THOMSEN ASSOCIATES

ENVIRONMENTAL STUDY
DIKED DISPOSAL AREA
BUFFALO, NEW YORK

Geotechnical & Materials Engineering, Geologic & Environmental Geoscience Services

S-5167 SOUTH PARK AVENUE, P.O. BOX 0913, HAMBURG, NY 14075, 716-649-8110

THOMSEN ASSOCIATES

May 21, 1987

Niagara Frontier Transportation Authority
181 Ellicott Street
Buffalo, NY 14205

Attention: Mr. Walter Zmuda

Reference: Environmental Study
Diked Disposal Area
Buffalo, New York
BTA-87-94C

Gentlemen:

At your request, we have provided additional services with respect to the above referenced project. Our expanded scope of services included the following:

- Raise the tops of the existing monitoring wells to accommodate fill placement activities at the site
- Obtain and test additional water samples from selected monitoring wells
- Submit selected composite soil samples for EP Toxicity testing
- Evaluate the additional chemical test results and compare with previous test results
- Present in an engineering report, all data, observations, evaluations and recommendations regarding the need for site remediation prior to developing the area as a parking lot for the NFTA Small Boat Harbor

We point out that this report is intended to supplement our original report (BTA-86-94) submitted in February 1987. Some of the data contained in this report was presented during project meetings held on April 14, 1987 and May 13, 1987. The raising of existing monitoring wells and additional chemical testing was performed in accordance with a letter of authorization dated March 31, 1987. The elevations of the "raised" monitoring wells were determined in accordance with our proposal dated March 23, 1987 and the verbal authorization of Mr. Walter Zmuda on April 9, 1987. Preparation of this report was authorized by a letter dated April 10, 1987.

The tops of the existing monitoring wells were extended to permit the NFTA to raise site grades and maintain the wells as monitoring points. The wells were extended by: (1) cutting off approximately one (1) foot of the existing protective steel casing, (2) threading the existing PVC risers, (3) extending the PVC riser approximately four (4) feet via threaded coupling and PVC pipe and (4) welding on a 5 feet long protective steel casing. The net raise at each well location was approximately four (4) feet. A total of twelve (12) of the thirteen (13) monitoring wells were extended. We note that it was not necessary to extend the casing and riser at location POW-2. We point out that site grades in the vicinity of POW-2 were raised prior to the original well installation. A summary of monitoring well data is presented in Table 1 in Appendix A. Monitoring well locations are illustrated on Drawing 1 in Appendix B. The water depths and elevations presented in Table 1 correspond to readings taken on April 13, 1987.

A comparison of ground surface and water elevations measured during our original investigation and on April 13, 1987 is presented in Table 2 in Appendix A. The changes in ground surface elevations indicate that as much as 4.5 feet of fill materials have been placed over portions of the site. We note that to date filling has occurred primarily over the northern half of the site, with little to no filling occurring over the southern portion. We point out that apparent ground surface elevation changes in areas where fill has not been placed (see Table 2) reflect the uneven topography adjacent to the wells (i.e. measuring inaccuracies) and not actual changes.

The comparison of water elevations presented in Table 2 indicates that water levels have risen as much as 2.5 feet in some wells and dropped as much as 2 feet in others. The wells exhibiting rises greater than 0.5 feet were EW-3, 4 and 5 with actual changes of 2.56, 1.57 and 1.16 feet, respectively. The wells exhibiting drops greater than 0.5 feet were POW-1, EW-1 and EW-8 with actual changes of 0.67, 2.08 and 0.72 feet, respectively. There is no discernable pattern to the observed changes, however, we do note that wells closer to the perimeter of the diked disposal area generally indicated a relative lowering of the water level. This may be attributed to fluctuating Lake Erie water

levels. The lowering of water levels in the northeast portion of the diked disposal area may also be attributed to reduced surface infiltration as the result of fill placement and grading. We also point out that the water levels are significantly influenced by the varying physical composition of the dredged materials. A ground water contour map, based on the most recent water level measurements, is presented on Drawing 2 in Appendix B.

Additional water samples were obtained from selected monitoring wells during the period from March 19 to 22, 1987. Water samples from monitoring wells POW-1 through 4 EW-2, EW-7 and EW-9 were subjected to the same chemical analyses as the previous samples. The purpose of the additional sampling and testing program was to confirm previous results, determine if a pattern of changes could be detected, and evaluate the effects (if any) of fill placement activities. Well locations POW-1 through 4 were selected for additional chemical analyses to aid in evaluating potential migration of contaminants due to fill placement activities. Well locations EW-7 and EW-9 were selected in order to provide maximum coverage of the area. Well EW-2 was selected for additional testing based on the relatively high levels of contaminants with respect to POW-2. A summary of field data (i.e. water elevation at the time of sampling, pH, conductivity and temperature) for the additional samples is given in Table 3 in Appendix A.

A summary of chemical test results for additional water samples is presented in Table 4 in Appendix A. We note that only those compounds which exceeded the laboratory detection limit are summarized in Table 4. The complete chemical test results are presented in Appendix C. Table 4 also presents a comparison of the most recent chemical test results with the previous results. We note that chemical test results presented in Table 4 were for unfiltered water samples. The most recent chemical test results generally confirm previous testing. We also point out that the apparent anomaly with respect to measured levels of compounds in wells POW-2 and EW-2 still exists. We note that the differences in well tip elevations (See Table 1) may account, at least partly, for the observed differences in concentrations of the various compounds measured at the

monitoring well locations. Other factors which could be used to explain the differences would be the composition and depositional nature of the dredged materials. As an aside, we note that the thickness of the dredged materials ranged from 17 to 22 feet, with an average of about 20 feet.

During the process of sampling the monitoring wells, it was noted that the samples contained significant quantities of sediment. On this basis, it was decided that selected chemical analyses should be performed on water samples which were filtered on a 0.45 µm filter. The results of the chemical analyses for metals for the filtered (soluble metals) and unfiltered (total metals) water samples are presented in summary form in Table 5 in Appendix A. The results indicate that the filtered water samples contain substantially less metals than the unfiltered samples. This indicates that the sediment contained in the unfiltered samples is responsible for the relatively high total metals content. A review of the filtered test results indicates that even the more soluble metals, such as mercury and zinc, are filtered out.

EP Toxicity testing was performed on selected composite soil samples to further evaluate the mobility of the metals and selected organic compounds. We point out that the soil samples submitted for EP Toxicity testing (5 total samples) were composited from individual soil samples which remained from our subsurface investigation and well installation program. A summary of EP Toxicity test results is presented in Table 6 in Appendix A. We point out that in all cases the measured concentrations are significantly less than the EPA maximum allowable concentrations given in 40 CFR 261.24. The EPA maximum allowable concentrations are given in Table 6.

Conclusions

The results of the additional chemical testing generally concur with the previous chemical test results. The comparison of test results for filtered versus unfiltered water samples indicates that the sediment contained in the unfiltered samples is responsible for the relatively high total metals content. The chemical test results indicate little to no soluble metals. EP Toxicity testing for

metals and selected organics indicates concentrations which are significantly less than the EPA maximum allowable concentrations.

In summary, it has been found that the dredged materials contain relatively high levels of priority pollutant organics and inorganics, however, the contaminants (particularly heavy metals) are apparently "locked up" in the sediments and are not free to migrate off the site in the ground water. On the basis of our review and evaluation of available chemical test results, we feel that the diked disposal area can be successfully developed as a parking lot without adversely affecting the water quality of the harbor or exposing the public to hazardous levels of contaminants.

As a means of minimizing the amount of surface water infiltration, eliminating any public contact with potentially contaminated dredged materials, raising existing low spots and providing site grades which are suitable for development as a parking lot, we recommend that fill placement be continued across the entire site. The fill should be placed and compacted in a controlled manner so as to minimize voids and provide a suitable base for the proposed parking lot. We understand that as much as 4 to 5 feet of fill materials will be required to properly raise the site grades. Following placement of the fill materials used to raise the site grades, we recommend that the entire site be capped with approximately 1.5 to 2.0 feet of relatively impervious soils. In addition to placing the cap in a controlled manner, we note that it is imperative that it be properly graded (i.e. crowned) to prevent ponding of surface water. As a result of the expected consolidation of underlying dredged materials, periodic regrading will be required to maintain the proper grades.

Following implementation of the above recommendations, we suggest that the NFTA petition the NYSDEC to re-classify the site on the basis of available data.

We anticipate that we have properly presented our position and addressed your concerns. If we have not, or you have

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additional questions, please contact our office. We have appreciated the opportunity to work with on this project.

Respectfully,

THOMSEN ASSOCIATES

Steve R. Pulley

Steve R. Pulley, P.E.
Geotechnical Engineer

map

Enclosures: Appendix A - Tables 1 through 6
Appendix B - Drawings 1 and 2
Appendix C - Chemical Test Results

APPENDIX A

TABLES 1 THROUGH 6

TABLE 1. Summary of Monitoring Well Data

Well No.	Adjacent Ground Surface Elevation(4)	Elevation of Top of PVC Riser (1)	Elevation of Tip of PVC Well Screen	Depth to Water From Top of PVC Riser (feet)	Water Elevation(2)
POW-1	581.91	583.57	568.37	8.67	574.90
POW-2	583.95	586.78	570.10	13.17	573.61
POW-3	580.93	588.58	569.98	14.88	573.70
POW-4	582.39	588.32	562.87	14.92	573.40
EW-1	584.06	589.26	570.51	15.33	573.93
EW-2	584.57	589.70	567.38	13.79	575.91
EW-3	582.66	588.00	567.77	10.50	577.50
EW-4	584.81	590.73	570.86	11.38	579.35
EW-5	582.74	588.64	567.95	9.33	579.31
EW-6	582.94	585.30	568.09	8.21	577.09
EW-7	577.73	584.39	564.50	8.00	576.39
EW-8	579.95	586.46	560.47	11.71	574.75
EW-9	582.56	588.63	559.34	14.83	573.80

NOTES:

(1) The monitoring well tops were extended to accommodate fill placement activities at the site.

(2) Monitoring well water elevations were measured on 4/13/87. Lake Erie water level measured at El. 573.63.

(3) All elevations are referenced to the International Great Lakes Datum (1955).

(4) Adjacent ground surface elevations have changed (since our November 1986 investigation) at some well locations due to fill placement activities.

TABLE 2. Comparison of Ground Surface and Water Elevations

Well No.	Ground Surface Elevation 12/8/86	Ground Surface Elevation 4/13/87	Ground Surface Elevation Differ	Water Elevations 12/8/86	Water Elevations 4/13/87	Water Elevations Differ
POW-1	577.37	581.91	4.54	575.57	574.90	-0.67
POW-2	584.10	583.95	-0.15	574.10	573.61	-0.49
POW-3	580.98	580.93	-0.05	574.15	573.70	-0.45
POW-4	581.87	582.39	0.52	573.83	573.40	-0.43
EW-1	583.51	584.06	0.55	576.01	573.93	-2.08
EW-2	583.58	584.57	0.99	575.58	575.91	0.33
EW-3	580.77	582.66	1.89	574.94	577.50	2.56
EW-4	584.86	584.81	-0.05	577.78	579.35	1.57
EW-5	582.65	582.74	0.09	578.15	579.31	1.16
EW-6	578.49	582.94	4.45	577.40	577.09	-0.31
EW-7	577.50	577.73	0.23	576.33	576.39	0.06
EW-8	580.47	579.95	-0.52	575.47	574.75	-0.72
EW-9	582.64	582.56	-0.08	573.97	573.80	-0.17

NOTES:

(1) Lake Erie water level determined to be at El. 573.63 on 4/13/87 by measuring down from benchmark located on crown of westerly 10 feet diameter corrugated metal pipe (i.e. El. 576.17 - 2.53 = El. 573.63).

(2) The NFTA has placed fill at the site since the original subsurface investigation.

(3) According to the information available from the U.S. Army Corps of Engineers, the daily average Lake Erie water elevation measured at the U.S. Coast Guard gaging station in the Buffalo Harbor on 12/8/86 and 4/13/87 was 572.36 and 572.88, respectively.

TABLE 3. Summary of Field Data for Sampled Wells

Well No.	Water Elevation Prior to Purging(1)	pH	Conductivity micromhos/cm	Temperature (°C)
POW-1	575.16	11.4	1690	6.0
POW-2	573.88	9.5	700	8.0
POW-3	573.48	8.5	580	6.0
POW-4	573.37	8.9	1260	6.0
EW-2	576.70	6.9	2500	8.4
EW-7	575.58	6.9	2490	8.1
EW-9	573.63	7.5	850	10.0

NOTES:

(1) Purging conducted through bailing. Generally 5 to 6 well volumes were withdrawn prior to sampling.

(2) pH, conductivity and temperature values for samples from wells POW-1 and POW-4 were not measured at the time of sampling. Reported values for these samples were taken on a sample obtained on 3/22/87.

(3) Samples were taken during the period from 3/19/87 to 3/22/87.

TABLE 4. Summary of Chemical Test Results for Water Samples

Compound (µg/l)(2)	Sample Number POW-1	POW-2	POW-3	POW-4	EW-2	EW-7	EW-9
(A) Organochlorine Pesticides/PCB's - Aqueous Matrix (Method 608)							
Aldrin	-	-	0.01/0.02/+	-	-	-	-
Alpha-BHC	<0.2/0.21/?	-	-	<0.05/0.90/+	<0.08/0.9/+	-	<0.006/0.091/+
Beta-BHC	3.2/<0.3/-	0.32/0.76/+	0.23/<0.07/-	0.72/0.25/-	<0.08/0.78/+	<0.03/0.082/+	<0.006/0.087/+
Delta-BHC	-	-	-	-	-	<0.03/0.074/+	<0.006/0.074/+
Gamma-BHC	-	-	<0.01/0.052/+	-	0.10/<0.2/?	-	-
4,4'-DDD	-	-	-	-	0.85/<0.4/-	0.27/<0.02/-	-
Dieldrin	-	-	-	0.24/<0.1/-	-	-	-
Endosulfan I	-	-	0.032/<0.02/-	0.25/<0.1/-	≤1/<0.3/?	-	0.12/0.27/+
Endosulfan II	-	-	-	-	<0.1/<0.4/?	<0.05/<0.02/?	-
Endrin	-	-	-	-	-	0.13/<0.02/-	-
Endrin Aldehyde	-	-	-	-	2.1/<0.4/-	0.86/<0.2/-	0.19/<0.05/-
Heptachlor	-	-	-	<0.05/0.50/+	-	-	<0.006/0.078/+
Heptachlor Epoxide	-	-	<0.01/0.037/+	-	-	-	<0.02/0.11/+
(B) Volatiles-Aqueous Matrix (Method 624)							
Benzene	<4.4/290/+	<22/21/-	<22/22/?	110/350/+	820/800/-	790/610/-	37/22/-
Chlorobenzene	1100/530/-	47/120/+	56/69/+	1300/7700/+	3800/6400/+	9400/10000/+	220/130/-
1,2-Dichlorobenzene(3)	160/81/-	<11/24/+	<11/8.5/?	510/680/+	790/550/-	630/1100/+	<11/220/+
1,3-Dichlorobenzene	23/≤21/-	<11/<2.1/?	<11/≤2.1/?	31/31/0	25/28/+	<210/66/?	<11/3.3/+
Ethylbenzene	9.2/<72/?	-	-	54/470/+	180/710/+	<720/240/?	-
Methylene Chloride	<2.8/210/+	21/<2.8/-	-	-	-	-	-
Toluene	<6.0/60/+	<30/<6/?	<30/≤6/?	47/61/+	510/1600/+	<600/≤60/?	<30/30/?

TABLE 4. Summary of Chemical Test Results for Water Samples (continued)

Compound (µg/l)(2)	Sample Number						
	POW-1	POW-2	POW-3	POW-4	EW-2	EW-7	EW-9
(C) Priority Pollutant Extractables - Aqueous Matrix (Method 625)							
Acenaphthene	-	-	-	-	19/42/+	6.2/8.2/+	28/≤19/-
Anthracene	4.0/5.2/+	-	-	4.6/<19/?	45/30/-	13/3.4/-	9.5/≤19/?
Bis(2-ethylhexyl)phthalate	<150/8.6/?	<150/2.8/-	<150/8.2/?	-	<150/51/?	<150/5.4/?	-
2-Chloronaphthalene	-	6.8/<1.9/-	-	-	-	-	-
Chrysene	-	-	-	-	13/<25/?	-	-
1,2-Dichlorobenzene	<1.9/9.9/+	7.2/<1.9/-	4.3/<1.9/-	76/200/+	160/21/-	330/62/-	190/44/-
1,3-Dichlorobenzene	32/7.2/-	-	-	15/28/+	46/≤19/?	<1.9/26/+	-
1,4-Dichlorobenzene	160/100/-	35/6.8/-	18/5.2/-	140/450/+	620/120/-	770/240/-	150/≤44/-
Fluoranthene	<2.2/3.5/+	-	-	5.4/≤22/?	44/31/-	-	-
Fluorene	22/2/-	-	-	<1.9/≤19/(4)	<1.9/34/+	<1.9/5.2/+	-
Isophorone	<2.2/4.1/+	-	-	<2.2/29/+	-	-	-
Naphthalene	360/<1.6/-	13/60/+	5.3/3.3/-	150/≤16/-	2600/580/-	120/97/-	500/120/-
Nitrobenzene	-	9.7/<1.9/-	-	<1.9/2000/+	-	-	-
N-nitrosodi-n-propylamine	1900/<25/-	-	-	-	-	130/<25/-	130/<250/?
Phenanthrene	28/8.8/-	-	15/<5.4/-	15/≤54/(4)	88/81/-	10/<5.4/-	18/<54/?
Pyrene	<1.9/2.3/+	-	-	3.6/≤19/(4)	33/25/-	-	-
1,2,4-Trichlorobenzene	8.6/<1.9/-	4.5/≤1.9/-	-	8.6/≤19/?	2/≤19/?	15/14/-	60/27/-
2-Chlorophenol	-	-	-	-	-	<3.3/27/+	-
2-Nitrophenol	-	20/<3.6/-	-	<3.6/<36/(4)	-	-	-
4-Nitrophenol	<2.4/4.3/+	-	-	<2.4/<24/(4)	-	-	-
Phenol	42/24/-	-	-	<1.5/29/+	-	-	-

NOTES:
(1) Results are first presented from our intital sampling program on 12/16/86 and secondly from subsequent testing on 3/23/87. Also indicated is the net change: (+) - increase in concentration; (-) - decrease in concentration; (?) - second testing detection limit or concentration less or greater than first round testing result.
(2) The compounds presented are a partial listing based on compounds that indicated a net change between sampling periods.
(3) Chromotographically, 1,2-Dichlorobenzene and 1,4-Dichlorobenzene coelute; therefore, the reported value is an "and/or" value.
(4) Elevated detection limits are the result of a dilution necessitated by the sample matrix.

TABLE 5. Comparison of Chemical Test Results for Filtered and Unfiltered Samples (3)

	SAMPLE NUMBER													
	POW-1		POW-2		POW-3		POW-4		EW-2		EW-7		EW-9	
Compound	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered
Antimony	<0.06	<0.06	<0.01	<0.01	<0.01	<0.01	<0.06	<0.06	<0.01	0.15	<0.01	0.039	<0.01	0.013
Arsenic	<0.005	0.061	0.008	0.036	0.006	0.077	0.034	0.83	0.069	6.6	0.011	0.19	0.020	0.34
Beryllium	<0.005	<0.005	<0.005	0.006	<0.005	0.005	<0.005	0.005	<0.005	0.022	<0.005	<0.005	<0.005	<0.005
Cadmium	<0.005	0.008	<0.02	<0.02	<0.02	<0.02	<0.005	0.088	<0.02	0.41	<0.02	<0.02	<0.02	<0.02
Chromium	<0.005	0.59	<0.005	0.018	<0.005	0.22	<0.005	3.2	0.022	22	0.012	0.64	0.009	0.88
Copper	<0.005	0.23	<0.005	0.012	<0.005	0.14	<0.005	2.6	0.014	18	<0.005	0.55	<0.005	0.77
Lead	<0.02	0.44	<0.005	<0.005	<0.005	0.079	<0.02	6.1	0.020	53	<0.005	0.85	<0.005	1.4
Mercury	<0.0005	0.0036	<0.0006	<0.0005	<0.0006	0.002	<0.0005	0.039	<0.0006	0.128	<0.0006	0.0099	<0.0006	0.0084
Nickel	<0.02	0.05	<0.005	0.011	<0.005	0.052	<0.02	0.33	0.0075	4	0.010	0.19	<0.005	0.09
Selenium	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	<0.005	0.017	<0.005	<0.005	<0.005	<0.005	<0.005	0.02	<0.005	0.03	<0.005	<0.005	<0.005	0.007
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	0.021	<0.005	<0.005	<0.005	<0.005
Zinc	<0.005	0.90	0.070	0.090	0.060	0.47	0.010	13	0.10	67	0.090	2.6	0.060	3.3

NOTES: (1) Samples were filtered on a 0.45um filter. Reported concentrations represent soluble metals.

(2) Unfiltered test results represent total metals.

(3) Filtered versus unfiltered analyses were performed for metals only.

Table 6. Summary of EP Toxicity Test Results for Composite Soil Samples

PARAMETER (NOTE 1.)	EPA MAXIMUM CONCENTRATION	SAMPLE NUMBER EW-2	EW-5	EW-6	EW-7	EW-8
I.) METALS						
Total Arsenic	5.0	0.038	0.053	0.011	0.029	0.049
Total Barium	100.0	0.240	0.370	0.170	0.310	0.330
Total Cadmium	1.0	0.040	0.040	0.030	0.060	0.065
Total Chromium	5.0	0.010	0.011	0.005	0.008	0.014
Total Lead	5.0	0.220	0.200	0.090	0.210	0.190
Total Mercury	0.2	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Total Selenium	1.0	<0.005	<0.005	<0.005	<0.005	<0.005
Total Silver	5.0	0.026	<0.005	<0.005	<0.005	<0.005
II.) ORGANICS						
Endrin	0.02	<0.00002	<0.00001	<0.00002	<0.00001	<0.00001
Lindane	0.40	0.000053	0.000029	0.000072	<0.00001	0.000027
Methoxychlor	10.0	0.00093	0.00045	0.00061	0.00045	0.00086
Toxaphene	0.50	<0.0008	<0.0004	<0.0008	<0.0004	<0.0005
2,4-D	10.0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
2,4,5-TP	1.0	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002

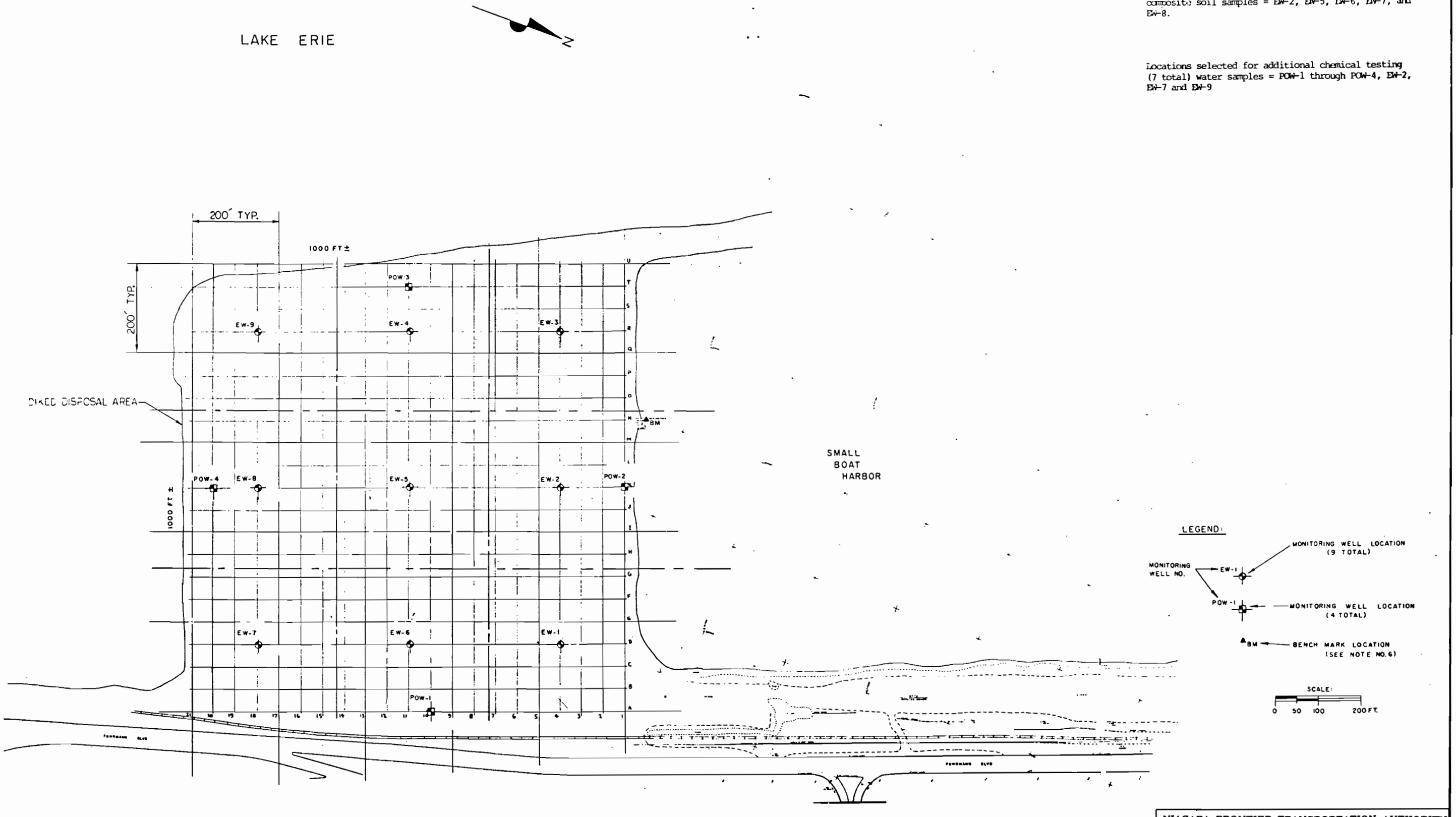
NOTES: (1) - Parameter concentrations are recorded in mg/l.

APPENDIX B

DRAWINGS 1 AND 2

Locations selected for EP Toxicity testing (5 total) composite soil samples = EW-2, EW-5, EW-6, EW-7, and EW-8.

Locations selected for additional chemical testing (7 total) water samples = POW-1 through POW-4, EW-2, EW-7 and EW-9



NOTES:

1. EW = Environmental monitoring well
2. POW = Perimeter Observation well
3. This drawing is made from a base drawing supplied by NFTA
5. Well locations and elevations were established in the field by a survey crew from Larsen Engineers in Rochester, New York
6. Benchmark is top of westerly 10 ft. ø CMP, El. 576.16

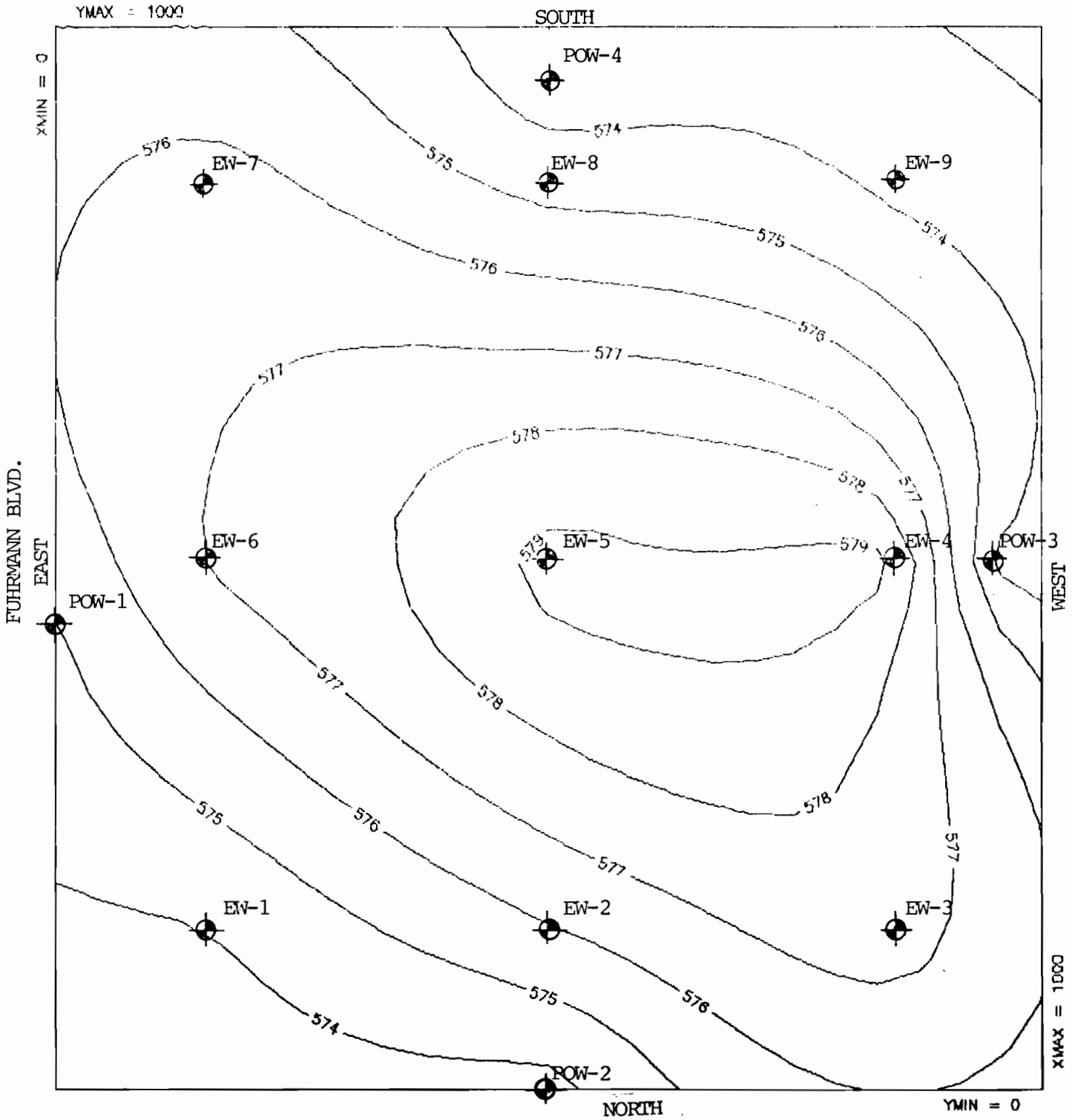
NIAGARA FRONTIER TRANSPORTATION AUTHORITY

DIKED DISPOSAL AREA — BUFFALO, NEW YORK

MONITORING WELL LOCATIONS

THOMSEN ASSOCIATES
CONSULTING ENGINEERS

DR. BY: DAW	SCALE: AS NOTED	PROJ. NO. BTA-86-94C
CK'D BY: SRP	DATE: 5-87	DRWG. NO. 1



NFTA DDA WATER LEVELS 4-13-87

SMALL BOAT HARBOR

APPENDIX C

CHEMICAL TEST RESULTS

ANALYTICAL RESULTS

Prepared For

Empire-Thomsen Associates
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Hamburg, New York 14075

Prepared By

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METHODOLOGIES

The specific methodologies employed in obtaining the enclosed analytical results are taken from the following U.S. Environmental Protection Agency reference.

- U.S. Environmental Protection Agency "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods". Office of Solid Waste and Emergency Response. November 1986, SW-846, Third Edition.

COMMENTS

Comments pertain to data on one or all pages of this report.

The values reported as "less than" (<) indicate the working detection limit for the particular sample and/or parameter.

EP TOXICITY TEST EXTRACT - ORGANICS

PARAMETER (Units of Measure = mg/l)	EXTRACTION DATE	ANALYSIS DATE	EPA MAX. CONC.	SAMPLE IDENTIFICATION (DATE) EW#2 (3/20/87)	EW#5 (3/20/87)
Endrin	3/25/87	4/2/87	0.02	<0.00002	<0.00001
Lindane	3/25/87	4/2/87	0.4	0.000053	0.000029
Methoxychlor	3/25/87	4/2/87	10.0	0.00093	0.00045
Toxaphene	3/25/87	4/2/87	0.5	<0.0008	<0.0004
2,4-D	3/31/87	4/2/87	10.0	<0.0002	<0.0002
2,4,5-TP	3/31/87	4/2/87	1.0	<0.00002	<0.00002

EP TOXICITY TEST EXTRACT - ORGANICS

PARAMETER (Units of Measure = mg/l)	EXTRACTION DATE	ANALYSIS DATE	EPA MAX. CONC.	SAMPLE IDENTIFICATION (DATE) EW#6 (3/20/87)	EW#7 (3/20/87)
Endrin	3/25/87	4/2/87	0.02	<0.00002	<0.00001
Lindane	3/25/87	4/2/87	0.4	0.000072	<0.00001
Methoxychlor	3/25/87	4/2/87	10.0	0.00061	0.00045
Toxaphene	3/25/87	4/2/87	0.5	<0.0008	<0.0004
2,4-D	3/31/87	4/2/87	10.0	<0.0002	<0.0002
2,4,5-TP	3/31/87	4/2/87	1.0	<0.00002	<0.00002

EP TOXICITY TEST EXTRACT - ORGANICS

PARAMETER (Units of Measure = mg/l)	EXTRACTION DATE	ANALYSIS DATE	EPA MAX. CONC.	SAMPLE IDENTIFICATION (DATE) EW#8 (3/20/87)
Endrin	3/25/87	4/2/87	0.02	<0.00001
Lindane	3/25/87	4/2/87	0.4	0.000027
Methoxychlor	3/25/87	4/2/87	10.0	0.00086
Toxaphene	3/25/87	4/2/87	0.5	<0.0005
2,4-D	3/31/87	4/2/87	10.0	<0.0002
2,4,5-TP	3/31/87	4/2/87	1.0	<0.00002

EP TOXICITY TEST EXTRACT - METALS

PARAMETER (Units of Measure = mg/l)	ANALYSIS DATE	EPA MAX. CONC.	SAMPLE IDENTIFICATION (DATE) EW#2 (3/20/87)	EW#5 (3/20/87)
Total Arsenic	3/26/87	5.0	0.038	0.053
Total Barium	3/31/87	100.0	0.24	0.37
Total Cadmium	3/27/87	1.0	0.040	0.040
Total Chromium	3/26/87	5.0	0.010	0.011
Total Lead	3/31/87	5.0	0.22	0.20
Total Mercury	3/27/87	0.2	<0.0005	<0.0005
Total Selenium	3/27/87	1.0	<0.005	<0.005
Total Silver	3/26/87	5.0	0.026	<0.005

X Standard Addition
___ Non-Standard Addition

EP TOXICITY TEST EXTRACT - METALS

PARAMETER (Units of Measure = mg/l)	ANALYSIS DATE	EPA MAX. CONC.	SAMPLE IDENTIFICATION (DATE) EW#6 (3/20/87)	EW#7 (3/20/87)
Total Arsenic	3/26/87	5.0	0.011	0.029
Total Barium	3/31/87	100.0	0.17	0.31
Total Cadmium	3/27/87	1.0	0.030	0.060
Total Chromium	3/26/87	5.0	0.0050	0.0080
Total Lead	3/31/87	5.0	0.090	0.21
Total Mercury	3/27/87	0.2	<0.0005	<0.0005
Total Selenium	3/27/87	1.0	<0.005	<0.005
Total Silver	3/26/87	5.0	<0.005	<0.005

X Standard Addition
___ Non-Standard Addition

EP TOXICITY TEST EXTRACT - METALS

PARAMETER (Units of Measure = mg/l)	ANALYSIS DATE	EPA MAX. CONC.	SAMPLE IDENTIFICATION (DATE) EW#8 (3/20/87)
Total Arsenic	3/26/87	5.0	0.049
Total Barium	3/31/87	100.0	0.33
Total Cadmium	3/27/87	1.0	0.065
Total Chromium	3/26/87	5.0	0.014
Total Lead	3/31/87	5.0	0.19
Total Mercury	3/27/87	0.2	<0.0005
Total Selenium	3/27/87	1.0	<0.005
Total Silver	3/26/87	5.0	<0.005

_X_ Standard Addition
___ Non-Standard Addition

QUALITY CONTROL INFORMATION - PRECISION
EP TOXICITY TEST EXTRACT - ORGANICS

SAMPLE IDENTIFICATION EW#8

PARAMETER (Units of Measure = mg/l)	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Endrin	<0.00001	<0.00001	<0.00001	-
Lindane	0.000033	0.000020	0.000027	0.0000092
Methoxychlor	0.00090	0.00081	0.00086	0.000064
Toxaphene	<0.0005	<0.0005	<0.0005	-

QUALITY CONTROL INFORMATION - PRECISION
EP TOXICITY TEST EXTRACT - ORGANICS

SAMPLE IDENTIFICATION EW#2

PARAMETER (Units of Measure = mg/l)	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
2,4-D	<0.0002	<0.0002	<0.0002	-
2,4,5-TP	<0.00002	<0.00002	<0.00002	-

QUALITY CONTROL INFORMATION - ACCURACY
EP TOXICITY TEST EXTRACT - ORGANICS

SAMPLE IDENTIFICATION Method Blank Spike

PARAMETER	NANOGRAMS OF SPIKE	PERCENT RECOVERY
Endrin	0.22	91
Lindane	0.29	108
Methoxychlor	0.94	89
2,4-D	0.81	56
2,4,5-TP	0.25	52

QUALITY CONTROL INFORMATION - PRECISION
EP TOXICITY TEST EXTRACT - METALS

SAMPLE IDENTIFICATION EW#8

PARAMETER (Units of Measure = mg/l)	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Total Arsenic	0.043	0.054	0.049	0.0078
Total Barium	0.33	0.33	0.33	0
Total Cadmium	0.060	0.070	0.065	0.0071
Total Chromium	0.013	0.014	0.014	0.00071
Total Lead	0.18	0.20	0.19	0.014
Total Mercury	<0.0005	<0.0005	<0.0005	-
Total Selenium	<0.005	<0.005	<0.005	-
Total Silver	<0.005	<0.005	<0.005	-

X Standard Addition
___ Non-Standard Addition

QUALITY CONTROL INFORMATION - ACCURACY
EP TOXICITY TEST EXTRACT - METALS

SAMPLE IDENTIFICATION EW#2

PARAMETER	µg OF SPIKE	% RECOVERY
Total Arsenic	25	100
	50	104
Total Barium	2,500	103
	5,000	95
Total Cadmium	250	88
	500	93
Total Chromium	250	85
	500	91
Total Lead	2,500	106
	5,000	105
Total Mercury	0.20	104
	0.40	102
Total Selenium	25	96
	50	102
Total Silver	250	84
	500	87

QUALITY CONTROL INFORMATION - ACCURACY
EP TOXICITY TEST EXTRACT - METALS

SAMPLE IDENTIFICATION EW#5

PARAMETER	µg OF SPIKE	% RECOVERY
Total Arsenic	25	96
	50	116
Total Barium	2,500	101
	5,000	94
Total Cadmium	250	94
	500	88
Total Chromium	250	86
	500	89
Total Lead	2,500	108
	5,000	102
Total Mercury	0.20	109
	0.40	108
Total Selenium	25	104
	50	102
Total Silver	250	85
	500	86

QUALITY CONTROL INFORMATION - ACCURACY
EP TOXICITY TEST EXTRACT - METALS

SAMPLE IDENTIFICATION EW#6

PARAMETER	µg OF SPIKE	% RECOVERY
Total Arsenic	25	96
	50	102
Total Barium	2,500	102
	5,000	97
Total Cadmium	250	88
	500	89
Total Chromium	250	86
	500	87
Total Lead	2,500	101
	5,000	99
Total Mercury	0.20	108
	0.40	114
Total Selenium	25	96
	50	102
Total Silver	250	88
	500	91

QUALITY CONTROL INFORMATION - ACCURACY
EP TOXICITY TEST EXTRACT - METALS

SAMPLE IDENTIFICATION EW#7

PARAMETER	µg OF SPIKE	% RECOVERY
Total Arsenic	25	82
	50	85
Total Barium	2,500	101
	5,000	97
Total Cadmium	250	83
	500	93
Total Chromium	250	84
	500	89
Total Lead	2,500	102
	5,000	99
Total Mercury	0.20	104
	0.40	107
Total Selenium	25	100
	50	108
Total Silver	250	90
	500	91

QUALITY CONTROL INFORMATION - ACCURACY
EP TOXICITY TEST EXTRACT - METALS

SAMPLE IDENTIFICATION EW#8

PARAMETER	µg OF SPIKE	% RECOVERY
Total Arsenic	25	92
	50	104
Total Barium	2,500	100
	5,000	98
Total Cadmium	250	93
	500	92
Total Chromium	250	80
	500	85
Total Lead	2,500	100
	5,000	100
Total Mercury	0.20	104
	0.40	108
Total Selenium	25	104
	50	110
Total Silver	250	91
	500	98

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO.:

SITE NAME: Port of Tacoma - Dixed Diesel Area

SAMPLERS (SIGNATURE): Frank A. Mussallem Jr.

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	160z GLASS						REMARKS
EW#2	3/20/87	950 am	X		K-4 Grid Location	1	X						Recra Label # 5144
EW#5	3/20/87	1015 am	X		K-11 Grid Location	1	X						Recra Label # 5145
EW#6	3/20/87	1045	X		D-11 Grid Location	1	X						Recra Label # 5146
EW#7	3/20/87	11:00 am	X		D-19 Grid Location	1	X						Recra Label # 5147
EW#8	3/20/87	1110 am	X		K-18 Grid Location	1	X						Recra Label # 5148

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
F. A. Mussallem	3/20/87	12 30	[signature]				
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)

RELINQUISHED BY (SIGNATURE):	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	REMARKS

Distribution: Original accompanies shipment; copy to coordinator field files

ANALYTICAL RESULTS

Prepared For

Empire Soils Investigation
P.O. Box 0913
Hamburg, NY 14075

Prepared By

Recra Environmental, Inc.
10 Hazelwood Drive, Suite 106
Amherst, New York 14150

METHODOLOGIES

The specific methodologies employed in obtaining the enclosed analytical results are indicated on the specific data table. The method numbers presented refer to the following U.S. Environmental Protection Agency reference.

- 40 CFR Part 136 "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act" October 26, 1984 (Federal Register) U.S. Environmental Protection Agency.

COMMENTS

Comments pertain to data on one or all pages of this report.

The values reported as "less than" (<) indicate the working detection limit for the particular sample and/or parameter.

The values reported as "less than or equal to" ($\leq$) indicate the compound may be present at trace levels relative to the detection limit but not subject to accurate quantification.

Parameters reported as soluble were filtered through a 0.45 µm filter prior to analysis.

Results of the analysis of Pesticide/PCB's are based on the matching of retention times between samples and standards on a single gas chromatographic column.

AQUEOUS MATRIX
METHOD 624 - VOLATILES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) POW-1* (3/19/87)	POW-4 (3/19/87)
Acrolein	<4,000	<400
Acrylonitrile	<4,000	<400
Benzene	290	350
Bromodichloromethane	<22	<2.2
Bromoform	<47	<4.7
Bromomethane	<100	<10
Carbon tetrachloride	<28	<2.8
Chlorobenzene	530	7,700
Chloroethane	<100	<10
2-Chloroethylvinyl ether	<100	<10
Chloroform	<16	<1.6
Chloromethane	<100	<10
Dibromochloromethane	<31	<3.1
1,2-Dichlorobenzene	81**	680**
1,3-Dichlorobenzene	<21	31
1,4-Dichlorobenzene	<25	<2.5
1,1-Dichloroethane	<47	<4.7
1,2-Dichloroethane	<28	<2.8
1,1-Dichloroethylene	<28	<2.8
trans-1,2-Dichloroethylene	<16	<1.6
1,2-Dichloropropane	<60	<6.0
cis-1,3-Dichloropropene	<50	<5.0
trans-1,3-Dichloropropene	<50	<5.0
Ethylbenzene	<72	470
Methylene chloride	210	<2.8
1,1,2,2-Tetrachloroethane	<69	<6.9
Tetrachloroethylene	<41	<4.1
Toluene	<60	61
1,1,1-Trichloroethane	<38	<3.8
1,1,2-Trichloroethane	<50	<5.0
Trichloroethylene	<19	<1.9
Vinyl chloride	<100	<10
Analysis Date	3/23/87	3/20-23/87
Internal Standards Level Added = 50 µg/l (% Recovery)		
Bromochloromethane	101	87
1,4-Difluorobenzene	99	89
Chlorobenzene D_5	101	44

*Elevated detection limits are the result of a dilution necessitated by sample matrix.

**Chromatographically 1,2-Dichlorobenzene and 1,4-Dichlorobenzene coelute. The reported value is therefore an "and/or" value.

AQUEOUS MATRIX
METHOD 624 - VOLATILES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) EW-2* (3/20/87)
Acrolein	<4,000
Acrylonitrile	<4,000
Benzene	800
Bromodichloromethane	<22
Bromoform	<47
Bromomethane	<100
Carbon tetrachloride	<28
Chlorobenzene	6,400
Chloroethane	<100
2-Chloroethylvinyl ether	<100
Chloroform	<16
Chloromethane	<100
Dibromochloromethane	<31
1,2-Dichlorobenzene	550**
1,3-Dichlorobenzene	28
1,4-Dichlorobenzene	<25
1,1-Dichloroethane	<47
1,2-Dichloroethane	<28
1,1-Dichloroethylene	<28
trans-1,2-Dichloroethylene	<16
1,2-Dichloropropane	<60
cis-1,3-Dichloropropene	<50
trans-1,3-Dichloropropene	<50
Ethylbenzene	710
Methylene chloride	<28
1,1,2,2-Tetrachloroethane	<69
Tetrachloroethylene	<41
Toluene	1,600
1,1,1-Trichloroethane	<38
1,1,2-Trichloroethane	<50
Trichloroethylene	<19
Vinyl chloride	<100
Analysis Date	3/24/87
Internal Standards Level Added = 50 µg/l (% Recovery)	
Bromochloromethane	99
1,4-Difluorobenzene	101
Chlorobenzene D_5	89

*Elevated detection limits are the result of a dilution necessitated by sample matrix.

**Chromatographically 1,2-Dichlorobenzene and 1,4-Dichlorobenzene coelute. The reported value is therefore an "and/or" value.

AQUEOUS MATRIX
METHOD 624 - VOLATILES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) EW-7* (3/21/87)	POW-2 (3/21/87)
Acrolein	<4,000	<400
Acrylonitrile	<4,000	<400
Benzene	610	21
Bromodichloromethane	<22	<2.2
Bromoform	<47	<4.7
Bromomethane	<100	<10
Carbon tetrachloride	<28	<2.8
Chlorobenzene	10,000	120
Chloroethane	<100	<10
2-Chloroethylvinyl ether	<100	<10
Chloroform	<16	<1.6
Chloromethane	<100	<10
Dibromochloromethane	<31	<3.1
1,2-Dichlorobenzene	1,100**	24**
1,3-Dichlorobenzene	66	<2.1
1,4-Dichlorobenzene	<25	<2.5
1,1-Dichloroethane	<47	<4.7
1,2-Dichloroethane	<28	<2.8
1,1-Dichloroethylene	<28	<2.8
trans-1,2-Dichloroethylene	<16	<1.6
1,2-Dichloropropane	<60	<6.0
cis-1,3-Dichloropropene	<50	<5.0
trans-1,3-Dichloropropene	<50	<5.0
Ethylbenzene	240	<7.2
Methylene chloride	<28	<2.8
1,1,2,2-Tetrachloroethane	<69	<6.9
Tetrachloroethylene	<41	<4.1
Toluene	<60	<6.0
1,1,1-Trichloroethane	<38	<3.8
1,1,2-Trichloroethane	<50	<5.0
Trichloroethylene	<19	<1.9
Vinyl chloride	<100	<10
Analysis Date	3/25/87	3/25/87
Internal Standards Level Added = 50 µg/l (% Recovery)		
Bromochloromethane	90	95
1,4-Difluorobenzene	100	95
Chlorobenzene D_5	73	95

*Elevated detection limits are the result of a dilution necessitated by sample matrix.

**Chromatographically 1,2-Dichlorobenzene and 1,4-Dichlorobenzene coelute. The reported value is therefore an "and/or" value.

AQUEOUS MATRIX
METHOD 624 - VOLATILES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) EW-9 (3/22/87)	POW-3 (3/22/87)
Acrolein	<400	<400
Acrylonitrile	<400	<400
Benzene	22	22
Bromodichloromethane	<2.2	<2.2
Bromoform	<4.7	<4.7
Bromomethane	<10	<10
Carbon tetrachloride	<2.8	<2.8
Chlorobenzene	130	69
Chloroethane	<10	<10
2-Chloroethylvinyl ether	<10	<10
Chloroform	<1.6	<1.6
Chloromethane	<10	<10
Dibromochloromethane	<3.1	<3.1
1,2-Dichlorobenzene	220*	8.5*
1,3-Dichlorobenzene	3.3	<2.1
1,4-Dichlorobenzene	<2.5	<2.5
1,1-Dichloroethane	<4.7	<4.7
1,2-Dichloroethane	<2.8	<2.8
1,1-Dichloroethylene	<2.8	<2.8
trans-1,2-Dichloroethylene	<1.6	<1.6
1,2-Dichloropropane	<6.0	<6.0
cis-1,3-Dichloropropene	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0
Ethylbenzene	<7.2	<7.2
Methylene chloride	<2.8	<2.8
1,1,2,2-Tetrachloroethane	<6.9	<6.9
Tetrachloroethylene	<4.1	<4.1
Toluene	30	<6.0
1,1,1-Trichloroethane	<3.8	<3.8
1,1,2-Trichloroethane	<5.0	<5.0
Trichloroethylene	<1.9	<1.9
Vinyl chloride	<10	<10
Analysis Date	3/26/87	3/25/87
Internal Standards Level Added = 50 µg/l (% Recovery)		
Bromochloromethane	92	96
1,4-Difluorobenzene	95	96
Chlorobenzene D_5	93	97

*Chromatographically 1,2-Dichlorobenzene and 1,4-Dichlorobenzene coelute. The reported value is therefore an "and/or" value.

AQUEOUS MATRIX
METHOD 624 - VOLATILES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) TRANSFER BLANK (3/22/87)	FIELD BLANK (3/22/87)
Acrolein	<400	<400
Acrylonitrile	<400	<400
Benzene	<4.4	<4.4
Bromodichloromethane	<2.2	<2.2
Bromoform	<4.7	<4.7
Bromomethane	<10	<10
Carbon tetrachloride	<2.8	<2.8
Chlorobenzene	<6.0	<6.0
Chloroethane	<10	<10
2-Chloroethylvinyl ether	<10	<10
Chloroform	<1.6	<1.6
Chloromethane	<10	<10
Dibromochloromethane	<3.1	<3.1
1,2-Dichlorobenzene	<2.5	<2.5
1,3-Dichlorobenzene	<2.1	<2.1
1,4-Dichlorobenzene	<2.5	<2.5
1,1-Dichloroethane	<4.7	<4.7
1,2-Dichloroethane	<2.8	<2.8
1,1-Dichloroethylene	<2.8	<2.8
trans-1,2-Dichloroethylene	<1.6	<1.6
1,2-Dichloropropane	<6.0	<6.0
cis-1,3-Dichloropropene	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0
Ethylbenzene	<7.2	<7.2
Methylene chloride	<2.8	<2.8
1,1,2,2-Tetrachloroethane	<6.9	<6.9
Tetrachloroethylene	<4.1	<4.1
Toluene	<6.0	<6.0
1,1,1-Trichloroethane	<3.8	<3.8
1,1,2-Trichloroethane	<5.0	<5.0
Trichloroethylene	<1.9	<1.9
Vinyl chloride	<10	<10
Analysis Date	3/25/87	3/25/87
Internal Standards Level Added = 50 µg/l (% Recovery)		
Bromochloromethane	94	97
1,4-Difluorobenzene	94	98
Chlorobenzene D_5	92	91

AQUEOUS MATRIX
METHOD 625 - BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) POW-1 (3/19/87)	POW-4* (3/19/87)
Acenaphthene	<1.9	<19
Acenaphthylene	<3.5	<35
Anthracene	5.2	<19
Benzo(a)anthracene	<7.8	<78
Benzo(b)fluoranthene	<2.5**	<25
Benzo(k)fluoranthene	<2.5	<25
Benzo(a)pyrene	<2.5	<25
Benzo(g,h,i)perylene	<4.1	<41
Bis(2-chloroethyl)ether	<5.7	<57
Bis(2-chloroethoxy)methane	<5.3	<53
Bis(2-chloroisopropyl)ether	<5.7	<57
Bis(2-ethylhexyl)phthalate	8.6	<25
4-Bromophenylphenylether	<1.9	<19
Butyl benzyl phthalate	<2.5	<25
2-Chloronaphthalene	<1.9	<19
4-Chlorophenylphenylether	<4.2	<42
Chrysene	<2.5	<25
Dibenzo(a,h)anthracene	<2.5	<25
Di-n-butyl phthalate	<2.5	<25
1,2-Dichlorobenzene	9.9	200
1,3-Dichlorobenzene	7.2	28
1,4-Dichlorobenzene	100	450
3,3'-Dichlorobenzidine	<17	<170
Diethyl phthalate	<22	<220
Dimethyl phthalate	<1.6	<16
2,4-Dinitrotoluene	<5.7	<57
2,6-Dinitrotoluene	<1.9	<19
Di-n-octylphthalate	<2.5	<25
Fluoranthene	3.5	<22
Fluorene	2.0	<19
Hexachlorobenzene	<1.9	<19
Hexachlorobutadiene	<0.9	<9.0
Hexachlorocyclopentadiene	<25	<250
Hexachloroethane	<1.6	<16
Indeno(1,2,3-cd)pyrene	<3.7	<37
Isophorone	4.1	29
Naphthalene	<1.6	<16
Nitrobenzene	<1.9	2,000
N-nitrosodi-n-propylamine	<25	<25
Phenanthrene	8.8	<54
Pyrene	2.3	<19

**Chromatographically, Benzo(b)fluoranthene and Benzo(k)fluoranthene coelute. The reported value is therefore an "and/or" value.

(Continued)

AQUEOUS MATRIX
METHOD 625 - BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) POW-1 (3/19/87)	POW-4* (3/19/87)
1,2,4-Trichlorobenzene	<1.9	<19
4-Chloro-3-methylphenol	<3.0	<30
2-Chlorophenol	<3.3	<33
2,4-Dichlorophenol	<2.7	<27
2,4-Dimethylphenol	<2.7	<27
2,4-Dinitrophenol	<42	<420
2-Methyl-4,6-dinitrophenol	<24	<240
2-Nitrophenol	<3.6	<36
4-Nitrophenol	4.3	<24
Pentachlorophenol	<3.6	<36
Phenol	24	29
2,4,6-Trichlorophenol	<2.7	<27
Extraction Date	3/23/87	3/23/87
Analysis Date	3/26/87	3/26/87
Internal Standards		
Level Added = 20 µg/l		
Phenanthrene-d10 (% Recovery)	149	179
Surrogates		
Level Added = 100 µg/l (% Recovery)		
Decafluorobiphenyl	52	50
2-Fluorobiphenyl	62	73
2-Fluorophenol	60	76
Phenol-d6	57	62

*Elevated detection limits are the result of a dilution necessitated by sample matrix.

AQUEOUS MATRIX
METHOD 625 - BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) EW-2* (3/20/87)
Acenaphthene	42
Acenaphthylene	<35
Anthracene	30
Benzo(a)anthracene	<78
Benzo(b)fluoranthene	<25
Benzo(k)fluoranthene	<25
Benzo(a)pyrene	<25
Benzo(g,h,i)perylene	<41
Bis(2-chloroethyl)ether	<57
Bis(2-chloroethoxy)methane	<53
Bis(2-chloroisopropyl)ether	<57
Bis(2-ethylhexyl)phthalate	51
4-Bromophenylphenylether	<19
Butyl benzyl phthalate	<25
2-Chloronaphthalene	<19
4-Chlorophenylphenylether	<42
Chrysene	<25
Dibenzo(a,h)anthracene	<25
Di-n-butyl phthalate	<25
1,2-Dichlorobenzene	21
1,3-Dichlorobenzene	<19
1,4-Dichlorobenzene	120
3,3'-Dichlorobenzidine	<170
Diethyl phthalate	<220
Dimethyl phthalate	<16
2,4-Dinitrotoluene	<57
2,6-Dinitrotoluene	<19
Di-n-octylphthalate	<25
Fluoranthene	31
Fluorene	34
Hexachlorobenzene	<19
Hexachlorobutadiene	<9.0
Hexachlorocyclopentadiene	<250
Hexachloroethane	<16
Indeno(1,2,3-cd)pyrene	<37
Isophorone	<22
Naphthalene	580
Nitrobenzene	<19
N-nitrosodi-n-propylamine	<250
Phenanthrene	81
Pyrene	25

(Continued)

AQUEOUS MATRIX
METHOD 625 - BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) EW-2* (3/20/87)
1,2,4-Trichlorobenzene	<19
4-Chloro-3-methylphenol	<30
2-Chlorophenol	<33
2,4-Dichlorophenol	<27
2,4-Dimethylphenol	<27
2,4-Dinitrophenol	<420
2-Methyl-4,6-dinitrophenol	<240
2-Nitrophenol	<36
4-Nitrophenol	<24
Pentachlorophenol	<36
Phenol	<15
2,4,6-Trichlorophenol	<27
Extraction Date	3/25/87
Analysis Date	3/31/87
Internal Standards	
Level Added = 40 µg/l	
Phenanthrene-d10	112
(% Recovery)	
Surrogates	
Level Added = 100 µg/l	
(% Recovery)	
Decafluorobiphenyl	35
2-Fluorobiphenyl	74
2-Fluorophenol	15
Phenol-d6	17

*Elevated detection limits are the result of a dilution necessitated by sample matrix.

AQUEOUS MATRIX
METHOD 625 - BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) EW-7 (3/21/87)	POW-2 (3/21/87)
Acenaphthene	8.2	<1.9
Acenaphthylene	<3.5	<3.5
Anthracene	3.4	<1.9
Benzo(a)anthracene	<7.8	<7.8
Benzo(b)fluoranthene	<2.5	<2.5
Benzo(k)fluoranthene	<2.5	<2.5
Benzo(a)pyrene	<2.5	<2.5
Benzo(g,h,i)perylene	<4.1	<4.1
Bis(2-chloroethyl)ether	<5.7	<5.7
Bis(2-chloroethoxy)methane	<5.3	<5.3
Bis(2-chloroisopropyl)ether	<5.7	<5.7
Bis(2-ethylhexyl)phthalate	5.4	2.8
4-Bromophenylphenylether	<1.9	<1.9
Butyl benzyl phthalate	<2.5	<2.5
2-Chloronaphthalene	<1.9	<1.9
4-Chlorophenylphenylether	<4.2	<4.2
Chrysene	<2.5	<2.5
Dibenzo(a,h)anthracene	<2.5	<2.5
Di-n-butyl phthalate	<2.5	<2.5
1,2-Dichlorobenzene	62	<1.9
1,3-Dichlorobenzene	26	<1.9
1,4-Dichlorobenzene	240	6.8
3,3'-Dichlorobenzidine	<17	<17
Diethyl phthalate	<22	<22
Dimethyl phthalate	<1.6	<1.6
2,4-Dinitrotoluene	<5.7	<5.7
2,6-Dinitrotoluene	<1.9	<1.9
Di-n-octylphthalate	<2.5	<2.5
Fluoranthene	<2.2	<2.2
Fluorene	5.2	<1.9
Hexachlorobenzene	<1.9	<1.9
Hexachlorobutadiene	<0.9	<0.9
Hexachlorocyclopentadiene	<25	<25
Hexachloroethane	<1.6	<1.6
Indeno(1,2,3-cd)pyrene	<3.7	<3.7
Isophorone	<2.2	<2.2
Naphthalene	97	60
Nitrobenzene	<1.9	<1.9
N-nitrosodi-n-propylamine	<25	<25
Phenanthrene	<5.4	<5.4
Pyrene	<1.9	<1.9

(Continued)

AQUEOUS MATRIX
METHOD 625 - BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) EW-7 (3/21/87)	POW-2 (3/21/87)
1,2,4-Trichlorobenzene	14	<1.9
4-Chloro-3-methylphenol	<3.0	<3.0
2-Chlorophenol	27	<3.3
2,4-Dichlorophenol	<2.7	<2.7
2,4-Dimethylphenol	<2.7	<2.7
2,4-Dinitrophenol	<42	<42
2-Methyl-4,6-dinitrophenol	<24	<24
2-Nitrophenol	<3.6	<3.6
4-Nitrophenol	<2.4	<2.4
Pentachlorophenol	<3.6	<3.6
Phenol	<1.5	<1.5
2,4,6-Trichlorophenol	<2.7	<2.7
Extraction Date	3/25/87	3/25/87
Analysis Date	3/31/87 - 4/1/87	3/31/87
Internal Standards		
Level Added = 40 µg/l		
Phenanthrene-d10 (% Recovery)	194	114
Surrogates		
Level Added = 100 µg/l		
(% Recovery)		
Decafluorobiphenyl	39	41
2-Fluorobiphenyl	58	78
2-Fluorophenol	50	15
Phenol-d6	36	21

AQUEOUS MATRIX
METHOD 625 - BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) EW-9* (3/22/87)	POW-3 (3/22/87)
Acenaphthene	<19	<1.9
Acenaphthylene	<35	<3.5
Anthracene	<19	<1.9
Benzo(a)anthracene	<78	<7.8
Benzo(b)fluoranthene	<25	<2.5
Benzo(k)fluoranthene	<25	<2.5
Benzo(a)pyrene	<25	<2.5
Benzo(g,h,i)perylene	<41	<4.1
Bis(2-chloroethyl)ether	<57	<5.7
Bis(2-chloroethoxy)methane	<53	<5.3
Bis(2-chloroisopropyl)ether	<57	<5.7
Bis(2-ethylhexyl)phthalate	<25	8.2
4-Bromophenylphenylether	<19	<1.9
Butyl benzyl phthalate	<25	<2.5
2-Chloronaphthalene	<19	<1.9
4-Chlorophenylphenylether	<42	<4.2
Chrysene	<25	<2.5
Dibenzo(a,h)anthracene	<25	<2.5
Di-n-butyl phthalate	<25	<2.5
1,2-Dichlorobenzene	44	<1.9
1,3-Dichlorobenzene	<19	<1.9
1,4-Dichlorobenzene	<44	5.2
3,3'-Dichlorobenzidine	<170	<17
Diethyl phthalate	<220	<22
Dimethyl phthalate	<16	<1.6
2,4-Dinitrotoluene	<57	<5.7
2,6-Dinitrotoluene	<19	<1.9
Di-n-octylphthalate	<25	<2.5
Fluoranthene	<22	<2.2
Fluorene	<19	<1.9
Hexachlorobenzene	<19	<1.9
Hexachlorobutadiene	<9.0	<0.9
Hexachlorocyclopentadiene	<250	<25
Hexachloroethane	<16	<1.6
Indeno(1,2,3-cd)pyrene	<37	<3.7
Isophorone	<22	<2.2
Naphthalene	120	3.3
Nitrobenzene	<19	<1.9
N-nitrosodi-n-propylamine	<250	<25
Phenanthrene	<54	<5.4
Pyrene	<19	<1.9

(Continued)

AQUEOUS MATRIX
METHOD 625 - BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) EW-9* (3/22/87)	POW-3 (3/22/87)
1,2,4-Trichlorobenzene	27	<1.9
4-Chloro-3-methylphenol	<30	<3.0
2-Chlorophenol	<33	<3.3
2,4-Dichlorophenol	<27	<2.7
2,4-Dimethylphenol	<27	<2.7
2,4-Dinitrophenol	<420	<42
2-Methyl-4,6-dinitrophenol	<240	<24
2-Nitrophenol	<36	<3.6
4-Nitrophenol	<24	<2.4
Pentachlorophenol	<36	<3.6
Phenol	<15	<1.5
2,4,6-Trichlorophenol	<27	<2.7
Extraction Date	3/25/87	3/25/87
Analysis Date	3/31/87	3/31/87
Internal Standards		
Level Added = 40 µg/l		
Phenanthrene-d10 (% Recovery)	91	95
Surrogates		
Level Added = 100 µg/l (% Recovery)		
Decafluorobiphenyl	58	49
2-Fluorobiphenyl	90	75
2-Fluorophenol	28	42
Phenol-d6	29	46

*Elevated detection limits are the result of a dilution necessitated by sample matrix.

AQUEOUS MATRIX
METHOD 625 - BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) TRANSFER BLANK (3/22/87)
Acenaphthene	<1.9
Acenaphthylene	<3.5
Anthracene	<1.9
Benzo(a)anthracene	<7.8
Benzo(b)fluoranthene	<2.5
Benzo(k)fluoranthene	<2.5
Benzo(a)pyrene	<2.5
Benzo(g,h,i)perylene	<4.1
Bis(2-chloroethyl)ether	<5.7
Bis(2-chloroethoxy)methane	<5.3
Bis(2-chloroisopropyl)ether	<5.7
Bis(2-ethylhexyl)phthalate	5.9
4-Bromophenylphenylether	<1.9
Butyl benzyl phthalate	<2.5
2-Chloronaphthalene	<1.9
4-Chlorophenylphenylether	<4.2
Chrysene	<2.5
Dibenzo(a,h)anthracene	<2.5
Di-n-butyl phthalate	2.8
1,2-Dichlorobenzene	<1.9
1,3-Dichlorobenzene	<1.9
1,4-Dichlorobenzene	<4.4
3,3'-Dichlorobenzidine	<17
Diethyl phthalate	<22
Dimethyl phthalate	<1.6
2,4-Dinitrotoluene	<5.7
2,6-Dinitrotoluene	<1.9
Di-n-octylphthalate	<2.5
Fluoranthene	<2.2
Fluorene	<1.9
Hexachlorobenzene	<1.9
Hexachlorobutadiene	<0.9
Hexachlorocyclopentadiene	<25
Hexachloroethane	<1.6
Indeno(1,2,3-cd)pyrene	<3.7
Isophorone	<2.2
Naphthalene	<1.6
Nitrobenzene	<1.9
N-nitrosodi-n-propylamine	<25
Phenanthrene	<5.4
Pyrene	<1.9

(Continued)

AQUEOUS MATRIX
METHOD 625 - BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) TRANSFER BLANK (3/22/87)
1,2,4-Trichlorobenzene	<1.9
4-Chloro-3-methylphenol	<3.0
2-Chlorophenol	<3.3
2,4-Dichlorophenol	<2.7
2,4-Dimethylphenol	<2.7
2,4-Dinitrophenol	<42
2-Methyl-4,6-dinitrophenol	<24
2-Nitrophenol	<3.6
4-Nitrophenol	<2.4
Pentachlorophenol	<3.6
Phenol	<1.5
2,4,6-Trichlorophenol	<2.7
Extraction Date	3/25/87
Analysis Date	3/31/87
Internal Standards	
Level Added = 40 µg/l	
Phenanthrene-d10 (% Recovery)	107
Surrogates	
Level Added = 100 µg/l (% Recovery)	
Decafluorobiphenyl	58
2-Fluorobiphenyl	84
2-Fluorophenol	30
Phenol-d6	37

AQUEOUS MATRIX
METHOD 608 - ORGANOCHLORINE PESTICIDES/PCB'S

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) POW-1 (3/19/87)	POW-4 (3/19/87)
Aldrin	<0.2	<0.2
Alpha-BHC	0.21	0.90
Beta-BHC	<0.3	0.25
Delta-BHC	<0.3	<0.05
Gamma-BHC	<0.005	<0.05
Chlordane	<0.5	<2
4,4'-DDD	<0.1	<0.5
4,4'-DDE	<0.02	<0.1
4,4'-DDT	<0.08	<0.4
Dieldrin	<0.02	<0.1
Endosulfan I	<0.02	<0.1
Endosulfan II	<0.1	<0.5
Endosulfan sulfate	<0.3	<0.4
Endrin	<0.02	<0.1
Endrin aldehyde	<0.08	<0.4
Heptachlor	<0.3	0.50
Heptachlor epoxide	<0.01	<0.05
Toxaphene	<0.6	<2
Aroclor 1016	<1	<3
Aroclor 1221	<2	<5
Aroclor 1232	<2	<5
Aroclor 1242	<1	<3
Aroclor 1248	<1	<3
Aroclor 1254	<0.5	<2
Aroclor 1260	<0.5	<2
Extraction Date	3/20/87	3/20/87
Analysis Date	3/30/87	4/1/87

AQUEOUS MATRIX
METHOD 608 - ORGANOCHLORINE PESTICIDES/PCB'S

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) EW-2 (3/20/87)
Aldrin	<0.1
Alpha-BHC	0.90
Beta-BHC	0.78
Delta-BHC	<0.2
Gamma-BHC	<0.2
Chlordane	<2
4,4'-DDD	<0.4
4,4'-DDE	<0.2
4,4'-DDT	<0.8
Dieldrin	<0.2
Endosulfan I	<0.3
Endosulfan II	<0.4
Endosulfan sulfate	<1
Endrin	<0.2
Endrin aldehyde	<0.4
Heptachlor	<0.1
Heptachlor epoxide	<0.1
Toxaphene	<3
Aroclor 1016	<4
Aroclor 1221	<8
Aroclor 1232	<8
Aroclor 1242	<4
Aroclor 1248	<4
Aroclor 1254	<2
Aroclor 1260	<2
Extraction Date	3/24/87
Analysis Date	3/30/87

AQUEOUS MATRIX
METHOD 608 - ORGANOCHLORINE PESTICIDES/PCB'S

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) EW-7 (3/21/87)	POW-2 (3/21/87)
Aldrin	<0.04	<0.03
Alpha-BHC	<0.02	<0.05
Beta-BHC	0.082	0.76
Delta-BHC	0.074	<0.05
Gamma-BHC	<0.01	<0.03
Chlordane	<0.4	<0.5
4,4'-DDD	<0.02	<0.09
4,4'-DDE	<0.02	<0.05
4,4'-DDT	<0.2	<0.4
Dieldrin	<0.04	<0.05
Endosulfan I	<0.02	<0.05
Endosulfan II	<0.02	<0.09
Endosulfan sulfate	<0.2	<0.2
Endrin	<0.02	<0.05
Endrin aldehyde	<0.2	<0.09
Heptachlor	<0.02	<0.05
Heptachlor epoxide	<0.02	<0.03
Toxaphene	<1	<3
Aroclor 1016	<1	<0.5
Aroclor 1221	<2	<1
Aroclor 1232	<2	<1
Aroclor 1242	<1	<0.5
Aroclor 1248	<1	<0.5
Aroclor 1254	<1	<0.5
Aroclor 1260	<1	<0.5
Extraction Date	3/24/87	3/24/87
Analysis Date	4/1/87	4/1/87

AQUEOUS MATRIX
METHOD 608 - ORGANOCHLORINE PESTICIDES/PCB'S

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) EW-9 (3/22/87)	POW-3 (3/22/87)
Aldrin	<0.01	<0.02
Alpha-BHC	0.091	<0.04
Beta-BHC	0.087	<0.07
Delta-BHC	0.074	<0.02
Gamma-BHC	<0.01	0.052
Chlordane	<0.3	<0.4
4,4'-DDD	<0.05	<0.07
4,4'-DDE	<0.02	<0.02
4,4'-DDT	<0.08	<0.3
Dieldrin	<0.02	<0.02
Endosulfan I	0.27	<0.02
Endosulfan II	<0.05	<0.07
Endosulfan sulfate	<0.1	<0.2
Endrin	<0.03	<0.02
Endrin aldehyde	<0.05	<0.07
Heptachlor	0.078	<0.04
Heptachlor epoxide	0.11	0.037
Toxaphene	<0.5	<2
Aroclor 1016	<0.5	<1
Aroclor 1221	<1	<2
Aroclor 1232	<1	<2
Aroclor 1242	<0.5	<1
Aroclor 1248	<0.5	<1
Aroclor 1254	<0.3	<0.5
Aroclor 1260	<0.3	<0.5
Extraction Date	3/24/87	3/24/87
Analysis Date	3/31/87	4/1/87

AQUEOUS MATRIX
METHOD 608 - ORGANOCHLORINE PESTICIDES/PCB'S

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) TRANSFER BLANK (3/22/87)
Aldrin	<0.005
Alpha-BHC	<0.005
Beta-BHC	<0.005
Delta-BHC	<0.005
Gamma-BHC	<0.005
Chlordane	<0.09
4,4'-DDD	<0.02
4,4'-DDE	<0.01
4,4'-DDT	<0.07
Dieldrin	<0.01
Endosulfan I	<0.01
Endosulfan II	<0.02
Endosulfan sulfate	<0.04
Endrin	<0.01
Endrin aldehyde	<0.02
Heptachlor	<0.005
Heptachlor epoxide	<0.005
Toxaphene	<0.5
Aroclor 1016	<0.1
Aroclor 1221	<0.2
Aroclor 1232	<0.2
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Extraction Date	3/24/87
Analysis Date	3/31/87

AQUEOUS MATRIX
TOTAL METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) POW-1 (3/19/87)	POW-4 (3/19/87)
Total Antimony	204.2	3/27/87	<0.06	<0.06
Total Arsenic	206.2	3/25/87	0.061	0.83
Total Beryllium	210.1	3/24/87	<0.005	0.005
Total Cadmium	213.1	3/23/87	0.0080	0.088
Total Chromium	218.1	3/23/87	0.59	3.2
Total Copper	220.1	3/24/87	0.23	2.6
Total Lead	239.2	3/26/87	0.44	6.1
Total Mercury	245.1	3/26/87	0.0036	0.039
Total Nickel	249.2	3/24/87	0.050	0.33
Total Selenium	270.2	3/27/87	<0.005	<0.005
Total Silver	272.1	3/24/87	0.017	0.020
Total Thallium	279.2	3/27/87	<0.01	<0.01
Total Zinc	289.1	3/24/87	0.90	13

AQUEOUS MATRIX
TOTAL METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) EW-2 (3/20/87)
Total Antimony	204.2	3/27/87	0.15
Total Arsenic	206.2	3/27/87	6.6
Total Beryllium	210.1	3/27/87	0.022
Total Cadmium	213.1	3/27/87	0.41
Total Chromium	218.1	3/26/87	22
Total Copper	220.1	3/27/87	18
Total Lead	239.2	3/27/87	53
Total Mercury	245.1	3/26/87	0.128
Total Nickel	249.2	3/27/87	4.0
Total Selenium	270.2	3/27/87	<0.01
Total Silver	272.1	3/26/87	0.030
Total Thallium	279.2	3/27/87	0.021
Total Zinc	289.1	3/26/87	67

AQUEOUS MATRIX
TOTAL METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) EW-7 (3/21/87)	POW-2 (3/21/87)
Total Antimony	204.2	3/27/87	0.039	<0.01
Total Arsenic	206.2	3/27/87	0.19	0.036
Total Beryllium	210.1	3/27/87	<0.005	0.0060
Total Cadmium	213.1	3/27/87	<0.02	<0.02
Total Chromium	218.1	3/26/87	0.64	0.018
Total Copper	220.1	3/27/87	0.55	0.012
Total Lead	239.2	3/27/87	0.85	<0.005
Total Mercury	245.1	3/26/87	0.0099	<0.0005
Total Nickel	249.2	3/27/87	0.19	0.011
Total Selenium	270.2	3/27/87	<0.01	<0.01
Total Silver	272.1	3/26/87	<0.005	<0.005
Total Thallium	279.2	3/27/87	<0.005	<0.005
Total Zinc	289.1	3/26/87	2.6	0.090

AQUEOUS MATRIX
TOTAL METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) EW-9 (3/22/87)	POW-3 (3/22/87)
Total Antimony	204.2	3/27/87	0.013	<0.01
Total Arsenic	206.2	3/27/87	0.34	0.077
Total Beryllium	210.1	3/27/87	<0.005	0.005
Total Cadmium	213.1	3/27/87	<0.02	<0.02
Total Chromium	218.1	3/26/87	0.88	0.22
Total Copper	220.1	3/27/87	0.77	0.14
Total Lead	239.2	3/27/87	1.4	0.079
Total Mercury	245.1	3/26/87	0.0084	0.0020
Total Nickel	249.2	3/27/87	0.69	0.052
Total Selenium	270.2	3/27/87	<0.01	<0.01
Total Silver	272.1	3/26/87	0.0070	<0.005
Total Thallium	279.2	3/27/87	<0.005	<0.005
Total Zinc	289.1	3/26/87	3.3	0.47

AQUEOUS MATRIX
TOTAL METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) TRANSFER BLANK (3/22/87)
Total Antimony	204.2	3/27/87	<0.01
Total Arsenic	206.2	3/27/87	<0.005
Total Beryllium	210.1	3/27/87	<0.005
Total Cadmium	213.1	3/27/87	<0.02
Total Chromium	218.1	3/26/87	<0.005
Total Copper	220.1	3/27/87	<0.005
Total Lead	239.2	3/27/87	0.021
Total Mercury	245.1	3/26/87	<0.0005
Total Nickel	249.2	3/27/87	<0.005
Total Selenium	270.2	3/27/87	<0.01
Total Silver	272.1	3/26/87	<0.005
Total Thallium	279.2	3/27/87	<0.005
Total Zinc	289.1	3/26/87	<0.02

AQUEOUS MATRIX
SOLUBLE METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) POW-1 (3/19/87)	POW-4 (3/19/87)
Soluble Antimony	204.2	3/24/87	<0.06	<0.06
Soluble Arsenic	206.2	3/26/87	<0.005	0.034
Soluble Beryllium	210.1	3/24/87	<0.005	<0.005
Soluble Cadmium	213.1	3/23/87	<0.005	<0.005
Soluble Chromium	218.1	3/23/87	<0.005	<0.005
Soluble Copper	220.1	3/24/87	<0.005	<0.005
Soluble Lead	239.2	3/23/87	<0.02	<0.02
Soluble Mercury	245.1	3/23/87	<0.0005	<0.0005
Soluble Nickel	249.2	3/24/87	<0.02	<0.02
Soluble Selenium	270.2	3/27/87	<0.005	<0.005
Soluble Silver	272.1	3/24/87	<0.005	<0.005
Soluble Thallium	279.2	3/27/87	<0.01	<0.01
Soluble Zinc	289.1	3/24/87	<0.005	0.010

AQUEOUS MATRIX
SOLUBLE METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) EW-2 (3/20/87)
Soluble Antimony	204.2	3/27/87	<0.01
Soluble Arsenic	206.2	3/27/87	0.069
Soluble Beryllium	210.1	3/27/87	<0.005
Soluble Cadmium	213.1	3/27/87	<0.02
Soluble Chromium	218.1	3/26/87	0.022
Soluble Copper	220.1	3/27/87	0.014
Soluble Lead	239.2	3/26/87	0.020
Soluble Mercury	245.1	4/1/87	<0.0006
Soluble Nickel	249.2	3/27/87	0.0075
Soluble Selenium	270.2	3/27/87	<0.01
Soluble Silver	272.1	3/26/87	<0.005
Soluble Thallium	279.2	3/27/87	<0.005
Soluble Zinc	289.1	3/26/87	0.10

AQUEOUS MATRIX
SOLUBLE METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) EW-7 (3/21/87)	POW-2 (3/21/87)
Soluble Antimony	204.2	3/27/87	<0.01	<0.01
Soluble Arsenic	206.2	3/27/87	0.011	0.0080
Soluble Beryllium	210.1	3/27/87	<0.005	<0.005
Soluble Cadmium	213.1	3/27/87	<0.02	<0.02
Soluble Chromium	218.1	3/26/87	0.012	<0.005
Soluble Copper	220.1	3/27/87	<0.005	<0.005
Soluble Lead	239.2	3/26/87	<0.005	<0.005
Soluble Mercury	245.1	4/1/87	<0.0006	<0.0006
Soluble Nickel	249.2	3/27/87	0.010	<0.005
Soluble Selenium	270.2	3/27/87	<0.01	<0.01
Soluble Silver	272.1	3/26/87	<0.005	<0.005
Soluble Thallium	279.2	3/27/87	<0.005	<0.005
Soluble Zinc	289.1	3/26/87	0.090	0.070

AQUEOUS MATRIX
SOLUBLE METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) EW-9 (3/22/87)	POW-3 (3/22/87)
Soluble Antimony	204.2	3/27/87	<0.01	<0.01
Soluble Arsenic	206.2	3/27/87	0.020	0.0060
Soluble Beryllium	210.1	3/27/87	<0.005	<0.005
Soluble Cadmium	213.1	3/27/87	<0.02	<0.02
Soluble Chromium	218.1	3/26/87	0.0090	<0.005
Soluble Copper	220.1	3/27/87	<0.005	<0.005
Soluble Lead	239.2	3/26/87	<0.005	<0.005
Soluble Mercury	245.1	4/1/87	<0.0006	<0.0006
Soluble Nickel	249.2	3/27/87	<0.005	<0.005
Soluble Selenium	270.2	3/27/87	<0.01	<0.01
Soluble Silver	272.1	3/26/87	<0.005	<0.005
Soluble Thallium	279.2	3/27/87	<0.005	<0.005
Soluble Zinc	289.1	3/26/87	0.060	0.060

AQUEOUS MATRIX
WATER QUALITY TESTING

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) POW-1 (3/19/87)	POW-4 (3/19/87)
Total Cyanide	335.2	mg/l	3/24/87	0.040	0.070
Total Recoverable Phenolics	420.1	mg/l	3/31/87	0.042	0.37

AQUEOUS MATRIX
WATER QUALITY TESTING

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) EW-2 (3/20/87)
Total Cyanide	335.2	mg/l	3/25/87	0.070
Total Recoverable Phenolics	420.1	mg/l	4/2/87	0.50

AQUEOUS MATRIX
WATER QUALITY TESTING

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) EW-7 (3/21/87)	POW-2 (3/21/87)
Total Cyanide	335.2	mg/l	3/25/87	0.060	0.11
Total Recoverable Phenolics	420.1	mg/l	4/7/87	0.22	0.024

AQUEOUS MATRIX
WATER QUALITY TESTING

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) EW-9 (3/22/87)	POW-3 (3/22/87)
Total Cyanide	335.2	mg/l	3/25/87	0.060	0.030
Total Recoverable Phenolics	420.1	mg/l	4/2/87	0.16	0.022

AQUEOUS MATRIX
WATER QUALITY TESTING

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) TRANSFER BLANK (3/22/87)
Total Cyanide	335.2	mg/l	3/25/87	<0.02
Total Recoverable Phenolics	420.1	mg/l	4/2/87	0.011

QUALITY CONTROL INFORMATION - PRECISION
AQUEOUS MATRIX
METHOD 624 - VOLATILES

SAMPLE IDENTIFICATION POW-1

COMPOUND (Units of Measure = µg/l)	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Benzene	320	260	290	42
Chlorobenzene	600	450	530	110
1,2-Dichlorobenzene	90*	72*	81*	13
1,3-Dichlorobenzene	<21	<21	<21	-
1,4-Dichlorobenzene	<25	<25	<25	-
Methylene chloride	<28	210	210	-
Analysis Date	3/23/87	3/23/87	-	-
Internal Standards Level Added = 50 µg/l (% Recovery)				
Bromochloromethane	98	104	101	4.2
1,4-Difluorobenzene	89	108	99	13
Chlorobenzene D_5	95	106	101	7.8

*Chromatographically 1,2-Dichlorobenzene and 1,4-Dichlorobenzene coelute. The reported value is therefore an "and/or" value.

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
METHOD 624 - VOLATILES

SAMPLE IDENTIFICATION EW-9

COMPOUND	NANOGRAMS OF SPIKE	PERCENT RECOVERY
Benzene	200	104
Bromodichloromethane	200	109
Bromoform	200	113
1,2-Dichloroethane	200	107
trans-1,2-Dichloroethylene	200	107
cis-1,3-Dichloropropene	244	115
trans-1,3-Dichloropropene	156	110
Ethylbenzene	200	108
1,1,2,2-Tetrachloroethane	200	120
Toluene	200	92
1,1,1-Trichloroethane	200	110
Analysis Date	3/26/87	
Internal Standards		
Level Added = 50 µg/l (% Recovery)		
Bromochloromethane	94	
1,4-Difluorobenzene	98	
Chlorobenzene D_5	99	

QUALITY CONTROL INFORMATION - PRECISION
AQUEOUS MATRIX
METHOD 625 - BASE/NEUTRAL/ACID EXTRACTABLES

SAMPLE IDENTIFICATION EW-2

COMPOUND (Units of Measure = µg/l)	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Acenaphthene	45	39	42	4.2
Anthracene	35	25	30	7.1
Bis(2-ethylhexyl)phthalate	51	<25	51	-
1,2-Dichlorobenzene	<19	21	21	-
1,3-Dichlorobenzene	<19	<19	<19	-
1,4-Dichlorobenzene	110	130	120	14
Fluoranthene	37	25	31	8.5
Fluorene	35	32	34	2.1
Naphthalene	580	570	580	7.1
Phenanthrene	91	70	81	15
Pyrene	25	<19	25	-
1,2,4-Trichlorobenzene	<19	<19	<19	-
2-Chlorophenol	<33	<33	<33	-
Extraction Date	3/25/87	3/25/87	-	-
Analysis Date	3/31/87	3/31/87	-	-
Internal Standards				
Level Added = 40 µg/l				
Phenanthrene-d10 (% Recovery)	94	130	112	25
Surrogates				
Level Added = 100 µg/l (% Recovery)				
Decafluorobiphenyl	31	38	35	4.9
2-Fluorobiphenyl	69	79	74	7.1
2-Fluorophenol	15	15	15	0
Phenol-d6	17	17	17	0

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
METHOD 625 - BASE/NEUTRAL/ACID EXTRACTABLES

SAMPLE IDENTIFICATION Method Blank Spike

COMPOUND	NANOGRAMS OF SPIKE	PERCENT RECOVERY
2-Chlorophenol	25	78
1,3-Dichlorobenzene	25	63
2,4-Dichlorophenol	25	85
Di-n-octylphthalate	25	42
Fluoranthene	25	86
Fluorene	25	81
Naphthalene	25	68
Nitrobenzene	25	72
2,4,6-Trichlorophenol	25	95
Extraction Date	3/23/87	
Analysis Date	3/26/87	
Internal Standards		
Level Added = 20 µg/l		
Phenanthrene-d10 (% Recovery)	168	
Surrogates		
Level Added = 100 µg/l		
(% Recovery)		
Decafluorobiphenyl	45	
2-Fluorobiphenyl	58	
2-Fluorophenol	55	
Phenol-d6	52	

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
METHOD 625 - BASE/NEUTRAL/ACID EXTRACTABLES

SAMPLE IDENTIFICATION Method Blank Spike

COMPOUND	NANOGRAMS OF SPIKE	PERCENT RECOVERY
2-Chlorophenol	25	100
1,3-Dichlorobenzene	25	52
2,4-Dichlorophenol	25	136
Di-n-octylphthalate	25	144
Fluoranthene	25	140
Fluorene	25	96
Naphthalene	25	100
Nitrobenzene	25	100
2,4,6-Trichlorophenol	25	64
Extraction Date	3/25/87	
Analysis Date	4/1/87	
Internal Standards		
Level Added = 40 µg/l		
Phenanthrene-d10 (% Recovery)	94	
Surrogates		
Level Added = 100 µg/l		
(% Recovery)		
Decafluorobiphenyl	45	
2-Fluorobiphenyl	72	
2-Fluorophenol	51	
Phenol-d6	46	

QUALITY CONTROL INFORMATION - PRECISION
AQUEOUS MATRIX
METHOD 608 - ORGANOCHLORINE PESTICIDES/PCB'S

SAMPLE IDENTIFICATION EW-9

COMPOUND (Units of Measure = µg/l)	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Aldrin	<0.01	<0.01	<0.01	-
Alpha-BHC	0.090	0.092	0.091	0.0014
Beta-BHC	0.073	0.10	0.087	0.019
Delta-BHC	0.072	0.076	0.074	0.0028
Gamma-BHC	<0.01	<0.01	<0.01	-
Chlordane	<0.3	<0.3	<0.3	-
4,4'-DDD	<0.05	<0.05	<0.05	-
4,4'-DDE	<0.02	<0.02	<0.02	-
4,4'-DDT	<0.08	<0.08	<0.08	-
Dieldrin	<0.02	<0.02	<0.02	-
Endosulfan I	0.38	0.15	0.27	0.16
Endosulfan II	<0.05	<0.05	<0.05	-
Endosulfan sulfate	<0.1	<0.1	<0.1	-
Endrin	<0.03	<0.03	<0.03	-
Endrin aldehyde	<0.05	<0.05	<0.05	-
Heptachlor	0.085	0.071	0.078	0.0099
Heptachlor epoxide	0.16	0.067	0.11	0.066
Toxaphene	<0.5	<0.5	<0.5	-
Aroclor 1016	<0.5	<0.5	<0.5	-
Aroclor 1221	<1	<1	<1	-
Aroclor 1232	<1	<1	<1	-
Aroclor 1242	<0.5	<0.5	<0.5	-
Aroclor 1248	<0.5	<0.5	<0.5	-
Aroclor 1254	<0.3	<0.3	<0.3	-
Aroclor 1260	<0.3	<0.3	<0.3	-
Extraction Date	3/24/87	3/24/87	-	-
Analysis Date	3/31/87	3/31/87	-	-

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
METHOD 608 - ORGANOCHLORINE PESTICIDES

SAMPLE IDENTIFICATION Method Blank Spike

COMPOUND	NANOGRAMS OF SPIKE	PERCENT RECOVERY
Aldrin	0.20	78
Gamma-BHC	0.20	106
4,4'-DDE	0.20	101
Endosulfan II	0.20	105
Endrin	0.20	116
Heptachlor	0.20	110
Extraction Date	3/24/87	
Analysis Date	3/31/87	

QUALITY CONTROL INFORMATION - PRECISION
AQUEOUS MATRIX
TOTAL METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	SAMPLE IDENTIFICATION	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Total Antimony	204.2	POW-4	<0.06	<0.06	<0.06	-
Total Arsenic	206.2		0.87	0.79	0.83	0.057
Total Beryllium	210.1		0.005	<0.005	0.005	-
Total Cadmium	213.1		0.087	0.089	0.088	0.0014
Total Chromium	218.1		3.2	3.2	3.2	0
Total Copper	220.1		2.7	2.5	2.6	0.14
Total Lead	239.2		6.1	6.0	6.1	0.071
Total Mercury	245.1		0.033	0.045	0.039	0.0085
Total Nickel	249.2		0.35	0.31	0.33	0.028
Total Selenium	270.2		<0.005	<0.005	<0.005	-
Total Silver	272.1		0.015	0.024	0.020	0.0064
Total Thallium	279.2		<0.01	<0.01	<0.01	-
Total Zinc	289.1		13	12	13	0.71

QUALITY CONTROL INFORMATION - PRECISION
AQUEOUS MATRIX
TOTAL METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	SAMPLE IDENTIFICATION	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Total Antimony	204.2	EW-2	0.19	0.10	0.15	0.064
Total Arsenic	206.2		5.9	7.2	6.6	0.92
Total Beryllium	210.1		0.022	0.022	0.022	0
Total Cadmium	213.1		0.41	0.41	0.41	0
Total Chromium	218.1		22	22	22	0
Total Copper	220.1		18	17	18	0.71
Total Lead	239.2		45	60	53	11
Total Mercury	245.1		0.147	0.108	0.128	0.028
Total Nickel	249.2		3.7	4.2	4.0	0.35
Total Selenium	270.2		<0.01	<0.01	<0.01	-
Total Silver	272.1		0.027	0.032	0.030	0.0035
Total Thallium	279.2		0.021	0.020	0.021	0.00071
Total Zinc	289.1		65	69	67	2.8

I.D. #87-306

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
TOTAL METALS

PARAMETER	METHOD NUMBER	SAMPLE IDENTIFICATION	MICROGRAMS OF SPIKE	PERCENT RECOVERY
Total Antimony	204.2	POW-1	50	70
Total Arsenic	206.2	POW-4	50	113
Total Beryllium	210.1	POW-4	500	99
Total Cadmium	213.1	POW-4	500	92
Total Chromium	218.1	POW-4	500	101
Total Copper	220.1	POW-4	500	100
Total Lead	239.2	POW-4	5,000	93
Total Mercury	245.1	POW-4	0.40	92
Total Nickel	249.2	POW-4	5,000	100
Total Selenium	270.2	POW-4	50	86
Total Silver	272.1	POW-4	500	97
Total Thallium	279.2	POW-4	50	90
Total Zinc	289.1	POW-4	500	98

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
TOTAL METALS

PARAMETER	METHOD NUMBER	SAMPLE IDENTIFICATION	MICROGRAMS OF SPIKE	PERCENT RECOVERY
Total Antimony	204.2	EW-2	50	96
Total Arsenic	206.2		50	86
Total Beryllium	210.1		500	86
Total Cadmium	213.1		500	100
Total Chromium	218.1		500	101
Total Copper	220.1		500	101
Total Lead	239.2		50	72
Total Mercury	245.1		0.40	79
Total Nickel	249.2		50	104
Total Selenium	270.2		50	108
Total Silver	272.1		500	87
Total Thallium	279.2		50	82
Total Zinc	289.1		500	104

QUALITY CONTROL INFORMATION - PRECISION
AQUEOUS MATRIX
SOLUBLE METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	SAMPLE IDENTIFICATION	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Soluble Antimony	204.2	EW-2	<0.01	<0.01	<0.01	-
Soluble Arsenic	206.2		0.068	0.069	0.069	0.00071
Soluble Beryllium	210.1		<0.005	<0.005	<0.005	-
Soluble Cadmium	213.1		<0.02	<0.02	<0.02	-
Soluble Chromium	218.1		0.026	0.017	0.022	0.0064
Soluble Copper	220.1		0.011	0.016	0.014	0.0035
Soluble Lead	239.2		0.019	0.020	0.020	0.00071
Soluble Mercury	245.1		<0.0006	<0.0006	<0.0006	-
Soluble Nickel	249.2		0.0070	0.0080	0.0075	0.00071
Soluble Selenium	270.2		<0.01	<0.01	<0.01	-
Soluble Silver	272.1		<0.005	<0.005	<0.005	-
Soluble Thallium	279.2		<0.005	<0.005	<0.005	-
Soluble Zinc	289.1		0.10	0.10	0.10	0

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
SOLUBLE METALS

PARAMETER	METHOD NUMBER	SAMPLE IDENTIFICATION	MICROGRAMS OF SPIKE	PERCENT RECOVERY
Soluble Antimony	204.2	EW-2	50	78
Soluble Arsenic	206.2		50	117
Soluble Beryllium	210.1		500	107
Soluble Cadmium	213.1		500	95
Soluble Chromium	218.1		500	96
Soluble Copper	220.1		500	102
Soluble Lead	239.2		50	96
Soluble Mercury	245.1		0.40	75
Soluble Nickel	249.2		50	102
Soluble Selenium	270.2		50	110
Soluble Silver	272.1		500	87
Soluble Thallium	279.2		50	86
Soluble Zinc	289.1		500	92

QUALITY CONTROL INFORMATION - PRECISION
AQUEOUS MATRIX
WATER QUALITY TESTING

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	SAMPLE IDENTIFICATION	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Total Cyanide	335.2	mg/l	POW-2	0.11	0.11	0.11	0
Total Recoverable Phenolics	420.1	mg/l	POW-3	0.024	0.020	0.022	0.0028

I.D. #87-306

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
WATER QUALITY TESTING

PARAMETER	METHOD NUMBER	SAMPLE IDENTIFICATION	MICROGRAMS OF SPIKE	PERCENT RECOVERY
Total Cyanide	335.2	POW-2	23	97
Total Recoverable Phenolics	420.1	POW-3	20	107

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO.: BTA-86-94

SITE NAME: NFTA DIKED DISPOSAL AREA

SAMPLERS (SIGNATURE): Edward J. Barbiero

CEMPIRE - THOMSEN

STATION NO	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	3-1L amber glass Priority Pollutants	2-1L amber glass Priority Pollutants	1-1L clear plastic Priority Pollutants	2-40 ml VOA Priority Pollutants	1-1L clear glass Priority Pollutants	Priority metals (only)	REMARKS
POW-4	3/19/87	2:30 PM	-	✓			✓	✓	✓	✓	✓		1-1L of 3 glass containers need to be filtered w/ 45 MICRON FILTER
POW-1	3/19/87	3:30 PM	-	✓			✓	✓	✓	✓	✓		" " " "

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
Edward J. Barbiero	3/19/87	5:00 PM	K. Kapzeck				
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	REMARKS	

Distribution: Original accompanies shipment; copy to coordinator field files

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO.:

SITE NAME: PORT OF BUFFALO (OIL SPILL)

SAMPLERS (SIGNATURE): Frank A Mamalian

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	3x1L AMBER GLASS	3x1 LOZ PLASTIC	2x40ML VOA	1x16 OZ GLASS			REMARKS
EW#2	3/20/87	1500		X	GRID LOCATION K-4	9	✓	●	●	●			RECRA #s 5028, 5029, 5030
								✓					RECRA #s 5031, 5032, 5036
									✓				RECRA #s 5034, 5035
										✓			RECRA # 5033
													NOTE - UNABLE TO FILTER (16 OZ PLASTIC) 5036 DUE TO SEDS. MUST BE FILTERED

RELINQUISHED BY (SIGNATURE)	DATE TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE TIME	RECEIVED BY (SIGNATURE)
F A Mamalian	1850/3/20/87	Ba Jumitt			
RELINQUISHED BY (SIGNATURE)	DATE TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE TIME	REMARKS	

Distribution: Original accompanies shipment; copy to coordinator field files

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO.:

SITE NAME: Port of Buffalo (Old Outer Harbor)

SAMPLERS (SIGNATURE): Frank R Mannalino Jr

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	3x1L GLASS (AMBER)	3x16 oz PLASTIC	1x16oz GLASS	2x40ML VOA's			REMARKS
EW #7	3/2/87	1100 hrs		X	GRID LOCATION D-12	9	✓						RECRA #'S 5019, 5020, 5021
FW #7	"	"		"	"			✓					RECRA #'S 5022, 5023, 5025 (ALL UNFILTERED DUE TO SEDS)
EW #7	"	"		"	"				✓				RECRA # 5024
EW #7	"	"		"	"					✓			RECRA #'S 5026, 5027
FB #3	3/2/87	730		X	GRID LOCATION C-1	9	✓						RECRA #'S 5001, 5002, 5003
FB #3	"	"		"	"			✓					RECRA #'S 5004, 5005, 5006 5005 FILTERED
EB #3	"	"		"	"				✓				RECRA #'S 5007
EB #3	"	"		"	"					✓			RECRA #'S 5008, 5009

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
Frank R Mannalino	3/2/87	1020	[signature]				
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	REMARKS	

Distribution: Original accompanies shipment; copy to coordinator field files

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO.:

SITE NAME: FORT ERIE - BUFFALO

SAMPLERS (SIGNATURE): Frank C. Wilkinson Jr.

STATION NO	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	3x1L AMBER GLASS	3x16 oz PLASTIC	1x16 oz GLASS	2x40ml VIALS			REMARKS
EB #1	3/27/84	1500		X	GRID LOCATION F-15	1	✓						RECRA #s 5037, 5038, 5039
EB #2	"	"		"	"			✓					RECRA #s 5040, 5041, 5042 (UNFILTERED)
EB #3	"	"		"	"				✓				RECRA # 5043
EB #4	"	"		"	"					✓			RECRA #s 5044, 5045
FB #3	3/27/84	1600		X	GRID LOCATION T 11	9	✓						RECRA #s 5046, 5047, 5048
FB #3	"	1600		"	"			✓					RECRA #s 5049, 5050, 5051 (UNFILTERED)
FB #3	"	1600		"	"				✓				RECRA # 5052
FB #3	"	1600		"	"					✓			RECRA #s 5053, 5054
—	3/27/84	2000		X	TRANSFER BLANKS	3	✓						RECRA #s 5055, 5056, 5057
—	3/28/84	2000		"	TRANSFER BLANKS	2		✓					RECRA # 5058, 5059
—	3/27/84	2000		"	TRANSFER BLANKS	1			✓				RECRA # 5060
—	3/27/84	2000		"	TRANSFER BLANKS	2				✓			RECRA #s 5061, 5062
—	—				FIELD BLANKS	2				✓			NO RECRA #s

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
Frank C. Wilkinson	3/27/84	2200	Stan Kulak				
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	REMARKS	

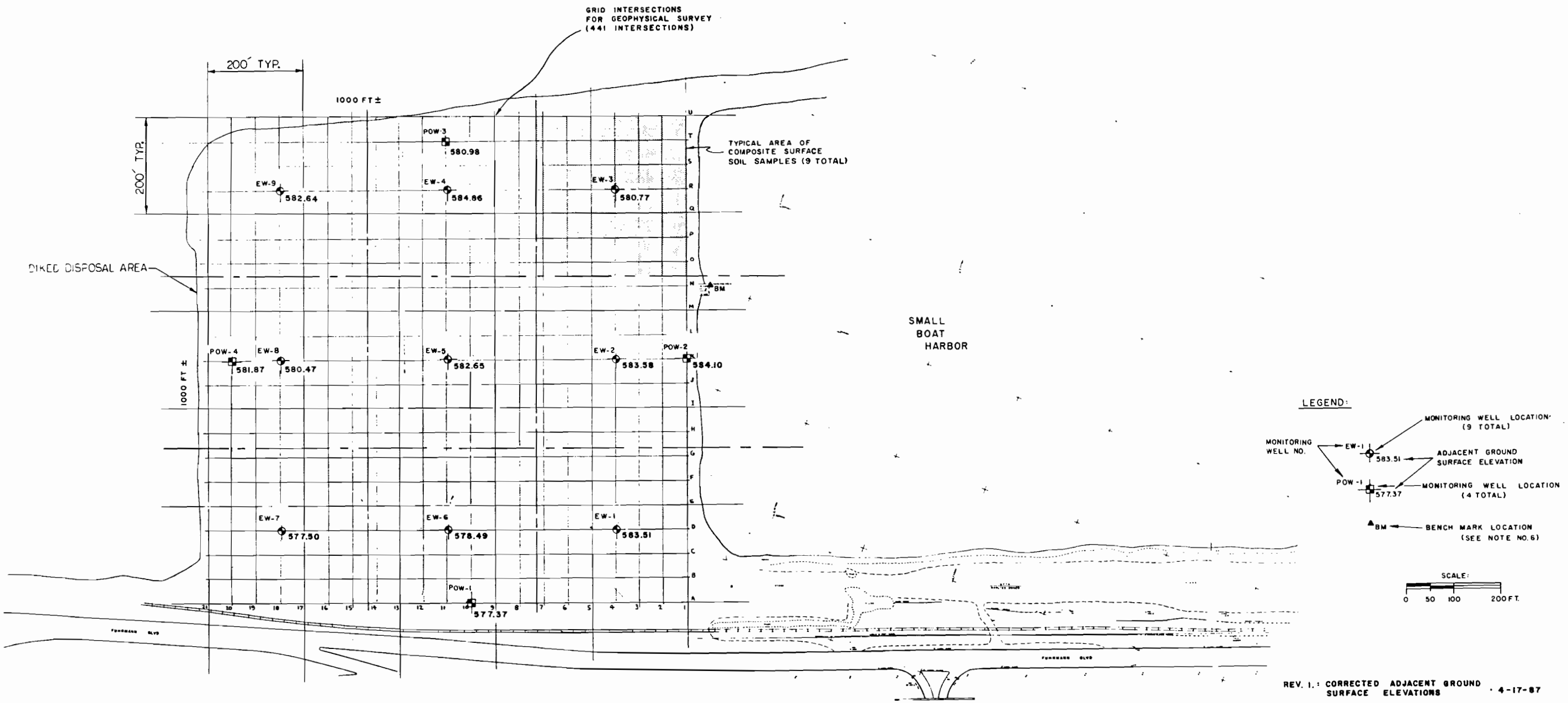
Distribution: Original accompanies shipment; copy to coordinator field files

LAKE ERIE

November 1985 Mean Lake Level = 573.05

Highest Monthly Average for Period of 1860 thru 1980
(June 1973 at Buffalo Harbor) = 573.45

Lowest Monthly Average for period 1860 thru 1980
(February 1935 at Buffalo Harbor) = 567.60



REV. 1.: CORRECTED ADJACENT GROUND SURFACE ELEVATIONS · 4-17-87

NOTES:

1. EW = Environmental monitoring well
2. POW = Perimeter Observation well
3. This drawing is made from a base drawing supplied by NFTA
4. Elevations are given with respect to the International Great Lakes Datum (IGLD, 1955)
5. Well locations and elevations were established in the field by a survey crew from Larsen Engineers in Rochester, New York
6. Benchmark is top of westerly 10 ft. ϕ CMP, El. 576.16

NIAGARA FRONTIER TRANSPORTATION AUTHORITY

DIKED DISPOSAL AREA — BUFFALO, NEW YORK

MONITORING WELL LOCATIONS

THOMSEN ASSOCIATES
CONSULTING ENGINEERS

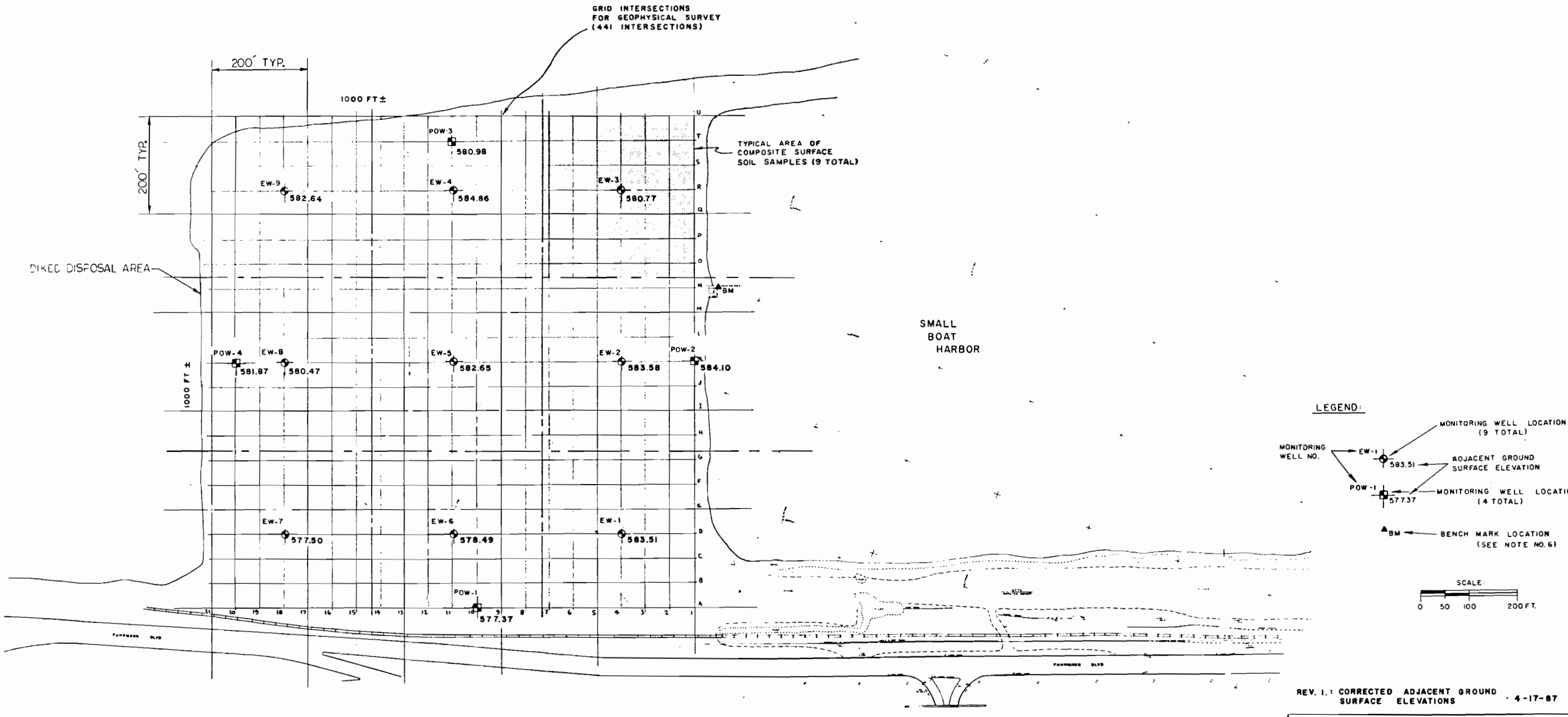
DR. BY: DAW	SCALE: AS NOTED	PROJ. NO. BTA-86-94A
CK'D BY: SRP	DATE: 2-87	DRWG. NO. A.2

LAKE ERIE

November 1985 Mean Lake Level = 573.05

Highest Monthly Average for Period of 1860 thru 1980
(June 1973 at Buffalo Harbor) = 573.45

Lowest Monthly Average for period 1860 thru 1980
(February 1935 at Buffalo Harbor) = 567.60



REV. 1.: CORRECTED ADJACENT GROUND SURFACE ELEVATIONS · 4-17-87

NOTES:

1. BM = Environmental monitoring well
2. POW = Perimeter Observation well
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6. Benchmark is top of westerly 10 ft. Ø CMP, El. 576.16

NIAGARA FRONTIER TRANSPORTATION AUTHORITY

DIKED DISPOSAL AREA — BUFFALO, NEW YORK

MONITORING WELL LOCATIONS

THOMSEN ASSOCIATES
CONSULTING ENGINEERS

DR. BY: DAW	SCALE: AS NOTED	PROJ. NO. BTA-86-94A
CK'D BY: SRP	DATE: 2-87	DRWG. NO. A.2

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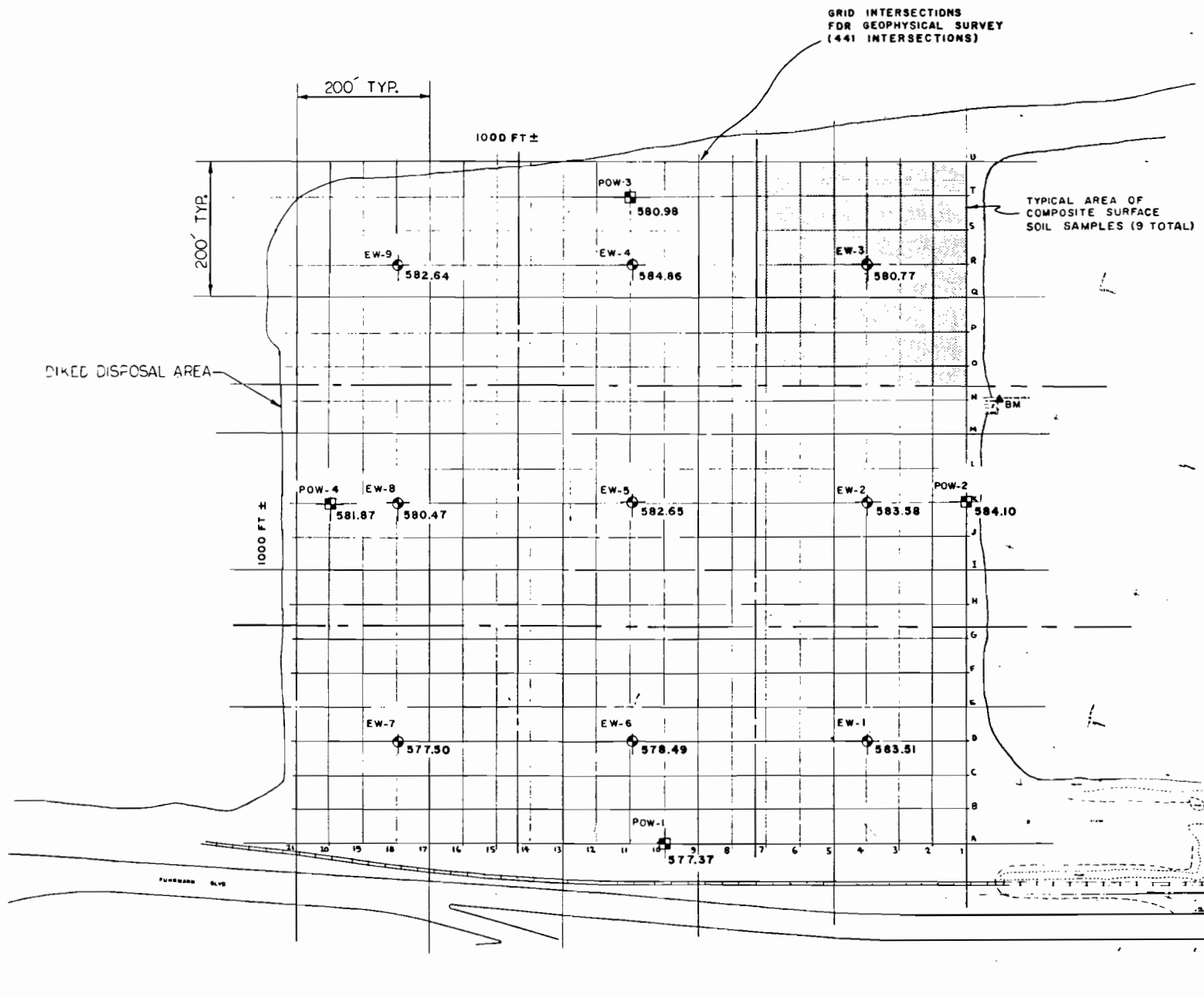

LEGEND:

- MONITORING WELL LOCATION (9 TOTAL)
- MONITORING WELL NO. EW-1 583.51 — ADJACENT GROUND SURFACE ELEVATION
- POW-1 577.37 — MONITORING WELL LOCATION (4 TOTAL)
- BM — BENCH MARK LOCATION (SEE NOTE NO. 6)

SCALE: 0 50 100 200 FT.

REV. 1.: CORRECTED ADJACENT GROUND SURFACE ELEVATIONS · 4-17-87

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NIAGARA FRONTIER TRANSPORTATION AUTHORITY
DIKED DISPOSAL AREA — BUFFALO, NEW YORK

MONITORING WELL LOCATIONS

THOMSEN ASSOCIATES
CONSULTING ENGINEERS

DR. BY: DAW	SCALE: AS NOTED	PROJ. NO. BTA-86-94A
CK'D BY: SRP	DATE: 2-87	DRWG. NO. A.2

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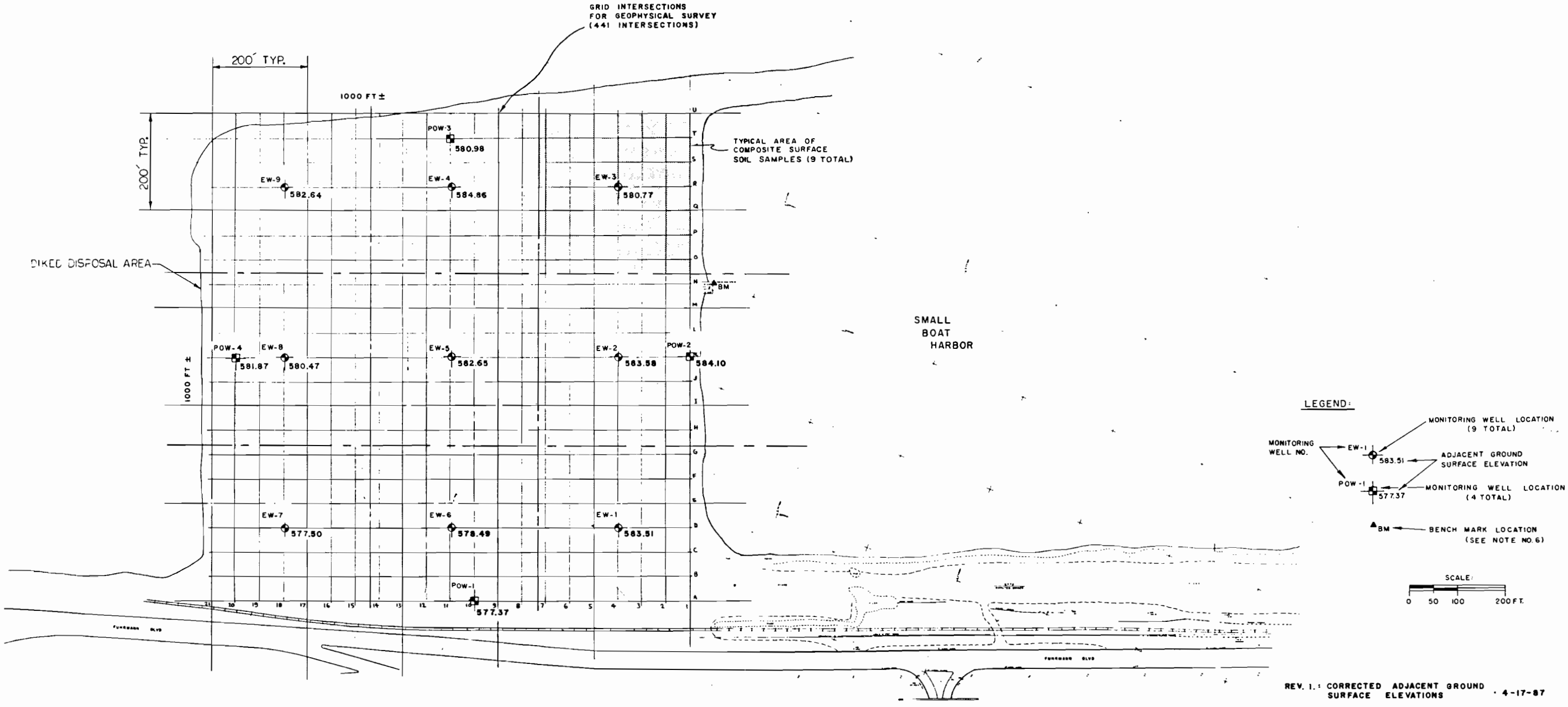

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NIAGARA FRONTIER TRANSPORTATION AUTHORITY

DIKED DISPOSAL AREA — BUFFALO, NEW YORK

MONITORING WELL LOCATIONS

THOMSEN ASSOCIATES
CONSULTING ENGINEERS

DR. BY: DAW	SCALE: AS NOTED	PROJ. NO. BTA-86-94A
CK'D BY: SRP	DATE: 2-87	DRWG. NO. A.2