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prepared by

SITE STATUS REPORT

for

Humboldt Bulk Facility
Highway 75 and Kittson County Road 6
Humboldt, MN

MPCA File No.: LEAK00005361

June 30, 2003

MPCA, MAR Division
PER/53 section

JUL 14 2003

RECEIVED

June 30, 2003

WC/EC

Ms. Miriam Horneff
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155

RE: Site Status Report
Humboldt Bulk Facility
MPCA Leak No. LEAK00005361
WC/EC Job #: 92-405-30

Dear Ms. Horneff:

The following report gives the results of the current soil boring investigation described in the FY 2003 Work Plan for the Humboldt Bulk Facility. A previous soil investigation was performed at this site in 1992-1993 (Appendix F). During that investigation, the "worst-case" area was determined to be the area east of the former AST area. Free product was observed in monitoring well MW2, located near the center of the contamination plume, and an excavation was recommended. In order to compare the extent and magnitude of the current contamination plume to the 1993 contamination plume and to determine the current horizontal extent of free product, a push probe investigation was completed. Included in this report are the results of the free product plume delineation, risk assessment, and groundwater monitoring. In addition, the formerly recommended excavation has been re-evaluated and site recommendations have been made.

SITE INFORMATION

The Humboldt bulk facility is located on the west corner of the intersection of Highway 75 and Kittson County Road 6, adjacent to the Burlington Northern spur line (Figures 1 and 2). Legal description of the site is the SW/4 of the SW/4 of the SE/4, section 23, T 163N, R 50W, St. Vincent Township, Kittson County, or 48°55'13"N, 97°05'38"W on the Humboldt 7.5' topographic quadrangle map (USGS, 1974):

The site is on the south edge of the small rural community of Humboldt. The bulk facility consisted of five petroleum ASTs, a fertilizer plant, and a dispenser building.

FREE PRODUCT PLUME DELINEATION

During the 1993 investigation, free product was observed in monitoring well MW2 on several occasions. During the current investigation, four free product borings (FP1-FP4) were hand augered in the previously proposed excavation area around monitoring well MW2 (Figure 2). Free product was not observed in any of the borings, however a slight sheen could be seen on water in FP1, FP3, and FP4. Boring FP2 was dry to 4'.

SOIL SAMPLING

Five test holes (TH9-TH13) were advanced northeast to southeast of the former AST area between the source area and monitoring wells MW1 and MW3 (Figure 2). An additional hand auger hole (HA2) was advanced west-northwest of the former AST area across the railroad tracks. In comparison to the previous test holes, test hole TH9 is located northeast of previous (1993) TH6, between the former tank area and monitoring well MW1. Test hole TH10 is located southeast of the former tank area. Test hole TH11 is located just north of 1993 test hole TH5. Test hole TH12 is located further north of 1993 test hole TH5 and test hole TH11. Test hole TH13 is located east of the former tank area, between the tank area and monitoring well MW3.

Soil samples were analyzed in the field with a photoionization detector (PID). Organic vapors ranging from 0.2 ppm to 12.2 ppm were detected in test hole TH11 between 6' and 10', and from 4.5 ppm to 52.8 ppm were detected in TH13 between 7' and 11' (Table 1).

Soil samples were also collected for laboratory analysis at 7' in all five test holes and at 32' in TH11. Samples were sent to NTS for laboratory analysis of benzene, toluene, ethyl benzene, and xylenes (BTEX), MTBE, gasoline range organics (GRO), and diesel range organics (DRO). Contamination was not detected by the laboratory in soil samples collected from test holes TH9, TH10, TH12 or TH13. In test hole TH11, 220 mg/kg GRO and 150 mg/kg DRO were detected (Table 2) at 7', but no contamination was detected in the soil sample collected at 32'.

Water samples were collected from all five borings and the hand auger boring HA2 and were sent to NTS for laboratory analysis of VOCs, GRO and DRO. In test holes TH9 and TH10, DRO was detected at levels of 270 and 130 ppb, respectively. In TH11, benzene (2.1 ppb), ethyl benzene (2.4 ppb), GRO (130 ppb), and DRO (1200 ppb) were detected. In test hole TH12, contamination was not detected. In TH13, ethyl benzene (300 ppb), xylenes (2350 ppb), GRO (8700 ppb), and DRO (280,000 ppb) were detected.

In addition, in test holes TH11 and TH13, some additional contaminants were detected: n-butylbenzene, sec-butylbenzene, isopropylbenzene, p-isopropylbenzene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and tetrahydrofuran. Isopropylbenzene and naphthalene were both above their respective HRLs in test hole TH13.

Based on field and laboratory analyses of soil samples and laboratory analyses of water samples, contaminant concentrations appear to be consistent with the results of the 1993 investigation with the exception of the area around test hole TH13. No test holes were advanced in this location during the 1993 investigation. Results from the current investigation indicate slightly higher contaminant concentrations than previously estimated in the area around test hole TH13, which causes the contaminant plume to be elongated more to the southeast (Figures 2a and 2b).

GROUNDWATER MONITORING

Monitoring wells MW1-MW3 were installed in 1993. Free product was discovered in monitoring well MW2 in 1993. Monitoring wells sampling was discontinued in 1995 and has resumed for this investigation. Due to off-site access delays, only one round of sampling has been completed at this time. Groundwater samples were analyzed for VOCs, GRO, and DRO. In MW1, laboratory analysis detected DRO (150 ppb). In MW2, benzene (150 ppb), xylenes (61 ppb), GRO (2400 ppb), and DRO (3500 ppb) were detected. In MW3, contamination was not detected. Benzene was above the HRL (10 ppb) in MW2.

The results of the current investigation are consistent with the 1993 groundwater monitoring results, but contaminant concentrations appear to have decreased slightly (Tables 7 and 8, and Appendix F). In 1993, GRO and DRO were detected during one sampling event in MW1 (200 ppb and 5600 ppm, respectively). During this investigation, only 150 ppb DRO was detected. In MW2, contaminant still remains and benzene is still above the HRL, but free product was not observed and contaminant concentrations have decreased. In MW3, benzene (3.4 ppb) and toluene (1.5 ppb) were detected during one 1993 sampling event, and only toluene (1.3 ppb) was detected during one other event. During this investigation, contamination was not detected in MW3.

Groundwater flow direction was calculated using water level elevations and was determined to be to the northeast (Figure 3). In 1993, groundwater flow had been determined to be to the northwest and to the east-northeast during two different monitoring events.

RISK ASSESSMENT

A 500-foot walking survey and groundwater receptor survey were completed for this site (Figure 2c and Table 9). Kittson County Rural Water was contacted and verified that rural water is utilized by everyone within 500 ft of the site. During the walking survey, a "well" was identified at the Dennis Diamond residence, located south of the site. Upon observation by WCFC, it was determined that the well located in the basement is actually a cistern that is used to water the garden, and the alkalai water collecting in the cistern is not drinkable. A water sample was collected and was sent to NTS for analysis of VOCs, GRO, and DRO. Laboratory analysis detected 4.0 ppb tetrahydrofuran (Tables 3 and 4).

A County Well Index (CWI) search was performed and the Minnesota Department of Health (MDH) was contacted to identify any wells within 1 mile of the site. Three wells were identified, which were also identified in the previous investigation (Table 10 and Appendix D). Two of the wells are within 500 ft southwest of the site and are 644 ft and 600 ft deep. The third well is 1000 ft east of the site and is 141 ft deep (Figure 4). According to MDH well records, all three of the wells are test wells. (According to the 1994 RI report, the 600 ft well is used by the railroad and the 141 ft well is a domestic well.)

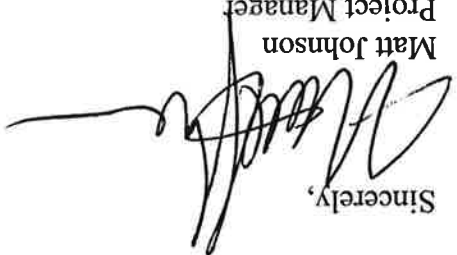
SUMMARY/CONCLUSION

Free product was not observed in the hand auger holes or in the monitoring well located in the previously proposed excavation area; a slight sheen was observed on water in several of the holes. Based on field and laboratory analyses, only the contamination concentrations in the area around test hole TH13 are higher than was previously estimated. Therefore, the contamination plume appears to be similar to the 1994 plume, but is elongated more to the southeast. The area is supplied by rural water, and the nearest groundwater receptors do not appear to be at risk from this release.

Based on the results of this investigation, it does not appear that an excavation is necessary at this time. Therefore, WCEC recommends one year of quarterly groundwater monitoring. Water samples should be analyzed for BTEX/MTBE, GRO, and DRO. Results of groundwater monitoring will be submitted in an Annual Monitoring Report (fact sheet 3.26). If little to no free product is observed and contamination concentrations remain low after one year of sampling, closure will be requested.

If you have any questions or concerns regarding this site, please give me a call at (320) 589-2039.

Sincerely,



Matt Johnson
Project Manager

Enclosures

TABLES

**Table 1
Results of Soil Headspace Screening**

Depth (ft)	TH9	TH10	TH11	TH12	TH13
1					
2					
3					
4	0	0	0	0	0
5					
6	0	0.2	1.9		4.5
7	0	0	12.2	0	52.8
8	0	0		0	
9				0	
10			8.8		
11					30
12	0	0	0	0	0
13					
14					
15					
16			0		0
17					
18					
19					
20			0		0
21					
22					
23					
24					
25					
26			0		
27					
28					
29					
30					
31					
32			0		

Table 2
Analytical Results of Soil Samples

Boring, Depth (ft)	Date Sampled	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	GRO	DRO	Lab Type
TH9 (7)	05/20/03	<0.100	<0.100	<0.070	<0.200	<0.120	<4	<10	Fixed
TH10 (7)	05/20/03	<0.100	<0.100	<0.070	<0.200	<0.120	<4	<10	Fixed
TH11 (7)	05/20/03	<0.200	<0.200	<0.140	<0.400	<0.240	220	150	Fixed
TH11 (32)	05/20/03	<0.100	<0.100	<0.070	<0.200	<0.120	<4	<10	Fixed
TH12 (7)	05/20/03	<0.100	<0.100	<0.070	<0.200	<0.120	<4	<10	Fixed
TH13 (7)	05/20/03	<0.100	<0.100	<0.070	<0.200	<0.120	<4	<10	Fixed
Trip Blank	05/20/03	<0.100	<0.100	<0.070	<0.200	<0.120	<4		Fixed

Notes: Report results in mg/kg.

Table 3
Analytical Results of Water Samples Collected from Borings

Boring Number	Date Sampled	Sampled Depth	Benzene	Toluene	Ethyl benzene	Xylenes	MTBE	GRO	DRO	Lab Type
TH9	05/21/03	8.2' ✓	<1.0	<1.0	<1.0	<3.0	<1.0	<60	270	Fixed
TH10	05/20/03	3.0'	<1.0	<1.0	<1.0	<3.0	<1.0	<60	130	Fixed
TH11	05/21/03	11.1'	2.1	<1.0	2.4	<3.0	<1.0	130	1200	Fixed
TH12	05/21/03	2.4'	<1.0	<1.0	<1.0	<3.0	<1.0	<60*	<100	Fixed
TH13	05/20/03	3.0'	<500	<500	3000	2350	<500	8700*	280000	Fixed
Diamond Residence	05/21/03		<1.0	<1.0	<1.0	<3.0	<1.0	<60	<100	Fixed
HA2	05/21/03		<1.0	<1.0	<1.0	<3.0	<1.0	<60*	<100	Fixed
Trip Blank	05/20/03		<1.0	<1.0	<1.0	<3.0	<1.0	<60		Fixed
Field Blank										
Lab Blank										
HRL				10	1000	700	10000			

*Notes: Results reported in ppb. * Preserved at a pH of 6.0 ✓ water level after pumping*

Table 4
Other Contaminants Detected in Water Samples
Collected from Borings (Petroleum or Non-petroleum Derived)

Compound	HRL (ug/L)	TH11 05/21/03	TH13 05/20/03	Diamond Res 05/21/03	Trip Blank 05/21/03
n-Butylbenzene	-	6.4	13,000	<1.0	<1.0
sec-Butylbenzene	-	1.4	3300	<1.0	<1.0
Isopropylbenzene	300	2.1	1500	<1.0	<1.0
p-Isopropyltoluene	-	1.6	1600	<1.0	<1.0
n-Propylbenzene	-	1.8	5000	<1.0	<1.0
Naphthalene	300	5.2*	17,000*	<2.0*	<2.0*
1,2,4-Trimethylbenzene	-	3.4	7000	<1.0	<1.0
1,3,5-Trimethylbenzene	-	5.1	4100	<1.0	<1.0
Tetrahydrofuran	HBV 100	<2.0	<1000	4.0	<2.0

Notes: Results reported in ppb. * Laboratory Control Spike not within control limits (81%)

Table 5
Monitoring Well Completion Information

Well Number	Unique Well Number	Installed Date	Surface Elevation	Top of Riser Elevation	Bottom of Well (Elevation)	Screen Interval (Elev. - Elev.)
MW1	517390	02/10/93	99.24	102.62	88.60	88.60 - 98.60
MW2	517389	02/10/93	100.40	103.01	88.49	88.49 - 98.49
MW3	517391	02/10/93	99.60	103.14	88.68	88.68 - 98.68

Table 6
Water Level Measurements in Wells

Well Number	Date Sampled	Depth of Water from Top of Riser	Product Thickness (in)	Depth of Water Below Grade	Relative Groundwater Elevation	Water Level Above Screen (Y/N)
MW1	05/07/03	5.65	0	2.27	96.97	N
MW2	05/07/03	4.59	0	1.98	98.42	N
MW3	05/07/03	5.49	0	1.95	97.65	N

Notes: Results reported in feet unless otherwise noted.

Table 7
Analytical Results of Water Samples Collected from Wells

Well #	Date Sampled	Benzene	Toluene	Ethyl benzene	Xylenes	MTBE	GRO	DRO	Lab Type
MW1	05/07/03	<1.0**	<1.0**	<1.0**	<3.0**	<1.0	<60	150	Fixed
MW2	05/07/03	150	<5.0	<5.0	61	<5.0	2400	35000*	Fixed
MW3	05/07/03	<1.0	<1.0	<1.0	<3.0	<1.0	<60	<100	Fixed
Trip Blank	05/07/03	<1.0	<1.0	<1.0	<3.0	<1.0	<60		Fixed
Field Blank									
Lab Blank									
HRL(ug/L)		10	1000	700	10000				

Notes: Results reported in ppb.

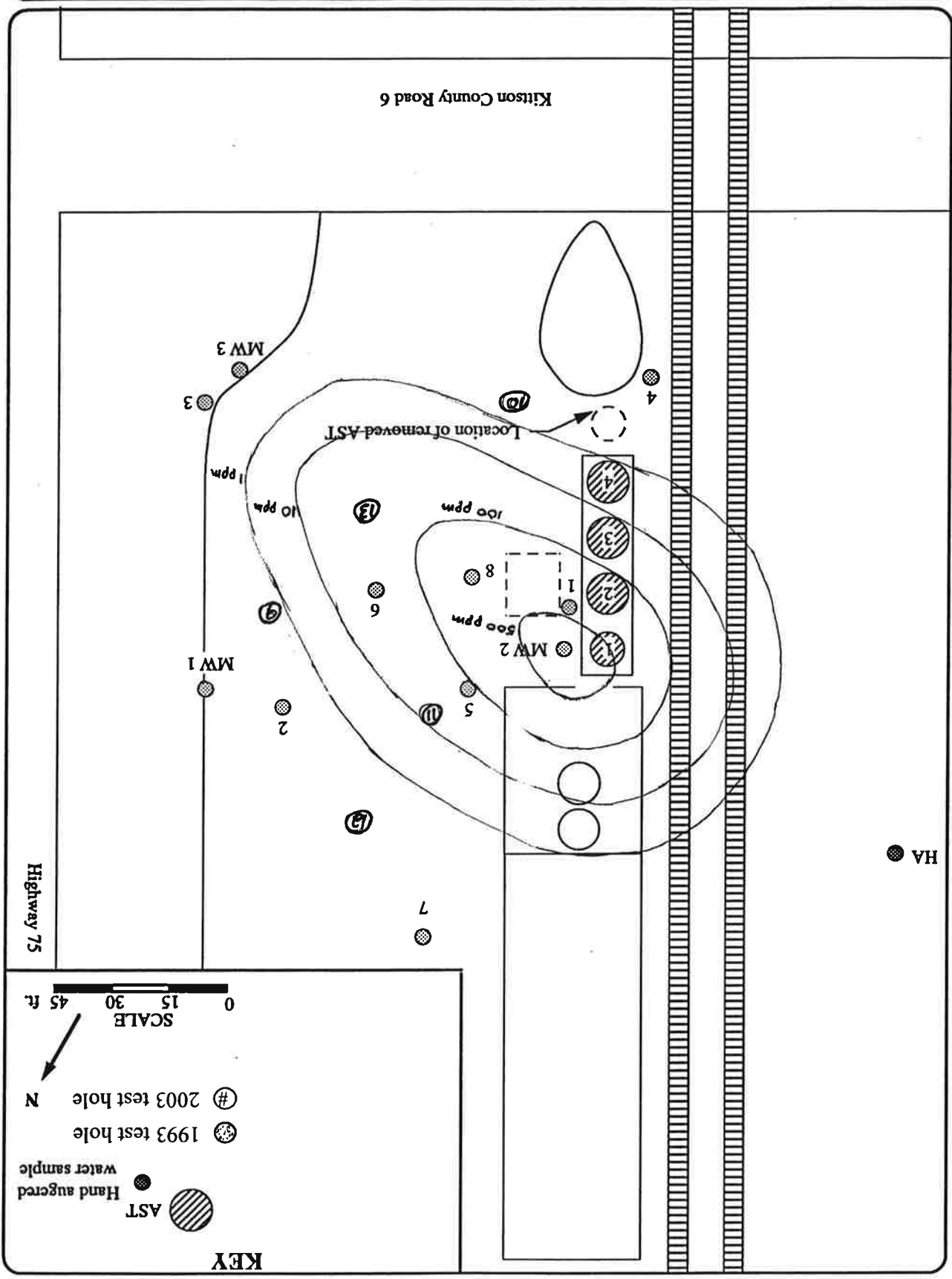
** Sample preserved at a pH of 3.0*

*** Laboratory control spike not within control limits. Recoveries were between 82-84%*

Table 8
Other Contaminants Detected in Water Samples Collected from Wells (Petroleum or Non-petroleum Derived)

Compound	HRL	MW2 05/07/03	Trip Blank 05/07/03
1,2-Dichloroethane		23	<1.0
n-Butylbenzene		75	<1.0
sec-Butylbenzene		13	<1.0
Isopropylbenzene	300	14	<1.0
p-Isopropyltoluene		9.5	<1.0
n-Propylbenzene		14	<1.0
Naphthalene	300	60	<2.0
Tetrahydrofuran		57	<2.0
1,2,4-Trimethylbenzene		34	<1.0
1,3,5-Trimethylbenzene		18	<1.0

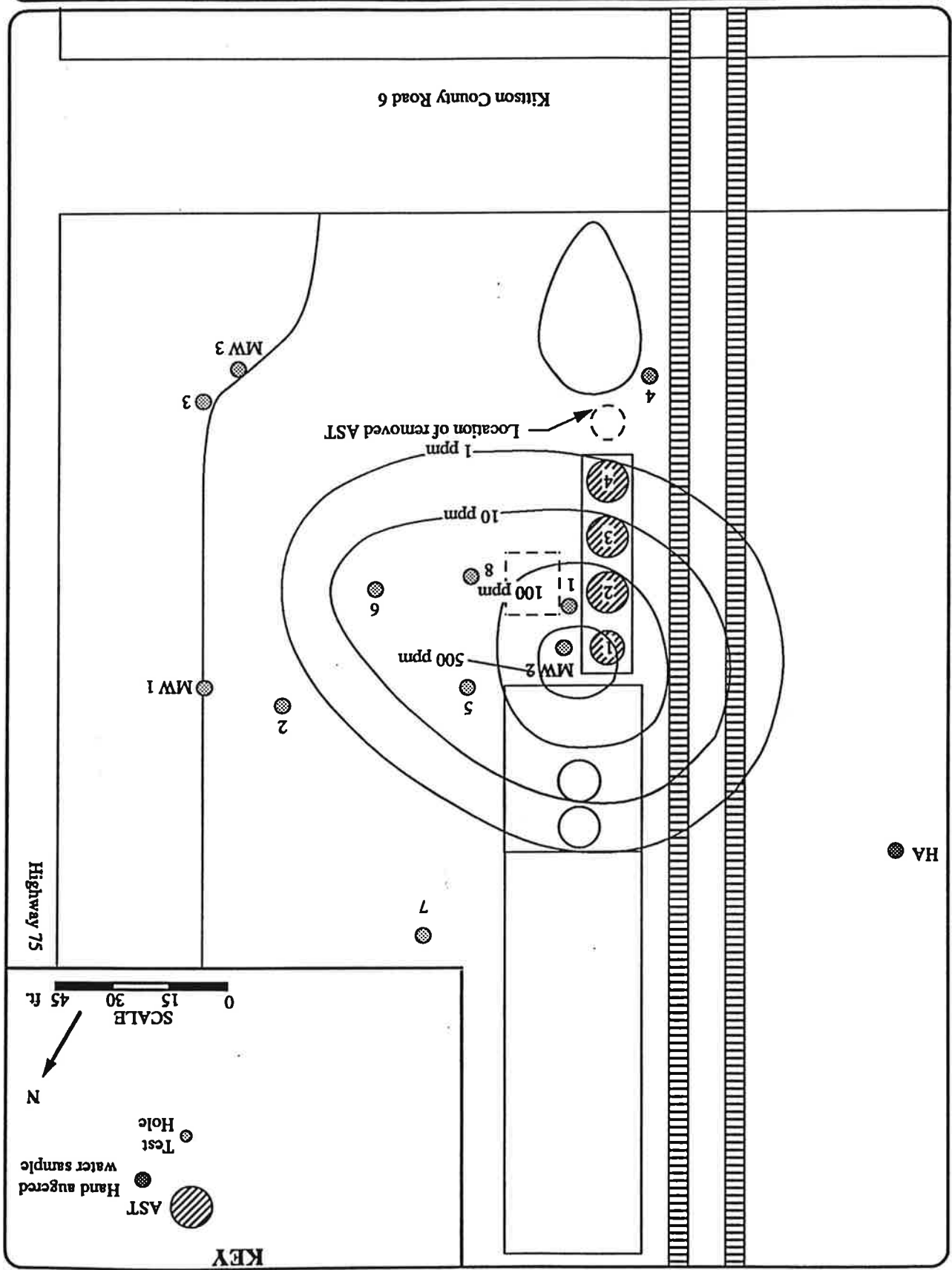
Notes: Results reported in ppb.



KEY

- AST
- Hand augered water sample
- ⊙ 1993 test hole
- # 2003 test hole
- N

SCALE
0 15 30 45 ft.



WCFC SOIL BORING LOG

LEAK NUMBER: 5361
 PROJECT NUMBER: 405
 PROJECT NAME: Humboldt Bulk
 DRILLER: WCFC
 DRILLING METHOD: Geoprobe
 BENCHMARK:

BORING #: 9
 DATE: 05/20/03
 TIME - start: 11:40 AM
 TIME - end: 12:30 PM
 SURFACE ELEVATION:

Depth (feet)	Sampling Information				ASTM Symbol	Material Description	Geologic Origin	WL	PID (ppm)	Sample Analysis
	T	A	R	B						
0					Gravel					
0 - 3					ML-CL Silty Clay w/ some organics, black, wet	lacustrine				
3 - 6					CL Silty Clay, moderate yellowish/brown, wet w/ light olive gray silty layers	lacustrine				
6 - 10					CL Silty Clay, moderate yellowish/brown, wet w/ light olive gray silty layers	lacustrine				
10 - 25					CL Silty Clay, moderate yellowish/brown, wet w/ light olive gray silty layers	lacustrine				

Comments:
 - Depth to water was 8.2' after pumping.
 - Ice crystals in samples after 5' - 15' screen in hole.

Water Level Measurements			
Date	Time	Elapsed Time	Water Level

Sample Types: SS = split spoon, GS = grab sample, HA = hand auger, LB = large bore, MS = macro, LS = lab soil, LW = lab water sample
 Sampling Info: T = sample type, A = attempt, R = recovery, B = blow count, N = N value, WL = Water Level
 Definitions: Elapsed time = time between end of drilling & sampling.
 screened interval for temporary well

KEY

WCFC SOIL BORING LOG

LEAK NUMBER: 5361
 PROJECT NUMBER: 405
 PROJECT NAME: Humboldt Bulk
 DRILLER: WCFC
 DRILLING METHOD: Geoprobe

BORING #: 10
 DATE: 05/20/03
 TIME -start: 12:30 PM
 -end: 01:15 PM
 SURFACE ELEVATION:

BENCHMARK:

Depth (feet)	Sampling Information				ASTM Symbol	Material Description	Geologic Origin	WL	PID (ppm)	Sample Analysis
	T	A	R	B						
0					Gravel					
0 - 1.5					ML-CL Silty Clay, black, wet	lacustrine				
1.5 - 3.0					CL Silty Clay, moderate yellowish/brown w/ light olive gray silty layers	lacustrine	▲			LW
3.0 - 4.5					CL Silty Clay, moderate yellowish/brown w/ light olive gray silty layers, water bearing	lacustrine				LS
4.5 - 10.0					CL Silty Clay, moderate yellowish/brown w/ light olive gray silty layers	lacustrine				
10.0 - 25.0					CL Silty Clay, moderate yellowish/brown w/ light olive gray silty layers	lacustrine				

Comments:
 - Ice crystals at 6'-8'
 - 10' screen in hole.

Date	05/20/03	Time	01:15 PM
Elapsed Time		Water Level	3.0'
Product Level			

KEY
Sample Types:
 SS = split spoon
 GS = grab sample
 HA = hand auger
 LB = large bore
 MS = macro
Analysis:
 LS = lab soil
 sample
 LW = lab water
 sample
Definitions:
 WL = Water Level
 Elapsed time = time
 between end of
 drilling & sampling.



WCEC SOIL BORING LOG

LEAK NUMBER: 5361
 PROJECT NUMBER: 405
 PROJECT NAME: Humboldt Bulk
 DRILLER: WCEC
 DRILLING METHOD: Geoprobe
 BENCHMARK:

BORING #: 11
 DATE: 05/20/03
 TIME -start: 01:20 PM
 -end: 03:30 PM
 SURFACE ELEVATION:

Depth (feet)	Sampling Information				ASTM Symbol	Material Description	Geologic Origin	WL	PID (ppm)	Sample Analysis
	T	A	R	B						
0					Gravelly fill	Gravel				
0.2					ML-CL	Silty clay, black, wet	lacustrine			
1.9					ML-CL	Silty clay, light olive gray, wet Slight petroleum odor.	lacustrine		12.2	LS
8.8					CH	Silty clay, wet, changes to moderate olive brown @ 11.5'	lacustrine			
10					CH	Lean clay olive gray, w/ light olive gray silt seams, w/ lite olive gray mottles, wet.	lacustrine			
15					MS	Clay, olive gray, wet				
20					MS	small 1" coarse sand lenses				
25					LB	Clay, olive gray, wet				

Date		05/21/03		Time		09:30 AM		Water Level Measurements		Water Level		11.1		Product Level	
Comments: - Some ice crystals below 5' - 20' screen in hole.															
screened interval for temporary well															
Elapsed time = time between end of drilling & sampling:															
Sample Types: SS = split spoon, GS = grab sample, HA = hand auger, LB = large bore, MS = macro, N = N value, WL = Water Level, LS = lab soil sample, LW = lab water															
Sampling Info: T = sample type, A = attempt, R = recovery, B = blow count, MS = macro, N = N value, WL = Water Level, LS = lab soil sample, LW = lab water															
KEY															

WCFC SOIL BORING LOG (cont)

BORING #: 11
DATE: 05/20/03

LEAK NUMBER: 5361
PROJECT NUMBER: 405
PROJECT NAME: Humboldt Bulk

Depth (feet)	Sampling Information				ASTM Symbol	Material Description	Geologic Origin	WL	PID (ppm)	Sample Analysis
	T	A	R	B						
25					CH	Fat clay, olive gray, wet		0		
	LB									
30					CH	Fat clay, olive gray, wet		0		
	LB									
35										
40										
45										
50										

Comments:

Sample Types:
 SS = split spoon
 GS = grab sample
 HA = hand auger
 LB = large bore
 MS = macro
 sampler

Sample Types:
 LS = lab soil
 sample

Analysis:
 LW = lab water
 sample

Definitions:
 WL = Water Level
 Elapsed time =
 time from end
 of drilling period
 to sampling time.

Sampling Info:
 T = sample type
 A = attempt
 R = recovery
 B = blow count
 N = N value

KEY

WCEC SOIL BORING LOG

LEAK NUMBER: 5361
 PROJECT NUMBER: 405
 PROJECT NAME: Humboldt Bulk
 DRILLER: WCEC
 DRILLING METHOD: Geoprobe
 BENCHMARK:

BORING #: 12
 DATE: 05/20/03
 TIME - start: 03:35 PM
 -end: 04:15 PM
 SURFACE ELEVATION:

Depth (feet)	Sampling Information				ASTM Symbol	Material Description	Geologic Origin	WL (ppm)	PID	Sample Analysis
	T	A	R	B						
0						Gravel				
0 - 1						Gravel rich fill	Fill			
1 - 3					ML-CL	Silty clay, black, moist to wet	lacustrine	0		
3 - 5					ML-CL	Silty clay, wet, w/ light olive gray silty layers Clay, moderate olive brown	lacustrine	0		
5 - 10					ML-CL	Silty clay, wet, w/ light olive gray silty layers Clay, moderate olive brown	lacustrine	0		
10 - 25					ML-CL	Silty clay, wet, w/ light olive gray silty layers Clay, moderate olive brown	lacustrine	0		

Date		Time		Elapsed Time		Water Level		Product Level	
05/21/03		08:30 AM				2.4			
Comments: - Ice crystals at 6'-7', - 15' screen in hole.									
screened interval for temporary well ↑ drilling & sampling between end of Elapsed time = time WL = Water Level Definitions: N = N value B = blow count R = recovery A = attempt T = sample type Sampling Info: SS = split spoon GS = grab sample HA = hand auger LB = large bore MS = macro Analysis: LS = lab soil sample LW = lab water sample KEY									

WCEC SOIL BORING LOG

LEAK NUMBER: 5361
 PROJECT NUMBER: 405
 PROJECT NAME: Humboldt Bulk
 DRILLER: WCEC
 DRILLING METHOD: Geoprobe
 BENCHMARK:

BORING #: 13
 DATE: 05/20/03
 TIME -start: 04:30 PM
 -end:
 SURFACE ELEVATION:

Depth (feet)	Sampling Information				ASTM Symbol	Material Description	Geologic Origin	WL	PID (ppm)	Sample Analysis
	T	A	R	B						
0					Gravel	Gravelly clay fill	Fill			
0 - 2					ML	Silty clay, light olive gray, moist to wet	lacustrine			
2 - 4					CL	Silty clay, light olive gray, moist to wet	lacustrine			
4 - 5					ML	Silt, light olive gray, w/ moderate olive brown mottles, wet	lacustrine			
5 - 10					ML-CL	Silty clay, olive gray w/ moderate light olive brown, wet, Petroleum odor, dash gray streaks	lacustrine	52.8	4.5	LS
10 - 15					MS	Silty clay, moderate olive brown, wet	lacustrine	30		
15 - 20					MS	Silty clay, moderate yellowish/brown clay w/ light olive gray silt, wet	lacustrine	0		
20 - 25					CH	Silty clay, moderate yellowish/brown clay w/ light olive gray silt, wet Clay, olive gray, waterbearing	lacustrine	0		

Comments: - Screened to 15'

Water Level Measurements			
Date	Time	Elapsed Time	Water Level
			3'
			Product Level

Sample Types:
 SS = split spoon
 GS = grab sample
 HA = hand auger
 LB = large bore
 MS = macro
 N = N value
Definitions:
 WL = Water Level
 Elapsed time = time between end of drilling & sampling

Sample Types:
 SS = split spoon
 GS = grab sample
 HA = hand auger
 LB = large bore
 MS = macro
 N = N value
Definitions:
 WL = Water Level
 Elapsed time = time between end of drilling & sampling

KEY

