

LOP - RECORD CHANGE REQUEST FORM

printed:
01/04/2000

Mark Out What Needs Changing and Hand to LOP Data Entry
(Name/Address changes go to Annual Programs Data Entry)

Insp: *JMS* *AG*

AGENCY # : 10000 SOURCE OF FUNDS: F SUBSTANCE: 12034
StID : 4233 LOC:
SITE NAME: San Lorenzo School DATE REPORTED : 01/08/1991
ADDRESS : 15701 Lorenzo Ave DATE CONFIRMED: 01/08/1991
CITY/ZIP : San Lorenzo 94580 MULTIPLE RPs : N

SITE STATUS

CASE TYPE: O CONTRACT STATUS: 9 PRIOR CODE: EMERGENCY RESP:
RP SEARCH: S DATE COMPLETED: 07/08/1992
PRELIMINARY ASMNT: C DATE UNDERWAY: 01/01/1991 DATE COMPLETED: 06/29/1999
REM INVESTIGATION: DATE UNDERWAY: DATE COMPLETED:
REMEDIAL ACTION: DATE UNDERWAY: DATE COMPLETED:
POST REMED ACT MON: DATE UNDERWAY: DATE COMPLETED:

ENFORCEMENT ACTION TYPE: 1 DATE ENFORCEMENT ACTION TAKEN: 07/08/1992
LUFT FIELD MANUAL CONSID: 3GQRW
CASE CLOSED: DATE CASE CLOSED:
DATE EXCAVATION STARTED : 01/03/1991 REMEDIAL ACTIONS TAKEN:

RESPONSIBLE PARTY INFORMATION

RP#1-CONTACT NAME: Karen Langmaid
COMPANY NAME: San Lorenzo Unified School Dis
ADDRESS: 15510 Usher St.
CITY/STATE: San Lorenzo, Ca 94580

INSPECTOR VERIFICATION:

NAME _____ SIGNATURE _____ DATE _____

DATA ENTRY INPUT:

Name/Address Changes Only

Case Progress Changes

ANNPMS _____ LOP _____ DATE _____

LOP _____ DATE _____

*Ins - Please finish, All it
needs is closing letter.
Thanks, Tim*

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY
DAVID J. KEARS, Agency Director



ENVIRONMENTAL HEALTH SERVICES

1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9335 (FAX)

StID 4233

September 22, 1999

Ms. Karen Langmaid
15510 Usher Street
San Lorenzo, CA 94580

**RE: Well Decommission at Arroyo School, located at 15701 Lorenzo Avenue,
San Lorenzo, CA**

Dear Ms. Langmaid:

This office and the San Francisco Bay-Regional Water Quality Control Board have reviewed the case closure summary for the above referenced site and concur that no further action related to the release from the two former petroleum underground storage tanks is required at this time. Before a remedial action completion letter is sent, the four onsite monitoring wells (MW1 through MW4) should be decommissioned if they will no longer be monitored. Please notify this office upon completion of well destruction so a closure letter can be issued.

Well destruction permits may be obtained from Alameda County Flood Control and Water Conservation, Zone 7. They can be reached at (510) 484-2600.

If you have any questions, I can be reached at (510) 567-6763.

Sincerely,

Juliet Shin, R.G.
Hazardous Materials Specialist

TRANSMIT REPORT

1999,09-22 14:09
510 337 9335
ALAMEDA CO EHS HAZ-OPS

COM No.	REMOTE STATION	START TIME	DURATION	PAGES	RESULT	USER ID	REMARKS
223	5105818490	09-22 14:08	01' 18	02/02	OK		

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Alameda County Environmental Health

1131 Harbor Bay Pkwy., #250
Alameda CA 94502-6577
Telephone (510) 567-6700 FAX (510) 337-9335

FACSIMILE COVER SHEET

TO: John Mrakovich, Fax: 510-581-8490FROM: Juliet ShinDATE: 09/22/99Total number of pages including cover sheet 2

-NOTES- John, FYI, - this office has
requested that the San Lorenzo School District
destroy monitoring wells before issuing
closure letter. - Juliet Shin



San Lorenzo Unified School District

BOARD OF EDUCATION

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Arnie C. Glassberg, Business Services
Stephen L. Ow, Personnel Services

September 3, 1999

Environmental Health Services
Attn: Juliet Shin, R.G.
Hazardous Materials Specialist
1131 Harbor Bay Parkway, Suite 250
Alameda, Ca 94502-6577

To whom it may concern:

In accordance with section 25297.15(a) of Chapter 6.7 of the Health and Safety Code, the San Lorenzo Unified School District certifies that the district is the sole landowner for the property located at 15701 Lorenzo Avenue, San Lorenzo, CA. 94580.

Sincerely,

Karen Langmaid
San Lorenzo Unified School District
Director of Facilities

KL: km

77 SEP 10 PM 3:46
NOTED
10/10/99

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY
DAVID J. KEARS, Agency Director



ENVIRONMENTAL HEALTH SERVICES

1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9335 (FAX)

August 12, 1999

Ms. Karen Langmaid
San Lorenzo Unified School District
15510 Usher Street
San Lorenzo, CA 94580

STID: 4233

Re: Investigations at Arroyo School, located at 15701 Lorenzo Avenue, San Lorenzo, CA

Dear Ms. Langmaid,

This office has reviewed ALLCal Property Services, Inc.'s Soil and Groundwater Investigations Report, dated July 19, 1999, for the above site. Based on the results of these recent soil and groundwater investigations, this office will be recommending this site for closure. The closure process will involve the preparation of a Closure Summary by our office, which will then need to be signed off by the San Francisco Bay-Regional Water Quality Control Board (RWQCB). The process will most likely take two to three months to complete. **Please do not destroy your wells until RWQCB signs off on the closure certification.**

All soil cuttings generated by the borings, as well as the purge water, should be hauled off site to appropriate disposal facilities.

Additionally, this office is required to inform you of new legislative requirements pertaining to cleanup and closure of sites where an unauthorized release of hazardous substance, including petroleum, has occurred from an underground storage tank (UST). Section 25297.15(a) of Ch. 6.7 of the Health & Safety Code requires the primary or active responsible party to notify all current record owners of fee title to the site of: 1) a site cleanup proposal, 2) a site closure proposal, 3) a local agency intention to make a determination that no further action is required, and 4) a local agency intention to issue a closure letter. Section 25297.15(b) requires the local agency to take all reasonable steps to accommodate responsible landowners' participation in the cleanup or site closure process and to consider their input and recommendations.

For purposes of implementing these sections, you have been identified as the primary or active responsible party. Please provide to this agency, within twenty (20) calendar days of receipt of this notice, a complete mailing list of all current record owners of fee title to the site. You may use the enclosed "list of landowners" form (sample letter 2) as a template to comply with this requirement. If the list of current record owners of fee title to the site changes, you must notify the local agency of the change within 20 calendar days from when you are notified of the change.

If you are the sole landowner, please indicate that on the landowner list form. The following notice requirements do not apply to responsible parties who are the sole landowner for the site.

Karen Langmaid
Re: 15701 Lorenzo Ave.
August 12, 1999
Page 2 of 2

In accordance with Section 25297.15(a) of Ch. 6.7 of the Health & Safety Code, you must certify to the local agency that all current record owners of fee title to the site have been informed of the proposed action before the local agency may do any of the following:

- 1) consider a cleanup proposal (corrective action plan)
- 2) consider a site closure proposal
- 3) make a determination that no further action is required
- 4) issue a closure letter

You may use the enclosed "notice of proposed action" form (sample letter 3) as a template to comply with this requirement. Before approving a cleanup proposal or site closure proposal, determining that no further action is required, or issuing a closure letter, the local agency will take all reasonable steps necessary to accommodate responsible landowner participation in the cleanup and site closure process and will consider all input and recommendations from any responsible landowner.

Thank you for your cooperation. If you have any questions or comments, please contact me at (510) 567-6763.

Sincerely,



Juliet Shin, R.G.
Hazardous Materials Specialist

ATTACHMENTS

Cc: John Mrakovich
AllCal Property Services, Inc.
27973 High Country Drive
Hayward, CA 94542-2530

SAMPLE LETTER (2): LIST OF LANDOWNERS FORM

Name of local agency
Street address
City

SUBJECT: CERTIFIED LIST OF RECORD FEE TITLE OWNERS FOR (*Site Name and Address*)

(Note: Fill out item 1 if there are multiple site landowners. If you are the sole site landowner, skip item 1 and fill out item 2.)

1. In accordance with section 25297.15(a) of Chapter 6.7 of the Health & Safety Code, I, (*name of primary responsible party*), certify that the following is a complete list of current record fee title owners and their mailing addresses for the above site:

2. In accordance with section 25297.15(a) of Chapter 6.7 of the Health & Safety Code, I, (*name of primary responsible party*), certify that I am the sole landowner for the above site.

Sincerely,

Signature of primary responsible party

Name of primary responsible party

SAMPLE LETTER 3: NOTICE OF PROPOSED ACTION SUBMITTED TO LOCAL AGENCY

Name of local agency
Street address
City

SUBJECT: NOTICE OF PROPOSED ACTION SUBMITTED TO LOCAL AGENCY
FOR *(Site Name and Address)*

In accordance with section 25297,15(a) of Chapter 6.7 of the Health & Safety Code, I, (name of primary responsible party), certify that I have notified all responsible landowners of the enclosed proposed action. Check space for applicable proposed action(s):

☐ cleanup proposal (corrective action plan)

☐ site closure proposal

☐ local agency intention to make a determination that no further action is required

☐ local agency intention to issue a closure letter

Sincerely,

Signature of primary responsible party

Name of primary responsible party

cc: Names and addresses of all record fee title owners

TRANSMIT REPORT

1999.08-12 11:02
510 337 9335
ALAMEDA CO EHS HAZ-OPS

COM No.	REMOTE STATION	START TIME	DURATION	PAGES	RESULT	USER ID	REMARKS
971	5105818490	08-12 10:59	02' 45	04/04	OK		

7499402045

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY
DAVID J. KEARS, Agency Director



Post-It™ brand fax transmittal memo 7671		# of pages > 4
To John Mrakovich	From Juliet Shin	
Co. All Cal	Co. Alameda City	
Dept.	Phone # 510-567-6700	
Fax # 510-581-8490	Fax # 510-337-9335	

1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9335 (FAX)

August 12, 1999

Ms. Karen Langmaid
San Lorenzo Unified School District
15510 Usher Street
San Lorenzo, CA 94580

STID: 4233

Re: Investigations at Arroyo School, located at 15701 Lorenzo Avenue, San Lorenzo, CA

Dear Ms. Langmaid,

This office has reviewed ALLCal Property Services, Inc.'s Soil and Groundwater Investigations Report, dated July 19, 1999, for the above site. Based on the results of these recent soil and groundwater investigations, this office will be recommending this site for closure. The closure process will involve the preparation of a Closure Summary by our office, which will then need to be signed off by the San Francisco Bay-Regional Water Quality Control Board (RWQCB). The process will most likely take two to three months to complete. **Please do not destroy your wells until RWQCB signs off on the closure certification.**

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Additionally, this office is required to inform you of new legislative requirements pertaining to cleanup and closure of sites where an unauthorized release of hazardous substance, including petroleum, has occurred from an underground storage tank (UST). Section 25297.15(a) of Ch. 6.7 of the Health & Safety Code requires the primary or active responsible party to notify all current record owners of fee title to the site of: 1) a site cleanup proposal, 2) a site closure proposal, 3) a local agency intention to make a determination that no further action is required, and 4) a local agency intention to issue a closure letter. Section 25297.15(b) requires the local agency to take all reasonable steps to accommodate responsible landowners' participation in the cleanup or site closure process and to consider their input and recommendations.

Alameda County Environmental Health

1131 Harbor Bay Pkwy., #250
Alameda CA 94502-6577
Telephone (510) 567-6700 FAX (510) 337-9335

FACSIMILE COVER SHEET

TO: John Mrakovich 510-581-8490

FROM: Juliet Shin

DATE: 04/14/99

Total number of pages including cover sheet 8

-NOTES- Hi John, Here's the info from the
May 10 '93 Report. Juliet Shin

white -env.health
yellow -facility
pink -files

ALAMEDA COUNTY, DEPARTMENT OF
ENVIRONMENTAL HEALTH
Hazardous Materials Inspection Form

1131 Harbor Bay Pkwy.
Suite 250
Alameda, CA 94502-6577
(510) 567-6700

II, III

Site ID # 4233 Site Name San Lorenzo School Today's Date 01/20/89

II.A BUSINESS PLANS (Title 19)

- ☐ 1. Immediate Reporting 2703
- ☐ 2. Bus. Plan Stds. 25503(b)
- ☐ 3. RR Cars > 30 days 25503.7
- ☐ 4. Inventory Information 25504(a)
- ☐ 5. Inventory Complete 2730
- ☐ 6. Emergency Response 25504(b)
- ☐ 7. Training 25504(c)
- ☐ 8. Deficiency 25505(a)
- ☐ 9. Modification 25505(b)

Site Address 15701 Lorenzo Ave.

City San Lorenzo Zip 94 Phone _____

MAX AMT stored > 500 lbs, 55 gal., 200 cft.?

Inspection Categories:

- ☐ I. Haz. Mat/Waste GENERATOR/TRANSPORTER
- ☐ II. Business Plans, Acute Hazardous Materials
- ☐ III. Underground Tanks

II.B ACUTELY HAZ. MATLS

- ☐ 10. Registration Form Filed 25533(a)
- ☐ 11. Form Complete 25533(b)
- ☐ 12. RMPP Contents 25534(c)
- ☐ 13. Implement Sch. Req'd? (Y/N)
- ☐ 14. OffSite Conseq. Assess. 25524(c)
- ☐ 15. Probable Risk Assessment 25534(d)
- ☐ 16. Persons Responsible 25534(g)
- ☐ 17. Certification 25534(f)
- ☐ 18. Exemption Request? (Y/N) 25536(b)
- ☐ 19. Trade Secret Requested? 25538

* Calif. Administration Code (CAC) or the Health & Safety Code (HS&C)

III. UNDERGROUND TANKS (Title 23)

- General
- ☐ 1. Permit Application 25284 (H&S)
 - ☐ 2. Pipeline Leak Detection 25292 (H&S)
 - ☐ 3. Records Maintenance 2712
 - ☐ 4. Release Report 2651
 - ☐ 5. Closure Plans 2670

Monitoring for Existing Tanks

- ☐ 6. Method
 - 1) Monthly Test
 - 2) Daily Vadose Semi-annual groundwater One time soils
 - 3) Daily Vadose One time soils
 - 4) Monthly Groundwater Annual tank test One time soils
 - 5) Daily Inventory Annual tank testing Cont pipe leak det Vadose/groundwater mon.
 - 6) Daily Inventory Annual tank testing Cont pipe leak det
 - 7) Weekly Tank Gauge Annual tank testing
 - 8) Annual Tank Testing Daily Inventory
 - 9) Other _____

- ☐ 7. Precip. Tank Test 2643
 - Date: _____
- ☐ 8. Inventory Rec. 2644
- ☐ 9. Soil Testing 2646
- ☐ 10. Ground Water. 2647

- New Tanks
- ☐ 11. Monitor Plan 2632
 - ☐ 12. Access Sec. 2634
 - ☐ 13. Plans Submit Date _____
 - ☐ 14. As Built Date _____ 2635

Comments:

Went out to site to meet w/ Karen Longmaid & discuss the history of investigations at the site and to go over the required work. Searched the grounds for the locations of the former diesel and gas USTs. Located all 4 wells, however, the lid of MW3 appeared to have been slightly tilted from settling.

Contact _____

Title _____

Signature _____

Inspector _____

Signature _____

II, III

Alameda County Environmental Health

1131 Harbor Bay Pkwy., #250
Alameda CA 94502-6577
Telephone (510) 567-6700 FAX (510) 337-9335

FACSIMILE COVER SHEET

TO: Karen Langmaid, Fax: 510-317-8321

FROM: Juliet Shin

DATE: 01/11/99

Total number of pages including cover sheet 4

-NOTES- Per our conversation, here is a copy
of the letter we sent to you in Oct. '98
requiring the submittal of a work plan for
additional work. Please The new due date
for the work plan is February 26 '99.
Call me @ (510) 567-6763 if you have any
questions.

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY
DAVID J. KEARS, Agency Director



ENVIRONMENTAL HEALTH SERVICES

1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9335 (FAX)

October 21, 1998

Karen Langmaid
San Lorenzo Unified School District
15510 Usher Street
San Lorenzo, CA 94580

Re: Required investigations at Arroyo School, located at 15701 Lorenzo Avenue,
San Lorenzo, CA
STID: 4233

Dear Ms. Langmaid,

In January 1991, one 45-gallon gasoline underground storage tank (UST) and one 6,000-gallon diesel UST were removed from the above site. The diesel UST was noted to be rusted and corroded with a 1/4-inch leaking seam at the time of removal. The bottom of the diesel UST was measured to be ~10-feet below ground surface (bgs). Three soil samples were collected from the bottom of the diesel excavation at roughly 10- to 11-feet bgs. Six soil samples were collected from stockpiled soil resulting from the excavation. All of these soil samples were analyzed for Total Petroleum Hydrocarbons as diesel (TPHD), Total Oil & Grease (TOG), and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Analyses of these soil samples identified up to 300 parts per million (ppm) TPHD and 2,000ppm TOG from the bottom of the diesel UST excavation pit.

The 45-gallon UST was noted to be rusted without any holes. The tank bottom was measured to be at roughly 2.5-feet bgs. Two soil samples were collected from the tank backfill at approximately 2.5- to 3.5-feet bgs, and two additional soil samples were collected from below the tank backfill from roughly 4- to 5-feet bgs. All four soil samples were analyzed for Total Petroleum Hydrocarbons as gasoline (TPHG), TPHD, and Total Lead. None of the samples were analyzed for BTEX. Low levels of lead were identified below threshold limits and no TPHG or TPHD were identified above detection limits.

In response to the contamination identified at the former diesel UST excavation, 16 borings (Borings 1 through 16) were emplaced around this location in January 1991 to further define the extent of soil contamination. Boring 1 was drilled down to 20.5 feet bgs and encountered groundwater at 17-feet bgs. Borings 2 through 13 were drilled down to 15.5-feet bgs. Three of the borings (Borings 14 through 16) were converted into monitoring wells (MW-1 through MW-3), whose borings were extended down to 25-feet bgs. These wells were screened from 15- to 25-feet bgs. Soil samples were collected from all 16 borings at varying depths down to 20-feet bgs and analyzed for TPHD, BTEX, and TOG. Analyses results identified up to 5.685ppm TOG, 1,720ppm TPHD, and low levels of toluene, ethylbenzene, and total xylenes. Groundwater samples collected from the three monitoring wells were analyzed for TPHD, BTEX, and TOG, and analyses results identified up to 300 parts per billion (ppb) TPHD.

Ms. Karen Langmaid
Re: 15701 Lorenzo Ave.
October 21, 1998
Page 2 of 3

On August 10, 1992, four borings (B14, B15, B16, and MW4) were drilled at the site, and MW4 was converted into a fourth monitoring well. Soil samples were collected from all four borings and analyzed for TPHD, BTEX, and TOG. Analyses of these soil samples identified up to 210ppm TPHD, 975ppm TOG, and low levels of toluene, ethylbenzene, and total xylenes.

Quarterly groundwater monitoring of the site's monitoring wells was conducted regularly up until March 23, 1993. Low levels of TPHD were still being identified from all four of the site's monitoring wells when quarterly groundwater monitoring of these wells were discontinued.

On February 28, 1995, this office sent the San Lorenzo Unified School District a letter requesting that groundwater monitoring continue for these wells. To date, it appears that no further groundwater sampling was conducted.

Although the last groundwater sampling event in March 1993 only identified low levels of TPHD in the wells, this office is requesting that the following additional information be collected and submitted to this office prior to our considering this site for closure:

- Soil samples from the gasoline UST excavation were never analyzed for BTEX constituents, which are the most toxic constituents in gasoline. Additionally, no groundwater samples were collected from this area to confirm that there were no releases from this former tank into groundwater. This office is requesting that a temporary boring be placed immediately downgradient of the former gasoline tank pit so that one soil sample and one groundwater sample can be collected. The soil sample shall be analyzed for TPHG and BTEX, and the groundwater sample shall be analyzed for TPHG, BTEX, and Methyl Tertiary Butyl Ether (MTBE). Per Senate Bill 521 (1997), all sites with petroleum UST leaks are required to analyze for MTBE prior to closure of the site. MTBE was used as an oxygenate in gasoline since the late 1970's.
- One additional temporary boring shall be placed in the area where the highest levels of TPHD-contaminated soil were identified, i.e., near Boring 2, and soil samples shall be collected from 5- and 10-foot bgs and analyzed for TPHD and Polynuclear Aromatics (PNAs) using Method 8270. PNAs, such as naphthalene, are the most toxic components of diesel, and this analysis is essential for determining whether the residual diesel concentrations in the soil will pose any future volatilization threats to occupants of the site.
- An additional round of groundwater samples shall be collected from the four existing monitoring wells on the site and groundwater samples shall be analyzed for TPHG, TPHD, BTEX, and MTBE.

Ms. Karen Langmaid
Re: 15701 Lorenzo Ave.
October 21, 1998
Page 3 of 3

- **A work plan addressing the above work shall be submitted to this office within 45 days of the date of this letter (i.e., by December 2, 1998). Field work must commence within 45 days after approval of the workplan. A report documenting the additional sample collection alongside the former gasoline UST, as well as sampling of the existing monitoring wells, shall be submitted to this office within 45 days after completing field activities.**
- This office needs information on where the former gasoline UST was located in reference to the former diesel UST. Please submit one site plan showing the locations of both of these USTs.

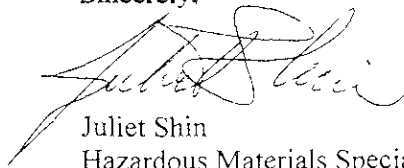
Additional sampling is required to determine whether the contaminant plume has stabilized or is attenuating prior to considering this site for closure. If the contaminant plume has not stabilized, continued investigations may be needed to determine whether this plume will pose any future threats to potential sensitive receptors such as occupants of the site. Additionally, San Lorenzo Creek is located approximately 1,300 feet downgradient of the site and several irrigation wells and one EBMUD municipal well is located 1,000- to 1,400-feet downgradient of the site.

The State Water Resources Control Board manages an Underground Storage Tank Cleanup Fund (Fund) to help eligible Responsible Parties to obtain reimbursement for costs of investigating and remediating releases from petroleum underground storage tanks. You are encouraged to apply. To obtain an Application Package, contact the Fund at the following:

State Water Resources Control Board
Division of Clean Water Programs
UST Cleanup Fund
P.O. Box 944212
Sacramento, CA 944212
Telephone: (916) 227-4307

If you have any questions or comments, please contact me at (510) 567-6763.

Sincerely,



Juliet Shin
Hazardous Materials Specialist

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY

DAVID J. KEARS, Agency Director



RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

February 28, 1995

DEPARTMENT OF ENVIRONMENTAL HEALTH
State Water Resources Control Board
Division of Clean Water Programs

Mike Chan
San Lorenzo Unified School District
15510 Usher St.,
San Lorenzo, CA 94580

ALAMEDA COUNTY-ENV. HEALTH DEPT.
ENVIRONMENTAL PROTECTION DIV.
1131 HARBOR BAY PKWY., #250
ALAMEDA CA 94502-6577
(510)567-6700

StId 4233

Subject: Investigations at Arroyo High School located at 15701
Lorenzo Ave., San Lorenzo, CA

Dear Mr. Chan:

In 1991, two under-
subject site and a
contamination cause
Per our conversatio
investigation at th
monitoring event.

Per Article 5 of th
the County's August
monitoring is requir
off" by the Californ
(RWQCB). Quarterly
month of each subseq
all Quarterly Monito
pertaining to soil at
School that are date
been conducted out at
me as soon as possibl

You should consider tl
pursuant to the Calif
submit this informati
1995.

Per your request, I ha

- o The cover letter a
Report this office
Inc., dated May 19
- o A copy of the last
you from this offic

If you have questions or
contact me at (510)567-6

Sincerely,

Amy Leech
Hazardous Materials Specialist

ATTACHMENTS

12/08/95

Dear Mr. Chan:

Attached is the letter
we discussed during
our telephone conversation
today.

I look forward to
hearing from you on
this by Jan 2, 1996.

Thank you.

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ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY

DAVID J. KEARS, Agency Director



RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

February 28, 1995

DEPARTMENT OF ENVIRONMENTAL HEALTH
State Water Resources Control Board
Division of Clean Water Programs

Mike Chan
San Lorenzo Unified School District
15510 Usher St.
San Lorenzo, CA 94580

ALAMEDA COUNTY-ENV. HEALTH DEPT.
ENVIRONMENTAL PROTECTION DIV.
1131 HARBOR BAY PKWY., #250
ALAMEDA CA 94502-6577
(510)567-6700

StId 4233

Subject: Investigations at Arroyo High School located at 15701
Lorenzo Ave., San Lorenzo, CA

Dear Mr. Chan:

In 1991, two underground storage tanks were removed from the subject site and an investigation ensued in regard to contamination caused by unauthorized releases from these tanks. Per our conversation today, this office has no information on any investigation at the site since the March 1993 groundwater monitoring event.

Per Article 5 of the California Code of Regulations, Title 23 and the County's August 23, 1993 letter, quarterly groundwater monitoring is required until this site qualifies for final "sign-off" by the California Regional Water Quality Control Board (RWQCB). Quarterly reports are due the first day of the second month of each subsequent quarter. Please forward to this office all Quarterly Monitoring Reports and other related documentation pertaining to soil and groundwater investigations at Arroyo High School that are dated after May 1993. If no additional work has been conducted out at the site since March 1993, please contact me as soon as possible to discuss required investigations.

You should consider this a formal request for technical reports pursuant to the California Water Code Section 13267 (b). Please submit this information to our office no later than March 27, 1995.

Per your request, I have attached the following information:

- o The cover letter attached to the last Groundwater Monitoring Report this office received from LW Environmental Services, Inc., dated May 1993, for the subject site.
- o A copy of the last correspondence, dated August 23, 1993, to you from this office.

If you have questions or need additional information, please contact me at (510)567-6755.

Sincerely,

Amy Leech
Hazardous Materials Specialist

ATTACHMENTS



Environmental Services, Inc.

2111 Jennings Street, San Francisco, CA 94124-3224, Phone (415) 822-4555 FAX (415) 822-5290

93 JUL 28 PM 2:24

May 10, 1993

Ms. Pam Evans
Hazardous Materials Division
Department of Environmental Health
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, California 94621

Subject: Groundwater Monitoring - March 1993
Arroyo School
15701 Lorenzo Avenue
San Lorenzo, California

Dear Ms. Evans:

Enclosed please find a copy of the report documenting the tenth round of sampling for the monitoring wells at the Arroyo School, located at 15701 Lorenzo Avenue, San Lorenzo, California ("the site"). Groundwater monitoring at the Site was initiated February 7, 1991.

If you have any questions or comments, please do not hesitate to contact me at (415) 822-4555.

Sincerely,

A handwritten signature in black ink, appearing to read 'George Wilson', with a long horizontal flourish extending to the right.

George Wilson
Vice President

Enclosure

cc: San Lorenzo Unified School District

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY

DAVID J. KEARS, Agency Director



RAFAT A. SHAHID, ASST AGENCY DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
State Water Resources Control Board
Division of Clean Water Programs
UST Local Oversight Program
80 Swan Way, Rm 200
Oakland, CA 94621
(510) 271-4530

August 23, 1993

Mr. Mike Chan
San Lorenzo Unified School District
15510 Usher St.
San Lorenzo, CA 94580

STID 4233

Re: Investigations at 15701 Lorenzo Avenue, San Lorenzo,
California

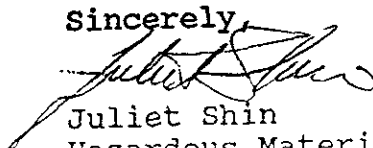
Dear Mr. Chan,

Although this office sent you a letter dated July 23, 1993 stating that continued monitoring of Wells MW-1 through MW-3 would not be required due to inaccurate screen depths, this office is now requiring that you continue monitoring of all these wells due to the increased concentrations identified in the well samples collected in March 1993, and documented in a report received by this office on July 28, 1993.

Additionally, although the extent of the bulk of soil contamination appears to have been fairly well delineated at the site, the elevated levels of soil contamination identified in January 1991 appear to have been left in place. Per my conversation with the Regional Water Quality Control Board on August 20, 1993, this soil contamination must be remediated since it is located at the capillary fringe and poses an immediate threat to ground water. Please submit a work plan addressing soil remediation within 60 days of the date of this letter.

If you have any questions or comments, please contact me at (510) 271-4530.

Sincerely,


Juliet Shin
Hazardous Materials Specialist

cc: George Wilson
LW Environmental Services, Inc.
2111 Jennings Street
San Francisco, CA 94124-3224

Edgar Howell-File(JS)

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY

DAVID J. KEARS, Agency Director



RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH

State Water Resources Control Board

Division of Clean Water Programs

UST Local Oversight Program

80 Swan Way, Rm 200

Oakland, CA 94621

(510) 271-4530

August 23, 1993

Mr. Mike Chan
San Lorenzo Unified School District
15510 Usher St.
San Lorenzo, CA 94580

STID 4233

Re: Investigations at 15701 Lorenzo Avenue, San Lorenzo,
California

Dear Mr. Chan,

Although this office sent you a letter dated July 23, 1993 stating that continued monitoring of Wells MW-1 through MW-3 would not be required due to inaccurate screen depths, this office is now requiring that you continue monitoring of all these wells due to the increased concentrations identified in the well samples collected in March 1993, and documented in a report received by this office on July 28, 1993.

Additionally, although the extent of the bulk of soil contamination appears to have been fairly well delineated at the site, the elevated levels of soil contamination identified in January 1991 appear to have been left in place. Per my conversation with the Regional Water Quality Control Board on August 20, 1993, this soil contamination must be remediated since it is located at the capillary fringe and poses an immediate threat to ground water. Please submit a work plan addressing soil remediation **within 60 days** of the date of this letter.

If you have any questions or comments, please contact me at (510) 271-4530.

Sincerely,

A handwritten signature in cursive script, appearing to read "Juliet Shin".

Juliet Shin

Hazardous Materials Specialist

cc: George Wilson
LW Environmental Services, Inc.
2111 Jennings Street
San Francisco, CA 94124-3224

Edgar Howell-File(JS)

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY

DAVID J. KEARS, Agency Director



RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
State Water Resources Control Board
Division of Clean Water Programs
UST Local Oversight Program
80 Swan Way, Rm 200
Oakland, CA 94621
(510) 271-4530

July 23, 1993

Mr. Mike Chan
San Lorenzo Unified School District
15510 Usher St.
San Lorenzo, CA 94580

STID 4233

Re: Additional investigations for site located at 15701 Lorenzo
Avenue, San Lorenzo, California

Dear Mr. Chan,

Per our conversation on July 22, 1993, you are required to conduct at least two more quarters of ground water monitoring for Well MW-4 at the above site. Well MW-4 appears to be downgradient of the former tanks and is properly screened above and below the water table. At this time, quarterly ground water monitoring will not be required for Wells MW-1 through MW-3 since these wells are screened too far below the water table. However, you will be required to collect quarterly ground water level measurements from these wells for gradient determination.

After two additional quarterly monitoring events, this office will determine whether this site can be considered for closure.

If you have any questions or comments, please contact me at (510) 271-4530.

Sincerely,

Juliet Shin
Hazardous Materials Specialist

cc: Richard Hiett, RWQCB

George Wilson
LW Environmental Services
2111 Jennings St.
San Francisco, CA 94124-3224

Edgar Howell-File(JS)

LOP - RECORD CHANGE REQUEST FORM

printed:
06/22/93

Mark Out What Needs Changing and Hand to LOP Data Entry
(Name/Address changes go to Annual Programs Data Entry)

AGENCY # : 10000 SOURCE OF FUNDS: F SUBSTANCE: 12034
StID : 4233
SITE NAME: San Lorenzo School DATE REPORTED : 01/08/91
ADDRESS : 15701 Lorenzo Ave. DATE CONFIRMED: 01/08/91
CITY/ZIP : San Lorenzo 94580 MULTIPLE RPs : N

SITE STATUS

CASE TYPE: S	CONTRACT STATUS: 4	EMERGENCY RESP:
RP SEARCH: S		DATE COMPLETED: 07/08/92
PRELIMINARY ASMNT:	DATE UNDERWAY:	DATE COMPLETED:
REM INVESTIGATION:	DATE UNDERWAY:	DATE COMPLETED:
REMEDIAL ACTION:	DATE UNDERWAY:	DATE COMPLETED:
POST REMED ACT MON:	DATE UNDERWAY:	DATE COMPLETED:

ENFORCEMENT ACTION TYPE: 1 DATE ENFORCEMENT ACTION TAKEN: 07/08/92
LUFT FIELD MANUAL CONSID:
CASE CLOSED: DATE CASE CLOSED:
DATE EXCAVATION STARTED : 01/03/91 REMEDIAL ACTIONS TAKEN:

RESPONSIBLE PARTY INFORMATION

RP#1-CONTACT NAME: Deb Cornwall
COMPANY NAME: San Lorenzo Unified School Dis
ADDRESS: 15510 Usher St.
CITY/STATE: San Lorenzo, Ca 94580

INSPECTOR VERIFICATION:

NAME _____	SIGNATURE _____	DATE _____
------------	-----------------	------------

DATA ENTRY INPUT:

Name/Address Changes Only			Case Progress Changes	
ANNPMS _____	LOP _____	DATE _____	LOP _____	DATE _____

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY

DAVID J. KEARS, Agency Director



RAFAT A. SHAHID, Assistant Agency Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Division
80 Swan Way, Rm. 200
Oakland, CA 94621
(510) 271-4320

July 29, 1992

Ms. Deb Cornwall
San Lorenzo Unified School District
15510 Usher St.
San Lorenzo, CA 94580

STID 4233

RE: Work Plan for further soil and ground water investigations
at 15701 Lorenzo Avenue, San Lorenzo, California

Dear Ms. Cornwall,

This office has received and reviewed the work plan, dated July 24, 1992, for the installation of an additional monitoring well and the drilling of three soil borings at the above site. The work plan is acceptable to this office with the following requirements:

- o The well must be screened adequately above and below the water table to accommodate for the fluctuations in the ground water level.
- o Following the delineation of the extent of soil contamination, you will be required to submit a work plan addressing the method in which this soil contamination will be remediated.

Furthermore, please keep in mind that additional ground water investigative or remedial work may be required based on the results of the above investigations.

After the installation of the monitoring well, you will be required to survey this well to an accuracy of 0.01 foot, and include this survey information in the quarterly report.

Field work should commence within 60 days of the receipt of this letter. A report documenting the results from work performed is due to this office within 45 days of completion of activities.

Ms. Deb Cornwall
RE: 15510 Usher St.
July 29, 1992
Page 2 of 2

Thank you for your cooperation. If you have any questions or comments, please contact Ms. Juliet Shin at (510) 271-4530.

Sincerely,



Scott O. Seery, CHMM
Senior Hazardous Materials Specialist

cc: Richard Hiett, RWQCB

Jim Ferdinand, Eden Consolidated Fire Dept.

John Carver
LW Environmental Services, Inc.
2111 Jennings St.
San Francisco, CA 94124-3224

Edgar Howell-File (JS)

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY

DAVID J. KEARS, Agency Director



RAFAT A. SHAHID, Assistant Agency Director

July 9, 1992

Ms. Deb Cornwall
San Lorenzo Unified School District
15510 Usher St.
San Lorenzo, CA 94580

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Division
80 Swan Way, Rm. 200
Oakland, CA 94621
(510) 271-4320

STID 4233

RE: Further soil and ground water investigations at 15701
Lorenzo Avenue, San Lorenzo, California

Dear Ms. Cornwall,

This office has reviewed the most recently submitted ground water monitoring report, dated April 30, 1992, for the above site. Although the ground water samples collected for the three on-site wells have consistently identified either low or no concentrations of Total Petroleum Hydrocarbons (TPH), Total Oil and Grease (TOG), or benzene, toluene, xylenes, or ethylbenzene, none of these monitoring wells appear to be directly downgradient of the former underground storage tank (UST). Ground water gradient determinations for the site have indicated that the ground water flow direction at the site fluctuates from northeast to northwest, however, the monitoring wells are located to the southeast, southwest, and south of the former UST.

Additionally, the Regional Water Quality Control Board's (RWQCB) guidelines state that the full vertical and lateral extent of soil contamination needs to be defined. According to the Soil and Ground Water Investigation Report, dated February 16, 1991, soil samples collected from 11 out of 13 borings identified elevated concentrations of either TPH as diesel or TOG. Additionally, all the soil samples collected during the installation of three monitoring wells identified elevated concentrations of TOG. This soil contamination is likely to impact shallow groundwater at some point in time.

You are required to install an additional monitoring well directly downgradient of the excavation. You must submit a work plan to this office within 45 days of the receipt of this letter, addressing your proposal for the installation of an additional monitoring well. Additionally, this proposal should address the further delineation and remediation of the soil contamination at the site. This proposal must adhere to the RWQCB's **Staff Recommendations for the Initial Evaluation and Investigation of Underground Tanks**, the State Water Resources Board's LUFT manual, and be consistent with requirements set forth in Article 11 of Title 23, California Code of Regulations.

Deb Cornwall
RE: 15701 Lorenzo Ave.
July 10, 1992
Page 2 of 2

Please be advised that this is a formal request for technical reports pursuant to **California Water Code Section 13267 (b)**. Any extensions of the stated deadlines, or modifications of the required tasks, must be confirmed in writing by either this agency or RWQCB.

Please be reminded to copy Richard Hiett, San Francisco Bay Region-Water Quality Control Board, on all reports and correspondence. Please direct all submittals for this office to Ms. Juliet Shin.

If you have any questions or comments, please contact Ms. Juliet Shin at (510) 271-4320.

Sincerely,



Scott O. Seery, CHMM
Senior Hazardous Materials Specialist

cc: Richard Hiett, RWQCB

Jim Ferdinand, Eden Consolidated Fire Dept.

John Carver
LW Environmental Services, Inc.
2111 Jennings Street
San Francisco, CA 94124-3224

Edgar Howell-File (JS)

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY

DAVID J. KEARS, Agency Director



DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)

July 7, 1992

Deb Cornwall
San Lorenzo Unified School District
15510 Usher St.
San Lorenzo CA 94580

RE: Groundwater Investigations at 15221 Wicks Blvd., San Leandro
and 15701 Lorenzo Av, San Lorenzo

different site

Dear Ms. Cornwall:

On July 2, 1992, you and I met with your consultants to discuss closure requirements for the above referenced sites.

There have been seven sampling events at the Marina High School (Wicks Blvd) site since February of 1991. Various semi-volatile organic compounds have shown up at low levels in groundwater monitoring wells during that period. In May of this year, SLUSD destroyed the three onsite wells to allow for residential development by the new property owner. We agreed that new wells will be installed to continue groundwater monitoring. Please submit a well installation workplan, including a site diagram and implementation timetable to this office. I have discussed the report of soil contamination at the City of San Leandro site with my Division's district inspector.

As for the Arroyo High School (Lorenzo Blvd.) site, low levels of petroleum constituents have been detected in every sampling event since your investigation began in February of 1992. You should plan to continue monitoring this site at least through the end of 1992.

As groundwater monitoring must continue at the two SLUSD sites for some time, it will be necessary for me to transfer the Arroyo case file to a special unit within my Division that specializes in oversight of underground tank clean-up. The Specialist handling your cases will be Juliet Shin. She can be reached at 271-4530. I will retain the Marina site for the time being, but request that SLUSD deposit an additional \$300.00, payable to County of Alameda, to cover my oversight costs. As before, you may contact me with any questions at 271-4320.

Sincerely,

[Signature]
Pamela J. Evans

Senior Hazardous Materials Specialist

c: Richard Hiett, RWQCB

George Wilson, LW Environmental Services, Inc.

DATE: 7-7-92
TO : Local Oversight Program
FROM: Pam Evans
SUBJ: Transfer of Eligible Oversight Case

Site name: Arroyo High School - San Lorenzo Unified School District
Address: 15701 Lorenzo Av city San Lorenzo zip 94580
Closure plan attached? Y ☒ N ☐ DepRef remaining \$ ~65.00
DepRef Project # 3065 STID #(if any) 0
Number of Tanks: 2 removed? ☒ Y ☐ N Date of removal 1-13-91
Samples received? ☒ Y ☐ N Contamination: TPHd, TPHg, BTEX
Petroleum ☒ Y ☐ N Types: Avgas Jet leaded unleaded Diesel
fuel oil waste oil kerosene solvents
Monitoring wells on site Y-3 Monitoring schedule? ☒ Y ☐ N quarterly
LUFT category 1 2 3 * H S C A R W G O
known gw contamination
Briefly describe the following:
Preliminary Assessment Soil + groundwater contamination around fuel tank
Remedial Action monitoring of groundwater after soil excavation
Post Remedial Action Monitoring _____
Enforcement Action None

ALAM. COUNTY
HEALTH CARE SERVICES

AGENCY
DAVID J. KEARS, Director



Telephone Number: (415)

October 28, 1991

Deb Cornwall
San Lorenzo Unified School District
15510 Usher St.
San Lorenzo CA 94580

RE: Groundwater Investigations at 15221 Wicks Blvd., San Leandro
and 15701 Lorenzo Av, San Lorenzo

Dear Ms. Cornwall:

I have reviewed the Groundwater Monitoring reports submitted by
LW Environmental Services, Inc. for the two sites referenced
above.

You have requested closure for the Marina High School (Wicks
Blvd) site based on negative analysis results from four sampling
events over five months (2/91 through 7/91). While these
sampling results are encouraging, five months is not a sufficient
time period to complete a groundwater contamination investiga-
tion. You will need to monitor the groundwater at the Marina
School site for a total of at least one year in order for this
office to consider closure. In keeping with the recommendations
made by LW Environmental, I will expect at least two more
sampling events to be carried out between now and next spring.

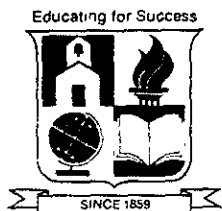
Regarding the Arroyo High School (Lorenzo Blvd.) site, low levels
of petroleum constituents have been detected in every sampling
event since your investigation began in February of this year.
You should plan to continue a quarterly monitoring schedule at
this site through next year as well. It is not possible for me
to specify a duration for monitoring at the site at this time.
However, please be aware that the total length of your
investigation may have to exceed one year.

Please feel free to contact me with any questions regarding your
Marina and Arroyo High School sites. You can reach me at 271-
4320.

Sincerely,

Pamela J. Evans
Hazardous Materials Specialist

c: Eddy So, RWQCB
George Wilson, LW Environmental Services, Inc.



San Lorenzo Unified School District

BOARD OF EDUCATION

Barbara J. Sidari, President
Betty L. Moose, Clerk
Harry G. Gin
Patricia R. Gniffen
Dorothy J. Partridge

SUPERINTENDENT

Alden W. Badal

ASSISTANT SUPERINTENDENTS

R. Michael Lenahan, Jr., Business Services
Lawrence P. Maniscalco, Educational Services
Stephen L. Ow, Personnel Services

April 18, 1991

91 APR 19 6:10:12

Pamela J. Evans
Hazardous Materials Specialist
Alameda County Health Care Services
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621

REASON: Groundwater Investigation at Arroyo High School, 15701 Lorenzo Ave.,
San Lorenzo

Dear Ms. Evans:

Thank you for your March 24, 1991 response and recommendations regarding the Arroyo High School Tank Removal and Soil and Groundwater Investigation Reports. The expressed concerns are being taken into serious consideration by the District, specifically in how to best remedy our current situation with minimal impact on the District as a whole.

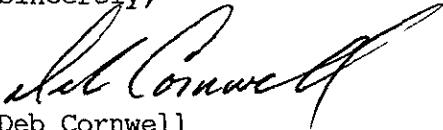
At this time, the District plans to continue in its current course of action by proceeding with the monthly monitoring during the first quarter, and if warranted, reduce the monitoring to a quarterly basis thereafter. It is the opinion of the District that the information we have presently on the soils and groundwater characteristics, specifically related to the direction of the groundwater current, and background soils and water profiles, do not provide sufficient information for determining the proper placement of future borings. Therefore, the District intends on performing additional site and geological historical research. By doing so, if additional borings are placed, their locations can be determined in as precise a manner as possible, in order to minimize the overall cost to the District.

As you are aware, being in a public agency yourself, the level of expenses incurred for remediation on the Arroyo and Marina High School sites, has had a significant financial impact on our public school district. Presently, the San Lorenzo Unified School District is experiencing financial problems due to the State's own budget difficulties. Because of this, it is definitely in the District's best interest to carefully review any action recommended, and acting upon those which are most practical in accomplishing, both effectively and efficiently, the true intent of the regulations covering these issues.

Pamela Evans
Alameda County Health Services Agency
April 12, 1991
Page 2 of 2

Therefore, as mentioned above, the District will continue to responsibly monitor as recommended, and pursue acquisition of additional historical information on the site, in order to best determine the next direction to go. If you would like to discuss this further, please don't hesitate to contact me.

Sincerely,

A handwritten signature in cursive script, appearing to read "Deb Cornwell".

Deb Cornwell
Safety and Risk Manager

cc: Lenahan

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY

DAVID J. KEARS, Agency Director



DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)

March 24, 1991

Deb Cornwall
San Lorenzo Unified School District
15510 Usher St.
San Lorenzo CA 94580

RE: Groundwater Investigation at Arroyo School
15701 Lorenzo Av., San Lorenzo

Dear Ms. Cornwall:

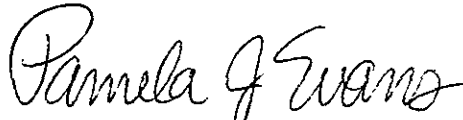
I have reviewed the Tank Removal and Soil and Groundwater Investigation Reports submitted by LW Environmental Services, Inc. I have the following questions and concerns regarding conditions at the site and the proposed work to be carried out in the area of the former diesel tank:

1. Although boring samples showed total petroleum hydrocarbons in excess of 1000 ppm in a number of samples, the report included no recommendation for soil excavation and/or remediation. Soils contaminated with petroleum hydrocarbons at levels in the hundreds and thousands of parts per million are likely to impact shallow groundwater at some point in time. However, monitoring groundwater for only one year may be inadequate to evaluate the threat this contamination presents to the aquifer. Consequently, unless contaminated soil is removed or remediated, you are likely to be required to continue your monitoring program well beyond the proposed one year period in order to ensure that the impact to groundwater has been fully investigated.
2. The borings done so far do not define the full extent of petroleum hydrocarbon contamination at the site. Regional Water Quality Control Board guidelines for investigation of fuel contaminated sites with shallow groundwater require that the full extent of contamination, both lateral and vertical, be defined.
3. Groundwater monitoring must be carried out monthly for the first quarter. If results of this monitoring period show that groundwater conditions are stable, you may decrease your testing frequency to a quarterly schedule.
4. Copies of chemical analysis reports, and of any workplans for the site, should be sent to the Regional Water Quality Control Board as well as to my office.

Deb Cornwall
SLUSD, Arroyo High School
March 24, 1991
Page 2 of 2

You may submit any additions to your workplan in the form of an addendum to LW's February 16 report or as a separate workplan. Please feel free to contact me with any questions regarding your Marina and Arroyo High School sites. You can reach me at 271-4320.

Sincerely,

A handwritten signature in cursive script that reads "Pamela J. Evans". The signature is written in dark ink and is positioned above the printed name and title.

Pamela J. Evans
Hazardous Materials Specialist

c: Richard Hiett, RWQCB
George Wilson, LW Environmental Services, Inc.

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

EMERGENCY <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		FOR LOCAL AGENCY USE ONLY I HEREBY CERTIFY THAT I AM A DESIGNATED GOVERNMENT EMPLOYEE AND THAT I HAVE REPORTED THIS INFORMATION TO LOCAL OFFICIALS PURSUANT TO SECTION 25180.7 OF THE HEALTH AND SAFETY CODE. SIGNED: <u>Pamela J. Evans</u> DATE: <u>3-25-91</u>	
REPORT DATE Q1 2 M 2 D 7 D 9 Y 1 Y		CASE #			
REPORTED BY	NAME OF INDIVIDUAL FILING REPORT Deb Cornwell		PHONE (415) 276-3600		SIGNATURE <u>Deb Cornwell</u>
	REPRESENTING <input checked="" type="checkbox"/> OWNER/OPERATOR <input type="checkbox"/> REGIONAL BOARD <input type="checkbox"/> LOCAL AGENCY <input type="checkbox"/> OTHER		COMPANY OR AGENCY NAME San Lorenzo Unified School District		
	ADDRESS 15510 Usher Street San Lorenzo California 94580				
RESPONSIBLE PARTY	NAME San Lorenzo Unified Sshool District		CONTACT PERSON Deb Cornwell		PHONE (415) 276-3600
	ADDRESS 15510 Usher Street San Lorenzo California 94580				
SITE LOCATION	FACILITY NAME (IF APPLICABLE) Arroyo High School		OPERATOR San Lorenzo Unified School District		PHONE (415) 276-2260
	ADDRESS 15701 Lorenzo Avenue San Lorenzo Alameda 94580				
	CROSS STREET Via Enrico		TYPE OF AREA <input checked="" type="checkbox"/> RESIDENTIAL <input type="checkbox"/> COMMERCIAL <input type="checkbox"/> INDUSTRIAL <input type="checkbox"/> RURAL <input type="checkbox"/> OTHER		TYPE OF BUSINESS <input type="checkbox"/> FARM <input checked="" type="checkbox"/> OTHER School
IMPLEMENTING AGENCIES	LOCAL AGENCY Alameda County Department of Environmental Health		AGENCY NAME Alameda County Department of Environmental Health		CONTACT PERSON Pamela J. Evans
	REGIONAL BOARD California Regional Water Quality Control Board-San Francisco Bay		CONTACT PERSON Tom Gandesbery		PHONE (415) 464-0841
SUBSTANCES INVOLVED	(1) NAME Diesel #2 Heating Oil				QUANTITY LOST (GALLONS) <input checked="" type="checkbox"/> UNKNOWN
	(2)				<input type="checkbox"/> UNKNOWN
DISCOVERY/ABATEMENT	DATE DISCOVERED Q1 1 M 0 D 3 D 9 Y 1 Y		HOW DISCOVERED <input type="checkbox"/> INVENTORY CONTROL <input type="checkbox"/> SUBSURFACE MONITORING <input type="checkbox"/> NUISANCE CONDITIONS <input type="checkbox"/> TANK TEST <input checked="" type="checkbox"/> TANK REMOVAL <input type="checkbox"/> OTHER		
	DATE DISCHARGE BEGAN M M D D Y Y <input checked="" type="checkbox"/> UNKNOWN		METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY) <input checked="" type="checkbox"/> REMOVE CONTENTS <input type="checkbox"/> REPLACE TANK <input checked="" type="checkbox"/> CLOSE TANK <input type="checkbox"/> REPAIR TANK <input type="checkbox"/> REPAIR PIPING <input type="checkbox"/> CHANGE PROCEDURE <input type="checkbox"/> OTHER		
	HAS DISCHARGE BEEN STOPPED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, DATE 0 M 1 M 0 D 3 D 9 Y 1 Y				
SOURCE/CAUSE	SOURCE OF DISCHARGE <input checked="" type="checkbox"/> TANK LEAK <input type="checkbox"/> UNKNOWN <input type="checkbox"/> PIPING LEAK <input type="checkbox"/> OTHER		TANKS ONLY/CAPACITY 5000 GAL. AGE 30+ YRS <input type="checkbox"/> UNKNOWN		MATERIAL <input type="checkbox"/> FIBERGLASS <input checked="" type="checkbox"/> STEEL <input type="checkbox"/> OTHER
			CAUSE(S) <input type="checkbox"/> OVERFILL <input type="checkbox"/> RUPTURE/FAILURE <input checked="" type="checkbox"/> CORROSION <input type="checkbox"/> UNKNOWN <input type="checkbox"/> SPILL <input type="checkbox"/> OTHER		
CASE TYPE	CHECK ONE ONLY <input type="checkbox"/> UNDETERMINED <input checked="" type="checkbox"/> SOIL ONLY <input type="checkbox"/> GROUNDWATER <input type="checkbox"/> DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)				
CURRENT STATUS	CHECK ONE ONLY <input checked="" type="checkbox"/> SITE INVESTIGATION IN PROGRESS (DEFINING EXTENT OF PROBLEM) <input checked="" type="checkbox"/> CLEANUP IN PROGRESS <input type="checkbox"/> SIGNED OFF (CLEANUP COMPLETED OR UNNECESSARY) <input type="checkbox"/> NO ACTION TAKEN <input type="checkbox"/> POST-CLEANUP MONITORING IN PROGRESS <input type="checkbox"/> NO FUNDS AVAILABLE TO PROCEED <input type="checkbox"/> EVALUATING CLEANUP ALTERNATIVES				
REMEDIAL ACTION	CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS)				
	<input type="checkbox"/> CAP SITE (CD)		<input type="checkbox"/> EXCAVATE & DISPOSE (ED)		<input type="checkbox"/> REMOVE FREE PRODUCT (FP)
	<input type="checkbox"/> CONTAMINANT BARRIER (CB)		<input checked="" type="checkbox"/> EXCAVATE & TREAT (ET)		<input type="checkbox"/> PUMP & TREAT GROUNDWATER (GT)
	<input type="checkbox"/> TREATMENT AT HOOKUP (HU)		<input type="checkbox"/> NO ACTION REQUIRED (NA)		<input type="checkbox"/> OTHER (OT)
COMMENTS	Tank has been removed. Site profile in progress. Three groundwater monitoring wells installed. Excavation - over excavation. PLEASE SEE ATTACHED REPORT (sent previously to you for review)				

Arroyo High School (01)

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT			
EMERGENCY <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
REPORT DATE 11/22/2007		CASE # _____	
FOR LOCAL AGENCY USE ONLY I HEREBY CERTIFY THAT I AM A DESIGNATED GOVERNMENT EMPLOYEE AND THAT I HAVE REPORTED THIS INFORMATION TO LOCAL OFFICIALS PURSUANT TO SECTION 25100.7 OF THE HEALTH AND SAFETY CODE. SIGNED: <u>Deb Cornwell</u> DATE: <u>3-25-91</u>			
REPORTED BY	NAME OF INDIVIDUAL FILING REPORT Deb Cornwell		PHONE (415) 276-3600
	SIGNATURE <u>Deb Cornwell</u>		
	COMPANY OR AGENCY NAME San Lorenzo Unified School District		
RESPONSIBLE PARTY	REPRESENTING <input type="checkbox"/> LOCAL AGENCY <input checked="" type="checkbox"/> OWNER/OPERATOR <input type="checkbox"/> REGIONAL BOARD <input type="checkbox"/> OTHER		
	ADDRESS 15510 Usher Street, San Lorenzo, California 94580		
	NAME V San Lorenzo Unified School District		
SITE LOCATION	CONTACT PERSON Deb Cornwell		PHONE (415) 276-3600
	ADDRESS 15510 Usher Street, San Lorenzo, California 94580		
	FACILITY NAME (IF APPLICABLE) Arroyo High School		
IMPLEMENTING AGENCIES	OPERATOR San Lorenzo Unified School District		PHONE (415) 276-2260
	ADDRESS 15701 Lorenzo Avenue, San Lorenzo, California 94580		
	CROSS STREET Via Enrico		
SUBSTANCES INVOLVED	TYPE OF AREA <input checked="" type="checkbox"/> RESIDENTIAL <input type="checkbox"/> COMMERCIAL <input type="checkbox"/> INDUSTRIAL <input type="checkbox"/> RURAL <input type="checkbox"/> OTHER		TYPE OF BUSINESS <input type="checkbox"/> FARM <input checked="" type="checkbox"/> OTHER School
	LOCAL AGENCY Alameda County Department of Regional Board		AGENCY NAME California Regional Water Quality Control Board-San Francisco Bay
	CONTACT PERSON Pamela J. Evans		PHONE (415) 271-4320
DISCOVERY/ABATEMENT	NAME Diesel #2 Heating Oil		QUANTITY LOST (GALLONS) UNKNOWN
	DATE DISCOVERED 11/22/2007		HOW DISCOVERED <input type="checkbox"/> TANK TEST <input checked="" type="checkbox"/> TANK REMOVAL <input type="checkbox"/> INVENTORY CONTROL <input type="checkbox"/> SUBSURFACE MONITORING <input type="checkbox"/> NUISANCE CONDITIONS
	DATE DISCHARGE BEGAN UNKNOWN		METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY) <input checked="" type="checkbox"/> REMOVE CONTENTS <input type="checkbox"/> REPLACE TANK <input checked="" type="checkbox"/> CLOSE TANK <input type="checkbox"/> REPAIR TANK <input type="checkbox"/> REPAIR PIPING <input type="checkbox"/> CHANGE PROCEDURE <input type="checkbox"/> OTHER
SOURCE/CAUSE	HAS DISCHARGE BEEN STOPPED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, DATE 11/23/2007		
	SOURCE OF DISCHARGE <input checked="" type="checkbox"/> TANK LEAK <input type="checkbox"/> UNKNOWN <input type="checkbox"/> PIPING LEAK <input type="checkbox"/> OTHER		TANKS ONLY/CAPACITY 5000 GAL. AGE 30+ YRS UNKNOWN
	MATERIAL <input type="checkbox"/> FIBERGLASS <input checked="" type="checkbox"/> STEEL <input type="checkbox"/> OTHER		CAUSE(S) <input type="checkbox"/> OVERFILL <input type="checkbox"/> RUPTURE/FAILURE <input checked="" type="checkbox"/> CORROSION <input type="checkbox"/> UNKNOWN <input type="checkbox"/> SPILL <input type="checkbox"/> OTHER
CURRENT STATUS	CHECK ONE ONLY <input type="checkbox"/> UNDETERMINED <input checked="" type="checkbox"/> SOIL ONLY <input type="checkbox"/> GROUNDWATER <input type="checkbox"/> DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)		
	CHECK ONE ONLY <input type="checkbox"/> SITE INVESTIGATION IN PROGRESS (DEFINING EXTENT OF PROBLEM) <input type="checkbox"/> CLEANUP IN PROGRESS <input type="checkbox"/> SIGNED OFF (CLEANUP COMPLETED OR UNNECESSARY) <input type="checkbox"/> NO ACTION TAKEN <input type="checkbox"/> POST-CLEANUP MONITORING IN PROGRESS <input type="checkbox"/> NO FUNDS AVAILABLE TO PROCEED <input type="checkbox"/> EVALUATING CLEANUP ALTERNATIVES		
	CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS) <input type="checkbox"/> CAP SITE (CD) <input type="checkbox"/> EXCAVATE & DISPOSE (ED) <input type="checkbox"/> REMOVE FREE PRODUCT (FP) <input type="checkbox"/> ENHANCED BIO DEGRADATION (IT) <input type="checkbox"/> CONTAMINANT BARRIER (CB) <input type="checkbox"/> EXCAVATE & TREAT (ET) <input type="checkbox"/> PUMP & TREAT GROUNDWATER (GT) <input type="checkbox"/> REPLACE SUPPLY (RS) <input type="checkbox"/> TREATMENT AT HOOKUP (HU) <input type="checkbox"/> NO ACTION REQUIRED (NA) <input type="checkbox"/> OTHER (OT)		
COMMENTS			



Environmental Services, Inc.

2111 Jennings Street, San Francisco, CA 94124-3224, Phone (415) 822-4555 FAX (415) 822-5290

LETTER OF TRANSMITTAL

DATE: March 4, 1991

TO: Alameda County Health Agency
Hazardous Material Department
80 Swan Way, Room 299
Oakland, California 94621
Attn: Pamela Evans

FROM: John Carver

RE: Arroy School Site
Fuel Oil Tank
15701 Lorenzo Boulevard
San Leandro, California

4110:52 Attached is the Underground Storage Tank Unauthorized Release Report. A
copy of the Soil and Groundwater Investigation Report has been previously
sent under separate cover.

If there are any questions, please call.

41 MAR 1991
Signed 

John Carver

white -env.health
yellow -facility
pink -files

ALAMEDA COUNTY, DEPARTMENT OF
ENVIRONMENTAL HEALTH

80 Swan Way, #200
Oakland, CA 94621
(415) 271-4320

Hazardous Materials Inspection Form

II, III

II.A BUSINESS PLANS (Title 19)

- | | |
|--------------------------|----------|
| 1. Immediate Reporting | 2703 |
| 2. Bus. Plan Stds. | 25503(b) |
| 3. RR Cars > 30 days | 25503.7 |
| 4. Inventory Information | 25504(a) |
| 5. Inventory Complete | 2730 |
| 6. Emergency Response | 25504(b) |
| 7. Training | 25504(c) |
| 8. Deficiency | 25505(a) |
| 9. Modification | 25505(b) |

II.B ACUTELY HAZ. MATLS

- | | |
|---------------------------------|----------|
| 10. Registration Form Filed | 25533(a) |
| 11. Form Complete | 25533(b) |
| 12. RMPP Contents | 25534(c) |
| 13. Implement Sch. Req'd? (Y/N) | |
| 14. OnSite Conseq. Assess. | 25524(c) |
| 15. Probable Risk Assessment | 25534(d) |
| 16. Persons Responsible | 25534(g) |
| 17. Certification | 25534(f) |
| 18. Exemption Request? (Y/N) | 25536(b) |
| 19. Trade Secret Requested? | 25538 |

III. UNDERGROUND TANKS (Title 23)

- | | | |
|---------|----------------------------|-------------|
| General | 1. Permit Application | 25284 (H&S) |
| | 2. Pipeline Leak Detection | 25292 (H&S) |
| | 3. Records Maintenance | 2712 |
| | 4. Release Report | 2651 |
| | 5. Closure Plans | 2670 |

- | | | |
|-------------------------------|-------------------------|--|
| Monitoring for Existing Tanks | 6. Method | |
| | 1) Monthly Test | |
| | 2) Daily Vadose | |
| | Semi-annual groundwater | |
| | One time soils | |
| | 3) Daily Vadose | |
| | One time soils | |
| | Annual tank test | |
| | 4) Monthly Groundwater | |
| | One time soils | |
| 5) Daily Inventory | | |
| Annual tank testing | | |
| Cont pipe leak det | | |
| Vadose/groundwater mon. | | |
| 6) Daily Inventory | | |
| Annual tank testing | | |
| Cont pipe leak det | | |
| 7) Weekly Tank Gauge | | |
| Annual tank testing | | |
| 8) Annual Tank Testing | | |
| Daily Inventory | | |
| 9) Other | | |

- | | |
|--------------------|------|
| 7. Precs Tank Test | 2643 |
| Date: | |
| 8. Inventory Rec. | 2644 |
| 9. Soil Testing | 2646 |
| 10. Ground Water | 2647 |

- | | |
|-------------------|------|
| 11. Monitor Plan | 2632 |
| 12. Access Secure | 2634 |
| 13. Plans Submit | 2711 |
| Date | |
| 14. As Bult | 2635 |
| Date | |

Site ID # _____ Site Name San Lorenzo High School Today's Date 1/3/91

Site Address 15701 Lorenzo Av.

City San Lorenzo Zip 94580 Phone _____

MAX AMT stored > 500 lbs, 55 gal., 200 cft.?

Inspection Categories:

- ☐ I. Haz. Mat/Waste GENERATOR/TRANSPORTER
☐ II. Business Plans, Acute Hazardous Materials
☒ III. Underground Tanks

* Calif. Administration Code (CAC) or the Health & Safety Code (HS&C)

Comments:

2 Tanks removed - 1 6000 gal diesel tank
Upon tank being pulled, fluid was flowing from lower
end into pit. A great deal of liquid was present in
the pit initially - this appeared to have come from
the tank. School rep Deb Cornwall stated that the tank
had been pumped of most of its fuel ~ 3-4 months ago,
but several gallons could not be removed at that time.
A number of holes were noted at fill (west) end of
tank.
1 ~ 50-75 gallon gasoline tank. Noticeable odor. 1st soil sample
taken < 1' into native soil - soil appeared grey + had a
slight odor. 2nd sample ~ 18" below 1st - depth of 5'.
Stockpile sample also taken.
Samples from 6000 gal pit - 1st from surface - visibly
contaminated soil at ~ 10'. Encountered a cement pad run-
ning the length of the pit directly below removed tank.
Next sample was taken ~ 10-11" depth - West.
Sample off E end of pad at ~ 11". Stockpile: 6 samples.
Obvious contamination soil aggregated, ~ 75 yds removed.
I. note backlines hauled tanks to Green Son.

Contact: Deb Cornwall

Title: _____

Signature: [Signature]

Inspector: _____

Signature: [Signature]

II, III

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
DEPARTMENT OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS DIVISION
80 SWAN WAY, ROOM 200
OAKLAND, CA 94621
PHONE NO. 415/271-4320

UNDERGROUND TANK CLOSURE/MODIFICATION PLANS

1. Business Name San Lorenzo Unified School District-Arroyo High School
Business Owner San Lorenzo Unified School District
2. Site Address 15701 Lorenzo Avenue
City San Lorenzo Zip 94580 Phone (415) 276-2260
3. Mailing Address 15510 Usher Street
City San Lorenzo Zip 94580 Phone (415) 276-3600
4. Land Owner San Lorenzo Unified School District
Address 15510 Usher Street City, State San Lorenzo, CA Zip 94580
5. EPA I.D. No. CAC000277721
6. Contractor Lindsay & Wilson Environmental Services, Inc.
dba, L. & W. Environmental Services, Inc.
Address 2111 Jennings Street
City San Francisco, CA. 94124 Phone (415) 822-4555
License Type A,B, Haz. Substance ID# 507442
7. Consultant N/A
Address _____
City _____ Phone _____

8. Contact Person for Investigation

Name George Wilson Title Vice President

Phone (415)822-4555

9. Total No. of Tanks at facility Two

10. Have permit applications for all tanks been submitted to this office? Yes [] No []

11. State Registered Hazardous Waste Transporters/Facilities

a) Product/Waste Tranporter

Name Allied Oil & Pumping EPA I.D. No. CAT080014277

Address P.O. Box 32128

City San Jose State CA. Zip 95152

b) Rinsate Transporter

Name Allied Oil & Pumping EPA I.D. No. CAT080014277

Address P.O. Box 32128

City San Jose State CA. Zip 95152

c) Tank Transporter

Name Erickson Trucking EPA I.D. No. CAD009466392

Address 255 Parr Boulevard

City Richmond State CA. Zip 94806

d) Tank Disposal Site

Name Erickson, Inc. EPA I.D. No. CAD009466392

Address 255 Parr Boulevard

City Richmond State CA. Zip 94806

e) Contaminated Soil Transporter

Name Dillard Trucking EPA I.D. No. CAD981692809

Address Route 1, Box 73

City Byron State CA. Zip 94514

12. Sample Collector

Name Sergio Salas
 Company L. & W. Environmental Services, Inc.
 Address 2111 Jennings Street
 City San Francisco State CA. Zip 94124 Phone (415)822-4555

13. Sampling Information for each tank or area

Tank or Area		Material sampled	Location & Depth
Capacity	Historic Contents (past 5 years)		
100 Gallons	Gasoline	Soil	Under both ends of each tank at the soil/backfill interface into 2' of native soil depending on intended disposition of soil
2500 Gallons	Diesel	Soil	
		Stockpile soils (No piping)	
		*Groundwater if encountered.	

14. Have tanks or pipes leaked in the past? Yes [] No []

If yes, describe. _____

15. NFPA methods used for rendering tank inert? Yes [X] No []

If yes, describe. Tanks emptied and purged with CO², minimum of 15lbs dry ice per 100 gallons of tank size.

An explosion proof combustible gas meter shall be used to verify tank inertness.

16. Laboratories

Name Precision Analytical Laboratory
 Address 4136 Lakeside Drive
 City Richmond State CA. Zip 94806
 State Certification No. 211

17. Chemical Methods ☒ be used for Analyzing Samples

Contaminant Sought	EPA, DHS, or Other Sample Preparation Method Number	EPA, DHS, or Other Analysis Number
Gasoline and Diesel Soil samples	SW-846	TPH as Gasoline GCFID EPA 5030 TPH as Diesel/GCFID EPA 3550 BTX & E / EPA 8020 or 8240 TOG / Standard method- 17 Edition 5520 D&F
Water samples if water is encountered.		----- TPH as Gasoline- GCFID EPA 5030 TPH as Diesel/GCFID EPA 3510 BTX & E / EPA 602 or 624 TOG / Standard method- 17 Edition 5520 C&F

18. Submit Site Safety Plan

19. Workman's Compensation: Yes ☒ No ☐

Copy of Certificate enclosed? Yes ☒ No ☐

Name of Insurer Republic Indemnity of America

20. Plot Plan submitted? Yes ☒ No ☐

21. Deposit enclosed? Yes ☒ No ☐

22. Please forward to this office the following information within 60 days after receipt of sample results.

- a) Chain of Custody Sheets
- b) Original Signed Laboratory Reports
- c) TSD to Generator copies of wastes shipped and received
- d) Attachment A summarizing laboratory results

I declare that to the best of my knowledge and belief the statements and information provided above are correct and true. I understand that information in addition to that provided above may be needed in order to obtain an approval from the Department of Environmental Health and that no work is to begin on this project until this plan is approved.

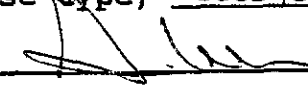
I understand that any changes in design, materials or equipment will void this plan if prior approval is not obtained.

I understand that all work performed during this project will be done in compliance with all applicable OSHA (Occupational Safety and Health Administration) requirements concerning personnel and safety.

I will notify the Department of Environmental Health at least two (2) working days (48 hours) after approval of this closure plan in advance to schedule any required inspections. I understand that site and worker safety are solely the responsibility of the property owner or his agent and that this responsibility is not shared nor assumed by the County of Alameda.

Signature of Contractor

Name (please type) George Wilson

Signature 

Date 12-12-90

Signature of Site Owner or Operator

Name (please type) DSB CORNWELL

Signature Deb. Cornwell 

Date 12/12/90

NOTES:

1. Any changes in this document must be approved by this Department.
2. Any leaks discovered must be submitted to this office on an underground storage tank unauthorized leak/contamination site report form within 5 days of its discovery.
3. Three (3) copies of this plan must be submitted to this Department. One copy must be at the construction site at all times.
4. After approval of plan, notification of at least two (2) working days (48 hours) must be given to this Department prior to removal of tank(s).
5. A copy of your approved plan must be sent to the landowner.
6. Triple rinse means that:
 - a) Final rinse must contain less than 100 ppm of Gasoline (EPA method 8020 for soil, or EPA method 602 for water) or Diesel (EPA method 418.1). Other methods for halogenated volatile organics (EPA method 8010 for soil, EPA method 601 for water) may be required. The composition of the final rinse must be demonstrated by an original or facsimile report from a laboratory certified for the above analyses.
 - b) Tank interior is shown to be free from deposits or residues upon a visual examination of tank interior.
 - c) Tank should be labelled as "tripled rinsed; laboratory certified analysis available upon request" with the name and address of the contractor.

If all the above requirements cannot be met, the tank must be transported as a hazardous waste.

7. Any cutting into tanks requires local fire department approval.

UNDERGROUND TANK CLOSURE/MODIFICATION PLANS

ATTACHMENT A
SAMPLING RESULTS

Tank or Area	Contaminant	Location & Depth	Results (specify units)

INSTRUCTIONS

2. SITE ADDRESS

Address at which closure or modification is taking place.

5. EPA I.D. NO.

This number may be obtained from the State Department of Health Services, 916/324-1781.

6. CONTRACTOR

Prime contractor for the project.

7. OTHER

List professional consultants here.

12. SAMPLE COLLECTOR

Persons who are collecting samples.

13. SAMPLING INFORMATION

Historic contents - the principal product(s) used in the last 5 years.

Material sampled - i.e., water, oil, sludge, soil, etc.

16. LABORATORIES

Laboratories used for chemical and geotechnical analyses.

17. CHEMICAL METHODS:

All sample collection methods and analyses should conform to EPA or DHS methods.

Contaminant - Specify the chemical to be analyzed.

Sample Preparation Method Number - The means used to prepare the sample prior to analyses - i.e., digestion techniques, solvent extraction, etc. Specify number of method and reference if not an EPA or DHS method.

Analysis Method Number - The means used to analyze the sample - i.e., GC, GC-MS, AA, etc. Specify number of method and reference if not a DHS or EPA method.

NOTE:

Method Numbers are available from certified laboratories.

18. SITE SAFETY PLAN

A plan outlining protective equipment and additional specialized personnel in the event that significant amount of hazardous materials are found. The plan should consider the availability of respirators, respirator cartridges, self-contained breathing apparatus (SCBA) and industrial hygienists.

19. ATTACH COPY OF WORKMAN'S COMPENSATION

20. PLOT PLAN

The plan should consists of a scaled view of the facility at which the tank(s) are located and should include the following information:

- a) Scale
- b) North Arrow
- c) Property Line
- d) Location of all Structures
- e) Location of all relevant existing equipment including tanks and piping to be removed
- f) Streets
- g) Underground conduits, sewers, water lines, utilities
- h) Existing wells (drinking, monitoring, etc.)
- i) Depth to ground water
- j) All existing tanks in addition to the ones being pulled

rev. 9/88
mam

CERTIFICATE OF INSURANCE

04/26/90

PRODUCER

COOK, DISHARDON & GREATHOUSE

Insurance Brokers

P. O. Box 12909

PHONE - Oakland, Calif. 94601

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

INSURED

L & W ENVIRONMENTAL SERVICES & PRECISION ANALYTICAL LAB.
2111 JENNINGS STREET
SAN FRANCISCO, CA
94124

COMPANY LETTER A COMCO INSURANCE COMPANY

COMPANY LETTER B REPUBLIC INDEMNITY

COMPANY LETTER C CHRISTIANIA GENERAL

COMPANY LETTER D

COMPANY LETTER E

COVERAGES (-----)
THIS IS TO CERTIFY THAT POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL TERMS, EXCLUSIONS, AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO- LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFF DATE	POLICY EXP DATE	ALL LIMITS IN THOUSANDS	
A	GENERAL LIABILITY	101028	09/23/89	09/23/90	GENERAL AGGREGATE	1000
	<input checked="" type="checkbox"/> COMMERCIAL GEN LIABILITY				PRODS-COMP/OPS AGG.	1000
	<input checked="" type="checkbox"/> [] CLAIMS MADE <input checked="" type="checkbox"/> OCC.				PERS. & ADVG. INJURY	1000
	[] OWNER'S & CONTRACTORS PROTECTIVE				EACH OCCURRENCE	1000
	<input checked="" type="checkbox"/> XCU				FIRE DAMAGE (ANY ONE FIRE)	100
	<input checked="" type="checkbox"/> INDEP. CONTRACT.				MEDICAL EXPENSE (ANY ONE PERSON)	5
	AUTOMOBILE LIAB				CSL	
	[] ANY AUTO				BODILY INJURY (PER PERSON)	
	[] ALL OWNED AUTOS				BODILY INJURY (PER ACCIDENT)	
	[] SCHEDULED AUTOS				PROPERTY	
	EXCESS LIABILITY				EACH OCC	AGGREGATE
	[] UMBRELLA FORM					
B	WORKERS' COMP AND EMPLOYERS' LIAB	PC 988445	01/08/90	01/08/91	STATUTORY	
					1000	EACH ACC
C	OTHER BUSINESS PERSONAL PROPERTY	534825	09/23/89	09/23/90	1000	DISEASE-POLICY LIMIT
					1000	DISEASE-EACH EMPLOYEE
					250	\$850,000. A R REPLACE. COST

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

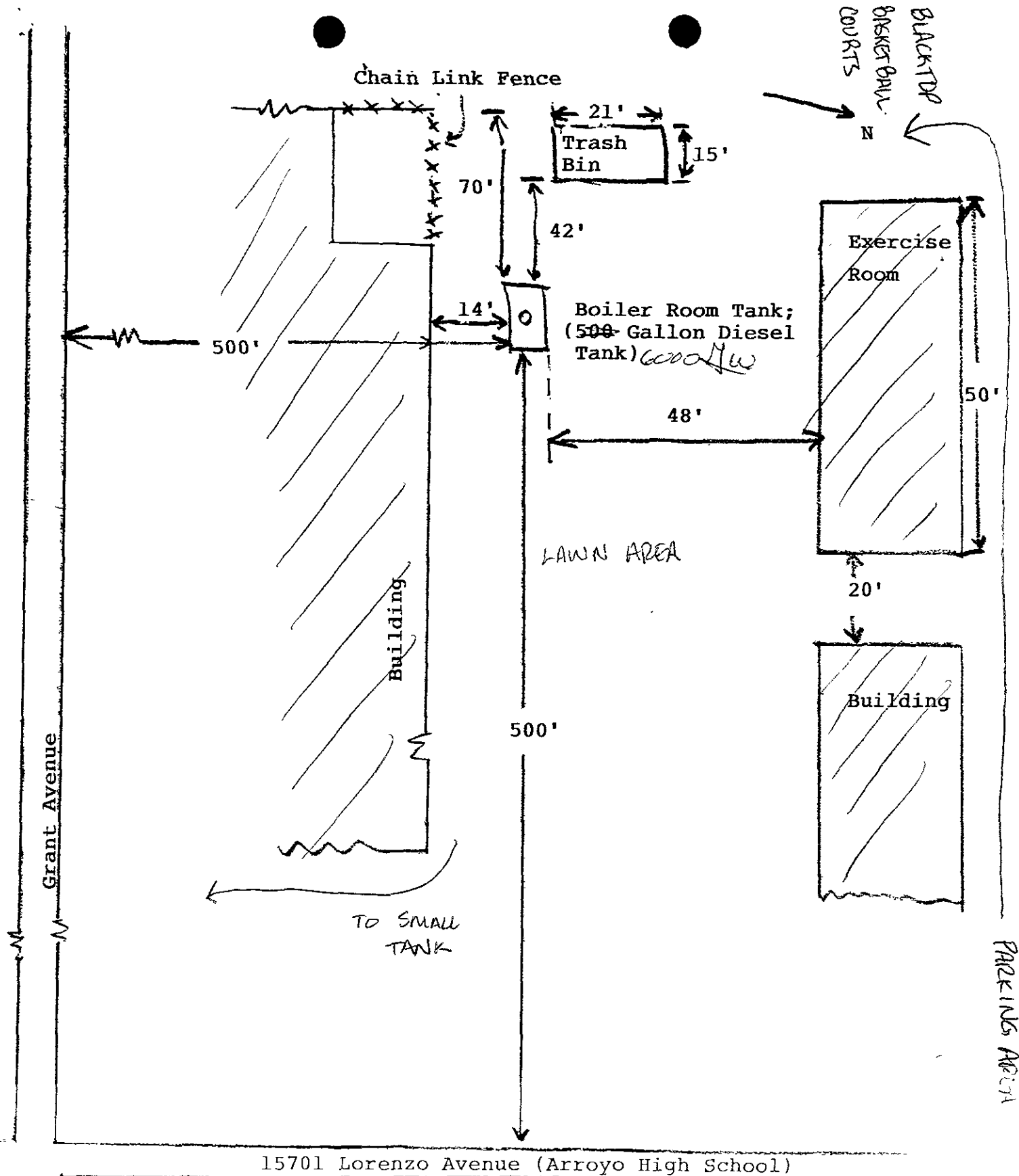
CERTIFICATE HOLDER (-----)
ALAMEDA COUNTY
HAZARDOUS MATERIALS
80 SWAN WAY
OAKLAND, CA
94621

CANCELLATION (-----)
= SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EX-
= PIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30
= DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT
= FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OF LIABILITY OF
= ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

Cook Dishard & Greathouse

ACORD 25-S (3/88)



15701 Lorenzo Avenue (Arroyo High School)

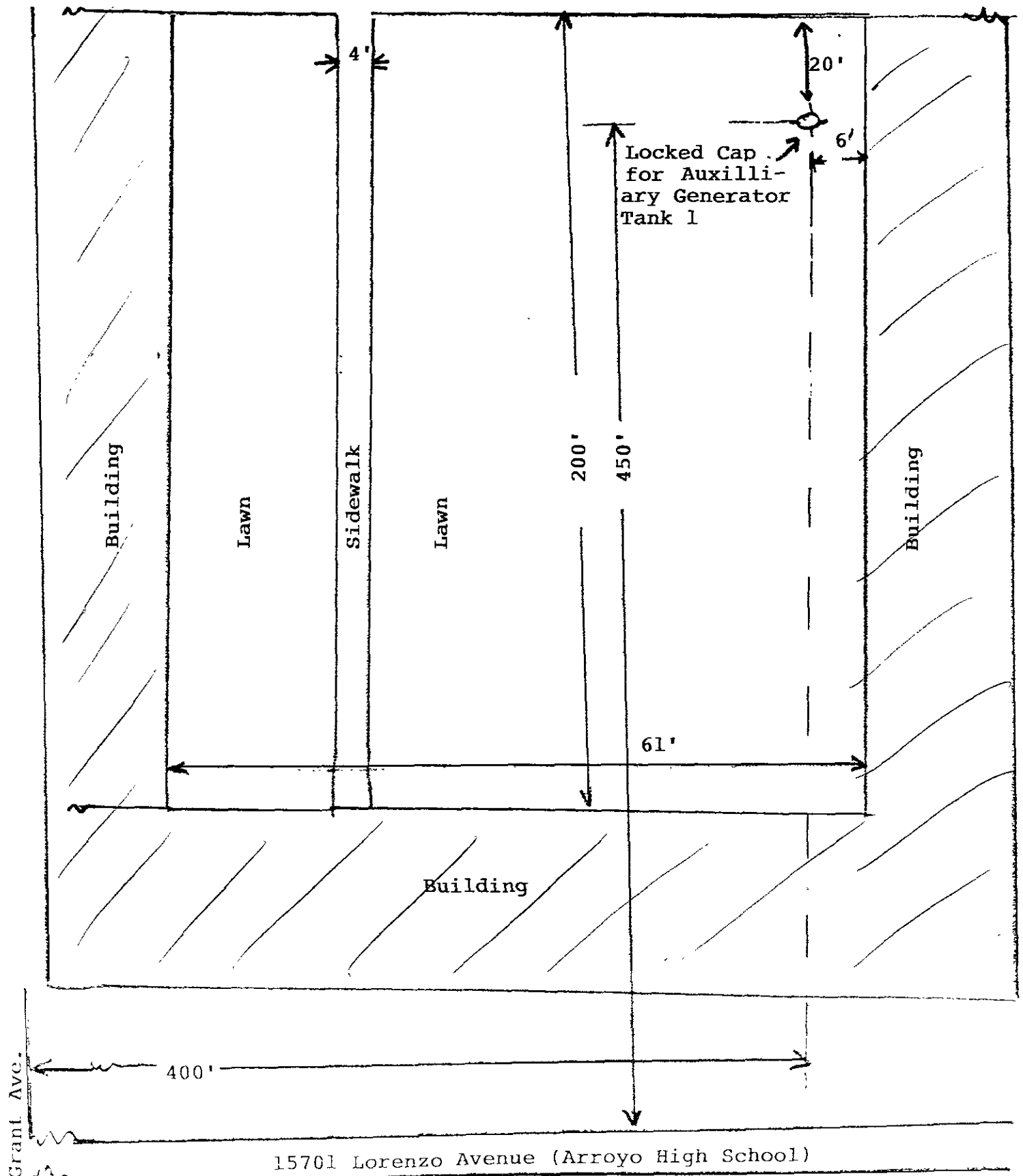
Boiler Room Tank 1
12-6-90

Distances are Approximate
Not to Scale

PARKING LOT

BLACK TOP AREA

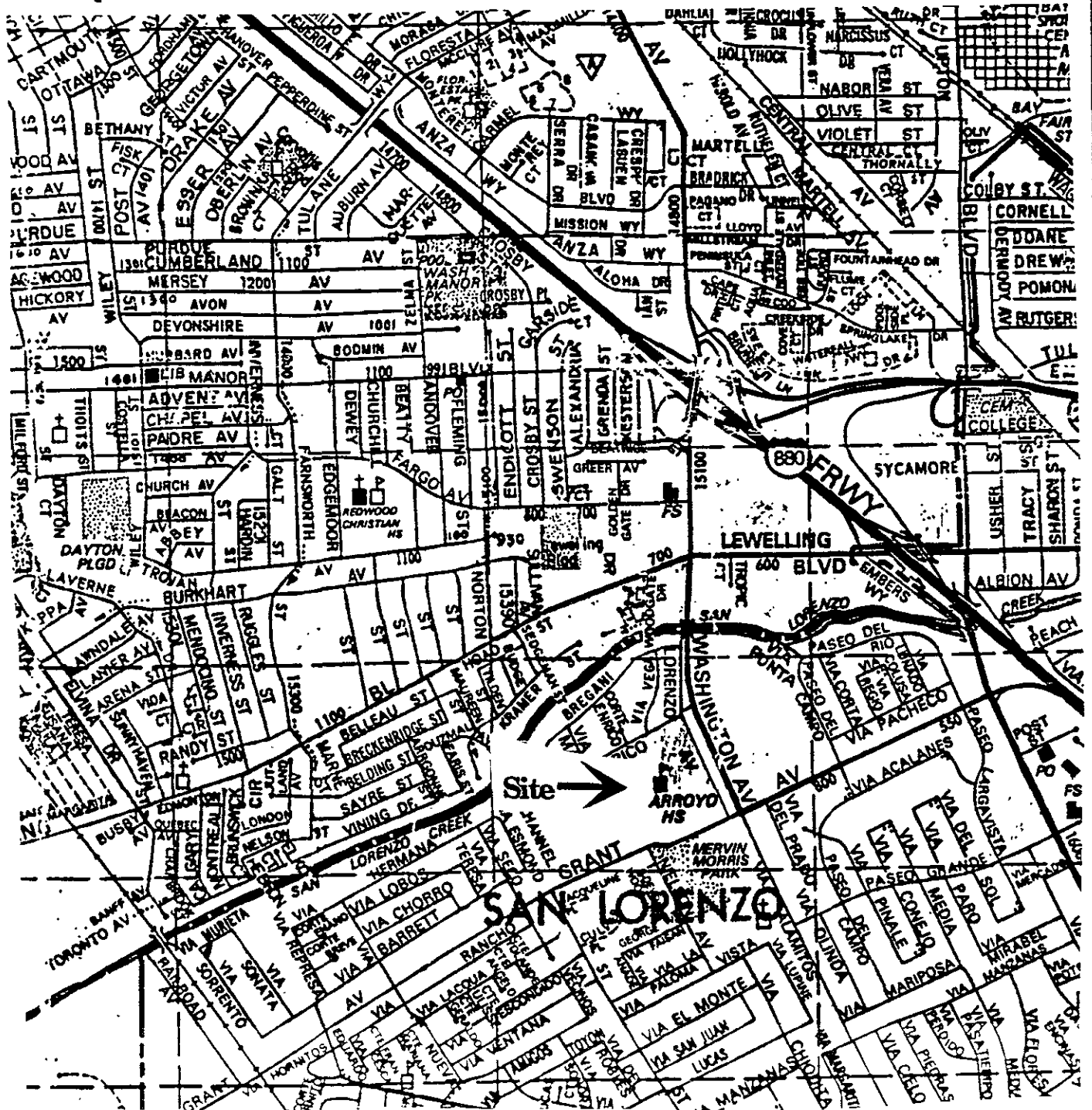
N



Auxilliary Generator Tank 1
12-6-90

Distances are approximate
Not to scale

NORTH



L & W Environmental Services, Inc.

2111 Jennings Street
San Francisco, California

ARROYO HIGH SCHOOL

15701 LORENZO AVENUE
SAN LORENZO, CA

Project Number. 5186

Drawn by: JJ

Date: 12/7/90

Figure Number: 1

OPERATING PROCEDURES

100.0 HEALTH AND SAFETY PROCEDURES FOR FIELD INVESTIGATIONS OF UNDERGROUND SPILLS OF MOTOR OIL AND PETROLEUM DISTILLATE FUEL

100.1 PURPOSE

This operating procedure established minimum procedures for protecting personnel against the hazardous properties of motor oil and petroleum distillate fuels during the performance of field investigations of known and suspected underground releases of such materials. The procedure was developed to enable health and safety personnel and project managers to quickly prepare and issue site safety plans for investigations of such releases.

Whenever this procedure is used a Site Safety Plan form must be completed and attached; together, the completed form and this operating procedure shall comprise a site safety plan. Safety procedures for additional site activities should be attached as needed. Rules governing approval, distribution, acknowledgement of receipt of standard site safety plans are applicable whenever this procedure is used.

100.2 APPLICABILITY

This procedure is applicable to field investigations of underground releases of the substances listed below and involving one or more of the activities listed below.

Substances

- Motor oil (used and unused)
- Leaded and unleaded gasoline
- No. 1 Fuel oil (kerosene, JP-1)
- No. 1-D Fuel oil (light diesel)
- No. 2 Fuel oil (home heating oil)
- No. 2-D Fuel oil (medium diesel)
- No. 4 Fuel oil (residual fuel oil)
- No. 5 Fuel oil (residual fuel oil)
- No. 6 Fuel oil (Bunker C fuel oil)
- JP-3, 4 & 5 (jet fuels)
- Gasahol

Activities

Collection of samples of subsurface soil with aid of truck-mounted drill rig, hand-held power auger or hand auger.

Construction, completion and testing of groundwater monitoring wells.

Collection of groundwater samples from new and existing wells.

Observing removal of underground fuel pipes and storage tanks.

This procedure must not be used for confined space entry (including trench entry) or for installing or operating pilot and full-scale fuel recovery systems.

No safety plans needed for non-intrusive geophysical surveys, reconnaissance surveys and collection of surface soil, surface water and biota.

100.3 PROJECT SAFETY AUTHORITY

Personnel responsible for the project safety are the Project Manager and/or the Site Supervisor.

The Project Manager is responsible for the provisions and submittal of this plan to the Site Supervisor, and for advising the Site Supervisor on health and safety matters. He or she has the authority to provide for the auditing of compliance with the provisions of this plan, suspend or modify work practices, and to administer disciplinary actions for individuals whose conduct does not meet the requirements set forth herein.

The Site Supervisor is responsible for the dissemination of the information contained in this plan to all L & W ENVIRONMENTAL SERVICES, INC. personnel assigned to the project, and to the responsible representative of each sub-contractor firm working under L & W ENVIRONMENTAL SERVICES, INC. on the project. The Site Supervisor will also act as the Site Safety Officer. As such, the Site Supervisor is responsible for ensuring the following items are adequately addressed:

- * Safety Supplies & Equipment Inventory
- * Medical Surveillance Program/Physical Examinations
- * Training Programs/Hazard Communication
- * Accident/Incident Reporting Procedures
- * Decontamination/Contamination Reduction Procedures

The Site Supervisor has the authority to suspend work anytime he or she determines that the provisions of the plan are inadequate to ensure worker safety. The Site Supervisor shall also inform the Project Manager of individuals whose conduct is not consistent with the requirements of the plan.

100.4 HAZARD EVALUATION

Motor oil and petroleum distillate fuels are mixtures of aliphatic and aromatic hydrocarbons. The predominant classes of compounds in motor oil, gasoline, kerosene and jet fuels are the paraffins. Gasoline contains about 80 percent paraffins, 6 percent olefins, and 14 percent aromatic hydrocarbons ranging from C3 to C11 compounds. Kerosene and jet fuels contain 42-48 percent paraffins, 36-38 percent olefins, and 16-20 percent aromatic hydrocarbons. Diesel fuels and heating oils contain less than 10 percent paraffins, 14-23 percent olefins, and 68-78 percent non-volatile aromatic compounds. Chemicals are usually added to automotive and aviation fuels to improve their burning properties. Examples are tetraethyl-lead and ethylene dibromide. Most additives are proprietary materials.

Flammability

Crude oil and petroleum distillate fuels possess two intrinsic hazardous properties, namely, flammability and toxicity. The flammable property of the oil and fuels presents a far greater hazard to field personnel than toxicity because it is difficult to protect against and can result in catastrophic consequences. Being flammable, the vapors of volatile components of crude oil and the fuels can be explosive when confined.

The lower flammable or explosive limits (LFL or LEL) of the fuels listed in Section 508.2 range from 0.6 percent for JP-5 to 1.4 percent for gasolines. LFL and LEL are synonyms. Flash points range from -50oF for gasoline to greater than 150oF for No. 6 fuel oil. JP-5 has a flash point of 140oF. Although it has a lower LEL than gasoline, it can be considered less hazardous because its vapors must be heated to a higher temperature to ignite.

Crude oil and petroleum distillate fuels will not burn in the liquid form; only the vapors will burn and only if the vapor concentration is between the upper and lower flammable limits, sufficient oxygen is present, and an ignition source is present. If these conditions occur in a confined area an explosion may result.

The probability of fire and explosion can be minimized by eliminating any one of the three factors needed to produce combustion. Two of the factors -- ignition source and vapor concentration -- can be controlled in many cases. Ignition can be controlled by prohibiting open fires and smoking on site, installing spark arrestors on drill rig engines, and turning the engines off when LELs are approached. Vapor concentrations can be reduced by using fans. In fuel tanks, vapor concentrations in the head space can be reduced by introducing dry ice (solid carbon dioxide) into the tank; the carbon dioxide gas will displace the combustible vapors.

Toxicity

Crude oil and petroleum distillate fuels exhibit relatively low acute inhalation and dermal toxicity. Gasolines act generally as an anesthetic and are mucous membrane irritants. Their hazard is high because of the ease in which harmful concentrations may develop. Inhalation is the most important route of occupational exposure. Concentrations of 160 to 270 ppm gasoline vapor have been reported to cause eye, nose and throat irritation after several hours of exposure. Levels of 500 to 900 ppm can cause irritation and dizziness in one hour, and 2000 ppm produces mild anesthesia in 30 minutes. Most fuels, particularly → gasoline, kerosene and jet fuels are capable of causing skin irritation after several hours contact with the skin.

Petroleum fuels exhibit moderate oral toxicity. The lethal dose of gasoline in children has been reported to be as low as 10-15 grams (2-3 teaspoons). In adults, ingestion of 20-50 grams of gasoline may produce severe symptoms of poisoning. If liquid fuel is aspirated (passed in to the lungs) gasoline and other petroleum distillate fuels cause intense burning in the throat and lungs and may cause secondary pneumonia.

Some of the additives to gasoline, such as ethylene dichloride and ethylene dibromide, are highly toxic; however, they are present in

such low concentrations that their contribution to the overall toxicity of gasoline and other fuels is negligible in most instances. Tetraethyl and tetramethyl lead are so low in volatility that they usually produce little health hazard in the handling of leaded gasoline.

It is noteworthy that the concentration of aromatics in gasoline vapor is reported to be much less than the liquid, with benzene (0.7%), toluene and xylene constituting less than 3% of the total. Cal-OSHA and ACGIH has established an eight hour (time weighted average) permissible exposure limit of 300 ppm and a short term (15 minute average) exposure limit of 500 ppm for gasoline. The limit took into consideration the average concentration of benzene in gasoline (one percent) as well as its common additives. Exposure limits established by other countries range from 250 to 500 ppm. Chemical data sheets, prepared for the U.S. Coast Guard's Chemical Hazard Information System (CHRIS), list 200 ppm as the permissible exposure limit for kerosene and jet fuels. This limit was not developed by NIOSH/OSHA or ACGIH.

100.5 HEALTH AND SAFETY DIRECTIVES

100.5.1 Personnel Clearance

L&W employees assigned to field operations must

1. Be certified by a L&W-approved physician as being physically fit to wear respiratory protective devices and to perform their assigned field work.
2. Be certified by a L&W Corporate Health and Safety Officer as having successfully completed, as a minimum, L&W's basic safety training course (Level C) for field personnel or the equivalent.

100.5.2 Site-Specific Safety Briefing

Before field work begins, all field personnel, including subcontractor employees, must be briefed on their work assignments and safety procedures contained in this document.

100.5.3 Personnel Protective Equipment

Required Equipment

Each member of the L&W field team must be provided with the equipment listed below.

- NIOSH-approved full or half-face respirator with organic vapor cartridges (color coded black)
- Saranex or polyethylene-coated Tyvek coveralls
- Splash-proof safety goggles
- Nitrile or neoprene gloves
- Neoprene or butyl boots, calf-length with steel toe and shank
- Hardhat

Equipment Usage

Chemical-resistant safety boots must be worn during the performance of work where surface soil is obviously contaminated with oil or fuel, when product quantities of oil or fuel are likely to be encountered, and within 10 feet of operating heavy equipment.

Respirators must be worn whenever total airborne hydrocarbons levels in the breathing zone of field personnel reach or exceed a 15-minute average of 150 ppm. If total airborne hydrocarbons in the breathing zone exceeds 500 ppm, work must be suspended, personnel directed to move a safe distance from the source, and the HSO or designee consulted.

Chemical resistant gloves must be worn whenever soil or water known or suspected of containing petroleum hydrocarbons is collected or otherwise handled.

Chemical resistant coveralls must be worn whenever product quantities of fuel are actually encountered and when oil or fuel-saturated soil is handled.

Safety goggles must be worn when working within 10 feet of any operating heavy equipment (e.g., drill rig, backhoe). Splash-proof goggles or face shields must be worn whenever product quantities of oil or fuel are encountered.

Hardhats must be worn when working within 10 feet of an operating drill rig, backhoe or other heavy equipment.

Operators of some facilities, such as refineries, often require all personnel working within facility boundaries to wear certain specified safety equipment. Such requirements shall be strictly

observed by L&W personnel and its subcontractors.

100.5.4 Vapor Monitoring

Required Equipment

- Organic vapor meter with flame or photoionization detector
- Combustible gas meter

Monitoring Requirements and Guidelines

Vapor monitoring shall be performed as often as necessary and whenever necessary to protect field personnel from hazardous vapors. Monitoring must be performed by individuals trained in the use and care of the monitoring equipment.

During drilling operations, vapor emissions from boreholes must be measured whenever the auger is removed from the boring and whenever flights are added or removed from hollow-stem augers. This requirement does not apply to borings less than five feet deep and borings of any depth made to install monitoring wells in uncontaminated soils. Measurements should be made initially with an organic vapor meter, followed with a combustible gas meter if vapor levels exceed the highest concentration measurable with the organic vapor meter.

Initially measurements shall be made about 12 inches from the bore hole, both upwind and downwind positions. If the total hydrocarbon concentrations exceed the respirator use action level (See Section 100.5.3), measurements must be made in the breathing zone of the individual(s) working closest to the borehole. Decisions regarding respiratory protection should be made using vapor concentrations in the breathing zone.

If total organic vapor concentrations within 12 inches of the borehole exceed the capacity of the organic vapor meter, a combustible gas meter (CGM) must be used to determine if explosive conditions exist. Operations must be suspended, the drill rig motor shut down, and corrective action taken if combustible gas concentrations reach 40 percent of LEL within a 12-inch radius of the borehole or 10 percent of LEL at a distance greater than 24 inches from the borehole. This procedure must also be followed whenever the organic vapor meter goes offscale at its highest range and no CGM is available. If corrective action cannot be taken, field personnel and all other individuals in the vicinity of the borehole must be directed to move to a safe area and the local fire department and facility management must be alerted.

Organic vapor meters with flame ionization detectors (FID) are much more sensitive to paraffins, with the major component of gasoline, kerosene, and jet fuels, than are meters with 10.0 or 10.2 eV

photoionization detectors. As the data in Table 1 show, an FID instrument, such as the Century Systems OVA (Foxboro Analytical), will detect 70-90 percent of actual paraffin concentrations, whereas PID instruments, such as the HNU Model PI-101, AID Model 580, and Photovac TIP with 10.0 to 10.2 eV lamp will detect only 17-25 percent of actual paraffin concentrations when calibrated with benzene and only 24-35 percent when calibrated with isobutylene. Both types of meters are equally sensitive to most aromatic, including benzene, toluene, xylene and ethylbenzene. For these compounds, meter readings equal or exceed 100 percent of actual concentrations. PIDs with 11.7 eV lamps are extremely sensitive to paraffins and aromatic. When calibrated to isobutylene, an 11.7 eV PID will register about twice actual paraffin concentrations and 100 percent or more of actual concentrations of benzene, toluene, and xylene.

An FID meter, recently calibrated with methane and in good working condition, can be expected to provide readings close enough to actual petroleum hydrocarbon concentrations to make corrections unnecessary. Value obtained with a PID must be corrected when measuring for paraffins. For 10.0 and 10.2 eV PIDs, the meter reading should be multiplied by 5 if the instrument is calibrated with benzene. If the instrument is calibrated with isobutylene, the meter readings should be multiplied by 3. If the instrument is equipped with an 11.7 eV probe and is calibrated with isobutylene, the meter reading should be divided by 2.

100.5.5 Area Control

Access to hazardous and potential hazardous areas of spill sites must be controlled to reduce the probability of occurrence of physical injury and chemical exposure of field personnel, visitors and the public. A hazardous or potentially hazardous area includes any area where

1. Field personnel are required to wear respirators.
2. Borings are being drilled with powered augers.
3. Excavating operations with heavy equipment are being performed.

The boundaries of hazardous and potentially hazardous areas must be identified by cordons, barricades, or emergency traffic cones or posts, depending on conditions. If such areas are left unattended, signs warning of the danger and forbidding entry must be placed around the perimeter if the areas are accessible to the public. Trenches and other large holes must be guarded with wooded or metal barricades spaced no further than 20 feet apart and connected with yellow or yellow and black nylon tape not less and 3/4-inches wide. The barricades must be placed no less than two feet from the edge of the excavation or hole.

Entry to hazardous areas shall be limited to individuals who must work in those areas. Unofficial visitors must not be permitted to enter hazardous areas while work in those areas is in progress. Official visitors should be discouraged from entering hazardous areas, but may be allowed to enter only if they agree to abide by the provisions of this document, follow orders issued by the site safety officer and are informed of the potential dangers that could be encountered in the areas.

Field personnel must maintain a safe distance from heavy equipment and excavations when tanks are being physically removed from an excavation and loaded onto a transport vehicle. Tanks must be placed securely on the ground and stabilized to prevent rolling before field personnel may attempt to remove excess soil. Field personnel under no circumstances shall descend into an excavation greater than four feet unless adequate shoring is provided.

100.5.6 Decontamination

Field decontamination of personnel and equipment is not required except when contamination is obvious (visually or by odor). Recommended decontamination procedures follow:

Personnel

Gasoline, kerosene, jet fuel, heating oil, gasahol and diesel oil should be removed from skin using a mild detergent and water. Hot water is more effective than cold. Liquid dishwashing detergent is more effective than hand soap. Motor oil and the heavier fuel oils (No. 4-6) can be removed with dishwashing detergent and hot water also; however, if weathered to an asphaltic condition, mechanic's waterless hand cleaner is recommended for initial cleaning followed by detergent and water.

Equipment

Gloves, respirators, hardhats, boots and goggles should be cleaned as described under personnel; however, if boots do not become clean after washing with detergent and water, wash them with a strong solution of trisodium phosphate and hot water and, if this fails, clean them with diesel oil followed by detergent and water to remove diesel oil.

Sampling equipment, augers, vehicle undercarriages and tires should be steam cleaned. The steam cleaner is a convenient source of hot water for personnel and protective equipment cleaning.

100.5.7 Smoking

Smoking and open flames are strictly prohibited at sites under

investigation.

100.5.8 Inerting of Tanks

Whenever L&W personnel must be present during removal or transport of fuel storage tanks, the SSO or designee must determine whether or not the procedures to be used by the firm responsible for tank removal/transport agree with procedures recommended by the American Petroleum Institute (attached). If the firm's procedures, especially those addressing removal/inactivation of flammable vapors, disagree substantially with API's procedures, the PM and HSO must be notified immediately (by telephone if possible). In turn, the PM shall inform the client that L&W personnel will not report to the site during tank removal/transport operations unless proper procedures are used. If the firm responsible for tank removal/transport is under subcontract to L&W it must be required to follow API procedures.

100.5.8 Reporting

Site Safety Plan Form must be completed and delivered to the HSO for each accident or incident involving L&W personnel. The form is available from the HSO.

The Site Safety Officer shall prepare a safety completion report after field work has been completed and deliver it to the HSO. The report shall contain and evaluation of the adequacy of the safety plan, summaries of each accident and safety incident, including safety infractions by site personnel (subcontractors included), air quality monitoring data (if collected) and description of decisions based on them, and recommendation for improving safety at similar sites.

TABLE 1
RELATIVE SENSITIVITIES OF FID AND PID INSTRUMENTS TO
SELECTED COMPONENTS OF OILS AND PETROLEUM DISTILLATE FUELS

Component	Sensitivity in Percent of Standard		
	FID	PID 10.2 eVa 11.7 eVb	
Paraffins			
Pentane	65	--	141
Hexane	70	22 (31)	189
Heptane	75	17 (24)	221
Octane	80	25 (35)	--
Nonane	90		--
Decane	75	--	--
Napthenes			
Cyclopentane	--	--	--
Methylcyclopentane	80	--	--
Cyclohexane	85	34 (40)	--
Methylcyclohexane	100	--	--
Aromatic			
Benzene	150	100 (143)	122
Toluene	110	100 (143)	100
Ethylbenzene	100	--	--
p-Xylene	116	114 (60)	--
Cumene	100	--	--
n-Propylbenzene	--	--	--
Napthaeine	--	--	--

a Values are relative to benzene standard. Values in parentheses are relative to isobutylene standard and were calculated.

b Values are relative to isobutylene standard.