TABLE 1
GROUND WATER TREATMENT SYSTEM DESIGN PARAMETERS

Parameter	Units	Value
Flow (design average)		
From Extraction Wells	gpm	800
From Internal Process Flows	gpm	100
Total	gpm	900
~~Diffused Air Stripping~~		
Number	--	2
Detention Time	hrs	3
Side Water Depth	ft	15.7
Air: Water Ratio	cfm/cfm	75:1
~~PACT System~~		
First Stage Aeration Basins		
Number	--	2
Detention Time	hrs	18
Side Water Depth	ft	15.25
MLSS	mg/L	20,000-23,000
Solids Retention Time	day	20
Temperature	^{o}C	10-22
Second Stage Aeration Basins		
Number	--	2
Detention Time	hrs	10
Side Water Depth	ft	13.75
MLSS	mg/L	20,000
Solids Retention Time	day	15
Temperature	^{o}C	10-22
Aerobic Digesters		
Number	--	2
Side Water Depth	ft	15.25
Solids Retention Time	day	20-24
Digester Solids Concentration	Percent	5
Temperature	^{o}C	10-22
First Stage Clarifiers		
Number	--	2
Side Water Depth	ft	11.5
Detention Time	hr	6
Surface Overflow Rate	gpd/sf	408
Second Stage Clarifiers		
Number	--	2
Detention Time, Each Minimum	hrs	2
Side Water Depth	ft	14
Sludge Solids Concentration	Percent	5

TABLE 1 (Con't.)
GROUND WATER TREATMENT SYSTEM DESIGN PARAMETERS

Parameter	Units	Value
Effluent Filters		
Number	--	3
Surface Loading Rate	gpm/sf	4.2
Effluent Suspended Solids	mg/L	<5
Air Consumption	scfm @ 15-25 psig	12
Pressure Drop	in. H_2O	24
Carbon Adsorbers		
Number of Vessels	--	4
Empty Bed Contact Time	min.	23.8
Mode of Operation	--	downflow
Air Pollution Control System		
Regenerative Thermal Oxidizer		
Number	--	1
Design Air Flow	scfm	11000
Retention Time, Minimum	sec	1.0
Oxidation Temperature	^oF	1800
Scrubber		
Number	--	1
Design Air Flow	scfm	11000
HCl Removal Efficiency	Percent	99
Caustic Usage, Approx.	gph	2.8
Filter Press		
Number	--	3
Cake Solids, WAS	Percent	30-35

REV. SEP1999

TABLE 2
ESTIMATED CONTAMINANT CONCENTRATIONS IN TREATMENT PLANT INFLUENT

Parameter	Units	Estimated Influent Concentration
PH	s.u.	6.5-8.5
Biochemical Oxygen Demand, 5-day (BOD_5)	mg/L	12
Chemical Oxygen Demand (COD)	mg/L	45
Alkalinity	mg/L	145
Total Suspended Solids (TSS)	mg/L	6
Total Kjeldahl Nitrogen (TKN)	mg/L	5
Ammonia-nitrogen	mg/L	2.5
Phosphorous	mg/L	<1.0
Temperature	^{o}C	10-20
HSL Compounds – Volatiles		
Vinyl Chloride	µg/L	35
1,2-Dichloroethane	µg/L	85
Toluene	µg/L	100
1,1-Dichloroethane	µg/L	40
Xylene (total)	µg/L	20
1,1,1-Trichloroethane	µg/L	70
1,1-Dichloroethene	µg/L	10
Chloroform	µg/L	5
Ethylbenzene	µg/L	5
1,1,2-Trichloroethane	µg/L	5
Benzene	µg/L	220
Tetrachloroethene	µg/L	35
Cis-1,2-Dichloroethene	µg/L	40
Carbon Tetrachloride	µg/L	5
Trichloroethene	µg/L	10
Chlorobenzene	µg/L	30
Acetone	µg/L	20
Chloroethane	µg/L	30
Tetrahydrofuran	µg/L	90
Semi-Volatiles & Non-Volatiles		
Aniline	µg/L	350
1,2-Dichlorobenzene	µg/L	90
1,3-Dichlorobenzene	µg/L	5
1,4-Dichlorobenzene	µg/L	15
Camphor	µg/L	300
N,N-Dimethylaniline	µg/L	700
N-Ethylbenzenamine	µg/L	300
n-Methylbenzenamine	µg/L	225
Tetramethylurea	µg/L	< 10

REV. 17MAR04

TABLE 3 ESTIMATED CONTAMINANT CONCENTRATIONS IN TREATMENT PROCESS OFF-GAS	
Compound	**Diffused Air Stripper Stack Average Concentration (ppbv)**
1,2-Dichlorobenzene	200
1,4-Dichlorobenzene	25
1,2-Dichloroethane	350
Vinyl Chloride	200
1,1-Dichloroethane	200
Toluene	600
Acetone	20
Benzene	1,500
1,1-Dichloroethene	45
Chlorobenzene	90
cis-1,2-Dichloroethene	150
Tetrahydrofuran	30
m,p-Xylenes	50
1,1,1-Trichloroethane	300
Chloroform	15
Ethyl Benzene	15
1,1,2 -Trichloroethane	7.5
Tetrachloroethene	125
Carbon Tetrachloride	20
Trichloroethene	25
o-Xylene	15

REV.17MAR04

TABLE 4 ANALYTICAL METHODS				
Parameter	**Minimum Detection Limit**	**EPA Methods**	**SW-846**	**Other**
Water/Solids				
Alkalinity	20 mg/L	310.1		
Amenable Cyanide		335.2		
Biomass[1]	4 mg/L			Zimpro, ZP-115
Carbon Mass[1]	4 mg/L			Zimpro, ZP-115
CBOD, 5 –day	2 mg/L	405.1		
COD	20 mg/L	410.4		
Dissolved Oxygen		360.1		
Hardness	20 mg/L as $CaCO_3$			Hach
Metals -Cu, V, Zn		200.7		
Metals —Mercury		245.1,1631, 1669		
Micro. Exam/Bio. Activity				Lackey - Drop
MLSS	4 mg/L	160.2		
MLVSS	4 mg/L	160.4		
Nitrogen				
Ammonia (NH_3)	0.1 mg/L as N	350.3		
Kjedahl (TKN)	0.3 mg/L as N			Hach 8075
Nitrate (NO_3)	0.01 mg/L as N			Hach 8192
Nitrite (NO_2)	0.01 mg/L as N			Hach 8507
Oxygen Uptake Rate[1]				Zimpro, Appendix D
Pesticides		608		
PH	1 Standard Unit	150.1		
Phosphorous, Total	0.02 mg/L as P	365.2		
Semivolatile Organic Compounds (2)		625	8270C	
Settleable Matter	10 mL/L/hr	160.5		
Specific Conductance	1 µmho/cm			
Temperature	0.1°C	360.1		
Total Organic Carbon (TOC)		415.1		
Total Solids (TS)		160.3		
Total Suspended Solids (TSS)	4 mg/L	160.2		

TABLE 4 (Con't.) ANALYTICAL METHODS				
Parameter	**Minimum Detection Limit**	**EPA Methods**	**SW-846**	**Other**
TCLP Volatile Organics Semivolatile Organics Pesticides Herbicides Metals --8 RCRA, Cu, and Zn			1311 8260B 8270 8081 8150 6010	
Volatile Organic Compounds(2)		624	8260B	
Air				
Volatile Organic Compounds				TO-14 Summa Cannisters
Hydrochloric Acid (HCl)				Method 26A

REV. FEB 2004

CBOD = Carbonaceous Biochemical Oxygen Demand

MLSS = Mixed Liquor Suspended Solids

MLVSS = Mixed Liquor Volatile Suspended Solids

(1) The carbon biomass, oxygen uptake, and microscopic exam are Zimpro Environmental developed tests. The Contractor shall perform these tests according to protocol included in Zimpro's General Process and Operational Manual dated April 1995. The protocol is not attached to this specification due to a Secrecy Agreement that restricts release of the manuals contents.

(2) Both onsite and offsite analysis shall include the reporting of compounds listed.

TABLE 5
ORGANIC COMPOUND LIST

VOLATILE ORGANICS			
1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane
1,1-Dichloroethene	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane
1,3-Dichlorobenzene	1,4-Dichlorobenzene	2-Butanone	2-Hexanone
4-Methyl-2-pentanone	Acetone	Benzene	Bromodichloromethane
Bromoform	Bromomethane	Carbon disulfide	Carbon tetrachloride
Chlorobenzene	Chloroethane	Chloroform	Chloromethane
cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dichlorodifluoromethane
Ethylbenzene	Styrene	Tetrachloroethene	Tetrahydrofuran
Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene
Trichlorofluoromethane	Xylene (total)	Vinyl chloride	

SEMI-VOLATIILE ORGANIC COMPOUNDS			
1,1-Dichloro-2,2-diethoxyethane	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene
1,4-Dichlorobenzene	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol
2,4-Dimethylphenol	2,4-Dinitrophenol	2,4-Dinitrotoluene	2,6-Dinitrotoluene
2-Chloronaphthalene	2-Chlorophenol	2-Ethylaniline	2-Methylnaphthalene
2-Methylphenol	2-Nitroaniline	2-Nitrophenol	3,3'-Dichlorobenzidine
4-Chlorophenyl-phenylether	4,6-Dinitro-2-methylphenol	4-Bromophenyl-phenylether	4-Chloro-3-methylphenol
4-Chloroaniline	3-Nitroaniline	3/4-Methylphenol	4-Nitroaniline
4-Nitrophenol	Acenaphthene	Acenaphthylene	Aniline
Anthracene	Benzidine	Benzo(a)anthracene	
Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene
Benzoic acid	Benzyl alcohol	Bis(2-chloroethoxy) Methane	Bis(2-chloroethyl)ether
Bis(2-chloroisopropyl)Ether	Bis(2-ethylhexyl) Phthalate	Butylbenzylphthalate	Camphor
Carbazole	Chrysene	Di-n-butylphthalate	Di-n-octylphthalate
Dibenz(a,h)anthracene	Dibenzofuran	Diethylphthalate	Dimethylphthalate
Fluoranthene	Fluorene	Hexachlorobenzene	Hexachlorobutadiene
Hexachlorocyclo Pentadiene	Hexachloroethane	Indeno(1,2,3-cd)pyrene	Isophorone
N,N-Dimethylaniline	N-Ethylaniline	N-Methylaniline	N-Nitroso-di-N-propylamine
N-Nitrosodiphenylamine	Naphthalene	Nitrobenzene	Pentachlorophenol
Phenanthrene	Phenol	Pyrene	Tetramethylurea

REV. DEC2003

TABLE 6 LIMITATIONS AND MONITORING REQUIREMENTS FOR OFFGAS FROM THERMAL OXIDATION UNIT STACK	
Compound	TOU Stack Maximum Concentration (µg/cu.m)
1,2-Dichlorobenzene	Report
1,4-Dichlorobenzene	Report
1,2-Dichloroethane	0.04
Vinyl Chloride	0.4
1,1-Dichloroethane	8100
Toluene	400
Acetone	Report
Methylene Chloride	Report
Benzene	0.1
1,1-Dichloroethene	0.02
Chlorobenzene	70
Cis-1,2-Dichloroethene	Report
Tetrahydrofuran	5900
m,p-Xylenes	4400
1,1,1-Trichloroethane	19000
Chloroform	Report
Ethyl Benzene	20
1,1,2 -Trichloroethane	Report
Tetrachloroethene	Report
Carbon Tetrachloride	Report
Trichloroethene	Report

REV. 1999

TABLE 7: Ott/Story/Cordova Extraction Well Preventative Maintenance Summary Form

DATE:

Well No.	Baseline Specific Capacity (BSC) (GPM/FT)	Static Well Number	Filterpack Rehab Well Water Level	SWL	PWL	SWL-PWL	GPM	SC [SC = GPM/(SWL-PWL)]	% of ASC (SC/ASC x 100%)	Corrective Action Required *	Remarks
EW-1	19.1	W-105 I									
EW-2	8.4	W-106 I									
EW-3	11.2	W-107 I									
EW-4	6.6	W-111 I									
EW-5	7.2	W-115 I									
EW-6	1.8	W-119 I									
EW-7	4.8	W-121 I									
EW-8	3.0	W-125 I									
EW-9	4.0	RW-9NW									
EW-10	5.6	W101i									
EW-11	7.5	W101i									
					Total Plant Flow						

* Corrective Action Required

⇒ If Specific Capacity is 80%, or less, of Baseline Specific Capacity, the well will immediately undergo preventative maintenance.

GPM/FT = Gallons per minute per foot of drawdown
BSC = Baseline Specific Capacity
SWL = Static Water Level or non-pumping well level (taken from the designated nearby Monitoring Well for each particular Extraction Well)
PWL = Pumping Water Level (taken from the Extraction Well)
GPM = Extraction well pumping rate in gallons per minute
SC = Specific Capacity = [GPM/(SWL-PWL)]
TBD = To Be Determined

REVISION: #7, (22 Oct 01)

TABLE 8
PREVENTATIVE MAINTENANCE SCHEDULE

Well Designation	Minimum Required Work Effort	Minimum Required Frequency
All Extraction Wells	Specific Capacity Measurements	Once a month or when cleaned
EW-1 to EW-7 & EW-9 to EW-11	Preventative Maintenance[1]	Every Six Months
EW-8	Preventative Maintenance[1]	Every Two Weeks

REV. DEC 2002

[1] A single application (300 gallons) of the specified chemical blend will be required each time the well PM is performed. This consists of injecting 100 gallons in each of the three surrounding satellite rehab wells. A double application (600 gallons) will be required to be injected every other time. Therefore, in addition to the 300 gallons injected to the satellite wells, 300 gallons of the specified chemical blend shall be applied to the inner rehab well on alternate PM cycles.

TABLE 9
BASELINE SPECIFIC CAPACITIES

Extraction Well No.	Baseline Specific Capacity[1] (GPM/ft)	Monitoring Well Utilized
EW-1	15.89	W-105I
EW-2	6.52	W-106I
EW-3	9.87	W-107I
EW-4	5.65	W-111I
EW-5	5.14	W-115I
EW-6a	3.9	W-119I
EW-7	4.8	W-121I
EW-8	3.0	W-125I
EW-9	4.0	RW-9NW
EW-10	5.6	W-101i
EW-11	7.5	W-101i

REV. DEC 2002

[1] These values were derived from performance data collected from 11/97 to 9/02 and may be revised by the COR in the future upon analysis of more recent data.

Table 10
Monitoring Scope

Well	Unit	March	June	September	December	Purging Method[2]	Water Levels
W-100 Series (1988 and 1996)							
W-101s	UU	●		●		Dedicated	●
W-101i	LU	●		●		Dedicated	●
W-101d	C	●		●		Dedicated	●
W-102s	UU	●		●		Dedicated	●
W-102i	LU	●		●		Dedicated	●
W-102d	C	●		●		Dedicated	●
W-103s	UU	●		●		Dedicated	●
W-103i	LU	●		●		Dedicated	●
W-104s	UU			●		Submersible or Bailer	●
W-104i	LU			●		Dedicated	●
W-105s	UU			●		Submersible or Bailer	●
W-105i	LU			●		Dedicated	●
W-106s	UU			●		Submersible or Bailer	●
W-106i	LU	●		●		Dedicated	●
W-107s	UU			●		Submersible or Bailer	●
W-107i	LU	●		●		Dedicated	●
W-108s	UU						●
W-108i	LU						●
W-109s	UU						●
W-109i	LU						●
W-110s	UU			●		Submersible or Bailer	●
W-110i	LU	●	●	●	●	Dedicated	●
W-111s	UU						●
W-111i	LU						●
W-112s	UU						●
W-112i	LU						●
W-113s	UU						●
W-113i	LU						●
W-114s	UU			●		Submersible or Bailer	●
W-114i	LU	●	●	●	●	Dedicated	●
W-115s	UU						●
W-115i	LU						●
W-116s	UU			●		Submersible or Bailer	●

Table 10 (Con't.)
Monitoring Scope

Well	Unit	March	June	September	December	Purging Method[2]	Water Levels
W-116i	LU			●		Dedicated	●
W-117s	UU			●		Submersible or Bailer	●
W-117i	LU	●		●		Dedicated	●
W-118s	UU						●
W-118i	LU						●
W-119s	UU						●
W-119i	LU						●
W-120s	UU			●		Submersible or Bailer	●
W-120i	LU	●		●		Dedicated	●
W-121s	UU			●		Submersible or Bailer	●
W-121i	LU	●		●		Dedicated	●
W-122s	UU			●		Submersible or Bailer	●
W-122i	LU	●		●		Dedicated	●
W-123s	UU			●		Submersible or Bailer	●
OW-3	LU	●		●		Submersible	●
W-123d	C			●		Submersible	●
W-124s	UU	●		●		Dedicated	●
OW-9d	LU	●		●		Dedicated	●
W-124d	C	●		●		Dedicated	●
W-125s	UU						●
W-125i	LU						●
W-125d	C						●
W-126s	UU						●
W-126i	LU						●
W-127s	UU						●
W-127i	LU						●
MW- and OW-series (1987 and 1979)							
MW-12s	UU	●		●		Dedicated	●
OW-12	LU	●		●		Dedicated	●
MW-12d	C			●		Dedicated	●
MW-16s	UU			●		Submersible or Bailer	●
OW-16	LU	●		●		Dedicated	●
MW-16d	C			●		Submersible	●
MW-23s	UU	●		●		Dedicated	●
OW-23	LU	●		●		Dedicated	●

Table 10 (Con't.)
Monitoring Scope

Well	Unit	March	June	September	December	Purging Method[2]	Water Levels

MW-23d	C			●		Submersible	●
MW-33s	UU			●		Submersible or Bailer	
MW-33i	LU			●		Submersible or Bailer	
MW-33d	C			●		Submersible	
MW-34s	UU			●		Submersible or Bailer	●
MW-34i	LU			●		Submersible or Bailer	●
MW-34d	C			●		Submersible	●
MW-38s	UU			●		Submersible or Bailer	
MW-38i	LU/C	●		●		Dedicated	
MW-38d	LU/C			●		Submersible	
K-series (1977)							
K1d	LU					Submersible	●
K2s	UU			●		Submersible or Bailer	
K3d	LU			●		Dedicated	
K4sR	UU			●		Dedicated	
K5dR	LU			●		Submersible	
K12s	UU			●		Submersible or Bailer	
K13d	LU			●		Submersible	
K28d	LU	●		●		Dedicated	
K32s	UU			●		Submersible or Bailer	
K31d	LU			●		Dedicated	
OW-series (1979)							
OW8	LU						●
OW14	LU	●		●		Submersible	
Extraction Wells (1996)							
EW-1	UU/LU	●	●	●	●	Sample port	●[1]
EW-2	UU/LU	●	●	●	●	Sample port	●[1]
EW-3	UU/LU	●	●	●	●	Sample port	●[1]
EW-4	UU/LU	●	●	●	●	Sample port	●[1]
EW-5	UU/LU	●	●	●	●	Sample port	●[1]
EW-6	UU/LU	●	●	●	●	Sample port	●[1]
EW-7	UU/LU	●	●	●	●	Sample port	●[1]
EW-8	UU/LU	●	●	●	●	Sample port	●[1]
EW-9	C	●	●	●	●	Sample port	●[1]

Table 10 (Con't.)
Monitoring Scope

Well	Unit	March	June	September	December	Purging Method[2]	Water Levels
EW-10	UU/LU	●	●	●	●	Sample port	●[1]
EW-11	UU/LU	●	●	●	●	Sample port	●[1]

			W-Series				
W3	UU					Peristaltic	
W5s	UU					Peristaltic	
W5d	UU			●		Peristaltic	
W6s	UU					Peristaltic	
W6d	UU	●		●		Dedicated	
W7s	UU			●		Peristaltic	
W7d	LU	●		●		Peristaltic	
W13s	UU					Dedicated	
W13d	LU	●		●		Dedicated	
W15s	UU	●		●		Dedicated	
W15d	LU	●		●		Dedicated	
W16s	UU			●		Dedicated	
W16d	LU	●		●		Dedicated	
W17s	UU	●		●		Dedicated	
W17d	LU	●		●		Dedicated	
W18s	UU	●		●		Dedicated	
W23d	LU	●		●		Dedicated	
W26s	UU			●		Dedicated	
W26d	LU	●		●		Dedicated	
W28s	UU					Peristaltic	
W28d	LU					Peristaltic	
W29s	UU/LU						
W35d	LU/C			●		Dedicated	
UW-series							
UW1	LU	●		●		Dedicated	
TW-series (1978)							
TW A	LU	●		●		Dedicated	
TW F	C						●
Number of Wells		52	13	93	13		85

[1] Water levels shall be collected from the filter pack piezometer and from the well casing.

[2] Purging methods:

Dedicated — Dedicated Well Wizard bladder pump installed in well. Groundwater sample collected using low flow purging technique and flow through cell for readings of dissolved oxygen, temperature, specific conductivity, and pH.

Submersible — Grundfos 2-inch diameter submersible pump (not dedicated, decontamination required). Groundwater sample collected with 2-inch diameter, disposable, polyethylene bailer.

Peristaltic — Peristaltic pump with polyethylene tubing discharge because of small casing diameter (not dedicated, decontamination required). Groundwater sample collected with 0.75-inch diameter, disposable, polyethylene bailer.

Sample port — Sample collected from sample port on piping in well vault.

Bailer — Because a small volume of water is purged from well for sampling, use of disposable polyethylene bailer for purging may be quicker, easier, and more economical than use and decontamination of submersible pump.

REV. DEC 2003

TABLE 11

Sample Location and Frequency

Analysis Performed by **ONSITE** Laboratory

Parameter	Continuous	2 Days/ Week	4 Days/ Week	5 Days/Week	Weekly	Bi-Weekly	Monthly	Quarterly	As Requested
Alkalinity					2, 3, 8, 9				
Biomass					4,5				
Carbon Mass					4,5				
CBOD, 5-day					2, 3, 8, 9, 14(comp)				
Chemical Oxygen Demand (COD)				1, 2, 3, 8, 9, 14(grab),25,26					
Dissolved Oxygen		6, 7		1, 4, 5, 14	24			Monitoring and Extraction Wells	
Hardness							1, 10, 14		
Microscopic Exam/Biological Activity				4,5					
MLSS		6,7		4,5					
MLVSS				4,5					
Nitrogen Ammonia (NH_3) Kjedahl (TKN) Nitrate (NO_3) Nitrite (NO_2)			14(comp)	1, 2, 3, 8, 9, 25, 26		 2,3, 8, 9 2,3, 8, 9 2,3, 8, 9			
Oxygen Uptake Rate				4, 5					
Ph	14	6, 7		1, 2, 3, 4, 5, 8, 9, 25, 26	24			Monitoring and Extraction Wells	
Phosphorous, Total			14(comp)	2,3,8,9,25, 26					
Semivolatile Organic Compounds							1,2,3,8,9 11,12,13, 14,25, 26	Extraction Wells &W110I, 114S	
Settleable Matter				4, 5					
Specific Conductance	14							Monitoring and Extraction Wells	
Temperature	14	6, 7		1, 4, 5	24			Monitoring and Extraction Wells	
Total Organic Carbon (TOC)					14				
Total Solids (TS)									20, 21, 22, 23
Total Suspended Solids (TSS)		10, 11	14(comp)	8, 9, 25, 26, 31, 32, 33, 34	1, 2, 3				
Volatile Organic Compounds					1,2,3,8,9,11, 12,13,14,25,26			Monitoring and Extraction Wells	

REV. JAN 2004

TABLE 12
Sample Location and Frequency
Analysis Performed by OFFSITE Laboratory

Parameter	Weekly	Semi-Monthly	Monthly	As Requested	Quarterly	Semi-Annual	Annual
Water							
Free Amenable Cyanide		14(grab)					
Pesticides					14(comp)	1(comp)	
Semivolatile Organic Compounds						Monitoring Wells	
Metals--Copper, Vanadium, Zinc					14(comp)		
Metals—Mercury						1,14 (grab)	
Total Organic Carbon (TOC)						14(grab)	
Solids							
TCLP Extraction				23			
Volatile Organics				23			
Semivolatile Organics				23			
Pesticides				23			
Herbicides				23			
Metals--8 RCRA, Copper, and Zinc				23			
Air							
Volatile Organic Compounds			15, 16			17, 18, 19	
Hydrochloric Acid (HCl)							16

REV. JAN 2004

TABLE 13

Estimated Quantity of Samples for One Year of Operation

Analysis Performed by **ONSITE** Laboratory

Parameter	Primary Samples	QC—Duplicates	Field- Duplicates	Total
Alkalinity	208	52		260
Biomass	104	52		156
CBOD, 5-day	260	52	5	317
Carbon Mass	104	52		156
Chemical Oxygen Demand (COD)	2,080	104	10	2,194
Dissolved Oxygen	1,300	52	15	1,367
Hardness	36	12		48
Microscopic Exam/Biological Activity	520	0		520
Mixed Liquor Suspended Solids (MLSS)	728	52		780
Mixed Liquor Volatile Suspended Solids (MLVSS)	520	52		572
Ammonia (NH_3)	2,028	104	10	2,142
Kjedahl (TKN)	104	26		130
Nitrate (NO_3)	104	26		130
Nitrite (NO_2)	104	26		130
Oxygen Uptake Rate	520	52		572
PH	2,860(1)(2)	2860	15	5,735
Phosphorous, Total	1,768	104	10	1,882
Semivolatile Organic Compounds (625)	132		2	134
Semivolatile Organic Compounds (8270C)	52		8	60
Settleable Matter	520		12	532
Specific Conductance	(1)(2)			
Temperature	988(1)(2)	52	15	1,055
Total Solids (TS)	120			120
Total Suspended Solids (TSS)	2,652	52	10	2,714
Volatile Organic Compounds (624)	572		10	582
Volatile Organic Compounds (8260B)	171		18	189

(1) Parameter is also recorded continuously at the NPDES Station (Sampling Location 14). Quantity of samples does not include the continuous monitoring.

(2) Parameter is also recorded in the field during groundwater sampling. For monitoring wells that have dedicated bladder pumps, parameter is recorded continuously during purging using flow-through cell. For monitoring wells that do not have dedicated bladder pumps, parameter is determined by sampling personnel using field instruments. The quantity of field measurements during groundwater sampling are not included in this table.

(3) A single sample is analyzed in duplicate for all weekly wet chemistry parameters.

(4) Two samples are analyzed in duplicate for all daily wet chemistry parameters.

(5) Field duplicates are analyzed on the influent and effluent samples at a rate of 10%

(6) REV. JAN 2004

TABLE 14
Estimated Quantity of Samples for One Year of Operation
Analysis Performed by **OFFSITE** Laboratory

Parameter	Primary Samples	Field—Duplicates	Total
Water			
Amenable Cyanide	24	3	27
Pesticides	6	1	7
Semivolatile Organic Compounds--monitoring and extraction wells	119	12	131
Metals—Copper, Vanadium, Zinc	4	1	5
Metals—Mercury	4	5*	9
Total Organic Carbon (TOC)	2	1	3
Solids			
TCLP	3	1	4
Volatile Organics	3	1	4
Semivolatile Organics	3	1	4
Pesticides	3	1	4
Herbicides	3	1	4
Metals—8 RCRA, Copper, and Zinc	3	1	4
Air			
Volatile Organic Compounds	30	3	33
Hydrochloric Acid (HCl)	1	0	1

REV. JAN 2004
* Mercury requires Field Blanks and Field Duplicates

TABLE 15 SAMPLE LOCATION KEY	
Sample Location Number	**Description**
1	Diffused Air Stripper Influent
2	PACT System Influent PCT-201
3	PACT System Influent PCT-202
4	PCT-201 First Stage Aeration Mixed Liquor
5	PCT-202 First Stage Aeration Mixed Liquor
6	PCT-201 Second Stage Aeration Mixed Liquor
7	PCT-202 Second Stage Aeration Mixed Liquor
8	C-301 Clarifier Effluent
9	C-302 Clarifier Effluent
10	Tertiary Filter Influent
11	Tertiary Filter Effluent
12	Lead Carbon Adsorber Effluent CA-551
13	Lead Carbon Adsorber Effluent CA-552
14	NPDES Station
15	Offgas from Diffused Air Stripper
16	Thermal Oxidation Unit Stack Exhaust
17	Site Boundary Air Sampling
18	Offgas from PACT System PCT-201
19	Offgas from PACT System PCT-202
20	Aerobic Digester Effluent PCT-201
21	Aerobic Digester Effluent PCT-202
22	Waste Activated Sludge Filter Press Filtrate
23	Waste Activated Sludge Filter Press Cake
24	Stream Discharge – Grab Sample at North Branch of Muskegon River
25	PCT-202 First Stage Clarifier Overflow
26	PCT-201 First Stage Clarifier Overflow
27	PCT-202 First Stage Clarifier Solids Underflow (Not currently sampled)
28	PCT-201 First Stage Clarifier Solids Underflow (Not currently sampled)
29	C-302 Solids Underflow (Not currently sampled)
30	C-301 Solids Underflow (Not currently sampled)
31	RSP-221 Discharge
32	RSP-222 Discharge
33	RSP-321 Discharge
34	RSP-322 Discharge

REV. 1999