UNDERGROUND STORAGE TANK REMOVAL REPORT

GINO'S COUNTRY STORE
1000 N. VASCO ROAD
LIVERMORE, CALIFORNIA

Grayland No. 022-030
December 28, 1994

Prepared For:

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December 28, 1994
022-030

Mr. Michael Walton
Walton Engineering
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West Sacramento, California 95691

Subject: Underground Storage Tank Removal Report
Gino's Country Store
1000 N. Vasco Road
Livermore, California 94550-9268

Dear Mr. Walton:

At the request of Walton Engineering, a geologist from Grayland Environmental (*Grayland*) arrived at Gino's Country Store on October 6, 1994, to oversee and assist with the removal of three 10,000-gallon underground gasoline storage tanks and one 10,000-gallon underground diesel fuel storage tank. Gino's Country Store (site) is located approximately one block north of Interstate 540 at 1000 North Vasco Road in Livermore, California (Figure 1). *Grayland* was present at the site to collect the required soil samples from beneath each tank and fuel dispenser area, and from stockpiled soil generated during the tank removal work.

BACKGROUND

Geno's Country Store began operating in 1976; prior to that time, the site was occupied by a grocery store and plant nursery. Following the opening of Gino's Country Store, four underground storage tanks were installed in 1978 for the purpose of storing leaded and unleaded gasoline and diesel fuel for retail sale. All of the tanks passed their most recent tank integrity tests for tightness in January of 1993. The three former gasoline tanks were located together adjacent to the eastern edge of the site near North Vasco Road; the former diesel fuel tank was located approximately 100 feet farther north next to the northern edge of the site (Figure 2). The northern edge of the site is bounded by a drainage slough (Figure 2). The site is bounded on the east by North Vasco Road, across from which is a trailer park, and is bounded on the south by a vacant undeveloped lot. West of the site is an older rural residence, while farther west across Central Avenue is a newer residential development (Figure 2).

TANK REMOVAL

All four underground storage tanks were removed from the ground on October 6, 1994, by Walton Engineering of West Sacramento, California. The tanks were loaded on to trailers and hauled from the site by H & H Environmental Services. The tanks and underground piping were constructed from fiberglass material. Prior to tank removal, the fuel dispensers were dismantled and removed and the piping was back-flushed into the tanks. A visual inspection of the tanks during their removal indicated that the tanks appeared in good condition with no visible perforations evident. The fiberglass tanks were removed for the purpose of installing larger double-wall underground storage tanks.

SOIL SAMPLING

Because groundwater was present in each of the tank excavations, soil samples could not be collected from beneath the underground storage tanks. Soil samples, however, were collected from the sidewalls of the tank excavations at depths immediately above groundwater level. Groundwater was present in the gasoline tank excavation (P1) at approximately 9 feet below ground surface; while groundwater was present at approximately 7 feet below ground surface in the diesel fuel tank excavation (P2). Each soil sample was collected *insitu* or from the bucket of the excavator using a hand-operated percussion core sampler containing a clean stainless steel sample sleeve. Each bucket sample was collected immediately after removing native soil from the sidewalls of the excavations at several different locations (Figure 3). Sidewall soil appeared stained mainly at the southwestern corner of P1 and on all four sidewalls of P2.

Minor overexcavation of each tank pit was conducted immediately following the tank removal work (Figure 3). Overexcavation of P1 was conducted at the southwest corner of the excavation because this was the area of the former product delivery lines and because soil at this location was significantly stained and had a moderately strong odor of petroleum hydrocarbons. Overexcavation of P2 was conducted at the western end of the excavation in order to evaluate the extent of vadose zone soil contamination. One additional soil sample was collected at the farthest extent of each of the overexcavated areas.

Test pits were excavated where the former gasoline dispensers were located. Soil samples were collected from approximately 4 feet below ground surface in each of the test pits and at approximately 10 feet below ground surface in test pit FD2 (Figure 3). Soil collected from FD2 at 4 feet was greatly discolored and had a strong odor of petroleum hydrocarbons; whereas soil collected from FD2 at 10 feet was discolored but had only a slight odor of gasoline.

The stockpiled soil was sampled by first removing approximately 1 foot of soil from the surface of the pile and then driving a clean stainless steel sleeve into the exposed surface using the percussion core sampler. Three individual soil samples were collected from areas of stockpile SP1 where obvious contamination was present (Figure 2).

Immediately after collecting each soil sample, each sample sleeve was sealed with plastic end caps, labeled with the project and sample identification numbers and date, placed in iced storage, and delivered the next day to an environmental laboratory under strict chain of custody.

GROUNDWATER SAMPLING

Groundwater was sampled from each open excavation for laboratory analysis. Groundwater samples were collected by lowering a clean plastic bailer slowly through the air-water interface and retrieving a groundwater specimen. Each specimen was transferred from the bailer slowly through a bailer port to laboratory-sterilized glass containers. Two 40-milliliter vials and two 1-liter amber jars were filled with water retrieved from P2 so that no air space remained in the containers. Groundwater collected from P2 had a strong odor of petroleum hydrocarbons and an oily texture. Some floating product appeared to be present in P2. Groundwater collected from P1 was transferred to two 40-milliliter vials in the aforementioned manner and to two 12-once plastic drinking water containers. Groundwater collected from P1 did not have an odor of petroleum hydrocarbons and was not greatly discolored.

LABORATORY ANALYSES

All of the soil and groundwater samples were analyzed by Matrix Environmental Laboratories, Inc. of Rancho Cordova, California. The soil samples collected from the sidewalls of P1 and the fuel dispenser test pits (FD1 and FD2) were analyzed for total petroleum hydrocarbons in the range of gasoline (TPHg) using Environmental Protection Agency (EPA) Method 8015 (modified) with purge and trap EPA Method 5030, and for the volatile organic constituents benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) using EPA Method 8020. Soil samples collected from the sidewalls of P2 were analyzed for TPHg and BTEX using the aforementioned methods and for total petroleum hydrocarbons as diesel fuel (TPHd) using EPA Method 8015 (modified) with solvent extraction EPA Method 3550. In addition, the soil sample collected from the southwest corner of P1 was analyzed for total threshold limit concentration (TTLC) lead using EPA Method 7420.

Groundwater collected from P1 was analyzed for TPHg using the same method as for soil, for BTEX components using EPA Method 602, and for TTLC lead using EPA Method 7420. Groundwater collected from P2 was analyzed for TPHg, TPHd, and BTEX using their respective methods. Matrix Laboratories is certified by the State of California for all of the above stated analyses.

LABORATORY RESULTS

Laboratory results indicated that low concentrations of TPHg and/or BTEX were present in every soil sample (except for S-8.5-P1SE) collected from the sidewalls of the gasoline tank pit P1 (Table 1). Slightly elevated concentrations of TPHg with very low concentrations of BTEX were found in the sidewalls of the diesel tank pit P2 (Table 1). Moderate to high concentrations of TPHg and BTEX were present in soil collected from the area of the underground piping and fuel dispensers, while moderate concentrations of TPHd were detected in the sidewall samples of P2 (Table 1). The

stockpile samples from SP1 (Figure 2) contained low to moderate concentrations of TPHg and BTEX with moderate to high concentrations of TPHd (Table 1). Only 14 parts per million (ppm) TTLC lead was detected in soil sample S-8-P1SW collected from the southwest corner of the gasoline tank pit P1. This concentration of TTLC lead is well below the criteria for requiring mitigation action.

The results of the laboratory analyses of groundwater samples collected from each of the open excavations indicated that relatively high concentrations of dissolved TPHg, BTEX, and TPHd were present (Table 2). The TTLC lead analysis of groundwater collected from P1 indicated that lead was not present in groundwater at a concentration greater than the detection limit (0.05 ppm) of the laboratory method. The chain of custody record and laboratory reports for all of the soil and groundwater samples are presented in Appendix A.

OVEREXCAVATION WORK

Grayland returned to the site on October 19, 1994, to assist with overexcavation of the fuel dispenser areas and to collect soil samples from the sidewalls of the overexcavations E1 and E2 (Figure 4). The gasoline dispenser island area (E1) was excavated to a depth of approximately 7.5 to 8 feet below ground surface. Groundwater was encountered at approximately 8 to 8.5 feet below ground surface at the southeast corner of excavation E1. Soil samples were collected from the bucket of the excavator using a hand-operated percussion core sampler immediately after removing soil from the sidewalls at approximately 7 to 7.5 feet below ground surface. This depth coincided with the transition zone between the vadose and capillary fringe zones. The overexcavation work at E1 extended from immediately south of the southernmost former gasoline dispenser northward to intersect with the previously overexcavated area of the gasoline tank pit P1 (Figure 4).

The former diesel fuel tank pit was overexcavated (E2) along the southern sidewall where the former fuel dispenser was present (Figure 4). Soil was sampled at this location in the same manner as previously described. The samples were sealed, placed in iced storage, and delivered to Matrix Laboratories on the following day under the required chain of custody record.

TABLE 1
LABORATORY RESULTS OF TANK REMOVAL SOIL SAMPLES
GINO'S COUNTRY STORE
LIVERMORE, CALIFORNIA

Sample Number	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHd
Gasoline Tank Excavation						
S-8-P1W	6.2	0.0087	0.0083	<0.005	0.018	NA
S-8-P1NW	28	0.054	0.43	0.19	2	NA
S-8-P1NM	2.1	0.0093	0.032	0.014	0.13	NA
S-8-P1NE	6	0.0064	0.015	0.0069	0.054	NA
S-8-P1E	<1	<0.005	0.009	<0.005	0.038	NA
S-8.5-P1SE	<1	<0.005	<0.005	<0.005	<0.015	NA
S-8-P1SM	8.7	0.04	0.082	0.018	0.13	NA
S-8-P1SW	22	0.03	0.024	0.022	0.057	NA
S-8-P1SWb	1,100	0.51	0.82	2.7	17	NA
Diesel Tank Excavation						
S-7-P2N	23	0.011	0.017	0.036	0.25	160
S-7-P2E	<1	<0.005	0.0081	<0.005	0.02	<1
S-7-P2S	95	0.01	0.16	0.74	2.9	1,400
S-7-P2Wa	110	0.01	0.15	0.63	3.1	550
S-7-P2Wb	89	<0.005	0.061	0.21	2.0	110
Fuel Dispensers						
S-4-FD1	4.8	<0.005	<0.005	0.023	0.083	NA
S-4-FD2	2,500	9.5	130	86	680	NA
S-10-FD2	40	0.32	3	1.7	13	NA
Stockpile						
S-SP1A	61	0.023	0.12	0.31	2.3	320
S-SP1B	82	0.014	0.15	0.44	2.9	1,100
S-SP1C	57	0.012	0.086	0.36	1.4	280

Laboratory results reported in mg/kg (parts per million)
TPHg = Total Petroleum Hydrocarbons as gasoline
TPHd = Total Petroleum Hydrocarbons as diesel fuel
<1.0 = Less than the laboratory method detection limits
NA = Not Analyzed

TABLE 2
LABORATORY RESULTS OF TANK REMOVAL GROUNDWATER SAMPLES
GINO'S COUNTRY STORE
LIVERMORE, CALIFORNIA

Sample Number	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHd
Gasoline Tank Excavation						
W-9-P1	3,200	91	65	<15	120	NA
Diesel Tank Excavation						
W-7-P2	4,400	1.1	0.51	4.2	12	64,000

Laboratory results reported in ‖g/kg (parts per billion)
TPHg = Total Petroleum Hydrocarbons as gasoline
TPHd = Total Petroleum Hydrocarbons as diesel fuel
<15 = Less than the laboratory method detection limits
NA = Not Analyzed

LABORATORY ANALYSES AND RESULTS

The soil samples collected from the former gasoline dispenser area were analyzed by the environmental laboratory for TPHg and BTEX using the aforementioned EPA methods. The single soil sample collected from overexcavation E2 was analyzed for TPHg, BTEX, and TPHd. The chain of custody record and laboratory reports are presented in Appendix A.

The results of the laboratory analyses indicated that only low concentrations of TPHg and BTEX remain in the subsurface transition zone soil beneath the former gasoline dispensers everywhere except at the north end of overexcavation E1 (Figure 4). Soil collected from the north end of overexcavation E1 contained a somewhat elevated concentration of TPHg with slightly elevated concentrations of BTEX (see S-7-E1N on Table 3). No TPHd was detected in the soil sample collected from overexcavation E2 where the former diesel fuel dispenser was located (Figure 4).

TABLE 3
LABORATORY RESULTS OF OVEREXCAVATION SOIL SAMPLES
GINO'S COUNTRY STORE
LIVERMORE, CALIFORNIA

Sample Number	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHd
Fuel Dispenser Overexcavation						
S-7-E1N	160	0.082	0.1	1.2	17	NA
S-7-E1Ea	4.6	0.048	<0.005	0.018	0.24	NA
S-7-E1Eb	2.3	0.017	<0.005	<0.005	<0.015	NA
S-7-E1S	3	0.079	0.0068	0.015	0.051	NA
S-7-E1Wa	28	0.34	0.025	0.053	0.39	NA
S-7-E1Wb	2.9	0.051	0.0093	0.0075	0.06	NA
S-7-E2S	2.3	0.016	<0.005	<0.005	<0.015	<1

Laboratory results reported in mg/kg (parts per million)
TPHg = Total Petroleum Hydrocarbons as gasoline
TPHd = Total Petroleum Hydrocarbons as diesel fuel
<1 = Less than the laboratory method detection limits
NA = Not Analyzed

Both of the tank excavations P1 and P2 were backfilled with pea gravel up to the depth which coincided with groundwater elevation at the time of backfilling. The pea gravel layer was covered with an impermeable fabric and the remaining excavation was backfilled with clean overburden soil to grade. The upper five feet of soil was compacted using a track-mounted excavator and sheep's foot soil compactor to greater than 90% of ASTM D 1557 maximum dry density.

Prior to backfilling the former diesel fuel tank pit, five gallons of a bio-enzyme product and five gallons of a bio-nutrient formula were added to the groundwater in the pit in order to stimulate existing bacteria to biodegrade hydrocarbons present in the groundwater. In addition, two 2-inch diameter polyvinyl chloride (PVC) lines were slotted and placed at the base of the excavation beneath the groundwater. The lines were extended to the surface with blank casing so that compressed air could be delivered to the subsurface where the contaminated groundwater and pea gravel are present.

SUMMARY AND RECOMMENDATIONS

Based on the results of the soil and groundwater sampling and laboratory analyses program conducted by *Grayland* during the tank removal work at the site, soil and groundwater contaminated with petroleum hydrocarbon products is present at the site as a result of the operation of the former underground storage tanks, product delivery pipelines, and fuel dispensers. Soil contamination was found mainly in native soil and backfill material beneath the former gasoline and diesel fuel dispenser islands. Based on laboratory data of soil samples collected during the overexcavation work, the bulk of the contaminated soil at these locations appears to have been successfully removed from the subsurface. All of the contaminated soil has been stockpiled onsite.

It is the opinion of *Grayland*, that because groundwater beneath the site has been significantly impacted by the release of petroleum hydrocarbons, corrective action will be required by the state and local regulatory agencies. We recommend that a minimum of four monitor wells be installed at the site to evaluate the extent of the groundwater contamination and to calculate the direction of groundwater flow beneath the site.

Grayland also recommends that a permit for soil aeration be obtained from the Alameda County Air Quality Management District, and that the stockpiled soil be spread across the western part of the site. It will be necessary to bio-treat the soil to degrade higher boiling-point hydrocarbons present in the soil. Operation of the biodegradation process will require turning the soil bi-weekly, at a minimum, maintaining a 20 to 30% soil moisture content, and re-sampling the stockpile for verification of successful soil contaminant mitigation.

If you have any questions regarding this underground storage tank removal report, please give our office a call. Thank you very much for the opportunity to work with Walton Engineering.

Sincerely,
Grayland Environmental

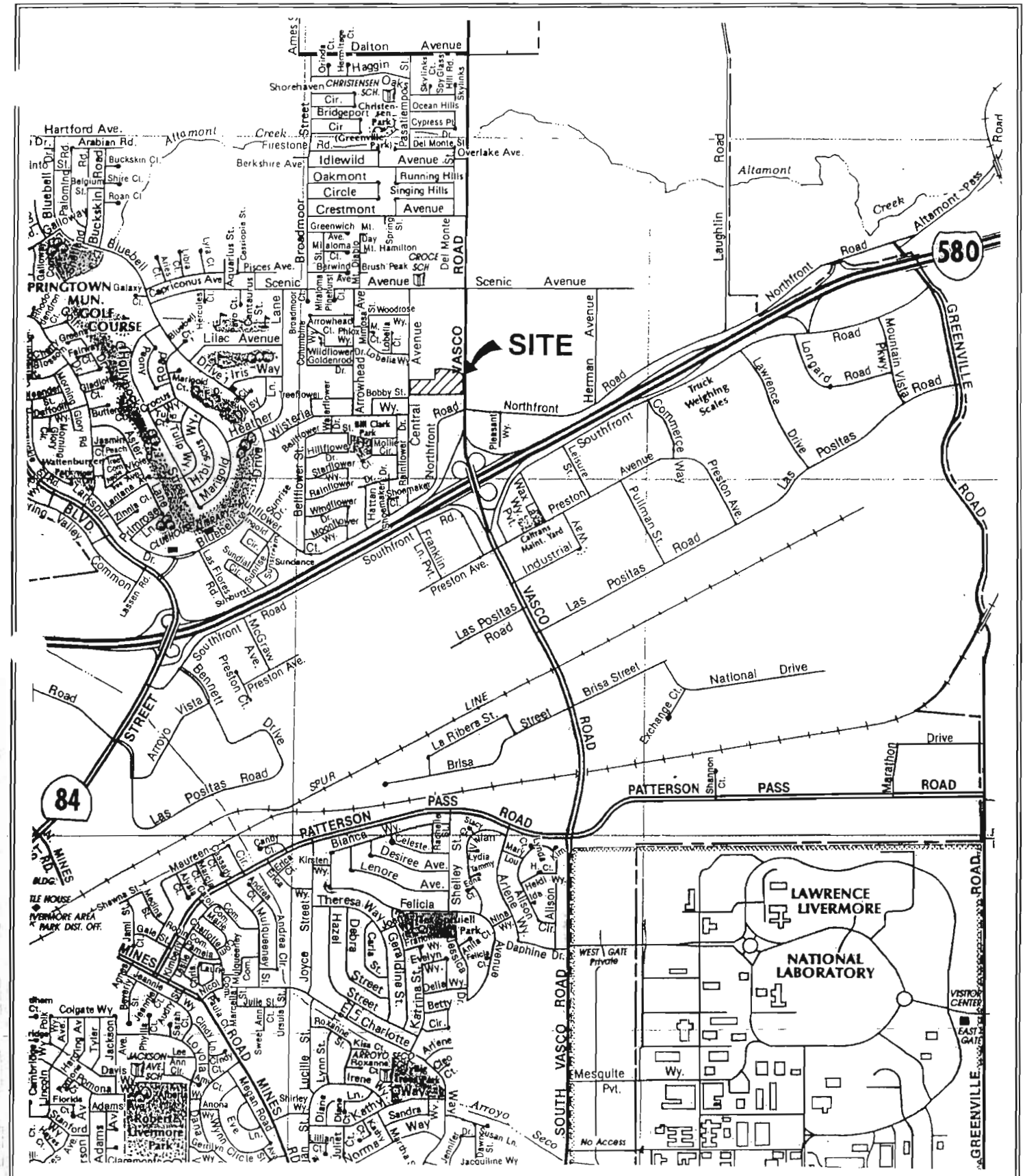
Jeffy A Clayton Pgr (916) 757-0448

Jeffrey A. Clayton, R.G., REA
Principal Geologist

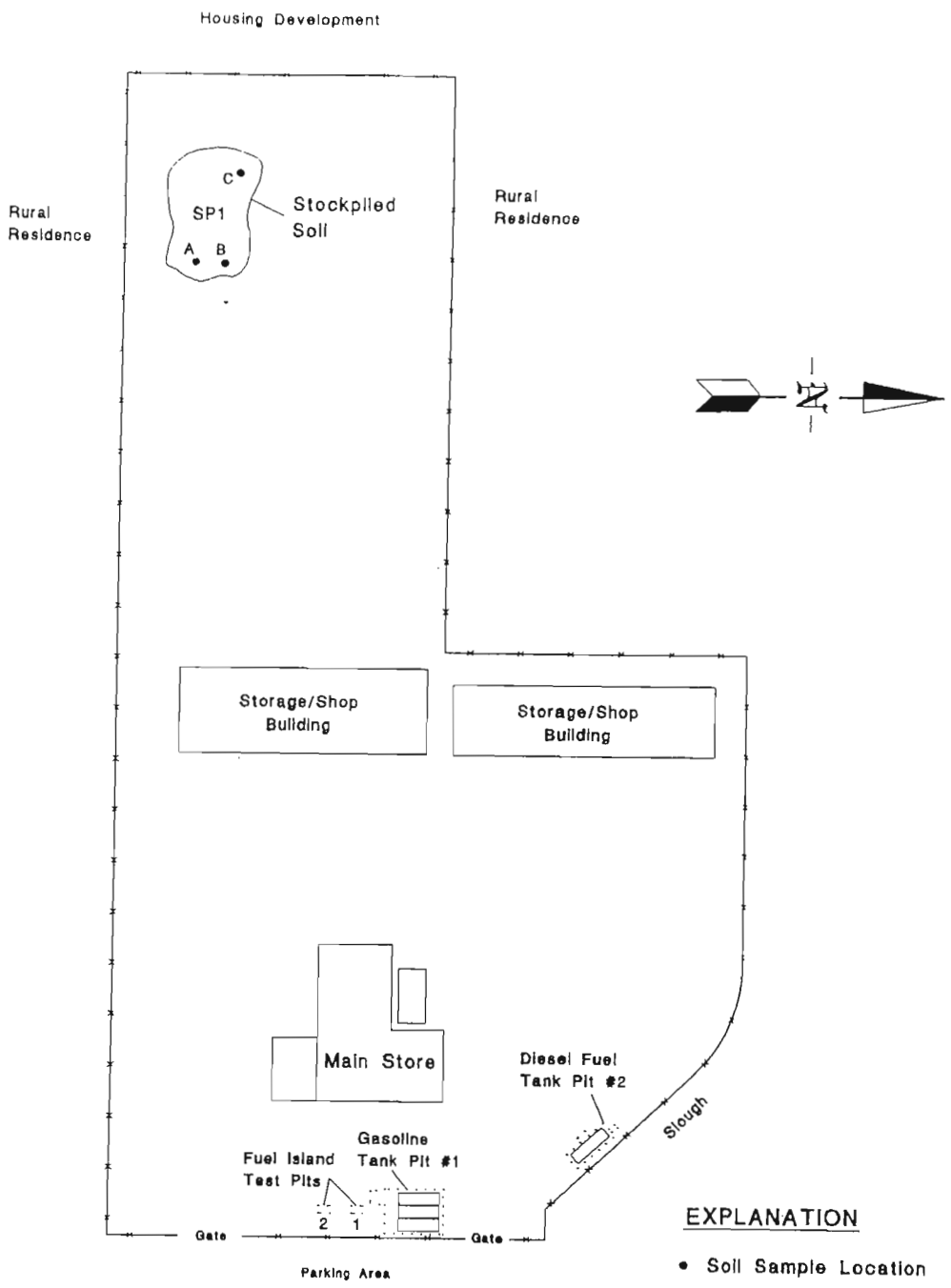
REGISTERED GEOLOGIST
JEFFREY CLAYTON
No. 5597
Exp. 8/31/95
STATE OF CALIFORNIA

JAC:jbc

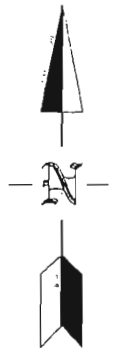
cc: Mr. Geno and Ms. Shirley Macedo (owners)
Ms. eva chu (Alameda County Department of Environmental Health)

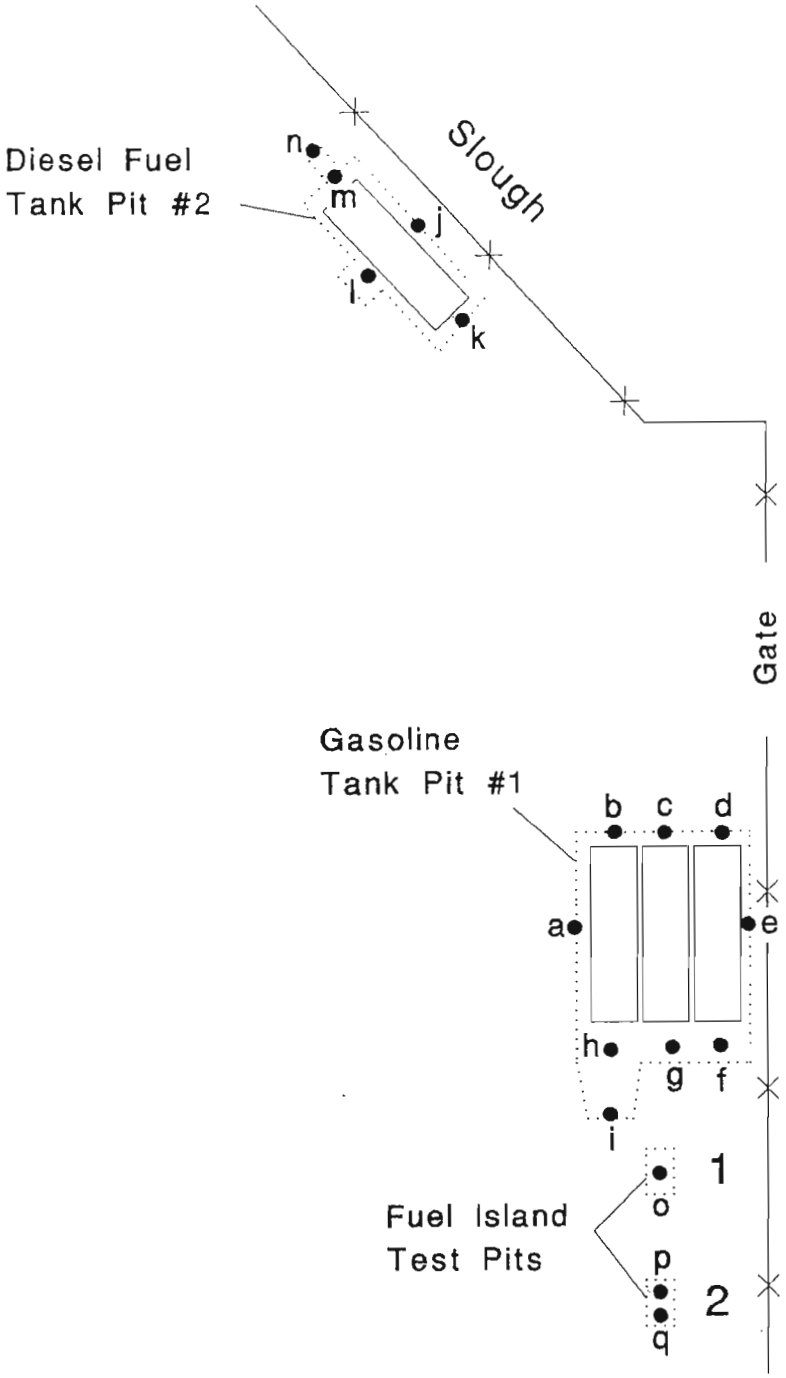


FTED BY: JAC	CHECKED BY	PROJECT NO. 022-030	SCALE: 1:24,000	***GRAYLAND ENVIRONMENTAL***
DWG. DATE: 1993	REV. DATE. 1993	**GENO'S COUNTRY STORE**	**FIGURE 1**	
MAP SOURCE: Compass Maps, Inc. Livermore Pleasanton		**1000 N. VASCO ROAD LIVERMORE,CALIFORNIA**	**SITE LOCATION MAP**	2731 Quail Street Davis, CA 95616



DRAFTED BY: JAC	CHECKED BY: JAC	PROJECT NO. 022-030	SCALE: 1:1,500	*GRAYLAND ENVIRONMENTAL*
DWG. DATE: 10-6-94	REV DATE: 10-7-94	**GENO'S COUNTRY STORE**	**FIGURE 2**	
MAP SOURCE: Site Visit Sketch		**1000 N. VASCO ROAD LIVERMORE, CALIFORNIA**	**GENERALIZED SITE PLAN**	2731 Quail Street Davis, CA 95616



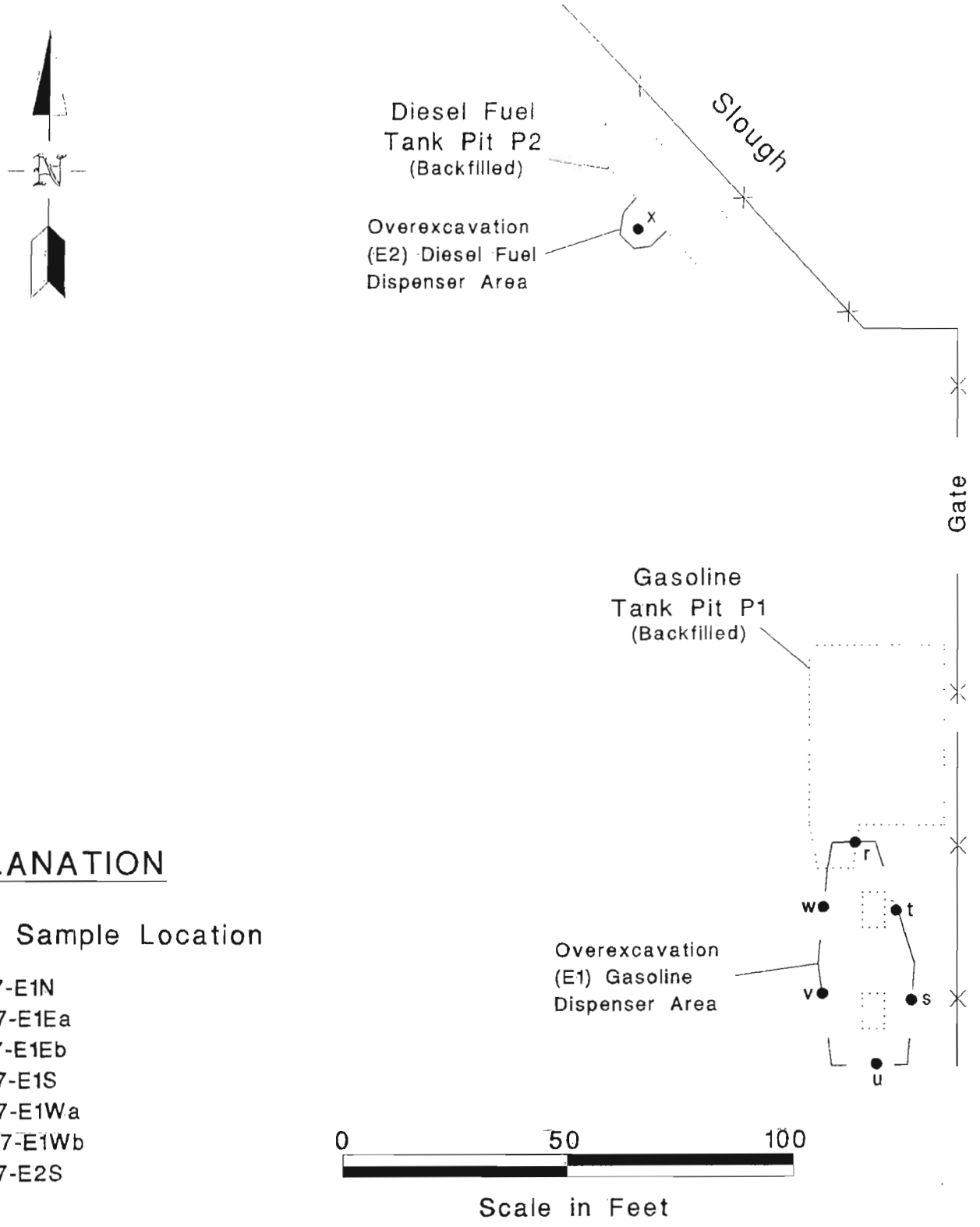


EXPLANATION

- Soil Sample Location

a = S-8-P1W
b = S-8-P1NW
c = S-8-P1NM
d = S-8-P1NE
e = S-8.5-P1E
f = S-8.5-P1SE
g = S-8-P1SM
h = S-8-P1SW
i = S-8-P1SWb
j = S-7-P2N
k = S-7-P2E
l = S-7-P2S
m = S-7-P2Wa
n = S-7-P2Wb
o = S-4-FD1
p = S-4-FD2
q = S-10-Fd2

DRAFTED BY: JAC	CHECKED BY: JAC	PROJECT NO. 022-030	SCALE: 1:400	*GRAYLAND ENVIRONMENTAL*
DWG. DATE: 10-6-94	REV. DATE 10-7-94	**GENO'S COUNTRY STORE**	**FIGURE 3**	
MAP SOURCE Site Visit Sketch		**1000 N. VASCO ROAD LIVERMORE, CALIFORNIA**	**SOIL SAMPLE LOCATION MAP**	2731 Quail Street Davis, CA 95616



DRAFTED BY: JAC	CHECKED BY: JAC	PROJECT NO. 022-030	SCALE: 1:400	*GRAYLAND ENVIRONMENTAL*
DWG. DATE: 10-06-94	REV. DATE: 12-23-94	GENO'S COUNTRY STORE	FIGURE 4	
MAP SOURCE: Site Visit Sketch		1000 N. VASCO ROAD LIVERMORE, CALIFORNIA	EXCAVATION SOIL SAMPLE LOCATION MAP	2731 Quail Street Davis, CA 95616