TRANSMITTAL

THE IT GROUP
4005 Port Chicago Highway
Concord, CA 94520-1120
(925)288-9898

To: Lynn Hornecker **Date:** April 30, 2002

From: David Kelly

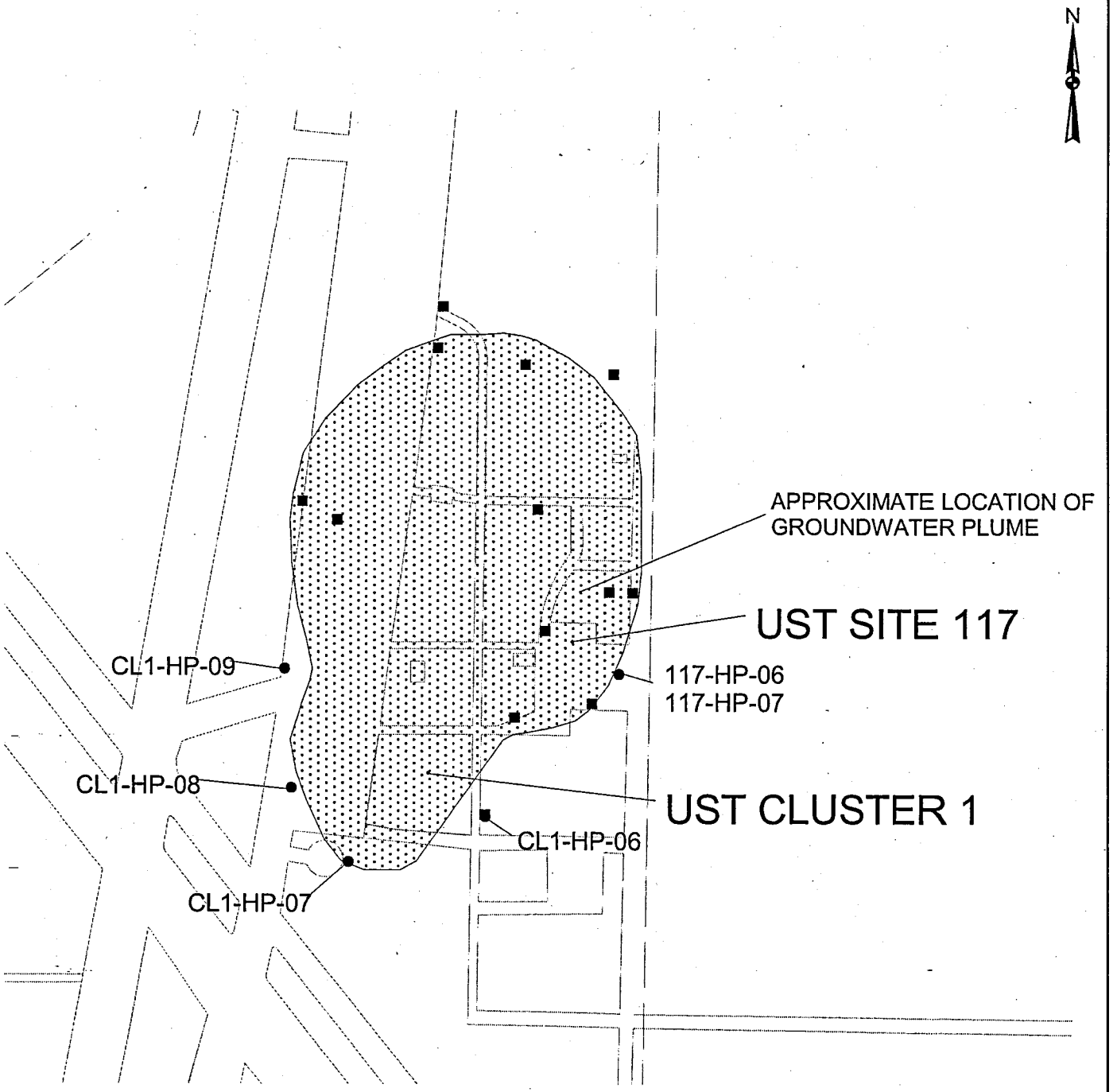
Subject: Site-Specific Groundwater Sampling Form
Discrete Groundwater Sampling

Discrete groundwater sampling was conducted at several locations to verify the nature and extent of groundwater contamination at the Administration Area Plume. The work was completed in accordance with the *Soil Vapor Extraction Optimization for the Remediation of UST Cluster 1 and Site Verification Activities at Various Sites Work Plan, Revision 2,* Attachment 8. Initial hydropunch sampling was conducted from June 4 through 7, 2001 and from June 27 through 29, 2001. Supplemental sampling was conducted from December 10 through 12, 2001 to further define the extent of petroleum hydrocarbons near UST Cluster 1.

The attached figure "Hydropunch Locations" shows the locations of samples collected in December 2001. The analytical results for groundwater samples collected from these locations are included in the attached table "Discrete Groundwater Sampling Analytical Data Summary". Results from samples collected west and southwest of the previously assumed boundary of the UST Cluster 1 plume show detections of petroleum hydrocarbons, indicating that the extent of the Administration Area Plume may be larger than previously assumed as indicated in previous drawings and defined by existing wells.

Attached are the Site-Specific Groundwater Sampling Forms for additional discrete groundwater sampling that will be conducted west and southwest of UST Cluster 1. Also included is a site map showing the proposed sampling locations. The forms include the proposed sample locations, rationale for sample collection, and specific analysis to be completed. Sampling work is tentatively planned to start the week of May 6, 2002, depending on equipment availability, and will be conducted in accordance with the *Soil Vapor Extraction Optimization for the Remediation of UST Cluster 1 and Site Verification Activities at Various Sites Work Plan, Revision 2.* Additional sampling and analysis may be conducted based on the results from previous discrete groundwater sampling, the results from this sampling event, and further evaluation of other site data.

cc: B Hulet
T Barry
E Ramirez
R Condit
Project File



● NEW HYDROPUNCH LOCATION

■ PREVIOUS HYDROPUNCH LOCATION

SCALE:

500 0 500 Feet

HYDROPUNCH LOCATIONS

Discrete Groundwater Sampling
Analytical Data Summary

	EPA Method								
Sample ID		17-HP-01	17-HP-02	17-HP-03	17-HP-04	17-HP-05	17-HP-06	17-HP-07	17-HP-08
Aquifer		shallow	mid-shallow	shallow	mid-shallow	shallow	mid-shallow	shallow	shallow
Screen Interval (ft bgs)		55-58	105-108	60-63	105-108	60-63	105-108	57-60	55-59
Date Sampled		05-Jun-01	05-Jun-01	04-Jun-01	04-Jun-01	04-Jun-01	04-Jun-01	06-Jun-01	29-Jun-01
Northing		1973305.34	1973308.77	1973369.56	1973367.73	1972725.23	1972728.18	1972764.39	1973269.29
Easting		6386089.42	6386090.89	6385764.12	6385764.16	6385388.10	6385388.43	6386135.94	6386415.11
pH	field	7.83	8.03	7.73	9.08	NA	NA	8.75	7.15
conductivity	field	0.888 mS/cm	1.43 mS/cm	1.74 mS/cm	1.55 mS/cm	NA	NA	0.731 mS/cm	1.5 mS/cm
turbidity	field	999+ NTU	999+ NTU	999+ NTU	999+ NTU	NA	NA	999+ NTU	888 NTU
dissolved oxygen	field	5.19 mg/L	7.61 mg/L	5.35 mg/L	5.9 mg/L	NA	NA	6.16 mg/L	3.73 mg/L
temperture	field	20.1 °C	22.1 °C	23.4 °C	23.5 °C	NA	NA	22.7 °C	20.5 °C
TPH-gasoline	M8015V	NA	NA	NA	NA	NA	NA	<0.05 mg/L	<0.05J mg/L
TPH-jet fuel	M8015V	NA	NA	NA	NA	NA	NA	<0.05 mg/L	<0.05 mg/L
TPH-diesel	M8015E	NA	NA	NA	NA	NA	NA	<0.1[b] mg/L	<0.1[b] mg/L
TPH-motor oil	M8015E	NA	NA	NA	NA	NA	NA	<0.1 mg/L	<0.1[b] mg/L
acetone	8260	<10J µg/L	<10J µg/L	<10J µg/L	<10J µg/L	1J µg/L	<10J µg/L	4J µg/L	<10J µg/L
benzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
bromodichloromethane	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
sec-butyl benzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
tert-butyl benzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
carbon disulfide	8260	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10J µg/L	<10J µg/L
carbon tetrachloride	8260	<0.5 µg/L	1.3 µg/L	<0.5 µg/L	0.7 µg/L	7 µg/L	19 µg/L	<0.5J µg/L	<0.5 µg/L
chloroform	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	0.3J µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
1,2-dichloroethane	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	<0.5J µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
1,2-dichloropropane	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
ethylbenzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
2-hexanone	8260	<10 µg/L	<10 µg/L	<10 µg/L	<10J µg/L	<10J µg/L	<10J µg/L	<10J µg/L	<10J µg/L
isopropylbenzene (cumene)	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
2-butanone (MEK)	8260	<10 µg/L	<10 µg/L	<10J µg/L	<10 µg/L	<10 µg/L	<10J µg/L	<10J µg/L	<10J µg/L
methylene chloride	8260	<1 µg/L	<1.2 µg/L	<1.1 µg/L	<0.78 µg/L	<0.78 µg/L	<0.78 µg/L	<0.78J µg/L	<2 µg/L
methyl isobutyl ketone (MIBK)	8260	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10J µg/L	<10J µg/L
n-propylbenzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
tert-butyl alcohol	8260	<20J µg/L	<20J µg/L	<20J µg/L	<20J µg/L	<20J µg/L	<20J µg/L	<20J µg/L	<20 µg/L
toluene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
trichloroethene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
1,2,4-trimethylbenzene	8260	0.5J µg/L	0.5 µg/L	<0.05J µg/L	<0.05J µg/L	<0.05J µg/L	<0.8 µg/L	<0.5J µg/L	<0.5 µg/L
1,3,5-trimethylbenzene	8260	0.6J µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
xylenes	8260	<1 µg/L	<1 µg/L	<1 µg/L	<1 µg/L	<1 µg/L	<1 µg/L	<1J µg/L	<1 µg/L

Discrete Groundwater Sampling
Analytical Data Summary

	EPA Method								
Sample ID		17-HP-09	17-HP-10	17-HP-11	17-HP-12	17-HP-13	117-HP-01	117-HP-02	117-HP-03
Aquifer		mid-shallow	shallow	mid-shallow	shallow	mid-shallow	shallow	mid-shallow	mid shallow
Screen Interval (ft bgs)		104-109	60-64	104-109	60-65	104-109	58-61	105-108	55-58
Date Sampled		29-Jun-01	28-Jun-01	28-Jun-01	28-Jun-01	28-Jun-01	06-Jun-01	06-Jun-01	07-Jun-01
Northing		1973265.93	1972794.93	1972793.76	1973522.94	1973521.82	1972454.57	1972454.95	1972308.85
Easting		6386414.39	6385260.84	6385260.12	6385783.02	6385782.85	6386399.10	6386395.92	6386162.30
pH	field	7.9	8.08	8.24	8.11	8.1	7.79	NA	7.35
conductivity	field	1.31 mS/cm	1.27 mS/cm	1.13 mS/cm	0.765 mS/cm	1.31 mS/cm	1.34 mS/cm	NA	1.42 mS/cm
turbidity	field	999+ NTU	999+ NTU	999+ NTU	999+ NTU	999+ NTU	999+ NTU	NA	999+ NTU
dissolved oxygen	field	5.93 mg/L	5.88 mg/L	6.01 mg/L	9.95 mg/L	6.1 mg/L	4.53 mg/L	NA	4 mg/L
temperture	field	22.6 °C	20.9 °C	22.4 °C	22.6 °C	23 °C	20.1 °C	NA	22.3 °C
TPH-gasoline	M8015V	<0.05J mg/L	<0.05J mg/L	<0.05J mg/L	<0.05J mg/L	<0.05J mg/L	<0.05 mg/L	<0.05J mg/L	<0.05 mg/L
TPH-jet fuel	M8015V	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L
TPH-diesel	M8015E	<0.1 mg/L	<0.1[b] mg/L	<0.1[b] mg/L	<0.1[b] mg/L	<0.1J mg/L	<0.1[b] mg/L	NA	<0.1[b] mg/L
TPH-motor oil	M8015E	<0.1 mg/L	<0.05J mg/L	<0.1[b] mg/L	<0.1[b] mg/L	<0.1J mg/L	<0.1 mg/L	NA	<0.1[b] mg/L
acetone	8260	<10J µg/L	25J µg/L	<10J µg/L	<10J µg/L	<10J µg/L	<10J µg/L	<10J µg/L	<10J µg/L
benzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	12.3J µg/L	<0.5 µg/L
bromodichloromethane	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
sec-butyl benzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	0.7 µg/L
tert-butyl benzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
carbon disulfide	8260	<10J µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<0.5J µg/L	<10J µg/L	<10 µg/L
carbon tetrachloride	8260	0.4J µg/L	<0.5J µg/L	<0.5J µg/L	<0.5J µg/L	<0.5J µg/L	1.5 µg/L	<0.5J µg/L	<0.5 µg/L
chloroform	8260	<0.5 µg/L	0.8 µg/L	0.8 µg/L	1 µg/L	<0.5 µg/L	<0.5 µg/L	0.5J µg/L	<0.5 µg/L
1,2-dichloroethane	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	0.6J µg/L	316 µg/L
1,2-dichloropropane	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	2.3 µg/L
ethylbenzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
2-hexanone	8260	<10J µg/L	<10 µg/L	<10 µg/L	<1 µg/L	<10J µg/L	<10 µg/L	<10J µg/L	<10 µg/L
isopropylbenzene (cumene)	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	1.3 µg/L
2-butanone (MEK)	8260	<10J µg/L	<27 µg/L	<27 µg/L	<29 µg/L	<10J µg/L	<10J µg/L	3J µg/L	<10 µg/L
methylene chloride	8260	<2 µg/L	<5.7 µg/L	<6.2 µg/L	<6.0 µg/L	<2 µg/L	<0.78 µg/L	<0.78J µg/L	<1.3 µg/L
methyl isobutyl ketone (MIBK)	8260	<10J µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	0.5J µg/L	2J µg/L
n-propylbenzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
tert-butyl alcohol	8260	<20 µg/L	<20 µg/L	<20 µg/L	<20 µg/L	<20 µg/L	<20J µg/L	<20J µg/L	180J µg/L
toluene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
trichloroethene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	<0.5 µg/L
1,2,4-trimethylbenzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	0.6J µg/L
1,3,5-trimethylbenzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5J µg/L	0.7 µg/L
xylenes	8260	<1 µg/L	<1 µg/L	<1 µg/L	<1 µg/L	<1 µg/L	<1 µg/L	<1J µg/L	<1 µg/L

Discrete Groundwater Sampling
Analytical Data Summary

	EPA Method								
Sample ID		117-HP-04	117-HP-05A	117-HP-06	117-HP-07	CL1-HP-01	CL1-HP-02	CL1-HP-03	CL1-HP-04
Aquifer		shallow	mid-shallow	shallow	mid-shallow	shallow	shallow	mid-shallow	shallow
Screen Interval (ft bgs)		55-59	108-113	53-58	103-108	65-68	62-65	105-108	62-65
Date Sampled		27-Jun-01	29-Jun-01	10-Dec-01	11-Dec-01	05-Jun-01	05-Jun-01	05-Jun-01	27-Jun-01
Northing		1972453.19	1972448.75	1972146.80	1972148.81	1971623.96	1971984.97	1971986.86	1972036.83
Easting		6386486.95	6386487.84	6386437.53	6386437.53	6385937.43	6386048.87	6386050.13	6386335.88
pH	field	7.61	NA	6.92	7.29	7.5	8.04	8.8	8.23
conductivity	field	1.96 mS/cm	NA	2.34 mS/cm	1.63 mS/cm	0.802 mS/cm	0.736 mS/cm	1.28 mS/cm	1.24 mS/cm
turbidity	field	999+ NTU	NA	999+ NTU	845 NTU	999+ NTU	999+ NTU	232 NTU	999+ NTU
dissolved oxygen	field	3.9 mg/L	NA	3.35 mg/L	2.21 mg/L	4.26 mg/L	5.62 mg/L	2.34 mg/L	5.35 mg/L
temperture	field	20.4 °C	NA	19.8 °C	18.4 °C	21.2 °C	23.3 °C	24 °C	24.1 °C
TPH-gasoline	M8015V	<0.04J mg/L	<0.05J mg/L	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L	2.33[c] mg/L	<0.05J mg/L
TPH-jet fuel	M8015V	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L
TPH-diesel	M8015E	<0.1 mg/L	0.24[a] mg/L	<0.1[b] mg/L	<0.1 mg/L	0.2[a] mg/L	0.44[a] mg/L	0.32[a] mg/L	<0.1[b] mg/L
TPH-motor oil	M8015E	<0.1 mg/L	0.2[a] mg/L	<0.1 mg/L	<0.1[b] mg/L	0.2[a] mg/L	0.48[a] mg/L	0.22[a] mg/L	<0.1[b] mg/L
acetone	8260	<10J µg/L	<10J µg/L	<10J µg/L	<10J µg/L	<10J µg/L	<10J µg/L	<200J µg/L	<10J µg/L
benzene	8260	<0.5 µg/L	4.4 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	1260 µg/L	<0.5 µg/L
bromodichloromethane	8260	1.1 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<10 µg/L	<0.5 µg/L
sec-butyl benzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
tert-butyl benzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
carbon disulfide	8260	<10 µg/L	<10J µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<200 µg/L	<10 µg/L
carbon tetrachloride	8260	<0.5J µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<10 µg/L	0.9J µg/L
chloroform	8260	1.1 µg/L	1.2 µg/L	0.4J µg/L	0.9 µg/L	<0.5 µg/L	<0.5 µg/L	<10 µg/L	<0.5 µg/L
1,2-dichloroethane	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	53 µg/L	<0.5 µg/L
1,2-dichloropropane	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
ethylbenzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<10 µg/L	<0.5 µg/L
2-hexanone	8260	<10J µg/L	<10J µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<200 µg/L	<10J µg/L
isopropylbenzene (cumene)	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<10 µg/L	<0.5 µg/L
2-butanone (MEK)	8260	<10J µg/L	<10J µg/L	<10J µg/L	<10J µg/L	<10 µg/L	<10 µg/L	<200 µg/L	<10J µg/L
methylene chloride	8260	<2 µg/L	<2 µg/L	<2.4 µg/L	<2.1 µg/L	<1 µg/L	<1.2 µg/L	<24 µg/L	<2 µg/L
methyl isobutyl ketone (MIBK)	8260	<10 µg/L	<10J µg/L	<10 µg/L	<10 µg/L	<10J µg/L	<10J µg/L	<200J µg/L	<10 µg/L
n-propylbenzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<10 µg/L	<0.5 µg/L
tert-butyl alcohol	8260	<20 µg/L	<20 µg/L	<20J µg/L	47J µg/L	<20J µg/L	<20J µg/L	<400J µg/L	<20 µg/L
toluene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<10 µg/L	<0.5 µg/L
trichloroethene	8260	<0.5 µg/L	<0.5 µg/L	2.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
1,2,4-trimethylbenzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	10 µg/L	<0.5 µg/L
1,3,5-trimethylbenzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	0.5 µg/L	<0.5 µg/L	10 µg/L	<0.5 µg/L
xylenes	8260	<1 µg/L	<1 µg/L	<1 µg/L	<1 µg/L	<1 µg/L	<1 µg/L	<20 µg/L	<1 µg/L

Discrete Groundwater Sampling
Analytical Data Summary

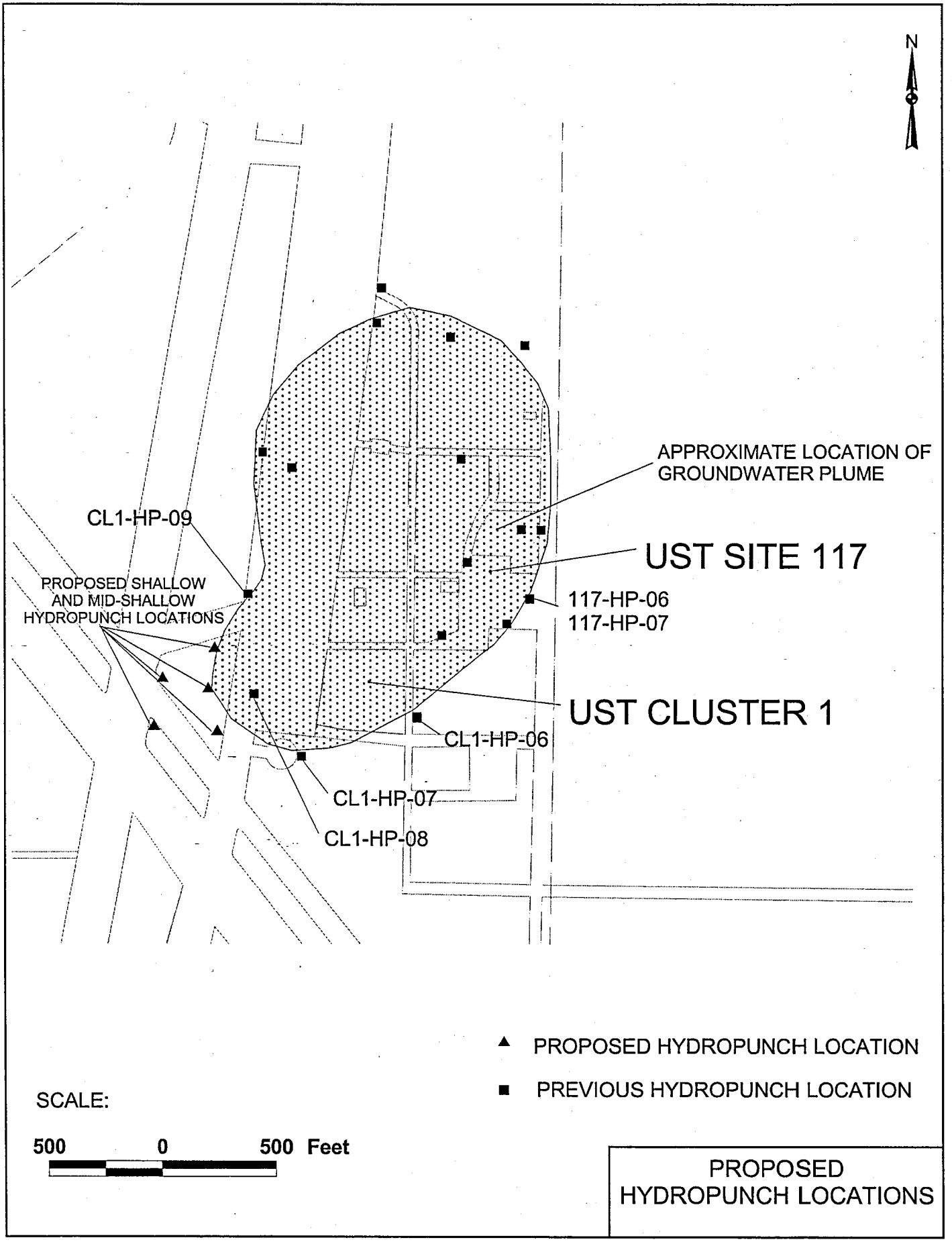
	EPA Method							
Sample ID		CL1-HP-05	CL1-HP-06	CL1-HP-07	CL1-HP-08	CL1-HP-09	CL2-HP-01	CL2-HP-02
Aquifer		mid-shallow	mid-shallow	mid-shallow	mid-shallow	mid-shallow	shallow	shallow
Screen Interval (ft bgs)		103-108	105-108	103-108	103-108	103-108	42-46	42-46
Date Sampled		27-Jun-01	10-Dec-01	12-Dec-01	11-Dec-01	11-Dec-01	06-Jun-01	06-Jun-01
Northing		1972036.51	1971616.41	1971447.76	1971724.33	1972168.08	1977165.08	1977127.13
Easting		6386339.42	6385939.96	6385427.99	6385219.78	6385194.30	6386955.74	6386939.00
pH	field	NA	7.5	7.17	7.64	8.93	7.19	7.16
conductivity	field	NA	1.37 mS/cm	1.38 mS/cm	1.95 mS/cm	1.71 mS/cm	1.58 mS/cm	1.58 mS/cm
turbidity	field	NA	999+ NTU	999+ NTU	999+ NTU	999+ NTU	999+ NTU	999+ NTU
dissolved oxygen	field	NA	8.82 mg/L	1.86 mg/L	2.21 mg/L	5.37 mg/L	3.33 mg/L	3.73 mg/L
temperture	field	NA	17.2 °C	19.2 °C	21.1 °C	19.5 °C	21.2 °C	21.2 °C
TPH-gasoline	M8015V	<0.05 mg/L	<0.05 mg/L	0.2 mg/L	4.41 mg/L	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L
TPH-jet fuel	M8015V	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L
TPH-diesel	M8015E	<0.1[b] mg/L	<0.1[b] mg/L	0.03J mg/L	<0.1[b] mg/L	<0.1[b] mg/L	<0.1[a] mg/L	<0.1[a] mg/L
TPH-motor oil	M8015E	<0.1[b] mg/L	<0.1[b] mg/L	<0.1[b] mg/L	<0.1 mg/L	<0.1[b] mg/L	0.06J mg/L	<0.1 mg/L
acetone	8260	26J µg/L	<10J µg/L	36J µg/L	<10J µg/L	<10J µg/L	<10J µg/L	<10J µg/L
benzene	8260	<0.5 µg/L	<0.5 µg/L	0.5J µg/L	3070 µg/L	0.5J µg/L	<0.5 µg/L	<0.5 µg/L
bromodichloromethane	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
sec-butyl benzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	1.7 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
tert-butyl benzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	8.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
carbon disulfide	8260	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L
carbon tetrachloride	8260	<0.5J µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
chloroform	8260	1.7 µg/L	4.8 µg/L	5.1 µg/L	2.9 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
1,2-dichloroethane	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	75.9 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
1,2-dichloropropane	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
ethylbenzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
2-hexanone	8260	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10J µg/L	<10J µg/L
isopropylbenzene (cumene)	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
2-butanone (MEK)	8260	<23J µg/L	<10J µg/L	<10J µg/L	<10J µg/L	<10J µg/L	<10 µg/L	<10 µg/L
methylene chloride	8260	<6.9 µg/L	<2.4 µg/L	<3.2 µg/L	<2.5 µg/L	<2.3 µg/L	<0.78 µg/L	<0.78 µg/L
methyl isobutyl ketone (MIBK)	8260	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L
n-propylbenzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
tert-butyl alcohol	8260	<20 µg/L	<20J µg/L	<20J µg/L	270J µg/L	<20J µg/L	<20J µg/L	<20J µg/L
toluene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	0.3J µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
trichloroethene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
1,2,4-trimethylbenzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
1,3,5-trimethylbenzene	8260	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
xylenes	8260	<1 µg/L	<1 µg/L	<1 µg/L	0.5J µg/L	<1 µg/L	<1 µg/L	<1 µg/L

Detections are bolded

J qualifier indicates that the associated numerical value is estimated

[a] Sample chromatogram showed unknown mixture in the diesel and motor oil ranges.

[b] Sample chromatogram contained some unknown peaks in the diesel and motor oil ranges.



PROPOSED HYDROPUNCH LOCATIONS

APPENDIX A
SITE-SPECIFIC GROUNDWATER SAMPLING FORM
NASA Crows Landing Flight Facility

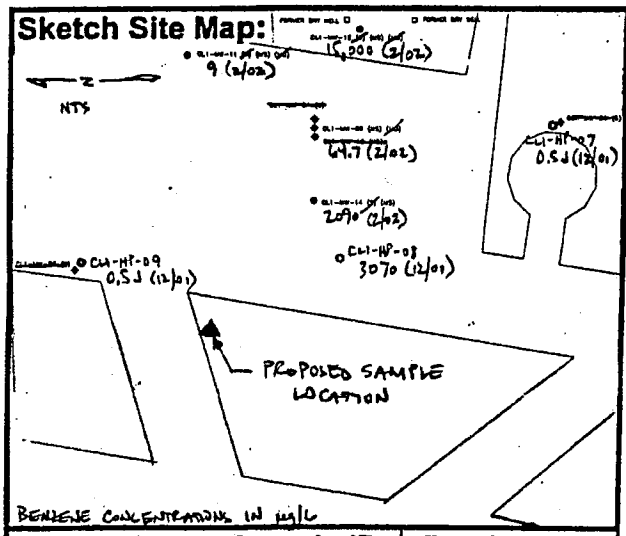
Sample Site:	UST CLUSTER 1
Sampling Rig Type:	CPT / HYDROPUNCH
Borehole/Rod Diameter:	1.5 INCH
Anticipated Depth to GW:	58.05' (CLI-MW-14(S) IN FEB-2002)

Date: 4/29/2002
Page 1 **of** 1

Purpose of Investigation: EVALUATE THE EXTENT OF PETROLEUM HYDROCARBON MIGRATION UPGRADIENT OF UST CLUSTER 1 AND EVALUATE THE POTENTIAL OF AN UNIDENTIFIED SOURCE AREA.

Sampling Collection Rationale: COLLECT SAMPLE NEAR GROUNDWATER INTERFACE AND IN MID-SHALLOW INTERVAL SOUTH WEST OF PREVIOUS HYDROPUNCH LOCATIONS WHERE ELEVATED CONCENTRATIONS OF BENZENE AND 1,2-DCA WERE DETECTED.

Sketch Site Map:



Groundwater Sample ID	Depth (bgs)	VOCs (EPA 8260)	TPH as Gas, Jet Fuel (EPA 8015B)	TPH as Diesel, Motor/Fuel Oil (EPA 8015B)	PAH's (EPA 8310)	CAM 17 Metals (EPA 6010B/7000)	Hexavalent Chromium (EPA 7196)	Anions (EPA 300)	Alkalinity (EPA 310.1)	Total Dissolved Solids (TDS)	*Other			
CLI-HP-10	57-60	X	X	X										
CLI-HP-11	105-108	X	X	X										

Soil Samples Collected: Yes (No) (If yes, attach boring log)

Soil Sample ID	Depth (bgs)												

Total Advanced Depth:

**Confirm Method is Described in SAP (IT 2001). If Not, Prepare RFI For New Method.*

APPENDIX A
SITE-SPECIFIC GROUNDWATER SAMPLING FORM
NASA Crows Landing Flight Facility

Sample Site:	UST CLUSTER 1
Sampling Rig Type:	CPT / HYDROPUNCH
Borehole/Rod Diameter:	1.5 INCH
Anticipated Depth to GW:	58.05' (CLI-MW-14(1) IN FEB-2002)

Date: 4/29/2002
Page 1 **of** 1

Purpose of Investigation: EVALUATE THE EXTENT OF PETROLEUM HYDROCARBON MIGRATION UPGRADIENT OF UST CLUSTER 1 AND EVALUATE THE POTENTIAL OF AN UNIDENTIFIED SOURCE AREA.

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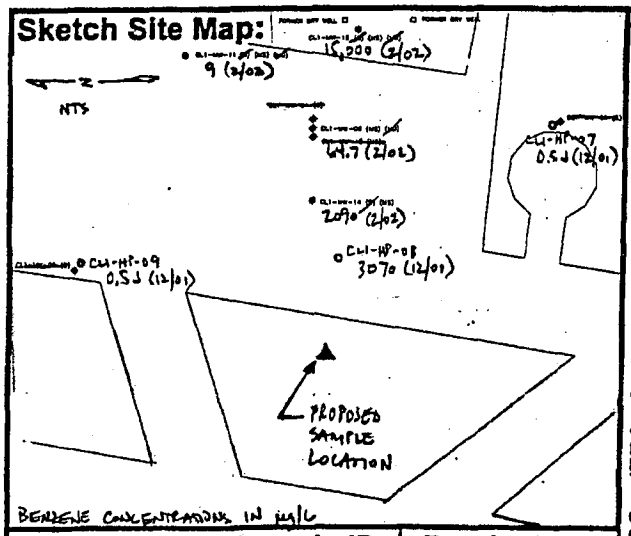
Sketch Site Map:



Groundwater Sample ID	Depth (bgs)	VOCs (EPA 8260)	TPH as Gas, Jet Fuel (EPA 8015B)	TPH as Diesel, Motor/Fuel Oil (EPA 8015B)	PAH's (EPA 8310)	CAM 17 Metals (EPA 6010B/7000)	Hexavalent Chromium (EPA 7196)	Anions (EPA 300)	Alkalinity (EPA 310.1)	Total Dissolved Solids (TDS)	*Other			
CLI-HP-12	57-60	X	X	X										
CLI-HP-13	105-108	X	X	X										

Soil Samples Collected: Yes (No) (If yes, attach boring log)

Soil Sample ID	Depth (bgs)													

Total Advanced Depth:

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APPENDIX A
SITE-SPECIFIC GROUNDWATER SAMPLING FORM
NASA Crows Landing Flight Facility

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Date: 4/29/2002
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Purpose of Investigation: EVALUATE THE EXTENT OF PETROLEUM HYDROCARBON MIGRATION UPGRADIENT OF UST CLUSTER 1 AND EVALUATE THE POTENTIAL OF AN UNIDENTIFIED SOURCE AREA.

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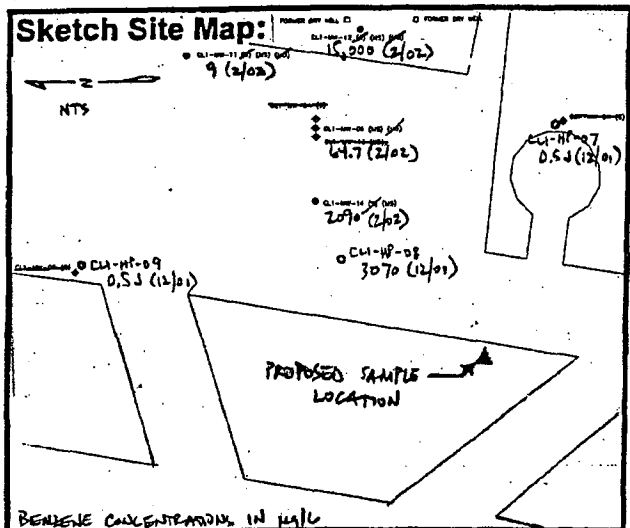
Sketch Site Map:



Groundwater Sample ID	Depth (bgs)	VOCs (EPA 8260)	TPH as Gas, Jet Fuel (EPA 8015B)	TPH as Diesel, Motor/Fuel Oil (EPA 8015B)	PAH's (EPA 8310)	CAM 17 Metals (EPA 6010B/7000)	Hexavalent Chromium (EPA 7196)	Anions (EPA 300)	Alkalinity (EPA 310.1)	Total Dissolved Solids (TDS)	*Other			
CLI-HP-14	57-60	X	X	X										
CLI-HP-15	105-108	X	X	X										

Soil Samples Collected: Yes (No) (If yes, attach boring log)

Soil Sample ID	Depth (bgs)													

Total Advanced Depth:

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APPENDIX A
SITE-SPECIFIC GROUNDWATER SAMPLING FORM
NASA Crows Landing Flight Facility

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Sampling Rig Type:	CPT / HYDROPUNCH
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Anticipated Depth to GW:	58.05' (CLI-MW-14(S) IN FEB-2002)

Date: 4/29/2002
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Purpose of Investigation: EVALUATE THE EXTENT OF PETROLEUM HYDROCARBON MIGRATION UPGRADIENT OF UST CLUSTER 1 AND EVALUATE THE POTENTIAL OF AN UNIDENTIFIED SOURCE AREA.

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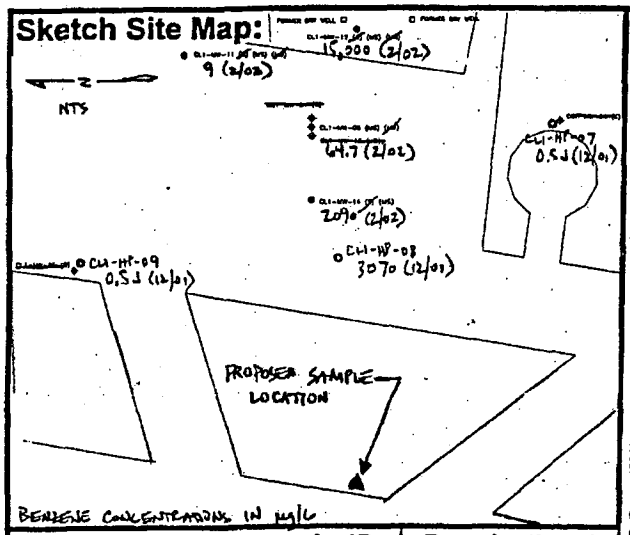
Sketch Site Map:



Groundwater Sample ID	Depth (bgs)	VOCs (EPA 8260)	TPH as Gas, Jet Fuel (EPA 8015B)	TPH as Diesel, Motor/Fuel Oil (EPA 8015B)	PAH's (EPA 8310)	CAM 17 Metals (EPA 6010B/7000)	Hexavalent Chromium (EPA 7196)	Anions (EPA 300)	*Alkalinity (EPA 310.1)	Total Dissolved Solids (TDS)	*Other			
CLI-HP-16	57-60	X	X	X										
CLI-HP-17	105-108	X	X	X										

Soil Samples Collected: Yes (No) (If yes, attach boring log)

Soil Sample ID	Depth (bgs)													
Total Advanced Depth:														

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APPENDIX A
SITE-SPECIFIC GROUNDWATER SAMPLING FORM
NASA Crows Landing Flight Facility

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Sampling Rig Type:	CPT / HYDROPUNCH
Borehole/Rod Diameter:	1.5 INCH
Anticipated Depth to GW:	58.05' (CLI-MW-14(S) IN FEB-2002)

Date: 4/29/2002
Page 1 **of** 1

Purpose of Investigation: EVALUATE THE EXTENT OF PETROLEUM HYDROCARBON MIGRATION UPGRADIENT OF UST CLUSTER 1 AND EVALUATE THE POTENTIAL OF AN UNIDENTIFIED SOURCE AREA.

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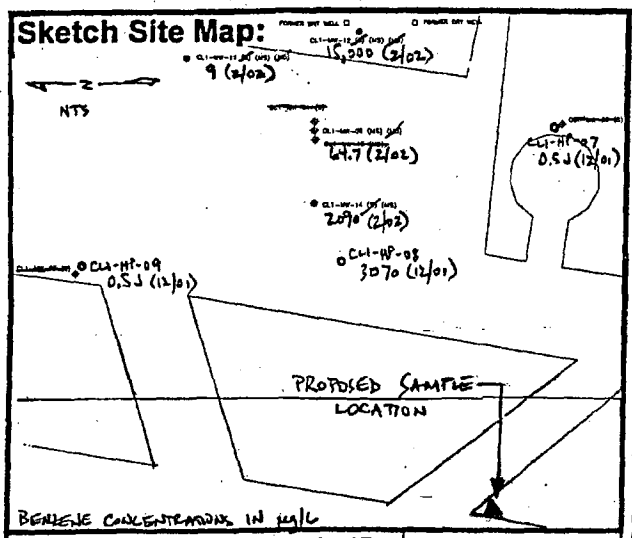
Sketch Site Map:



Groundwater Sample ID	Depth (bgs)	VOCs (EPA 8260)	TPH as Gas, Jet Fuel (EPA 8015B)	TPH as Diesel, Motor/Fuel Oil (EPA 8015B)	PAH's (EPA 8310)	CAM 17 Metals (EPA 6010B/7000)	Hexavalent Chromium (EPA 7196)	Anions (EPA 300)	Alkalinity (EPA 310.1)	Total Dissolved Solids (TDS)	*Other			
CLI-HP-18	57-60	X	X	X										
CLI-HP-19	105-108	X	X	X										

Soil Samples Collected: Yes (No) (If yes, attach boring log)

Soil Sample ID	Depth (bgs)													
Total Advanced Depth:														

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SOUTHWESTNAVFACENGCOM
Code 06CC.LMH
Telephone: (619) 532-0783/Fax (619) 532-0780

Crows

File: clartrltr.doc

Transmittal

Date: 2 May 2002

From: Lynn Marie Hornecker
Code 06CC.LMH

To: Diane Silva
Code 01LS.DS
Administrative Record Manager

Subj: CERCLA ADMINISTRATIVE RECORD MATERIALS
NALF Crows Landing

Installation: NALF Crows Landing

UIC Number: N60211

Document Title: Planned Plume Delineation Activities

Author: Lynn Marie Hornecker

Recipient: James Barton RWQCB

Record Date: 30 Apr 2002

Approximate Number of Pages: 15

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Key Words: ground water

Contract: N/A

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