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HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Agency Director

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May 31, 2013

Ms. Kaye Patterson
The Salvation Army USA Western Territory Offices
(Sent via email to kaye.patterson@usw.salvationarmy.org)
180 East Ocean Blvd., 3rd Floor St,
Long Beach, CA 94607

Subject: Soil and Groundwater Investigation Work Plan Addendum; Fuel Leak Case No. RO0003084 and Geotracker Global ID T10000003428, The Salvation Army, 601 Webster St, Oakland CA 94607

Dear Ms. Patterson:

Alameda County Environmental Health (ACEH) staff has reviewed the March 1, 2013 *Revised Subsurface Investigation Workplan* prepared by Cardno ATC (CATC). The revised work plan was prepared to address items discussed at a meeting held on February 15, 2013 and attended by representatives of The Salvation Army (TSA), ACEH, and CATC. Following the meeting CATC was to complete the following:

- Perform a record search of Oakland Certified Unified Program Agency (CUPA) files regarding the USTs previously occupying the site. If the earliest set of USTs are shown to post-date leaded gasoline, lead would not be added to the work plan analysis scope.

- Conduct a utility survey within the 7th Street sidewalk abutting the property to determine if a suitable boring location could be located with the sidewalk adjacent to the northeast side of the former tank pit.

- Prepare a work plan addendum presenting the depths of sample recovery; scope of analysis; and provide a figure depicting the proposed boring locations.

The revised work plan was received by ACEH on March 1, 2013 and the utility survey results provided to ACEH on April 18, 2013. Based on a review of the referenced documents, ACEH concurs that the proposed boring along the 7th Street sidewalk should be located within the subject property, as close to the property line as possible but outside the former tank pit. ACEH is in agreement with the proposed seven transect borings and the two borings within the former tank pit as depicted on Figure 2 of the March 1, 2013 Revised Workplan. Findings of the Oakland CUPA file review were not presented to ACEH. As organic lead is listed as an analyte in the revised work plan, ACEH presumes that the file review did not reveal when the former fuel tanks were installed. ACEH generally concurs with the proposed scope of work and requests that you address the following technical comments, perform the proposed work, and send us the technical report**s** described below.

TECHNICAL COMMENTS

1. **Site Conceptual Model—** Please present the findings of the investigation proposed in your revised work plan in the format of a site conceptual model (SCM). Included for your

reference is an example of an initial SCM and proposed data gap investigation in table format which highlights the major SCM elements and their associated data gaps, if any, which need to be addressed to progress the site to case closure. Please follow the level of detail described in Attachment A and shown in the example tables and figures (Table 1, Initial Site Conceptual Model and Table 2, Data Gaps and Proposed Investigation, and Figures 2-6) and submit the SCM report by the date specified in the Technical Report Request section below.

2. **Electronic Submittal of Information (ESI) Compliance —** Currently, site data and documents are maintained in two separate electronic databases – ACEH's File Transfer Protocol (FTP) site and the SWRCB's Geotracker website. Both databases act as repositories for Portable Document Format (PDF) files of regulatory directives and reports, but only Geotracker has the functionality to store electronic compliance data in Electronic Deliverable Format (EDF) including analytical laboratory data for soil, vapor and water samples, monitoring well depth-to-water measurements, and surveyed location and elevation data for permanent sampling locations. Although the SWRCB is responsible for the overall operation and maintenance of the Geotracker System, ACEH, as lead regulatory agency, is responsible to ensure that the Geotracker database is complete and accurate for sites regulated by ACEH under the LOP and SCP (SWRCB March 2011 document entitled *Electronic Reporting Roles and Responsibilities*).

Because Geotracker is often used as the sole source of information at sites where chemical releases have occurred, the accuracy, completeness, and timeliness of the information on the database is critical in the following realms in order to facilitate review and analysis of data and informed decision making that is protective of human health, safety and the environment:

- The public domain during the public participation process as required by Title 23 of the California Code of Regulations (CCR), Chapter 16, Section 2728;
- The real-estate industry during property transactions;
- RPs, consultants, and the LOP during the site investigation, corrective action, monitoring, and case closure process; and
- State and federal government during decision making related to closure recommendations and petitions, priorities and funding, and evaluation of the UST cleanup program effectiveness.

A review of the case file indicates that the SWRCB Geotracker database and/or the ACEH database is not complete (see Table 1), thus rendering the site to a non-compliant status pursuant to California Code of Regulations, Title 23, Division 3, Chapter 30, Articles 1 and 2, Sections 3890 to 3895. At present missing data and documents include, but may not be limited to:

- complete copies of reports, in pdf format, including professional certification (GEO_REPORT files);
- analytical data for soil, water and vapor samples collected for the purpose of subsurface investigation or remediation, including influent/effluent water samples from remediation systems (EDF files);

- stand alone site maps displaying tank locations, streets bordering the facility, and sampling locations for all soil, water and vapor samples (GEO_MAP files);

In order to facilitate coordination between the two databases, and ease of review and document sorting capabilities, we have provided a file naming convention for the Geotracker submittals that is consistent with the naming convention used for files on the ACEH FTP site.

Please upload the requisite data and documents in accordance with the naming convention provided in Attachment 1, to the ACEH FTP site (and/or) SWRCB Geotracker website as indicated, by the date specified in the Technical Report Request section below. Copies of PDF files of historic reports contained on the ACEH FTP site can be uploaded to the Geotracker database for this purpose.

Also, please transmit all analytical laboratory results and depth-to-water measurements collected for the purpose of subsurface investigation or remediation in a comprehensive excel spreadsheet to ACEH via an electronic mail message at keith.nowell@acgov.org in order to facilitate electronic access and review of historic data.

NOTIFICATION OF FIELDWORK ACTIVITIES

Please provide ACEH with at least three (3) business days notification prior to conducting the fieldwork.

TECHNICAL REPORT REQUEST

Please upload technical reports to the ACEH ftp site (Attention: Keith Nowell), and to the State Water Resources Control Board's Geotracker website, in accordance Attachment 1 and the following specified file naming convention and schedule:

- **July 1, 2013 –** Electronic Submittal of Information

- **August 30, 2013 -** Site Conceptual Model with Data Gap Identification. File to be named: RO0003084_SCM_ R_yyyy-mm-dd

Thank you for your cooperation. Should you have any questions regarding this correspondence or your case, please call me at (510) 567-6764 or send an electronic mail message at keith.nowell@acgov.org.

Sincerely,

Keith Nowell

Digitally signed by Keith Nowell
DN: cn=Keith Nowell, o, ou, email=keith.nowell@acgov.org, c=US
Date: 2013.05.31 15:14:58 -07'00'

Keith Nowell, PG, CHG
Hazardous Materials Specialist

Enclosures: Attachment 1 - Responsible Party(ies) Legal Requirements/Obligations &
ACEH Electronic Report Upload (ftp) Instructions

Attachment A – Site Conceptual Model Requisite Elements

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

Mike Sonke, Cardno ATC Associates Inc., 1117 Lone Palm Ave, Ste B, Modesto, CA 95351 (*Sent via Email to: (mike.sonke@atcassociates.com)*
Jeanne Homsey, Cardno ATC Associates Inc., 1117 Lone Palm Ave, Ste B, Modesto, CA 95351 (*Sent via Email to: Jeanne.Homsley@atcassociates.com)*

Donna Drogos, ACEH (*Sent via E-mail to: donna.drogos@acgov.org*)
Dilan Roe, ACEH (*Sent via E-mail to: dilan.roe@acgov.org*)
Keith Nowell, ACEH (*Sent via E-mail to keith.nowell@acgov.org)*
GeoTracker
File

Attachment 1

Responsible Party(ies) Legal Requirements/Obligations

REPORT/DATA REQUESTS

These reports/data are being requested pursuant to Division 7 of the California Water Code (Water Quality), Chapter 6.7 of Division 20 of the California Health and Safety Code (Underground Storage of Hazardous Substances), and Chapter 16 of Division 3 of Title 23 of the California Code of Regulations (Underground Storage Tank Regulations).

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (Local Oversight Program [LOP] for unauthorized releases from petroleum Underground Storage Tanks [USTs], and Site Cleanup Program [SCP] for unauthorized releases of non-petroleum hazardous substances) require submission of reports in electronic format pursuant to Chapter 3 of Division 7, Sections 13195 and 13197.5 of the California Water Code, and Chapter 30, Articles 1 and 2, Sections 3890 to 3895 of Division 3 of Title 23 of the California Code of Regulations (23 CCR). Instructions for submission of electronic documents to the ACEH FTP site are provided on the attached "Electronic Report Upload Instructions."

Submission of reports to the ACEH FTP site is in addition to requirements for electronic submittal of information (ESI) to the State Water Resources Control Board's (SWRCB) Geotracker website. In April 2001, the SWRCB adopted 23 CCR, Division 3, Chapter 16, Article 12, Sections 2729 and 2729.1 (Electronic Submission of Laboratory Data for UST Reports). Article 12 required electronic submittal of analytical laboratory data submitted in a report to a regulatory agency (effective September 1, 2001), and surveyed locations (latitude, longitude and elevation) of groundwater monitoring wells (effective January 1, 2002) in Electronic Deliverable Format (EDF) to Geotracker. Article 12 was subsequently repealed in 2004 and replaced with Article 30 (Electronic Submittal of Information) which expanded the ESI requirements to include electronic submittal of any report or data required by a regulatory agency from a cleanup site. The expanded ESI submittal requirements for petroleum UST sites subject to the requirements of 23 CCR, Division, 3, Chapter 16, Article 11, became effective December 16, 2004. All other electronic submittals required pursuant to Chapter 30 became effective January 1, 2005. Please visit the SWRCB website for more information on these requirements. (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/)

PERJURY STATEMENT

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

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 7835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

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

AGENCY OVERSIGHT

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

Alameda County Environmental Cleanup Oversight Programs (LOP and SCP)	**REVISION DATE:** July 25, 2012
	ISSUE DATE: July 5, 2005
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010
SECTION: Miscellaneous Administrative Topics & Procedures	**SUBJECT:** Electronic Report Upload (ftp) Instructions

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

REQUIREMENTS

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

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

Submission Instructions

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

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

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

ATTACHMENT A

Site Conceptual Model Requisite Elements

ATTACHMENT A

Site Conceptual Model

The site conceptual model (SCM) is an essential decision-making and communication tool for all interested parties during the site characterization, remediation planning and implementation, and closure process. A SCM is a set of working hypotheses pertaining to all aspects of the contaminant release, including site geology, hydrogeology, release history, residual and dissolved contamination, attenuation mechanisms, pathways to nearby receptors, and likely magnitude of potential impacts to receptors.

The SCM is initially used to characterize the site and identify data gaps. As the investigation proceeds and the data gaps are filled, the working hypotheses are modified, and the overall SCM is refined and strengthened until it is said to be "validated". At this point, the focus of the SCM shifts from site characterization towards remedial technology evaluation and selection, and later remedy optimization, and forms the foundation for developing the most cost-effective corrective action plan to protect existing and potential receptors.

For ease of review, Alameda County Environmental Health (ACEH) requests utilization of tabular formats to (1) highlight the major SCM elements and their associated data gaps which need to be addressed to progress the site to case closure (see Table 1 of attached example), and (2) highlight the identified data gaps and proposed investigation activities (see Table 2 of the attached example). ACEH requests that the tables presenting the SCM elements, data gaps, and proposed investigation activities be updated as appropriate at each stage of the project and submitted with work plans, feasibility studies, corrective action plans, and requests for closures to support proposed work, conclusions, and/or recommendations.

The SCM should incorporate, but is not limited to, the topics listed below. Please support the SCM with the use of large-scaled maps and graphics, tables, and conceptual diagrams to illustrate key points (see Figures 2 through 6 for examples). Please include an extended site map(s) utilizing an aerial photographic base map with sufficient resolution to show the facility, delineation of streets and property boundaries within the adjacent neighborhood, downgradient irrigation wells, and proposed locations of transects, monitoring wells, and soil vapor probes.

a. Regional and local (on-site and off-site) geology and hydrogeology. Include a discussion of the surface geology (e.g., soil types, soil parameters, outcrops, faulting), subsurface geology (e.g., stratigraphy, continuity, and connectivity), and hydrogeology (e.g., water-bearing zones, hydrologic parameters, impermeable strata). Please include a structural contour map (top of unit) and isopach map for the aquitard that is presumed to separate your release from the deeper aquifer(s), cross sections, soil boring and monitoring well logs and locations, and copies of regional geologic maps.

b. Analysis of the hydraulic flow system in the vicinity of the site. Include rose diagrams for depicting groundwater gradients. The rose diagram shall be plotted on groundwater elevation contour maps and updated in all future reports submitted for your site. Please address changes due to seasonal precipitation and groundwater pumping, and evaluate the potential interconnection between shallow and deep aquifers. Please include an analysis of vertical hydraulic gradients, and effects of pumping rates on hydraulic head from nearby water supply wells, if appropriate. Include hydraulic head in the different water bearing zones and hydrographs of all monitoring wells.

c. Release history, including potential source(s) of releases, potential contaminants of concern (COC) associated with each potential release, confirmed source locations, confirmed release locations, and existing delineation of release areas. Address primary leak source(s) (e.g., a tank, sump, pipeline, etc.) and secondary sources (e.g., high-

concentration contaminants in low-permeability lithologic soil units that sustain groundwater or vapor plumes). Include local and regional plan view maps that illustrate the location of sources (former facilities, piping, tanks, etc.).

d. Plume (soil gas and groundwater) development and dynamics including aging of source(s), phase distribution (NAPL, dissolved, vapor, residual), diving plumes, attenuation mechanisms, migration routes, preferential pathways (geologic and anthropogenic), magnitude of chemicals of concern and spatial and temporal changes in concentrations, and contaminant fate and transport. Please include three-dimensional plume maps for groundwater and two-dimensional soil vapor plume plan view maps to provide an accurate depiction of the contaminant distribution of each COC.

e. Summary tables of chemical concentrations in different media (i.e., soil, groundwater, and soil vapor). Please include applicable environmental screening levels on all tables. Include graphs of contaminant concentrations versus time.

f. Current and historic facility structures (e.g., buildings, drain systems, sewer systems, underground utilities, etc.) and physical features including topographical features (e.g., hills, gradients, surface vegetation, or pavement) and surface water features (e.g. routes of drainage ditches, links to water bodies). Please include current and historic site maps.

g. Current and historic site operations/processes (e.g., parts cleaning, chemical storage areas, manufacturing, etc.).

h. Other contaminant release sites in the vicinity of the site. Hydrogeologic and contaminant data from those sites may prove helpful in testing certain hypotheses for the SCM. Include a summary of work and technical findings from nearby release sites, including the two adjacent closed LUFT sites, (i.e., Montgomery Ward site and the Quest Laboratory site).

i. Land uses and exposure scenarios on the facility and adjacent properties. Include beneficial resources (e.g., groundwater classification, wetlands, natural resources, etc.), resource use locations (e.g., water supply wells, surface water intakes), subpopulation types and locations (e.g., schools, hospitals, day care centers, etc.), exposure scenarios (e.g. residential, industrial, recreational, farming), and exposure pathways, and potential threat to sensitive receptors. Include an analysis of the contaminant volatilization from the subsurface to indoor/outdoor air exposure route (i.e., vapor pathway). Please include copies of Sanborn maps and aerial photographs, as appropriate.

j. Identification and listing of specific data gaps that require further investigation during subsequent phases of work. Proposed activities to investigate and fill data gaps identified.

TABLE 1

INITIAL SITE CONCEPTUAL MODEL
Crown Chevrolet
7544 Dublin Boulevard
Dublin, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Geology and Hydrogeology	Regional	The site is in the northwest portion of the Livermore Valley, which consists of a structural trough within the Diablo Range and contains the Livermore Valley Groundwater Basin (referred to as "the Basin") (DWR, 2006). Several faults traverse the Basin, which act as barriers to groundwater flow, as evidenced by large differences in water levels between the upgradient and downgradient sides of these faults (DWR, 2006). The Basin is divided into 12 groundwater basins, which are defined by faults and non-water-bearing geologic units (DWR, 1974). The hydrogeology of the Basin consists of a thick sequence of fresh-water-bearing continental deposits from alluvial fans, outwash plains, and lacustrine environments to up to approximately 5,000 feet bgs (DWR, 2006). Three defined fresh-water bearing geologic units exist within the Basin: Holocene Valley Fill (up to approximately 400 feet bgs in the central portion of the Basin), the Plio-Pleistocene Livermore Formation (generally between approximately 400 and 4,000 feet bgs in the central portion of the Basin), and the Pliocene Tassajara Formation (generally between approximately 250 and 5,000 or more feet bgs) (DWR, 1974). The Valley Fill units in the western portion of the Basin are capped by up to 40 feet of clay (DWR, 2006).	None	NA
	Site	***Geology:*** Borings advanced at the site indicate that subsurface materials consist primarily of finer-grained deposits (clay, sandy clay, silt and sandy silt) with interbedded sand lenses to 20 feet below ground surface (bgs), the approximate depth to which these borings were advanced. The documented lithology for one on-site boring that was logged to approximately 45 feet bgs indicates that beyond approximately 20 feet bgs, fine-grained soils are present to approximately 45 feet bgs. A cone penetrometer technology test indicated the presence of sandier lenses from approximately 45 to 58 feet bgs and even coarser materials (interbedded with finer-grained materials) from approximately 58 feet to 75 feet bgs, the total depth drilled. The lithology documented at the site is similar to that reported at other nearby sites, specifically the Montgomery Ward site (7575 Dublin Boulevard), the Quest laboratory site (6511 Golden Gate Drive), the Shell-branded Service Station site (11989 Dublin Boulevard), and the Chevron site (7007 San Ramon Road). ***Hydrogeology:*** Shallow groundwater has been encountered at depths of approximately 9 to 15 feet bgs. The hydraulic gradient and groundwater flow direction have not been specifically evaluated at the site.	As noted, most borings at the site have been advanced to approximately 20 feet bgs, and one boring has been advanced and logged to 45 feet bgs; CPT data was collected to 75 feet bgs at one location. Lithologic data will be obtained from additional borings that will be advanced on site to further the understanding of the subsurface, especially with respect to deeper lithology. The on-site shallow groundwater horizontal gradient has not been confirmed. Additionally, it is not known if there may be a vertical component to the hydraulic gradient.	Two direct push borings and four multi-port wells will be advanced to depth (up to approximately 75 feet bgs) and soil lithology will be logged. See items 4 and 5 on Table 2. Shallow and deeper groundwater monitoring wells will be installed to provide information on lateral and vertical gradients. See Items 2 and 5 on Table 2.
Surface Water Bodies		The closest surface water bodies are culverted creeks. Martin Canyon Creek flows from a gully west of the site, enters a culvert north of the site, and then bends to the south, passing approximately 1,000 feet east of the site before flowing into the Alamo Canal. Dublin Creek flows from a gully west of the site, enters a culvert approximately 750 feet south of the site, and then joins Martin Canyon Creek approximately 750 feet southeast of the site.	None	NA
Nearby Wells		The State Water Resources Control Board's GeoTracker GAMA website includes information regarding the approximate locations of water supply wells in California. In the vicinity of the site, the closest water supply wells presented on this website are depicted approximately 2 miles southeast of the site; the locations shown are approximate (within 1 mile of actual location for California Department of Public Health supply wells and 0.5 mile for other supply wells). No water-producing wells were identified within 1/4 mile of the site in the well survey conducted for the Quest Laboratory site (6511 Golden Gate Drive; documented in 2009); information documented in a 2005 report for the Chevron site at 7007 San Ramon Road indicates that a water-producing well may exist within 1/2 mile of the site.	A formal well survey is needed to identify water-producing, monitoring, cathodic protection, and dewatering wells.	Obtain data regarding nearby, permitted wells from the California Department of Water Resources and Zone 7 Water Agency (Item 11 on Table 2).

TABLE 1

INITIAL SITE CONCEPTUAL MODEL
Crown Chevrolet
7544 Dublin Boulevard
Dublin, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Constituents of Concern		Constituents of concern have been identified by comparing analytical results to environmental screening levels for residential land use and for groundwater that is a current or potential drinking water source, developed by the California Regional Water Quality Control Board, San Francisco Bay Region (May 2008). PCE and TCE have been identified as the primary constituents of concern at the site; these constituents have been detected in soil, groundwater and soil vapor in the northern portion of the site. Biodegradation byproducts (e.g., cis-1,2-DCE) are present in groundwater, but at lower concentrations relative to PCE and TCE and below their respective environmental screening levels. Vinyl chloride has been detected in soil vapor at concentrations above its screening level. In the northern portion of the site, benzene and ethylbenzene have been detected in soil vapor at concentrations above their respective screening levels. Chlorobenzene and related constituents, and to a lesser extent, benzene, are present in soil, groundwater, and soil vapor at the former sump and pit in Building B.	None	NA
Potential Sources	On-site	Building B has been used for servicing automobiles since the 1960s. Based on the minor detections of PCE in soil vapor (in an area where groundwater is not impacted) beneath Building B and in groundwater beneath the former sump in another portion of Building B, it is possible that PCE entered the drain line from the sump within Building B, and was released to the subsurface from the sewer line northeast of Building A between 1968 and the present. There is no likely source in Building A, which has only been used as a showroom. Investigation performed within and downgradient of Building C indicates that there are no significant impacts in this area.	Concentrations of PCE in groundwater and soil vapor are highest approximately 50 feet west of the sewer line; the mechanism for these constituents to be present west of the sewer line is not currently known.	A subsurface utility locator, using ground penetrating radar, will evaluate the area north of Building A to ascertain the possible presence of unknown, buried utilities that could serve as a PCE source or migration conduit in the area. See Item 10 on Table 2.
		Two USTs (one 1,000-gallon gasoline and one 1,000-gallon waste oil) are present just south of Building B). The tanks appear to have been replaced in the 1980s and upgraded in 1998. Recent data collected in the vicinity of the USTs indicate that there are no significant impacts.	The absence of localized impacts to soil in the vicinity of the USTs has not been confirmed.	No additional investigation is recommended at this time. Additional sampling may be conducted as part of the formal UST closure process, and any impacts addressed at that time.
Potential Sources	Off-site	The site is located within a commercial/industrial area, and several vehicle-maintenance related shops are located south of the site; these facilities appear to be served by a sewer that flows north along the western edge of the Crown site. It is possible that PCE was released to the subsurface upgradient of the site via the sewer line. Additionally, there are three dry cleaners located hydraulically upgradient of the Crown site, including Crow Canyon Cleaners at 7272 San Ramon Road, which has a known groundwater contamination issue (however, that site is approximately 0.5 mile from the Crown site and groundwater at the site has limited impact with maximum concentrations of 24 parts per billion). The other two sites, VIP Cleaners at 7214 Regional Street and “Dry Clean 1 Hour” at 7257 Regional Street, are slightly closer to the Crown site (0.3 mile) and may have had an undocumented release to soil or groundwater. All three of the sites are served by sewers that flow north, away from the Crown site, but sewer releases in the general area, if any, could have impacted groundwater flowing toward the Crown site.	A specific off-site source is not known at this time. It is possible that additional research and/or investigation will be warranted at a later time, pending the results of this investigation.	NA

TABLE 1

INITIAL SITE CONCEPTUAL MODEL
Crown Chevrolet
7544 Dublin Boulevard
Dublin, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Potential Presence of DNAPL		Based on the currently available information, there does not appear to be separate-phase product (i.e., DNAPL) in soil or groundwater at the site. The U.S. EPA Fact Sheet entitled "Estimating Potential for Occurrence of DNAPL at Superfund Sites" (Fact Sheet) includes two flow charts that provide guidance for assessing whether site characterization data indicate the presence of DNAPL. The EPA approach uses lines of evidence that include consideration of historical site use and site characterization data. Based on the historical site use flow chart, some activities may have been performed (i.e., metal cleaning/degreasing and paint removing/stripping) that possibly may have resulted in historical DNAPL releases. However, review of available historical site chemical inventories does not indicate the presence of pure product PCE; it was likely present within other products at lower concentrations (percentage of product mixtures). Laboratory data generated from site characterization activities conducted to date do not indicate the potential for DNAPL, based on the following conditions, which are components of the laboratory data flow chart in the Fact Sheet: • Concentrations of PCE in groundwater are not greater than 1% of the solubility of PCE (i.e., greater than 2,000 µg/L, which is 1% of the pure product solubility of PCE)[1]; • Concentrations of PCE on soils are not greater than 10,000 mg/kg (and PID readings collected every 1 to 3 feet in the area of elevated groundwater concentrations were all 0, with the exception of several readings at 0.1 parts per million); and • Concentrations of PCE in groundwater calculated from water/soil partitioning relationships and soil samples are not greater than 1,500 µg/L.	Some elements listed in the Fact Sheet that would further our understanding of whether DNAPL is present at the site include additional knowledge of site stratigraphy and vertical distribution of PCE.	Four multi-port wells will be advanced to depth (up to approximately 75 feet bgs) and soil lithology will be logged. See items 4 and 5 on Table 2.
Nature and Extent of Environmental Impacts	Extent in Soil	PCE and TCE have been detected in soil samples collected north of Buildings A and B. All concentrations are less than their respective screening levels for residential shallow soil, applicable to groundwater considered to be a potential source of drinking water (screening levels of 370 and 460 µg/kg for PCE and TCE, respectively). PCE was detected at concentrations up to 6.8 µg/kg in soil at a depth of approximately 5.5 feet bgs in the vicinity of the highest PCE concentrations in groundwater and soil vapor (locations NM-B-32 and SV-22, respectively). It is likely that these PCE detections represent PCE in the vapor phase and not a source of PCE in soil. PCE and TCE were detected in deeper soil samples (between 12.5 and 14.5 feet bgs) at concentrations up to 36 µg/kg (in borings NM-B-23B, -24, -25, -26, 29, and -30). These soil samples were generally located within the saturated zone and it is likely that the detected concentrations represent PCE and TCE in groundwater. Soil was screened during advancement of the direct-push probe approximately every 1 to 4 feet using a PID; readings in most borings were 0 ppm; the highest PID readings (up to 22 ppmv of total VOCs) were observed at SB-02 within a likely saturated zone.	Additional samples will be collected to confirm absence of significant VOC concentrations in soil.	Soil samples will be collected from select borings, as indicated on Table 2 (Items 1, 3, and 8); sampling locations are prescribed and/or will be collected based on field observations.
		Chlorobenzenes and petroleum-related constituents were detected in soil in the vicinity of the former sump and pit at concentrations greater than their respective ESLs; soil remediation was performed in 2011. Currently inaccessible impacted soil remains in place under existing building foundation walls at concentrations greater than ESLs.	Soil samples have collected to a total depth of 11.5 feet bgs pre-remediation and 8 feet bgs post-remediation beneath the sump. The remediation consisted of soil excavation to a depth of 16 feet bgs. No soil samples were collected at the base of the excavation because the soil was saturated; there is currently no data confirming the absence of significant impacts to soil beneath the sump.	No additional investigation is recommended at this time. Additional soil removal and sampling may be conducted at the time of redevelopment.

TABLE 1

INITIAL SITE CONCEPTUAL MODEL
Crown Chevrolet
7544 Dublin Boulevard
Dublin, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Nature and Extent of Environmental Impacts	Extent in Soil	TPHho (at concentrations greater than the residential ESL) was detected in soil sample SB-20-11 near a hydraulic lift east of the former pit in Building B (an elevated concentration of TPHho also was detected in soil sample SB-25-8; this sample location subsequently was excavated). Analysis for PCBs was performed on 13 samples, which were collected in the vicinity of hydraulic lifts within Building B. One PCB, Arochlor 1242, was detected in a soil sample collected at location NM-B-5 just north of the pit in Building B; however, the concentration of Aroclor 1242 at this location was an order of magnitude lower than its screening level. No other PCBs were detected in soil samples (however, the detection limit for Aroclor in 1 sample of the 13 samples analyzed was above the screening level).	None	NA
Nature and Extent of Environmental Impacts	Extent in Shallow Groundwater	Grab groundwater data are available for VOCs on approximately 50- to 100-foot centers throughout the northern portion of the site, indicating that PCE, TCE, and some related breakdown products (other VOCs) are present in groundwater at concentrations greater than their respective screening levels that consider groundwater to be a current or potential drinking water resource (the screening level is 5 µg/L for both PCE and TCE). The current data indicate that the highest concentrations of PCE in groundwater are limited to a small area just north of Building A, adjacent to and near a sewer line (concentrations in this area range from 120 to 190 µg/L at locations NM-B-23B2 and NM-B-32, respectively; these concentrations are not indicative of separate-phase product in groundwater). PCE also was detected at concentrations less than 50 µg/L upgradient (to the north and west) and downgradient (to the east) of the highest concentration area. TCE is present at higher concentrations relative to PCE at sampling locations NM-B-26-W and NM-B-28-W, in the northeast corner of the site; cis- and trans-1,2-DCE also were detected in these groundwater samples (at concentrations below their respective screening levels). Cis- and trans-1,2-DCE also have been detected (below screening levels) at other groundwater sampling locations. The results suggest that natural biodegradation could be occurring. With the exception of one shallow grab groundwater sample (Basics sample B8 located at the former sump) in which PCE was detected at 9.6 µg/L, only low concentrations of PCE (less than 5 µg/L) were detected in shallow groundwater in the vicinity of the former sump and pit.	Groundwater concentrations are not defined to less than the ESL in the following areas: • The northern and western property boundaries. • The eastern property boundary and the adjacent property to the east. • Within Building A, south of the highest concentration area. No temporal data are available. Specific data to confirm that natural biodegradation processes may be occurring has not been collected.	Seven monitoring wells will be installed to collect groundwater samples for evaluation of current and long-term concentration trends. See items 1, 2, 3, 5, 4, 7, and 8 in Table 2. Groundwater samples will be analyzed for field parameters that could indicate that natural biodegradation is occurring. See Item 2 in Table 2.
		Chlorobenzenes and petroleum-related constituents are present in shallow groundwater at concentrations greater than ESLs in the vicinity of the former sump within Building B (where soil remediation was conducted in 2011). The presence of these constituents (e.g., gasoline-range organics, benzene, and chlorobenzene) in groundwater appears to be limited to an area within approximately 15 feet of the former sump. These constituents were not detected above ESLs in groundwater samples collected at the former pit in Building B.	No temporal data are available.	One shallow groundwater monitoring well will be installed within the area of known impacts. See Item 2 on Table 2.
Nature and Extent of Environmental Impacts	Extent in Shallow Groundwater	TPHho (at a concentration greater than its screening level) was detected in an unfiltered groundwater sample (SB-20) collected near one hydraulic lift east of the former pit in Building B; however, no TPHho was detected in the filtered groundwater sample. The unfiltered sample result is likely representative of TPHho sorbed onto soil particles, as TPHho was also detected in soil at 11 feet bgs at this location. The reporting limits for TPHho (and TPHd and TPHmo) in groundwater are greater than the respective screening levels for these constituents. However, no TPH was detected down to the laboratory's method detection limit for the filtered samples. While concentrations less than the laboratory reporting limit are estimated, the absence of detections indicates that dissolved TPHd, TPHmo, and TPHho are not present.	None	NA
		Total chromium was detected above the residential ESL at one location (SB-06), but dissolved concentrations in the vicinity were less than the screening level.	None	NA

TABLE 1

INITIAL SITE CONCEPTUAL MODEL
Crown Chevrolet
7544 Dublin Boulevard
Dublin, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Nature and Extent of Environmental Impacts	Extent in Deeper Groundwater	Grab groundwater samples have been collected from two deeper water-bearing zones. Samples were collected from approximately 42 to 47 feet bgs and from 58 to 63 feet bgs from a boring just downgradient of the former sump within building B, and from approximately 43.5 feet bgs from a boring adjacent to the sewer line (northeast of Building A, just east of the highest concentration area). No constituents were detected in the deeper groundwater samples.	Limited data are available within the area of known PCE impacts to shallow groundwater, and no temporal data are available.	Nested, multi-port groundwater monitoring wells will be installed at four locations. Ports will be located within the shallowest water-bearing zone, in addition to one to two deeper water bearing zones (as possible based on saturated units encountered). See Item 5 of Table 2.
Nature and Extent of Environmental Impacts	Extent in Soil Vapor	PCE, TCE, vinyl chloride, and some related breakdown products, were detected in soil vapor in the northern portion of the north parcel; PCE, TCE, and vinyl chloride concentrations are greater than residential screening levels for evaluation of potential vapor intrusion concerns (410, 1,200, and 31 µg/m^3, respectively [Table E-2 of the May 2008 Water Board publication]) in some areas. The highest concentrations of PCE detected in soil vapor (up to a maximum concentration of 35,000 µg/m^3 at location SV-22) were in the vicinity of the highest concentrations of PCE in groundwater (north of Building A, near the sewer line). PCE has been detected in soil vapor at concentrations greater than the ESL (up to 9,600 µg/m^3 at location SV-24) at various locations north of Buildings A and B, along the sewer line running from between Buildings A and B to Dublin Boulevard, and along the floor drain lateral to the sewer line within Building B. (It should be noted that PCE was detected at 4,700 µg/m^3 in sample SV-3, collected from within a former pit in Building B; this pit has since been removed). The higher concentrations of TCE in soil vapor also generally correlate with the higher concentrations of TCE in groundwater. The concentration of vinyl chloride in soil vapor exceeded its screening level in three samples collected in the north-central area of the north parcel (SG-03, SG-04, and SV-23).	Only limited soil vapor data is available at the eastern property boundary.	A transect of four nested temporary soil vapor probes will be installed at the eastern property boundary. Based on results of initial sampling, at least two of these probes will be converted to permanent vapor monitoring probes. See Item 6 on Table 2.
		PCE was detected in one vapor sample, at a concentration that is approximately an order of magnitude less than its screening level, at the northwestern corner of the southern parcel. No auto servicing activities are known to have been conducted in this area, which was historically used as a parking lot. PCE was not detected in groundwater at this location.	The source and extent of PCE in soil vapor is not known.	Four temporary soil vapor probes will be installed and sampled in the southern parcel around the location of the PCE detection. See Item 9 on Table 2.
Nature and Extent of Environmental Impacts	Extent in Soil Vapor	Benzene and ethylbenzene have been detected in shallow soil vapor (i.e., collected from 1.5 to 5 feet bgs) north of Buildings A and B at concentrations exceeding their respective screening levels. Benzene was detected at concentrations generally ranging from 90 to 160 µg/m^3, with one detected concentration of 1,300 µg/m^3 (the shallowest soil vapor sample, which was collected from a depth of 1.5 to 2 feet bgs at location SV-16) in the northeastern portion of the north parcel. Ethylbenzene concentrations were greater than the screening level at two locations, up to a maximum concentration of 1,300 µg/m^3 at location SV-16. These constituents were not detected in corresponding soil and groundwater samples, and there was not a visible pattern to the soil vapor sample concentrations. Additionally, there is no known source of petroleum-related constituents in the northern portion of the north parcel.	The extent of benzene and ethylbenzene at concentrations greater than screening levels has not been defined. While shallow soil will be removed during the proposed redevelopment, and engineering controls are expected to be implemented in this area due to PCE concentrations in soil vapor, only limited soil vapor data is available at the eastern property boundary.	A transect of four nested temporary soil vapor probes will be installed at the eastern property boundary. Based on results of initial sampling, at least two of these probes will be converted to permanent vapor monitoring probes. See Item 6 on Table 2.
		Soil vapor sampling was conducted in the vicinity of the former sump and pit in Building B prior to remediation, and some concentrations of PCE, benzene, 1,2-dichlorobenzene, and 1,4-dichlorobenzene were greater than their respective screening levels at that time.	Post-remediation soil vapor concentrations are not known.	No additional investigation is recommended at this time. Additional sampling may be conducted at the time of redevelopment.
Migration Pathways	Potential Conduits	Figure 2 shows the known locations of on-site utilities, including sanitary sewer laterals, water, gas, and electrical lines. These facilities could act as conduits for vapor migration. From the data collected at the site, it appears that concentrations of VOCs in soil vapor generally correlate with concentrations of VOCs in groundwater. Based on this observation, it appears that these utilities act as only a minor conduit, if at all.	While we believe that PCE was released to the subsurface via the main on-site sewer line and lateral from Building B, the highest concentrations of PCE in soil vapor and groundwater are west (in the presumed upgradient direction) of the on-site sewer main. The extent of possible subsurface utilities just north of Building A, which may have acted as a source for a PCE release, is not known.	A subsurface utility locator will evaluate the area, including with ground-penetrating radar, to evaluate if there are potential conduits in the area. See Item 10 on Table 2.

TABLE 1

INITIAL SITE CONCEPTUAL MODEL
Crown Chevrolet
7544 Dublin Boulevard
Dublin, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Potential Receptors/Risk	On-site	Potable water at the site currently is provided via municipal supply and will continue to be in the foreseeable future. As such, direct contact to groundwater is not contemplated. Receptors at the site could include the following: • Current worker via vapor intrusion to indoor air • Future construction worker via soil, groundwater, and soil vapor • Future resident via vapor intrusion to indoor air • Future maintenance worker via soil and soil vapor	Potential impacts to on-site receptors are not known.	Human health risks will be evaluated following additional data collection.
Potential Receptors/Risk	Off-site	Potential off-site receptors include: • Nearby water-producing wells, if any are present • Concrete-lined Dublin Creek and Martin Canyon Creek	Potential impacts to off-site receptors are not known.	Data will be obtained from the California Department of Water Resources and Zone 7 Water Agency regarding the location of nearby water-producing wells, including the depth at which groundwater is extracted, will be obtained. See Item 11 on Table 2. The potential for constituents at the site to impact off-site receptors will be evaluated pending the results of the proposed investigation.

Abbreviations
bgs = below ground surface
cis-1,2-DCE = cis-1,2-dichloroethene
trans-1,2-DCE = trans-1,2-dichloroethene
DNAPL = dense non-aqueous phase liquid
mg/kg = milligrams per kilogram
PCE = tetrachloroethene
PCBs = polychlorinated biphenyls
PID = photoionization detector
ppm = parts per million
ppmv = parts per million by volume
TCE = trichloroethene
TPHho = total petroleum hydrocarbons as hydraulic oil
TPHd = total petroleum hydrocarbons as diesel
TPHmo = total petroleum hydrocarbons as motor oil
µg/kg = micrograms per kilogram
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter

Note
1. Pankow, J., et al, 1996, Dense chlorinated solvents in groundwater: background and history of the problem: in Pankow D. and Cherry J. (eds.), Dense Chlorinated Solvents and other DNAPLs in Groundwater, Waterloo Press, Portland, Ore., Ch. 1, pp. 1-52.

TABLE 2

DATA GAPS AND PROPOSED INVESTIGATION
Crown Chevrolet
7544 Dublin Boulevard
Dublin, California

Item	Data Gap	Proposed Investigation	Rationale	Analysis
1	Refine groundwater contours beneath Building A. Collect data relevant to the potential for biodegradation.	Advance two borings to approximately 20 feet bgs within Building A for collection of soil and grab groundwater samples.[1] Soil samples will be collected at two depths in the vadose zone. Soil samples will be collected based on field indications of impacts (PID readings, odor, staining) or, in the absence of field indications of impacts, at 5 and 10 feet bgs.	The highest concentrations of PCE in groundwater were detected at boring NM-B-32, just north of Building A. One boring will be advanced approximately 15 feet from the northern building wall to provide data close to the highest concentration area. A second boring will be advanced approximately halfway between the first boring and existing boring NM-B-31 to provide additional spatial data for contouring purposes. These borings will be part of a transect in the highest concentration area.	*Groundwater:* VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance. *Soil:* VOCs by EPA Method 8260 (soil samples to be collected using field preservation in accordance with EPA Method 5035).
2	Confirm shallow groundwater flow direction. Evaluate VOC concentration trends over time. Collect data relevant to the potential for biodegradation.	Install seven shallow groundwater monitoring wells to approximately 15 to 20 feet bgs in northern portion of site (monitoring well locations may be adjusted pending results of grab groundwater samples). • Three of these wells will be pre-pack wells installed using direct push technology, and a grab groundwater sample will be collected from these borings prior to installation of the well. • Four of these wells will be part of nested, multi-port wells that will also allow collection of chemical and water level data from deeper groundwater (see Item 6, below). • Soil samples will be collected only if there are field indications of impacts (with the exception of the well planned in the highest PCE concentration area, where soil samples will be collected at two depths in the vadose zone based on field indications of impacts (PID readings, odor, staining) or, in the absence of field indications of impacts, at 5 and 10 feet bgs.). • Groundwater monitoring frequency to be determined.	To evaluate groundwater flow direction, a minimum of three wells is needed; the seven proposed wells will provide for a more robust analysis. It is proposed that the wells be spaced throughout the northern portion of the north parcel to evaluate concentration trends while also evaluating groundwater flow direction. • In the west, one well is proposed at the western property boundary at the location where PCE concentrations are highest (the location may be adjusted based on the results of grab groundwater samples to be collected nearby). • A second well is proposed in the area with the highest concentrations of PCE in groundwater, north of Building A. • Three wells are proposed in a north-south line through the middle of the northern parking lot to evaluate spatial variations in PCE and TCE concentrations. • A sixth well is proposed just southwest (downgradent) of the former sump, where VOCs have been detected in groundwater. • A seventh well is proposed at the eastern property boundary; its distance from the northern property boundary is based on where existing data indicate the highest concentrations of PCE are present.	*Groundwater:* VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance. Soil: VOCs by EPA Method 8260 (soil samples to be collected using field preservation in accordance with EPA Method 5035).
3	Evaluate groundwater impacts along western property boundary (presumed upgradient boundary).	Advance a transect of three borings to approximately 20 feet bgs at the western property boundary for collection of soil and grab groundwater samples (one will be converted to a monitoring well; see Item 2, above). Soil samples will be collected at two depths in the vadose zone based on field indications of impacts (PID readings, odor, staining) or, in the absence of field indications of impacts, at 5 and 10 feet bgs.	PCE was detected in boring NM-B-34, at the western property boundary. A transect of three additional borings is proposed at an approximately 15-foot spacing to the south to provide more data regarding PCE at the upgradient property boundary. Data from these borings may be used to modify the location of one of the monitoring wells.	*Groundwater:* VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance. *Soil:* VOCs by EPA Method 8260 (soil samples to be collected using field preservation in accordance with EPA Method 5035).
4	Evaluate deeper lithology at the site.	Advance two direct push borings to approximately 75 feet bgs (one downgradient of the highest concentration area and one upgradient). Soil samples will be collected only if there are field indications of impacts. Soil lithology will be logged.	One boring is proposed adjacent to the location of the westernmost nested well, and one is proposed between the two nested wells in the central portion of the northern parking lot (see Item 6, below). No borings are proposed in the highest concentration area, as a precaution to avoid potential cross-contamination.	None

TABLE 2

DATA GAPS AND PROPOSED INVESTIGATION
Crown Chevrolet
7544 Dublin Boulevard
Dublin, California

Item	Data Gap	Proposed Investigation	Rationale	Analysis
5	Evaluate the possible presence of impacts to deeper groundwater. Evaluate deeper groundwater concentration trends over time. Obtain data regarding the vertical groundwater gradient. Obtain more lithological data below 20 feet bgs.	Install four continuous multichannel tubing (CMT) groundwater monitoring wells (aka multi-port wells) to approximately 65 feet bgs in the northern parking lot with ports at three depths (monitoring well locations may be adjusted pending results of shallow grab groundwater samples; we will discuss any potential changes with ACEH before proceeding). Groundwater monitoring frequency to be determined. Soil samples will be collected only if there are field indications of impacts. Soil lithology will be logged. However, information regarding the moisture content of soil may not be reliable using sonic drilling technology (two borings will be logged using direct push technology; see Item 4, above).	One well is proposed at the western (upgradient) property boundary to confirm that there are no deeper groundwater impacts from upgradient. Two wells are proposed near the center of the northern parking lot to evaluate potential impacts in an area where deeper impacts, if any, would most likely to be found. One well is proposed at the eastern (downgradient) property boundary to confirm that there are no impacts extending off-site. Port depths will be chosen based on the locations of saturated soils (as logged in direct push borings; see Item 4, above), but are expected at approximately 15, 45, and 60 feet bgs.	*Groundwater:* VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance.
6	Evaluate possible off-site migration of impacted soil vapor in the downgradient direction (east). Evaluate concentration trends over time.	Install 4 temporary nested soil vapor probes at approximately 4 and 8 feet bgs along the eastern property boundary. Based on the results of the sampling, two sets of nested probes will be converted to vapor monitoring wells to allow for evaluation of VOC concentration trends over time.	Available data indicate that PCE and TCE are present in soil vapor in the eastern portion of the northern parking lot. Samples are proposed on approximately 50-foot intervals along the eastern property boundary to provide a transect of concentrations through the vapor plume. The depths of 4 and 8 feet bgs are chosen to provide data closest to the source (i.e., groundwater) while avoiding saturated soil, and also provide shallower data to help evaluate potential attenuation within the soil column. Two sets of nested vapor probes will be converted into vapor monitoring wells (by installing well boxes at ground surface); the locations of the permanent wells will be chosen based on the results of samples from the temporary probes.	*Soil vapor* : VOCs by EPA Method TO-15.
7	Evaluate potential for off-site migration of impacted groundwater in the downgradient direction (east).	Advance two borings to approximately 20 feet bgs in the parking lot of the property east of the Crown site for collection of grab groundwater samples.	Two borings are proposed off-site, on the property east of the Crown site, just east of the building in the expected area of highest potential VOC concentrations.	*Groundwater:* VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance.
8	Evaluate VOC concentrations just north of the highest concentration area.	Advance two borings to approximately 20 feet bgs north of Building A for collection of soil and grab groundwater samples. Soil samples will be collected at two depths in the vadose zone. Soil samples will be collected based on field indications of impacts (PID readings, odor, staining) or, in the absence of field indications of impacts, at 5 and 10 feet bgs.	The highest concentrations of PCE in groundwater were detected at boring NM-B-32, just north of Building A. The nearest available data to the north are approximately 75 feet away. One of the borings will be advanced approximately 20 feet north of NM-B-32 to provide data close to the highest concentration area. A second boring will be advanced approximately halfway between the first boring and former boring NM-B-33 to provide additional spatial data for contouring purposes. These borings will be part of a transect in the highest concentration area.	*Groundwater:* VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance. *Soil:* VOCs by EPA Method 8260 (soil samples to be collected using field preservation in accordance with EPA Method 5035).
9	Evaluate VOC concentrations in soil vapor in the south parcel of the site.	Install four temporary soil vapor probes at approximately 5 feet bgs around boring SV-25, where PCE was detected in soil vapor at a low concentration.	PCE was detected in soil vapor sample SV-25 in the southern parcel, although was not detected in groundwater in that area. Three probes will be installed approximately 30 feet from of boring SV-25 to attempt to delineate the extent of impacts. A fourth probe is proposed west of the original sample, close to the property boundary and the location of mapped utility lines, which may be a potential conduit, to evaluate potential impacts from the west.	*Soil vapor* : VOCs by EPA Method TO-15.
10	Obtain additional information regarding subsurface structures and utilities to further evaluate migration pathways and sources.	Ground penetrating radar (GPR) and other utility locating methodologies will be used, as appropriate, to further evaluate the presence of unknown utilities and structures at the site.	Utilities have been identified at the site that include an on-site sewer lateral and drain line, and shallow water, electric, and gas lines. Given the current understanding of the distribution of PCE in groundwater at the site, it is possible that other subsurface utilities, and specifically sewer laterals, exist that may act as a source or migration pathway for distribution of VOCs in the subsurface.	NA

TABLE 2

DATA GAPS AND PROPOSED INVESTIGATION
Crown Chevrolet
7544 Dublin Boulevard
Dublin, California

Item	Data Gap	Proposed Investigation	Rationale	Analysis
11	Perform a formal well survey to identify water-producing wells.	A formal well survey will be performed to identify water-producing, monitoring, and cathodic protection wells. Data will be obtained regarding nearby, permitted wells from the California Department of Water Resources and Zone 7 Water Agency (Item 11 on Table 2).	If groundwater downgradient of the site is being used for supply purposes, it is possible that VOCs related to the site could be impacting groundwater.	NA

Notes
1. Borings for soil/grab groundwater collection may be terminated at 15 feet bgs if groundwater is encountered and grab groundwater sample collection is possible at that depth. Soil lithology will be logged at all borings.

Abbreviations
bgs = below ground surface
EPA = U.S. Environmental Protection Agency
PCE = tetrachloroethene
TPHg = total petroleum hydrocarbons quantified as gasoline
VOCs = volatile organic compounds

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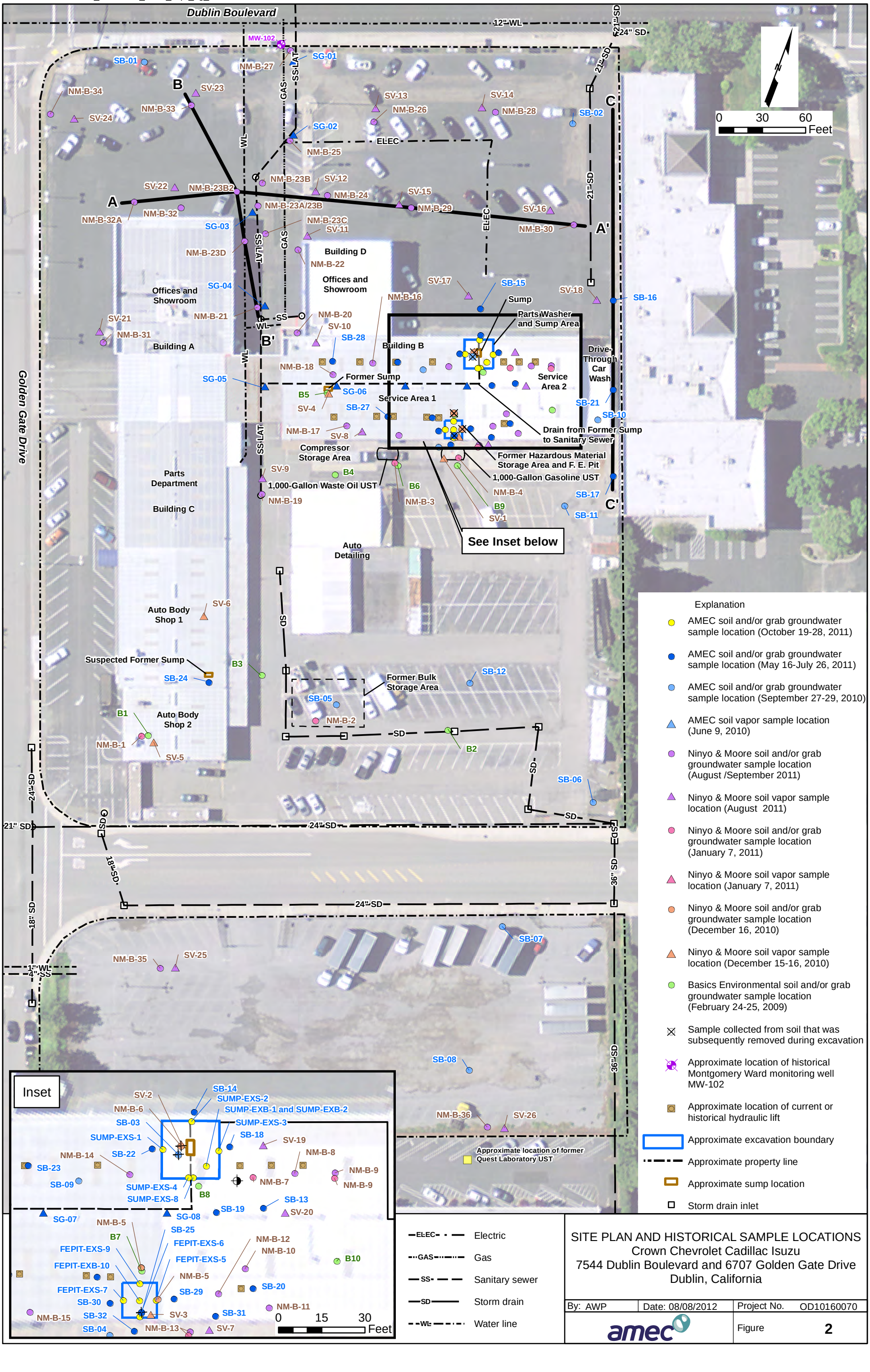
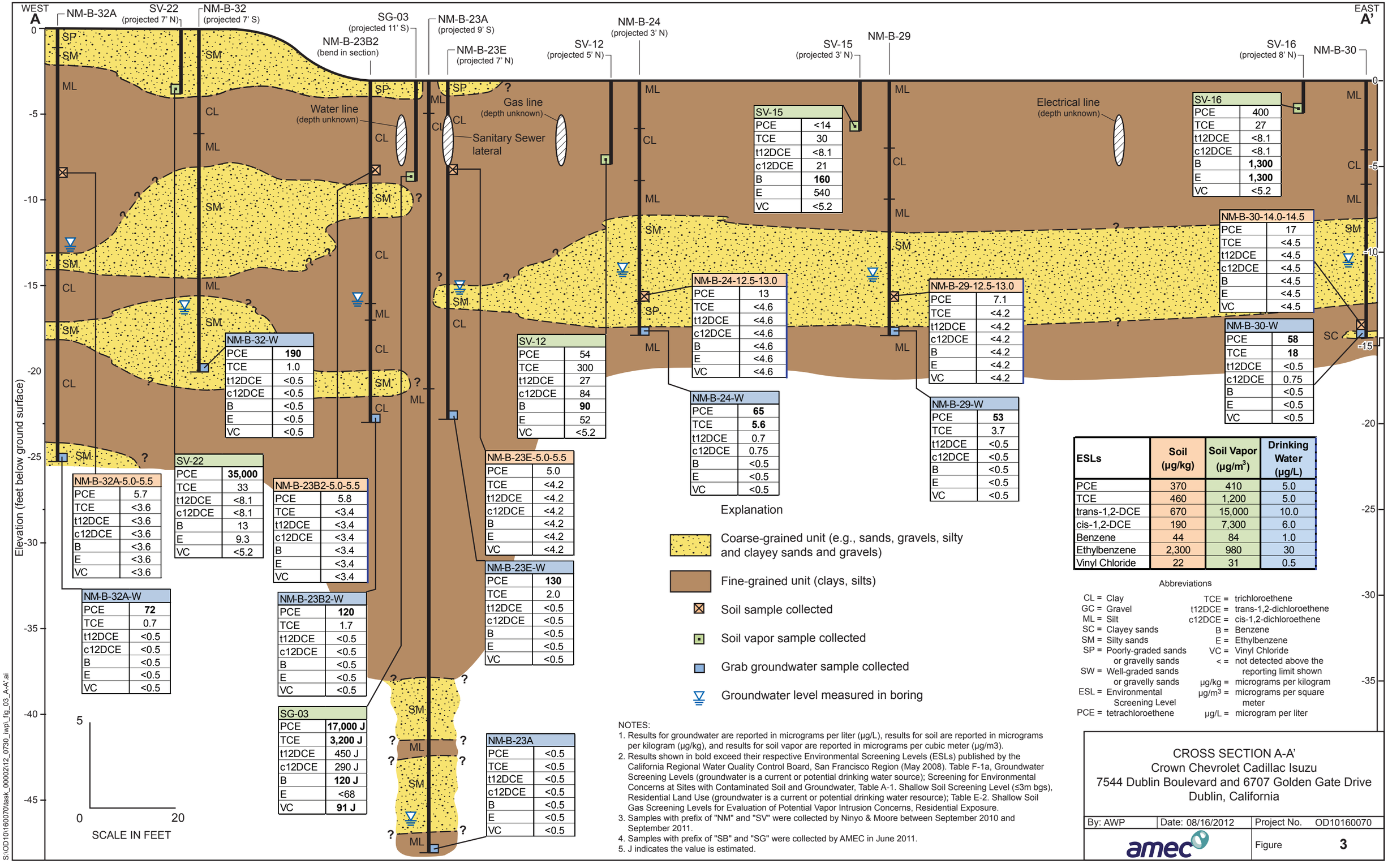


SITE PLAN AND HISTORICAL SAMPLE LOCATIONS
Crown Chevrolet Cadillac Isuzu
7544 Dublin Boulevard and 6707 Golden Gate Drive
Dublin, California

By: AWP	Date: 08/08/2012	Project No. OD10160070
amec		Figure 2



NM-B-32-W	
PCE	**190**
TCE	1.0
t12DCE	<0.5
c12DCE	<0.5
B	<0.5
E	<0.5
VC	<0.5

SV-22	
PCE	**35,000**
TCE	33
t12DCE	<8.1
c12DCE	<8.1
B	13
E	9.3
VC	<5.2

NM-B-32A-5.0-5.5	
PCE	5.7
TCE	<3.6
t12DCE	<3.6
c12DCE	<3.6
B	<3.6
E	<3.6
VC	<3.6

NM-B-32A-W	
PCE	**72**
TCE	0.7
t12DCE	<0.5
c12DCE	<0.5
B	<0.5
E	<0.5
VC	<0.5

NM-B-23B2-5.0-5.5	
PCE	5.8
TCE	<3.4
t12DCE	<3.4
c12DCE	<3.4
B	<3.4
E	<3.4
VC	<3.4

NM-B-23B2-W	
PCE	**120**
TCE	1.7
t12DCE	<0.5
c12DCE	<0.5
B	<0.5
E	<0.5
VC	<0.5

SG-03	
PCE	**17,000 J**
TCE	**3,200 J**
t12DCE	450 J
c12DCE	290 J
B	**120 J**
E	<68
VC	**91 J**

SV-12	
PCE	54
TCE	300
t12DCE	27
c12DCE	84
B	**90**
E	52
VC	<5.2

NM-B-23E-5.0-5.5	
PCE	5.0
TCE	<4.2
t12DCE	<4.2
c12DCE	<4.2
B	<4.2
E	<4.2
VC	<4.2

NM-B-23E-W	
PCE	**130**
TCE	2.0
t12DCE	<0.5
c12DCE	<0.5
B	<0.5
E	<0.5
VC	<0.5

NM-B-23A	
PCE	<0.5
TCE	<0.5
t12DCE	<0.5
c12DCE	<0.5
B	<0.5
E	<0.5
VC	<0.5

SV-15	
PCE	<14
TCE	30
t12DCE	<8.1
c12DCE	21
B	**160**
E	540
VC	<5.2

NM-B-24-12.5-13.0	
PCE	13
TCE	<4.6
t12DCE	<4.6
c12DCE	<4.6
B	<4.6
E	<4.6
VC	<4.6

NM-B-24-W	
PCE	**65**
TCE	**5.6**
t12DCE	0.7
c12DCE	0.75
B	<0.5
E	<0.5
VC	<0.5

NM-B-29-12.5-13.0	
PCE	7.1
TCE	<4.2
t12DCE	<4.2
c12DCE	<4.2
B	<4.2
E	<4.2
VC	<4.2

NM-B-29-W	
PCE	**53**
TCE	3.7
t12DCE	<0.5
c12DCE	<0.5
B	<0.5
E	<0.5
VC	<0.5

SV-16	
PCE	400
TCE	27
t12DCE	<8.1
c12DCE	<8.1
B	**1,300**
E	**1,300**
VC	<5.2

NM-B-30-14.0-14.5	
PCE	17
TCE	<4.5
t12DCE	<4.5
c12DCE	<4.5
B	<4.5
E	<4.5
VC	<4.5

NM-B-30-W	
PCE	**58**
TCE	**18**
t12DCE	<0.5
c12DCE	0.75
B	<0.5
E	<0.5
VC	<0.5

Explanation

- Coarse-grained unit (e.g., sands, gravels, silty and clayey sands and gravels)
- Fine-grained unit (clays, silts)
- Soil sample collected
- Soil vapor sample collected
- Grab groundwater sample collected
- Groundwater level measured in boring

NOTES:
1. Results for groundwater are reported in micrograms per liter (µg/L), results for soil are reported in micrograms per kilogram (µg/kg), and results for soil vapor are reported in micrograms per cubic meter (µg/m3).
2. Results shown in bold exceed their respective Environmental Screening Levels (ESLs) published by the California Regional Water Quality Control Board, San Francisco Region (May 2008). Table F-1a, Groundwater Screening Levels (groundwater is a current or potential drinking water source); Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Table A-1. Shallow Soil Screening Level (≤3m bgs), Residential Land Use (groundwater is a current or potential drinking water resource); Table E-2. Shallow Soil Gas Screening Levels for Evaluation of Potential Vapor Intrusion Concerns, Residential Exposure.
3. Samples with prefix of "NM" and "SV" were collected by Ninyo & Moore between September 2010 and September 2011.
4. Samples with prefix of "SB" and "SG" were collected by AMEC in June 2011.
5. J indicates the value is estimated.

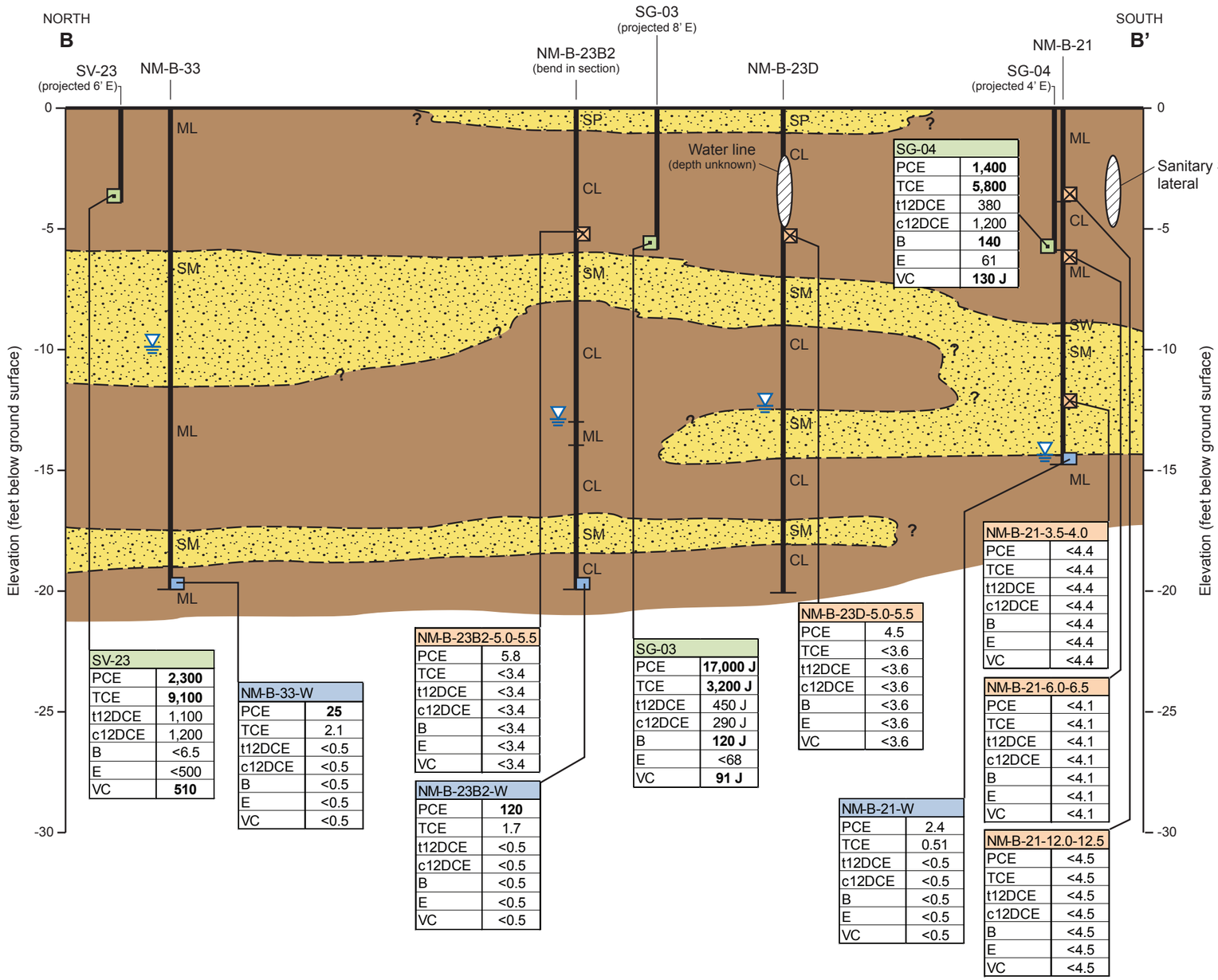
ESLs	Soil (µg/kg)	Soil Vapor (µg/m³)	Drinking Water (µg/L)
PCE	370	410	5.0
TCE	460	1,200	5.0
trans-1,2-DCE	670	15,000	10.0
cis-1,2-DCE	190	7,300	6.0
Benzene	44	84	1.0
Ethylbenzene	2,300	980	30
Vinyl Chloride	22	31	0.5

Abbreviations

CL = Clay
GC = Gravel
ML = Silt
SC = Clayey sands
SM = Silty sands
SP = Poorly-graded sands or gravelly sands
SW = Well-graded sands or gravelly sands
ESL = Environmental Screening Level
PCE = tetrachloroethene
TCE = trichloroethene
t12DCE = trans-1,2-dichloroethene
c12DCE = cis-1,2-dichloroethene
B = Benzene
E = Ethylbenzene
VC = Vinyl Chloride
< = not detected above the reporting limit shown
µg/kg = micrograms per kilogram
µg/m³ = micrograms per square meter
µg/L = microgram per liter

CROSS SECTION A-A'
Crown Chevrolet Cadillac Isuzu
7544 Dublin Boulevard and 6707 Golden Gate Drive
Dublin, California

By: AWP	Date: 08/16/2012	Project No. OD10160070
amec		Figure 3



SG-04	
PCE	**1,400**
TCE	**5,800**
t12DCE	380
c12DCE	1,200
B	**140**
E	61
VC	**130 J**

NM-B-21-3.5-4.0	
PCE	<4.4
TCE	<4.4
t12DCE	<4.4
c12DCE	<4.4
B	<4.4
E	<4.4
VC	<4.4

NM-B-21-6.0-6.5	
PCE	<4.1
TCE	<4.1
t12DCE	<4.1
c12DCE	<4.1
B	<4.1
E	<4.1
VC	<4.1

NM-B-21-12.0-12.5	
PCE	<4.5
TCE	<4.5
t12DCE	<4.5
c12DCE	<4.5
B	<4.5
E	<4.5
VC	<4.5

SV-23	
PCE	**2,300**
TCE	**9,100**
t12DCE	1,100
c12DCE	1,200
B	<6.5
E	<500
VC	**510**

NM-B-33-W	
PCE	**25**
TCE	2.1
t12DCE	<0.5
c12DCE	<0.5
B	<0.5
E	<0.5
VC	<0.5

NM-B-23B2-5.0-5.5	
PCE	5.8
TCE	<3.4
t12DCE	<3.4
c12DCE	<3.4
B	<3.4
E	<3.4
VC	<3.4

NM-B-23B2-W	
PCE	**120**
TCE	1.7
t12DCE	<0.5
c12DCE	<0.5
B	<0.5
E	<0.5
VC	<0.5

SG-03	
PCE	**17,000 J**
TCE	**3,200 J**
t12DCE	450 J
c12DCE	290 J
B	**120 J**
E	<68
VC	**91 J**

NM-B-23D-5.0-5.5	
PCE	4.5
TCE	<3.6
t12DCE	<3.6
c12DCE	<3.6
B	<3.6
E	<3.6
VC	<3.6

NM-B-21-W	
PCE	2.4
TCE	0.51
t12DCE	<0.5
c12DCE	<0.5
B	<0.5
E	<0.5
VC	<0.5

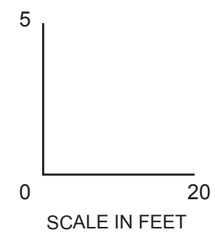
Explanation

- Coarse-grained unit (e.g., sands, gravels, silty and clayey sands and gravels)
- Fine-grained unit (clays, silts)
- Soil sample collected
- Soil vapor sample collected
- Grab groundwater sample collected
- Groundwater level measured in boring

Abbreviations

CL =	Clay	TCE =	trichloroethene
GC =	Gravel	t12DCE =	trans-1,2-dichloroethene
ML =	Silt	c12DCE =	cis-1,2-dichloroethene
SC =	Clayey sands	B =	Benzene
SM =	Silty sands	E =	Ethylbenzene
SP =	Poorly-graded sands or gravelly sands	VC =	Vinyl Chloride
		< =	not detected above the reporting limit shown
SW =	Well-graded sands or gravelly sands	µg/kg =	micrograms per kilogram
ESL =	Environmental Screening Level	µg/m³ =	micrograms per square meter
PCE =	tetrachloroethene	µg/L =	microgram per liter

ESLs	Soil (µg/kg)	Soil Vapor (µg/m³)	Drinking Water (µg/L)
PCE	370	410	5.0
TCE	460	1,200	5.0
trans-1,2-DCE	670	15,000	10.0
cis-1,2-DCE	190	7,300	6.0
Benzene	44	84	1.0
Ethylbenzene	2,300	980	30
Vinyl Chloride	22	31	0.5



NOTES:
1. Results for groundwater are reported in micrograms per liter (µg/L), results for soil are reported in micrograms per kilogram (µg/kg), and results for soil vapor are reported in micrograms per cubic meter (µg/m3).
2. Results shown in bold exceed their respective Environmental Screening Levels (ESLs) published by the California Regional Water Quality Control Board, San Francisco Region (May 2008). Table F-1a, Groundwater Screening Levels (groundwater is a current or potential drinking water source); Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Table A-1. Shallow Soil Screening Level (≤3m bgs), Residential Land Use (groundwater is a current or potential drinking water resource); Table E-2. Shallow Soil Gas Screening Levels for Evaluation of Potential Vapor Intrusion Concerns, Residential Exposure.
3. Samples with prefix of "NM" and "SV" were collected by Ninyo & Moore between September 2010 and September 2011.
4. Samples with prefix of "SB" and "SG" were collected by AMEC in June 2011.
5. J indicates the value is estimated.

CROSS SECTION B-B'
Crown Chevrolet Cadillac Isuzu
7544 Dublin Boulevard and 6707 Golden Gate Drive
Dublin, California

By: AWP	Date: 08/16/2012	Project No. OD10160070
amec		Figure 4

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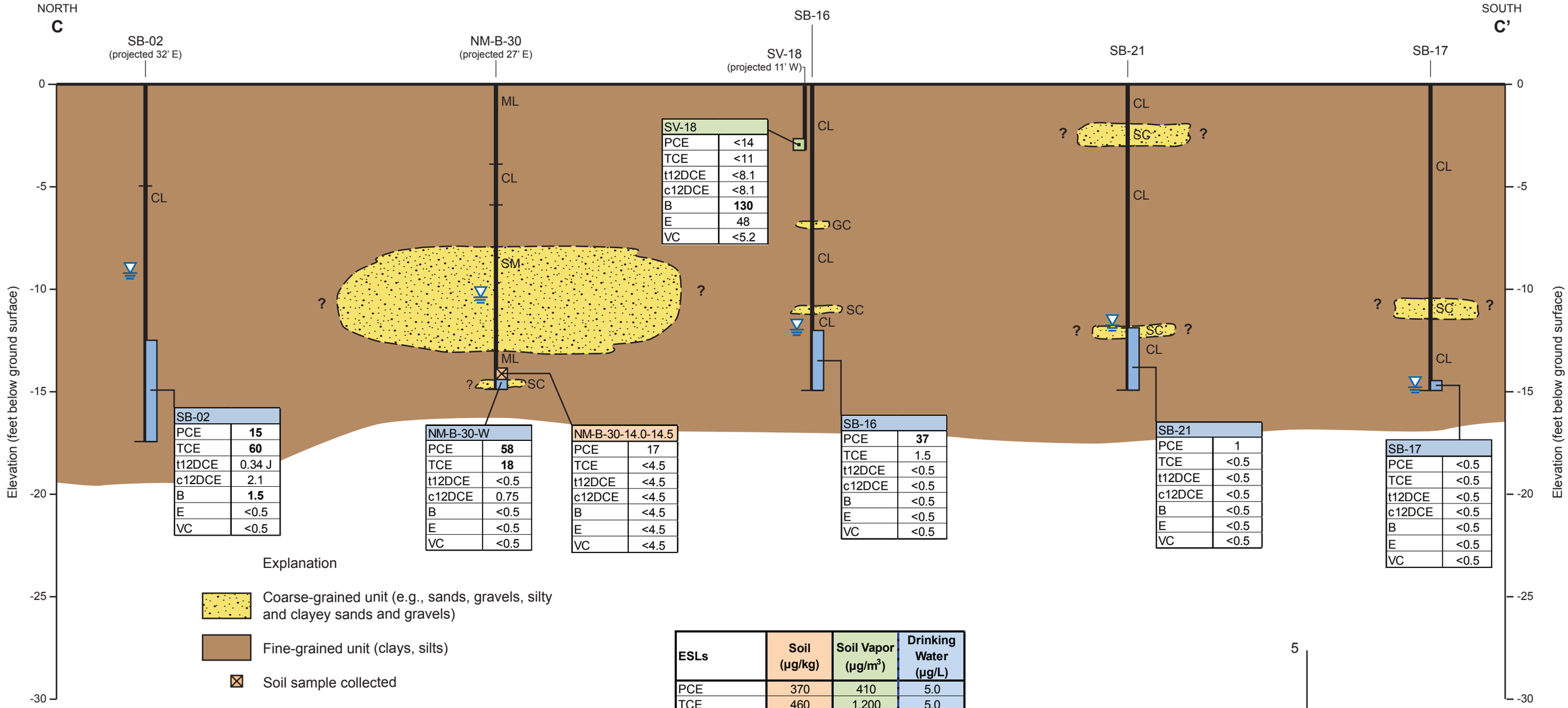
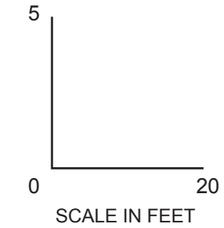


Explanation

- Coarse-grained unit (e.g., sands, gravels, silty and clayey sands and gravels)
- Fine-grained unit (clays, silts)
- Soil sample collected
- Soil vapor sample collected
- Grab groundwater sample collected
- Groundwater level measured in boring

ESLs	Soil (µg/kg)	Soil Vapor (µg/m^3)	Drinking Water (µg/L)
PCE	370	410	5.0
TCE	460	1,200	5.0
trans-1,2-DCE	670	15,000	10.0
cis-1,2-DCE	190	7,300	6.0
Benzene	44	84	1.0
Ethylbenzene	2,300	980	30
Vinyl Chloride	22	31	0.5



Abbreviations

CL =	Clay	TCE =	trichloroethene
GC =	Gravel	t12DCE =	trans-1,2-dichloroethene
ML =	Silt	c12DCE =	cis-1,2-dichloroethene
SC =	Clayey sands	B =	Benzene
SM =	Silty sands	E =	Ethylbenzene
SP =	Poorly-graded sands or gravelly sands	VC =	Vinyl Chloride
SW =	Well-graded sands or gravelly sands	< =	not detected above the reporting limit shown
ESL =	Environmental Screening Level	µg/kg =	micrograms per kilogram
PCE =	tetrachloroethene	µg/m^3 =	micrograms per square meter
		µg/L =	microgram per liter

NOTES:
1. Results for groundwater are reported in micrograms per liter (µg/L), results for soil are reported in micrograms per kilogram (µg/kg), and results for soil vapor are reported in micrograms per cubic meter (µg/m3).
2. Results shown in **bold** exceed their respective Environmental Screening Levels (ESLs) published by the California Regional Water Quality Control Board, San Francisco Region (May 2008). Table F-1a, Groundwater Screening Levels (groundwater is a current or potential drinking water source); Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Table A-1. Shallow Soil Screening Level (≤3m bgs), Residential Land Use (groundwater is a current or potential drinking water resource); Table E-2. Shallow Soil Gas Screening Levels for Evaluation of Potential Vapor Intrusion Concerns, Residential Exposure.
3. Samples with prefix of "NM" and "SV" were collected by Ninyo & Moore between September 2010 and September 2011.
4. Samples with prefix of "SB" and "SG" were collected by AMEC in June 2011.
5. J indicates the value is estimated.

CROSS SECTION C-C'
Crown Chevrolet Cadillac Isuzu
7544 Dublin Boulevard and 6707 Golden Gate Drive
Dublin, California

By: AWP	Date: 08/16/2012	Project No. OD10160070
amec		Figure 5

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Dublin Boulevard

Golden Gate Drive

12" WL

24" SD

21" SD

MW-102

SB-01

NM-B-27

SS-LAT

SG-01

NM-B-34

SV-23

NM-B-33

SV-24

GAS

WL

SG-02

EL-EC

NM-B-25

SV-13

NM-B-26

SV-14

NM-B-28

SB-02

NM-B-23B2

SV-22

NM-B-23E

SV-12

NM-B-24

NM-B-23A/23B

NM-B-32A

NM-B-32

SV-15

NM-B-29

SV-16

NM-B-30

SG-03

NM-B-23C

SV-11

NM-B-23D

Building D

NM-B-22

Offices and Showroom

SG-04

NM-B-16

17

SV-18

SB-16

Sump

SB-15

Parts Washer and Sump Area

NM-B-21

NM-B-20

SS

SV-21

SV-10

SB-28

NM-B-31

Building A

Building B

Drive-Through Car Wash

NM-B-18

SG-05

Former Sump

SG-06

Service Area 2

B5

SV-4

Service Area 1

SB-21

SB-27

SB-10

Drain from Former Sump to Sanitary Sewer

NM-B-17

SV-8

Compressor Storage Area

Former Hazardous Material Storage Area and F. E. Pit

1,000-Gallon Gasoline UST

SB-17

SV-9

B4

1,000-Gallon Waste Oil UST

B6

NM-B-3

NM-B-4

B9

SV-1

SB-11

NM-B-19

Parts Department

Building C

See Inset below

Auto Detailing

SV-6

Auto Body Shop 1

SD

Suspected Former Sump

B3

SB-24

Former Bulk Storage Area

SB-12

SB-05

B1

Auto Body Shop 2

NM-B-2

NM-B-1

SV-5

B2

SB-06

18" SD

1" WL
4" SS

NM-B-35

SV-25

SB-07

SB-08

NM-B-36

SV-26

Approximate location of former Quest Laboratory UST

0 30 60 Feet

Inset

SV-2

SB-14

SUMP-EXS-2

NM-B-6

SUMP-EXB-1 and SUMP-EXB-2

SB-03

SUMP-EXS-3

SUMP-EXS-1

SB-18

SV-19

NM-B-14

SB-22

NM-B-8

SB-23

NM-B-9

NM-B-7

SB-09

SUMP-EXS-4

SUMP-EXS-8

B8

SB-13

SB-19

SV-20

SG-07

SG-08

NM-B-5

SB-25

B7

FEPIT-EXS-6

NM-B-12

FEPIT-EXS-9

NM-B-10

FEPIT-EXS-5

B10

FEPIT-EXB-10

NM-B-5

SB-20

FEPIT-EXS-7

SB-29

SB-30

NM-B-11

NM-B-15

SB-32

SV-3

SB-31

SB-04

NM-B-13

SV-7

0 15 30 Feet

Explanation

- Proposed deeper boring for logging of soil lithology
- Proposed shallow groundwater monitoring well location
- Proposed deeper groundwater monitoring well location
- Proposed shallow soil/grab groundwater boring location
- Proposed continuous multichannel tubing (CMT; multiport) well at three depths (approximately 20, 40, and 60 feet below ground surface)
- Proposed soil vapor monitoring well location
- Proposed temporary soil vapor sample location
- AMEC soil and/or grab groundwater sample location (October 19-28, 2011)
- AMEC soil and/or grab groundwater sample location (May 16-July 26, 2011)
- AMEC soil and/or grab groundwater sample location (September 27-29, 2010)
- AMEC soil vapor sample location (June 9, 2010)
- Ninyo & Moore soil and/or grab groundwater sample location (August /September 2011)
- Ninyo & Moore soil vapor sample location (August 2011)
- Ninyo & Moore soil and/or grab groundwater sample location (January 7, 2011)
- Ninyo & Moore soil vapor sample location (January 7, 2011)
- Ninyo & Moore soil and/or grab groundwater sample location (December 16, 2010)
- Ninyo & Moore soil vapor sample location (December 15-16, 2010)
- Basics Environmental soil and/or grab groundwater sample location (February 24-25, 2009)
- Sample collected from soil that was subsequently removed during excavation
- Approximate location of historical Montgomery Ward monitoring well MW-102
- Approximate location of current or historical hydraulic lift
- Approximate excavation boundary
- Approximate property line
- Approximate sump location
- Storm drain inlet

EL-EC Electric

GAS Gas

SS Sanitary sewer

SD Storm drain

WL Water line

Note: Utility locations provided by Carlson, Barbee & Gibson, Inc., of San Ramon, California.

PROPOSED SAMPLE LOCATIONS
Crown Chevrolet Cadillac Isuzu
7544 Dublin Boulevard and 6707 Golden Gate Drive
Dublin, California

By: AWP	Date: 08/16/2012	Project No. OD10160070
amec		Figure 6