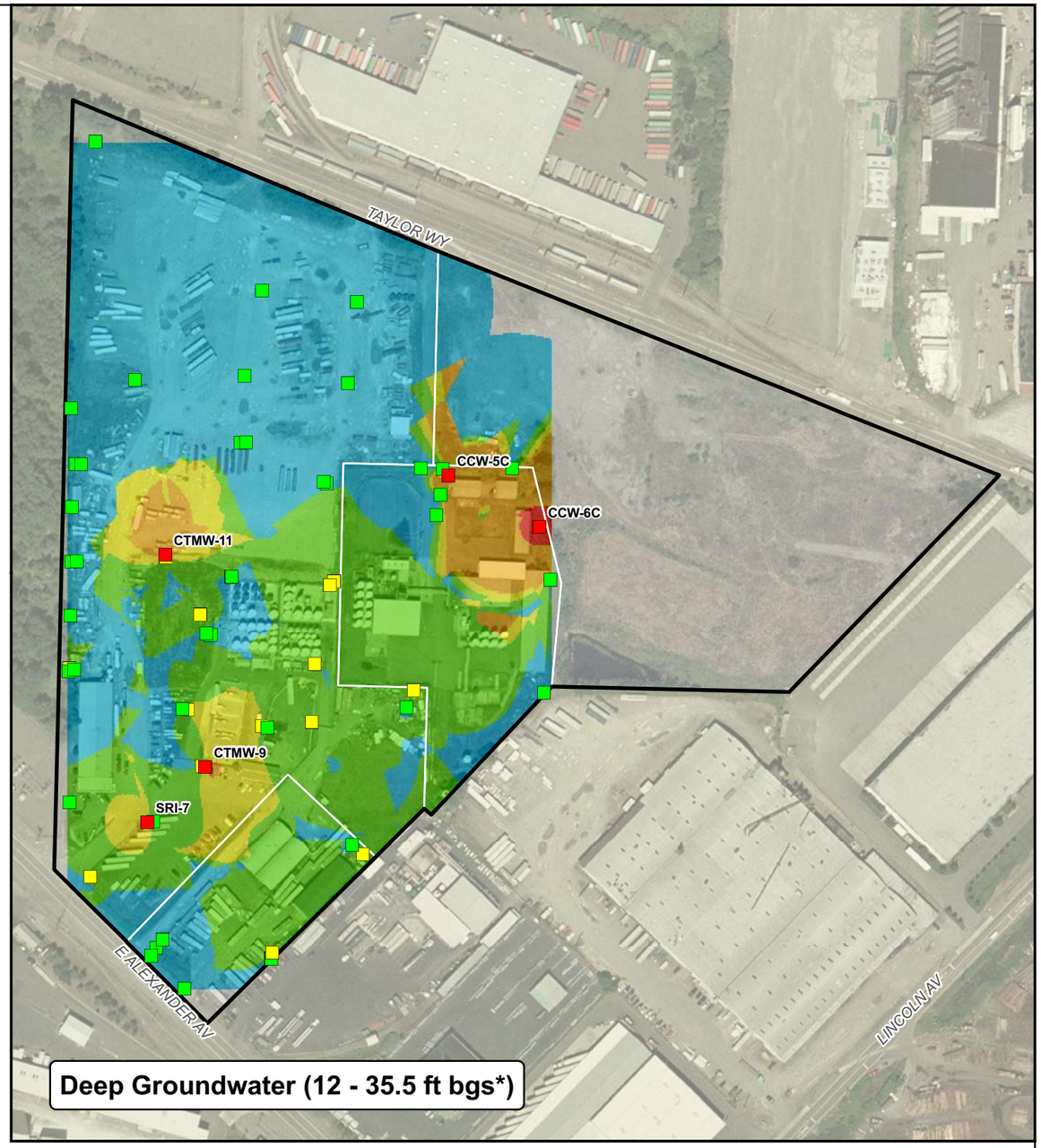
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 45**

Map Revised: June 27, 2008
Path: P:\0\04541116\00\GIS\MXD\Individual Analytes\Water_Selenium.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC screening level
Screening level basis: practical quantitation limits

| Silver (ug/L) |
|---|
| <0.01 |
| 0.01 - 1 |
| 1 - 2 |
| 2** - 20 |
| >20 |

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

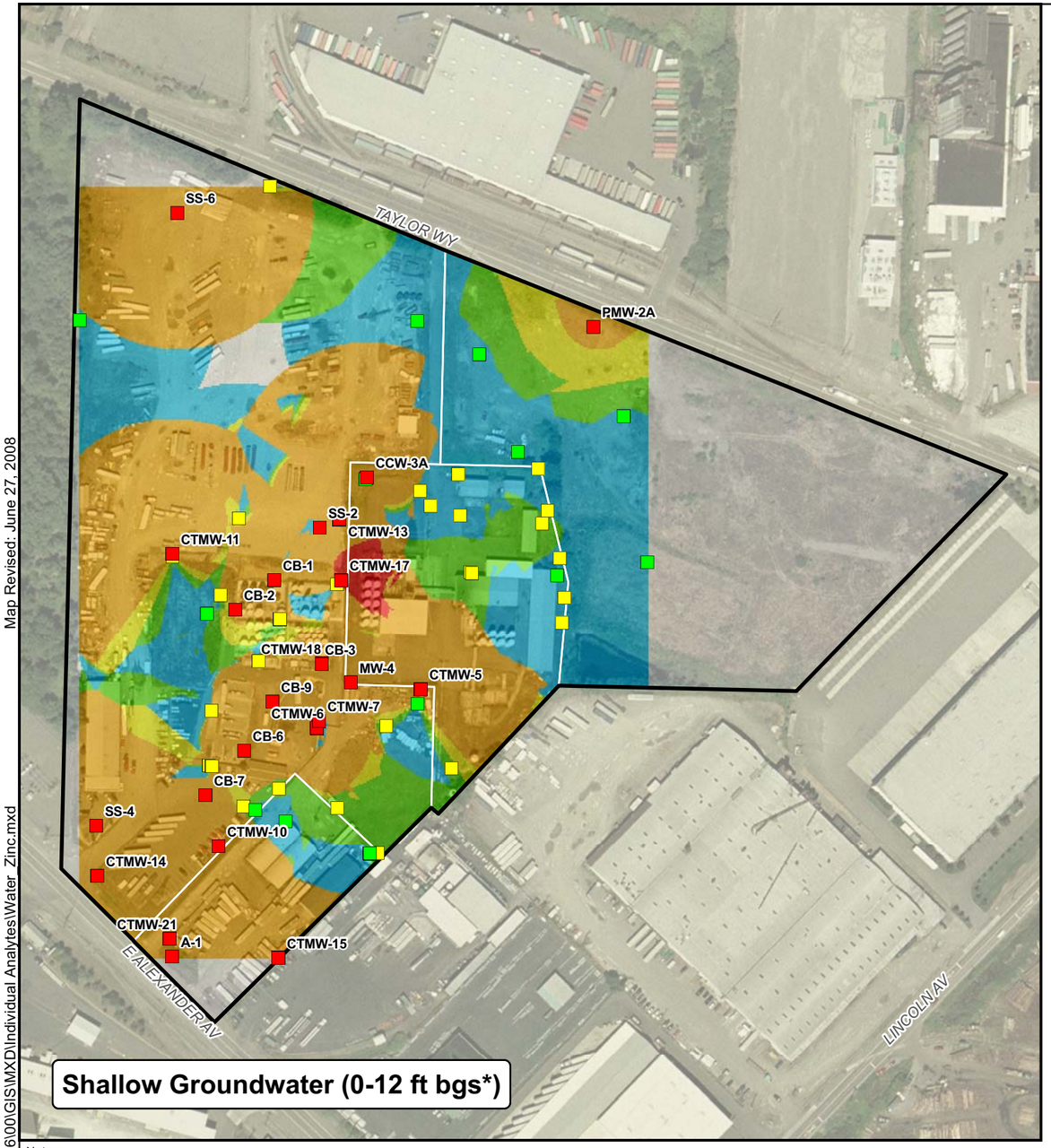
# Silver in Groundwater

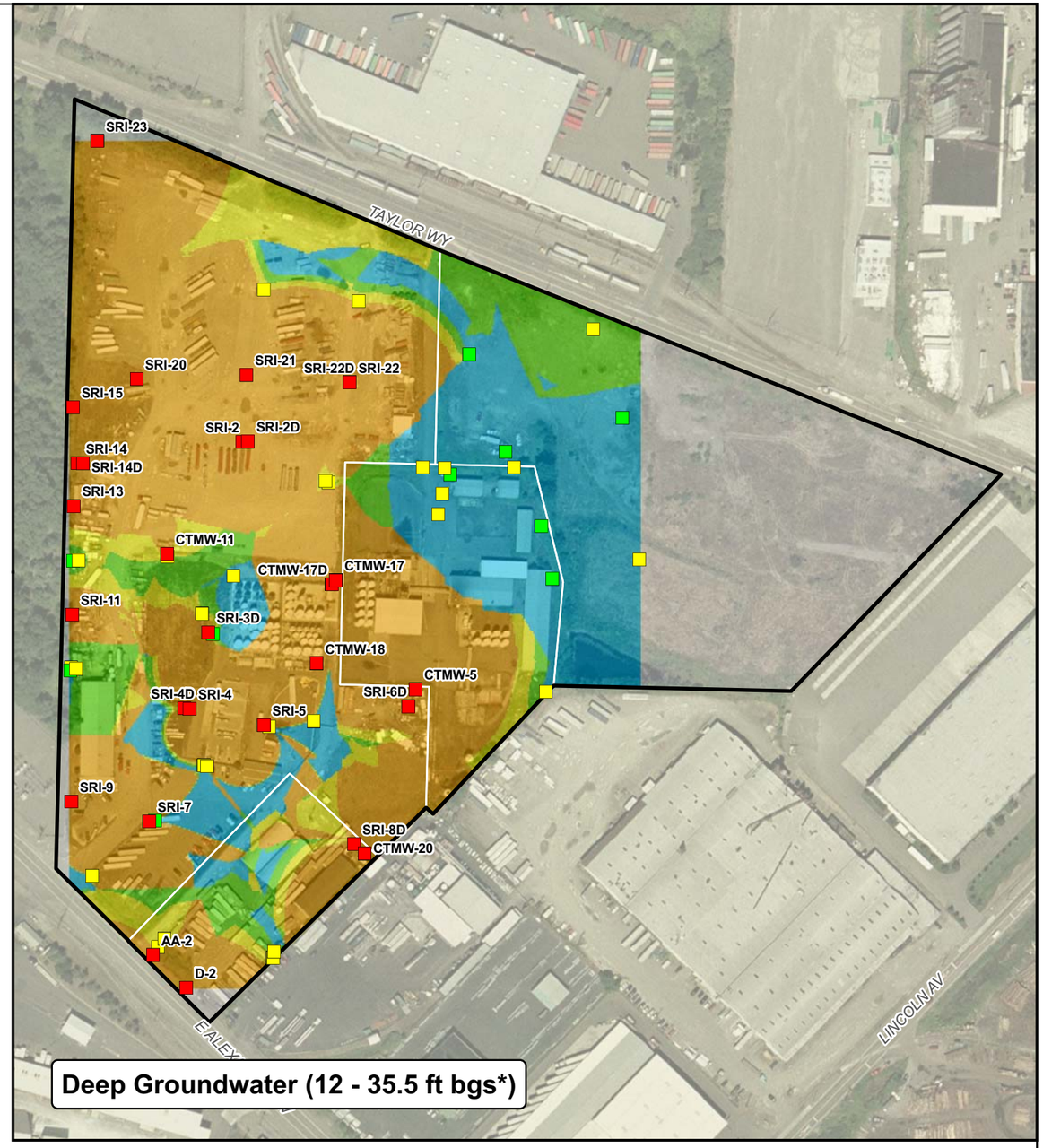
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 46**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Water_Silver.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC screening level
Screening level basis: protection of surface water

**Zinc (ug/L)**

| |
|---|
| <10 |
| 10 - 40 |
| 40 - 81 |
| 81** - 100,000 |
| >100,000 |

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

# Zinc in Groundwater

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

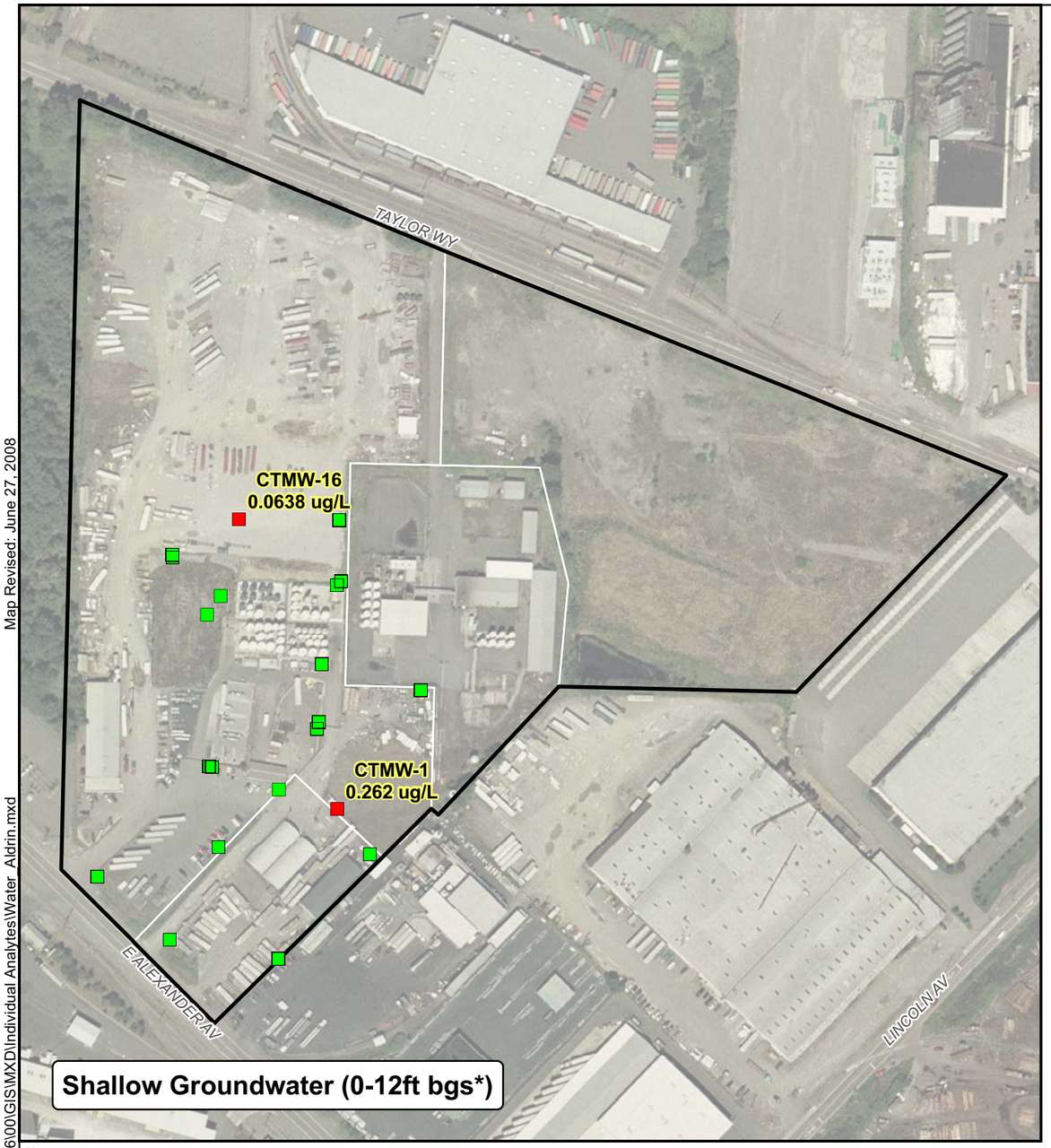
GeoEngineers

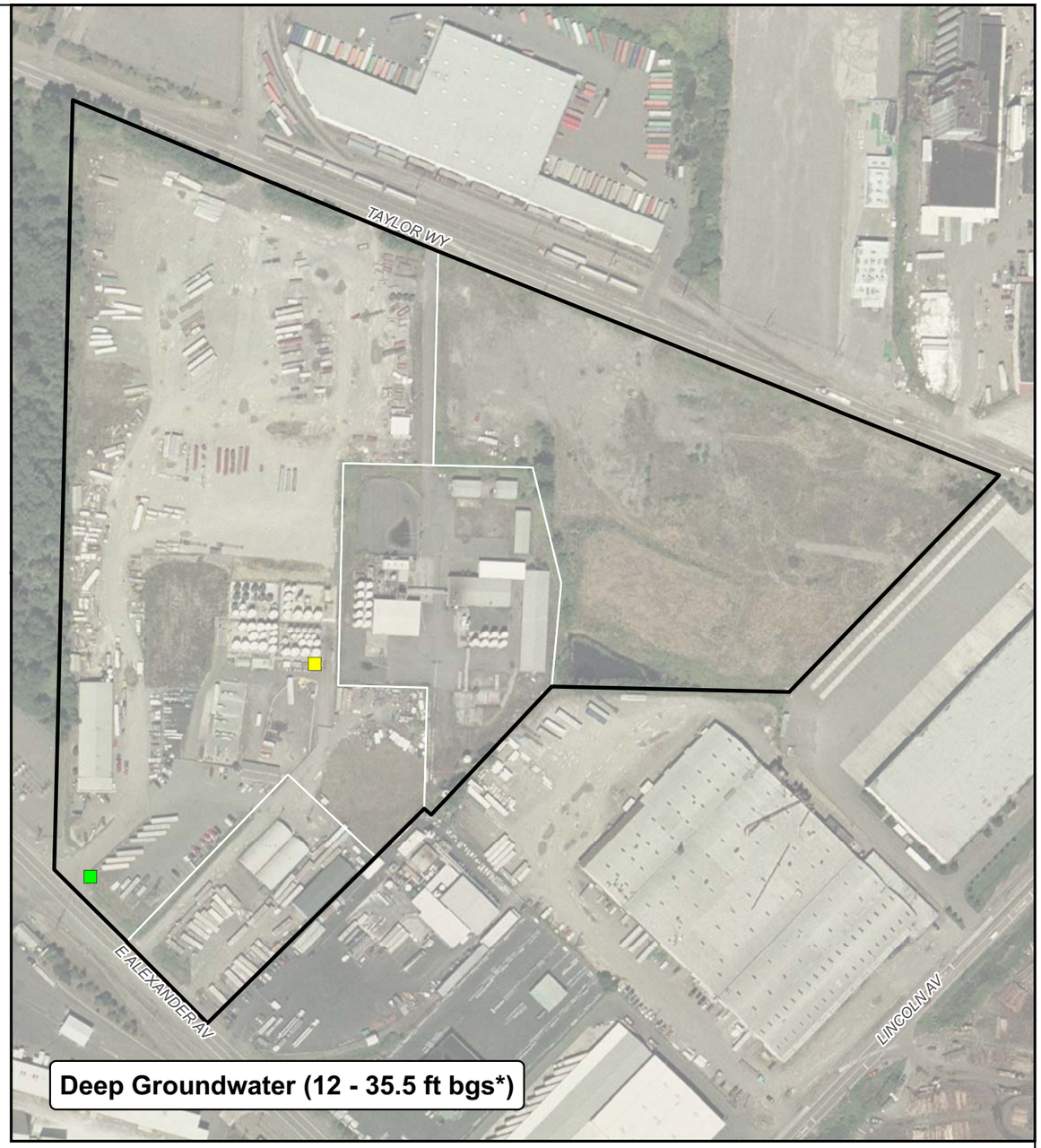
**Figure 47**

Map Revised: June 27, 2008

Path: P:\0\045416\00\GIS\MXD\Individual Analytes\Water_Zinc.mxd

Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 0.04 ug/L
Screening level basis: practical quantitation limits

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

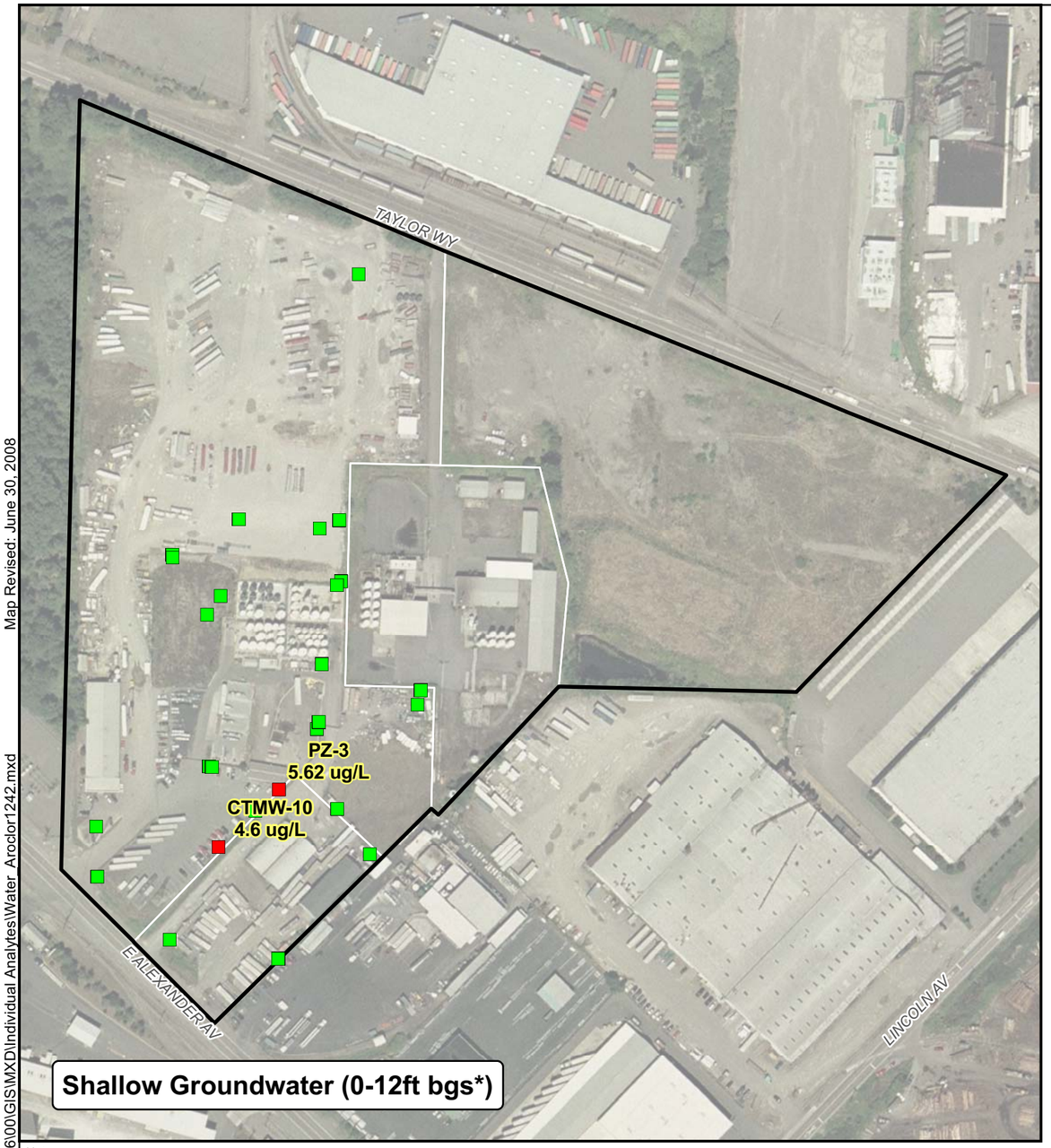
# Aldrin in Groundwater

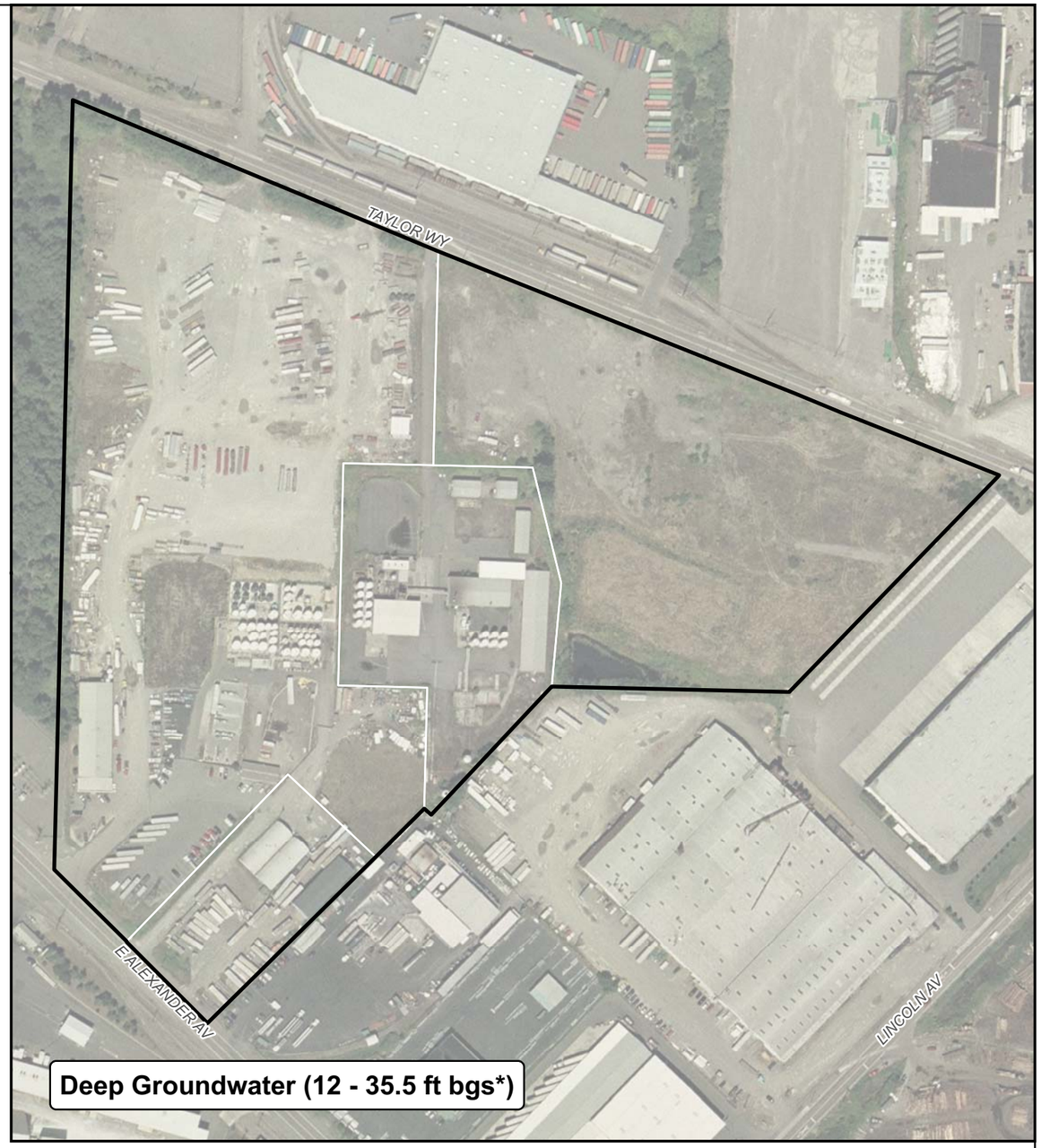
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 48**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Water_Aldrin.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 0.65 ug/L
Screening level basis: practical quantitation limits

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

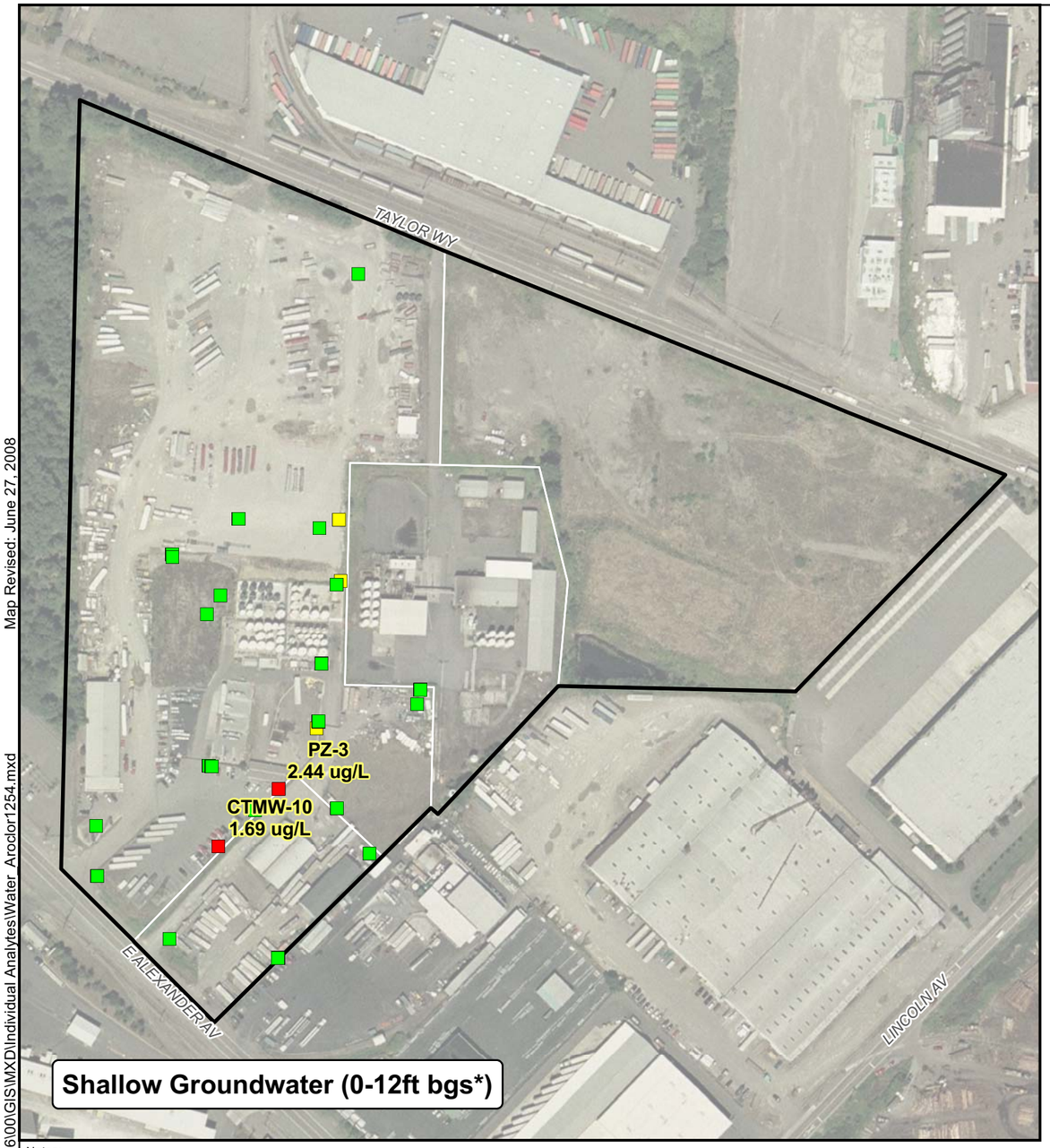
# Aroclor 1242 in Groundwater

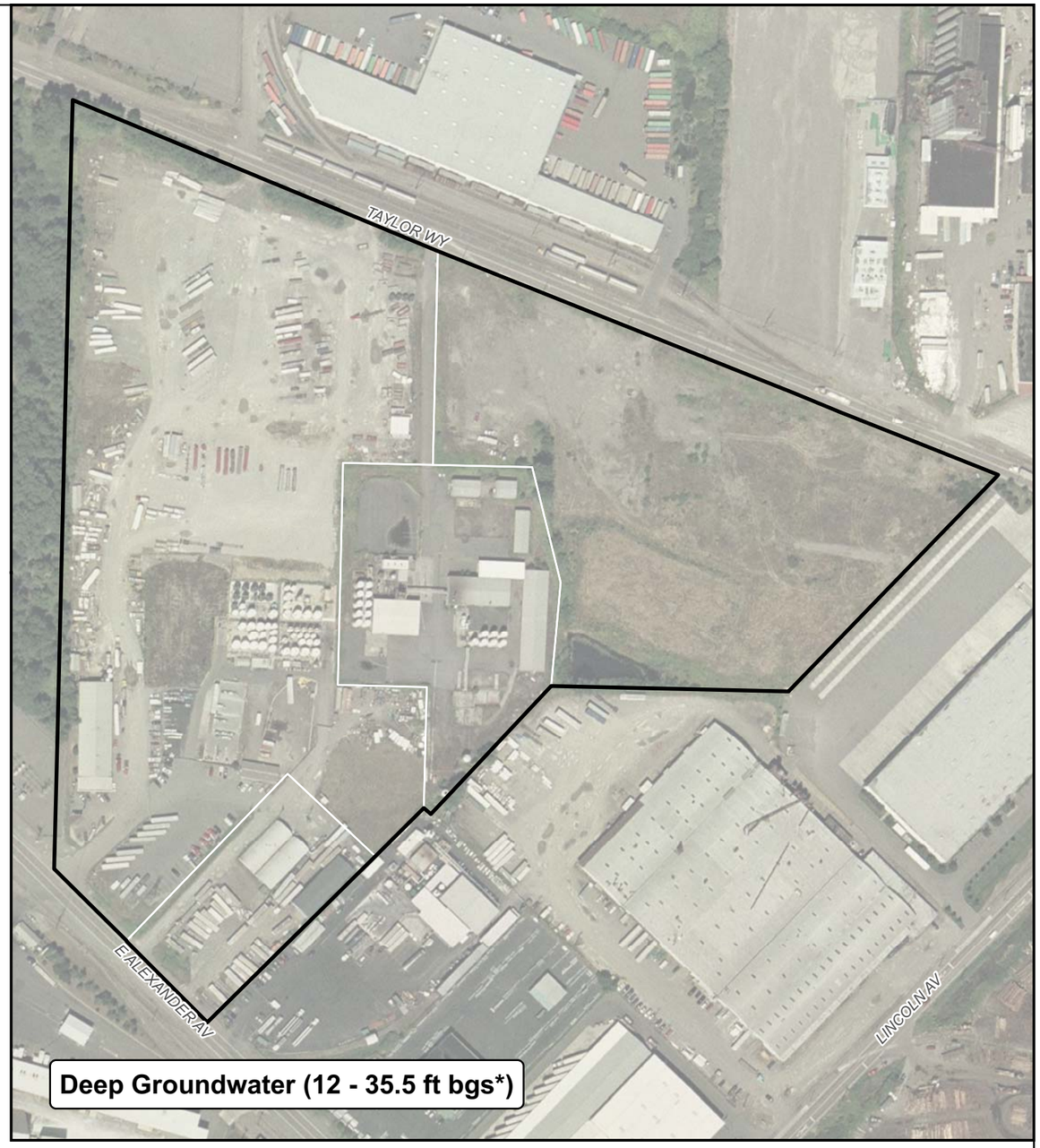
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 49**

Map Revised: June 30, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Water_Aroclor1242.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 1.3 ug/L
Screening level basis: practical quantitation limits

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

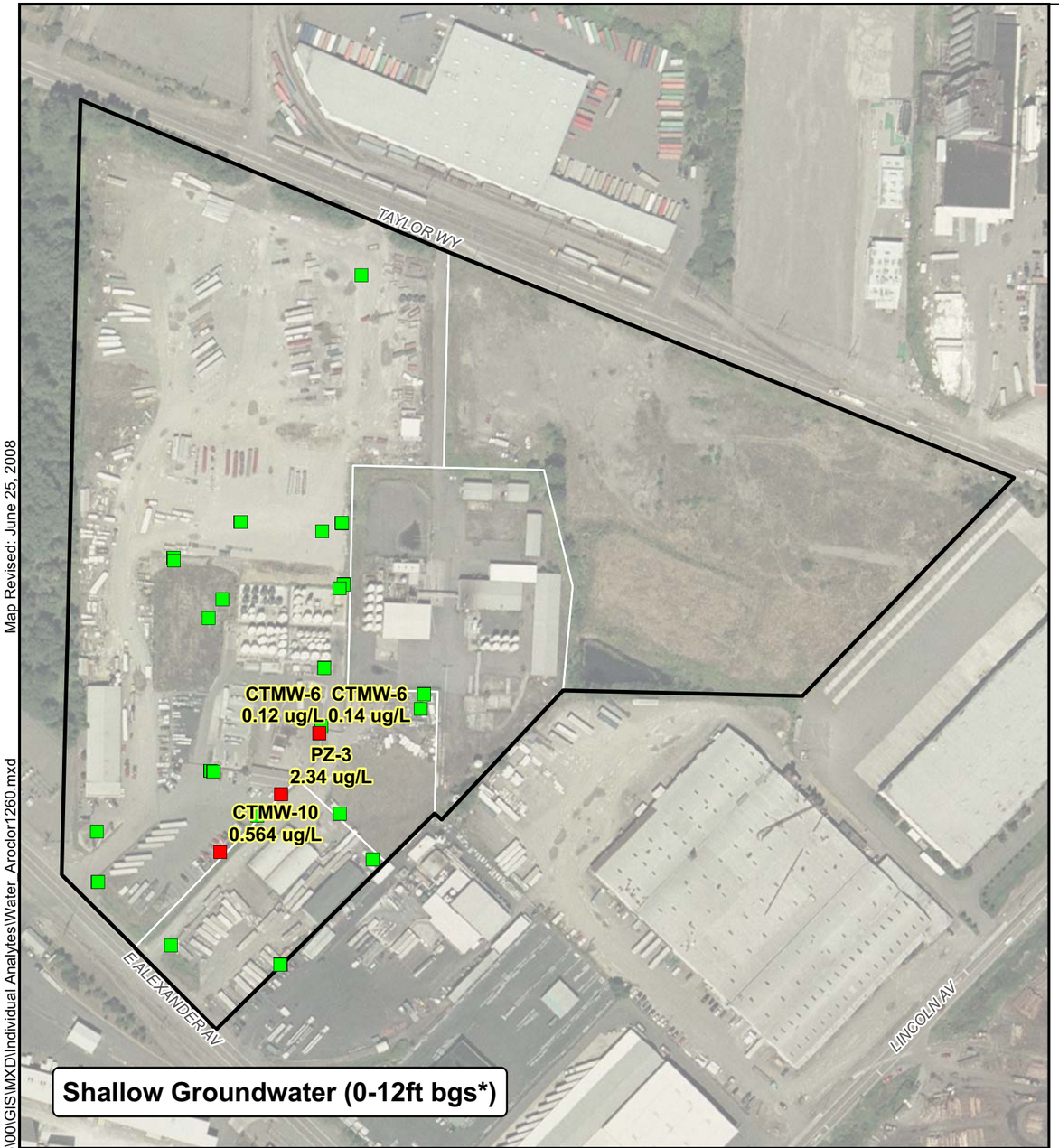
**Aroclor 1254 in Groundwater**

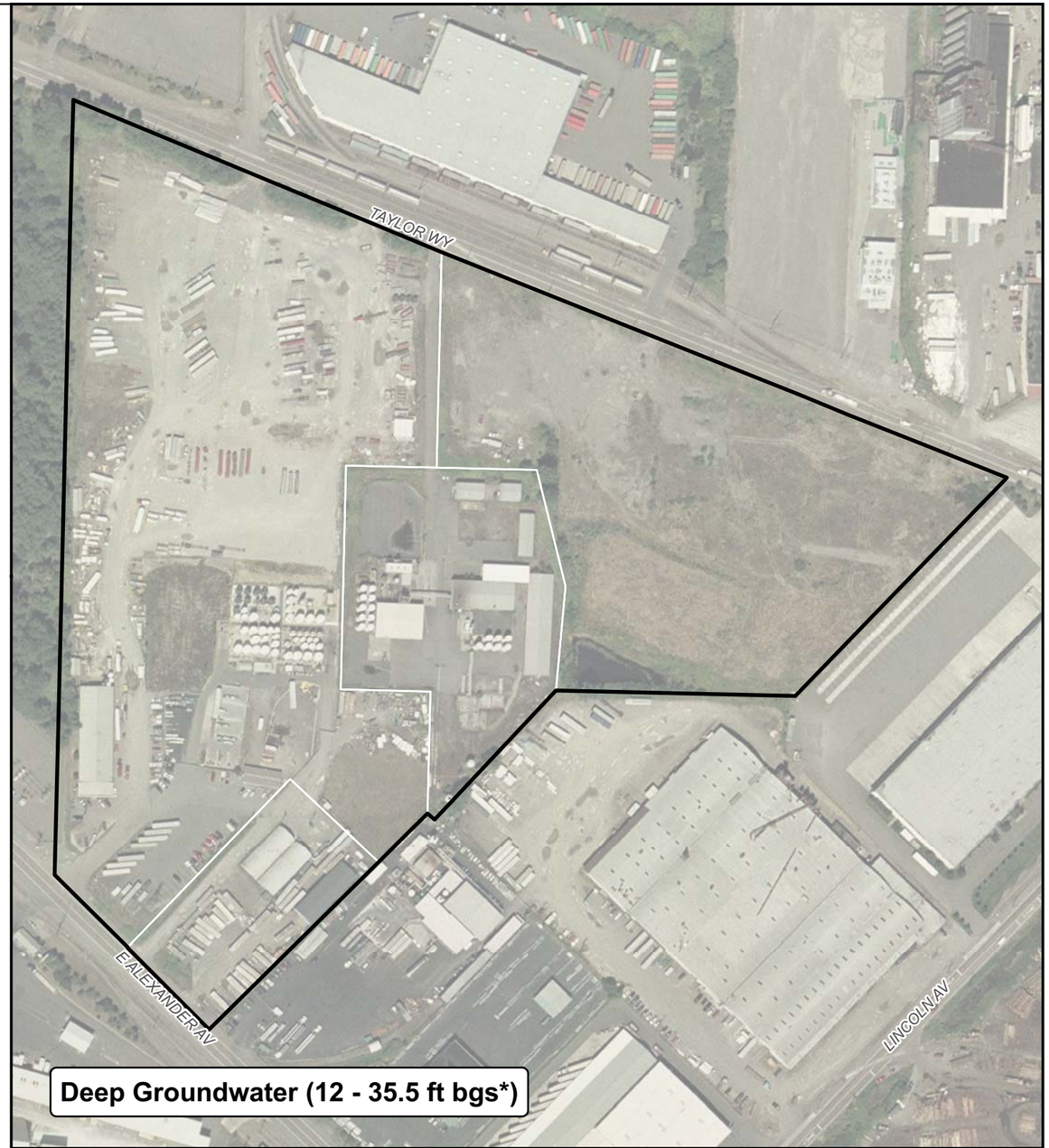
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 50**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Water_Aroclor1254.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 0.006 ug/L
Screening level basis: protection of surface water

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

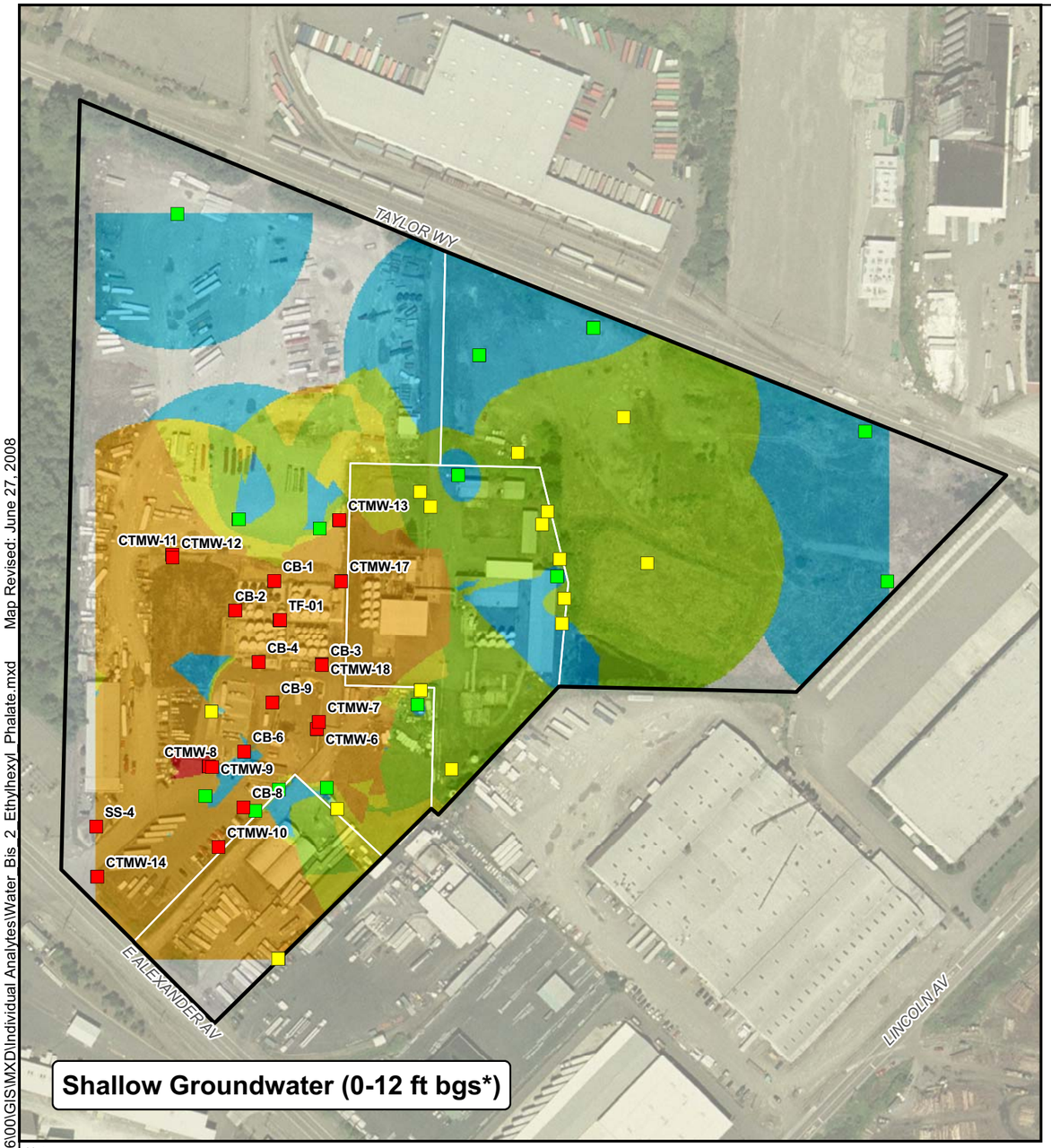
# Aroclor 1260 in Groundwater

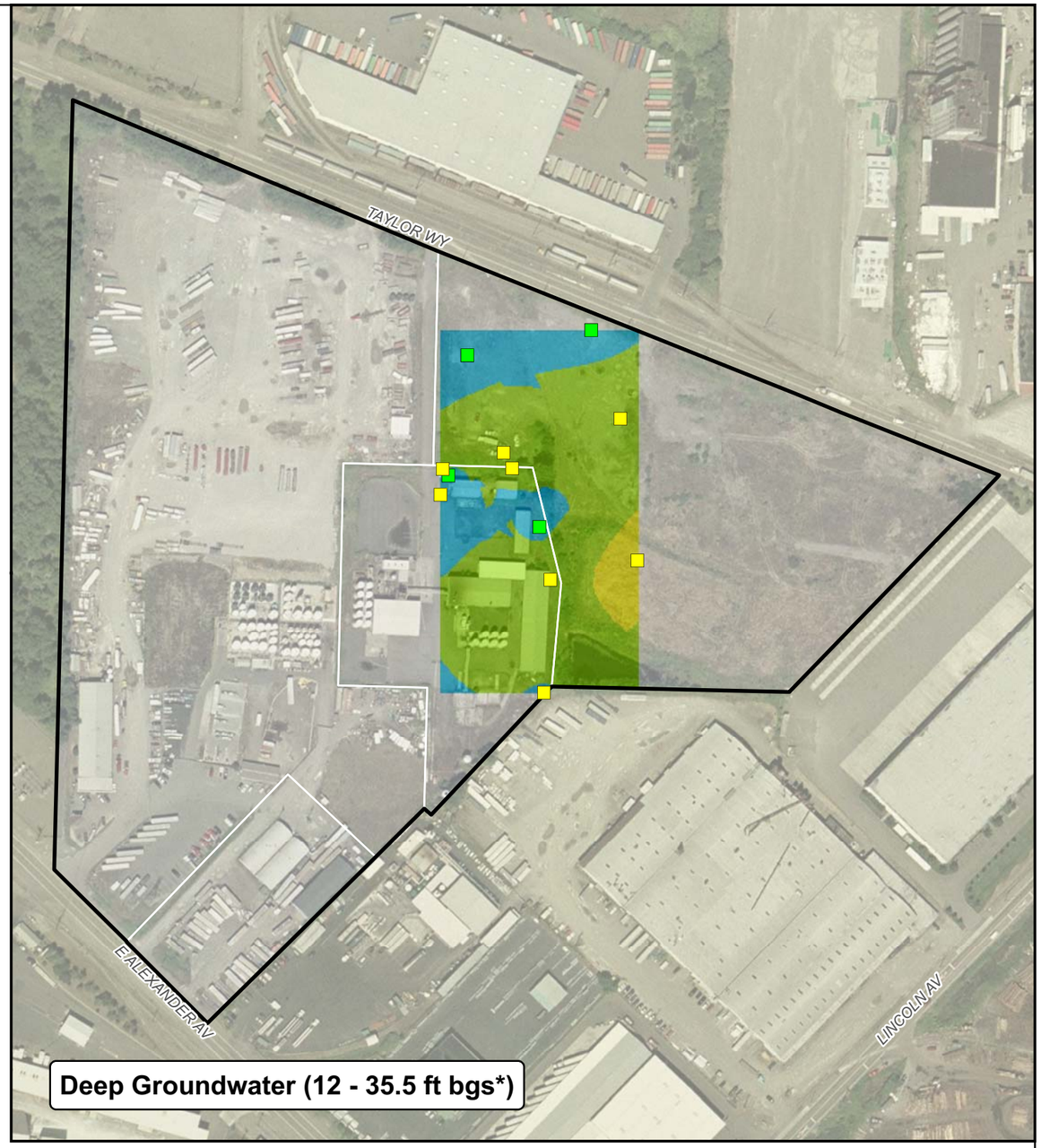
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 51**

Map Revised: June 25, 2008
Path: P:\i\0045411600\GIS\MXD\Individual Analytes\Water_Aroclor1260.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC screening level
Screening level basis: practical quantitation limits

**Bis(2-ethylhexyl)-phalate (ug/L)**

- <1
- 1 - 5
- 5 - 10
- 10** - 6,000
- >6,000

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

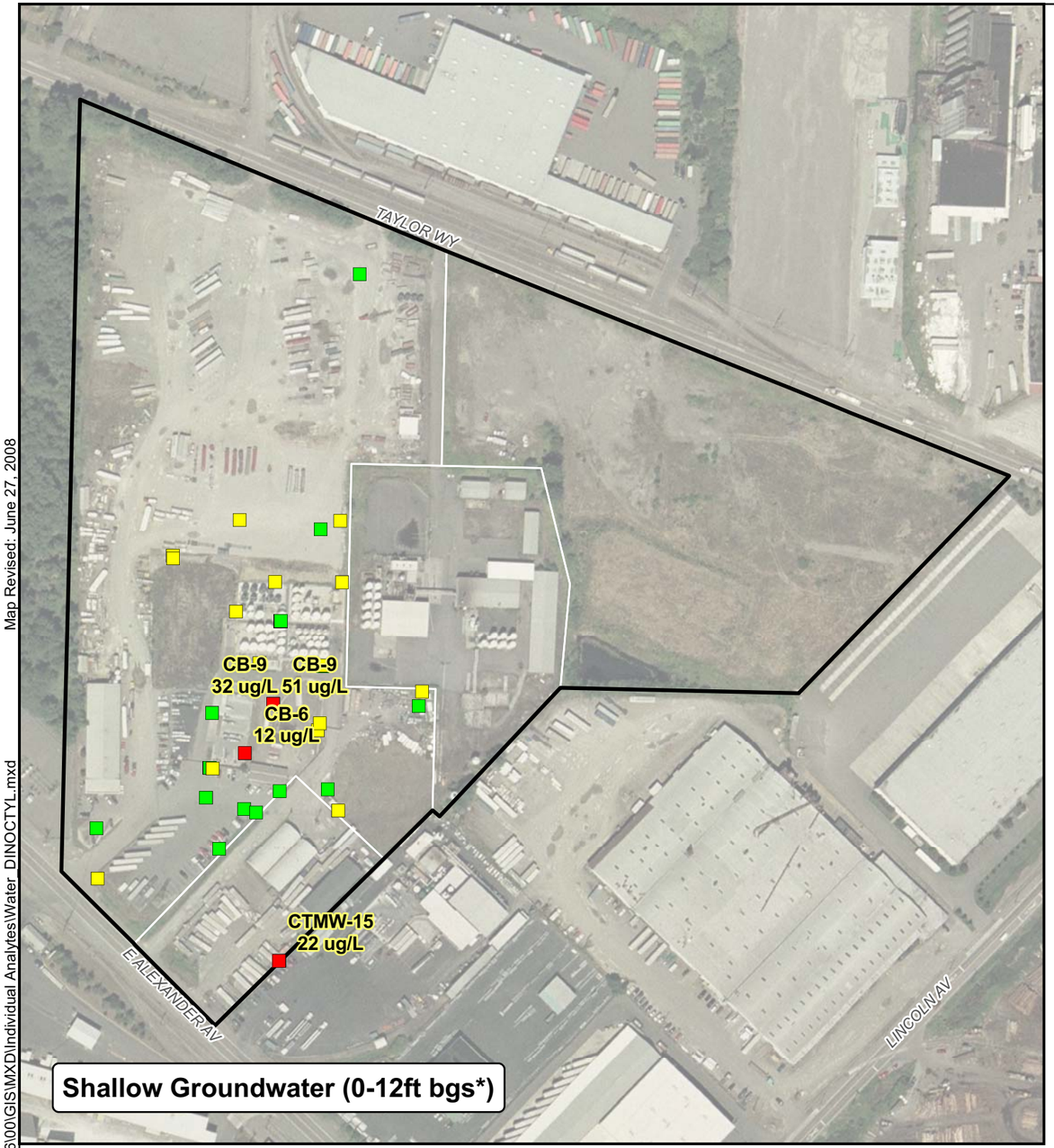
# Bis(2-ethylhexyl)-phthalate in Groundwater

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

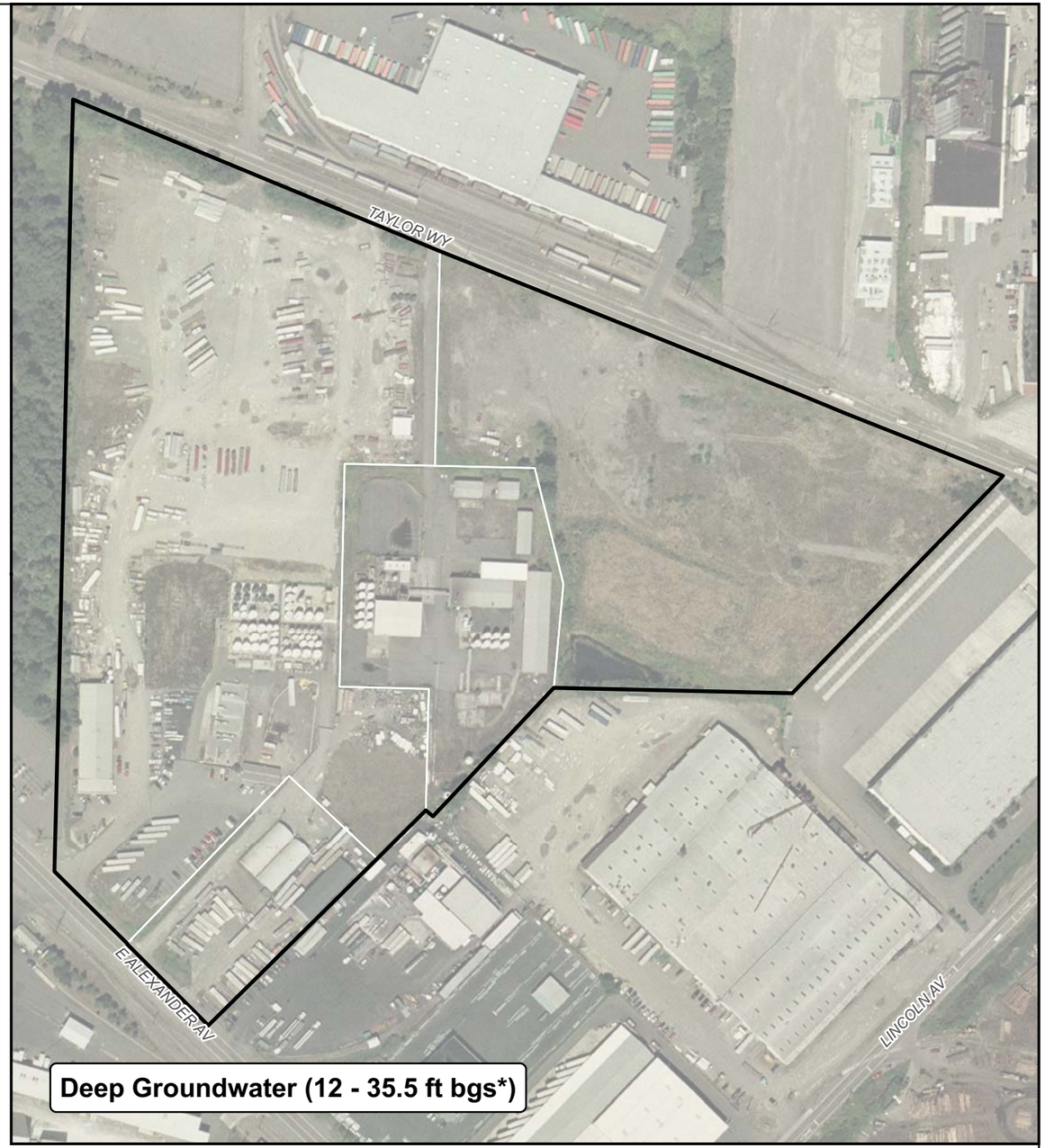
GeoEngineers

**Figure 52**

Office: TAC Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Water Bis_2_Ethylhexyl_Phalate.mxd Map Revised: June 27, 2008




**Shallow Groundwater (0-12ft bgs*)**




**Deep Groundwater (12 - 35.5 ft bgs*)**

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 10 ug/L
Screening level basis: practical quantitation limits

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

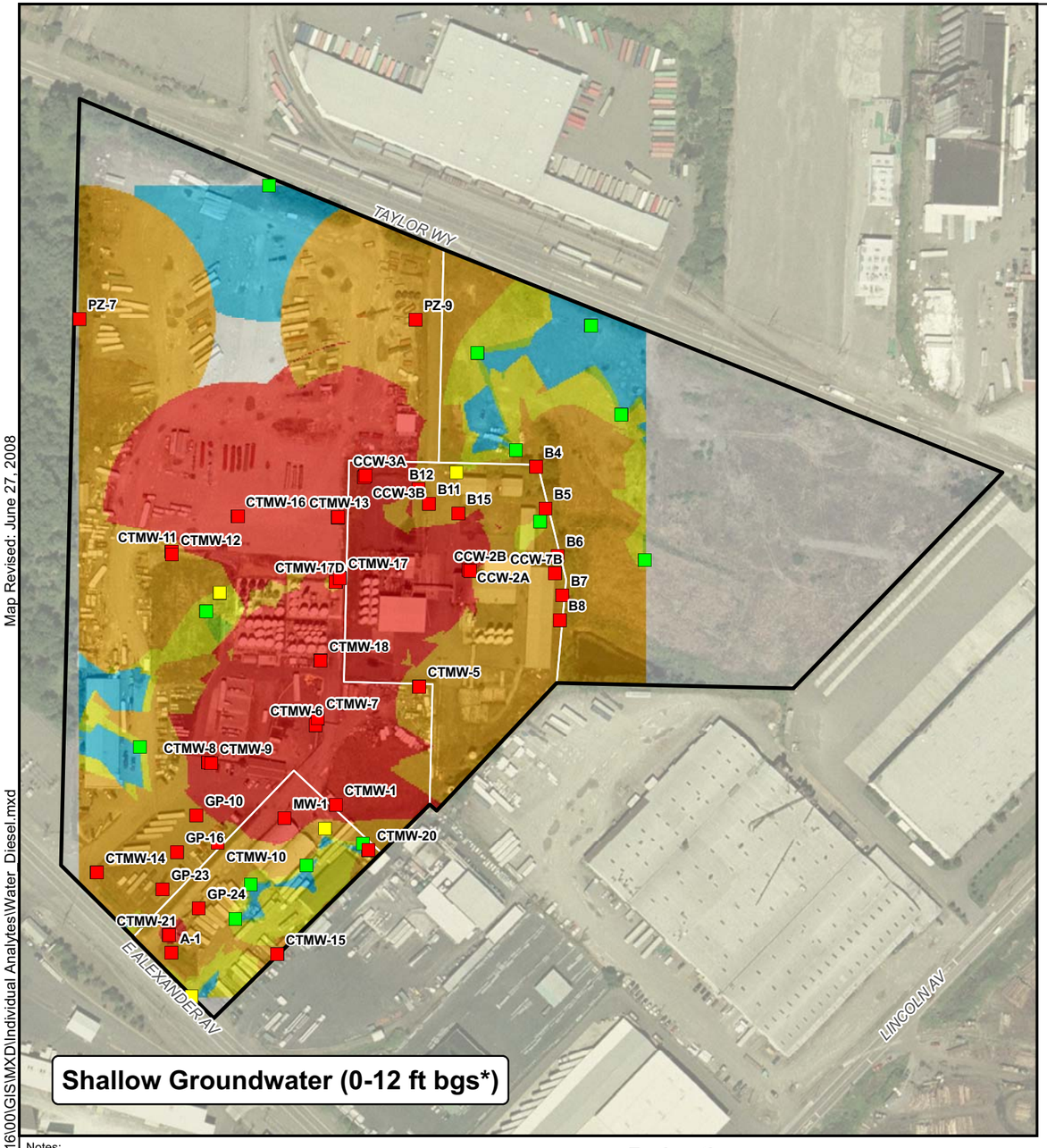
**Di-n-octylphthalate in Groundwater**

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

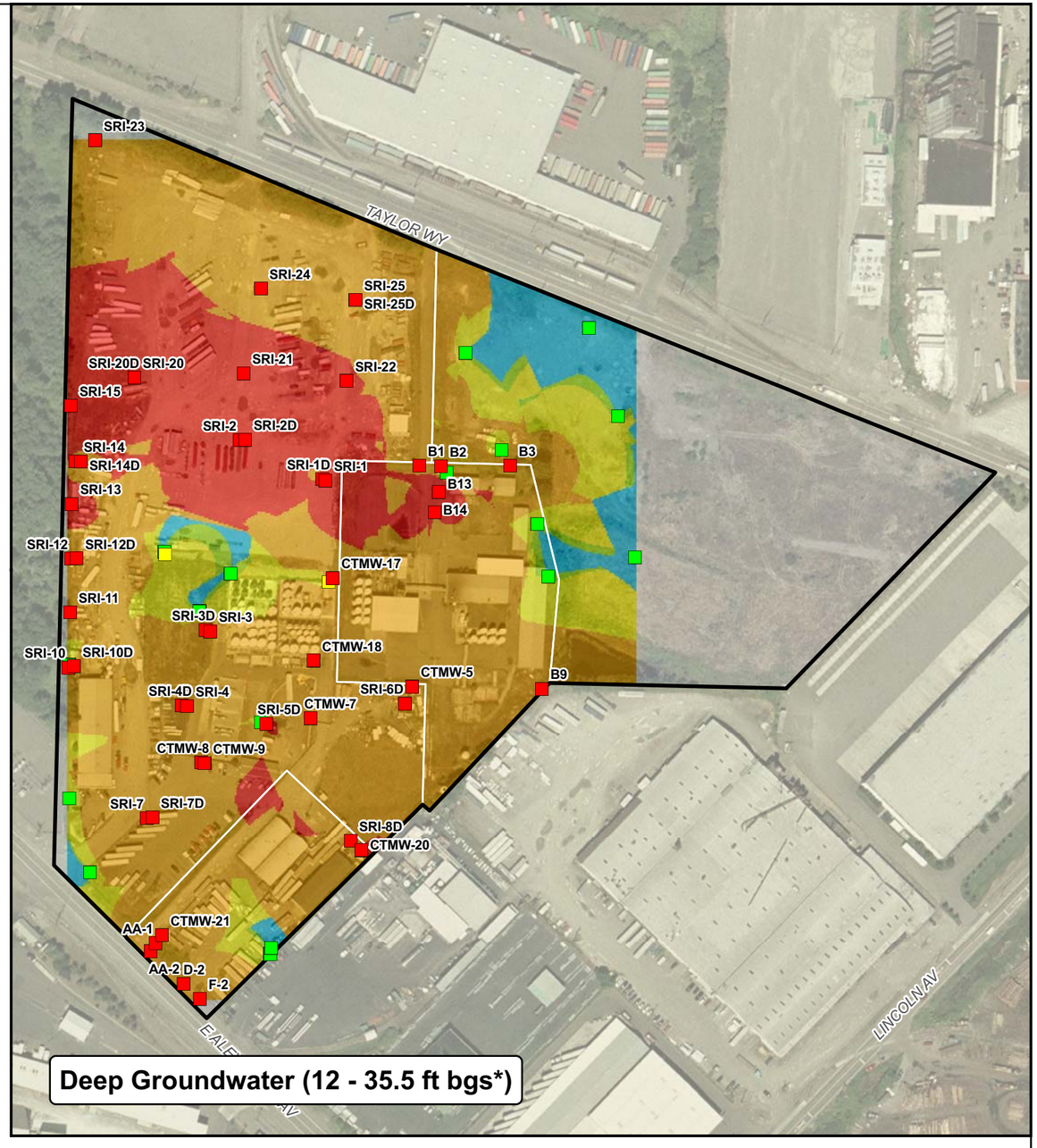
GeoEngineers

**Figure 53**

Map Revised: June 27, 2008
Path: P:\0\045416\00\GIS\MXD\Individual Analytes\Water_DINOCTYL.mxd
Office: TAC




**Shallow Groundwater (0-12 ft bgs*)**




**Deep Groundwater (12 - 35.5 ft bgs*)**

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC screening level
Screening level basis: protection of groundwater

**Diesel (ug/L)**

- <5
- 5 - 50
- 50 - 500
- 500** - 5,000
- >5000

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

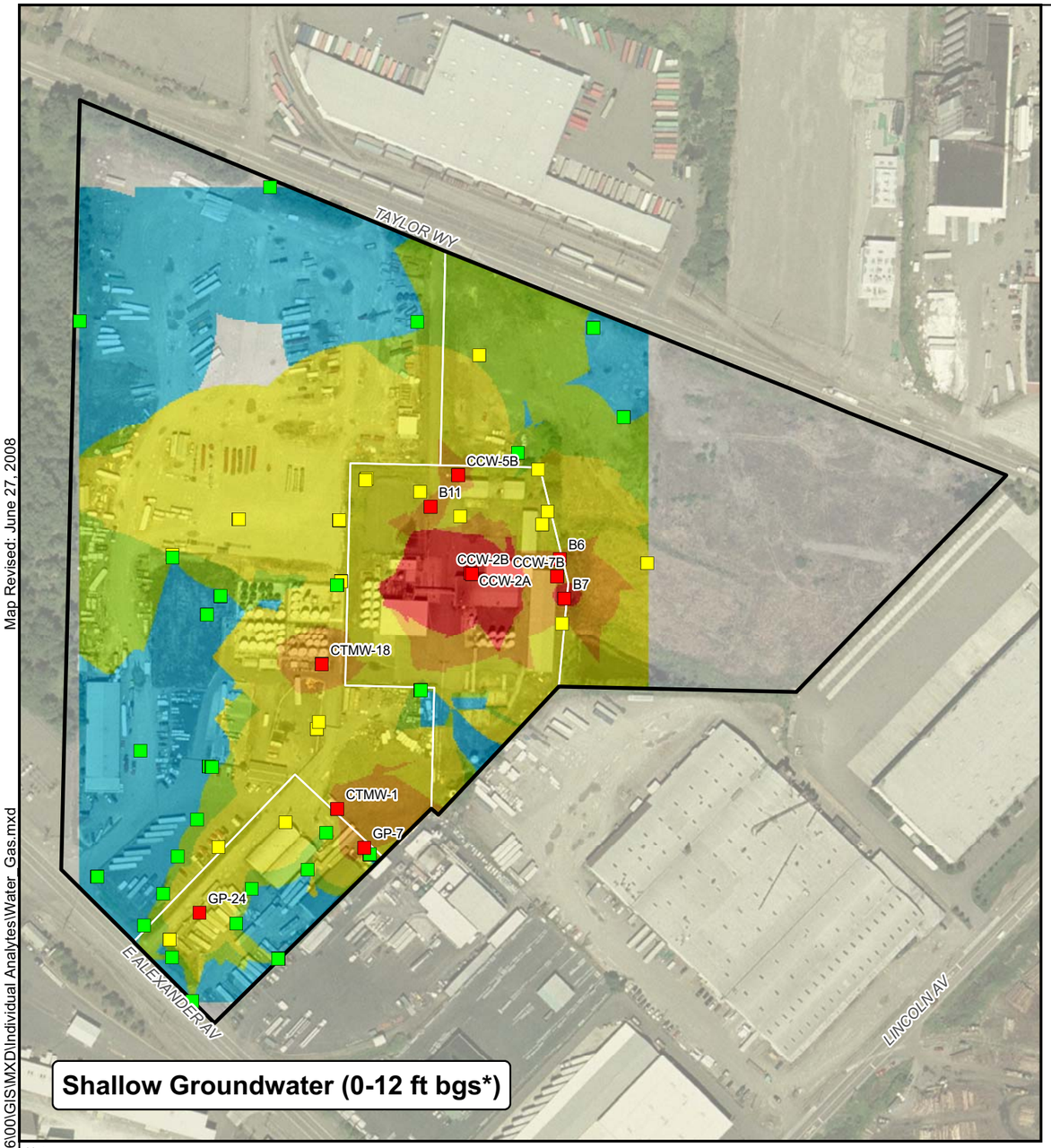
**Diesel in Groundwater**

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

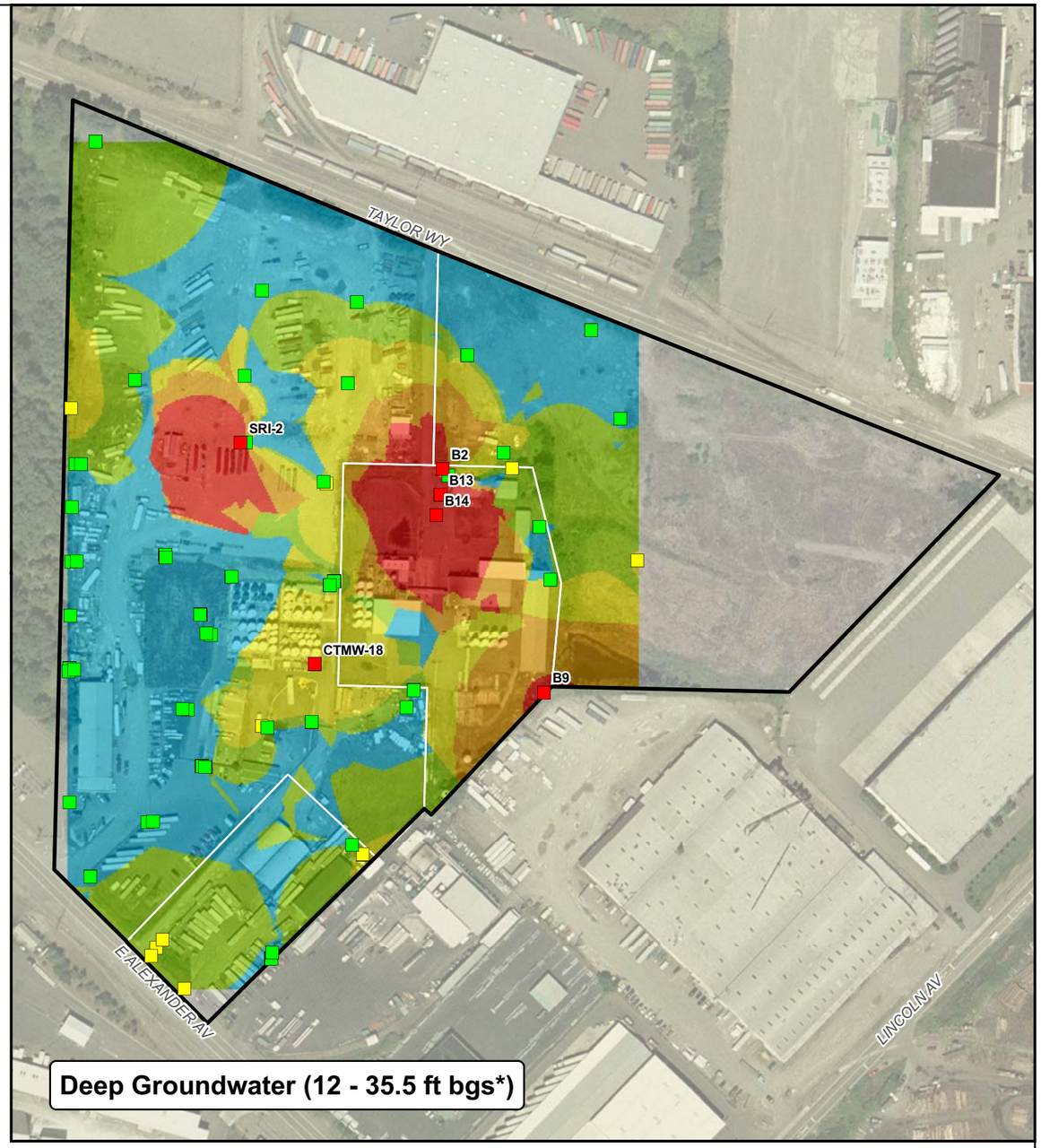
GeoEngineers

**Figure 54**

Map Revised: June 27, 2008
Path: P:\0\045411 6\00\GIS\MXD\Individual Analytes\Water Diesel.mxd
Office: TAC




**Shallow Groundwater (0-12 ft bgs*)**




**Deep Groundwater (12 - 35.5 ft bgs*)**

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC screening level
Screening level basis: protection of groundwater

**Gasoline (ug/L)**

- <5
- 5 - 100
- 100 - 800
- 800** - 2,000
- >2,000

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

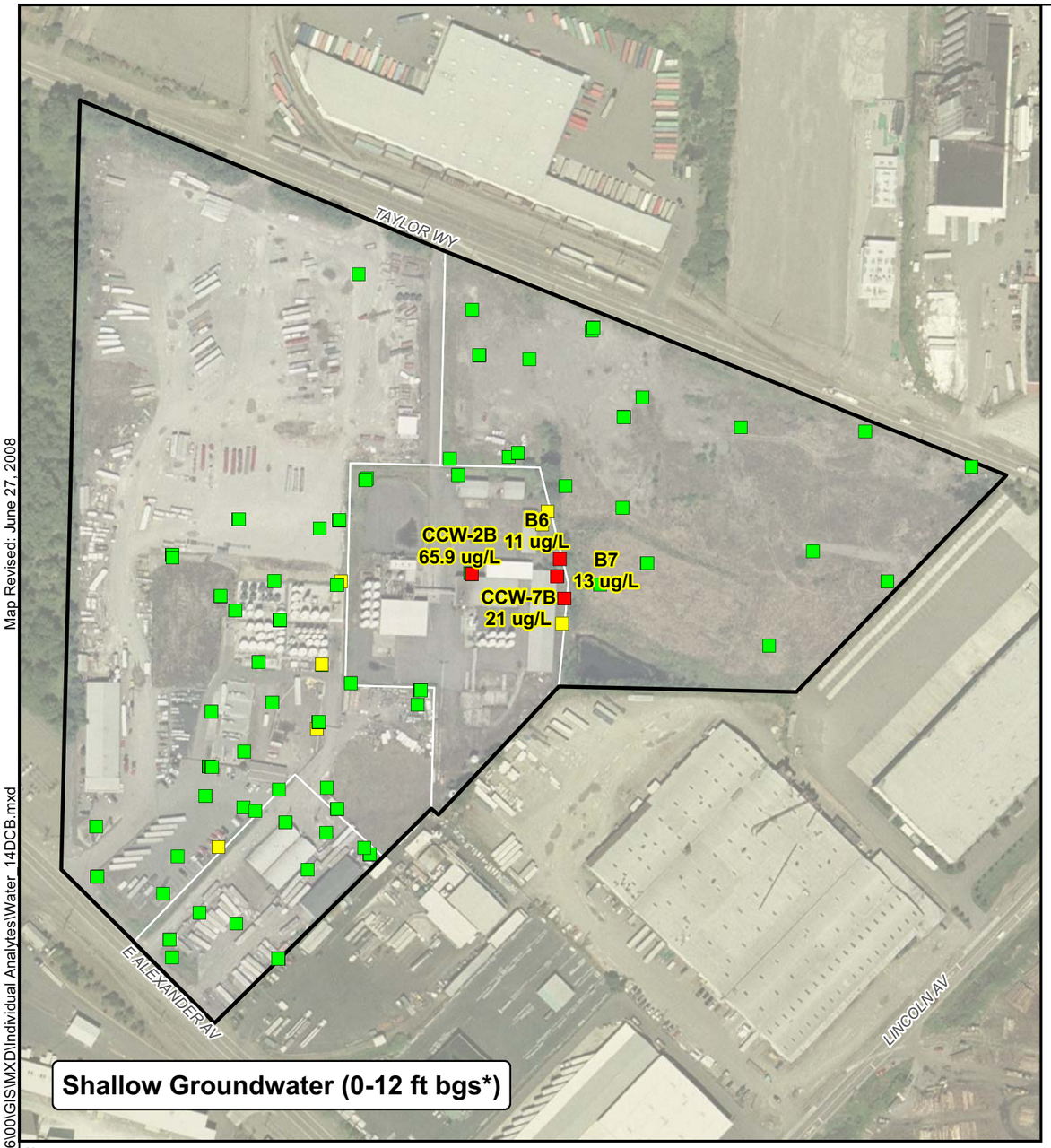
# Gasoline in Groundwater

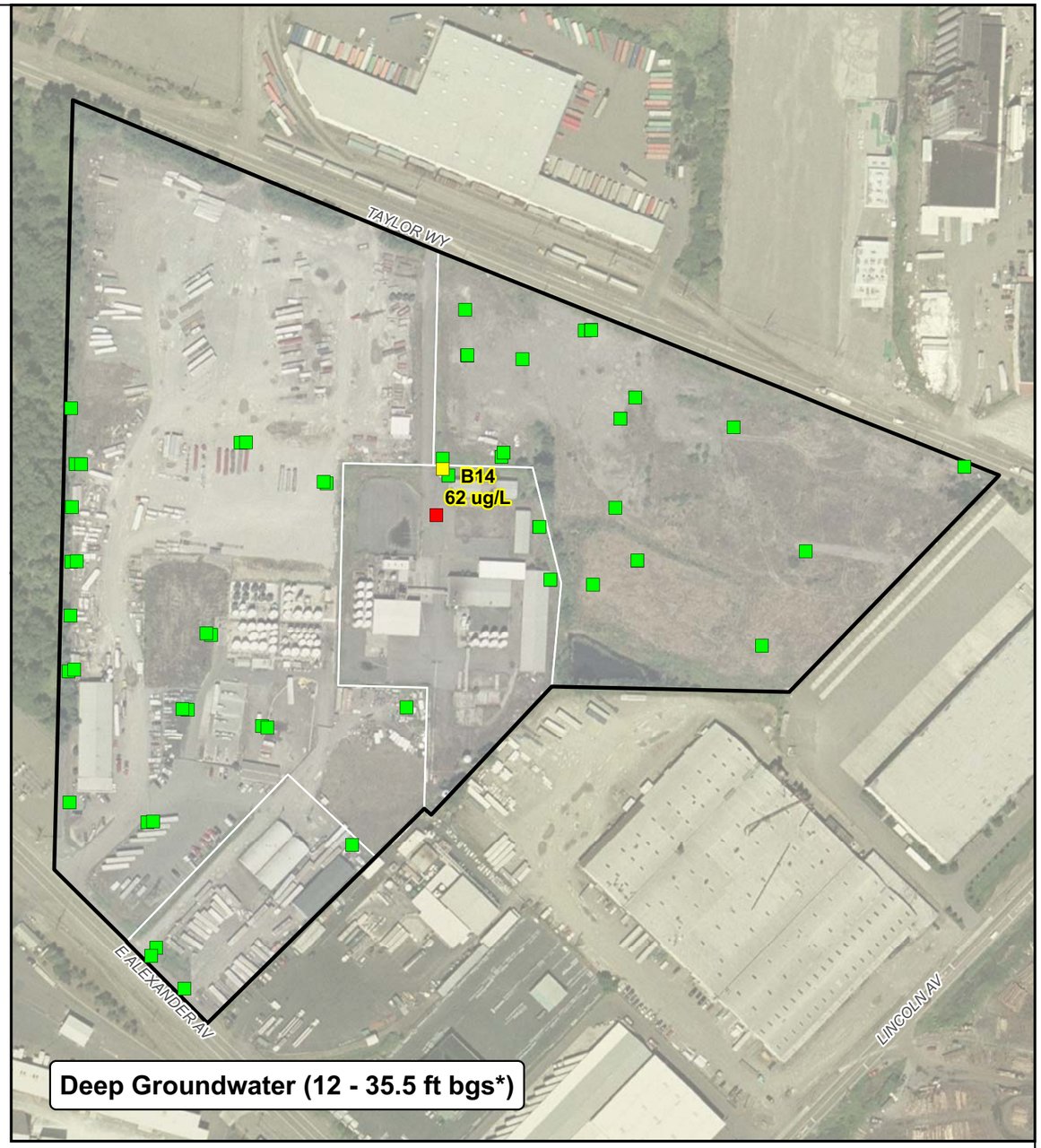
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 55**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Water_Gas.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 10 ug/L
Screening level basis: practical quantitation limits

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

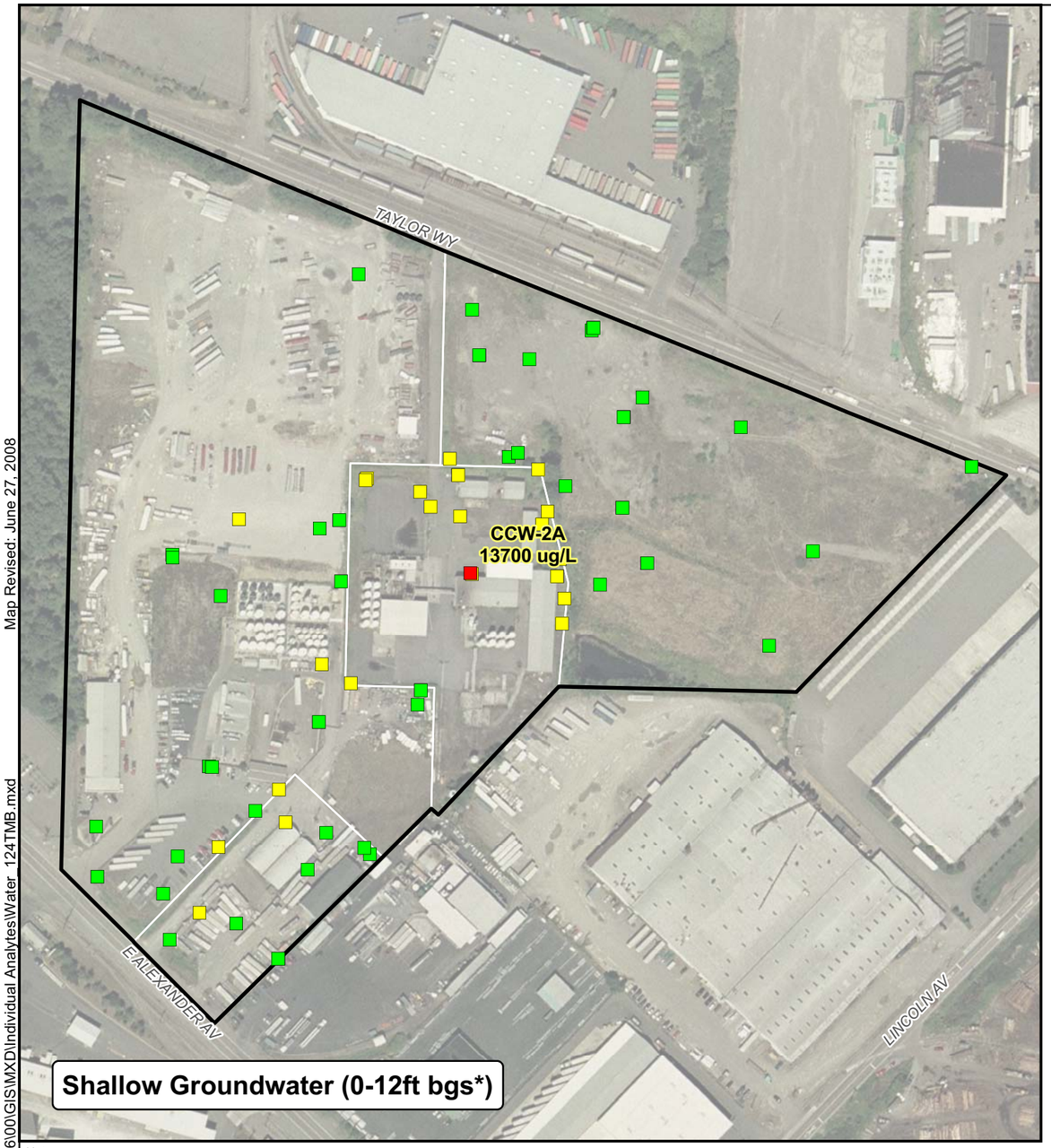
**1,4-Dichlorobenzene in Groundwater**

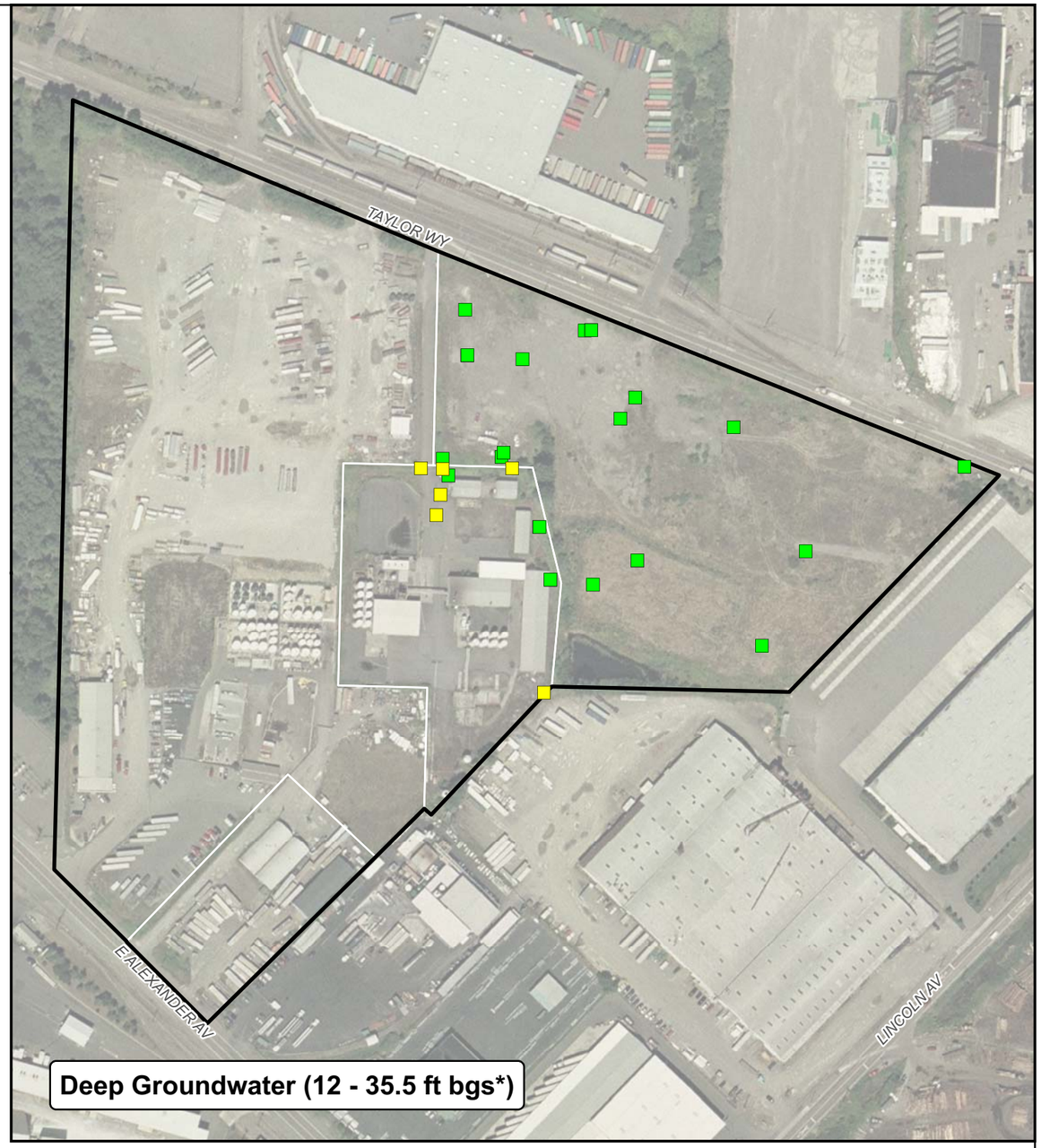
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 56**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Water_14DCB.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 3870 ug/L
Screening level basis: protection of On-Site groundwater exposure

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

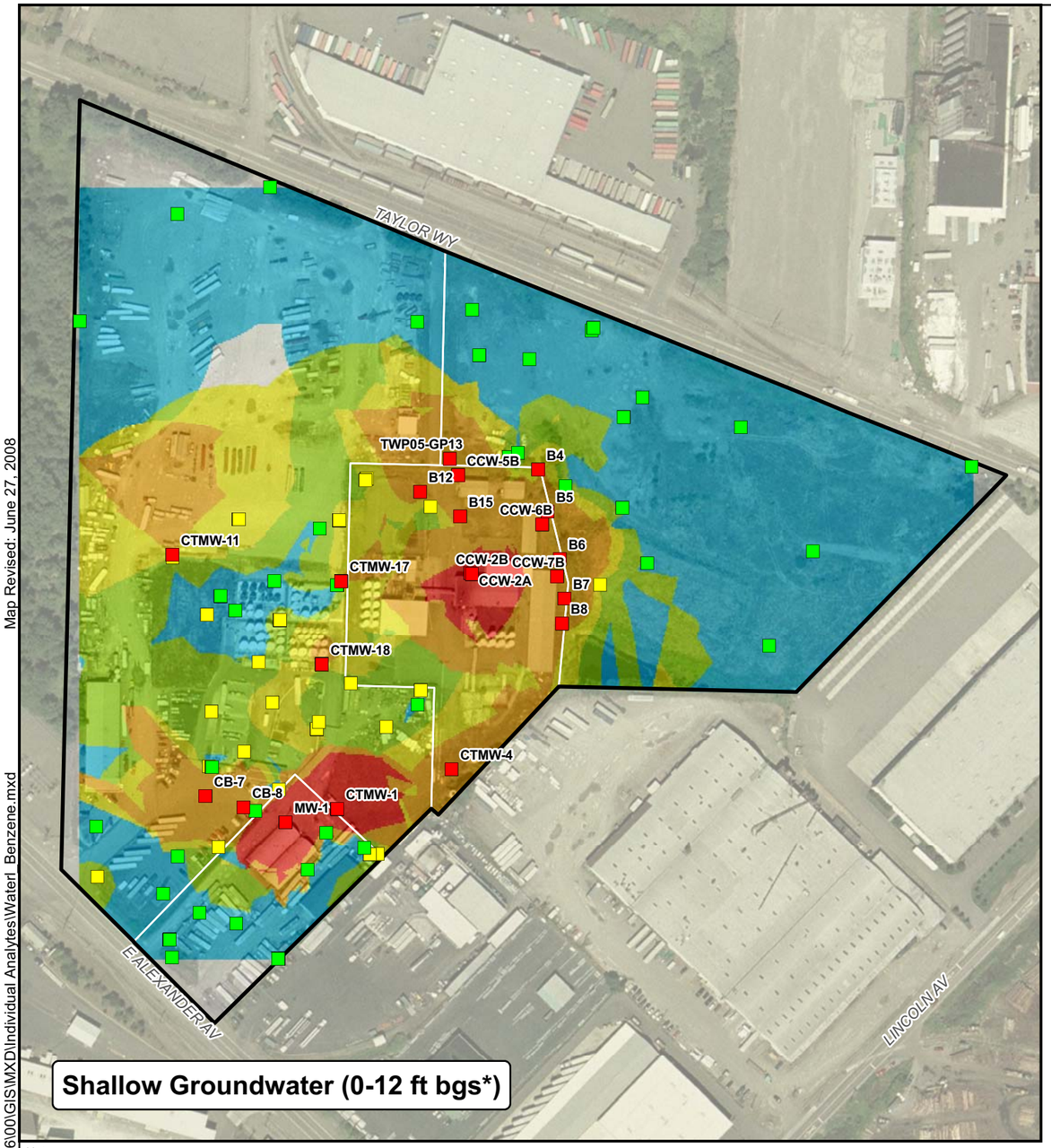
# 1,2,4-Trimethylbenzene in Groundwater

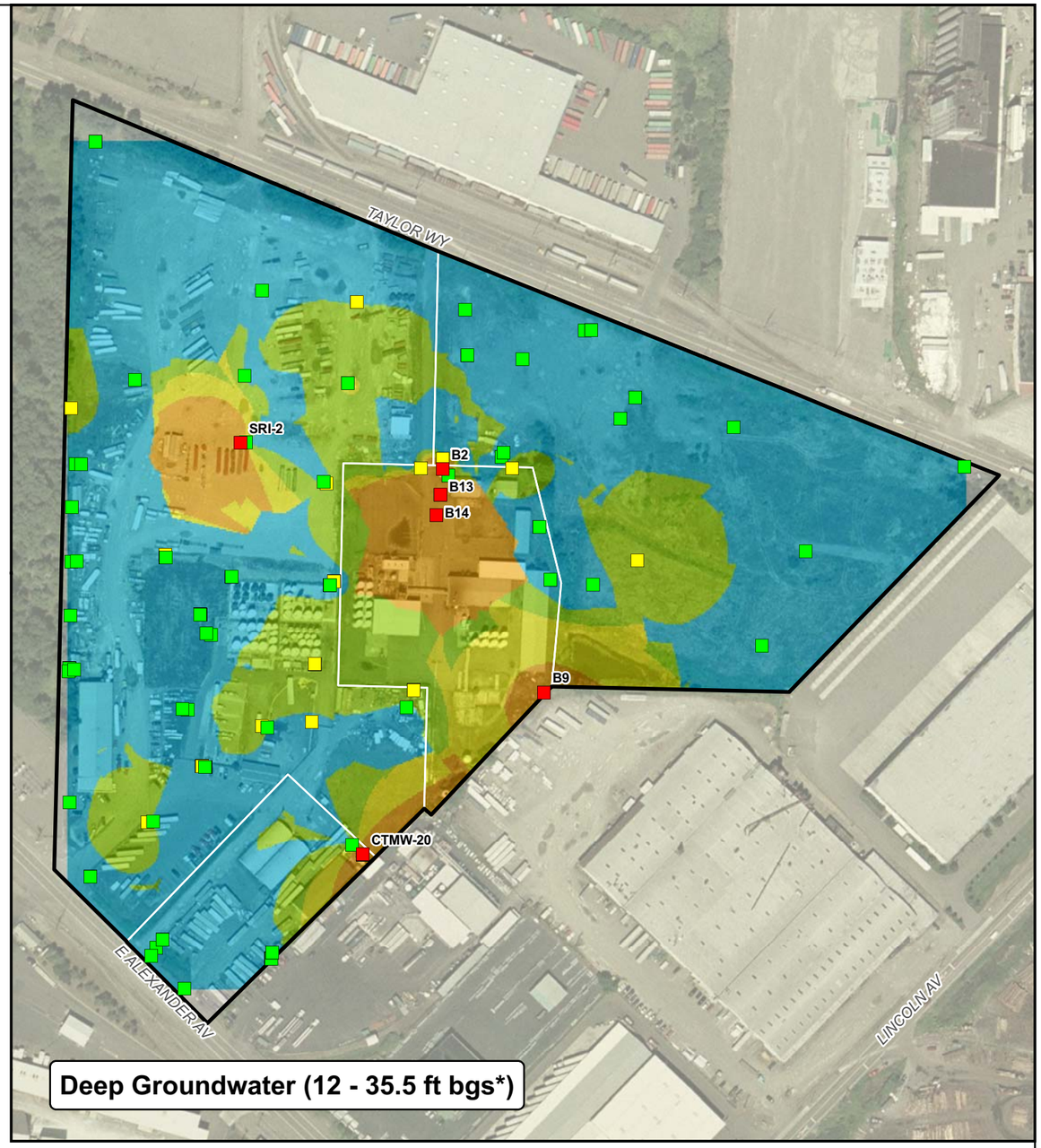
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 57**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Water_124TMB.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC screening level
Screening level basis: protection of surface water

**Benzene (ug/L)**

- <1
- 1 - 10
- 10 - 22.7
- 22.7** - 200
- >200

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

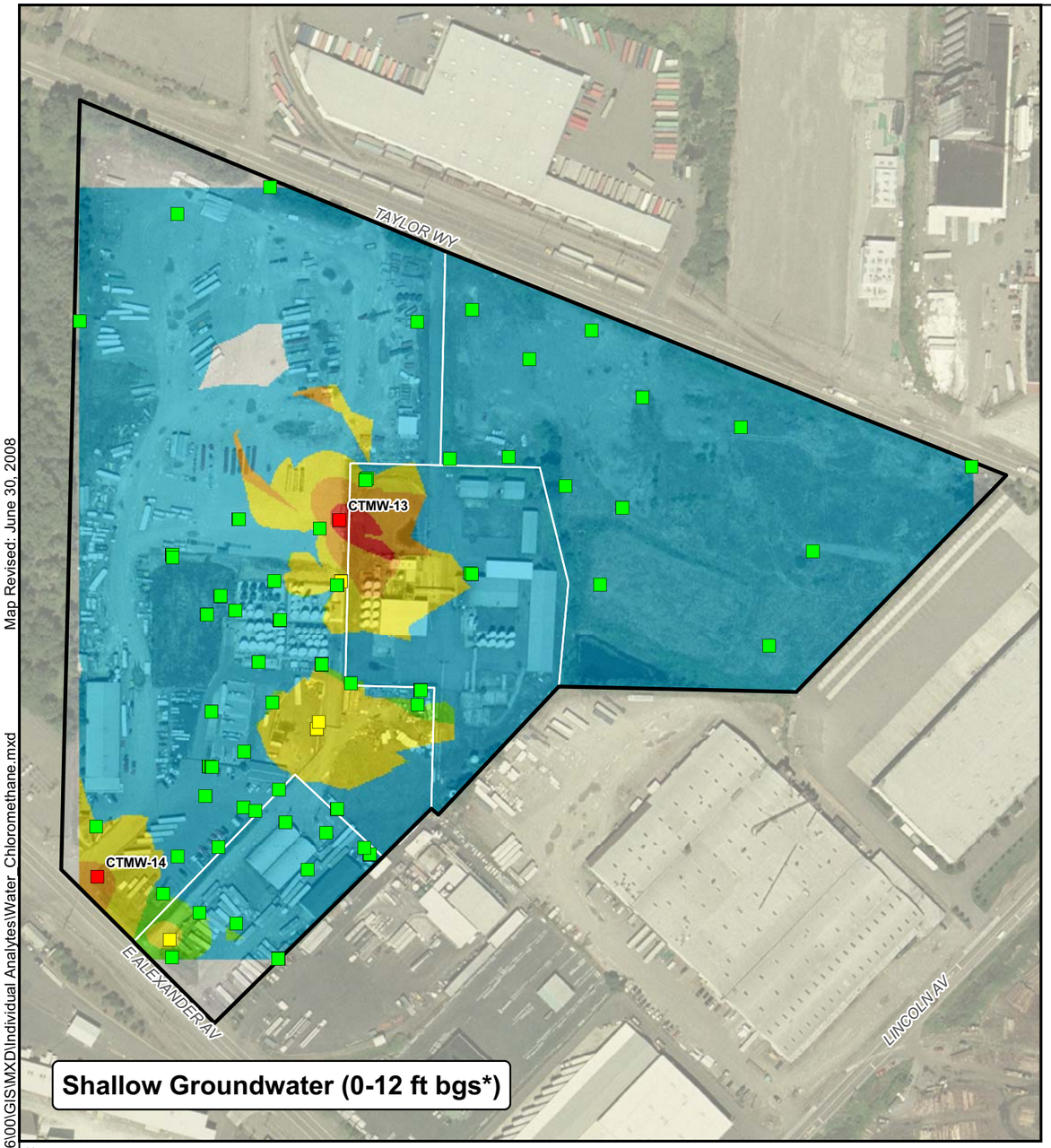
**Benzene in Groundwater**

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

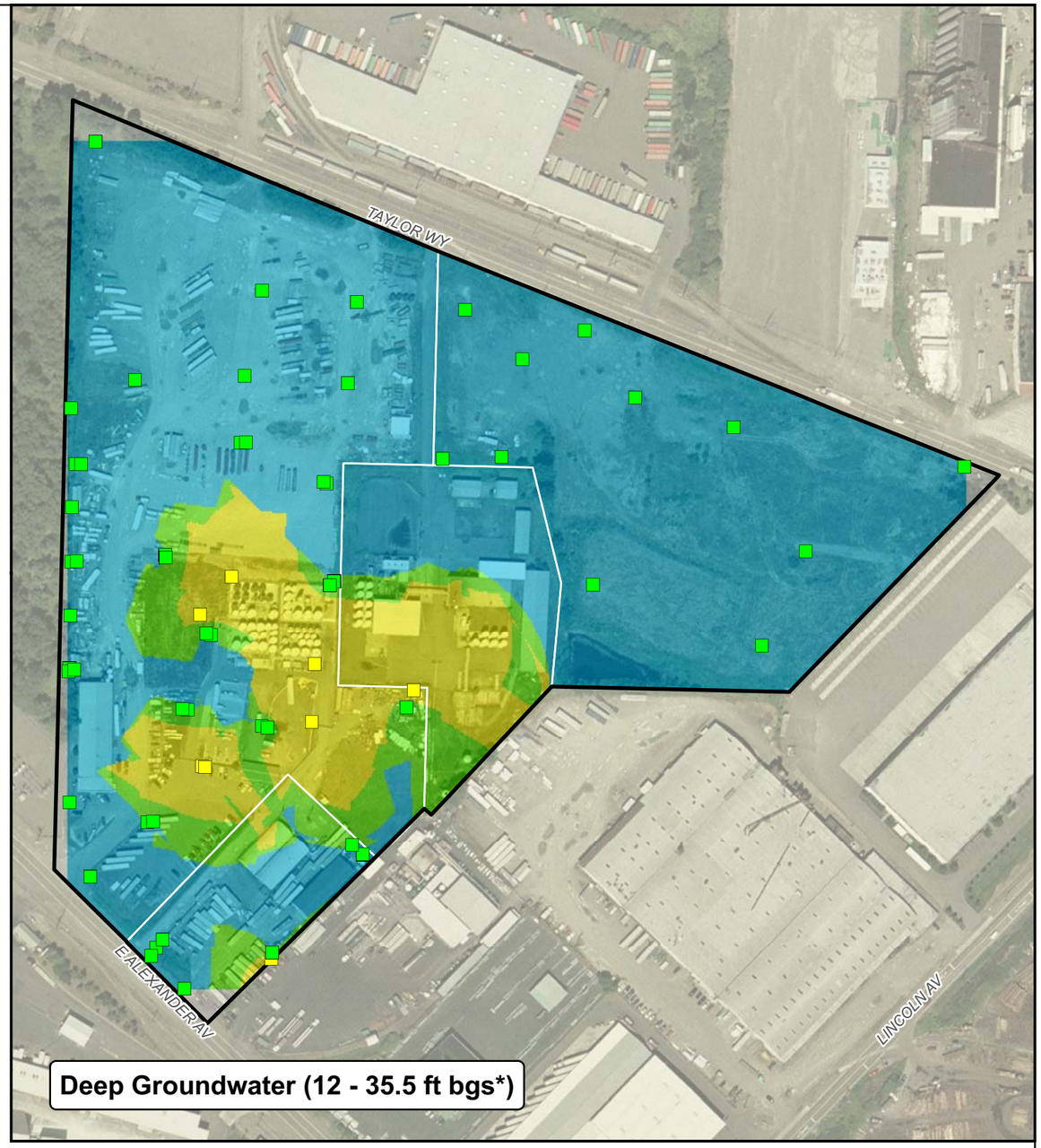
GeoEngineers

**Figure 58**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Water\ Benzene.mxd
Office: TAC




**Shallow Groundwater (0-12 ft bgs*)**




**Deep Groundwater (12 - 35.5 ft bgs*)**

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC screening level
Screening level basis: protection of surface water

**Chloromethane (ug/L)**

- <0.01
- 0.01 - 0.1
- 0.1 - 133
- 133** - 500
- >500

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

# Chloromethane in Groundwater

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

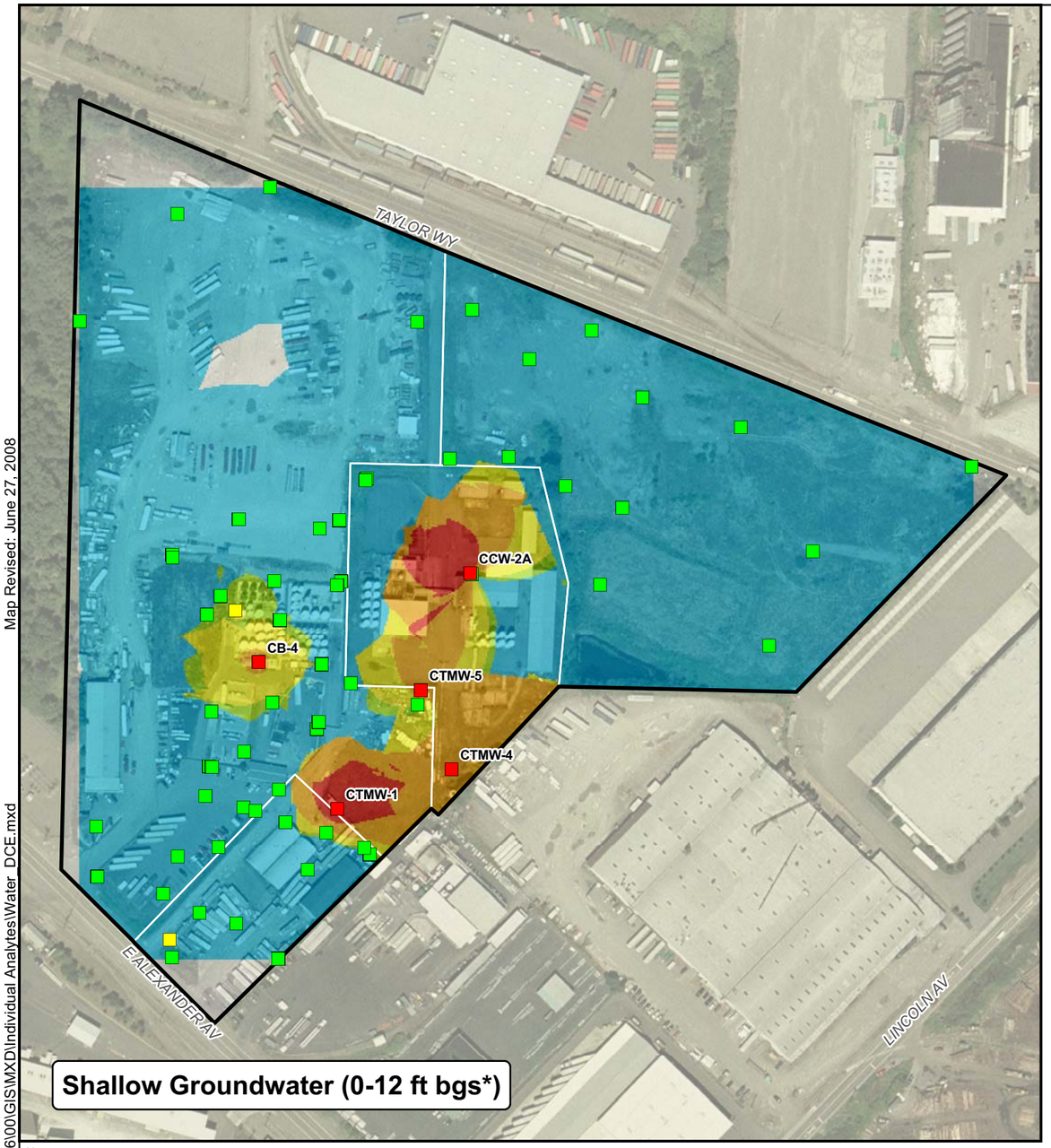
GeoEngineers

**Figure 59**

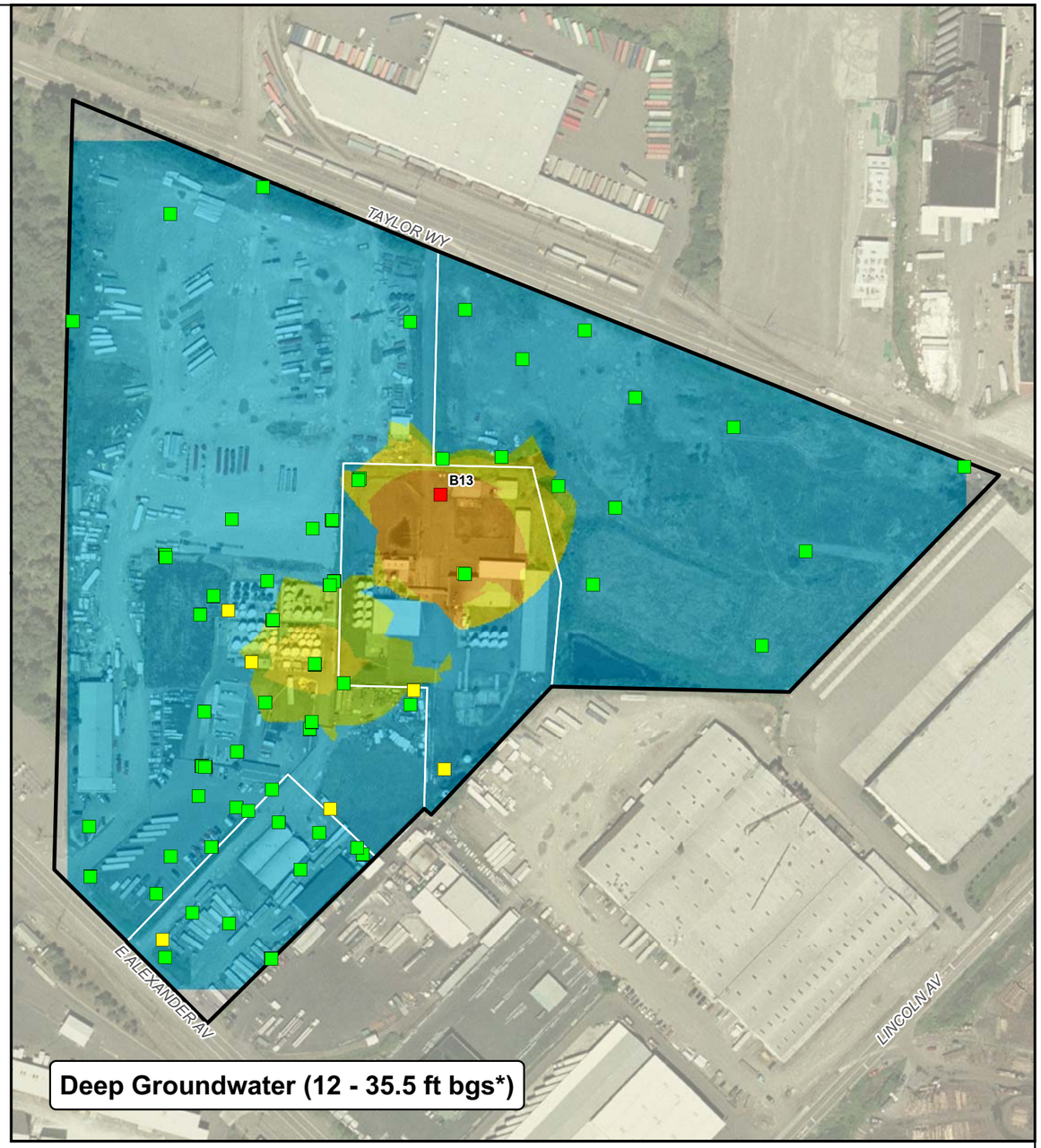
Map Revised: June 30, 2008

Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Water_Chloromethane.mxd

Office: TAC




**Shallow Groundwater (0-12 ft bgs*)**




**Deep Groundwater (12 - 35.5 ft bgs*)**

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC screening level
Screening level basis: practical quantitation limits

**1,1-Dichloroethene (ug/L)**

- <0.1
- 0.1 - 1
- 1 - 5
- 5** - 15
- >15

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

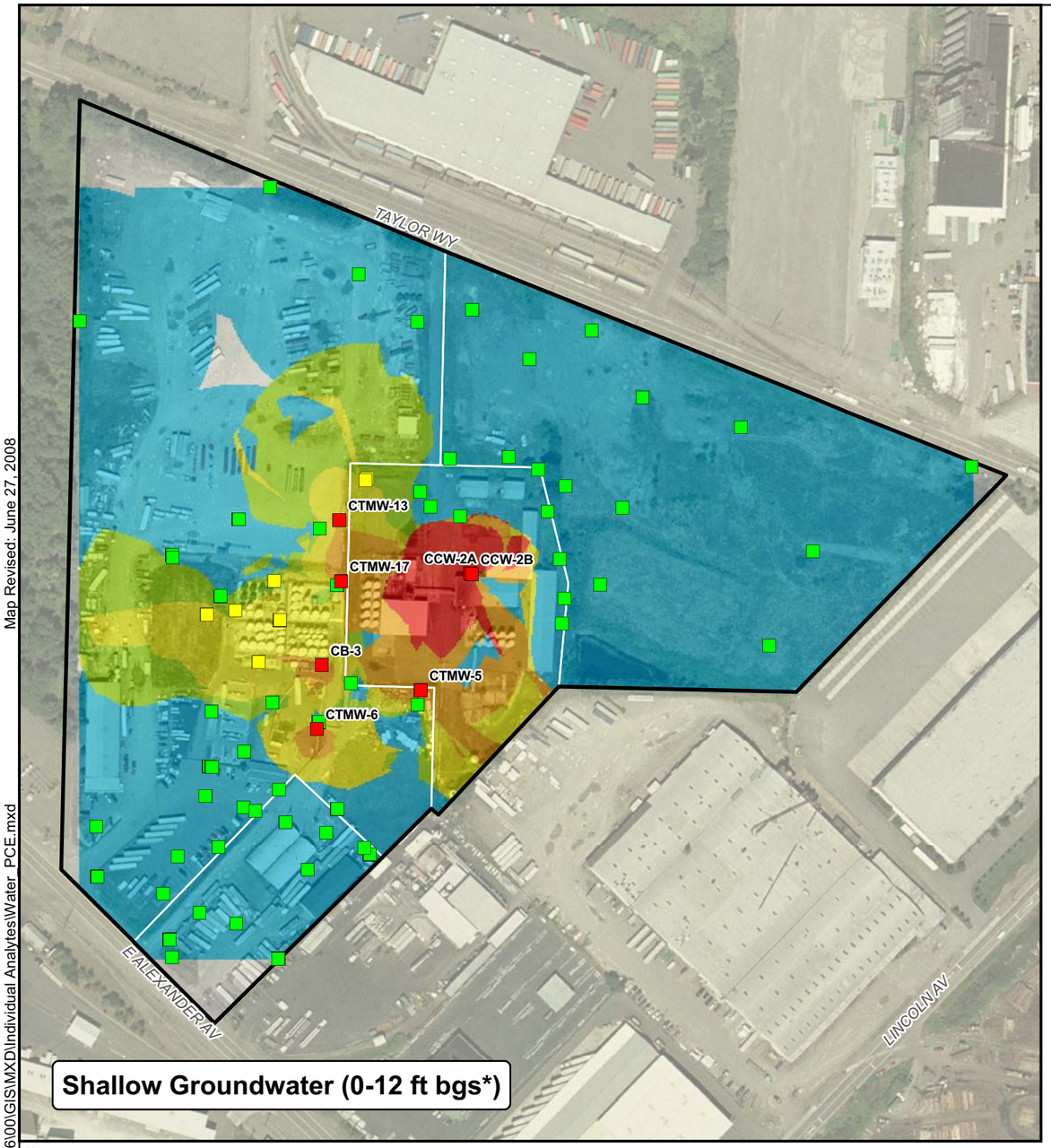
# 1,1-Dichloroethene in Groundwater

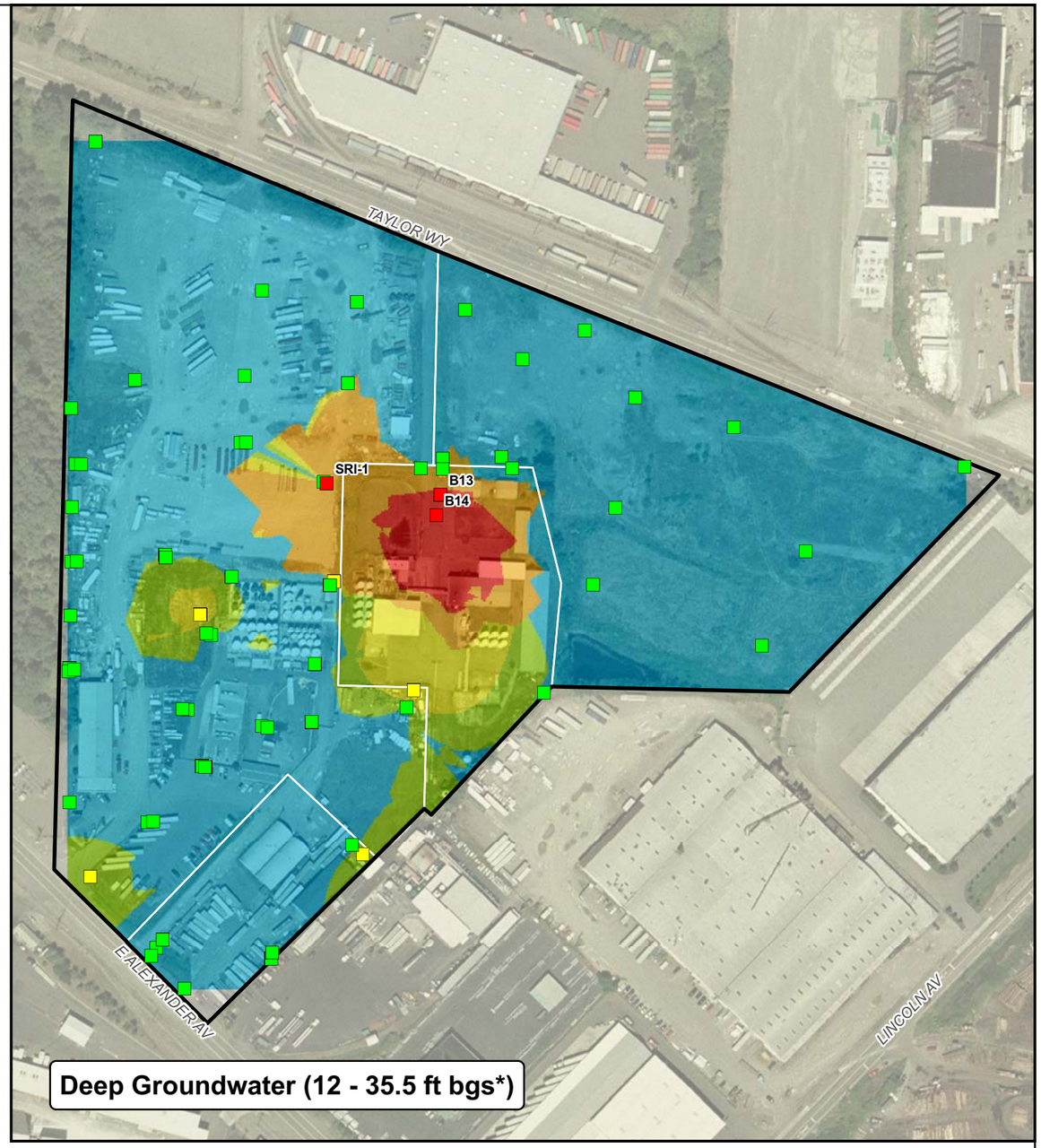
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 60**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Water_DCE.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC screening level
Screening level basis: practical quantitation limits

**Tetrachloroethene (ug/L)**

- <0.1
- 0.1 - 1
- 1 - 5
- 5** - 1,000
- >1,000

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

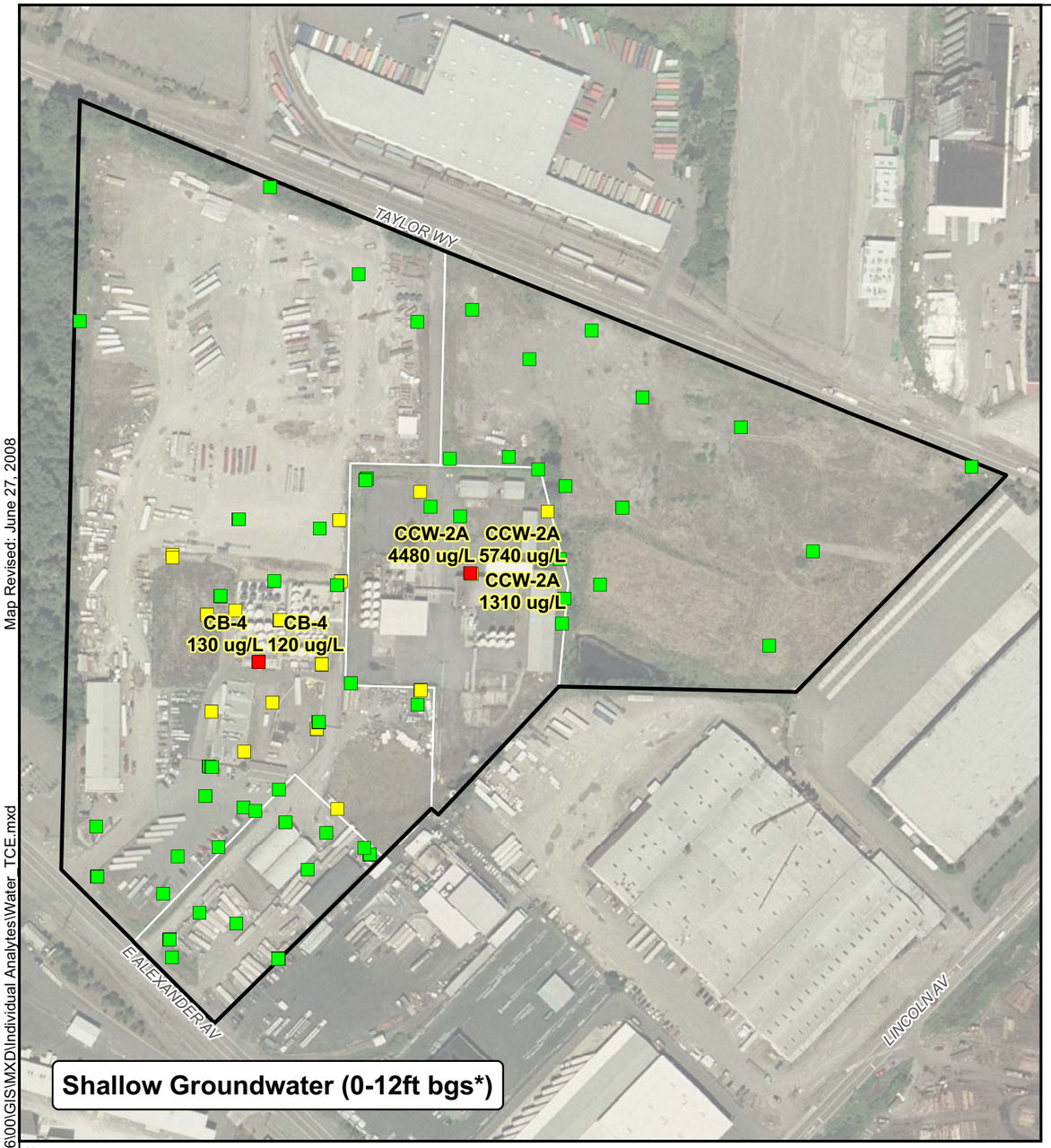
# Tetrachloroethene in Groundwater

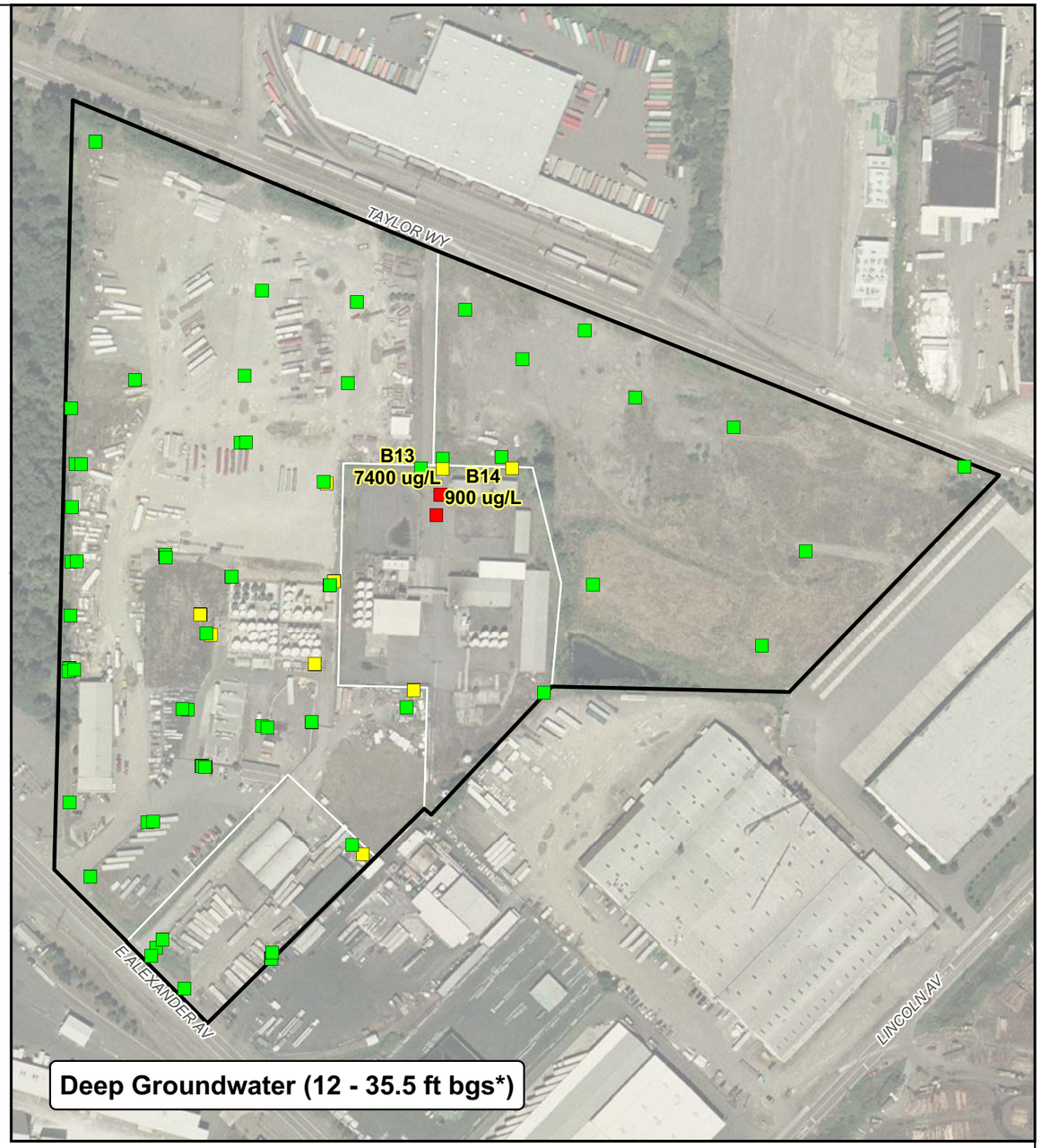
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 61**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Water_PCE.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** PSC screening level = 56 ug/L
Screening level basis: protection of surface water

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

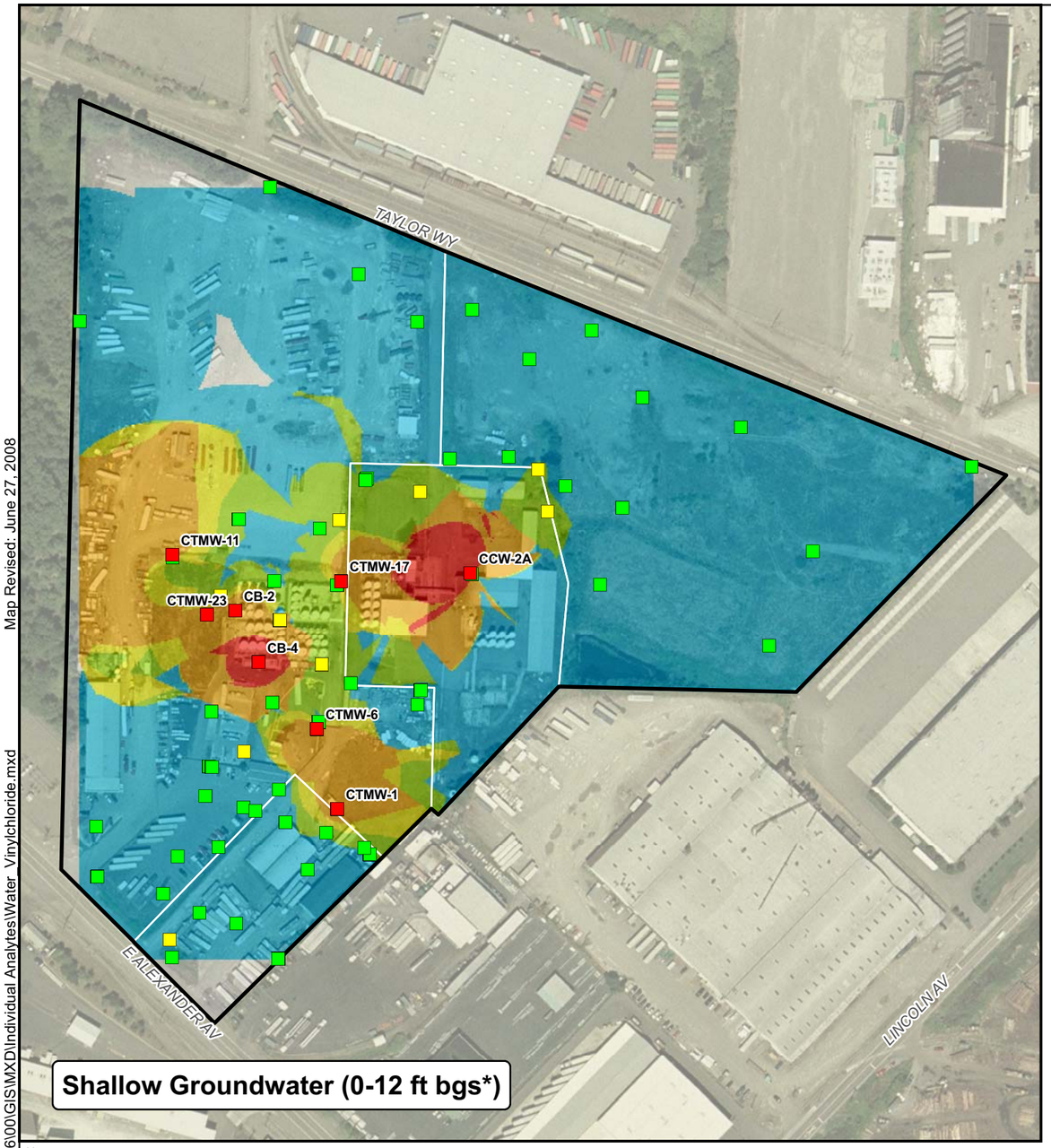
# Trichloroethene in Groundwater

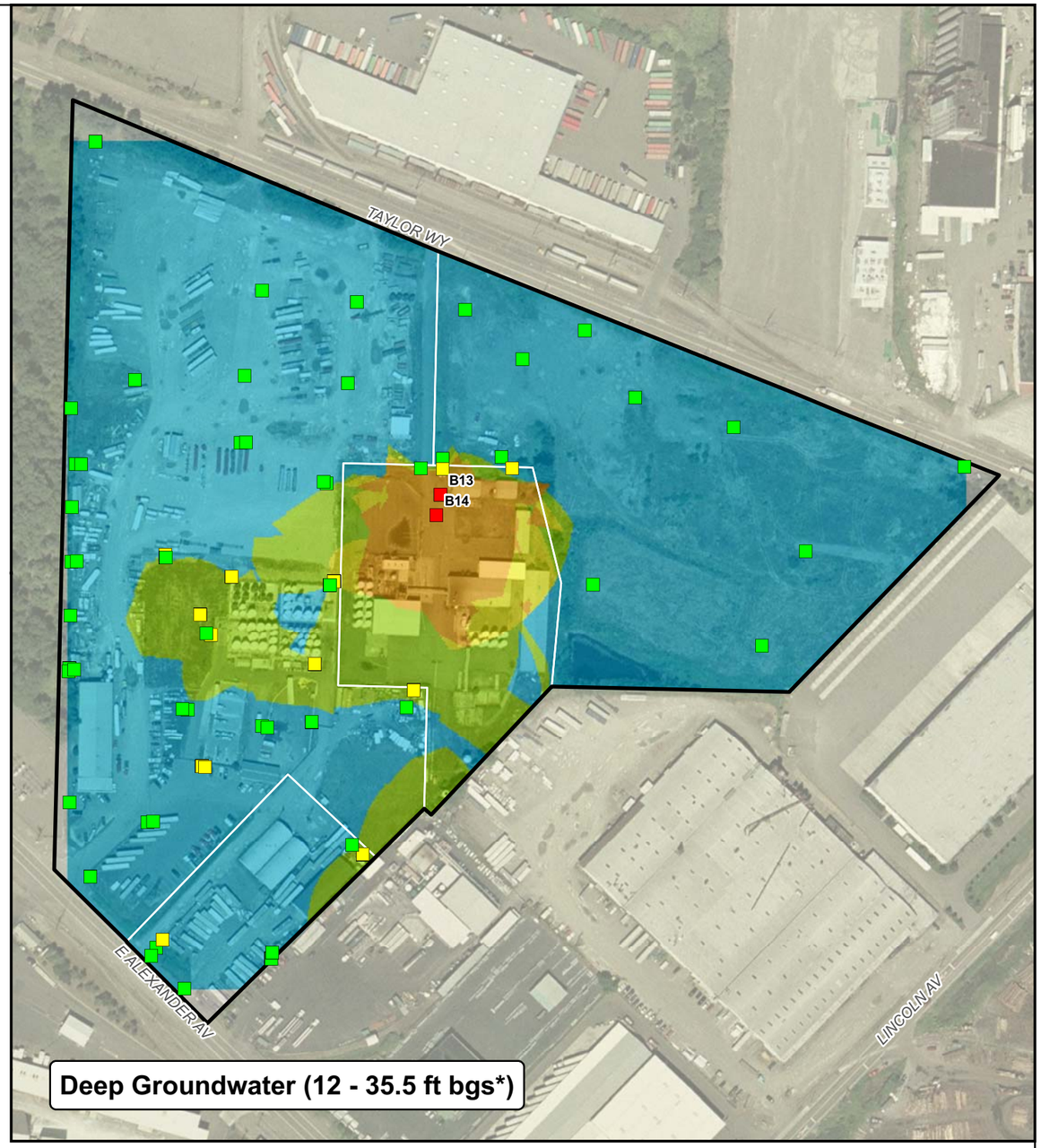
Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 62**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Water_TCE.mxd
Office: TAC




Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: Sample site data obtained from investigation reports for Clean Care, Prologis and Phillips Services Corporation. Aerial photo (dated September 2005) from Aerials Express (obtained from-http://services.arcgisonline.com/v92, April 2008). Street labels from Pierce County.

PSC Screening Levels obtained from Table 8-12 of Final Comprehensive Remedial Investigation Report, Philip Services Corporation, Tacoma Facility, Tacoma, Washington.

**Explanation**

- Analyte exceeding PSC screening level
- Analyte detected
- Analyte non-detect

*Below ground surface (bgs)

** Indicates PSC screening level
Screening level basis: practical quantitation limits

**Vinyl Chloride (ug/L)**

- <0.1
- 0.1 - 5
- 5 - 10
- 10** - 500
- >500

PROJECT NORTH

TRUE NORTH

250 0 250
Feet

# Vinyl Chloride in Groundwater

Taylor Way and Alexander Avenue Fill Site
Tacoma, Washington

GeoEngineers

**Figure 63**

Map Revised: June 27, 2008
Path: P:\0\0454116\00\GIS\MXD\Individual Analytes\Water_Vinylchloride.mxd
Office: TAC

GeoEngineers

# APPENDIX A
## BACKGROUND SUMMARIES

# APPENDIX A
# BACKGROUND SUMMARIES

## 1.0 INTRODUCTION

This appendix presents a summary of the past development, investigation and remediation activities that have been conducted at the Taylor Way and Alexander Avenue Fill Area (site). The background summaries are presented separately for each of the properties that comprise the site.

## 2.0 CLEANCARE PROPERTY

A summary of the historic use and development of the CleanCare property is presented in the following sections.

### 2.1 BACKGROUND

The CleanCare property encompasses approximately 4 acres at 1510 Taylor Way. The CleanCare property contains approximately 8.5 to 16.5 feet of fill placed in the Don Oline Landfill. The CleanCare property was utilized as a chemical waste treatment, storage and disposal (TSD) facility between 1974 and 1999. The chemical waste processing was conducted by several entities, including Poligen, Northwest Processing, Chempro, and CleanCare.

Poligen leased the northwest half of the CleanCare property from Don Oline in 1974 and used the property to support solvent recycling operations that were conducted at an off-site facility (the Lilyblad Petroleum facility). Poligen purchased the CleanCare property in 1981, along with the property to the southwest.

Poligen used the property to recycle, store and transfer waste solvents, petroleum and antifreeze. Four separate aboveground storage tank (ASTs) farms were constructed at the property. The tanks were used to store a variety of chemicals, including mineral spirits, used oil and solvents.

Poligen changed its name to Northwest Processing in the mid-1980s. Northwest Processing initially recycled used oil and processed the used oil into fuel. Northwest Processing expanded their operations in the mid-1980s to include recycling of antifreeze and parts washer solvent, blending hazardous waste fuel and consolidating hazardous wastes generated by small quantity generators. Northwest Processing began processing/recycling mixtures of gasoline, diesel fuel and water in 1983. From 1983 to 1987, waste oils containing less than 1,000 milligrams per liter (mg/l) halogenated hydrocarbons and less than 1 mg/l PCBs were processed at the site. Other activities that occurred on site included repackaging of solvents, storage of lubricants, laboratory analysis, process wastewater collection and treatment and stormwater runoff management.

Northwest Processing submitted a Resource Conservation and Recovery Act (RCRA) Part A Application to the Environmental Protection Agency (EPA) in 1990 to establish interim status for a dangerous waste disposal operation at the property. EPA approved Northwest Processing's RCRA permit in 1992. That same year, Northwest Processing was incorporated into CleanCare Corporation (CleanCare). CleanCare submitted a RCRA Part B Permit Application and a series of application revisions to Ecology between 1998 and 1999.

CleanCare ceased operations at the site in late 1999 and abandoned substantial quantities of hazardous waste at the property. In response, EPA conducted emergency removal actions in 1999 which included: 1) removal of approximately 2 million gallons of drummed waste, 2) demolition of four ASTs,

3) installation of an asphalt cap in three areas covering more than 26,000 square feet of contaminated soil and 4) installation of an aboveground stormwater management system. EPA transferred responsibility for the CleanCare facility to Ecology in September 2000.

The CleanCare property is approximately 65 percent capped with concrete and asphalt paving. Several buildings remain on site and two of the original four tank farms still exist.

## 2.2 PREVIOUS INVESTIGATIONS

The CleanCare property has been the subject of numerous environmental investigations, conducted between 1982 and at least 2000. These investigations are described below.

### *2.2.1 1982 Assessment of Lilyblad Pond and Related Fill*

Ecology collected a composite water sample from the Lilyblad Pond in 1982. VOCs and PAHs were detected in the water sample.

Ecology also completed five test pits and approximately 25 borings at the south portion of the CleanCare property in 1982. Wood waste, a white clay-like material, concrete, lime mixture, blocks and dredge spoils were encountered in the explorations. Groundwater was observed at depths between 0.5 and 3 feet below ground surface (bgs). Ecology did not submit any samples for chemical analysis.

### *2.2.2 1987 Stormwater Sampling*

The Tacoma/Pierce County Health Department (TCPHD) collected stormwater samples in 1987 from the final discharge tank in an effluent treatment system and from a catch basin located off site. The stormwater samples contained oil and grease at concentrations as high as 500 mg/l and 1,400 mg/l, respectively. The discharge tank sample also contained concentrations of chloroform, 1,2-dichloroethane, methylene chloride, 1,1,1-trichloroethane, trichloroethene and xylenes.

### *2.2.3 1990 Facility Assessment*

Science Applications International Corporation (SAIC) conducted a RCRA Facility Assessment at the CleanCare property and some adjacent properties in 1990. The Facility Assessment included a review of historic and ongoing operations and limited stormwater sampling.

SAIC studied the stormwater catchment areas and discharge pathways at the CleanCare property and reported that roof drainage was discharged to either: 1) a ditch adjacent to Lincoln Avenue (between Taylor Way and Alexander Avenue), or 2) the City of Tacoma sanitary sewer system. SAIC reported that surface water that included water discharging from sumps in the process area was discharged to an oily water treatment system. Effluent from this treatment system was discharged to the storm sewer (i.e., the Lincoln Avenue Ditch) prior to 1988. The effluent was reportedly discharged to the sanitary sewer system after 1988.

SAIC collected stormwater samples from storm drains and catch basins at the CleanCare property. Sludge wastes reportedly contained halogenated organics (total 164 milligrams per kilogram [mg/kg]) and some metals (arsenic, barium, cadmium, chromium, lead and silver). A sample of wastewater from fractionation process area contained phenols (156 mg/kg), low concentrations of metals (arsenic, chromium, copper, lead, nickel and zinc), and oil and grease.

### *2.2.4 1994-1995 Monitoring Well Installation and Sampling*

The 1994-1995 monitoring well installation and sampling report was not available for our review during this data summary review scope of work. Information identified below regarding Ecology's Site Assessment report and our understanding of the findings of that study investigation is based on information presented in others' reports (listed in Section 8.0).

CleanCare installed eight monitoring wells at the property in 1994. Measurable light non-aqueous phase liquid (LNAPL) was not encountered in the monitoring wells. Groundwater samples collected from the wells indicated that tetrachloroethene (PCE), trichloroethene (TCE), vinyl chloride, lead and arsenic were present in groundwater at concentrations greater than the MTCA cleanup levels.

### *2.2.5 1995 Soil Assessment at Proposed Building Site*

Pacific Groundwater Group (PGG) excavated four test pits to depths of approximately 7 feet bgs at the location of a proposed building foundation pad. Materials encountered in the excavations include gravel fill, green silty sand, auto fluff, trace amounts of gravel, slag-like sand with wood debris and hydraulic fill.

Six discrete soil samples (TP1-1 through TP4-1) and seven composite soil samples ("TPcomp1" through "TPcomp7") were collected during this study. The discrete soil samples were submitted for chemical analysis of arsenic and lead. The composite soil samples were submitted for analysis of total petroleum hydrocarbons. Some of the detected chemical concentrations reportedly exceeded RCRA facility investigation (RFI) action levels and Washington Model Toxics Control Act (MTCA) Method A cleanup levels.

### *2.2.6 1999 Site Assessment*

Ecology's Site Assessment report was not available for our review during this data summary review scope of work. Information identified below regarding Ecology's Site Assessment report and our understanding of the findings of that study is based on information presented in others' reports (listed in Section 8.0).

Ecology collected several grab samples from storm drains, tank farm secondary containment areas, ASTs, a sump, ditches and the Blair outfall. Ecology submitted the samples for laboratory analysis of petroleum hydrocarbons and biomarker compounds. Diesel, mineral spirits and lube oil were detected in one or more samples. The actual locations of the 1999 samples and the associated analytical data are considered a data gap.

### *2.2.7 2000 Subsurface Investigation*

Ecology and Environment, Inc. (E&E) completed 44 soil borings at the northwestern portion of the property in July 2000. The borings were completed to approximate depths of 4 to 5 feet bgs. E&E reported that lime waste, wood debris and dredge fill materials were encountered in the borings. E&E also reported observing a solvent odor in at least one boring and observing free product in almost all of the borings within the location of a former tank farm. E&E screened approximately 100 soil samples for TPH using a field screening kit (PetroFLAG Hydrocarbon Analyzer). Fourteen soil samples were submitted to a laboratory for chemical analysis of TPH. Gasoline-range petroleum hydrocarbons were detected in the analyzed soil samples (the highest concentration was 1,100 mg/kg). Diesel-range petroleum hydrocarbons were detected at concentrations that ranged between 120 mg/kg to 45,000 mg/kg.

Heavy oil-range petroleum hydrocarbons were detected at concentrations that ranged between 110 mg/kg to 10,000 mg/kg.

### *2.2.8 2002 Site Hazard Assessment*

The TPCHD Subsurface Investigation report was not available for our review during this data summary review scope of work. Information identified below regarding the TPCHD Subsurface Investigation report and our understanding of the findings of that investigation is based on information presented in others' reports (listed in Section 8.0).

TPCHD installed additional monitoring wells and collected samples from the wells during a site hazard assessment and a subsurface investigation completed at the property. The date of the subsurface investigation is unclear. Reportedly, TPCHD (or a contractor) completed 14 soil borings at the property. Fill material such as automobile fluff, wood waste and lime waste was encountered. Soil samples were analyzed for VOCs, SVOCs, PCBs, metals, and gasoline- and diesel-range petroleum hydrocarbons. Arsenic, cadmium, chromium, lead, carcinogenic PAHs, gas, diesel and oil were reportedly detected at concentrations exceeding MTCA Method A cleanup levels. Chlorinated hydrocarbons, barium, mercury and benzene were also reportedly detected in soil, although at levels less than MTCA cleanup levels.

Groundwater was encountered at approximately 5 feet bgs during this investigation. Groundwater samples were collected and analyzed for VOCs, SVOCs, PCBs, metals, and gasoline- and diesel-range hydrocarbons. Arsenic, cadmium, chromium, lead, mercury, carcinogenic PAHs and petroleum hydrocarbons were detected at concentrations greater than the MTCA groundwater cleanup levels. GeoEngineers has not reviewed the TPCHD report for this assessment; therefore, details regarding the date of the investigation, the subsurface conditions and contaminant concentrations are considered data gaps.

## 3.0 PHILIP SERVICES CORPORATION PROPERTY

A summary if the historic use and development of the Philip Services Corporation (PSC) property is presented in the following sections.

## 3.1 BACKGROUND

The PSC property is located at 1701 East Alexander Way. The PSC property encompasses approximately 17 acres. The property was a tidal marshland in the 1930s. Dredge spoils, wood waste and saw dust were deposited on the property in the 1940s and early 1950s. Don Oline purchased the southwestern part of the PSC property in 1961 and allowed the dumping of industrial waste in low areas of the property. The industrial waste included sand, gravel, lime waste sludge, automobile fluff, dredge spoils and demolition debris. It appears that the landfill activities were mostly completed by 1974 on this property. The fill thickness ranges between 5 and 26 feet at the PSC facility.

Don Oline leased the south portion of the property (referred to as "Parcel A") to Aero Oil between approximately 1970 and 1975. Aero Oil operated an oil storage and waste recycling facility on this property. As part of their operations, Aero Oil placed waste oil into an unlined pond until 1975. The unlined pond was pumped out and filled with inert material in 1975. Don Oline reportedly continued to allow dumping of waste oil and sludge in the marsh areas on Parcel B located adjacent to the northeast and northwest sides of Parcel A.

Chempro Processors, Inc. (Chempro) assumed operation of the oil-recycling facility in 1975 and expanded operations to include a chemical treatment facility for neutralization of liquid inorganic wastes. Chempro also installed additional ASTs at the site to store and treat these wastes and generated wastewaters. Chempro operated a treatment system at the south portion of the property ("Parcel B") between the mid-1970s and the late 1980s. The treatment system was used for the storage and treatment of oily sludges, caustics from plating and chemical milling. Parcel B has been primarily used for container storage since 1992.

Chempro also operated a chemical waste processing facility near the central and northeastern portion of the property (an area referred to as "Parcel C"), beginning in 1987. Chempro processed waste oil and wastes that may have contained chlorinated solvents, acids, phenolics, and heavy metals on Parcel C. The ASTs and treatment system were removed from Parcels A and B in 1987.

Burlington Environmental, Inc. (Burlington), a wholly owned subsidiary of PSC, purchased Parcels A and B in 1992. Parcel A has remained unoccupied except for the storage of inert materials and Parcel B has primarily been used for container storage.

PSC began using Parcel C as a RCRA hazardous waste TSD facility in 1992. PSC processes chlorinated solvents, acids, phenolics and heavy metals at Parcel C. Waste oil was also blended as part of PSCs operation on this parcel. The PSC facility is currently under Ecology oversight for dangerous waste corrective action and cleanup activities.

## 3.2 PREVIOUS INVESTIGATIONS

Several environmental investigations have been completed at the PSC property since at least 1987. These investigations are described below.

### *3.2.1 1987 Tank and Treatment Facility Remediation*

The remedial documents were not available for our review during this data summary review scope of work. Information identified below regarding PSCs 2005 Remedial Investigation report and our understanding of the findings of that investigation is based on information presented in others' reports (listed in Section 8.0).

Chempro excavated approximately 1,300 cubic yards of petroleum-contaminated soil beneath the ASTs located at Parcel A at estimated depths between the ground surface and 4 feet bgs in 1987. A 40-mil high density polyethylene (HDPE) membrane and soil cap were placed over the remediated area.

Chempro also excavated contaminated soil from the area under a former chemical treatment facility at Parcel A. No other information was available that identified the vertical and horizontal extent of this remediated area. The actual remediation area locations, depths of samples, residual contamination, encountered and other details are considered data gaps.

### *3.2.2 2005 Remedial Investigation*

PSC completed a remedial investigation at the site in 2005. Data collected during the RI indicate that contamination, primarily from past landfill and oil recycling operations, has impacted soil and groundwater quality at the PSC property. PSC developed a conceptual site model (CSM) and identified a number of potentially complete contaminant exposure pathways for both humans and ecological receptors.

PSC compared maximum detected concentrations of contaminants to the screening criteria established by the CSM. PSC concluded that a number of contaminants including petroleum mixtures, VOCs, SVOCs, metals, phthalates, PCBs and pesticides are contaminants of potential concern.

PSC also concluded the following.

- The buried auto fluff is the likely primary source of metals and pthalates contamination.
- The former oil disposal pond (and overflows) are the primary source of petroleum (including LNAPL), VOC and PAH contamination.
- The buried lime solvent sludge is the primary source of chlorinated solvent contamination.
- PCB contamination is derived from auto fluff and oil, and miscellaneous fill and dredge sediment are the source of pesticides at the site.
- Chlorinated solvents in groundwater are undergoing natural attenuation and generally do not extend beyond the boundary of the PSC property.
- Elevated concentrations of some metals are present in groundwater; however, the metals are likely naturally occurring.
- LNAPL recovery has been attempted from two trenches at the PSC property; however, no LNAPL has been recovered and the LNAPL is generally immobile.

# 4.0 PROLOGIS PROPERTY

A summary if the historic use and development of the ProLogis property is presented in the following sections.

## 4.1 BACKGROUND

The Prologis property is located at 2000 Taylor Way and encompasses approximately 10.6 acres. The property consisted of tidal marshland prior to the 1920s. The property was filled with dredge spoils that began in the early 1920s and continued until the mid-1970s. Non-solvent lime waste from the Don Oline landfill was reportedly deposited within the western portion of the ProLogis property in the late 1960s.

Wood manufacturing activities began at the ProLogis property in 1936 by Buffelen Lumber and Manufacturing Company. Mutual Fir Column Company took ownership of the property in 1974. Lyndale Cedar Homes, a successor to Mutual Fir Column Company, sold the property to AOL Express in 1982. AOL Express operated an industrial warehousing facility at the property until the late 1990s. The ProLogis property is currently unpaved with no structures.

## 4.2 PREVIOUS INVESTIGATIONS

Limited investigation was conducted at the ProLogis property until 2006, when ProLogis conducted a remedial investigation, which is described below.

### *4.2.1 2006 Remedial Investigation and Feasibility Study*

Floyd/Snider conducted a remedial investigation at the ProLogis property. Soil is contaminated with gasoline-, diesel-, and heavy oil-range hydrocarbons, SVOCs and metals at the ProLogis property. Contaminants were detected in soil at the highest concentrations near the western portions of the site at

depths generally between the ground surface and approximately 5 feet bgs. Petroleum hydrocarbons, VOCs, SVOCs and metals are also present in groundwater in both the shallow and intermediate aquifers.

The preferred remedy for Prologis is capping of contaminated soils by either pavement or buildings as part of site redevelopment, along with the implementation of institutional controls and groundwater monitoring.

# 5.0 POTTER PROPERTY

A summary of the historic use and development of the Potter property is presented in the following sections.

## 5.1 BACKGROUND

The Potter property is located at 1801 Alexander Avenue and encompasses approximately nine acres. The Potter property consisted of tidal marsh areas until the early 1960s. The marsh areas were filled and Educators Furniture and Supply Company began operations at the property by 1963. The type and quality of fill placed at the Potter property is unknown and is considered a data gap.

Educators Furniture and Supply fabricated school furniture at the property approximately between 1963 and 1969. Subsequent occupants conducted light manufacturing (including boat manufacturing) and industrial operations at the property until 1996. Handon Containers has utilized the property to maintain and repair truck trailers between at least 1996 to the present. The property is currently developed with three buildings and asphalt-paved parking areas.

## 5.2 PREVIOUS INVESTIGATIONS

The Potter property was investigated during the PSC remedial investigation. The Potter property is contaminated with metals, petroleum mixtures, VOCs, and SVOCs in soil and groundwater.