REMEDIAL INVESTIGATION REPORT

FOR

HERTEL LANDFILL SITE

PLATTEKILL, NEW YORK

VOLUME 2

EPA WORK ASSIGNMENT NO. 003-2LH7

JULY, 1991

REGION II

ALTERNATIVE REMEDIAL CONTRACTING STRATEGY (ARCS)
FOR
HAZARDOUS WASTE REMEDIAL SERVICES

EPA Contract No. 68-S9-2001

TAMS CONSULTANTS, Inc.

and

TRC ENVIRONMENTAL CONSULTANTS, Inc.

HERTEL LANDFILL SITE

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TABLE 2-1

HERTEL LANDFILL REMEDIAL INVESTIGATION
INITIAL SITE RECONNAISSANCE DATA

Location	Meter					
	OVA (ppm)	HNu (ppm)	LEL (%)	O_2 (%)	H_2S (ppm)	Radiation (mrems/hr)
By Gate, Access Road	0.7	0.0	0.1	20.9	0.0	0.025-0.030
Access Road, Wetland	1.3	0.0	0.1	20.9	0.0	0.035-0.040
Access Road, Culvert	6.0	0.2	0.2	20.6	0.0	0.030-0.040
Command Post	4.0	0.0	0.1	20.7	0.0	0.030-0.045
Area #3, Oil-Stained Soils	6.0-9.0	0.2-0.6	0.1	20.9	0.1	0.025-0.030
Area #3, Central	3.0-5.0	0.2-0.4	0.1	20.8	0.0	0.030-0.040
Area #3, Central	>1,000	0.2	0.3	20.8	0.1	0.030-0.040
Area #6, West of Road	5.0	0.0	0.1	20.8	1.0	0.025-0.035
Area #6, East of Road	2.0	0.0	0.2	20.8	1.0	0.020-0.030
End of Road	1.0	0.0	0.1	20.8	0.0	0.030-0.045
Area #7, (Near Garbage)	>1,000	0.0	6.0	19.0	1.0	0.030-0.040

Note: All readings taken at ground surface.

ppm - parts per million

% - parts per hundred

mrems - millirems

TABLE 2-2

HERTEL LANDFILL REMEDIAL INVESTIGATION
GAS CHROMATOGRAPH SOIL GAS RESULTS

Sample ID #	Station Grid #	Concentrations (ppb) Benzene RT = 0:51	Toluene RT = 1:19	TCE RT = 0:58	PCE RT = 1:37
1	1725 +00	51	ND<2	ND<2	ND<2
4	50 L	15	>178*	41	>142
2	1775 +00	ND<4	70	ND<4	ND<4
3	50 L	ND<4	ND<4	13	ND<4
5	1825 +00	ND<4	184	70	65
6	50 L	ND<4	32	4	ND
7	50 R	ND<4	ND<4	ND<4	ND<4
8	1875 +00	ND<20	1448	1634	243
9	50 L	ND<4	7322	ND<4	178
10	50 R	98	115	218	41
11	1925 +00	ND<2000	36782	78431	32389
12	50 L	ND<4000	13071	ND<4000	ND<4000
13	50 R	ND<40	69	305	405
14	1975 +00	159	690	251	121
15	50 R	61	35	131	121

* = masked in off-scale peak
** = some heavier peaks eluted
RT = Retention Time

TABLE 2-3

HERTEL LANDFILL REMEDIAL INVESTIGATION
SURFACE SOIL SAMPLING LOCATION RATIONALE

Sample Number	Rationale
SS-01	Disposal Area #1 - pipe and metal debris
SS-02	Perimeter of Area #1 - across access road from SS-01
SS-03	Disposal Area #2 - metal debris and assorted trash
SS-04	Perimeter of Area #2 - south of SS-03
SS-05	Disposal Area #3 - oil-stained area at edge of Area 3
SS-07	Perimeter of Area #3 - in area of vegetation
SS-09	Perimeter of Area #3 - in small ravine; paint cans nearby
SS-10	Disposal Area #6 - "central" area
SS-11	Perimeter of Area #6 - area of phragmites and sumac growth
SS-12	Perimeter of Area #6 - some metal debris nearby
SS-13	Disposal Area #7 - (immediately downhill of) surface paint waste
SS-16	Perimeter of Area #7 - southern edge
SS-18	Perimeter of Area #6 - western edge
SS-19	Perimeter of Area #6 - northern edge
SS-20	Disposal Area #5 - approximate location, disposal area not easily discernable
SS-21	Perimeter of Area #5 - near western most area of landfill activities
SS-22	Background sample near Wehran well MW-W3S
SS-23	Disposal Area #4 - approximate location
SS-24	Perimeter of Area #4
SS-25	Area where runoff from southern area of site would collect
SS-26	Unidentified Disposal Area #8
SS-27	Unidentified Disposal Area #8

TABLE 2-4

HERTEL LANDFILL REMEDIAL INVESTIGATION
TEST PIT LOCATION RATIONALE AND SAMPLING LOCATIONS

Test Pit Number	Rationale/Samples
TP-1	Investigate Disposal Area #7; soil, waste samples
TP-2	Investigate Disposal Area #7; soil, water samples
TP-3	Investigate Disposal Area #3; soil sample
TP-4	Investigate Disposal Area #6; soil sample
TP-5	Investigate Disposal Area #7
TP-6	Investigate Disposal Area #7
TP-7	Investigate Disposal Area #7
TP-8	Investigate Disposal Area #1; soil, water samples
TP-9	Investigate Magnetic Anomaly and General Landfill
TP-10	Investigate Disposal Area #3 and Magnetic Anomaly; waste sample
TP-11	Investigate Disposal Area #3 and Magnetic Anomaly; soil, waste samples
TP-12	Investigate Magnetic Anomaly and Landfill; soil sample
TP-13	Investigate Disposal Area #4 and Magnetic Anomaly; soil sample
TP-14	Investigate Magnetic Anomaly and General Landfill
TP-15	Investigate Disposal Area #7 and Magnetic Anomaly; water sample
TP-16	Investigate Magnetic Anomaly and General Landfill; soil sample
TP-17	Investigate Magnetic Anomaly and General Landfill
TP-18	Investigate Disposal Area #4
EP-1-7	Investigate Soils Outside of the Landfill Area

TABLE 2-5

HERTEL LANDFILL REMEDIAL INVESTIGATION
TEST PIT SAMPLING SUMMARY

Test Pit Number	Sample Number	General Sample/Fill Description
TP-1	TP-1	• Sand beneath paint waste at 2-3 feet below ground level
	TP-1	• Composite of waste pile for waste characterization
TP-2	TP-2	• Fill material at 2-3 feet below ground level
	TP-2	• Ground water in test pit
TP-3	TP-3	• Fill material at 12 feet below ground level
TP-4	TP-4	• Fine sand below fill at 16.5 feet below ground level; assorted garbage
TP-5	-	• No samples collected; assorted garbage
TP-6	-	• No samples collected; assorted garbage
TP-7	TP-7	• Sand between layers of fill; assorted garbage
	TP-7W	• Ground water at about 5 feet below ground level
TP-8		• Soil at 2-3 feet below ground level. • Ground water in test pit.
TP-9	-	• No samples collected; assorted garbage
TP-10	TP-10	• Composite sample of fill and waste from 2-5 feet below ground level; assorted garbage
TP-11	TP-11	• Sand below waste at 17 feet below ground level; assorted garbage
	TP-11	• Composite of waste for waste characterization
TP-12	TP-12	• Soil at depth of 6 feet below ground level in fill; metal and assorted garbage
TP-13	TP-13	• Sand at depth of 13.5 feet below ground level immediately below fill; assorted garbage
TP-14	-	• No samples collected; assorted garbage
TP-15	TP-15	• Ground water at depth of 13 feet below ground level; assorted garbage

TABLE 2-5

HERTEL LANDFILL REMEDIAL INVESTIGATION
TEST PIT SAMPLING SUMMARY

(Continued)

Test Pit Number	Sample Number	General Sample/Fill Description
TP-16	TP-16	• Sand, silt and roots from between layers of fill; metal, wood and assorted garbage
TP-17	-	• No samples collected; assorted garbage, wood and metal
TP-18	-	• No samples collected; assorted garbage, tires and metal
EP-1	-	• No samples collected; native silt, sand, gravel and boulders
EP-2	-	• No samples collected; native silts, sands, gravel and boulders
EP-3	-	• No samples collected; native silts, sands, gravel and boulders
EP-4	-	• No samples collected; native silts, sands, gravel and boulders
EP-5	-	• No samples collected; native silts, sands, gravel and boulders
EP-6	-	• No samples collected; native silts, sands, gravel and boulders
EP-7	-	• No samples collected; native silts, sands, gravel and boulders

TABLE 2-6

HERTEL LANDFILL REMEDIAL INVESTIGATION
TEST BORING/MONITORING WELL LOCATION RATIONALE

MW-1S/1D	Upgradient well cluster to west, shallow water table well, deep well overburden.
MW-2S/2D	Upgradient well cluster to north, shallow water table well, deep well bedrock.
MW-3S/3D	Upgradient well cluster to east, shallow water table well, deep well bedrock.
MW-5S	Single shallow water table well installed below fill.
MW-6S/6D	Well cluster within landfill, shallow water table well within fill, deep well in bedrock.
MW-7S/7D	Well cluster within landfill, shallow water table well within fill, deep well in bedrock.
MW-8S	Single shallow water table well in landfill area.
MW-9S	Single shallow water table well at landfill toe.
MW-10S/10D	Well cluster at landfill toe - shallow water table well in overburden, deep well in overburden.
MW-11S/11D	Well cluster at landfill toe - shallow water table well overburden, deep well in overburden.
MW-12S	Single shallow water table well downgradient east of landfilling activities.
MW-13S	Single shallow water table well in area of debris along access road.
P-1	Single piezometer to monitor ground water levels downgradient of pond along access road.
P-2	Single piezometer to monitor ground water levels at southern edge of landfill.
P-3	Single piezometer to monitor ground water levels beyond landfill area to south.
P-4	Single piezometer to monitor ground water levels beyond landfill area to south.

TABLE 2-7

HERTEL LANDFILL REMEDIAL INVESTIGATION
MONITORING WELL CONSTRUCTION SUMMARY

Well Number	Date Installed	Bottom of Double Casing (ft bg)[2]	Boring Depth (ft bg)[2]	Well Screen Interval (ft bg)[2]	Sand Pack (ft bg)[2]	Bentonite Seal (ft bg)[2]	Depth to Water (ft btoc)[3]	Ground Surface Elevation (ft msl)[4]	Top of Well Casing Elevation (ft msl)[4]	Ground Water Elevation (ft msl)[4]	New York State Grid Coordinates North	New York State Grid Coordinates East
MW-1S	03/02/90	--	36	18.0-28.0	11.5-28.0	8.5-11.5	26.63	679.9	681.90	655.27	614833.50	579972.75
MW-1D	04/11/90	--	50	37.0-47.0	35.0-49.8	32.0-35.0	29.56	682.2	684.84	655.28	614888.64	579983.60
MW-2S	01/17/90	--	105	5.5-10.5	3.5-10.5	2.0-3.5	9.09	622.4	623.76	614.67	616276.77	581327.65
MW-2D	05/18/90	37	52	42.0-52.0	38.0-52.0	3.0-38.0	9.54	621.0	624.00	614.46	616224.22	581327.35
MW-3S	02/14/90	--	12	2.0-12.0	1.7-12.0	0.9-1.7	5.16	636.1	639.27	634.11	614249.16	580362.69
MW-3D	05/02/90	42	54	44.0-54.0	42.4-54.0	21.0-42.4	3.76	634.1	636.29	632.53	614263.34	580393.50
MW-5S	02/06/90	14	25.5	15.0-25.0	14.0-25.5	11.6-14.0	21.87	654.6	656.56	634.69	615114.05	580383.32
MW-6S	01/17/90	--	18	4.0-14.0	2.5-14.0	1.3-2.5	12.77	631.0	632.86	620.09	615117.36	580720.53
MW-6D	06/05/90	19/32[1]	61.5	50.0-60.0	48.7-60.0	32.0-48.7	15.66	630.7	633.62	617.96	615115.76	580739.53
MW-7S	01/18/90	--	16	3.8-13.8	2.3-14.0	0.6-2.3	14.12	640.6	642.40	628.28	614860.14	580525.09
MW-7D	05/29/90	19/43[1]	56.5	44.5-54.5	44.3-54.5	3.0-44.3	21.31	640.5	643.18	621.87	614867.68	580527.97
MW-8S	01/24/90	--	12.4	2.5-12.4	2.25-12.4	1.5-2.25	4.33	619.3	621.10	616.77	615337.85	580862.86
MW-9S	02/28/90	--	11	2.0-11.0	1.5-11.0	0.5-1.5	1.28	622.4	624.31	623.03	614461.60	580633.16
MW-10S	03/07/90	--	13	3.0-13.0	2.0-13.0	1.0-2.0	1.40	616.0	617.17	615.77	614689.04	580782.08
MW-10D	05/17/90	--	50	34.5-44.5	31.6-44.6	30.0-31.6	4.56	618.8	621.10	616.54	614686.19	580756.02
MW-11S	03/08/90	--	14	3.0-13.0	2.0-13.0	1.0-2.0	3.26	617.3	618.99	615.73	614934.36	580933.01
MW-11D	05/23/90	--	46	28.75-38.75	27.0-38.75	25.0-27.0	4.60	618.4	620.96	616.36	614920.42	580921.67
MW-12S	01/12/90	--	12.25	2.25-12.25	2.25-12.25	1.0-2.25	5.25	618.6	620.48	615.23	615249.05	581008.30
MW-13S	01/11/90	--	13	2.0-12.0	2.0-13.0	1.3-2.0	3.04	615.6	617.41	614.37	615488.77	581173.23
MW-W1S[5]	07/23/81	--	15	4.0-14.0	4.0-15.0	2.0-4.0	7.06	619.3	621.78	615.31	615179.72	581020.70
MW-W1D[5]	07/22/81	--	32	20.0-30.0	19.0-32.0	18.5-19.0	6.05 [6]	619.0	621.27	615.22	615169.35	581029.90
MW-W2S[5]	07/24/81	--	11	5.0-10.0	4.0-11.0	2.0-4.0	2.48	616.4	618.61	616.13	614794.58	580879.46
MW-W2D[5]	07/23/81	--	22	15.0-20.0	13.0-22.0	12.3-13.0	2.25	615.9	618.35	616.10	614788.41	580878.84
MW-W3S[5]	07/28/81	--	41	28.0-38.0	11.0-41.0	9.0-11.0	18.83	673.6	675.07	656.24	614885.93	579834.77
P-1	01/10/90	--	13	3.0-13.0	2.0-13.0	1.5-2.0	3.44	616.4	617.93	614.49	615698.45	581242.20
P-2	01/30/90	--	13	3.0-13.0	3.0-13.0	2.0-3.0	9.95	637.8	639.10	629.15	614494.82	580428.61
P-3	02/12/90	--	13	3.0-13.0	2.0-13.0	1.9-2.0	2.07	629.5	631.51	629.44	614175.86	580519.34
P-4	02/13/90	--	13.5	3.0-13.0	2.3-13.5	1.0-2.3	5.50	647.3	649.27	643.77	614048.35	580187.70
EP-2[7]	12/07/89	--	6.3	1.3-6.3	--	--	6.33	642.8	646.34	640.01	614097.10	580299.56
EP-4[7]	12/06/89	--	7.7	2.7-7.7	--	--	4.67	657.8	661.63	656.96	613217.95	580105.84
EP-5[7]	12/07/89	--	8.6	3.6-8.6	--	--	3.91	646.6	649.82	645.91	613814.03	580364.50

1 When two numbers are given, a triple cased well is represented
2 ft. bg = feet below grade
3 ft - feet to water measured from top of inner casing
4 ft msl = feet above mean sea level (on 10/29/90) or NGVD
5 Wehran Engineering well
6 Water level measured from top of outer casing
7 Test pit piezometer

-- = Not Applicable

TABLE 2-8

HERTEL LANDFILL REMEDIAL INVESTIGATION
MONITORING WELL DEVELOPMENT SUMMARY

Well Number	Method(s) Development	Total Volume	Initial Readings pH	Temp °C	S.C./MMHO	Tur. NTU	Final Readings pH	Temp °C	S.C. MMHO	Tur. NTU	Comments
MW-1S	B	84	6.0	10.0	215	>200	6.0	10.8	140	>200	Salinity - 0.0%
MW-1D	B	56	6.8	13.0	115	>200	7.1	11.0	90	>200	
MW-2S	B, CP	49	7.8	14.5	96	>200	7.4	12.0	80	18	
MW-2D	PP		7.1	12.7	252	14.2	6.8	12.8	280	14.3	
MW-3S	CP, PP	84	6.0	--	60	>200	6.0	8.0	36	27	
MW-3D	B, PP	93	10.7	12.0	118	>200	10.9	11.0	240	>200	
MW-5	B, CP, PP	59	6.0	11.0	480	>200	6.0	11.0	700	38	Salinity - 0.02%
MW-6S	CP	60	6.8	14.5	1480	>200	6.5	15.5	1580	23	Salinity - 0.1%
MW-6D	B	78	7.0	15.5	670	>200	6.7	15.5	790	>200	
MW-7S	CP, W, B	7	6.5	9.0	670	>200	6.0	10.0	570	89	Salinity - 0.02%
MW-7D	B	72	10.2	14.1	205	>200	10.3	15.0	180	>200	
MW-8	CP, PP	40	--	12.0	900	--	6.5	10.5	750	5	Salinity - 0.02%
MW-9	PP, CP	60	6.0	10.0	232	>200	7.2	12.1	290	5500	
MW-10S	CP, PP	40	6.0	--	600	>200	6.5	10.5	620	42	Salinity - 0.01%
MW-10D	CP	300	7.3	15	250	>200	7.2	--	300	>200	
MW-11S	CP, PP	206	6.0	13.5	1050	--	7.0	11.0	1120	5	
MW-11D	CP	590	6.2	14.0	1220	95	6.1	15.1	1310	40	
MW-12	CP, PP	56	7.3	11.0	530	>200	6.0	8.1	850	36	
MW-13	CP, PP	43	6.6	6.5	250	>200	6.0	6.5	165	2	
MW-W1S	B, CP, PP	117	7.3	--	850	--	7.8	8.0	900	2	Salinity - 0.05%
MW-W1D	CP, PP	108	7.7	12.0	1380	--	7.0	10.0	1370	<1	Salinity - 0.1%
MW-W2S	CP, PP	30	6.6	--	900	--	6.0	10.0	800	26	Salinity - 0.03%
MW-W2D	CP, PP	579	6.0	--	900	--	7.0	10.5	850	<1	Salinity - 0.02%
MW-W3S	B	30	6.7	11.5	80	>200	7.0	16.2	81	>200	

B - Bailer
CP - Centrifugal pump
PP - Peristaltic pump
W - Waterra hand pump

TABLE 2-9

HERTEL LANDFILL REMEDIAL INVESTIGATION
PRIVATE WELL SAMPLING SUMMARY

Sample Number	Household Name	Well Depth (ft below grade)	Sample Location	Prior NYSDOH Sampling	Notes
PW-1	Cerra	365	Outside Tap	Yes	
PW-2	Cavezza	38	Outside Tap	Yes	20-gallon holding tank. Homeowner reports sulfur odor.
PW-3	LaCascio	125	Outside Tap	Yes	
PW-4	M. LaManna	20	Kitchen Tap	Yes	30-gallon holding tank.
PW-5	F. Lamanna	220	Outside Tap	Yes	
PW-6	Johnson	Unknown	Kitchen Tap	Yes	
PW-7	Snyder	"shallow"	Outside Tap	Yes	30-gallon holding tank. Water softener system[1]
PW-8	Roosa	28	Kitchen Tap	No	
PW-9	Bisaccia	68	Outside Tap	No	120-gallon holding tank. Well supplies 2 households.
PW-10	Ericksen Home	175	Kitchen Tap	Yes	
PW-11	Ericksen Apt.	215	Wellhead Tap	Yes	

Well depths were reported by the occupants of the residences.

[1] - Water softener system shut-off during purging and sampling.

TABLE 2-10

HERTEL LANDFILL REMEDIAL INVESTIGATION
SURFACE WATER SAMPLING LOCATION RATIONALE

Location	Rationale
SW-1	Off-site, background samples
SW-2	Drainage ditch between pond and landfill area
SW-3	Off-site, background sample
SW-4	On-site background sample
SW-5	On-site background sample
SW-6	Stream at landfill base, near south end of landfill
SW-7	Stream at landfill base, near center of landfill
SW-8	Stream at landfill base, near center of landfill
SW-9	Stream at landfill base, near north end of landfill
SW-10	Wetland/pond at north end of site, southern area
SW-11	Wetland/pond at north end of site, near area of timber and empty drums
SW-12	Wetland/pond at north end of site, metal debris
SW-13	Wetland/pond at north end of site, near discharge culvert
SW-14	Wetland/pond at north end of site, northern area, some metal debris
SW-15	Downgradient of wetland/pond, prior to confluence with stream from east landfill
SW-16	Off-site to east, downgradient of landfill
SW-17	Off-site to east, downgradient of landfill
SW-18	Off-site to east, downgradient of landfill at base of hill
SW-19	Off-site in stream valley, upstream from influence with discharge from site
SW-20	Off-site in stream valley, near stream crossing with US 44/55
LS-21	Leachate seep at landfill base, to north
LS-22	Leachate seep at landfill base
LS-23	Leachate seep at landfill base
LS-24	Leachate seep at landfill base
LS-25	Leachate seep at landfill base

TABLE 2-11

HERTEL LANDFILL REMEDIAL INVESTIGATION
SEDIMENT SAMPLING LOCATION RATIONALE

Location	Rationale
SED-1	Off-site, background samples
SED-2	Drainage ditch between pond and landfill area
SED-3	Off-site, background sample
SED-4	On-site background sample
SED-5	On-site background sample
SED-6	Stream at landfill base, near south end of landfill
SED-7	Stream at landfill base, near center of landfill
SED-8	Stream at landfill base, near center of landfill
SED-9	Stream at landfill base, near north end of landfill
SED-10	Wetland/pond at north end of site, southern area
SED-11	Wetland/pond at north end of site, near area of timber and empty drums
SED-12	Wetland/pond at north end of site, metal debris
SED-13	Wetland/pond at north end of site, near discharge culvert
SED-14	Wetland/pond at north end of site, northern area, some metal debris
SED-15	Downgradient of wetland/pond, prior to confluence with stream from east landfill
SED-16	Off-site to east, downgradient of landfill
SED-17	Off-site to east, downgradient of landfill
SED-18	Off-site to east, downgradient of landfill at base of hill
SED-19	Off-site in stream valley, upstream from influence with discharge from site
SED-20	Off-site in stream valley, near stream crossing with US 44/55
SED-21	Leachate seep at landfill base, to north
SED-22	Leachate seep at landfill base
SED-23	Leachate seep at landfill base
SED-24	Leachate seep at landfill base
SED-25	Leachate seep at landfill base
SED-26	Leachate seep in ravine southern end of landfill area
SED-27	Location SED-20, 6-12 inches
SED-28	Location SED-20, 12-18 inches
SED-29	Location SED-3, 6-12 inches
SED-30	Location SED-3, 12-18 inches
SED-31	Location SED-15, 6-12 inches
SED-32	Location SED-15, 12-18 inches
SED-33	Location SED-8, 6-12 inches
SED-34	Location SED-8, 12-18 inches
SED-35	Location SED-11, 6-12 inches
SED-36	Location SED-11, 12-18 inches
SED-37	Location SED-5, 6-12 inches
SED-38	Location SED-5, 12-18 inches

TABLE 2-12

HERTEL LANDFILL REMEDIAL INVESTIGATION
SAMPLE SUMMARY

Matrix (Sample Designation)	Approximate Date of Sampling	Number of Samples						Analyses[4]
		Environmental	Duplicate	MS/MSD[1]	Field Blank[2]	Trip Blank[3]	Other	
Surface Soil (SS)	11/89	22	2	2	2	2	0	A,B,C,D,E,K
Subsurface Soil (SB)	1/90	2	1	1	1	0	0	A,B,C,D,E
	2/90	1	0	1	1	0	1[5]	A,B,C,D,E
Test Pit (TP)								
Soil	12/89	11	2	2	0	0	0	A,B,C,D,E,K,L[5]
Ground Water	12/89	4	2	2	4	4	0	A,B,C,D,E,F,H,K
Sediment (SED)	6/90	36	2	2	3	0	0	A,B,C,D,E,K
Surface Water (SW)	6/90	25	2	2	0	4	0	A,B,C,D,E,F,G, H,I,J,K,M
Private Wells (PW)	6/90	11	1	1	0	1	0	A,B,C,D,E,F,G, H,I,J,K
Ground Water (GW)	6/90	22	2	2	1	3	0	A,B,C,D,E,F,H, K
	8/90	23	2	2	1	2	1[7]	A,B,C,D,E,F,H, K

1 Matrix spike/matrix spike duplicate for lab quality assurance/quality control.

2 Field blanks taken with laboratory grade deionized water.

3 Trip blanks analyzed for volatile organic compounds (VOCs) only.

4 Analyses performed as follows:

A) Volatile organic compounds (VOCs)
B) Base neutral/acid extractables (BNAs)
C) Pesticides/PCBs
D) Total metals, Target Analyte List (filtered and unfiltered on ground water)
E) Cyanide (CN)
F) Ions, (chloride, carbonate, bicarbonate and sulphate)
G) Total dissolved solids (TDS)
H) Nitrogen compounds (total nitrogen, TKN, NH_3, NO_2, NO_3)
I) Biological oxygen demand (BOD)
J) Phosphorus
K) Total organic carbon (TOC)
L) RCRA waste characterization (EP toxicity, corrosivity, ignitability, reactivity [sulfide-R, cyanide + R])
M) Total organic halogens, (TOX)

5 A sample from the driller's water truck was submitted during this sampling event. The water sample was analyzed for A, B, C, D, E, K.

6 Based on field observations during test pit excavation, 8 soil samples were collected for RCRA characteristics.

7 A water blank taken from the deionized water used at the site was submitted for analysis.

TABLE 3-1

HERTEL LANDFILL REMEDIAL INVESTIGATION
VERTICAL GRADIENTS

Well Number	Screen Interval (ft bg)	Ground Water Elevation(ft msl) 5/22/90	10/29/90	Vertical Gradient(ft/ft) 5/22/90	10/29/90
MW-1S	18-28	658.36	655.27	-0.012	+0.001
MW-1D	37-47	658.25	655.28		
MW-2S	55-105	618.54	614.67	-0.044	-0.006
MW-2D	42-52	617.14	614.46		
MW-3S	2-12	634.92	634.11	-0.024	-0.049
MW-3D	44.54	634.14	632.53		
MW-6S	4-14	622.34 [3]	620.09	-0.103	-0.059
MW-6D	50-60	618.62 [3]	617.96		
MW-7S	3.8-13.8	628.57	628.28	-0.141	-0.209
MW-7D	44.5-54.5	624.24	621.87		
MW-10S	3-13	615.53	615.77	+0.067	+0.036
MW-10D	34.5-44.5	616.96	616.54		
MW-11S	3-13	616.33	615.73	+0.044	+0.040
MW-11D	28.75-38.75	617.02	616.36		
MW-W1S	4-14	615.60	615.31	-0.002	-0.015
MW-W1D	20-30	615.59	615.22		
MW-W2S	5-10	616.59	616.13	-0.002	-0.006
MW-W2D	15-20	616.58	616.10		

Note:

[1] ft bg = feet below grade

[2] ft msl = feet above mean sea level

[3] June 11, 1990 data

\+ signifies upward hydraulic gradient

\- signifies downward hydraulic gradient

TABLE 3-2

HERTEL LANDFILL REMEDIAL INVESTIGATION
COMPARISON OF GROUND WATER AND SURFACE WATER LEVELS

Location	Reference Elevation (ft msl)	Water Elevation (ft NGVD) 05/22/90	Water Elevation (ft NGVD) 10/29/90
P-4	649.27	645.05	643.77
SWL-4	644.39	643.41	643.13
P-3	631.51	629.55	629.44
SWL-5	630.27	628.27	628.19
MW-10S	617.17	615.53	615.77
SWL-6	618.80	616.39	616.51
MW-W1S	622.37	615.60	615.31
MW-11S	618.99	616.28	615.73
SWL-7	616.79	614.46	614.48
MW-8S	621.10	617.00	616.77
SWL-8	618.10	615.97	615.75
MW-13S	617.41	614.28	614.37
SWL-9	615.29	613.31	613.96
P-1	617.93	614.62	614.49
SWL-10	617.47	616.08	615.93

Note: "MW-" and "P-" designations refer to ground water observation points in monitor wells and piezometers, respectively.

"SWL-" designations refer to a surface water observation point.

Surface and ground water measurements are referenced to National Geodetic Vertical Datum (NGVD).

TABLE 3-3

HERTEL LANDFILL REMEDIAL INVESTIGATION
CALCULATED HYDRAULIC CONDUCTIVITIES

Well Number	Test Method	Aquifer Unit Monitored	Calculated Hydraulic Conductivity Based on Single-Well Aquifer Tests (ft/day)
MW-1S	SE	WT	7.4-13.2*
MW-2S	SE	WT	1.6-7.6*
MW-3S	SE	WT	5.3
MW-5S	SE	WT	1.2-16.9*
MW-8S	SE	WT	1.6
MW-9S	SE	WT	0.4
MW-10S	SE	WT	0.7
MW-11S	SE	WT	1.2-10.8*
MW-12S	SE	WT	0.7-6.3*
MW-13S	PT/RT	WT	12.3/64.6
MW-W1S	SE	WT	4.2-9.6*
MW-W2S	SE	WT	3.3
MW-W3S	SE	WT	0.8
MW-2D	SE	BR	3.3
MW-3D	SE	BR	0.1
MW-6D	SE	BR	1.2-1.9*
MW-7D	SE	BR	1.4-2.7*
MW-10D	PT/RT	DE	2.5/3.6
MW-11D	PT/RT	DE	2.0/5.1
MW-W1D	PT/RT	DE	0.7/2.4
MW-W2D	PT/RT	DE	162/94

SE - slug extraction test
PT - short term pumping test
RT - recovery data following pumping test
WT - water table/shallow overburden
DE - deep overburden
BR - bedrock
* - Ranges result from analysis of different portions of the data set; higher values are from limited early-time data, whereas lower values are from later-time data. The early-time data from shallow well tests may be influenced by drainage from the gravel pack resulting in an elevated apparent hydraulic conductivity.

See Appendix G for data and analyses.

TABLE 3-4

HERTEL LANDFILL REMEDIAL INVESTIGATION

NUMBER OF MACROINVERTEBRATE TAXA AND INDIVIDUALS

AREA OF STREAM	TOTAL NO. OF TAXA	TOTAL NO. OF INDIVIDUALS
UPSTREAM OF LANDFILL (Stations US-A, US-B)	12	305
ADJACENT TO LANDFILL (Stations IS-A, IS-B)	13	186
DOWNSTREAM OF LANDFILL (Stations DS-A, DS-B)	13	250

Note: For each area, one station was sampled with a Surber and the other was sampled with a D-net (e.g., all three replicates at Station IS-A were sampled with a Surber and all replicates at IS-B were sampled with a D-net). Surber used in sections of stream with flowing water, D-net used in calm, ponded areas.

TABLE 3-5

HERTEL LANDFILL REMEDIAL INVESTIGATION

IDENTIFIED NYSDEC PROTECTED NATIVE PLANTS

SCIENTIFIC NAME	COMMON NAME	PROTECTED STATUS	COMMUNITY
1. Adiantum pedatum	maiden hair fern	(d)	FW(S)
2. Cypripedium acaule	moccasin flower	(d)	FU
3. Cypripedium reginae	showy lady's-slipper	(d)	FW(S)
4. Dennstaedtia punctilobula	hayscented fern	(d)	FU
5. Equisetum pratense	meadow horsetail	(e)	FW
6. Ilex verticillata	common winterberry	(d)	FW
7. Lycopodium annotinum	stiff clubmoss	(d)	FU
8. Lycopodium inundatum	bog clubmoss	(d)	FW(S)
9. Lycopodium obscurum	tree clubmoss	(d)	FU
10. Pteridium aquilinum	braken fern	(d)	FU
11. Quercus phellos	willow oak	(b)	FU
12. Trillium erectum	red trillium	(d)	FU
13. Trillium undulatum	painted trillium	(d)	FU

Status -

(b) native plants in danger of extinction throughout all or a significant portion of their range.
(d) exploitably vulnerable native plant.
(e) rare native plants that have from 20 to 35 extant sites or 3,000 to 5,000 individuals statewide.

Communities -

FW(S) Forested wetland limited to stream habitat.
FU Forested upland.
FW Forested wetland.

TABLE 3-6

HERTEL LANDFILL REMEDIAL INVESTIGATION
SUMMARY OF SOILS AND HYDROLOGY INVESTIGATIONS

Observation Point	Matrix Color 10-16"	Mottle Colors	Hydric Soil	Wetland Hydrology	Remarks
0-1-U	10YR 5/4	------	No	No	Bath-Nassau
0-1-W	5Y 6/1	------	Yes	Yes	Lyons; gleyed; very poorly drained
0-2-U	10YR 5/4	------	No	No	Bath-Nassau; rock outcrop
0-2-W	5Y 6/1	------	Yes	Yes	Lyons; surface ponding
0-3-U	10YR 5/4	------	No	No	Bath-Nassau; rock outcrop
0-3-W	------	----	-----	Yes	Disturbed
0-4-U	10YR 5/3	------	No	No	Bath-Nassau; rock outcrop
0-4-W	5Y 5/1	------	Yes	Yes	Lyons-Atherton; very poorly drained
0-5-U	10YR 6/4	------	No	No	Bath-Nassau; well drained
0-5-W	5Y 5/1	------	Yes	Yes	Canandaigua? Ponded
0-6-U	10YR 5/4	------	No	No	Bath-Nassau; rock outcrop
0-6-W	10YR 4/1	10YR 6/4	Yes	Yes	Lyons, hummocky, gleyed
0-7-U	10YR 6/4	------	No	No	Bath-Nassau; rock outcrop
0-7-W	5Y 5/1	------	Yes	Yes	Lyons; gleyed
0-8-U	10YR 5/4	------	No	No	Bath-Nassau
0-8-W	5Y 5/1	------	Yes	Yes	Lyons; gleyed; stream
0-9-U	10YR 5/1	------	No	No	Bath-Nassau
0-9-W	10YR 5/1	10YR 6/4	Yes	Yes	Lyons

TABLE 4-1

HERTEL LANDFILL REMEDIAL INVESTIGATION

CONCENTRATIONS OF ON-SITE SOILS TO PUBLISHED VALUES

Element	Observed On-Site Background Concentrations (ppm)		Published Ranges of Background Elements in U.S. Soils (ppm)		Observed Concentration Ranges in On-Site Soils (ppm)	
	Subsurface Soil	Surface Soil[1]	EPA[2]	USGS[3]	Subsurface Soils	Surface Soils
Aluminum	10,200-19,600	12,800	10,300-300,000	7->100,000	9,360-16,200	5,010-28,700
Antimony	<24	<10	2-10	<1-8.8	<2.9-21	<10
Arsenic	4.8-24.2	109	1-50	<0.1-73	1.2-12.5	9.1-21.50 [4]
Barium	37.3-1,300	92.6	100-3,000	10-1,500	29-409	41.9-4,490
Beryllium	<0.22-1.4	--	0.1-40	<1-7	0.43-0.89	<1
Cadmium	0.78-2.7	4.4	0.01-0.7	--	<0.43-1.8	4.1-113
Calcium	1,250-7,950	2,110	--	100-280,000	986-2,450	1,410-29,500
Chromium	8.8-16	8.8	1-1,000	1-1,000	12.2-21.9	7.7-2,880
Cobalt	7.6-28	6.7	1-40	<3-70	9.6-13.9	<4.5-34.70
Copper	26 [4]	-- [4]	2-100	<1-700	20.3-50.1	25-319 [4]
Iron	22,000-69,800	12,000	--	100->100,000	17,400-28,300	538-278,000
Lead	10.6-44.4	<0.29	2-200	<10-300	8.5-100	29.3-1,170
Magnesium	2,330-4,810	226	600-6,000	50->50,000	3,900-6,010	<191-14,200
Manganese	782-38,100	1,740	20-3,000	<2-7,000	189-1,720	230-6,040
Mercury	<0.11 [4]	-- [4]	0.01-0.3	<0.01-3.4	--	0.30-1.6 [4]
Nickel	17.2-2509	8.4	5-500	<5-700	14.3-25	<7.9-347
Potassium	777-1,250	905	--	50-37,000	620-1,550	14.9-2,320
Selenium	<0.44-1.3	<14.3	0.1-2	<0.1-3.9	--	<28.2
Silver	0.6-5	<3	0.01-5	--	--	<3
Sodium	75.6 [4]	244	--	<500-50,000	70.5-237 [4]	<182-1,460
Vanadium	12.1-49.5	25.3	20-500	<7-300	12.1-22.3	17.7-51.1
Zinc	76.7-177 [4]	93.5	10-300	<5-2,900	48.6-286	62.6-615

1 Sample SS-22 contained trace concentrations of pesticides and polynuclear aromatic hydrocarbons indicating that it may not be a suitable background sample.

2 From "Hazardous Waste Land Treatment", SW-874, April 1983.

3 From "Element Concentrations in Soils and other Surficial Materials of the Counterminous United States", U.S. Geological Survey Professional Paper 1270, 1984.

4 Range is limited due to rejection of some sample results.

5 Subsurface soil background.

TABLE 4-1

HERTEL LANDFILL REMEDIAL INVESTIGATION

CONCENTRATIONS OF ON-SITE SOILS TO PUBLISHED VALUES

(Continued)

Element	Soil Sample Locations Showing Concentrations Greater Than Observed Background[5]		
	2-5 times background	5-10 times background	10 times background
Aluminum	--		
Antimony	--		
Arsenic	SS-22		
Berium	SS-14		
Beryllium	--		
Cadmium	SS-10, SS-14		SS-04, SS-05, SS-06
Calcium	SS-13, SS-14, SS-19		
Chromium	SS-02, SS-03, SS-13, SS-18		SS-04, SS-05, SS-10, SS-11
Cobalt	--		
Copper	SS-01, SS-10, SS-11, SS-13, SS-16, SS-21 [4]	SS-04	SS-05
Iron	SS-04, SS-05		
Lead	TP-4, SS-07, SS-19, SS-25	SS-03	SS-13
Magnesium	SS-13, SS-16		
Manganese	--		
Mercury	SS-04, SS-05, SS-07, SS-13 [4]	SS-01, SS-02, SS-03, SS09, SS-10, SS-12, SS-18, SS-19	SS-11, SS-16
Nickel	--		
Potassium			
Selenium			
Silver			
Sodium	TP-3, SS-12, SS-16, SS-17, SS-19, SS-22, SS-23, SS-24, SS-25, SS-27 [4]	SS-07, SS-09, SS-10, SS-11, SS-13, SS-18, SS-21, SS-26	SS-01, SS-02, SS-03, SS-04, SS-05
Vanadium			
Zinc	SS-13 [4]		

TABLE 4-2

HERTEL LANDFILL REMEDIAL INVESTIGATION

SURFACE SOIL: ORGANIC COMPOUNDS AND WET CHEMISTRY

FIELD ID	SS-01	SS-02	SS-03	SS-04	SS-05	SS-06	SS-07	SS-08	SS-09	SS-10
DATE SAMPLED	20-Nov-89	20-Nov-89	20-Nov-89	20-Nov-89	20-Nov-89	20-Nov-89	20-Nov-89	20-Nov-89	20-Nov-89	20-Nov-89
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENV DUP SS-05	ENVIRONMENTAL	MS/MSD SS-07	ENVIRONMENTAL	ENVIRONMENTAL
VOLATILE ORGANICS (ug/kg)										
TETRACHLOROETHENE	6 U	6 U	6 U	8 UJ	6 UJ	6 UJ	6 U	6 U	6 U	7 U
TOLUENE	6 U	6 U	6 U	8 UJ	6 UJ	6 UJ	6 U	6 U	6 U	7 U
BASE NEUTRAL/ACID EXTRACTABLES (ug/kg)										
NAPHTHALENE	390 UJ	410 UJ	410 UJ	5500 UJ	24000 UJ	24000 UJ	400 UJ	400 UJ	390 UJ	2200 UJ
ACENAPHTHYLENE	390 UJ	410 UJ	410 UJ	5500 UJ	24000 UJ	24000 UJ	400 UJ	400 UJ	390 UJ	2200 UJ
DIETHYLPHTHALATE	390 UJ	410 UJ	410 UJ	5500 UJ	24000 UJ	24000 UJ	400 UJ	400 UJ	390 UJ	2200 UJ
FLUORENE	390 UJ	410 UJ	410 UJ	5500 UJ	24000 UJ	24000 UJ	400 UJ	400 UJ	390 UJ	2200 UJ
PHENANTHRENE	390 UJ	410 UJ	410 J	5500 UJ	24000 UJ	24000 UJ	240 J	120 J	390 UJ	2200 UJ
ANTHRACENE	390 UJ	410 UJ	410 UJ	5500 UJ	24000 UJ	24000 UJ	48 J	400 UJ	390 UJ	2200 UJ
DI-N-BUTYLPHTHALATE	390 UJ	410 UJ	80 J	5500 UJ	24000 UJ	24000 UJ	400 UJ	400 UJ	390 UJ	2200 UJ
FLUORANTHENE	390 UJ	410 UJ	170 J	5500 UJ	24000 UJ	24000 UJ	440 J	250 J	390 UJ	2200 UJ
PYRENE	390 UJ	410 UJ	180 J	5500 UJ	24000 UJ	24000 UJ	390 J	210 J	390 UJ	2200 UJ
BENZO(A)ANTHRACENE	390 UJ	410 UJ	82 J	5500 UJ	24000 UJ	24000 UJ	240 J	140 J	390 UJ	2200 UJ
CHRYSENE	390 UJ	410 UJ	110 J	5500 UJ	24000 UJ	24000 UJ	270 J	140 J	390 UJ	2200 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	60 J	410 UJ	200 J	5500 UJ	24000 UJ	24000 UJ	91 J	100 J	62 J	2200 UJ
BENZO(B)FLUORANTHENE	390 UJ	410 UJ	86 J	5500 UJ	24000 UJ	24000 UJ	350 J	130 J	390 UJ	2200 UJ
BENZO(K)FLUORANTHENE	390 UJ	410 UJ	98 J	5500 UJ	24000 UJ	24000 UJ	400 UJ	100 J	390 UJ	2200 UJ
BENZO(A)PYRENE	390 UJ	410 UJ	94 J	5500 UJ	24000 UJ	24000 UJ	170 J	110 J	390 UJ	2200 UJ
INDENO(1,2,3-CD)PYRENE	390 UJ	410 UJ	58 J	5500 UJ	24000 UJ	24000 UJ	130 J	110 J	390 UJ	2200 UJ
BENZO(G,H,I)PERYLENE	390 UJ	410 UJ	410 UJ	5500 UJ	24000 UJ	24000 UJ	150 J	100 J	390 UJ	2200 UJ
PESTICIDES/PCB's (ug/kg)										
4,4-DDE	19 UJ	20 UJ	80 UJ	--- R	1500 UJ	2900 UJ	20 UJ	20 UJ	19 UJ	110 UJ
4,4-DDT	19 UJ	20 UJ	93 J	--- R	1500 UJ	2900 UJ	20 UJ	20 UJ	19 UJ	110 UJ
WET CHEMISTRY (mg/kg)										
TOC	-- R	-- R	-- R	-- R	-- R	-- R	-- R	-- R	-- R	-- R

U = Not Detected to the Reported Detection Limit
UJ = Not Detected to an Estimated Detection Limit
J = Estimated Value
R = Data Rejected by Validation
NA = Not Analyzed
ENV DUP = Duplicate of Sample Named
MS/MSD = Sample Analyzed by Matrix Spike/Matrix Spike Duplicate Method

TABLE 4-2

HERTEL LANDFILL REMEDIAL INVESTIGATION

SURFACE SOIL: ORGANIC COMPOUNDS AND WET CHEMISTRY

PAGE 2 OF 3

FIELD ID	SS-11	SS-12	SS-13	SS-14	SS-16	SS-17	SS-18	SS-19	SS-20	SS-21
DATE SAMPLED	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENV DUP SS-13	ENVIRONMENTAL	MS/MSD SS-16	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL
VOLATILE ORGANICS (ug/kg)										
TETRACHLOROETHENE	-- R	6 U	8	6 U	6 U	6 U	6 U	6 U	6 U	6 U
TOLUENE	-- R	6 U	6 U	6 U	6 U	6 U	6 U	8 U	6 U	6 U
BASE NEUTRAL/ACID EXTRACTABLES (ug										
NAPHTHALENE	--- R	790 UJ	3100 J	520 J	390 UJ	390 UJ	420 UJ	3900 UJ	370 UJ	370 UJ
ACENAPHTHYLENE	--- R	790 UJ	4100 UJ	4200 UJ	390 UJ	390 UJ	420 UJ	3900 UJ	370 UJ	370 UJ
DIETHYLPHTHALATE	--- R	790 UJ	4100 UJ	4200 UJ	390 UJ	390 UJ	420 UJ	3900 UJ	43 J	370 UJ
FLUORENE	--- R	790 UJ	4100 UJ	4200 UJ	390 UJ	390 UJ	46 J	3900 UJ	370 UJ	370 UJ
PHENANTHRENE	--- R	790 UJ	4100 UJ	4200 UJ	390 UJ	390 UJ	370 J	1900 J	370 UJ	370 UJ
ANTHRACENE	--- R	790 UJ	4100 UJ	4200 UJ	390 UJ	390 UJ	130 J	3900 UJ	370 UJ	370 UJ
DI-N-BUTYLPHTHALATE	--- R	790 UJ	4100 UJ	4200 UJ	390 UJ	390 UJ	90 J	3900 UJ	370 UJ	370 UJ
FLUORANTHENE	--- R	790 UJ	720 J	510 J	390 UJ	390 UJ	480 J	2400 J	370 UJ	370 UJ
PYRENE	--- R	790 UJ	670 J	720 J	390 UJ	390 UJ	460 J	2800 J	370 UJ	370 UJ
BENZO(A)ANTHRACENE	--- R	790 UJ	480 J	4200 UJ	390 UJ	390 UJ	230 J	1200 J	370 UJ	370 UJ
CHRYSENE	--- R	790 UJ	540 J	4200 UJ	390 UJ	390 UJ	210 J	1700 J	370 UJ	370 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	--- R	790 UJ	2400 J	1400 J	390 UJ	390 UJ	180 J	3900 UJ	370 UJ	370 UJ
BENZO(B)FLUORANTHENE	--- R	790 UJ	860 J	4200 UJ	390 UJ	390 UJ	250 J	1700 J	370 UJ	370 UJ
BENZO(K)FLUORANTHENE	--- R	790 UJ	4100 UJ	4200 UJ	390 UJ	390 UJ	420 UJ	3900 UJ	370 UJ	370 UJ
BENZO(A)PYRENE	--- R	790 UJ	4100 UJ	4200 UJ	390 UJ	390 UJ	210 J	1100 J	370 UJ	370 UJ
INDENO(1,2,3-CD)PYRENE	--- R	790 UJ	4100 UJ	4200 UJ	390 UJ	390 UJ	100 J	650 J	370 UJ	370 UJ
BENZO(G,H,I)PERYLENE	--- R	790 UJ	4100 UJ	4200 UJ	390 UJ	390 UJ	140 J	720 J	370 UJ	370 UJ
PESTICIDES/PCB's (ug/kg)										
4,4-DDE	--- R	380 UJ	200 UJ	200 UJ	19 UJ	19 UJ	100 UJ	380 UJ	18 UJ	18 UJ
4,4-DDT	--- R	380 UJ	210 J	290 J	19 UJ	19 UJ	110 J	620 J	18 UJ	18 UJ
WET CHEMISTRY (mg/kg)										
TOC	-- R	-- R	-- R	-- R	-- R	-- R	-- R	-- R	-- R	-- R

U = Not Detected to the Reported Detection Limit
UJ = Not Detected to an Estimated Detection Limit
J = Estimated Value
R = Data Rejected by Validation
NA = Not Analyzed
ENV DUP = Duplicate of Sample Named
MS/MSD = Sample Analyzed by Matrix Spike/Matrix Spike Duplicate Method

TABLE 4-2

HERTEL LANDFILL REMEDIAL INVESTIGATION

SURFACE SOIL: ORGANIC COMPOUNDS AND WET CHEMISTRY

PAGE 3 OF 3

FIELD ID	SS-22	SS-23	SS-24	SS-25	SS-26	SS-27	FB-1120	FB-1121	TB-1120	TB-1121
DATE SAMPLED	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	20-Nov-89	21-Nov-89	20-Nov-89	21-Nov-89
SAMPLE TYPE	ENV-BKGD	ENVIRONMENTAL	ENVIRONMENTAL	ENV-BKGD	ENVIRONMENTAL	ENVIRONMENTAL	FIELD BLANK	FIELD BLANK	TRIP BLANK	TRIP BLANK
VOLATILE ORGANICS (ug/kg)										
TETRACHLOROETHENE	7 U	6 U	6 U	-- R	-- R	9 U	5 UJ	5 U	5 UJ	5 U
TOLUENE	7 U	9 U	6 U	-- R	-- R	9 U	1 J	2 J	1 J	3 J
BASE NEUTRAL/ACID EXTRACTABLES (ug										
NAPHTHALENE	480 UJ	410 UJ	390 UJ	--- R	--- R	570 UJ	10 U	10 U	NA	NA
ACENAPHTHYLENE	480 UJ	410 UJ	390 UJ	--- R	--- R	570 UJ	10 U	10 U	NA	NA
DIETHYLPHTHALATE	480 UJ	410 UJ	390 UJ	--- R	--- R	570 UJ	10 U	10 U	NA	NA
FLUORENE	480 UJ	410 UJ	390 UJ	--- R	--- R	570 UJ	10 U	10 U	NA	NA
PHENANTHRENE	480 UJ	410 UJ	390 UJ	--- R	--- R	77 J	10 U	10 U	NA	NA
ANTHRACENE	480 UJ	410 UJ	390 UJ	--- R	--- R	570 UJ	10 U	10 U	NA	NA
DI-N-BUTYLPHTHALATE	480 UJ	410 UJ	390 UJ	--- R	--- R	570 UJ	10 U	10 U	NA	NA
FLUORANTHENE	63 J	410 UJ	390 UJ	--- R	--- R	110 J	10 U	10 U	NA	NA
PYRENE	58 J	410 UJ	390 UJ	--- R	--- R	110 J	10 U	10 U	NA	NA
BENZO(A)ANTHRACENE	480 UJ	410 UJ	390 UJ	--- R	--- R	570 UJ	10 U	10 U	NA	NA
CHRYSENE	480 UJ	410 UJ	390 UJ	--- R	--- R	78 J	10 U	10 U	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	170 J	490 J	37 J	--- R	--- R	140 J	10 U	10 U	NA	NA
BENZO(B)FLUORANTHENE	480 UJ	410 UJ	390 UJ	--- R	--- R	110 J	10 U	10 U	NA	NA
BENZO(K)FLUORANTHENE	480 UJ	410 UJ	390 UJ	--- R	--- R	570 UJ	10 U	10 U	NA	NA
BENZO(A)PYRENE	480 UJ	410 UJ	390 UJ	--- R	--- R	570 UJ	10 U	10 U	NA	NA
INDENO(1,2,3-CD)PYRENE	480 UJ	410 UJ	390 UJ	--- R	--- R	570 UJ	10 U	10 U	NA	NA
BENZO(G,H,I)PERYLENE	480 UJ	410 UJ	390 UJ	--- R	--- R	570 UJ	10 U	10 U	NA	NA
PESTICIDES/PCB's (ug/kg)										
4,4-DDE	150 J	100 UJ	19 UJ	--- R	--- R	500 J	0.10 U	0.10 U	NA	NA
4,4-DDT	200 J	100 UJ	19 UJ	--- R	--- R	540 J	0.10 U	0.10 U	NA	NA
WET CHEMISTRY (mg/kg)										
TOC	-- R	-- R	-- R	-- R	-- R	-- R	-- R	-- R	NA	NA

U = Not Detected to the Reported Detection Limit
UJ = Not Detected to an Estimated Detection Limit
J = Estimated Value
R = Data Rejected by Validation
NA = Not Analyzed
ENV DUP = Duplicate of Sample Named
MS/MSD = Sample Analyzed by Matrix Spike/Matrix Spike Duplicate Method

TABLE 4-3

HERTEL LANDFILL REMEDIAL INVESTIGATION

SURFACE SOIL: INORGANIC COMPOUNDS DETECTED

FIELD SAMPLE ID	SS-01	SS-02	SS-03	SS-04	SS-05	SS-06	SS-07	SS-08	SS-09	SS-10	SS-11	SS-12	SS-13	SS-14	SS-16
DATE SAMPLED	20-Nov-89	20-Nov-89	20-Nov-89	20-Nov-89	20-Nov-89	20-Nov-89	20-Nov-89	20-Nov-89	20-Nov-89	20-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENV DUP SS-05	ENVIRONMENTAL	MS/MSD SS-07	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENV DUP SS-13	ENVIRONMENTAL
INORGANICS--(mg/kg)															
ALUMINUM	14300.00	15100.00	14200.00	6870.00	5210.00	5010.00	16500.00	15100.00	13500.00	21400.00	17600.00 J	13900.00	15400.00	20700.00	26400.00
ARSENIC	10.60 J	15.20 J	18.40 J	13.60 J	14.70 J	16.10 J	21.50 J	20.80 J	9.10 J	13.40 J	-- R	-- R	-- R	-- R	-- R
BARIUM	43.80	66.30	73.00	84.40	63.70	60.70	60.00	62.10	50.60	130.00	236.00 J	74.00	2070.00	4490.00	85.30
CADMIUM	3.10	2.70	3.10	29.10	38.60	113.00	2.40	1.20 U	1.20	5.50	5.10 J	3.00	4.00	5.80	3.50
CALCIUM	6490.00	5650.00	4820.00	4920.00	5440.00	5040.00	1840.00	1730.00	2100.00	10100.00	12500.00 J	4930.00	29500.00	23300.00	11900.00
CHROMIUM	29.90 J	77.60 J	32.60 J	2210.00 J	2880.00 J	2770.00 J	20.20 J	19.30 J	17.10	218.00 J	211.00 J	15.40	43.30 J	106.00 J	21.90 J
COBALT	14.80	13.90	13.00	29.40	30.00	34.70	11.70	10.80	10.50	24.60	26.70 J	10.60	12.10	15.80	21.30
COPPER	111.00	41.30	42.20	205.00	319.00	296.00	32.20	31.20	50.50	68.70	91.00 J	-- R	-- R	54.70	59.90
IRON	38200.00	38300.00	32200.00	195000.00	278000.00	274000.00	28000.00	24600.00	22800.00	65900.00	50700.00 J	24600.00	29300.00	39100.00	538.00
LEAD	71.20 J	77.60	298.00 J	54.30 J	49.60 J	46.10 J	91.60	60.60	85.50	43.30 J	67.10 J	43.30 J	835.00 J	1170.00 J	55.90
MAGNESIUM	6640.00	6090.00	5080.00	753.00	191.00 U	194.00 U	4580.00	3920.00	3440.00	5920.00	335.00 UJ	4900.00	14200.00	9460.00	10600.00
MANGANESE	714.00	737.00	798.00	1190.00	1650.00	1690.00	956.00	917.00	984.00	1810.00	6040.00 J	664.00	961.00	1200.00	1340.00
MERCURY	0.65 J	0.90 J	0.66 J	0.49 J	0.30 J	0.37 J	0.54 J	0.60 J	0.74 J	0.71 J	1.60 J	0.64 J	0.52 J	0.82 J	1.10 J
NICKEL	30.10	33.50	28.70	181.00	347.00	347.00	22.30	19.20	17.20	59.90	44.40 J	22.90 J	28.00 J	35.50 J	43.10
POTASSIUM	1150.00	1460.00	1190.00	1040.00 U	767.00 U	790.00	2320.00	1270.00	1460.00	1160.00	1340.00 UJ	1090.00	1410.00	1430.00	14.90
SELENIUM	12.30 UJ	13.80 UJ	12.60 UJ	16.40 UJ	12.10 UJ	12.30 UJ	1.20 UJ	12.00 UJ	1.10 U	1.30 UJ	2.10 UJ	1.20 UJ	13.10 UJ	12.60 UJ	12.00 UJ
SODIUM	1370.00	1460.00	764.00	972.00	801.00	711.00	614.00	659.00	478.00	395.00	587.00 J	344.00	382.00	377.00	341.00
THALLIUM	1.50 UJ	1.70 UJ	1.50 UJ	2.00 UJ	1.50 UJ	1.50 UJ	1.40 UJ	1.40 UJ	1.40 UJ	1.60 UJ	2.60 UJ	1.40 UJ	1.60 UJ	1.50 UJ	1.40 UJ
VANADIUM	18.10	20.20	18.60	24.90	18.80	18.60	21.40	19.20	17.70	32.50	43.50 J	20.00 J	27.80 J	39.60 J	35.50 J
ZINC	112.00 J	99.30 J	328.00 J	149.00 J	133.00 J	132.00 J	86.70 J	80.20 J	70.90 J	151.00 J	287.00 J	106.00 J	469.00 J	615.00 J	201.00 J

U = Not Detected to the Reported Detection Limit

UJ = Not Detected to an Estimated Detection Limit

J = Estimated Value

R = Data Rejected by Validation

BKGD = Background Sample

ENV DUP = Duplicate of Sample Named

MS/MSD = Sample Analyzed by Matrix Spike/Matrix Spike Duplicate Method

TABLE 4-3

HERTEL LANDFILL REMEDIAL INVESTIGATION

SURFACE SOIL: INORGANIC COMPOUNDS DETECTED

PAGE 2 OF 2

FIELD SAMPLE ID	SS-17	SS-18	SS-19	SS-20	SS-21	SS-22	SS-23	SS-24	SS-25	SS-26	SS-27	FB-1120	FB-1121
DATE SAMPLED	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	21-Nov-89	20-Nov-89	21-Nov-89
SAMPLE TYPE	MS/MSD SS-16	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENV-BKGD	ENVIRONMENTAL	ENVIRONMENTAL	ENV-BKGD	ENVIRONMENTAL	ENVIRONMENTAL	FIELD BLANK	FIELD BLANK
INORGANICS--(mg/kg)													
ALUMINUM	12300.00	14200.00	14200.00	12800.00	33500.00	12800.00	13500.00	15800.00	28700.00 J	5330.00 J	16000.00	56.00 U	56.00 U
ARSENIC	-- R	-- R	-- R	-- R	-- R	109.00	-- R	-- R	-- R	-- R	-- R	4.00 U	67.60
BARIUM	41.90	93.00	66.80	59.50	105.00	92.60	49.10	53.90	155.00 J	43.50 J	132.00	37.00 U	37.00 U
CADMIUM	1.20	1.60	2.30	1.10 U	5.10	4.40	1.20 U	1.20 U	2.60 J	2.80 UJ	1.70 U	5.00 U	5.00 U
CALCIUM	4300.00	9570.00	23100.00	1690.00	2320.00	2110.00	1410.00	1420.00	8890.00 J	2530.00 J	5350.00	3010.00	2350.00
CHROMIUM	12.50 J	51.80 J	23.00 J	8.20	20.20	8.80	7.70	9.00	22.40 J	10.30 J	15.50	8.00 U	8.00 U
COBALT	10.20	10.30	9.80	9.60	23.20	6.70	10.40	9.50	12.50	4.50 UJ	5.40	11.40	8.00 U
COPPER	25.00	-- R	-- R	-- R	52.40	-- R	-- R	-- R	-- R	-- R	-- R	21.00 U	38.50 J
IRON	25500.00	29200.00	26500.00	23500.00	54900.00	12000.00	22200.00	24800.00	32500.00 J	4880.00 J	18300.00	78.50	123.00
LEAD	44.70	44.50 J	197.00 J	29.30	63.30	0.29 U	47.90	33.10	123.00 J	-- R	0.35 U	4.60 J	19.50
MAGNESIUM	4790.00	4400.00	9010.00	3590.00	9610.00	226.00 U	3760.00	4490.00	2040.00 J	499.00 J	606.00	804.00	787.00 U
MANGANESE	561.00	1020.00	478.00	870.00	1890.00	1740.00	801.00	763.00	1580.00 J	230.00 J	1790.00	21.50	11.00 U
MERCURY	-- R	0.59 J	0.89 J	-- R	-- R	-- R	-- R	-- R	-- R	-- R	-- R	0.20 U	-- R
NICKEL	20.00 J	30.60 J	25.00 J	15.80 J	40.50	8.40 J	13.80 J	19.90 J	15.20 J	7.90 UJ	15.30 J	14.00 U	14.00 U
POTASSIUM	1470.00	1210.00	950.00	1990.00	730.00 U	905.00 U	1280.00	1400.00	1490.00 UJ	1780.00 UJ	1100.00 U	3160.00 U	4300.00
SELENIUM	1.20 UJ	13.10 U	1.20 UJ	11.40 UJ	11.50 UJ	14.30 UJ	12.00 UJ	11.90 UJ	23.50 UJ	28.20 UJ	17.50 UJ	5.00 U	50.00 U
SODIUM	332.00	382.00	329.00	182.00 U	392.00	244.00	192.00 U	190.00 U	375.00 UJ	449.00 UJ	279.00 U	797.00 U	797.00 U
THALLIUM	1.50 U	1.60 UJ	1.40 UJ	1.40 U	1.40 U	1.70 U	1.40 U	1.40 U	2.80 UJ	3.40 UJ	2.10 U	6.00 U	6.00 U
VANADIUM	18.40 J	20.40 J	30.70 J	16.90	37.80 J	25.30 J	17.70 J	18.50 J	51.10 J	36.50 J	44.60 J	12.00 U	12.00 U
ZINC	90.60	147.00 J	127.00 J	67.00	154.00	93.50	62.60	68.50	133.00 J	67.80 J	121.00	13.40	17.60 BJ

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J = Estimated Value
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BKGD = Background Sample
ENV DUP = Duplicate of Sample Named
MS/MSD = Sample Analyzed by Matrix Spike/Matrix Spike Duplicate Method

TABLE 4-4

HERTEL LANDFILL REMEDIAL INVESTIGATION

TEST PIT SOILS: ORGANIC COMPOUNDS

TABLE 4-4

FIELD ID	TP-1	TP-2	TP-3	TP-4	TP-4	TP-7	TP-8	TP-8	TP-10	TP-11	TP-12
DATE SAMPLED	11-Dec-89	12-Dec-89	13-Dec-89	14-Dec-89	14-Dec-89	15-Dec-89	15-Dec-89	15-Dec-89	19-Dec-89	19-Dec-89	20-Dec-89
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENV-DUP-TP4	ENVIRONMENTAL	ENVIRONMENTAL	MS/MSD TP-8	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL
VOLATILE ORGANICS (ug/kg)											
ACETONE	11 U	12 U	34	13 U	58	11 U	12 U	42	12 U	69 BJ	12 U
CARBON DISULFIDE	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	3 J	3 J
2-BUTANONE	-- R	-- R	-- R	-- R	-- R	-- R	-- R	-- R	12 U	12 U	12 U
BENZENE	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	2 J	6 U
TOLUENE	7	6 U	15	6 U	4 J	14	5 J	8 J	6 U	6 J	2 J
CHLOROBENZENE	6 U	6 U	7	5 J	9	6 U	6 U	6 U	6 U	7	3 J
ETHYLBENZENE	21	6 U	10	9	17	29	6 U	2 J	6 U	41	15
XYLENES (TOTAL)	190	14	37	15	26	310 J	6 U	25	6 U	110	49
BASE NEUTRAL/ACID EXTRACTABLES (ug/kg)											
1,4-DICHLOROBENZENE	730 U	800 U	1000 U	100 J	100 J	720 U	840 U	800 U	390 UJ	4100 UJ	24000 UJ
4-METHYLPHENOL	730 U	800 U	340 J	770 U	790 U	720 U	840 U	800 U	390 UJ	4100 UJ	24000 UJ
BENZOIC ACID	3500 U	3900 U	5100 U	220 J	3800 UJ	3500 U	4100 U	3900 U	1900 UJ	20000 UJ	120000 UJ
NAPHTHALENE	650 J	200 J	310 J	270 J	280 J	68 J	840 U	800 U	390 UJ	360 J	24000 UJ
2-METHYLNAPHTHALENE	76 J	800 U	690 J	770 U	790 U	720 U	840 U	800 U	390 UJ	4100 UJ	24000 UJ
DIBENZOFURAN	730 U	800 U	1000 U	770 U	78 J	720 U	840 U	800 U	390 UJ	4100 UJ	24000 UJ
DIETHYLPHTHALATE	730 U	800 U	1000 U	110 J	120 J	720 U	840 U	800 U	390 UJ	4100 UJ	24000 UJ
FLUORENE	730 U	800 U	420 J	770 U	48 J	720 U	840 U	800 U	390 UJ	4100 UJ	24000 UJ
PHENANTHRENE	730 U	410 J	1100	170 J	210 J	720 U	840 U	800 U	390 UJ	740 J	24000 UJ
ANTHRACENE	730 U	88 J	150 J	770 U	790 U	720 U	840 U	800 U	390 UJ	4100 UJ	24000 UJ
FLUORANTHENE	730 U	610 J	1200	50 J	45 J	720 U	840 U	800 U	390 UJ	840 J	24000 UJ
PYRENE	730 U	620 J	1100	73 J	790 U	720 U	840 U	800 U	390 UJ	920 J	24000 UJ
BUTYLBENZYLPHTHALATE	730 U	92 J	240 J	770 U	210 J	720 U	840 U	800 U	390 UJ	4100 UJ	24000 UJ
BENZO(A)ANTHRACENE	730 U	300 J	420 J	770 U	790 U	720 U	840 U	800 U	390 UJ	4100 UJ	24000 UJ
CHRYSENE	730 U	270 J	430 J	770 U	790 U	720 U	840 U	800 U	390 UJ	4100 UJ	24000 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	580 J	2600	1100	4500	4200	87 J	840 U	800 U	390 UJ	4100 UJ	24000 UJ
DI-N-OCTYLPHTHALATE	730 U	800 U	1000 U	200 J	160 J	720 U	840 U	800 U	390 UJ	4100 UJ	24000 UJ
BENZO(B)FLUORANTHENE	730 UJ	260 J	710 J	770 UJ	790 UJ	720 UJ	840 UJ	800 UJ	390 UJ	4100 UJ	24000 UJ
BENZO(K)FLUORANTHENE	730 UJ	270 J	360 J	770 UJ	790 UJ	720 UJ	840 UJ	800 UJ	390 UJ	4100 UJ	24000 UJ
BENZO(A)PYRENE	730 U	240 J	1000 U	770 U	790 U	720 U	840 U	800 U	390 UJ	4100 UJ	24000 UJ
PESTICIDES/PCB's (ug/kg)											
AROCHLOR-1248	180 U	1500	1300	190 U	190 U	180 U	200 U	190 U	190 UJ	200 UJ	190 UJ
AROCHLOR-1260	350 U	390 U	510 U	370 U	380 U	350 U	410 U	390 U	400 J	400 UJ	380 UJ
WET CHEMISTRY (mg/l)											
TOC (ppm)	-- R	-- R	-- R	-- R	-- R	-- R	-- R	-- R	-- R	-- R	-- R
TKN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NITRATE-NITRITE-N2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMMONIA NITROGEN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHLORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BICARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

U = Not Detected to the Reported Detection Limit

UJ = Not Detected to an Estimated Detection Limit

J = Estimated Value

R = Data Rejected by Validation

B = Analyte Detected in Method Blank; sample concentration less than five times blank value

NA = Not Analyzed

ENV DUP = Duplicate of Sample Named

MS/MSD = Sample Analyzed by Matrix Spike/Matrix Spike Duplicate Method

TABLE 4-4

HERTEL LANDFILL REMEDIAL INVESTIGATION

TEST PIT SOILS: ORGANIC COMPOUNDS

PAGE 2 OF 2

FIELD ID	TP-13	TP-16	TP-32	TPFB-1211	TPFB-1212	TPFB-1213	TPTB-1211	TPFB-1212	TB-1215	TPFB-1221
DATE SAMPLED	20-Dec-89	20-Dec-89	20-Dec-89	11-Dec-89	12-Dec-89	13-Dec-89	11-Dec-89	12-Dec-89	15-Dec-89	21-Dec-89
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENV DUP TP-12	FIELD BLANK	FIELD BLANK	FIELD BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	FIELD BLANK
VOLATILE ORGANICS (ug/kg)										
ACETONE	70 BJ	17 U	79 BJ	-- R	10 UJ	-- R	-- R	10 UJ	-- R	NA
CARBON DISULFIDE	3 J	6 U	9 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
2-BUTANONE	11 U	12 U	13 J	-- R	-- R	-- R	-- R	-- R	-- R	NA
BENZENE	1 J	6 U	1 J	5 U	5 U	5 U	5 U	5 U	5 U	NA
TOLUENE	8	2 J	22	5 U	5 U	5 U	5 U	5 U	5 U	NA
CHLOROBENZENE	1 J	6 U	10	5 U	5 U	5 U	5 U	5 U	5 U	NA
ETHYLBENZENE	7	6 U	35	5 U	5 U	5 U	5 U	5 U	5 U	NA
XYLENES (TOTAL)	13	6 U	100	5 U	5 U	5 U	5 U	5 U	5 U	NA
BASE NEUTRAL/ACID EXTRACTABLES (ug/kg)										
1,4-DICHLOROBENZENE	370 UJ	1900 UJ	4000 UJ	10 U	10 U	10 U	NA	NA	NA	10 U
4-METHYLPHENOL	370 UJ	1900 UJ	4000 UJ	10 U	10 U	10 U	NA	NA	NA	10 U
BENZOIC ACID	1800 UJ	9300 UJ	19500 UJ	50 U	50 U	50 U	NA	NA	NA	50 U
NAPHTHALENE	370 UJ	1900 UJ	4000 UJ	10 U	10 U	10 U	NA	NA	NA	10 U
2-METHYLNAPHTHALENE	370 UJ	1900 UJ	4000 UJ	10 U	10 U	10 U	NA	NA	NA	10 U
DIBENZOFURAN	370 UJ	1900 UJ	4000 UJ	10 U	10 U	10 U	NA	NA	NA	10 U
DIETHYLPHTHALATE	370 UJ	1900 UJ	4000 UJ	10 U	10 U	10 U	NA	NA	NA	10 U
FLUORENE	370 UJ	1900 UJ	4000 UJ	10 U	10 U	10 U	NA	NA	NA	10 U
PHENANTHRENE	370 UJ	1900 UJ	4000 UJ	10 U	10 U	10 U	NA	NA	NA	10 U
ANTHRACENE	370 UJ	1900 UJ	4000 UJ	10 U	10 U	10 U	NA	NA	NA	10 U
FLUORANTHENE	370 UJ	1900 UJ	4000 UJ	10 U	10 U	10 U	NA	NA	NA	10 U
PYRENE	370 UJ	1900 UJ	4000 UJ	10 U	10 U	10 U	NA	NA	NA	10 U
BUTYLBENZYLPHTHALATE	370 UJ	1900 UJ	4000 UJ	10 U	10 U	10 U	NA	NA	NA	10 U
BENZO(A)ANTHRACENE	370 UJ	1900 UJ	4000 UJ	10 U	10 U	10 U	NA	NA	NA	10 U
CHRYSENE	370 UJ	1900 UJ	4000 UJ	10 U	10 U	10 U	NA	NA	NA	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	370 UJ	1900 UJ	4000 UJ	10 U	10 U	10 U	NA	NA	NA	10 U
DI-N-OCTYLPHTHALATE	370 UJ	1900 UJ	4000 UJ	10 U	10 U	10 U	NA	NA	NA	10 U
BENZO(B)FLUORANTHENE	370 UJ	1900 UJ	4000 UJ	10 UJ	10 UJ	10 UJ	NA	NA	NA	10 U
BENZO(K)FLUORANTHENE	370 UJ	1900 UJ	4000 UJ	10 UJ	10 UJ	10 UJ	NA	NA	NA	10 U
BENZO(A)PYRENE	370 UJ	1900 UJ	4000 UJ	10 U	10 U	10 U	NA	NA	NA	10 U
PESTICIDES/PCB's (ug/kg)										
AROCHLOR-1248	170 UJ	190 UJ	200 UJ	0.50 U	0.50 U	0.50 U	NA	NA	NA	0.50 U
AROCHLOR-1260	350 UJ	370 UJ	390 UJ	1.0 U	1.0 U	1.0 U	NA	NA	NA	1.00 U
WET CHEMISTRY (mg/l)										
TOC (ppm)	-- R	-- R	NA	NA	NA	NA	NA	NA	NA	11
TKN	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1 U
NITRATE-NITRITE-N2	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1 U
AMMONIA NITROGEN	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1 U
CHLORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0 U
CARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA	NA	NA	NA	0
BICARBONATE ALKALINITY	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U

U = Not Detected to the Reported Detection Limit

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J = Estimated Value

R = Data Rejected by Validation

B = Analyte Detected in Method Blank; sample concentration less than five times blank value

NA = Not Analyzed

ENV DUP = Duplicate of Sample Named

MS/MSD = Sample Analyzed by Matrix Spike/Matrix Spike Duplicate Method

TABLE 4-5

HERTEL LANDFILL REMEDIAL INVESTIGATION

TEST PIT SOILS: INORGANIC COMPOUNDS

FIELD ID	TP-1	TP-2	TP-3	TP-4	TP-4	TP-7	TP-8	TP-8	TP-10	TP-10	TP-11	TP-12	TP-13	TP-16	TP-32
DATE SAMPLED	11-Dec-89	12-Dec-89	13-Dec-89	14-Dec-89	14-Dec-89	15-Dec-89	15-Dec-89	15-Dec-89	19-Dec-89	19-Dec-89	19-Dec-89	20-Dec-89	20-Dec-89	20-Dec-89	20-Dec-89
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENV DUP TP-4	ENVIRONMENTAL	ENVIRONMENTAL	TP-8 MS/MSD	ENVIRONMENTAL	MS/MSD TP-10	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENV DUP TP-12
INORGANICS (mg/kg)															
ALUMINUM	9760 J	11000 J	12300 J	10300 J	10200 J	9360 J	13300 J	12500 J	16200	13600	16000	11800	9430	11300	12800
ANTIMONY	16.1 J	16.3 J	17.4 J	14.5 J	15.0 J	13.0 J	21.0 J	18.7 J	3.3 UJ	3.3 UJ	3.9 UJ	3.3 UJ	2.9 UJ	3.0 UJ	3.3 UJ
ARSENIC	6.6 J	4.4 J	5.0 J	12.5 J	6.2 J	3.0 J	2.0 J	1.2 J	5.6	4.9	4.8	4.5	4.2	3.7	4.6
BARIUM	40.7	46.1	61.6	378	409	43.6	32.0	29.0	71.5	64.5	62.8	54.3	41.0	50.3	54.9
BERYLLIUM	0.71	0.80	0.83	0.71	0.72	0.71	0.89	0.86	0.75	0.53	0.65	0.48	0.43	0.55	0.56
CADMIUM	0.68 J	0.48 UJ	1.80 J	0.55 J	0.46 UJ	0.43 UJ	0.73 J	0.62 J	0.46 U	0.47 U	0.55 U	0.47 U	0.41 U	0.43 U	0.48 U
CALCIUM	2450 J	2010 J	1440 J	1250 J	1860 J	1090 J	1210 J	1090 J	1710	1640	1610	1170	986	1070	1390
CHROMIUM	15.1	15.2	21.9	16.4	16.3	12.2	19.3	17.3	19.9 J	17.7 J	17.3 J	17.0 J	12.8 J	14.4 J	17.2 J
COBALT	12.9	10.8	13.7	10.6	11.0	9.6	13.9	13.3	13.2	11.4	11.9	9.6	8.9	11.2	9.6
COPPER	45.6	33.7	30.1	39.8	50.1	20.3	33.1	40.2	33.9 J	24.1 J	31.7 J	27.3 J	21.1 J	26.1 J	26.0 J
IRON	21800 J	22800 J	21400 J	18800 J	18200 J	17400 J	26400 J	25400 J	28300	25600	26200	19700	19700	22400	21300
LEAD	18.3 J	45.2 J	63.3 J	93.1 J	100.0 J	10.9 J	17.0 J	17.9 J	33.0 J	28.6 J	12.4 J	13.7 J	8.5 J	36.6 J	16.1 J
MAGNESIUM	4400 J	4290 J	4100 J	4170 J	3900 J	3990 J	6010 J	5660 J	5390	4290	5090	4330	4070	4730	4530
MANGANESE	1720 J	749 J	705 J	741 J	628 J	1000 J	201 J	189 J	756	677	1180	640	284	780	705
NICKEL	20.0	22.2	20.6	17.5	17.5	15.6	25.0	24.1	22.9 J	18.0 J	18.1	16.1	14.3	18.0 J	16.7
POTASSIUM	831 J	1030 J	1030 J	738 J	823 J	1100 J	789 J	620 J	1530	1180	1550	1220	1360	1370	1440
SODIUM	70.5	116	237	78.1	87.2	76.9	98.4	93.9	-- R	-- R	-- R	-- R	-- R	— R	-- R
VANADIUM	13.7	13.7	14.8	13.8	13.2	12.7	14.6	13.1	22.3 J	19.1 J	19.4 J	15.2 J	12.1	14.6 J	16.7 J
ZINC	84.9 J	148 J	286	89.2 J	110 J	48.6 J	79.2 J	83.2 J	82.0	94.0	70.7	78.9	65.1	68.6	120.0
CYANIDE	0.56 U	0.62 U	0.75 U	0.57 U	0.56 U	0.55 U	0.62 U	0.58 U	0.61	1.10	0.75 U	10.4	0.58 U	0.66 U	7.5

U = Not Detected to the Reported Detection Limit
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J = Estimated Value
R = Data Rejected by Validation
MS/MSD = Sample Analyzed by Matrix Spike\Matrix Spike Duplicate Method
ENV DUP = Duplicate of Sample Named

TABLE 4-6

HERTEL LANDFILL REMEDIAL INVESTIGATION

TEST PITS: EP TOXICITY RESULTS OF WASTE SAMPLES

FIELD ID	TP-1	TP-4	TP-8	TP-10	TP-11	TP-12	TP-13	TP-16
DATE SAMPLED	11-Dec-89	14-Dec-89	15-Dec-89	19-Dec-89	19-Dec-89	20-Dec-89	20-Dec-89	20-Dec-89
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL
HAZARDOUS CHARACTERISTICS (ug/l)								
2,4-D	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.36 J	0.05 UJ
ARSENIC	20 J	30 J	30 J	30 J	20 J	20 J	10 J	30 J
BARIUM	520 J	1240 J	170 J	160 J	200 J	580 J	770 J	270 J
CHROMIUM	840 J	200 J	80 J	290 J	560 J	370 J	110 J	50 J
LEAD	9 J	7 J	8 J	5 UJ	5 UJ	17 J	11 J	7 J
SELENIUM	16 J	20 J	31 J	19 J	22 J	20 J	13 J	24 J
SILVER	10 J	40 J	50 J	20 J	10 UJ	40 J	400 J	80 J

U = Not Detected to the Reported Detection Limit

UJ = Not Detected to an Estimated Detection Limit

J = Estimated Value

TABLE 4-7

HERTEL LANDFILL REMEDIAL INVESTIGATION

COMPOUNDS DETECTED IN SOIL BORINGS

FIELD ID	MWB-1	MWB-2	MWB-3	MWB-4	MWB-5	FB-0116	FB-0209	DW-0209
DATE SAMPLED	09-Feb-90	17-Jan-90	16-Jan-90	17-Jan-90	16-Jan-90	16-Jan-90	09-Feb-90	09-Feb-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENV DUP MWB-2	MWB-3 MS/MSD	FIELD BLANK	FIELD BLANK	DRILL WATER BLK
VOLATILE ORGANICS (ug/kg)								
ACETONE	110 U	11 U	20 U	11 U	19 U	70 J	23 J	10 U
CHLOROFORM	6 U	6 U	10 U	6 U	10 U	5 U	5 U	27
BASE NEUTRAL/ACID EXTRACTABLES (ug/kg)								
BENZOIC ACID	1800 U	1800 U	3200 UJ	2000 U	160 J	50 U	50 U	50 U
DI-N-BUTYLPHTHALATE	240 J	380 U	660 UJ	370 U	630 UJ	10 U	10	10
BIS(2-ETHYLHEXYL)PHTHALATE	2100	1000 U	660 UJ	370 U	630 UJ	15	10	10
PESTICIDES/PCB's (ug/kg)	ND	ND	ND	ND	ND	ND	ND	ND
INORGANICS (ug/kg)								
ALUMINUM	10200 J	11000 J	19600 J	11000 J	18300 J	58.2 J	59.0	277
ARSENIC	5.5	5.7 J	20.1 J	4.8 J	24.2 J	5.0 UJ	2.0 U	2.0 U
BARIUM	37.3	58.5	1300 J	57.8	386	4.0 UJ	1.8	11.2
BERYLLIUM	0.22 U	0.46	1.40	0.46	1.20	1.0 UJ	1.0 UJ	1.0 UJ
CADMIUM	0.78	1.10 U	2.70 J	1.10 U	1.80 U	5.0 UJ	1.0 U	1.6
CALCIUM	3190	1250 J	7950 J	1330 J	4880 J	161 J	214	17300
CHROMIUM	16.0	9.2	8.8	8.9	11.4	4.6 J	1.8	1.7
COBALT	9.3	7.6	28.0	8.7	12.5	6.0 UJ	2.0 U	2.0 U
COPPER	26.0 J	-- R	-- R	-- R	-- R	159 J	5.9	11.8
IRON	22400	22000 J	69800 J	22100 J	67800 J	61.2 J	155	1440
LEAD	10.8 J	10.6 J	44.4 J	-- R	17.9 J	2.0 UJ	2.5 J	2.3 J
MAGNESIUM	4810	4210 J	2330 J	4250 J	3230 J	81.9 J	51.6	1390
MANGANESE	786	849 J	38100 J	782 J	5920 J	3.0 UJ	3.9	32.0
MERCURY	0.11 U	0.11 U	-- R	0.11 U	-- R	0.30 J	0.20 UJ	0.20 UJ
NICKEL	21.9	20.4	25.9	20.4	17.2	19.0 UJ	20.0 U	20.0 U
POTASSIUM	1130	1250	836	1090	777	528 UJ	435 U	521
SELENIUM	0.44 U	0.44 UJ	0.93 J	0.45 UJ	1.3 J	2.0 UJ	2.0 U	2.0 U
SILVER	0.60	0.65 U	5.00	0.67 U	1.10 U	3.0 UJ	2.0 U	2.0 U
SODIUM	75.6	-- R	-- R	-- R	-- R	567 J	261	4090
VANADIUM	12.1	12.2	49.5	12.1	44.2	3.0 UJ	1.0 U	1.2 U
ZINC	76.7 J	-- R	177.0	-- R	-- R	84.0 J	23.2	17.9

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B = Analyte Detected in Method Blank; sample concentration less than five times blank value

ND = No analytes of this compound group detected

ENV DUP = Duplicate of Sample Named

MS/MSD = Sample Analyzed by Matrix Spike/Matrix Spike Duplicate Method

TABLE 4-8

HERTEL LANDFILL REMEDIAL INVESTIGATION

ORGANIC COMPOUNDS IN GROUND WATER - JUNE, 1990

TABLE 4-8

FIELD ID	MW-1S	MW-1D	MW-2S	MW-2D	MW-3S	MW-3D	MW-4	MW-5S	MW-6S	MW-6D
DATE SAMPLED	13-Jun-90	13-Jun-90	12-Jun-90	11-Jun-90	12-Jun-90	12-Jun-90	13-Jun-90	12-Jun-90	13-Jun-90	13-Jun-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENV DUP MW-6S	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL
VOLATILE ORGANICS (ug/l)										
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	2 J	10 U
METHYLENE CHLORIDE	5 U	5 U	9 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ACETONE	10 UJ	10 UJ	10 UJ	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U
1,1-DICHLOROETHANE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-DICHLOROETHENE (TOTAL)	5 U	5 U	1 J	5 U	5 U	5 U	5 U	1 J	5 U	5 U
CHLOROFORM	5 U	5 U	1 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-BUTANONE	-- R	-- R	10 U	10 U	10 U	10 U	10 U	10 U	2 J	10 U
1,2-DICHLOROPROPANE	5 U	5 U	1 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TRICHLOROETHENE	5 U	5 U	1 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
BENZENE	5 U	5 U	5 U	5 U	5 U	5 U	5	5 U	6	5 U
TOLUENE	5 U	5 U	5 U	5 U	5 U	5 U	22	5 U	24	5 U
CHLOROBENZENE	5 U	5 U	1 J	5 U	5 U	5 U	15 B	3 J	15 B	5 U
ETHYLBENZENE	5 U	5 U	1 J	5 U	5 U	5 U	32	3 J	32	5 U
STYRENE	5 U	5 U	1 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
XYLENES (TOTAL)	5 U	5 U	3 J	5 U	5 U	5 U	38	5 U	38	5 U
BASE NEUTRAL/ACID EXTRACTABLES (ug/l)										
PHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	-- R	10 U	72
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	2 J	10 U	2 J	10 U
BENZYL ALCOHOL	10 U	10 U	10 U	10 U	10 U	10 U	-- R	10 U	-- R	6 J
4-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	31	-- R	44	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	4 J	-- R	5 J	10 U
BENZOIC ACID	50 U	50 U	50 U	50 U	50 U	50 U	50 U	-- R	59 J	50 U
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U	7 J	10 U	8 J	4 J
2-METHYLNAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U	3 J	10 U	4 J	4 J
DIETHYLPHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	-- R	10 U	-- R	10 U
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U	10 U	-- R	10 U	-- R	11
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U	10 U	3 J	10 U	-- R	10 U	-- R	10 U
DI-N-OCTYLPHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	-- R	10 U	-- R	69
PESTICIDES/PCB's (ug/l)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WET CHEMISTRY (mg/l)										
CHLORIDE	4.8	2.0	11.0	39.0	25.0	2.9	78.0	5.5	78.0	62.0
TKN	<0.61	<0.10	<0.21	<0.10 J	<0.21 J	<0.14	83	6.4 J	71	<1.1 J
TOTAL DISSOLVED SOLIDS	96	86	86	230	130	140	1100	390	1100	860
SULFATE	18	26	14	<100	<20	1.8	4.1	26	4.4	15
CARBONATE as CaCO3	VS	VS	VS	VS	VS	3.5	VS	VS	VS	VS
BICARBONATE as CaCO3	57	44	48	120	<20	150	1000	320	1000	720
NITRATE-NITRITE-N2	0.36	0.086	0.18	0.76	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
AMMONIA NITROGEN	<0.050	<0.050	<0.050	0.061	<0.050	<0.050	71	7.2	69	0.33
TOC	<1.0	<1.0	<1.0 J	1.59 J	4.26 J	<1.0 J	51.08	7.3	50.62	11.94

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UJ = Not Detected to an Estimated Detection Limit
J = Estimated Value
R = Data Rejected by Validation
B = Analyte Detected in Method Blank; sample concentration less than five times blank value
ND = No analytes of this compound group detected
NA = Not Analyzed
VS = Very Slight (<1% of Bicarbonate Alkalinity)
ENV DUP = Duplicate of Sample Named

TABLE 4-8

HERTEL LANDFILL REMEDIAL INVESTIGATION

ORGANIC COMPOUNDS IN GROUND WATER - JUNE, 1990

PAGE 3 OF 3

FIELD ID	MW-13S	MW-W1S	MW-W1D	MW-W2S	MW-W2D	MW-W3	MWTB611	MWFB611	MWTB612	MWTB613
DATE SAMPLED	11-Jun-90	11-Jun-90	11-Jun-90	12-Jun-90	12-Jun-90	13-Jun-90	11-Jun-90	11-Jun-90	12-Jun-90	13-Jun-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	TRIP BLANK	FIELD BLANK	TRIP BLANK	TRIP BLANK
VOLATILE ORGANICS (ug/l)										
CHLOROETHANE	10 U	10 U	10 U	10 U	4 J	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	7 U	5 U	5 U	8 U	5 U	5 U	5 U	2 BJ	5 U	5 U
ACETONE	10 U	21 U	10 U	10 U	10 U	10 U	4 J	6 J	10 UJ	4 J
1,1-DICHLOROETHANE	5 U	5 U	5 U	5 U	2 J	5 U	5 U	5 U	5 U	5 U
1,2-DICHLOROETHENE (TOTAL)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CHLOROFORM	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	-- R	10 U
1,2-DICHLOROPROPANE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TRICHLOROETHENE	1 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
BENZENE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TOLUENE	31	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CHLOROBENZENE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ETHYLBENZENE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
STYRENE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
XYLENES (TOTAL)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
BASE NEUTRAL/ACID EXTRACTABLES (ug/										
PHENOL	20	-- R	-- R	-- R	-- R	10 U	NA	10 U	NA	NA
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	NA	10 U	NA	NA
BENZYL ALCOHOL	10 U	10 U	-- R	10 U	10 U	10 U	NA	10 U	NA	NA
4-METHYLPHENOL	10 U	-- R	-- R	-- R	-- R	10 U	NA	10 U	NA	NA
2,4-DIMETHYLPHENOL	10 U	-- R	-- R	-- R	-- R	10 U	NA	10 U	NA	NA
BENZOIC ACID	14 J	-- R	-- R	-- R	-- R	50 U	NA	50 U	NA	NA
NAPETHALENE	10 U	10 U	10 U	10 U	10 U	10 U	NA	10 U	NA	NA
2-METHYLNAPETHALENE	10 U	10 U	10 U	10 U	10 U	10 U	NA	10 U	NA	NA
DIETHYLPETHALATE	10 U	10 U	10 U	10 U	10 U	10 U	NA	10 U	NA	NA
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U	10 U	NA	10 U	NA	NA
BIS(2-ETHYLHEXYL)PETHALATE	10 U	10 U	10 U	10 U	10 U	10 U	NA	10 U	NA	NA
DI-N-OCTYLPETHALATE	10 U	10 U	10 U	10 U	10 U	10 U	NA	10 U	NA	NA
PESTICIDES/PCB's (ug/l)	ND	ND	ND	ND	ND	ND	NA	ND	NA	NA
WET CHEMISTRY (mg/l)										
CHLORIDE	26.0	28	140	66	56	1.4	NA	<1.0	NA	NA
TKN	<0.86 J	<0.44 J	6.5 J	6.5 J	7.7 J	<0.20	NA	0.24 J	NA	NA
TOTAL DISSOLVED SOLIDS	200	730	1200	780	730	72	NA	<10	NA	NA
SULFATE	1.4	4.1	16 J	12	10	13	NA	<2.0	NA	NA
CARBONATE as CaCO3	VS	VS	VS	VS	VS	VS	NA	VS	NA	NA
BICARBONATE as CaCO3	150	690	1000	760	640	39	NA	<20	NA	NA
NITRATE-NITRITE-N2	<0.050	<0.050	<0.050	<0.050	<0.050	0.11	NA	<0.050	NA	NA
AMMONIA NITROGEN	0.63	0.052	<0.050	7.3	8.3	<0.050	NA	<0.050	NA	NA
TOC	8.84	17.51	9.59	10.95	11.05	<1.0	NA	NA	NA	NA

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J = Estimated Value
R = Data Rejected by Validation
B = Analyte Detected in Method Blank; sample concentration less than five times blank value
ND = No analytes of this compound group detected
NA = Not Analyzed
VS = Very Slight (<1% of Bicarbonate Alkalinity)
ENV DUP = Duplicate of Sample Named

TABLE 4-9

HERTEL LANDFILL REMEDIAL INVESTIGATION

INORGANIC COMPOUNDS IN GROUND WATER - JUNE, 1990

FIELD SAMPLE ID	MW-1S	MW-1D	MW-2S	MW-2D	MW-3S	MW-3D	MW-4	MW-5S	MW-6S	MW-6D	MW-7S	MW-7D	MW-8S
DATE SAMPLED	13-Jun-90	13-Jun-90	12-Jun-90	11-Jun-90	12-Jun-90	12-Jun-90	13-Jun-90	12-Jun-90	13-Jun-90	13-Jun-90	12-Jun-90	12-Jun-90	11-Jun-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENV DUP MW-6S	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL
UNFILTERED INORGANICS (ug/1)													
ALUMINUM	28500.0 J	13900.0 J	13300.0	26500.0	65700.0	1370.0	77100.0 J	4500.0	75800.0 J	9430.0 J	649.0	7520.0	17800.0
ARSENIC	2.3	4.1	6.0	13.6	9.3	2.2 U	13.4	12.2 J	12.2	5.3	3.5	9.1	11.2 J
BARIUM	209.0 J	212.0 J	136.0	254.0	651.0	44.7	841.0 J	109.0	799.0 J	239.0 J	523.0	68.0	371.0
BERYLLIUM	6.6	2.6	3.0 UJ	1.6	3.0 UJ	3.0 UJ	15.0	3.0 UJ	13.4	2.0 U	3.0 UJ	3.0 UJ	1.3
CADMIUM	3.9 J	3.0 U	4.5	2.0 U	4.0 U	4.0 U	3.0 U	4.0 U	3.0 U	3.0 U	4.0 U	4.0 U	2.0 U
CALCIUM	29300.0 J	25400.0 J	32300.0	77100.0	19700.0	41200.0	191000.0 J	104000.0	18100.0 J	198000.0 J	159000.0	52200.0	148000.0
CHROMIUM	-- R	-- R	35.1	87.2	85.7	6.0 U	266.0	8.5	265.0	-- R	6.0 U	6.6	28.8
COBALT	29.0	12.0	19.1	25.4	53.8	7.0 U	55.9	12.8	46.9	15.0	7.0 U	7.0 U	24.4
COPPER	66.5	33.8	30.0	175.0	123.0	4.7	145.0	14.9	132.0	25.8	7.0	15.3	92.8
IRON	66700.0 J	30200.0 J	21800	72900.0 J	97800.0	2290.0	260000.0 J	27600.0	192000.0 J	20700.0 J	136000.0	9290.0	132000.0 J
LEAD	-- R	-- R	20.9	29.9	83.7	61.1	-- R	7.6	-- R	-- R	7.4	10.9	42.4
MAGNESIUM	11600.0 J	5650.0 J	7150.0	13500.0	21600.0	7580.0	48700.0 J	10400.0	46900.0 J	30300.0 J	37500.0	6640.0	17100.0
MANGANESE	3770.0 J	3210.0 J	2270.0	2460.0	7650.0	159.0	8360.0 J	17900.0	8760.0 J	3870.0 J	2810.0	302.0	15100.0
MERCURY	0.2 U	0.2 UJ	0.30	0.2 U	0.7	0.3	2.2	0.3	1.5	0.2	0.4	0.3	0.2 U
NICKEL	54.8	27.6	61.4	67.7	118.0	28.0 U	138.0	28.0 U	125.0	52.1	28.0 U	28.0 U	34.3
POTASSIUM	5330.0 J	2970.0	2940.0	5190.0	4650.0	851.0	41700.0 J	6660.0	41000.0 J	4890.0 J	40800.0	2080.0	6670.0
SILVER	6.0 UJ	6.0 UJ	4.0 U	2.0 U	4.0 U	4.0 U	6.0 UJ	4.0 U	6.0 UJ	6.0 UJ	4.0 U	4.0 U	2.0 U
SODIUM	5280.0	2680.0	8260	21500.0 J	2190.0	6790.0	110000.0	8960.0	104000.0	112000.0	108000.0	9460.0	43500.0 J
VANADIUM	35.3	16.2	12.2	33.9	59.4	10.0 U	49.3	10.0 U	44.9	9.0	10.0 U	10.0 U	21.8
ZINC	186.0	92.3	115.0	148.0	351.0	25.6	811.0	48.2	722.0	46.9	68.4	35.9	283.0
CYANIDE	10.0 U	10.0 U	20.0 U	-- R	10.0 U	10.0 U	10.0 U	10.0 U	18.2	10.0 U	10.0 U	10.0 U	36.5 J
FILTERED INORGANICS (ug/1)													
ALUMINUM	733.0	284.0	28.0 U	146.0	112.0	29.9	143.0	28.0 U	133.0	96.0 U	28.4	31.5	45.0
ARSENIC	1.0 U	1.0 U	2.2 U	1.0 U	2.2 U	2.2 U	2.9	13.8 J	3.1	1.0 U	2.2 U	2.2 U	15.5 J
BARIUM	13.6	17.4	14.0 U	16.1	14.0 U	28.1	393.0 J	106.0	389.0 J	172.0 J	445.0	14.0 U	261.0
CALCIUM	23900.0 J	20500.0 J	23000.0 J	48600.0	5280.0 J	33500.0 J	157000.0 J	99700.0 J	164000.0 J	183000.0 J	150000.0 J	22900.0 J	134000.0
IRON	-- R	-- R	12.0 U	358.0	123.0	12.0 U	73800.0 J	22900.0	76500.0 J	2970.0 J	116000.0	33.5	81100.0
LEAD	1.0 UJ	1.0 UJ	1.1 UJ	3.7	1.1 UJ	1.6 J	1.0 UJ	1.1 UJ	1.0 UJ	1.0 UJ	1.1 UJ	1.3	5.9
MAGNESIUM	1780.0 J	1350.0 J	2000.0	3250.0	550.0	6470.0	30300.0 J	8450.0	30800.0 J	25800.0 J	35100.0	3090.0	12500.0
MANGANESE	250.0 J	171.0 J	424.0	230.0	553.0	71.6	5460.0 J	16200.0	4610.0 J	3400.0 J	2580.0	4.0 U	9960.0
MERCURY	0.2 U	0.2 J	0.2 U	0.2 U	0.2 U	0.2 U	0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	16.0 U	16.5	28.0 U	12.6	28.0 U	28.0 U	20.9	28.0 U	18.1	43.2	28.0 U	28.0 U	14.4
POTASSIUM	523.0	445.0 U	883.0	972.0	396.0 U	599.0	36800.0	6810.0	37500.0	3740.0	37500.0	1100.0	5040.0
SODIUM	5530.0	2770.0	7390.0	22000.0	1050.0	6570.0	98200.0	8620.0	102000.0	111000.0	101000.0	9230.0	31900.0
ZINC	8.3	76.8	63.3	20.9	19.4	4.0 U	12.1	6.7	15.4	8.7	28.6	4.0 U	8.3
FIELD PARAMETERS													
pH (standard units)	6.9	7.0	7.2	7.7	6.8	8.9	DUP MW-6S	6.0	6.0	7.0	6.4	8.8	7.0
TEMPERATURE (C)	11.0	12.0	12.0	11.5	15.5	16.0	DUP MW-6S	13.3	14.0	14.0	15.0	15.0	13.9
EH (mv)	195.0	183.0	NA	65.0	115.0	NA	DUP MW-6S	152	NA	NA	-66.0	-60.0	90.0
CONDUCTIVITY (umhos/cm)	105.0	89.0	220.0	245.0	39.0	155.0	DUP MW-6S	530	1500.0	1200.0	1650.0	155.0	950.0
SALINITY (%)	0.0	0.0	0.0	0.0	0.0	0.0	DUP MW-6S	0.0	1.0	0.1	1.0	0.0	0.3

U = Not Detected to the Reported Detection Limit

UJ = Not Detected to an Estimated Detection Limit

J = Estimated Value

R = Data Rejected by Validation

B = Analyte Detected in the Method Blank; sample concentration less then five times blank value

NA = Not Analyzed

ENV DUP = Duplicate of Sample Named

TABLE 4-9

HERTEL LANDFILL REMEDIAL INVESTIGATION

INORGANIC COMPOUNDS IN GROUND WATER - JUNE, 1990

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FIELD SAMPLE ID	MW-9S	MW-10S	MW-10D	MW-10S.1	MW-11S	MW-11D	MW-12S	MW-13S	MW-W1S	MW-W1D	MW-W2S	MW-W2D	MW-W3	MWFB611
DATE SAMPLED	13-Jun-90	12-Jun-90	12-Jun-90	12-Jun-90	11-Jun-90	11-Jun-90	11-Jun-90	11-Jun-90	11-Jun-90	11-Jun-90	12-Jun-90	12-Jun-90	13-Jun-90	11-Jun-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENV DUP MW-10S	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	FIELD BLANK
UNFILTERED INORGANICS (ug/l)														
ALUMINUM	5360.0 J	40800.0	73500.0	42800.0	84900.0	162000.0	252000.0	47400.0	5180.0	1850.0	24800.0	9530.0	3490.0 J	20.0 UJ
ARSENIC	3.9	15.9	33.8	13.9	41.4	32.3	10.8	19.6	30.9	13.8	24.0	15.2	1.0	1.0 UJ
BARIUM	46.5 J	449.0	1980.0	472.0	1070.0	1290.0	1540.0	319.0	218.0	357.0	436.0	381.0	34.0 J	1.0 UJ
BERYLLIUM	2.0 U	3.0 UJ	5.8 J	3.0 UJ	3.9	7.6	11.9	2.6	1.0 U	1.0 U	3.0 UJ	3.0 UJ	2.0 U	1.0 UJ
CADMIUM	3.0 U	4.0 U	5.2	4.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.6	5.9	4.0 U	3.0 U	2.0 UJ
CALCIUM	76800.0 J	185000.0	1460000.0	189000.0	341000.0	641000.0	265000.0	121000.0	171000.0	273000.0	264000.0	242000.0	19600.0 J	49.6 J
CHROMIUM	16.8	64.1	123.0	67.2	109.0	222.0	538.0	87.3	7.9	3.6	54.1	38.0	-- R	3.0 UJ
COBALT	9.0 U	44.9	90.9	49.5	81.4	153.0	220.0	41.8	11.1	7.0	45.2	41.4	9.0 U	4.0 UJ
COPPER	30.6	125.0	392.0	127.0	224.0	515.0	846.0	162.0	16.6	8.0	209.0	109.0	10.9	3.3 J
IRON	11100.0 J	93800.0	144000.0	99600.0	165000.0 J	323000.0 J	482000.0 J	113000.0 J	22700.0 J	4830.0 J	59600.0	44400.0	7080.0 J	4.0 UJ
LEAD	-- R	69.9	170.0 J	69.1	83.0	152.0	288.0	79.5	13.8	4.7	175.0 J	103.0 J	-- R	1.6 J
MAGNESIUM	7100.0 J	37500.0	133000.0	38800.0	89200.0	127000.0	113000.0	33700.0	25900.0	58300.0	40700.0	29200.0	2270.0 J	50.0 UJ
MANGANESE	2010.0 J	3360.0	26800.0	3580.0	10600.0	21800.0	28700.0	4530.0	18500.0	2990.0	50800.0	212000.0	282.0 J	1.4 J
MERCURY	-- R	0.5	0.9	0.3	0.3	0.4	0.5	0.2 U	0.2 U	0.2 U	0.7	0.6	0.2 UJ	0.2 UJ
NICKEL	16.0 U	120.0	136.0	108.0	181.0	303.0	490.0	93.3	15.4	26.9	94.4	43.5	16.0 U	10.0 UJ
POTASSIUM	1890.0	7380.0	9320.0	7490.0	18800.0 J	27000.0 J	21400.0 J	8630.0 J	6470.0	1880.0	13500.0	12600.0	1450.0	700.0 UJ
SILVER	6.0 UJ	4.0 U	4.2	4.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	7.4	33.2	6.0 UJ	2.0 UJ
SODIUM	8180.0	37400.0	12900.0	38900.0	106000.0 J	98000.0 J	69400.0 J	17900.0 J	56600.0 J	112000.0 J	76000.0	62800.0	2180.0	60.0 UJ
VANADIUM	8.1	60.4	55.9	62.5	110.0	209.0	319.0	78.0	3.7	4.2	20.1	10.0 U	5.0	3.0 UJ
ZINC	65.4	305.0	602.0	308.0	417.0	976.0	2880.0	339.0	37.8	23.4	515.0	219.0	23.4	2.0 UJ
CYANIDE	10.0 U	15.7	10.0 U	15.0	-- R	-- R	-- R	-- R	-- R	-- R	10.0 U	10.0 U	10.0 U	-- R
FILTERED INORGANICS (ug/l)														
ALUMINUM	40.0 U	88.2	28.0 U	28.0 U	188.0	83.6	110.0	54.4	38.8	30.6	28.0 U	28.0 U	96.0 U	20.0 UJ
ARSENIC	1.0 U	2.2 U	2.2 U	2.2 U	9.9	10.5	1.9	2.5	26.9	10.6	17.5	11.4	1.0 U	1.0 UJ
BARIUM	14.6 J	248.0	59.9	250.0	732.0	459.0	102.0	27.6	169.0	346.0	233.0	269.0	6.1	1.0 UJ
CALCIUM	76000.0 J	119000.0 J	56500.0 J	116000.0 J	206000.0	196000.0	200000.0	37000.0	173000.0	264000.0	178000.0 J	165000.0 J	13700.0 J	138.0 J
IRON	403.0 J	165.0	12.0 U	12.0 U	4680.0	2540.0	1090.0	14500.0	12600.0	1690.0	6250.0	4420.0	-- R	4.0 UJ
LEAD	10.0 U	2.2 J	1.1 UJ	1.3 J	3.5	1.0 U	1.0 U	1.0 U	1.0 U	1.3	1.1 UJ	1.5 J	1.0 UJ	1.0 UJ
MAGNESIUM	5340.0 J	9660.0	8550.0 UJ	9410.0	36500.0	35300.0	24300.0	3090.0	24100.0	57400.0	28100.0	25000.0	891.0 J	50.0 UJ
MANGANESE	1770.0 J	667.0	285.0	650.0	6090.0	7670.0	21200.0	1140.0	19900.0	2860.0	11500.0	12700.0	-- R	6.2 J
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.3 J	0.2 UJ
NICKEL	22.0 U	28.0 U	28.0 U	28.0 U	41.6	35.3	23.2	10.0 U	23.9	33.0	28.0 U	28.0 U	16.0 U	10.0 UJ
POTASSIUM	1820.0 J	3980.0	721.0	4390.0	13800.0	13600.0	1850.0	1670.0	6010.0	1110.0	10400.0	10800.0	445.0 U	700.0 UJ
SODIUM	7880.0 J	33500.0	8940.0	35500.0	114000.0	114000.0	77000.0 J	18900.0	55600.0	122000.0	69000.0	58800.0	2270.0	97.8 J
ZINC	-- R	19.4	7.6	6.4	23.6	38.8	45.0	3.4	10.5	8.6	9.8	21.4	7.0 U	2.5 J
FIELD PARAMETERS														
pH (standard units)	7.1	NA	NA	DUP MW-10S	6.5	6.4	6.5	6.5	6.5	6.6	NA	NA	7.2	NA
TEMPERATURE (C)	19.0	15.0	16.5	DUP MW-10S	15.0	16.0	12.0	16.0	13.0	15.0	13.0	13.0	3.5	NA
EH (mv)	230.0	NA	NA	DUP MW-10S	156.0	134.0	140.0	-30.0	24.0	58.0	NA	NA	212.0	NA
CONDUCTIVITY (umhos/cm)	345.0	410.0	248.0	DUP MW-10S	1300.0	1250.0	97.0	270.0	1000.0	1450.0	850.0	850.0	85.0	NA
SALINITY (%)	0.0	0.0	NA	DUP MW-10S	0.8	NA	0.5	0.0	0.5	0.8	0.2	0.0	0.0	NA

U = Not Detected to the Reported Detection Limit

UJ = Not Detected to an Estimated Detection Limit

J = Estimated Value

R = Data Rejected by Validation

B = Analyte Detected in the Method Blank; sample concentration less than five times blank value

NA = Not Analyzed

ENV DUP = Duplicate of Sample Named

TABLE 4-10

HERTEL LANDFILL REMEDIAL INVESTIGATION

ORGANIC COMPOUNDS IN GROUND WATER - AUGUST, 1990

FIELD ID	MW-1S	MW-1D	MW-2S	MW-2D	MW-3S	MW-3D	MW-4S	MW-4D	MW-5S	MW-6S	MW-6D
DATE SAMPLED	20-Aug-90	20-Aug-90	21-Aug-90	21-Aug-90	22-Aug-90	22-Aug-90	20-Aug-90	20-Aug-90	22-Aug-90	21-Aug-90	21-Aug-90
SAMPLE TYPE	ENVIRONMENT	ENVIRONMENT	ENVIRONMENT	ENVIRONMENT	ENVIRONMENT	ENVIRONMENT	DUP MW-8S	DUP MW-6S	ENVIRONMENT	ENVIRONMENT	ENVIRONMENT
VOLATILE ORGANICS (ug/l)											
ACETONE	10 U	10 U	10 U	45	10 U	10 U	10 U	10 U	15	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZENE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	6	5 U	5 U	5 U
TOLUENE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	21	5 U	16	5 U
CHLOROBENZENE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	28	5 U	22	5 U
ETHYLBENZENE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50	6	37	5 U
XYLENES (TOTAL)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	81	5 U	62	5 U
BASE NEUTRAL/ACID EXTRACTABLES (ug/l)											
PHENOL	10 U	10 U	10 U	10 U	50 U	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYLPHENOL	10 U	10 U	10 U	10 U	50 U	10 U	10 U	130	10 U	17	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	50 U	10 U	10 U	82	10 U	32	10 U
NAPHTHALENE	10 U	10 U	10 U	10 U	50 U	10 U	10 U	10 U	10 U	10 U	10 U
DIETHYLPHTHALATE	10 U	10 U	10 U	10 U	900	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U	10 U	50 U	10 U	10 U	10 U	10 U	21	10 U
PESTICIDES/PCB's (ug/l)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WET CHEMISTRY (mg/l)											
CHLORIDE	1.4 J	1.2 J	3.7	36.3	0.8 J	1.1	8.5	65.9	6.7	67.2	65 J
TKN	<1.0 J	<1.0	<1.0 JL	<1.0 JL	2 JL	<1.0	10 JL	28	6.4	22 JL	1.2 JL
SULFATE	9.6	6.5	5.3	14.9	7.7 J	7.7	<0.5	<3.8 UJ	15.1	<2.9 UJ	12.9 J
CARBONATE as CaCO3	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
BICARBONATE as CaCO3	72	54	60	118	20	120	446	858	346	874	807
NITRATE-NITRITE-N2	<0.05 J	0.01 J	0.25 J	0.87 J	0.06 J	<0.05	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J
AMMONIA NITROGEN	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	12	78	5.3	79	<0.10
TOC	6.4 J	2.0 U	9.9 J	18.4 J	32.1	14.2	116 J	163 J	10.4	136 J	11.3

U = Not Detected to the Reported Detection Limit
UJ = Not Detected to an Estimated Detection Limit
J = Estimated Value
JL = Possible/Probable Low Bias; actual value probably higher
R = Data Rejected by Validation
B = Analyte Detected in Method Blank; sample concentration less than five times blank value
NA = Not Analyzed
ND = No Analytes of this Compound Group Detected
MS/MSD = Sample Analyzed by Matrix Spike\Matrix Spike Duplicate Method
DUP = Duplicate of Sample Named
FB = Field Blank

TABLE 4-10

HERTEL LANDFILL REMEDIAL INVESTIGATION

ORGANIC COMPOUNDS IN GROUND WATER - AUGUST, 1990

PAGE 2 OF 3

FIELD ID	MW-7S	MW-7D	MW-8S	MW-9S	MW-10S	MW-10D	MW-11S	MW-11D	MW-12S	MW-13S	MW-W1S
DATE SAMPLED	21-Aug-90	21-Aug-90	21-Aug-90	21-Aug-90	20-Aug-90	20-Aug-90	22-Aug-90	22-Aug-90	20-Aug-90	21-Aug-90	20-Aug-90
SAMPLE TYPE	ENVIRONMENT	ENVIRONMENT	ENVIRONMENT	ENVIRONMENT	ENVIRONMENT	ENVIRONMENT	ENVIRONMENT	ENVIRONMENT	ENVIRONMENT	ENVIRONMENT	ENVIRONMENT
VOLATILE ORGANICS (ug/l)											
ACETONE	35	10 U	10 U	10 U	10 U	10 U	-- R	10 U	15	10 U	10 U
2-BUTANONE	31	10 U	10 U	10 U	10 U	10 U	-- R	10 U	10 U	10 U	10 U
BENZENE	10 U	5 U	5 U	5 U	5 U	5 U	-- R	5 U	5 U	5 U	5 U
TOLUENE	21	5 U	5 U	5 U	5 U	5 U	-- R	5 U	5 U	33	5 U
CHLOROBENZENE	27	5 U	5 U	5 U	5 U	5 U	-- R	5 U	5 U	5 U	5 U
ETHYLBENZENE	63	5 U	5 U	5 U	5 U	5 U	-- R	5 U	5 U	5 U	5 U
XYLENES (TOTAL)	200	5 U	5 U	5 U	5 U	5 U	-- R	5 U	5 U	5 U	5 U
BASE NEUTRAL/ACID EXTRACTABLES (ug/l)											
PHENOL	18	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYLPHENOL	79	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	36	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIETHYLPHTHALATE	11	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	17 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PESTICIDES/PCB's (ug/l)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WET CHEMISTRY (mg/l)											
CHLORIDE	75.8	2.3 J	8.9	1.9 J	15.4	1.9	90.6 J	64.2	27.4	17.7	27.5
TKN	25 JL	<1.0	6.7 JL	<1.0 JL	3.6 JL	2.3	9	7.8	8.4	9.7 JL	14
SULFATE	<1.8 UJ	7	<3.1 UJ	22.4	<3.4 UJ	-- R	9.7 J	8.4 J	<0.5	<3.9 U	<2.5 UJ
CARBONATE as CaCO3	<10	<10	<10	<10	<10	-- R	<10	<10	<10	<10	<10
BICARBONATE as CaCO3	698	119	440	198	337	-- R	1028	1400	590	939	619
NITRATE-NITRITE-N2	<0.05 J	0.14 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J
AMMONIA NITROGEN	34	<0.10	18	<0.10	1.7	<0.10	1.9	1.5	0.4	0.5	6.6
TOC	261	2.2	81.5 J	30.6 J	9.3	13.9	47.4	21.7	33.9	70	20.5

U = Not Detected to the Reported Detection Limit
UJ = Not Detected to an Estimated Detection Limit
J = Estimated Value
JL = Possible/Probable Low Bias; actual value probably higher
R = Data Rejected by Validation
B = Analyte Detected in Method Blank; sample concentration less than five times blank value
NA = Not Analyzed
ND = No Analytes of this Compound Group Detected
MS/MSD = Sample Analyzed by Matrix Spike\Matrix Spike Duplicate Method
DUP = Duplicate of Sample Named
FB = Field Blank

TABLE 4-10

HERTEL LANDFILL REMEDIAL INVESTIGATION

ORGANIC COMPOUNDS IN GROUND WATER - AUGUST, 1990

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FIELD ID	MW-W1D	MW-W2S	MW-W2D	MW-W3S	P-2	WB-0822	FB-0820	TB-0820	TB-0821	TB-0822
DATE SAMPLED	20-Aug-90	20-Aug-90	20-Aug-90	20-Aug-90	22-Aug-90	22-Aug-90	20-Aug-90	20-Aug-90	21-Aug-90	22-Aug-90
SAMPLE TYPE	ENVIRONMENT	ENVIRONMENT	ENVIRONMENT	ENVIRONMENT	PIEZOMETER	DI H2O BLANK	FIELD BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK
VOLATILE ORGANICS (ug/l)										
ACETONE	10 U	10 U	10 U	10 U	14	10 U	10 U	-- R	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	-- R	10 U	10 U
BENZENE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	-- R	5 U	5 U
TOLUENE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	-- R	5 U	5 U
CHLOROBENZENE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	-- R	5 U	5 U
ETHYLBENZENE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	-- R	5 U	5 U
XYLENES (TOTAL)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	-- R	5 U	5 U
BASE NEUTRAL/ACID EXTRACTABLES (ug/l)										
PHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA	NA
4-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA	NA
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA	NA
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA	NA
DIETHYLPHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA	NA
PESTICIDES/PCB's (ug/l)	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA
WET CHEMISTRY (mg/l)										
CHLORIDE	123	62.3	54.8	1.1 J	2.9	NA	0.1 J	NA	NA	NA
TKN	3.2	15	14	<1.0 J	<1.0 JL	NA	<1.0	NA	NA	NA
SULFATE	<2.2 U	6.2	4.5	4.4	13.3	NA	0.8 J	NA	NA	NA
CARBONATE as CaCO3	<10	<10	<10	<10	<10	NA	<10	NA	NA	NA
BICARBONATE as CaCO3	965	765	533	40	228	NA	<10	NA	NA	NA
NITRATE-NITRITE-N2	<0.05 J	<0.05 J	<0.05 J	0.1 J	0.52 J	NA	<0.05 J	NA	NA	NA
AMMONIA NITROGEN	<0.10	6.3	7	<0.10	<0.10	NA	<0.10	NA	NA	NA
TOC	50.5	41.7	25	4.6	20.9	NA	2 U	NA	NA	NA

U = Not Detected to the Reported Detection Limit
UJ = Not Detected to an Estimated Detection Limit
J = Estimated Value
JL = Possible/Probable Low Bias; actual value probably higher
R = Data Rejected by Validation
B = Analyte Detected in Method Blank; sample concentration less than five times blank value
NA = Not Analyzed
ND = No Analytes of this Compound Group Detected
MS/MSD = Sample Analyzed by Matrix Spike\Matrix Spike Duplicate Method
DUP = Duplicate of Sample Named
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TABLE 4-11

HERTEL LANDFILL REMEDIAL INVESTIGATION

INORGANIC COMPOUNDS IN GROUND WATER - AUGUST, 1990

FIELD SAMPLE ID	MW-1S	MW-1D	MW-2S	MW-2D	MW-3S	MW-3D	MW-4S	MW-4D	MW-5S	MW-6S
DATE SAMPLED	20-Aug-90	20-Aug-90	21-Aug-90	21-Aug-90	22-Aug-90	22-Aug-90	21-Aug-90	21-Aug-90	22-Aug-90	21-Aug-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENV. MS\MSD	ENVIRONMENTAL	ENV. MS\MSD	ENV DUP MW-8S	ENV DUP MW-6S	ENVIRONMENTAL	ENVIRONMENTAL
UNFILTERED INORGANICS (ug/l)										
ALUMINUM	-- R	-- R	-- R	-- R	44600.0 J	1300.0 J	-- R	-- R	17200.0 J	-- R
ARSENIC	11.6	5.0	5.6	5.6	5.5 J	2.0 UJ	14.4	8.6	21.6 J	12.0
BARIUM	431.0 J	233.0 J	183.0	64.4 J	358.0 J	35.8 J	255.0 J	515.0 J	300.0 J	567.0 J
BERYLLIUM	2.9	1.0 U	1.0 U	1.0 U	2.7 J	1.0 UJ	1.0 U	2.6	1.8 J	2.8
CADMIUM	2.0 U	2.0 U	2.0 U	2.0 U	2.0 UJ	2.0 UJ	2.0 U	2.0 U	2.0 UJ	2.0 U
CALCIUM	36400.0	23800.0	23400.0	49600.0	12100.0 J	36100.0 J	114000.0	155000.0	103000.0 J	155000.0
CHROMIUM	77.3	-- R	48.0	-- R	60.6 J	57.0 J	-- R	74.2 J	-- R	143.0 J
COBALT	50.3	13.7	20.0	6.7	34.6 J	5.9 J	6.8	14.3	37.7 J	19.6
COPPER	131.0 J	36.6	74.0 J	50.3 J	69.1 J	3.0 UJ	14.1	46.4	71.8 J	66.0 J
IRON	117000.0	32200.0	42800.0	16200.0	68600.0 J	1060.0 J	72100.0	108000.0	80400.0 J	121000.0
LEAD	55.8	16.8	22.4	10.6	33.9 J	3.7 J	5.4	79.2	39.8 J	108.0
MAGNESIUM	19100.0	5690.0	8470.0	5110.0	13100.0 J	6400.0 J	10400.0	32500.0	14700.0 J	34000.0
MANGANESE	6210.0	3700.0	2060.0	602.0	3420.0 J	108.0 J	6740.0	6150.0	16500.0 J	7420.0
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 UJ	0.2 U	0.2 U	0.36 J	0.2 U
NICKEL	106.0	36.9	67.0	21.2	75.5 J	31.6 J	30.4	45.1	47.4 J	60.2
POTASSIUM	9580.0	3300.0	5090.0	2160.0	6460.0 J	780.0 UJ	5790.0	40500.0	10300.0 J	40400.0
SILVER	8.0 U	8.0 U	8.0 U	8.0 U	4.0 UJ	4.0 UJ	8.0 U	8.0 U	16.2 J	8.0 U
SODIUM	4550.0	2430.0	6170.0	19600.0	2110.0 J	7850.0 J	23800.0	87100.0	11000.0 J	83600.0
VANADIUM	92.1	24.3	38.5	11.0	44.5 J	3.0 UJ	11.9	35.7	10.9 J	47.4
ZINC	324.0 J	93.4 J	143.0 J	55.7 J	203.0 J	6.7 J	36.0 J	221.0 J	125.0 J	290.0 J
FILTERED INORGANICS (ug/l)										
ARSENIC	-- R	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.5 J	12.4 J	2.5 J	21.4 J	2.9
BARIUM	6.4	6.4	9.7	14.5	6.3 J	28.9 J	242.0	391.0	110.0 J	381.0 J
CALCIUM	25700.0	18800.0	22100.0	46100.0	5410.0 J	33900.0 J	113000.0	144000.0	92700.0 J	137000.0
IRON	47.8	47.8	118.0	151.0 J	224.0 J	12.0 UJ	60600.0 J	71500.0 J	30600.0 J	70700.0
LEAD	3.0 U	3.0 U	3.0 U	3.0 U	2.0 UJ	2.0 UJ	3.0 U	3.0 U	2.0 UJ	2.0 U
MAGNESIUM	1460.0 J	1180.0 J	1570.0 J	2980.0 J	569.0 J	5630.0 J	10400.0 J	27900.0 J	8510.0 J	27200.0
MANGANESE	118.0	229.0	8.0	63.0	384.0 J	68.2 J	6120.0	5680.0	13800.0 J	5140.0
POTASSIUM	780.0 U	780.0 U	1180.0	780.0 U	780.0 UJ	780.0 UJ	5660.0	38700.0	6900.0 J	38500.0
SODIUM	3550.0	2480.0	6070.0	20600.0	1240.0 J	8880.0 J	23000.0	82300.0	9100.0 J	79900.0
ZINC	10.0	9.0	8.0	9.0	17.4 J	2.0 UJ	4.1 J	2.1	2.0 UJ	2.0 U
FIELD MEASUREMENTS										
pH (standard units)	6.14	7.28	6.30	6.13	5.70	8.45	DUP 8S	DUP 6S	6.87	6.00
TEMPERATURE (C)	20.0	21.0	NA	NA	NA	NA	DUP 8S	DUP 6S	15.0	NA
EH (mv)	NA	NA	NA	NA	174	-9	DUP 8S	DUP 6S	NA	NA
CONDUCTIVITY (umhos/cm)	160	120	160	328	40	NA	DUP 8S	DUP 6S	580	NA
SALINITY (%)	0.0	0.0	0.0	0.0	0.0	NA	DUP 8S	DUP 6S	0.0	NA

U = Not Detected to the Reported Detection Limit

UJ = Not Detected to an Estimated Detection Limit

J = Estimated Value

R = Data Rejected by Validation

NA = Not Analyzed

ND = No Analytes of this Compound Group Detected

MS/MSD = Sample Analyzed by Matrix Spike\Matrix Spike Duplicate Method

ENV DUP = Duplicate of Sample Named

TABLE 4-11

HERTEL LANDFILL REMEDIAL INVESTIGATION

INORGANIC COMPOUNDS IN GROUND WATER - AUGUST, 1990

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FIELD SAMPLE ID	MW-6D	MW-7S	MW-7D	MW-8S	MW-9S	MW-10S	MW-10D	MW-11S	MW-11D	MW-12S
DATE SAMPLED	21-Aug-90	21-Aug-90	21-Aug-90	21-Aug-90	21-Aug-90	20-Aug-90	20-Aug-90	22-Aug-90	22-Aug-90	20-Aug-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL
UNFILTERED INORGANICS (ug/l)										
ALUMINUM	-- R	-- R	-- R	-- R	6370.0 J	-- R	-- R	46100.0 J	41500.0 J	-- R
ARSENIC	3.7	5.3	3.4	13.2	2.0 UJ	6.3	9.7	21.3 J	24.1 J	7.9
BARIUM	223.0 J	390.0 J	17.8	235.0 J	60.6 J	222.0 J	120.0 J	819.0 J	943.0 J	653.0 J
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	4.4 J	2.7 J	2.8
CADMIUM	2.0 U	2.0 U	2.0 U	2.0 U	2.0 UJ	2.0 U	2.0 U	2.3 J	3.2 J	2.0 U
CALCIUM	204000.0	143000.0	40300.0	112000.0	77900.0 J	127000.0	76300.0	361000.0 J	521000.0 J	190000.0
CHROMIUM	-- R	-- R	-- R	-- R	-- R	-- R	-- R	54.2 J	45.9 J	114.0
COBALT	8.2	6.2	3.0 U	4.2	13.4 J	10.1	5.6	57.0	55.4 J	69.8
COPPER	6.4	8.3	5.0 U	8.0	24.6 J	29.5	17.1	258.0 J	276.0 J	229.0 J
IRON	6580.0	104000.0	1180.0	62100.0	12600.0 J	24200.0	17600.0	94500.0 J	84900.0 J	132000.0
LEAD	7.0	9.0	3.1	2.0 U	16.2 J	15.5	11.4	83.8 J	87.1 J	99.2
MAGNESIUM	27900.0	26000.0	4770.0	9840.0	7480.0 J	13400.0	13200.0	72000.0 J	67500.0 J	36100.0
MANGANESE	2460.0	2250.0	-- R	6170.0	2340.0 J	1060.0	1010.0	11600.0 J	17000.0 J	16000.0
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 UJ	0.2 UJ	0.2 U
NICKEL	39.7	28.4	11.0 U	11.0 U	29.8 J	30.1	17.1	121.0 J	96.6 J	146.0
POTASSIUM	3350.0	29700.0	878.0	5520.0	2430.0 J	4720.0	2850.0	18300.0 J	17300.0 J	9590.0
SILVER	8.0 U	8.0 U	8.0 U	8.0 U	4.0 UJ	8.0 U	266.0	4.0 UJ	4.0 UJ	8.0 U
SODIUM	105000.0	75100.0	5230.0	21900.0	8360.0 J	24400.0	7760.0	110000.0 J	102000.0 J	42500.0
VANADIUM	5.0	15.9	4.0 U	7.4	6.2 J	25.4	15.5	44.9 J	36.5 J	100.0
ZINC	50.4 J	57.6 J	14.1	-- R	90.9 J	69.0 J	45.9 J	282.0 J	315.0 J	898.0 J
FILTERED INORGANICS (ug/l)										
ARSENIC	2.0	3.5 J	2.0 UJ	12.9 J	2.0 UJ	2.4 J	5.2 J	11.3	17.0	5.0 J
BARIUM	195.0 J	341.0 J	8.6	247.0	12.9	128.0	44.1	564.0 J	379.0 J	81.7
CALCIUM	182000.0	137000.0 J	35000.0	113000.0	68000.0	95400.0	51100.0	195000.0	185000.0	160000.0
IRON	2300.0	88300.0 J	91.1	63100.0 J	60.2	3350.0 J	189.0 J	5680.0	7520.0	3460.0 J
LEAD	2.0 U	3.0 UJ	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	4.2 J	2.1 J	3.0 U
MAGNESIUM	26300.0	26000.0 J	4330.0 J	10500.0 J	5400.0 J	8090.0 J	7850.0 J	34900.0	32900.0	16300.0 J
MANGANESE	2160.0	2050.0 J	7.0 U	6220.0	1800.0	683.0	393.0	7070.0	7720.0	14200.0
POTASSIUM	2910.0	30400.0 J	780.0 U	5840.0	1220.0	1830.0	780.0 U	14100.0	13000.0	3420.0
SODIUM	101000.0	76300.0 J	5210.0	23500.0	8610.0	14900.0	7610.0	112000.0	99100.0	49400.0 J
ZINC	11.1	5.1 J	10.0	-- R	8.0	91.6 J	16.0	4.7	2.0 U	17.4
FIELD MEASUREMENTS										
pH (standard units)	6.50	6.50	6.60	5.86	7.10	6.70	8.00	6.90	NA	6.86
TEMPERATURE (C)	14.5	14.0	14.0	NA	NA	16.5	14.0	15.0	15.0	19.0
EH (mv)	NA	NA	NA	NA	NA	90	-37	NA	NA	NA
CONDUCTIVITY (umhos/cm)	1150	1400	190	720	360	600	270	1250	1230	800
SALINITY (%)	0.5	0.8	0.0	0.3	0.1	0.0	0.0	0.5	1.0	0.0

U = Not Detected to the Reported Detection Limit
UJ = Not Detected to an Estimated Detection Limit
J = Estimated Value
R = Data Rejected by Validation
NA = Not Analyzed
ND = No Analytes of this Compound Group Detected
MS/MSD = Sample Analyzed by Matrix Spike\Matrix Spike Duplicate Method
ENV DUP = Duplicate of Sample Named

TABLE 4-11

HERTEL LANDFILL REMEDIAL INVESTIGATION

INORGANIC COMPOUNDS IN GROUND WATER - AUGUST, 1990

TABLE 4-11
(pg. 3 of 3)

FIELD SAMPLE ID	MW-13S	MW-W1S	MW-W1D	MW-W2S	MW-W2D	MW-W3S	P-2	P-3	WB-0822	FB0820
DATE SAMPLED	21-Aug-90	20-Aug-90	20-Aug-90	20-Aug-90	20-Aug-90	20-Aug-90	22-Aug-90	22-Aug-90	22-Aug-90	20-Aug-90
SAMPLE TYPE	ENVIRONMENTAL	WEHRAN	WEHRAN	WEHRAN	WEHRAN	WEHRAN	PIEZOMETER	PIEZOMETER	DI H2O Blank	Field Blank
UNFILTERED INORGANICS (ug/l)										
ALUMINUM	88700.0 J	-- R	-- R	-- R	-- R	-- R	4390.0 J	NA	29.0 UJ	36.0 U
ARSENIC	44.1 J	32.7	16.6	23.8	13.4	3.3	2.0 U	NA	2.0 U	2.0 U
BARIUM	922.0 J	163.0 J	375.0 J	406.0 J	317.0 J	64.2 J	94.9	NA	2.0 U	2.0 U
BERYLLIUM	7.1 J	1.0 U	1.0 U	1.2	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U
CADMIUM	9.0 J	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	NA	2.0 U	2.0 U
CALCIUM	671000.0 J	162000.0	273000.0	248000.0	197000.0	19600.0	73700.0	NA	180.0	71.3
CHROMIUM	142.0 J	-- R	-- R	-- R	-- R	-- R	58.3 J	NA	-- R	-- R
COBALT	109.0 J	5.0	8.2	38.0	29.2	6.2	10.4	NA	4.0 U	3.0 U
COPPER	249.0 J	5.0 U	18.9	152.0	71.3 J	19.3	3.0 U	NA	3.0 U	5.0 U
IRON	287000.0 J	13900.0	10200.0	49000.0	36300.0	16800.0	7560.0 J	NA	103.0	34.2
LEAD	171.0 J	9.3	12.4	313.0	68.3	11.0	13.9	NA	2.0 U	2.0 U
MAGNESIUM	123000.0 J	21700.0	56600.0	33600.0	27800.0	3830.0	9850.0	NA	41.4	31.0 U
MANGANESE	20600.0 J	16600.0	3060.0	37600.0	121000.0	591.0	2330.0	NA	7.6	31.6
MERCURY	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	0.2 U	0.2 U
NICKEL	228.0 J	13.0	41.4	74.9	31.8	21.9	42.1	NA	5.0 U	11.0 U
POTASSIUM	10300.0 J	6420.0	3320.0	11600.0	11000.0	2640.0	8010.0	NA	780.0 U	136.0 U
SILVER	4.0 UJ	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	NA	4.0 U	8.0 U
SODIUM	15200.0 J	49700.0	115000.0	69500.0	56700.0	2300.0	13800.0	NA	37.0 U	120.0 U
VANADIUM	83.0 J	4.2	9.2	35.9	24.4	15.4	3.0 U	NA	3.0 U	4.0 U
ZINC	951.0 J	18.4	63.6 J	507.0 J	146.0 J	48.5 J	96.6	NA	2.0 U	5.8
FILTERED INORGANICS (ug/l)										
ARSENIC	8.3 J	33.8 J	12.5 J	17.7 J	16.3 J	2.0 UJ	2.3	NA	2.0 U	2.0 UJ
BARIUM	111.0	158.0	332.0	212.0 J	238.0 J	4.8	55.2 J	NA	2.0 U	2.0 U
CALCIUM	47700.0	162000.0	257000.0	170000.0 J	156000.0 J	16400.0	68800.0	NA	54.0 U	55.3
IRON	12200.0 J	11700.0 J	1710.0 J	6800.0 J	4890.0 J	109.0	56.6	NA	12.0 U	14.7
LEAD	3.0 U	3.0 U	3.0 U	4.2 J	3.0 UJ	3.0 U	2.0 U	NA	2.0 U	3.0 U
MAGNESIUM	3440.0 J	22400.0 J	55500.0 J	27500.0 J	24200.0 J	996.0 J	8170.0	NA	37.0 U	37.0 U
MANGANESE	1680.0	16400.0	2780.0	10300.0 J	11300.0 J	81.8	1440.0	NA	7.0 U	7.0 U
POTASSIUM	1750.0	6710.0	1930.0	10300.0 J	10300.0 J	780.0 U	7050.0	NA	780.0 U	780.0 U
SODIUM	14200.0	53200.0	119000.0	71600.0 J	57800.0 J	2160.0	12700.0	NA	69.1	105.0
ZINC	27.9	7.9	8.6	5.8 J	9.1 J	16.0	34.8	NA	2.0 U	13.1
FIELD MEASUREMENTS										
pH (standard units)	6.10	6.30	6.60	6.53	6.58	8.90	NA	7.80	NA	NA
TEMPERATURE (°C)	NA	14.0	NA	14.0	15.0	20.0	NA	NA	NA	NA
EH (mv)	NA	137	-12	NA	NA	NA	NA	30	NA	NA
CONDUCTIVITY (umhos/cm)	305	940	NA	1100	1000	105	480	NA	NA	NA
SALINITY (%)	0.1	0.2	NA	0.0	0.0	0.0	0.2	NA	NA	NA

U = Not Detected to the Reported Detection Limit
UJ = Not Detected to an Estimated Detection Limit
J = Estimated Value
R = Data Rejected by Validation
NA = Not Analyzed
ND = No Analytes of this Compound Group Detected
MS/MSD = Sample Analyzed by Matrix Spike\Matrix Spike Duplicate Method
ENV DUP = Duplicate of Sample Named

TABLE 4-12

HERTEL LANDFILL REMEDIAL INVESTIGATION

ORGANIC COMPOUNDS IN TEST PIT SAMPLES

FIELD ID	TP-2	TP-2	TP-7W	TP-8W	TP-15	TP-15	TP-27	TPFB-1211	TPFB-1212	TPFB-1213	TPFB-1221	TPTB-1212	TPTB-1221
DATE SAMPLED	13-Dec-89	13-Dec-89	15-Dec-89	15-Dec-89	21-Dec-89	21-Dec-89	15-Dec-89	11-Dec-89	12-Dec-89	13-Dec-89	21-Dec-89	12-Dec-89	21-Dec-89
SAMPLE TYPE	ENVIRONMENTAL	ENV DUP TP-2	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENV DUP TP-15	ENV DUP TP-7W	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	TRIP BLANK	DI WATER BLANK
VOLATILE ORGANICS (ug/l)													
ACETONE	20 J	NA	-- R	-- R	10 UJ	10 UJ	-- R	-- R	10 UJ	-- R	4 J	10 UJ	10 UJ
BENZENE	3 J	NA	4 J	5 U	3 J	3 J	4 J	5 U	5 U	5 U	5 U	5 U	5 U
TOLUENE	5 U	NA	8	5 U	5 U	5 U	9	5 U	5 U	5 U	1 J	5 U	5 U
CHLOROBENZENE	14	NA	10	5 U	12	11	10	5 U	5 U	5 U	5 U	5 U	5 U
ETHYLBENZENE	13	NA	24	5 U	21	20	25	5 U	5 U	5 U	5 U	5 U	5 U
XYLENES (TOTAL)	24	NA	97	5 U	52	56	120	5 U	5 U	5 U	5 U	5 U	5 U
BASE NEUTRAL/ACID EXTRACTABLES (ug/l)													
1,4-DICHLOROBENZENE	11 U	NA	11 U	10 U	2 J	2 J	10 UJ	10 U	10 U	10 U	10 U	NA	10 U
4-METHYLPHENOL	38	NA	11 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	NA	10 U
2,4-DIMETHYLPHENOL	7 J	NA	11 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	NA	10 U
NAPHTHALENE	10 J	NA	9 J	10 U	16	19	7 J	10 U	10 U	10 U	10 U	NA	10 U
2-METHYLNAPHTHALENE	11 U	NA	1 J	10 U	2 J	3 J	10 UJ	10 U	10 U	10 U	10 U	NA	10 U
N-NITROSODIPHENYLAMINE	2 J	NA	11 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	NA	10 U
PHENANTERENE	11 U	NA	11 U	10 U	10 U	.2 J	10 UJ	10 U	10 U	10 U	10 U	NA	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	11 U	NA	11 U	10 U	2 J	2 J	10 UJ	10 U	10 U	10 U	10 U	NA	10 U
PESTICIDES/PCB's (ug/l)													
AROCHLOR-1248	0.69	NA	0.56 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	NA	0.50 U
WET CHEMISTRY (mg/l)													
TOC	55	15	14	31	45	98	NA	NA	NA	NA	11	NA	NA
TKN	12	29	28	0.1 U	32	32	NA	NA	NA	NA	0.1 U	NA	NA
NITRATE-NITRITE-N2	0.1 U	0.1 U	0.1 U	0.1 U	0.21	0.19	NA	NA	NA	NA	0.1 U	NA	NA
AMMONIA NITROGEN	9.0	28	24	0.54	29	34	NA	NA	NA	NA	0.1 U	NA	NA
CHLORIDE	28	64	41	24	30	30	NA	NA	NA	NA	1.0 U	NA	NA
CARBONATE ALKALINITY	0	0	0	0	0	0	NA	NA	NA	NA	0	NA	NA
BICARBONATE ALKALINITY	380	680	470	85	550	520	NA	NA	NA	NA	10 U	NA	NA

U = Not Detected to the Reported Detection Limit

UJ = Not Detected to an Estimated Detection Limit

J = Estimated Value

R = Data Rejected by Validation

B = Analyte Detected in the Method Blank; sample concentration less than five times blank value

NA = Not Analyzed

ENV DUP = Duplicate of Sample Named

TABLE 4-13

HERTEL LANDFILL REMEDIAL INVESTIGATION

INORGANIC COMPOUNDS IN TEST PIT WATER SAMPLES

FIELD SAMPLE ID	TP-2	TP-7W	TP-8W	TP-15	TP-27	TP-35	TPFB1211	TPFB1212	TPFB1213	TPFB1221	TPTB1221
DATE SAMPLED	13-Dec-89	15-Dec-89	15-Dec-89	20-Dec-89	15-Dec-89	20-Dec-89	11-Dec-89	12-Dec-89	13-Dec-89	21-Dec-89	21-Dec-89
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENV DUP TP-7W	ENV DUP TP-15	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	DI WATER BLANK
INORGANICS (ug/l)											
ALUMINUM	3990 J	1930 J	5660 J	685 J	3000 J	1560 J	14.7 J	9.9 J	37.0 J	70.2 J	65.6 J
ANTIMONY	119	92.7	45.2	14.0 U	93.1	14.0 U	12.0 U	12.0 U	14.3	14.0 U	14.0 U
ARSENIC	10.0	5.0	3.0	3.5	4.0	3.2	2.0 U	2.0 U	2.0 U	1.0 U	1.0 U
BARIUM	220 J	468 J	81.2 J	222	449 J	227	1.0 U	1.0 U	1.0 U	1.4	1.0 U
CADMIUM	3.9 J	4.8	4.0	2.0 U	5.2	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
CALCIUM	115000 J	156000 J	35400 J	119000	155000 J	121000	39.9	40.8	70.8	78.0	77.7
CHROMIUM	22.4 J	15.1	28.0	3.4	18.1	9.3	5.0 U	5.0 U	5.0 U	3.0 U	3.0 U
COBALT	23.8 J	17.4	12.3	15.0	18.6	18.4	2.0 U	2.0 U	2.0 U	7.0 U	7.0 U
COPPER	71.4 J	50.3 J	80.3 J	16.5	52.9 J	11.1	8.2	14.4	7.8	3.0 U	3.0 U
IRON	117000 J	70800 J	28400 J	126000	71600 J	128000	69.7	-- R	-- R	49.0 U	49.0 U
LEAD	126	113	185	81	118	70.2	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
MAGNESIUM	22700 J	24900 J	4140 J	18200	25200 J	19200	10.0 U	14.3	22.8	22.0 U	22.0 U
MANGANESE	1660 J	6500 J	1510 J	1440	6360 J	1480	2.9 J	2.6 J	3.7 J	1.0 U	1.0 U
MERCURY	0.55	0.20 U	0.2 U	0.32	0.20 U	0.29	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U
NICKEL	47.3 J	32.3 J	21.3	18.3	34.9 J	16.5	3.0 U	3.0 U	3.0 U	7.0 U	7.0 U
POTASSIUM	32000 J	28600 J	1840 J	23300	28400 J	24500	183 U	183 U	183 U	518 U	518 U
SELENIUM	2.0	2.0 U	2.0 U	1.0 U	2.0 U	1.0 U	2.0 U	2.0 U	2.0 U	1.0 U	1.0 U
SILVER	6.2	8.3	4.2	3.0 U	8.8	3.5	2.0 U	2.0 U	2.0 U	3.0 U	3.0 U
SODIUM	33400 J	57500 J	12400	22900	56900 J	24600	76.0	83.7	55.2	539	496
VANADIUM	21.8 J	22.7 J	12.5	6.0 U	24.9 J	6.7	2 U	2.0 U	2.0 U	6.0 U	6.0 U
ZINC	482 J	184 J	521 J	245	180 J	241	26 J	-- R	-- R	4.0 U	4.0 U
CYANIDE	199	10.0 U	10.0 U	22.5	10.0 U	22.5	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U

U = Not Detected to the Reported Detection Limit

UJ = Not Detected to an Estimated Detection Limit

J = Estimated Value

R = Data Rejected by Validation

ENV DUP = Duplicate of Sample Named

TABLE 4-14

HERTEL LANDFILL REMEDIAL INVESTIGATION

COMPOUNDS DETECTED IN THE PRIVATE WELLS

FIELD SAMPLE ID	PW-01	PW-2	PW-03	PW-04	PW-05	PW-06	PW-07	PW-08	PW-09	PW-10	PW-11	PW-12
DATE SAMPLED	19-Jun-90	19-Jun-90	20-Jun-90	20-Jun-90	20-Jun-90	20-Jun-90	20-Jun-90	20-Jun-90	20-Jun-90	20-Jun-90	20-Jun-90	20-Jun-90
SAMPLE TYPE	CERRA	CAVEZZA	LACASCIO	M. LAMANNA	F. LAMANNA	JOHNSON	SNYDER	ROOSA	BISACCIO	ERICKSEN HOME	ERICKSEN APT.	DUP OF PW-8
VOLATILE ORGANICS (ug/l).												
ACETONE	10 U	5 J	10 U	10 U	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U	10 U	10 U
BASE NEUTRAL/ACID EXTRACTABLES (ug/l)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PESTICIDES/PCB's (ug/l)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
INORGANICS (ug/l)												
ARSENIC	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 UJ	3.2 J	2.0 UJ	2.0 UJ	2.0 U	2.0 U	2.0 UJ
BARIUM	6.2	16.1	5.2	5.2	10.9	17.5	49.0 J	6.0	29.2 J	34.3	14.0	9.4
CALCIUM	39200.0	27100.0	54500.0	28900.0	56500.0	45300.0	41700.0	27200.0	43500.0	46500.0	64400.0	37600.0
COPPER	15.0	4.6	3.3	18.2	3.0 U	81.2	38.5	24.6	7.5	11.7	24.8	34.7
IRON	205.0	139.0	63.1	29.2	43.2	71.5	539.0	110.0	252.0	28.6	412.0	139.0
LEAD	2.4 J	3.4 J	2.4 J	2.2 J	2.0 UJ	-- R	-- R	-- R	-- R	2.6 J	30.7 J	-- R
MAGNESIUM	2360.0	2170.0	4400.0	1790.0	7450.0	5180.0	4390.0	1950.0	5640.0	8940.0	5260.0	2740.0
MANGANESE	7.0 U	41.2	7.0 U	7.0 U	7.0 U	4.3	242.0	1.2	156.0	7.0 U	49.9	2.4
SELENIUM	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 U	3.0 U	3.0 U
SODIUM	6700.0	6560.0	12400.0	7050.0	5490.0	7670.0	11900.0	19500.0 J	4560.0	7180.0	30500.0	28200.0 J
ZINC	-- R	-- R	-- R	-- R	-- R	26.8	34.1	211.0 J	41.4 J	-- R	-- R	276.0 J
WET CHEMISTRY (mg/l)												
CHLORIDE	20	15	14	9.8	20	39.0	35.0	50.0	4.3	78.0	10.0	50.0
TKN	0.18	0.15	0.14	0.15	<0.10	0.18	0.13	0.15	<0.10	0.13	<0.10	0.25
TOTAL DISSOLVED SOLIDS	160	120	200	100	210	250	220	190	140	320	200	190
SULFATE	18	20	19	17	16	28	15	18	20	24	19	19
CARBONATE as CaCO3	VS	VS	VS	VS	VS	VS	VS	VS	VS	VS	VS	VS
BICARBONATE as CaCO3	82	55	140	62	140	61	140	76	190	120	130	75
NITRATE-NITRITE-N2	0.25	<0.050	2.9	1.6	0.10	4.8	<0.050	1.0	<0.050	2.0	1.1	1.0
AMMONIA NITROGEN	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
TOC	<1.0 J	1.49 J	<1.0	<1.0	<1.0	<1.0	1.08	<1.0	<1.0	<1.0 J	<1.0 J	<1.0
FIELD PARAMETERS												
pH (standard units)	6.8	NA	6.4	5.7	6.3	6.8	7.4	7	7.8	6.3	6.5	DUP
TEMPERATURE (°C)	18	18	16.5	20	17	17	19	NA	15.5	18	15	DUP
EH (mv)	NA	NA	140	182	147	215	50	161	187	114	111	DUP
CONDUCTIVITY (umhos/cm)	210	270	270	185	290	265	440	312	210	300	405	DUP
SALINITY (%)	0	0	0	0	0	0	0	NA	0	0	0	DUP

U = Not Detected to the Reported Detection Limit

UJ = Not Detected to an Estimated Detection Limit

J = Estimated Value

R = Data Rejected by Validation

ND = No analytes of this compound group detected

TABLE 4-15

HERTEL REMEDIAL INVESTIGATION

COMPARISON OF LEACHATE PARAMETERS
TO CONCENTRATIONS IN GROUND WATER

Species/ Parameter	Dissolved Concentrations Range Observed in Ground Water (ppm)	Representative Range Typical of Leachate[1] (ppm)	Representative Range Typical of Leachate[2] (ppm)
Alkalinity	<20-1,400	0-20,350	500-10,000
Calcium (Ca)	5.4-671		100-3,000
Chlorides (Cl)	90.6		300-3,000
Iron (Fe)	<12.0-116	0-5,500	1-1,000
Lead (Pb)	<0.001-0.006	0-2.0	<5
Magnesium (Mg)	5.4-57.4		100-1,500
Manganese (Mn)	0.07-21.2	0-50	0.01-100
Mercury (Hg)	<0.002-0.007	0-0.2	<0.2
Nickel (Ni)	<0.016-0.043		0.01-1
Nitrogen			
Organic	<0.10-71	0-1,416	10-1,000
NO_3	<0.05-0.76	0-27.2 [3]	0.1-10
NH_4	<0.05-69	0-1,106	10-1,000
pH	6.0-8.9	3.7-11.5	4-8
Potassium (K)	<0.396-37.5		200-1,000
Sodium	5.5-122		200-1,200
Sulfate (SO_4)	1.8-16		10-1,000
Total Dissolved Solids (TDS)	72-1,400	0-44,900	5,000-40,000
Total Organic Carbon (TOC)	<1-355.6	5.2-27,700	200-30,000
Zinc	<0.004-0.077		0.1-100

1 (Lu et al, 1985)

2 (Freeze and Cherry, 1979)

3 $NO_3 + NO_2$

TABLE 4-16

TABLE 4-16

HERTEL LANDFILL REMEDIAL INVESTIGATION

ORGANIC COMPOUNDS DETECTED IN SURFACE WATER SAMPLES

FIELD ID	SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7	SW-8	SW-9	SW-10	SW-11
DATE SAMPLED	14-Jun-90	19-Jun-90	14-Jun-90	19-Jun-90	19-Jun-90	18-Jun-90	18-Jun-90	15-Jun-90	15-Jun-90	15-Jun-90	15-Jun-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL
VOLATILE ORGANICS (ug/l)											
CHLOROETHANE	10 U	-- R	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	5 U	4 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ACETONE	10 U	-- R	10 U	7 J	10 U	10 U	10 U	10 U	10 U	110	10 U
CARBON DISULFIDE	2 J	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-DICHLORETHANE	5 U	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TOLUENE	5 U	4 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CHLOROBENZENE	5 U	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ETHYLBENZENE	5 U	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
XYLENES (TOTAL)	5 U	-- R	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
BASE NEUTRAL/ACID EXTRACTABLES (ug/l)											
PHENOL	10 U	10 UJ	10 U	10 UJ	10 UJ	10 U	10 U	-- R	10 UJ	10 UJ	10 U
BENZYL ALCOHOL	10 U	10 J	10 U	10 UJ	10 UJ	10 U	10 U	-- R	10 UJ	10 UJ	10 U
4-METHYLPHENOL	10 U	7 J	10 U	10 UJ	10 UJ	10 U	10 U	-- R	10 UJ	10 UJ	10 U
BENZOIC ACID	50 U	9 J	50 U	50 UJ	50 UJ	50 U	50 U	-- R	50 UJ	50 UJ	50 U
NAPHTHALENE	10 U	-- R	10 U	10 UJ	10 UJ	10 U	10 U	10 U	10 UJ	10 UJ	10 U
PESTICIDES/PCB'S (ug/l)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WET CHEMISTRY (mg/l)											
BOD	<2.0	21	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0 J	<2.0 J	26 J	2.9 J
COD	15	440 J	86	200 J	18	18 J	9.7	19	18	270 J	30
CHLORIDE	1.2	25	1.6	1.6	1.3	1.7	4.7	10.0	13.0	18.0	16.0
TKN	0.96 J	16	0.5	5.2	0.35	0.31	0.92	3.7	2.7 J	21	0.57
TOTAL DISSOLVED SOLIDS	54	700	70	60	54	57	130	180	220	190	140
SULFATE	570	7.5	1.3	12	1.1	6.7	3.5 J	3.8	3.4	9.2	6.6
CARBONATE as CACO3	VS	VS	VS	VS	VS	VS	VS	VS	VS	VS	VS
BICARBONATE as CACO3	38	580	38	31	34	36	110	170	190	140	98
NITRATE-NITRITE-N2	<0.050	<0.050	<0.050	0.22	<0.050	<0.050	0.23	0.14	0.17	0.18	<0.050
AMMONIA NITROGEN	<0.050	5	0.054	0.1	<0.050	<0.050	1	3.5	3.1	0.71	0.14
PO4 as P	<0.10	2.1	0.18	0.48	<0.10	0.11	<0.10	<0.10	<0.10	2.2	<0.10
TOC	4.15 J	48.95	27.97	7.17	7.17	4.69	6.27	7.86	7.44	18.19	10.31
TOX (ug/l)	<5.0	147	6.5	24	7	6.5	23	42.5	52.5	34	28.5

U = Not Detected to the Reported Detection Limit
UJ = Not Detected to an Estimated Detection Limit
J = Estimated Value
R = Data Rejected by Validation
B = Analyte Detected in Method Blank; sample concentration less than five times blank value
NA = Not Analyzed
ND = No Analytes of this Compound Group Detected
ENV DUP = Duplicate of Sample Named

TABLE 4-16

HERTEL LANDFILL REMEDIAL INVESTIGATION

ORGANIC COMPOUNDS DETECTED IN SURFACE WATER SAMPLES

PAGE 2 OF 3

FIELD ID	SW-12	SW-13	SW-14	SW-15	SW-16	SW-17	SW-18	SW-19	SW-20	SW-21	SW-22
DATE SAMPLED	15-Jun-90	15-Jun-90	15-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	19-Jun-90	18-Jun-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL
VOLATILE ORGANICS (ug/l)											
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5 J	10 U
METHYLENE CHLORIDE	5 U	10 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	9 U	5 U
ACETONE	10 U	10 U	12 U	10 U	10 U	10 U	10 U	10 U	10 U	17	14 U
CARBON DISULFIDE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-DICHLORETHANE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	3 J	5 U
TOLUENE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CHLOROBENZENE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	4 J	8
ETHYLBENZENE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	4 J
XYLENES (TOTAL)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	7
BASE NEUTRAL/ACID EXTRACTABLES (ug/l)											
PHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	-- R	10 U
BENZYL ALCOHOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	-- R	-- R
4-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	-- R	10 U
BENZOIC ACID	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	-- R	50 U
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	-- R	4 J
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	-- R	1 J
DI-N-BUTYLPHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	3 J	-- R
FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	-- R	-- R
PYRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	-- R	-- R
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	3 J	5 J	-- R
PESTICIDES/PCB's (ug/l)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WET CHEMISTRY (mg/l)											
BOD	4.1 J	9.9 J	9.1 J	3.6	<2.0	<2.0	<2.0	<2.0	<2.0	2.9	>3.5
COD	29	62	58	410 J	18	13	12	8	12	120 J	490 J
CHLORIDE	21.0	23.0	24.0	24.0	15.0	15.0	14.0	9.6	9.8	4.8	49.0
TKN	0.59	1.7	1.1	0.83	1.1	0.17	<0.1	<0.1	0.25 J	8.3	29
TOTAL DISSOLVED SOLIDS	140	130	130	140	180	160	160	100	120	250	800
SULFATE	7.5	7.7	7.3	6	1.3	2.5	3.5	9	7.6	9.4	6.5
CARBONATE as CaCO3	VS	VS	VS	VS	VS	VS	VS	VS	VS	VS	VS
BICARBONATE as CaCO3	78	76	79	100	150	130	120	75	78	220	700
NITRATE-NITRITE-N2	<0.050	0.052	<0.050	<0.050	0.16	0.67	0.47	<0.050	<0.050	<0.050	<0.050
AMMONIA NITROGEN	0.057	0.34	0.13	0.19	<0.050	<0.050	<0.050	<0.050	0.14	1.9	29
PO4 as P	<0.10	0.21	0.18	2.6	<0.10	<0.10	<0.10	<0.10	<0.10	3.7	3.7
TOC	10.97	10.87	21.3	31.77	6.96	5.65	4.56 J	4.04 J	3.91 J	41.86	42.72
TOX (ug/l)	27.5	29.5	21.5	19.5	29.5	29.5	27.5	34	11	62	241.5

U = Not Detected to the Reported Detection Limit
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J = Estimated Value
R = Data Rejected by Validation
B = Analyte Detected in Method Blank; sample concentration less than five times blank value
NA = Not Analyzed
ND = No Analytes of this Compound Group Detected
ENV DUP = Duplicate of Sample Named

TABLE 4-16

HERTEL LANDFILL REMEDIAL INVESTIGATION

ORGANIC COMPOUNDS DETECTED IN SURFACE WATER SAMPLES

PAGE 3 OF 3

FIELD ID	SW-23	SW-24	SW-25	SW-40	SW-41	SWTB614	SWFB615	SWTB615	SWFB618	SWTB618	SWTB619
DATE SAMPLED	18-Jun-90	18-Jun-90	18-Jun-90	18-Jun-90	18-Jun-90	14-Jun-90	15-Jun-90	15-Jun-90	18-Jun-90	18-Jun-90	19-Jun-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENV DUP SW-7	ENV DUP SW-25	TRIP BLANK	FIELD BLANK	TRIP BLANK	FIELD BLANK	TRIP BLANK	TRIP BLANK
VOLATILE ORGANICS (ug/l)											
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	16 U	16 U	6 U	5 U	5 U	5 U	2 J	2	4 BJ	3 BJ	5 U
ACETONE	68 U	25 U	37 U	11 U	36 U	10 U	6 J	10 U	16	41	10 U
CARBON DISULFIDE	8	.5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-DICHLORETHANE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TOLUENE	5 U	1 J	1 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CHLOROBENZENE	5 U	3 J	1 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ETHYLBENZENE	5 U	5 U	1 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
XYLENES (TOTAL)	5 U	5 U	2 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
BASE NEUTRAL/ACID EXTRACTABLES (ug/l)											
PHENOL	10 UJ	10 U	21	-- R	10 U	NA	10 U	NA	10 UJ	NA	NA
BENZYL ALCOHOL	-- R	-- R	-- R	-- R	10 U	NA	10 U	NA	10 UJ	NA	NA
4-METHYLPHENOL	10 UJ	10 U	110	-- R	62	NA	10 U	NA	10 UJ	NA	NA
BENZOIC ACID	50 UJ	10 U	10 U	-- R	50 U	NA	50 U	NA	50 UJ	NA	NA
NAPHTHALENE	-- R	-- R	-- R	-- R	-- R	NA	10 U	NA	10 UJ	NA	NA
PHENANTHRENE	-- R	2 J	-- R	-- R	-- R	NA	10 U	NA	10 UJ	NA	NA
DI-N-BUTYLPHTHALATE	-- R	-- R	-- R	-- R	-- R	NA	10 U	NA	10 UJ	NA	NA
FLUORANTHENE	-- R	2 J	-- R	-- R	-- R	NA	10 U	NA	10 UJ	NA	NA
PYRENE	-- R	2 J	-- R	-- R	-- R	NA	10 U	NA	10 UJ	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	-- R	-- R	-- R	-- R	-- R	NA	10 U	NA	10 UJ	NA	NA
PESTICIDES/PCB's (ug/l)	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	NA
WET CHEMISTRY (mg/l)											
BOD	>7.9	5.4	>2.1	<2.0	>2.0	NA	NA	NA	NA	NA	NA
COD	1200 J	2100 J	620 J	62 J	240 J	NA	NA	NA	NA	NA	NA
CHLORIDE	19.0	71.0	29.0	4.5	31.0	NA	NA	NA	NA	NA	NA
TKN	2.1	23	16	1.3	19	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	140	910	530	140	570	NA	NA	NA	NA	NA	NA
SULFATE	11	11	3.9 J	4.8 J	77 J	NA	NA	NA	NA	NA	NA
CARBONATE as CaCO3	VS	VS	VS	VS	VS	NA	NA	NA	NA	NA	NA
BICARBONATE as CaCO3	200	840	570 J	110	750 J	NA	NA	NA	NA	NA	NA
NITRATE-NITRITE-N2	0.088	0.21	0.18	0.23	0.21	NA	NA	NA	NA	NA	NA
AMMONIA NITROGEN	0.83	24	16	1	16	NA	NA	NA	NA	NA	NA
PO4 as P	2.3	4.1	0.92 J	<0.10	3.1 J	NA	NA	NA	NA	NA	NA
TOC	176.8	59.22	58	6.06	50.8	NA	<1.0	NA	3.49	NA	NA
TOX (ug/l)	51	247.5	205	31.5	292	NA	NA	NA	NA	NA	NA

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J = Estimated Value
R = Data Rejected by Validation
B = Analyte Detected in Method Blank; sample concentration less than five times blank value
NA = Not Analyzed
ND = No Analytes of this Compound Group Detected
ENV DUP = Duplicate of Sample Named

TABLE 4-17

HERTEL LANDFILL REMEDIAL INVESTIGATION

INORGANIC COMPOUNDS DETECTED IN SURFACE WATER SAMPLES

PAGE 1 OF 3

FIELD ID	SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7	SW-8	SW-9	SW-10
DATE SAMPLED	14-Jun-90	19-Jun-90	14-Jun-90	19-Jun-90	19-Jun-90	18-Jun-90	18-Jun-90	15-Jun-90	15-Jun-90	15-Jun-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL
INORGANICS (ug/l)										
ALUMINUM	137.0	4280.0	239.0	628.0	41.5	763.0	144.0	40.0 U	96.0 U	1780.0 J
ANTIMONY	20.0 U	10.0 U	20.0 U	10.0 U	10.0 U	10.0 U	10.0 U	20.0 U	23.0 U	20.0 U
ARSENIC	2.2	12.1	1.4	2.0 U	2.0 U	2.0 U	2.0 U	1.0 U	1.0 U	4.6 J
BARIUM	9.0	509.0	20.0	24.9	8.3	15.0	46.7	61.3 J	57.3	125.0 J
BERYLLIUM	1.0 U	1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	4.0 U	2.0 U	4.0 U
CADMIUM	2.0 U	37.1	2.0 U	2.0 U	2.0 U	2.0 U	4.0	5.0 U	3.0 U	5.0 U
CALCIUM	13400.0	178000.0	13800.0	19300.0	11700.0	14200.0	32200.0	51300.0 J	61700.0 J	60900.0 J
CHROMIUM	3.0 U	5.0 U	3.0 U	5.0 U	5.0 U	5.0 U	5.0 U	6.0 U	6.0 U	6.0 U
COBALT	4.0 U	7.3	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	9.0 U	8.0 U
COPPER	7.1	39.2	5.8	8.6	3.0 U	3.0 U	4.0	4.0 U	4.0 U	4.0 U
IRON	232.0	190000.0	2240.0	1630.0	178.0	826.0	13500.0 J	7900.0 J	7140.0 J	12300.0 J
LEAD	1.0 U	54.9 J	9.7	30.9 J	3.8 J	2.6 J	2.2 J	1.0 U	1.0 UJ	5.4 J
MAGNESIUM	1290.0	17000.0	1110.0	1270.0	853.0	1250.0	3340.0	6260.0 J	7950.0	5290.0 J
MANGANESE	41.7	11800.0	181.0	87.2	32.6	221.0	2870.0	2430.0 J	2740.0 J	10000.0 J
MERCURY	0.2 U	1.0 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	10.0 U	19.0	10.0 U	5.7	5.0 U	5.0 U	5.0 U	22.0 U	16.0 U	22.0 U
POTASSIUM	700.0 U	7700.0	970.0	794.0	780.0 U	780.0 U	1730.0	5150.0 J	5470.0	6410.0 J
SELENIUM	2.0 U	3.0 UJ	2.0 U	3.0 UJ	3.0 UJ	3.0 UJ	3.0 U	2.5 J	2.0 U	2.0 U
SILVER	2.0 U	4.0 U	2.0 U	4.0 U	4.0 U	4.0 U	4.0 U	-- R	6.0 UJ	-- R
SODIUM	1840.0	29600.0	1630.0	1880.0	1730.0	1970.0	5690.0	11600.0 J	15800.0 J	14000.0 J
THALLIUM	1.0 U	2.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 UJ	2.0 U	20.0 UJ
VANADIUM	3.0 U	3.0 U	3.0 U	10.2	3.0 U	3.0 U	3.0 U	6.5 J	5.8	11.8 J
ZINC	6.5	347.0	27.7	-- R	-- R	-- R	-- R	-- R	7.0 U	-- R
CYANIDE	10.0 U	12.5 U	10.0 U	12.5 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
FIELD PARAMETERS										
pH (standard units)	NA	6.3	5.5	4.0	6.5	6.8	6.6	6.7	6.6	6.7
TEMPERATURE (°C)	NA	27	NA	21	21.5	17.5	17.5	15	15	25.5
EH (mv)	NA	-051	NA	186	167	176	36	70	205	97
CONDUCTIVITY (umhos/cm)	NA	1250	NA	215	65	85	225	300	330	320
SALINITY (%)	NA	1.0	NA	0.0	0.0	NA	NA	0.0	0.0	0.0
	NA	NA	NA	NA	NA	7.3	5.0	5.1	5.2	2.9

U = Not Detected to the Reported Detection Limit
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TABLE 4-17

HERTEL LANDFILL REMEDIAL INVESTIGATION

INORGANIC COMPOUNDS DETECTED IN SURFACE WATER SAMPLES

PAGE 2 OF 3

FIELD ID	SW-11	SW-12	SW-13	SW-14	SW-15	SW-16	SW-17	SW-18	SW-19	SW-20
DATE SAMPLED	15-Jun-90	15-Jun-90	15-Jun-90	15-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL
INORGANICS (ug/l)										
ALUMINUM	40.0 U	40.0 U	96.0 U	96.0 U	3480.0	20.0 U	43.2	70.0	76.7	96.0 U
ANTIMONY	20.0 U	20.0 U	23.0 U	23.0 U	20.0 U	20.0 U	20.0 U	20.0 U	20.0 U	23.0 U
ARSENIC	1.0 U	1.0 U	1.0 U	1.0 U	4.6	1.4	1.0 U	1.0 U	1.0 U	1.0 U
BARIUM	33.7 J	18.1 J	11.6	32.4	72.7	33.2	14.3	14.7	11.6	9.4
BERYLLIUM	4.0 U	4.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U
CADMIUM	5.0 U	5.0 U	3.0 U	3.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	3.0 U
CALCIUM	39000.0 J	33300.0 J	31900.0 J	33100.0 J	38500.0	43500.0	41000.0	38800.0	30800.0	32100.0 J
CHROMIUM	6.0 U	6.0 U	6.0 U	6.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	6.0 U
COBALT	8.0 U	8.0 U	9.0 U	9.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	9.0 U
COPPER	4.0 U	4.0 U	4.0 U	4.0 U	12.8	7.9	2.0 U	2.0 U	2.0 U	4.0 U
IRON	3130.0 J	737.0 J	498.0 J	1680.0 J	12500.0	2430.0	520.0	551.0	240.0	-- R
LEAD	10.0 U	10.0 U	1.0 UJ	1.0 UJ	25.6	2.2	1.0 U	1.0 U	1.0 U	1.0 UJ
MAGNESIUM	2990.0 J	2550.0 J	2480.0	2510.0	3410.0	5180.0	4690.0	4300.0	2210.0	2400.0
MANGANESE	1930.0 J	484.0 J	350.0 J	579.0 J	2700.0	1720.0	191.0	207.0	89.8	98.8 J
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	22.0 U	22.0 U	16.0 U	16.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	16.0 U
POTASSIUM	1630.0 J	1410.0 J	842.0	445.0 U	1170.0	2950.0	2930.0	2690.0	700.0 U	445.0 U
SELENIUM	2.0 U	2.0 U	2.0 U	2.0 UJ	2.8	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
SILVER	-- R	-- R	6.0 UJ	6.0 UJ	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	6.0 UJ
SODIUM	12400.0 J	14500.0 J	16000.0 J	15800.0 J	16700.0	14500.0	13300.0	12700.0	6650.0	7300.0 J
THALLIUM	20.0 UJ	20.0 UJ	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0
VANADIUM	9.2 J	6.3 J	4.0 U	4.0 U	8.6	3.0 U	3.0 U	3.0 U	3.0 U	4.0 U
ZINC	-- R	-- R	10.1	23.2	67.5	2.2	2.7	2.7	2.8	7.0 U
CYANIDE	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
FIELD PARAMETERS										
pH (standard units)	6.0	7.0	7.0	6.0	7.1	7.3	7.5	7.6	NA	7.0
TEMPERATURE (C)	25.5	22.5	22.5	25	18	16	16	16	17	23
EH (mv)	188	225	NA	NA	82	NA	245	NA	NA	NA
CONDUCTIVITY (umhos/cm)	250	235	215	220	165	275	240	220	160	180
SALINITY (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3.0	4.5	3.6	3.3	3.1	3.6	8.9	8.3	6.5	NA

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J = Estimated Value
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TABLE 4-17

HERTEL LANDFILL REMEDIAL INVESTIGATION

INORGANIC COMPOUNDS DETECTED IN SURFACE WATER SAMPLES

PAGE 3 OF 3

FIELD ID	SW-21	SW-22	SW-23	SW-24	SW-25	SW-40	SW-41	SWFB615	SWFB618
DATE SAMPLED	19-Jun-90	18-Jun-90	18-Jun-90	18-Jun-90	18-Jun-90	18-Jun-90	18-Jun-90	15-Jun-90	18-Jun-90
SAMPLE TYPE	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE	ENVDUP SW-7	ENVDUP SW-25	FLD BLK SED-10	FIELD BLANK
INORGANICS (ug/l)									
ALUMINUM	1190.0	4720.0 J	18100.0	20400.0 J	5110.0 J	30.7	3000.0 J	88.8 J	29.0 U
ANTIMONY	10.0 U	10.0 UJ	14.9	10.0 UJ	11.2	10.0 U	10.0 U	20.0 U	10.0 U
ARSENIC	8.8	2.0 UJ	9.1	4.0 J	2.0 U	2.0 U	2.0 U	1.0 U	2.0 U
BARIUM	222.0	1500.0 J	570.0	1180.0 J	3580.0	34.8	2210.0	16.9 J	2.0 U
BERYLLIUM	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	4.4 J	1.0 UJ
CADMIUM	12.7	65.7 J	109.0	128.0 J	178.0	2.7	112.0	5.0 U	2.0 U
CALCIUM	66700.0	163000.0 J	74800.0	317000.0 J	171000.0	32300.0	143000.0	669.0 J	54.0 U
CHROMIUM	5.0 U	5.0 UJ	67.0	316.0 J	7.5	5.0 U	5.5	6.0 U	5.0 U
COBALT	6.2	11.8 J	9.3	16.0 J	12.6	4.0 U	7.7	8.0 U	4.0 U
COPPER	11.0	31.2 J	151.0	370.0 J	8.7	5.1	3.2	6.9 J	3.0 U
IRON	83600.0	318000.0 J	503000.0	526000.0 J	836000.0	5670.0 J	552000.0	74.7 J	56.1
LEAD	25.4 J	71.7 J	454.0 J	366.0 J	51.4 J	2.0 UJ	32.4 J	1.0 J	2.0 UJ
MAGNESIUM	6270.0	23400.0 J	7530.0	37300.0 J	18600.0	3440.0	17100.0	273.0 J	37.0 U
MANGANESE	8160.0	6220.0 J	4410.0	25300.0 J	5910.0	2300.0	4450.0	8.2 J	7.0 U
MERCURY	0.2 U	0.3 J	1.2 J	4.1 J	0.3 J	0.2 U	0.3 J	0.2 U	0.2 U
NICKEL	5.0 U	15.2 J	32.2	116.0 J	6.3	5.0 U	5.7	22.0 U	5.0 U
POTASSIUM	3100.0	25500.0 J	2830.0	28300.0 J	17600.0	1780.0	16200.0	1370.0 J	780.0 U
SELENIUM	3.0 U	3.0 UJ	3.0 U	3.0 UJ	3.0 U	3.0 U	3.0 U	2.0 U	3.0 U
SILVER	4.0 U	4.0 UJ	4.0 U	4.0 UJ	4.0 U	4.0 U	4.0 U	-- R	4.0 U
SODIUM	8410.0	48600.0 J	15200.0	79800.0 J	31100.0	5900.0	29700.0	789.0 J	37.0 U
THALLIUM	2.0 U	2.0 UJ	2.0 U	10.0 UJ	2.0 U	2.0 U	2.0 U	2.0 UJ	2.0 U
VANADIUM	3.0 U	54.6 J	3.0 U	3.0 UJ	3.0 U	3.0 U	3.0 U	10.0 J	3.0 U
ZINC	-- R	283.0 J	790.0	11200.0 J	154.0 J	-- R	-- R	-- R	-- R
CYANIDE	10.0 U	10.0 U	85.3	10.0 U	32.8	10.0 U	17.8	20.0 U	10.0 U
FIELD PARAMETERS									
pH (standard units)	6.0	NA	6.8	6.4	6.7	NA	NA	NA	NA
TEMPERATURE (°C)	24.5	20	16	21	20	NA	NA	NA	NA
EH (mv)	-11	-075	-125	85	-160	NA	NA	NA	NA
CONDUCTIVITY (umhos/cm)	550	140	345	1600	1170	NA	NA	NA	NA
SALINITY (%)	0.1	1.0	0.0	0.8	0.7	NA	NA	NA	NA
	NA	NA	1.8	NA	NA	NA	NA	NA	NA

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J = Estimated Value
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TABLE 4-18

HERTEL LANDFILL REMEDIAL INVESTIGATION

ORGANIC COMPOUNDS DETECTED IN SEDIMENT SAMPLES

TABLE 4-18

FIELD ID	SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7	SED-8	SED-9	SED-10	SED-11
DATE SAMPLED	14-Jun-90	19-Jun-90	14-Jun-90	19-Jun-90	19-Jun-90	18-Jun-90	18-Jun-90	15-Jun-90	14-Jun-90	15-Jun-90	15-Jun-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL
VOLATILE ORGANICS (mg/kg)											
METHYLENE CHLORIDE	10 UJ	54 B	9 UJ	320 J	65 UJ	17 UJ	61 UJ	1200 UJ	44 UJ	97 UJ	40 U
ACETONE	19 UJ	-- R	16 UJ	140 UJ	-- R	-- R	-- R	640 UJ	79 UJ	54 UJ	39 U
CARBON DISULFIDE	10 U	8	8 U	71 UJ	9 J	6 J	38 UJ	36 UJ	12 UJ	19 UJ	10 U
CHLOROFORM	10 U	8 U	8 U	71 UJ	13 UJ	11 UJ	38 UJ	10 J	12 UJ	19 UJ	10 U
2-BUTANONE	19 UJ	17 UJ	16 U	140 UJ	27 UJ	23 UJ	83 UJ	86 J	24 UJ	37 UJ	20 UJ
TOLUENE	10 U	8 J	8 U	71 UJ	6 J	11 UJ	38 UJ	36 UJ	12 UJ	19 UJ	10 U
CHLOROBENZENE	10 U	8 U	8 U	71 UJ	13 UJ	11 UJ	38 UJ	36 UJ	12 UJ	19 UJ	10 U
ETHYLBENZENE	10 U	8 U	8 U	71 UJ	13 UJ	11 UJ	38 UJ	36 UJ	12 UJ	19 UJ	10 U
XYLENES (TOTAL)	10 U	8 U	8 U	71 UJ	13 UJ	11 UJ	38 UJ	36 UJ	12 UJ	19 UJ	10 U
BASE NEUTRAL/ACID EXTRACTABLES (mg/kg)											
1,2-DICELOROBENZENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
4-METHYLPHENOL	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
BENZOIC ACID	3100 U	5300 UJ	2400 U	46000 UJ	8600 UJ	7200 UJ	25000 UJ	11000 UJ	3800 UJ	5900 UJ	3200 U
NAPHTHALENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
2-METHYLNAPHTHALENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
ACENAPHTHYLENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
ACENAPHTHENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
FLUORENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
PHENANTHRENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
ANTHRACENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
DI-N-BUTYLPHTHALATE	630 U	1100 UJ	58 J	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
FLUORANTHENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
PYRENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
BENZO(A)ANTHRACENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
CHRYSENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
BIS(2-ETHYLHEXYL)PHTHALATE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	2300 J	2400 UJ	790 UJ	1200 UJ	660 U
DI-N-OCTYLPHTHALATE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
BENZO(B)FLUORANTHENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
BENZO(K)FLUORANTHENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
BENZO(A)PYRENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
INDENO(1,2,3-CD)PYRENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
DIBENZO(A,H)ANTHRACENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
PESTICIDES/PCB's (mg/kg)											
BETA-BHC	15 U	270 UJ	12 U	2300 UJ	430 UJ	360 UJ	1200 UJ	57 UJ	19 UJ	27 UJ	16 U
4,4'-DDE	31 U	530 UJ	24 U	4600 UJ	860 UJ	720 UJ	2500 UJ	110 UJ	38 UJ	53 UJ	32 U
4,4'-DDD	31 U	530 UJ	24 U	4600 UJ	860 UJ	720 UJ	2500 UJ	110 UJ	38 UJ	53 UJ	32 U
4,4'-DDT	31 U	530 UJ	24 U	4600 UJ	860 UJ	720 UJ	2500 UJ	110 UJ	38 UJ	53 UJ	32 U
TOTAL ORGANIC CARBON (mg/kg)	79900 J	6030	41100	-- R	89300 J	147000 J	960000 J	699000 J	97600 J	388000 J	248000 J

U = Not Detected to the Reported Detection Limit

UJ = Not Detected to an Estimated Detection Limit

J = Estimated Value

XJ = These Parameters Not separable from each other; value given is the total value for both parameters in the sample with this qualifier.

R = Data Rejected by Validation

B = Analyte Detected in Method Blank; sample concentrations greater than five times blank value

NA = Not Analyzed

ND = No analytes of this compound group detected

TABLE 4-18

HERTEL LANDFILL REMEDIAL INVESTIGATION

ORGANIC COMPOUNDS DETECTED IN SEDIMENT SAMPLES

FIELD ID	SED-12	SED-13	SED-14	SED-15	SED-16	SED-17	SED-18	SED-19	SED-20	SED-21	SED-22
DATE SAMPLED	15-Jun-90	15-Jun-90	16-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	13-Jun-90	19-Jun-90	18-Jun-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL
VOLATILE ORGANICS (mg/kg)											
METHYLENE CHLORIDE	23 U	23 U	200 UJ	40 U	8 UJ	14 UJ	8 UJ	39 UJ	14 UJ	110 UJ	410 UJ
ACETONE	31 U	30 U	140 UJ	40 U	14 UJ	28 UJ	17 UJ	45 UJ	28 UJ	57 UJ	-- R
CARBON DISULFIDE	9 U	8 U	16 UJ	10 U	7 U	14 UJ	8 U	23 UJ	14 UJ	23 UJ	52 J
CHLOROFORM	9 U	8 U	16 UJ	10 U	7 U	14 UJ	8 U	23 UJ	14 UJ	23 UJ	32 UJ
2-BUTANONE	18 UJ	17 UJ	31 UJ	20 U	14 U	28 UJ	17 U	45 UJ	38 J	45 UJ	99 UJ
TOLUENE	9 U	8 U	16 UJ	10 U	7 U	14 UJ	8 U	23 UJ	14 UJ	23 UJ	49 J
CHLOROBENZENE	9 U	8 U	16 UJ	10 U	7 U	14 UJ	8 U	23 UJ	14 UJ	23 UJ	430 J
ETHYLBENZENE	9 U	8 U	16 UJ	10 U	7 U	14 UJ	8 U	23 UJ	14 UJ	23 UJ	32 UJ
XYLENES (TOTAL)	9 U	8 U	16 UJ	10 U	7 U	14 UJ	8 U	23 UJ	14 UJ	23 UJ	970 J
BASE NEUTRAL/ACID EXTRACTABLES (mg/k											
1,2-DICHLOROBENZENE	580 U	560 U	120 J	660 UJ	450 U	1100 UJ	560 U	1200 UJ	920 UJ	3000 UJ	4200 UJ
4-METHYLPHENOL	580 U	560 U	930 UJ	660 UJ	59 J	1100 UJ	560 U	1200 UJ	920 UJ	3000 UJ	4200 UJ
BENZOIC ACID	2800 U	2700 U	4500 UJ	3200 UJ	2200 U	5300 UJ	2700 U	6100 UJ	4400 UJ	15000 UJ	5600 J
NAPHTHALENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	920 UJ	3000 UJ	1000 J
2-METHYLNAPHTHALENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	920 UJ	3000 UJ	4200 UJ
ACENAPHTHYLENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	160 J	3000 UJ	4200 UJ
ACENAPHTHENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	920 UJ	3000 UJ	4200 UJ
FLUORENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	170 J	3000 UJ	260 J
PHENANTHRENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	2500 J	550 J	4200 UJ
ANTHRACENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	180 J	3000 UJ	4200 UJ
DI-N-BUTYLPHTHALATE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	920 UJ	490 J	610 J
FLUORANTHENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	3100 J	510 J	4200 UJ
PYRENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	2900 J	520 J	4200 UJ
BENZO(A)ANTHRACENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	1500 J	3000 UJ	4200 UJ
CHRYSENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	1700 J	280 J	4200 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	920 UJ	1300 J	1700 J
DI-N-OCTYLPHTHALATE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	2500 XJ	3000 UJ	4200 UJ
BENZO(B)FLUORANTHENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	2500 XJ	3000 UJ	4200 UJ
BENZO(K)FLUORANTHENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	1200 J	3000 UJ	4200 UJ
BENZO(A)PYRENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	870 J	3000 UJ	4200 UJ
INDENO(1,2,3-CD)PYRENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	390 J	3000 UJ	4200 UJ
DIBENZO(A,H)ANTHRACENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	960 J	3000 UJ	4200 UJ
PESTICIDES/PCB's (mg/kg)											
BETA-BHC	25	14 U	22 UJ	16 UJ	11 U	26 UJ	14 U	31 UJ	22 UJ	740 UJ	1000 UJ
4,4'-DDE	28 U	27 U	45 UJ	32 UJ	38	53 UJ	27 U	63 UJ	44 UJ	1500 UJ	2000 UJ
4,4'-DDD	28 U	27 U	45 UJ	32 UJ	22 U	53 UJ	27 U	94 J	100 J	1500 UJ	2000 UJ
4,4'-DDT	28 U	27 U	74 J	32 UJ	22 U	53 UJ	27 U	63 UJ	44 UJ	1500 UJ	2000 UJ
TOTAL ORGANIC CARBON (mg/kg)	9560	45500 J	302000 J	532000 J	38600	223000 J	24900	232000 J	111000 J	278000 J	461000 J

U = Not Detected to the Reported Detection Limit
UJ = Not Detected to an Estimated Detection Limit
J = Estimated Value
XJ = These Parameters Not separable from each other; value given is the total value for both parameters in the sample with this qualifier.
R = Data Rejected by Validation
B = Analyte Detected in Method Blank; sample concentrations greater than five times blank value
NA = Not Analyzed
ND = No analytes of this compound group detected

TABLE 4-18

HERTEL LANDFILL REMEDIAL INVESTIGATION

ORGANIC COMPOUNDS DETECTED IN SEDIMENT SAMPLES

PAGE 4 OF 4

FIELD ID	SED-34	SED-35	SED-36	SED-37	SED-38	SED-40	SED-41	SEDFB-613	SEDFB-615	SEDFB-618
DATE SAMPLED	16-Jun-90	16-Jun-90	16-Jun-90	19-Jun-90	19-Jun-90	20-Jun-90	20-Jun-90	13-Jun-90	15-Jun-90	18-Jun-90
SAMPLE TYPE	SED-12 12-18"	SED-11 6-12"	SED-11 12-18"	SED-5 6-12"	SED-5 12-18"	ENV DUP SED-7	ENV DUP SED-2	FB EQ SED-20	FIELD BLANK	FIELD BLANK
VOLATILE ORGANICS (mg/kg)										
METHYLENE CHLORIDE	20 U	17 U	29 U	34 UJ	21 U	350 BJ	780 J	5 U	NA	NA
ACETONE	23 U	17 U	44 U	-- R	-- R	250 UJ	810 UJ	6 J	NA	NA
CARBON DISULFIDE	7 U	7 U	8 U	5 J	3 J	69 J	19 J	5 U	NA	NA
CHLOROFORM	7 U	7 U	8 U	8 UJ	6 U	38 UJ	32 UJ	5 U	NA	NA
2-BUTANONE	14 UJ	14 UJ	17 UJ	15 UJ	13 UJ	77 UJ	280 B	10 U	NA	NA
TOLUENE	7 U	7 U	8 U	8 UJ	7	38 UJ	32 UJ	5 U	NA	NA
CHLOROBENZENE	7 U	7 U	8 U	8 UJ	6 U	38 UJ	130 J	5 U	NA	NA
ETHYLBENZENE	7 U	7 U	8 U	8 UJ	6 U	38 UJ	32 UJ	5 U	NA	NA
XYLENES (TOTAL)	7 U	7 U	8 U	8 UJ	6 U	38 UJ	220 J	5 U	NA	NA
BASE NEUTRAL/ACID EXTRACTABLES (mg/kg)										
1,2-DICHLOROBENZENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
4-METHYLPHENOL	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
BENZOIC ACID	2300 UJ	2200 U	2700 U	4800 UJ	4000 UJ	25000.0 UJ	20000.0 UJ	50 U	NA	NA
NAPHTHALENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
2-METHYLNAPHTHALENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	110.0 J	10 U	NA	NA
ACENAPHTHYLENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
ACENAPHTHENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
FLUORENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
PHENANTHRENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
ANTHRACENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
DI-N-BUTYLPHTHALATE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
FLUORANTHENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
PYRENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
BENZO(A)ANTHRACENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
CHRYSENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
DI-N-OCTYLPHTHALATE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
BENZO(B)FLUORANTHENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
BENZO(K)FLUORANTHENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
BENZO(A)PYRENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
INDENO(1,2,3-CD)PYRENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
DIBENZO(A,H)ANTHRACENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
PESTICIDES/PCB's (mg/kg)										
BETA-BHC	11 UJ	11 UJ	13 UJ	240 UJ	200 UJ	1300 UJ	1000 UJ	0.05	NA	NA
4,4'-DDE	23 UJ	22 UJ	26 UJ	480 UJ	400 UJ	2500 UJ	2000 UJ	0.10	NA	NA
4,4'-DDD	23 UJ	22 UJ	26 UJ	480 UJ	400 UJ	2500 UJ	2000 UJ	0.10	NA	NA
4,4'-DDT	23 UJ	22 UJ	26 UJ	480 UJ	400 UJ	2500 UJ	2000 UJ	0.10	NA	NA
TOTAL ORGANIC CARBON (mg/kg)	11800	9900	21900	26400	1500	672000 J	768000 J	<1.0	<1.0	3.49

U = Not Detected to the Reported Detection Limit

UJ = Not Detected to an Estimated Detection Limit

J = Estimated Value

XJ = These Parameters Not separable from each other; value given is the total value for both parameters in the sample with this qualifier.

R = Data Rejected by Validation

B = Analyte Detected in Method Blank; sample concentrations greater than five times blank value

TABLE 4-18

HERTEL LANDFILL REMEDIAL INVESTIGATION

ORGANIC COMPOUNDS DETECTED IN SEDIMENT SAMPLES

TABLE 4-18

FIELD ID	SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7	SED-8	SED-9	SED-10	SED-11
DATE SAMPLED	14-Jun-90	19-Jun-90	14-Jun-90	19-Jun-90	19-Jun-90	18-Jun-90	18-Jun-90	15-Jun-90	14-Jun-90	15-Jun-90	15-Jun-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL
VOLATILE ORGANICS (mg/kg)											
METHYLENE CHLORIDE	10 UJ	54 B	9 UJ	320 J	65 UJ	17 UJ	61 UJ	1200 UJ	44 UJ	97 UJ	40 U
ACETONE	19 UJ	-- R	16 UJ	140 UJ	-- R	-- R	-- R	640 UJ	79 UJ	54 UJ	39 U
CARBON DISULFIDE	10 U	8	8 U	71 UJ	9 J	6 J	38 UJ	36 UJ	12 UJ	19 UJ	10 U
CHLOROFORM	10 U	8 U	8 U	71 UJ	13 UJ	11 UJ	38 UJ	10 J	12 UJ	19 UJ	10 U
2-BUTANONE	19 UJ	17 UJ	16 U	140 UJ	27 UJ	23 UJ	83 UJ	86 J	24 UJ	37 UJ	20 UJ
TOLUENE	10 U	8 J	8 U	71 UJ	6 J	11 UJ	38 UJ	36 UJ	12 UJ	19 UJ	10 U
CHLOROBENZENE	10 U	8 U	8 U	71 UJ	13 UJ	11 UJ	38 UJ	36 UJ	12 UJ	19 UJ	10 U
ETHYLBENZENE	10 U	8 U	8 U	71 UJ	13 UJ	11 UJ	38 UJ	36 UJ	12 UJ	19 UJ	10 U
XYLENES (TOTAL)	10 U	8 U	8 U	71 UJ	13 UJ	11 UJ	38 UJ	36 UJ	12 UJ	19 UJ	10 U
BASE NEUTRAL/ACID EXTRACTABLES (mg/kg)											
1,2-DICHLOROBENZENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
4-METHYLPHENOL	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
BENZOIC ACID	3100 U	5300 UJ	2400 U	46000 UJ	8600 UJ	7200 UJ	25000 UJ	11000 UJ	3800 UJ	5900 UJ	3200 U
NAPHTHALENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
2-METHYLNAPHTHALENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
ACENAPHTHYLENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
ACENAPHTHENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
FLUORENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
PHENANTHRENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
ANTHRACENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
DI-N-BUTYLPHTHALATE	630 U	1100 UJ	58 J	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
FLUORANTHENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
PYRENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
BENZO(A)ANTHRACENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
CHRYSENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
BIS(2-ETHYLHEXYL)PHTHALATE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	2300 J	2400 UJ	790 UJ	1200 UJ	660 U
DI-N-OCTYLPHTHALATE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
BENZO(B)FLUORANTHENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
BENZO(K)FLUORANTHENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
BENZO(A)PYRENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
INDENO(1,2,3-CD)PYRENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
DIBENZO(A,H)ANTHRACENE	630 U	1100 UJ	510 U	9400 UJ	1800 UJ	1500 UJ	5100 UJ	2400 UJ	790 UJ	1200 UJ	660 U
PESTICIDES/PCB's (mg/kg)											
BETA-BHC	15 U	270 UJ	12 U	2300 UJ	430 UJ	360 UJ	1200 UJ	57 UJ	19 UJ	27 UJ	16 U
4,4'-DDE	31 U	530 UJ	24 U	4600 UJ	860 UJ	720 UJ	2500 UJ	110 UJ	38 UJ	53 UJ	32 U
4,4'-DDD	31 U	530 UJ	24 U	4600 UJ	860 UJ	720 UJ	2500 UJ	110 UJ	38 UJ	53 UJ	32 U
4,4'-DDT	31 U	530 UJ	24 U	4600 UJ	860 UJ	720 UJ	2500 UJ	110 UJ	38 UJ	53 UJ	32 U
TOTAL ORGANIC CARBON (mg/kg)	79900 J	6030	41100	-- R	89300 J	147000 J	960000 J	699000 J	97600 J	388000 J	248000 J

U = Not Detected to the Reported Detection Limit

UJ = Not Detected to an Estimated Detection Limit

J = Estimated Value

XJ = These Parameters Not separable from each other; value given is the total value for both parameters in the sample with this qualifier.

R = Data Rejected by Validation

B = Analyte Detected in Method Blank; sample concentrations greater than five times blank value

NA = Not Analyzed

ND = No analytes of this compound group detected

TABLE 4-18

HERTEL LANDFILL REMEDIAL INVESTIGATION

ORGANIC COMPOUNDS DETECTED IN SEDIMENT SAMPLES

PAGE 2 OF 4

FIELD ID	SED-12	SED-13	SED-14	SED-15	SED-16	SED-17	SED-18	SED-19	SED-20	SED-21	SED-22
DATE SAMPLED	15-Jun-90	15-Jun-90	16-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	13-Jun-90	19-Jun-90	18-Jun-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL
VOLATILE ORGANICS (mg/kg)											
METHYLENE CHLORIDE	23 U	23 U	200 UJ	40 U	8 UJ	14 UJ	8 UJ	39 UJ	14 UJ	110 UJ	410 UJ
ACETONE	31 U	30 U	140 UJ	40 U	14 UJ	28 UJ	17 UJ	45 UJ	28 UJ	57 UJ	-- R
CARBON DISULFIDE	9 U	8 U	16 UJ	10 U	7 U	14 UJ	8 U	23 UJ	14 UJ	23 UJ	52 J
CHLOROFORM	9 U	8 U	16 UJ	10 U	7 U	14 UJ	8 U	23 UJ	14 UJ	23 UJ	32 UJ
2-BUTANONE	18 UJ	17 UJ	31 UJ	20 U	14 U	28 UJ	17 U	45 UJ	38 J	45 UJ	99 UJ
TOLUENE	9 U	8 U	16 UJ	10 U	7 U	14 UJ	8 U	23 UJ	14 UJ	23 UJ	49 J
CHLOROBENZENE	9 U	8 U	16 UJ	10 U	7 U	14 UJ	8 U	23 UJ	14 UJ	23 UJ	430 J
ETHYLBENZENE	9 U	8 U	16 UJ	10 U	7 U	14 UJ	8 U	23 UJ	14 UJ	23 UJ	32 UJ
XYLENES (TOTAL)	9 U	8 U	16 UJ	10 U	7 U	14 UJ	8 U	23 UJ	14 UJ	23 UJ	970 J
BASE NEUTRAL/ACID EXTRACTABLES (mg/k											
1,2-DICHLOROBENZENE	580 U	560 U	120 J	660 UJ	450 U	1100 UJ	560 U	1200 UJ	920 UJ	3000 UJ	4200 UJ
4-METHYLPHENOL	580 U	560 U	930 UJ	660 UJ	59 J	1100 UJ	560 U	1200 UJ	920 UJ	3000 UJ	4200 UJ
BENZOIC ACID	2800 U	2700 U	4500 UJ	3200 UJ	2200 U	5300 UJ	2700 U	6100 UJ	4400 UJ	15000 UJ	5600 J
NAPHTHALENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	920 UJ	3000 UJ	1000 J
2-METHYLNAPHTHALENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	920 UJ	3000 UJ	4200 UJ
ACENAPHTHYLENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	160 J	3000 UJ	4200 UJ
ACENAPHTHENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	920 UJ	3000 UJ	4200 UJ
FLUORENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	170 J	3000 UJ	260 J
PHENANTHRENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	2500 J	550 J	4200 UJ
ANTHRACENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	180 J	3000 UJ	4200 UJ
DI-N-BUTYLPHTHALATE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	920 UJ	490 J	610 J
FLUORANTHENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	3100 J	510 J	4200 UJ
PYRENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	2900 J	520 J	4200 UJ
BENZO(A)ANTHRACENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	1500 J	3000 UJ	4200 UJ
CHRYSENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	1700 J	280 J	4200 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	920 UJ	1300 J	1700 J
DI-N-OCTYLPHTHALATE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	2500 XJ	3000 UJ	4200 UJ
BENZO(B)FLUORANTHENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	2500 XJ	3000 UJ	4200 UJ
BENZO(K)FLUORANTHENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	1200 J	3000 UJ	4200 UJ
BENZO(A)PYRENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	870 J	3000 UJ	4200 UJ
INDENO(1,2,3-CD)PYRENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	390 J	3000 UJ	4200 UJ
DIBENZO(A,H)ANTHRACENE	580 U	560 U	930 UJ	660 UJ	450 U	1100 UJ	560 U	1200 UJ	960 J	3000 UJ	4200 UJ
PESTICIDES/PCB's (mg/kg)											
BETA-BHC	25	14 U	22 UJ	16 UJ	11 U	26 UJ	14 U	31 UJ	22 UJ	740 UJ	1000 UJ
4,4'-DDE	28 U	27 U	45 UJ	32 UJ	38	53 UJ	27 U	63 UJ	44 UJ	1500 UJ	2000 UJ
4,4'-DDD	28 U	27 U	45 UJ	32 UJ	22 U	53 UJ	27 U	94 J	100 J	1500 UJ	2000 UJ
4,4'-DDT	28 U	27 U	74 J	32 UJ	22 U	53 UJ	27 U	63 UJ	44 UJ	1500 UJ	2000 UJ
TOTAL ORGANIC CARBON (mg/kg)	9560	45500 J	302000 J	532000 J	38600	223000 J	24900	232000 J	111000 J	278000 J	461000 J

U = Not Detected to the Reported Detection Limit
UJ = Not Detected to an Estimated Detection Limit
J = Estimated Value
XJ = These Parameters Not separable from each other; value given is the total value for both parameters in the sample with this qualifier.
R = Data Rejected by Validation
B = Analyte Detected in Method Blank; sample concentrations greater than five times blank value
NA = Not Analyzed

TABLE 4-18

HERTEL LANDFILL REMEDIAL INVESTIGATION

ORGANIC COMPOUNDS DETECTED IN SEDIMENT SAMPLES

FIELD ID	SED-23	SED-24	SED-25	SED-26	SED-27	SED-28	SED-29	SED-30	SED-31	SED-32	SED-33
DATE SAMPLED	18-Jun-90	18-Jun-90	18-Jun-90	19-Jun-90	13-Jun-90	13-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	16-Jun-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	SED-20 6-12"	SED-20 12-18"	SED-3 6-12"	SED-3 12-18"	SED-15 6-12"	SED-15 12-18"	SED-12 6-12"
VOLATILE ORGANICS (mg/kg)											
METHYLENE CHLORIDE	390 B	290 B	860 J	35 U	220 UJ	86 U	36 U	66 U	82 U	36 UJ	110 UJ
ACETONE	-- R	-- R	350 UJ	-- R	510 UJ	110 U	30 U	23 U	39 U	71 UJ	370 U
CARBON DISULFIDE	60 J	64 J	33 UJ	4 J	18 UJ	6 U	7 U	7 U	14 U	36 UJ	28 UJ
CHLOROFORM	38 UJ	29 UJ	33 UJ	7 U	19 J	2 J	7 U	7 U	14 U	36 UJ	28 UJ
2-BUTANONE	98 UJ	57 UJ	120 UJ	13 UJ	36 J	3 J	14 U	13 U	28 U	71 UJ	72 UJ
TOLUENE	38 UJ	15 J	33 UJ	7 U	5 J	6 U	7 U	7 U	14 U	36 UJ	28 UJ
CHLOROBENZENE	38 UJ	390 J	170 J	7 U	18 UJ	6 U	7 U	7 U	14 U	36 UJ	28 UJ
ETHYLBENZENE	38 UJ	29 UJ	13 J	7 U	18 UJ	6 U	7 U	7 U	14 U	36 UJ	28 UJ
XYLENES (TOTAL)	38 UJ	80 J	280 J	7 U	18 UJ	6 U	7 U	7 U	14 U	36 UJ	28 UJ
BASE NEUTRAL/ACID EXTRACTABLES (mg/kg)											
1,2-DICHLOROBENZENE	4900 UJ	3900 UJ	4400 UJ	870 UJ	1200 UJ	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
4-METHYLPHENOL	4900 UJ	3900 UJ	4400 UJ	870 UJ	1200 UJ	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
BENZOIC ACID	24000 UJ	19000 UJ	21000 UJ	4200 UJ	5700 UJ	1900 UJ	2200 U	2100 U	3800 UJ	9400 UJ	8200 UJ
NAPHTHALENE	540 J	710 J	4400 UJ	870 UJ	1200 UJ	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
2-METHYLNAPHTHALENE	4900 UJ	300 J	170 J	870 UJ	1200 UJ	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
ACENAPHTHYLENE	4900 UJ	3900 UJ	4400 UJ	870 UJ	1200 UJ	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
ACENAPHTHENE	4900 UJ	280 J	4400 UJ	870 UJ	1200 UJ	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
FLUORENE	4900 UJ	370 J	4400 UJ	870 UJ	1200 UJ	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
PHENANTHRENE	4900 UJ	1500 J	4400 UJ	870 UJ	1200 UJ	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
ANTHRACENE	4900 UJ	3900 UJ	4400 UJ	870 UJ	1200 UJ	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
DI-N-BUTYLPHTHALATE	4900 UJ	3900 UJ	4400 UJ	870 UJ	1200 UJ	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
FLUORANTHENE	4900 UJ	1600 J	4400 UJ	870 UJ	190 J	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
PYRENE	4900 UJ	1500 J	4400 UJ	870 UJ	190 J	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
BENZO(A)ANTHRACENE	4900 UJ	1000 J	4400 UJ	870 UJ	1200 UJ	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
CHRYSENE	4900 UJ	930 J	4400 UJ	870 UJ	140 J	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	2900 J	2700 J	4400 UJ	100 J	1200 UJ	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
DI-N-OCTYLPHTHALATE	4900 UJ	3900 UJ	4400 UJ	870 UJ	1200 UJ	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
BENZO(B)FLUORANTHENE	4900 UJ	770 J	4400 UJ	870 UJ	230 XJ	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
BENZO(K)FLUORANTHENE	4900 UJ	3900 UJ	4400 UJ	870 UJ	230 XJ	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
BENZO(A)PYRENE	4900 UJ	3900 UJ	4400 UJ	870 UJ	570 J	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
INDENO(1,2,3-CD)PYRENE	4900 UJ	3900 UJ	4400 UJ	870 UJ	1200 UJ	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
DIBENZO(A,H)ANTHRACENE	4900 UJ	3900 UJ	4400 UJ	870 UJ	1200 UJ	390 U	460 U	440 U	780 UJ	1900 UJ	1700 UJ
PESTICIDES/PCB's (mg/kg)											
BETA-BHC	1200 UJ	950 UJ	1100 UJ	210 UJ	28 UJ	9.4 U	11 U	11 U	19 UJ	47 UJ	41 UJ
4,4'-DDE	2400 UJ	1900 UJ	2100 UJ	420 UJ	57 UJ	19 U	22 U	21 U	39 UJ	94 UJ	82 UJ
4,4'-DDD	2400 UJ	1900 UJ	2100 UJ	420 UJ	57 UJ	19 U	22 U	21 U	39 UJ	94 UJ	82 UJ
4,4'-DDT	2400 UJ	1900 UJ	2100 UJ	420 UJ	57 UJ	19 U	22 U	21 U	39 UJ	94 UJ	82 UJ
TOTAL ORGANIC CARBON (mg/kg)	558000 J	894000 J	346000 J	14100	182000 J	10400	10000	10000	180000 J	52400	348000 J

U = Not Detected to the Reported Detection Limit
UJ = Not Detected to an Estimated Detection Limit
J = Estimated Value
XJ = These Parameters Not separable from each other; value given is the total value for both parameters in the sample with this qualifier.
R = Data Rejected by Validation
B = Analyte Detected in Method Blank; sample concentrations greater than five times blank value
NA = Not Analyzed
ND = No analytes of this compound group detected

TABLE 4-18

HERTEL LANDFILL REMEDIAL INVESTIGATION

ORGANIC COMPOUNDS DETECTED IN SEDIMENT SAMPLES

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FIELD ID	SED-34	SED-35	SED-36	SED-37	SED-38	SED-40	SED-41	SEDFB-613	SEDFB-615	SEDFB-618
DATE SAMPLED	16-Jun-90	16-Jun-90	16-Jun-90	19-Jun-90	19-Jun-90	20-Jun-90	20-Jun-90	13-Jun-90	15-Jun-90	18-Jun-90
SAMPLE TYPE	SED-12 12-18"	SED-11 6-12"	SED-11 12-18"	SED-5 6-12"	SED-5 12-18"	ENV DUP SED-7	ENV DUP SED-2	FB EQ SED-20	FIELD BLANK	FIELD BLANK
VOLATILE ORGANICS (mg/kg)										
METHYLENE CHLORIDE	20 U	17 U	29 U	34 UJ	21 U	350 BJ	780 J	5 U	NA	NA
ACETONE	23 U	17 U	44 U	-- R	-- R	250 UJ	810 UJ	6 J	NA	NA
CARBON DISULFIDE	7 U	7 U	8 U	5 J	3 J	69 J	19 J	5 U	NA	NA
CHLOROFORM	7 U	7 U	8 U	8 UJ	6 U	38 UJ	32 UJ	5 U	NA	NA
2-BUTANONE	14 UJ	14 UJ	17 UJ	15 UJ	13 UJ	77 UJ	280 B	10 U	NA	NA
TOLUENE	7 U	7 U	8 U	8 UJ	7	38 UJ	32 UJ	5 U	NA	NA
CHLOROBENZENE	7 U	7 U	8 U	8 UJ	6 U	38 UJ	130 J	5 U	NA	NA
ETHYLBENZENE	7 U	7 U	8 U	8 UJ	6 U	38 UJ	32 UJ	5 U	NA	NA
XYLENES (TOTAL)	7 U	7 U	8 U	8 UJ	6 U	38 UJ	220 J	5 U	NA	NA
BASE NEUTRAL/ACID EXTRACTABLES (mg/kg)										
1,2-DICHLOROBENZENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
4-METHYLPHENOL	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
BENZOIC ACID	2300 UJ	2200 U	2700 U	4800 UJ	4000 UJ	25000.0 UJ	20000.0 UJ	50 U	NA	NA
NAPHTHALENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
2-METHYLNAPHTHALENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	110.0 J	10 U	NA	NA
ACENAPHTHYLENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
ACENAPHTHENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
FLUORENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
PHENANTHRENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
ANTHRACENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
DI-N-BUTYLPHTHALATE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
FLUORANTHENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
PYRENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
BENZO(A)ANTHRACENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
CHRYSENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
DI-N-OCTYLPHTHALATE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
BENZO(B)FLUORANTHENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
BENZO(K)FLUORANTHENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
BENZO(A)PYRENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
INDENO(1,2,3-CD)PYRENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
DIBENZO(A,H)ANTHRACENE	470 UJ	460 U	550 U	990 UJ	830 UJ	5200.0 UJ	4100.0 UJ	10 U	NA	NA
PESTICIDES/PCB's (mg/kg)										
BETA-BHC	11 UJ	11 UJ	13 UJ	240 UJ	200 UJ	1300 UJ	1000 UJ	0.05	NA	NA
4,4'-DDE	23 UJ	22 UJ	26 UJ	480 UJ	400 UJ	2500 UJ	2000 UJ	0.10	NA	NA
4,4'-DDD	23 UJ	22 UJ	26 UJ	480 UJ	400 UJ	2500 UJ	2000 UJ	0.10	NA	NA
4,4'-DDT	23 UJ	22 UJ	26 UJ	480 UJ	400 UJ	2500 UJ	2000 UJ	0.10	NA	NA
TOTAL ORGANIC CARBON (mg/kg)	11800	9900	21900	26400	1500	672000 J	768000 J	<1.0	<1.0	3.49

U = Not Detected to the Reported Detection Limit
UJ = Not Detected to an Estimated Detection Limit
J = Estimated Value
XJ = These Parameters Not separable from each other; value given is the total value for both parameters in the sample with this qualifier.
R = Data Rejected by Validation
B = Analyte Detected in Method Blank; sample concentrations greater than five times blank value
NA = Not Analyzed
ND = No analytes of this compound gro

TABLE 4-19

HERTEL LANDFILL REMEDIAL INVESTIGATION

INORGANIC COMPOUNDS DETECTED IN SEDIMENT SAMPLES

PAGE 1 OF 4

FIELD ID	SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7	SED-8	SED-9	SED-10	SED-11
DATE SAMPLED	14-Jun-90	19-Jun-90	14-Jun-90	19-Jun-90	21-Jun-90	18-Jun-90	18-Jun-90	15-Jun-90	15-Jun-90	15-Jun-90	15-Jun-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL
INORGANICS (mg/kg)											
ALUMINUM	27500 J	14600	19900	1530 J	10200 J	18100 J	9450 J	9180 J	6800 J	23400 J	16200 J
ANTIMONY	8.5 J	3.2 UJ	5.1 UJ	23.7 UJ	7.5 UJ	4.4 UJ	15.8 UJ	23.5 UJ	7.2 UJ	13.3 UJ	7.1 UJ
ARSENIC	9.5 J	3.6	0.66 J	6.0 J	1.9 J	17.6 J	10.5 J	5.8 J	1.3 J	11 J	2.1 J
BARIUM	366 J	114.0	125 J	45.0 J	142.0 J	318 J	219 J	235 J	92.2 J	189 J	82.1 J
BERYLLIUM	1.4 J	0.96	0.48	2.40 UJ	0.75 UJ	1.30 J	3.50 J	1.2 UJ	0.36 UJ	0.67 UJ	0.55 J
CADMIUM	1.7 J	4.60	1.3 U	4.70 UJ	1.60 J	8.40 J	16.50 J	5.9 UJ	1.8 UJ	3.3 UJ	1.8 UJ
CALCIUM	4600 J	3550	2910	23700 J	10000 J	6380 J	22900 J	21300 J	3420 J	10900 J	5070 J
CHROMIUM	27.6 J	16.2	16	11.9 UJ	14.8 J	23.3 J	19.1 J	19.9 J	9.3 J	23.9 J	18.6 J
COBALT	29.5 J	6.5	3.6	9.5 UJ	3 UJ	8.5 J	11.0 J	7.2 J	3.9 J	8 J	4 J
COPPER	25.2 J	10.5 J	10.3	21.5 J	15.5 J	11.9 J	43.4 J	41.6 J	3 J	23.3 J	6.4 J
IRON	45000 J	20100	10000	1310 J	3970 J	36200 J	76500 J	77300 J	39700 J	41700 J	13200 J
LEAD	35.9 J	-- R	8.3	-- R	-- R	-- R	-- R	72.5 J	13.0 J	46.4 J	19.6 J
MAGNESIUM	3520 J	2420	1850	721 J	1060 J	2540 J	1510 J	1170 J	1880 J	1920 J	3050 J
MANGANESE	4600 J	456	64.9	83 J	104 J	3980 J	6870 J	2750 J	1520 J	1630 J	167 J
MERCURY	0.18 UJ	0.14 U	0.11 U	1.10 UJ	0.38 UJ	0.23 J	0.64 UJ	0.7 J	0.23 UJ	0.37 J	0.18 J
NICKEL	23.2 J	11.6	10.4	11.9 UJ	7.3 J	14.5 J	17.3 J	23.5 UJ	9.5 J	21.7 J	12.2 J
POTASSIUM	1470 J	741	746	2080 J	1250 J	797 J	1240 UJ	711 UJ	745 J	706 J	811 J
SELENIUM	0.72 UJ	0.96 UJ	4.7 UJ	7.6 UJ	2.1 UJ	2.00 J	5.80 J	5.9 J	0.72 UJ	1.6 J	1 J
SILVER	5.6 J	1.30 U	1.4	9.50 UJ	3.00 UJ	1.80 UJ	6.30 UJ	4.1 J	2.6 J	2.2 J	1.1 UJ
SODIUM	249 J	158 J	170	296 J	139 J	82.9 J	279 J	7.69 J	260 J	591 J	279 J
THALLIUM	0.36 UJ	0.64 U	0.24 UJ	5.10 UJ	1.40 UJ	0.86 UJ	3.20 UJ	1.3 UJ	0.36 UJ	0.61 UJ	0.32 UJ
VANADIUM	44.7 J	17.3	17.5	8.1 J	11.1 J	22.5 J	10.6 J	16 J	79.5 J	32.1 J	17.1 J
ZINC	224 J	43.4 J	55.2 J	-- R	-- R	116.0 J	372.0 J	205 J	62.4 J	223 J	45.4 J
CYANIDE	1.1 UJ	1.60 U	0.81 U	12.70 UJ	3.80 UJ	2.50 UJ	7.90 UJ	4 UJ	1.2 UJ	2.1 UJ	1.1 UJ
FIELD MEASUREMENTS											
EH (mv)	NA	NA	--	--	--	--	--	-60	-70	--	--

U = Not Detected to the Reported Detection Limit

UJ = Not Detected to an Estimated Detection Limit

J = Estimated Value

R = Data Rejected by Validation

NA = Not Analyzed

ENVDUP = Duplicate of Sample Named

TABLE 4-19

HERTEL LANDFILL REMEDIAL INVESTIGATION

INORGANIC COMPOUNDS DETECTED IN SEDIMENT SAMPLES

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FIELD ID	SED-12	SED-13	SED-14	SED-15	SED-16	SED-17	SED-18	SED-19	SED-22	SED-23	SED-24
DATE SAMPLED	15-Jun-90	15-Jun-90	15-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	13-Jun-90	18-Jun-90	18-Jun-90	18-Jun-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENT	ENVIRONMENTAL	ENVIRONMENTAL	ENVIRONMENTAL
INORGANICS (mg/kg)											
ALUMINUM	10600	15600	32500 J	16300 J	5810	14200 J	7560	18600	13700 J	11300 J	10700 J
ANTIMONY	5.4 UJ	6.2 UJ	9.8 UJ	21.6 UJ	5.5 UJ	8.2 UJ	4.2 UJ	14.7 U	11.0 UJ	14.3 UJ	11.5 UJ
ARSENIC	1.9	1.6	2.1 J	6.4 J	1.2 J	30 J	14.2 J	4.6	3.6 J	13.4 J	8.9 J
BARIUM	32.8 J	90.3 J	192 J	110 J	48.3 J	6230 J	2130 J	121	186.0 J	103.0 J	132.0 J
BERYLLIUM	0.29	0.61	1.5 J	1.3 J	0.28 U	1.1 J	0.42	0.74 U	3.30 J	3.20 J	2.6 J
CADMIUM	1.3 U	1.6 U	2.4 UJ	5.4 UJ	1.4 U	5.4 J	1 U	3.7 U	6.80 J	8.1 J	8.9 J
CALCIUM	1270	3420	8030 J	15200 J	2820	13400 J	3640	11800	18600 J	14900 J	20100 J
CHROMIUM	17.2	16.8	27.6 J	25.6 J	7.6	20.8 J	12.1	30.9	28 J	25.6 J	64.4 J
COBALT	7.9	3.6	5.6 J	7.8 J	3.9	60.6 J	19.7	8.3	4.4 UJ	5.7 UJ	5.3 J
COPPER	15 J	12.2 J	19.5 J	45.6 J	9.4	24.9 J	10.3	26	31.0 J	64.8 J	57.2 J
IRON	20600	8350	11000 J	16300 J	9570	137000 J	51800	17100	26800 J	21700 J	32500 J
LEAD	27.6 J	16.1 J	54.9 J	93.7 J	30	51.9 J	12.4	69.3	-- R	-- R	-- R
MAGNESIUM	4600 J	1820 J	2350 J	3110 J	1580	2110 J	2780	2990	1480 J	1450 J	1870 J
MANGANESE	135	101	140 J	537 J	461	68100 J	23400	830	626 J	550 J	1620 J
MERCURY	0.33 J	0.19 U	0.38 J	0.56 UJ	0.13 U	0.25 UJ	0.12 U	0.34 U	0.53 UJ	0.69 UJ	0.52 UJ
NICKEL	21	9.8	23.3 J	27.7 J	6.2	29 J	15.7	14.7 U	19.8 J	22.9 J	31.7 J
POTASSIUM	1050	500	1110 J	1420 J	639	990 J	780	1180	1550 J	1190 J	1840 J
SELENIUM	0.54 U	0.9	1 UJ	2.8 J	0.7 J	0.81 J	0.42 UJ	16.4 U	5.40 J	4.50 UJ	5.5 J
SILVER	0.84	0.93 U	1.5 UJ	3.2 UJ	0.87	12.8 J	4.9	2.2 U	4.40 UJ	5.70 UJ	4.6 UJ
SODIUM	188	275	392 J	889 J	219	340 J	169	480	577 J	443.00 J	771 J
THALLIUM	0.32 J	0.45 J	0.51 UJ	1.2 UJ	0.29 UJ	0.41 UJ	0.21 UJ	-- R	2.30 UJ	3.00 UJ	2.4 UJ
VANADIUM	11.8	16.4	31.9 J	32 J	8.9	78.3 J	25.8	23.7	31.5 J	20.5 J	9.2 J
ZINC	78.3 J	32 J	181 J	183 J	54.3 J	340 J	110 J	120	126 J	640.0 J	416.0 J
CYANIDE	1.7 J	1 UJ	1.6 UJ	3.7 UJ	0.94 U	3 J	0.67 U	2.5 U	6.00 UJ	7.6 UJ	6.2 UJ
FIELD MEASUREMENTS											
EH (mv)	--	--	--	50	--	213	265	240	--	--	--

U = Not Detected to the Reported Detection Limit
UJ = Not Detected to an Estimated Detection Limit
J = Estimated Value
R = Data Rejected by Validation
NA = Not Analyzed
ENVDUP = Duplicate of Sample Named

TABLE 4-19

HERTEL LANDFILL REMEDIAL INVESTIGATION

INORGANIC COMPOUNDS DETECTED IN SEDIMENT SAMPLES

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FIELD ID	SED-25	SED-26	SED-27	SED-28	SED-29	SED-30	SED-31	SED-32	SED-33	SED-34	SED-35
DATE SAMPLED	18-Jun-90	19-Jun-90	13-Jun-90	13-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	14-Jun-90	15-Jun-90	15-Jun-90	15-Jun-90
SAMPLE TYPE	ENVIRONMENTAL	ENVIRONMENTAL	SED-20 6-12"	SED-20 12-18"	SED-3 6-12"	SED-3 12-18"	SED-15 6-12	SED-15 12-18"	SED-8 6-12"	SED-8 12-18"	SED-11 6-12"
INORGANICS (mg/kg)											
ALUMINUM	12700 J	11600	9740 J	13100	18200	14900	23000	15900	17300 J	17100	13900
ANTIMONY	13.1 UJ	2.7 U	11.2 UJ	4.3 UJ	4.3 UJ	4 UJ	8.2 U	5.7 UJ	14.2 UJ	4.5 UJ	4.2 UJ
ARSENIC	11.4 J	3.6	3.6 J	3.6	1.5 J	4.2 J	6.2	2.1 J	2.6 J	1.1	1.3
BARIUM	302.0 J	63.6	62.9 J	34.9 J	94.4 J	86.9 J	199	132 J	178 J	93.5 J	73.7 J
BERYLLIUM	2.9 J	0.61	0.56 UJ	0.39	0.45	0.5	1.2	0.78	0.71 UJ	0.68	0.36
CADMIUM	17.4 J	5.3	2.8 UJ	1.1 U	1.1 U	0.99 U	2.1 U	1.4 U	3.6 UJ	1.1 U	1 U
CALCIUM	19500 J	1350	19300 J	2240	1610	1920	9820	6240	15300 J	3650	2750
CHROMIUM	24.6 J	13.1	16.4 J	17.9	18.3	17.2	28.3	19.3	29.7 J	23.3	17.2
COBALT	9.3 J	4.9	6.5 J	11.2	4.8	6.8	4.5	2.9	3.1 J	10	5.4
COPPER	29 J	19.8 J	5.4 J	14.9 J	8.7	20 J	67.8	44.2 J	23.9 J	15.7 J	5.1 J
IRON	796 J	24500	13100 J	23700	16600	19300	10800	7630	20300 J	21800	19100
LEAD	-- R	-- R	15.2 J	8.7 J	21	6.7	12	16.1	14.6 J	8.7 J	13.4 J
MAGNESIUM	1920 J	3650	3100 J	5950 J	2750	3450	2250	1750	2430 J	5840 J	5130 J
MANGANESE	1320 J	266	413 J	173	65.9	372	301	193	1180 J	254	114
MERCURY	0.58 UJ	0.13 U	0.35 UJ	0.13 U	0.14 U	0.11 U	0.22 U	0.14 U	0.85 J	0.15 U	0.13 U
NICKEL	21.8 J	16.0	15.1 J	21.5	10.6	19	14.8	10.4	14.2 UJ	23.8	17.3
POTASSIUM	1390 J	1080	571 J	1620	1090	899	936	838	575 J	1210	696
SELENIUM	4.5 J	0.83 UJ	-- R	0.38 U	0.48 UJ	0.4 J	8.2 U	1.2 J	6.1 J	0.45 U	0.4 U
SILVER	5.2 UJ	1.10 U	1.7 UJ	1.1	1.7	1.7	1.2 U	1.3	2.1 UJ	1.2	0.85
SODIUM	459 J	90.6	357 J	141	171	138	371	276	451 J	165	134
THALLIUM	2.5 UJ	0.55 U	0.88 J	0.19 UJ	-- R	-- R	-- R	-- R	0.8 UJ	0.23 U	0.2 U
VANADIUM	7.5 J	8.5	11.1 J	17.6	23	18.9	20.8	15.8	14.7 J	23.7	15
ZINC	349.0 J	205.0 J	58.4 J	63.3 J	43.4 J	48.7 J	58	40.8 J	66.8 J	87.7 J	41.3 J
CYANIDE	7 UJ	1.4 U	1.7 UJ	0.7 UJ	0.71 U	0.66 U	1.3 U	0.88 U	2.6 UJ	0.77 UJ	0.67 UJ
FIELD MEASUREMENTS											
EH (mv)	--	--	--	--	--	--	22	--	12	-40	--

U = Not Detected to the Reported Detection Limit
UJ = Not Detected to an Estimated Detection Limit
J = Estimated Value
R = Data Rejected by Validation
NA = Not Analyzed
ENVDUP = Duplicate of Sample Named

TABLE 4-19

HERTEL LANDFILL REMEDIAL INVESTIGATION

INORGANIC COMPOUNDS DETECTED IN SEDIMENT SAMPLES

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FIELD ID	SED-36	SED-37	SED-38	SED-40	SED-41	SEDFB613
DATE SAMPLED	15-Jun-90	21-Jun-90	21-Jun-90	18-Jun-90	18-Jun-90	13-Jun-90
SAMPLE TYPE	SED-11 12-18"	SED-5 5-11"	SED-5 12-17"	ENVDUP SED-7	ENVDUP SED-25	FIELD BLANK
INORGANICS (mg/kg)						
ALUMINUM	13400	7680	9160	8560 J	11700	84.9
ANTIMONY	5 UJ	3.0 UJ	2.1 UJ	15.3 UJ	13 UJ	20 U
ARSENIC	0.9	0.6 U	0.4 U	7.1 J	5.7 J	2 U
BARIUM	76.6 J	93.5	46.7	208.0 J	296 J	2 U
BERYLLIUM	0.43	0.66	0.21 U	2.30 J	2.9 J	1 U
CADMIUM	1.3 U	1.7	3	13.60 J	16.3 J	5 U
CALCIUM	3450	3980	2040	23700 J	18600 J	55
CHROMIUM	16.5	10.3	11.2 J	13.9 J	25.6 J	6.2
COBALT	4.6	1.7	5.9	6.1 UJ	7.8 J	2 U
COPPER	4.8 J	6.1	8.5 J	33.5 J	22.7 J	6 U
IRON	14400	6980	14400	58800 J	76400 J	49 U
LEAD	14.1 J	-- R	-- R	-- R	-- R	1 U
MAGNESIUM	3080 J	1830	3600	1380 J	1660 J	534 U
MANGANESE	177	68.8	100	6560 J	1300 J	2 U
MERCURY	0.15 U	0.16 U	0.09 U	0.70 UJ	0.53 UJ	0.2 U
NICKEL	12.5	8.0	14.0	15.7 J	15.8 J	20 U
POTASSIUM	446	630	620	1190 UJ	1280 J	604 U
SELENIUM	0.9	0.90 UJ	0.60 UJ	4.8 UJ	3.70 UJ	2 U
SILVER	0.75 U	1.20 U	0.85 U	6.10 UJ	5.20 UJ	3 U
SODIUM	162	61.3	43.2	386 J	4.90 J	414
THALLIUM	0.24 U	0.6 U	0.4 U	3.20 UJ	2.50 UJ	1 U
VANADIUM	14.7	5.9	8.0	8.7 J	3.9 UJ	2 U
ZINC	47.8 J	37.9 J	40.5 J	316 J	318.0 J	5.4
CYANIDE	0.84 UJ	1.6 U	1.1 U	8.40 UJ	6.60 UJ	10 U
FIELD MEASUREMENTS						
EH (mv)	--	--	--	DUP	DUP	--

U = Not Detected to the Reported Detection Limit
UJ = Not Detected to an Estimated Detection Limit
J = Estimated Value
R = Data Rejected by Validation
NA = Not Analyzed
ENVDUP = Duplicate of Sample Named

TABLE 4-20

HERTEL LANDFILL REMEDIAL INVESTIGATION

COMPARISON OF GROUND WATER CONCENTRATIONS TO ARARS

Parameter	Maximum Concentration Observed In Ground Water (ppb)	Federal ARARs			New York ARARs	
		MCL[1] (ppb)	MCLG[2] (ppb)	Ambient Water[3] Quality Criteria (ppb)	Ground Water[4] Quality Criteria (ppb)	NYMCL[5] (ppb)
Acetone	45					50
Benzene	6	5	0	0.66	ND	5
2-Butanone	31					50
Chlorobenzene	24	100	100	488	20	5
Chloroethane	4					5
Chloroform	1	100(a)		0.19	100	
1,1-Dichloroethane	2					5
1,2-Dichloroethene	1	cis-70 trans-100	cis-70 trans-100			5
1,2-Dichloropropane	1	5	0		50	5
Ethylbenzene	64	700	700	2,400	50	5
Styrene	1	100	100		931	5
Toluene	33	1,000	1,000	15,000	50	5
Trichloroethene	1	5	0	2.8	10	5
Xylenes	240	10,000	10,000		50	
Benzoic Acid	200					
Benzyl Alcohol	6					50
Bis (2-ethylhexyl) Phthalate	21		(0)	21,000	50	
1,4-Dichlorobenzene	10	75	75	470	4.7	5
Diethylphthalate	900			434,000	50	50
2,4-Dimethylphenol	82			400	0.3	5
Di-n-octylphthalate	69				50	50
2-Methylnaphthalene	5					50
4-Methylphenol	44					
Naphthalene	39				10	50
Phenanthrene	11				50	50
Phenol	72			3,500	1	50
Aluminum (total/dissolved)	252,000/733					
Arsenic (total/dissolved)	44.1/33.8	50	(50)	0.0022	25	50
Barium (total/dissolved)	1,980/732	2,000	2,000		1000	1000
Berylium (total/dissolved)	13.4/ND	1	0			
Cadmium (total/dissolved)	9.0/ND	5	5	10	10	10
Calcium (total/dissolved)	71,000/264,000					
Chromium (total/dissolved)	538/ND	100	100	50		50
Cobalt (total/dissolved)	220/ND					
Copper (total/dissolved)-Not Primary	846/ND	See Note		1000	1000	200
Iron (total/dissolved)	893,800/116,000				300	300

TABLE 4-20

HERTEL LANDFILL REMEDIAL INVESTIGATION

COMPARISON OF GROUND WATER CONCENTRATIONS TO ARARS

(Continued)

Parameter	Maximum Concentration Observed In Ground Water (ppb)	Federal ARARs			New York ARARs	
		MCL[1] (ppb)	MCLG[2] (ppb)	Ambient Water[3] Quality Criteria (ppb)	Ground Water[4] Quality Criteria (ppb)	NYMCL[5] (ppb)
Lead (total/dissolved)	313/5.9	See Note	0	50	25	50
Magnesium (total/dissolved)	133,000/55,500					35,000
Manganese (total/dissolved)	121,000/27,900			50	300	300
Mercury (total/dissolved)	0.90/0.3	2	2	10	2	2
Nickel (total/dissolved)	490/43.2	(100)	(100)	15.4		
Potassium (total/dissolved)	41,000/38,500					
Silver (total/dissolved)	266/ND	100		50	50	50
Sodium (total/dissolved)	115,000/122,000					20,000
Vanadium (total/dissolved)	319/ND					
Zinc (total/dissolved)	2,880/91.6			5,000		300
Chloride	150,000			250,000	250,000	

(a) Based on standard for total trihalomethanes of 100 ppb.

ND - Not detected.

1 MCL - Maximum Contaminant Level, National Primary Drinking Water Regulations, Final Rule Amendments to SDWA, U.S. EPA, 1/30/91, 40 CFR 141 - (Proposed MCL)

2 MCLG - Maximum Contaminant Level Goals, based on health considerations only, amendments to SDWA, U.S. EPA, 1/30/91; Cites 50 FR 46936, 11/13/85 - Proposed MCLG).

3 Derived from published EPA Ambient Water Quality Criteria (drinking water only) 45 FR 79318-79379, 11/28/90. (August 8, 1988 draft - recent update is being sent to SDWA).

4 NYSDEC 6NYCRR Part 703, Regulations for ground water (1/9/89).

5 NYSDOH 10NYCRR Part 5, Regulations for drinking water supplies (1/9/89) and NYSDOH 10NYCRR Part 170, Regulations for source of drinking water.

June 7th - Final Rule on Lead and Copper Treatment technique action levels have been identified in lieu of MCL levels: Lead 15 ppb; Copper 1,300 ppb. Testing would be done at the consumer's tap water and any time 10% of the samples exceed these limits, then action would be required.

TABLE 4-21

HERTEL LANDFILL REMEDIAL INVESTIGATION

COMPARISON OF SURFACE WATER CONCENTRATIONS TO (ARARS)

Parameter	Maximum Concentration in Surface Water (ppb)	Maximum Concentration in Leachate Seep (ppb)	Federal ARARs			New York ARARs		
			MCL[1] (ppb)	MCLG[2] (ppb)	Ambient Water[3] Quality Criteria (ppb)	Drinking Water Supply[4] (ppb)	Fishing and Fish Propagation[4] (ppb)	Fishing and Fish Survival[4] (ppb)
Acetone	110	17						
Carbon Disulfide	2	8						
Chlorobenzene		8	100	100	488	20	5	50
Chloroethane		5						
1,1-Dichloroethane		3				50[5]		
Ethylbenzene		4	700	700	2,400	50[5]		
Methylene Chloride	10					50[5]		
Toluene	4	1	1,000	1,000	15,000	50[5]		
Trichloroethene			5	0	2.8			
Xylenes		7	10,000	10,000		50[5]		
Benzoic Acid	9							
Benzyl Alcohol	10							
Bis (2-ethylhexyl) Phthalate	3	5		(0)	21,000	4[5]	0.6	
Di-n-Butylphthalate		3				50[5]		
Fluoranthene		2				50[5]		
4-Methylphenol	7	110						
Naphthalene		4				10		
Phenanthrene		2				50[5]		
Phenol		21				1	1	1
Pyrene		2				50[5]		
Aluminum	4,280	20,400					100[5]	
Arsenic	12.1		50	(50)	0.0022	50[5]	190[6]	360[6]
Barium	509	3,580	2,000	2,000		1,000		
Cadmium	37.1	178	5	5	10	10		
Calcium	61,700	317,000						
Chromium		316	100	100	50	50		
Copper - Not Primary	39.2	370	See Note		1000	200		
Iron	190,000	526,000				300	300	300
Lead	54.9	454	See Note	0	50	50		
Magnesium	37,300	836,000				35,000		
Manganese	11,800	25,300			50	300		

TABLE 4-21

HERTEL LANDFILL REMEDIAL INVESTIGATION

COMPARISON OF SURFACE WATER CONCENTRATIONS TO (ARARS)

(Continued)

Parameter	Maximum Concentration in Surface Water (ppb)	Maximum Concentration in Leachate Seep (ppb)	Federal ARARs			New York ARARs		
			MCL[1] (ppb)	MCLG[2] (ppb)	Ambient Water[3] Quality Criteria (ppb)	Drinking Water Supply[4] (ppb)	Fishing and Fish Propagation[4] (ppb)	Fishing and Fish Survival[4] (ppb)
Mercury	1.0	4.1	2	2	10	2	0.2[5]	0.2[5]
Nickel	19.0	116	(100)	(100)	15.4			
Potassium	7,700	28,300						
Sodium	29,600	79,800						
Vanadium	11.8	54.6					14	190
Zinc	347	11,200				300	30	
Cyanide		85.3				100	5.2[7]	22[7]

1 MCL - Maximum Contaminant Level, National Primary Drinking Water Regulations, Final Rule Amendments to SDWA, U.S. EPA, 1/30/91, 40 CFR 141 - (Proposed MCL)

2 MCLG - Maximum Contaminant Level Goals, based on health considerations only, amendments to SDWA, U.S. EPA, 1/30/91; Cites 50 FR 46936, 11/13/85 - (Proposed MCLG).

3 Derived from published EPA Ambient Water Quality Criteria (drinking water only) 45 FR 79318-79379, 11/28/90. (August 8, 1988 draft - recent update is being sent to SDWA).

4 New York State Ambient Water Quality Standards and Guidance Values, NYSDEC 6NYCRR Part 701 and 702, Regulations for Surface Water.

5 Guidance value.

6 Dissolved concentrations.

7 Standard for free cyanide.

June 7th - Final Rule on Lead and Copper Treatment technique action levels have been identified in lieu of MCL levels: Lead 15 ppb; Copper 1,300 ppb. Testing would be done at the consumer's tap water and any time 10% of the samples exceed these limits, then action would be required.

TABLE 4-22

HERTEL LANDFILL REMEDIAL INVESTIGATION

COMPARISON OF SEDIMENT CONCENTRATIONS TO ARARS

Parameter	Maximum Concentration Detected In Sediment (ppb)	New York ARARs	
		Aquatic Toxicity Basis[1] (ug/gOC)	Human Health Basis[1] (ug/gOC)
2-Butanone	86		
Carbon Disulfide	64		
Chlorobenzene	430	700	
Chloroform	19		
Ethylbenzene	13		
Methylene Chloride	860		
Toluene	49		
Xylenes	970		
Acenaphthene	160	146,000	
Acenaphthylene	280		
Benzo(A)Anthracene	1,500		
Benzo(B)Fluoranthene	770		
Benzo(K)Fluoranthene	1,200		
Benzo(A)Pyrene	870		260
Benzoic Acid	5,600		
Bis(2 ethylhexyl)phthalate	2,900	23,940	
Chrysene	1,700		
Dibenzo(A,H)Anthracene	960		
1,2-Dichlorobenzene	120		
Di-n-butylphthalate	610		
Fluorene	370		
Fluoranthene	3,100		
Indeno(1,2,3-CD)Pyrene	390		
2-Methylnaphthalene	300		
4-Methylphenol	59		
Naphthalene	1,000		
Phenanthrene	2,500		
Pyrene	2,900		
Aluminum	32,500,000		
Arsenic	30,000		(5,000 ppb)
Barium	6,230,000		
Cadmium	17,400		(800 ppb)
Calcium	23,700		

TABLE 4-22

HERTEL LANDFILL REMEDIAL INVESTIGATION

COMPARISON OF SEDIMENT CONCENTRATIONS TO ARARS

(Continued)

Parameter	Maximum Concentration Detected In Sediment (ppb)	New York ARARs	
		Aquatic Toxicity Basis[1] (ug/gOC)	Human Health Basis[1] (ug/gOC)
Chromium	64,400		(26,000 ppb)
Cobalt	60,600		
Copper	67,800		(19,000 ppb)
Iron	137,000,000		(27,000 ppb)
Lead	93,700		(24,000 ppb)
Magnesium	5,950,000		
Manganese	68,100,000		(428,000 ppb)
Mercury	700		(110 ppb)
Nickel	29,000		(22,000 ppb)
Potassium	1,620,000		
Selenium	400		
Silver	5,600		
Vanadium	78,300		
Zinc	340		(85,000 ppb)
Cyanide	6,700		

All New York ARARs values were based on a representative site organic carbon value of 20% by weight.

[1] NYSDEC 1987; Sediment Criteria, Bureau of Environmental Protection, Division of Fish and Wildlife.

TABLE 4-23

HERTEL LANDFILL REMEDIAL INVESTIGATION

COMPARISON OF SURFACE SOIL CONCENTRATIONS TO ARARS

Parameter	Maximum Concentration In Surface Soil (ppb)	NJDEP Soil Cleanup Objective (ppm)	RCRA* (ppm)
Total Volatile Organics (with Benzene <1 ppm)	353	1	
Benzene	2	1	
Total Carcinogenic PAHs		10	
Total PAHs (if total carcinogenic (PAHs <10 ppm)		100	
Total Base Neutrals		10	
Anthracene	130		
Benzo(A)Anthracene	1,200		
Benzo(B)Fluoranthene	1,700		
Benzo(K)Fluoranthene	100		
Benzo(G,H,I)Perylene	720		
Benzo(A)Pyrene	1,100		
Bis(2-Ethylhexyl)Phthalate	2,400		2,000
Chrysene	1,700		
Diethylphthalate	43		60,000
Di-n-butylphthalate	90		
Fluoranthene	2,400		
Fluorene	46		
Indeno(1,2,3-CD)Pyrene	650		
Naphthalene	3,100		
Phenanthrene	1,900		
Pyrene	2,800		
4,4'-DDE	500		
4,4'-DDT	620	1-10	40
Aluminum	33,500		
Arsenic	109*/	20	
Barium	4,490	400	4,000
Cadmium	113	3	
Calcium	29,500		

* RCRA Facility Investigation (RFI) guidance, Office of Solid Waste, Volume I, Section 8, Table 8-7.

TABLE 4-23

HERTEL LANDFILL REMEDIAL INVESTIGATION

COMPARISON OF SURFACE SOIL CONCENTRATIONS TO ARARS

(Continued)

Parameter	Maximum Concentration In Surface Soil (ppb)	NJDEP Soil Cleanup Objective (ppm)	RCRA* (ppm)
Chromium	2,880	100	80,000[1]
Cobalt	34.7		
Copper	319	170	
Iron	278,000		
Lead	1,170	250-1,000	
Magnesium	14,200		
Manganese	6,040		
Mercury	1.6	1	
Nickel	347	100	2,000
Potassium	2,320		
Sodium	1,460		
Vanadium	51.1	100	
Zinc	615	350	

1 This is the value for Cr^{3+}, value for Cr^{6+} is 400 ppm.

TABLE 5-1

SUMMARY OF PHYSICAL, CHEMICAL AND FATE DATA

Chemical Name	Water Solubility (mg/l)	Vapor Pressure (mm Hg)	Henry's Law Constant ($atm-m^3/mol$)	Koc (ml/g)	Log Kow	Fish BCF (l/kg)
Acenaphthene	3.42E+00	1.55E-03	9.20E-05	4,600	4.00	242
Acenaphthylene	3.93E+00	2.90E-02	1.48E-03	2,500	3.70	
Acetone	1.00E+06	2.70E+02	2.06E-05	2.2	-0.24	
Aluminum						
Anthracene	4.50E-02	1.95E-04	1.02E-03	14,000	4.45	
Antimony and Compounds		1.00E+00	NA			1
Arochlor-1248	1.00E-01	5.00E+01				$1.2x10^5$
Arochlor-1260	8.00E-01					270,000
Arsenic and Compounds		0.00E+00	NA			44
Barium and Compounds			NA			
Benzene	1.75E+03	9.52E+01	5.59E-03	83	2.12	5.2
Benzo(a)anthracene	5.70E-03	2.20E-08	1.16E-06	1,380,000	5.60	
Benzo(a)pyrene	1.20E-03	5.60E-09	1.55E-06	5,500,000	6.06	
Benzo(b)fluoranthene	1.40E-02	5.00E-07	1.19E-05	550,000	6.06	
Benzo(g,h,i)perylene	7.00E-04	1.03E-10	5.34E-08	1,600,000	6.51	
Benzo(k)fluoranthene	4.30E-03	5.10E-07	3.94E-05	550,000	6.06	
Benzoic Acid	2.90E+02	2.20E-08	1.16E-06		1.87 (20*)	
Benzyl Alcohol	4.00E+04	1.00E+00			1.1	
Beryllium and Compounds		0.00E+00	NA			19
Bis(2-ethylhexyl)phthalate						
2-Butanone	2.68E+05	7.75E+01	2.74E-05	4.5	0.26	0
Butyl Benzyl Phthalate	2.90E+00				4.8	
Cadmium and Compounds		0.00E+00	NA			81
Calcium						
Carbon Disulfide	2.94E+03	3.60E+02	1.23E-02	54	2.00	0
Chlorobenzene	4.66E+02	1.17E+01	3.72E-03	330	2.84	10

TABLE 5-1

SUMMARY OF PHYSICAL, CHEMICAL AND FATE DATA

(Continued)

Chemical Name	Water Solubility (mg/l)	Vapor Pressure (mm Hg)	Henry's Law Constant ($atm-m^3/mol$)	Koc (ml/g)	Log Kow	Fish BCF (l/kg)
Chloroethane (Ethyl Chloride)	5.74E+00	1.00E+03			1.54	
Chloroform	8.20E+03	1.51E+02	2.87E-03	31	1.97	3.75
Chromium III, VI, and Compounds		0.00E+00	NA			16
Chrysene	1.80E-03	6.30E-09	1.05E-06	200,000	5.61	
Cobalt						
Copper and Compounds		0.00E+00	NA			200
Cyanides			NA			
DDD	1.00E-01	1.89E-06	7.96E-06	770,000	6.20	
DDE	4.00E-02	6.50E-06	6.80E-05	4,400,000	7.00	51,000
DDT	5.00E-03	5.50E-06	5.13E-04	243,000	6.19	54,000
Dibenzo(a,h)anthracene	5.00E-04	1.00E-10	7.33E-08	3,300,000	6.80	
Dibenzofuran						
1,2-Dichlorobenzene	1.00E+02	1.00E+00	1.93E-03	1,700	3.60	56
1,4-Dichlorobenzene	7.90E+01	1.18E+00	2.89E-03	1,700	3.60	56
1,1-Dichloroethane	5.50E+03	1.82E+02	4.31E-03	30	1.79	
1,2-Dichloroethene (1,2-Dichloroethylene)	3.50E+03	2.08E+02	7.58E-03	49	0.7	1.6
1,2-Dichloropropane	2.70E+03	4.20E+01	2.31E-03	51	2.00	
Diethyl Phthalate	8.96E+02	3.50E-03	1.14E-06	142	2.50	117
2,4-Dimethylphenol (2,4-Xylenol)						

TABLE 5-1

SUMMARY OF PHYSICAL, CHEMICAL AND FATE DATA

(Continued)

Chemical Name	Water Solubility (mg/l)	Vapor Pressure (mm Hg)	Henry's Law Constant ($atm-m^3/mol$)	Koc (ml/g)	Log Kow	Fish BCF (l/kg)
Di-n-Butylphthalate	1.30E+01	1.00E-05	2.82E-07	170,000	6	
Di-n-Octylphthalate	2.85E-01	1.20E+00				130
Ethylbenzene	1.52E+02	7.00E+00	6.43E-03	1,100	3.15	37.5
Fluoranthene	2.06E-01	5.00E-06	6.46E-06	38,000	4.90	1,150
Fluorene	1.69E+00	7.10E-04	6.42E-05	7,300	4.20	1,300
Indeno(1,2,3-cd)pyrene	5.30E-04	1.00E-10	6.86E-08	1,600,000	6.50	
Iron and Compounds			NA			
Lead and Compounds (Inorganic)		0.00E+00	NA			49
Manganese and Compounds			NA			
Magnesium						
Mercury and Compounds (Inorganic)		2.00E-03	NA			5,500
Methylene Chloride	2.00E+04	3.62E+02	2.03E-03	8.8	1.30	5
2-Methylnaphthalene	2.55E+01		4.81E-04		3.86	
4-Methylphenol (p-Cresol)	2.40E+02	4.00E-02			1.92/1.94	
Naphthalene	3.06E+01		4.48E-04		3.35	40-300
Nickel and Compounds		0.00E+00	NA			47
N-Nitrosodiphenylamine						
Phenanthrene	1.00E+00	6.80E-04	1.59E-04	14,000	4.46	2,630
Phenol	9.30E+04	3.41E-01	4.54E-07	14.2	1.46	1.4
Potassium						

TABLE 5-1

SUMMARY OF PHYSICAL, CHEMICAL AND FATE DATA

(Continued)

Chemical Name	Water Solubility (mg/l)	Vapor Pressure (mm Hg)	Henry's Law Constant ($atm-m^3/mol$)	Koc (ml/g)	Log Kow	Fish BCF (l/kg)
Pyrene	1.32E-01	2.50E-06	5.04E-06	38,000	4.88	
Selenium and Compounds		0.00E+00	NA			16
Silver and Compounds		0.00E+00	NA			3,080
Sodium						
Styrene						
Tetrachloroethene						
Thallium and Compounds		0.00E+00				
Toluene	5.35E+02	2.81E+01	6.37E-03	300	2.73	10.7
Trichloroethene						
Vanadium and Compounds			NA			
Xylene (Mixed)	1.98E+02	1.00E+01	7.04E-03	240	3.26	
Zinc and Compounds		0.00E+00	NA			47

TABLE 6.1
SUMMARY OF SURFACE SOIL DATA

COMPOUND NAME	FREQUENCY OF DETECTION	RANGE OF SQL (mg/kg)	RANGE OF DETECTION (mg/kg)	95% UCL (mg/kg)	RANGE OF ON-SITE BACKGROUND LEVELS(mg/kg)	U.S BACKGROUND LEVELS(mg/kg) A
SEMIVOLATILE ORGANICS						
1,2-Dichlorobenzene	0/22	0.37-24	NA	NA	0.57	NA
1,4-Dichlorobenzene	0/22	0.37-24	NA	NA	0.57	NA
2,4-Methylphenol	0/22	0.37-24	NA	NA	0.57	NA
4-Methylphenol	0/22	0.37-24	NA	NA	0.57	NA
Acenaphthene	1/22	0.37-24	0.062	0.06	0.57	NA
Anthracene	2/22	0.37-24	0.048-0.13	0.13	0.57	NA
Benzoic Acid	0/22	0.37-24	NA	NA	2.8	NA
Benzo(a)anthracene	5/22	0.37-24	0.082-1.2	0.77	0.57	NA
Benzo(a)pyrene	4/22	0.37-24	0.094-1.1	0.97	0.57	NA
Benzo(b)fluoranthene	6/22	0.37-24	0.086-1.7	0.93	0.57	NA
Benzo(ghi)perylene	3/22	0.37-24	0.14-0.72	0.72	0.57	NA
Benzo(k)fluoranthene	1/22	0.37-24	0.098	0.098	0.57	NA
Bis(2ethylhexyl)phthalate	10/22	0.37-24	0.037-2.4	1.64	0.57	NA
Butylbenzylphthalate	0/22	0.37-24	NA	NA	0.57	NA
Chrysene	6/22	0.37-24	0.078-1.7	0.87	0.57	NA
Dibenzo(a,h)anthracene	0/22	0.37-24	NA	NA	0.57	NA
Diethylphthalate	1/22	0.37-24	0.043	0.04	0.57	NA
Di-n-butylphthalate	2/22	0.37-24	0.08-0.09	0.09	0.57	NA
Di-n-octylphthalate	0/22	0.37-24	NA	NA	0.57	NA
Fluoranthene	7/22	0.37-24	0.063-2.4	2.26	0.57	NA
Fluorene	1/22	0.37-24	0.046	0.05	0.57	NA
Indeno(123cd)pyrene	4/22	0.37-24	0.058-0.65	0.72	0.57	NA
Naphthalene	1/22	0.37-24	ND(0.37)-3.1	2.36	0.57	NA
Phenanthrene	5/22	0.37-24	0.077-1.9	1.16	0.57	NA
Phenol	0/22	0.37-24	NA	NA	0.57	NA
Pyrene	7/22	0.37-24	0.058-2.8	2.32	0.57	NA
INORGANICS						
Aluminum	22/22	NA	5210-33500	19316.2	5330-28700	72000
Antimony	0/22	7.5-18.6	NA	NA	11.5-18.6	0.66
Arsenic	9/22	NA	9.1-109	45.4	NA	7.2
Barium	22/22	NA	43.5-2070	191.1	43.5-155	580
Beryllium	2/22	0.68-1.7	ND(0.68)-0.84	1	1.0-1.70	0.92
Cadmium	17/22	1.1-2.8	ND(1.1)-38.6	7.6	1.7-2.8	0.5
Calcium	22/22	NA	1410-29500	11293.7	2530-8890	24000
Chromium	22/22	NA	7.7-2880	502.4	10.3-22.4	54
Cobalt	21/22	NA	5.4-29.4	18.4	4.5-12.5	9.1
Copper	11/22	NA	32.20-319	161.5	NA	25
Iron	22/22	NA	538-278000	115980	4880-32500	26000
Lead	19/22	0.29-0.35	ND(0.29)-835	581.5	0.35-123	19
Magnesium	19/22	191-335	ND(191)-14200	15127	499-2040	9000
Manganese	22/22	NA	478-1890	1732	230-1790	550
Mercury	14/22	NA	0.3-1.60	1.6	NA	0.09
Nickel	21/22	7.9	ND(7.9)-347	64.7	7.9-15.3	19
Potassium	14/22	730-1780	14.9-2320	2810.7	1100-1780	15000
Selenium	0/22	1.1-28.2	NA	NA	17.5-28.2	0.39
Sodium	16/22	182-449	ND(182)-1460	672.1	279-449	12000
Thallium	0/22	1.4-3.4	NA	NA	2.1-3.4	9.4
Vanadium	22/22	NA	16.9-51.1	31.3	36.5-51.1	80
Zinc	22/22	NA	62.6-469	183	67.8-133	60
Cyanide	0/22	1.1-2.8	NA	NA	1.7-2.8	NA
PESTICIDES/PCBs						
4,4'-DDE	2/22	0.018-1.5	ND(0.018)-0.50	0.341	0.500	NA
4,4'-DDD	0/22	0.018-1.5	NA	NA	0.280	NA
4,4'-DDT	6/22	0.018-1.5	ND(0.018)-0.62	0.491	0.540	NA

ND: NOT DETECTED
NA: NOT APPLICABLE
A: Source-USGS(1983)

TABLE 6.2
SUMMARY OF SUBSURFACE SOIL DATA

COMPOUND NAME	FREQUENCY OF DETECTION	RANGE OF SQL (mg/kg)	RANGE OF DETECTION (mg/kg)	95% UCL (mg/kg)	RANGE OF ON-SITE BACKGROUND LEVELS (mg/kg)	U.S. BACKGROUND LEVELS (mg/kg) A
SEMIVOLATILE ORGANICS						
1,2-Dichlorobenzene	0/11	0.370-24.0	NA	NA	NA	NA
1,4-Dichlorobenzene	1/11	0.370-24.0	0.10	0.1	NA	NA
2,4-Dimethylphenol	0/11	0.370-24.0	NA	NA	NA	NA
4-Methylphenol	1/11	0.370-24.0	0.34	0.34	NA	NA
Acenapthene	0/11	0.370-24.0	NA	NA	NA	NA
Anthracene	2/11	0.370-24.0	0.088-0.15	0.15	NA	NA
Benzoic Acid	1/11	1.8-120	0.22	0.22	NA	NA
Benzo(a)Anthracene	2/11	0.37-0.84	0.30-0.42	0.43	NA	NA
Benzo(a)Pyrene	1/11	0.37-0.84	0.24	0.24	NA	NA
Benzo(b)Fluoranthene	2/11	0.37-4.1	0.26-0.71	0.69	NA	NA
Benzo(g,h,i)perylene	0/11	0.370-24.0	NA	NA	NA	NA
Benzo(k)Fluorathene	2/11	0.37-0.77	0.27-0.36	0.391	NA	NA
Bis(2-Ethylhexyl)Phthalate	5/11	0.370-24.0	0.087-4.5	6.39	NA	NA
Butylbenzylphthalate	2/11	0.370-24.0	0.092-0.24	0.24	NA	NA
Chrysene	2/11	0.37-0.84	0.27-0.43	0.43	NA	NA
Dibenzo(a,h)anthracene	0/11	0.370-24.0	NA	NA	NA	NA
Diethylphthalate	1/11	0.370-24.0	0.11	0.11	NA	NA
Di-n-butylphthalate	0/11	0.370-24.0	NA	NA	NA	NA
Di-n-Octylphthalate	1/11	0.370-24.0	0.20	0.2	NA	NA
Fluoranthene	4/11	0.370-24.0	0.05-1.2	1.35	NA	NA
Fluorene	1/11	0.370-24.0	ND(0.37)-0.42	0.60	NA	NA
Indeno(1,2,3-cd)pyrene	0/11	0.370-24.0	NA	NA	NA	NA
Naphthalene	6/11	0.37-1.9	0.068-0.65	0.65	NA	NA
Phenanthrene	4/11	0.370-24.0	0.17-1.1	0.84	NA	NA
Phenol	0/11	0.370-24.0	NA	NA	NA	NA
Pyrene	4/11	0.370-24.0	0.073-1.1	1.21	NA	NA
VOLATILE ORGANICS						
Benzene	2/11	0.006	0.001-0.002	0.002	NA	NA
Carbon Disulfide	3/11	0.006	0.003	0.003	NA	NA
Chlorobenzene	5/11	0.006	0.001-0.009	0.007	NA	NA
Ethylbenzene	7/11	0.006	ND(0.006)-0.041	0.023	NA	NA
Toluene	8/11	0.006	0.002-0.015	0.012	NA	NA
Xylene(total)	8/11	0.006	ND(0.006)-0.310	0.422	NA	NA
INORGANICS						
Aluminium	11/11	NA	9360-16200	13255.5	NA	72000
Antimony	6/11	2.9-3.9	ND(2.9)-21	22.8	NA	0.66
Arsenic	11/11	NA	2-12.5	6.9	NA	7.2
Barium	11/11	NA	32-378	118.8	NA	580
Beryllium	11/11	NA	0.43-0.89	0.8	NA	0.92
Cadmium	4/11	0.41-0.55	ND(0.41)-1.8	0.8	NA	0.5
Calcium	11/11	NA	986-2450	1722.8	NA	24000
Chromium	11/11	NA	12.2-21.9	18.3	NA	54
Cobalt	11/11	NA	8.9-13.9	12.5	NA	9.1
Copper	11/11	NA	20.3-45.6	36.1	NA	25
Iron	11/11	NA	17400-28300	24278.1	NA	26000
Lead	11/11	NA	8.5-93.1	60.1	NA	19
Magnesium	11/11	NA	3990-6010	4954.3	NA	9000
Manganese	11/11	NA	201-1720	1250.2	NA	550
Nickel	11/11	NA	14.3-25	21.1	NA	19
Potassium	11/11	NA	738-1550	1334.6	NA	15000
Selenium	0/11	0.22-0.49	NA	0.4	NA	0.39
Sodium	6/11	NA	70.5-237	191.5	NA	12000
Vanadium	11/11	NA	12.1-22.3	16.8	NA	80
Zinc	11/11	NA	48.6-286	134.1	NA	60
Cyanide	2/11	0.5-0.75	ND(0.50)-10.4	2.4	NA	NA
PESTICIDES/PCBS						
4,4'-DDE	0/11	0.035-0.051	NA	NA	NA	NA
4,4'-DDD	0/11	0.035-0.051	NA	NA	NA	NA
4,4'-DDT	0/11	0.035-0.051	NA	NA	NA	NA

ND: NOT DETECTED
NA: NOT APPLICABLE
A: Source - USGS(1983)

TABLE 6.3

SUMMARY OF SURFACE WATER DATA INCLUDING LEACHATE SAMPLES

	FREQUENCY OF DETECTION	SAMPLES RANGE OF SQL (mg/l)	RANGE OF DETECTION (mg/l)	95% UCL (mg/l)	RANGE OF ON-SITE BACKGROUND LEVELS(mg/l)	U.S. BACKGROUND LEVELS (mg/l)
SEMIVOLATILE ORGANICS						
1,2-Dichlorobenzene	0/20	0.01	NA	NA	0.01	NA
1,4-Dichlorobenzene	0/20	0.01	NA	NA	0.01	NA
4-Methylphenol	2/20	0.01	0.007-0.11	0.018	0.01	NA
Acenapthene	0/20	0.01	NA	NA	0.01	NA
Anthracene	0/20	0.01	NA	NA	0.01	NA
Benzoic Acid	1/20	0.01-0.05	0.009	0.01*	0.01	NA
Benzo(a)anthracene	0/20	0.01	NA	NA	0.01	NA
Benzo(a)pyrene	0/20	0.01	NA	NA	0.01	NA
Benzo(b)fluoranthene	0/20	0.01	NA	NA	0.01	NA
Benzo(g,h,i)perylene	0/20	0.01	NA	NA	0.01	NA
Benzo(k)fluoranthene	0/20	0.01	NA	NA	0.01	NA
Benzyl Alcohol	1/20	0.01	0.01	0.01	0.01	NA
Bis(2-ethylhexyl)phthalate	2/20	0.01	0.002-0.005	0.005	0.01	NA
Butylbenzylphthalate	0/20	0.01	NA	NA	0.01	NA
Chrysene	0/20	0.01	NA	NA	0.01	NA
Dibenzo(a,h)anthracene	0/20	0.01	NA	NA	0.01	NA
Diethylphthalate	0/20	0.01	NA	NA	0.01	NA
Di-N-Butylphthalate	1/20	0.01	0.003	0.003*	0.01	NA
Di-n-octylphthalate	1/20	0.01	0.003	0.003*	0.003-0.01	NA
Fluoranthene	1/20	0.01	0.002	0.002*	0.01	NA
Fluorene	0/20	0.01	NA	NA	0.01	NA
Indeno(123cd)pyrene	0/20	0.01	NA	NA	0.01	NA
Naphthalene	1/20	0.01	0.004	0.004*	0.01	NA
Phenanthrene	2/20	0.01	0.001-0.002	0.002*	0.01	NA
Phenol	1/20	0.01	ND(0.01)-0.021	0.012	0.01	NA
Pyrene	1/20	0.01	0.002	0.002*	0.01	NA
VOLATILES						
Carbon Disulfide	2/20	0.005	0.005-0.008	0.005	0.005	NA
Chlorobenzene	4/20	0.005	0.001-0.008	0.006	0.005	NA
Chloroethane	1/20	0.010	0.005	0.005	0.010	NA
1,1-Dichloroethane	1/20	0.005	0.003	0.003	0.005	NA
Ethylbenzene	2/20	0.005	0.001-0.004	0.005	0.005	NA
Toluene	3/20	0.005	0.001-0.004	0.005	0.005	NA
Xylenes	2/20	0.005	0.002-0.007	0.006	0.005	NA
INORGANICS						
Aluminium	13/20	0.02-0.096	ND(0.02)-20.4	86.22	0.0415-0.628	NA
Antimony	2/20	0.010-0.023	ND(0.01)-0.015	0.011	0.010	NA
Arsenic	7/20	0.01-0.02	ND(0.001)-0.012	0.005	0.002	NA
Barium	20/20	NA	0.008-3.58	1.85	0.008-0.025	NA
Beryllium	0/20	0.01-0.04	NA	NA	0.001	NA
Calcium	20/20	NA	11.7-317	118.02	11.7-19.3	NA
Cadmium	8/20	0.02-0.05	0.002-0.178	0.101	0.002	NA
Chromium	3/20	0.03-0.06	ND(0.003)-0.316	0.027	0.005	NA
Cobalt	6/20	0.04-0.09	ND(0.004)-0.016	0.009	0.004	NA
Copper	10/20	0.02-0.04	ND(0.002)-0.370	0.064	0.003-0.009	NA
Iron	20/20	NA	0.013-836	836	0.178-1.63	NA
Lead	13/20	0.001-0.010	ND(0.001)-0.454	0.441	0.0038-0.031	NA
Magnesium	20/20	NA	0.853-18.6	14.55	0.853-1.27	NA
Manganese	20/20	NA	0.033-25.3	35.75	0.0326-0.087	NA
Mercury	5/20	0.0002	ND(0.0002)-0.004	0.0006	0.0002	NA
Nickel	6/20	0.005-0.022	ND(0.005)-0.116	0.028	0.005-0.006	NA
Potassium	17/20	0.445-0.780	ND(0.445)-28.3	13.25	0.780-0.794	NA
Selenium	2/20	0.002-0.003	ND(0.002)-0.0028	0.0028	0.003	NA
Silver	0/20	0.002-0.006	NA	NA	0.004	NA
Sodium	20/20	NA	1.730-79.8	36.37	1.73-1.88	NA
Thallium	0/20	0.001-0.020	NA	NA	0.002	NA
Vanadium	8/20	0.003-0.004	ND(0.003)-0.055	0.0098	0.003-0.010	NA
Zinc	10/20	0.007	0.0022-11.2	11.2	NA	NA
Cyanide	2/20	0.010-0.0125	ND(0.010)-0.085	0.018	0.010-0.013	NA
PESTICIDES						
4,4'-DDE	0/20	ND(0.0001)	NA	NA	0.0001	NA
4,4'-DDD	0/20	ND(0.0001)	NA	NA	0.0001	NA
4,4'-DDT	0/20	ND(0.0001)	NA	NA	0.0001	NA

ND: NOT DETECTED
NA: NOT APPLICABLE
*: MAXIMUM DETECTED VALUE

TABLE 6.4
SUMMARY OF SEDIMENT DATA

	FREQUENCY OF DETECTION	RANGE OF SQL (ug/kg)	RANGE OF DETECTION (ug/kg)	95% UCL (ug/kg)	RANGE OF ON-SITE BACKGROUND LEVELS (ug/kg)	U.S. BACKGROUND LEVELS (ug/kg) A
SEMIVOLATILE ORGANICS						
1,2-Dichlorobenzene	1/21	0.450-5.1	0.120	0.120*	0.90-4.70	NA
1,4-Dichlorobenzene	0/21	0.45-9.4	NA	NA	0.90-4.70	NA
2,4-Dimethylphenol	0/21	0.45-9.4	NA	NA	0.90-4.70	NA
4-Methylphenol	1/21	0.45-9.4	ND(0.45)-0.59	0.059*	0.90-4.70	NA
Acenaphthene	1/21	0.45-0.58	0.28	0.280*	0.90-4.70	NA
Anthracene	0/21	0.45-9.4	NA	NA	0.90-4.70	NA
Benzoic acid	0/21	2.2-46	NA	NA	4.3-23	NA
Benzo(a)anthracene	1/21	0.45-4.9	ND(0.45)-1.0	1.15	0.90-4.70	NA
Benzo(a)pyrene	0/21	0.45-9.4	NA	NA	0.90-4.70	NA
Benzo(b)fluoranthene	1/21	0.45-4.2	ND(0.45)-0.77	0.799	0.90-4.70	NA
Benzo(g,h,i)perylene	0/21	0.45-9.4	NA	NA	0.90-4.70	NA
Benzo(k)fluoranthene	0/21	0.45-9.4	NA	NA	0.90-4.70	NA
Bis(2ethylhexyl)phthalate	6/21	0.45-9.4	0.10-2.90	2.23	0.90-4.70	NA
Butylbenzylphthalate	0/21	0.45-9.4	NA	NA	0.90-4.70	NA
Chrysene	2/21	0.45-4.9	0.28-0.93	1.02	0.90-4.70	NA
Dibenzoanthracene	0/21	0.45-9.4	NA	NA	0.90-4.70	NA
Diethylphthalate	0/21	0.45-9.4	NA	NA	0.90-4.70	NA
Di-n-butylphthalate	2/21	0.45-9.4	ND(0.45)-0.61	0.59	0.90-4.70	NA
Dioctylphthalate	0/21	0.45-9.4	NA	NA	0.90-4.70	NA
Fluoranthene	2/21	0.45-9.4	ND(0.45)-1.60	1.44	0.90-4.70	NA
Fluorene	2/21	0.45-0.87	0.26-0.37	0.37	0.90-4.70	NA
Indeno(123cd)pyrene	0/21	0.45-9.4	NA	NA	0.90-4.70	NA
Naphthalene	3/21	0.45-9.4	ND(0.45)-1.0	1.11	0.90-4.70	NA
Phenanthrene	2/21	0.45-9.4	ND(0.45)-1.50	1.43	0.90-4.70	NA
Phenol	0/21	0.45-9.4	NA	NA	0.90-4.70	NA
Pyrene	2/21	0.45-9.4	ND(0.45)-1.50	1.43	0.90-4.70	NA
VOLATILES						
1,1-Dichloroethane	0/21	0.007-0.071	NA	NA	0.013-0.035	NA
1,2-Dichloroethene	0/21	0.007-0.071	NA	NA	0.013-0.035	NA
Benzene	0/21	0.007-0.071	NA	NA	0.013-0.035	NA
Carbon disulfide	7/21	0.007-0.071	0.004-0.064	0.035	0.009-0.035	NA
Chlorobenzene	3/21	0.007-0.071	ND(0.007)-0.43	0.102	0.013-0.035	NA
Chloroethane	0/21	0.017-0.14	NA	NA	0.027-0.07	NA
Chloroform	1/21	0.007-0.071	ND(0.007)-0.01	0.01*	0.013-0.035	NA
Ethylbenzene	1/21	0.007-0.071	ND(0.007)-0.013	0.013*	0.013-0.035	NA
Toluene	4/21	0.007-0.071	0.006-0.049	0.027	0.006-0.035	NA
Trichloroethene	0/21	0.007-0.071	NA	NA	0.013-0.035	NA
Xylenes	3/21	0.007-0.071	ND(0.007)-0.97	0.106	0.013-0.035	NA
INORGANICS						
Aluminium	21/21	NA	1530-32500	18014.8	1530-10200	72000
Antimony	0/21	3.2-23.7	NA	NA	7.5-23.5	0.66
Arsenic	21/21	NA	1.2-30	13.1	1.9-6	7.2
Barium	21/21	NA	32.8-6230	486.4	45-142	580
Beryllium	15/21	0.28-2.4	ND(0.28)-3.5	2.3	0.75-2.4	0.92
Cadmium	11/21	1.3-5.9	ND(1.3)-17.1	9.8	1.6-4.7	9.1
Calcium	21/21	NA	1270-23700	19684.7	10000-23700	24000
Chromium	20/21	11.9	7.6-64.4	25.6	11.9-14.8	54
Cobalt	17/21	3-9.5	ND(3)-60.6	10.8	3-9.5	9.1
Copper	21/21	NA	3-64.8	38	15.5-21.5	25
Iron	21/21	NA	1310-137000	105995	1310-3970	26000
Lead	8/21	NA	8.3-93.7	90	NA	19
Magnesium	21/21	NA	721-3110	2547.6	721-1060	9000
Manganese	21/21	NA	83-68100	10161.6	83-104	550
Mercury	6/21	0.13-1.1	ND(0.13)-7	0.5	0.38-1.1	0.09
Nickel	19/21	11.9	6.2-31.7	21.9	7.3-11.9	19
Potassium	19/21	711-1240	500-2080	1271.5	1250-2080	15000
Selenium	12/21	0.42-16.4	ND(0.42)-5.9	4.5	2.1-7.6	0.39
Silver	6/21	0.93-9.5	0.84-12.8	5.5	3-9.5	80
Sodium	21/21	NA	82.9-771	688.5	139-296	12000
Thallium	2/21	0.29-5.1	ND(0.29)-0.45	2.3	1.4-5.1	9.4
Vanadium	21/21	NA	7.5-79.5	30.9	8.1-11.1	80
Zinc	10/21	NA	32-340	259.8	NA	60
Cyanide	2/21	0.94-12.7	ND(0.94)-3	6	3.8-12.7	NA
PESTICIDES/PCBS						
4,4'-DDE	1/21	0.027-0.053	ND(0.027)-0.038	0.039	NA	NA
4,4'-DDD	0/21	0.022-0.11	NA	NA	NA	NA
4,4'-DDT	1/21	0.022-0.11	ND(0.022)-0.074	0.054	NA	NA

ND: NOT DETECTED
NA: NOT APPLICABLE
*: MAXIMUM DETECTED VALUE
A: Source - USGS(1983)

TABLE 6.5
SUMMARY OF GROUND WATER DATA - ROUND I

	FREQUENCY OF DETECTION	SAMPLES RANGE OF SQL (ug/l)	RANGE OF DETECTION (ug/l)	95% UCL (ug/l)	RANGE OF ON-SITE BACKGROUND LEVELS (ug/l)	U.S. BACKGROUND LEVELS (ug/l)
SEMIVOLATILE ORGANICS						
1,2-Dichlorobenzene	0/25	0.01	NA	NA	NA	NA
1,4-Dichlorobenzene	1/25	0.01	0.002	0.002*	0.01	NA
2,4-Dimethylphenol	3/25	0.01	0.003-0.005	0.005*	0.01	NA
4-Methylphenol	2/25	0.01	0.031-0.044	0.044*	0.01	NA
Acenaphthene	0/25	0.01	NA	NA	NA	NA
Anthracene	0/25	0.01	NA	NA	0.01	NA
Benzoic acid	3/25	0.05	0.014-0.2	0.2*	0.05	NA
Benzo(a)anthracene	0/25	0.01	NA	NA	0.01	NA
Benzo(a)pyrene	0/25	0.01	NA	NA	0.01	NA
Benzo(b)fluoranthene	0/25	0.01	NA	NA	0.01	NA
Benzo(ghi)perylene	0/25	0.01	NA	NA	NA	NA
Benzo(k)fluoranthene	0/25	0.01	NA	NA	0.01	NA
Benzyl alcohol	0/25	0.01	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	1/25	0.01	0.003	0.018	0.006-0.01	NA
Butylbenzylphthalate	0/25	0.01	NA	NA	NA	NA
Chrysene	0/25	0.01	NA	NA	0.01	NA
Dibenzoanthracene	0/25	0.01	NA	NA	NA	NA
Diethylphthalate	1/25	0.01	0.01	0.01*	0.01	NA
Di-N-Butylphthalate	0/25	0.01	NA	NA	0.01	NA
Di-n-octylphthalate	1/25	0.01	0.069	0.069*	0.01	NA
Fluoranthene	0/25	0.01	NA	NA	0.01	NA
Fluorene	0/25	0.01	NA	NA	0.01	NA
Indeno(123cd)pyrene	0/25	0.01	NA	NA	0.01	NA
Naphthalene	5/25	0.01	0.004-0.039	0.012	0.01	NA
Phenanthrene	0/25	0.01	NA	NA	0.01	NA
Phenol	3/25	0.01	0.018-0.072	0.072*	0.01	NA
Pyrene	0/25	0.01	NA	NA	0.01	NA
VOLATILES						
1,1-Dichloroethane	0/25	0.005-0.01	NA	NA	0.005	NA
1,2-Dichloroethene	0/25	0.005-0.01	NA	NA	0.005	NA
Benzene	0/25	0.005	NA	NA	0.005	NA
Carbon disulfide	0/25	0.005	NA	NA	0.005	NA
Chlorobenzene	3/25	0.005	0.001-0.024	0.008	0.005	NA
Chloroethane	1/25	0.01	0.004	0.004*	0.01	NA
Chloroform	1/25	0.005	0.001	0.001*	0.005	NA
Ethylbenzene	4/25	0.005	0.001-0.064	0.012	0.005	NA
Toluene	3/25	0.005	0.016-0.033	0.033*	0.005	NA
Xylenes	2/25	0.005	0.062-0.2	0.2*	0.005	NA
INORGANICS						
Aluminium	25/25	NA	0.649-252	144.19	1.37-28.5	NA
Antimony	3/25	0.02-0.03	0.029-0.041	0.041*	0.023-0.03	NA
Arsenic	24/25	0.0022	0.001-0.041	0.024	0.001-0.009	NA
Barium	25/25	NA	0.034-1.98	1.05	0.034-0.651	NA
Beryllium	11/25	0.001-0.003	0.0013-0.015	0.051*	0.0016-0.0066	
Cadmium	5/25	0.002-0.004	ND(0.002)-0.006	0.004	0.003-0.004	NA
Calcium	25/25	NA	181-1460	407.45	196-412	NA
Chromium	19/25	6	0.0036-0.538	0.337	0.006-0.086	NA
Cobalt	20/25	0.007-0.009	0.007-0.22	0.071	0.007-0.054	NA
Copper	25/25	NA	0.0047-0.846	0.418	0.0047-0.123	NA
Iron	25/25	NA	2.29-482	314.09	7.08-97.8	NA
Lead	18/25	NA	0.0047-0.288	0.228	0.0611-0.084	NA
Magnesium	25/25	NA	2.27-133	76.558	0.282-21.6	NA
Manganese	25/25	NA	0.159-212	68.009	0.159-7.65	NA
Mercury	16/25	0.0002	0.0002-0.002	0.001	0.0002-0.001	NA
Nickel	16/25	0.016-0.028	0.0154-0.49	0.182	0.0002-0.118	NA
Potassium	25/25	NA	0.851-41.7	22.98	0.851-5.33	NA
Selenium	1/25	0.0011-0.02	ND(0.0011)-0.002	0.003	0.002-0.004	NA
Sodium	25/25	NA	2.18-112	131.28	2.1-6.79	NA
Thallium	6/25	0.001-0.002	ND(0.001)-0.003	0.002	0.002-0.002	NA
Vanadium	20/25	0.01	0.0037-0.319	0.112	0.005-0.059	NA
Zinc	25/25	NA	0.0234-2.88	0.932	0.0234-0.186	NA
PESTICIDES/PCB						
4,4'-DDD	0/25	0.0001	NA	NA	0.0001	NA
4,4'-DDE	0/25	0.0001	NA	NA	0.0001	NA
4,4'-DDT	0/25	0.0001	NA	NA	0.0001	NA

ND: NOT DETECTED
NA: NOT APPLICABLE
*: MAXIMUM DETECTED VALUE

TABLE 6.6

CHEMICALS OF POTENTIAL CONCERN IN ALL MEDIA SAMPLED

	RANGE OF SURFACE SOIL SAMPLES (mg/kg)	RANGE OF TEST PIT SAMPLES (mg/kg)	RANGE OF SEDIMENT SAMPLES (mg/kg)	RANGE OF SURFACE WATER SAMPLES(mg/l)	RANGE OF GROUND WATER SAMPLES(mg/l) ROUND I	RANGE OF GROUND WATER SAMPLES(mg/l) ROUND II
SEMIVOLATILE ORGANICS						
‡‡ 1,2-Dichlorobenzene	NA	NA	0.120	NA	NA	NA
‡‡‡ 1,4-Dichlorobenzene	NA	0.10	NA	NA	0.002	NA
‡‡ 2,4-Dimethylphenol	NA	NA	NA	NA	0.003-0.005	ND(0.01)-0.032
‡‡‡ p-Cresol	NA	0.34	ND(0.45)-0.59	0.007-0.11	0.031-0.044	ND(0.01)-0.079
‡‡ Acenaphthene	0.062	NA	0.28	NA	NA	NA
‡ Anthracene	0.048-0.13	0.088-0.15	NA	NA	NA	NA
‡‡ Benzoic acid	NA	0.22	NA	0.009	0.014-0.2	NA
‡ Benzo(a)anthracene	0.082-1.2	0.30-0.42	ND(0.45)-1.0	NA	NA	NA
‡ Benzo(a)pyrene	0.094-1.1	0.24	NA	NA	NA	NA
‡ Benzo(b)fluoranthene	0.086-1.7	0.26-0.71	ND(0.45)-0.77	NA	NA	NA
Benzo(ghi)perylene	0.14-0.72	NA	NA	NA	NA	NA
‡ Benzo(k)fluoranthene	0.098	0.27-0.36	NA	NA	NA	NA
Benzyl alcohol	NA	NA	NA	0.01	NA	NA
‡ Bis(2ethylhexyl)phthalate	0.037-2.4	0.087-4.5	0.10-2.90	0.002-0.005	0.003	ND(0.01)-0.021
‡‡‡ Butylbenzylphthalate	NA	0.092-0.24	NA	NA	NA	NA
‡ Chrysene	0.078-1.7	0.27-0.43	0.28-0.93	NA	NA	NA
‡‡ Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA
‡ Diethylphthalate	0.043	0.11	NA	NA	0.01	ND(0.01)-0.900
‡ Di-n-butylphthalate	0.08-0.09	NA	ND(0.45)-0.61	0.003	NA	NA
‡‡ Di-n-octylphthalate	NA	0.20	NA	0.003	0.069	NA
‡ Fluoranthene	0.063-2.4	0.05-1.2	ND(0.45)-1.60	0.002	NA	NA
‡ Fluorene	0.046	ND(0.37)-0.42	0.26-0.37	NA	NA	NA
‡ Indeno(123cd)pyrene	0.058-0.65	NA	NA	NA	NA	NA
‡ Naphthalene	ND(0.37)-3.1	0.068-0.65	ND(0.45)-1.0	0.004	0.004-0.039	ND(0.01)-0.036
‡ Phenanthrene	0.077-1.9	0.17-1.1	ND(0.45)-1.50	0.001-0.002	NA	NA
‡‡‡ Phenol	NA	NA	NA	ND(0.01)-0.021	0.018-0.072	ND(0.01)-0.018
‡ Pyrene	0.058-2.8	0.073-1.1	ND(0.45)-1.50	0.002	NA	NA
INORGANICS						
‡ Aluminium	5210-33500	9360-16200	1530-32500	ND(0.02)-20.4	0.649-252	ND(0.029)-0.193
‡‡ Antimony	NA	ND(2.9)-21	NA	ND(0.01)-0.015	0.029-0.041	NA
‡ Arsenic	9.1-109	2-12.5	1.2-30	ND(0.001)-0.012	0.001-0.041	0.002-0.0334
‡ Barium	43.5-2070	32-378	32.8-6230	0.008-3.58	0.034-1.98	0.0048-0.564
‡ Beryllium	ND(0.68)-0.84	0.43-0.89	ND(0.28)-3.5	NA	0.0013-0.015	0.0012-0.0071
‡ Cadmium	ND(1.1)-38.6	ND(0.41)-1.8	ND(1.3)-17.1	11.7-317	ND(0.002)-0.006	0.002-0.003
Calcium	1410-29500	986-2450	1270-23700	0.002-0.178	181-1460	5.41-257
‡ Chromium	7.7-2880	12.2-21.9	7.6-64.4	ND(0.003)-0.316	0.0036-0.538	NA
‡ Cobalt	5.4-29.4	8.9-13.9	ND(3)-60.6	ND(0.004)-0.016	0.007-0.22	ND(0.004)-0.014
‡ Copper	32.20-319	20.3-45.6	3-64.8	ND(0.002)-0.370	0.0047-0.846	NA
Iron	538-278000	17400-28300	1310-137000	0.013-836	2.29-482	ND(0.012)-88.3
‡ Lead	ND(0.29)-835	8.5-93.1	8.3-93.7	ND(0.001)-0.454	0.0047-0.288	ND(0.002)-0.004
Magnesium	ND(191)-14200	3990-6010	721-3110	0.853-18.6	2.27-133	0.569-55.5
‡ Manganese	478-1890	201-1720	83-68100	0.033-25.3	0.159-212	ND(0.007)-16.4
‡ Mercury	0.3-1.60	NA	ND(0.13)-7	ND(0.0002)-0.004	0.0002-0.002	NA
‡ Nickel	ND(7.9)-347	14.3-25	6.2-31.7	ND(0.005)-0.116	0.0154-0.49	ND(0.005)-0.029
Potassium	14.9-2320	738-1550	500-2080	ND(0.445)-28.3	0.851-41.7	ND(0.780)-38.5
‡‡ Selenium	NA	NA	ND(0.42)-5.9	ND(0.002)-0.0028	ND(0.0011)-0.002	NA
Silver	NA	NA	0.84-12.8	NA	NA	NA
Sodium	ND(182)-1460	70.5-237	82.9-771	1.730-79.8	2.18-112	2.48-119
‡‡ Thallium	NA	NA	ND(0.29)-0.45	NA	ND(0.001)-0.003	NA
‡ Vanadium	16.9-51.1	12.1-22.3	7.5-79.5	ND(0.003)-0.055	0.0037-0.319	ND(0.003)-0.004
‡ Zinc	62.6-469	48.6-286	32-340	0.0022-11.2	0.0234-2.88	ND(0.002)-0.092
‡ Cyanide	NA	ND(0.50)-10.4	ND(0.94)-3	ND(0.010)-0.085	NA	NA
VOLATILES						
‡ 1,1-Dichloroethane	NA	NA	NA	0.003	NA	NA
1,2-Dichloroethene	NA	NA	NA	NA	NA	NA
Benzene	NA	0.001-0.002	NA	NA	NA	NA
‡ Carbon disulfide	NA	0.003	0.004-0.064	0.005-0.008	NA	NA
‡ Chlorobenzene	NA	0.001-0.009	ND(0.007)-0.43	0.001-0.008	0.001-0.024	ND(0.005)-0.027
Chloroethane	NA	NA	NA	0.005	0.004	NA
Chloroform	NA	NA	ND(0.007)-0.01	NA	0.001	NA
‡ Ethylbenzene	NA	ND(0.006)-0.041	ND(0.007)-0.01	0.001-0.004	0.001-0.064	ND(0.005)-0.063
‡ Toluene	NA	0.002-0.015	0.006-0.049	0.001-0.004	0.016-0.033	ND(0.005)-0.033
Trichloroethene	NA	NA	NA	NA	NA	NA
‡ Xylenes	NA	ND(0.006)-0.310	ND(0.007)-0.97	0.002-0.007	0.062-0.2	ND(0.005)-0.200
PESTICIDES/PCBS						
‡ 4,4'-DDE	ND(0.018)-0.50	NA	ND(0.027)-0.03	NA	NA	NA
4,4'-DDD	NA	NA	NA	NA	NA	NA
‡ 4,4'-DDT	ND(0.018)-0.62	NA	ND(0.022)-0.07	NA	NA	NA

ND: NOT DETECTED
NA: NOT APPLICABLE
‡ : USED IN QUANTITATIVE ANALYSIS
‡‡ : USED IN QUALITATIVE ANALYSIS
‡‡‡ : USED IN BOTH QUANTITATIVE AND QUALITATIVE ANALYSIS

TABLE 6-7
SUMMARY OF PARAMETER VALUES USED TO ESTIMATE EXPOSURE

PARAMETER	VALUE OR RANGE	VALUE USED	RATIONAL	REFERENCE
Scenario 1-3: Global variables				
Body Weight (kg)				
- Child (scenario 1)	36-61.2	49	Value based on average of males and females between 9-18 yrs	EPA 1990
- Child (scenario 3)	11.6-17.4	16	Value based on average of males and females between 0-6 yrs	EPA 1989
- Adult	67.2-74.5	70	Value based on average of males and females between 18-65 yrs	EPA 1989
Exposure Duration (years)				
(scenario 1)			Based upon the age range of children likely to enter the site;	
Child	1-18	9	Based upon the age range for adults and national upper-bound	
Adult	1-70	30	(90th percentile) residence at one location.	
(scenario 2)	1-70	1	Amount of time spent building new homes.	
(scenario 3)				
Child	1 - 6	6	Number of years in this age group.	
Adult	1-70	30	National upper-bound (90th percentile) at one residence.	
Averaging Time				
Cancer-risks (days)	NA	25,550	Value based upon 70 year life expectancy.	
Noncancer-risks (days) (scenario 1)				
Child	365-25,550	3,285	Value based upon exposure duration.	
Adult	365-25,550	10,950	Value based upon exposure duration.	
Noncancer-risks (days) (scenario 2)	180	180	Value based upon exposure duration.	
Noncancer-risks (days) (scenario 3)				
Child	365-2,190	2,190	Value based upon exposure duration.	
Adult	365-25,550	10,950	Value based upon exposure duration.	
Absorption Factor				
organic compounds	0-1	0.1		Brown (1984)
arsenic	0-1	0.1		ATSDR (1989)
inorganic compounds	0-1	0.01		EPA (1984;1982;1986)
Permeability Constant - Dermal contact in Water (cm/hr)		8.4E-04	Based upon the penetration rate of water	
Adherence Factor (mg/cm2)	0-2.77	1.45	Based upon commercial potting soil	
Fraction Ingestion From Contaminated Source	0-1	1	Assuming 100% of the soil ingestion occurs while on site	
Scenario 1-3 Chemical Concentration Justification				
Surface Soils; Subsurface soils; Surface Water;			95th pecentile values used in exposure estimate were	
Ground Water			calculated using the methods described in section 6.3.	

TABLE 6-7
(continued)
SUMMARY OF PARAMETER VALUES USED TO ESTIMATE EXPOSURE

Scenario 1 - Recreational Exposure: Current Use				
Exposure Frequency (days/year)				
Child	1-365	90	Based upon trespassing 1/2 of non-school days/year	
Adult	1-365	5	Based on a high estimate of the number of contacts with surface water during a total of 60 trips/year	
Dermal Contact With Chemicals in Water				
Skin Surface Area (cm2)				
Child	0-1440	6,800	Based upon immersion of legs, arms, hands. Swimming is unlikely. Average for 9-18 years age group.	
Adult	0-18,150	5,500	Based upon total lower body exposure to water.	
Exposure Time (hrs/day)				
Child	1-24	4	Clothing stays wet after initial exposure.	
Adult	1-24	4	Clothing stays wet after initial exposure.	
Ingestion Of Chemicals In Surface Water				
Contact Rate (L/hr)				
Child		0.05	Based upon water ingestion rate for swimming.	EPA 1989
Exposure Time (hrs/day)				
Child	1-24	1		
Dermal Contact With Chemicals in Soils				
Skin Surface Area (cm2)				
Child	0-14,400	6,800	Based upon exposed arms, hands, and legs.	
Adult	0-18,150	3,100	Based upon exposed arms and hands.	
Ingestion Of Chemicals In Soils				
Ingestion Rate (mg/day)				
Child	0-200	100	Soil ingestion rate for those over 6 years of age.	EPA 1989
Adult		100	Soil ingestion rate for those over 6 years of age.	EPA 1989
Scenario 2 - Construction Exposure: Future Use				
Exposure Frequency (days/year)	1-365	180	Based on an estimate of the number of days building homes.	
Dermal Contact with Chemicals In Soils				
Skin Surface Area (cm2)	0-18,150	6,300	Includes hands, arms, head, neck and a portion of the trunk.	
Ingestion Of Chemicals in Soils				
Ingestion Rate (mg/day)		100	Soil ingestion rate for those over 6 years of age.	EPA 1989
Inhalation Of Airborne Chemicals Absorbed to Dust				
Ambient Dust Concentration (kg/m3)		3.24E-09	Wind erosion, loading and dumping model found in AP-42.	EPA 1985
Inhalation Rate (m3/hr)		2	Adults during moderate exertion	
Exposure Time (hrs/day)	1-24	8	Based upon an eight hour work day.	
Scenario 3 - Residential Scenario: Future Use				
Exposure Frequency (days/yr)	1-365	365	No time spent away from home.	
Dermal Contact With Chemicals in Water				
Skin Surface Area (cm2)				
Child	0-7200	7200	Average child 2-6 years old; total body exposure	
Adult	0-18,150	18,150	Adult total body exposure.	
Exposure Time (hrs/day)	1-24	0.2	Bathing or showering time.	
Dermal Contact With Chemicals in Soil				
Skin Surface Area (cm2)				
Child	0-7200	3,146	Exposure of an child's arms, hands, and legs.	
Adult	0-18,150	9,440	Exposure of an adult's arms, hands, and legs.	
Ingestion Of Chemicals In Soils and House Dust				
Ingestion Rate (mg/day)				
Child	0-200	200	Children, 1-6 years old; EPA 1989	
Adult	0-100	100	Age groups greater than 6 years old; EPA 1989.	
Ingestion Of Chemicals In Drinking Water				
Ingestion Rate (L/day)				
Child		0.756	Children, 0-6 years old; EPA 1990	
Adult		2	Adult, 90th percentile; EPA 1989.	
Inhalation Of Airborne (Vapor Phase) Chemicals				
Inhalation Rate (m3/hr)		0.83	Adults and children, light activity assumed.	
Exposure Time (hrs/day)	0-24	0.1 hr	Based upon the duration of a shower.	
Inhalation Of Airborne Chemicals Absorbed to Dust				
Ambient Dust Concentration		1.04E-09	Wind erosion, loading and dumping model found in AP-42	EPA 1985
Inhalation Rate (m3/hr)		0.83	Adults and children, light activity assumed.	
Exposure Time (hrs/day)	1-24	4	The amount of time spent outdoors.	

TABLE 6-8
SUMMARY OF TOXICITY VALUES ASSOCIATED WITH NONCARCINOGENIC-CHRONIC EFFECTS: ORAL

CHEMICAL	CHRONIC RFD (ORAL) (mg/kg/day)	CONFIDENCE LEVEL	CRITICAL EFFECT	ORAL RFD BASIS/ SOURCE	UNCERTAINTY AND MODIFYING FACTORS
INORGANICS					
Aluminum	DI			HEAST	
Antimony	4E-04	Low	Longevity,blood glucose and cholesterol	Water/IRIS	UF=1000;MF=1
Arsenic	1E-03	NA	Keratosis and hyperpigmentation	NA/HEAST	UF=1
Barium	7E-02	Medium	Increased blood pressure	Water/IRIS	UF=3;MF=1
Beryllium	5E-03	Low	None observed	Water/IRIS	UF=100;MF=1
Cadmium	1E-03	High	Proteinuria	Water/IRIS	UF=10;MF=1
Chromium III	1E+00	Low	No effects reported	Diet/IRIS	UF=100;MF=10
Chromium VI	5E-03	Low	No effects reported	Water/IRIS	UF=500;MF=1
Cobalt	NF			IRIS,HEAST	
Copper	4E-02	NA	Local GI irritation	NA/HEAST	UF=NA
Lead	ND	NA	Neurobehavioral effects	NA/IRIS	NA
Manganese	1E-01	Medium	CNS effects	Diet/IRIS	UF=1;MF=1
Mercury	3E-04	NA	Kidney effects	NA/HEAST	UF=1000
Nickel	2E-02	Medium	Decreased body and organ weight	Diet/IRIS	UF=100;MF=3
Selenium	NF			IRIS,HEAST	
Vanadium	7E-03	NA	None observed	Water/HEAST	UF=100
Zinc	2E-01	NA	Anemia	NA/HEAST	UF=10
Cyanide	2E-02	Medium	Weight loss, thyroid effects, myelin degeneration	Oral/IRIS	UF=100;M=5
VOLATILES					
Carbon Disulfide	1E-01	Medium	Fetal toxicity, malformation	Inhalation/IRIS	UF=100;MF=1
Chlorobenzene	2E-02	Medium	Histopathological changes in the liver	Oral/IRIS	UF=1000;MF=1
Ethylbenzene	1E-01	Low	Liver and kidney toxicity	Oral/IRIS	UF=1000;MF=1
Toluene	2E-01	Medium	Changes in liver and kidney	Gavage/IRIS	UF=1000;MF=1
Xylenes	2E+00	Medium	Hyperactivity,decreased body weight	Gavage/IRIS	UF=100;MF=1
SEMIVOLATILES					
Bis(2ethylhexyl)phthalate	2E-02	Medium	Increased relative liver weight	Diet/IRIS	UF=1000;MF=1
Butylbenzylphthalate	2E-01	Low	Effects on body weight gain, testes, liver, kidney	Diet/IRIS	UF=1000,MF=1
Benzo(a)anthracene	NF			IRIS,HEAST	
Benzo(a)pyrene	NF			IRIS,HEAST	
Chrysene	DI			HEAST	
Benzo(b)fluoranthene	NF			IRIS,HEAST	
Benzo(k)fluoranthene	NF			IRIS,HEAST	
Dibenzo(a,h)anthracene	NF			IRIS,HEAST	
Indeno(1,2,3-c,d)pyrene	NF			IRIS,HEAST	
1,4-Dichlorobenzene	ND	NA		NA/HEAST	
Diethylphthalate	8E-01	Low	Decreased growth rate, food consumption rate and altered organ weights	Diet/IRIS	UF=1000;MF=1
Di-n-butylphthalate	1E-01	Low	Increased mortality	Diet/IRIS	UF=1000;MF=1
Di-n-octylphthalate	2E-02	NA	Elevated kidney and liver weights,increased SGOT and SGPT	Diet/HEAST	UF=1000
Acenaphthene	6E-02	Low	Hepatotoxicity	Oral/IRIS	UF=3000,MF=1
Anthracene	3E-01	Low	No observed effects	Gavage/IRIS	UF=3000;MF=1
Benzo(g,h,i)perylene	NF			IRIS,HEAST	
Fluoranthene	4E-02	Low	Nephropathy, liver weight changes hematological alterations and clinical effects	Gavage/IRIS	UF=3000;MF=1
Fluorene	4E-02	Low	Decreased RBC, packed cell volume and hemoglobin	Gavage/IRIS	UF=3000;MF=1
p-Cresol	5E-02	Medium	Decreased body weight gain, neurotoxicity	IRIS	UF=1000;MF=1
Naphthalene	4E-03	NA	Decreased body weight gain	Gavage/HEAST	UF=10,000
Pyrene	3E-02	Low	Kidney effects	Gavage/IRIS	UF=3000;MF=1
Phenanthrene	DI			HEAST	
Phenol	6.0E-01	Low	Reduced fetal body weight	Gavage/IRIS	UF=100;MF=1
PESTICIDES/PCBS					
4,4'-DDD	NF			IRIS,HEAST	
4,4'-DDE	NF			IRIS,HEAST	
4,4'-DDT	5E-04	Medium	Liver lesions	Diet/IRIS	UF=100;MF=1

TABLE 6-9
SUMMARY OF TOXICITY VALUES ASSOCIATED WITH NONCARCINOGENIC-CHRONIC EFFECTS: INHALATION

CHEMICAL	CHRONIC RFD (INHALATION) (mg/kg/day)	CONFIDENCE LEVEL	CRITICAL EFFECT	INHALATION RFD BASIS/ SOURCE	UNCERTAINTY AND MODIFYING FACTORS
INORGANICS					
Aluminum	DI			HEAST	
Antimony	4E-04 a				
Arsenic	1E-03 a				
Barium	7E-02 a				
Beryllium	5E-03 a				
Cadmium	5E-4 a				
Chromium III	6E-07		Nasal mucosa atrophy	HEAST	UF=300
Chromium VI	6E-07		Nasal mucosa atrophy	HEAST	UF=300
Cobalt	NF			IRIS,HEAST	
Copper	ND	NA		NA/HEAST	NA
Lead	ND	NA	CNS effects	NA/HEAST	NA
Manganese	1E-04	Medium	Increased prevalance of respiratory symptoms and psycho-motor disturbances	IRIS HEAST	UF=300;MF=3 UF=900
Mercury	1E-04	NA	Neurotoxicity	NA/HEAST	UF=30
Nickel	2E-02 a				
Selenium	NF			IRIS,HEAST	
Vanadium	7E-03 a				
Zinc	2E-01 a				
Cyanide	2E-02 a		myelin degeneration		
VOLATILES					
Carbon Disulfide	1E-01 a				
Chlorobenzene	5E-03	NA	Liver and kidney effects	HEAST	UF=10,000
Ethylbenzene	1E-01 a				
Toluene	6E-01	NA	CNS effects, eyes and nose irritation	HEAST	UF=100
Xylenes	9E-02	NA	CNS effects, eyes and nose irritation	HEAST	UF=100
SEMIVOLATILES					
Bis(2ethylhexyl)phthalate	2E-02 a				
Butylbenzylphthalate	2E-01 a				
Benzo(a)anthracene	NF			IRIS,HEAST	
Benzo(a)pyrene	NF			IRIS,HEAST	
Chrysene	DI			HEAST	
Benzo(b)fluoranthene	NF			IRIS,HEAST	
Benzo(k)fluoranthene	NF			IRIS,HEAST	
Dibenzo(a,h)anthracene	NF			IRIS,HEAST	
Indeno(1,2,3-c,d)pyrene	NF			IRIS,HEAST	
1,4-Dichlorobenzene	2E-01	NA	Liver and kidney effects	HEAST	UF=100
Diethylphthalate	8E-01 a				
Di-n-butylphthalate	1E-01 a				
Di-n-octylphthalate	2E-02 a				
Acenaphthene	6E-02 a				
Anthracene	3E-01 a				
Benzo(g,h,i)perylene	NF			IRIS,HEAST	
Fluoranthene	4E-02 a				
Fluorene	4E-02 a				
p-Cresol	5E-02 a				
Naphthalene	4E-03 a				
Pyrene	3E-02 a				
Phenanthrene	DI			HEAST	
Phenol	DI			IRIS	
PESTICIDES/PCBS					
4,4'-DDD	NF			IRIS,HEAST	
4,4'-DDE	NF			IRIS,HEAST	
4,4'-DDT	5E-04 a				

TABLE 6-10

SUMMARY OF TOXICITY VALUES ASSOCIATED WITH NONCARCINOGENIC-SUBCHRONIC EFFECTS: INHALATION

CHEMICAL	SUBCHRONIC RFC (INHALATION) (mg/kg/day)	CONFIDENCE LEVEL	CRITICAL EFFECT	INHALATION RFD BASIS/ SOURCE	UNCERTAINTY AND MODIFYING FACTORS
INORGANICS					
Aluminum	DI			HEAST	
Antimony	4E-04 a				
Arsenic	1E-03 a				
Barium	1E-03		Fetotoxicity; increased blood pressure	HEAST	
Beryllium	5E-03 a				
Cadmium	1E-03 a				
Chromium III	6E-06		Nasal mucosa atrophy	HEAST	UF=30
Chromium VI	6E-06		Nasal mucosa atrophy	HEAST	UF=30
Cobalt	NF			IRIS,HEAST	
Copper	ND	NA		NA/HEAST	NA
Lead	ND		NA	NA/HEAST	NA
Manganese	4E-4	Medium	Increased prevalance of respiratory symptoms and psycho-motor disturbances	IRIS	UF=300;MF=3
Mercury	1E-04	NA	Neurotoxicity	NA/HEAST	UF=30
Nickel	2E-02 a				
Selenium	NF			IRIS,HEAST	
Vanadium	7E-03 a				
Zinc	2E-01 a				
Cyanide	2E-02 a		myelin degeneration		
VOLATILES					
Carbon Disulfide	1E-01 a				
Chlorobenzene	5E-02		Liver and kidney effects	HEAST	UF=1000
Ethylbenzene	1E+00 a				
Toluene	2E+00	NA	CNS effects, eyes and nose irritation	HEAST	UF=100
Xylenes	3E-01	NA	CNS effects, eyes and nose irritation	HEAST	UF=100
SEMIVOLATILES					
Bis(2ethylhexyl)phthalate	2E-02 a				
Butylbenzylphthalate	2E+00 a				
Benzo(a)anthracene	NF			IRIS,HEAST	
Benzo(a)pyrene	NF			IRIS,HEAST	
Chrysene	DI			HEAST	
Benzo(b)fluoranthene	NF			IRIS,HEAST	
Benzo(k)fluoranthene	NF			IRIS,HEAST	
Dibenzo(a,h)anthracene	NF			IRIS,HEAST	
Indeno(1,2,3-c,d)pyrene	NF			IRIS,HEAST	
1,4-Dichlorobenzene	2E-01	NA	Liver and kidney effects	HEAST	UF=100
Diethylphthalate	8E+00 a				
Di-n-butylphthalate	1E+00 a				
Di-n-octylphthalate	2E-02 a				
Acenaphthene	6E-01 a				
Anthracene	3E+00 a				
Benzo(g,h,i)perylene	NF			IRIS,HEAST	
Fluoranthene	4E-01 a				
Fluorene	4E-01 a				
p-Cresol	5E-01 a				
Naphthalene	4E-02 a				
Pyrene	3E-01 a				
Phenanthrene	DI			HEAST	
Phenol	DI			HEAST	
PESTICIDES/PCBS					
4,4'-DDD	NF			IRIS,HEAST	
4,4'-DDE	NF			IRIS,HEAST	
4,4'-DDT	5E-04 a		Liver lesions	HEAST	

TABLE 6-11

SUMMARY OF TOXICITY VALUES ASSOCIATED WITH NONCARCINOGENIC-SUBCHRONIC EFFECTS: ORAL

CHEMICAL	SUBCHRONIC RFD (ORAL) (mg/kg/day)	CONFIDENCE LEVEL	CRITICAL EFFECT	ORAL RFD BASIS/ SOURCE	UNCERTAINTY AND MODIFYING FACTORS
INORGANICS					
Aluminum	DI			HEAST	
Antimony	4E-04 c	Low	Decreased longevity,blood glucose and cholesterol	Water/IRIS	UF=1000;MF=1
Arsenic	1E-03	NA	Keratosis and hyperpigmentation	NA/HEAST	UF=1
Barium	5E-02		Fetotoxic, increased blood pressure	Water/HEAST	UF=100
Beryllium	5E-03 c	Low	None observed	Water/IRIS	UF=100;MF=1
Cadmium	1E-03				
Chromium III	1E+01		Hepatotoxicity	Diet/HEAST	UF=100
Chromium VI	2E-02		Not defined	Water/HEAST	UF=100
Cobalt	NF			IRIS,HEAST	
Copper	1.3mg/l (0.04)	NA	Local GI irritation	NA/HEAST	UF=NA
Lead	ND		NA	NA/HEAST	UF=NA
Manganese	1E-01 c	Medium	CNS effects, respiratory symptoms	Diet/IRIS	UF=1;MF=1
Mercury	3E-04	NA	Kidney effects, neurotoxicity	NA/HEAST	UF=1000
Nickel	2E-02 c	Medium	Decreased body and organ weight	Diet/IRIS	UF=100;MF=3
Selenium	NF			IRIS,HEAST	
Vanadium	7E-03	NA	None observed	Water/HEAST	UF=100
Zinc	2E-01	NA	Anemia	NA/HEAST	UF=10
Cyanide	2E-02 c	Medium	Weight loss, thyroid effects, myelin degeneration	Oral/IRIS	UF=100;M=5
VOLATILES					
Carbon Disulfide	1E-01 c	Medium	Fetal toxicity, malformation	Inhalation/IRIS	UF=100;MF=1
Chlorobenzene	2E-01		Liver and kidney effects	HEAST	UF=100
Ethylbenzene	1E+00		Hepatotoxicty, nephrotoxicity	Oral/HEAST	UF=100
Toluene	2E+00		Changes in liver and kidney weight, CNS	HEAST	UF=100
Xylenes	4E+00		CNS effects	Gavage/HEAST	UF=100
SEMIVOLATILES					
Bis(2ethylhexyl)phthalate	2E-02 c	Medium	Increased relative liver weight	Diet/IRIS	UF=1000;MF=1
Butylbenzylphthalate	2E+00		Effects on body weight gain, testes, liver, kidney	Diet/HEAST	UF=100
Benzo(a)anthracene	NF			IRIS,HEAST	
Benzo(a)pyrene	NF			IRIS,HEAST	
Chrysene	DI			HEAST	
Benzo(b)fluoranthene	NF			IRIS,HEAST	
Benzo(k)fluoranthene	NF			IRIS,HEAST	
Dibenzo(a,h)anthracene	NF			IRIS,HEAST	
Indeno(1,2,3-c,d)pyrene	NF			IRIS,HEAST	
1,4-Dichlorobenzene	ND	NA		NA/HEAST	
Diethylphthalate	8E+00		NA	HEAST	UF=100
Di-n-butylphthalate	1E+00		Mortality	Diet/HEAST	UF=100
Di-n-octylphthalate	2E-02	NA	Elevated kidney and liver weights,increased SGOT and SGPT	Diet/HEAST	UF=1000
Acenaphthene	6E-01		Hepatotoxicity	Gavage/HEAST	UF=300
Anthracene	3E+00		No observed effects	Gavage/HEAST	UF=300
Benzo(g,h,i)perylene	NF			IRIS,HEAST	
Fluoranthene	4E-01		Nephropathy, liver weight changes hematological alterations and clinical effects	Gavage/HEAST	UF=300
Fluorene	4E-01		Hematological changes	Gavage/HEAST	UF=300
p-Cresol	5E-01		Decreased body weight gain, neurotoxicity	HEAST	UF=100
Naphthalene	4E-02		Decreased body weight gain	Gavage/HEAST	UF=1000
Pyrene	3E-01		Reanal effects	Gavage/HEAST	UF=300
Phenanthrene	DI			HEAST	
Phenol	6.0E-01	Low	Reduced fetal body weight	HEAST	UF=100
PESTICIDES/PCBS					
4,4'-DDD	NF			IRIS,HEAST	
4,4'-DDE	NF			IRIS,HEAST	
4,4'-DDT	5E-04		Liver lesions	IRIS,HEAST	UF=100

DI:Data inadequate for quantitative risk assessment
NA:Not available ative risk assessment
NF:Not found
ND:Not determined
a:Oral value has been placed where no inhalation value exists.
c:Subchronic RFD/RFC values taken from HEAST tables

TABLE 6-12
SUMMARY OF TOXICITY VALUES ASSOCIATED WITH CARCINOGENIC EFFECTS: ORAL

CHEMICAL	SLOPE FACTOR (SF) ORAL (mg/kg/day)-1	WEIGHT-OF-EVIDENCE CLASSIFICATION	TYPE OF CANCER	SF BASIS/ SOURCE
INORGANICS				
Aluminum	NF	D		NA/IRIS,HEAST
Antimony	NF	D		NA/IRIS,HEAST
Arsenic	1.75	A	Skin	Water/IRIS
Barium	NF	D		Water/IRIS
Beryllium	4.3	B2	Skin	Water/IRIS
Cadmium	ND	ND		NA/HEAST
Chromium VI	ND	ND		NF/IRIS
Cobalt	NF	D		NA/IRIS,HEAST
Copper	NF	D		NA/IRIS
Lead	NA	B2	Renal	Oral/IRIS
Manganese	NF	D		NA/IRIS
Mercury	NF	D		NA/IRIS
Nickel	ND	ND		NA/IRIS
Selenium	NF	D		NA/IRIS,HEAST
Vanadium	NF	D		NA/IRIS,HEAST
Zinc	NF	D		NA/IRIS,HEAST
Cyanide	NF	D		NA/IRIS
VOLATILES				
Carbon Disulfide	NF	D		NA/IRIS,HEAST
Chlorobenzene	NF	D		NA/IRIS
Ethylbenzene	NF	D		NA/IRIS
Toluene	NF	D		NA/IRIS
Xylenes	NF	D		NA/IRIS
SEMIVOLATILES				
Bis(2ethylhexyl)phthalate	1.4E-02	B2	Liver	Diet/IRIS
Butylbenzylphthalate	ND	C		NF/IRIS
Benzo(a)anthracene	11.5	B2		NA/IRIS
Benzo(a)pyrene	11.5	B2	Stomach	Diet/IRIS
Chrysene	11.5	B2		NA/IRIS
Benzo(b)fluoranthene	11.5	B2		NA/IRIS
Benzo(k)fluoranthene	11.5	B2		NA/IRIS
Dibenzo(a,h)anthracene	11.5	B2		NA/IRIS
Indeno(123cd)pyrene	11.5	B2		NA/IRIS
1,4-Dichlorobenzene	2.4E-02	B2	Liver	Gavage/HEAST
Diethylphthalate	NF	D		NA/IRIS,HEAST
Di-n-butylphthalate	NF	D		NA/IRIS,HEAST
Di-n-octylphthalate	NF	D		NA/IRIS
Acenaphthene	NF	D		NA/IRIS,HEAST
Anthracene	NF	D		NA/IRIS
Benzo(g,h,i)perylene	NF	D		NA/IRIS
Fluoranthene	NF	D		NA/IRIS,HEAST
Fluorene	NF	D		NA/IRIS
p-Cresol	ND	C		IRIS
Naphthalene	NF	D		NA/IRIS
Pyrene	NF	D		NA/IRIS
Phenanthrene	NF	D		NA/IRIS
Phenol	NF	D		NA/IRIS
PESTICIDES/PCBS				
4,4'-DDD	2.4E-01	B2	Lung, liver, thyroid	Diet/IRIS
4,4'-DDE	3.4E-01	B2	Liver, thyroid	Diet/IRIS
4,4'-DDT	3.4E-01	B2	Liver	Diet/IRIS

TABLE 6-13
SUMMARY OF TOXICITY VALUES ASSOCIATED WITH CARCINOGENIC EFFECTS: INHALATION

CHEMICAL	SLOPE FACTOR (SF) INHALATION (mg/kg/day)-1	WEIGHT-OF-EVIDENCE CLASSIFICATION	TYPE OF CANCER	SF BASIS/ SOURCE
INORGANICS				
Aluminum	NA	D		NA/IRIS,HEAST
Antimony	NA	D		NA/IRIS,HEAST
Arsenic	5E+01	A	Lung	Air/HEAST
Barium	NA	D		NA/IRIS,HEAST
Beryllium	8.4E+00 a			
Cadmium	6.1E+00	B1		OCCUPATIONAL/HEAST
Chromium VI	4.1e+1	A	Lung	OCCUPATIONAL/HEAST
Cobalt	NA	D		NA/IRIS,HEAST
Copper	NA	D		NA/IRIS,HEAST
Lead	NA	B2		NA/IRIS,HEAST
Manganese	NA	D		NA/IRIS,HEAST
Mercury	NA	D		NA/IRIS,HEAST
Nickel	8.4E-1	A	Respitory Tract	OCCUPATIONAL/HEAST
Selenium	NA	D		NA/IRIS,HEAST
Vanadium	NA	D		NA/IRIS,HEAST
Zinc	NA	D		NA/IRIS,HEAST
Cyanide	NA	D		NA/IRIS,HEAST
VOLATILES				
Carbon Disulfide	NA	D		NA/IRIS,HEAST
Chlorobenzene	NA	D		NA/IRIS,HEAST
Ethylbenzene	NA	D		NA/IRIS,HEAST
Toluene	NA	D		NA/IRIS,HEAST
Xylenes	NA	D		NA/IRIS,HEAST
SEMIVOLATILES				
Bis(2ethylhexyl)phthalate	1.4E-02 a			
Butylbenzylphthalate	NA	C		NF/IRIS, NA/HEAST
Benzo(a)anthracene	6.1 b	B2		NA/IRIS,HEAST
Benzo(a)pyrene	6.1 b	B2	Respitory Tract	INHALATION/HEAST
Chrysene	6.1 b	B2		NA/IRIS,HEAST
Benzo(b)fluoranthene	6.1 b	B2		NA/IRIS,HEAST
Benzo(k)fluoranthene	6.1 b	B2		NA/IRIS,HEAST
Dibenzo(a,h)anthracene	6.1 b	B2		NA/IRIS,HEAST
Indeno(123cd)pyrene	6.1 b	B2		NA/IRIS,HEAST
1,4-Dichlorobenzene	2.4E-02 a			
Diethylphthalate	NA	D		NA/IRIS,HEAST
Di-n-butylphthalate	NA	D		NA/IRIS,HEAST
Di-n-octylphthalate	NA	D		NA/IRIS,HEAST
Acenaphthene	NA	D		NA/IRIS,HEAST
Anthracene	NA	D		NA/IRIS,HEAST
Benzo(g,h,i)perylene	NA	D		NA/IRIS,HEAST
Fluoranthene	NA	D		NA/IRIS,HEAST
Fluorene	NA	D		NA/IRIS,HEAST
p-Cresol	NA	C		IRIS
Naphthalene	NA	D		NA/IRIS,HEAST
Pyrene	NA	D		NA/IRIS,HEAST
Phenanthrene	NA	D		NA/IRIS,HEAST
Phenol	NA	D		NA/IRIS,HEAST
PESTICIDES/PCBS				
4,4'-DDD	2.4E-01	B2		NA/IRIS,HEAST
4,4'-DDE	3.4E-01	B2		NA/IRIS,HEAST
4,4'-DDT	3.4E-01	B2	Liver	NA/IRIS,HEAST

TABLE 6-14
SUMMARY OF CANCER RISK ESTIMATES - SCENARIO 1: CHILDREN

CHEMICAL	CHRONIC DAILY INTAKE(CDI) (mg/kg/day)	CDI ADJUSTED FOR ABSORPTION	SF (mg/kg/day)-1	WEIGHT OF EVIDENCE	TYPE OF CANCER	SF BASIS/ SOURCE	CHEMICAL SPECIFIC RISK	TOTAL PATHWAY RISK	TOTAL EXPOSURE RISK
EXPOSURE PATHWAY: DERMAL CONTACT								5E-04	5E-04
INORGANICS									
Arsenic	2.9E-05	0.10	1.75	A	Bladder, Liver, Lung		5E-04		

TABLE 6-15
SUMMARY OF CANCER RISK ESTIMATES - SENARIO 1: ADULTS

CHEMICAL	CHRONIC DAILY INTAKE(CDI) (mg/kg/day)	CDI ADJUSTED FOR ABSORPTION	SF (mg/kg/day)-1	WEIGHT OF EVIDENCE	TYPE OF CANCER	SF BASIS/ SOURCE	CHEMICAL SPECIFIC RISK	TOTAL PATHWAY RISK	TOTAL EXPOSURE RISK
EXPOSURE PATHWAY: DERMAL CONTACT WITH SURFACE WATER - ADULTS								1.3E-07	3.7E-04
INORGANICS									
Arsenic	7.4E-09	0.10	1.75	A	Bladder, Liver, Lung	Water/IRIS	1.3E-07		
EXPOSURE PATHWAY: DERMAL CONTACT WITH SOILS - ADULT								3.6E-04	
INORGANICS									
Arsenic	2.1E-05	0.10	1.75	A	Bladder, Liver, Lung	Water/IRIS	3.6E-04		

TABLE 6-16
SUMMARY OF CHRONIC HAZARD INDEX ESTIMATES - SCENARIO 1: CHILDREN

CHEMICAL	CHRONIC DAILY INTAKE(CDI) (mg/kg/day)	CDI ADJUSTED FOR ABSORPTION	RFD (mg/kg/day)	CONFIDENCE LEVEL	CRITICAL EFFECT	RFD SOURCE/ BASIS	RFD UNCERTAINTY ADJUSTMENTS	MODIFYING FACTORS	HAZARD QUOTIENT	PATHWAY HAZARD INDEX (HI)	TOTAL EXPOSURE HI
EXPOSURE PATHWAY: DERMAL CONTACT WITH SOIL - CHILDREN										2E+00	3E+00
INORGANICS											
Arsenic	2.3E-04	0.10	1E-03	NA	Keratosis and Hyperpigmentation	NA/HEAST			2E+00		

TABLE 6-17
SUMMARY OF CHRONIC HAZARD INDEX ESTIMATES - SENARIO 1: ADULTS

CHEMICAL	CHRONIC DAILY INTAKE(CDI) (mg/kg/day)	CDI ADJUSTED FOR ABSORPTION	RFD (mg/kg/day)	CONFIDENCE LEVEL	CRITICAL EFFECT	RFD SOURCE/ BASIS	RFD UNCERTAINTY ADJUSTMENTS	MODIFYING FACTORS	HAZARD QUOTIENT	PATHWAY HAZARD INDEX (HI)	TOTAL EXPOSURE HI
EXPOSURE PATHWAY: DERMAL CONTACT WITH CHEMICALS IN SOIL - ADULTS										4.9E-01	5.4E-01
INORGANICS											
Arsenic	4.8E-05	0.1	1E-03	NA	Keratosis and hyperpigmentation	NA/HEAST	1		4.8E-01		

TABLE 6-18
SUMMARY OF CANCER RISK ESTIMATES - SCENARIO 2 : CONSTRUCTION WORKERS

CHEMICAL	CHRONIC DAILY INTAKE(CDI) (mg/kg/day)	CDI ADJUSTED FOR ABSORPTION	SF (mg/kg/day)-1	WEIGHT OF EVIDENCE	TYPE OF CANCER	SF BASIS/ SOURCE	CHEMICAL SPECIFIC RISK	TOTAL PATHWAY RISK	TOTAL EXPOSURE RISK
EXPOSURE PATHWAY: DERMAL CONTACT WITH CHEMICALS IN SOIL								1E-05	1E-05
INORGANICS									
Arsenic	6.34E-07	0.10	1.75	A	Skin	Water/IRIS	1E-05		

TABLE 6-19
SUMMARY OF CHRONIC HAZARD INDEX ESTIMATES - SCENARIO 2 : CONSTRUCTION WORKERS

CHEMICAL	SUBCHRONIC DAILY INTAKE (mg/kg/day)	CDI ADJUSTED FOR ABSORPTION	RFD (mg/kg/day)	CONFIDENCE LEVEL	CRITICAL EFFECT	RFD SOURCE/ BASIS	RFD UNCERTAINTY ADJUSTMENTS	MODIFYING FACTORS	HAZARD QUOTIENT	PATHWAY HAZARD INDEX (HI)	TOTAL EXPOSURE HI
EXPOSURE PATHWAY: DERMAL CONTACT WITH CHEMICALS IN SOIL										9E-01	1E+00
INORGANICS											
Arsenic	9.0E-05	0.10	1E-03	NA	Keratosis and hyperpigmentation	NA/HEAST	1		9E-01		

TABLE 6-20
SUMMARY OF CANCER RISK ESTIMATES - SCENARIO 3: CHILDREN

CHEMICAL	CHRONIC DAILY INTAKE(CDI) (mg/kg/day)	CDI ADJUSTED FOR ABSORPTION	SF (mg/kg/day)-1	WEIGHT OF EVIDENCE	TYPE OF CANCER	SF BASIS/ SOURCE	CHEMICAL SPECIFIC RISK	TOTAL PATHWAY RISK	TOTAL EXPOSURE RISK
EXPOSURE PATHWAY: INGESTION OF CHEMICALS IN DRINKING WATER								2E-04	2E-03
INORGANICS									
Arsenic	9.8E-05	No	1.75E+00	A	Skin	Water/IRIS	2E-04		
EXPOSURE PATHWAY: DERMAL CONTACT WITH CHEMICALS IN SOIL -								2E-03	
INORGANICS									
Arsenic	1.1E-04	0.10	1.75E+00	A	Skin	Water/IRIS	2E-03		

TABLE 6-21
SUMMARY OF CANCER RISK ESTIMATES - SCENARIO 3: ADULT

CHEMICAL	CHRONIC DAILY INTAKE(CDI) (mg/kg/day)	CDI ADJUSTED FOR ABSORPTION	SF (mg/kg/day)-1	WEIGHT OF EVIDENCE	TYPE OF CANCER	SF BASIS/ SOURCE	CHEMICAL SPECIFIC RISK	TOTAL PATHWAY RISK	TOTAL EXPOSURE RISK
EXPOSURE PATHWAY: INGESTION OF CHEMICALS IN DRINKING WATER								5E-04	7E-03
INORGANICS									
Arsenic	3.0E-04	No	1.75E+00	A	Skin	Water/IRIS	5E-04		
EXPOSURE PATHWAY: DERMAL CONTACT WITH CHEMICALS IN SOIL -								7E-03	
INORGANICS									
Arsenic	3.8E-04	0.10	1.75E+00	A	Skin	Water/IRIS	7E-03		

TABLE 6-22
SUMMARY OF CHRONIC HAZARD INDEX ESTIMATES - SCENARIO 3: CHILDREN

CHEMICAL	CHRONIC DAILY INTAKE(CDI) (mg/kg/day)	CDI ADJUSTED FOR ABSORPTION	RFD (mg/kg/day)	CONFIDENCE LEVEL	CRITICAL EFFECT	RFD SOURCE/ BASIS	RFD UNCERTAINTY ADJUSTMENTS	MODIFYING FACTORS	HAZARD QUOTIENT	PATHWAY HAZARD INDEX (HI)	TOTAL EXPOSURE HI
EXPOSURE PATHWAY: INGESTION OF CHEMICALS IN DRINKING WATER - CHILDREN										84	100
INORGANICS											
Arsenic	1.1E-03	No	1E-03	NA					1E+00		
Chromium VI	1.6E-02	No	5E-03	Low	No effect reported	Water/IRIS	500	1	3E+00		
Manganese	7.6E+00	No	1E-01	Medium	CNS effects	Diet/HEAST	1	1	8E+01		
EXPOSURE PATHWAY: DERMAL CONTACT WITH CHEMICALS IN SOIL - CHILDREN										13	
INORGANICS											
Arsenic	1.3E-03	0.10	1E-03	NA	Keratosis and hyperpigmentation	NA/HEAST	1		13		
EXPOSURE PATHWAY: INGESTION OF CHEMICALS IN SOIL AND HOUSE DUST - CHILDREN										3	
INORGANICS											
Chromium VI	6.3E-03	No	5E-03	Low	No effect reported	Water/IRIS	500	1	1E+00		

TABLE 6-23

SUMMARY OF CHRONIC HAZARD INDEX ESTIMATES - SCENARIO 3: ADULT

CHEMICAL	CHRONIC DAILY INTAKE(CDI) (mg/kg/day)	CDI ADJUSTED FOR ABSORPTION	RFD (mg/kg/day)	CONFIDENCE LEVEL	CRITICAL EFFECT	RFD SOURCE/ BASIS	RFD UNCERTAINTY ADJUSTMENTS	MODIFYING FACTORS	HAZARD QUOTIENT	PATHWAY HAZARD INDEX (HI)	TOTAL EXPOSURE HI
EXPOSURE PATHWAY: INGESTION OF CHEMICALS IN DRINKING WATER - ADULT										51	60
INORGANICS											
Chromium VI	9.6E-03	No	5E-03	Low	No effect reported	Water/IRIS	500	1	2E+00		
Manganese	4.6E+00	No	1E-01	Medium	CNS effects	Diet/HEAST	1	1	5E+01		
EXPOSURE PATHWAY: DERMAL CONTACT WITH CHEMICALS IN SOIL - ADULT										9	
INORGANICS					Keratosis						
Arsenic	8.9E-04	0.10	1E-03	NA	and hyperpigmentation	NA/HEAST	1		9		

Table 6-24

COMPOUNDS ADDRESSED QUALITATIVELY IN THE HEALTH RISK ASSESSMENT

Compound	Matrix
Semi-Volatiles	
1,2-dichlorobenzene	surface soil; subsurface soil
1,4-dichlorobenzene	surface soil
butyl benzylphthalate	surface soil
dibenzo(a)anthracene	surface soil; subsurface soil
di-n-octylphthalate	surface soil
Acenaphthene	subsurface soil
Phenol	surface soil; subsurface soil
4-Methylphenol (p-cresol)	surface soil
2,4-Dinethylphenol	surface soil; subsurface soil
Benzoic Acid	surface soil
Inorganics	
Antimony	surface soil
Selenium	surface soil; subsurface soil
Silver	surface soil
Thallium	surface soil; surface water

TABLE 6-25
SUMMARY OF EXPOSURE PATHWAYS

Potentially Exposed Population	Exposure Route, Medium and Exposure Point	Pathway Selected for Evaluation?	Reason for Selection or Inclusion
Current Land Use			
Residents	Ingestion of ground water from local wells down gradient of the site	No	No impacts found
Residents	Ingestion of soils on site	Yes	Access to site unrestricted
Residents	Ingestion of sediments on site	No	Ingestion of soils characterizes equal or greater risk
Residents	Ingestion of surface water on site	Yes	Access to site unrestricted
Residents	Dermal contact with soils	Yes	Access to site unrestricted
Residents	Dermal contact with sediments	No	Dermal contact with soils characterizes equal or greater risk
Residents	Inhalation of fugitive dusts	No	Site heavily vegetated
Residents	Dermal contact with surface water	Yes	Access to site unrestricted
Future Land Use			
Residents	Ingestion of ground water from local wells on the site	Yes	Potential residential use of site
Residents	Ingestion of soils on site	Yes	Potential residential use of site
Residents	Ingestion of sediments on site	No	Ingestion of soils characterizes equal or greater risk
Residents	Ingestion of surface water on site	No	Contact route unlikely; ground water available for ingestion
Residents	Dermal contact with soils	Yes	Potential residential use of site
Residents	Dermal contact with sediments	No	Dermal contact with soils characterizes equal or greater risk
Residents	Inhalation of fugitive dusts	Yes	Potential residential use of site may produce areas devoid of cover
Residents	Inhalation of chemicals volatilized from ground water during home use	Yes	Potential residential use of site; volatile organics in ground water
Construction Workers	Ingestion of ground water from local wells	No	Wells not developed during construction
Construction Workers	Ingestion of soils on site	Yes	Incidental ingestion expected
Construction Workers	Ingestion of sediments on site	No	Contact route unlikely; ingestion of soils characterizes equal or greater risk
Construction Workers	Ingestion of surface water on site	No	Contact route unlikely
Construction Workers	Dermal contact with soils	Yes	Contact with soils expected during construction
Construction Workers	Dermal contact with sediments	No	Contact route unlikely
Construction Workers	Inhalation of fugitive dusts	Yes	Generation of fugitive dust expected during construction

Table 6-26

ESSENTIAL ELEMENTS FOUND IN THE SOILS OF THE HERTEL LANDFILL

Aluminum
Calcium
Cobalt
Copper
Iron
Magnesium
Manganese
Potassium
Sodium
Zinc
Aluminum

Table 6-27

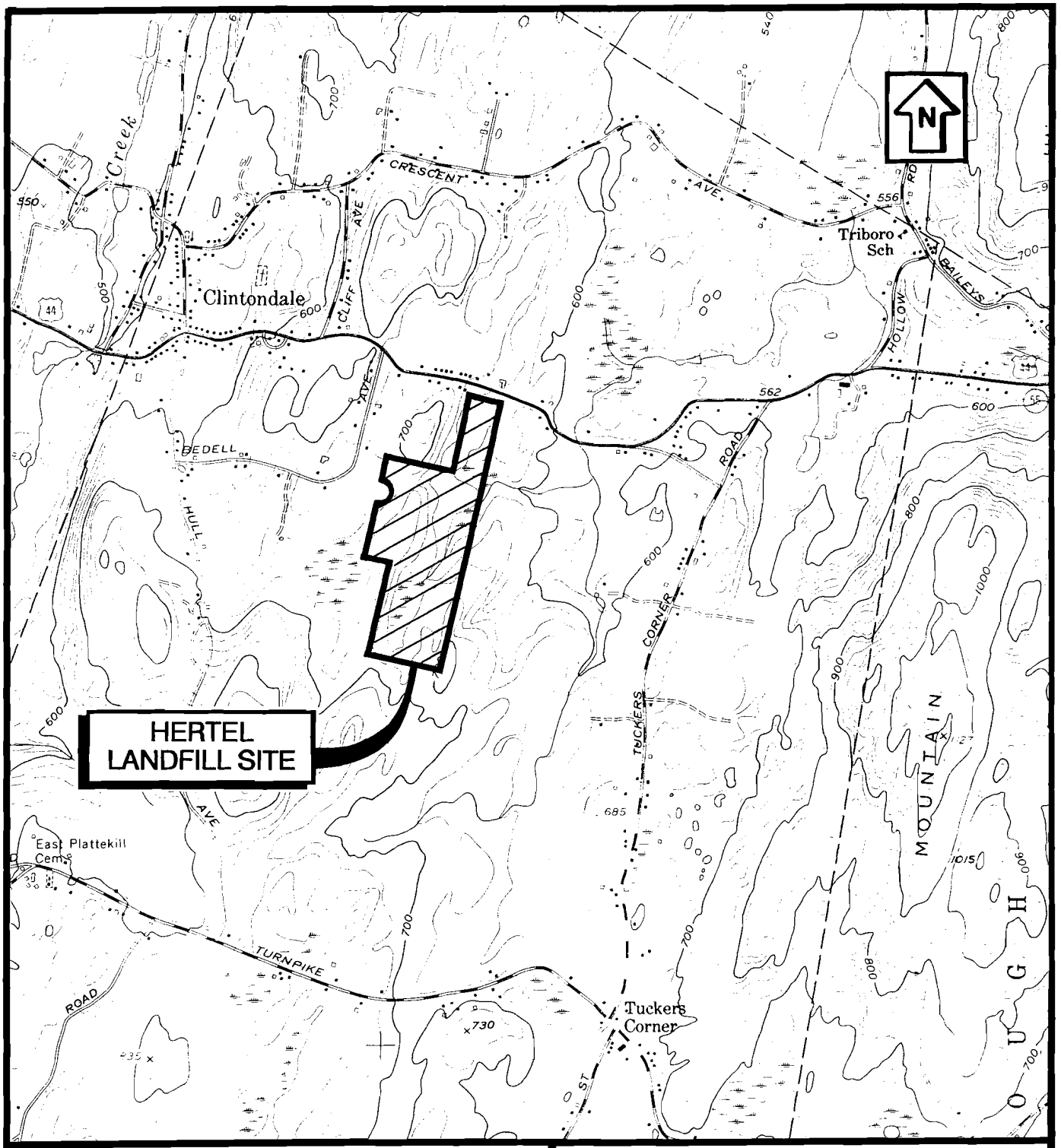
EXCEEDANCE OF BACKGROUND CONCENTRATIONS OF VARIOUS ELEMENTS AT THE HERTEL SITE

	Background		
	EPA	USGS	On Site
Aluminum			x
Barium			x
Cadmium	x		x
Calcium			x
Chromium			x
Copper	x		x
Iron	x	x	x
Lead	x	x	x
Magnesium	x		x
Mercury	x		x
Potassium			x
Selenium	x	x	x
Sodium			x
Zinc			x

Table 6-28

NON-ESSENTIAL NUTRIENTS IN SOILS

Arsenic
Antimony
Cadmium
Chromium
Lead
Mercury
Nickel
Selenium
Thallium
Vandium



From Clintondale, NY U.S.G.S. 7.5' Topographic Map, 1957

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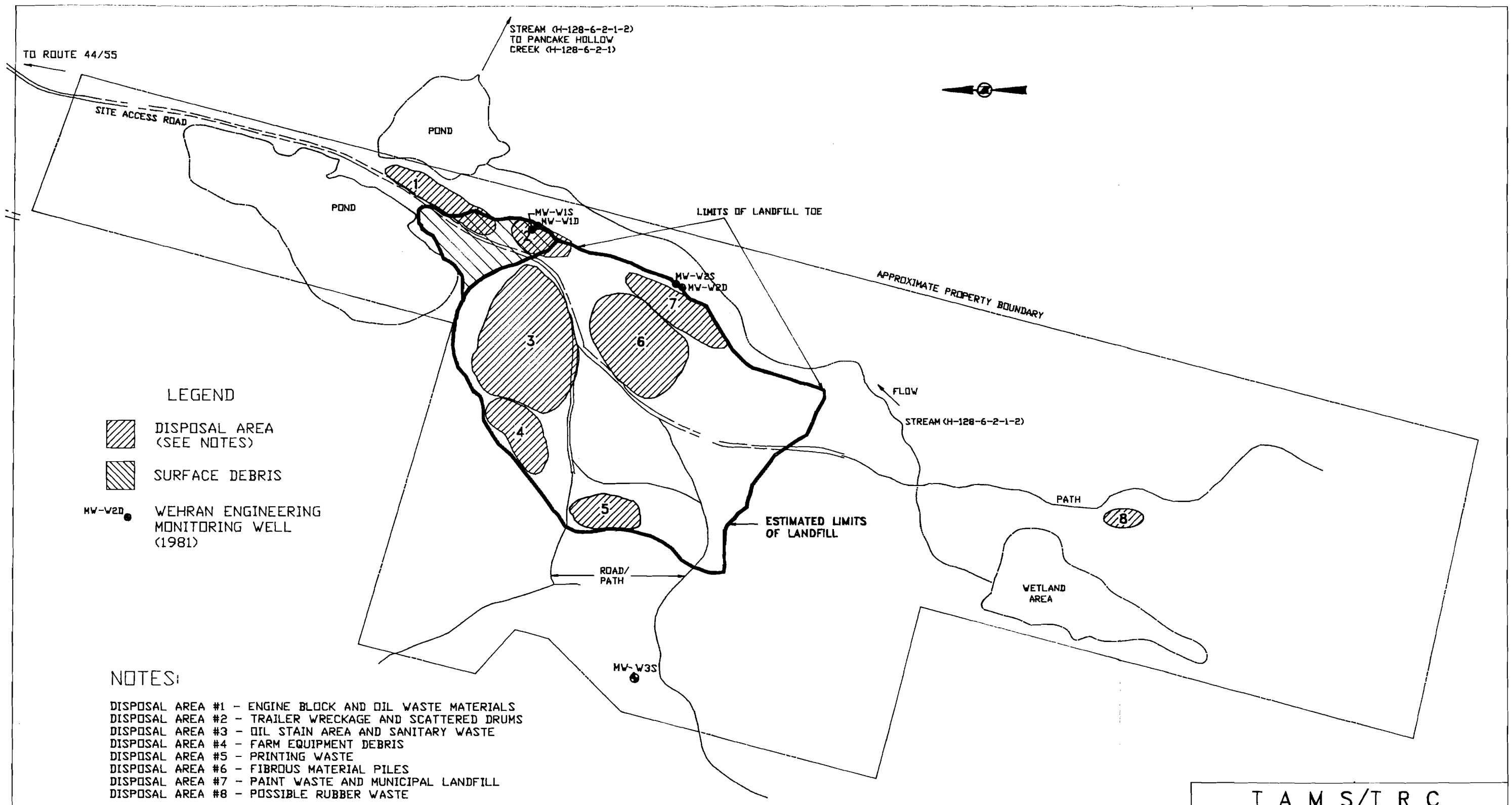
FIGURE 1-1.

SITE LOCATION MAP



NOTES:

DISPOSAL AREA #1 - ENGINE BLOCK AND OIL WASTE MATERIALS
DISPOSAL AREA #2 - TRAILER WRECKAGE AND SCATTERED DRUMS
DISPOSAL AREA #3 - OIL STAIN AREA AND SANITARY WASTE
DISPOSAL AREA #4 - FARM EQUIPMENT DEBRIS
DISPOSAL AREA #5 - PRINTING WASTE
DISPOSAL AREA #6 - FIBROUS MATERIAL PILES
DISPOSAL AREA #7 - PAINT WASTE AND MUNICIPAL LANDFILL
DISPOSAL AREA #8 - POSSIBLE RUBBER WASTE

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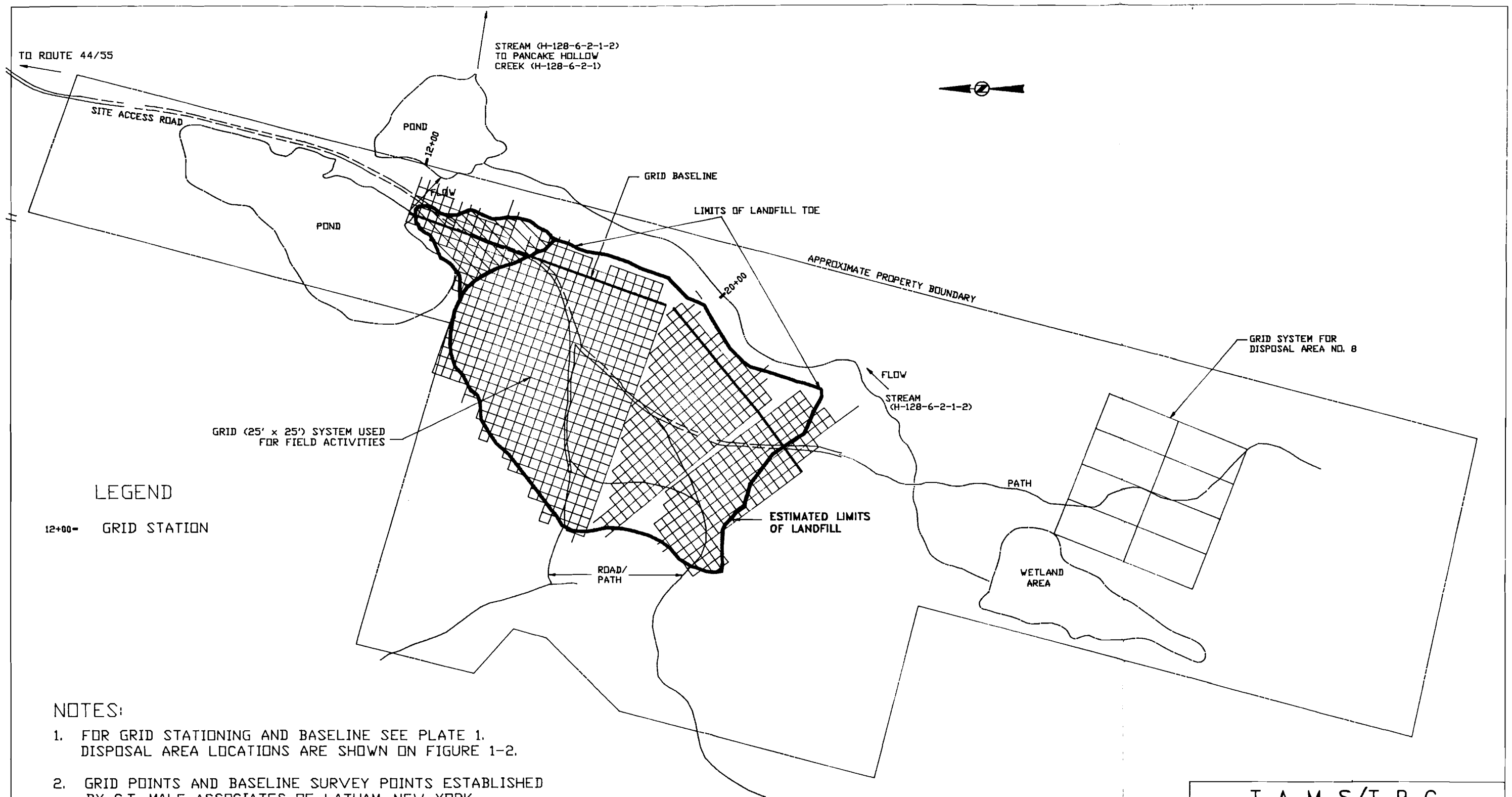
FIGURE 1-2.

HERTEL LANDFILL SITE MAP (DISPOSAL AREAS)



LEGEND

12+00= GRID STATION

NOTES:

1. FOR GRID STATIONING AND BASELINE SEE PLATE 1. DISPOSAL AREA LOCATIONS ARE SHOWN ON FIGURE 1-2.

2. GRID POINTS AND BASELINE SURVEY POINTS ESTABLISHED BY C.T. MALE ASSOCIATES OF LATHAM, NEW YORK

SCALE IN FEET
100 0 100 200 300

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FIGURE 2-1.

GRID LOCATION MAP

POND

POND

APPROXIMATE EAST PROPERTY BOUNDARY

?

?

?

?

?

?

FLOW

STREAM

LEGEND

EM-31 READINGS INDICATIVE OF METALLIC DEBRIS

? LIMITS OF ANOMALY OUTSIDE GRID ARE UNCERTAIN

NOTE:

1. EM SURVEY PERFORMED BY TAMS/TRC ON OCTOBER 25-26, 1989.

SCALE IN FEET

100 0 100 200 300

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FIGURE 2-2.

EM-31 SURVEY RESULTS

POND

POND

GRID

APPROXIMATE EAST PROPERTY BOUNDARY

FLOW

STREAM

LEGEND

ANOMALY DUE TO OBJECTS AT OR NEAR SURFACE

ANOMALY DUE TO BURIED OBJECTS

? LIMITS OF ANOMALY OUTSIDE GRID ARE UNCERTAIN

NOTE:
1. MAGNETOMETRY PERFORMED BY HAGER-RICHTER GEOSCIENCES, INC.

SCALE IN FEET

-100 0 100 200 300

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FIGURE 2-3.

MAGNETOMETER SURVEY RESULTS

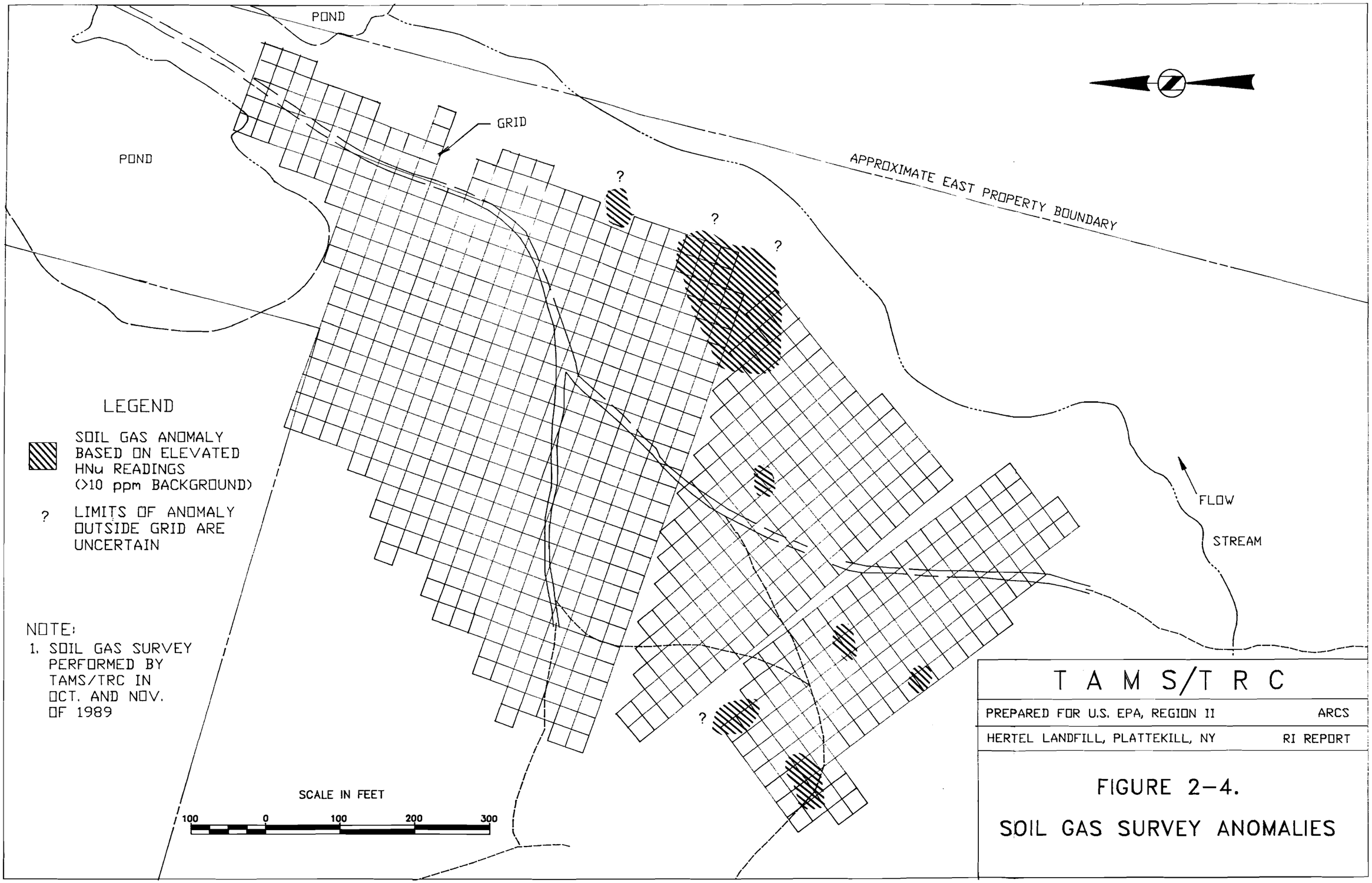
POND
POND
GRID
APPROXIMATE EAST PROPERTY BOUNDARY
?
?
?
?
FLOW
STREAM
LEGEND
SOIL GAS ANOMALY BASED ON ELEVATED HNu READINGS (>10 ppm BACKGROUND)
? LIMITS OF ANOMALY OUTSIDE GRID ARE UNCERTAIN
NOTE:
1. SOIL GAS SURVEY PERFORMED BY TAMS/TRC IN OCT. AND NOV. OF 1989
SCALE IN FEET
100 0 100 200 300
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FIGURE 2-4.
SOIL GAS SURVEY ANOMALIES

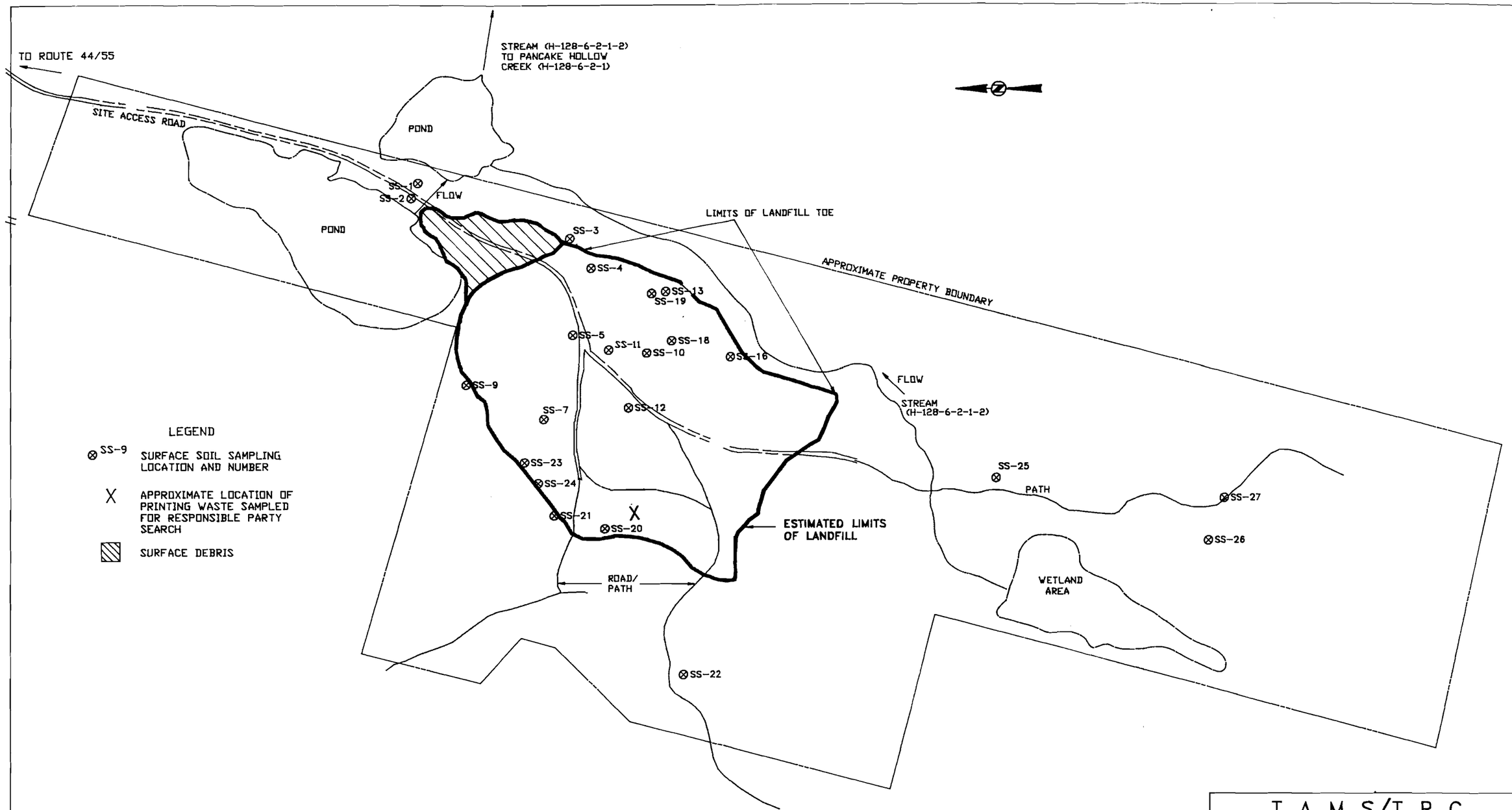

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FIGURE 2-5.
SURFACE SOIL SAMPLING LOCATIONS

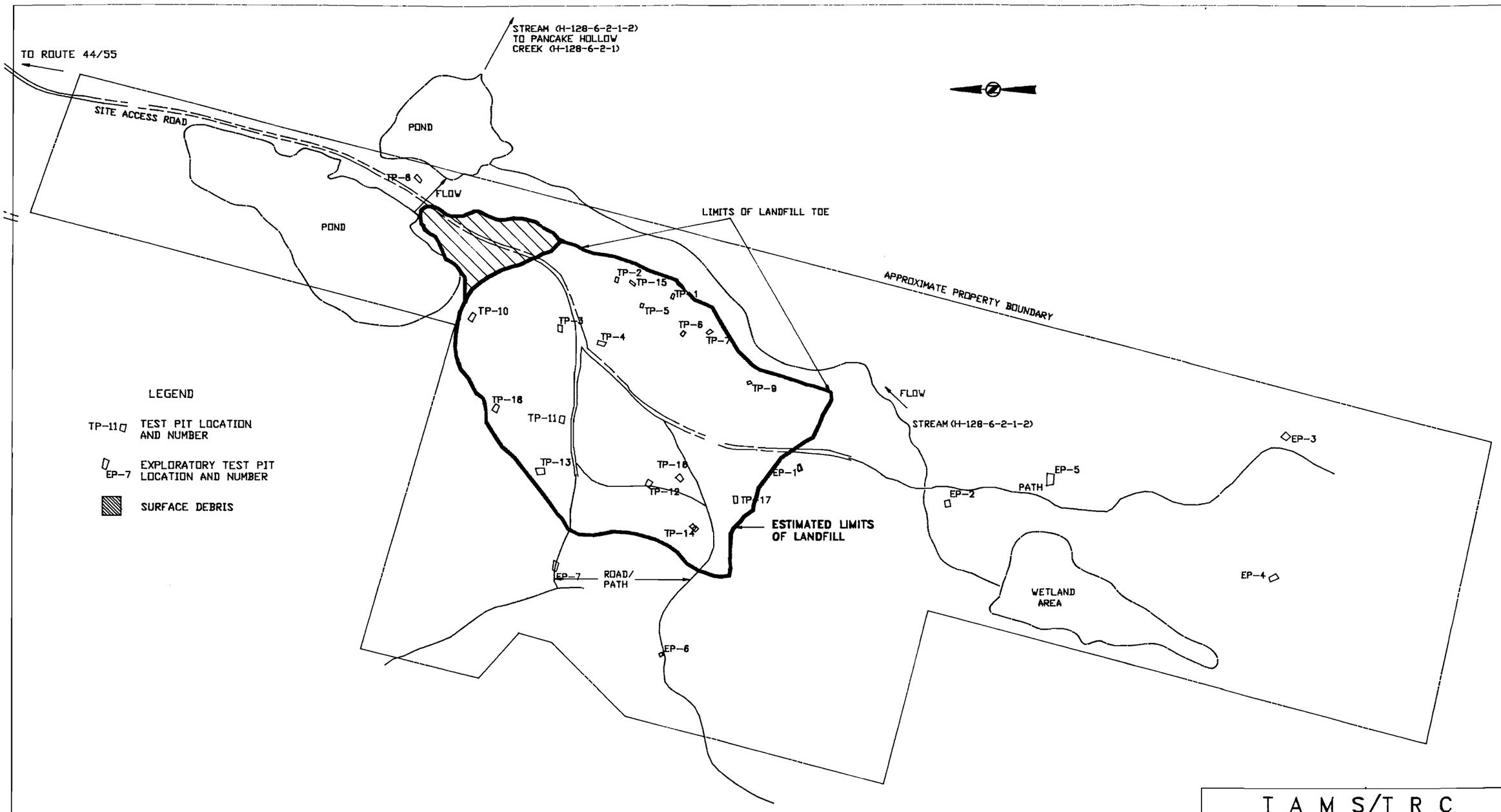

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FIGURE 2-6.

TEST PIT EXCAVATION LOCATIONS

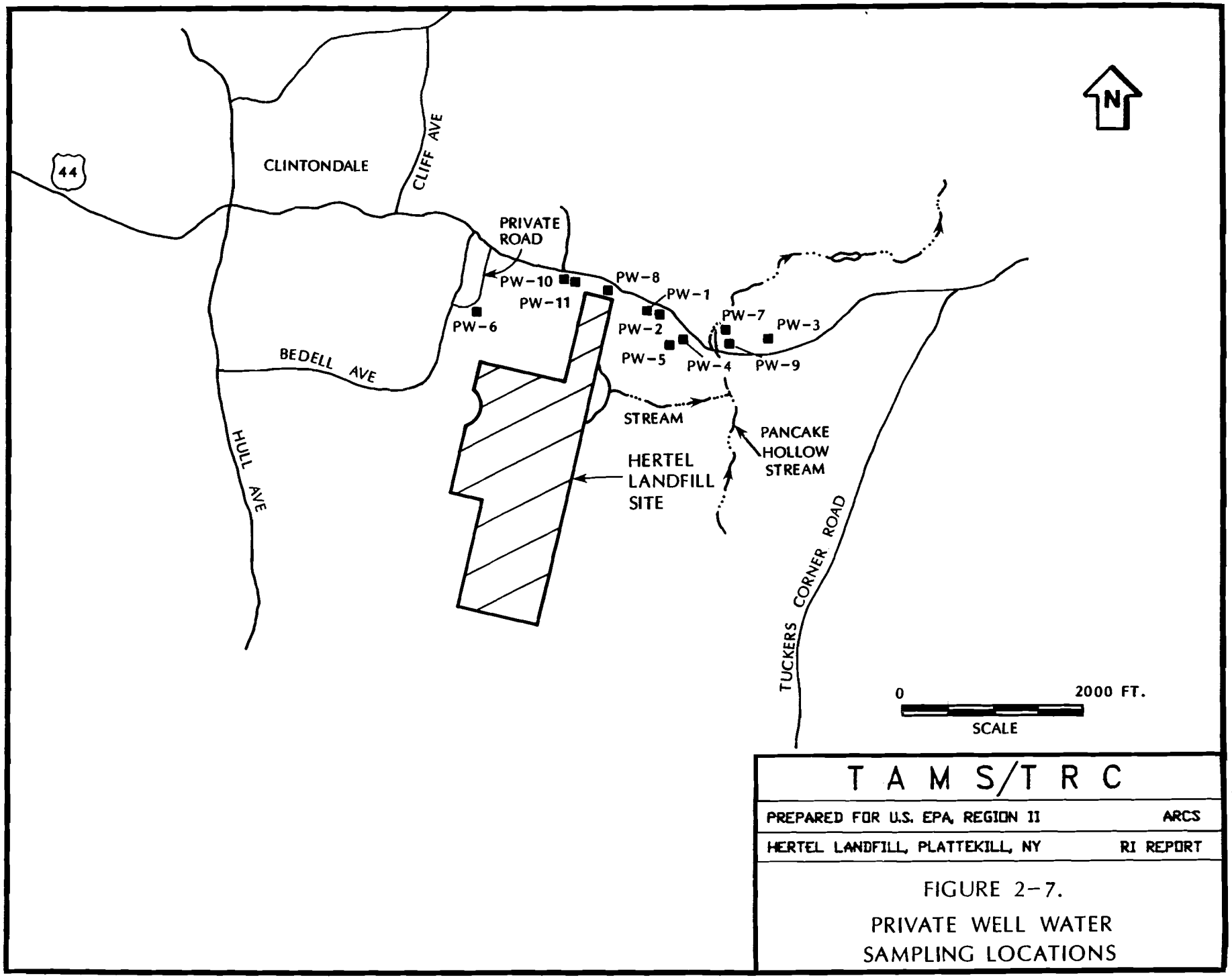

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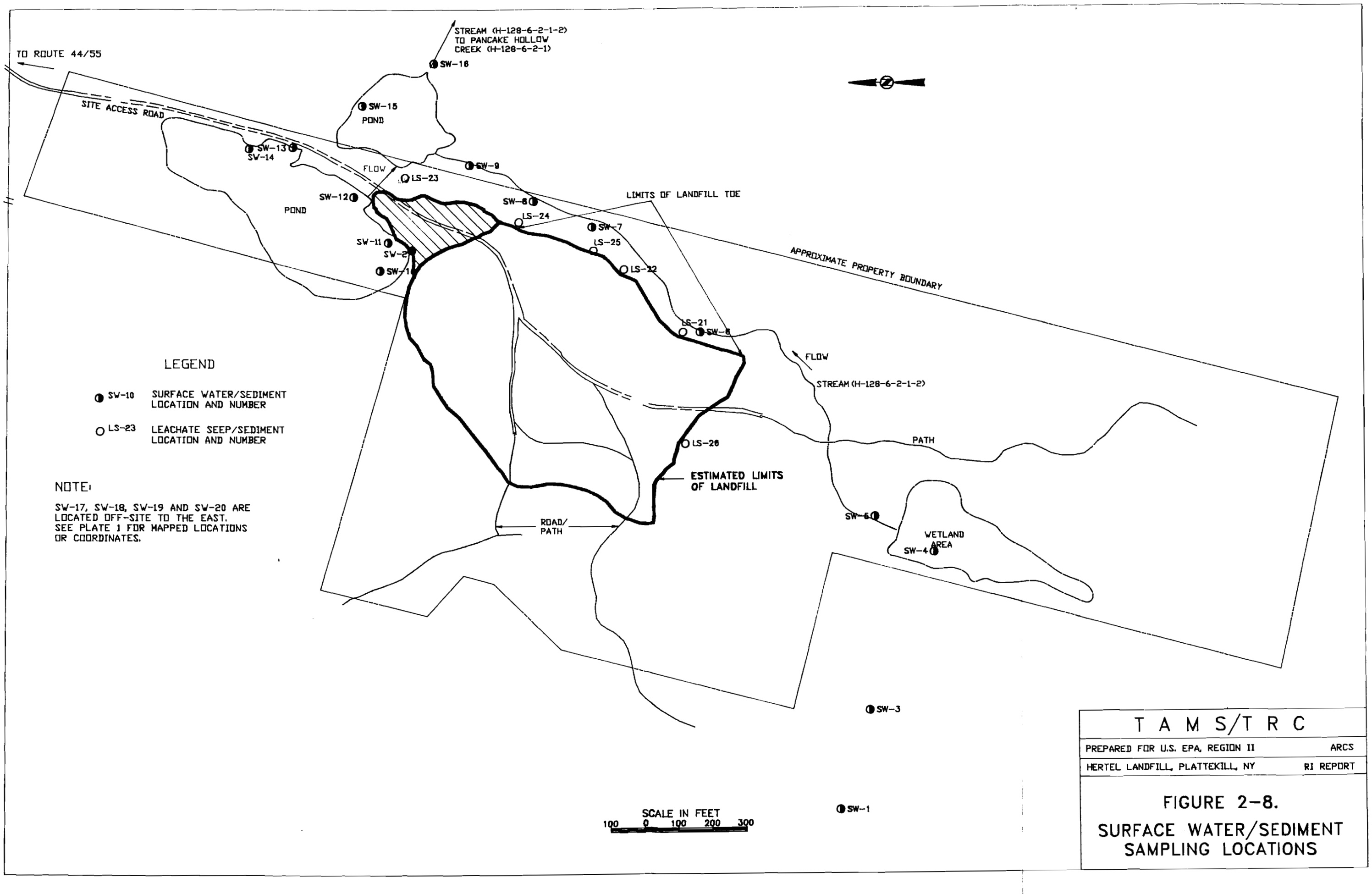
FIGURE 2-7.
PRIVATE WELL WATER
SAMPLING LOCATIONS



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HERTEL LANDFILL, PLATTEKILL, NY	RI REPORT

FIGURE 2-8.

SURFACE WATER/SEDIMENT SAMPLING LOCATIONS

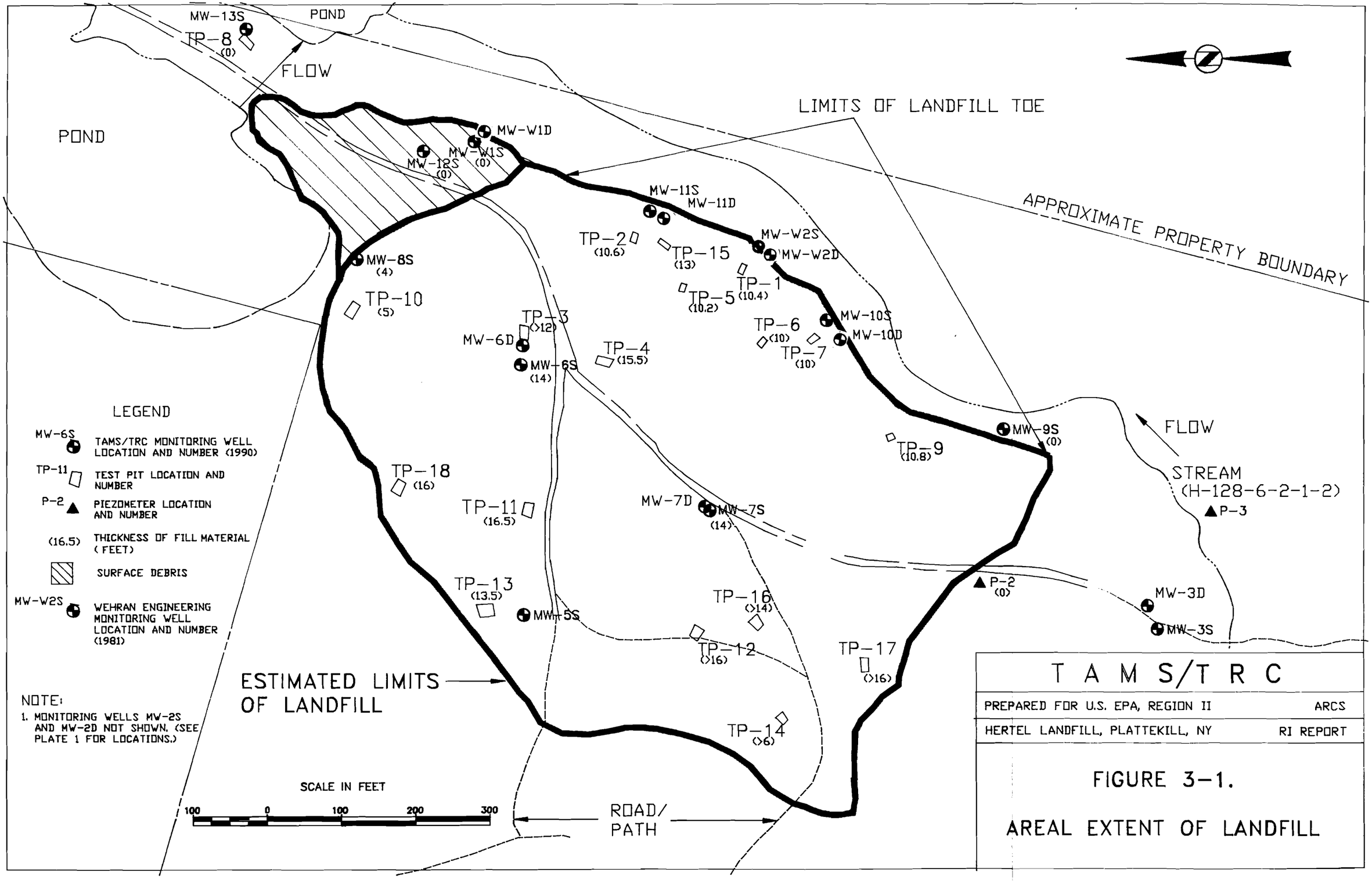

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FIGURE 3-1.

AREAL EXTENT OF LANDFILL

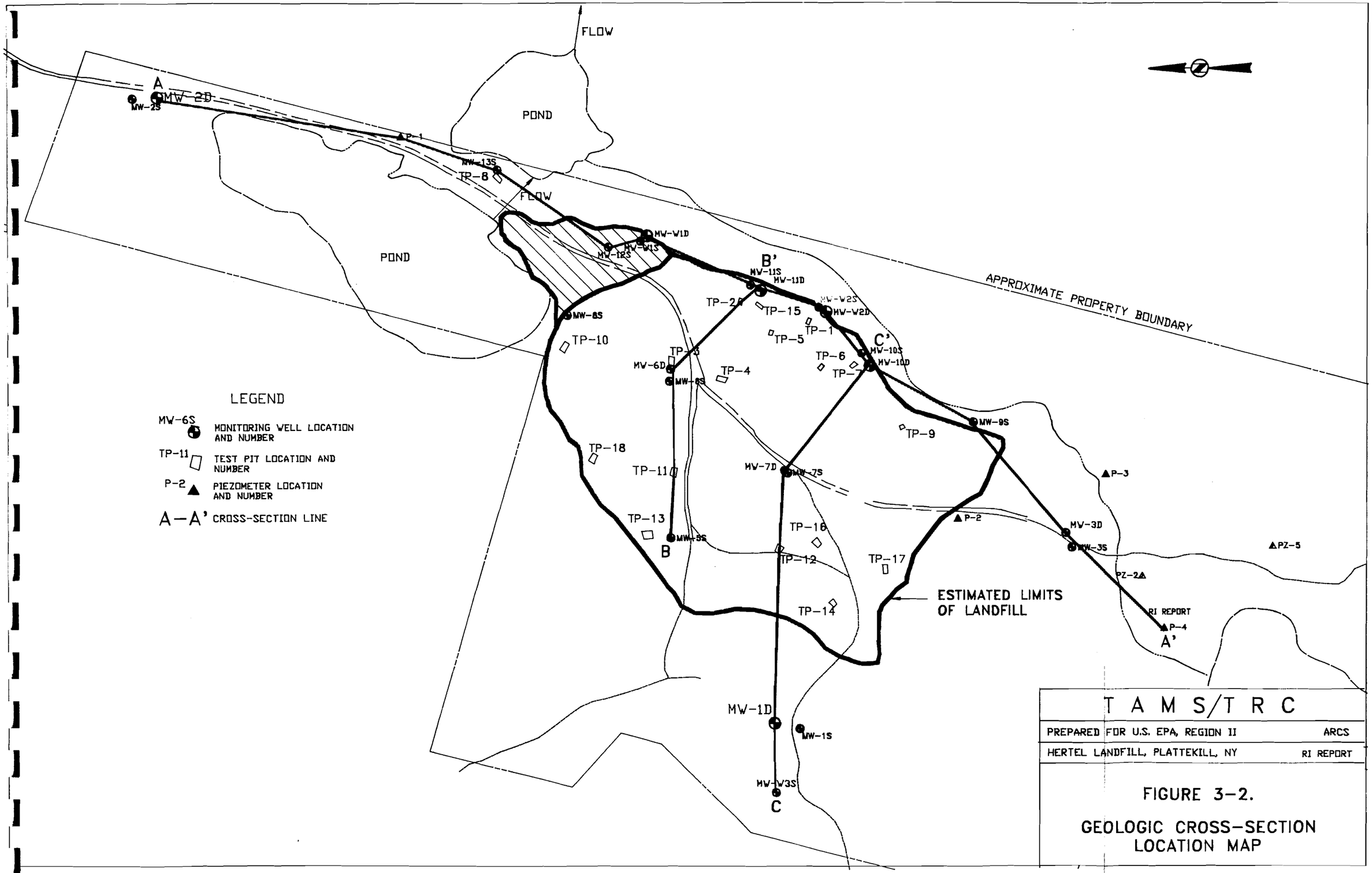

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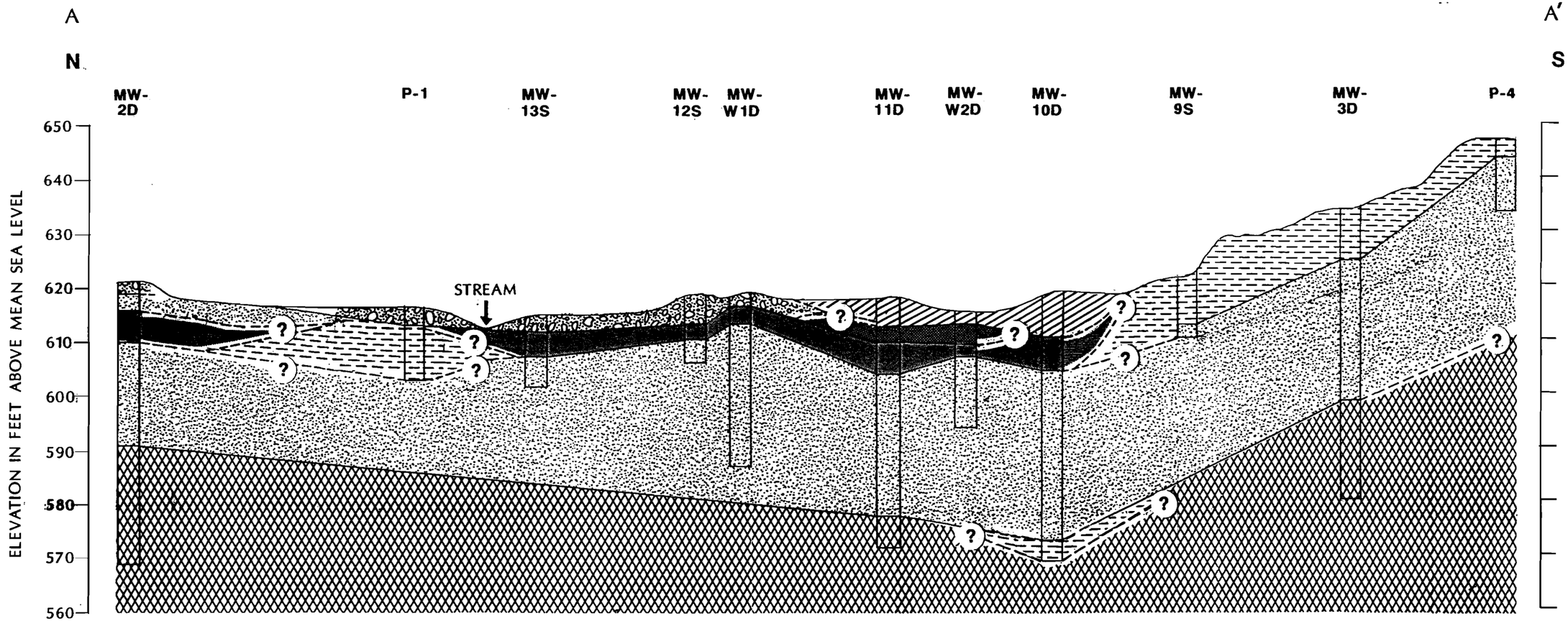
FIGURE 3-2.

GEOLOGIC CROSS-SECTION LOCATION MAP



LEGEND

- NATURAL FILL MATERIAL
- LANDFILL MATERIAL
- SAND & SILT
- SILT
- PEAT
- SAND/SAND & GRAVEL
- SANDSTONE

0 200 FT

HORIZONTAL SCALE
1 " = 200'

REFERENCE: FIGURE 3-2

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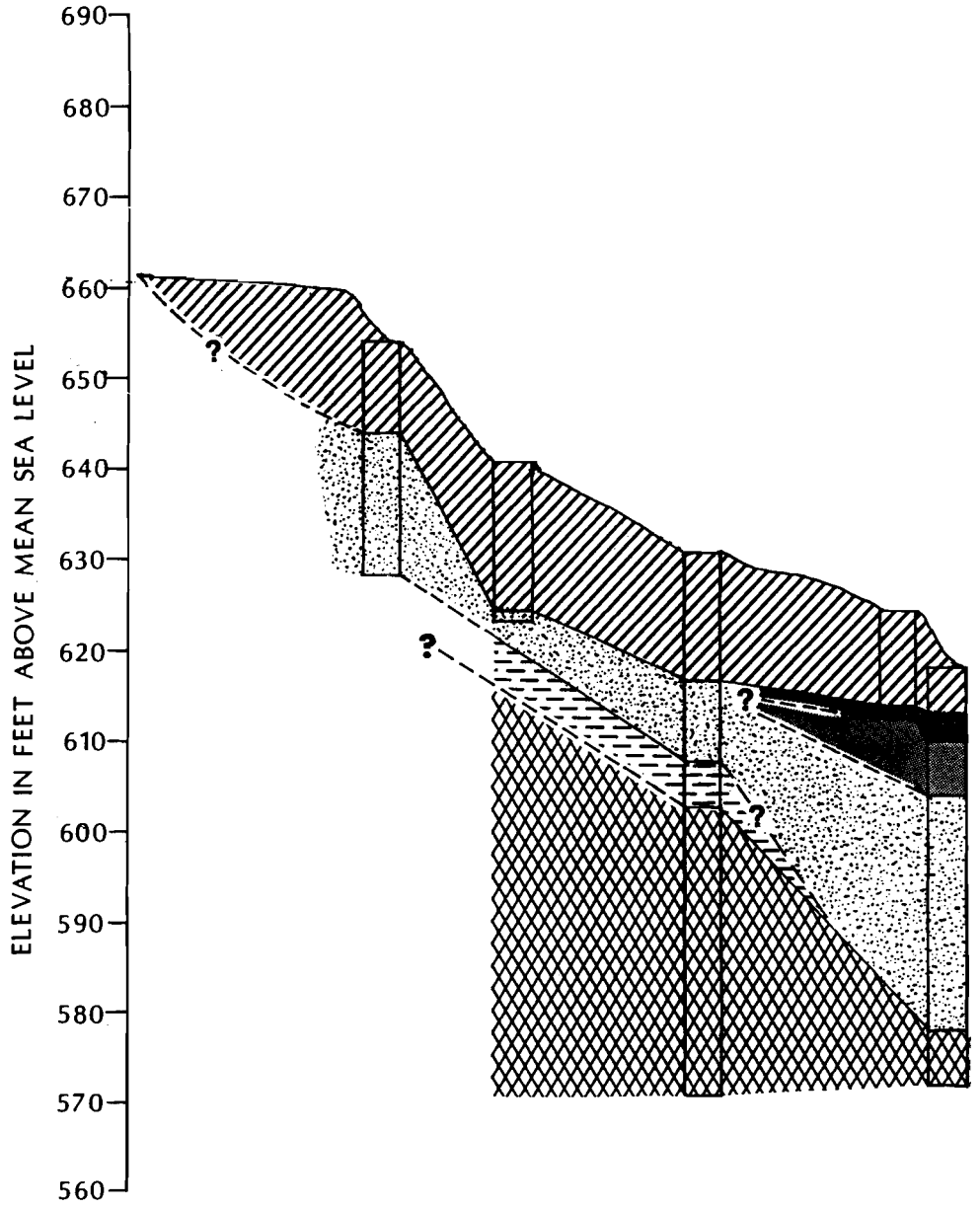
FIGURE 3-3.

GENERALIZED GEOLOGIC
CROSS-SECTION: A-A'
NORTH TO SOUTH



LEGEND

- LANDFILL MATERIAL
- SILT
- SAND & SILT
- PEAT
- SAND/SAND & GRAVEL
- SANDSTONE

REFERENCE: FIGURE 3-2

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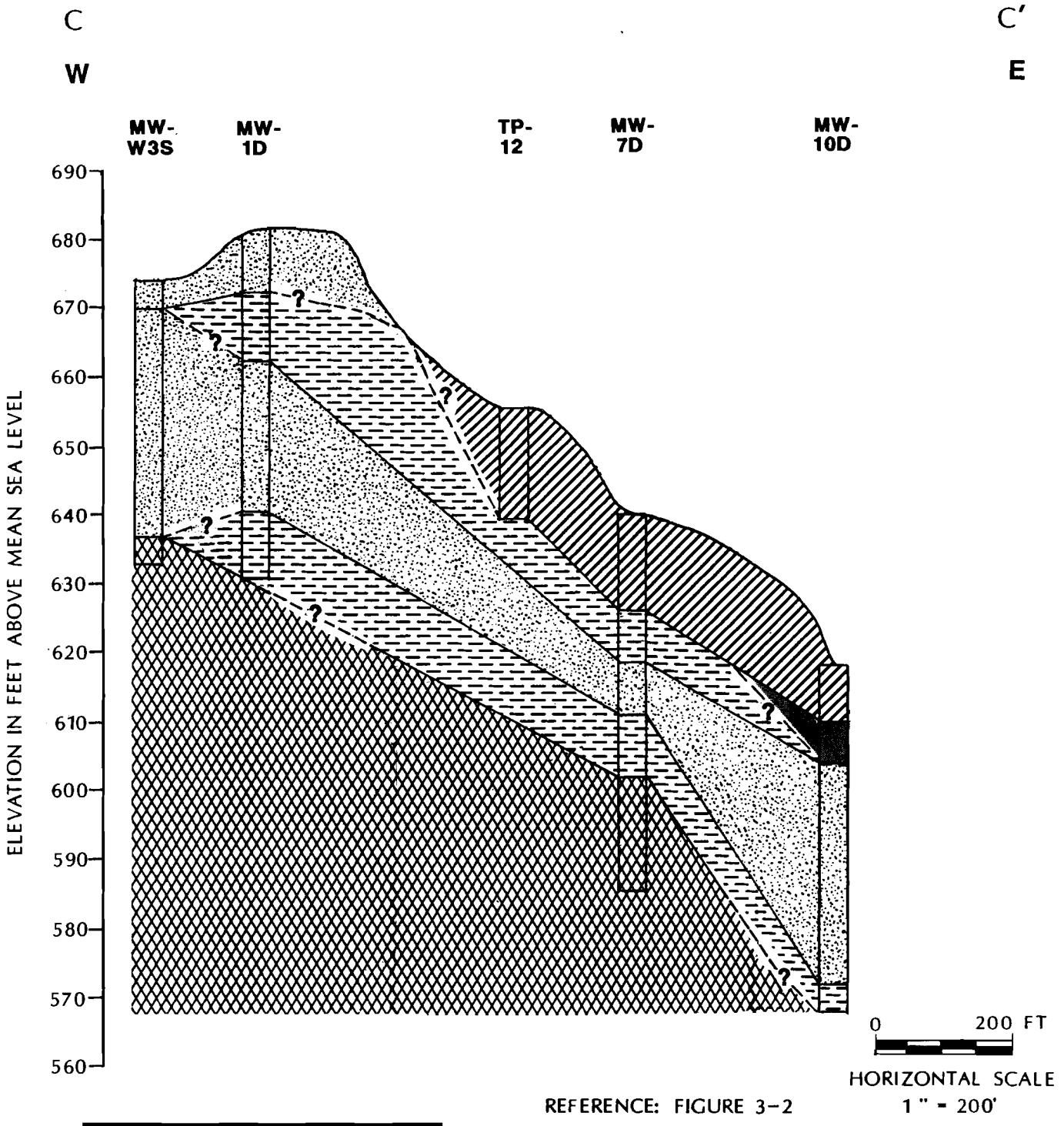
FIGURE 3-4.

GENERALIZED GEOLOGIC CROSS-SECTION: B-B' WEST TO EAST



REFERENCE: FIGURE 3-2

LEGEND

- LANDFILL MATERIAL
- SILT
- SAND & SILT
- SAND/SAND & GRAVEL
- SANDSTONE

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FIGURE 3-5.

GENERALIZED GEOLOGIC CROSS-SECTION: C-C'
WEST TO EAST

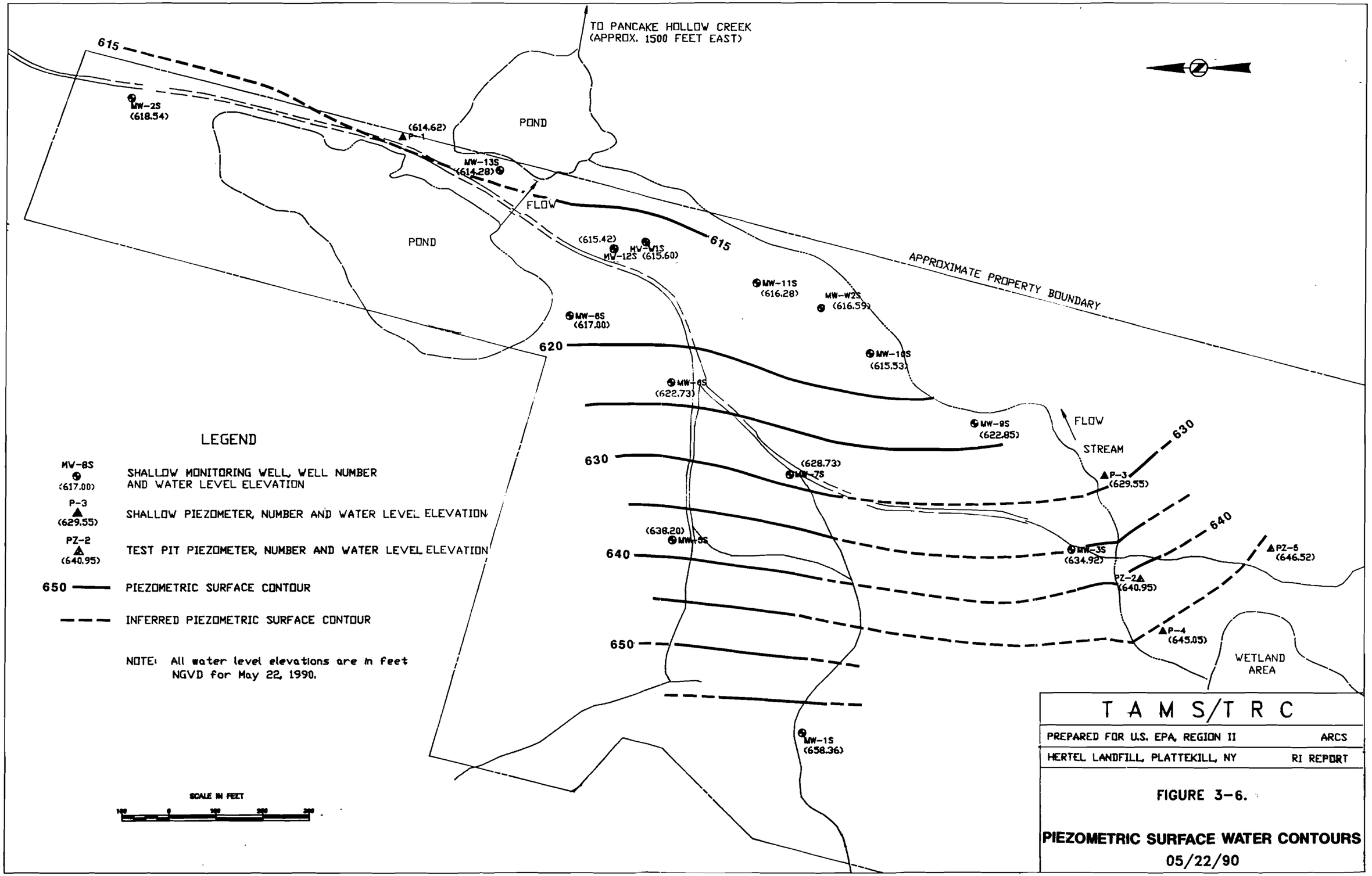

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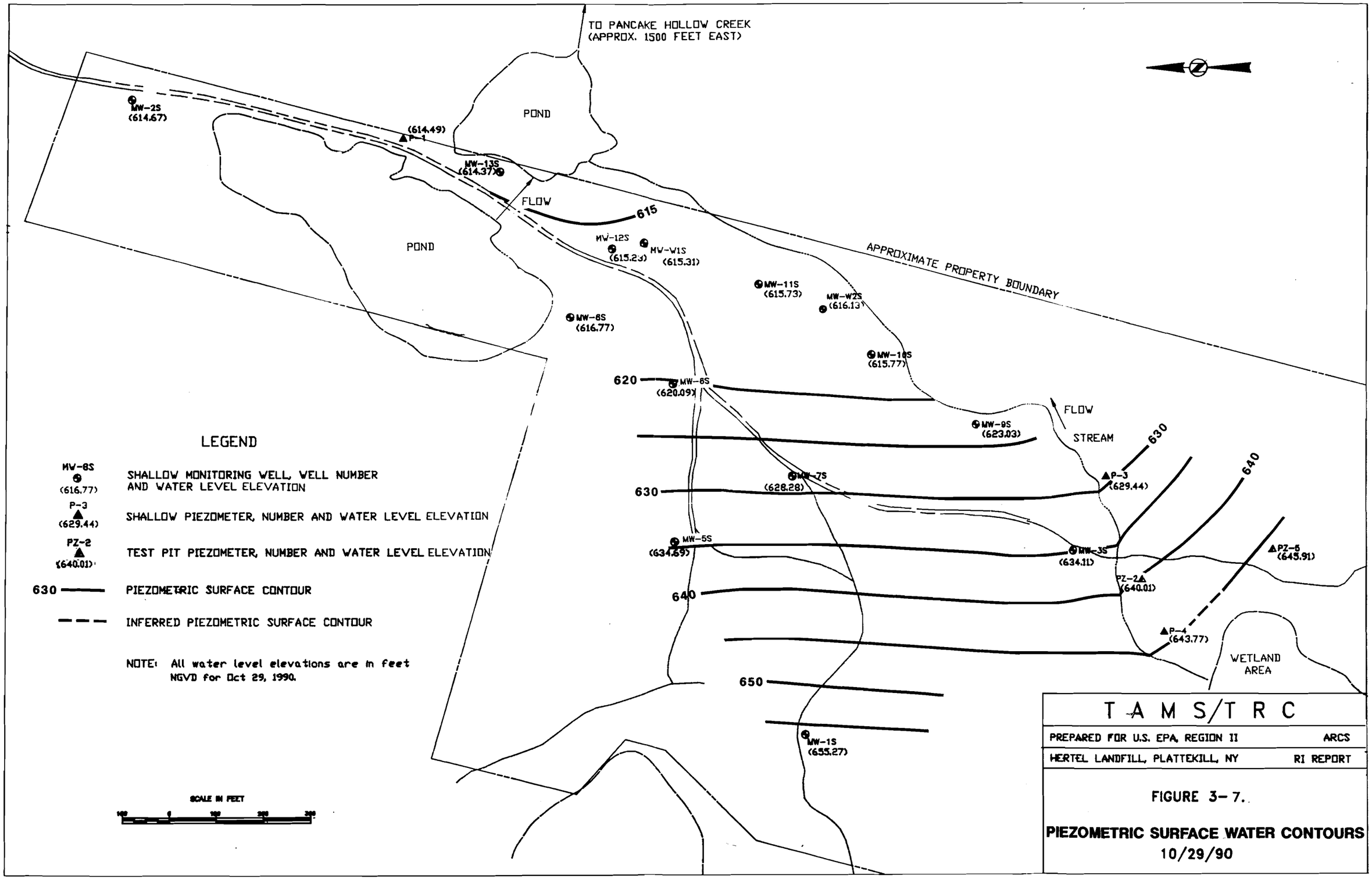
FIGURE 3-6.

PIEZOMETRIC SURFACE WATER CONTOURS

05/22/90


TO PANCAKE HOLLOW CREEK
(APPROX. 1500 FEET EAST)
N
MW-2S
(614.67)
(614.49)
P-1
MW-13S
(614.37)
POND
POND
FLOW
615
MW-12S
(615.23)
MW-W1S
(615.31)
APPROXIMATE PROPERTY BOUNDARY
MW-11S
(615.73)
MW-W2S
(616.13)
MW-6S
(616.77)
MW-10S
(615.77)
620
MW-8S
(620.09)
FLOW
STREAM
MW-9S
(623.03)
630
P-3
(629.44)
640
MW-7S
(628.28)
630
MW-5S
(634.69)
MW-3S
(634.11)
PZ-5
(645.91)
PZ-2
(640.01)
640
P-4
(643.77)
WETLAND
AREA
650
MW-1S
(655.27)
LEGEND
MW-8S (616.77) SHALLOW MONITORING WELL, WELL NUMBER AND WATER LEVEL ELEVATION
P-3 (629.44) SHALLOW PIEZOMETER, NUMBER AND WATER LEVEL ELEVATION
PZ-2 (640.01) TEST PIT PIEZOMETER, NUMBER AND WATER LEVEL ELEVATION
630 PIEZOMETRIC SURFACE CONTOUR
INFERRED PIEZOMETRIC SURFACE CONTOUR
NOTE: All water level elevations are in feet NGVD for Oct 29, 1990.
SCALE IN FEET
100 0 100 200 300
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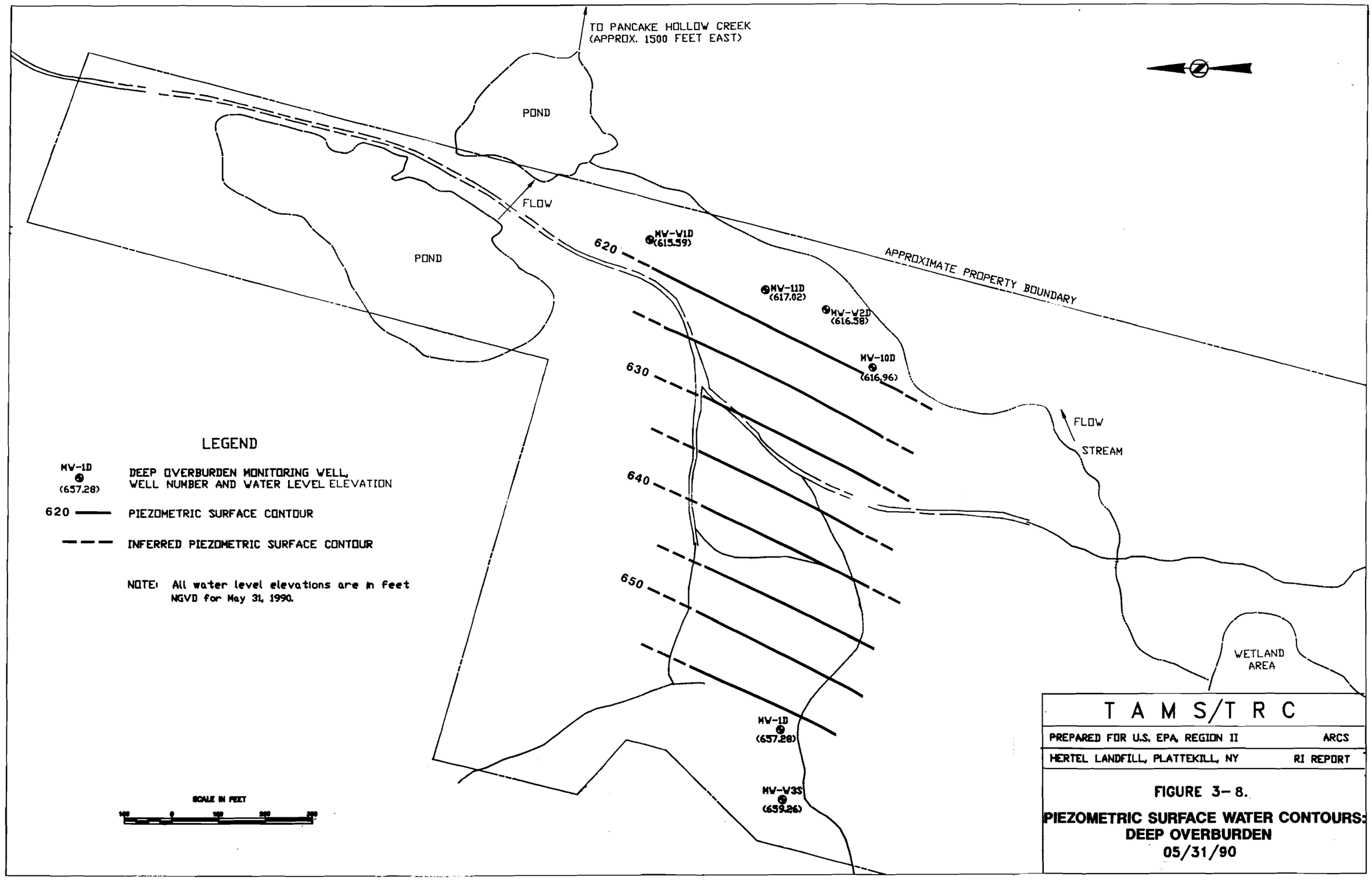
HERTEL LANDFILL, PLATTEKILL, NY RI REPORT
FIGURE 3-7.
PIEZOMETRIC SURFACE WATER CONTOURS
10/29/90


TO PANCAKE HOLLOW CREEK
(APPROX. 1500 FEET EAST)
POND
POND
FLOW
MW-W1D
(615.59)
620
MW-11D
(617.02)
MW-W2D
(616.58)
APPROXIMATE PROPERTY BOUNDARY
MW-10D
(616.96)
630
640
650
FLOW
STREAM
WETLAND
AREA
MW-1D
(657.28)
MW-W3S
(659.26)
LEGEND
MW-1D
(657.28)
DEEP OVERBURDEN MONITORING WELL, WELL NUMBER AND WATER LEVEL ELEVATION
620
PIEZOMETRIC SURFACE CONTOUR
INFERRED PIEZOMETRIC SURFACE CONTOUR
NOTE: All water level elevations are in feet NGVD for May 31, 1990.
SCALE IN FEET
T A M S/T R C
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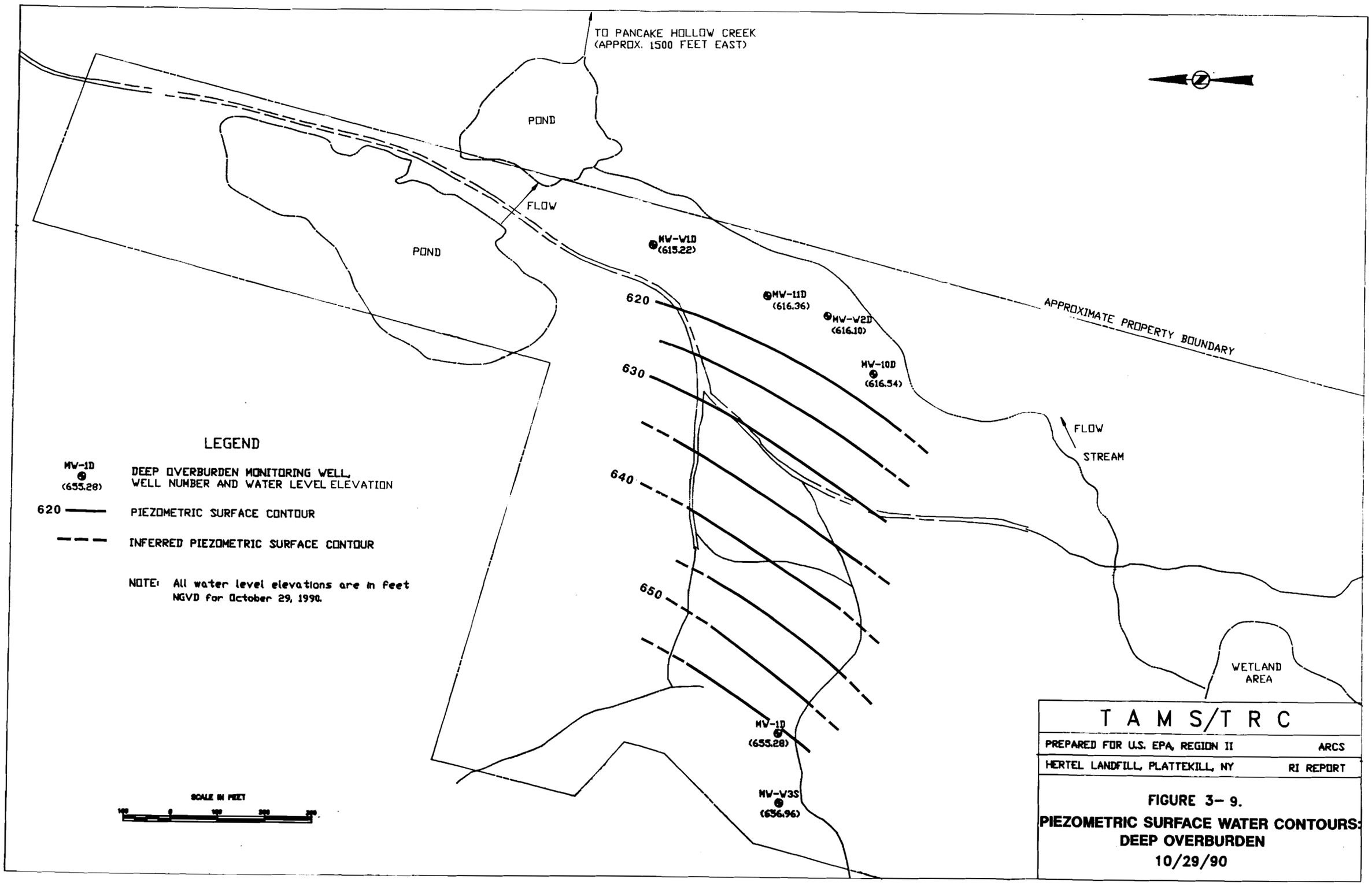
ARCS
HERTEL LANDFILL, PLATTEKILL, NY
RI REPORT
FIGURE 3-8.
PIEZOMETRIC SURFACE WATER CONTOURS: DEEP OVERBURDEN
05/31/90


TO PANCAKE HOLLOW CREEK
(APPROX. 1500 FEET EAST)
POND
POND
FLOW
MW-W1D
(615.22)
MW-11D
(616.36)
MW-W2D
(616.10)
MW-10D
(616.54)
APPROXIMATE PROPERTY BOUNDARY
620
630
640
650
FLOW
STREAM
WETLAND
AREA
MW-1D
(655.28)
MW-W3S
(656.96)
LEGEND
MW-1D
(655.28)
DEEP OVERBURDEN MONITORING WELL,
WELL NUMBER AND WATER LEVEL ELEVATION
620
PIEZOMETRIC SURFACE CONTOUR
INFERRED PIEZOMETRIC SURFACE CONTOUR
NOTE: All water level elevations are in feet
NGVD for October 29, 1990.
SCALE IN FEET
100 0 100 200 300
T A M S/T R C
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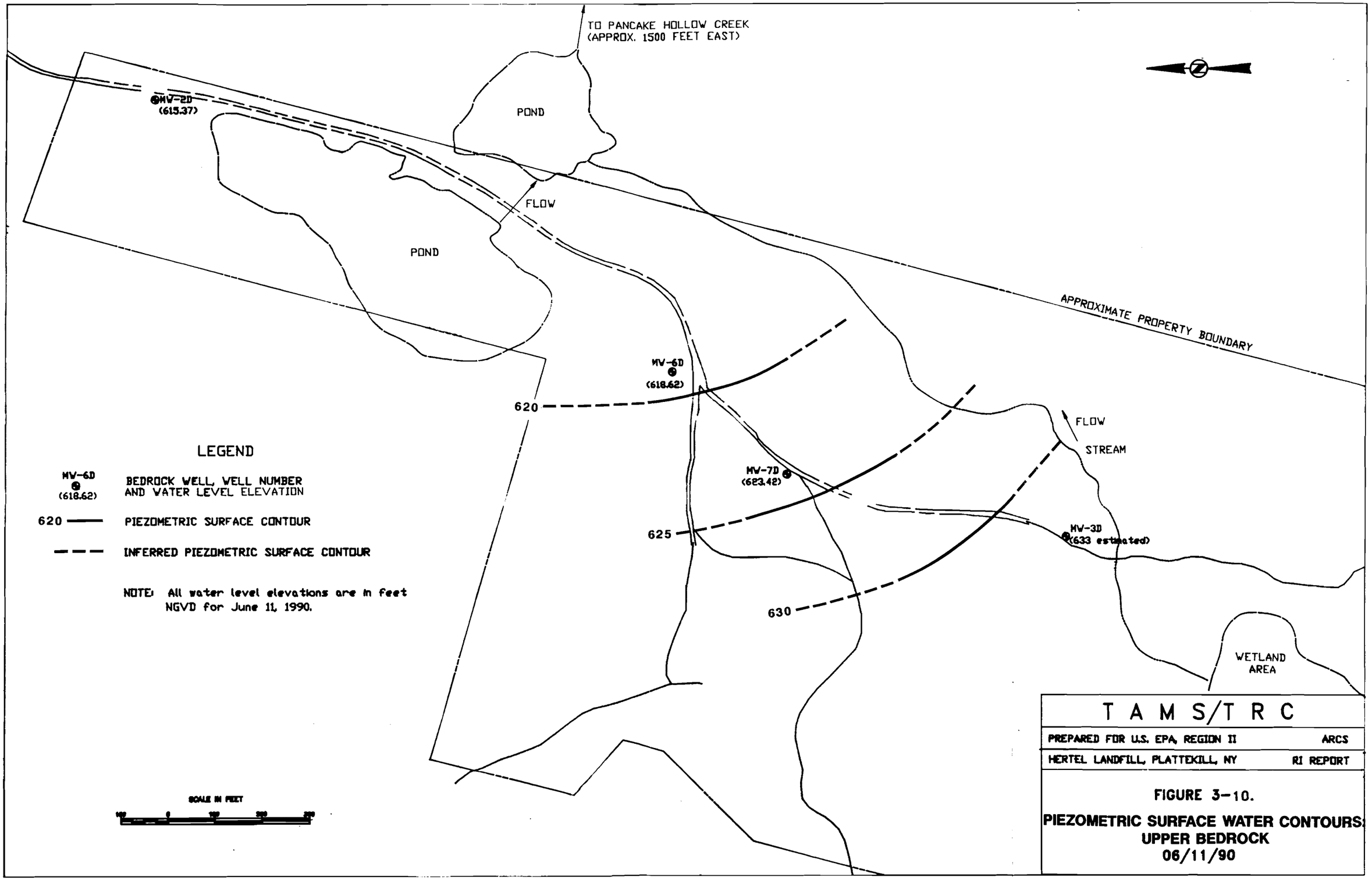
ARCS
HERTEL LANDFILL, PLATTEKILL, NY
RI REPORT
FIGURE 3– 9.
PIEZOMETRIC SURFACE WATER CONTOURS:
DEEP OVERBURDEN
10/29/90



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HERTEL LANDFILL, PLATTEKILL, NY — RI REPORT

FIGURE 3-10.

PIEZOMETRIC SURFACE WATER CONTOURS: UPPER BEDROCK 06/11/90

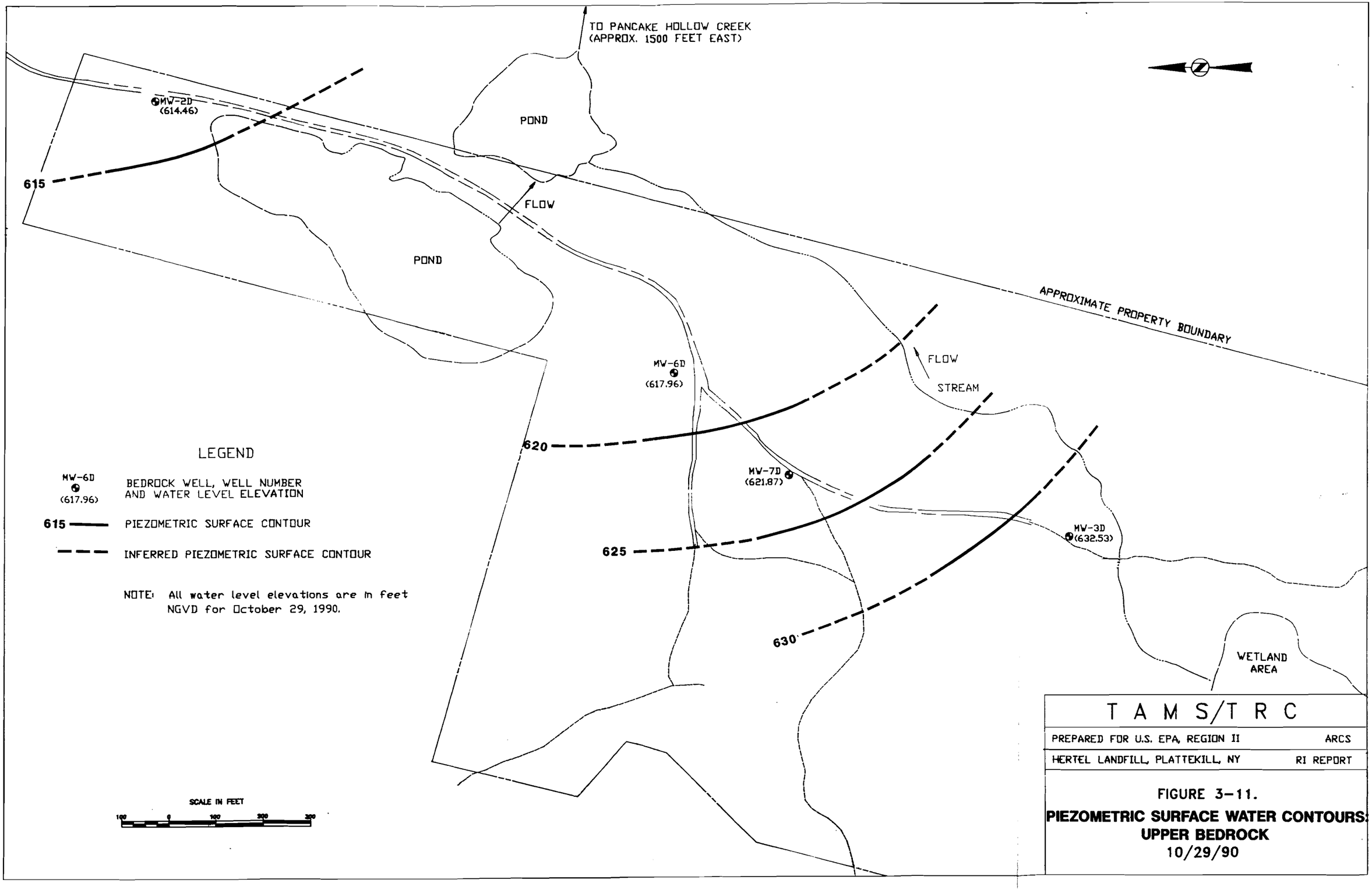

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FIGURE 3-11.

PIEZOMETRIC SURFACE WATER CONTOURS: UPPER BEDROCK

10/29/90

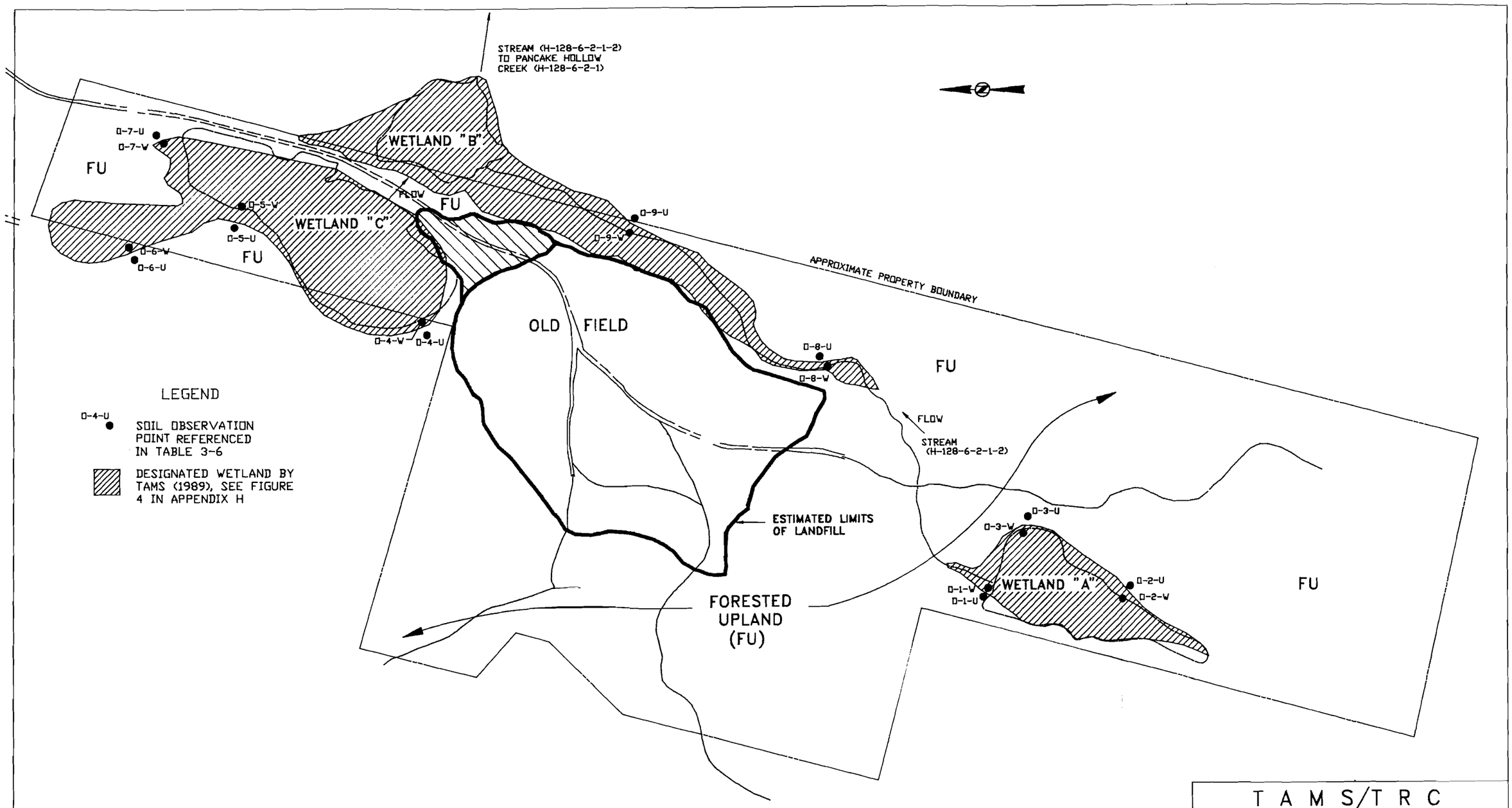

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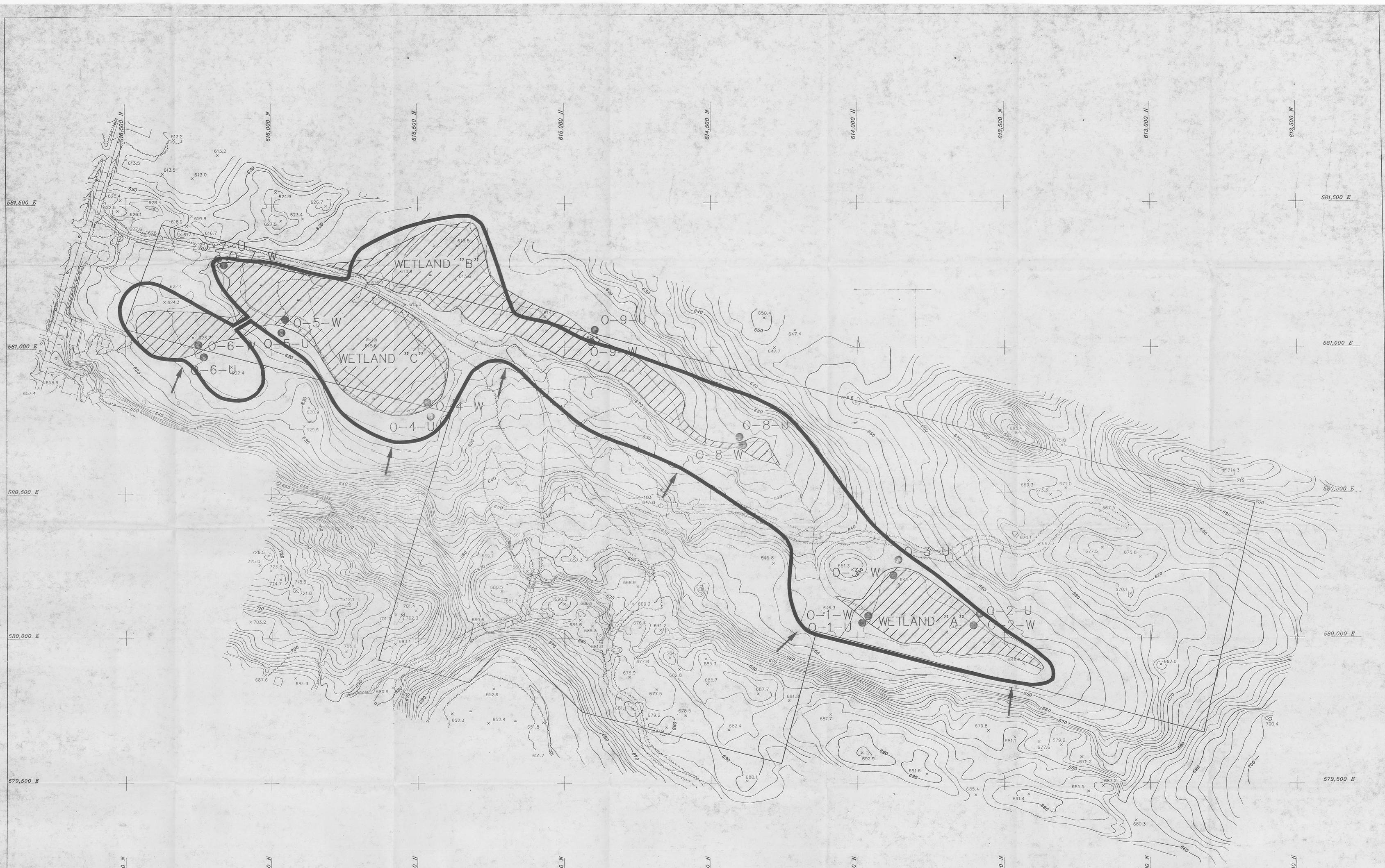
FIGURE 3-12.

FEDERAL WETLAND DELINEATION AND VEGETATION



THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS FOR TWO FOOT CONTOUR INTERVAL MAPPING.

HORIZONS, INC. PROJECT NO. 9-4487
RAPID CITY, SD. 57709-3134

NOTE: IMAGES OF OBJECTS NOT AT GROUND LEVEL MAY BE DISPLACED.

NOTE: DASHED CONTOURS INDICATE APPROXIMATE ELEVATIONS AS DEFINED IN PARAGRAPH 7.1.3.6 OF THE MANUAL OF PHOTOGRAMMETRY, 4TH EDITION.

LEGEND

- PAVED ROAD
- GRAVEL ROAD
- PAVED PARKING
- GUARD RAIL
- TRAIL
- RAILROAD
- PAVED DRIVEWAY
- GRAVEL DRIVEWAY
- BRIDGE
- CULVERT
- WATER
- BORE HOLE
- TREE
- TREELINE
- CHAIN LINK FENCE
- BOARD RAIL FENCE
- BARB WIRE FENCE
- RETAINING WALL
- BUILDING
- UNIDENTIFIED STRUCTURE
- CONCRETE SLAB
- UNIDENTIFIED TANK
- TAMS APPROXIMATED WETLAND BOUNDARY
- NEW YORK STATE DEC PRELIMINARY WETLAND BOUNDARY
- INTERMEDIATE CONTOUR
- INDEX CONTOUR
- DEPRESSION CONTOUR
- DISCOLORED CONTOUR
- SPOT ELEVATION
- HORIZONTAL CONTROL
- VERTICAL CONTROL
- POWER POLE
- LIGHT POLE
- UNIDENTIFIED POLE
- POLE

SCALE IN FEET
100 0 100 200 300

CONTOUR INTERVAL - 2 FOOT

NATIONAL GEODETIC VERTICAL DATUM OF 1929 BASED ON NEW YORK EAST ZONE PLANE COORDINATE SYSTEM

LOCATION PLAN
NEW YORK
HERTEL LANDFILL SITE

RECEIVED
AUG - 2 1991
NYS - DEC
REGION 5 NEW PALTZ

TAMS CONSULTANTS, Inc.
300 BROADACRES DRIVE, BLOOMFIELD, NEW JERSEY 07003

PREPARED FOR: ENVIRONMENTAL PROTECTION AGENCY, REGION II
Alternative Remedial Contracting Strategy (ARCS) for Hazardous Waste Remedial Services

DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUBMITTED BY:

APPENDIX H
FIGURE 4
REMEDIAL INVESTIGATION FEASIBILITY STUDY
HERTEL LANDFILL SITE
Plattsburgh, New York

DATE: SCALE: DRAWING NO.: