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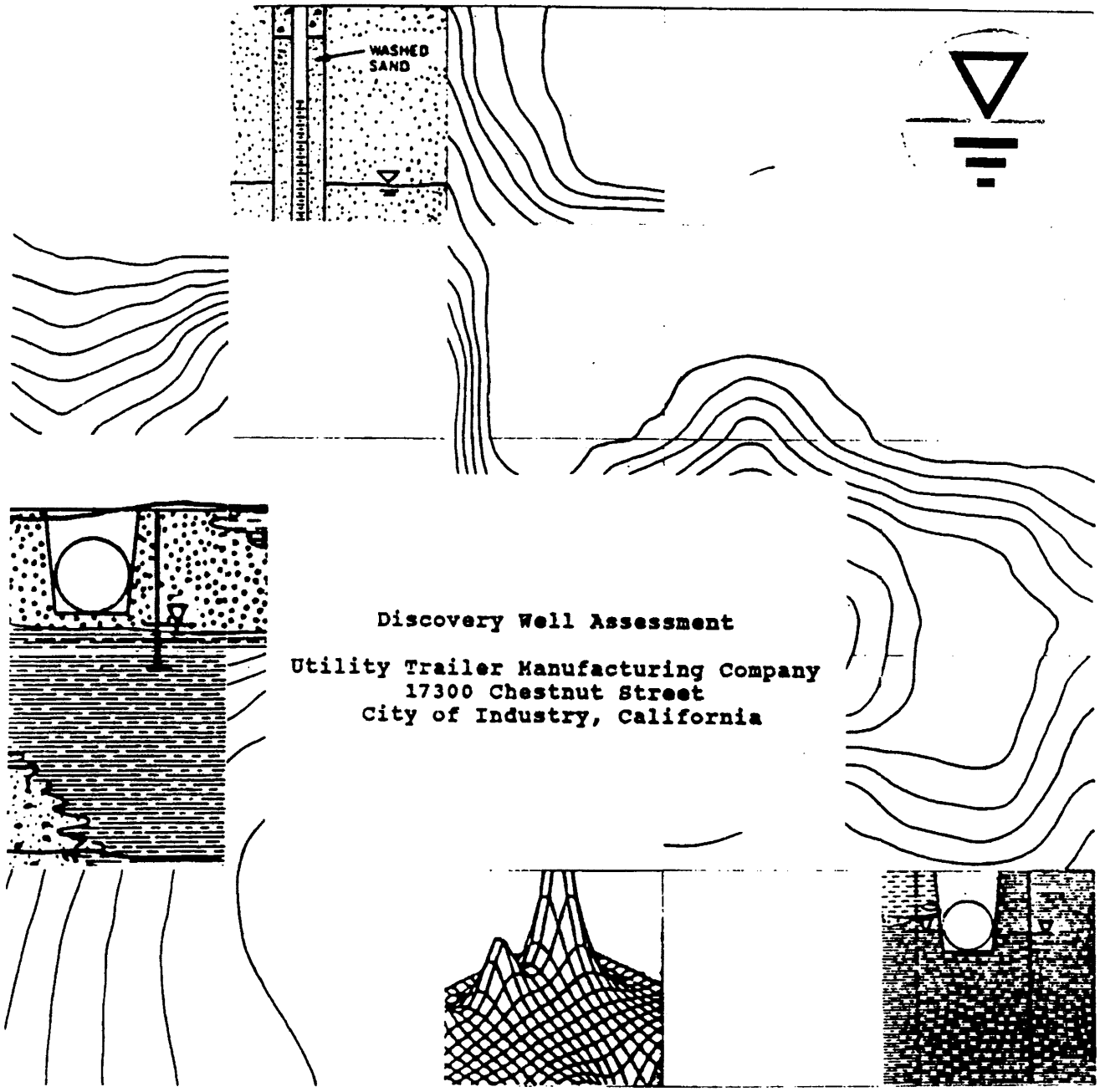

Discovery Well Assessment

Utility Trailer Manufacturing Company
17300 Chestnut Street
City of Industry, California

HYDRO-FLUENT, INC.

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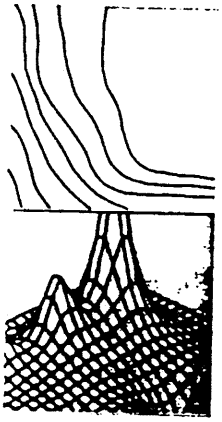


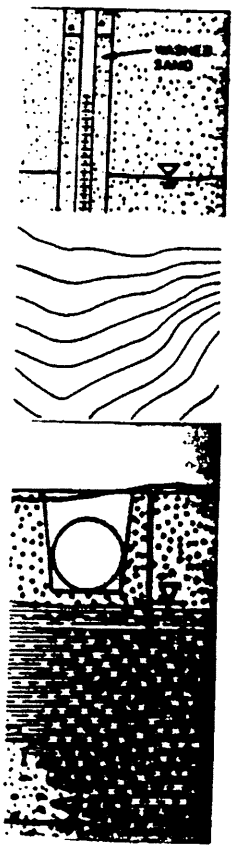
Prepared for:

Utility Trailer Manufacturing Company
P.O. Box 1299
City of Industry, California

Attention: Mr. Gary Little

Discovery Well Assessment

Utility Trailer Manufacturing Company
17300 Chestnut Street
City of Industry, California



Project Number 1614-02

December 30, 1988

Charles R. Stultz
Project Geologist

geology • engineering • environmental services
701 E. Ball Road • Suite 105 • Anaheim, California 92805 • (714) 772-1220

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DISCOVERY WELL ASSESSMENT

UTILITY TRAILER MANUFACTURING COMPANY
CITY OF INDUSTRY, CALIFORNIA

1.0 EXECUTIVE SUMMARY

Assessment of soil and ground water collected during the construction and sampling of discovery well MW-1 indicates the presence of chlorinated hydrocarbons. Soil samples indicate very low levels of Perchloroethylene (PCE) (8 ppb at 1 foot, 10 ppb at 5 foot), 1, 1-Dichlorethylene (1,1-DCE) (14 ppb at 5 foot), 1,1,1-Trichloroethane (1,1,1-TCA) (12 ppb at 5 foot) and non detect at ten feet, fifteen feet and twenty feet. The levels observed in the soil attenuate quickly at depth and are consistent with contamination from surface run-off that has been documented by Utility Trailer Manufacturing Company personnel. In an effort to reduce the impact of off-site run-off, Utility has constructed a concrete slab adjacent to the channel.

A split sample taken by the Regional Board at the twenty foot level did reveal contamination. However, this result is more consistent with fluctuating water tables that contain chlorinated hydrocarbons and other compounds rather than surface contamination migrating downward.

The water sample contained 1,1-Dichloroethylene (150 ppb), 1,1-Dichloroethane (1,1-DCA) (48 ppb), 1,1,1-Trichloroethane (210 ppb), Trichloroethylene (TCE) (60ppb) and Perchloroethylene (PCE) (550 pb). All these compounds have been detected in greater concentrations upgradient from this site.

2.0 INTRODUCTION

HYDRO-FLUENT, INC. is pleased to submit this assessment report for discovery well MW-1. The proceeding report discusses the results obtained during soil and ground water sampling.

2.1 Site Description

The Utility Trailer Manufacturing Company property (the site) is located at 17300 East Chestnut Street in the City of Industry, Los Angeles County, California. The site is comprised of a main manufacturing building, plant operations building and numerous small operational support buildings. The remaining property is either paved with asphalt or concrete and is used to store the numerous parts required for plant operations. There is a small dirt parking lot to the north of the main gated entrance.

Drainage is by sheet flow to existing drainage conduits and swales. All property drainage is directed to the north towards the San Jose flood control channel. Drainage from Somitex Prints of California, Inc. flows over the Utility property in a northerly direction. The location of the discovery well is next to the concrete drainage channel that carries run-off from the Somitex property.

2.2 Background

The area of concern to California Regional Water Quality Control Board (CRWQCB), as described in the Regional Board's letter of April 8, 1988, was previously a dirt storage area with a shallow concrete drainage channel sloping in a northerly direction. With the approval of the CRWQCB, an eight inch reinforced concrete slab was poured in late 1987 to preclude the surface run-off from entering the soil.

In the past, discharges of various colors from the Somitex property have occurred. Samples collected by both Utility personnel and by CRWQCB staff and analyzed for volatile organic compounds (VOC) have detected several chlorinated hydrocarbon compounds.

Soil samples collected by Triad Engineering and reported to the CRWQCB on October 30, 1987 indicated that chlorinated hydrocarbons are found in the soil.

As a result of the Triad report of October 30, 1987, Utility Trailer was required to construct a discovery well and sample the ground water beneath the site. During construction of the discovery well, soil samples were collected and analyzed at a state certified laboratory.

3.0 GEOLOGY AND HYDROGEOLOGY

3.1 Regional Geology and Hydrogeology

The site is located in the Puente Valley between the San Jose Hills to the north and the Puente Hills to the south. The stratigraphic sequence, from oldest to youngest includes:

* Basement Complex
* Puente Formation
* Repetto Formation
* Pico Formation
* Older and Recent Alluvium

Water bearing zones exist in the upper member of the Pico Formation and the unconsolidated and semi-consolidated non-marine alluvium. The recent alluvium consists of coarse boulders, gravels, sand, silts and some clay. Their thickness varies from a few inches to 100 feet depending upon the distance from the local hills. The finer grained sediments increase as distance from the hills increase.

Ground water movement is generally east to west moving towards the Whittier Narrows area. Often the water flow follows the San Jose Creek flood control channel. Rough hydraulic conductivity values for the Puente Valley range from 100 to 300 feet per day near the hills and decrease to 10 to 50 feet per day in the central valley areas.

3.2 Site Geology

Soil samples collected during construction of the discovery well consisted of fine to medium grained silty sands with minor clay in the vadose zone.(Appendix A) Samples collected below the water level were described as fine to medium grained micaceous sands. A sieve sample was

collected at thirty-eight and a half feet below established grade. The results of that sieve analysis are:

* 68% Sand
* 21% Silt
* 11% Clay

4.0 DISCOVERY WELL

4.1 Discovery well MW-1 was constructed of two inch inner diameter schedule 40 PVC. The final twenty feet of casing consisted of .020" factory slotted screen. The filter pack is Number 3 Monterey sand. The sand was placed in the bore hole annulus until it extended 3 feet above the screened section. This was followed by a two foot bentonite plug. The rest of the annulus was backfilled with neat cement. A locking cap was placed on the top of the casing with a metal well box.

4.2 Well Development

Due to high silt and clay content within the saturated zone, approximately 500 gallons of water were removed during the development stage.(Appendix C)

At the same time as development, a member of HYDRO-FLUENT, INC.'s geotechnical staff tested the air within the 55 gallon drum that development water was being pumped into. A drager tube for cyanide was used to sample air from the headspace of the drum. A reading of 0.5 ppm was observed on two sample tubes. It must also be noted that the drager tubes used were past their expiration dates marked on the package.

At this time, all activities were brought to a halt until proper health and safety procedures could be implemented. (Appendix F)

4.3 Water Sample Collection

Following implementation of the site health and safety plan, water samples were collected.(Appendix B) Five casing volumes were collected as described in the RCRA Ground Water Monitoring Technical Enforcement Guidance Document. During the purging process, the clarity of the water continually increased until the last few bailers contained relatively clear water.

A sample for turbidity was collected first followed immediately by the VOC samples. Next the samples were

collected for the metals analysis and finally the sample for cyanide analysis was collected.

All samples were immediately placed into an ice chest with Blue Ice and prepared for transport to the state certified laboratory following proper chain-of-custody. The well was then closed, securely locked and the cover firmly replaced.

5.0 ANALYTICAL TESTING

5.1 Analytical Methods

The turbidity samples were analyzed by EPA Method 180.1. The VOC samples were analyzed by EPA Method 8240, the cyanide sample was analyzed by Method 412.E (ISE). The metals were analyzed by the inductivity coupled plasma/mass spectrometry (ICPMS) method.

The cyanide sample was preserved with NaOH to a pH of >12. The metals sample was preserved with HNO_3 to a pH<2. All samples were immediately placed into an ice chest with Blue Ice.

5.2 Laboratory Results

Soil samples collected during construction of MW-1 were analyzed for VOC's by EPA Method 8240 and for CAM metals by the ICPMS method. VOC analysis of the soil samples detected very low levels of chlorinated hydrocarbons. At the one foot depth, 8 ppb of perchloroethylene was detected. At the five foot depth, 10 ppb of Perchloroethylene, 14 ppb of 1,1-Dichloroethane and 12 ppb of 1,1,1-Trichloroethane were detected. No other soil samples analyzed detected any chlorinated hydrocarbons except the duplicate sample, collected at a depth of twenty feet and given to the Regional Board representative. This sample was analyzed by the same EPA method at the Department of Health Services, Hazardous Materials Laboratory in Los Angeles. Their analysis detected 48 ppb of 1,1-DCA, 59 ppb of 1,1-DCE, 16 ppb of PCE and 167 ppb of 1,1,1-TCA. The discrepancy in the results from the Regional Boards analysis and the analysis run at West Coast Analytical Laboratories is not completely understood.*

* (One explanation is that the sample given to the Regional Board may have been the tube closest to the saturated zone. During fluctuations in the water table, hydrocarbon compounds may be left in the unsaturated zone.)

A check with West Coast Analytical Laboratories indicates that their results are accurate. No inquiry has been made to the DOHS-HML. No other discrepancies were observed between the Regional Boards results and those collected by HYDRO-FLUENT, INC.

Ground water samples collected from MW-1 were analyzed for VOC's by EPA Method 624, for turbidity by EPA Method 180.1; for cyanide by EPA Method 412.E (ISE); and for metals by the ICPMS method. The metals results were not available at the time of this report but will be sent under separate cover immediately upon receipt.

The VOC analysis detected 150 ppb of 1,1-DCE, 48 ppb of 1,1-DCA, 210 ppb of 1,1,1-TCA, 60 ppb of Trichloroethylene (TCE) and 550 ppb of PCE.

The cyanide analysis indicated non-detected, with a detection limit of < .05 ppm. The turbidity results were 130 NTU. This result is better than the initial turbidity sample collected prior to the drager tube detection of cyanide vapors in the water drum. The result at that time was 430 NTU.

6.0 CONCLUSIONS

The review of files from the Regional Board has indicated several ground water investigations near the site. The Ajax Hardware facility has conducted an extensive investigation concerning chlorinated hydrocarbons that have been released into the subsurface by past operations. A plume of PCE, TCE, 1,1,1-TCA and other solvents has been delineated beneath the Ajax property. This plume is following the local gradient in a westerly direction. All of the compounds detected in MW-1 have been detected in at least one well at the Ajax Hardware facility at higher levels than observed in MW-1. Though the data is not conclusive, we feel that there is growing evidence that chlorinated hydrocarbons detected beneath the Utility site may be from one or more off-site sources.

The observed soil contamination is consistent with off-site run-off that overflowed the drainage channel and entered the uncovered soil adjacent to the channel. Paving of this area has minimized the risk of future releases to the soil.

7.0 LIMITATIONS

Services performed by the Consultant have been conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions and in similar locations.

Client recognizes that subsurface conditions may vary from those encountered at the location where borings, surveys, or explorations are made by the Consultant and that the data, interpretations and recommendations of the Consultant are based solely on the information available to him. The Consultant shall not be responsible for the interpretation by others of the information developed.

The interpretations and conclusions of this report are based in part on data supplied by others, (previous investigation performed by others, laboratory analysis results, and toxicology or health information supplied by others). Such information, prepared by professionals, and in the case of the laboratory, certified by the State of California and using test methods established by the Environmental Protection Agency, are presumed correct and representative. The consultant has no control over or involvement in such testing or analysis, and does not possess a means of confirming accuracy of test results. Therefore, the consultant disclaims any responsibility for inaccuracy of information supplied by others in the preparation of this report.

Samples, sample analyses and observations used in the preparation of this report are inferred to be representative of the study area, however, geologic and hydrogeologic conditions revealed by future work at the site may disagree with preliminary findings. If conditions are different from those presented in the preliminary findings, the designs and plans may be re-evaluated and adjusted by the project engineer or geologist.

The findings in this report are valid as of the date presented. Site conditions may alter with time due to natural or man-made changes on this or adjacent property. Additionally, changes in governmental regulations applicable

to the site may occur. The findings of this report may be partially, or wholly invalidated by changes beyond the consultant's control.

Respectfully submitted,

HYDRO-FLUENT, INC.

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Senior Project Manager
P.E. C28068

Charles R. Stultz
Project Geologist

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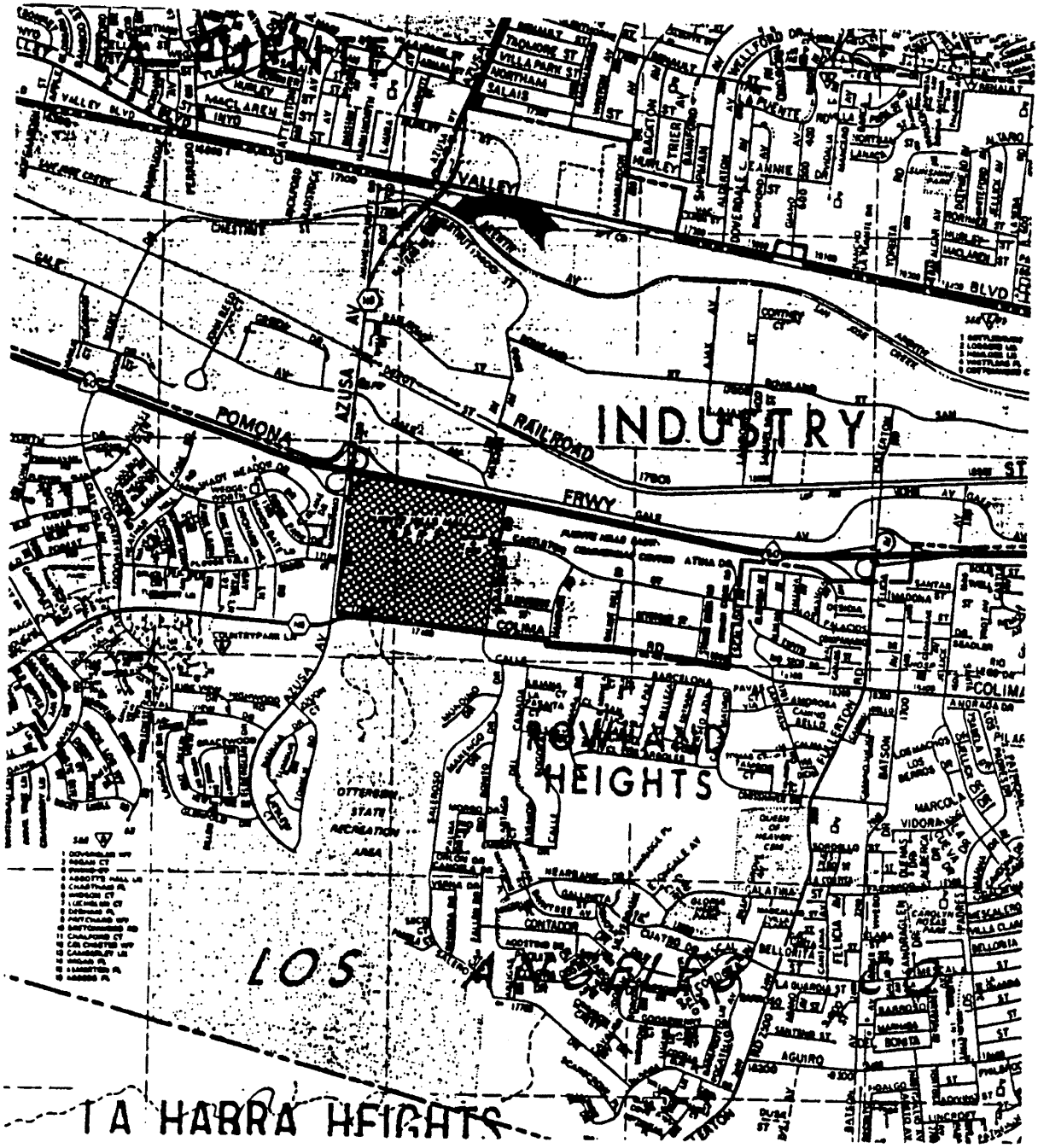

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17300 Chestnut Street
City of Industry, California

Project No.:	Figure No.:
1614-02	1

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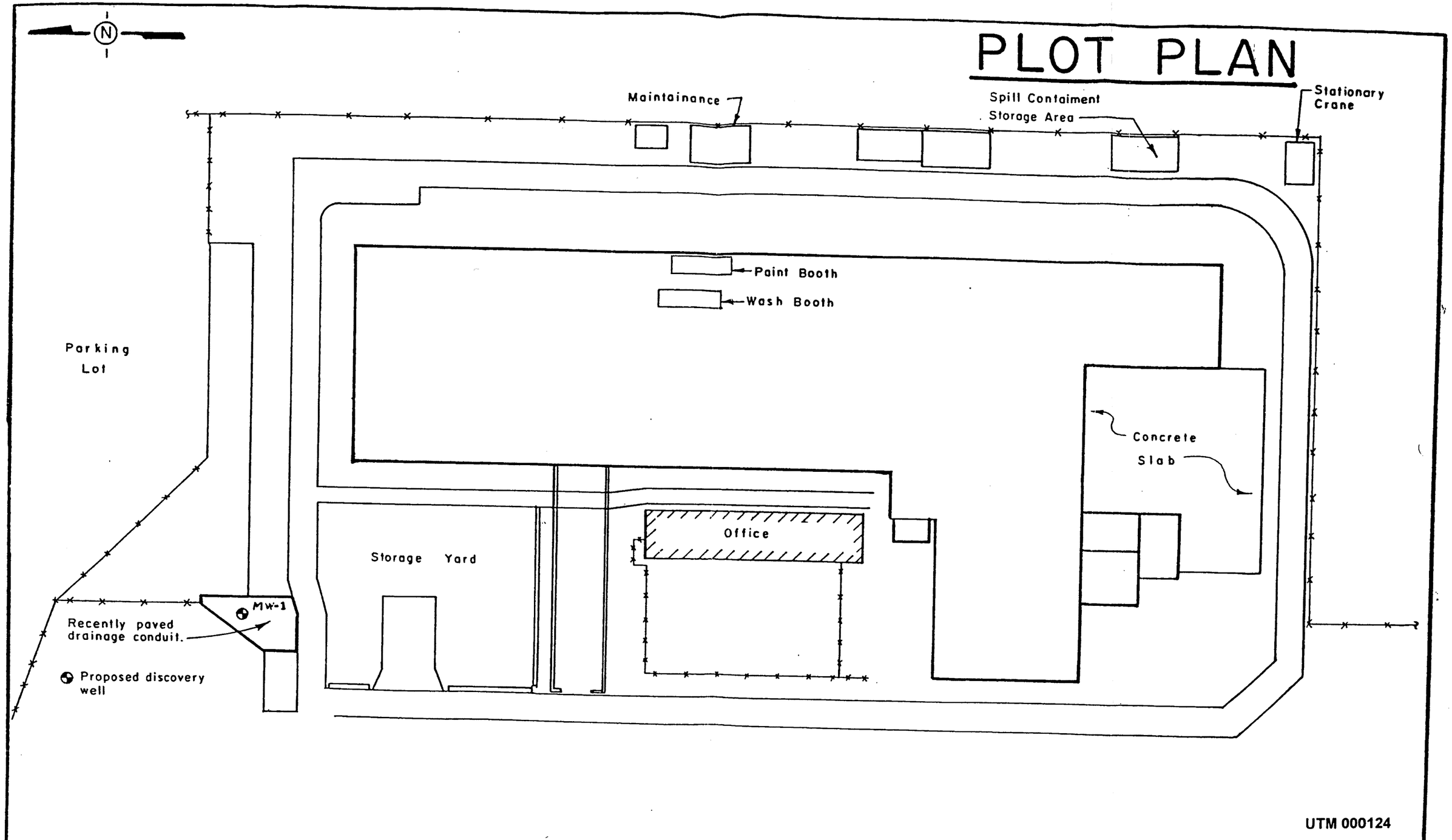
PLOT PLAN



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CITY OF INDUSTRY

Project No.: 1614-02

Figure No.: 2

SUMMARY OF ANALYTICAL RESULTS

TABLE 1

SOIL (9/19/88)

Sample	PCE	1,1 DCA	1,1,1 TCA
MW1 - 1'	8 ppb	ND	ND
MW1 - 5'	10 ppb	14 ppb	12 ppb
MW1 - 10'	ND	ND	ND
MW1 - 15'	ND	ND	ND
MW1 - 20'	ND	ND	ND

WATER (12/23/88)

MW-1

1,1 DCE	150 ppb
1,1 DCA	48 ppb
1,1,1 TCA	210 ppb
TCE	60 ppb
PCE	550 ppb
Cyanide	ND
Turbidity	130 NTU

APPENDIX A

SOIL SAMPLING COLLECTION PROCEDURES

SOIL SAMPLE COLLECTION PROCEDURES

Soil borings were drilled with a Drilline B-57 drill rig equipped with 8-inch diameter, hollow-stem, continuous-flight augers. These borings were be drilled to further characterize the lateral and vertical limits of chemicals detected in the soils. Soil samples were collected from each boring at a minimum of five-foot intervals for lithologic description. The Unified Soil Classification System will be used for soil descriptions in the field.

Relatively undisturbed soil samples are collected from each boring using a Modified California Sampler. The Modified California Sampler consists of an outer sampler barrel with an inner, thin-walled set of rings. The rings are 3 inches long by 2.5 inches in diameter, and made of stainless steel. Soil is forced into the sample barrel and rings by repeatedly striking the top of the sampler with a 140 pound hammer. The hammer is attached to a steel cable and pulley system on the drill rig, and travels a distance of 30 inches before impacting the sampler. After the sampler is retrieved and disassembled, the rings containing the soil are removed. The ring ends will be immediately covered with aluminum foil, and plastic caps will be placed on each tube end before being secured with duct tape. Each sample is then labeled and placed in an ice chest to be chilled to 4 degrees centigrade before shipment to an analytical laboratory certified by the state of California for hazardous waste analysis.

To avoid cross-contamination between samples and bore holes, the sampler and rings are cleaned before each use in an aqueous solution of Alconox, followed by double-rinsing with distilled water. Drill augers are steam cleaned between each bore hole to further reduce the potential for cross contamination.

Soil samples will be analyzed in the field with a Bacharach Instruments Threshold Limit Value (TLV) combustible gas meter or by a Thermo Environmental Instruments Photo Ionization Detector (PID) OVM for the presence of hydrocarbon vapors. A portion of each sample is placed into a 2.5 inch diameter by 3 inches long stainless steel ring sealed on both ends by plastic end caps. Head space readings are measured by inserting the devices sampling probe through an opening in one of the plastic end caps.

Organic vapors are either drawn into the TLV meter and analyzed for combustible gas on a heated catalytic platinum element or in the case of the PID, the organic molecules are ionized by an ultraviolet lamp. Results of the analysis are given in parts per million, and are used only as a qualitative field measurement for the presence of hydrocarbons.

APPENDIX B

GROUND WATER COLLECTION PROCEDURES

GROUND WATER COLLECTION PROCEDURES

The monitoring wells are purged and developed prior to collection of ground water samples. A minimum of five casing volumes are removed from each well to ensure that representative ground water samples are obtained from the aquifer. Ground water parameters of pH, electrical conductivity (EC) and temperature are monitored until they have stabilized. to ensure that the continuity of flow between the well and the aquifer is established. These parameters are documented for each well. Water samples are collected using a clean teflon bailer. The teflon bailer was properly steam cleaned, washed with an aqueous solution of Alconox and double rinsed in distilled water prior to the first use and after every subsequent use.

The VOC samples were collected in 40-ml, "zero head-space" glass vials with teflon septa. The pre-cleaned, virgin vials were filled such that a positive (upward) meniscus results. The caps were then secured and the vial inverted and tapped on a hard surface. If air bubbles were observed, the sample was discarded and the sampling procedure repeated.

Ground water samples collected are immediately labeled, placed into an ice chest with blue ice and chilled to 4 degrees Centigrade. Samples are then delivered to a State of California certified laboratory for analysis to determine the presence of Volatile Organic Compounds. The remaining ground water sample from each monitoring well can serve as a duplicate sample for quality control data.

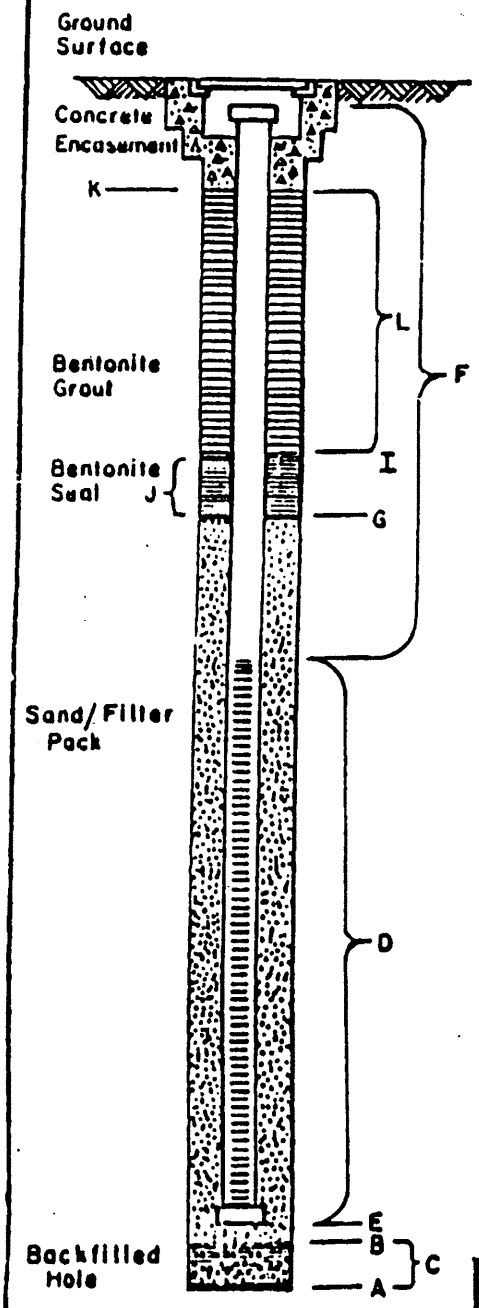
All other analytical samples are collected in the appropriate clean laboratory container. Proper preservation methods as required by the Environmental Protection Agency are used. Chain-of-custody procedures were utilized and strictly followed. All personnel who have had control over the samples have signed the chain-of-custody documents. Copies of these documents are included in the final report.

APPENDIX C

GROUND WATER MONITORING WELL CONSTRUCTION AND INSTALLATION DETAILS WITH DRAWINGS

Boring No. MW-1
Location UTILITY TRAILOR
CITY OF INDUSTRY, CA.
Date 9/19/88
Logger's Initials A.S.

MONITORING WELL



A.	Total depth drilled	(A) 45.5'
B.	Depth of open hole (if no caving occurs as augers are raised, value will be same as A)	(B) 45.5'
C.	Bottom of hole backfilled	(C) .5'
D.	Length of slotted casing installed	(D) 30.0'
E.	Depth of bottom of casing	(E) 45.0'
F.	Length of blank casing	(F) 15.0'
G.	Depth to top of filter sand	(G) 12.0'
H.	Footage of filter sand	(H) 33.0'
I.	Depth to top of bentonite seal	(I) 1.0'
J.	Thickness of bentonite seal	(J) 11.0'
K.	Depth to top of bentonite grout	(K) --
L.	Thickness of bentonite grout	(L) --
M.	Thickness of concrete encasement	(M) 1.0'

Type of Access Box	9" CNI
Type of Casing	SCH.40 PVC
Screen Slot Size	.020
Filter Sand Size	#3 Monterrey
Date Surveyed	
Reference Elevation	
Depth to Water	
Ground Water Elevation	

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GROUND WATER MONITORING WELL CONSTRUCTION AND INSTALLATION

Ground water monitoring wells are designed exclusively for ground water monitoring purposes and to establish a localized ground water gradient. Placement of wells is based on estimated regional and local ground water gradients. Data obtained from local agencies, file reviews and past investigations is used to locate these wells to the best of HYDRO-FLUENT, INC. ability.

Soil borings are completed as ground water monitoring wells (MW) by installing 2-inch diameter, schedule 40, flush-threaded, PVC well casings through the hollow-stem of the auger. The lower 20 to 30 feet of the well casings will be factory perforated with 0.020-inch slots (unless otherwise specified). The perforated casing will extend 20 feet below the level at which ground water is encountered and 10 feet above ground water level. Blank schedule 40 PVC casing will be used above the perforated casing to ground surface.

The casing will be suspended above the bottom of the boring with 2 feet of clean Monterey sand in the bottom of the boring. Centralizers may be used along every 20 feet of the casing as required. No solvent-based cements of any description will be used in well construction and all well casings will be steam-cleaned prior to installation. A sand filter pack consisting of No. 3 or No. 2/12 Monterey sand (as specified by the Project Geologist) will be placed in the well annulus around the casing screen to a point approximately three feet above the top of the perforations.

The hollow-stem auger will be used as a tremie for emplacement of the filter pack to preclude any bridging. The sand filter pack will be sealed by at least three feet of 0.25-inch bentonite pellets, also installed through the hollow-stem of the auger (i.e. tremie pipe) to reduce the chance of bridging. The bentonite pellets will be hydrated in place with bottled distilled water prior to installing the remainder of the annular seal. The remaining annular space will be sealed with a bentonite slurry grout using the auger as a tremie pipe.

The monitoring wells will be located in areas where vehicular access is required; therefore, the wells will be completed flush with the ground surface and protected by cast-aluminum boxes with lockable, water-tight lids. Each well box will be constructed in manner which will allow drainage by gravity away from the box.

Reference elevations will be determined for the top of casing for each monitoring well measured from a bench mark elevation of 100 feet unless otherwise specified.

Depths to ground water in each well will be measured using a Well Wizard Water Level Meter Model 6000 electric well sounding instrument. The exact location of each monitoring well will be presented on the final report plot plan.

Well Development and Purging

The main objective of well development is to achieve turbidity of less than 10 nephelometric turbidity units (NTU). A Nalgene 1,000 ml. graduated Imhoff Cone will be used in the field to measure turbidity to a limit of .5 ml.:1,000 ml. A sample will also be collect to measure the turbidity at the laboratory during sample collection. The ground water monitoring wells will be developed immediately after installation to remove the fine-grained sediments lodged in the sand pack and accumulated in the bottoms of the wells. Well development will include surging using tight-fitting, 4-inch diameter surge blocks and bailing to remove those fine sediments drawn into the well from overpumping. The development procedures will consist of initial surging using the drill rig surge block, initial bailing using the drill rig 3.5 inch diameter PVC bailor and subsequent surging, pumping and bailing by HYDRO-FLUENT, INC. personnel using a hand surge tool, a PVC development pump and 3.5 inch diameter PVC bailor.

The wells will be purged to remove standing water from the well casing and to promote the flow of water from the surrounding formation into the well casing. Well purging will be accomplished through the use of an either an electric stainless steel submersible pump or a teflon bailer. All purging equipment will be thoroughly steam cleaned and washed using an aqueous solution of Alconox and double rinsed in bottled distilled water before being inserted into the first and all successive monitoring wells.

Water will be collected from the mid point of the screened section either by installing the pump at the mid-point of the screened interval of each well or by lowering the bailer this depth. The wells will be purged until the pH, electric conductance (EC) and temperature stabilize or until five casing volumes have been removed. A Presto-Tek model DspH-3 pH and conductivity meter will be used to measure pH and EC and a Taylor Instruments pocket mercury thermometer will be used to measure temperature.

Well volumes will be calculated based on the height of the water column in the well casing and the casing diameter. All measurements will be recorded and submitted along with details of the procedures in the final report.

APPENDIX D

GEOLOGIC LOGS

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	DESCRIPTIONS
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size.)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size.)	CLEAN GRAVELS (Little or no fines)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures.
			GC	Clayey gravels, gravel-sand-clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 sieve size.)	CLEAN SANDS (Little or no fines)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures.
			SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size.)	SILTS AND CLAYS (Liquid limit LESS than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.

PARTICLE SIZE LIMITS

SILT or CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

No. 200 No. 40 No. 10 No. 4 3/4 in. 3 in. 12 in.

U. S. STANDARD SIEVE SIZE

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Project No:	Date:	Figure No:

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
H-F Drilling B-61	8"	-------	MW-1
Date Drilled: 9/19/88	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK	SAMPLE: TUBE	VAPOR READINGS	TIME	BLOW COUNTS	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	DESCRIPTION AND REMARKS
								8" Concrete
		TLV PPM 30 OVM 60	9:57a	18"			SM	**SILTY SAND:** Fine-Medium Grained, Light Brown, Loose
		TLV 10 OVM 38	10:02a	5-7-14	5		CL	**SANDY CLAY:** Dark Brown-Black, Damp, Firm - electrical wire - wire wrapped around auger
		TLV 30 OVM 130	--	4-8-10	10		SM	**SILTY SAND:** Fine-Grained, Light-Brown, Damp, Firm
		TLV 20 OVM 103	10:40a	8-10-13	15			**SILTY SAND:** Fine-Grained, Light-Brown, Damp, Firm - black mottling
		TLV 80 OVM 91	10:45a	7-12-10	20			**SILTY SAND:** Fine-Grained, Light-Brown, Damp, Firm - Orange mottling
					23.5'			
		TLV 0 OVM 20	10:47a	3-5-9	25			**SAND:** Fine-Medium Grained, Tan, Firm - micaceous - sieve sample
					30		SP	
								- ground water encountered at 23.5'
					35			- sieve analysis sample 38.5' 68% Sand 21% Silt 11% Clay
		TLV 0 OVM 17	11:10a	--	40			
					45			T.D. - 45.5'

HYDRO-FLUENT, INC.
geology • engineering • environmental services

UTILITY TRAILER MANUFACTURING CO.
17300 Chestnut Street
City of Industry, California

Project No.:	Figure No.:
1614-02	

APPENDIX E

LABORATORY ANALYTICAL RESULTS
WITH CHAIN OF CUSTODY LOGS

HYDRO-FLUENT, INC.

geology • engineering • environmental services

701 E. BALL ROAD, SUITE 105, ANAHEIM, CA. 92805 714-772-1220

00745

CHAIN OF CUSTODY FORM

Sheet 1 Of 1

Project No.	Project Name	Samplers (Signatures)
1641-02	Utility Trailer City of Industry	Charles R. Stultz

Sampling Method	Field Conditions
Hand bailer monitoring Well	Cool, Clear - IH onsite

Date	Time	Station Number / Location	Sample Type	Sample Container	Type of Preservative	Analysis Required
12/22/88	4:05	MW1	Ground Water	40 ml bottle	N/A	8240
12/22/88	4:00 pm	MW1	G.W.	40 ml bottle	N/A	Tubidity
12/22/88	4:07	MW1	G.W.	Plastic	2ML HNO_3	Metals - ICPMS method
	4:10					CAM metals
12/22/88		MW1	G.W.	Amber	.1M NaOH	Cyanide

Comments: Rush: Return Results to Chuck Stultz / Please tell technician the Approx. time for results

Total Number of Containers: 9

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Relinquished By: (Signature)	Date	Time	Received By: (Signature)
Charles R. S	12/22/88	4:14	G	[illegible]	12/23/88	3:20	[illegible]
Relinquished By:	Date	Time	Received By: (Signature)	Relinquished By: (Signature)	Date	Time	Received By: (Signature)

UTM 000138

BCL ASSOCIATES, INC.
Planners • Engineers • Scientists • Chemists

5702 Bolsa Avenue, Huntington Beach, CA 92649 / (714) 892-2565
FAX (714) 890-4032

LABORATORY REPORT

Report to: Hydro-Fluent, Inc.
701 E. Ball Rd.
Suite 105
Anaheim, CA 92805

Project Name: Utility Trailer-
City of Industry

Laboratory No.: 00745

Report Date: 12-28-88

Received Date: 12-23-88

Attention: Chuck Stoltz

Purchase Order No.: 1641-02

Sample Description: One Water Sample

Testing Methods: Volatile Organics/GC-MS; EPA 8240
Turbidity/Nephelometry; EPA 180.1
Cyanide/Colorimetric; EPA 335.2

BCL #	Client Sample #	Results Cyanide (mg/L)	Results Turbidity (NTU)	Detection Limits Cyanide (mg/L)	Detection Limits Turbidity (NTU)
00745-001		ND	130	0.05	1.0

ND = None Detected

Results for the one 8240 are on the following summary sheet.

Jay Jamerski
Wet Chemistry Group Leader

Jesse Mallari
Technical Director

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET
EPA METHOD 8240

CLIENT SAMPLE NO.

1641-02 MW-1

Lab Name: BCL ASSOCIATES

CL Lab No.: 745-001C

Client: HYDRO-FLUENT

Data File: >2AFC4

Matrix: WATER

ample wt/vol: 1.0 mL

Date Received: 12/23/88

Analyst: MANNY

Date Analyzed: 12/28/88

ilution Factor: 5.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	
74-87-3	Chloromethane	50.	U
74-83-9	Bromomethane	50.	U
75-01-4	Vinyl Chloride	50.	U
75-00-3	Chloroethane	50.	U
75-09-2	Methylene Chloride	25.	U
75-69-4	Trichlorofluoromethane	50.	U
67-64-1	Acetone	50.	U
75-15-0	Carbon Disulfide	25.	U
156-60-5	Trans-1,2-Dichloroethene	25.	U
75-35-4	1,1-Dichloroethene	150.	■
75-34-3	1,1-Dichloroethane	48.	■
67-66-3	Chloroform	25.	U
107-02-2	1,2-Dichloroethane	25.	U
78-93-3	2-Butanone	50.	U
71-55-6	1,1,1-Trichloroethane	210.	■
56-23-5	Carbon Tetrachloride	25.	U
108-05-4	Vinyl Acetate	50.	U
75-27-4	Bromodichloromethane	25.	U
78-87-5	1,2-Dichloropropane	25.	U
10061-01-5	cis-1,3-Dichloropropene	25.	U
79-01-6	Trichloroethene	60.	■
124-48-1	Dibromochloromethane	25.	U
79-00-5	1,1,2-Trichloroethane	25.	U
71-43-2	Benzene	25.	U
10061-02-6	trans-1,3-Dichloropropene	25.	U
75-25-2	Bromoform	25.	U
108-10-1	4-Methyl-2-pentanone	50.	U
591-78-6	2-Hexanone	50.	U
127-18-4	Tetrachloroethene	550.	■
79-34-5	1,1,2,2-Tetrachloroethane	25.	U
108-88-3	Toluene	25.	U
108-90-7	Chlorobenzene	25.	U
100-41-4	Ethylbenzene	25.	U
100-42-5	Styrene	25.	U
133-02-7	Xylene (total)	25.	U

U = Compound undetected. Concentration listed is detection limit.
T = Trace. Amount shown is approximate and below quantification limit.
■ = Compound was found in sample.

OCT 4 1988

HYDRO-FLUENT, INC.

RUN TURBIDITY FIRST

geology • engineering • environmental services

701 E. BALL ROAD, SUITE 105, ANAHEIM, CA. 92805 714-772-1220

CHAIN OF CUSTODY FORM

Sheet 1 of 1

Project No.	Project Name	Samplers (Signatures)
1614-02	UTILITY TRAILER	Curtis J. Wilkie

Sampling Method: JOINT SOURCE TEFLON BAILER

Field Conditions: CLOUDY AND FAIR

Date	Time	Station Number / Location	Sample Type	Sample Container	Type of Preservative	Analysis Required
9/21/88	12:45	DW-1	WATER	VOA	BLUEICE	EPA 624
	12:45	DW-1		PLASTIC BOTTLE		CAM (17 Metals) by ICP/MS
	12:45	DW-1		500 ml		CYANIDE
	12:45	DW-1		GLASS		TURBIDITY RUN FIRST; PROCEED WITH OTHER TESTS IF BELOW 10 NTU

UTM 000141

Comments: RESULTS TO: CHUCK STULTZ 2:30 p.m. WPAS 9-21-88 #10873

Total Number of Containers: 4

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Relinquished By: (Signature)	Date	Time	Received By: (Signature)
Curtis J. Wilkie	9/21/88	2:25	Mary Cederwall				
Relinquished By: Owens J. Williams	Date	Time	Received By: (Signature)	Relinquished By: (Signature)	Date	Time	Received By: (Signature)

October 3, 1988

RECEIVED
OCT 4 1988

WCAS
WEST COAST ANALYTICAL SERVICE, INC.
ANALYTICAL CHEMISTS

HYDRO-FLUENT, INC.
701 E. Ball Rd., Suite 105
Anaheim, CA 92805

Attn: Chuck Stultz

JOB NO. 10873

A

LABORATORY REPORT

Samples Received: One (1) liquid sample in quadruplicate
Date Received: 9-21-88
Purchase Order No: Proj#: 1614-02/Utility Trailer

The sample was analyzed as follows:

Samples Analyzed	Analysis	Results
One (1) liquid	Turbidity by EPA 180.1	Table I

TABLE I

Sample No.	Turbidity
DW-1	430 ntu

Date Analyzed: 9-28-88

Page 1 of 1

Michael Shelton
Senior Chemist

D.J. Northington, Ph.D.
Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225

HYDRO-FLUENT, INC.

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701 E. BALL ROAD, SUITE 105, ANAHEIM, CA. 92805 714-772-1220

CHAIN OF CUSTODY FORM

Sheet 1 of 1

Project No.	Project Name	Samplers (Signatures)
1614-02	UTILITY TRAILOR	Anthony Silva

Sampling Method	Field Conditions
SPLIT SPOON	CLOUDY + COOL

Date	Time	Station Number / Location	Sample Type	Sample Container	Type of Preservative	Analysis Required
9/19/88	9:57a	MW-1 1' ✓	SOIL	[illegible]	[illegible]	EPA 8240 + METALS
	10:02a	MW-1 5' ✓				ICPMS CAM 17
	10:10a	MW-1 10' ✓				
	10:40a	MW-1 15' ✓				
	10:45a	MW-1 20' ✓				

Comments: PLEASE REPORT RESULTS TO CHUCK STULTZ

Total Number of Containers: 5

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Relinquished By: (Signature)	Date	Time	Received By: (Signature)
Anthony Silva	9/19/88	1:30p					#10850
Relinquished By:	**Date**	**Time**	**Received By: (Signature)**	**Relinquished By: (Signature)**	**Date**	**Time**	**Received By: (Signature)**

UTM 000143

September 28, 1988

WCAS
WEST COAST ANALYTICAL SERVICE, INC.
ANALYTICAL CHEMISTS

HYDRO-FLUENT, INC.
701 E. Ball Rd., Suite 105
Anaheim, CA 92805

Attn: Chuck Stultz

JOB NO. 10850 A

LABORATORY REPORT

Samples Received: Five (5) soil samples
Date Received: 9-19-88
Purchase Order No: Proj#: 1614-02/Utility Trailor

The samples were analyzed as follows:

Samples Analyzed	Analysis	Results
Five (5) soils	Volatile Organics by EPA 8240	Data Sheets
Five (5) soils	CAM (17) Metals by ICPMS	Quant Report

Michael Shelton
Senior Chemist

D.J. Northington, Ph.D.
Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225

Client: HYDRO-FLUENT, INC. Sample: MW-1 1'
Job Number: 10850
Date Analyzed: 9-23-88 File: 754 30

C.A.M. Metals
Quantitative Analysis Report
Inductively Coupled Plasma-Mass Spectrometry
Total Metals Concentration---Parts Per Million

**** Exceeds TTLC limits * May exceed STLC limits

	TTLC Limits mg/Kg	Sample	10X STLC Limits mg/Kg	Detect. Limit
Antimony	500	0.4	150	0.2
Arsenic	500	3.4	50	0.6
Barium	10000	95	1000	0.4
Beryllium	75	0.26	7.5	0.02
Cadmium	100	1.1	10	0.02
Chromium (III/VI)	2500/500	17	5600/50	0.4
Cobalt	8000	10	800	0.02
Copper	2500	12	250	0.3
Lead	1000	2.9	50	0.1
Mercury	20	ND<0.10	2	0.1
Molybdenum	3500	3.7	3500	0.02
Nickel	2000	19	200	0.2
Selenium	100	ND<0.9	10	0.9
Silver	500	0.03	50	0.02
Thallium	700	0.18	70	0.02
Vanadium	2400	44	240	2
Zinc	5000	42	2500	0.9

(1) ND-Not Detected. The Limit of Detection is reported above.
(2) Chromium reported above as total chromium in sample.
(3) 10X STLC Limits used as comparison takes into account dilution of the sample by 1/10 during leachate preparation.

WCAS

Client: HYDRO-FLUENT, INC. Sample: MW-1 5'
Job Number: 10850
Date Analyzed: 9-23-88 File: 754
31

C.A.M. Metals
Quantitative Analysis Report
Inductively Coupled Plasma-Mass Spectrometry
Total Metals Concentration---Parts Per Million

**** Exceeds TTLC limits * May exceed STLC limits

		TTLC Limits mg/Kg	Sample	10X STLC Limits mg/Kg	Detect. Limit
Antimony		500	0.5	150	0.2
Arsenic		500	4	50	1
Barium		10000	202	1000	0.4
Beryllium		75	0.59	7.5	0.02
Cadmium		100	0.65	10	0.02
Chromium	(III/VI)	2500/500	35	5600/50	0.4
Cobalt		8000	9.3	800	0.02
Copper		2500	19	250	0.3
Lead		1000	5.9	50	0.1
Mercury		20	ND<0.10	2	0.1
Molybdenum		3500	2.2	3500	0.02
Nickel		2000	24	200	0.4
Selenium		100	1.8	10	0.9
Silver		500	0.08	50	0.02
Thallium		700	0.26	70	0.02
Vanadium		2400	69	240	3
Zinc		5000	57	2500	0.9

(1) ND-Not Detected. The Limit of Detection is reported above.
(2) Chromium reported above as total chromium in sample.
(3) 10X STLC Limits used as comparison takes into account dilution of the sample by 1/10 during leachate preparation.

WCAS

Client: HYDRO-FLUENT, INC.
Job Number: 10850
Date Analyzed: 9-23-88

Sample: MW-1 10'

File: 754 32

C.A.M. Metals
Quantitative Analysis Report
Inductively Coupled Plasma-Mass Spectrometry
Total Metals Concentration---Parts Per Million

**** Exceeds TTLC limits * May exceed STLC limits

	TTLC Limits mg/Kg	Sample	10X STLC Limits mg/Kg	Detect. Limit
Antimony	500	0.6	150	0.2
Arsenic	500	6.8	50	0.8
Barium	10000	101	1000	0.4
Beryllium	75	0.52	7.5	0.02
Cadmium	100	0.34	10	0.02
Chromium (III/VI)	2500/500	28	5600/50	0.4
Cobalt	8000	7.3	800	0.02
Copper	2500	18	250	0.3
Lead	1000	5.3	50	0.1
Mercury	20	ND<0.10	2	0.1
Molybdenum	3500	1.1	3500	0.02
Nickel	2000	18	200	0.4
Selenium	100	2.1	10	0.9
Silver	500	0.02	50	0.02
Thallium	700	0.16	70	0.02
Vanadium	2400	64	240	3
Zinc	5000	56	2500	0.9

(1) ND-Not Detected. The Limit of Detection is reported above.
(2) Chromium reported above as total chromium in sample.
(3) 10X STLC Limits used as comparison takes into account dilution of the sample by 1/10 during leachate preparation.

WCAS

Client: HYDRO-FLUENT, INC.
Job Number: 10850
Date Analyzed: 9-23-88

Sample: MW-1 15'

File: 754
33

C.A.M. Metals
Quantitative Analysis Report
Inductively Coupled Plasma-Mass Spectrometry
Total Metals Concentration---Parts Per Million

**** Exceeds TTLC limits * May exceed STLC limits

	TTLC Limits mg/Kg	Sample	10X STLC Limits mg/Kg	Detect. Limit
Antimony	500	0.3	150	0.2
Arsenic	500	2.4	50	0.8
Barium	10000	256	1000	0.4
Beryllium	75	0.41	7.5	0.02
Cadmium	100	0.5	10	0.02
Chromium (III/VI)	2500/500	24	5600/50	0.4
Cobalt	8000	6.9	800	0.02
Copper	2500	15	250	0.3
Lead	1000	4.9	50	0.1
Mercury	20	ND<0.10	2	0.1
Molybdenum	3500	3.6	3500	0.02
Nickel	2000	15	200	0.2
Selenium	100	1.8	10	0.9
Silver	500	0.07	50	0.02
Thallium	700	0.26	70	0.02
Vanadium	2400	53	240	3
Zinc	5000	45	2500	0.9

(1) ND-Not Detected. The Limit of Detection is reported above.
(2) Chromium reported above as total chromium in sample.
(3) 10X STLC Limits used as comparison takes into account dilution of the sample by 1/10 during leachate preparation.

WCAS

Client: HYDRO-FLUENT, INC.
Job Number: 10850
Date Analyzed: 9-23-88

Sample: MW-1 20'

File: 754
34

C.A.M. Metals
Quantitative Analysis Report
Inductively Coupled Plasma-Mass Spectrometry
Total Metals Concentration---Parts Per Million

**** Exceeds TTLC limits * May exceed STLC limits

	TTLC Limits mg/Kg	Sample	10X STLC Limits mg/Kg	Detect. Limit
Antimony	500	0.7	150	0.2
Arsenic	500	6.6	50	0.9
Barium	10000	211	1000	0.4
Beryllium	75	0.79	7.5	0.02
Cadmium	100	0.71	10	0.02
Chromium (III/VI)	2500/500	39	5600/50	0.4
Cobalt	8000	16	800	0.02
Copper	2500	29	250	0.3
Lead	1000	9	50	0.1
Mercury	20	ND<0.10	2	0.1
Molybdenum	3500	3.2	3500	0.02
Nickel	2000	25	200	0.3
Selenium	100	2.1	10	0.9
Silver	500	0.1	50	0.02
Thallium	700	0.34	70	0.02
Vanadium	2400	88	240	3
Zinc	5000	84	2500	0.9

(1) ND-Not Detected. The Limit of Detection is reported above.
(2) Chromium reported above as total chromium in sample.
(3) 10X STLC Limits used as comparison takes into account dilution of the sample by 1/10 during leachate preparation.

WCAS

CLIENT: HYDRO-FLUENT
WCAS JOB #: 10850

SAMPLE: MW-1 1'

DATE RECEIVED: 09/19/88
DATE EXTRACTED: 09/27/88
DATE ANALYZED: 09/27/88

RUN NUMBER: 10850V1
SAMPLE AMOUNT: 1.0G
MATRIX: SOIL

VOLATILE ORGANICS (EPA 624/8240)

UNITS: UG/KG (PPB)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	50.
71-43-2	BENZENE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	5.
75-25-2	BROMOFORM	ND	5.
74-83-9	BROMOMETHANE	ND	30.
78-93-3	2-BUTANONE (MEK)	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
75-00-3	CHLOROETHANE	ND	30.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
67-66-3	CHLOROFORM	ND	5.
74-87-3	CHLOROMETHANE	ND	30.
108-41-8	CHLOROTOLUENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
75-35-4	1,1-DICHLOROETHYLENE	ND	5.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
76-13-1	FREON-TF	ND	5.
119-78-6	2-HEXANONE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	30.
100-42-5	STYRENE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
127-18-4	TETRACHLOROETHYLENE	8.	5.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	5.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
79-01-6	TRICHLOROETHYLENE	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
95-47-6	TOTAL XYLENES	ND	5.

WCAS

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT: HYDRO-FLUENT SAMPLE: MW-1 1'
WCAS JOB #: 10850

UNITS: UG/KG (PPB)

	COMPOUND NAME	FRACTION	APPROXIMATE CONCENTRATION
1	NONE FOUND	VOA	

WCAS

CLIENT: HYDRO-FLUENT
WCAS JOB #: 10850

SAMPLE: MW-1 5'

DATE RECEIVED: 09/19/88
DATE EXTRACTED: 09/27/88
DATE ANALYZED: 09/27/88

RUN NUMBER: 10850V2
SAMPLE AMOUNT: 1.0G
MATRIX: SOIL

VOLATILE ORGANICS (EPA 624/8240)

UNITS: UG/KG (PPB)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	50.
71-43-2	BENZENE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	5.
75-25-2	BROMOFORM	ND	5.
74-83-9	BROMOMETHANE	ND	30.
78-93-3	2-BUTANONE (MEK)	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
75-00-3	CHLOROETHANE	ND	30.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
67-66-3	CHLOROFORM	ND	5.
74-87-3	CHLOROMETHANE	ND	30.
108-41-8	CHLOROTOLUENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	14.	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
75-35-4	1,1-DICHLOROETHYLENE	ND	5.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
76-13-1	FREON-TF	ND	5.
119-78-6	2-HEXANONE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	30.
100-42-5	STYRENE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
127-18-4	TETRACHLOROETHYLENE	10.	5.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	5.
71-55-6	1,1,1-TRICHLOROETHANE	12.	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
79-01-6	TRICHLOROETHYLENE	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
95-47-6	TOTAL XYLENES	ND	5.

WCAS

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT: HYDRO-FLUENT
WCAS JOB #: 10850

SAMPLE: MW-1 5'

UNITS: UG/KG (PPB)

	COMPOUND NAME	FRACTION	APPROXIMATE CONCENTRATION
1	NONE FOUND	VOA	

WCAS

CLIENT: HYDRO-FLUENT
WCAS JOB #: 10850

SAMPLE: MW-1 10'

DATE RECEIVED: 09/19/88
DATE EXTRACTED: 09/27/88
DATE ANALYZED: 09/27/88

RUN NUMBER: 10850V3
SAMPLE AMOUNT: 1.0G
MATRIX: SOIL

VOLATILE ORGANICS (EPA 624/8240)

UNITS: UG/KG (PPB)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	50.
71-43-2	BENZENE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	5.
75-25-2	BROMOFORM	ND	5.
74-83-9	BROMOMETHANE	ND	30.
78-93-3	2-BUTANONE (MEK)	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
75-00-3	CHLOROETHANE	ND	30.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
67-66-3	CHLOROFORM	ND	5.
74-87-3	CHLOROMETHANE	ND	30.
108-41-8	CHLOROTOLUENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
75-35-4	1,1-DICHLOROETHYLENE	ND	5.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
76-13-1	FREON-TF	ND	5.
119-78-6	2-HEXANONE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	30.
100-42-5	STYRENE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
127-18-4	TETRACHLOROETHYLENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	5.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
79-01-6	TRICHLOROETHYLENE	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
95-47-6	TOTAL XYLENES	ND	5.

WCAS

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT: HYDRO-FLUENT SAMPLE: MW-1 10'
WCAS JOB #: 10850

UNITS: UG/KG (PPB)

	COMPOUND NAME	FRACTION	APPROXIMATE CONCENTRATION
1	NONE FOUND	VOA	

WCAS

CLIENT: HYDRO-FLUENT
WCAS JOB #: 10850

SAMPLE: MW-1 15'

DATE RECEIVED: 09/19/88
DATE EXTRACTED: 09/27/88
DATE ANALYZED: 09/27/88

RUN NUMBER: 10850V4
SAMPLE AMOUNT: 1.0G
MATRIX: SOIL

VOLATILE ORGANICS (EPA 624/8240)

UNITS: UG/KG (PPB)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	50.
71-43-2	BENZENE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	5.
75-25-2	BROMOFORM	ND	5.
74-83-9	BROMOMETHANE	ND	30.
78-93-3	2-BUTANONE (MEK)	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
75-00-3	CHLOROETHANE	ND	30.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
67-66-3	CHLOROFORM	ND	5.
74-87-3	CHLOROMETHANE	ND	30.
108-41-8	CHLOROTOLUENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
75-35-4	1,1-DICHLOROETHYLENE	ND	5.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
76-13-1	FREON-TF	ND	5.
119-78-6	2-HEXANONE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	30.
100-42-5	STYRENE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
127-18-4	TETRACHLOROETHYLENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	5.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
79-01-6	TRICHLOROETHYLENE	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
95-47-6	TOTAL XYLENES	ND	5.

WCAS

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT: HYDRO-FLUENT
WCAS JOB #: 10850

SAMPLE: MW-1 15'

UNITS: UG/KG (PPB)

	COMPOUND NAME	FRACTION	APPROXIMATE CONCENTRATION
1	NONE FOUND	VOA	

WCAS

CLIENT: HYDRO-FLUENT
WCAS JOB #: 10850

SAMPLE: MW-1 20'

DATE RECEIVED: 09/19/88
DATE EXTRACTED: 09/27/88
DATE ANALYZED: 09/27/88

RUN NUMBER: 10850V5
SAMPLE AMOUNT: 1.0G
MATRIX: SOIL

VOLATILE ORGANICS (EPA 624/8240)

UNITS: UG/KG (PPB)

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	50.
71-43-2	BENZENE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	5.
75-25-2	BROMOFORM	ND	5.
74-83-9	BROMOMETHANE	ND	30.
78-93-3	2-BUTANONE (MEK)	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
75-00-3	CHLOROETHANE	ND	30.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
67-66-3	CHLOROFORM	ND	5.
74-87-3	CHLOROMETHANE	ND	30.
108-41-8	CHLOROTOLUENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
75-35-4	1,1-DICHLOROETHYLENE	ND	5.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
76-13-1	FREON-TF	ND	5.
119-78-6	2-HEXANONE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	30.
100-42-5	STYRENE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
127-18-4	TETRACHLOROETHYLENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	5.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
79-01-6	TRICHLOROETHYLENE	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
95-47-6	TOTAL XYLENES	ND	5.

WCAS

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT: HYDRO-FLUENT
WCAS JOB #: 10850

SAMPLE: MW-1 20'

UNITS: UG/KG (PPB)

	COMPOUND NAME	FRACTION	APPROXIMATE CONCENTRATION
1	NONE FOUND	VOA	

WCAS

Data Reporting Qualifiers

Value - If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.

ND - Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.

TR - Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

APPENDIX F

HEALTH AND SAFETY PLAN

SITE SPECIFIC HEALTH & SAFETY PLAN (SSHSP)

For

INITIAL SITE INVESTIGATION

At

UTILITY TRAILER COMPANY PROJECT SITE

INDUSTRY, CA.

Prepared For

HYDRO-FLUENT, INC.

ANAHEIM, CA

By

HEALTH & HAZARD SYSTEMS

CLAREMONT, CA.

December, 1988

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HEALTH & HAZARD SYSTEMS STATEMENT OF LIMITED USE/LIABILITY PROVISION

This Site Health & Safety Plan, developed by Health & Hazard Systems, a California based corporation, has been done so solely for the use of our client and solely for their purpose of guaranteeing the health and safety of personnel and environment and meeting regulatory requirements at the specific project and project site described in this plan and for which Health & Hazard Systems has been specifically contracted to do so. Any abridgements, revisions, copying, or alterations of this plan for any other use or purpose without the expressed written permission of Health & Hazard Systems is strictly forbidden.

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SITE SPECIFIC HEALTH & SAFETY PLAN

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3.3 HAZARDOUS CONDITIONS

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5.1 MONITORING PROGRAMS

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7.2 CONTAMINATION REDUCTION ZONE (CRZ)

7.3 CONTAMINATION REDUCTION CORRIDOR (CRC)

7.4 SUPPORT ZONE

UTM 000164

8.0 CONTAMINATION CONTROL PROCEDURES

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10.0 STANDARD OPERATING PROCEDURES

11.0 CONTINGENCY/EMERGENCY RESPONSE PLANS

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12.3 SITE SPECIFIC TRAINING

12.4 DAILY SAFETY MEETINGS

13.0 MEDICAL SURVEILLANCE

13.1 PHYSICAL EXAMINATIONS

13.2 OCCUPATIONAL HEALTH SURVEYS

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13.4 DAILY HEALTH MONITORING

13.5 BIOLOGICAL MONITORING

14.0 DOCUMENTATION

14.1 MONITORING

14.2 MEDICAL SURVEILLANCE

14.3 TRAINING

14.4 INJURY/ILLNESS

UTM 000165

ATTACHMENTS

1) PROJECT SITE MAP
2) HEAT STRESS PROGRAM
3) NOISE MONITORING PROGRAM
4) WORK ZONES
5) STANDARD OPERATING PROCEDURES
6) EMERGENCY RESPONSE INFORMATION
7) MEDICAL SURVEILLANCE INFORMATION
8) MONITORING DOCUMENTATION
9) TRAINING DOCUMENTATION

UTM 000166

1.0 INTRODUCTION

1.1 PURPOSE

This document describes the Site Specific Health & Safety Plan (SSHSP) for all work activities performed at this project site. This SSHSP is intended to ensure the safety of employees and nearby communities from potential health hazards associated with these activities. It is expressly intended that all project work will comply with 29 CFR 1910.120, OSHA's (Occupational Safety and Health Administration) Interim Final Rule for Hazardous Waste Operations and Emergency Response, and all other relevant federal, state, and local regulations. All personnel working at this project site will maintain a general responsibility to identify and correct any health and safety hazards and cooperate with the implementation of this plan.

1.2 APPROACH

This plan has been developed by and will be implemented on site by HEALTH & HAZARD SYSTEMS . HEALTH & HAZARD SYSTEMS will have ultimate responsibility and authority in this regard. The plan will be enforced on site by personnel from HEALTH & HAZARD SYSTEMS . The general approach used in the development, implementation and enforcement of this SSHSP will be to reduce risks to the lowest acceptable risk attainable or LARA.

Prior to working on-site, all personnel working at this project site will have completed and successfully passed a comprehensive annual medical examination, an initial 40-Hour Hazardous Material/Waste Operation Training Program and an 8-Hour Supervisor/Manager Training Course if appropriate, and will have been trained and fit-tested to wear the appropriate respirators by qualified personnel. Project managers will have completed additional required training. Each subcontractor will submit a copy of their General Health & Safety Program to HYDRO-FLUENT, INC. to insure that these requirements have been met. Copies of appropriate certifications for each employee will also be sent to HEALTH & HAZARD SYSTEMS .
This information will be kept on file and will be submitted to the Project Health & Safety Director for approval.

All personnel working on-site will be required to attend an initial site-specific training session. This training program will specifically train and inform all project personnel about specific site hazards, work practices, and procedures to be followed throughout the course of this project. This training will be scheduled as near as possible to project start-up to insure there are no conflicts with other work projects and to insure maximum retention following training. All personnel completing this training will be certified to that effect.

Copies of appropriate certifications will be submitted to HEALTH & HAZARD SYSTEMS for each employee working on this project. These certifications will be kept on file at the project site by the Project Health Safety Officer (PH&SO). No personnel without proper certification will be permitted to work at this project site.

UTM 000167

Once work has begun safety meetings will be held each morning prior to work start up to inform personnel of any changes in procedure and to insure compliance with this SSHSP.

Both personnel and environment will be monitored throughout the course of this project to assure compliance with this plan and maximum control over potential health and safety hazards. All monitoring information will be documented on a daily basis and will be reviewed and evaluated by PHSD as often as is determined necessary. Any changes, revisions or additional actions or procedures as a result of these reviews will be implemented as soon as possible. If possible, daily safety meetings will be used to inform personnel of these changes. If not, a specific safety meeting will be held as soon as is practical to inform personnel of these changes and/or revisions.

HEALTH & HAZARD SYSTEMS will maintain continual Industrial Hygiene, Occupational Medicine and Toxicology support throughout the course of this project. All visitors will also receive training regarding potential hazards and procedures to be followed. Personnel will be medically monitored as determined necessary by HEALTH & HAZARD SYSTEMS and in accordance with HYDRO-FLUENT,INC.'s Medical Surveillance Program. By using this approach, potential hazards can be minimized and controlled.

Any personnel not complying with the intent or letter of this plan will be reprimanded and if corrective action is not taken, will be removed from this work project.

1.3 FACILITY BACKGROUND/PROJECT DESCRIPTION

The project site is located at 17300 Chesnut Street in City of Industry, California and is property currently being utilized by the Utility Trailer Company located at the same address. HYDRO-FLUENT, INC. has been retained by UTILITY TRAILER COMPANY to perform a site investigation to determine possible ground water and soil contamination.

During the development of a monitoring well on-site, particulate Cyanide was detected in purge water from the well by personnel using a Draeger Tube. Previously chlorinated hydrocarbons (1,1,1- trichloroethane, tetrachloroethylene, trichloroethylene) and aromatic hydrocarbons (toluene and xylene) had been detected in groundwater on-site.. The purpose of this investigation is to more thoroughly sample and analyze this purge water to determine the extent of contamination from these materials, metals, and other volatile organic compounds.

Based on the resullts from the sampling and analysis being conducted during this current project an evaluation will be made to determine what additional action must taken.

Three casing volumes will be purged from the well using a hand bailer. Samples for VOCs, Cyanide, metals, and turbidity will be taken from this purge water. Field work for this operation at this project site is projected to involve from two to three personnel and to require no more than one day on-site time to complete.

UTM 000168

2.0 PROJECT PERSONNEL/RESPONSIBILITIES

2.1 PROJECT PERSONNEL

1) Project Director

2) Project Health & Safety Director

3) Project Manager

4) Project Site Health & Safety Officer

5) Project Technician

2.2 PROJECT RESPONSIBILITIES

1) Project Director

The Project Director's responsibilities include the overall direction and management of all phases of work being conducted at this project site.

2) Project Health & Safety Director

The Project Health & Safety Director responsibilities include the development and implementation of the SSHSP at this project site and to provide support during the course of this project.

3) Project Manager

The Project Manager's responsibilities include the management of all work being conducted on-site at this project-site.

4) Project Health & Site Safety Officer

The Project Health & Safety Officer's responsibilities will be to enforce all aspects of this SSHSP at the project site and to consult with the Project Health & Safety Director when support is necessary.

5) Project Technician

The Project Technician's responsibilities will be to conduct the purging and sampling operations according to specifications and to assiste the project manager as determined necessary throughout the course of operations.

2.3 PROJECT SUPPORT

Continuous technical and scientific support will be provided by HEALTH & HAZARD SYSTEMS throughout the course of this project. This staff has been used in developing this SSHSP and will be used in its implementation and during the course of this project to provide support and assistance in matters of health and safety.

UTM 000170

3.0 PROJECT SITE HAZARDS

Based on prior sampling and experience the following potential hazards may be expected to be encountered during the conduct of field work at this project site:

1) Hazardous Materials
2) Hazardous Physical Agents
3) Hazardous Conditions
4) Hazardous Work Activities

Each of these hazard types will be discussed in more specific detail as follows.

3.1 HAZARDOUS MATERIALS

Based on prior sampling/analysis and project site assessment, a number of hazardous materials can be expected to be encountered as soil or groundwater contaminants during the conduct of field work at this project site. These include the following :

1. Cyanide salts (as CN)
2. 1,1,1-Trichloroethane
3. Tetrachloroethylene
4. Trichloroethylene
5. Toluene
6. Xylenes (mixed)

All these materials may be potentially present at the site as soil or groundwater contaminants. Hydrogen Cyanide gas can bew generared fron Cyanides present in solution in groundwater or as soil contaminants when these materials are subjected to acidic environments.

The primary source of exposure during these operations will be from contact with contaminants in the purge water from the monitoring well and to a lesser extent contact with contaminated soil.. Only brief exposures to groundwater and soil is expected during operations conducted for this project.

A specific treatment of each of the possible hazardous chemical contaminants listed above follows in this section.

UTM 000171

1) Cyanides (as CN-Skin) CAS NOS. 151-50-8 & 143-33-9

OSHA EXPOSURE LIMITS

8-HR TWA PEL	=	5mg/m3

ACGIH EXPOSURE LIMITS

8-HR TWA TLV	=	5mg/m3
IDLH LEVEL	=	50mg/m3

Cyanides (Cyanide Salts) are acutely toxic by all routes of administration. Inhalation and ingestion of cyanide salts may be rapidly fatal and cyanides are absorbed through intact skin. Exposure to dusts may also irritate the eyes, mucous membranes, and skin. Early symptoms of intoxication following exposure and absorption include weakness, dizziness, headache, confusion, nausea, and vomiting followed by cyanosis, convulsions, unconsciousness, respiratory collapse and death. Exposure to mists of some cyanide salts causes nosebleed and nasal ulceration.

Cyanide salts will liberate Hydrogen Cyanide (HCN) gas on contact with weak acids. This gas is highly toxic and exposures can be immediately fatal.

2) 1,1,1-Trichloroethane (Methyl chloroform) CAS NOS. 71-55-6

OSHA EXPOSURE LIMITS

8-HR TWA PEL	=	350ppm

ACGIH EXPOSURE LIMITS

8-HR TWA TLV	=	350ppm
STEL	=	450ppm
IDLH LEVEL	=	1000ppm

Acute exposure to 1,1,1-trichloroethane produces effects similar to other aliphatic chlorinated hydrocarbons. It produces anesthesia and strong narcotic effects. Target organs include the central nervous system, heart, liver, and kidneys.

It is toxic by inhalation and by ingestion and can be absorbed through the skin.

Exposure to vapors in excess of recommended exposure limits causes minor eye, nose and throat irritation, initial flushing, headache, nausea signs of CNS depression, and sensitization of the heart (myocardium).

Symptoms of CNS depression include drowsiness, dizziness, loss of coordination and confusion. Sensitization of the heart muscle can lead to arrhythmias and hypotension.

Severe acute exposures can cause liver damage and result in unconsciousness, coma and death.

Contact with the liquid causes transient eye irritation and prolonged skin contact causes defatting of the skin characterized by drying and cracking of the skin, dermatitis and can result in severe skin damage. Skin contact may also result in absorption through the skin exaccerbating effects from vapor inhalation.

Chronic exposure to vapors has been shown to cause reversible liver and kidney changes in laboratory animals indicating low hepatic and renal toxicity.

1,1,1-Trichloroethane has been evaluated by IARC and the evidence for carcinogenicity has been classified as indefinite.

3) Tetrachloroethylene (Perclorotethylene) CAS NOS. 127-18-4

OSHA EXPOSURE LIMITS

8-HR TWA PEL	=	100ppm
CEILING	=	200ppm
5-MIN/3-Hr PEAK	=	300ppm

ACGIH EXPOSURE LIMITS

8-HR TWA TLV	=	50ppm
STEL	=	200ppm

IDLH LEVEL = Ca

Acute exposure to Tetrachloroetylene produces effects similar to other aliphatic chlorocarbons. It produces anesthesia and strong narcotic effects. Target organs include the peripheral and central nervous system, heart, liver, and kidneys.

It is toxic by inhalation and by ingestion and can be absorbed through the skin.

Exposure to vapors in excess of recommended exposure limits causes minor eye, nose and throat irritation, initial flushing, headache, nausea signs of CNS depression, and sensitization of the heart muscle (myocardium).

Symptoms of CNS depression include drowsiness, dizziness, loss of coordination and confusion. Sensitization of the heart muscle can lead to arrhythmias and hypotension.

Severe acute exposures can cause liver damage and result in unconsciousness, coma and death.

Contact with the liquid causes transient eye irritation and prolonged skin contact causes defatting of the skin characterized by drying and cracking of the skin, dermatitis and can result in severe skin damage. Skin contact may also result in absorption through the skin exaccerbating effects from vapor inhalation.

Chronic exposure to vapors has been shown to cause liver and kidney damage in laboratory animals. Long term industrial exposures have been reported to have caused various peripheral neuropathies (numbness of extremities) in humans.

Tetrachloroethylene has been evaluated by IARC to be a suspect human carcinogen but is listed on California's Toxic Enforcement List as a known human carcinogen.

4) Trichloroethylene (Perclorotethylene) CAS NOS. 79-01-6

OSHA EXPOSURE LIMITS

8-HR TWA PEL	=	100ppm
CEILING	=	200ppm
5-MIN/3-Hr PEAK	=	300ppm

ACGIH EXPOSURE LIMITS

8-HR TWA TLV	=	50ppm
STEL	=	200ppm
IDLH LEVEL	=	Ca

Acute exposure to Tetrachloroethylene produces effects similar to other aliphatic chlorocarbons. It produces anesthesia and strong narcotic effects. Target organs include the peripheral and central nervous system, heart, liver, and kidneys.

It is toxic by inhalation and by ingestion and can be absorbed through the skin.

Exposure to vapors in excess of recommended exposure limits causes minor eye, nose and throat irritation, initial flushing, headache, nausea, signs of CNS depression, and sensitization of the heart muscle (myocardium).

Symptoms of CNS depression include drowsiness, dizziness, loss of coordination and confusion. Sensitization of the heart muscle can lead to arrhythmias and hypotension.

Severe acute exposures can cause liver and kidney damage and result in unconsciousness, coma and death.

Contact with the liquid causes transient eye irritation. Prolonged skin contact and exposure causes defatting of the skin which is characterized by drying and cracking of the skin, and dermatitis. Unattended skin exposures can result in severe damage. Skin contact may also result in absorption through the skin exaccerbating effects from vapor inhalation.

Chronic exposure to vapors has been shown to cause liver and kidney damage in laboratory animals. Peripheral neuropathies may also occur with long term exposures.

Trichloroethylene has been evaluated by IARC to be a suspect human carcinogen but is listed on California's Toxic Enforcement List as a known human carcinogen.

5) Toluene (Toluol) CAS NOS. 108-88-3

OSHA EXPOSURE LIMITS

8-HR TWA PEL	=	200ppm
CEILING	=	350ppm
10-MIN PEAK	=	500ppm

ACGIH EXPOSURE LIMITS

8-HR TWA TLV	=	100ppm
STEL	=	150ppm

IDLH LEVEL = 2000ppm

Acute exposure to Toluene produces effects similar to other aromatic petroleum hydrocarbons. Exposure to vapors in excess of recommended exposure limits causes minor eye, nose and throat irritation, initial flushing, headache, nausea and signs of CNS depression. Symptoms of CNS depression include drowsiness, dizziness, loss of coordination and confusion. Severe exposures can result in unconsciousness, coma and death. The liquid causes transient eye irritation and prolonged skin contact causes defatting of the skin characterized by drying and cracking of the skin, dermatitis and skin damage. Prolonged skin contact may result in absorptions of components through the skin exaccerbating effects from vapor inhalation.

In addition acute inhalation exposure to toluene vapors have been shown to cause paresthesia of the extremities in humans. Paresthesia are a numbing or tingling sensation and have been shown to occur in the fingers, toes, lips and tongue following toluene exposure.

Toluene abuse (chronic and deliberate exposure to high concentrations has been shown to cause severe but reversible liver and kidney damage.

6) Xylenes (Mixed isomers) CAS NOS. 1330-20-7

OSHA EXPOSURE LIMITS

8-HR TWA PEL	=	100ppm

ACGIH EXPOSURE LIMITS

8-HR TWA TLV	=	100ppm
STEL	=	150ppm
IDLH LEVEL	=	1000ppm

Acute exposure to Xylenes produces effects similar to other aromatic petroleum hydrocarbons. Exposure to vapors in excess of recommended exposure limits causes minor eye, nose and throat irritation, initial flushing, headache, nausea and signs of CNS depression. Symptoms of CNS depression include drowsiness, dizziness, loss of coordination and confusion. Severe exposures can result in unconsciousness, coma and death. The liquid causes transient eye irritation. Prolonged skin contact causes defatting of the skin characterized by drying and cracking of the skin, dermatitis and skin damage. Prolonged skin contact may result in absorptions of components through the skin exaccerbating effects from vapor inhalation.

Chronic inhalation exposure to xylene vapors has been shown to cause reversible blood changes in laboratory animals reflecting mild hematopoietic toxicity.

3.2 HAZARDOUS PHYSICAL AGENTS

Hazardous physical agents include heat and cold, noise, electricity, electromagnetic radiation, and any other physical factors which may produce added stress on personnel in a work environment. The following potentially hazardous physical agents may be encountered during operations at this project site :

1) Heat Stress

2) Noise

3) Electricity

3.21 HEAT STRESS

Heat stress occurs when the body produces or absorbs more heat than it is able to dissipate. Heat is produced internally as the result of metabolic activity which increases with body activity or the level of physical work being performed. Heat can be absorbed by the body from ambient air and from the radiant heat of the sun.

The body's ability to absorb heat is therefore affected by factors such as the ambient air temperature and humidity, air density, radiant energy and cloud cover, wind velocity and air flow, and localized heat generation, such as that from power equipment.

The body's ability to dissipate heat to the environment is dependent on factors such as the amount of heat and radiant energy in the ambient environment, its exposure to the ambient or radiant heat in that environment, and its own inherent ability to cool itself (perspiration).

Exposure to ambient conditions is affected by such factors as wind velocity or air flow, cloud cover or shade, and the type of protective clothing being worn. Its ability to cool itself is affected by its own inherent biovariability

Any of these factors may contribute to a loss of body fluids and electrolytes, and an increase in body temperature. A significant increase in body temperature can be life threatening and rapidly fatal or may result in permanent injury.

One approach which takes into account many of the factors which determine the body's ability to absorb and dissipate heat and provides action levels to implement controls is the WBGT Temperature Index. (See Attachment 1). The potential to develop heat illness exists when the WBGT Temperature Index exceeds 86 degrees F (30 degrees C) for continuous work under light load conditions or when the WBGT Temperature Index exceeds 70 degrees F for workers wearing impervious clothing (See Attachment 1). Heat stress may cause any of the following conditions :

Heat Cramps

Strenuous physical activity is a predisposing factor for the development of heat cramps. This heat illness is characterized by painful spasms of the abdominal and extremity muscles. An increased rate of breathing, numbness, tingling and tetany may accompany the cramps. This condition must be differentiated from exertional rhabdomyolysis (breakdown of muscle tissue) that causes prolonged muscle pain unresponsive to fluid and electrolyte replacement.

Heat Syncope

Sudden loss of consciousness may be a consequence of heat illness, particularly when the worker stands relatively still in a hot environment. Although the worker may be slightly disoriented immediately after he regains consciousness, alterations of the mental state (confusion, delirium, disorientation) or prolonged unconsciousness (i.e., meaning a few minutes) are not a part of this syndrome. The possibility of heat stroke must always be considered when a worker loses consciousness.

Heat Exhaustion

Excessive loss and inadequate replacement of fluid and electrolytes causes the syndrome of heat exhaustion. Early signs and symptoms of heat exhaustion include excessive fatigue, light-headedness, headache, nausea and vomiting. Increased rate of breathing (hyperventilation), high pulse rate (tachycardia) and low blood pressure (hypotension) may occur, especially when the loss of fluid is prominent in the more advanced stages of heat exhaustion.

Heat Stroke

In contrast to heat cramps and heat exhaustion, heat stroke is a medical emergency requiring immediate medical care. The classic presentation of heat stroke is high core body temperature (over 41C or 106F), mental status changes (confusion, delirium, coma) and hot dry skin. However, lack of sweating is not always present and, in fact, the victim of early heat stroke may sweat profusely. Alterations of neurological function include sudden loss of consciousness, irritability, bizarre behavior, combativeness, hallucinations, seizures and coma. In patients with a normal cardiovascular system, heat stroke produces increased heart and respiratory rate (tachycardia, hyperventilation). The presence of hypotension (low blood pressure) is a poor prognostic sign. Liver and kidney damage, rhabdomyolysis (breakdown of muscle tissue) and coagulation (bleeding) disorders may complicate the course of a heat stroke victim. Predisposing factors for the development of heat illness include obesity, fatigue, alcoholism, cardiovascular disease, high humidity, and certain drugs (phenothiazines, tricyclic antidepressants, anticholinergics).

3.22 NOISE

When working around mechanical equipment the potential exists for exposure to excessive noise. Permanent noise induced hearing loss is due to the intensity and frequency distribution of the noise, the time pattern and duration of exposure, and individual susceptibility. Sound levels (noise) is measured in dBAs.

The Threshold Limit Values for noise exposure is 85 dBA for an 8 hour duration and 90 dBA for a 4-hour duration.

Drilling activities may generate significant levels of noise during operations.

3.23 ELECTRICITY

Contact with electrical current can cause shock, electrical burns, and can be instantly fatal. The potential for exposure to electrical current exists through contact with electrical tools or equipment, generators and electrical control equipment, and overhead and underground powerlines.

3.3 HAZARDOUS CONDITIONS

Hazardous conditions are any existing or work-created hazardous environments that may exist at the project site. These include hazardous terrain, trenches, holes, pits, enclosed work areas, oxygen deficient environments and any other physical phenomena which because of their existence create a hazardous condition for workers on-site.

3.4 HAZARDOUS WORK ACTIVITIES

Hazardous work activities are any activities, operations, or practices, which are potentially hazardous. They may be hazardous because of the types of tools or equipment being used, the types of materials being used, or the types of activities being performed. These may include :

1) Bending and lifting or moving heavy loads
2) Slipping or falling accidents
3) Being struck with flying or falling objects
4) Being struck with tools or equipment
5) Crushing, pinching, tearing, puncture, or cutting accidents
6) Specific tool hazards

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4.0 HAZARD ANALYSIS/RISK ASSESSMENT

During any work operation where hazards have been identified, a potential risk exists for both those personnel involved in the work activities being conducted and for the surrounding environment. The following section addresses the potential risk in the work environment and the potential risk to the surrounding environment.

4.1 SURROUNDING ENVIRONMENT

Since this is an initial investigation involving sampling operations, the potential risk/impact on nearby/surrounding communities and the environment should be minimal. The nature of work being conducted, should not pose a significant threat to nearby communities or the environment. The main risks would be from the generation of dusts or vapors from contaminants in the soil and groundwater, the possible transmission of these dusts and vapors outside the exclusion zone.. Vapor and dust generation within the work area during sampling operations should be insignificant. Even so, the potential for this occuring will be carefully monitored and controlled to prevent any possible significant transmission and deposition outside the work area.

4.2 WORK ENVIRONMENT

There may be significant risks during sampling operations conducted at this project site. These include risks from potential exposure to soils contaminated with hazardous materials, heat stress, noise, hazardous conditions and work activities. Each of the these risks is specifically addressed in the following sections.

4.21 HAZARDOUS MATERIALS

The hazardous materials present at this site are present primarily as soil and groundwater contaminants. These include possible cyanide salts, chlorinated and aromatic hydrocarbons, These contaminants have been identified from previous sampling/analysis and if present at high enough concentrations could pose significant risks to on-site personnel if significant amounts of dust or vapors are generated during sampling operations.

The main potential for exposure to these hazardous materials will occur from: 1) breathing soil dusts contaminated with cyanides, chlorinated and aromatic hydrocarbons; 2) from breathing hazardous material vapors or gases (chlorinated and aromatic hydrocarbons) released from contaminated ground water or soil; and 3) from skin contact with contaminated soil or gound water. The greatest potential for direct contact with contaminated material and for gas or vapor generation and exposure will occur during purging and sampling operations. Dusts should not be generated during these operations..

Monitoring and controls, therefore, will be designed to prevent any skin contact with contaminated groundwater or soil and to prevent the generation and breathing of gases or vapors released from contaminated soil or ground water.

4.22 HAZARDOUS PHYSICAL AGENTS

The hazardous physical agents that are expected to be present during work operations conducted at this project site include heat, noise, and possible electric current from tools and equipment lines and from unidentified underground electrical lines.

HEAT STRESS

This operation will occur in December of 1988 in Southern California. The potential for exposure to excess heat during work operations in this exist at any time during the year. Work levels performed during operations at this specific project should be light to medium. Work will occur outside and sampling and purging operations will occur in Saranac coated Tyveks. The ambient temperature expected on the scheduled project date, however, is not expected to exceed 70F. For this reason, heat stress is not expected to present a significant risk during operations for this specific project.

Even so, the potential to develop heat stress will be monitored in accordance with the guidelines established in Health & Hazard Systems Heat Stress Program which can be found in the Attachments to this SSHSP.

NOISE

Sampling operations should not generate noise levels in excess of permissible exposure limits.

ELECTRICAL CURRENT

Since there are no electrically powered tools being used during the purging and sampling operations being conducted at this project and since there is little potential for contact with underground or overhead powerlines during operations, no significant potential hazard exists for contact with electrical current.

4.23 HAZARDOUS CONDITIONS

Hazardous conditions are those that present hazards because of there very nature. These include oxygen deficient environments, enclosed spaces, trenches, pits, structural problems, etc.. No potentially hazardous conditions of this type currently exist at this project site.

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4.24 HAZARDOUS WORK ACTIVITIES

Hazardous work activities expected to be encountered during these operations at this project site are those associated with purging and sampling operations and principally purging operations. These include any of the following :

1) Bending and lifting or moving heavy loads
2) Slipping or falling accidents
3) Being struck with flying or falling objects
4) Being struck with tools or equipment
5) Crushing, pinching, tearing, puncture, or cutting accidents
6) Specific tool hazards

Although these types of hazards exist for the purging and sampling operations being performed, the contractor's and subcontractor's General Health & Safety Program should address this hazard type. A review of each contractor or subcontractor's plan will determine whether there are any deficiencies with regard to personnel training in this area. Any deficiencies will be made up prior to any work activity being performed.

5.0 MONITORING PROGRAM/ACTION LEVELS

5.1 MONITORING PROGRAM

The monitoring program that will be implemented at this project site consists of the following monitoring elements :

1) Hazardous Material Monitoring

2) Heat Stress Monitoring

3) Personnel Monitoring

5.11 HAZARDOUS MATERIAL MONITORING

The following monitoring procedures will be established to ensure control of exposure to hazardous materials and includes the following :

1. Organic Vapor Monitoring - General on-site air and the working environment will be monitored for the presence of the following organic vapors:

   1) Trichloroethylene
   2) Tertachloroethylene
   3) 1,1,1-Trichloroethane
   4) Toluene
   5) Xylene

   In addition, bore-hole soil and groundwater, if generated will be continuously monitored for the presence of these organic vapors. An HNu photo-ionization meter (Model PI 101 with 10.6mev probe) will be used for this purpose.

2. General Monitoring - A Draeger hand sampling pump with a selection of direct reading sample tubes will also be available to identify and confirm the presence of hazardous material vapors or gases.

3. Personal Monitoring - SKC high flow sample pumps or their equivalent with appropriate filter cassettes and media and/or passive diffusion monitors will be used to monitor personnel breathing zone air for the following potential hazardous air contaminants:

   1) Cyanide salts
   2) Trichloroethylene
   3) Tertachloroethylene
   4) 1,1,1-Trichloroethane
   5) Toluene
   6) Xylene

   One personnel from the sampling crew monitored for each work day.

7. Environmental Monitoring - An SKC high flow sample pump or its equivalent with appropriate filter cassettes and media and/or passive diffusion monitors will be used to monitor environmental air for the following air contaminants:

   1) Cyanide salts
   2) Trichloroethylene
   3) Tertachloroethylene
   4) 1,1,1-Trichloroethane
   5) Toluene
   6) Xylene

   One sample will be collected for each work shift and it will be collected from a location downwind and outside the exclusion zones.

All pumps and monitoring equipment will be calibrated and maintained on a daily basis prior to use according to HEALTH & HAZARD SYSTEMS directions and specifications.

All real-time data will be recorded and logged in the daily Health & Safety Log. The record of all samples taken will also be kept in this log.

All samples will be collected and transported to state certified laboratories for analysis using appropriate chain of evidence. Results of analysis will be recorded in the Health & Safety Log (HSL).

5.12 HEAT STRESS MONITORING

The WBGT Index, ambient air temperature, wet temperature, and radiant temperature will be continuously monitored and recorded during operation at this project site using a Metrosonics Model hs-371 Heat Stress Monitor during sampling operations. The WBGT Index will be used to determine action levels for implementing Health & Hazard Systems Heat Stress Program found in the Attachments to this SSHSP..

Biological monitoring for pulse and core body temperature will take place during the rest phase of the work/rest cycle and will be measured by the Project Health & Safety Officer. These measurements will be used to modify the parameters of the work/rest cycle. The specific guidelines that will be used are outlined in Health & Hazard Systems Heat Stress Program.

All data will be recorded in the HSL either directly or as an attached computer printout.

All equipment will be maintained on a daily basis according to Health & Hazard Systems directions and specifications.

5.13 PERSONNEL MONITORING

All personnel working at this project site will be monitored on a continuous basis by the PH&SO to insure compliance with this SSHSP, safe work practices and procedures and to be able to detect any symptoms of exposure to project site hazards which may develop.

All observations will be recorded in the HSL.

5.2 ACTION LEVELS

The following action levels have been developed to control exposure to potential on-site hazards. These levels will dictate the implementation of specific control procedures to address any potentially hazardous exposure situations.

5.21 HAZARDOUS MATERIALS

1) Chlorinated Hydrocarbons - A direct read instrument (HNu Instrument or equivalent) will be used to monitor Trichloroethylene levels continuously during work operations at this project site. Since the previous investigation has showed this contaminant to be present in the soil at highest concentrations (69ppm), its presence will be used to trigger actions to control and protect personnel from exposures to the other chlorinated hydrocarbons identified at this site. The following action levels in air will be used to initiate protective measures at this site:

10ppm Trichloroethylene	-	Level C Protective Equipment with Half-Face Air Purifying Respirator with Organic Vapor Cartridge.
50ppm Trichloroethylene	-	Level C Protective Equipment with Full-Face Air Purifying Respirator with Organic Vapor Cartridge.
100ppm Trichloroethylene	-	Stop work and implement other controls.

2) Aromatic Hydrocarbons - A direct read instrument (HNu Instrument or equivalent) will be used to frequently monitor Toluene levels in air during work operations at this project site. Since the previous investigation has showed this contaminant to be present in the soil only at minor concentrations (<10ppm), it or the other aromatic contaminant identified at this site (Xylene), are not expected to present a significant exposure risk at this project site. Action levels therefore have not been developed for these contaminants. If, however, Toluene levels in air in excess of 10ppm are detected during the course of operations, this position will be reassessed.

6) Other - If any contaminants or hazardous materials other than those already identified are detected during operations, work will cease and the presence of the new materials assessed. If necessary, additional controls will be implemented.

5.22 HEAT STRESS

As already indicated the WBGT Temperature Index will be monitored to determine the potential for developing heat stress during operations at this project site.

Since the work being performed at this project site within the exclusion zone will be performed in protective clothing and equipment that restricts perspiratory evaporation, a WBGT Index of 70 degrees F will be used as an action level for implementing procedures and controls to protect personnel inside the exclusion zone. A WBGT Index of 80 degrees F will be used for all other working personnel. The specific guidelines that will be used are outlined in Health & Hazard Systems' Heat Stress Monitoring Program described in Attachment 2 to this SSHSP.

6.0 PERSONNEL PROTECTIVE EQUIPMENT REQUIREMENTS

Two levels or personal protective equipment will be required for operations at this project site. Level C with two levels of respiratory protection will be required for all work being conducted within the exclusion zone. Level D will be required for all other work being conducted at this project site.

LEVEL C

This level will be required for all work being conducted within the exclusion zone. It consists of the following:

Respirator Protection
Half-face or full-face air-purifying respirators appropriate cartridges (HEPA, Organic Vapor, and/or Acid-Gas). The action levels described in Section 5.2 will determine the appropriate respirator and cartridge or cartridges to be worn. The PH&SO will make these determinations after consultations with the Project Health & Safety Director. SCBAs will be available for escape and rescue operations.

Eye/Face Protection
Protective goggles will be worn by all personnel during operations in the exclusion zone. Not required if full-face respirators are worn.

Head Protection
Hard hats will be worn by all personnel at this project site.

Protective Clothing
Protective coveralls (Tyvek) will be worn by all personnel during operations in the Exclusion Zone.

Hand Protection
Impervious protective gloves will be worn by all personnel during operations in the exclusion zone.

Foot Protection
Chemically resistant protective boots (Neoprene with safety toe) will be worn by all personnel during sampling operations in the exclusion zone.

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LEVEL D

This level will be required for all other work being conducted at this project site. It consists of the following:

Respirator Protection
None required.

Eye/Face Protection
Protective goggles or safety glasses will be worn by all personnel during operations in work areas.

Head Protection
Hard hats will be worn by all personnel at this project site.

Protective Clothing
Protective coveralls.

Hand Protection
Protective gloves will be worn by all personnel during operations at this project site.

Foot Protection
Safety boots/shoes will be worn by all personnel at this project site.

7.0 EXCLUSION AND OTHER WORK ZONES

Work areas with work zones will be established to control and minimize exposure during operations at this project site. Each area will consist of an Exclusion, a Contamination Reduction (CRZ), and a Support Zone with a Contamination Reduction Corridor. A separate Exclusion and Contamination Reduction Zone will be established for each purging or sampling operation conducted. Only approved personnel will be allowed access to these areas during operations. Unless visitors can show that they meet all requirements of this SSHSP, they will not be permitted to enter the Exclusion or Contamination Reduction zones. These zones are described in the following sections. A sample work area with work zones can be found in Attachment 4 to this SSHSP.

EXCLUSION ZONE

An exclusion zone will be established around each sampling operation that is to be performed. Only those personnel with appropriate protective clothing and equipment will be allowed to enter this area. Personnel leaving this area will have to exit through a decontamination zone where all contaminated clothing and equipment will be decontaminated or discarded as is deemed necessary. No eating, drinking, or smoking will be permitted in this area.

CONTAMINATION REDUCTION ZONE (CRZ)

A Contamination Reduction Zone will be established between the Exclusion Zone and the Support Zone and will function as a buffer zone for contaminated material, equipment, and personnel.

CONTAMINATION REDUCTION CORRIDOR

A Contamination Reduction Corridor will be established to allow access to and exit from the Exclusion Zone to or from the Support Zone through the Contamination Reduction Zone (CRZ). All movement of personnel, material, or equipment into or out of the Exclusion Zone must occur through this corridor. Personnel or equipment leaving the Exclusion Zone must exit through this area and decontaminate before entering the safe zone. This zone will contain a source of clean water and appropriate brushes and equipment for decontaminated personnel and equipment. It will also contain appropriate collection and disposal facilities for contaminated clothing, equipment, and materials. No eating, drinking, or smoking will be permitted in this area.

SUPPORT ZONE

The area outside the Exclusion and Contamination Reduction Zones will be the Support Zone. Equipment and material storage, facilities for lunch, rest, first aid, dressing, and toilet will be located in this area. Any procedures for heat stress control, such as fluid and electrolyte replacement, will also take place in this area. Eating, drinking, and smoking will only be allowed in this area.

8.0 CONTAMINATION CONTROL PROCEDURES

8.1 PERSONNEL

All personnel will decontaminate when leaving the Exclusion Zone. Contaminated Tyvek coveralls, gloves, and respirator cartridges will be discarded in a receptacle located in the Contamination Reduction Corridor (CRC). Contaminated coveralls, boots, respirators, goggles, and hard hats will be cleaned using water and brushes as necessary. Contaminated water will be collected and disposed of as hazardous material.

8.2 EQUIPMENT

All contaminated equipment leaving the Exclusion Zone will be decontaminated by washing with a biodegradable soap and water in the CRC. Contaminated water and other materials from this cleaning process will be collected and disposed of as hazardous material. Contaminated heavy equipment will be steam cleaned in the CRC or a similar separate area for equipment. Washings will be collected and disposed of as hazardous materials.

9.0 SAFE WORK PRACTICES

All personnel working at the site will be required to read this Site Specific Health & Safety Plan, to wear the protective clothing and equipment recommended, to follow all procedures and work practices established for this site, and to be aware and monitor for signs of potential hazards. The personnel working at the site are experienced with the equipment and procedures being used and have been trained in the safe operating procedures of this equipment and procedures being conducted. A buddy-system will be employed throughout the course of these operations. Only those personnel listed will be allowed access into established work areas.

10.0 STANDARD OPERATING PROCEDURES

All personnel working at this project site will follow standard operating procedures for the following operations.

1. Personal Protective Equipment check.
2. Donning Personal Protective Equipment (PPE).
3. Monitoring equipment calibration and maintenance.
4. Work Zone integrity check.
5. Decontamination procedures.
6. Sampling operations.

Copies of the specific SOPs for these procedures can be found in Attachment 5 to this SSHSP.

11.0 CONTINGENCY PLANS

11.1 MEDICAL EMERGENCIES

All emergency operations conducted at this site will be performed under the supervision of the PH&SO or the Project Health & Safety Director. The PH&SO and the Project Safety Director will be trained and have a current certification in CPR and First Aid. The following procedures will be followed in the event of a medical emergency.

1. Accident will be reported to the PH&SO.

2. PH&SO will direct movement of accident victim to safe area and removal of clothing, if necessary.

3. PH&SO or other designated personnel will contact emergency services as soon as possible. Personnel will dial 911 for medical emergencies.

4. PH&SO will administer first aid and provide support for victim until emergency personnel arrive. If PH&SO determines that injury is not serious enough to warrant additional emergency personnel but serious enough to take victim to a hospital emergency room, they will take victim to the following emergency room in a vehicle located on site and designated for this purpose.

   Queen of the Valley Hospital
   1115 S. Sunset Ave.
   West Covina, Ca.
   818/962-4011

   The PH&SO will familiarize themselves with the best route to this facility prior to the start up of operations. This route is described and mapped in Attachment 6 of this SSHSP.

5. Another designated personnel will remain at site entrance to direct emergency personnel to accident victim.

6. PH&SO will record all events in the HSL and will complete any required accident forms or reports.

11.2 FIRES/EXPLOSIONS

Because of the nature of the work being performed, the potential for fire and explosions during this operation should be minimal. In case of small equipment fires, the PH&SO will take necessary means to extinguish fire using on site fire extinguishers. If fire cannot be controlled, Local Fire Department will be called using 911.

11.3 SPILLS/RELEASES

Again, because of the nature of the operations being performed, a major hazardous material spill is highly unlikely. Any minor spills that might occur will be cleaned up and disposed of with other contaminated material (See Section 8.0).

11.4 EMERGENCY EVACUATION

If a situation would develop that would warrant a site evacuation, the evacuation will occur as indicated in Attachment X to this SSHSP, and emergency fire, police, and medical personnel will be summoned using 911.

11.5 EMERGENCY EQUIPMENT

The following emergency equipment will be available at this project site:

1. First Aid kit and equipment.
2. Portable emergency eye wash and shower.
3. One 20lb ABC type fire extinguishers.
4. Emergency vehicle.

12.0 TRAINING REQUIREMENTS

12.1 GENERAL HAZARDOUS MATERIAL/HAZARDOUS WASTE TRAINING

All personnel at this project site will have met the training requirements as specified in 29CFR 1910.120, OSHA's Final Rule for Hazardous Waste Activity and Emergency Response. This includes the initial 40-Hour Training Course, annual 8-Hour Update Training, and an additional initial 8-Hour Training Course for project managers.

12.2 RESPIRATORY PROTECTION/PROTECTIVE EQUIPMENT TRAINING PROGRAM

Either as part of their initial 40-Hour Training Course or as a separate course all personnel will have met requirements for respiratory protection training and will have been fit tested and certified to wear a respirator.

12.3 SITE-SPECIFIC TRAINING

Using this document all personnel will be trained about the specific hazards associated with the work being performed at this project site and the methods of recognition and control being implemented to control exposures to those hazards.

12.4 DAILY SAFETY MEETINGS

All personnel on-site will be required to attend daily tail-gate safety meetings and any other safety meetings which may need to be held. The PH&SO will conduct all safety meetings on-site.

13.0 MEDICAL SURVEILLANCE PROGRAM

On-site personnel will have complied with all requirements of 29CFR 1910.120, OSHA's Hazardous Waste Rule as it pertains to medical surveillance. This includes a comprehensive annual physical examination and biological monitoring as required. Each contractor or subcontractor will submit a copy of their Medical Surveillance Program either as part of their General Health & Safety Program or separately. They will also submit medical certifications for all personnel who may be working at this project site.

Components which should be present and a part of each company's Medical Surveillance Program include physical examinations, health surveys, site evaluations, daily health monitoring, and biological monitoring.

3.1 PHYSICAL EXAMINATIONS

All personnel are required to have an annual physical examination performed. This examination must include all tests indicated in Attachment 7 of this SSHSP. Based on the results of this examination, additional tests may be requested or required.

13.2 OCCUPATIONAL HEALTH SURVEYS

A second component to personnel Medical Evaluations are Occupational Health Surveys. These will be filled out prior to initial personnel physical examinations and then updated on an annual basis. These surveys document any prior health problems and and previous exposures to hazardous materials. Personnel will be required to update these profiles after each project they work on. A copy of the initial survey used by Hydrotech Consultants can be found in the company's Medical Surveillance Program.

13.3 PROJECT SITE EVALUATIONS

Based on the annual physical exams and updated health surveys, personnel working at a specific project site must be evaluated using the potential hazards associated with that project site. Based on this review, personnel may be required to undergo additional testing to control and monitor exposures to health hazards at each project site.

13.4 DAILY HEALTH MONITORING

As an integral part of Medical Evaluations, personnel will be instructed to monitor their health daily and inform appropriate personnel of any medical problems which may be compounded with project site work. In addition, all personnel should be trained to recognize physical symptoms from exposure to project site hazards. They will be instructed to notify appropriate safety personnel of any indication of these symptoms. Personnel who develop medical problems will be reevaluated before working in any hazardous situation.

13.5 BIOLOGICAL MONITORING

Based on potential exposures at each project site, biological monitoring may be implemented. This would involve pre and post work site biological tests to bracket exposure situations, ongoing biological testing to monitor personal exposures during work at specific project sites, and acute testing to monitor specific exposure situations.

This surveillance program will be used at this project site to monitor exposure to the hazardous materials identified. Biological monitoring will be utilized to monitor potential cadmium, chromium and nickel exposures at this project site.

14.0 DOCUMENTATION

A daily log will be maintained by the PH&SO to record all events occurring through the course of work. In addition the following documentation will be maintained.

14.1 MONITORING

Monitoring data will be recorded and documented using the forms found in Attachment 8.

14.2 MEDICAL SURVEILLANCE

Medical Surveillance will be documented using the forms found in Attachment 7.

14.3 TRAINING

Training will be documented using the forms found in Attachment 9.

14.4 INJURY/ILLNESS

Any Injuries or illnesses occurring during the progress of work will be documented using the forms found in Attachment 7.

UTM 000196

ATTACHMENTS

Attachment 1

PROJECT SITE MAP

Attachment 2

HEALTH & HAZARD SYSTEMS

HEAT STRESS PROGRAM

PROJECT SITE HEAT STRESS
MONITORING & CONTROL PROGRAM

1988

Prepared by

HEALTH & HAZARD SYSTEMS

Claremont, Ca.

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PROJECT SITE HEAT STRESS PROGRAM

1.0 INTRODUCTION

This program will be implemented during the course of this project and includes a description of the monitoring program and work practices and procedures that will be used to minimize and control the potential for the development of heat stress and related medical conditions. These include heat cramps, heat syncope, heat exhaustion, and heat stroke. See text for a more detailed treatment of these conditions.

1.1 HEAT STRESS PREVENTION

Employees will be trained to recognize the signs and symptoms of heat stress and related illnesses during their initial training. They will be instructed to report any of these signs and symptoms to the Project Health & Safety Officer during any work they perform at this project site. Weather reports and ambient temperatures will be monitored daily by the Project Health & Safety Officer as described in Project Site Monitoring Plan. Work practices and scheduling will be adjusted by the Project Health & Safety Officer as described in this program based on the monitoring data obtained using this plan.

Cool water (10 to 15 degrees centigrade) will be present in the work place and the workers will be encouraged to drink up to a cup every 10 to 15 minutes during rest periods in excessively warm weather. Electrolytes solutions will be available and workers will be encouraged to drink these solutions to replace electrolyte losses. Rest periods will be based on temperatures, clothing, activity, conditions of individual workers, and physical responses determined by the Project Health & Safety Officer.

1.2 HEAT STRESS MONITORING

The Wet Bulb Globe Temperature (WBGT) Index will be taken at 15 minute intervals throughout the workshift by the onsite Project Health & Safety Officer. A description of how this index is determined and its rationale for use can be found in the ACGIH's Guidelines for Heat Stress attached to this program. Work and rest schedules will be adjusted according to this index as follows.

When the WBGT Index temperature exceeds 86 degrees F, close observation of heat stress by the Project Health & Safety Officer will begin for all workers at this project site. If workers are using impervious clothing, close observation will begin when the WBGT Index exceeds 70 degrees F.

UTM 000201

This observation will include measurements of the heart rate and oral body temperatures at rest periods particularly when signs of heat stress are present as determined by the Project Health & Safety Officer or the worker. When signs of heat stress are present daily body weights at the beginning and end of each shift will also be taken.

HEART RATE

The heart rate at the beginning of the rest period using the radial pulse for 30 seconds should not exceed 110 beats per minute. If the heart rate is higher the next work period will be shortened by 10 minutes or 33%. The length of the rest period will stay the same. If the pulse rate is 100 beats per minute at the beginning of the next rest period the following work cycle will also be shortened by 33%.

BODY TEMPERATURE

Body temperatures measured orally at the beginning of the rest period should not exceed 99 degrees F. If it does the next work period will be shortened by 10 minutes or 33%. While the length of the rest period

BODY WEIGHTS

Body weights will be taken using a medical scale at the beginning and end of each work shift to monitor fluid loss during periods of high heat stress potential. Workers will be instructed to wear identical clothing during each weighing. Personnel exhibiting excessive fluid loss will be instructed to increase fluid and electrolyte intake and to be particularly attentive to signs of heat cramps during off work periods.

If signs or symptoms of heat exhaustion or heat cramps are present the worker will be placed in the shade, any impervious clothing will be removed and cool sponging will begin. A fan will be available to provide evaporative cooling. Cool electrolyte solutions will be given to the patient to replace any fluid and electrolyte losses. An oral temperature will be taken immediately. Medical attention will be sought if symptoms do not improve within 30 minutes.

If any signs or symptoms of heat stroke are present such as combativeness, disorientation, delirium, or high oral temperatures (101F to 102F), ice bags will be used to cool the victim. The Project Health & Safety Officer will immediately call for medical transport to an emergency facility.

1.3 HEAT STRESS WORK PRACTICES

During conditions of high heat stress potential, the following procedures will be implemented to prevent heat stress hazards for all field personnel. Particular attention will be paid to those personnel who are wearing impervious protective clothing and equipment.

1. Work activity periods will be limited to reduce the amount of heat the body produces.

2. Work loads and duration of physical exertion will be limited during the first few days of exposure to heat.

3. Work loads will be gradually increased to allow acclimation.

4. Heavier work loads will be performed during the cooler periods of the day whenever feasible.

5. Alternate work and rest periods will be used in high heat stress conditions.

6. Field personnel will be encouraged during rest periods to replenish any body water and electrolyte loss by drinking cool drinking water or balanced electrolyte solutions.

7. Based upon the WBGT Index and worker's personal symptoms, the heart rate and the body temperature will be measured during rest periods as indicated in Section 1.2.. Work/rest periods will be adjusted as described.

1.4 DOCUMENTATION

The Project Health & Safety Officer will record all relevant heat stress information in daily logs and report this information in the daily or weekly safety reports. Any significant incidences will be reported immediately to the Project Health & Safety Director.

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Attachment 3

NOISE MONITORING PROGRAM

PROJECT SITE NOISE STRESS MONITORING & CONTROL PROGRAM

1988

Prepared by

HEALTH & HAZARD SYSTEMS

Claremont, Ca.

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PROJECT SITE NOISE STRESS PROGRAM

1.0 INTRODUCTION

This program will be implemented during the course of this project and includes a description of the monitoring program and protective procedures that will be used to minimize and control the potential for exposure to excessive noise stress at this project site. Noise stress causes hearing loss and other less obvious adverse health effects related to excessive stress.

1.1 NOISE STRESS PREVENTION

Employees will be trained to recognize the signs and symptoms of effects related to excessive exposure to noise during their initial training. They will be instructed to report any of these signs and symptoms which may occur during any work they perform at this project site to the Project Health & Safety Officer.

All equipment and procedures will be evaluated for their noise generating potential by the Project Health & Safety Staff, prior to the commencement of work at this project site. Based on these evaluations, engineering controls will be implemented to reduce noise exposure if practical.

Work practices, engineering controls, and protective equipment will be implemented after the commencement of work if monitoring results indicate noise levels in excess of recommended exposure limits.

The limits used are those established by the ACGIH and described in their guidelines for Noise. A copy of these guidelines is attached to this program.

1.2 NOISE MONITORING

Noise levels will be monitored continuously using a Metrosonics db-308 Sound Level Dosimeter/Analyzer or similar instrument. This instrument directly monitors incident noise and has the capability to analyze that noise using a number of different programs. The results of monitoring and analysis can be directly viewed, stored, and printed out at a later time.

A monitor will be placed in an area where the potential for noise exposure may be greatest. The Project health & Safety Officer will monitor this instrument at regular intervals, more frequently when noise generation is greater.

The monitor may be on a personnel directly exposed or in an environment of high potential exposure. Based on the results of this monitoring, appropriate work practices, controls or protective equipment will be implemented to control personnel exposure to noise in excess of recommended exposure limits. These limits, which are based on time weighted averages, can be found in the attached guidelines.

1.3 NOISE CONTROL PRACTICES

During conditions of high noise generation or stress, the following procedures will be implemented to prevent personnel from being exposed to excessive noise levels.

1. The Project Health & Safety Officer will closely monitor instrument readings during periods of high noise generation.

2. If any of the recommended exposure limits is exceeded the possibility of implementing engineering controls will be reviewed and discussed.

3. If engineering controls are practical, they will be implemented. Work will continue using appropriate hearing protection until controls can be implemented.

4. If engineering controls are not practical work will continue using appropriate hearing protection until noise generation is below recommended limits.

5. The Project Health & Safety Officer with support from the Project Health & Safety Director will determine what protective equipment and controls are appropriate during work at this project site.

6. All personnel will be encouraged to reduce noise exposure off the work site.

1.4 DOCUMENTATION

The Project Health & Safety Officer will record all relevant noise monitoring and control information in daily logs and report this information in the daily or weekly safety reports. Any significant incidents will be reported immediately to the Project Health & Safety Director.

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Attachment 4

WORK ZONES

PROJECT SITE WORKZONES

CONTAMINATION REDUCTION
ZONE (CRZ)

CRZ Boundary
(Yellow tape)

EZ Boundary
(Red tape)

EXCLUSION ZONE (EZ)

(Maximum Contamination)

Drilling Operations
and Equipment

Contamination
Reduction Corridor
(CRC) - Personnel

Contamination
Reduction Corridor
(CRC) - Equipment

CRC Boundaries
(Yellow tape)

Prevailing Wind
Direction

SUPPORT ZONE

UTM 000209

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MATERIAL/EQUIPMENT IDENTIFICATION & CONTROL DOCUMENT

PROJECT:

PROJECT DATE:

MATERIAL/EQUIPMENT DESCRIPTION	BROUGHT IN BY	WORK AREA DESTINATION AND PURPOSE	DATE IN	DATE OUT

PROJECT HEALTH & SAFETY OFFICER SIGNATURE: _____

DATE: _____

UTM 000210

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PERSONNEL IDENTIFICATION & CONTROL DOCUMENT

PROJECT: _____

PROJECT DATE: _____ TODAY'S DATE: _____

	PERSONNEL/EMPLOYEE NAME	WORK AREA/WORK PERFORMED OR PURPOSE OF VISIT	TIME IN	TIME OUT
1)				
2)				
3)				
4)				
5)				
6)				
7)				
8)				
9)				
10)				
11)				
12)				
13)				
14)				
15)				
16)				
17)				
18)				
19)				
20)				

PROJECT HEALTH & SAFETY OFFICER SIGNATURE: _____

DATE: _____

UTM 000211

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Attachment 5

STANDARD OPERATING PROCEDURES

PROJECT SITE
STANDARD OPERATING PROCEDURES

1988

Prepared by

HEALTH & HAZARD SYSTEMS

Claremont, Ca.

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PROJECT SITE STANDARD OPERATING PROCEDURES

INTRODUCTION

This compilation of standard procedures will be followed during the performance of work at this project site. The specific areas covered include the following :

1) PERSONAL PROTECTIVE EQUIPMENT

2) DECONTAMINATION

3) MONITORING EQUIPMENT

4) WORK ZONE INTEGRITY

5) DRILLING OPERATIONS

6) SAMPLING OPERATIONS

The following sections list specific procedures to be followed for each of these areas.

1.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

The following procedures will be used whenever PPE is to donned, doffed, or inspected during operations at this project site.

1.1 DONNING PPE - LEVEL C

1) Inspect all personal protective clothing and equipment as detailed in Section 1.3.

2) Adjust hardhat or headpiece - if used - to insure proper fit.

3) Standing or sitting don splash suit or Tyvek coveralls insuring that feet - if used - fit properly.

4) Put on chemical-resistant safety boots. Place leg cuff over boots and tape over top of boots using butterfly.

5) Don full or half-face air purifying respirator.

6) Perform positive and negative respirator facepiece seal test.

7) Put on inner gloves. Place cuffs of protective suit over gloves and tape seal closure using butterfly.

8) Put on hard hat and hood - if used, being careful not to disturb respirator fit.

9) Close protective suit and have PH&SO check ensemble just before entering Exclusion Zone.

10) Make any corrections as required and have ensemble reinspected by PH&SO prior to entering Exclusion Zone

11) Repeat steps 9 and 10 if necessary.

12) Enter Exclusion Zone and begin work.

1.2 DOFFING PPE - LEVEL C

The following procedures for doffing personal protective equipment and clothing should be followed only after decontamination and only if PPE is not discarded as part of decontamination for personnel working in the Exclusion Zone.

1) Remove any extraneous or disposable clothing, boot covers, outer gloves, and tape.

2) Remove inner gloves and store in designated clean area or discard.

3) Open suit and store in designated clean area or discard.

4) Remove air-purifying respirators and inspect.

5) Dismantle, wash, and disinfect respirators after each workday.

6) Replace cartridges, if necessary.

7) Seal in plastic bag and store in a designated clean area.

8) Wash hands and face or shower if facilities are available.

1.3 INSPECTING PPE - LEVEL C

The following general types of inspection will be utilized to insure all PPE used at this project site performs as per specifications.

1. Inspection and operational testing of equipment received from the factory.

2. Inspection of equipment as it is used.

3. Inspection after use and prior to maintenance.

4. Periodic inspection of stored equipment.

5. Periodic inspection when a question or problems arise.

The following specific steps will be followed to inspect all personal protective equipment and clothing used at this project site.

HEAD, FOOT, HAND, EYE & BODY PROTECTION

<u>Before Use</u>

1) Determine that type of clothing and equipment is correct for operations being performed and as specified in SSP.

2) Visually inspect clothing for :

- imperfect seams
- non-uniform coatings
- tears
- malfunctioning closures

3) Hold up to the light and check clothing for pinholes

.4) Pressurize gloves and check for pinholes.

5) Chemical chemically resistant boots for leaks or damage.

6) If used previously, check clothing, gloves, and boots for chemical attack, i.e., discoloration, swelling, stiffness, etc.

7) Check hardhat for cracks and wear. Check headpiece for fit.

8) Check protective eye goggles and face shields for :

- Cracks.
- Crazing.
- Fogginess.

During Work

1) Periodically check all equipment and clothing for:

- Chemical attack.
- Tears.
- Punctures.
- Seam discontinuities.

RESPIRATOR PROTECTION

Air-Purifying Respirators

1) Inspect

- Before each use to insure they have been cleaned.
- After each use.
- During cleaning.
- Regularly, if stored for long periods of time.

2) Check respirator material for :

- Signs of pliability.
- Signs of deterioration.
- Signs of distortion.

3) Examine cartridges or canisters to that :

- They are proper type.
- Expiration date has not been exceeded.
- They have not been opened or previously been used.

4) Check faceshields and lenses for :

- Cracks.
- Crazing.
- Fogginess.

All protective equipment and clothing will be maintained and stored according to manufactures specifications and good industrial hygiene and safety engineering practices.

2.0 DECONTAMINATION PROCEDURES

The following decontamination layout and procedures excerpted from the EPA's "Field Standard Operating Procedures for the Decontamination of Response Personnel (FSOP 7)" will be used to decontaminate personnel and equipment exiting exclusion zones at this project site. The layout and procedures adopted are those recommended to perform maximum decontamination for Level C.

3.0 MONITORING EQUIPMENT CALIBRATION & MAINTENANCE

The following procedures will be used to maintain and calibrate all monitoring equipment used at this project site.

1) Prior to use all monitoring equipment will be inspected and calibrated according to manufacturers specifications and utilizing materials appropriate for the operations at this site.

2) Equipment used inside exclusion zones will be cleaned appropriately prior to being removed from that zone.

3) Equipment will be inspected periodically during use to insure proper operation.

4) If determined necessary by periodic inspections, equipment will be recalibrated.

5) At the end of each workday or as often as is deemed necessary by periodic inspections all equipment will be cleaned and maintained according to manufactures specifications.

6) Battery operated equipment will be recharged at the end of each workday or as often as is deemed necessary.

7) Equipment with data storage capabilities will be downloaded at the end of each workday or as often as deemed necessary by memory capabilities..

8) At the end of each workday all equipment will be stored in a clean, isolated area according to manufacturers' specifications.

4.0 WORK ZONE INTEGRITY

The following procedures will be used prior to each workday and periodically during each workday to insure that the integrity of work zone boundaries at this project site are maintained.

1) Check boundary stations or points for Contamination Reduction Zone (CRZ) and for Contamination Reduction Corridor (CRC) and reestablish or strengthen as determined necessary..

2) Check boundary tape for Contamination Reduction Zone (CRZ) and for Contamination Reduction Corridor (CRC) and replace or refasten as determined necessary..

3) Check boundary stations or points for Exclusion Zone and reestablish or strengthen as determined necessary..

4) Check boundary tape for Exclusion Zone and replace or refasten as determined necessary..

Attachment 6

EMERGENCY RESPONSE INFORMATION

ANNUAL MEDICAL EVALUATION CERTIFICATE

EMPLOYEE NAME :

COMPANY NAME :

DATE :

I certify that I have personally reviewed the Occupational & Environmental Health Survey and results of the physical examination and evaluation for the above named employee scheduled to begin work on the above named project. They are scheduled to begin work on this project on _____ and complete work on _____ for a total of _____ days. The physical examination and evaluation was performed as described in the above named company's General Health & safety Program by

Dr._____ on _____

at_____(Name of Medical Clinic)_____ . Both are medically

certified to practise or operate in the state of _____.

This examination and evaluation includes all tests listed on the attached physical examination form.

I certify that this employee is physically and mentally qualified to work on this project as described.

Signature _____

Date _____

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RETURN TO WORK MEDICAL EVALUATION CERTIFICATE

(RETMEDEC)

PROJECT NAME : ALARK HARD CHROME PROJECT, RIVERSIDE, CA.

DATE : 1988

EMPLOYEE NAME :

I certify that I have personally examined or consulted with the examining physician and reviewed the Occupational Health Profile for the above named employee and declare that he/she is physically and mentally qualified to return to work.

Signature _____

Date _____

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Attachment 8

MONITORING DOCUMENTATION

HEALTH & HAZARD SYSTEMS
MONITORING DATA FORM

PROJECT: _____

PROJECT NO.: _____ PROJECT DIRECTOR _____

MONITORING LOCATION: _____

DATE : _____ TIME : _____

TYPE OF MONITORING : _____

INSTRUMENT : _____

INSTRUMENT NO. : _____

CALIBRATION DATE : _____ CALIBRATED BY : _____

SAMPLING METHOD : _____ SAMPLE NO. : _____

SAMPLED BY : _____ DATE : _____

ANALYTICAL METHOD : _____

ANALYZED BY : _____ DATE : _____

RESULTS : _____

COMMENTS : _____

REMARKS : _____

SIGNATURE : _____ DATE : _____

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Attachment 9

TRAINING DOCUMENTATION

HEALTH & HAZARD SYSTEMS
STANDARD 40-HOUR TRAINING CERTIFICATION

COMPANY NAME :

YEAR : 1988

EMPLOYEE NAME :

I certify that the above named employee has successfully taken and completed the initial 40-Hour Training Course for personnel working at hazardous waste operation and emergency response sites as required by Federal OSHA's Final Rule for Hazardous Waste Operations and Emergency Response, 29 CFR 1910.120.

This training course was given by _____(Company)_____
on _____(Dates)_____ at _____(Location)_____

COMPANY SIGNATURE :_____ DATE :_____
(SAFETY DIRECTOR)

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HEALTH & HAZARD SYSTEMS
STANDARD 40-HOUR TRAINING CERTIFICATION

COMPANY NAME :

YEAR : 1988

EMPLOYEE NAME :

I certify that the above named employee has successfully taken and completed the initial 40-Hour Training Course for personnel working at hazardous waste operation and emergency response sites as required by Federal OSHA's Final Rule for Hazardous Waste Operations and Emergency Response, 29 CFR 1910.120.

This training course was given by _____

on _____ at _____

COMPANY SIGNATURE : _____ DATE : _____
(SAFETY DIRECTOR)

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HEALTH & HAZARD SYSTEMS
PROJECT MANAGER TRAINING CERTIFICATION

COMPANY NAME :

YEAR : 1988

EMPLOYEE NAME :

I certify that the above named employee has successfully taken and completed the initial 40-Hour Training Course for personnel working at hazardous waste operation and emergency response sites and an additional 8-Hour Training Course for project managers and supervisors as required by Federal OSHA's Final Rule for Hazardous Waste Operations and Emergency Response, 29 CFR 1910.120.

The 40-Hour Training Course was given by ___(Company)_____
on _____(Dates)_____ at _____(Location)_____

The 8-Hour Managers Course was given by ___(Company)_____
on _____(Dates)_____ at _____(Location)_____

COMPANY SIGNATURE :_____ DATE :_____
(SAFETY DIRECTOR)

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HEALTH & HAZARD SYSTEMS
PROJECT MANAGER TRAINING CERTIFICATION

COMPANY NAME :

YEAR : 1988

EMPLOYEE NAME :

I certify that the above named employee has successfully taken and completed the initial 40-Hour Training Course for personnel working at hazardous waste operation and emergency response sites and an additional 8-Hour Training Course for project managers and supervisors as required by Federal OSHA's Final Rule for Hazardous Waste Operations and Emergency Response, 29 CFR 1910.120.

The 40-Hour Training Course was given by _____

on _____ at _____

The 8-Hour Managers Course was given by _____

on _____ at _____

COMPANY SIGNATURE :_____ DATE :_____
(SAFETY DIRECTOR)

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HEALTH & HAZARD SYSTEMS
ANNUAL REFRESHER 8-HOUR TRAINING CERTIFICATION

COMPANY NAME :

YEAR : 1988

EMPLOYEE NAME :

I certify that the above named employee has successfully taken and completed the Annual 8-Hour Refresher Training Courses for personnel working at hazardous waste operation and emergency response sites as required by Federal OSHA's Final Rule for Hazardous Waste Operations and Emergency Response, 29 CFR 1910.120.

These Annual 8-Hour Refresher Training Courses were taken on the following dates :

DATE	TRAINING COMPANY	COMPANY SIGNATURE

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