QUARTERLY OPERATING REPORT
JULY-SEPTEMBER 1999

WORK ASSIGNMENT D003825-1

FORT EDWARD LANDFILL
FORT EDWARD (T)

SITE NO. 5-58-001
WASHINGTON (C), NY

Prepared for:
NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 Wolf Road, Albany, New York

John P. Cahill, Commissioner

DIVISION OF ENVIRONMENTAL REMEDIATION

URS Greiner Woodward Clyde
282 Delaware Avenue
Buffalo, New York 14202

G3125

August 2000

URS CORPORATION GROUP CONSULTANTS
282 Delaware Avenue
Buffalo, New York 14202 (716)-856-5636 FAX: (716) 856-2545

Letter of Transmittal

To: John R. Strang, P.E.
Div of Hazardous Waste Rem-NYSDEC
50 Wolf Rd.
Albany, NY 12233-7010

Date: 8/11/00 Job No.: 35629
Re: Ford Edward Landfill
W.A. #D003825-1
Site No. 5-58-001

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Remarks: John – Please send the October 1999 Groundwater results and we can then complete the October-December, 1999 Report. Thank you!

Copies to: C. Pawlewski, URS
File: 35629 (C-1)

C. Dusel
Charles E. Dusel, Jr.
Project Manager

J:\35629.02\word\cor\TRANSMIT to Strang.doc:ajp

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August 2000

QUARTERLY REPORT OF OPERATIONS

JULY 1 TO SEPTEMBER 30, 1999

FOR THE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

WORK ASSIGNMENT NO. D003825-1

FORT EDWARD LANDFILL
NYSDEC SITE NO. 5-58-001
FORT EDWARD (T), WASHINGTON (C), NEW YORK

SUBMITTED BY:
URS GREINER WOODWARD CLYDE
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

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1.0 INTRODUCTION

This report summarizes the long-term operation and maintenance (O&M) activities at the Fort Edward Landfill for the period from July 1 to September 30, 1999. The Fort Edward Landfill is a Class 2 Inactive Hazardous Waste Site (No. 5-58-001) located in the Town of Fort Edward, Washington County. The O&M services for this project will be provided for a period of 18 months with system operation reports being submitted on a quarterly basis. This is the second of a scheduled six quarterly reports under this work assignment.

The Fort Edward Landfill remediation consists of a final cover system over the landfill, a leachate/groundwater collection system, a landfill gas collection trench, and a groundwater/leachate treatment system; including a pretreatment building and a constructed wetland treatment system (CWTS) with three cells. Refer to Figure 1 for a schematic of the process.

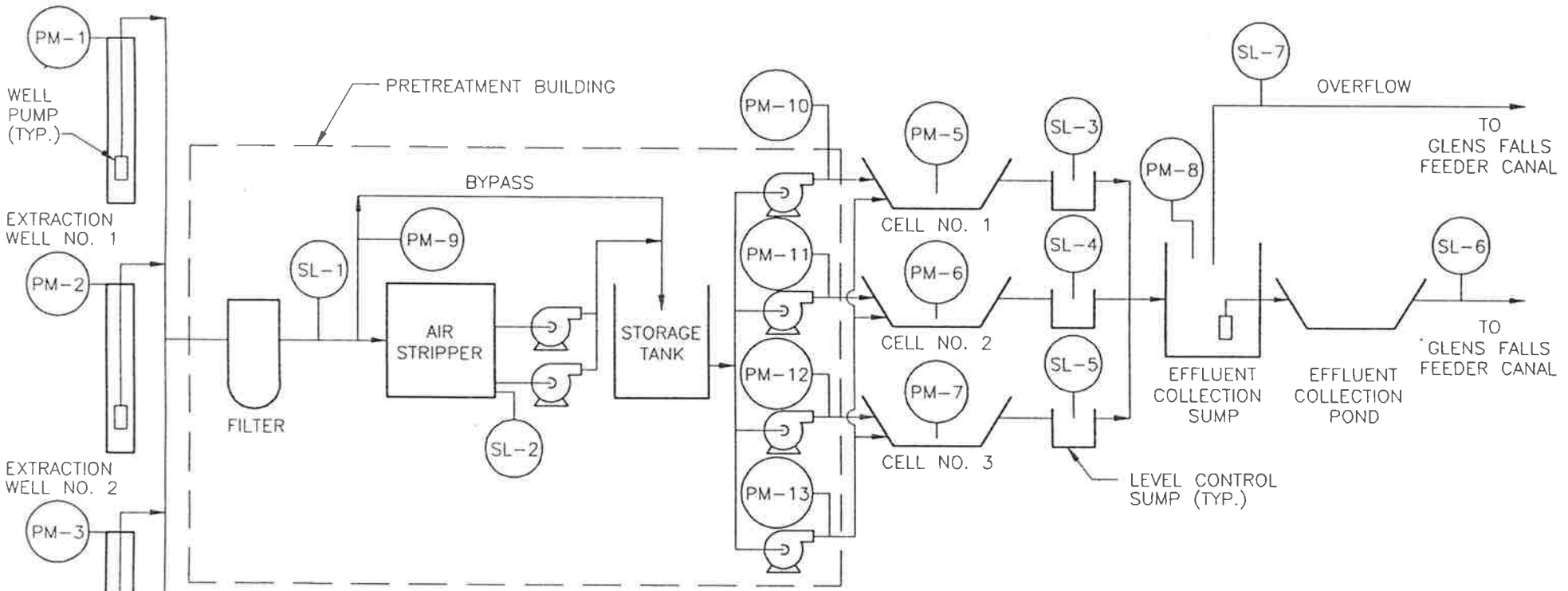
The air stripper was installed to remove volatile organic compounds (VOCs) from the water. During the start-up period, the concentrations of VOCs in the influent were below the discharge criteria, therefore, the air stripper was not needed. As a result, the air stripper was bypassed in the treatment system on October 29, 1998 and is not currently being used.

Also, the deposit control chemical FeREMEDE is added to the incoming water to keep the iron in solution, thereby preventing it from depositing and fouling the system.

Mitkem Corporation provided analytical services for the first of eight weekly sampling events and the first round (year 1) of groundwater and surface water sampling. On May 14, 1999, the Department requested that URSGWC utilize the New York State Department of Health (NYSDOH) laboratory for all analytical services after June 1, 1999. All analytical results included in this report are from the NYSDOH laboratory.

2.0 PROCESS MONITORING

Process monitoring includes physical measurements of process parameters. Measurements for this remediation system include flow rates and water levels. The flow rates are measured at five



PROCESS MONITORING LOCATION KEY

PM-1 = LEVEL EXT. WELL NO. 1
PM-2 = LEVEL EXT. WELL NO. 2
PM-3 = LEVEL EXT. WELL NO. 3
PM-4 = LEVEL COLLECTION TRENCH SUMP
PM-5 = LEVEL CELL 1
PM-6 = LEVEL CELL 2
PM-7 = LEVEL CELL 3
PM-8 = LEVEL EFFLUENT COLLECTION SUMP
PM-9 = BYPASS FLOW
PM-10 = DISCHARGE FLOW TO CELL 1
PM-11 = DISCHARGE FLOW TO CELL 2
PM-12 = DISCHARGE FLOW TO CELL 3
PM-13 = DISCHARGE FLOW TO EITHER CELL 1, CELL 2 OR CELL 3

SAMPLE LOCATION KEY

SL-1 = AST INFLUENT
SL-2 = AS EFFLUENT
SL-3 = CELL 1 EFF
SL-4 = CELL 2 EFF
SL-5 = CELL 3 EFF
SL-6 = POND EFF
SL-7 = OVERFLOW

LEGEND

(PM) PROCESS MONITORING LOCATION

(SL) SAMPLE LOCATION

PUMP

URS CONSULTANTS, INC.

SAMPLE AND PROCESS MONITORING LOCATIONS

FIGURE 1

(5) locations, and the water levels are measured at eight (8) locations (Figure 1). Measurements for the period are summarized in Table 1.

3.0 PERFORMANCE MONITORING

Performance monitoring included water sampling and analysis at two (2) locations (SL-1 and SL-6 on Figure 1). The analytical results are utilized to evaluate the progress of the remediation at the site.

Analytical results from 10 samples are included in this report. (Four samples from the previous period are included because this data was not available at the time the report was issued). The samples were analyzed for target compound list (TCL) volatile organic compounds (VOCs) by NYSDEC ASP Method 95-1 and site-specific target analyte list (TAL) metals by NYSDEC ASP Methods CLP-M. Each effluent sample was also analyzed for total dissolved solids (TDS) by Standard Method SM2540C, total suspended solids (TSS) by SM2540D, and total phenols by SM5530B.

System influent and effluent results for all detected analytes are summarized in Table 2 (VOCs) and Table 3 (Metals). The data for TDS, TSS, and total phenols, of the effluent samples, are summarized in Table 4. Analytical results are included in Appendix A.

During this operating period, the discharge criteria for three analytical parameters were exceeded in one or more sampling events at the point of compliance (polishing pond effluent). These parameters were cobalt, iron, and total dissolved solids. Exceedences are discussed below.

TABLE 1
PROCESS MONITORING SUMMARY

MONITORING LOCATION	PARAMETER	JULY[3] 1999	AUGUST 1999	SEPTEMBER 1999
PM-1	Level (ft. of H_2O)	4.8 - 11.6	11.7	5.6 - 10.1
PM-2	Level (ft. of H_2O)	7.8 - 17.8	17.7	9 - 15.2
PM-3	Level (ft. of H_2O)	7.4 - 20.3	20.1	11.6 - 17
PM-4	Level (ft. of H_2O)	4.8	4.8	4.8
PM-5	Level (ft. of H_2O)	2.34 - 2.82	2.23 - 2.58	2.06 - 2.69
PM-6	Level (ft. of H_2O)	2.39 - 2.62	2.37 - 2.61	2.32 - 2.55
PM-7	Level (ft. of H_2O)	2.64 - 2.68	2.55 - 2.63	2.48 - 2.67
PM-8	Level (ft. of H_2O)	4.8	4.8	4.8
PM-9	Flow (gpm)	18.5 - 20.1	19.1	22 - 31.8
PM-10	Flow (gpm) [1]	7.7 - 17.9	14.1	11.2 - 16.1
PM-11	Flow (gpm) [1]	7.9 - 22	26.3	7.7 - 9.5
PM-12	Flow (gpm) [1]	0 - 5.7	12.8	0 - 8.6
PM-13	Flow (gpm) [1] [2]	0 - 18.7	0	6.5 - 14

Notes:

(1) Flow rates are intermittent. Total flows are not available because the flow indicators are not equipped with totalizers.

(2) The fourth pump, which is common to all three cells, discharged to cell #1 during this three-month period.

(3) Sample dates were July 7 and 28, 2000. The ranges for the level and flow measurements are shown.

TABLE 2 - VOLATILE ORGANIC COMPOUNDS (VOCs)
SUMMARY OF ANALYTICAL RESULTS
FROM GROUNDWATER TREATMENT SYSTEM

		CONCENTRATION, (μg/l)				CONCENTRATION, (μg/l)				Conc. (μg/l)	Conc. (μg/l)
	Discharge Criteria (μg/l)	June 1999				July 1999				August 1999	September 1999
Contaminant		10th	16th	23rd	30th	7th	14th	22nd	28th	18th	23rd
		I : E	I : E	I : E	I : E	I : E	I : E	I : E	I : E	I : E	I : E
1,2 Dichloroethene (Total)	30	3:ND	NA:ND	NA:ND	NA:ND	NA:0.3	0.7:ND	NA:0.1	NA:ND	1:ND	NA:ND
Acetone	NV	ND:ND	NA:ND	NA:ND	NA:ND	NA:13	3:19	NA:14	NA:ND	ND:ND	NA:ND
Bromodichloromethane	30	ND:ND	NA:ND	NA:ND	NA:ND	NA:ND	ND:ND	NA:ND	NA:ND	ND:ND	NA:ND
Bromoform	NV	ND:ND	NA:ND	NA:ND	NA:ND	NA:ND	ND:ND	NA:ND	NA:0.2	ND:ND	NA:ND
Benzene	10	4:ND	NA:ND	NA:ND	NA:ND	NA:ND	4:ND	NA:0.09	NA:ND	0.8:ND	NA:ND
Chlorobenzene	10	1:0.2	NA:ND	NA:ND	NA:ND	NA:ND	2:ND	NA:ND	NA:ND	1:ND	NA:ND
Chloroethane	20	3:ND	NA:ND	NA:ND	NA:ND	NA:ND	3:ND	NA:0.3	NA:ND	3:ND	NA:ND
Chloroform	150	ND:ND	NA:ND	NA:ND	NA:ND	NA:ND	ND:ND	NA:0.08	NA:ND	ND:ND	NA:ND
Ethylbenzene	10	5:0.2	NA:ND	NA:ND	NA:ND	NA:ND	0.8:ND	NA:0.02	NA:ND	.09:.07	NA:ND

I = Influent E = Effluent NA = Not Analyzed ND = Not Detected NV = No discharge criteria has been established

Only detected analytes are included.

Bold type indicates result exceeds standard.

TABLE 2 - VOLATILE ORGANIC COMPOUNDS (VOCs) (Continued)
SUMMARY OF ANALYTICAL RESULTS
FROM GROUNDWATER TREATMENT SYSTEM

		CONCENTRATION, (µg/l)				CONCENTRATION, (µg/l)				Conc. (µg/l)	Conc. (µg/l)
	Discharge Criteria (µg/l)	June 1999				July 1999				August 1999	September 1999
Contaminant		10th	16th	23rd	30th	7th	14th	22nd	28th	18th	23rd
		I : E	I : E	I : E	I : E	I : E	I : E	I : E	I : E	I : E	I : E
Toluene	10	0.6:0.5	NA:0.3	NA:0.1	NA:0.5	NA:2	0.1:ND	NA:0.5	NA:0.7	0.1:0.2	NA:0.3
Total Xylenes	10	5:0.8	NA:0.2	NA:0.06	NA:0.1	NA:ND	5:ND	NA:0.2	NA:ND	0.4:0.3	NA:ND
Trichloroethene	NV	2:ND	NA:ND	NA:ND	NA:ND	NA:ND	0.6:ND	NA:0.1	NA:ND	2:ND	NA:ND
Bromomethane	NV	ND:ND	NA:ND	NA:ND	NA:ND	NA:ND	ND:ND	NA:0.2	NA:ND	ND:ND	NA:ND
Tetrachloroethene	NV	ND:0.04	NA:ND	NA:ND	NA:ND	NA:ND	ND:ND	NA:ND	NA:ND	ND:ND	NA:ND
Methlyene Chloride	50	ND:0.2	NA:0.2	NA:ND	NA:0.2	NA:0.8	0.3:0.4	NA:0.5	NA:0.6	0.3:ND	NA:0.2
1,1 Dichloroethane	30	0.6:ND	NA:ND	NA:ND	NA:ND	NA:ND	0.6:ND	NA:ND	NA:ND	0.6:ND	NA:ND
Styrene	NV	0.2:0.3	NA:ND	NA:ND	NA:ND	NA:ND	ND:ND	NA:ND	NA:ND	ND:ND	NA:ND
Methyl Ethyl Ketone (2-Butanone)	NV	ND:ND	NA:ND	NA:ND	NA:ND	NA:7	4:4	NA:3	NA:ND	ND:ND	NA:ND

I = Influent E = Effluent ND = Not Detected NA = Not Analyzed NV = No discharge criteria has been established

Only detected analytes are included.

Bolt type indicates result exceeds standard.

TABLE 3 – METALS
SUMMARY OF ANALYTICAL RESULTS
FROM GROUNDWATER TREATMENT SYSTEM

		CONCENTRATION, (µg/l)				CONCENTRATION, (µg/l)				Conc. (µg/l)	Conc. (µg/l)
	Discharge Criteria (µg/l)	June 1999				July 1999				August 1999	September 1999
Contaminant		10th	16th	23rd	30th	7th	14th	22nd	28th	18th	23rd
		I : E	I : E	I : E	I : E	I : E	I : E	I : E	I : E	I : E	I : E
Aluminum	NV	ND:ND	NA:ND	NA:ND	NA:ND	NA:59	ND:ND	NA:115	NA:ND	ND:ND	48:348
Antimony	NV	ND:ND	NA:ND	NA:ND	NA:ND	NA:ND	ND:ND	NA:ND	NA:ND	ND:ND	ND:ND
Arsenic	150	ND:ND	NA:ND	NA:ND	NA:ND	NA:10	ND:ND	NA:17	NA:12	ND:ND	ND:ND
Barium	3500	82:36	NA:41	NA:43	NA:70	NA:155	94:75	NA:186	NA:142	86:90	239:67
Cadmium	1	ND:ND	NA:ND	NA:ND	NA:ND	NA:ND	ND:ND	NA:ND	NA:ND	ND:ND	ND:ND
Calcium	NV	116:92.2	NA:98.1	NA:103	NA:88.7	NA:128	113:82.4	NA:123	NA:109	112:103	126:57.8
Chromium	210	ND:ND	NA:ND	NA:ND	NA:ND	NA:ND	ND:ND	NA:ND	NA:ND	ND:ND	ND:ND
Cobalt	5	5:ND	NA:ND	NA:ND	NA:ND	NA:**6**	8.0:ND	NA:5	NA:ND	9:ND	8:ND
Copper	24	ND:ND	NA:ND	NA:ND	NA:ND	NA:ND	ND:ND	NA:ND	NA:ND	ND:ND	ND:ND
Iron	300	23,100:**1,090**	NA:**766**	NA:280	NA:**476**	NA:**7,470**	32,900:98	NA:**24,000**	NA:**4,500**	32,700:210	105,000:**1,150**
Lead	3.2	ND:ND	NA:ND	NA:ND	NA:ND	NA:ND	ND:ND	NA:ND	NA:ND	ND:ND	ND:ND
Magnesium	NV	32.2:35.4	NA:36.1	NA:37.5	NA:36.5	NA:37.8	30.8:33.5	NA:35.8	NA:32.6	31.7:33.3	30.4:15

I = Influent E = Effluent ND = Not Detected NA = Not Analyzed NV = No discharge criteria has been established

Only detected analytes are included.

Bolt type indicates result exceeds standard.

TABLE 3 – METALS (Continued)
SUMMARY OF ANALYTICAL RESULTS
FROM GROUNDWATER TREATMENT SYSTEM

		CONCENTRATION, (µg/l)				CONCENTRATION, (µg/l)				Conc. (µg/l)	Conc. (µg/l)
	Discharge Criteria (µg/l)	June 1999				July 1999				August 1999	September 1999
Contaminant		10th	16th	23rd	30th	7th	14th	22nd	28th	18th	23rd
		I : E	I : E	I : E	I : E	I : E	I : E	I : E	I : E	I : E	I : E
Manganese	NV	3,000:2,290	NA:715	NA:162	NA:1,270	NA:1,380	3,030:103	NA:1,400	NA:786	3,060:437	3,230:987
Nickel	96	5.0:10.0	NA:5	NA:6	NA:6	NA:12	5:5	NA:9	NA:8	5:ND	12:ND
Potassium	NV	5.8:4.8	NA:4.7	NA:2.8	NA:2.5	NA:11.8	5.8:2.3	NA:11.2	NA:10.4	5.3:6.6	6.4:6.6
Silver	NV	ND:ND	NA:ND	NA:ND	NA:ND	NA:ND	ND:ND	NA:ND	NA:ND	ND:ND	ND:ND
Sodium	NV	56.8:61.2	NA:62.7	NA:64.7	NA:60.6	NA:73	54.1:54.5	NA:62.9	NA:62.4	54.9:60.4	63.4:20.1
Thallium	NV	ND:ND	NA:ND	NA:ND	NA:ND	NA:ND	ND:ND	NA:ND	NA:ND	ND:ND	ND:ND
Vanadium	14	ND:ND	NA:ND	NA:ND	NA:ND	NA:ND	ND:ND	NA:7	NA:ND	ND:ND	ND:ND
Zinc	170	48:70	NA:55	NA:23	NA:25	NA:ND	33:18	NA:12	NA:ND	28:35	47:110

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Only detected analytes are included.

Bolt type indicates result exceeds standard.

TABLE 4 - MISCELLANEOUS PARAMETERS
SUMMARY OF ANALYTICAL RESULTS
FROM GROUNDWATER TREATMENT SYSTEM

		CONCENTRATION (mg/l)				CONCENTRATION (mg/l)				(mg/l)	(mg/l)
	Discharge Criteria	June 1999				July 1999				August 1999	September 1999
Contaminant		10th	16th	23rd	30th	7th	14th	22nd	28th	18th	23rd
		E	E	E	E	E	E	E	E	E	E
Total Dissolved Solids	500 mg/l	**622**	**663**	**666**	**617**	**702**	**547**	**747**	**676**	**643**	309
Total Suspended Solids	50 mg/l	10	5	10	17	25	3	17	21	6	11
Total Phenols	0.008 mg/l	0.007	0.003	0.008	0.006	0.003	0.005	0.004	0.002	ND	0.002
pH	6.0 - 9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Bolt type indicates result exceeds standard.

Cobalt: Cobalt exceeded the discharge criterion (5 µg/l) in one of the ten samples included in Table 3. This exceedence (6 µg/l) was only 1 µg /l over the criteria.

Iron: Iron exceeded the discharge criterion (300 µg/l) in seven of the ten samples included in Table 3.

Total Dissolved Solids (TDS): TDS exceeded the discharge criterion (500 mg/l) in nine of ten samples included in Table 4.

A comparison of analytical results from the previous report (April - June 1999) to this report show the following:

Cobalt concentrations decreased, and the number of exceedences decreased significantly.

The average concentration of iron decreased (from about 12 to 4 mg/l), and the number of exceedences decreased somewhat.

The average concentration of total dissolved solids and the number of exceedences is comparable for this and the last report.

It is significant to note that four parameters (lead, nickel, total suspended solids, and total phenols) that exceeded discharge criteria in the previous report were not above the criteria in this report.

In general, effluent quality has significantly improved based on data from this report. Only iron and total dissolved solids are frequently being discharged at concentrations above their discharge criteria.

4.0 GROUNDWATER MONITORING

Samples are scheduled to be collected and analyzed from the network of groundwater monitoring wells twice per year (Figure 2). Samples were not collected during this reporting period. The next scheduled groundwater sampling event will occur in October 1999.

5.0 SURFACE WATER MONITORING

Sampling and analysis of the Glens Falls Feeder Canal and the small tributaries flowing from the landfill to the Feeder Canal are performed twice a year to assess the effect of the remediation on surface water quality. Samples were not collected during this reporting period. The next scheduled sampling event will occur in October 1999.

6.0 MAINTENANCE AND REPAIR

The remediation system operated efficiently throughout this period. Maintenance and repair activities are summarized below.

- Replaced FeREMEDE drum (7/14/00)
- Flushed out P-203 and piping with high pressure hose (7/22/00)
- Collection sump pump (W-4) and effluent collection sump (W-5) restored to full operation (9/16/00) after being off for approximately one week
- Computer (Operating Interface Terminal) fixed by Bob Wasner (vendor representative) on 9/23/00.

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