



**Weiss Associates**

5500 Shellmound Street, Emeryville, CA 94608-2411

Environmental and Geologic Services

Fax: 510-547-5043 Phone: 510-547-5420

92 JAN 20 1993

January 20, 1993

Susan Hugo  
Alameda County Department of  
Environmental Health  
Hazardous Materials Division  
80 Swan Way, Room 200  
Oakland, CA 94621-1426

Re: Shell Service Station  
WIC #204-2004-0204  
5755 Broadway  
Oakland, California  
WA Job #81-619-08

Dear Ms. Hugo:

This letter presents Weiss Associates' (WA) workplan for a subsurface investigation at the Shell service station referenced above (Figure 1). Our investigation objectives are to assess whether a recent hydrocarbon release at the site has impacted native soil and, if so, assess the downgradient extent of hydrocarbons. A brief summary of activities related to the recent release and our investigation scope of work is presented below.

#### HYDROCARBON RELEASE SUMMARY

**Release Location and Repair:** On December 20, 1992, Shell Oil company responded to a report of gasoline vapors in the storm and sanitary sewer piping south of the Shell site. On December 21, 1992, Shell retained Gettler-Ryan (G-R) of Hayward, California to test the underground fuel storage tanks and product piping to assess whether a release could have originated from the site. Although all tanks passed the test, the regular unleaded piping failed. G-R replaced a pipe fitting and the piping passed a subsequent test. Based on tank inventory records, about 200 gallons of gasoline may have been released. Since the tanks and piping had passed a test on September 8, 1992, the release appears to have happened between September 8th and December 20th. A summary of G-R and other activities is included as Attachment A.

**Tank Backfill Purging:** On December 24, 1992, up to one inch of floating hydrocarbons were observed in the tank backfill observation wells. Shell immediately arranged for a vacuum truck to purge the floating hydrocarbons from the tank backfill. Purging continued on a daily basis until January 7, 1993 when the floating hydrocarbon thickness was reduced to a sheen.

Susan Hugo  
January 20, 1993

2

According to Shell records, a total of about 40,000 gallons of mixed water and gasoline were purged from the tank backfill.

**Trench Excavation:** Concurrent with purging the floating hydrocarbons from the tank backfill, G-R excavated several trenches at the southeast corner of the site to identify how the hydrocarbons entered the sewer piping (Figure 2). G-R encountered floating hydrocarbons on ground water in the excavations at about 4 ft depth that presumably were entering the sewer piping. However, the exact location where the floating hydrocarbons entered the sewers was not located.

**Hydrocarbon Removal from Excavations:** G-R either purged the floating hydrocarbons from the excavations or absorbed them using hydrocarbon absorbent pads. G-R has continuously replaced the hydrocarbon absorbent pads in the excavations to remove any floating hydrocarbons that accumulate in the trench. Since the floating hydrocarbons were removed either by purging them along with ground water or by absorbing them onto pads, it is impossible to estimate the total volume of hydrocarbons removed.

**Hydrocarbon Vapor Monitoring:** Starting on December 22, 1992, G-R monitored the hydrocarbon vapor concentrations in a sanitary sewer manhole immediately downgradient of the site 24 hrs a day using a lower explosive limit meter. From December 22, 1992 until January 13, 1993, hydrocarbon vapors did not exceed 2% of the lower explosive limit. Since hydrocarbon concentrations in a recent water sample of the effluent in the sanitary sewer piping were below allowable limits, the Alameda County Department of Environmental Health approved of monitoring three times per day instead of continuously.

**Sanitary Sewer Piping Replacement:** To ensure that no additional floating hydrocarbons enter the sanitary sewer piping from this or future hydrocarbon releases, G-R will remove the existing sanitary sewer piping and replace it with piping that is resistant to hydrocarbon penetration. The section of the sanitary sewer that will be replaced is shown on Figure 2.

*7 ft  
sewer main  
20 ft  
space  
stairwell*

## PROPOSED WORK

In our January 13, 1993 meeting we discussed tasks that should be completed to assess whether the released hydrocarbons may have impacted native soil beneath the site. To assess whether hydrocarbons are present in the native soil adjacent to the trenches, WA proposed to collect soil samples from the existing excavations and from the excavation for the sanitary

Susan Hugo  
January 20, 1993

3

sewer piping replacement. WA also recommended installing a horizontal ground water extraction well beneath the replaced sanitary sewer in the event that ground water remediation is required at this site in the future. Specific tasks are discussed below.

### Trench Sampling

To assess whether hydrocarbons have impacted native soil at the site, WA proposes to collect soil samples from the existing excavations and from the excavation for the sanitary sewer piping replacement. WA will collect soil samples every 15 lineal feet immediately above the water table in the sanitary sewer trench and from several locations from the existing trenches. We will also collect additional soil samples in areas where there are field indications of hydrocarbons in either the existing trenches or the sanitary sewer trench.

Soil samples will be collected from a backhoe bucket by driving stainless steel soil sampling tubes into the excavated soil in the bucket. The tubes will be immediately trimmed of excess soil and capped with teflon tape and plastic end caps, labelled, stored on dry ice at or below 4°C, and transported under chain-of-custody to a State-certified analytic laboratory. Samples will be analyzed for total petroleum hydrocarbons as gasoline (TPH-G) and benzene, ethylbenzene, toluene and xylenes (BETX) by EPA Methods 8015 Modified and 8020, respectively. Selected soil samples may also be analyzed for MTBE, which is an additive recently added to gasoline as an oxygenator.

If hydrocarbons are observed during sampling, we will excavate the hydrocarbon-bearing soil to remove as much of the hydrocarbons as possible. However, the excavation may be limited by the City excavation permits for the sanitary sewer piping in the street and by the proximity to the sanitary sewer piping and other site structures. We will collect soil samples from the walls of the final excavation to assess whether hydrocarbons remain in the soil.

If analytic results indicate that hydrocarbons are detected in soil samples from the sanitary sewer trench, WA recommends collecting soil vapor and/or soil samples from the trench further downgradient of the site to assess the downgradient extent of hydrocarbons in the trench. Soil vapor samples could be used to tentatively assess the downgradient extent of hydrocarbons and soil sampling could be used to confirm the downgradient extent.

Since the sanitary sewer downgradient of the site may lie under private property and possibly beneath structures, it may not be possible to collect soil vapor and or soil samples at

Susan Hugo  
January 20, 1993

4

all locations. Since Right of Entry Agreements are often difficult to secure quickly, we recommend sampling only beneath City right of ways and pursuing Right of Entry Agreements on specific private property where soil samples are critical to the investigation.

### Horizontal Well

To facilitate future site remediation, if it is necessary, WA proposes installing a horizontal ground water extraction well below the new sanitary sewer piping. The well will be constructed of four-inch diameter well-screen placed in #1/20 sand backfill. The screen will be installed horizontally four ft below the static water level, or about eight ft below grade. A vertical riser will connect the well to the ground surface and provide access to install a ground water extraction pump, if ground water remediation is required in the future. The vertical riser will be stubbed up inside a secured well vault finished flush with grade. As we discussed in our meeting, preliminary modeling indicates that ground water extraction from the horizontal well should be sufficient to capture hydrocarbon-bearing ground water from all potential sources at the site. A schematic diagram illustrating the location and construction of the horizontal well is being prepared by G-R and will be submitted when installation permits are approved by the City.

### Summary

In summary, our proposed scope of work includes:

- Collecting soil samples every 15 lineal ft from immediately above the water table in the sanitary sewer trench (Figure 2) and from the smaller excavations onsite to assess whether the hydrocarbon release impacted soil beneath the site,
- Analyzing soil samples for TPH-G and BETX,
- Excavating limited volumes of soil to remove hydrocarbon-bearing soil identified by field screening,
- If hydrocarbons are detected in the initial soil samples from the sanitary sewer excavation, collect soil vapor and/or soil samples from the unexcavated sanitary sewer piping further downgradient of the site to assess the downgradient extent of hydrocarbons,
- Observing the installation of a horizontal ground water extraction well in the sanitary sewer excavation at a depth of about 8 ft, and

Susan Hugo  
January 20, 1993

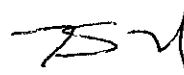
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- Preparing a brief subsurface investigation report documenting the work.

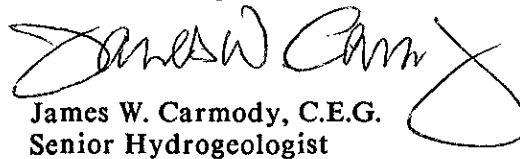
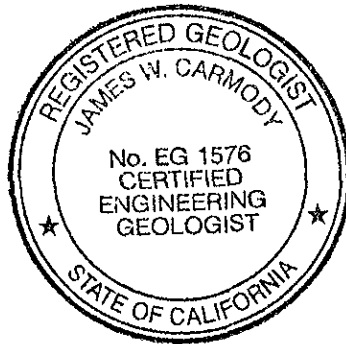
Based on our discussions with G-R, we anticipate that all work can be completed within about three weeks once all necessary permits are received. The excavation work should start less than one week after permits are received. Trench excavation, soil sampling and installation of the horizontal well should be completed during the second week. Sanitary sewer piping replacement and backfilling should be completed by the third week. If additional soil vapor and/or soil sampling along the trench further downgradient of the site is required, it will be completed after the analytic results for the initial trench sampling are received and reviewed.

We thank you for your consideration in this matter. Please call if you have any questions or comments.

Sincerely,  
Weiss Associates



N. Scott MacLeod  
Project Geologist



James W. Carmody, C.E.G.  
Senior Hydrogeologist

NSM/JWC:de

C:\WP51\SHELL\OAK-619\619L1JA3.WP

Attachments: G-R Activities

cc: Lester Feldman, Regional Water Quality Control Board-San Francisco Bay Region, 2101 Webster Street, Suite 500, Oakland, California 94612  
Dan Kirk, Shell Oil Company, P.O. Box 5278, Concord, California, 95450-9998  
Jeff Granberry, Shell Oil Company, P.O. Box 5278, Concord, California, 95450-9998

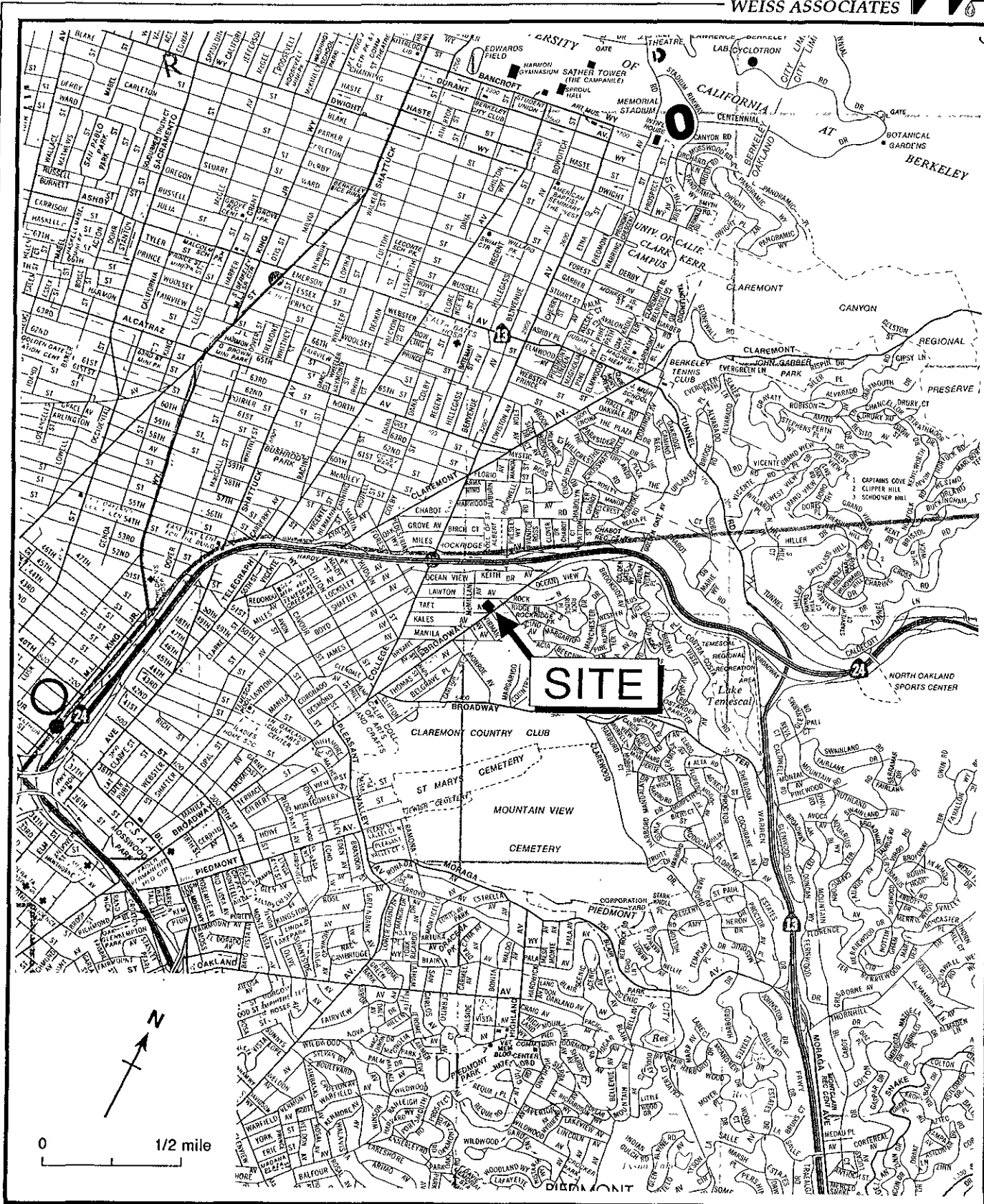


Figure 1. Site Location Map - Shell Service Station WIC #204-5510-0303, 5755 Broadway, Oakland, California

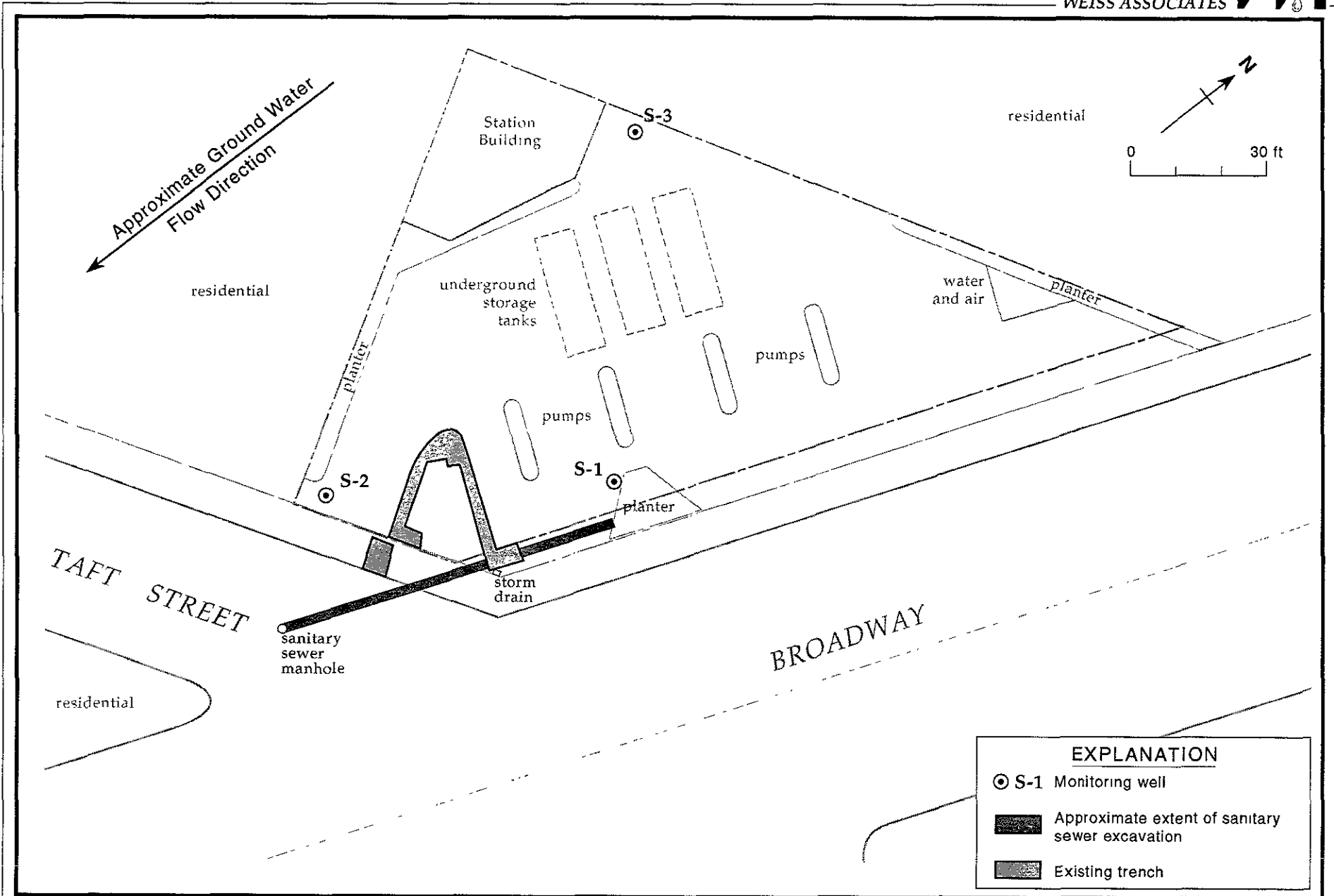


Figure 2. Sanitary Sewer Excavation and Existing Trench Locations - Shell Service Station WIC #204-2004-0204, 5755 Broadway, Oakland, California

**ATTACHMENT A**  
**GETTLER-RYAN SUMMARY**





gettler - ryan inc.

general contractors

January 8, 1993

Mr. Larry Seto  
Alameda County Environmental Health Department  
80 Swan Way  
Oakland, California 94621

Reference: Shell Service Station  
5755 Broadway  
Oakland, California

Gentlemen:

The following is a chronological list of events pertaining to the referenced location.

- o December 20, 1992 - Responded to an emergency (Sunday, 12:00 noon) of reported gasoline vapors in storm drains in the street. Gettler - Ryan personnel were on site along with officials from the county and fire department.
- o December 21, 1992 - Gettler - Ryan technician was dispatched to the site to perform a Petro-Tite line test and certify the operation of all monitoring equipment. The SU-2000 and SR-2000 lines passed testing, however, the RU-2000 failed (copies of test results are enclosed). Blew product out of the RU-2000 product line and confirmed line pressure loss by performing a nitrogen test.
- o December 22, 1992 - Shell Oil Company representatives had product removed from the RU-2000 underground storage tank. Gettler-Ryan technician performed a helium test to locate any leaks in the product line.
- o December 29, 1992 - Excavated near one of the pump islands and located a leak in a 2" fiberglass 45-degree ell fitting on the RU-2000 product line.
- o December 31, 1992 - Replaced and glued the 2" fiberglass fitting.

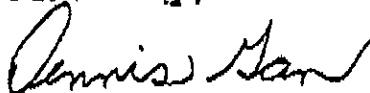
Mr. Larry Seto  
January 8, 1993  
Page Two

- o January 1, 1993 - Retested the RU-2000 product line at 90 psi for 4 hours; the line held tight. The station received a delivery of RU-2000 product.
- o January 4, 1993 - Gettler - Ryan technician purged air from the product line in preparation for tank and linetesting to be performed the following day.
- o January 5, 1993 - NDE Environmental Corporation performed tank and line tests on all systems (copies enclosed). All systems passed NFPA criteria for tight tanks and lines.

As of this date, Gettler - Ryan is waiting for county approval before restoring operation to the RU-2000 system.

Please call if you should have any questions or require additional information.

Sincerely,



Dennis Gan  
Superintendent

DG/jw

Enclosures

cc: Ms. Lisa Waters, Shell Oil Company  
Mr. Ray Newsome, Shell Oil Company



## DAILY LOG

5755 Broadway  
Oakland, California

Date and Well	Vap. Truck	Time		Product		Well Water		Depth
		Arrival	Dept.	Before	After	Before	After	
12/24/92	A	0700	1030	7/16"	1/8"	10'6"	13'6"	
	B			7/16"	1/8"	11'6"	Bottom	
	C			1"	0	N/A	N/A	
	D			0	0	N/A	N/A	
12/25/92	A	0700	1000	1/4"	0	11'6"	12'6"	
	B			0	0	11'6"	Bottom	
	C			0	0	N/A	N/A	
	D			0	0	N/A	N/A	
12/25/92	A	0700	1000	1/8"	0	12'	13'2"	
	B			0	0	11'6"	Bottom	
	C			0	0	N/A	N/A	
	D			0	0	N/A	N/A	
12/27/92	A	0700	1000	3/16"	0	12'3"	Bottom	
	B			3/16"	0	13'3"	Bottom	
	C			1/2"	0	N/A	N/A	
	D			0	0	N/A	N/A	
12/28/92	A	0850	1430	3/16"	sheen	12'2"	Bottom	
	B			3/16"	0	12'3"	Bottom	
	C			0	0	N/A	N/A	
	D			0	0	N/A	N/A	
12/28/92	A	0815	1100	1/8"	0	12'1"	Bottom	
	B			1/8"	0	12'2"	Bottom	
	C			0	0	N/A	N/A	
	D			0	0	N/A	N/A	
12/30/92	A	0815	0800	1/16"		11'8"		
	B			1/16"		12'9"		
12/31/92	A	N/A	1010	1/16"		10'6.5"		
01/01/93	A	N/A	0625	3/16"		8'3"		
01/02/93	A	0700	N/A	1/8"		8'		
01/03/93	A	0630	N/A	1/8"		6'0"		

**DAILY LOG**

**5755 Broadway  
Oakland, California**

Date and Well	Voc Truck Time		Product Thickness		Wall Water Depth	
	Arrival	Dept.	Before	After	Before	After
01/04/93 A	0845	N/A	1/8"		5'11"	
01/05/93 A	0800	N/A	1/8"		5'4.5"	
01/06/93 A	0843	1006	1/16"	sheen	5'11"	
B			1/8"	sheen	5'1"	
01/07/93 A	0815	N/A	sheen		6'8"	
B			sheen		4'10"	

**PERCENT OF L.E.L. IN MANHOLE**

**Broadway and Perkins Street  
Oakland, California**

Time	12/21	12/22	12/23	12/24	12/25	12/26	12/27	12/28	12/29	12/30
0100		0	0	0	0	0	0	0	0	0
0200		0	0	0	0	0	0	0	0	0
0300		0	0	0	0	0	0	0	0	0
0400		0	0	0	0	0	0	0	0	0
0500		0	1	0	0	0	0	0	0	0
0600		2	2	0	0	0	0	0	0	0
0700		2	2	2	0	0	1	1	0	0
0800		2	2	2	0	0	1	2	0	0
0900		1	1	1	0	0	1	0	0	1
1000		1	1	2	0	0	0	0	0	1
1100		0	2	1	0	0	0	0	0	0
1200		0	2	2	0	0	0	0	0	0
1300		0	2	0	0	0	0	0	0	0
1400		0	2	0	0	0	0	0	0	0
1500	100	1	1	0	0	0	0	0	0	0
1600		1	0	0	0	0	0	0	0	0
1700	100	0	1	0	0	0	0	0	0	0
1800		0	0	0	0	0	0	0	0	0
1900		1	1	0	0	0	0	0	0	0
2000		0	0	0	0	0	0	0	0	0
2100		0	0	0	0	0	0	0	0	0
2200		0	0	0	0	0	0	0	0	0
2300		0	0	0	0	0	0	0	0	0
2400		0	0	0	0	0	0	0	0	0

### PERCENT OF L.E.L. IN MANHOLE

Broadway and Perkins Street  
Oakland, California

Time	12/31	01/01	01/02	01/03	01/04	01/05	01/06	01/07	01/08	01/09
0100	0	0	0	0	0	0	0	0	0	0
0200	0	0	0	0	0	0	0	0	0	0
0300	0	0	0	0	0	0	0	0	0	0
0400	0	0	0	0	0	0	0	0	0	0
0500	0	0	0	0	0	0	0	0	0	0
0600	0	0	0	0	0	0	0	0	0	0
0700	0	0	0	0	0	0	0	0	0	0
0800	0	0	0	0	0	0	0	0	0	0
0900	0	0	0	0	0	0	0	0	0	0
1000	0	0	0	0	0	0	0	0	0	0
1100	0	0	0	0	0	0	0	0	0	0
1200	0	0	0	0	0	0	0	0	0	0
1300	0	0	0	0	0	0	0	0	0	0
1400	0	0	0	0	0	0	0	0	0	0
1500	0	0	0	0	0	0	0	0	0	0
1600	0	0	0	0	0	0	0	0	0	0
1700	0	0	0	0	0	0	0	0	0	0
1800	0	0	0	0	0	0	0	0	0	0
1900	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0
2100	0	0	0	0	0	0	0	0	0	0
2200	0	0	0	0	0	0	0	0	0	0
2300	0	0	0	0	0	0	0	0	0	0
2400	0	0	0	0	0	0	0	0	0	0

### PERCENT OF L.E.L. IN MANHOLE

Broadway and Perkins Street  
Oakland, California

Time	01/10	01/11	01/12	01/13
0100	0	0	0	0
0200	0	0	0	0
0300	0	0	0	0
0400	0	0	0	0
0500	0	0	0	0
0600	0	0	0	0
0700	0	0	0	0
0800	0	0	0	0
0900	0	0	0	0
1000	0	0	0	0
1100	0	0	0	0
1200	0	0	0	0
1300	0	0	0	0
1400	0	0	0	
1500	0	0	0	
1600	0	0	0	
1700	0	0	0	
1800	0	0	0	
1900	0	0	0	
2000	0	0	0	
2100	0	0	0	
2200	0	0	0	
2300	0	0	0	
2400	0	0	0	

2

BLDG.

BLACK WALL  
BAD SOIL SCOUR



Vac TRUCK TO EXTRACT FROM  
POINTS A, B, C, D

2

N

Block WALL

RU 2000 SR 2000 SU 2000

EXCAVATION  
TO  
GROUNDWATER

HOUSE

BRICK

BRICK

BRICK

Flooding  
Proctor  
Change FBS. PROS  
as needed  
2 TIMES  
per shift

STORM  
CATCH  
BASIN

TEST EX. HOLE

A.C. TEST  
OVERFLOW  
HOLE

SEWER LINE

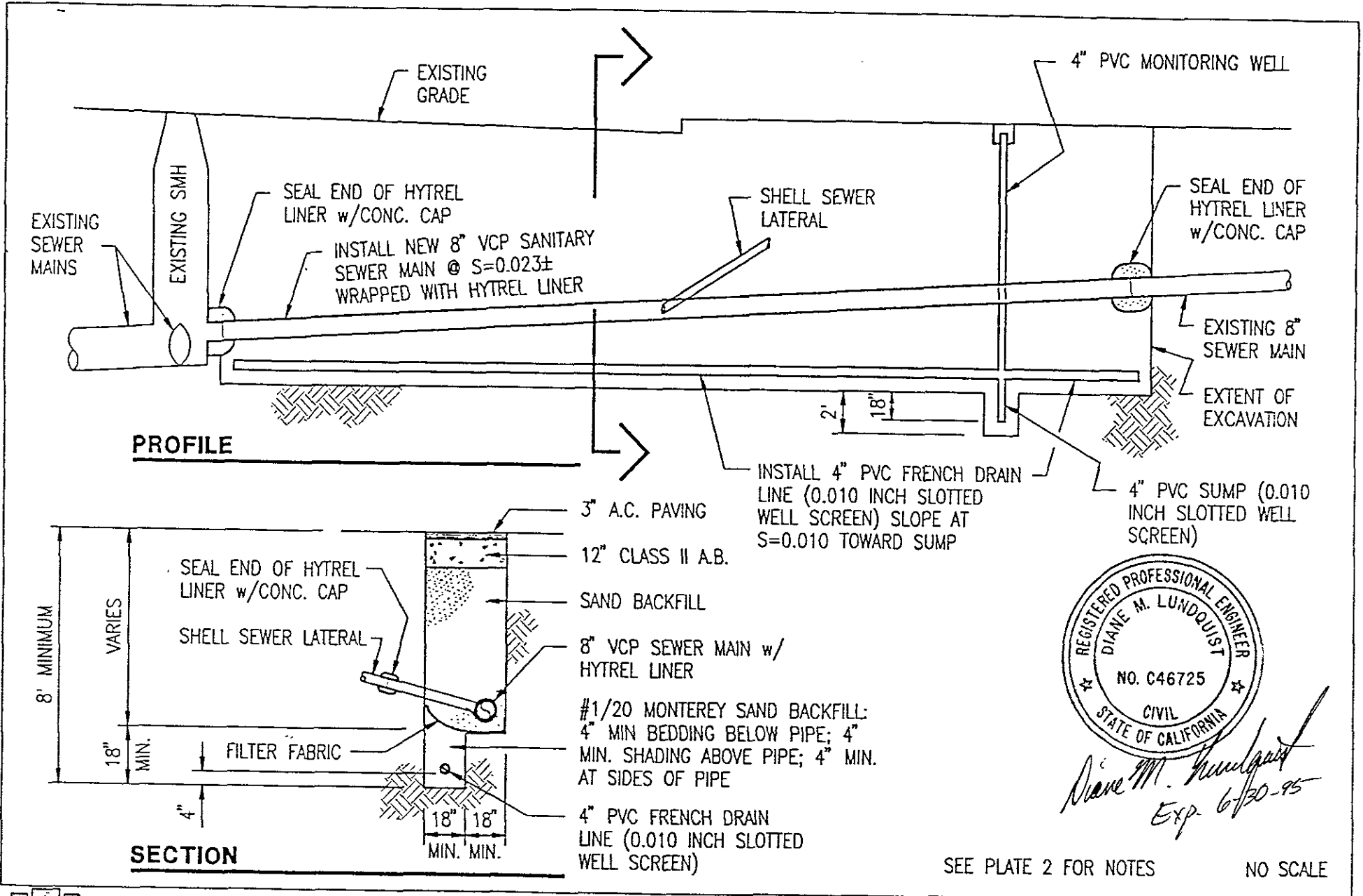
SIDEWALK

TAKE READINGS  
Hourly - Change PROS  
AS NEEDED

SEWER  
DISCONNECT  
EXCAVATION

BRONK





*Diane M. Lundquist*  
Exp. 6/30-95

SEE PLATE 2 FOR NOTES NO SCALE

# GENERAL NOTES

1. ALL WORK SHALL CONFORM TO LOCAL CODES AND ORDINANCES. ALL WORK WITHIN THE PUBLIC RIGHT OF WAY SHALL CONFORM TO THE REQUIREMENTS OF THE CITY OF OAKLAND PUBLIC WORKS DEPARTMENT.
2. ALL WORK SHALL COMPLY WITH OSHA REGULATIONS AND RECOMMENDATIONS.
3. OPEN TRENCHES SHALL BE PLATED AT ALL TIMES WHEN WORK IS NOT IN PROGRESS.
4. EXISTING BURIED PIPE AND UTILITY LOCATIONS SHOWN ARE APPROXIMATE. THE GENERAL CONTRACTOR SHALL EXPOSE AND VERIFY PIPE LOCATIONS AS NECESSARY. CONTACT UNDERGROUND SERVICE ALERT, (800) 642-2444, AT LEAST TWO WORKING DAYS PRIOR TO START OF CONSTRUCTION.
5. GENERAL CONTRACTOR SHALL PROTECT ALL EXISTING FACILITIES WHICH ARE TO REMAIN, UNLESS OTHERWISE NOTED, THROUGHOUT THE CONSTRUCTION PERIOD. GENERAL CONTRACTOR SHALL REPAIR OR REPLACE (AT CONTRACTOR'S SOLE EXPENSE AND TO THE SATISFACTION OF THE SHELL ENGINEER) ANY EXISTING FACILITIES WHICH ARE DAMAGED DURING THE CONSTRUCTION PERIOD.
6. THE GENERAL CONTRACTOR SHALL VERIFY THE ADEQUACY OF BACKFILL MATERIAL AND PAVING SECTION TO CONFORM TO CITY OF OAKLAND REQUIREMENTS.
7. SEWER LINE SHALL BE TESTED PER CITY OF OAKLAND REQUIREMENTS PRIOR TO BACKFILL.
8. BACKFILL AND COMPACTION SHALL BE PER CITY OF OAKLAND REQUIREMENTS. GENERAL CONTRACTOR SHALL PROVIDE COMPACTION TESTING IF REQUIRED BY THE CITY OF OAKLAND PUBLIC WORKS DEPARTMENT.
9. SEWER LINE SIZE OF 8" AND SLOPE OF 0.023± ARE SPECIFIED ONLY IN ORDER TO REPLACE THE EXISTING SEWER LINE WITH A LINE OF THE SAME SIZE AND SLOPE. NO CALCULATIONS WERE PERFORMED TO DEMONSTRATE ADEQUATE CAPACITY OF THE LINE AT THIS SIZE AND SLOPE.
10. GENERAL CONTRACTOR SHALL PATCH ALL SLABS AND PAVING AS REQUIRED AFTER TRENCHING AND EXCAVATION FOR NEW WORK. SAWCUT EXISTING PAVEMENT, SLABS AND/OR SIDEWALKS IN NEAT STRAIGHT LINES PRIOR TO PATCH PAVING.



*Diane M. Lundquist*  
Exp. 6-30-95



GeoStrategies Inc.

SEWER MAIN REPLACEMENT PROJECT  
Shell Service Station  
5755 Broadway at Taft Avenue  
Oakland, California

PLATE

2

JOB NUMBER  
410501

REVIEWED BY  
*[Signature]*

DATE  
1/13/93

REVISED DATE

2/1/93 *BA AB M* *ST103618* *7 1 7*  
*On site meeting*  
 Reference: Shell Oil Company  
 5755 Broadway / Taft  
 Oakland, California

The following is the proposed construction time-line for the referenced location.

	<i>2/1/93</i> Week 1					Week 2					Week 3					
	M	T	W	TH	F	M	T	W	TH	F	S	M	T	W	TH	F
MOBLIZATION	XXXX															
FIELD MEETINGS	XXXX															
EXCAVATE AT TANKS	XXXX	XXXX														
SAWCUT SEWER TRENCHES	XXXX	XXXX														
INSTALL LINE MONITOR <i>→ ? positive</i>			XXXX	XXXX												
REROUTE SEWER DISCHARGE			XXXX	XXXX												
DELIVER SHORING MATERIALS <i>→</i>			XXXX													
EXCAVATE ON SITE SEWER				XXXX	XXXX											
POUR TANK SLAB					XXXX											
EXCAVATE AT MH / TEST -						XXXX										
EXCAVATE SEWER MAIN						XXXX	XXXX									
INSTALL FRENCH DRAIN								XXXX								
BED TRENCH/LAY HYTREL								XXXX								
INSTALL SEWER PIPING									XXXX	XXXX	XXXX					
FINISH FRENCH DRAIN											XXXX					
TEST SEWER AND LATERAL -												XXXX				
RECONNECT SEWER												XXXX				
CLOSE HYTREL/POUR SEALS													XXXX	XXXX		
BACKFILL TRENCHES														XXXX		
POUR CONC/SIDEWALKS																XXXX
PAVE STREET/PREP CONC															XXXX	
CLEAN-UP / OFF HAUL MATS				XXXX						XXXX					XXXX	XXXX

If you have any questions or comments, please call.