



WEISS ASSOCIATES

Geologic and Environmental Services

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5500 Shellmound Street, Emeryville, CA 94608

March 19, 1990

E. Paul Hayes
Shell Oil Company
P.O. Box 4848
Anaheim, California 92803

Re: Shell Service Station
WIC #204-007-205
1601 Webster Street
Alameda, California
WA Job #81-434-03

501

Dear Mr. Hayes:

This letter outlines Weiss Associates' (WA) proposed Scope of Work (SOW) for a subsurface investigation at the subject Shell service station (Figure 1). The objectives of the work are to determine the ground water flow direction beneath the site, to determine if hydrocarbons or VOCs are present in soil and/or ground water beneath the site, and if water quality is not degraded, to obtain regulatory closure for the excavation associated with the 1987 removal of a waste oil tank from the site. Presented below are a site history summary and an outline of our proposed SOW.

SITE HISTORY

Shell Oil Company records indicate that a steel 550-gallon waste oil tank, apparently installed in 1962, was removed from the site in June 1987 by Petroleum Engineering of Santa Rosa, California. It was replaced with a 550-gallon fiberglass tank. Backfill and native soil removed during the excavation and rinseate from the tank steam cleaning were taken to Chemical Waste Management, Inc., of Kettleman City, California, for disposal by a California licensed waste hauler. Copies of the hazardous waste manifest for the soil and rinseate are presented as Attachment A.

Immediately following the tank removal, Blaine Tech Services of San Jose, California, documented the tank condition, collected a soil sample from directly beneath the former tank

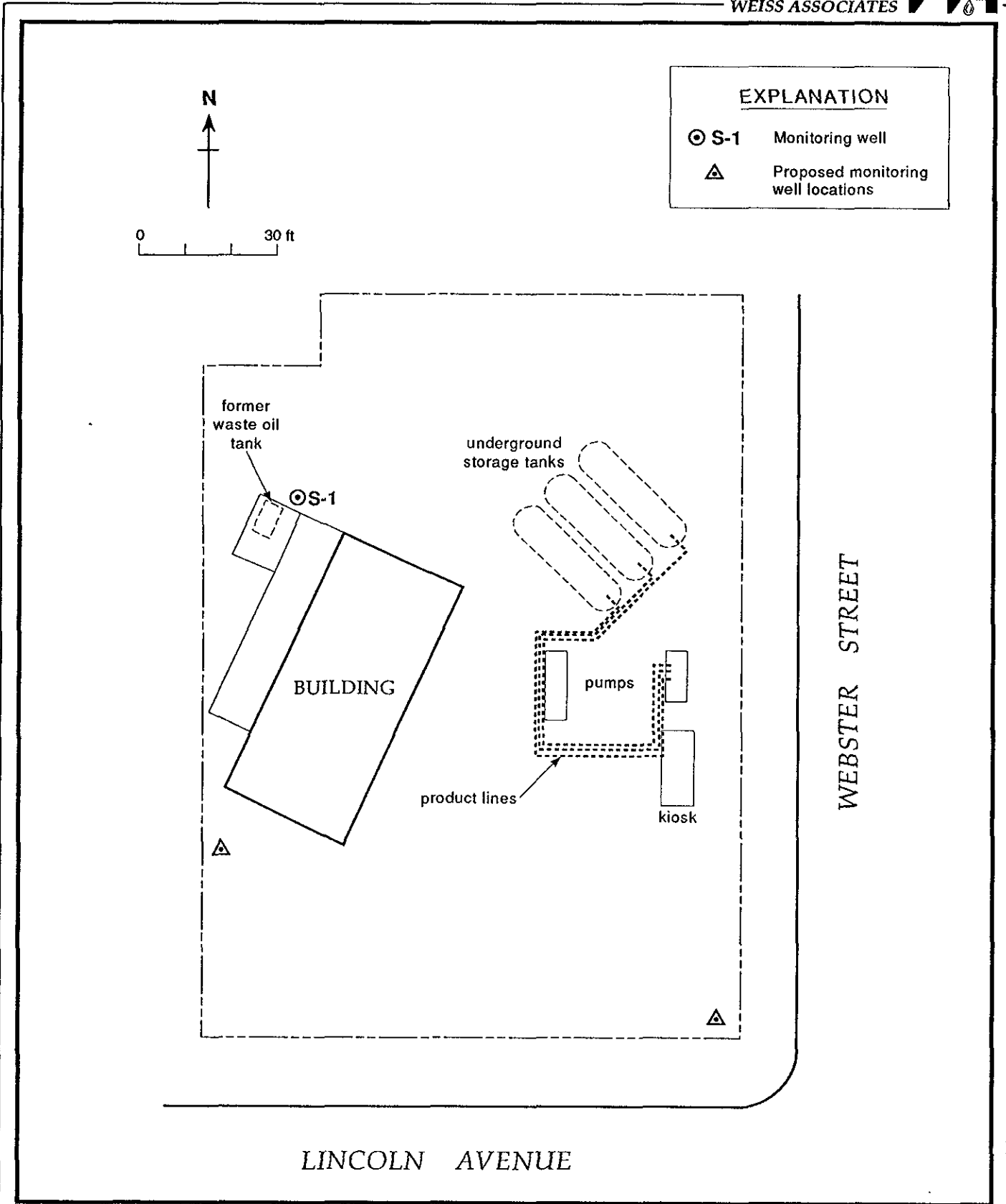


Figure 1. Proposed Monitoring Well Locations - Shell Service Station WIC #204-007-204, 1601 Webster Street, Alameda, California



location at 9.5 ft depth, and sampled ground water from the tank pit.¹ The soil sample contained 14 parts per million (ppm) total petroleum hydrocarbons (TPH), 133 ppm total oil and grease (TOG) and 0.029 ppm 1,1,1-trichloroethane (TCA). Benzene, ethylbenzene, toluene, and xylenes (BETX) were not detected in the soil. Hydrocarbons detected in the water sample from the excavation included 132 ppm TPH, 244 ppm TOG and low concentrations of BETX.

Ground water was encountered at 9.75 ft depth in the tank excavation. The tank condition was described by the sampling technician as "poor," and the field notes describe the tank as having more than 77 holes of various sizes.

In September 1987, Pacific Environmental Group of Santa Clara, California (PEG) conducted a subsurface investigation to determine whether the compounds detected in the former waste oil tank excavation were in ground water beneath the site.² PEG drilled one soil boring, installed ground water monitoring well S-1 in the boring, and collected soil and ground water samples for chemical analysis. The boring was drilled adjacent to the northeastern side of the waste oil tank pit. Ground water was encountered in the borehole at about 10 ft depth and stabilized in the monitoring well at about 8.5 ft depth. Soil samples were collected from the boring about every 5 ft for chemical analysis. TPH was detected at 50 ppm in a soil sample from 4 ft depth, and TOG was detected in all soil samples to a maximum of 130 ppm in the 4 ft depth sample. The ground water sample collected by PEG from monitoring well S-1 contained 0.12 ppm acetone.

On September 11, 1989, WA environmental technician Todd Pearson collected ground water samples from monitoring well S-1.³ At this time, the depth to water in the well was about 9.8 ft. Chromium and zinc were detected in the ground water sample at 0.02 ppm and 0.03 ppm, respectively. Hydrocarbons, PCBs, volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) were not detected in the sample.

¹ Blaine Tech Services, 1987, Sampling Report 87177-B-1, Shell Service Station, 1601 Webster Street, Alameda, California, consultants' letter-report prepared for Shell Oil Company, June 26, 1987, 3 pp. and 2 attachments.

² Pacific Environmental Group, 1987, Soil and Groundwater Investigation at Shell Service Station, 1601 Webster Street, Alameda, California, consultants' letter-report prepared for Shell Oil Company, October 23, 1987, 3 pp. and 7 attachments.

³ Weiss Associates, 1989, Petition for Tank Closure, Shell Service Station, 1601 Webster Street, Alameda, California, consultants' letter prepared for Shell Oil Company, October 13, 1989, 8 pp. and 4 attachments.

PROPOSED SCOPE OF WORK

Our proposed SOW for this initial investigation is to:

- 1) Review the site history and prepare a site safety plan,
- 2) Identify wells within one-half mile of the site and prepare a map showing their locations relative to the site,
- 3) Obtain all permits and drill two on-site soil borings. Collect soil samples for subsurface hydrogeologic description and for possible chemical analysis,
- 4) Complete the borings as 4-inch-diameter ground water monitoring wells,
- 5) Develop the wells, collect water samples and analyze the samples for hydrocarbons and VOCs,
- 6) Survey top-of-casing elevations for each well and determine the ground water flow direction at the site,
- 7) Review the analytic results for the soil and ground water samples and, based on the analytic results and the ground water flow direction, drill/install additional borings and wells, if necessary, to completely define the horizontal extent of hydrocarbons in soil and ground water on- and offsite,
- 8) Perform an area reconnaissance to locate possible offsite hydrocarbon sources and prepare a map of the surrounding properties and businesses,
- 9) Arrange for disposal of drill cuttings and well purge water,
- 10) Report the subsurface investigation results,
- 11) Sample ground water quarterly,
- 12) Prepare quarterly status reports, and

- 13) Recommend additional work, if necessary, to achieve closure of the former waste oil tank excavation.

Each of these tasks is described in detail below.

TASK 1 - REVIEW SITE HISTORY AND PREPARE A SITE SAFETY PLAN

Based upon the site history, previous work and analytic results for soil and water samples collected at the site, WA will prepare a site-specific safety plan. The safety plan will identify potential site hazards and specify procedures to protect site workers and the public.

TASK 2 - AREA WELL SURVEY

An area well survey will be conducted to locate and identify water wells within one-half mile of the site. The survey will consist of reviewing California Department of Water Resources (DWR) and Alameda County records, and visually surveying the site vicinity. The well locations will be shown on a map and the owners and uses of the wells will be tabulated. The results of the survey will be included in the investigation report.

TASK 3 - SOIL BORING AND CHEMICAL ANALYSIS

We will obtain well construction permits from Alameda County Flood Control and Water Conservation District (Zone 7). Based on the location of site structures and underground and overhead utilities, we will drill two soil borings at the proposed borehole locations shown on Figure 1 to provide adequate spacing to determine the ground water gradient.

The drill cuttings and soil samples will be described and the samples will be screened with a portable photoionization detector (PID). The first boring drilled will be continuously cored and logged to total depth to fully characterize the subsurface materials. Soil samples will be collected for chemical analysis at least every five feet in all borings. At least one sample will be collected and analyzed from just above the water table.

The samples will be submitted to a Shell-approved state-certified laboratory under chain-of-custody procedures for the following analyses:

- Total petroleum hydrocarbons as gasoline (TPH-G) by modified EPA Method 8015, gas chromatography with flame ionization detection (GC/FID),
- Aromatic hydrocarbons including benzene, ethylbenzene, toluene and xylenes (BETX) by EPA Method 8020, gas chromatography with photoionization detection (GC/PID)
- Halogenated volatile organic compounds (HVOCs) by EPA Method 8010, gas chromatography with electrolytic conductivity detection (GC/ECD), and
- Total oil and grease (TOG) by American Public Health Association (APHA) Standard Methods 503D&E.

One composite sample from each boring will be analyzed for TPH-G and BETX, and for total and organic lead to characterize the cuttings for disposal. Flashpoint and soluble lead analyses will be performed if warranted by the earlier results.

Drill cuttings will be stored temporarily on-site on plastic sheeting pending analytic results of the composite sample. The stockpile will also be covered with plastic sheeting to prevent aeration of volatile compounds and disturbance by precipitation or wind. The soil will then be transported to an appropriate disposal facility by a licensed waste hauler, and will be tracked and documented.

TASK 4 - GROUND WATER MONITORING WELLS

Ground water monitoring wells will be installed in the soil borings. The wells will be constructed with 4-inch-diameter, 0.02-inch slotted PVC well screen and blank casing. Number 3 Monterey sand will be placed in the annular space between the casing and the borehole from the bottom of the boring to about 2 ft above the screened interval. About 1 to 2 ft of bentonite pellets will separate the sand from the sanitary seal. Cement mixed with 3-5% bentonite powder will be used to fill the annular space, thereby preventing infiltration of surface water into the well.

The well will be screened to monitor the first water-bearing zone encountered. If a confining layer is encountered below the first water-bearing zone, its thickness will be confirmed by sampling with decreasing diameter split barrel samplers. The sampling hole through the underlying confining layer will be sealed with bentonite pellets.

TASK 5 - WELL DEVELOPMENT, SAMPLING AND GROUND WATER CHEMICAL ANALYSIS

The monitoring wells will be developed using at least two episodes of surge block agitation and airlift evacuation, and the flow rate for each well will be estimated. Airlift evacuation will continue until at least ten well casing volumes of ground water have been removed, and the water is as free of fine sediments as possible. Ground water removed from the wells will be temporarily stored on-site in 55-gallon drums.

Ground water samples will be collected from all wells at least 24 hours after the new wells are developed. Prior to sampling, at least four well casing volumes of ground water will be evacuated from each well using steam-cleaned PVC bailers. The wells will then be allowed to recover to at least 80% of their original water levels before sampling. Water samples will be collected with steam-cleaned Teflon bailers, and will be decanted into 40-ml glass vials, labeled and refrigerated for transport under chain-of-custody to the analytic laboratory. To reduce the possibility of sample contamination during transport or storage, each sample will be sealed in a plastic guard bottle containing activated carbon pellets. Purged ground water will be stored temporarily on-site in 55-gallon drums pending analytic results.

A trip blank will accompany the samples to check for carry-over of VOCs during transport. A bailer blank will also be collected and analyzed as a quality assurance measure.

Ground water samples will be analyzed for:

- TPH-G and D by Modified EPA Method 8015, GC/FID,
- BETX by EPA Method 8020, GC/PID,
- HVOCs by EPA Method 601, GC/ECD, and
- TOG by APHA Standard Method 503A.

The results of the above analyses will determine whether analysis for additional compounds is necessary.

An electronic water-oil interface probe and a specially designed product thickness bailer will both be used to measure product thickness in the wells prior to well purging and sampling if free-floating hydrocarbons are encountered.

TASK 6 - ELEVATION SURVEY

Top-of-casing elevations of the monitoring wells will be surveyed relative to mean sea level by a California registered land surveyor. Water table elevation data will be tabulated and a ground water elevation contour map will be prepared.

TASK 7 - ADDITIONAL SOIL BORINGS AND/OR GROUND WATER MONITORING WELLS

The ground water elevation data and the analytic results for soil and ground water will be reviewed. Additional soil borings and/or monitoring wells may be installed as necessary to assess the horizontal extent of hydrocarbons on- and offsite. If additional wells are necessary, they will be developed and sampled according to the protocol outlined above for the initial phase wells. The soil and ground water samples will be analyzed for TOG, TPH-G and BETX as well as all other compounds detected during the initial phase investigation. The top-of-casing elevation of all additional wells will be surveyed by a California registered land surveyor. Analytic results and construction details for all wells will be presented in the final investigation report once the extent of dissolved hydrocarbons in soil and ground water is fully defined.

TASK 8 - ADJACENT PROPERTY SURVEY

WA will reconnoiter properties within at least one block of the site to indicate potential nearby off-site sources of hazardous materials to the subsurface. A map indicating the location and apparent use of the nearby properties will be prepared.

TASK 9 - DISPOSAL

Disposal of the soil cuttings and purged ground water will be determined by the soil and ground water analytic results. All contaminated soil and ground water extracted from the site will be tracked and documented.

TASK 10 - SUBSURFACE INVESTIGATION REPORT

A report presenting the results of the investigation will be prepared after WA fully defines the extent of hydrocarbons in soil and ground water. The report will include:

- A summary of the results,
- Site background and history,
- Topographic and geologic setting,
- Site location map,
- Land and ground water use in the vicinity,
- Rationale for well placement and design, and descriptions of the well construction, development and sampling,
- Tabulated soil and ground water analytic results, and all data collected during well development, purging and sampling, including estimated flow rate, pH, temperature and electrical conductivity on the initial sampling,
- Tabulated ground water elevation data and a water table elevation contour map,
- Conclusions,
- Appendix A: Boring logs

- Appendix B: Chain-of-custody forms, and
- Appendix C: Laboratory Analytic Reports.

TASK 11 - QUARTERLY GROUND WATER MONITORING

Ground water from all monitoring wells will be sampled quarterly after the initial sampling. If additional wells are installed, they will be added to the quarterly monitoring program.

TASK 12 - QUARTERLY REPORTS

WA will prepare status reports every three months which present all available analytic results, analytic reports, and brief summaries of work performed at the site in the previous quarter. The report summarizing activities for the second quarter of 1990 will be submitted to the Alameda County Department of Health by July 30, 1990.

TASK 13 - RECOMMENDATIONS

WA will review analytic reports and all other data from the investigation and present recommendations to Shell Oil for additional work, including site remediation, as may be necessary.

SCHEDULE

We expect to begin work at this site in the first week of April 1990. Well development and initial water sampling will be scheduled for the week following drilling. A report presenting the results of the investigation will be prepared when the extent of hydrocarbons in soil and ground water is fully defined.

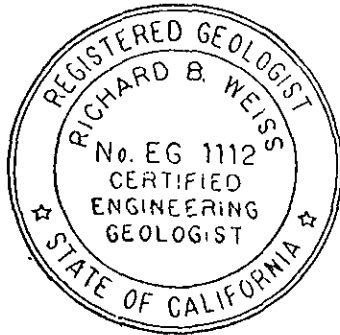
Mr. E. Paul Hayes
March 19, 1990

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WEISS ASSOCIATES



Please call Robert Kitay or Karen Sixt if you have questions about our proposed SOW. We appreciate the opportunity to provide hydrogeologic consulting services to Shell Oil, and trust that this proposal meets your needs.



Sincerely,
Weiss Associates

Robert E. Kitay
Staff Geologist

Richard B. Weiss
Principal Hydrogeologist

REK/RBW:kw

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Attachment A - Hazardous Waste Manifests for Soil and Rinseate

cc: Ariu Levi, Alameda County Environmental Health Department, Hazardous Materials Division, 80 Swan Way, Room 200, Oakland, California 94621

Lester Feldman, California Regional Water Quality Control Board - San Francisco Bay Region, 1800 Harrison Street, Oakland, California 94612

ATTACHMENT A

Hazardous Waste Manifests for Soil and Rinseate

HAZARDOUS MANIFEST		1. Generator's US EPA ID No. CA D 9 8 1 1 4 0 3 2 4 9	Manifest Document No. 1 1 0 1 0 1 5 1 0	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
Name and Mailing Address OIL COMPANY, PO BOX 6249 CA 90749 Phone (213) 816-2037		GENERATING SITE SHELL STATION BA805 1601 WEBSTER/LINCOLN ALAMEDA, CA 94502		A. State Manifest Document Number 87357189	
1. Company Name SAY & OVERTON EMI		8. US EPA ID Number 1 0 1 1 9 8 1 1 4 6 1 1 0 1 6 1 4		B. State Generator's ID TAX ID NO. H Y H O 3 6 - 1 0 1 0 1 7 7	
Generator 2 Company Name		8. US EPA ID Number		C. State Transporter's ID 703780	
Designated Facility Name and Site Address CHEMICAL WASTE MANAGEMENT, INC 35251 OLD SKYLINE RD KETTLEMAN CITY, CA 93239		10. US EPA ID Number 1 0 1 1 9 8 1 1 4 6 1 1 0 1 6 1 4		D. Transporter's Phone 415/633-0336	
				E. State Transporter's ID	
				F. Transporter's Phone	
				G. State Facility's ID C 1 1 1 0 1 0 1 0 1 1 1 7	
				H. Facility's Phone 800/222-2964	

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	13. Total Quantity	14. Unit Wt/Vol	1. Waste No.	
				State	EPA/Other
a. Hazardous waste, liquid, n.c.s., ORM-E, NA9189	0, 0, 1	T, T	90.650	G	241 D008, F001
b.					State EPA/Other
c. DOT# E7476					State EPA/Other
d. EXTREMELY HAZARDOUS WASTE PERMIT #2-8243					State EPA/Other

15. Special Handling Instructions and Additional Information
 ADDL. EPA CODES: F003, F005
 WATER 50-90%
 OIL 15-30%
 SEDIMENTS/ASSOCIATED DEBRIS 25-40%
 HALOGENATED ORGANICS <1200ppm TOTAL LEAD <2%
 K. Handling Codes for Wastes Listed Above
 15-03
 AVOID CONTACT WITH EYES AND SKIN.
 CWM PROFILE SHEET#LAX-G25006-022

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
 If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: R G Newsome
 Signature: [Signature]
 Month Day Year: 10 7 19 87

17. Transporter 1 Acknowledgement of Receipt of Materials
 Printed/Typed Name: Mark Wilkins
 Signature: [Signature]
 Month Day Year: 10 7 19 87

18. Transporter 2 Acknowledgement of Receipt of Materials
 Printed/Typed Name: [Blank]
 Signature: [Blank]
 Month Day Year: [Blank]

19. Discrepancy Indication Space
 (No) incorrect DOT #5
 4

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
 Printed/Typed Name: STUBB
 Signature: [Signature]
 Month Day Year: 10 7 19 87

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

BA 747

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. C1A1D98140XXXX10003		Manifest Document No. 10003		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.											
3. Generator's Name and Mailing Address SHELL OIL COMPANY, PO BOX 6249 CARSON, CA 90749				GENERATING SITE SHELL STATION: 1601 Webster 17816 MISSION MISSION PASS FREMONT, CA 94539 Alameda.				A. State Manifest Document Number 86102086		B. State Generator's ID TAX ID NO. CA HY 36-010177									
4. Generator's Phone (213) 816-2037				6. US EPA ID Number C1A1D9814061064				C. State Transporter's ID 801788		D. Transporter's Phone 415/633-0336									
5. Transporter 1 Company Name CROSBY & OVERTON EMI				8. US EPA ID Number				E. State Transporter's ID		F. Transporter's Phone									
7. Transporter 2 Company Name				10. US EPA ID Number				G. State Facility's ID 01000646117		H. Facility's Phone 800/222-2964									
9. Designated Facility Name and Site Address CHEMICAL WASTE MANAGEMENT, INC 35251 OLD SKYLINE RD KETTLEMAN CITY, CA 93239				11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)				12. Containers No. Type		13. Total Quantity		14. Unit W/Vol Waste No.							
a. Hazardous waste, solid, n.o.s., ORM-E, NA9189				0		0		1		D		T		001018 Y		611, 0008			
b.																			
c.																			
d.																			
J. Additional Descriptions for Materials Listed Above SOIL CONTAMINATED WITH WASTE OIL/ASSOCIATED DEBRIS 1008						K. Handling Codes for Wastes Listed Above 02													
15. Special Handling Instructions and Additional Information AVOID CONTACT WITH EYES AND SKIN. CYM PROFILE SHEET #SFO-F65696-050																			
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment.																			
Printed/Typed Name R G Newsome				Signature <i>R G Newsome</i>				Month Day Year 10/6/21/87											
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name John Fraso				Signature <i>John Fraso</i>				Month Day Year 10/6/21/87											
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name				Signature				Month Day Year											
19. Discrepancy Indication Space																			
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. Printed/Typed Name BOB HULL ET												Signature <i>Bob Hull</i>				Month Day Year 10/6/21/87			

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. 3249 C A D 9 8 1 4 0 2 7 5 3		Manifest Document No. 1001063		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.	
Generator's Name and Mailing Address SHELL OIL COMPANY, PO BOX 6249 CARSON, CA 90749		GENERATING SITE SHELL STATION 1601 Webster		A. State Manifest Document Number 86102050		B. State Generator's ID - TAX ID NO. CA BY HQ 36-010177			
Generator's Phone (213) 816-2037		C. State Transporter's ID 80784		D. Transporter's Phone 415/633-0336		E. State Transporter's ID		F. Transporter's Phone	
5. Transporter 1 Company Name CROSBY & OVERTON EMI		6. US EPA ID Number C A D 9 8 1 4 6 1 0 6 4		7. Transporter 2 Company Name		8. US EPA ID Number		9. Designated Facility Name and Site Address CHEMICAL WASTE MANAGEMENT, INC 35251 OLD SKYLINE RD KETTLEMAN CITY, CA 93239	
10. US EPA ID Number C A T 0 0 0 6 4 6 1 1 7		G. State Facility's ID CA000646117		H. Facility's Phone 800/222-2964		11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)		12. Containers	
		13. Total Quantity		14. Unit Wt/Vol		15. Waste No.			
a. Hazardous waste, solid, n.o.s., ORM-E, NA9189		0101		DIT		09919 Y		611, D008	
b.									
c.									
d.									
J. Additional Descriptions for Materials Listed Above SOIL CONTAMINATED WITH WASTE OIL/ASSOCIATED DEBRIS 100%		K. Handling Codes for Wastes Listed Above 03		15. Special Handling Instructions and Additional information AVOID CONTACT WITH EYES AND SKIN. CWM PROFILE SHEET #SFO-F65696-050		16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment.			
Printed/Typed Name RG Newsome		Signature <i>RG Newsome</i>		Month Day Year 062687		17. Transporter 1 Acknowledgement of Receipt of Materials			
Printed/Typed Name TIM TALIATA		Signature <i>Tim Talata</i>		Month Day Year 062687		18. Transporter 2 Acknowledgement of Receipt of Materials			
Printed/Typed Name		Signature		Month Day Year		19. Discrepancy Indication Space			
Printed/Typed Name BOB HULET		Signature <i>Bob Hulet</i>		Month Day Year 062687		20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.			