

Appendix F:

VAPOR ENCROACHMENT SCREENING MATRIX

Vapor Encroachment Screening Matrix

Phase I ESA Vapor Encroachment Conditions (VEC) matrix includes a (1) Search Radius Test, (2) Chemicals of Concern Test (COC), and (3) a Critical Distance Test [1].

(1) Search Radius Test: Are there any known or suspect contaminated properties in the primary area of concern within the corresponding search radii (including the site)?

Yes No If **No**, then screening for a VEC is complete and no VEC *currently* exists, go to #4. If **Yes**, then:

(2) Chemicals of Concern Test: Are COC likely to be present within the area of concern for those known or suspect contaminated sites identified based on the Search Distance Test?

Yes No If **No**, then screening for a VEC is complete and no VEC *currently* exists, go to #4. If **Yes**, then:

(3) Critical Distance Test*: A plume test to determine whether or not COC in the contaminated plume(s) may be within the critical distance.

Yes No (3a) Is information related to the contaminated(s) plume available (i.e. iso-concentration maps, site drawings, etc.)?

(3b) If **No**, then a VEC cannot be ruled out; check **Yes** in #4 below indicating it is likely a VEC exists. If **Yes**, then:

Yes No (3c) Is the site less than 100 feet to the nearest edge of a contaminated [non-petroleum hydrocarbon] plume(s)? If **Yes**, then check **Yes** in #4 below indicating it is likely a VEC exists.

Yes No (3d) Is the site less than 30 feet to the nearest edge of a dissolved petroleum hydrocarbon plume(s)? If **Yes**, then check **Yes** in #4 below indicating it is likely a VEC exists.

*If the distance from the nearest edge of a contaminated plume to the nearest existing or planned structure on the site is less than 100 feet for non-petroleum hydrocarbon COC, or less than 30 feet for dissolved petroleum hydrocarbons, then it is presumed that a VEC *currently* exists beneath the site. If the distance from the nearest edge of the contaminated plume is greater than or equal to 100 feet for non-petroleum hydrocarbons, or 30 feet for dissolved petroleum hydrocarbon chemicals of concern, then it is presumed unlikely that a VEC *currently* exists beneath the site.

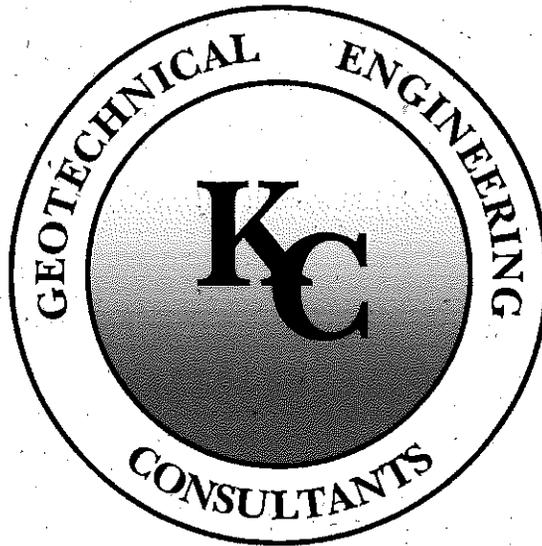
(4) Is it likely that a VEC *currently* exists beneath the site?

Yes No If **No**, then the VEC screening is complete and no further investigation is recommended at this time. If **Yes**, Ninyo & Moore recommends performing additional assessment, such as a Tier 2 VEC assessment according to ASTM E 2600-10.

[1] Based on guidance presented in the ASTM E 2600-10 Standard.

Appendix G:
OTHER REPORTS

**PHASE I ENVIRONMENTAL SITE ASSESSMENT
OF
CRYSTAL SCHOOL
100 Cordelia Street
Suisun City, Solano County, California
For
MAIN STREET WEST PARTNERS**



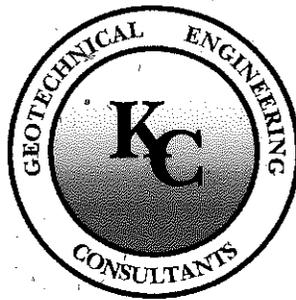
By

KC ENGINEERING COMPANY

Project No. VV2195-06

30 May 2006

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KC ENGINEERING COMPANY
A SUBSIDIARY OF MATERIALS TESTING, INC.

Project No. VV2195-06
30 May 2006

Mr. Mike Rice and Mr. Frank Marinello
Main Street West Partners
710 Kellogg Street
Suisun City, California 94585

Subject: Crystal School
100 Cordelia Street
Suisun City, Solano County, California
PHASE I ENVIRONMENTAL SITE ASSESSMENT

Dear Mr. Rice and Mr. Marinello:

In accordance with your authorization, **KC ENGINEERING COMPANY** has completed a Phase I Environmental Site Assessment of the vacant Crystal School facility located at 100 Cordelia Street in Suisun City, Solano County, California.

The accompanying report presents our conclusions and recommendations based on our investigation and review. Historical research indicates that the majority of the property has been developed from at least 1888 to the present. A schoolhouse, a residence, and sheds were located on the northeast portion of the property from at least 1888 to 1907. The original schoolhouse was removed from the property by 1920, and a new building identified as Crystal Grammar School was located on the northeast portion of the property from at least 1920 to 1968. A fuel oil tank was located to the west of the school building in 1920. A building identified as Manual Training was located in the same location as the previously observed fuel oil tank by 1945.

Residences, garages, and sheds were located on the southeast portion of the property from at least 1888 to 1968. The northwest portion of the property contained a saloon, a restaurant, a kitchen, lodgings, a buggy house, an icehouse, and sheds from at least 1889 to 1907. Residences were located on the northwest portion of the property from at least 1918 to 1950. The northwest portion of the property consisted of vacant land from at least 1957 to 1968.

The southwest portion of the property consisted of vacant land from at least 1889 to 1937. Four residences were located on the southwest portion of the property by 1950. School buildings have been located on the southwest portion of the property from at least 1957 to the present. Line Street was located on the eastern portion of the property from at least 1888 to 1968, and was removed from the property by 1970.

By 1970 the former Crystal Grammar School and Manual Training buildings were removed from the northeast portion of the property, and the former residences, garages, and sheds were removed from the southeast portion of the property. The property was developed with the existing school facility by 1970, which included school buildings on the southern portion of the property, grass fields on the northwest portion of the property, and asphalt-paved blacktop areas on the northeast portion of the property. Additional classroom buildings have been added to the property since 1970.

The property currently contains a vacant school facility, including classrooms, restrooms, a gymnasium, a pool, a library, storage sheds, and offices. The northwest portion of the property consists of grass fields. The northeast portion of the property contains asphalt-paved blacktop areas. Regulated quantities of hazardous materials including 55-gallon drums of chemicals, underground storage tanks, and aboveground storage tanks were not observed to be used, stored, or disposed of on the property during the site reconnaissance.

Oil and gas wells were not identified on the subject property. The subject property was identified on the HAZNET database and the FINDS database, as a recycler of waste oil and mixed oil, and as having disposed of 16.85 tons of asbestos-containing waste. The property was not identified on the 65 databases reviewed as having underground storage tanks, or as having a reported spill or release of hazardous materials. No open fuel, solvent, or toxic leak sites were identified within 0.12-miles of the property. No obvious potential off-site sources of contamination were identified for the property from the 65 government databases reviewed.

A lead-based paint survey was not included in this Phase I Environmental Site Assessment. However, Mr. Bill Vucurevich of the Fairfield Suisun Unified School District informed **KC ENGINEERING COMPANY** personnel that lead-based paint is present in the swimming pool. Lead-based paint may also be present on other structures on the property. **KC ENGINEERING COMPANY** recommends that a lead-based paint survey be conducted on the property prior to the demolition of the structures on the property.

An asbestos survey was conducted on the property by Mr. Daniel J. Weathers in 1988. This survey revealed the presence of friable asbestos-containing building materials in the thermal system insulation, specifically the pipe insulation in A-wing subfloor crawlspace. No other asbestos-containing building materials (>5%) were identified during the 1988 asbestos survey. The property is identified on the HAZNET database as having disposed of 16.85 tons of asbestos-containing waste. However, additional asbestos-containing materials may remain on the property. **KC ENGINEERING COMPANY** cannot guarantee the results of the 1988 asbestos survey. Prior to demolition, **KC ENGINEERING COMPANY** recommends that random samples from suspect asbestos-containing building materials be collected and analyzed by a certified asbestos contractor, to confirm the results presented in the 1988 survey.

The following recognized environmental condition was identified for the subject property during the course of this assessment:

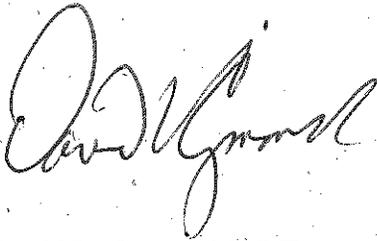
1. A 1920 Sanborn map shows a fuel oil tank located on the northeast portion of the property. This tank was no longer identified on the property in 1945, when a new building was located on top of the former tank location. This tank was likely removed prior to the construction of the new building. However, the only way to verify that an old UST does not remain on this

portion of the property is to conduct an electro-magnetic survey, a ground-penetrating radar survey, or to explore the area with a backhoe. The northeast portion of the property is currently asphalt-paved. **KC ENGINEERING COMPANY** recommends further investigation of this portion of the property, to ensure that a UST is not located on the northeast portion of the property.

Should you have any questions relating to the contents of this report, or should you require additional information, please contact our office at your convenience.

Reviewed by:

Respectfully Submitted,
KC ENGINEERING CO.



David V. Cymanski, G.E.
Principal Engineer



Amy E. Lee, R.E.A.
Environmental Assessor



Copies: 6 to Main Street West Partners

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PLATE II – SITE SKETCH
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APPENDIX A – PHOTOGRAPHS OF THE SUBJECT PROPERTY
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APPENDIX C – QUALIFICATIONS STATEMENT

INTRODUCTION

Purpose and Scope

This report presents the findings of the Phase I Environmental Site Assessment conducted for the Crystal School site located at 100 Cordelia Street in Suisun City, Solano County, California. The property currently contains a vacant school facility. This evaluation has been performed at your request to identify, to the extent feasible pursuant to the processes prescribed in ASTM E-1527-00, recognized environmental conditions in connection with the subject property. The term "recognized environmental conditions" means the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property.

Our investigation included the following:

- a. Visual reconnaissance of the property to evaluate current on-site activities and past uses;
- b. Review of reasonably ascertainable local regulatory files concerning chemical use and storage at the property;
- c. Acquisition of a computerized review of federal, state, and local publications to identify National Priority List (NPL); Resource Conservation and Recovery Act (RCRA); United States Environmental Protection Agency (EPA), Region 9, Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS); RCRA Treatment, Storage and Disposal (TSD); and Emergency Response Notification System (ERNS) sites located within close proximity to the property as well as landfills, Leaking Underground Storage Tanks

- (LUST) sites and registered underground storage tank (UST) and above-ground storage tank (AST) sites;
- d. Review of selected historic documentation of the property to determine what activities have occurred at the subject site since the property's first developed use or since 1940 (when available);
 - e. General visual survey of the current uses of the immediately adjacent sites;
 - f. Preparation of this written report in general conformance to the guidelines presented in ASTM Standard E-1527-00, *Standard Practice for Environmental Site Assessments*.

Site Location and Description

The property is located at 100 Cordelia Street in Suisun City, Solano County, California. The property currently contains a vacant school facility, which includes classrooms, restrooms, a gymnasium, a pool, a library, storage sheds, and offices. The property is situated at the northwest intersection of Cordelia Street and School Street. Access to the subject property can be made from Cordelia Street, School Street, Morgan Street, West Street, and California Street. The predominant land uses in the vicinity of the property are vacant land, residential, and commercial. A Vicinity Map, Site Sketch, and Aerial Photograph are attached as Plates I, II, and III, respectively.

The topography of the site is relatively flat, with an overall gentle downward gradient towards the south. The elevation of the property is approximately 5 feet above sea level (USGS 7.5-minute Fairfield South, California Quadrangle, 1980).

Hydrology

Groundwater was encountered between 5- and 6-feet below the ground surface in soil borings placed on the property by **KC ENGINEERING COMPANY** on May 31, 2006. Depth to groundwater was measured between 3- and 5.5-feet below the ground surface from 1993 to 1994 in wells located approximately 0.15-miles east of the property. Groundwater flow direction was reported to the east in these wells (EDR Inquiry Number 1671411.2s).

The property is identified within the bounds of a 100- and 500-year flood zone. The property is not identified as a federal wetlands area (EDR Inquiry Number 1671411.2s).

RECORDS REVIEW

In order to obtain information regarding current and past recognized environmental conditions at the site, information from several sources was researched. The results of this research are outlined below.

Aerial Photographs

In an attempt to identify the likelihood of past property uses having led to recognized environmental conditions in connection with the property or surrounding areas, select aerial photographs of the subject property and surrounding areas were reviewed. Photographs taken between 1937 and 1998 were available for review. The following features relative to land use history were identified:

1937 - (Flyer: Laval, Scale 1" = 555')

Two buildings, likely residential, are located on the northwest portion of the property. The southwest portion of the property is vacant. A school is located on the northeast portion of the property. Several residences and sheds are located on the southeast portion of the property. Line Street is paved on the eastern portion of the property. California Street and Morgan Street adjoin the property to the north, followed by vacant land and

residences. Cordelia Street adjoins the property to the south, followed by vacant land. Railroad tracks, a storage area, and sheds adjoin the property to the west. West Street and School Street adjoin the property to the east, followed by residences.

1957 – (Flyer: Cartwright, Scale 1" = 555')

The previously observed two buildings have been removed from the northwest portion of the property. The northwest portion of the property consists of vacant land. Two new commercial (school) buildings are now located on the southwest portion of the property. The previously observed school building remains located on the northeast portion of the property. Several residences and sheds remain located on the southeast portion of the property. Line Street remains paved on the eastern portion of the property. California Street and Morgan Street adjoin the property to the north, followed by a commercial building and residences. Cordelia Street adjoins the property to the south, followed by vacant land and apartment buildings. Railroad tracks, a storage area, and sheds adjoin the property to the west. West Street and School Street adjoin the property to the east, followed by residences.

1965 – (Flyer: Cartwright, Scale 1" = 333')

The property and adjoining parcels appear similar to the previous photograph.

1970 – (Flyer: Cartwright, Scale 1" = 555')

The previously observed residences and sheds have been removed from the southeast portion of the property. Line Street is no longer located on the eastern portion of the property. The previously observed school building is no longer located on the northeast portion of the property. The entire property now consists of a school facility. Several buildings are located on the southern portion of the property. The northern portion of the property consists of grass fields and asphalt-paved blacktop areas. California Street and

Morgan Street adjoin the property to the north, followed by a commercial building and residences. Cordelia Street adjoins the property to the south, followed by vacant land and apartment buildings. Railroad tracks, a storage area, and sheds adjoin the property to the west. West Street and School Street adjoin the property to the east, followed by residences.

1982 – (Flyer: Western State Aerial, Scale 1" = 690')

The property and adjoining parcels to the north, west, and east appear similar to the previous photograph. New apartment buildings are located to the south of Cordelia Street.

1993 – (Flyer: USGS, Scale 1" = 666')

The property and adjoining parcels appear similar to the previous photograph, with the exception that additional classroom buildings have been added to the southern portion of the property.

1998 – (Flyer: USGS, Scale 1" = 666')

The property and adjoining parcels appear similar to the previous photograph.

No obvious recognized environmental conditions for the property or adjacent parcels were noted from the aerial photographs reviewed.

Historical Topographic Maps

In an attempt to assess past property uses that may have had an environmental impact on the property or surrounding areas, select historical topographic maps depicting the subject property and

surrounding areas were reviewed. The following features relative to land use history were identified:

1898 – (USGS 15-Minute Karquines (Carquinez), California Quadrangle):

Approximately seven buildings (likely residences) are located on the northern and eastern portions of the property. Line Street is located on the property. The remainder of the property is vacant marshland. California Street and Morgan Street adjoin the property to the north, followed by buildings (likely residences). Cordelia Street and vacant land adjoin the property to the south. Railroad tracks adjoin the property to the west. West Street and School Street adjoin the property to the east, followed by buildings (likely residences).

1901 – (USGS 15-Minute Carquinez, California Quadrangle):

The property and adjoining parcels appear similar to the previous map.

1918 – (USGS 7.5-Minute Suisun, California Quadrangle):

Two buildings (likely residences) are located on the northwest portion of the property. A school and five buildings (likely residences) are located on the eastern portion of the property. Line Street extends onto the property. The remainder of the property is vacant. Vacant land and Morgan Street adjoin the property to the north, followed by buildings (likely residences). Cordelia Street adjoins the property to the south, followed by vacant marshland. A railroad spur adjoins the property to the west, followed by commercial buildings and railroad tracks. West Street and School Street adjoin the property to the east, followed by buildings (likely residences).

1950 – (USGS 7.5-Minute Fairfield South, California Quadrangle):

One building (likely a residence) remains located on the northwest portion of the property. Four buildings (likely residences) are now located on the southwest portion of the property. A school and six buildings (likely residences) are located on the eastern portion of the property. Line Street remains located on the property. California Street and Morgan Street adjoin the property to the north, followed by buildings (likely residences). Cordelia Street adjoins the property to the south, followed by vacant marshland. Railroad tracks adjoin the property to the west. West Street and School Street adjoin the property to the east, followed by buildings (likely residences) and a church.

1968 – (USGS 7.5-Minute Fairfield South, California Quadrangle):

The northwest portion of the property is now vacant. Four buildings (likely residences) remain located on the southwest portion of the property, along with two new commercial buildings. A school and six buildings (likely residences) remain located on the eastern portion of the property. Line Street remains located on the property. The southeast portion of the property is shaded pink, indicating a developed area. California Street and Morgan Street adjoin the property to the north, followed by buildings (likely residences). Cordelia Street adjoins the property to the south, followed by vacant marshland, apartment buildings, and an area that is shaded pink, indicating a developed area. Railroad tracks adjoin the property to the west. West Street and School Street adjoin the property to the east, followed by buildings (likely residences) and a church. The areas to the northeast and east of the property are shaded pink, indicating developed areas.

1980 – (USGS 7.5-Minute Fairfield South, California Quadrangle):

The property and adjoining parcels appear similar to the previous map, with the exception that additional apartment buildings are now located to the south of the property.

No obvious recognized environmental conditions for the property or adjacent parcels were noted from the topographic maps reviewed.

Regulatory Agency Database Review

To ascertain reported areas of possible environmental impairment on or in the vicinity of the subject property, lists published by several agencies were reviewed. During the course of this study **KC ENGINEERING COMPANY** utilized Environmental Data Resources, Inc. (EDR) as an information source for environmental records. Sixty-five (65) federal, state, local, tribal, and proprietary records databases were reviewed.

Oil and gas wells were not identified on the subject property. The subject property was identified on the HAZNET database and the FINDS database. The property was identified as a recycler of waste oil and mixed oil, and as having disposed of 16.85 tons of asbestos-containing waste. The property was not identified as having underground storage tanks, or as having a reported spill or release of hazardous materials.

Two adjoining parcels were identified:

1. Union Pacific Railroad, located adjacent to the west of the property at 110 Cordelia Road, was identified on the Leaking Underground Storage Tank (LUST) database, the HAZNET database, and the underground storage tank (UST) database. This facility is identified as a recycler of empty containers 30 gallons or more, and as a transfer station for unspecified solvent mixture waste. Three gasoline USTs were reported at this facility on the UST database. The status of this facility is listed as inactive. No details were available for the LUST case in the EDR report. **KC ENGINEERING COMPANY** personnel researched this case on the Regional Water Quality Control Board's (RWQCB)

GeoTracker web site. This address/facility was not listed on the RWQCB web site as a Leaking Underground Fuel Tank (LUFT) site, a Spills, Leaks, Investigation, and Cleanup (SLIC) site, or an underground storage tank (UST) site. The fact that no information is available for this case may indicate that the LUST listing is an error. No records were found to indicate that an open soil or groundwater contamination case exists for this facility. Therefore, this site is not considered a recognized environmental condition for the property.

12. Fry Properties/Union Pacific Railroad, located just north of the property at 705 West Street, is identified on the LUST database, the HAZNET database, the Cortese database, and the UST database. Two USTs were located at this facility. The status of this facility is listed as inactive. This facility is identified as a recycler of empty containers 30 gallons or more, as a transfer station of unspecified solvent mixture waste, as a recycler of other organic solids, and as having incinerated waste oil and mixed oil. A gasoline leak resulted in soil contamination at this facility. This LUST case received regulatory agency closure in 1999, and is therefore not considered a recognized environmental condition for the property.

Sixteen (16) additional hazardous materials use, storage, disposal, or release sites were identified within a one-mile radius of the subject property. Thirteen (13) of the 16 identified sites have had a reported spill or release of hazardous materials. The three (3) identified hazardous materials use, storage, or disposal sites that have not had a reported release of hazardous materials are not considered a recognized environmental condition for the subject property. Nine (9) of the 13 hazardous materials release sites have received regulatory agency closure, and are therefore not considered a recognized environmental condition for the subject property. The four (4) hazardous materials release sites that have not received regulatory agency closure are located between 0.12- and 0.42-miles east and northeast of the property.

In fuel leak cases, research conducted in the State of California by Lawrence Livermore National Laboratory (LLNL) in 1996 indicates that attenuation and degradation of the product in groundwater play major roles in reducing the hydrocarbon contamination to non-detectable levels within several hundred feet of the contaminant source. Moreover, this research indicates that in over 90% of the hydrocarbon contamination cases, groundwater contaminant plumes do not extend more than 250-feet from the source. Solvent/toxic contamination plumes may extend farther from the source.

Based on the discussion above, open fuel, solvent, or toxic leak sites that are within 250-feet in the upgradient direction are considered to have potential risk to the subsurface soils and/or groundwater of the property. No open fuel, solvent, or toxic leak sites were identified within 0.12-miles of the property.

No obvious recognized environmental conditions for the property or adjacent parcels were noted from the 65 government databases reviewed. No obvious potential off-site sources of contamination were identified within the ASTM-specified search distances (up to one-mile) of the subject property.

Sanborn Fire Insurance Maps

Sanborn fire insurance maps for Suisun City were reviewed. Partial coverage of the property was available from 1888 to 1954. The following observations were made:

1888:

A schoolhouse with a belfry, a dwelling, and sheds are located on the northeast portion of the property. Two dwellings and sheds are located on the southeast portion of the property. Line Street is located on the eastern portion of the property.

1889:

The northwest portion of the property contains a saloon, a restaurant, a kitchen, lodgings, and sheds. The southwest portion of the property is identified as Tule Land, and there is no exposure of the southwest portion of the property. The northeast portion of the property contains a schoolhouse with a belfry, a dwelling, and sheds. The southeast portion of the property contains two dwellings, a storehouse, and sheds. Line Street remains located on the eastern portion of the property.

1893:

The property appears similar to the previous photograph, with the exception that a hay shed is now located on the southeast portion of the property.

1900:

The northwest portion of the property contains a saloon, a restaurant, a kitchen, lodgings, a buggy house, and sheds. The southwest portion of the property is identified as Tule Land, and there is no exposure of the southwest portion of the property. The northeast portion of the property contains a schoolhouse with a belfry, a dwelling, and sheds. The southeast portion of the property contains two dwellings and sheds. Line Street remains located on the eastern portion of the property.

1907:

The northwest portion of the property contains a saloon, a restaurant, a kitchen, lodgings, a buggy house, an icehouse, and sheds. The southwest portion of the property is identified as Tule Land, and there is no exposure of the southwest portion of the property. The northeast portion of the property contains a schoolhouse with a belfry, a dwelling, a garage, and sheds. The heating system of the schoolhouse is identified as stoves. The southeast portion of the

property contains three dwellings, garages, and sheds. Line Street remains located on the eastern portion of the property.

1920:

Coverage of the northwest portion of the property is no longer available. The previously observed schoolhouse is no longer located on the northeast portion of the property. A new building identified as Crystal Grammar School is now located on the northeast portion of the property. A fuel oil tank is located to the west of the school building. Four dwellings, an apartment building, garages, and sheds are located on the southeast portion of the property. Line Street remains located on the eastern portion of the property.

1945:

Crystal Grammar School remains located on the northeast portion of the property. A building identified as Manual Training is now located to the west of the school building, in the same location as the previously observed fuel oil tank. Five dwellings, garages, and sheds are located on the southeast portion of the property. Line Street remains located on the eastern portion of the property.

1954:

The northeast portion of the property appears unchanged from the previous map. Four dwellings, an apartment building, garages, and sheds are located on the southeast portion of the property. Line Street remains located on the eastern portion of the property.

The 1920 Sanborn map shows a fuel oil tank located on the northeast portion of the property. No other obvious recognized environmental conditions for the property or adjacent parcels were noted from the topographic maps reviewed.

City Directories

During the course of this assessment, **KC ENGINEERING COMPANY** utilized Environmental Data Resources, Inc. (EDR) as an information source for historic city directories. Business directories including city, cross reference, and telephone directories were reviewed, if available, at approximate five-year intervals for the years spanning 1970 through 2005. Cordelia Street was not listed from 1970 to 1990. The property was listed as Crystal Middle School from 1995 to 2005.

SITE RECONNAISSANCE

A site reconnaissance of the subject property was conducted on May 6, 2006 to observe and identify recognized environmental conditions in connection with the subject property. Property photographs are attached as Appendix A. The following observations were made:

The site consists of approximately 7.4-acres of land located at the northwest corner of Cordelia Street and School Street in Suisun City, Solano County, California. The address of the property is 100 Cordelia Street. The property was last occupied by Crystal Middle School, and contains vacant classrooms, restrooms, a gymnasium, a pool, a library, storage sheds, and offices. The buildings on the property consist of wood-framed structures, concrete tilt-up structures, and portable buildings. Access to the subject property can be made from Cordelia Street, School Street, Morgan Street, West Street, and California Street.

The property is currently vacant. Electricity, gas, potable water, sewage disposal, and refuse collection services were previously provided to the property by the local supply companies. Utility pole-mounted transformers were observed along Morgan Street and Cordelia Street. Several pad-mounted transformers, underground utility vaults, sewer hook-ups, and electric panels were

observed on the property. Water meters, a gas meter, and underground utility vaults were observed along Cordelia Street. Fire hydrants are located near the northeast and southeast corners of the property. Storm drains are located on the northeast portion of the property and along Cordelia Street.

Evidence of sumps, hoists, wells, basements, elevators, 55-gallon drums of chemicals, aboveground storage tanks (ASTs), and underground storage tanks (USTs) were not observed on the property. The northwest portion of the property consists of grass fields. The northeast portion of the property is asphalt-paved. Visual evidence of stressed vegetation, stained pavement, and stained soils were not observed at the time of the site reconnaissance. Surface waters were not observed on the property. Storm waters flow into storm drains located on the property and onto adjacent parcels and streets. No obvious recognized environmental conditions were observed on the property during the site reconnaissance.

SURROUNDING PROPERTIES

Adjacent to the north – California Street and Morgan Street. Carlson Drywall & Spraying Inc. is located to the north of California Street, at 705 West Street. Residences are located to the north of Morgan Street.

Adjacent to the south – Cordelia Street, followed by vacant land and apartment buildings.

Adjacent to the west – A portable office building and a railroad storage yard, located at 110 Cordelia Street. The storage yard contains railroad ties and a propane aboveground storage tank.

Adjacent to the east – West Street and School Street, followed by residences.

ASBESTOS SURVEY REVIEW

An asbestos survey conducted for the property in 1988 by Daniel J. Weathers was provided to **KC ENGINEERING COMPANY** for review. A copy of the asbestos survey is included in Appendix B. Samples were collected from suspect asbestos containing materials located throughout the property buildings. Friable asbestos-containing building materials were identified in the thermal system insulation, specifically the pipe insulation in A-wing subfloor crawlspace. No other asbestos-containing building materials (>5%) were identified during the 1988 asbestos survey. The property is identified on the HAZNET database as having disposed of 16.85 tons of asbestos-containing waste. However, additional asbestos-containing materials may remain on the property.

CONCLUSIONS

This report presents the findings of the Phase I Environmental Site Assessment conducted by **KC ENGINEERING COMPANY** for the vacant Crystal School facility located at 100 Cordelia Street in Suisun City, Solano County, California. This assessment was performed in general conformance with the scope and limitations of ASTM Practice E 1527-00. The purpose of this assessment was to evaluate the potential for the presence of recognized environmental conditions in connection with the subject property. The scope of services for this evaluation included a reconnaissance of the property and vicinity, a review of the history of the site, and a review of information reasonably obtainable from regulatory agencies.

Historical research indicates that the majority of the property has been developed from at least 1888 to the present. A schoolhouse with a belfry, a dwelling, and sheds were located on the northeast portion of the property from at least 1888 to 1907. The original schoolhouse was removed from the property by 1920, and a new building identified as Crystal Grammar School was located on the

northeast portion of the property from at least 1920 to 1968. A fuel oil tank was located to the west of the school building in 1920. A building identified as Manual Training was located in the same location as the previously observed fuel oil tank by 1945.

Two dwellings and sheds were located on the southeast portion of the property from at least 1888 to 1900. A third dwelling was located on the southeast portion of the property by 1907. Four dwellings, an apartment building, garages, and sheds were located on the southeast portion of the property by 1920. Five dwellings, garages, and sheds were located on the southeast portion of the property by 1945. Four dwellings, an apartment building, garages, and sheds were located on the southeast portion of the property in 1954. Residences and sheds remained located on the southeast portion of the property until at least 1968.

The northwest portion of the property contained a saloon, a restaurant, a kitchen, lodgings, and sheds from at least 1889 to 1907. A buggy house was added to the northwest portion of the property by 1900, and an icehouse was added to the northwest portion of the property by 1907. Two residences were located on the northwest portion of the property from at least 1918 to 1937. One residence remained located on the northwest portion of the property by 1950. The northwest portion of the property consisted of vacant land from at least 1957 to 1968.

The southwest portion of the property was identified as Tulle (Tule) Land from at least 1889 to 1907, and consisted of vacant land from at least 1889 to 1937. Four residences were located on the southwest portion of the property by 1950. School buildings were located on the southwest portion of the property from at least 1957 to the present. Line Street was located on the eastern portion of the property from at least 1888 to 1968, and was removed from the property by 1970.

By 1970 the former Crystal Grammar School and Manual Training buildings were removed from the northeast portion of the property, and the former residences, garages, and sheds were

removed from the southeast portion of the property. The property was developed with the existing school facility by 1970, which included school buildings on the southern portion of the property, grass fields on the northwest portion of the property, and asphalt-paved blacktop areas on the northeast portion of the property. Additional classroom buildings have been added to the property since 1970. The property was identified as Crystal Middle School from 1995 to 2005.

The property currently contains a vacant school facility, including classrooms, restrooms, a gymnasium, a pool, a library, storage sheds, and offices. The northwest portion of the property consists of grass fields. The northeast portion of the property contains asphalt-paved blacktop areas. Regulated quantities of hazardous materials including 55-gallon drums of chemicals, underground storage tanks, and aboveground storage tanks were not observed to be used, stored, or disposed of on the property during the site reconnaissance.

Oil and gas wells were not identified on the subject property. The subject property was identified on the HAZNET database and the FINDS database. The property was identified as a recycler of waste oil and mixed oil, and as having disposed of 16.85 tons of asbestos-containing waste. The property was not identified on the 65 databases reviewed as having underground storage tanks, or as having a reported spill or release of hazardous materials. No open fuel, solvent, or toxic leak sites were identified within 0.12-miles of the property. No obvious potential off-site sources of contamination were identified for the property from the 65 government databases reviewed.

SUMMARY

The following recognized environmental condition was identified for the subject property during the course of this assessment:

1. A 1920 Sanborn map shows a fuel oil tank located on the northeast portion of the property. This tank was no longer identified on the property in 1945, when a new building was located on top of the former tank location. This tank was likely removed prior to the construction of the new building. However, the only way to verify that an old UST does not remain on this portion of the property is to conduct an electro-magnetic survey, a ground-penetrating radar survey, or to explore the area with a backhoe. The northeast portion of the property is currently asphalt-paved. **KC ENGINEERING COMPANY** recommends further investigation of this portion of the property, to ensure that a UST is not located on the northeast portion of the property.

A lead-based paint survey was not included in this Phase I Environmental Site Assessment. However, Mr. Bill Vucurevich of the Fairfield Suisun Unified School District informed **KC ENGINEERING COMPANY** personnel that lead-based paint is present in the swimming pool. Lead-based paint may also be present on other structures on the property. **KC ENGINEERING COMPANY** recommends that a lead-based paint survey be conducted on the property prior to the demolition of the structures on the property.

An asbestos survey was conducted on the property by Mr. Daniel J. Weathers in 1988. This survey revealed the presence of friable asbestos-containing building materials in the thermal system insulation, specifically the pipe insulation in A-wing subfloor crawlspace. No other asbestos-containing building materials (>5%) were identified during the 1988 asbestos survey. The property is identified on the HAZNET database as having disposed of 16.85 tons of asbestos-containing waste. However, additional asbestos-containing materials may remain on the property. **KC ENGINEERING COMPANY** cannot guarantee the results of the 1988 asbestos survey. Prior to demolition, **KC ENGINEERING COMPANY** recommends that random samples from suspect

asbestos-containing building materials be collected and analyzed by a certified asbestos contractor, to confirm the results presented in the 1988 survey.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

At the present date, the findings of this report are valid for the property investigated. With the passage of time, significant changes in the conditions of a property can occur due to natural processes or works of man on this or adjacent properties. In addition, legislation or the broadening of knowledge may result in changes in applicable standards. Changes outside of our control may render this report invalid, wholly or partially. Therefore, this report should not be considered valid after a period of one (1) year without our review, nor should it be used, or is it applicable, for any properties other than those investigated.

This report has been prepared for the exclusive use of Main Street West Partners, as it pertains to the property described herein. The conclusions in this report are opinions, based on readily available information obtained to date, within the scope of work authorized by Main Street West Partners. Use of, or reliance on the information and opinions contained in this report by other parties without first consulting this office is at those parties' own risk.

The results contained in this report are based upon the information acquired during this assessment. **KC ENGINEERING COMPANY** shall not be responsible for conditions or consequences arising from facts and information that were withheld or concealed, or not fully disclosed at the time that this evaluation was performed. **KC ENGINEERING COMPANY** is not responsible for errors or omissions in agency files or databases. It is possible that variations exist beyond or between points observed during the course of this assessment. Also, changes in observed conditions could occur due to contamination migration, variations in rainfall, temperature, and/or other factors not apparent at the time of the field evaluation. No environmental site assessment can wholly eliminate

uncertainty regarding the potential for recognized environmental conditions in connection with a property.

KC ENGINEERING COMPANY has strived to prepare this report in accordance with generally accepted geologic/environmental practices in this community. No warranty or guarantee is expressed or implied.

REFERENCES

Environmental Data Resources, Inc., The EDR Radius Map with GeoCheck, Inquiry Number: 1671411.2s, May 9, 2006.

Environmental Data Resources, Inc., The EDR Aerial Photo Decade Package, Inquiry Number: 1663600.5, April 28, 2006.

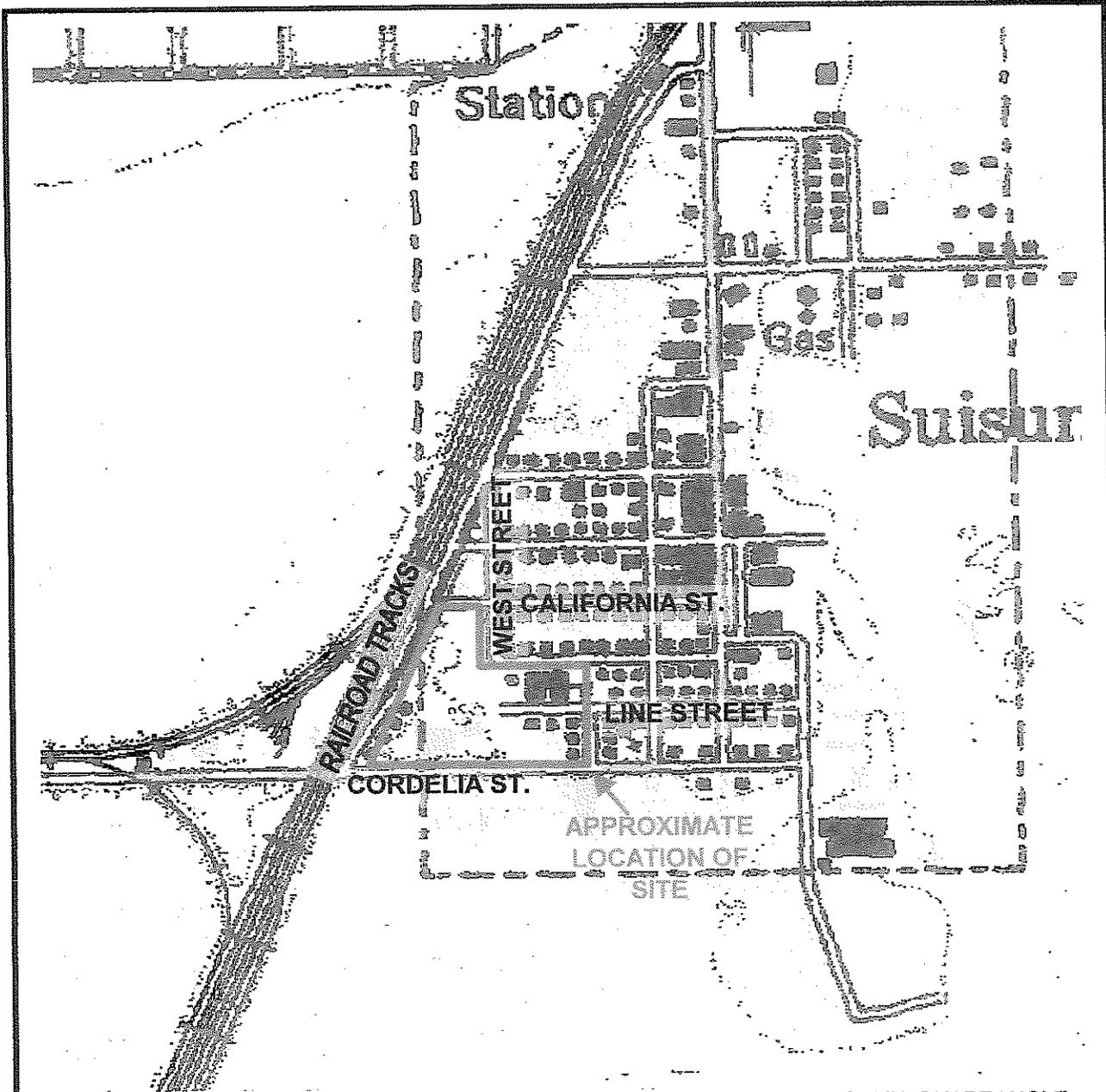
Environmental Data Resources, Inc., The EDR City Directory Abstract, Inquiry Number: 1671411.4, May 11, 2006.

Sanborn Fire Insurance Maps for Suisun City, California.

USGS Topographic Maps, Karquines (Carquinez), California 15-minute Quadrangles, 1898 and 1901.

USGS Topographic Map, Suisun, California 7.5-minute Quadrangle, 1918.

USGS Topographic Maps, Fairfield South, California 7.5-minute Quadrangles, 1950, 1968 and 1980.

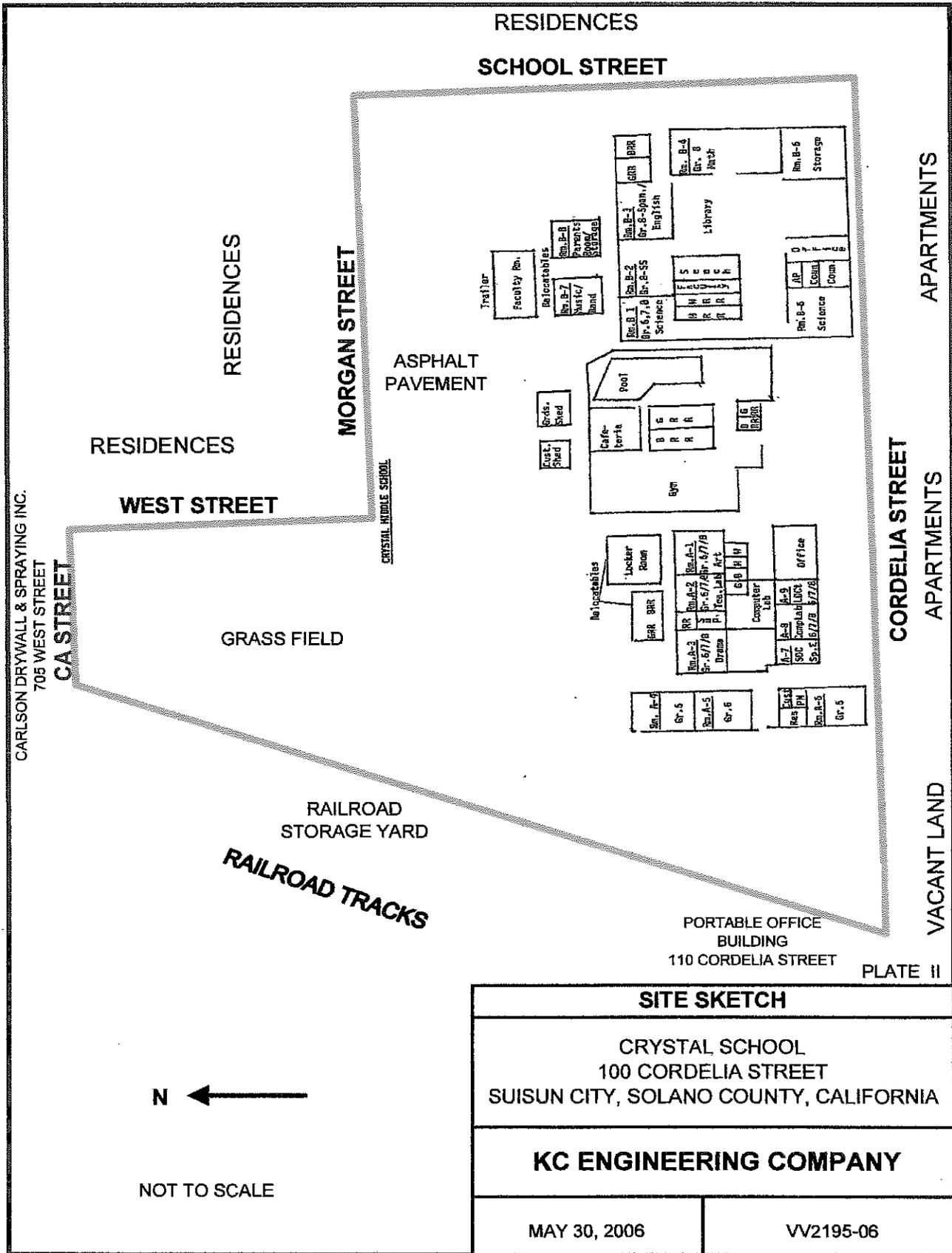


SOURCE: USGS TOPOGRAPHIC MAP, 7.5-MINUTE FAIRFIELD SOUTH, CALIFORNIA QUADRANGLE, 1949, PHOTOREVISED 1980. PLATE I



APPROXIMATE SCALE: 1" = 660'

VICINITY MAP	
CRYSTAL SCHOOL 100 CORDELIA STREET SUISUN CITY, SOLANO COUNTY, CALIFORNIA	
KC ENGINEERING COMPANY	
MAY 30, 2006	VV2195-06



SITE SKETCH

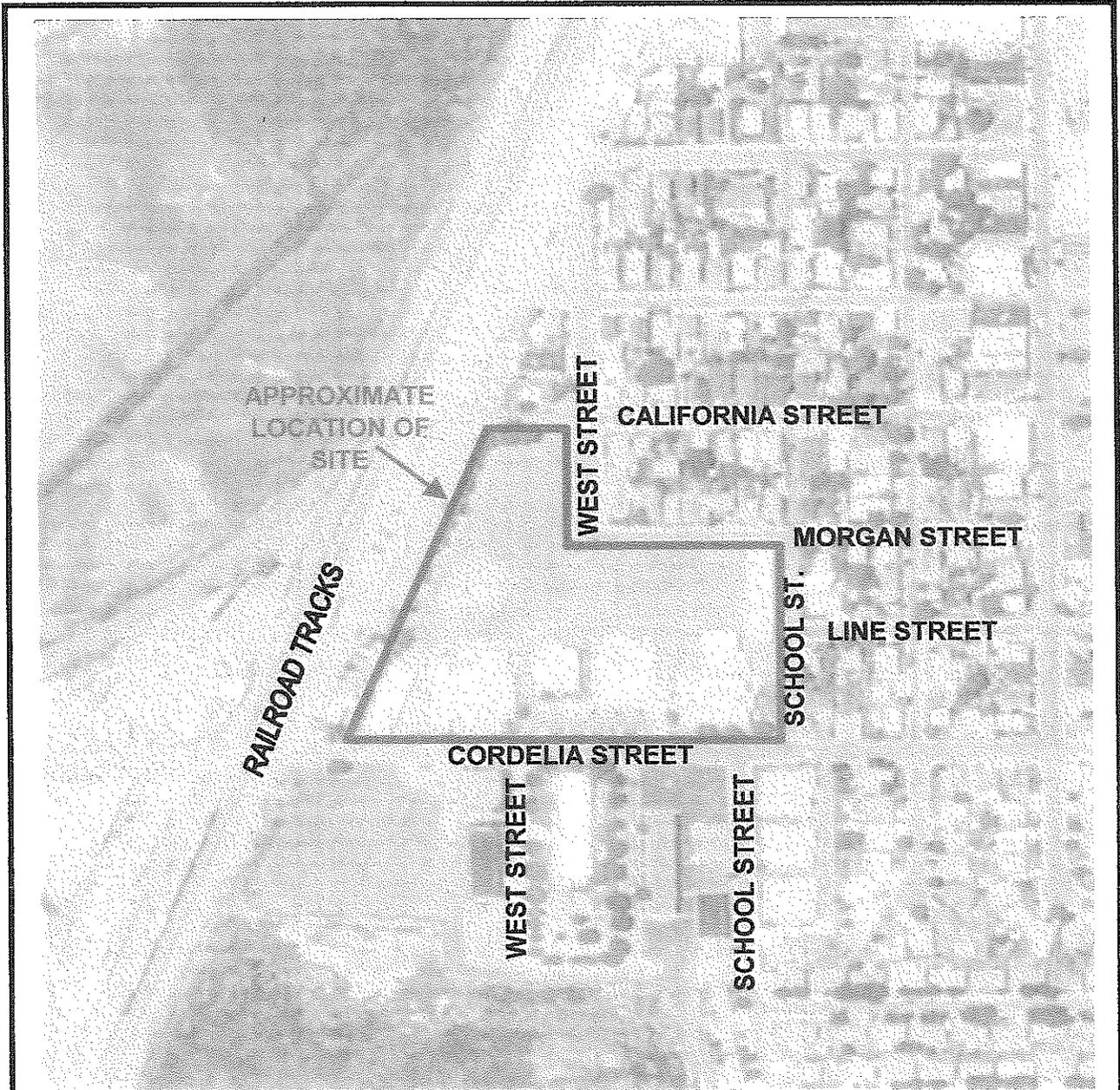
CRYSTAL SCHOOL
100 CORDELIA STREET
SUISUN CITY, SOLANO COUNTY, CALIFORNIA

KC ENGINEERING COMPANY

MAY 30, 2006

VV2195-06

PLATE II



SOURCE: USGS TERRASERVER, JUNE 16, 1993.

PLATE III



APPROXIMATE SCALE: 1" = 330'

AERIAL PHOTOGRAPH

CRYSTAL SCHOOL
 100 CORDELIA STREET
 SUISUN CITY, SOLANO COUNTY, CALIFORNIA

KC ENGINEERING COMPANY

MAY 30, 2006

VV2195-06

APPENDIX A

Photographs of the Subject Property



Photo 1. West-facing view from the southeast corner of the property.



Photo 2. Looking southwest from the northeast corner of the property.

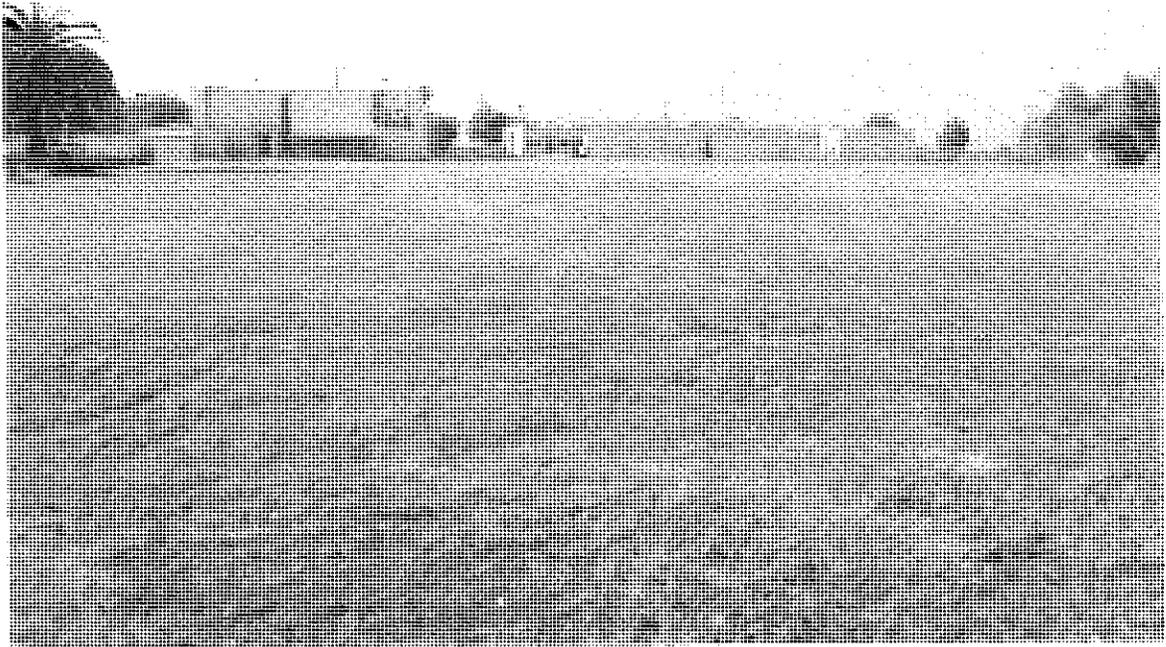


Photo 3. South-facing view from the northwest portion of the property.



Photo 4. Northeast-facing view from the southwest corner of the property.



Photo 5. Northeast-facing view of the swimming pool.



Photo 6. South-facing view from the northeast corner of the property.

APPENDIX B

1988 Asbestos Survey

ASSESSMENT OF FRIABLE ASBESTOS-CONTAINING BUILDING MATERIALS

OVERALL ASSESSMENT RATING: (2)

MATERIAL CLASSIFICATION

- Thermal System Insulation
 - Damaged or Significantly Damaged
 - Undamaged
- Surfacing Material
 - Significantly Damaged
 - Damaged
 - Undamaged
- Miscellaneous Material
 - Significantly Damaged
 - Damaged
 - Undamaged

ASSESSMENT VARIABLES

- Asbestos Concentration: 55-60 %
- Occupancy Rate: high moderate low
- Frequency of Use: high moderate low
- Vibration: high moderate low
- Air Erosion: high moderate low
- Accessibility: high moderate low

TYPE OF DAMAGE

- Water
- Delamination
- Other (specify) (inappropriate installation)
- Deterioration (age)
- Physical

EXTENT OF DAMAGE

Localized Generalized

Percent of Homogeneous Area Damaged 2 %

Percent of Functional Space Affected by Damage 25 %

POTENTIAL FOR DAMAGE

high moderate low

Comments: _____

I attest that the above assessment is true and accurate to the best of my knowledge based on physical examination and/or observations made during the inspection conducted in accordance with 40 CFR 763, Subpart E "Asbestos-Containing Materials in Schools".

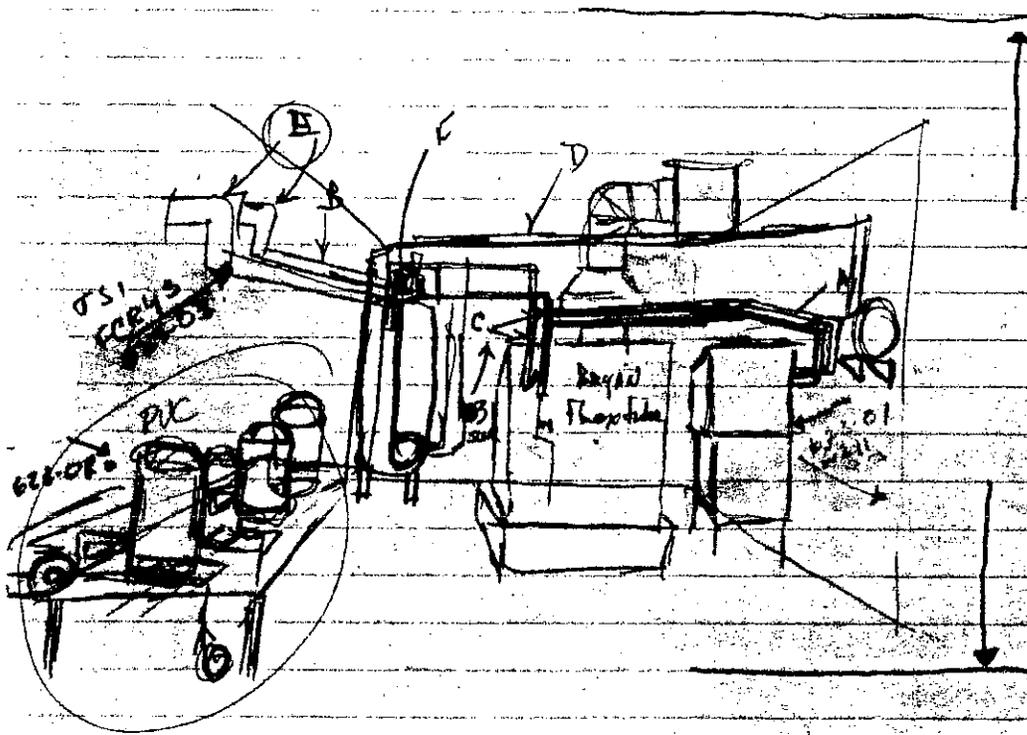
Daniel J. Weathers
Daniel J. Weathers

6/29/88
Date

CRYSTAL ELE
 06/23/88
 DW #52

Pool Water Room

- Concrete floor
- Plaster walls & ceiling (walls from 3' above floor)
- Drop ceiling lights
- Bryan Gas fired heater
- Bryan Flex Tube Boiler (Model CL-180P-CU-SS #46888 installed 1959)



C' Height 14'
 Plaster on walls 10' High
 26' 7 3/4" long x 11' 4 1/4"

- A - Foam rubber insulation
- B - Fiberglass wrapped 2"
- C - Foam insulated 2" copper
- D - Uninsulated 2" C.I. pipe
- E - Hard packed Elbow 2"
- F - glass wrapped Tee 1"
- G. FOAM RUBBER PIPE COVER 63'
- H. ELBOWS HARD PACK 7 TONS
- I. GLASS RAP 93' GRANULES
- J. BOILER RM (CHLOE) ^{ASBESTOS} FREE

- 1) FCRYS-623-01 - Base Plaster
- 2) FCRYS-623-02 - TSI ELBOW
- 3) FCRYS-623-03 SUR Finish Plaster
- 4) FCRYS-623-04 - Under layment for linoleum
- 5) FCRYS-623-05 - Stray/charcoal linoleum ^{Antibacterial Room Hotel}
- 6) FCRYS-624-06 - 8'5" W X 3'7" S in lobby Linoleum
- 7) FCRYS-624-07 - 8'1/2" E X 5' N Floor Tile Class Rm #6 Linoleum

OWNER: FAIRFIELD-SUISUN UNIFIED SCHOOL DISTRICT

INSPECTOR: D.WEATHERS EPA-ACCREDITATION 52

SITE LOCATION: CRYSTAL SCHOOL

TYPE OF MATERIAL: _____ SURFACING X TSI _____ MISCELLANEOUS

HOMOGENEOUS SAMPLE AREA: PIPE INSULATION

FUNCTIONAL AREA: A-WING SUBFLOOR CRAWLSPACE

NARRATIVE DESCRIPTION: MAGNESIA-BASED INSULATION

DATE INSPECTED: 6 / 28 / 88

RESPONSE ACTION: 2 /BY: DW

SAMPLE ID	HOMOG AREA Sq or Lin Ft	SAMPLE COORDINATES	CURRENT CONDITION	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYTICAL RESULTS
FCRYS628-20	267 l.f.	1'W x 18'N	DAMAGED	LOW ACCESSIBILITY	MODERATE	55 - 60%
FCRYS628-21		21'W x 30'N		LOW FREQUENCY LOW VIBRATION		55 - 60%
FCRYS628-24		31'W x 30'N		LOW ACCESSIBILITY LOW AIR EROSION		35 - 45%
				FRIABLE DEBRIS		

DRAWING/PHOTO No. _____

COMMENTS: _____

OWNER: FAIRFIELD-SUISUN UNIFIED SCHOOL DISTRICT

INSPECTOR: D.WEATHERS EPA-ACCREDITATION 52

SITE LOCATION: CRYSTAL SCHOOL

TYPE OF MATERIAL: _____ SURFACING X TSI _____ MISCELLANEOUS

HOMOGENEOUS SAMPLE AREA: PIPE INSULATION

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RESPONSE ACTION: 2 /BY: DW

SAMPLE ID	HOMOG AREA Sq or Lin Ft	SAMPLE COORDINATES	CURRENT CONDITION	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYTICAL RESULTS
FCRYS628-20	267 l.f.	1'W x 18'N	DAMAGED	LOW ACCESSIBILITY	MODERATE	55 - 60%
FCRYS628-21		21'W x 30'N		LOW FREQUENCY HIGH VIBRATION		55 - 60%
FCRYS628-24		31'W x 30'N		LOW ACCESSIBILITY LOW AIR EROSION		35 - 45%
				FRIABLE DEBRIS		

DRAWING/PHOTO No. _____

COMMENTS: _____

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal FUNCTIONAL AREA(S): Library, NE Hallway, Work Room,
Entry Hallway, Entry Lobby

HOMOGENEOUS AREA: Floor Tile

TYPE OF MATERIAL: Misc. FRIABLE: No DATE OF INSPECTION: 6/27/88

DESCRIPTION OF MATERIAL: Tile Mastic

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
FCRYS 672-13	896.5 s.f.	6' East on North Wall Hallway	Not Damaged	Low	1 to 5%

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS:

RESPONSE ACTION: B, Continue O & M Plan Until Major Renovation or Demolition Requires Removal or Until Assessment Factors Change.

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal

FUNCTIONAL AREA(S): Lobby and East Wing of Gya

HOMOGENEOUS AREA: Wainscoating

TYPE OF MATERIAL: Misc. FRIABLE: No DATE OF INSPECTION: 6/28/88

DESCRIPTION OF MATERIAL: Transite panel

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
Assumed	628.2 s.f.		nonfriable	low	

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS: Access, high occupancy

OWNER: Fairfield Suisun Unified School District . INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal

FUNCTIONAL AREA(S): Kitchen Hallway

HOMOGENEOUS AREA: Mainscoat

TYPE OF MATERIAL: Misc. FRIABLE: No DATE OF INSPECTION: 6/28/88

DESCRIPTION OF MATERIAL: Transite

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
Assumed	198 s.f.		nonfriable	low	

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS:

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal

FUNCTIONAL AREA(S): Kitchen Gym

HOMOGENEOUS AREA: Floor Finish

TYPE OF MATERIAL: Misc.

FRIABLE: No

DATE OF INSPECTION: 6/28/88

DESCRIPTION OF MATERIAL: Yellow Sheet Linoleum

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
FCRYS 628-19	780 s.f.	9' West x 9' South	nonfriable	low	Trace

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS:

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal

FUNCTIONAL AREA(S): Kitchen Gym

HOMOGENEOUS AREA: Troweled-on Plaster Walls and Ceiling

TYPE OF MATERIAL: SUR FRIABLE: No DATE OF INSPECTION: 6/28/88

DESCRIPTION OF MATERIAL: Stucco Plaster

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
FCRYS 628-1B	2,157 s.f.	20' West x 3' North	nonfriable	low	< 1%

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS:

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal

FUNCTIONAL AREA(S): Stage Stairs of Gym

HOMOGENEOUS AREA: Floor Tile

TYPE OF MATERIAL: Misc. FRIABLE: No DATE OF INSPECTION: 6/28/88

DESCRIPTION OF MATERIAL: 9x9 Beige

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
FCRYS 628-17	48 s.f.	Base of North Stairs East Corner	Not Damaged (see comments)	Low	< 1%

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS: High occupancy, accessible

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal FUNCTIONAL AREA(S): Lobby and East Wing of Gym

HOMOGENEOUS AREA: Plaster Wall

TYPE OF MATERIAL: SUR FRIABLE: No DATE OF INSPECTION: 6/28/88

DESCRIPTION OF MATERIAL: Textured Plaster

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
FCRYS 628-15	1,696.5 s.f. x 1/16"	8-1/2 North on East Wall (Finish)	<10% Damage	Low	Trace
FCRYS 628-16	1,696.5 s.f. x 1/2"	4' East on Swell 47' (Base)			< 1%

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS: High occupancy, accessible

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal

FUNCTIONAL AREA(S): Portable - Classroom B-9

HOMOGENEOUS AREA: Non Suspect Materials

TYPE OF MATERIAL: Misc.

FRIABLE: No

DATE OF INSPECTION: 6/28/88

DESCRIPTION OF MATERIAL:

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
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DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS: Carpet floors, fiberglass insulation, wood panel walls, recessed lights

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal

FUNCTIONAL AREA(S): Portable B-15

HOMOGENEOUS AREA: Crawlspace Above Suspended Ceiling

TYPE OF MATERIAL: TSI FRIABLE: No DATE OF INSPECTION: 6/28/88

DESCRIPTION OF MATERIAL: Fiberglass

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
FHS-728-R09	5 s.f.	Heater Sheet Metal	not damaged	moderate	None Detected

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS: 36" fiberglass insulation girder-rafter

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal

FUNCTIONAL AREA(S): Portable - Classroom B-16

HOMOGENEOUS AREA: Ceiling Finish

TYPE OF MATERIAL: Misc. FRIABLE: Yes DATE OF INSPECTION: 6/28/88

DESCRIPTION OF MATERIAL: 2x4 Acoustic Panels

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
FCRYS 628-10	2,160 s.f.	6' North x 18' West	Not Damaged	Low	< 1%
FCRYS 628-11		22' North x 9' West			< 1%
FCRYS 628-12		38' North x 24' West			< 1%
FCRYS 628-13		42' North x 4'6" West			< 1%
FCRYS 628-14		6' North x 28' West			< 1%

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS: Friable Edges, high occupancy

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal FUNCTIONAL AREA(S): Portable - Classroom B-11

HOMOGENEOUS AREA: Floor Finish

TYPE OF MATERIAL: Misc. FRIABLE: No DATE OF INSPECTION: 6/28/88

DESCRIPTION OF MATERIAL: Orange-Brown 12x12 Floor Tile

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
FCRYS 628-09	899 s.f.	1' South x 13' West	nonfriable	Low	Trace

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS: Meehlis Portable P-11

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal

FUNCTIONAL AREA(S): Portable - Classroom B-11

HOMOGENEOUS AREA: Ceiling Finish

TYPE OF MATERIAL: Misc. FRIABLE: No DATE OF INSPECTION: 6/28/88

DESCRIPTION OF MATERIAL: 2x4 Random Fissured Ceiling Panels

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
FCRYS 628-06	899 s.f.	9'E x 12'S	nonfriable	Low	< 1%
FCRYS 628-07		3'E x 15'S			
FCRYS 628-08		14'E x 30'S			< 1%

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS: Table 2, Scheme 4

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal

FUNCTIONAL AREA(S): Portable - Classroom B-10

HOMOGENEOUS AREA: Floor Covering

TYPE OF MATERIAL: Misc. FRIABLE: No DATE OF INSPECTION: 6/28/88

DESCRIPTION OF MATERIAL: Orange-Brown 12x12 Floor Tile

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
FCRYS 628-05	899 s.f.	12'2" East x 2'10" South	Not Damaged	Low	< 1%

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS: Meehlis Modular Portable, Hayward, CA

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal FUNCTIONAL AREA(S): Portable - Classroom B-10

HOMOGENEOUS AREA: Ceiling Finish

TYPE OF MATERIAL: Misc. FRIABLE: No DATE OF INSPECTION: 6/28/88

DESCRIPTION OF MATERIAL: 2x4 White Random Fissure Ceiling Tiles

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
FCRYS 628-02	899 s.f.	4'10" South x 15'6" West	Not Damaged	Moderate	< 1%
FCRYS 628-03		14'6" South x 10'4" West			< 1%
FCRYS 638-04		24'2" South x 25'10" West			< 1%

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS: Inaccessible. Subject to vandalism. Railroad Vibration.

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal

FUNCTIONAL AREA(S): Portable - Teacher's Lounge

HOMOGENEOUS AREA: Ceiling

TYPE OF MATERIAL: non-suspect

FRIABLE: No

DATE OF INSPECTION: 6/29/88

DESCRIPTION OF MATERIAL: No suspect material

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS X ASBESTOS
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960 s.f.

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS:

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal FUNCTIONAL AREA(S): Portables

HOMOGENEOUS AREA: Drop Ceiling Crawlspace

TYPE OF MATERIAL: Non-suspect FRIABLE: No DATE OF INSPECTION: 6/28/88

DESCRIPTION OF MATERIAL: Non-suspect

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
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DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS: Steel girder and wood beam with OC fiberglass aluminum air duct exterior fiberglass insulation

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal FUNCTIONAL AREA(S): Portable - Teacher's Lounge

HOMOGENEOUS AREA: Floor Finish

TYPE OF MATERIAL: Misc. FRIABLE: No DATE OF INSPECTION: 6/28/88

DESCRIPTION OF MATERIAL: 12x12 Brown/Tan Floor Tile

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
FCRYS 628-01	960 s.f.	Door Threshold	Not Damaged	Low	< 1%

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS:

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal - B Wing

FUNCTIONAL AREA(S): Classroom B-1

HOMOGENEOUS AREA: Kick Panel

TYPE OF MATERIAL: Misc.

FRIABLE: No

DATE OF INSPECTION: 6/27/88

DESCRIPTION OF MATERIAL: Transite

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
Assumed	20.25 s.f.	Left of Entry Door	Not Damaged (see comments)	Demolition	

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS: easy access, high occupancy

RESPONSE ACTION: B, Continue O & M Plan Until Major Renovation or Demolition Requires Removal or Until Assessment Factors Change.

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal - 8 Wing

FUNCTIONAL AREA(S): Crawl Space

HOMOGENEOUS AREA: Elbows

TYPE OF MATERIAL: TSI FRIABLE: No DATE OF INSPECTION: 6/27/88

DESCRIPTION OF MATERIAL: Soft fiberglass-appearing runs and elbows

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
FCRYS 627-15	2,425.5 s.f.	1'1/4" Elbows 22" into Hatch x 4" West 8-1 Classroom	No Visible Damage	Low	Trace

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS: Crawlspace Details: 3' high with wood rafter and DC fiberglass insulation. 5/8 gap firewalls at breaks. Runs and Tees are of fiberglass

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal FUNCTIONAL AREA(S): Library, Classrooms, AV Room, Work room

HOMOGENEOUS AREA: Walls

TYPE OF MATERIAL: SUR FRIABLE: No DATE OF INSPECTION: 6/27/88

DESCRIPTION OF MATERIAL: Textured Gypsum

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
FCRYS 627-14	7,386.5 s.f.	8'9" North x 15-1/2" West	Not Damaged	Low Maintenance	< 1%

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS:

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal - B Wing FUNCTIONAL AREA(S): Classroom B1, B8, Entry Lobby, Entry Hallway

HOMOGENEOUS AREA: Cove Molding

TYPE OF MATERIAL: Misc. FRIABLE: No DATE OF INSPECTION: 6/27/88

DESCRIPTION OF MATERIAL: Cove Mastic

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS X ASBESTOS
FCRYS 627-12	124.87 s.f.	8' West at S. Wall Room B-B	Not Damaged	Low Maintenance	Trace

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS:

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal - B Wing FUNCTIONAL AREA(S): Restroom Ceiling and Wall
 Above Wainscoat

HOMOGENEOUS AREA: Plaster Ceiling

TYPE OF MATERIAL: SUR FRIABLE: No DATE OF INSPECTION: 6/27/88

DESCRIPTION OF MATERIAL: Painted Plaster

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
FCRYS 627-10	449 s.f.	18" West of Hatch in Custodial Room	Not Damaged	Low	< 1%

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS:

OWNER: Fairfield Suisun Unified School District INSPECTOR: D. Weathers EPA ACCREDITATION No. 52

SITE LOCATION: Crystal FUNCTIONAL AREA(S): Library, Lobby, Admin. Offices
Nurse's Room, Computer Room
Principal and V. Principal's Office

HOMOGENEOUS AREA: Library Ceiling

TYPE OF MATERIAL: SUR FRIABLE: No DATE OF INSPECTION: 6/27/88

DESCRIPTION OF MATERIAL: Uniform Punch Acoustic Tile

SAMPLE ID No.	SQUARE FOOTAGE	SAMPLE COORDINATES	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYSIS % ASBESTOS
FCRYS 627-01	3, 056.12 s.f.	7' North x 12' East Principal's Office	Not Damaged (see comments)	Demolition Only	< 1%
FCRYS 627-02		3'4" North x 13' East Hallway	Not Damaged (see comments)	Demolition Only	< 1%
FCRYS 627-03		13-1/2' North x 18' East Library	Not Damaged (see comments)	Demolition Only	n.a.
FCRYS 627-04		13-1/2' North x 6' East Library	Not Damaged (see comments)	Demolition Only	< 1%
FCRYS 627-05		13-1/2' North x 30' East	Not Damaged (see comments)	Demolition Only	< 1%

DRAWING OR PHOTOGRAPH REFERENCE:

COMMENTS: Railroad Vibration, High Occupancy

CLIENT: FAIRFIELD-SUISUN UNIFIED SCHOOL DISTRICT

INSPECTOR: D.WEATHERS EPA-ACCREDITATION 52

SITE LOCATION: CRYSTAL SCHOOL

TYPE OF MATERIAL: SURFACING TSI MISCELLANEOUS

HOMOGENEOUS SAMPLE AREA: CEILING FINISH

FUNCTIONAL AREA: B-WING CLASSROOMS

NARRATIVE DESCRIPTION: FIGURED CEILING LAY-IN PANELS AS BORDER

DATE INSPECTED: 6 / 28 / 88

RESPONSE ACTION: _____ /BY: DW

SAMPLE ID	HOMOG AREA Sq or Lin Ft	SAMPLE COORDINATES	CURRENT CONDITION	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYTICAL RESULTS
FCRYS624-22	468	18'N x 6'10"W ROOM 1	UNDAMAGED	NONFRIABLE	LOW	< 1%
FCRYS624-23		3'3"S x 6'10"E ROOM 3				< 1%
FCRYS624-24		1"N x 20'5"W ROOM 8				< 1%
FCRYS624-25		20'6"E x 11"N ROOM 1				< 1%
FCRYS624-26		3'E x 33"N ROOM 7				< 1%
FCRYS624-27		3'E x 11"S				< 1%

DRAWING/PHOTO No. _____

COMMENTS: _____

OWNER: FAIRFIELD-SUISUN UNIFIED SCHOOL DISTRICT

INSPECTOR: D.WEATHERS EPA-ACCREDITATION 52

SITE LOCATION: CRYSTAL SCHOOL

TYPE OF MATERIAL: SURFACING TSI X MISCELLANEOUS

HOMOGENEOUS SAMPLE AREA: RANDOM PUNCHED 12" x 12" CEILING TILES

FUNCTIONAL AREA: HALLWAY, B-WING ROOMS 4, 5, AND 6 ENTRYWAY

NARRATIVE DESCRIPTION: UNIFORM PUNCHED 12" x 12" CEILING TILES

DATE INSPECTED: 6 / 28 / 88

RESPONSE ACTION: /BY: DW

SAMPLE ID	HOMOG AREA Sq or Lin Ft	SAMPLE COORDINATES	CURRENT CONDITION	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYTICAL RESULTS
FCRYS624-17	1,108	39'3"S x 5'6"E	UNDAMAGED	NONFRIABLE	LOW	< 1%
FCRYS624-18		79'4"S x 5'6"E				< 1%
FCRYS624-19		4'6" x 6'10"E				< 1%
FCRYS624-20		16'10"S x 5'6"E				< 1%
FCRYS624-21		69'2"S x 5'6"D				< 1%

DRAWING/PHOTO No.

COMMENTS:

OWNER: FAIRFIELD-SUISUN UNIFIED SCHOOL DISTRICT

INSPECTOR: D. WEATHERS EPA-ACCREDITATION 52

SITE LOCATION: CRYSTAL SCHOOL

TYPE OF MATERIAL: _____ SURFACING _____ TSI _____ X MISCELLANEOUS

HOMOGENEOUS SAMPLE AREA: A-WING, B-WING, ENTRY, HALLWAY, ADMINISTRATIVE SUITE

FUNCTIONAL AREA: FLOOR TILE MASTIC

NARRATIVE DESCRIPTION: BLACK FLEXIBLE MASTIC

DATE INSPECTED: 6 / 28 / 88

RESPONSE ACTION: _____ /BY: DW

SAMPLE ID	HOMOS AREA Sq or Lin Ft	SAMPLE COORDINATES	CURRENT CONDITION	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYTICAL RESULTS
FCRYS63-04	25,860	8.5'E x 5'N	INACCESSIBLE	NONFRIABLE	LOW	< 1%

DRAWING/PHOTO No. _____

COMMENTS: _____

OWNER: FAIRFIELD-SUISUN UNIFIED SCHOOL DISTRICT

INSPECTOR: D.WEATHERS EPA-ACCREDITATION 52

SITE LOCATION: CRYSTAL SCHOOL

TYPE OF MATERIAL: _____ SURFACING _____ TSI MISCELLANEOUS

HOMOGENEOUS SAMPLE AREA: CEILING LAY-IN PANELS AS A BORDER

FUNCTIONAL AREA: ROOMS A1,2,3,7,8,9

NARRATIVE DESCRIPTION: GRAY GRANULAR-TYPE CEILING PANELS

DATE INSPECTED: 6 / 28/ 98

RESPONSE ACTION: _____ /BY: DW

SAMPLE ID	HOMOG AREA Sq or Lin Ft	SAMPLE COORDINATES	CURRENT CONDITION	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYTICAL RESULTS
FCRYS624-08	486	13'E x 6"W ROOM 6	FRIABLE	LOW AIR EROSION	MODERATE	< 1%
FCRYS624-09		18"N x 13'E ROOM 6				< 1%
FCRYS624-10		13'S x 6"W ROOM 6				< 1%
FCRYS624-11		13"W x 6"N ROOM 5				< 1%
FCRYS624-12		13"W x 18"S ROOM 5				< 1%
FCRYS624-13		13'S x 6"W ROOM 5				< 1%
FCRYS624-14		13"W x 6"N ROOM 4				< 1%
FCRYS624-15		18'E x 13'S ROOM 4				< 1%
FCRYS624-16		13"N x 6"S ROOM 4				< 1%

COMMENTS: _____

OWNER: FAIRFIELD-SUISUN UNIFIED SCHOOL DISTRICT

INSPECTOR: D.WEATHERS EPA-ACCREDITATION 52

SITE LOCATION: CRYSTAL SCHOOL

TYPE OF MATERIAL: _____ SURFACING _____ TSI MISCELLANEOUS

HOMOGENEOUS SAMPLE AREA: GRAY LINOLEUM FLOOR COVERING

FUNCTIONAL AREA: A-WING, B-WING, ENTRY, HALLWAY, ADMINISTRATIVE SUITE

NARRATIVE DESCRIPTION: GRAY SHEET FLOOR COVERING DATE INSPECTED: 6 / 28 / 88

RESPONSE ACTION: /BY: DW

SAMPLE ID	HOMOGENEOUS AREA Sq or Lin Ft	SAMPLE COORDINATES	CURRENT CONDITION	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYTICAL RESULTS
FCRYS623-05	25,860	CUSTODIAL ROOM HATCH	UNDAMAGED	NONFRIABLE	LOW	< 1%
FCRYS624-06		3'E x 8'S ENTRY				< 1%
FCRYS624-07		8.5'W x 5'N ROOM 6				< 1%

DRAWINGS/PHOTO No. _____

COMMENTS: _____

OWNER: FAIRFIELD-SUISUN UNIFIED SCHOOL DISTRICT

INSPECTOR: D.WEATHERS EPA-ACCREDITATION 52

SITE LOCATION: CRYSTAL SCHOOL

TYPE OF MATERIAL: X SURFACING

 TSI

 MISCELLANEOUS

HOMOGENEOUS SAMPLE AREA: FINISH TROWELED-ON PLASTER

FUNCTIONAL AREA: POOL HEATER ROOM

NARRATIVE DESCRIPTION: WHITE AGGREGATE PLASTER

DATE INSPECTED: 6 / 28 / 99

RESPONSE ACTION: /BY: DW

SAMPLE ID	HOMOG AREA Sq or Lin Ft	SAMPLE COORDINATES	CURRENT CONDITION	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYTICAL RESULTS
FCRYS626-03	396	8'S x 6'E	10% DAMAGED	NONFRIABLE	MODERATE	< 1%

DRAWING/PHOTO No. _____

COMMENTS: _____

OWNER: FAIRFIELD-SUISUN UNIFIED SCHOOL DISTRICT

INSPECTOR: D.WEATHERS EPA-ACCREDITATION 52

SITE LOCATION: CRYSTAL SCHOOL

TYPE OF MATERIAL: _____ SURFACING X TSI _____ MISCELLANEOUS

HOMOGENEOUS SAMPLE AREA: PIPE ELBOWS AND TEES

FUNCTIONAL AREA: A-WING SUBFLOOR CRAWLSPACE

NARRATIVE DESCRIPTION: HARD PACKED GRAYISH WHITE ELBOW AND TEE CEMENT

DATE INSPECTED: 6 / 28 / 88

RESPONSE ACTION: 5 /BY: DW

SAMPLE ID	HOMOG AREA Sq or Lin Ft	SAMPLE COORDINATES	CURRENT CONDITION	ASSESSMENT VARIABLES	DAMAGE POTENTIAL	ANALYTICAL RESULTS
FCRYS628-22	36 ELBOWS	2'W x 42'N	NONFRIABLE	LOW ACCESSIBLIITY	LOW	TRACE
FCRYS628-23	42 TEES	41'W x 48'N	NONFRIABLE	LOW ACCESSIBILITY		< 1X

DRAWING/PHOTO No. _____

COMMENTS: _____

FAIRFIELD-SUISUN UNIFIED SCHOOL DISTRICT

CRYSTAL ELEMENTARY SCHOOL

100 Cordelia Street
Suisun, California

Former OLA Project Number
19/74203

-  Permanent
-  Trailer (Leased) (1)
-  Relocatables (Leased) (4)
-  Relocatable (D.O.) (12 Inc. 1 RR)

SUMMARY OF AREA

Site: 7.4 acres
 Permanent Building 35,568 sq. ft.
 Trailer (Leased) (1) 2,160 sq. ft. (36 x 60)
 Relocatables (Leased) (4) 3,840 sq. ft. (1-24x40; 2-24x40 ST; 1-30x32)
 Relocatable (D.O.) (12) 11,115 sq. ft. (1-32x30; 10-24x40; 1-12x40 RR
 & 1-11.4 x 6.6 add on P.E. Relocatable)

Total Sq. Ft. . . . 52,683

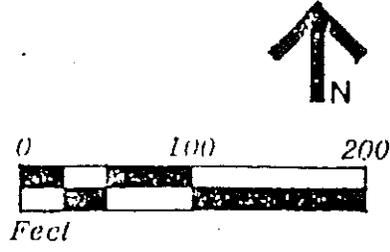
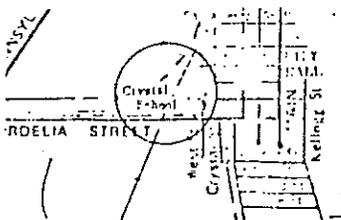
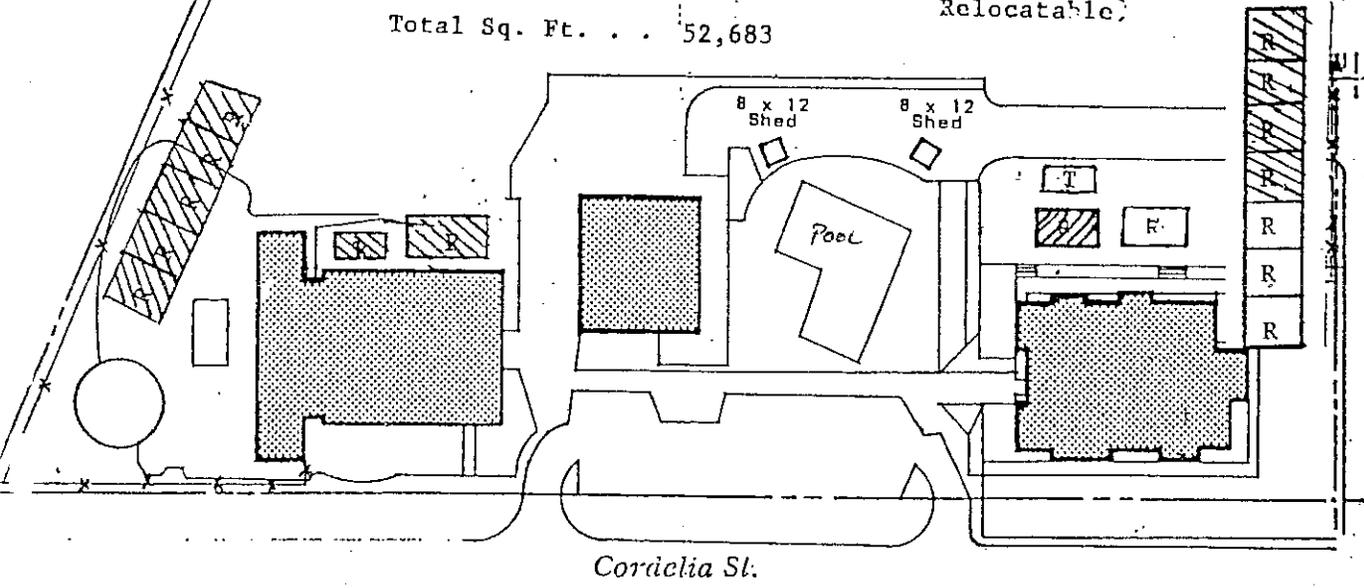


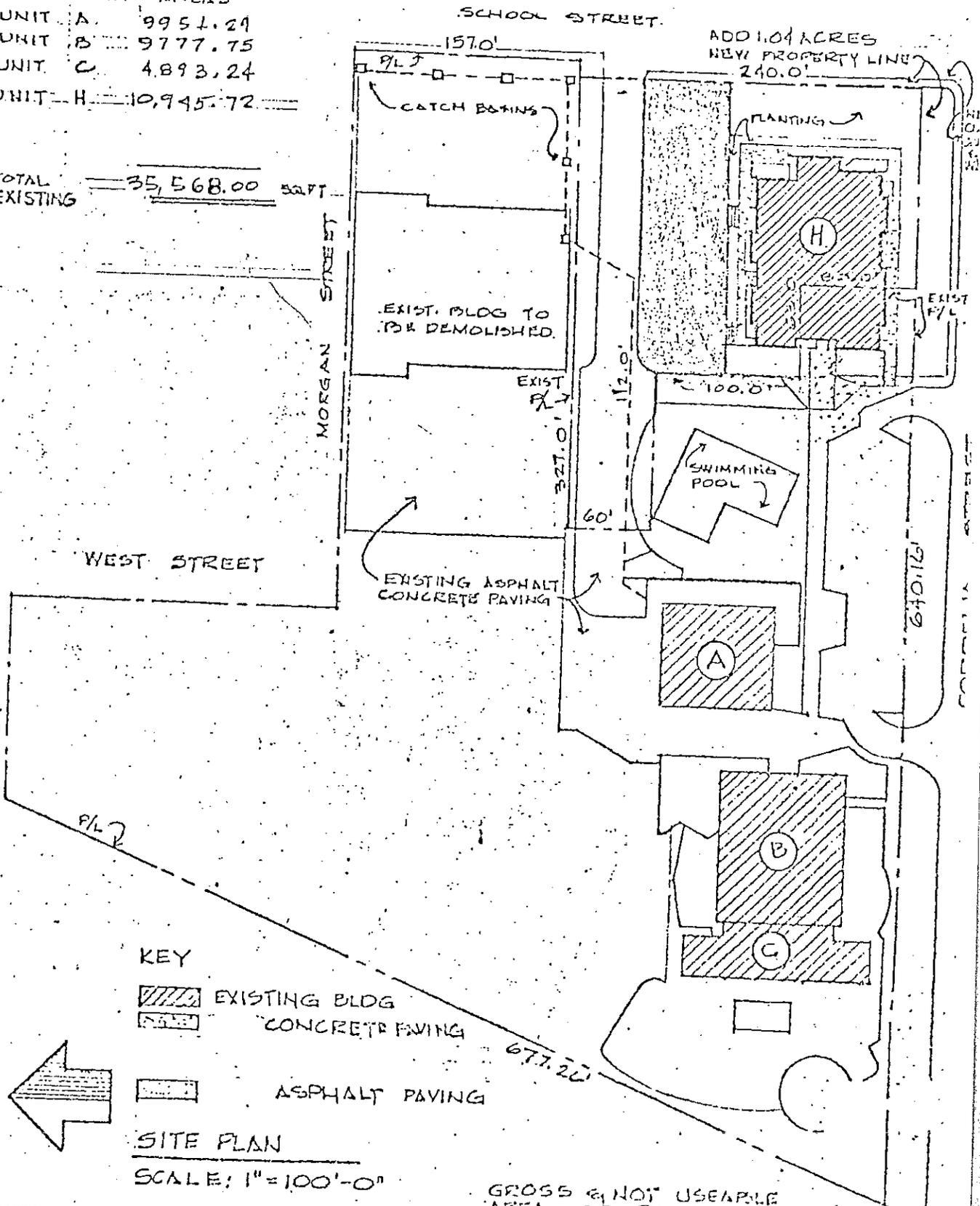
DIAGRAM OF BUILDING AREAS

-  EXISTING (1)
-  BASIC PLANS (2)
-  FINAL PLANS (3)

CRYSTAL ELEMENTARY SCHOOL
 ADDRESS 215 Morgan St., Suisun, California
 Fairfield-Suisun Unified School District

- BUILDING AREAS
- UNIT A. 9951.29
 - UNIT B. 9777.75
 - UNIT C. 4893.24
 - UNIT H. 10,945.72

TOTAL EXISTING = 35,568.00 SQFT



- KEY
-  EXISTING BLDG
 -  CONCRETE PAVING
 -  ASPHALT PAVING

SITE PLAN

SCALE: 1" = 100'-0"

GROSS & NOT USEABLE AREA OF PROPERTY = 7.5+ ACRES

SCHOOL STREET

Gr. 7-Eng.
Room B-14
Gr. 7-Math
Room B-13
Gr. 7-SS
Room B-12
Gr. 7-SS
Room B-11
Gr. 7-SS
Room B-10
Gr. 7-Math
Room B-9
Gr. 7-Eng.

Trailer

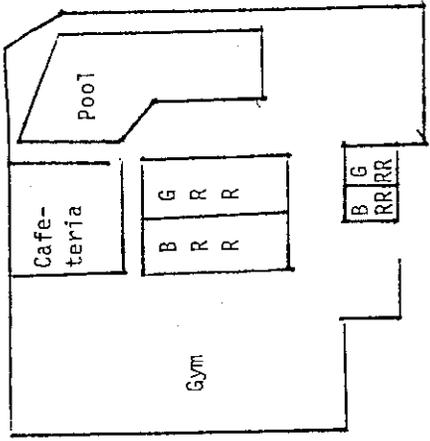
Faculty Rm.

Relocatables

Rm. B-7
Music/ Band
Rm. B-8
Parents Room/ Storage

Grds. Shed

Cust. Shed



Relocatables

Locker Room

GRR BRR

Rm. A-3
Gr. 6/7/8
Drama
RR
Rm. A-2
Gr. 6/7/8
Sp. Tea. Lab
Art
G B M W
Computer Lab
A-7
SDC
Sp. E. 6/7/8
A-8
Comp Lab
A-9
LDCT
Office

Rm. A-4
Gr. 6
Rm. A-5
Gr. 6
Cust
Res
PM
Rm. A-6
Gr. 6

Rm. A-11
Gr. 6
Rm. A-12
Gr. 6
Rm. A-13
Gr. 6
Rm. A-14
Gr. 6
Rm. A-15
Gr. 6

Relocatables

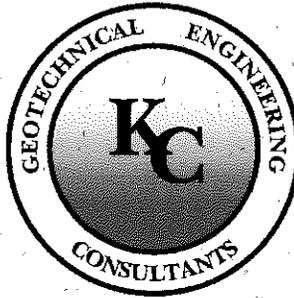
Rm. B-1
Gr. 6,7,8
Science
M R R R
W R R R
F a c u l t y
S e e c h
Rm. B-2
Gr. 8-SS
Rm. B-3
Gr. 8-Span./
English
GRR BRR
Rm. B-4
Gr. 8
Math
Rm. B-5
Storage
Rm. B-6
Science
AP
Coun.
Coun.
Office

CORDELIA STREET

APPENDIX C

Qualifications Statement

865 Cotting Lane, Suite A
Vacaville, California 95688
(707) 447-4025, fax 447-4143



8798 Airport Road
Redding, California 96002
(530) 222-0832, fax 222-1611

KC ENGINEERING COMPANY
A SUBSIDIARY OF MATERIALS TESTING, INC.

AMY E. LEE, R.E.A.
Personal Resume

Education: Bachelor of Science in Forestry and Natural Resource Management
California Polytechnic State University, San Luis Obispo, CA, 1994,
GPA 3.5

Registration: Registered Environmental Assessor I-07387, 1999
40-Hour OSHA Hazardous Materials Course, 1994
Yearly 8-Hour OSHA Hazardous Materials Refresher Course

Experience:

2000 to Present **KC ENGINEERING COMPANY**
Registered Environmental Assessor

1994 to 2000 Earth Systems Consultants, Southern California
Registered Environmental Assessor

Amy Lee has more than eleven years experience in performing all aspects of environmental site assessments, site characterizations, and remediation plans in conformance with ASTM Standards. Mrs. Lee has performed Phase I and Phase II Assessments on commercial, industrial, and residential properties throughout California. Her work includes conducting site reconnaissances, evaluating historical research, reviewing regulatory agency records and government databases, interpreting aerial photographs, sampling soil and groundwater, interpreting laboratory data, and preparing final reports that include recommendations for remediation. Mrs. Lee has authored numerous Closure Reports, Work Plans, and Health and Safety Plans for regulatory agency submittal.

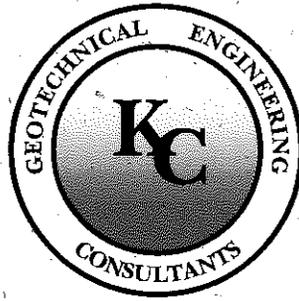
Representative Experience:

- *Phase I Environmental Site Assessments.* As a Registered Environmental Assessor, Mrs. Lee specializes in performing Phase I Environmental Site Assessments in conformance with ASTM Standard E1527-00. Phase I Environmental Site Assessments are conducted to identify recognized environmental conditions in connection with a property. The term "recognized environmental conditions" means the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances

or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property.

- *Environmental Audits.* Mrs. Lee has conducted Site Closure Environmental Audits for properties in southern California. Services performed include an initial site reconnaissance to identify areas of potential environmental concern; soil and groundwater sampling and analysis; and preparation of a Site Closure Environmental Audit report.
- *Phase II Environmental Site Assessments.* Mrs. Lee has conducted numerous Phase II Environmental Site Assessments on properties located throughout the state of California. Phase II studies have been performed to determine the presence or absence of soil and groundwater contamination at a property after a recognized environmental condition has been identified during the course of a Phase I Environmental Site Assessment. Mrs. Lee has experience identifying and defining petroleum hydrocarbon, solvents, agricultural chemicals, and metals-based contamination plumes in both the soil and groundwater.
- *Soil Remediation.* Following the identification and delineation of contamination plumes, Mrs. Lee has coordinated and overseen soil remediation activities including remediation by excavation and in-situ bio-remediation.
- *Regulatory Agency Case Closure.* Mrs. Lee has authored several Closure Reports for regulatory agency submittal following successful remediation of contaminated properties. Mrs. Lee also authors Closure Reports for underground storage tank removal activities.

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Redding, California 96002
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KC ENGINEERING COMPANY
A SUBSIDIARY OF MATERIALS TESTING, INC.

DAVID V. CYMANSKI, G.E.
Personal Resume

Education:

Bachelor of Science in Civil Engineering
California State University at Chico, 1990

Affiliations:

American Society of Civil Engineers
International Conference of Building Officials
American Concrete Institute

Registration:

California Registered Geotechnical Engineer, 2003
California Registered Civil Engineer, 1994

Experience:

1996 to Present

KC ENGINEERING COMPANY
Principal Engineer

Responsible charge of geotechnical and environmental consulting, materials testing and special inspection services in the Vacaville office. Supervises all investigation and design activities including site evaluation, grading control, underground utility placement, pavement design, foundation design, distress analysis, slope stability and earth movements. Supervise company special inspection activities for reinforced and pre-stressed concrete, structural masonry, structural steel and welding.

1993 to 1996

TERRARESEARCH, INC., Project Engineer
Dublin Office

Responsible charge of geotechnical engineering, site grading and drilling investigation operations. Supervises and performs geotechnical investigations on a variety of projects including commercial, industrial, residential and public works. Supervises engineering technicians and laboratory during grading and foundation operations. Perform special inspections for reinforced and pre-stressed concrete, structural masonry, structural steel and welding.

1989 to 1993

TERRASEARCH, INC., Staff Engineer
Fairfield Office

Responsibility as a Staff Engineer included performing tasks of geotechnical investigations, supervision of Field Technicians, soil analysis and design, laboratory work, plan reviews, geotechnical report preparations, drilling operations, and drafting. Perform in-situ ASTM soil and concrete testing, and reinforcement and post-tensioned slab on grade inspections.

1988 to 1989

CITY OF VACAVILLE, Engineering Technician
Easterly Waste Water Treatment Plant

Assisted in the engineering duties of the plant. Drafted various drawings for plant update, aided in the design of a chlorine contact chamber and conducted various test with polymers to improve sludge treatment.

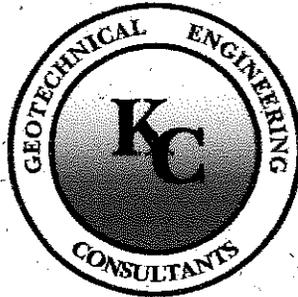
Summers of
1986 and 1987

CITY OF FAIRFIELD, General Engineering Assistant
Waterman and Dickson Hill Water Treatment Plants

Engineering analysis and drafting. In addition, checked water levels and chemical contents, rebuilt and maintained valves and pumps and completed various plant duties.



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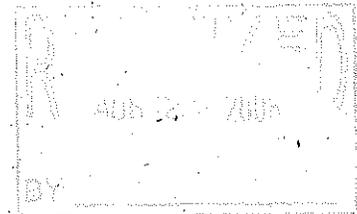
KC ENGINEERING COMPANY
A SUBSIDIARY OF MATERIALS TESTING, INC.

Project No. VV2313-06
24 August 2006

Mr. Jason Garben
Suisun Redevelopment Agency
701 Civic Center Boulevard
Suisun City, California 94585

Subject: Crystal School
100 Cordelia Street
Suisun City, Solano County, California
ELECTRO-MAGNETIC SURVEY

Reference: Phase I Environmental Site Assessment
Crystal School, 100 Cordelia Street
Suisun City, Solano County, California
Prepared by **KC ENGINEERING COMPANY**
Dated 30 May 2006, Project Number VV2195-06



Dear Mr. Garben:

In accordance with your authorization, **KC ENGINEERING COMPANY** has conducted an electro-magnetic survey on a section of the northeast portion of the property located at 100 Cordelia Street in Suisun City, Solano County, California. A Phase I Environmental Site Assessment was prepared for the property by **KC ENGINEERING COMPANY** in May, 2006. The purpose of this assessment was to determine the presence or absence of a possible underground storage tank that was identified on a 1920 Sanborn fire insurance map during the course of the Phase I Environmental Site Assessment. The 1920 map showed a fuel oil tank located just south of Morgan Street, approximately 60- to 75-feet east of the intersection of West Street and Morgan Street.

An electro-magnetic survey was conducted by Subdynamic Locating Services on August 16, 2006. An approximate 150' by 100' area on the northeast portion of the property was "swept" with electro-magnetic equipment to locate any large metallic anomalies beneath the ground surface. The portion of the property surveyed is currently asphalt-paved. Aboveground utility vaults are located on the northwest corner of the area surveyed. Due to interference from the utility vaults with the electro-magnetic equipment, the area directly beneath the utility vaults was

August 24, 2006

VV2313-06

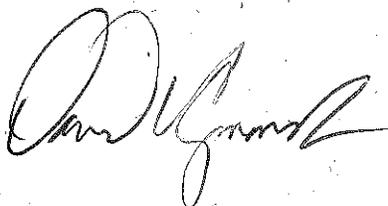
not surveyed. The approximate area surveyed is shown on Plate II, EMS Survey Location Map. No buried metallic anomalies indicative of an underground storage tank (UST) were detected on this portion of the property.

Based on the results of this electro-magnetic survey, no underground storage tanks appear to be located in the vicinity of the fuel oil tank that was identified on a 1920 Sanborn fire insurance map. No further environmental investigation of the former fuel oil tank appears warranted at this time.

We appreciate the opportunity of working with you on this project. Should you have any questions relating the contents of this report or should you require additional information, please contact our office at your convenience.

Reviewed By:

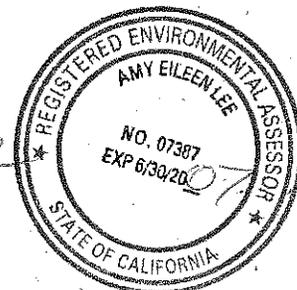
Respectfully submitted,
KC ENGINEERING COMPANY



David V. Cymanski, G.E.
Principal Engineer

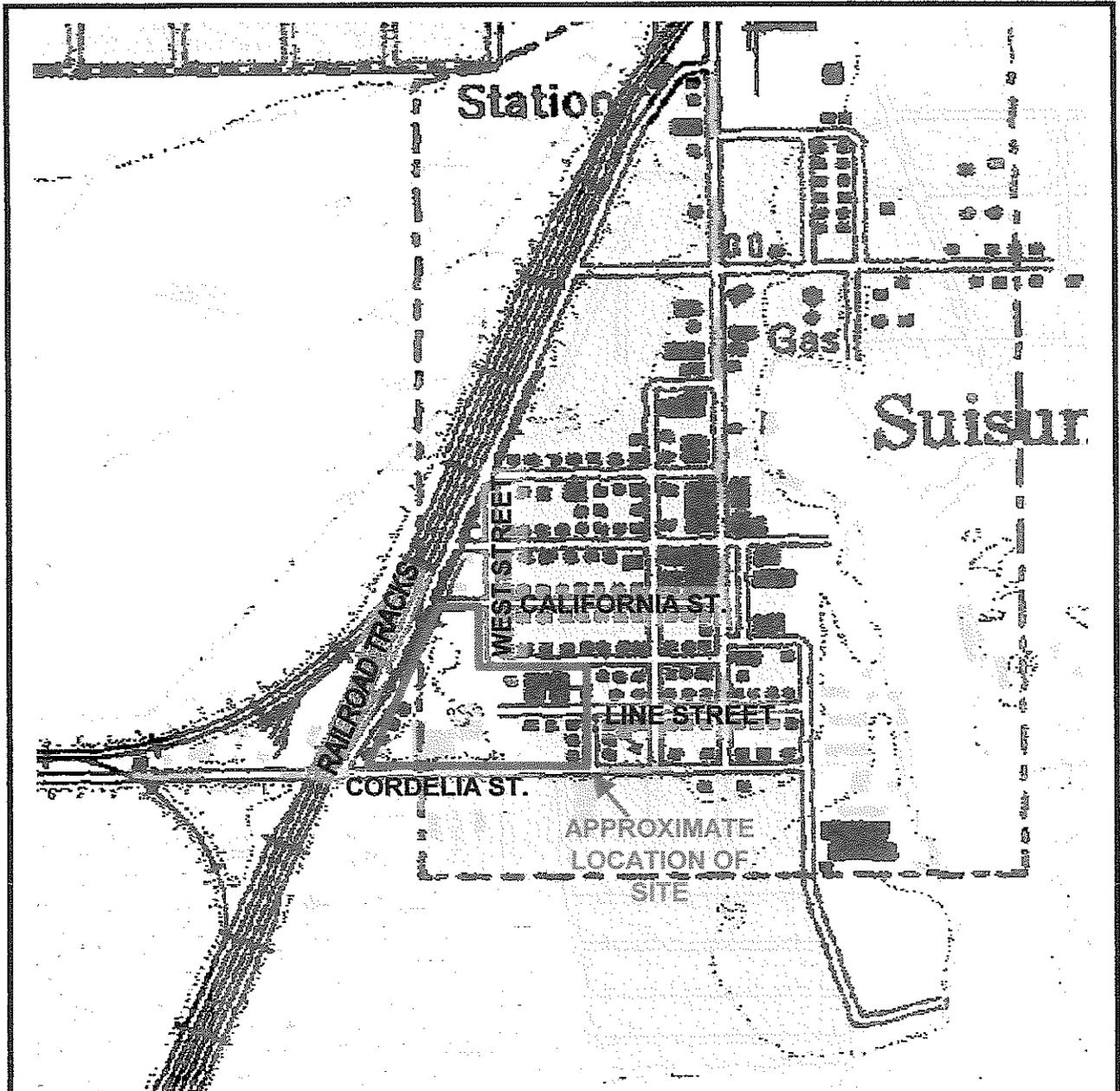


Amy E. Lee, R.E.A.
Environmental Assessor



Attachments: Plate I, Vicinity Map
Plate II, EMS Survey Location Map
Photographs of the area surveyed

Copies: 6 to Suisun Redevelopment Agency

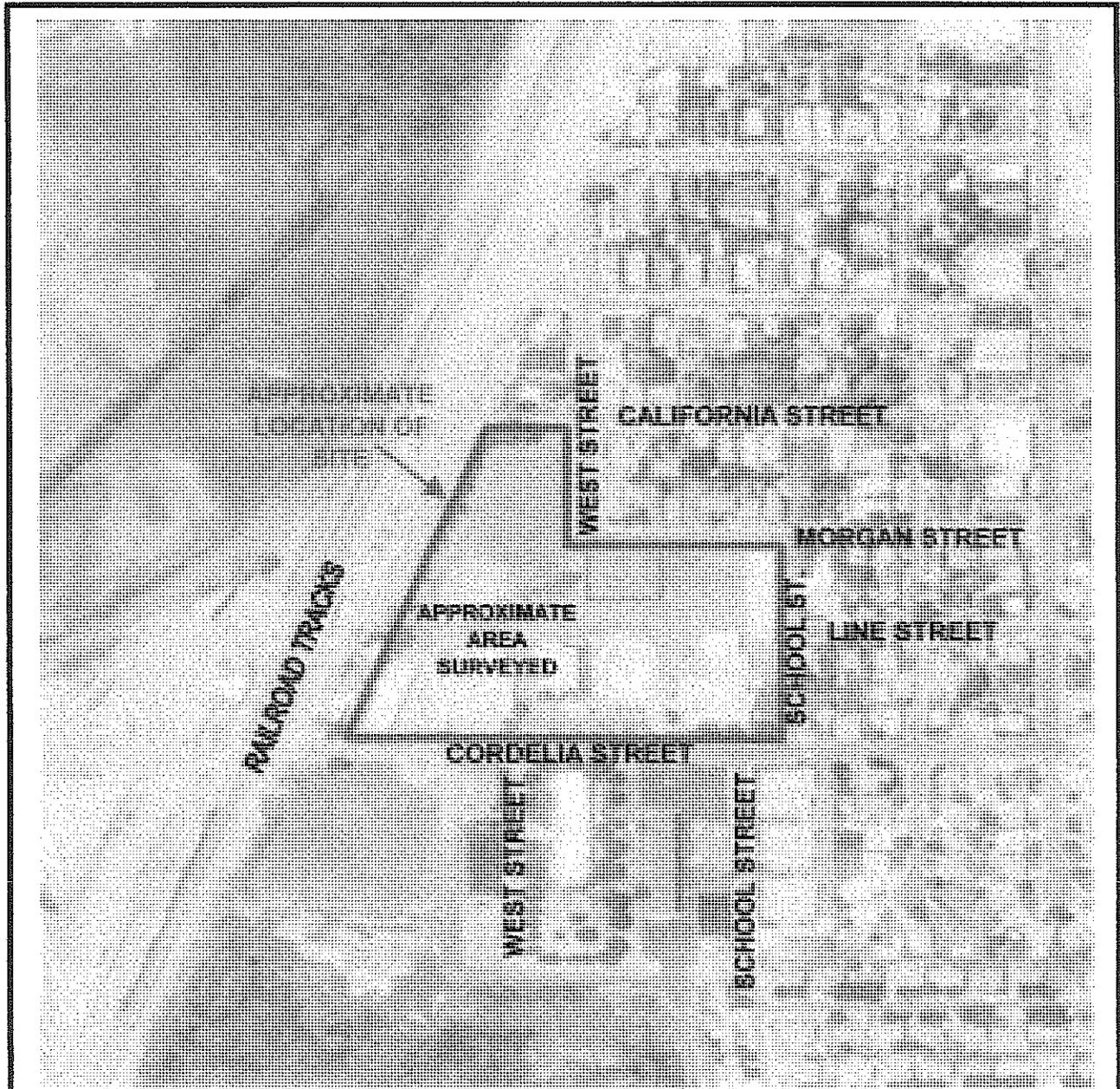


SOURCE: USGS TOPOGRAPHIC MAP, 7.5-MINUTE FAIRFIELD SOUTH, CALIFORNIA QUADRANGLE, 1949, PHOTOREVISED 1980. PLATE I



APPROXIMATE SCALE: 1" = 660'

VICINITY MAP	
CRYSTAL SCHOOL 100 CORDELIA STREET SUISUN CITY, SOLANO COUNTY, CALIFORNIA	
KC ENGINEERING COMPANY	
AUGUST 24, 2006	VV2313-06



SOURCE: USGS TERRASERVER, JUNE 16, 1993.

PLATE II



APPROXIMATE SCALE: 1" = 330'

EMS SURVEY LOCATION MAP

CRYSTAL SCHOOL
 100 CORDELIA STREET
 SUISUN CITY, SOLANO COUNTY, CALIFORNIA

KC ENGINEERING COMPANY

AUGUST 24, 2006

VV2313-06



Photo 1. Northeast-facing view of the area surveyed.



Photo 2. Northwest-facing view of the area surveyed.



SUBSURFACE INVESTIGATION REPORT

**FORMER CRYSTAL MIDDLE SCHOOL
SUISUN CITY, CALIFORNIA**



**RAVEN
RESEARCH**

A Report Prepared for:

Mr. Lee Evans
City of Suisun City
701 Civic Center Boulevard
Suisun City, California 94585

SUBSURFACE INVESTIGATION REPORT

**FORMER CRYSTAL MIDDLE SCHOOL
SUISUN CITY, CALIFORNIA**

April 2, 2010

Prepared by:



Peter A. Dellavalle
Project Manager



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Project Geologist



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1.0 EXECUTIVE SUMMARY

The former Crystal Middle School is located at 100 Cordelia Street in Suisun City, California. The site is located north and west of the Peytonia slough, bordered on the west by the Union Pacific Railroad right of way and is surrounded by residences to the north, south and east.

Petroleum-impacted subsurface soil was discovered in May, 2007 during underground demolition work at the north end of the Crystal Middle School play yards. The area of impact lies adjacent to the former Crystal Grammar School which was razed when the middle school was built. A sample of the impacted soil was collected and analyzed for petroleum hydrocarbons. The results indicated that the constituent of concern is weathered fuel oil.

Seventeen test pits were subsequently excavated during June, 2007 in a broad grid across the area to evaluate the extent of soil impact. Soil samples were collected from the pits at three relative depths: upper, middle and lower, roughly corresponding to 2, 5 and 7 feet below ground surface (ft bgs). The samples were analyzed for diesel and motor oil range petroleum hydrocarbons (TPH) and were found to contain up to 3,800 parts per million (ppm) TPH as diesel and 1,800 ppm TPH as motor oil.

An oil bunker was discovered during the original demolition work just south of the Morgan Street sidewalk. Fuel oil had apparently been used to heat the former grammar school. The concrete bottom of the bunker was briefly exposed during excavation. It was left in place and lies seven to eight feet below the surface in saturated soil about two feet below the water table.

In April 2009 Raven Research prepared a Work Plan to conduct a subsurface investigation. To address the impacts north of the former UST, Raven Research installed nine soil borings using a Sonic™ rig. Soil and groundwater samples were collected for quantitative chemical analysis.

Based on the findings of this subsurface investigation, as well as consideration of historic data Raven research draws the following conclusions:

- Total petroleum hydrocarbons were detected above San Francisco Bay Regional Water Quality Control Board's Environmental Screening Levels (ESLs) in soil and groundwater onsite and north of the former fuel bunker area into Morgan Street.
- TPH in soil are limited in extent to a depth of approximately 5 to 7 ft bgs and concentrations decrease with depth to non-detect between 7.0 and 8.0 ft bgs in all borings with detected TPH.
- Groundwater surrounding the former fuel bunker is likely to be impacted with TPH above ESLs because the bunker is the source of the TPH release.
- The groundwater impact extends north into the middle of Morris Street (boring B2). Based on non-detect analytical results in groundwater sampled from borings B1, B3 and B7, groundwater impact on the north side of the site appears to be limited in lateral extent to within 35-feet of the former fuel oil tank.
- The distribution and spread of soil and groundwater impacts does not appear to be controlled by subsurface utilities.

2.0 INTRODUCTION

Raven Research has prepared this report on behalf of the City of Suisun (City) summarizing the subsurface investigation for the northern extent of petroleum in soil and groundwater at the former Crystal Middle School in Suisun City, California (See the attached Site Map, Plate 1).

In 2007, soil at the site was found to be impacted with fuel oil from a concrete and redwood bunker just south of Morgan Street in an area formerly used for basketball courts. The approximate location of the bunker is shown on the Site Map. Raven Research submitted an Application to Close an Underground Storage Tank for Hazardous Substances, a Site Safety Plan, and State of California UPCF Forms A and B to Solano County on September 25, 2009.

2.1 SITE DESCRIPTION

The former Crystal Middle School is located at 100 Cordelia Street in Suisun City, California, (Plate 1). The site is located north and west of the Peytonia slough, bordered on the west by a railroad right of way and is surrounded by residences to the north, south and east.

The City of Suisun is preparing the former Crystal Middle School site for redevelopment. Petroleum-impacted soil was discovered on May 10, 2007 by Nica DMT Construction during underground demolition work at the north end of the Crystal Middle School play yards. The area of impact lies adjacent to the former Crystal Grammar School which was razed when the middle school was built. A sample of the impacted soil was collected and analyzed for petroleum hydrocarbons. The results indicated that the constituent of concern is weathered fuel oil.

Seventeen test pits were subsequently excavated on June 6, 2007 in a broad grid across the area to evaluate the extent of impact. Soil samples were collected from the pits at three relative depths: upper, middle and lower, roughly corresponding to 2, 5 and 7 feet below ground surface (ft bgs). The samples were analyzed for diesel and motor oil range petroleum hydrocarbons. Up to 3,800 parts per million (ppm) Total Petroleum Hydrocarbons (TPH) as diesel (TPH-d) and 1,800 ppm TPH as motor oil (TPH-mo) were detected in soil during this event.

An oil bunker was discovered during the original demolition work just south of the Morgan Street sidewalk near the location of a feature labeled "fuel oil" on a 1920 Sanborn fire insurance map. Fuel oil was apparently used to heat the former grammar school. The bunker was constructed of redwood stave sides with a concrete base and top and was filled with soil. The top and two sides of the bunker were removed before the structure was recognized as a storage vessel. The concrete bottom of the bunker was briefly exposed during excavation. It was left in place and lies seven to eight feet below the surface in saturated soil about two feet below the water table.

Two soil samples that were collected from the excavation sidewalls between the bunker and the Morgan Street sidewalk were analyzed for polynuclear aromatic hydrocarbons (PAHs). No PAHs were detected at concentrations exceeding ESLs for residential land uses.

At the request of the City, the excavation was subsequently backfilled to a level just above the water table to remove a source of standing water. In a June 5, 2009 meeting, Mr. Josuwa Bernardo of the Solano County Department of Resource Management requested further definition of petroleum hydrocarbons in the soil and groundwater north of the site. This investigation addressed the work proposed by the City to fulfill this request.

2.2 OBJECTIVE

The objective of this investigation was to define the vertical and lateral extent of petroleum hydrocarbons in the soil and groundwater north of the site in order to protect human health and the environment. Remediation goals based on the San Francisco Bay Regional Water Quality Control Board's Environmental Screening Levels (ESLs) were used to meet this objective. Raven Research has referred to the May 2008 edition of the ESLs.

ESLs are selected based on the proposed use and environmental setting of a site. In this case, the most conservative ESLs are those for residential land use of shallow soils where potentially impacted groundwater is not a current or potential drinking water resource (California Regional Water Quality Control Board, San Francisco Bay Region, *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*, 2008, Table B-1). Table F-1b Groundwater Screening Levels (groundwater is not a current or potential drinking water resource) were utilized for groundwater screening levels. Laboratory analysis of soil samples collected near the bunker show that the constituent of concern is a weathered petroleum hydrocarbon that elutes as a middle distillate or residual fuel. The ESLs for TPH are:

	<u>Soil</u>	<u>Groundwater</u>
• TPH (middle distillates)	100 mg/kg	210 µg/l
• TPH (residual fuels)	370 mg/kg	210 µg/l

TPH-d is considered a middle distillate and TPH-mo a residual fuel. These ESL concentrations are used as remediation goals for this site.

3.0 FIELD INVESTIGATION

Prior to field work, a drilling permit was obtained from the County of Solano (County) and notice was provided to the County at least 48 hours in advance of the field work. The City of Suisun City posted no parking signs along Morgan Street between School and West Streets. Thru traffic was allowed during drilling via a one lane channel separated from the work zone by barricades and cones. Raven Research then installed nine soil borings using a Compact Sonic drilling rig. Soil and groundwater samples were collected for quantitative chemical analysis.

3.1 SUBSURFACE UTILITY SURVEY

Raven Research marked the work area and notified Underground Services Alert (USA) to mark subsurface utilities on Morgan Street. USA was notified at least 48 hours prior to the scheduled drilling activities.

3.2 SUBSURFACE INVESTIGATION

Raven Research subcontracted with Clear Heart drilling of Santa Rosa to use a Compact Sonic drilling rig to complete the work. The Sonic rig allowed continuous sampling so that a detailed soil profile could be observed. On December 4, 2009, borings were advanced at nine locations to approximately 10 ft bgs, as shown on Plates 2, 3 and 4. Eight of the borings were located on Morgan Street and one boring was advanced on the former school grounds, south of the former UST excavation. Soil boring logs are presented in Appendix A.

Samples were collected in 2-inch diameter by 6-inch long sampling tubes, covered with a low permeability film, sealed with plastic end caps, and placed on ice pending transport under Chain-of-Custody documentation to a State of California Department of Health Services certified laboratory.

Temporary well casing was placed in four of the boreholes for collection of grab groundwater samples (B1, B2, B3, and B7). No free water was encountered in borings B5 or B8. Grab groundwater samples were collected in the appropriate sample containers provided by the laboratory and placed on ice pending transport under Chain-of-Custody documentation to the laboratory. Trace sediment was observed in groundwater sample B2W.

RESTORATION AND RESURFACING OF BORINGS

All borings were completed in accordance with the County Environmental Health Department guidelines and permit conditions. Borings were abandoned by backfilling with hydrated bentonite chips and the ground surface restored with asphalt.

3.3 CHEMICAL ANALYSIS

The soil and groundwater samples were submitted to McCampbell Analytical Laboratory of Pittsburg, California for quantitative chemical analysis. Soil and groundwater samples were analyzed for total petroleum hydrocarbons (TPH) as midrange compounds and heavy range

compounds. The laboratory performed a silica gel clean up on all of the samples so that only petroleum based hydrocarbons were analysed. The following analytical methods were employed:

- Total Petroleum Hydrocarbons quantified as diesel, gasoline and motor oil (TPHd, TPHg, and TPHmo) by Modified EPA Method 8015

3.4 INVESTIGATION DERIVED WASTES (IDW)

Investigation derived wastes (IDW) were generated during the investigation and included soil cuttings and decontamination water rinseate. Two 55-gallon drums containing IDW were placed within a fenced area on the former school grounds pending disposal.

4.0 FINDINGS

The following describes the results of the investigation and soil and groundwater sampling. Soil boring logs are included in Appendix A. Analytical laboratory reports are included in Appendix B. Sample locations are shown on Plates 2 through 4.

4.1 SUBSURFACE SOIL

The subsurface is characterized by interbedded layers of clay and silt with a few thin discontinuous lenses of sand. A brown, sandy and silty clay was encountered at a depth between 8.5 ft to 10 ft bgs. Material encountered in B9 was primarily fill material to approximately 8.0 ft bgs. Static groundwater was observed at a depth of approximately 4 ft bgs.

4.2 SUMMARY OF ANALYTICAL FINDINGS

Eight borings were advanced in Morgan Street to evaluate the extent of impact north of the former UST and at the request of the County, one boring was advanced south of the former UST. Soil samples were collected from the borings at the three relative depths: upper, middle and lower, roughly corresponding to 2, 5 and 7 ft bgs. Groundwater was collected from borings B1, B2, B3 and B7. The samples were analyzed for diesel and motor oil range petroleum hydrocarbons.

Analytical data from the 2009 investigation is summarized in Tables 1 and 2. Analytical laboratory reports are contained in Appendix B. A full tabulation of current and historical data collected is compiled in Tables 3 and 4 (Appendix B). Raven Research used the 2009 boring data and the 2007 pothole data to develop conclusions regarding the magnitude and extent of petroleum hydrocarbon impacts at the site.

Field observations made during the subsurface exploration and confirmed by analytical laboratory reports suggests that the fuel release originally reported for the former UST is limited in extent in both soil and groundwater. A comparison of the constituents of concern detected during this investigation to the ESLs described in Section 2.2 is as follows:

4.2.1 Soil

Total petroleum hydrocarbons were not detected at or above laboratory reporting limits in soil samples collected from borings B1, B2, B3, B4 and B9. Soil samples collected between 2.0 and 2.5 ft bgs from borings B5, B6 and B7 contained concentrations of TPH below ESLs. TPH were not detected in samples collected from borings B5 and B7 at approximately 5 ft bgs. The shallower soil impacts in B5 and B7 may reflect the effects of TPH from asphalt and base rock fill.

TPH were detected in boring B6 at 5.0 ft bgs and from B8 at 6.75 ft bgs at concentrations above ELS (up to 2,400 mg/kg). As shown in Table 1, TPH were not detected in the samples collected below each of these samples at 8.0 ft bgs.

Analytical results for soil samples collected from borings with detected TPH concentrations are summarized below. Complete results are provided in Table 3 (Appendix B). To assess the distribution of petroleum hydrocarbons in the soil and groundwater Raven Research prepared a series of isoconcentration contour maps using analytical laboratory results for soil from the recent borings combined with results from the previous pothole investigation. Isoconcentration contours for the upper (2 ft bgs), middle (5 ft bgs) and lower (7 ft bgs) level TPH-d concentrations are shown on Plates 2, 3 and 4 respectively.

Table 1
Summary of Soil Sample Analytical Results

Sample ID	Petroleum Hydrocarbons Concentrations in mg/kg		
	TPH-G	TPH-D	TPH-MO
B5-2.5	ND<1.0	1.4 ^{a,b}	11 ^{a,b}
B5-4.75	ND<1.0	ND<1.0	ND<5.0
B5-8.0	ND<1.0	ND<1.0	ND<5.0
B6-2.5	ND<1.0	14 ^{a,b}	25 ^{a,b}
B6-5.0	81 ^c	2500 ^d	690 ^d
B6-8.0	ND<1.0	ND<1.0	ND<5.0
B7-2.0	ND<1.0	31 ^{a,b}	120 ^{a,b}
B7-5.0	ND<1.0	ND<1.0	ND<5.0
B7-8.0	ND<1.0	ND<1.0	ND<5.0
B8-6.75	5.7 ^c	160 ^{a,b}	240 ^{a,b}
B8-8.0	ND<1.0	ND<1.0	ND<5.0
SF Bay ESL	100	100	370

^a Oil range compounds are significant

^b Diesel range compounds are significant

^c Strongly aged gasoline or diesel range compounds are significant in the TPHg chromatogram

^d Unmodified or weakly modified diesel is significant

4.2.2 Groundwater

To assess the extent of groundwater impact north of the former UST, groundwater samples were collected from four borings: B1, B2, B3 and B7. TPH at or above the laboratory reporting limits were not detected in groundwater collected from borings B1, B3 and B7.

TPH at or above the laboratory reporting limits were detected in sample B2-W. The concentrations in B2-W are above the ESLs for middle distillates and residual fuels.

Table 2
Groundwater Sample Analytical Results

Sample ID	Total Petroleum Hydrocarbon Concentrations in µg/l		
	TPH-G	TPH-D	TPH-MO
B1W	ND<50	ND<50	ND<250
B2W	470	8000	2300
B3W	ND<50	ND<50	ND<250
B7W	ND<50	ND<50	ND<250
SF Bay ESL	210	210	210

5.0 CONCLUSIONS

Based on the findings of this investigation and the 2007 pothole investigation, Raven Research draws the following conclusions:

- Total petroleum hydrocarbons were detected above ESLs in soil and groundwater onsite and north of the former fuel bunker area into Morgan Street.
- TPH in soil are limited in extent to a depth of approximately 5 to 7 ft bgs and concentrations decrease with depth to non-detect between 7.0 and 8.0 ft bgs in all borings with detected TPH.
- Groundwater surrounding the former fuel bunker is likely to be impacted with TPH above ESLs because the bunker is the source of the TPH release.
- The groundwater impact extends north into the middle of Morris Street (boring B2). Based on non-detect analytical results in groundwater sampled from borings B1, B3 and B7, groundwater impact on the north side of the site appears to be limited in lateral extent to within 35-feet of the former fuel oil tank.
- The distribution and spread of soil and groundwater impacts does not appear to be controlled by subsurface utilities.

6.0 LIMITATIONS

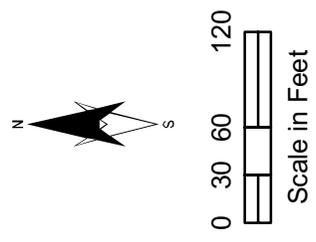
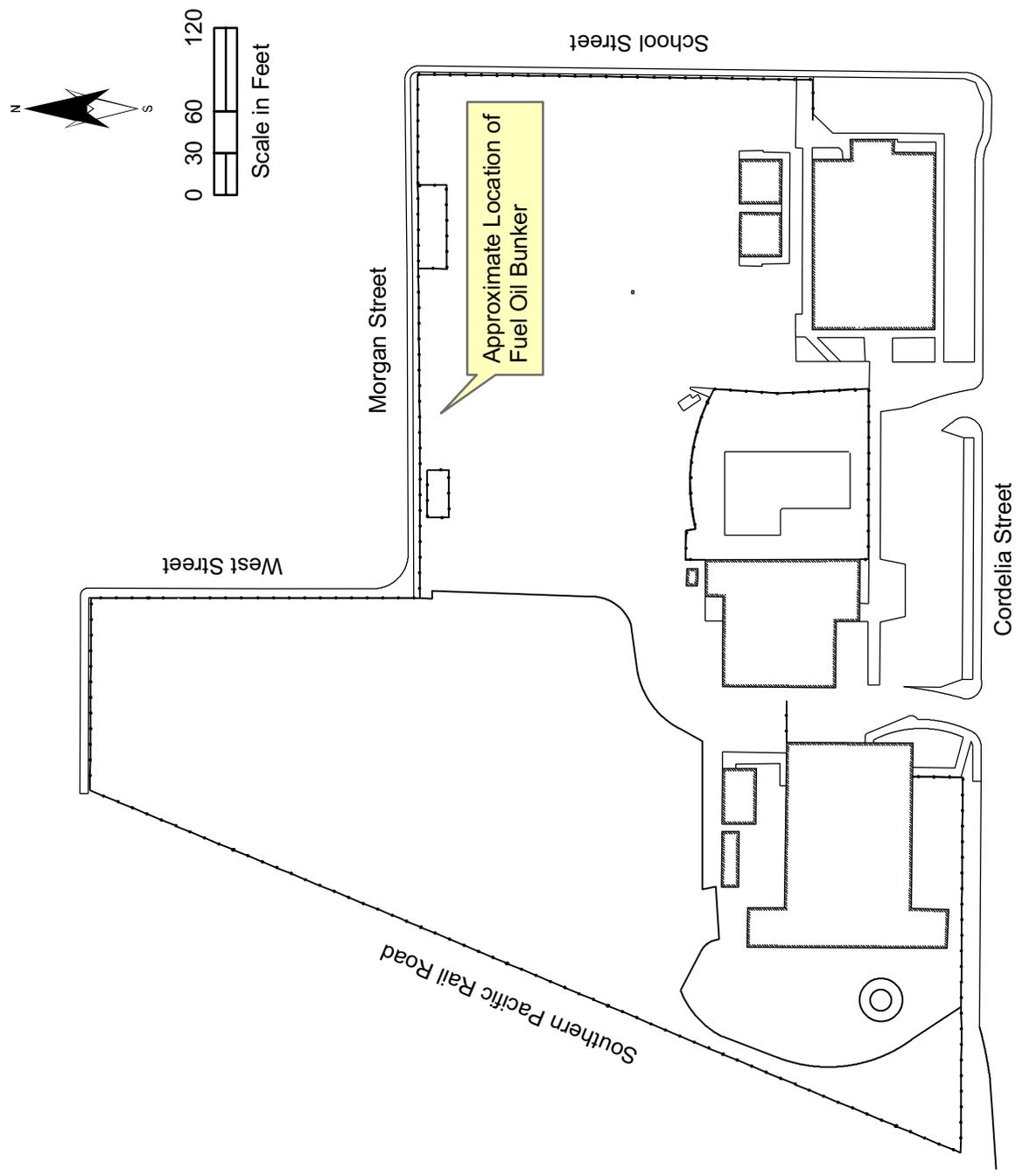
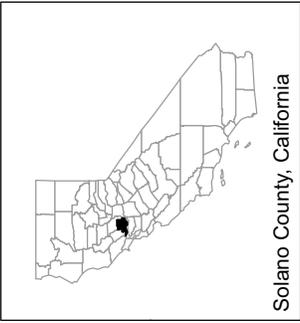
Raven Research, Inc. prepared this report in accordance with generally accepted standards of care which exist in Northern California at this time. It should be recognized that definition and evaluation of geologic and environmental conditions is a difficult and an inexact science.

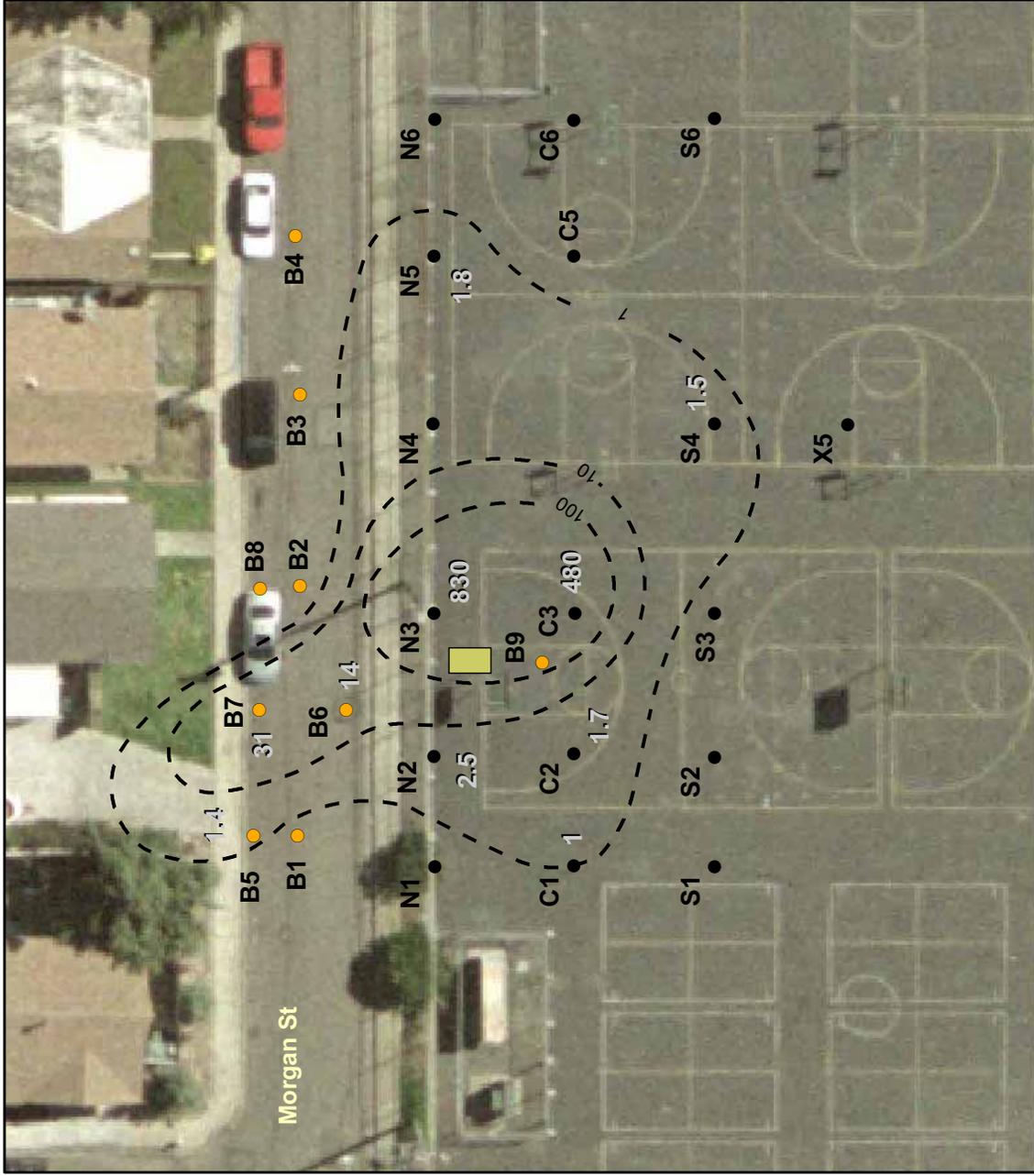
Conclusions and recommendations presented in this report are based on the results of the scope of work presented in our work plan dated September 25, 2009. This scope of work includes installing a total of 9 borings, quantitative analysis of soil and groundwater samples conducted by McCampbell Analytical, and reviewing all data collected to date. Only work described herein was performed. As such Raven Research cannot render opinions on issues not resulting directly from the work performed.

Judgments leading to conclusions and recommendations are generally made with incomplete knowledge of the subsurface conditions present. More extensive studies, including additional subsurface investigations, may be performed to reduce uncertainties. If the client wishes to reduce the uncertainties of this investigation, Raven Research should be notified for additional consultation. No warranty, expressed or implied, is made.

This report may be used only by the client and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both onsite and offsite) or other factors may change over time, and additional work may be required with the passage of time. Any party other than the client who wishes to use this report shall notify Raven Research of such intended use. Based on the intended use of the report, Raven Research may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release Raven Research from any liability resulting from the use of this report by any unauthorized party.

PLATES

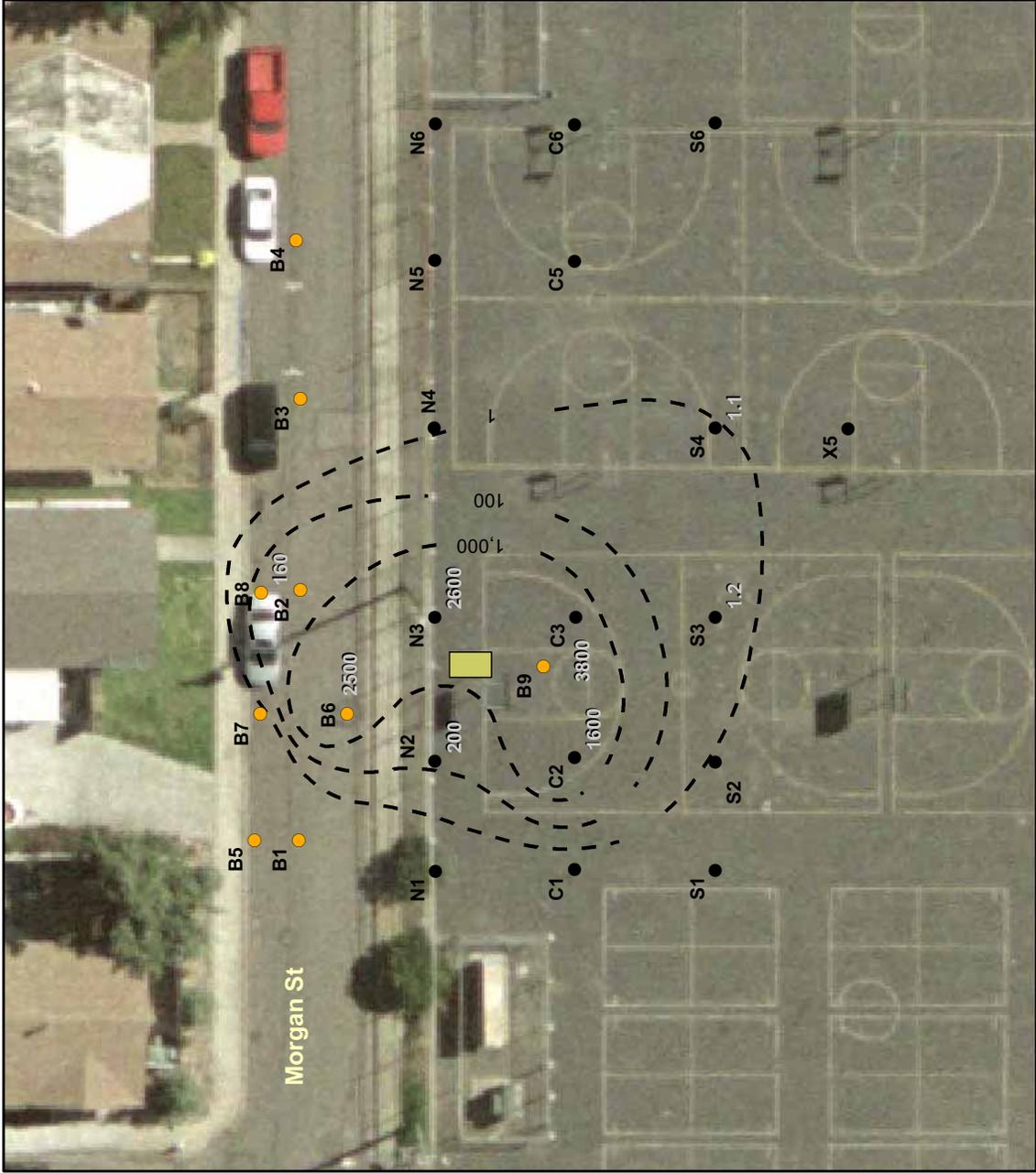




Explanation

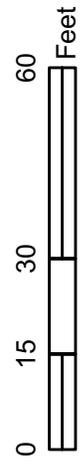
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- Marked Boring Locations
- Apx. Former Tank Location
- - - Equal Line of TPHd Concentration
- 480 TPHd Concentration in mg/kg

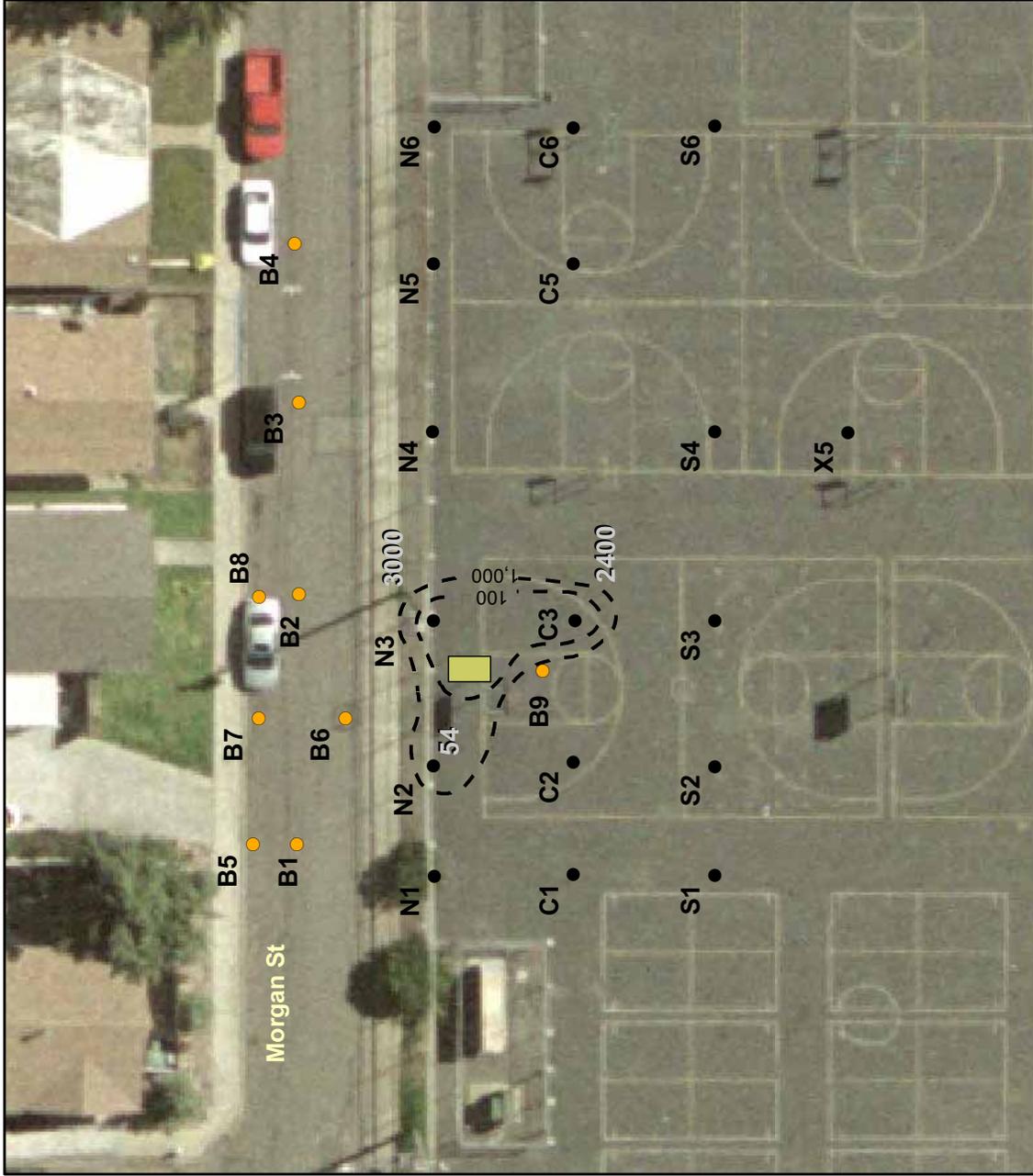




Explanation

- Test Pit Sample Locations
- Marked Boring Locations
- Apx. Former Tank Location
- - - Equal Line of TPHd Concentration
- 1.1 TPHd Concentration in mg/kg





Explanation

- Test Pit Sample Locations
 - Marked Boring Locations
 - Apx. Former Tank Location
 - - - Equal Line of TPHd Concentration
- 54 TPHd Concentration in mg/kg



APPENDIX A

Soil Boring Logs

DRILLING COMPANY
 DRILLING EQUIPMENT
 DRILLING METHOD
 DRILLER
 SAMPLING EQUIPMENT

Clear Heart Drilling
 AMS C-10 Compact Sonic Sampling Rig
 Sonic Continuous Core
 Rick Schneider and Ruben Tejada
 5' Discrete Piston Sampler

LOGGED BY Yousef Saadeh
 DATE STARTED 12/14/09
 DATE COMPLETED 12/14/09
 HAND AUGERED TO 3'
 TOTAL DEPTH 15'
 WATER LEVEL, INITIAL 6.8'
 WATER LEVEL, STATIC 3.7'

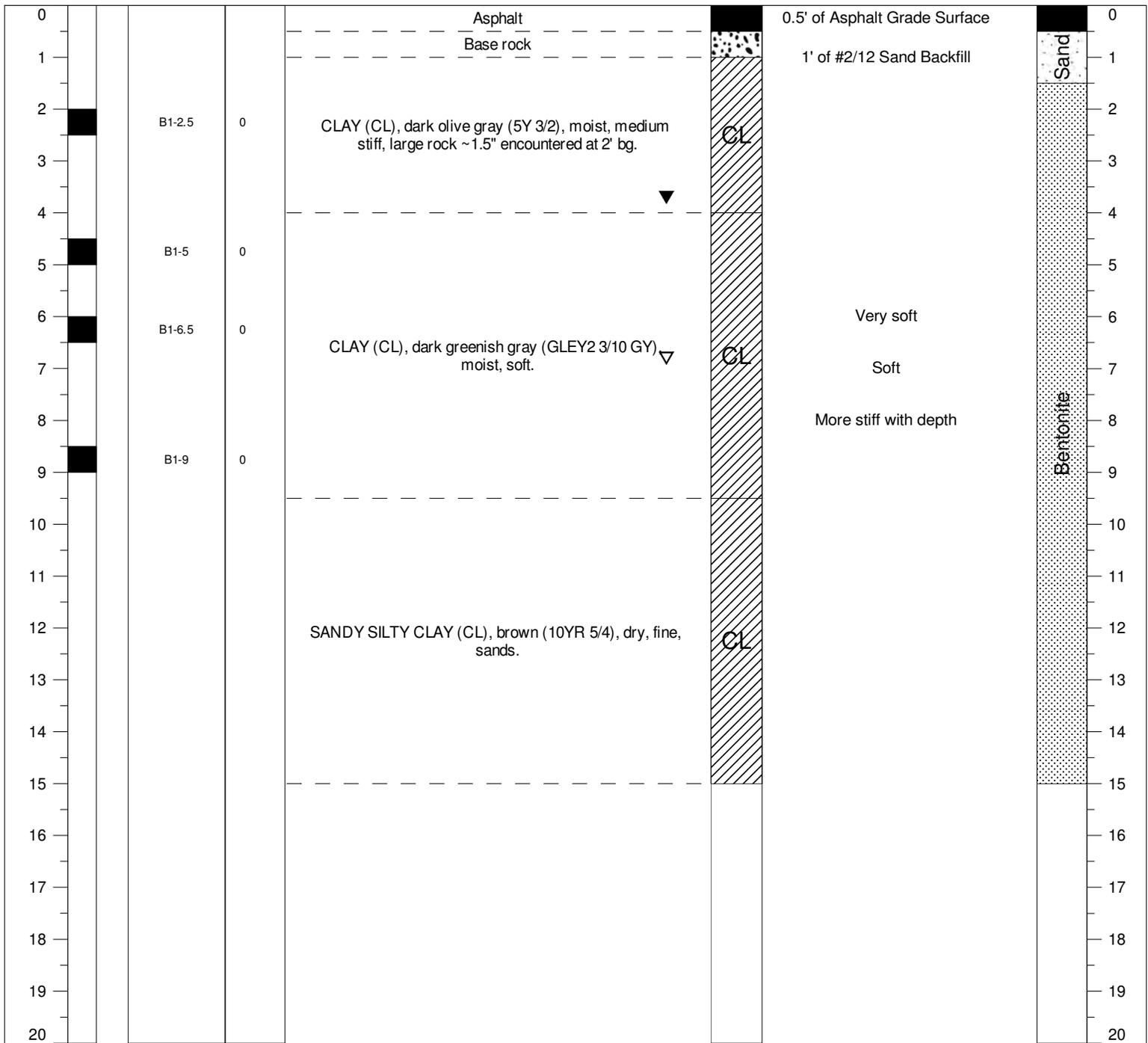
BORING LOCATION

Middle of street, west edge of garage
 of 206 Morgan

COMMENTS

B1

Depth (Feet)	Samples	Sample ID	PID (ppm)	Material Description	USCS	Comments	Boring Completion
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Soil Boring Log
 Crystal Middle School Investigation
 City of Suisun
 Morgan Street between West and School

B1

DRILLING COMPANY
 DRILLING EQUIPMENT
 DRILLING METHOD
 DRILLER
 SAMPLING EQUIPMENT

Clear Heart Drilling
 AMS C-10 Compact Sonic Sampling Rig
 Sonic Continuous Core
 Rick Schneider and Ruben Tejada
 5' Discrete Piston Sampler

LOGGED BY Yousef Saadeh
 DATE STARTED 12/14/09
 DATE COMPLETED 12/14/09
 HAND AUGERED TO 2.5'
 TOTAL DEPTH 10'
 WATER LEVEL, INITIAL
 WATER LEVEL, STATIC 3.6'

BORING LOCATION

B2

COMMENTS

Depth (Feet)	Samples	Sample ID	PID (ppm)	Material Description	USCS	Comments	Boring Completion
0				Asphalt		0.5' of Asphalt Grade Surface	0
0.5				Base rock		1' of #2/12 Sand Backfill	0.5
2				CLAY (CL), dry to moist, stiff.	CL		2
3		B2-3.5	0	CLAY (CL), greenish black (GLEY2 2.5/10BG), moist, highly organic.	CL		3
5		B2-5	0	CLAY (CL), dark green gray (GLEY2 3/10BG), moist, very soft, clay with silt.	CL	Increased stiffness with depth	5
8		B2-8	0	CLAY (CL), strong brown, moist, clay with fine sand/silt.	CL	Dark gray clays become strong brown at 8.25' bg Less moist at 9'	8
10		B2-9.5	0		CL	Very stiff	10



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Soil Boring Log
 Crystal Middle School Investigation
 City of Suisun
 Morgan Street between West and School

B2

DRILLING COMPANY
 DRILLING EQUIPMENT
 DRILLING METHOD
 DRILLER
 SAMPLING EQUIPMENT

Clear Heart Drilling
 AMS C-10 Compact Sonic Sampling Rig
 Sonic Continuous Core
 Rick Schneider and Ruben Tejada
 5' Discrete Piston Sampler

LOGGED BY Yousef Saadeh
 DATE STARTED 12/14/09
 DATE COMPLETED 12/14/09
 HAND AUGERED TO 2'
 TOTAL DEPTH 10'
 WATER LEVEL, INITIAL
 WATER LEVEL, STATIC 3.62'

BORING LOCATION

B3

COMMENTS

Depth (Feet)	Samples	Sample ID	PID (ppm)	Material Description	USCS	Comments	Boring Completion
0				Asphalt		0.5' of Asphalt Grade Surface	0
0.5				Base rock		1' of #2/12 Sand Backfill	0.5
2		B3-2	0	CLAY (CL), dry ot moist, medium stiff.	CL		2
5		B3-4.5	0	CLAY (CL), brown gray, moist, soft to medium stiff, highly organic.	CL		5
8		B3-7.5	0	CLAY (CL), gray brown/tan, dry, very stiff, clay with fine sand/silt.	CL	Gray becomes more tan at 9'	8
10							10



RAVEN
 RESEARCH

Soil Boring Log
 Crystal Middle School Investigation
 City of Suisun
 Morgan Street between West and School

B3

DRILLING COMPANY
 DRILLING EQUIPMENT
 DRILLING METHOD
 DRILLER
 SAMPLING EQUIPMENT

Clear Heart Drilling
 AMS C-10 Compact Sonic Sampling Rig
 Sonic Continuous Core
 Rick Schneider and Ruben Tejada
 5' Discrete Piston Sampler

LOGGED BY Yousef Saadeh
 DATE STARTED 12/14/09
 DATE COMPLETED 12/14/09
 HAND AUGERED TO 2'
 TOTAL DEPTH 10'
 WATER LEVEL, INITIAL
 WATER LEVEL, STATIC

BORING LOCATION

B4

COMMENTS

Depth (Feet)	Samples	Sample ID	PID (ppm)	Material Description	USCS	Comments	Boring Completion
0				Asphalt		0.5' of Asphalt Grade Surface	0
0.5				Base rock		1' of #2/12 Sand Backfill	0.5
2		B4-2	0	CLAY (CL), dark gray (2.5Y 3/2), dry to moist, medium stiff.	CL	No odor	2
5		B4-5	0	CLAY (CL), dark gray (2.5Y 3/2), moist, soft.	CL	No odor	5
7		B4-7.5	0	SANDY CLAY (CL), yellow brown (10YR 4/6), dry, stiff to very stiff, fine sands.	CL	Becomes stiff	7
10							10



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 RESEARCH

Soil Boring Log
 Crystal Middle School Investigation
 City of Suisun
 Morgan Street between West and School

B4

DRILLING COMPANY
 DRILLING EQUIPMENT
 DRILLING METHOD
 DRILLER
 SAMPLING EQUIPMENT

Clear Heart Drilling
 AMS C-10 Compact Sonic Sampling Rig
 Sonic Continuous Core
 Rick Schneider and Ruben Tejada
 5' Discrete Piston Sampler

LOGGED BY Yousef Saadeh
 DATE STARTED 12/14/09
 DATE COMPLETED 12/14/09
 HAND AUGERED TO 2'
 TOTAL DEPTH 10'
 WATER LEVEL, INITIAL
 WATER LEVEL, STATIC

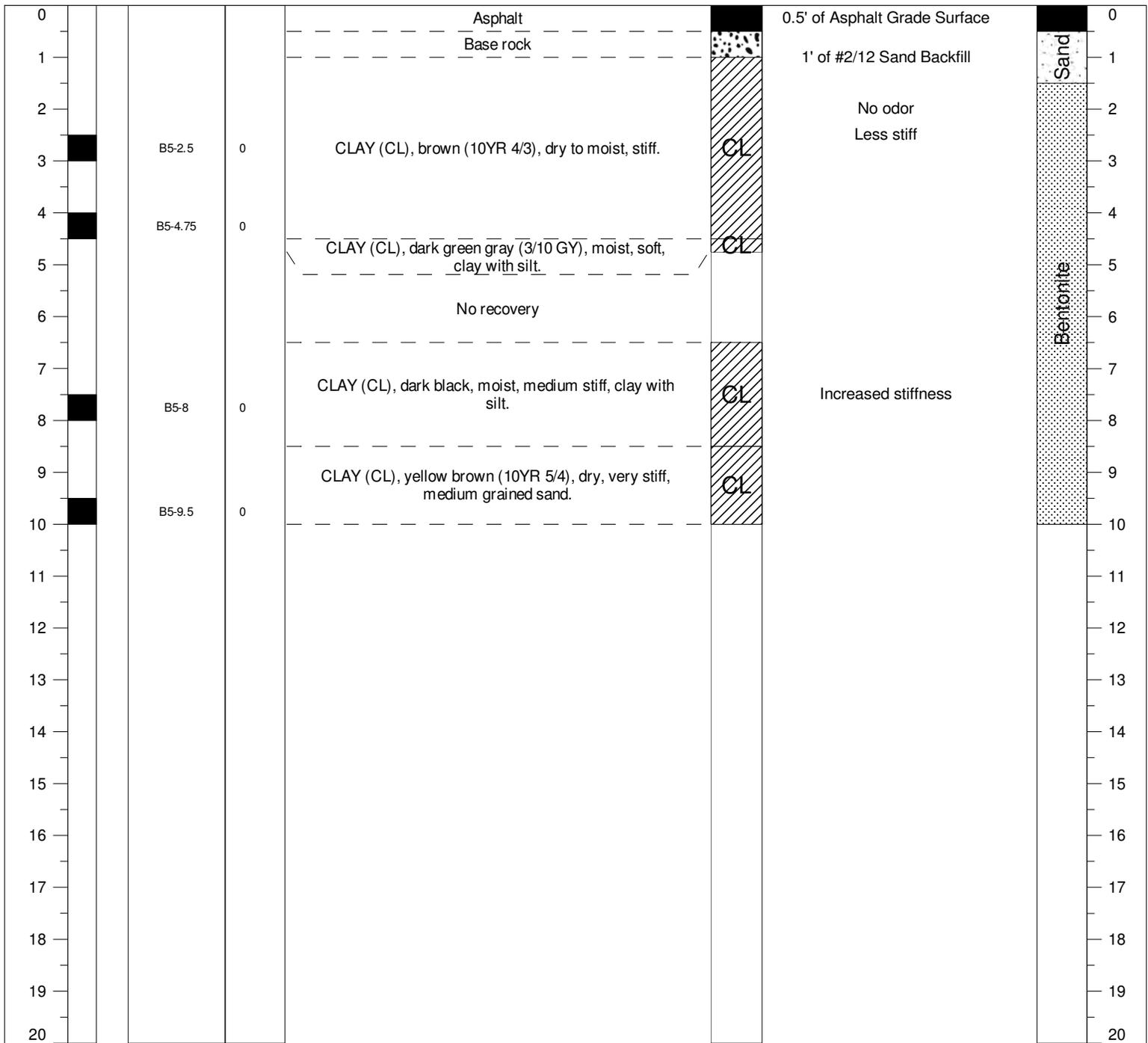
BORING LOCATION

Between north curb and PGE line
 of 206 Morgan

COMMENTS

B5

Depth (Feet)	Samples	Sample ID	PID (ppm)	Material Description	USCS	Comments	Boring Completion
--------------	---------	-----------	-----------	----------------------	------	----------	-------------------



RAVEN
 RESEARCH

Soil Boring Log
 Crystal Middle School Investigation
 City of Suisun
 Morgan Street between West and School

B5

DRILLING COMPANY
 DRILLING EQUIPMENT
 DRILLING METHOD
 DRILLER
 SAMPLING EQUIPMENT

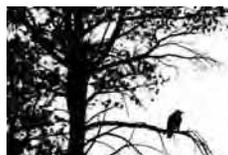
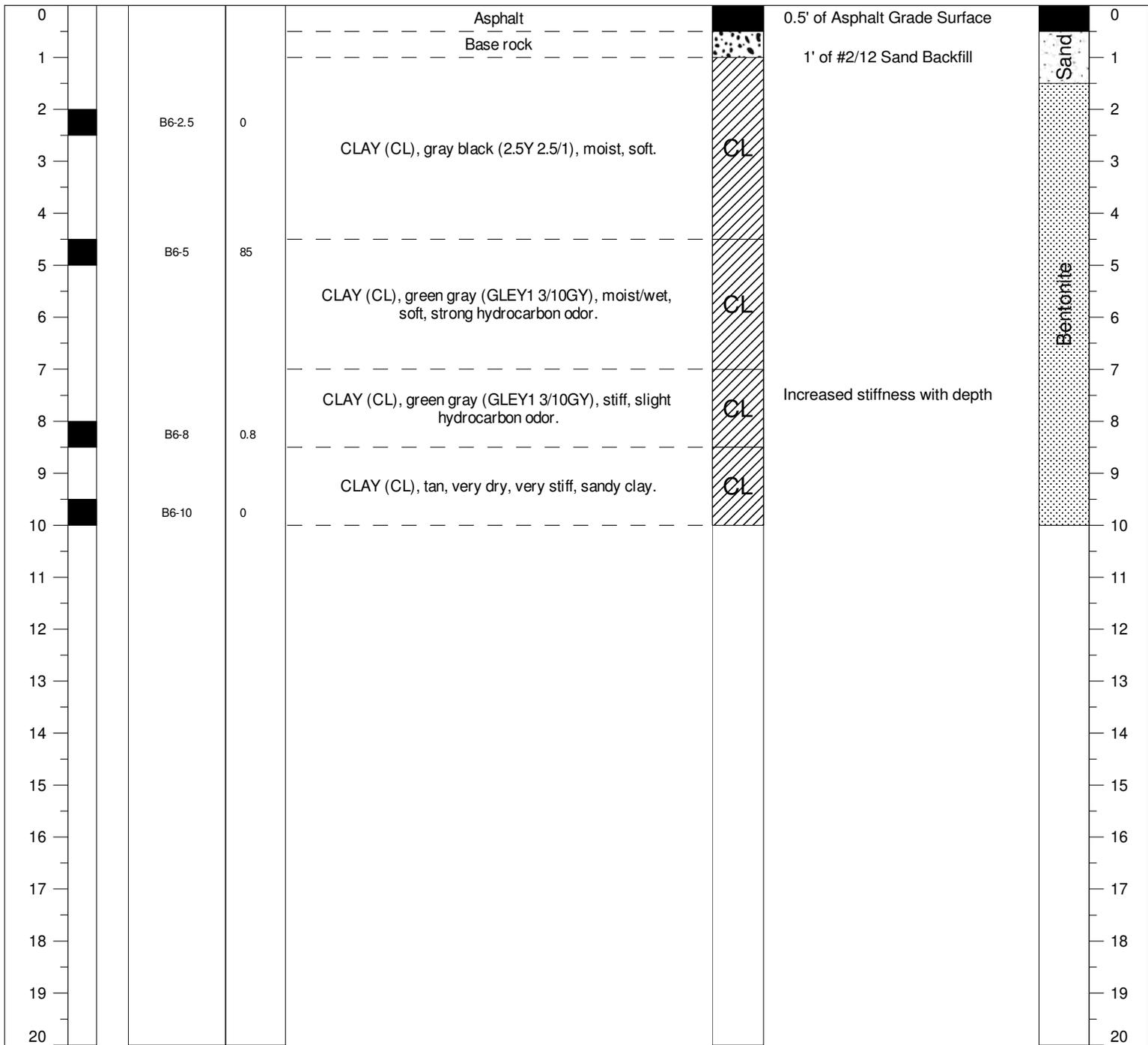
Clear Heart Drilling
 AMS C-10 Compact Sonic Sampling Rig
 Sonic Continuous Core
 Rick Schneider and Ruben Tejada
 5' Discrete Piston Sampler

LOGGED BY Yousef Saadeh
 DATE STARTED 12/14/09
 DATE COMPLETED 12/14/09
 HAND AUGERED TO 2'
 TOTAL DEPTH 10'
 WATER LEVEL, INITIAL
 WATER LEVEL, STATIC

BORING LOCATION
 South curb
 COMMENTS

B6

Depth (Feet)	Samples	Sample ID	PID (ppm)	Material Description	USCS	Comments	Boring Completion
--------------	---------	-----------	-----------	----------------------	------	----------	-------------------



RAVEN
 RESEARCH

Soil Boring Log
 Crystal Middle School Investigation
 City of Suisun
 Morgan Street between West and School

B6

DRILLING COMPANY
 DRILLING EQUIPMENT
 DRILLING METHOD
 DRILLER
 SAMPLING EQUIPMENT

Clear Heart Drilling
 AMS C-10 Compact Sonic Sampling Rig
 Sonic Continuous Core
 Rick Schneider and Ruben Tejada
 5' Discrete Piston Sampler

LOGGED BY Yousef Saadeh
 DATE STARTED 12/14/09
 DATE COMPLETED 12/14/09
 HAND AUGERED TO 2'
 TOTAL DEPTH 10'
 WATER LEVEL, INITIAL
 WATER LEVEL, STATIC

BORING LOCATION

B7

COMMENTS

Depth (Feet)	Samples	Sample ID	PID (ppm)	Material Description	USCS	Comments	Boring Completion
0				Asphalt		0.5' of Asphalt Grade Surface	0
1				Base rock		1' of #2/12 Sand Backfill	1
2		B7-2	0.2	CLAY (CL), very dark green gray (GLE Y 13/10Y), moist, medium stiff to very soft.	CL		2
3							3
4							4
5		B7-5	8.2	No recovery			5
6							6
7							7
8		B7-8	0	SILTY CLAY (CL), olive gray (5Y 4/2), moist to dry, medium stiff to stiff, silty clay with fine sand.	CL	Less moist with depth.	8
9							9
10							10
11							11
12							12
13							13
14							14
15							15
16							16
17							17
18							18
19							19
20							20



RAVEN
 RESEARCH

Soil Boring Log
 Crystal Middle School Investigation
 City of Suisun
 Morgan Street between West and School

B7

DRILLING COMPANY
 DRILLING EQUIPMENT
 DRILLING METHOD
 DRILLER
 SAMPLING EQUIPMENT

Clear Heart Drilling
 AMS C-10 Compact Sonic Sampling Rig
 Sonic Continuous Core
 Rick Schneider and Ruben Tejada
 5' Discrete Piston Sampler

LOGGED BY Yousef Saadeh
 DATE STARTED 12/14/09
 DATE COMPLETED 12/14/09
 HAND AUGERED TO
 TOTAL DEPTH 10'
 WATER LEVEL, INITIAL
 WATER LEVEL, STATIC

BORING LOCATION

B8

COMMENTS

Depth (Feet)	Samples	Sample ID	PID (ppm)	Material Description	USCS	Comments	Boring Completion
0				Asphalt		0.5' of Asphalt Grade Surface	0
1				Base rock		1' of #2/12 Sand Backfill	1
2							2
3							3
4				No recovery			4
5							5
6							6
7		B8-6.75	0.7	SILTY SANDY CLAY (CL), very dark green gray (GLE _Y 1 3/10 _Y), moist, fine sand.	CL		7
8		B8-8.5	0			More stiffness with increased depth	8
9		B8-9.5	0	SILTY SANDY CLAY (CL), olive gray (2.5 _Y 4/3), less moist, very stiff at 9'.	CL		9
10							10
11							11
12							12
13							13
14							14
15							15
16							16
17							17
18							18
19							19
20							20



RAVEN
 RESEARCH

Soil Boring Log
 Crystal Middle School Investigation
 City of Suisun
 Morgan Street between West and School

B8

DRILLING COMPANY
 DRILLING EQUIPMENT
 DRILLING METHOD
 DRILLER
 SAMPLING EQUIPMENT

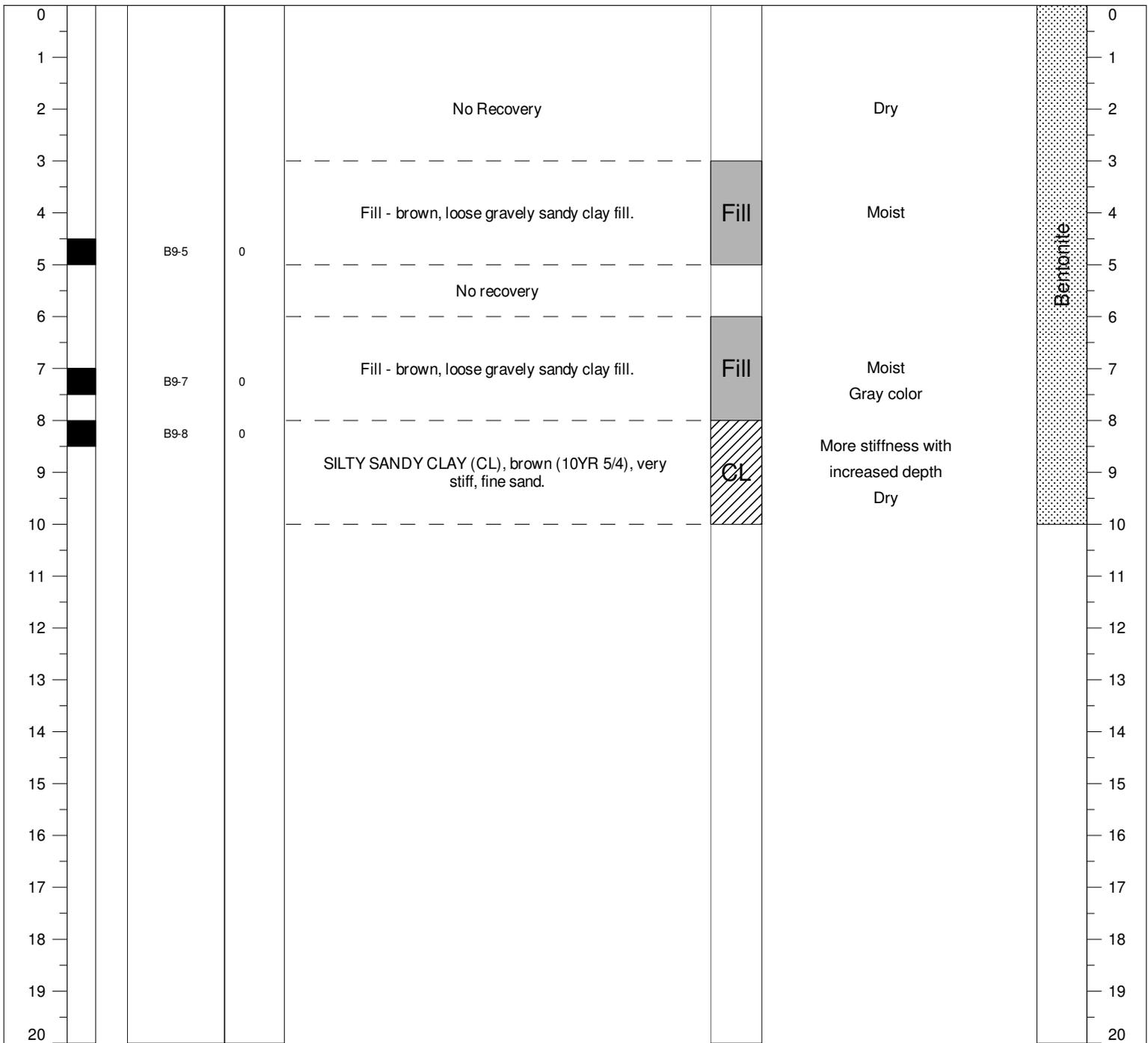
Clear Heart Drilling
 AMS C-10 Compact Sonic Sampling Rig
 Sonic Continuous Core
 Rick Schneider and Ruben Tejada
 5' Discrete Piston Sampler

LOGGED BY Yousef Saadeh
 DATE STARTED 12/14/09
 DATE COMPLETED 12/14/09
 HAND AUGERED TO
 TOTAL DEPTH 10'
 WATER LEVEL, INITIAL
 WATER LEVEL, STATIC

BORING LOCATION
 In feild, in line with B6
 COMMENTS

B9

Depth (Feet)	Samples	Sample ID	PID (ppm)	Material Description	USCS	Comments	Boring Completion
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RAVEN
 RESEARCH

Soil Boring Log
 Crystal Middle School Investigation
 City of Suisun
 Morgan Street between West and School

B9

APPENDIX B

Analytical Summary and Analytical Laboratory Reports

TABLE 3
Summary of Analytical Results – Petroleum Hydrocarbons in Soil
CRYSTAL MIDDLE SCHOOL

Sample ID	Boring ID	Depth Level	Sample Date	Petroleum Hydrocarbons Concentrations in mg/kg		
				TPH-G	TPH-D	TPH-MO
Borings						
B1-2.5	B1	Upper	12/04/09	ND<1.0	ND<1.0	ND<5.0
B1-5.0	B1	Middle	12/04/09	ND<1.0	ND<1.0	ND<5.0
B1-6.5	B1	Lower	12/04/09	ND<1.0	ND<1.0	ND<5.0
B2-3.5	B2	Upper	12/04/09	ND<1.0	ND<1.0	ND<5.0
B2-5.0	B2	Middle	12/04/09	ND<1.0	ND<1.0	ND<5.0
B2-8.0	B2	Lower	12/04/09	ND<1.0	ND<1.0	ND<5.0
B3-2.0	B#	Upper	12/04/09	ND<1.0	ND<1.0	ND<5.0
B3-4.5	B3	Middle	12/04/09	ND<1.0	ND<1.0	ND<5.0
B3-7.5	B3	Lower	12/04/09	ND<1.0	ND<1.0	ND<5.0
B4-2.0	B4	Upper	12/04/09	ND<1.0	ND<1.0	ND<5.0
B4-5.0	B4	Middle	12/04/09	ND<1.0	ND<1.0	ND<5.0
B4-7.5	B4	Lower	12/04/09	ND<1.0	ND<1.0	ND<5.0
B5-2.5	B5	Upper	12/04/09	ND<1.0	1.4 ^{e7,e2}	11 ^{e7,e2}
B5-4.75	B5	Middle	12/04/09	ND<1.0	ND<1.0	ND<5.0
B5-8.0	B5	Lower	12/04/09	ND<1.0	ND<1.0	ND<5.0
B6-2.5	B6	Upper	12/04/09	ND<1.0	14 ^{e7,e2}	25 ^{e7,e2}
B6-5.0	B6	Middle	12/04/09	81 ^{d7}	2500 ^{e1}	690 ^{e1}
B6-8.0	B6	Lower	12/04/09	ND<1.0	ND<1.0	ND<5.0
B7-2.0	B7	Upper	12/04/09	ND<1.0	31 ^{e7,e2}	120 ^{e7,e2}
B7-5.0	B7	Middle	12/04/09	ND<1.0	ND<1.0	ND<5.0
B7-8.0	B7	Lower	12/04/09	ND<1.0	ND<1.0	ND<5.0
B8-6.75	B8	Middle	12/04/09	5.7 ^{d7}	160 ^{e7,e2}	240 ^{e7,e2}
B8-8.0	B8	Lower	12/04/09	ND<1.0	ND<1.0	ND<5.0
B9-5.0	B9	Upper	12/04/09	ND<1.0	ND<1.0	ND<5.0
B9-7.0	B9	Middle	12/04/09	ND<1.0	ND<1.0	ND<5.0
B9-8.0	B9	Lower	12/04/09	ND<1.0	ND<1.0	ND<5.0
Test Pits						
Pit 1	NA	NA	05/10/07	340 ^{NG1}	7400 ^{D1}	ND<1000
S6U	S6	Upper	06/06/07	NA	ND<1.0	ND<5.0
S6M	S6	Middle	06/06/07	NA	ND<1.0	ND<5.0
S6L	S6	Lower	06/06/07	NA	ND<1.0	ND<5.0
C6U	C6	Upper	06/06/07	NA	ND<1.0	ND<5.0
C6M	C6	Middle	06/06/07	NA	ND<1.0	ND<5.0
C6L	C6	Lower	06/06/07	NA	ND<1.0	ND<5.0
N6U	N6	Upper	06/06/07	NA	ND<1.0	ND<5.0
N6M	N6	Middle	06/06/07	NA	ND<1.0	ND<5.0
N6L	N6	Lower	06/06/07	NA	ND<1.0	ND<5.0
N5U	N5	Upper	06/06/07	NA	1.8 ^{e2}	ND<5.0
N5M	N5	Middle	06/06/07	NA	ND<1.0	ND<5.0
N5L	N5	Lower	06/06/07	NA	ND<1.0	ND<5.0
C5U	C5	Upper	06/06/07	NA	ND<1.0	ND<5.0
C5M	C5	Middle	06/06/07	NA	ND<1.0	ND<5.0
C5L	CL	Lower	06/06/07	NA	ND<1.0	ND<5.0
S4U	S4	Upper	06/06/07	NA	1.5 ²	ND<5.0
S4M	S4	Middle	06/06/07	NA	1.1 ²	ND<5.0
S4L	S4	Lower	06/06/07	NA	ND<1.0	ND<5.0
SF Bay ESL*				100	100	370

Table 3. Continued

Sample ID	Boring ID	Depth Level	Sample Date	Petroleum Hydrocarbons Concentrations in mg/kg		
				TPH-G	TPH-D	TPH-MO
Test Pits continued						
N4U	N4	Upper	06/06/07	NA	ND<1.0	ND<5.0
N4M	N4	Middle	06/06/07	NA	ND<1.0	ND<5.0
N4L	N4	Lower	06/06/07	NA	ND<1.0	ND<5.0
S3U	S3	Upper	06/06/07	NA	ND<1.0	ND<5.0
S3M	S3	Middle	06/06/07	NA	1.2 ²	ND<5.0
S3L	S3	Lower	06/06/07	NA	ND<1.0	ND<5.0
C3U	C3	Upper	06/06/07	NA	480 ^{e1,4}	180
C3M	C3	Middle	06/06/07	NA	3,800 ^{e1,4}	1,800
C3L	C3	Lower	06/06/07	NA	2,400 ^{e1,4}	1,400
N3U	N3	Upper	06/06/07	NA	830 ^{e1,4}	500
N3M	N3	Middle	06/06/07	NA	2,600 ^{e1,4}	1,200
N3L	N3	Lower	06/06/07	NA	3,000 ^{e1,4}	1,500
S2U	S2	Upper	06/06/07	NA	ND<1.0	ND<5.0
S2M	S2	Middle	06/06/07	NA	ND<1.0	ND<5.0
S2L	S2	Lower	06/06/07	NA	ND<1.0	ND<5.0
C2U	C2	Upper	06/06/07	NA	1.7 ^{e1}	ND<5.0
C2M	C2	Middle	06/06/07	NA	1,600 ^{e1,4}	530
C2L	C2	Lower	06/06/07	NA	ND<1.0	ND<5.0
N2U	N2	Upper	06/06/07	NA	2.5 ^{e2}	ND<5.0
N2M	N2	Middle	06/06/07	NA	200 ^{e1,4}	65
N2L	N2	Lower	06/06/07	NA	54 ^{e1,4}	19
S1U	S1	Upper	06/06/07	NA	ND<1.0	ND<5.0
S1M	S1	Middle	06/06/07	NA	ND<1.0	ND<5.0
S1L	S1	Lower	06/06/07	NA	ND<1.0	ND<5.0
C1U	C1	Upper	06/06/07	NA	1.0 ^{e2,e7}	9.6
C1M	C1	Middle	06/06/07	NA	ND<1.0	ND<5.0
C1L	C1	Lower	06/06/07	NA	ND<1.0	ND<5.0
N1U	N1	Upper	06/06/07	NA	ND<1.0	ND<5.0
N1M	N1	Middle	06/06/07	NA	ND<1.0	ND<5.0
N1L	N1	Lower	06/06/07	NA	ND<1.0	ND<5.0
X5U	X5	Upper	06/06/07	NA	ND<1.0	ND<5.0
X5M	X5	Middle	06/06/07	NA	ND<1.0	ND<5.0
X5L	X5	Lower	06/06/07	NA	ND<1.0	ND<5.0
SF Bay ESL*				100	100	370

* San Francisco Bay Environmental Screening Levels, Table B-1 Shallow Soil Screening Levels (<3m bgs) Residential Land Use (groundwater is not a current or potential drinking water source), November 2007

d7: strongly aged gasoline or diesel range compounds are significant in the TPH(g) chromatogram

e1: unmodified or weakly modified diesel is significant

e2: diesel range compounds are significant

e7: oil range compounds are significant

NG1: the sample chromatogram does not exhibit a characteristic pattern of gasoline

D1: the sample chromatogram does not exhibit a characteristic pattern of diesel

2: kerosene/kerosene range/jet fuel

4: fuel oil

mg/kg: milligrams per kilogram = parts per million

TPH-G/-D/-MO: Total Petroleum Hydrocarbons quantified as Gasoline/Diesel/Motor Oil

TABLE 4
 Summary of Analytical Results – Petroleum Hydrocarbons in Groundwater
 CRYSTAL MIDDLE SCHOOL
 December 4, 2009

Sample ID	Sample Date	Petroleum Hydrocarbons Concentrations in µg/l		
		TPH-G	TPH-D	TPH-MO
Pit1-H20	05/10/07	340 ^{NG1}	16000 ^{FP,D1}	ND<1000
B1W	12/04/09	ND<50	ND>50	ND<250
B2W	12/04/09	470	8000	2300
B3W	12/04/09	ND<50	ND<50	ND<250
B7W	12/04/09	ND<50	ND<50	ND<250
SF Bay ESL*		210	210	210

* San Francisco Bay Environmental Screening Levels, Table F-1b Groundwater Screening Levels (groundwater is not a current or potential drinking water source), November 2007

- FP: floating product was present in the sample container
- NG1: the sample chromatogram does not exhibit a characteristic pattern of gasoline
- D1: the sample chromatogram does not exhibit a characteristic pattern of diesel
- µg/l: micrograms per liter = parts per million
- TPH-G/-D/-MO: Total Petroleum Hydrocarbons quantified as Gasoline/Diesel/Motor Oil



McC Campbell Analytical, Inc.

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mcccampbell.com E-mail: main@mcccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Raven Research 5450 Pepperwood Road Santa Rosa, CA 95409	Client Project ID: GW; Crystal Middle School	Date Sampled: 12/04/09
		Date Received: 12/07/09
	Client Contact: Peter Dellavalle	Date Reported: 12/11/09
	Client P.O.:	Date Completed: 12/10/09

WorkOrder: 0912186

December 11, 2009

Dear Peter:

Enclosed within are:

- 1) The results of the **4** analyzed samples from your project: **GW; Crystal Middle School,**
- 2) A QC report for the above samples,
- 3) A copy of the chain of custody, and
- 4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McC Campbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McC Campbell Analytical, Inc.



1534 Willow Pass Rd
 Pittsburg, CA 94565-1701
 (925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0912186 ClientCode: RRSR

WaterTrax
 WriteOn
 EDI
 Excel
 Fax
 Email
 HardCopy
 ThirdParty
 J-flag

Report to: Peter Dellavalle **Bill to:** Peter Dela Valle
 Raven Research Raven Research
 5450 Pepperwood Road 241 South Main Street
 Santa Rosa, CA 95409 Sebastopol, CA 95472
 (707) 490-5040 FAX (707)

Requested TAT: 5 days

Date Received: 12/07/2009
 Date Printed: 12/07/2009

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12

0912186-001	B1W	Water	12/4/2009 15:30	<input type="checkbox"/>	A														
0912186-002	B2W	Water	12/4/2009 15:45	<input type="checkbox"/>	A														
0912186-003	B3W	Water	12/4/2009 16:00	<input type="checkbox"/>	A														
0912186-004	B7W	Water	12/4/2009 16:30	<input type="checkbox"/>	A														

Test Legend:

1	G-MBTEX W	3	4	5
6		8	9	10
11				

The following SampleIDs: 001A, 002A, 003A, 004A contain testgroup.

Prepared by: Shino Hamilton

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
 Hazardous samples will be returned to client or disposed of at client expense.



Sample Receipt Checklist

Client Name: **Raven Research** Date and Time Received: **12/7/2009 7:06:08 PM**
 Project Name: **GW; Crystal Middle School** Checklist completed and reviewed by: **Shino Hamilton**
 WorkOrder N°: **0912186** Matrix Water Carrier: Rob Pringle (MAI Courier)

Chain of Custody (COC) Information

Chain of custody present? Yes No
 Chain of custody signed when relinquished and received? Yes No
 Chain of custody agrees with sample labels? Yes No
 Sample IDs noted by Client on COC? Yes No
 Date and Time of collection noted by Client on COC? Yes No
 Sampler's name noted on COC? Yes No

Sample Receipt Information

Custody seals intact on shipping container/cooler? Yes No NA
 Shipping container/cooler in good condition? Yes No
 Samples in proper containers/bottles? Yes No
 Sample containers intact? Yes No
 Sufficient sample volume for indicated test? Yes No

Sample Preservation and Hold Time (HT) Information

All samples received within holding time? Yes No
 Container/Temp Blank temperature Cooler Temp: 2°C NA
 Water - VOA vials have zero headspace / no bubbles? Yes No No VOA vials submitted
 Sample labels checked for correct preservation? Yes No
 Metal - pH acceptable upon receipt (pH<2)? Yes No NA
 Samples Received on Ice? Yes No
 (Ice Type: WET ICE)

* NOTE: If the "No" box is checked, see comments below.

Client contacted: Date contacted: Contacted by:

Comments:



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Web: www.mcccampbell.com E-mail: main@mcccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Raven Research 5450 Pepperwood Road Santa Rosa, CA 95409	Client Project ID: GW; Crystal Middle School	Date Sampled: 12/04/09
	Client Contact: Peter Dellavalle	Date Received: 12/07/09
	Client P.O.:	Date Extracted: 12/07/09
		Date Analyzed: 12/08/09

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up*

Extraction method: SW3510C/3630C

Analytical methods: SW8015B

Work Order: 0912186

Lab ID	Client ID	Matrix	TPH-Diesel (C10-C23)	TPH-Motor Oil (C18-C36)	DF	% SS	Comments
0912186-001A	B1W	W	ND	ND	1	99	
0912186-002A	B2W	W	8000	2300	1	105	e1,b6
0912186-003A	B3W	W	ND	ND	1	101	
0912186-004A	B7W	W	ND	ND	1	98	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	250	µg/L
	S	NA	NA	mg/Kg

* water samples are reported in µg/L, wipe samples in µg/wipe, soil/solid/sludge samples in mg/kg, product/oil/non-aqueous liquid samples in mg/L, and all DISTLC / STLC / SPLP / TCLP extracts are reported in µg/L.

#) cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract; &) low or no surrogate due to matrix interference.

+The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation:

b6) lighter than water immiscible sheen/product is present
e1) unmodified or weakly modified diesel is significant



QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 47480

WorkOrder: 0912186

EPA Method SW8015Bm		Extraction SW5030B							Spiked Sample ID: 0912186-001A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex) ^f	ND	60	91.4	109	17.8	91.7	92.9	1.29	70 - 130	20	70 - 130	20
MTBE	ND	10	103	110	6.61	114	104	8.59	70 - 130	20	70 - 130	20
Benzene	ND	10	102	101	0.896	98.2	103	5.03	70 - 130	20	70 - 130	20
Toluene	ND	10	91.5	91.3	0.182	90.8	105	14.9	70 - 130	20	70 - 130	20
Ethylbenzene	ND	10	90.9	89.6	1.46	91.2	92.5	1.35	70 - 130	20	70 - 130	20
Xylenes	ND	30	103	103	0	105	106	0.869	70 - 130	20	70 - 130	20
%SS:	100	10	101	100	1.00	98	112	13.7	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 47480 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0912186-001A	12/04/09 3:30 PM	12/09/09	12/09/09 12:45 AM	0912186-002A	12/04/09 3:45 PM	12/10/09	12/10/09 6:32 AM
0912186-003A	12/04/09 4:00 PM	12/09/09	12/09/09 1:17 AM	0912186-004A	12/04/09 4:30 PM	12/09/09	12/09/09 1:48 AM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content, or inconsistency in sample containers.



QC SUMMARY REPORT FOR SW8015B

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 47482

WorkOrder: 0912186

EPA Method SW8015B		Extraction SW3510C/3630C							Spiked Sample ID: N/A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH-Diesel (C10-C23)	N/A	1000	N/A	N/A	N/A	113	110	2.29	N/A	N/A	70 - 130	30
%SS:	N/A	2500	N/A	N/A	N/A	113	110	2.49	N/A	N/A	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 47482 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0912186-001A	12/04/09 3:30 PM	12/07/09	12/08/09 12:55 PM	0912186-002A	12/04/09 3:45 PM	12/07/09	12/08/09 12:55 PM
0912186-003A	12/04/09 4:00 PM	12/07/09	12/08/09 2:20 PM	0912186-004A	12/04/09 4:30 PM	12/07/09	12/08/09 4:22 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.
 % Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).
 MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.
 N/A = not enough sample to perform matrix spike and matrix spike duplicate.
 NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.



McC Campbell Analytical, Inc.

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mcccampbell.com E-mail: main@mcccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Raven Research 5450 Pepperwood Road Santa Rosa, CA 95409	Client Project ID: Soil, Crystal Middle School	Date Sampled: 12/04/09
		Date Received: 12/07/09
	Client Contact: Peter Dellavalle	Date Reported: 12/16/09
	Client P.O.:	Date Completed: 12/16/09

WorkOrder: 0912241

December 16, 2009

Dear Peter:

Enclosed within are:

- 1) The results of the **26** analyzed samples from your project: **Soil, Crystal Middle School,**
- 2) A QC report for the above samples,
- 3) A copy of the chain of custody, and
- 4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McC Campbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McC Campbell Analytical, Inc.

0912241



McCAMPBELL ANALYTICAL, INC.
 1534 WILLOW PASS ROAD
 PITTSBURGH, CA 94565-1701
 Website: www.mccampbell.com Email: main@mccampbell.com
 Telephone: (877) 252-9262 Fax: (925) 252-9269

Report To: Peter Dellavalle **Bill To:** Same
Company: Raven Research, Inc.
 5450 Pepperwood Road
 Santa Rosa, CA 95409 E-Mail: ravenre@meteze.com; yousef@econca.com
 Tele: (707) 490-5040 Fax: (707) 823-8725
Project #: Soil **Project Name:** Crystal Middle School
Project Location: Morgan Street, Suisun City, CA
Sampler Signature: *[Signature]*

CHAIN OF CUSTODY RECORD
TURN AROUND TIME 24 HR 48 HR 72 HR 5 DAY
GeoTracker EDF PDF Excel Write On (DW)
 Check if sample is effluent and "J" flag is required

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING		# Containers	Type Containers	MATRIX						METHOD PRESERVED				Other	Comments	
		Date	Time			Water	Soil	Air	Sludge	Other	ICE	HCL	HNO ₃	Other				
B1-2.5		12-4-09	9:00	1	cube	/	/	/	/	/	/	/	X	X	X			
B1-5.0			9:10			/	/	/	/	/	/	/	X	X	X			
B1-6.5			9:15			/	/	/	/	/	/	/	X	X	X			
B1-9.0			9:20			/	/	/	/	/	/	/	X	X	X			
B1-			9:20			/	/	/	/	/	/	/	X	X	X			
B2-3.5			10:50			/	/	/	/	/	/	/	X	X	X			
B2-5.0			10:55			/	/	/	/	/	/	/	X	X	X			
B2-8.0			11:00			/	/	/	/	/	/	/	X	X	X			
B2-9.5			11:03			/	/	/	/	/	/	/	X	X	X			
B3-2.0			11:15			/	/	/	/	/	/	/	X	X	X			
B3-4.5			11:20			/	/	/	/	/	/	/	X	X	X			
B3-7.5			11:25			/	/	/	/	/	/	/	X	X	X			
BA-2.0			11:45			/	/	/	/	/	/	/	X	X	X			
BA-5.0			11:45			/	/	/	/	/	/	/	X	X	X			

ICE/C 100
GOOD CONDITION
HEAD SPACE ABSENT
DECHLORINATED IN LAB
APPROPRIATE CONTAINERS
PRESERVED IN LAB
COMMENTS: Pg 1 of 3
OFF HOLD 12/09/09
 PRESERVATION VOAS O&G METALS OTHER pH<2

Relinquished By: *[Signature]* Date: 12/7/09 Time: 11:13
Relinquished By: *[Signature]* Date: 12/7/09 Time: 9:00
Relinquished By: *[Signature]* Date: 12/7/09 Time: 9:00

* Tube Lacked B1-15

McC Campbell Analytical, Inc.



1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0912241 ClientCode: RRSR

WaterTrax
 WriteOn
 EDf
 Excel
 Fax
 HardCopy
 ThirdParty
 J-flag

Report to: Peter Dellavalle **Bill to:** Peter Dela Valle **Requested TAT:** 5 days
 Raven Research cc: Raven Research **Date Received:** 12/07/2009
 5450 Pepperwood Road PO: 241 South Main Street **Date Printed:** 12/09/2009
 Santa Rosa, CA 95409 ProjectNo: Soil, Crystal Middle School Sebastopol, CA 95472
 (707) 490-5040 FAX (707)

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12

0912241-001	B1-2.5	Soil	12/4/2009 9:00	<input type="checkbox"/>	A															
0912241-002	B1-5.0	Soil	12/4/2009 9:10	<input type="checkbox"/>	A															
0912241-003	B1-6.5	Soil	12/4/2009 9:15	<input type="checkbox"/>	A															
0912241-006	B2-3.5	Soil	12/4/2009 10:50	<input type="checkbox"/>	A															
0912241-007	B2-5.0	Soil	12/4/2009 10:55	<input type="checkbox"/>	A															
0912241-008	B2-8.0	Soil	12/4/2009 11:00	<input type="checkbox"/>	A															
0912241-010	B3-2.0	Soil	12/4/2009 11:15	<input type="checkbox"/>	A															
0912241-011	B3-4.5	Soil	12/4/2009 11:20	<input type="checkbox"/>	A															
0912241-012	B3-7.5	Soil	12/4/2009 11:25	<input type="checkbox"/>	A															
0912241-013	B4-2.0	Soil	12/4/2009 11:45	<input type="checkbox"/>	A															
0912241-014	B4-5.0	Soil	12/4/2009 11:45	<input type="checkbox"/>	A															
0912241-015	B4-7.5	Soil	12/4/2009 11:50	<input type="checkbox"/>	A															
0912241-016	B5-2.5	Soil	12/4/2009 12:15	<input type="checkbox"/>	A															
0912241-017	B5-4.75	Soil	12/4/2009 12:15	<input type="checkbox"/>	A															

Test Legend:

1	PREF REPORT	3	4	5
6		8	9	10
11		12		

Prepared by: Maria Venegas

Comments: Samples off Hold 12/9/09

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
 Hazardous samples will be returned to client or disposed of at client expense.



Sample Receipt Checklist

Client Name: **Raven Research** Date and Time Received: **12/7/2009**
Project Name: **Soil, Crystal Middle School** Checklist completed and reviewed by: **Maria Venegas**
WorkOrder N°: **0912241** Matrix Soil Carrier: Rob Pringle (MAI Courier)

Chain of Custody (COC) Information

Chain of custody present? Yes No
Chain of custody signed when relinquished and received? Yes No
Chain of custody agrees with sample labels? Yes No
Sample IDs noted by Client on COC? Yes No
Date and Time of collection noted by Client on COC? Yes No
Sampler's name noted on COC? Yes No

Sample Receipt Information

Custody seals intact on shipping container/cooler? Yes No NA
Shipping container/cooler in good condition? Yes No
Samples in proper containers/bottles? Yes No
Sample containers intact? Yes No
Sufficient sample volume for indicated test? Yes No

Sample Preservation and Hold Time (HT) Information

All samples received within holding time? Yes No
Container/Temp Blank temperature Cooler Temp: 1.8°C NA
Water - VOA vials have zero headspace / no bubbles? Yes No No VOA vials submitted
Sample labels checked for correct preservation? Yes No
Metal - pH acceptable upon receipt (pH<2)? Yes No NA
Samples Received on Ice? Yes No
(Ice Type: WET ICE)

* NOTE: If the "No" box is checked, see comments below.

Client contacted: Date contacted: Contacted by:

Comments:



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Raven Research 5450 Pepperwood Road Santa Rosa, CA 95409	Client Project ID: Soil, Crystal Middle School	Date Sampled: 12/04/09
	Client Contact: Peter Dellavalle	Date Received: 12/07/09
	Client P.O.:	Date Analyzed: 12/10/09-12/15/09
		Date Extracted: 12/09/09

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*

Extraction method SW5030B

Analytical methods SW8015Bm

Work Order: 0912241

Lab ID	Client ID	Matrix	TPH(g)	DF	% SS	Comments
001A	B1-2.5	S	ND	1	85	
002A	B1-5.0	S	ND	1	81	
003A	B1-6.5	S	ND	1	87	
006A	B2-3.5	S	ND	1	85	
007A	B2-5.0	S	ND	1	83	
008A	B2-8.0	S	ND	1	84	
010A	B3-2.0	S	ND	1	88	
011A	B3-4.5	S	ND	1	79	
012A	B3-7.5	S	ND	1	88	
013A	B4-2.0	S	ND	1	88	
014A	B4-5.0	S	ND	1	81	
015A	B4-7.5	S	ND	1	87	
016A	B5-2.5	S	ND	1	83	
017A	B5-4.75	S	ND	1	82	
018A	B5-8.0	S	ND	1	88	
020A	B6-2.5	S	ND	1	82	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	NA	NA
	S	1.0	mg/Kg

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts in mg/L.

cluttered chromatogram; sample peak coelutes w/surrogate peak; low surrogate recovery due to matrix interference.

+The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation:

d7) strongly aged gasoline or diesel range compounds are significant in the TPH(g) chromatogram



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Raven Research 5450 Pepperwood Road Santa Rosa, CA 95409	Client Project ID: Soil, Crystal Middle School	Date Sampled: 12/04/09
		Date Received: 12/07/09
	Client Contact: Peter Dellavalle	Date Extracted: 12/09/09
	Client P.O.:	Date Analyzed 12/10/09-12/15/09

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*

Extraction method SW5030B

Analytical methods SW8015Bm

Work Order: 0912241

Lab ID	Client ID	Matrix	TPH(g)	DF	% SS	Comments
021A	B6-5.0	S	81	20	87	d7
022A	B6-8.0	S	ND	1	86	
024A	B7-2.0	S	ND	1	88	
025A	B7-5.0	S	ND	1	---#	
026A	B7-8.0	S	ND	1	85	
027A	B8-6.75	S	5.7	1	88	d7
028A	B8-8.0	S	ND	1	88	
030A	B9-5.0	S	ND	1	83	
031A	B9-7.0	S	ND	1	86	
032A	B9-8.0	S	ND	1	84	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	NA	NA
	S	1.0	mg/Kg

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts in mg/L.

cluttered chromatogram; sample peak coelutes w/surrogate peak; low surrogate recovery due to matrix interference.

+The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation:

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Raven Research 5450 Pepperwood Road Santa Rosa, CA 95409	Client Project ID: Soil, Crystal Middle School	Date Sampled: 12/04/09
	Client Contact: Peter Dellavalle	Date Received: 12/07/09
	Client P.O.:	Date Extracted: 12/09/09
		Date Analyzed: 12/09/09-12/15/09

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up*

Extraction method: SW3550C/3630C

Analytical methods: SW8015B

Work Order: 0912241

Lab ID	Client ID	Matrix	TPH-Diesel (C10-C23)	TPH-Motor Oil (C18-C36)	DF	% SS	Comments
0912241-001A	B1-2.5	S	ND	ND	1	101	
0912241-002A	B1-5.0	S	ND	ND	1	100	
0912241-003A	B1-6.5	S	ND	ND	1	101	
0912241-006A	B2-3.5	S	ND	ND	1	98	
0912241-007A	B2-5.0	S	ND	ND	1	100	
0912241-008A	B2-8.0	S	ND	ND	1	97	
0912241-010A	B3-2.0	S	ND	ND	1	102	
0912241-011A	B3-4.5	S	ND	ND	1	101	
0912241-012A	B3-7.5	S	ND	ND	1	102	
0912241-013A	B4-2.0	S	ND	ND	1	100	
0912241-014A	B4-5.0	S	ND	ND	1	102	
0912241-015A	B4-7.5	S	ND	ND	1	102	
0912241-016A	B5-2.5	S	1.4	11	1	114	e7,e2
0912241-017A	B5-4.75	S	ND	ND	1	102	
0912241-018A	B5-8.0	S	ND	ND	1	101	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	NA	NA	ug/L
	S	1.0	5.0	mg/Kg

* water samples are reported in µg/L, wipe samples in µg/wipe, soil/solid/sludge samples in mg/kg, product/oil/non-aqueous liquid samples in mg/L, and all DISTLC / STLC / SPLP / TCLP extracts are reported in µg/L.

cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

+The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation:

- e1) unmodified or weakly modified diesel is significant
- e2) diesel range compounds are significant; no recognizable pattern
- e7) oil range compounds are significant



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Raven Research 5450 Pepperwood Road Santa Rosa, CA 95409	Client Project ID: Soil, Crystal Middle School	Date Sampled: 12/04/09
	Client Contact: Peter Dellavalle	Date Received: 12/07/09
	Client P.O.:	Date Extracted: 12/09/09
		Date Analyzed: 12/09/09-12/15/09

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up*

Extraction method: SW3550C/3630C

Analytical methods: SW8015B

Work Order: 0912241

Lab ID	Client ID	Matrix	TPH-Diesel (C10-C23)	TPH-Motor Oil (C18-C36)	DF	% SS	Comments
0912241-020A	B6-2.5	S	14	25	1	118	e7,e2
0912241-021A	B6-5.0	S	2500	690	50	100	e1
0912241-022A	B6-8.0	S	ND	ND	1	99	
0912241-024A	B7-2.0	S	31	120	5	101	e7,e2
0912241-025A	B7-5.0	S	ND	ND	1	102	
0912241-026A	B7-8.0	S	ND	ND	1	100	
0912241-027A	B8-6.75	S	160	240	5	102	e7,e2
0912241-028A	B8-8.0	S	ND	ND	1	99	
0912241-030A	B9-5.0	S	ND	ND	1	97	
0912241-031A	B9-7.0	S	ND	ND	1	102	
0912241-032A	B9-8.0	S	ND	ND	1	103	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	NA	NA	ug/L
	S	1.0	5.0	mg/Kg

* water samples are reported in µg/L, wipe samples in µg/wipe, soil/solid/sludge samples in mg/kg, product/oil/non-aqueous liquid samples in mg/L, and all DISTLC / STLC / SPLP / TCLP extracts are reported in µg/L.

cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

+The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation:

- e1) unmodified or weakly modified diesel is significant
- e2) diesel range compounds are significant; no recognizable pattern
- e7) oil range compounds are significant



QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Soil

QC Matrix: Soil

BatchID: 47453

WorkOrder: 0912241

EPA Method SW8021B/8015Bm		Extraction SW5030B							Spiked Sample ID: 0912207-002A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex) ^f	ND	0.60	98.4	101	3.00	99.3	101	1.87	70 - 130	20	70 - 130	20
MTBE	ND	0.10	103	107	3.57	107	106	1.09	70 - 130	20	70 - 130	20
Benzene	ND	0.10	100	99.1	1.27	97.5	98.7	1.17	70 - 130	20	70 - 130	20
Toluene	ND	0.10	99.3	97.2	2.04	94.6	96	1.52	70 - 130	20	70 - 130	20
Ethylbenzene	ND	0.10	100	98.8	1.36	95.3	97.5	2.31	70 - 130	20	70 - 130	20
Xylenes	ND	0.30	102	101	1.16	97.8	100	2.17	70 - 130	20	70 - 130	20
%SS:	81	0.10	102	100	1.37	100	95	4.57	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 47453 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0912241-026A	12/04/09 2:00 PM	12/09/09	12/10/09 9:41 PM	0912241-027A	12/04/09 2:20 PM	12/09/09	12/11/09 12:54 AM
0912241-028A	12/04/09 2:20 PM	12/09/09	12/11/09 1:26 AM	0912241-030A	12/04/09 2:45 PM	12/09/09	12/10/09 7:31 PM
0912241-031A	12/04/09 2:45 PM	12/09/09	12/11/09 6:07 AM	0912241-032A	12/04/09 2:50 PM	12/09/09	12/10/09 9:09 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.



QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Soil

QC Matrix: Soil

BatchID: 47519

WorkOrder: 0912241

Analyte	EPA Method SW8021B/8015Bm		Extraction SW5030B						Spiked Sample ID: 0912241-016A			
	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex) [£]	ND	0.60	118	122	3.65	120	120	0	70 - 130	20	70 - 130	20
MTBE	ND	0.10	109	111	1.54	111	115	4.01	70 - 130	20	70 - 130	20
Benzene	ND	0.10	103	102	1.07	104	108	3.91	70 - 130	20	70 - 130	20
Toluene	ND	0.10	91.3	91.3	0	92.3	95	2.93	70 - 130	20	70 - 130	20
Ethylbenzene	ND	0.10	95.6	94.6	1.07	94.9	96.5	1.69	70 - 130	20	70 - 130	20
Xylenes	ND	0.30	109	108	0.782	108	110	1.34	70 - 130	20	70 - 130	20
%SS:	83	0.10	101	98	3.00	103	103	0	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 47519 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0912241-001A	12/04/09 9:00 AM	12/09/09	12/11/09 6:24 PM	0912241-002A	12/04/09 9:10 AM	12/09/09	12/11/09 2:29 AM
0912241-003A	12/04/09 9:15 AM	12/09/09	12/11/09 5:37 AM	0912241-006A	12/04/09 10:50 AM	12/09/09	12/11/09 8:23 PM
0912241-007A	12/04/09 10:55 AM	12/09/09	12/11/09 8:53 PM	0912241-008A	12/04/09 11:00 AM	12/09/09	12/11/09 1:58 AM
0912241-010A	12/04/09 11:15 AM	12/09/09	12/11/09 4:37 AM	0912241-011A	12/04/09 11:20 AM	12/09/09	12/11/09 5:54 PM
0912241-012A	12/04/09 11:25 AM	12/09/09	12/11/09 5:07 AM	0912241-013A	12/04/09 11:45 AM	12/09/09	12/11/09 3:38 AM
0912241-014A	12/04/09 11:45 AM	12/09/09	12/10/09 8:36 PM	0912241-015A	12/04/09 11:50 AM	12/09/09	12/11/09 3:01 AM
0912241-016A	12/04/09 12:15 PM	12/09/09	12/11/09 7:53 PM	0912241-017A	12/04/09 12:15 PM	12/09/09	12/11/09 3:33 AM
0912241-018A	12/04/09 12:10 PM	12/09/09	12/11/09 6:37 AM	0912241-020A	12/04/09 1:20 PM	12/09/09	12/10/09 10:13 PM
0912241-021A	12/04/09 1:20 PM	12/09/09	12/11/09 8:49 PM	0912241-022A	12/04/09 1:30 PM	12/09/09	12/15/09 1:24 PM
0912241-024A	12/04/09 1:55 PM	12/09/09	12/11/09 6:49 PM	0912241-025A	12/04/09 1:55 PM	12/09/09	12/11/09 6:54 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.



QC SUMMARY REPORT FOR SW8015B

W.O. Sample Matrix: Soil

QC Matrix: Soil

BatchID: 47501

WorkOrder 0912241

EPA Method SW8015B		Extraction SW3550C/3630C							Spiked Sample ID: 0912210-019A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH-Diesel (C10-C23)	ND	20	96.6	94.9	1.80	106	109	2.63	70 - 130	30	70 - 130	30
%SS:	99	50	99	97	2.44	109	110	1.13	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 47501 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0912241-026A	12/04/09 2:00 PM	12/09/09	12/10/09 2:21 PM	0912241-027A	12/04/09 2:20 PM	12/09/09	12/15/09 11:40 PM
0912241-028A	12/04/09 2:20 PM	12/09/09	12/10/09 11:09 AM	0912241-030A	12/04/09 2:45 PM	12/09/09	12/10/09 1:26 PM
0912241-031A	12/04/09 2:45 PM	12/09/09	12/11/09 2:55 AM	0912241-032A	12/04/09 2:50 PM	12/09/09	12/11/09 1:46 AM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.



QC SUMMARY REPORT FOR SW8015B

W.O. Sample Matrix: Soil

QC Matrix: Soil

BatchID: 47518

WorkOrder 0912241

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH-Diesel (C10-C23)	ND	20	105	101	4.23	102	102	0	70 - 130	30	70 - 130	30
%SS:	102	50	103	97	6.23	96	95	0.773	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 47518 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0912241-001A	12/04/09 9:00 AM	12/09/09	12/09/09 7:48 PM	0912241-002A	12/04/09 9:10 AM	12/09/09	12/10/09 4:13 AM
0912241-003A	12/04/09 9:15 AM	12/09/09	12/10/09 5:22 AM	0912241-006A	12/04/09 10:50 AM	12/09/09	12/10/09 7:41 AM
0912241-007A	12/04/09 10:55 AM	12/09/09	12/10/09 8:50 AM	0912241-008A	12/04/09 11:00 AM	12/09/09	12/10/09 10:00 AM
0912241-010A	12/04/09 11:15 AM	12/09/09	12/09/09 8:56 PM	0912241-011A	12/04/09 11:20 AM	12/09/09	12/09/09 10:05 PM
0912241-012A	12/04/09 11:25 AM	12/09/09	12/09/09 11:13 PM	0912241-013A	12/04/09 11:45 AM	12/09/09	12/11/09 11:34 AM
0912241-014A	12/04/09 11:45 AM	12/09/09	12/10/09 3:47 AM	0912241-015A	12/04/09 11:50 AM	12/09/09	12/10/09 4:55 AM
0912241-016A	12/04/09 12:15 PM	12/09/09	12/14/09 2:40 PM	0912241-017A	12/04/09 12:15 PM	12/09/09	12/10/09 8:20 AM
0912241-018A	12/04/09 12:10 PM	12/09/09	12/10/09 9:28 AM	0912241-020A	12/04/09 1:20 PM	12/09/09	12/14/09 10:37 PM
0912241-021A	12/04/09 1:20 PM	12/09/09	12/15/09 5:25 AM	0912241-022A	12/04/09 1:30 PM	12/09/09	12/11/09 12:42 PM
0912241-024A	12/04/09 1:55 PM	12/09/09	12/15/09 10:31 PM	0912241-025A	12/04/09 1:55 PM	12/09/09	12/10/09 6:03 AM

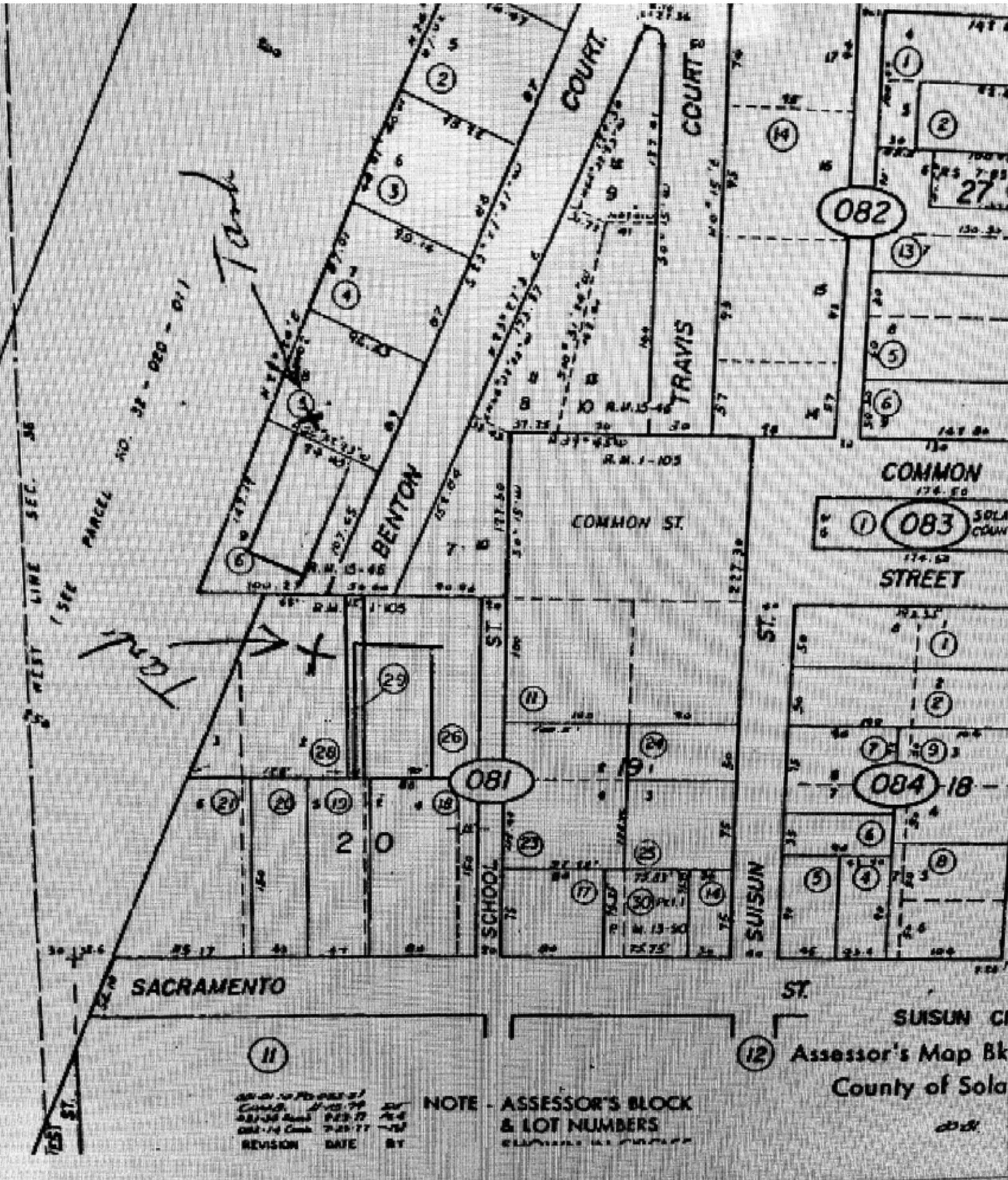
MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.



081-14	Feb 22 77	BY
081-14	Feb 22 77	BY
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081-14	Feb 22 77	BY
081-14	Feb 22 77	BY
081-14	Feb 22 77	BY
081-14	Feb 22 77	BY

NOTE - ASSESSOR'S BLOCK & LOT NUMBERS

Assessor's Map Bk
 County of Solano



Applied GeoSystems

43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

4000 L

RECORD OF ANALYSIS

Date 9-2-87

RAMCON
1450 Harbor Blvd.
West Sacramento, CA 95691

Attention: Clyde Chapman

Date Received: 8-28-87

Laboratory# 8708S144

Date Analyzed: 8-28-87

Procedure:

The soil sample referenced on the attached Chain-of-Custody was analyzed for the presence and concentration of Benzene, Ethyl-Benzene, Toluene, and Xylenes (BETX) and for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The sample was concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Photo-Ionization detector (PID) and a Flame Ionization detector (FID). The limit of detection for this sample is 0.05 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

<u>SITE</u>	<u>SAMPLE</u>	<u>BENZENE</u>	<u>ETHYL BENZENE</u>	<u>TOLUENE</u>	<u>TOTAL XYLENES</u>	<u>TVH</u>
DEWEY PEST CONTROL	1	ND	ND	0.14	0.25	1.11

Results in milligrams/kilogram (parts per million = ppm).
ND=Non Detectable - Less than 0.05 milligrams/kilogram (ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).



Applied GeoSystems

43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-7906

RECORD OF ANALYSIS Date 9-2-87

RAMCON
1450 Harbor Blvd.
West Sacramento, CA 95691

Attention: Clyde Chapman

Date Received: 8-28-87
Date Analyzed: 8-28-87

Laboratory# 8708S145

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for the presence and concentration of Benzene, Ethyl-Benzene, Toluene, and Xylenes (BETX) and for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Photo-Ionization detector (PID) and a Flame Ionization detector (FID). The limit of detection for these samples is 0.05 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

<u>SITE</u>	<u>SAMPLE</u>	<u>BENZENE</u>	<u>ETHYL BENZENE</u>	<u>TOLUENE</u>	<u>TOTAL XYLENES</u>	<u>TVH</u>
SUISUN ROOFING OUTSIDE YARD	1	ND	ND	ND	0.17	0.92
SUISUN ROOFING SOUTH END OF TANK	2	0.07	ND	ND	0.17	1.28
SUISUN ROOFING NORTH END OF TANK	3	ND	ND	0.33	0.28	1.19

Results in milligrams/kilogram (parts per million = ppm).
ND=Non Detectable - Less than 0.05 milligrams/kilogram (ppm).


Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

file # 4000 2

SOLANO COUNTY DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
Division of Environmental Health Services
OFFICIAL INSPECTION FORM

355 Tuolumne Street
VALLEJO, CA. 94590
PH: (707) 553-5251

Date 26 Aug 81
Business Name RAMCO Operator Safety Bill
Address P.O. Box 1024, 145th St, W. Sac, CA Phone 916 372 7535

The following violations of _____ Code were found and shall be corrected: _____

UGT Removals

① 260 Barton Ct - Swivel (SS Roofing)
1 - 10,000 gal. - Leaked regular - Noted: holes at both ends (probably corrosion from electrolytic/cathodic action)
Excavation 11' depth (same as groundwater)
Required Sampling -> Soil sampling at each end of tank
Analysis Req'd -> TPH + BTX + Lead
[One off-site sample for lead analysis for background]

② 260 W Barton Ct - Swivel (Perry P.C.)
1 - 2,000 gal - Unleaked - No holes/leakage noted
Req'd sampling - minimum 1 sample soil - Run TPH + BTX

③ 1648 N. Texas - Fairfield Flt # 30114
2 - 1,000 gal - Unknown fuel tank - no holes/leakage noted
Req'd sampling - 2 soil samples, (1 each) directly under each tank - Run TPH + BTX
~~1 - 1,000 gal~~

Received by [Signature] Title FOREMAN
Environmental Health Officer [Signature]

Randy Wheeler

From: Musonge, Martin@Waterboards <Martin.Musonge@waterboards.ca.gov>
Sent: Wednesday, October 14, 2015 2:42 PM
To: Randy Wheeler
Subject: RE: Sheldon Oil Truck Wash, 526 School Street Update CASE #: 48S0040

Dear Mr. Wheeler:

In response to your inquiry, I do not believe that the subject Site would be considered for closure at this time because detected concentrations of TCE at the wash rack area wells are still very, high. I still need to complete further review of the related request for closure. It is possible we will be recommending additional monitoring and/or additional remedial actions.

Sincerely,

Martin Musonge
WRCE

From: Randy Wheeler [<mailto:rlwheeler@ninyoandmoore.com>]
Sent: Tuesday, October 13, 2015 11:10 AM
To: Musonge, Martin@Waterboards
Subject: Sheldon Oil Truck Wash, 526 School Street Update CASE #: 48S0040

Good morning Martin,
I'm working on a specific plan update for the City of Suisun City, and wanted to get some feedback on the status of the work at 526 School Street. I have a copy of Geocon's Second and Third Quarter 2015 g/w monitoring report that recommends the site should be closed as a low-threat solvent case. Can you comment on the status of closure for this facility, or if additional monitoring is necessary?

Thank you.

Randy L. Wheeler, C.E.M
Senior Geologist
Ninyo & Moore
Geotechnical & Environmental Sciences Consultants
1401 Halyard Drive, Suite 110
West Sacramento, California 95691
916-373-9858, Ext 15402 (office)
916-373-9792 (fax)
916-317-3284 (cell)
rlwheeler@ninyoandmoore.com

Experience · Quality · Commitment

In Reply
Please Refer to:
NI-3057-F3B

August 26, 1991

Suisun City Redevelopment Agency
701 Civic Center Boulevard
Suisun City, CA 94585

Attention: Mr. Camran Nojoomi

Subject: Former Sewer Treatment Plant Sludge Ponds
Suisun City, California

DRAFT

PL
MB
LB
Old Plant Property file

SOIL AND GROUND-WATER INVESTIGATION REPORT

- Reference:
1. ENGEO, Inc.; Environmental Assessment, 35 Acre Redevelopment Area, Suisun City, California; Report Dated August 20, 1991.
 2. ENGEO Inc.; Laboratory Testing of Soil in the Area of the Former Sludge Ponds, Abandoned Sewer Treatment Plant, Suisun City, California; Draft Report Dated May 13, 1991.
 3. ENGEO Inc.; Revised Work Plan for a Soil and Ground-Water Investigation, Former Sewer Treatment Plant Sludge Ponds and Todd Park, Suisun City, California; Draft Revised Work Plan Dated June 20, 1991.

Gentlemen:

Enclosed please find the results of the investigation undertaken to address the potential soil and ground-water contamination found in the area of the former sludge beds east of the abandoned sewer treatment plant in Suisun City, California. The study included sampling and testing of the soil and ground water beneath the Todd Park playing fields north of the sewer plant facilities and testing the ground water adjacent to the former sewer plant.

No significant environmental concerns were identified which would preclude the development of the parcel for residential use. The study found that the distribution of metals in the near surface soil was within known background levels.

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INTRODUCTION

This soil and ground-water investigation was undertaken to evaluate the extent of the metal concentrations in the soil and ground water beneath the proposed development site. Earlier studies had identified potential soil and ground-water contamination in the area of the former sludge ponds associated with the abandoned Suisun City sewer treatment plant. Previous sampling and laboratory testing of near surface soil in the area of the former sludge beds exposed concentrations of lead and nickel exceeding the State's designated levels defining a hazardous waste.

A residential development is presently proposed that will include the area of the former sludge beds. The proposed development would encompass the area of the former sludge ponds, the abandoned sewer treatment plant and Todd Park. Soil and ground-water samples were collected from Todd Park to establish local background levels for metals particularly lead and nickel.

A ground-water monitoring well was installed south of the former sludge pond area to determine if the soluble lead found in the one of the previously tested samples had impacted the ground water. A second monitoring well was installed south of the area of the abandoned sewer treatment plant to find out if releases from the facility had occurred and impacted the soil and ground water.

Scope of Work

The scope of services includes:

1. Drilling and logging of exploratory boreholes in the area of the former sludge ponds, Todd Park and in areas outside of the proposed development limits.

2. Collection of near surface soil samples for laboratory testing. A description of the soil in each borehole was prepared and the extent of unknown fill materials was described.
3. Laboratory testing of selected soil samples for priority metals. Testing for individual metals such as nickel and lead was conducted on each of the soil samples.
4. Installation of two ground-water monitoring wells with the collection of ground-water samples for laboratory testing for priority metals and semi-volatile compounds. The well installed in the area of the former sewer treatment plant was also tested for volatile organics and total petroleum hydrocarbons.
5. Analysis of the laboratory test results to establish the normal distribution of the lead and the nickel in the near surface soil beneath the proposed development area.
6. Preparation of a report documenting the work performed and the findings of the laboratory testing and analysis.

BACKGROUND INFORMATION

Site History

The abandoned sewer treatment plant and the area of the former sludge beds was used by the Fairfield-Suisun Sewer District from the mid-1950s to about 1976. The plant is located in the Eastern Redevelopment Area of Suisun City. The parcel includes abandoned sewer treatment plant buildings and cement-lined treatment tanks. The area of the former sludge beds is currently used as baseball playing fields (Figure 2). An operational pumping plant is situated on the western limits of the parcel and is not included in the study area.

Structures at the abandoned plant include a concrete-lined digester, a clarifier and chlorination tanks, administrative buildings, a maintenance garage and storage sheds. The ground surface of the sewer plant is paved and covered with either asphalt or concrete. The clarifiers, digester, chlorine tanks and chlorination building are concrete structures. The bottom of the clarifier, digester and chlorine tanks are situated approximately six to eight feet below the ground surface. A 42-inch-diameter sewer outflow pipe is located in the southwest corner of the parcel.

We understand that the former sludge disposal ponds were used during the operational life of the treatment plant. There were four anaerobically digested sludge ponds located on the adjacent parcel. Sludge from the sewer plant was also hauled off-site and used on agricultural lands. It is unclear whether the sludge from the ponds was periodically hauled off site. We found no record of the abandonment of the sludge ponds prior to the construction of the playing fields.

The playing fields were developed by filling and leveling the area of the old sludge ponds. Conversations with Suisun City personnel found that dried sludge or sediment in the ponds was removed prior to the placement of fill for the playing field construction. It is our

understanding that the source for some of the fill materials was the demolition of the old town portion of Suisun City. Pieces of asphalt pavement, brick, concrete and glass could be found in the old fill.

Recent Studies

Laboratory testing of near surface soil samples collected on April 8, 1991 from the area of the former sludge ponds detected soluble concentrations of lead and nickel in two of the four samples tested (Appendix C). There was a concern that potentially hazardous concentrations of metals were in the site soil and ground water which could impact the proposed residential development. The samples collected and tested were from within a limited area in the southern portion of the proposed development.

Review of these initial findings presented the following environmental concerns (1) the unknown extent of hazardous levels of soluble lead and nickel on the subject parcel and the impact of these metals on the proposed use of the site and (2) the potential for ground-water impact from soluble lead. It was not clear if the source of the lead in the soil is from sludge leachate or the unknown fill materials which have been placed beneath the playing fields. The fill appeared to be on the order of two to at least four feet in thickness.

The initial number of four soil samples collected for laboratory testing was not sufficient to characterize the soil beneath the proposed development with regard to the background metal concentrations and the potential impacts from lead and nickel. The soil sampling and laboratory testing undertaken in this study was developed to determine the average concentration of the lead and nickel in the site soils.

The sampling plan encompassed the Todd Park, north of the sludge bed site, where playing fields are now located. No previous environmental assessments of the playing fields had

been undertaken by our office. These fields were not included in the Eastern Redevelopment Area studied in Referenced Report 1.

Shallow off site soil sampling locations were selected to establish a local background level for metals in the site soil in this section of Suisun City. The extent and character of the unknown fill in the area of the former sludge ponds and beneath Todd Park was also evaluated.

Analysis of the laboratory test results would establish the average metals concentrations in the near surface soil on and off the property. The purpose of the sampling and testing is to determine if the lead and nickel exposed to date are (1) anomalous hot spots, (2) typical of the metal concentrations in this portion of Suisun City, or (3) are characteristic of the metal concentrations found in the unknown fill but not across the remainder of the development site.

The two ground-water monitoring wells were installed to establish if the shallow ground water had been impacted by soluble metals from the sludge pond area or by semi-volatile and volatile organics from the abandoned sewer treatment plant. One well was located south of the former sludge bed site to establish if the water migrating in the direction of the Suisun Slough has been affected.

We understand that the proposed development will encompass the abandoned former sewer treatment plant. There is a thick concrete pad and cover across this site which makes it difficult to collect representative soil samples. A ground-water monitoring well was placed south of the former sewer plant, between the plant and the slough. If there has been a release of unknown chemical compounds from the plant, given the relatively shallow ground-water depth, this well could provide an initial indication of the possible extent or character of a release.

SOIL AND GROUND-WATER INVESTIGATION

A. Soil Sampling

Near surface soil samples were collected from the area of the former sludge beds and in Todd Park (Figure 2). The shallow exploratory borings were also logged to identify the extent of unknown fill material overlying the natural soil. In some selected locations the borings were extended to the top of the saturated zone above the ground water.

The exploratory soil borings drilled in the area of the former sludge ponds, playing fields and landscaped areas were advanced using a three inch diameter hand auger. The soil samples were collected using a 2-inch-diameter hand sampler equipped with six-inch-long brass liners. The soil samples were collected from depths of about nine to fifteen inches below the ground surface.

Sampling equipment was washed with a trisodium phosphate (TSP) and water solution and rinsed with clean water between each sampling event. The samples were placed in a cooled ice chest and transported under documented chain-of-custody to a certified analytical testing laboratory.

The samples were submitted to the analytical laboratory to determine the background levels of metals in the near surface soil. Selected samples were tested for the priority metals while the remaining soil samples were tested for nickel and lead only since these appear to be the metals of most concern on the site.

The exploratory drilling was performed by an ENGEO environmental geologist who logged the borings in accordance with the Unified Soil Classification System. The logs of the exploratory boreholes are included in Appendix D. The samples were screened in the field using a photoionization detector (PID), a device that provides a field determination of the

presence of certain volatile organic compounds. The detector is equipped with a 10.0 eV bulb and is calibrated to a 100 parts per million isobutylene standard.

Soil cuttings were placed in sealed plastic bags for a period of 5 to 10 minutes. The PID sampling probe is then placed within the bag to draw an air sample into the sampling port. The peak organic vapor value is then recorded for each sample. No unusual vapors were recorded during the exploratory drilling process.

B. Ground-Water Monitoring Wells

Two ground-water monitoring wells were installed outside of the proposed development area. The locations of the wells are shown on Figure 2. One well is situated south of the former sludge beds to determine if soluble metals have impacted the ground water flowing from the site.

The second well was placed southwest of the abandoned sewer treatment plant. It is our opinion that if a release occurred from the clarifier, digester or chlorine tanks, the ground water would have been affected since the tank bottoms are recessed six to eight feet below the ground surface.

The borings for the wells were drilled to a depth of approximately 20 feet (15 feet below the top of the ground-water table) using a hollow stem auger. Soil samples were collected at regular intervals and preserved for laboratory testing.

The monitoring wells consist of 2-inch-diameter PVC casing with flush joints, installed down through the hollow stem auger. The wells are constructed with 15 feet of screened casing (0.01-inch slot width) and an appropriate length of solid PVC well casing (2-inch-diameter Schedule 40 PVC). The bottom of the PVC screen and boring was backfilled with No. 1C Monterey sand to one foot above the screened section. A 12-inch layer of bentonite pellets

was placed on top of the sand and a cement/bentonite seal was established up to the ground surface. The wells were completed in a locking, traffic-resistant box. The top of the well casing is secured with a locking waterproof cap.

After the cement/bentonite grout had set for at least 24 hours, each well was developed using a surge block, air lift pump, and bailer in an attempt to produce less turbid water prior to sampling. The report on the development of each well is included in Appendix E. The purged water was stored in Department of Transportation approved drums until the results of the laboratory testing were available. At that time the water was disposed in an appropriate manner and the drums removed from the site.

Twenty-four hours after development, the depth to the top of the ground-water table was measured and the wells were checked for the presence of free product. Prior to the collection of the ground-water samples for laboratory testing, four well volumes of water were removed from each well using an electric submersible pump. Samples were recovered using a Voss Technologies dedicated polyethylene bailer. The water samples were then decanted into the appropriate containers depending on the laboratory testing to be conducted. The samples were cooled in an ice chest until delivery under a documented chain-of-custody to the analytical testing laboratory.

C. Laboratory Testing

Soil Samples. The shallow soil samples selected for laboratory testing were analyzed for TTLC CAM 17 metals with most of the samples tested for nickel and lead concentrations. The soil samples collected from the top of the saturated zone in each monitoring well were tested for either priority metals or semi-volatile and volatile organic compounds.

Ground-Water Samples. The ground-water samples collected from the monitoring well south of the sludge pond area were tested for priority metals and semi-volatile organics (EPA Test Method 625). The ground-water monitoring well located southwest of the abandoned sewer treatment plant was analyzed for priority metals, semi-volatile organics (EPA Test Method 625), volatile organics (EPA Test Method 624) and total extractable petroleum hydrocarbons (EPA Test Method 3510/8015).

REVIEW OF LABORATORY TEST RESULTS

Ground Water

The laboratory analysis of the ground water sampled from both of the monitoring wells was non-detectable for the compounds tested. Monitoring well 1 is situated south of the area of the former sludge ponds (Figure 2). It is also south of surface sampling location number 2 where a soluble lead concentration of 6.7 ppm was detected. This concentration barely exceeded the State Soluble Threshold Limit Concentration (STLC) for lead which is 5 ppm.

No metal concentrations were detected in the ground water collected from well MW-1. The ground-water sample from MW-1 was also evaluated for concentrations of semi-volatile organics which could have leached from the crushed asphalt and pavement placed in the fill in the area of the former sludge ponds. The laboratory analysis (EPA Test Method 625) was non-detectable for semi-volatile organics.

The ground water from monitoring well MW-2 was non-detectable for extractable petroleum hydrocarbons, volatile organics and for CAM 17 metals. There were no indications from reviewing the laboratory test results that the sewer treatment facility has impacted the ground water in the site vicinity.

Soil

Review of the laboratory test results for the near surface soil samples found that the concentrations of metals in the near surface soil varied across the proposed development site. High concentrations of lead and nickel were detected in the southern portion of the former sludge pond area. Lead at 295 ppm was detected in the near surface soil sample collected from sampling location 6-1. Nickel at 226 ppm was detected in sampling location 8. It should be noted that the high lead level appears to be limited to the upper nine to

fifteen inches of soil since sample 6-2 collected at a depth of twenty-four inches below the ground surface was significantly less. High lead levels were also recorded in the soil samples 15 and 19 collected along the eastern edge of Todd Park (Figure 2).

The Department of Health Services (California Administrative Code, Title 22, Section 66699) has established Soluble Threshold Limit Concentrations (STLC) and Total Threshold Limits Concentrations (TTLC) which define materials as a hazardous waste. The lead and nickel concentrations were of the most concern since in some sampling locations they exceed the STLC by greater than ten times.

The DHS requires that a Waste Extraction Test (WET) be undertaken on a sample that exceeds the STLC by greater than ten times. If the detected concentrations exceed the STLC but are not greater than ten times the STLC, than a WET does not need to be conducted.¹ The WET was undertaken on the appropriate soil samples to determine the waste classification of the material. The limit of this classification is based on a 10-fold dilution factor associated with the sample preparation for the Waste Extraction Test.

The Waste Extraction Test results (CAM WET) for the lead and nickel samples are summarized below in parts per million (ppm). The initial concentrations of lead and nickel are in parentheses next to the sample number:

<u>Sample ID</u>	<u>Lead</u>	<u>Nickel</u>
6-1 (295 ppm)	0.85	N/A
8 (226 ppm)	N/A	2.2
15 (123 ppm)	0.74	N/A
19 (42 ppm)	0.10	N/A

¹ Department of Health Services letter report dated July 23, 1987 by David J. Lue PhD., Chief Alternative Technology Section

Review of the WET analysis shows that the high lead and nickel concentrations detected in the near surface soil samples are not soluble and the soil would not be classified as a hazardous waste.

ANALYSIS OF SOIL DATA

The laboratory test results for the lead and nickel concentrations in the soil were statistically analyzed. The purpose was to evaluate the normal distribution of the metals in the near surface soils beneath the planned development area and to establish a background concentration for these metals in this section of Suisun City. The level of confidence in the test results was also studied to determine if an appropriate number of samples had been collected for the analysis.

The results of the study are included in Appendix F. The study found that there is a 90 percent confidence level that the lead concentrations in the near surface soil across the planned development site are at levels of 21.9 ppm or less with nickel at 28.0 ppm. These levels are within known background level for lead and nickel in the Bay Area.

Given the results of the WET analyses undertaken on the selected soil samples, we would expect that the soluble concentrations of lead and nickel in the soil beneath the planned development area, are significantly below a defined hazardous waste level. Review of the test results indicates that there is a 90 percent level of confidence that additional laboratory testing of a near surface soil sample within the proposed development area would expose lead or nickel concentrations close to the normal distributions levels of 21.9 ppm and 28.0 ppm respectively.

SUMMARY OF FINDINGS

Laboratory testing of the ground-water monitoring wells situated south of the former sludge pond area and the abandoned sewer treatment plant found no detectable concentrations of metals, extractable petroleum hydrocarbons or volatile and semi-volatile organics. It does not appear that soluble lead exposed in one near surface soil sample has impacted the ground water beneath the southern portion of the development area. There are no indications that past use of the abandoned sewer treatment plant has impacted the ground water south of the site.

The sampling of the near surface soil across the proposed development area exposed approximately two to four feet of a fill material beneath the sod and grasses of the playing fields. The fill appeared to be a mixture of sandy clay and clayey sand with some gravel. Traces of glass, brick and concrete fragments were logged in a number of the exploratory boreholes. It is most likely that the source of the fill is the old town sections of Suisun City, such as Heritage Park.

Laboratory testing of the fill materials in the near surface soil exposed metal concentrations which on the average were within expected background levels particularly with regard to lead and nickel. The southern portion of the sludge pond area in the southeast corner of the proposed development contained significant concentrations of lead and nickel. The WET test results show that the concentrations of nickel in sample 1-1 and lead in sample 2-1 exceed the DHS criteria used to classify a material as hazardous (Appendix C). The classification of the soil as a hazardous waste applies if the soil is to be removed and hauled from the site.

After reviewing the most recent WET analyses undertaken on samples with significant concentrations of lead and nickel, it is our opinion that the soluble lead found in sampling location number 2 is an isolated anomalous instance. Laboratory testing of the near surface

soil in this study exposed high levels of lead and nickel which are not soluble. Given the normal distribution concentrations of the lead and nickel developed from a statistical analysis of the laboratory test results, it does not appear that the metal concentrations in the soil should impact the proposed use of the site.

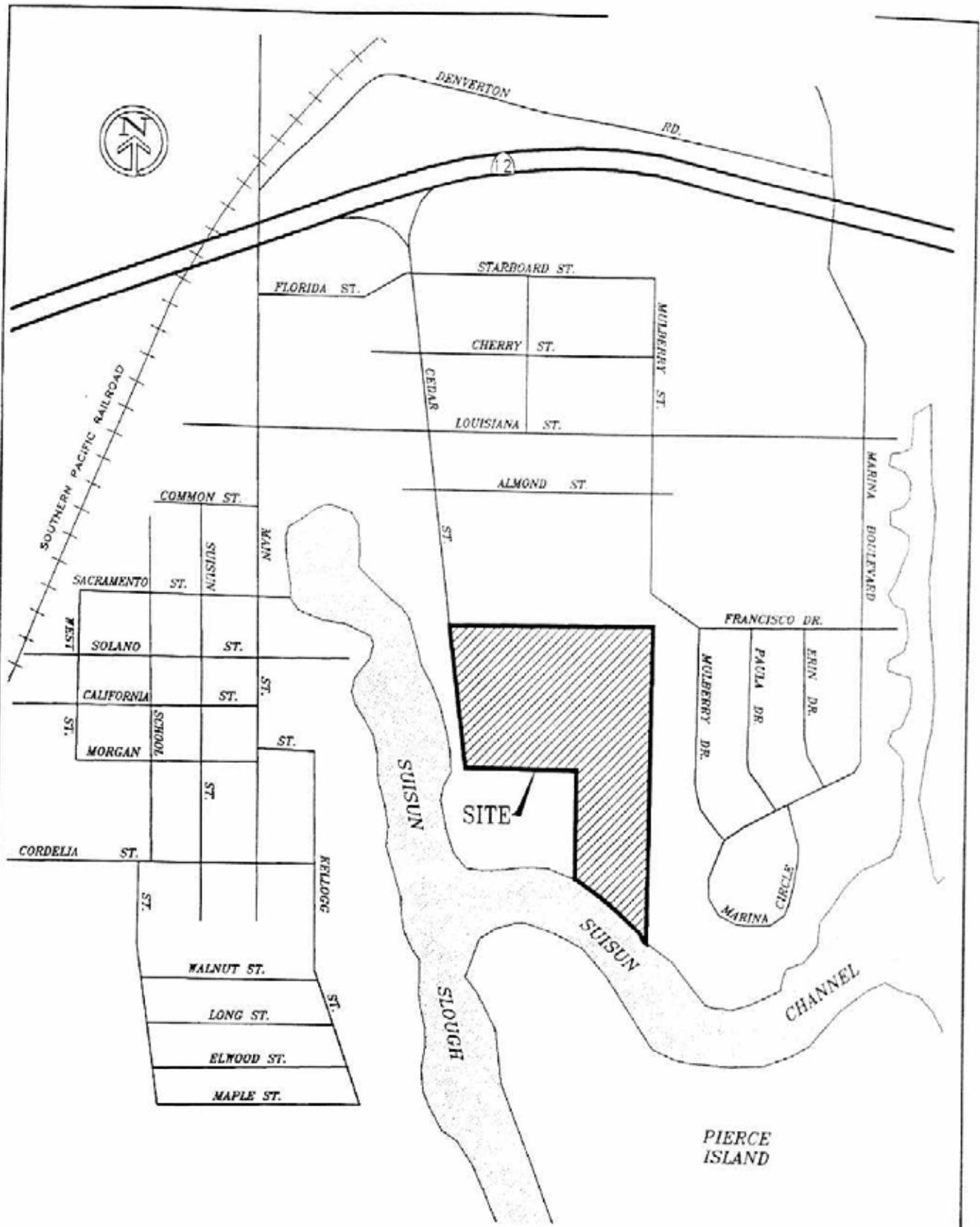
The soil beneath the remainder of the former sludge pond area and Todd Park does not contain significant concentrations of metals which would preclude the development of the site. The residential development of the parcels can be constructed as planned.

RECOMMENDATIONS

The area of concern identified in the soil and ground-water studies include the southern limits of the former sludge ponds in the areas of sampling locations 2 and 4. Soluble levels of lead and nickel were identified in these locations. It appears that the excessive concentrations of the metals are limited to the upper one to one and one half feet of the near surface soils at these sampling points.

Prior to grading and after the removal of the sod and grasses from the playing fields, we recommend that the soils in these areas be excavated. The surface soil in this area could be scraped up and isolated from the residential development area. Since it does not appear that there are significant levels of soluble lead or nickel we would recommend that the soil be placed beneath paved inaccessible areas such as the roadways and parking area.

After grading activities soil samples could be collected from the rough graded lot pads in the southern portion of the former sludge pond area. Laboratory testing of the soil for metals could be undertaken as a prudent measure to determine that no significant concentrations of lead or nickel remain in the near surface soil in this area.



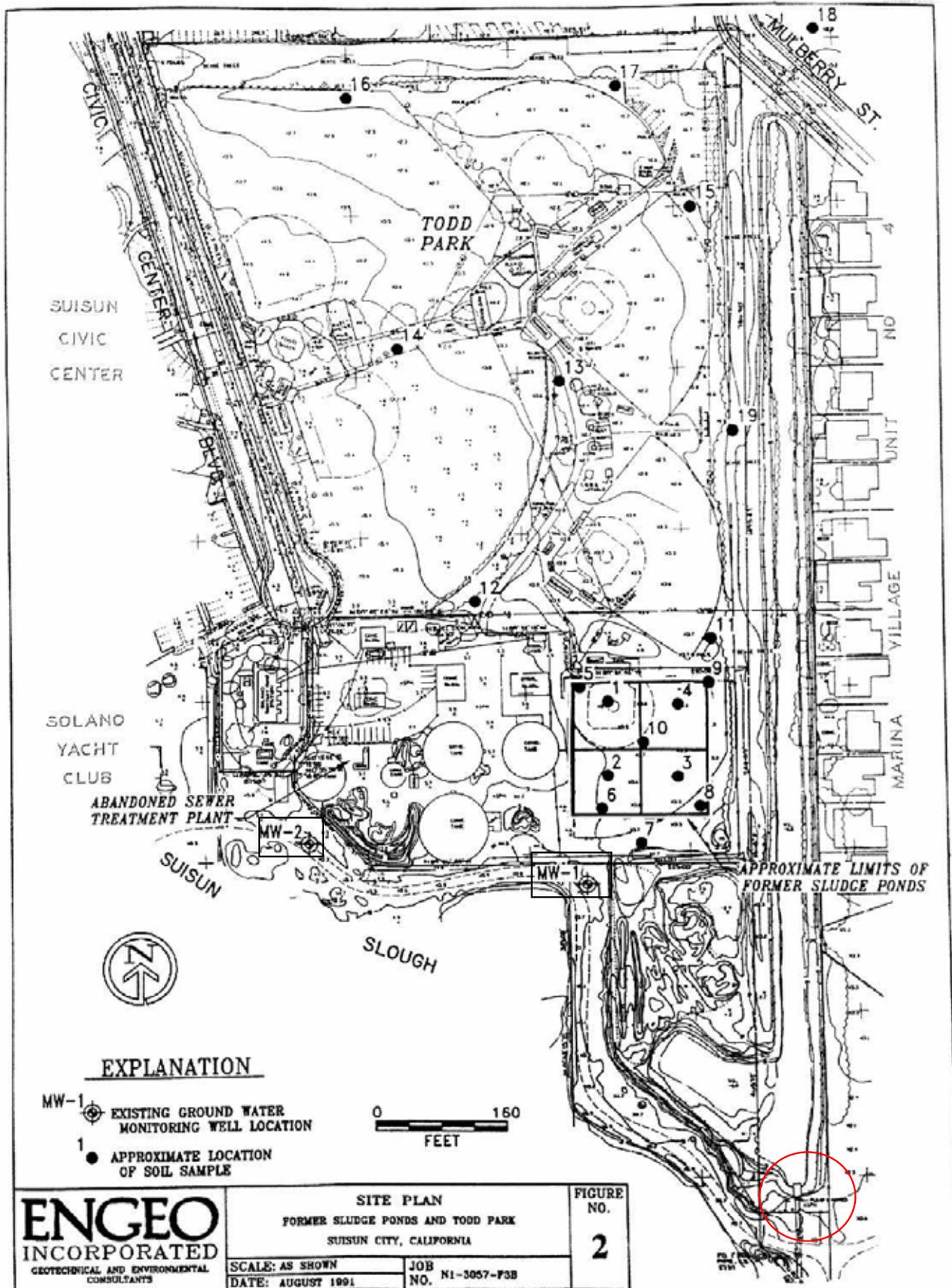
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VICINITY MAP
 FORMER SLUDGE PONDS AND TODD PARK
 SUISUN CITY, CALIFORNIA

FIGURE NO.
1

SCALE: N.T.S.
 DATE: AUGUST 1991

JOB NO. N1-3057-F3B



EXPLANATION

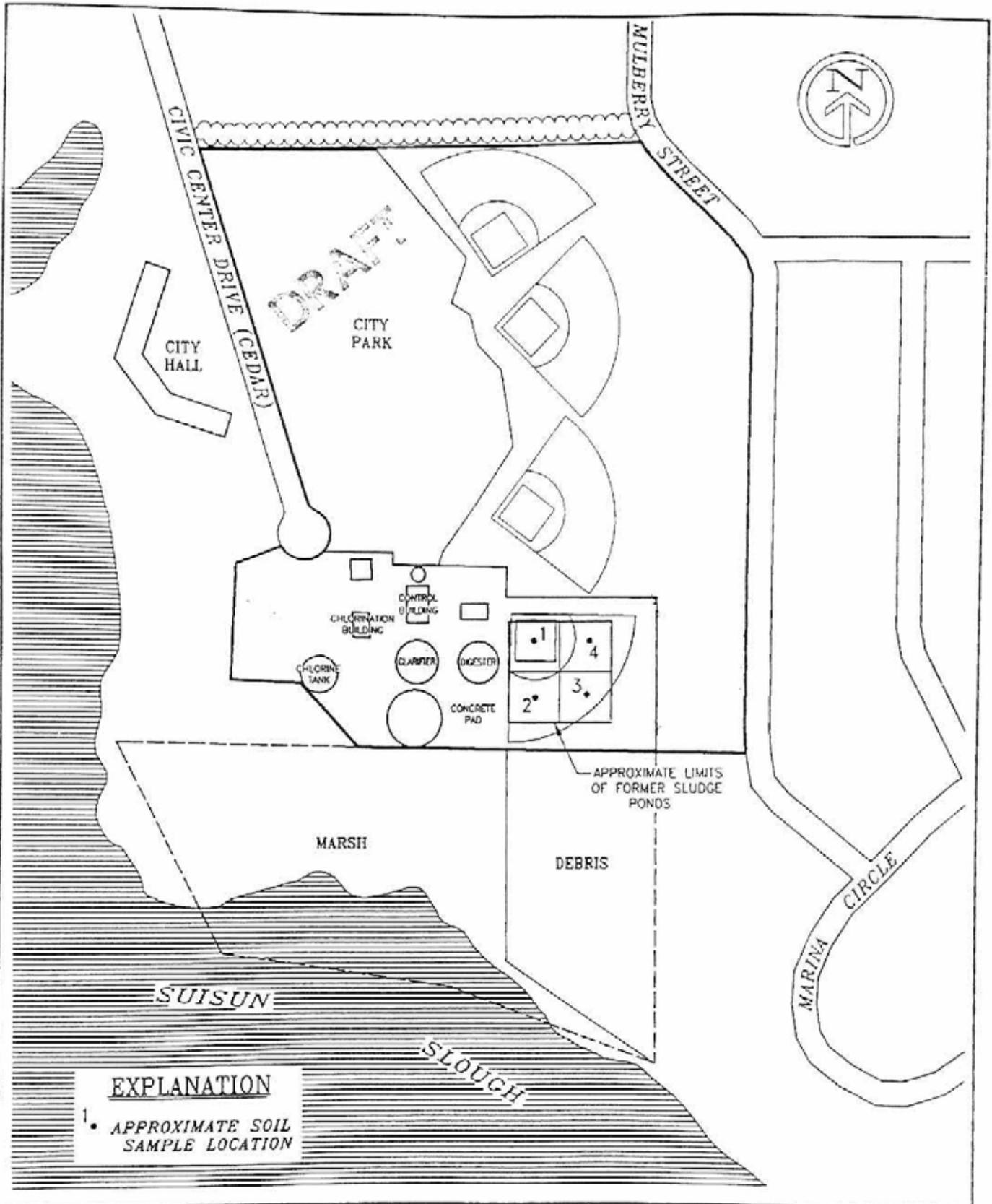
- MW-1 EXISTING GROUND WATER MONITORING WELL LOCATION
- 1 APPROXIMATE LOCATION OF SOIL SAMPLE



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SITE PLAN FORMER SLUDGE PONDS AND TODD PARK SUISUN CITY, CALIFORNIA	
SCALE: AS SHOWN	JOB NO. N1-3057-F3B
DATE: AUGUST 1991	

FIGURE NO.
2



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SITE PLAN
 FORMER SEWER PLANT AREA
 SUISUN CITY, CALIFORNIA

SCALE: N.T.S.
 DATE: MAY 1991

JOB
 NO. N1-3057-F3

FIGURE
 NO.
1