NW Natural and Siltronic
Groundwater Treatment Pilot Plant Report

December 2009

Sevenson Environmental Services, Inc.

NW Natural/Siltronic
Groundwater Treatment Pilot Plant Report
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Executive Summary

The NW Natural and Siltronic groundwater treatment pilot plant operated for approximately 5 weeks, from the last week of July through the end of August 2009. The pilot plant was conducted in accordance with a plan submitted and approved by DEQ. The pilot discharge standards were also promulgated by DEQ.

Two separate process flow trains were utilized: one for NW Natural wells and one for Siltronic wells. These processes were kept separate because of concern for co-mingling groundwater extracted from the Siltronic site, which may contain F002-listed waste, with groundwater from the Gasco site, which does not contain a hazardous waste. The NW Natural pilot included processes designed to oxidize and remove iron and manganese, heavy metals, cyanide, volatile organics and semi-volatile organics. The Siltronic pilot also included processes to handle these pollutants, but had an additional Advanced Oxidation Process (AOP) to destroy chlorinated solvents.

The results of the NW Natural pilot demonstrated its effectiveness: all discharge limitations for organic compounds were met in all NW Natural samples. All free cyanide values met the discharge limitations. One iron exceedance was found, three manganese exceedances, and one small copper exceedance occurred over the 5-week period. Sevenson believes that these exceedances can be addressed through duplication of chemical feed points and that the overall process will be even more stable when run continuously.

With the exception of one iron exceedance, the results of the Siltronic pilot showed all parameters (organics, free cyanide, and heavy metals) met the discharge standards. The tests also showed that the listed components of the Siltronic groundwater were reduced below threshold values for TCE and its daughter products approved by DEQ, so that the treated groundwater did not contain F002 waste. As with the NW Natural metals exceedances, Sevenson believes that the single iron exceedance will be addressed with

duplicate chemical addition points and will be unlikely to re-occur given a more stable, continuous operation.

Treatment residuals from the pilot processes were characterized. The major finding was that chlorinated organics in the residual solids (primarily settled soil) from the Siltronic system were significantly below the F002 threshold values for soil, meaning that the residuals could be combined, processed and disposed with treatment residuals from the NW Natural system, a much more cost-effective option than separate residuals-handling facilities.

In addition to the on-site pilot work, a separate air-stripping study was conducted at Sevenson's Wastestream Laboratories in Buffalo, NY to determine if air stripping would accomplish the required treatment levels at lower cost. The results of the air stripping tests showed that volatile organic compounds were effectively removed in both groundwater streams. In addition, the chlorinated organic compounds of concern in groundwater from the Siltronic site also appeared to have been reduced below F002 threshold values, though Wastestream's detection limits were too high to make an absolute determination of compliance.

As a result of the pilot plant work and the air stripping studies, Sevenson has developed a process flow scheme and has begun sizing the individual unit processes. These processes have been detailed in the Interim Design Report (IDR) submitted to Oregon DEQ on November 6, 2009. The general process approach has been to utilize the processes that have the best potential for meeting DEQ's requirements at the lowest life-cycle cost to NW Natural and Siltronic. As such, air stripping has been incorporated into both processes to reduce the level of volatile organics and chlorinated organics as early in the process as possible.

Following air stripping, groundwater extracted from the Siltronic site will be pumped in a dual-contained pipeline to the NW Natural site for blending with the NW Natural groundwater. During initial runs of the full-scale facility, analyses of the air stripper effluent will be performed to establish that F002 constituents are not present before

pumping to the NW Natural treatment facility. A backup chemical oxidation system will be provided, if the F002 constituents have not been reduced below the threshold values after the air stripping process.

The combined water will receive a coagulant and flocculant prior to separation in a settling tank. Heavy metals and iron and manganese will be removed. Following settling, an oxidant (either hydrogen peroxide or sodium hypochlorite) will be added to the water for cyanide destruction in a designated reactor. Following pH adjustment into the neutral range, the water will be pumped through bag filters to remove additional solids and then to granular activated carbon vessels for additional organics removal. Finally, prior to discharge to the Willamette River, the flow will be pumped through a 1-micron bag filter rack to catch any carbon particles and adsorbed organics that may escape.

Treatment residuals from the plant will be thickened and dewatered, and disposed of off-site in an approved facility.

Pilot Plant Overview

In anticipation of the cleanup of the NW Natural and Siltronic sites, a groundwater treatment pilot was performed to refine the processes to be used, as well as to optimize the operations to meet the regulatory requirements for the cleanup while constructing and operating the most cost-effective system.

Oregon DEQ Effluent Requirements

After discussions with the Oregon Department of Environmental Quality (DEQ) concerning the cleanup of the Northwest Natural and Siltronic properties, the DEQ provided preliminary discharge limitations to be followed both during the pilot plant operations, and during the following full-scale operations.

DEQ specifically stated that the final full-scale operating discharge limitations may change following a risk-based assessment of the parameters achieved by the pilot process.

Discharge Limitations for NW Natural/Siltronic Discharge

Table 1 is a summary of discharge limitations summarized from the March 31, 2009 memorandum from the Oregon DEQ. DEQ prepared the criteria on Tables 1 and 2 from the DEQ reasonable potential analysis that was conducted based on the data from the Groundwater Source Control Treatability Testing Report (Anchor, December, 2008). The data in the December report are from the bench scale treatability testing conducted by Sevenson in 2008.

Table 1: Discharge Limitations for NW Natural/Gasco Site

Discharge Limitations		
Parameter	**Monthly Average**	**Daily Maximum**
Benzene	0.66 (µg/L)	1.1 (µg/L)
Benzo(a)Anthracene	Not to exceed EPA Method 625 Quantitation Limit of 1 µg/L	
Benzo(a)Pyrene	Not to exceed EPA Method 625 Quantitation Limit of 1 µg/L	
Benzo(b)Flouranthene	Not to exceed EPA Method 625 Quantitation Limit of 1 µg/L	
Benzo(k)Flouranthene	Not to exceed EPA Method 625 Quantitation Limit of 1 µg/L	
Copper	Not to exceed EPA Method 200.8 Quantitation Limit of 10 µg/L	17.7 (µg/L)
Chromium VI	Not to exceed EPA Method 218.6 Quantitation Limit of 10 µg/L	16 (µg/L)
Chrysene	Not to exceed EPA Method 625 Quantitation Limit of 1 µg/L	
Free Cyanide	Not to exceed ASTM Method 4282-95 Quantitation Limit of 10 µg/L	
Dibenzo(a,h)Anthracene	Not to exceed EPA Method 625 Quantitation Limit of 1 µg/L	
Indeno(1,2,3-Cd)Pyrene	Not to exceed EPA Method 625 Quantitation Limit of 1 µg/L	
Iron (Dissolved)	300.0 (µg/L)	520 (µg/L)
Manganese (Dissolved)	50.0 (µg/L)	86.6 (µg/L)
Mercury	Not to exceed EPA Method 245.7 Quantitation Limit of 0.01 µg/L	
Pentachlorophenol	Not to exceed EPA Method 625 Quantitation Limit of 2 µg/L	
pH	6.5 S.U.	8.5 S.U.
Temperature	7-day Avg. of the Daily Maximums Not to Exceed 68 ºF	

Table 2 is the Oregon DEQ's monitoring requirements for the pilot plant and subsequent facilities. Besides the required permit tests, Sevenson performed other tests on influent and process flows as required to control and monitor process performance.

Sevenson collected samples and conducted the analyses for the following reasons:

- To satisfy the discharge reporting requirements of the regulatory agency.
- To form a rational basis for controlling the pilot treatment processes.
- To define the operational efficiency of the pilot plants.
- To develop a historical record of the conditions under which the plant has been operated, as an aid to the design of the full-scale plant.

Table 2 shows the Oregon DEQ's monitoring schedule that was used for both pilot plant operations. Besides the required tests, Sevenson performed other tests on internal process flows as required to control and monitor process performance, as shown in Tables 3 and 4 for NW Natural and Siltronic, respectively.

Sampling and Analysis Plan

General

This Sampling and Analysis Plan covers the pilot water treatment plants handling both the NW Natural and Siltronic sites and their effluent discharges. All samples taken were grab samples.

Influent and effluent samples were taken in accordance with the March 31, 2009 "Discharge Limitations and Monitoring Requirements for the NW Natural/Gasco Site" from Oregon Department of Environmental Quality (DEQ).

The NW Natural pilot treatment facilities were designed to remove:

- Iron and manganese;
- Cyanide
- Heavy metals
- Volatile and semi-volatile organic compounds, particularly polyaromatic hydrocarbons

The Siltronic pilot treatment facilities were designed to remove:

- Iron and manganese;
- Cyanide
- Heavy metals
- Volatile and semi-volatile organic compounds, particularly polyaromatic hydrocarbons, and
- Chlorinated solvents, particularly vinyl chloride.

Effluent Flow Routing and Monitoring

All flow from the NW Natural pilot water treatment plant was discharged under permit to the local POTW. The effluent flow rate was instantaneously measured and totalized. All flow from the Siltronic pilot plant was initially stored in an 18,000-gallon storage tank before being pumped and ultimately discharged to the NW Natural pilot plant.

Sample Locations

Both plants utilized influent equalization tanks and a common effluent storage tank. Grab samples were taken from these tanks. In addition, process samples were obtained from individual processes to facilitate the design of the individual processes.

Monitoring Program

In addition to those parameters shown in Tables 3 and 4, sludges or sludge cakes generated were tested for total solids and other pollutants. Also, all treatment chemicals used were tracked throughout the pilot test period for final design purposes.

Table 2: Discharge Limitations for NW Natural/Gasco Site

Minimum Monitoring			
Parameter	Minimum Frequency		Sample Type
	During Pilot Study	All Other Periods	
Volume Discharged	Daily, when discharging	Daily, when discharging	Metering
Temperature	Daily, when discharging	Daily, when discharging	Recorder
Bioassay Testing	-	Annual	Grab
Outfall Pipe	-	Annual	Inspection
pH	Weekly, when discharging	Monthly, when discharging	Grab
Hardness	Weekly, when discharging	Monthly, when discharging	Grab
Free Cyanide	Weekly, when discharging	Monthly, when discharging	Grab
Total Cyanide	Weekly, when discharging	Monthly, when discharging	Grab
Available Cyanide	Weekly, when discharging	Monthly, when discharging	Grab
Weak-acid Dissociable Cyanide	Weekly, when discharging	Monthly, when discharging	Grab
PAHs			
Acenaphthylene	Weekly, when discharging	Monthly, when discharging	Grab
Acenaphthene	Weekly, when discharging	Monthly, when discharging	Grab
Anthracene	Weekly, when discharging	Monthly, when discharging	Grab
Benzo(a)Anthracene	Weekly, when discharging	Monthly, when discharging	Grab
Benzo(a)Pyrene	Weekly, when discharging	Monthly, when discharging	Grab
Benzo(b)Flouranthene	Weekly, when discharging	Monthly, when discharging	Grab
Benzo(k)Flouranthene	Weekly, when discharging	Monthly, when discharging	Grab
Carbazole	Weekly, when discharging	Monthly, when discharging	Grab
Chrysene	Weekly, when discharging	Monthly, when discharging	Grab
Dibenzo(a,h)Anthracene	Weekly, when discharging	Monthly, when discharging	Grab
Dibenzofuran	Weekly, when discharging	Monthly, when discharging	Grab
Flouranthene	Weekly, when discharging	Monthly, when discharging	Grab
Flourene	Weekly, when discharging	Monthly, when discharging	Grab
Indeno(1,2,3-Cd) Pyrene	Weekly, when discharging	Monthly, when discharging	Grab
2-Methlynaphthalene	Weekly, when discharging	Monthly, when discharging	Grab
Naphthalene	Weekly, when discharging	Monthly, when discharging	Grab
Pyrene	Weekly, when discharging	Monthly, when discharging	Grab
Metals			
Arsenic (organic)	Weekly, when discharging	Monthly, when discharging	Grab
Arsenic (inorganic)	Weekly, when discharging	Monthly, when discharging	Grab
Cadmium	Weekly, when discharging	Monthly, when discharging	Grab
Chromium III	Weekly, when discharging	Monthly, when discharging	Grab
Chromium VI	Weekly, when discharging	Monthly, when discharging	Grab
Copper	Weekly, when discharging	Monthly, when discharging	Grab
Iron (dissolved)	Weekly, when discharging	Monthly, when discharging	Grab
Iron (total)	Weekly, when discharging	Monthly, when discharging	Grab
Lead	Weekly, when discharging	Monthly, when discharging	Grab
Manganese (dissolved)	Weekly, when discharging	Monthly, when discharging	Grab
Mercury	Weekly, when discharging	Monthly, when discharging	Grab
Nickel	Weekly, when discharging	Monthly, when discharging	Grab
Selenium	Weekly, when discharging	Monthly, when discharging	Grab
Silver	Weekly, when discharging	Monthly, when discharging	Grab
Zinc	Weekly, when discharging	Monthly, when discharging	Grab

Table 2 (Cont'd): Oregon DEQ Monitoring Requirements for NW Natural Site

Minimum Monitoring (Continued)			
Parameter	Minimum Frequency		Sample Type
	During Pilot Study	All Other Periods	
VOCs			
Acetone	Weekly, when discharging	Monthly, when discharging	Grab
Benzene	Weekly, when discharging	Monthly, when discharging	Grab
2-Butanone	Weekly, when discharging	Monthly, when discharging	Grab
1,1-dichloroethene	Weekly, when discharging	Monthly, when discharging	Grab
cis-1,2-dichloroethene	Weekly, when discharging	Monthly, when discharging	Grab
Ethylbenzene	Weekly, when discharging	Monthly, when discharging	Grab
Tetrachloroethene	Weekly, when discharging	Monthly, when discharging	Grab
Toluene	Weekly, when discharging	Monthly, when discharging	Grab
Trans-1,2-dichloroethene	Weekly, when discharging	Monthly, when discharging	Grab
Trichloroethene	Weekly, when discharging	Monthly, when discharging	Grab
Vinyl chloride	Weekly, when discharging	Monthly, when discharging	Grab
Xylene	Weekly, when discharging	Monthly, when discharging	Grab
Phenols			
2-Chlorophenol	Weekly, when discharging	Monthly, when discharging	Grab
2,4-Dichlorophenol	Weekly, when discharging	Monthly, when discharging	Grab
2,4-Dimethylphenol	Weekly, when discharging	Monthly, when discharging	Grab
2-methyl-4,6-Dinitrophenol	Weekly, when discharging	Monthly, when discharging	Grab
2-methylphenol	Weekly, when discharging	Monthly, when discharging	Grab
2-nitrophenol	Weekly, when discharging	Monthly, when discharging	Grab
4-nitrophenol	Weekly, when discharging	Monthly, when discharging	Grab
2,4,5-Trichlorophenol	Weekly, when discharging	Monthly, when discharging	Grab
2,4,6-Trichlorophenol	Weekly, when discharging	Monthly, when discharging	Grab
Pentachlorophenol	Weekly, when discharging	Monthly, when discharging	Grab
Phenol	Weekly, when discharging	Monthly, when discharging	Grab

Notes:

1. After receiving and reviewing the discharge data from several months of monitoring, the Department may make the determination that the monitoring of certain parameters will no longer be necessary, should continue, or assigning discharge limitations is warranted.
2. The quantitation limits specified in the November 2007 DEQ memorandum pertaining to water quality quantitation limits must be addressed for each applicable parameter.

Table 3: Process Monitoring Sampling Schedule—NW Natural[1]

Parameter	Influent	Clarifier Effluent	Bag Filter Effluent	Carbon Midpoint	Carbon Effluent	Final Effluent
Flow	D					D
pH	D	D	D			D
Oxidation-reduction potential (ORP)		D				D
Temperature[2]	D					D
Oil & Grease	W					W
Total suspended solids	D		D			D
Total & dissolved iron	D		D			D
Total & dissolved manganese	D		D			D
Total, amenable, WAD, Available & free cyanide	D		D			D
Heavy metals incl mercury	D		D			D
Total hardness	W		W			W
Total organic carbon	D		D	D	D	D
Volatile organic compounds	D			D	D	D
Semi-volatile compounds	D			D	D	D
Methyl mercury	W					W

SAMPLING LEGEND
D—Daily
W--Weekly

[1] All samples grab samples, except pH, ORP & temperature
[2] Temperature continuously recorded

Table 4: Process Monitoring Sampling Schedule—Siltronic[3]

Parameter	Influent	Clarifier Effluent	Advanced Oxidation Process Effluent to NW Natural Plant
Flow	D		D
pH	D	D	D
Oxidation-reduction potential (ORP)		D	
Temperature[4]	D	D	D
Oil & Grease	W		W
Total suspended solids	D		D
Total dissolved solids	D	D	
Total & dissolved iron	D		D
Total & dissolved manganese	D		D
Total, amenable, WAD, Available & free cyanide	D		D
Heavy metals incl mercury	D		D
Total hardness	W		W
Total calcium, as CaCO3	D	D	
Total alkalinity, as CaCO3	D	D	
Total organic carbon	D		D
Volatile organic compounds	D		D
Semi-volatile compounds	D		D
Methyl mercury	W		W

SAMPLING LEGEND
D—Daily
W--Weekly

[3] All samples grab samples, except pH, ORP & temperature
[4] Temperature continuously recorded

Sample Collection and Handling

All samples collected for off-site laboratory analysis were stored in ice and preserved in accordance with the requirements of the particular analytical method. All samples were transported by courier on the day they were collected for analysis at a local analytical laboratory. One exception was the analysis for free cyanide using ASTM Method 4282-95 which was performed in a limited number of laboratories and was sent to Trimatrix Laboratories for special testing. Proper preservation was used for these samples.

Sample Analytical Methods and Mean Reporting Limits

The analytical laboratory, Apex Labs of Tigard, Oregon was selected to perform the chemical analyses. A major consideration in the Apex selection was the ability of the laboratory to analyze for the required parameters down to the Method Reporting Limit (MRL) as specified by Oregon DEQ in Table 1.

Pilot Plant Process Design

NW Natural and Siltronic Site Plant Components

The pilot treatment process is largely designed to remove iron and manganese, cyanide, heavy metals, VOCs and SVOCs. The plant was situated inside a secondary containment area containing crushed stone over a 40-mil liner, with berms around the entire site to contain water, residual, or chemical spills. The facility was operated under a site-specific Health and Safety Plan (HASP). The site-specific HASP addressed spill prevention and countermeasures to be taken and emergency contacts in the event of a spill.

The NW Natural pilot plant was designed to operate at a flow rate of 50 gpm. The Siltronic plant (15 gpm) was blended into the NW Natural facilities prior to the GAC facilities, though the facilities were not operated at the same time. Discharge was to the existing POTW connection.

All backwash water was recirculated to the influent equalization tanks for re-treatment. All plant residuals (bag filters, sedimentation tank solids, and spent carbon) were properly disposed of to a permitted facility.

The Wastewater Pilot Plant Testing Plan (Sevenson, April, 2009) was provided to DEQ on May 4, 2009. DEQ provided a preliminary comment letter on May 13 and Sevenson prepared a May 21 response letter addressing DEQ's comments. The approach and sizing data contained in this Pilot Test Report are based upon prior treatability studies that established the processes as effective in cost-effectively meeting Oregon DEQ's discharge standards. The 5-week pilot plant test was run from late July through the end of August 2009.

Sevenson has included its pilot plant treatment plant design and materials balance in Attachment A. The process flow drawings for the pilot plant showing the sampling locations are included in Attachment B.

An overall process flow diagram for the pilot plant is shown on Figure 1 and described further in this section.

NW Natural and Siltronic Pilot Wells Location

The NW Natural Pilot Plant drew separately from the MW-1-55 and PW-1 wells on the NW Natural Site, and four Siltronic wells: WS-21-112, WS-21-131, WS-25-96 and WS-25-111 from the Siltronic site, as shown on Figure 2.

NW Natural Influent Equalization Tanks

Two equalization tanks were provided, each with a capacity of 21,000 gallons. Wells MW-1-55 and PW-1 each discharged into a separate 21,000-gallon equalization tank. In the pilot plant, the tanks were used to store the day's "run" rather than to provide any significant equalization benefits.

Clarifier Feed Pumps

Two 50-gpm clarifier feed pumps with adjustable speed controls (VFDs) were used to allow for pumping different flow ratios from each well to the plant.

Recirculation Loops and In- Line Aeration

Two in-line aerators (eductors) were installed (one on each tank) on the recirculation lines from the clarifier feed pump to each of the Influent Equalization Tanks. The eductors were used to draw air into the recirculation line to assist in iron and manganese oxidation.

Sodium Hydroxide Feed Pumps

Two sodium hydroxide feed pumps, pH meters and controllers were installed on the Clarifier Feed Pump discharge lines to increase the influent pH to between 9.5 and 10.0 in the recycle loop and in the flow to the clarifier. The rates of iron and manganese oxidation are both greatly accelerated at the higher pH value.

Figure 1: NW Natural Pilot Plant Overall Process Flow

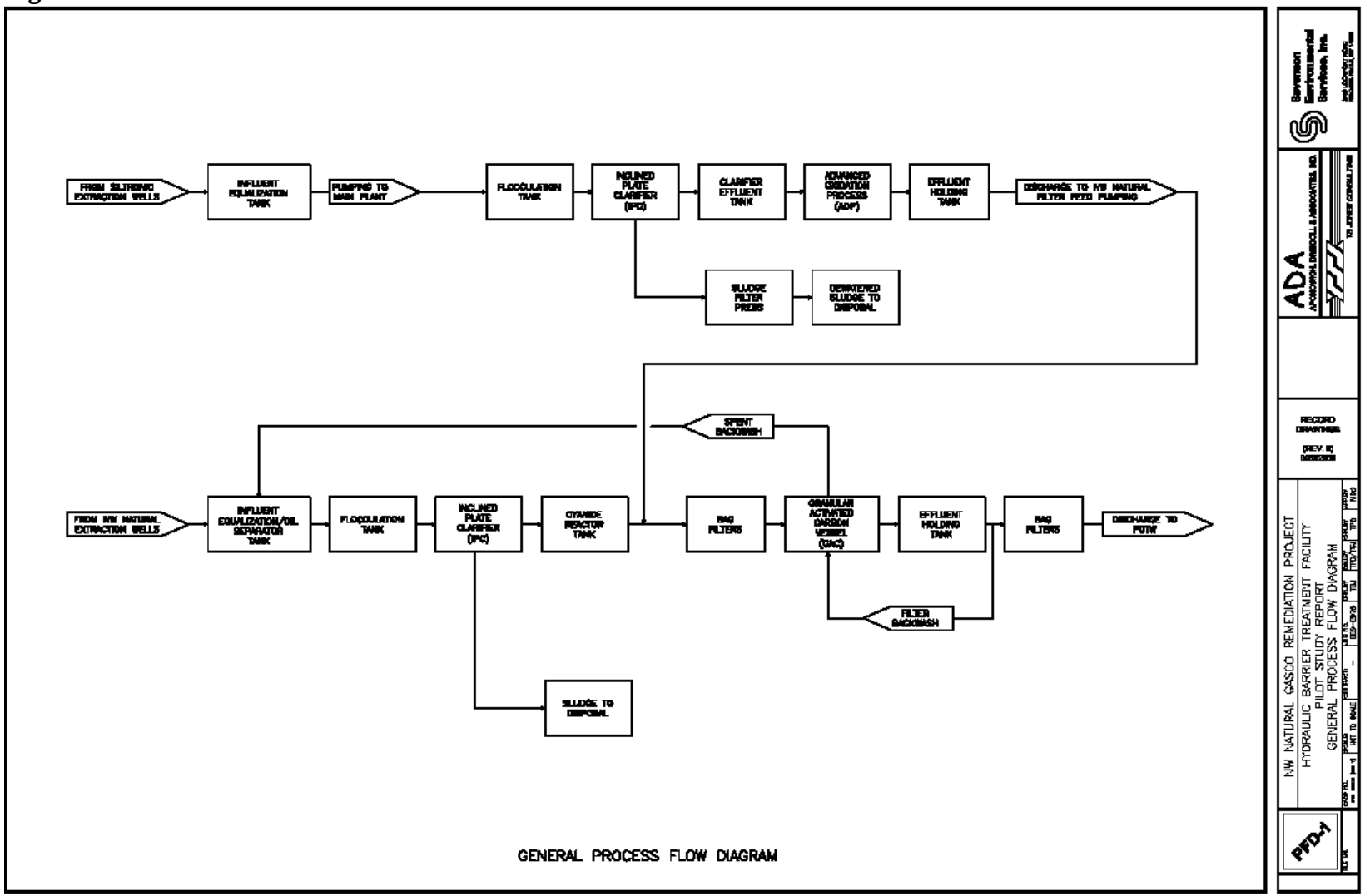

Figure 2: Location of NW Natural and Siltronic Wells for Pilot Plant

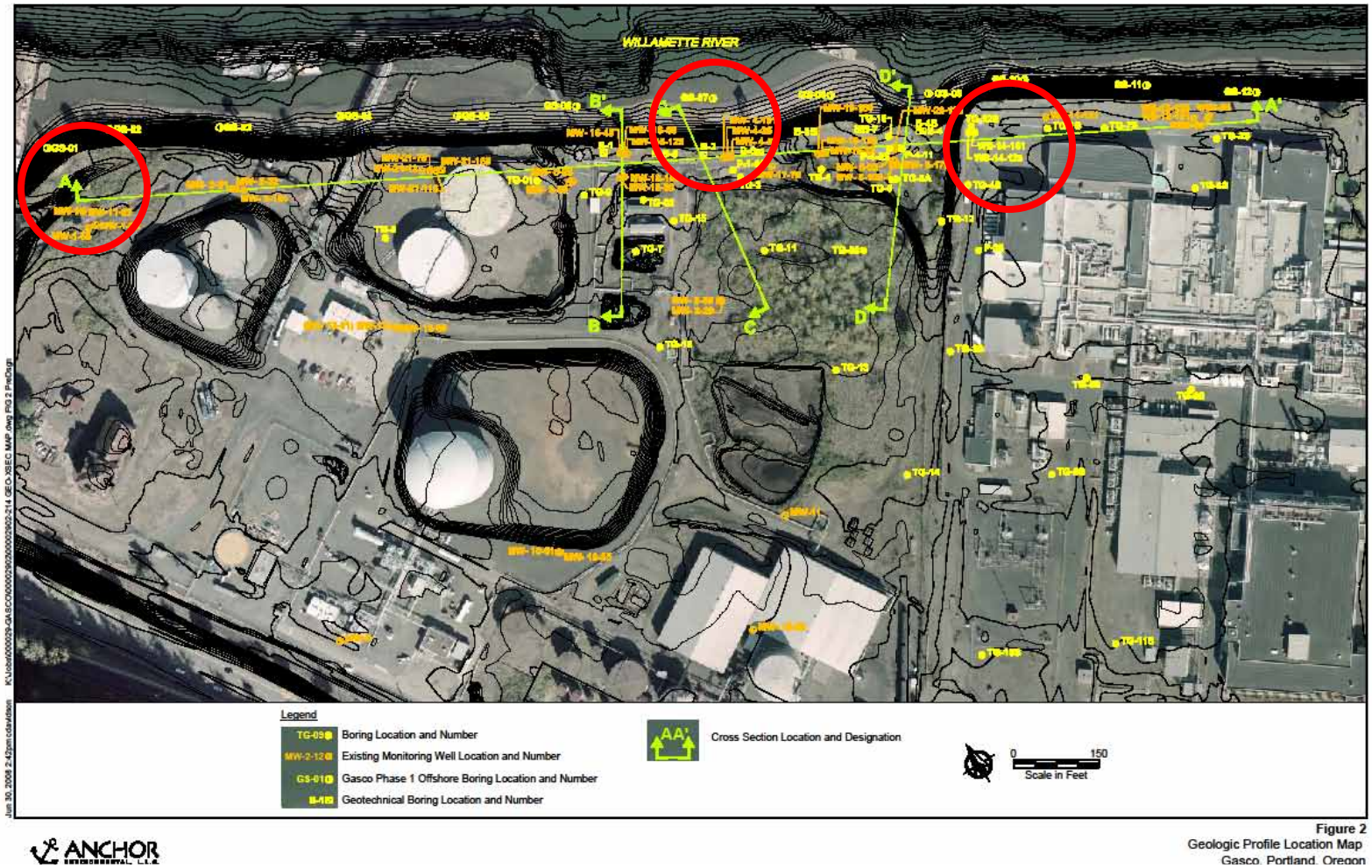

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Figure 2
Geologic Profile Location Map
Gasco, Portland, Oregon

Polymer Addition

One polymer addition system was installed to feed polymer to the water prior to introduction into the downstream inclined-plate clarifier to facilitate settling. The polymer was mixed in-line with a 2-inch static mixer, and manually paced.

Inclined-Plate Clarifier (IPC)

A single inclined-plate clarifier (IPC) received the flow from the equalization tanks to remove the oxidized iron and manganese. In addition, heavy metals were removed via iron co-precipitation in the clarifier.

Settled sludge was removed via a single air-operated diaphragm pump. The pump discharged to a tank for storage and ultimate dewatering. The resulting filter cake was stored in a proper container within the containment area and properly disposed of.

Hydrogen Peroxide Feed System

A hydrogen peroxide feed pump, ORP meter and controller was installed on the cyanide destruct reactor to destroy cyanide as described below. A 50% hydrogen peroxide solution was used.

Cyanide Destruct Reactor

A 6,000-gallon reactor tank was used for cyanide destruction using the alkaline oxidation process. The alkaline oxidation process uses hydrogen peroxide (H_2O_2) and caustic (NaOH) to break the cyanide bond at high pH in two steps.

In the first step, cyanide (CN-) oxidized to cyanate (CNO-) as shown below:

$$CN^- + H_2O_2 \rightarrow CNO^- + H_2O$$

In the second step, cyanate is further oxidized to carbon dioxide and nitrogen gas, as shown below:

$$2CNO^- + 2H_2O_2 \rightarrow 2CO_2 \uparrow + N_2 \uparrow + 2H_2O$$

Both of these reactions occurred in the reactor tank. The addition of hydrogen peroxide (a strong oxidizer) was made ahead of the destruct tank. The hydrogen peroxide feed rate

was automatically controlled by Oxidation-Reduction Potential (ORP), measured in millivolts by a probe in the effluent tank. Adding the hydrogen peroxide raises ORP in the water. An ORP controller adjusted the addition of the hydrogen peroxide to between +200-250 millivolts.

The tank was sized for a minimum detention time of 100 minutes, based upon the results in the treatability tests, and including both flows (from NW Natural wells and Siltronic wells).

Sulfuric Acid Feed System

A sulfuric acid feed pump, a pH meter and a controller were installed on the effluent pipe from the cyanide destruct tank to reduce the water pH to approximately 8.5. The acid was injected upstream of a 2-inch in-line static mixer.

Filter Feed Pump

Following the cyanide reactor tank was a 50-gpm electric centrifugal pump. The pump was manually controlled, using the level downstream of the weirs in the cyanide destruct effluent tank. The Filter Feed Pump pumped the flow through the bag filters, and the granular activated carbon (GAC) vessels, before discharging into the effluent /backwash storage tank.

Primary Bag Filters

Two pressure bag filters in series were provided to remove remaining particulates from the water prior to the GAC units. The bag filters were set up to operate in series to filter iron and other solids prior to introduction into the GAC vessels. Each bag filter had a capacity of 100 gpm.

The upstream and downstream filters were fitted with 10-micron and 5-micron bags, respectively. The vessels were fitted with inlet and outlet pressure indicators. When the selected pressure differential was reached, the operator changed filter bags before putting the train back on line.

Granular Activated Carbon Vessels

The water then flowed through three, 4-foot diameter Granular Activated Carbon (GAC) vessels, piped in parallel, with differential pressure measured across each vessel. The GAC units were intended to remove volatile organics and semi-volatile organics in the effluent from the filter units. One thousand, three hundred pounds of carbon were loaded into each vessel, for an overall total of 3,900 pounds of carbon.

The GAC filters were provided with backwashing. Spent backwash water was returned to the influent equalization tanks for re-processing through the plant.

Effluent/Backwash Storage Tanks

After the GAC vessels, the treated water was discharged into one of two 21,000-gallon effluent/backwash storage tank. Each tank served as a "batch holding tank" during the pilot operation, and was utilized as clean water holding tank for backwash water. Each tank held a day's "run" until the results were received from the analytical laboratory, establishing that the process was working as intended.

Effluent/Backwash Pump

An electric centrifugal pump was provided, with a capacity of 150 gpm, to allow for a suitable backwash rate for the GAC vessels. The pumps were sized to discharge to the approved discharge point to the POTW.

Flow Meter Rate/Totalizer

All treated water discharged from the plant passed through a 2-inch flow meter. Discharge flow rates and totalized volumes will be recorded by the SCADA system.

Effluent Bag Filters

A final filtration step used two bag filters arranged in parallel. The filters were intended to remove any carbon fines and adsorbed organics escaping the GAC vessels prior to the discharge to the POTW. The bag filters were equipped with 1.0-micron bags and were each sized for 100 gpm, and fitted with inlet and outlet pressure indicators. The bags were changed at an appropriate pressure differential.

Siltronic Site Pilot Plant Components

The proposed treatment process is largely designed to remove iron and manganese, cyanide, heavy metals, and chlorinated solvents including vinyl chloride. With the exception of the influent equalization tank and influent pump, the Siltronic Plant was situated inside the secondary containment area for the NW Natural plant. The Siltronic containment area contained crushed stone over a 40-mil liner, with berms around the site to contain water, residual, or chemical spills.

The Siltronic groundwater-treatment facility on the NW Natural site was operated under Sevenson's Health and Safety Plan (HASP). The site-specific HASP addressed spill prevention and countermeasures to be taken and emergency contacts in the event of a spill.

The Siltronic equalization tank and pump were located approximately 500 feet away, from the NW Natural treatment plant on the NW Natural site. All piping between the influent tank, pumps and treatment process was dual-contained. The dual-contained piping was pitched toward lowest point on the line, to capture any leakage. No leakage was observed during the pilot plant operation.

The Siltronic plant was designed to operate at an average daily flow rate of 15 gpm on a continuous basis. The remote Siltronic Equalization Tank had caustic addition and recirculation aeration systems similar to the NW Natural components. Again, the purpose of these units was to oxidize iron and manganese before downstream settling and an advanced oxidation process.

The flow was pumped to a separate inclined-plate clarifier to remove iron, manganese, and other heavy metals. The clarified effluent was pumped to an advanced oxidation process (AOP), using hydrogen peroxide and ultraviolet light to destroy chlorinated solvents such as vinyl chloride, as well as cyanide.

Treated effluent from the advanced oxidation process was blended into the NW Natural plant into the effluent tank in the cyanide destruct tanks for further treatment (bag filtration, activated carbon, and final bag filtration) prior to discharge to the POTW.

All plant residuals (principally soils from the wells) were analyzed to determine if they contained F002 waste (they did not) and were properly disposed of to a permitted facility. Prior to disposal, the residuals were stored in a closed container located within the containment zone.

Sevenson has included its groundwater treatment plant design and materials balance for the Siltronic site in Attachment A. The pilot plant process flow diagram for the plant is included in Attachment B.

Siltronic Influent Equalization Tank

Waters from the Siltronic well(s) were pumped into a single 21,000-gallon frac tank. The tank was air-tight, with a vapor-phase carbon system on top of the tank to handle off-gases (volatile organic compounds and air) that may be released from the tank.

The tank was designed to permit settling of DNAPL and flotation of LNAPL and other solids and floatables. The accumulated solids and floatables in the tanks were periodically removed as required using a trash pump. Plant influent characteristics were sampled from this tank.

Clarifier Feed Pump

One 30-gpm clarifier feed pump was provided. The pump was oversized to provide the capability to “loop” the flow through an in-line aerator to facilitate iron removal prior to sedimentation.

Sodium Hydroxide Feed Pump

A sodium hydroxide feed pump, pH meters and controllers were installed on the Clarifier Feed Pump discharge lines to increase the influent pH to between 9.5 and 10.0 in the recycle loop and in the flow to the clarifier. The rates of iron and manganese oxidation are both greatly accelerated at the higher pH value.

Recirculation Loop and In- Line Aeration

An in-line aerator was installed on the recirculation lines from the clarifier feed pump to the Influent Equalization Tank. The aerator was used to draw air into the recirculation line to assist in iron and manganese oxidation.

Polymer Addition

A polymer addition system was installed to feed polymer to the groundwater prior to introduction into the downstream inclined-plate clarifier to facilitate settling. The system was located at the NW Natural pilot plant site. The polymer was mixed in line with a 1-inch static mixer, and manually paced.

Inclined-Plate Clarifier (IPC)

A separate Siltronic inclined-plate clarifier (IPC), located at the NW Natural Site, received the pumped flow from the Siltronic influent equalization tank to remove the oxidized iron, manganese, and other heavy metals. Settled sludge was removed and pumped to a separate storage tank at the NW Natural site for further processing.

IPC Effluent Tank

A 2,500-gallon effluent tank was positioned at the outlet of the IPC to receive the flow by gravity. This tank served as the pump tank for the advanced oxidation feed pump.

Advanced Oxidation Feed Pump

A 15-gpm electric centrifugal pump followed the IPC effluent tank. The pump was manually controlled, using the level in the Siltronic IPC Effluent Tank.

The Advanced Oxidation Feed Pump pumped the wastewater flow through the advanced oxidation process, before discharging into the effluent holding tank for analysis and further treatment.

Advanced Oxidation Process (AOP)

The advanced oxidation process (AOP) utilized a combination of hydrogen peroxide and ultraviolet light to destroy the chlorinated organic solvents and cyanide in the Siltronic groundwater.

A hydrogen peroxide feed pump, oxidation-reduction potential (ORP) indicator and controller delivered 50% hydrogen peroxide solution to an in-line static mixer to thoroughly mix the water and hydrogen peroxide. The water-hydrogen-peroxide mixture then passed through an ultraviolet light reactor to destroy the chlorinated solvents and cyanide.

Effluent Storage Tank

After the AOP, the treated water was discharged into a single 2,500-gallon storage tank. This tank served as a "batch holding tank" before introducing the flow into the NW Natural Plant.

Siltronic Effluent Pump

A 15-gpm electric centrifugal pump was used to pump the effluent from the storage tank to the NW Natural Plant bag filter process.

Further Siltronic Treatment

Following the AOP process, the Siltronic effluent was pumped to the NW Natural bag filters for removal of most solids, then to the NW Natural GAC vessels, and then to the NW Natural Holding Tanks, before final bag filtration and discharge to the POTW.

Pilot Plant Operation

Pilot Plant Process Operation

The pilot plant was operated on a daily basis for most of the weekdays during the last week of July and throughout August 2009. Normal operating hours were from 9 AM-3 PM, which allowed for setup in the morning and cleanup/shutdown in the afternoon.

The plant was operated on a continuous basis, using the selected set of wells for the day. All effluent from the plant was stored at the end of a day in an Effluent Storage Tank. Grab samples were taken from the tank and sent to APEX Labs of Tigard, Oregon for rush analyses. Available cyanide samples were subcontracted by APEX to Trimatrix Laboratories. Samples were held pending an acceptable analyses that met the pretreatment requirements of the Portland POTW. Once the lab results confirmed that the samples were compliant with the pretreatment requirements, the operators were directed to empty that day's batch to the sewer connection.

All Siltronic runs were performed without NW Natural groundwater to isolate and evaluate the Siltronic treatment scheme.

Pilot Plant Sampling and Analyses

All pilot plant sampling was performed in compliance with the Sevenson Sampling and Analysis Plan. Daily influent and effluent samples were taken while operating, as well as internal process samples to establish individual process performance. All samples were grab samples, taken as close to the time of laboratory sample pickup as possible. APEX Laboratory provided coolers, ice, and the preservative chemicals used when sampling, to ensure the integrity of the analyses performed by them.

Pilot Plant Residuals Handling and Disposal

All residuals from both the NW Natural and Siltronic treatment plants: settled solids, GAC media, and spent bag filters, were found to be nonhazardous and were properly disposed of.

Final Site Decontamination and Disposal of Chemicals and Residuals

All site personnel working at the treatment plant had required OSHA training and certification for management of potentially hazardous chemicals and waste materials. The minimum training for onsite personnel is described in the Sevenson HASP.

All chemicals were stored within the containment area to contain any chemical spills from operation or chemical delivery. Sumps were located within the containment area to collect chemical and process spills and pump to the influent equalization tanks. No significant spills or leakage occurred during the pilot test period.

Two separate decon areas: one for F002 contamination and one for non-F002 contamination, were provided within the lined, bermed area to permit decontamination of equipment, vehicles, etc.

Air Stripping Bench-Scale Studies

Purpose

In addition to the on-site pilot plant, additional air stripping studies were performed on the Siltronic well water at Sevenson's certified laboratory, Wastestream Laboratory, in Buffalo, NY. These studies were conducted within the same time frame as the on-site studies.

The goal of the additional air stripping studies was to determine if observed levels of chlorinated solvents found in the Siltronic wells could be stripped to below threshold values for TCE and its daughter products such that the groundwater would no longer contain F002 waste (*see* letter from Dana Bayuk to Robert Wyatt, March 27, 2008).[5]

Set-Up and Procedure

A detailed procedure is contained in Attachment C, and summarized in this section. Six separate runs were performed on Siltronic groundwater. The collected groundwater was properly chilled and expedited to the Wastestream Laboratory.

The sample was characterized initially to establish baseline values for organic solvents, other VOCs, and iron and manganese. Six separate samples were set up for the testing, based upon pH differences and different air stripping parameters as shown in Table 5.

Two pH levels, 9.5 and 10.0, were tested to determine if iron and manganese removals were affected. Three different aeration periods: 30 minutes, 60 minutes and 90 minutes, were tested at each pH level to determine the amount of air required to achieve both optimal stripping performance while achieving a high level of iron and manganese oxidation and removal.

[5] NW Natural understands that DEQ continues to disagree with aspects of NW Natural's interpretation of EPA's "contained-in" policy, but we believe that we are in agreement on the criteria to be evaluated for TCE and related VOCs.

Table 5: Summary of Air Stripping Runs

Run	Nominal pH[6]	Aeration Time, Mins	Air: Water Ratio
1	10.0	30	10: 1
2	9.5	30	10: 1
3	10.0	60	20: 1
4	9.5	60	20: 1
5	10.0	90	30: 1
6	9.5	90	30: 1

[6] Actual pH varied slightly, as shown in the results

Pilot Plant and Bench-Scale Results

The results of the pilot plant and air stripping testing are summarized in this section. Complete results of the pilot plant and air stripping tests are included in Attachment D through H.

The NW Natural and Siltronic results are most easily understood in combination with the pilot plant process drawings in Attachment B. These drawings show the location of the sampling points within the process flow train.

The NW Natural pilot plant results are tabulated in two ways:

1. By *process performance* through the entire plant on a given date. These tabulations are most useful in evaluating the performance of individual unit processes on a given day, and therefore which processes are likely to achieve the desired treatment and discharge goals. These data are included in Attachment D for the NW Natural flows and in Attachment F for Siltronic flows.
2. By *sample point* for the entire pilot plant operating period. The sampling point tabulations are most useful in predicting influent and effluent concentrations for the full-scale design. These data are included in Attachment E for the NW Natural flows and Attachment G for the Siltronic flows.

NW Natural Results

A summary of the results of the NW Natural well testing is shown in Table 6. Because the results of the analysis of a number of the data points were below the mean detection limit, an average value of the constituents was not statistically meaningful. Therefore, the daily minimum and maximum values for each constituent are shown for the entire pilot testing period. The influent values shown are from individual wells MW-1 and PW-1, while the effluent value is shown for their common effluent.

PW-1 Characteristics

The PW-1 well parameters, summarized in Table 6, show the following general characteristics:

- Alkaline pH values ranging from 9.8—10.4
- Highest levels of total cyanide
- High levels of naphthalene (up to 9,760 ug/L) and methylnaphthalene (up to 1,070 ug/L)
- Low levels of remaining semi-volatile organics including polyaromatic hydrocarbons
- High levels of dissolved iron and manganese
- High levels of benzene, ethylbenzene, toluene, and xylene

MW-1 Characteristics

The MW-1 well parameters, summarized in Table 6, show the following general characteristics:

- Alkaline pH values ranging from 7.72—10.5
- High levels of total suspended solids (up to 3,530 mg/L)
- Lower total cyanide values than PW-1, similar to the Siltronic wells
- Low levels (mostly below detection limits) of semi-volatile organics including polyaromatic hydrocarbons
- Highest levels of dissolved iron and manganese
- Low levels (mostly below detection limits) of VOCs including benzene, ethylbenzene, toluene, and xylene

Table 6: NW Natural Influent--Effluent Results[7]

		PW-1 INFLUENT		MW-1 INFLUENT		NW NATURAL EFFLUENT	
NW Natural Pilot Results	Units	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
pH	pH Units	9.82	10.4	7.72	10.5	7.14	8.23
pH Temperature	pH Units	14	24	13.7	24.8	15.9	31.8
Total Dissolved Solids	mg/L	893	1270	982	3490	518	1720
Total Suspended Solids	mg/L	7	143	5	3530	<5.00	<5.00
Total Organic Carbon	mg/L	23.8 [1] [1]	33.5	3.74	14.6	<2.00	7.97
Total Iron	mg/L					<100 [4] [9]	338 [6] [9]
Total Manganese	mg/L					9.44 [5] [9]	171 [6] [9]
CYANIDE							
Cyanide, Total	mg/L	0.546	1.08	0.299	0.585	0.0200 [1] [2] [1] [6]	0.712
Cyanide, WAD	mg/L	0.0819	0.121	0.0498	0.0765	0.0101	0.0738
Cyanide, Amenable	mg/L	<0.0150	0.174	<0.00500	<0.0300	<0.00500	<0.0100
CATC, chlorinated	mg/L	0.372	1.13	0.429	0.739	0.0193	0.739
Cyanide, Free	mg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
CATC, total	mg/L	0.546	1.08	0.299	0.585	0.0200 [2] [6]	0.712
Available Cyanide	mg/L	0.0033	0.0088	0.0033	0.0088	<0.0020	<0.0020
SEMI-VOLATILE ORGANICS							
Acenaphthylene	ug/L	116 [3]	264 [6]	<0.0755 [3]	<0.152	<0.0769 [3]	0.169 [5]
Acenaphthene	ug/L	244 [11]	374 [6]	<0.0755 [3]	<0.152	<0.0762 [5]	<0.0816 [11]
Anthracene	ug/L	21.1 [6]	96.4 [6]	<0.0755 [3]	<0.152	<0.0769 [3]	0.0863 [5]
Benz(a)anthracene	ug/L	4.12 [6]	<93.0 [3]	<0.0755 [3]	<0.152	0.625 [5]	0.0893 [6]
Benzo(a)pyrene	ug/L	5.98 [6]	119 [3]	<0.0755 [3]	<0.152	<0.0784	1.84 [5]
Benzo(b)fluoranthene	ug/L	<15.2 [3]	<93.0 [3]	<0.0755 [3]	<0.152	<0.0769 [3]	<0.0816 [11]
Benzo(k)fluoranthene	ug/L	<15.2 [3]	<93.0 [3]	<0.0755 [3]	<0.152	<0.0769 [3]	<0.0816 [11]
Benzo(b+k)fluoranthene(s)	ug/L	7.99 [6] [19] [6]	143 [3] [15] [6]			<0.157 [6] [16] [10]	2.22 [5] [15] [10]
Benzo(g,h,i)perylene	ug/L	3.59 [6]	<93.0 [3]	<0.0755 [3]	<0.152	<0.0769 [3]	1.74 [5]
Carbazole	ug/L	114 [3]	184 [6]	<0.0755 [3]	0.0988 [3]	<0.0762 [5]	<0.0816 [9]
Chrysene	ug/L	4.49 [6]	96.4 [3]	<0.0755 [3]	<0.152	<0.0769 [3]	<0.0816 [11]
Dibenz(a,h)anthracene	ug/L	<1.90 [6]	<93.0 [3]	<0.0755 [3]	<0.152	<0.0769 [3]	0.171 [5]
Dibenzofuran	ug/L	20.1 [3]	<93.0 [3]	<0.0755 [3]	<0.152	<0.0762 [5]	<0.0816 [9]
Fluoranthene	ug/L	32.6 [6]	299 [3]	<0.0755 [3]	0.159	<0.0769 [3]	0.660 [5]
Fluorene	ug/L	100 [11]	180 [6]	<0.0755 [3]	<0.152	<0.0762 [5]	<0.0816 [9]
Indeno(1,2,3-cd)pyrene	ug/L	2.27 [6] [8] [5]	<93.0 [3]	<0.0755 [3]	<0.152	<0.0769 [3]	1.57 [5]
2-Methylnaphthalene	ug/L	36.7 [3]	1070 [6]	<0.0755 [3]	0.675	<0.0769 [3]	0.104 [9] [11] [6]
Naphthalene	ug/L	21.7 [3]	9760 [3] [6] [3]	<0.0779 [3]	3.62	<0.0762 [5]	955 [2] [9] [11] [4] [6]
Phenanthrene	ug/L	230 [6]	717 [6]	<0.0755 [3]	0.439	<0.0769 [3]	0.317 [5]
Pyrene	ug/L	34.2 [3]	364 [3]	<0.0755 [3]	0.169	<0.0769 [3]	0.980 [5]
2-Chlorophenol	ug/L	<23.8 [6]	<1160 [3]	<0.943 [3]	<1.90	<0.952 [5]	<1.02 [11]
2,4-Dichlorophenol	ug/L	<23.8 [6]	<1160 [3]	<0.943 [3]	<1.90	<0.952 [5]	<1.02 [11]
2,4-Dimethylphenol	ug/L	<23.8 [6]	<1160 [3]	<0.943 [3]	<1.90	<0.952 [5]	<1.02 [11]
4,6-Dinitro-2-methylphenol	ug/L	<23.8 [6]	<1160 [3]	<0.943 [3]	<1.90	<0.952 [5]	<1.02 [11]
2-Methylphenol	ug/L	<23.8 [6]	<1160 [3]	<0.943 [3]	<1.90	<0.952 [5]	<1.02 [11]
2-Nitrophenol	ug/L	<23.8 [6]	<1160 [3]	<0.943 [3]	<1.90	<0.952 [5]	<1.02 [11]
4-Nitrophenol	ug/L	<23.8 [6]	<1160 [3]	<0.943 [3]	<1.90	<3.81 [5]	<1.02 [11]
2,4,5-Trichlorophenol	ug/L	<23.8 [6]	<1160 [3]	<0.943 [3]	<1.90	<0.952 [5]	<1.02 [11]
2,4,6-Trichlorophenol	ug/L	<23.8 [6]	<1160 [3]	<0.943 [3]	<1.90	<0.952 [5]	<1.02 [11]
Pentachlorophenol (PCP)	ug/L	<23.8 [6]	<1160 [3]	<0.943 [3]	<1.90	<0.952 [5]	<1.02 [11]
Phenol	ug/L	<23.8 [6]	<1160 [3]	<0.943 [3]	<1.90	<0.952 [5]	5.84
METALS							
Hexavalent Chromium	mg/L	<0.0100	<0.0200	<0.0100	<0.0500 [17] [9]	<0.0100	<0.0400 [20] [12]
Silver	ug/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Arsenic	ug/L					2.67 [1] [6]	30.5
Cadmium	ug/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Chromium	ug/L	<1.00	1.41	<1.00	5.66	<1.00	2.2
Copper	ug/L	<5.00	<5.00	<5.00	7.99	<5.00	17.9
Iron	ug/L	1050	15600	682	925000	168	1990
Mercury	ug/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0176
Manganese	ug/L	265	1720	126	32300	11.5	175
Nickel	ug/L	<1.00	<1.00	<1.00	16.6	2.57	31.5
Lead	ug/L	<1.00	<1.00	<1.00	<1.00	<1.00	7.66
Selenium	ug/L	<1.00	1.49	1.13	3.02 [1] [5]	1.86	5.6
Zinc	ug/L	20.6	126	<4.00	26.3	6.26	30.7
Calcium	ug/L	2410	18000	63700	1390000	6950	21700
Chromium	ug/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Hardness (Calc by 6020)	mg CaCO3/L	178	260	404	6920	133	360
Magnesium	ug/L	40400	45800	49200	838000	24200	76600
Trivalent Chromium	ug/L	1.41	<21.0	<1.00	<101	<1.00	<41.0
VOLATILE ORGANICS							
Acetone	ug/L	<400	<2000	<20.0	<20.0	<20.0	<200 [11] [12] [11]
Benzene	ug/L	3620	7200	<0.250 [22]	<0.500 [18] [10]	<0.250	<2.50 [12]
2-Butanone (MEK)	ug/L	<200	<1000	<10.0	17.9	<10.0	<100 [11] [12] [11]
1,1-Dichloroethene	ug/L	<10.0	<50.0	<0.500	<0.500	<5.00 [12]	<5.00 [12]
cis-1,2-Dichloroethene	ug/L	<10.0	<50.0	<0.500	<0.500	<5.00 [12]	<5.00 [12]
trans-1,2-Dichloroethene	ug/L	<10.0	<50.0	<0.500	<0.500	<5.00 [12]	<5.00 [12]
Ethylbenzene	ug/L	42	868	<0.500	<0.500	<5.00 [12]	<5.00 [12]
Tetrachloroethene (PCE)	ug/L	<10.0	<50.0	<0.500	<0.500	<5.00 [12]	<5.00 [12]
Toluene	ug/L	64.8	200	<0.500	<0.500	<5.00 [12]	<5.00 [12]
Trichloroethene (TCE)	ug/L	<10.0	<50.0	<0.500	<0.500	<5.00 [12]	<5.00 [12]
Vinyl chloride	ug/L	<10.0	<50.0	<0.500	<0.500	<5.00 [12]	<5.00 [12]
m,p-Xylene	ug/L	196	463	<1.00	<1.00	<1.00	<10.0 [12]
o-Xylene	ug/L	125	242	<0.500	0.54	<0.500	<5.00 [12]

[7] Footnotes for results found in individual data in Attachment E.

NW Natural Effluent Characteristics and Results

The NW Natural process flow train included equalization, oxidation, chemical addition, settling, cyanide destruction, filtration, granular activated carbon, and final filtration. This process flow train was focused on iron and manganese removal, heavy metals removal, cyanide removal, and volatile and semi-volatile organics removal.

The NW Natural pilot plant effluent characteristics, shown in Table 6, showed compliance with the Oregon DEQ parameters in Table 1 on virtually all samples taken. Only one iron value (out of 11 samples) exceeded the requirements of Table 1. Three manganese values exceeded Table 1. One copper sample was 0.2 ug/L above the daily maximum requirement.

All other parameters were within the limits in Table 1, or were not detected at a laboratory detection limit below the Table 1 value.

Siltronic Results

Siltronic influent and effluent parameters are summarized in Table 7. Again, because the results of the analysis of a number of the data points were below the mean detection limit, an average value of the constituents was not statistically meaningful. Therefore, the daily minimum and maximum values for each constituent are shown for the entire pilot testing period. The influent values shown are from Siltronic wells. The effluent values shown are downstream of the granular activated carbon columns at sampling point NW 9S.

Siltronic Characteristics

The Siltronic well parameters, summarized in Table 7, show the following general characteristics:

- Slightly alkaline pH values ranging from 7.31—7.60
- Lower total cyanide values than PW-1, similar to MW-1 well
- Low levels (mostly below detection limits) of semi-volatile organics including polyaromatic hydrocarbons

Table 7: Siltronic Influent--Effluent Results[8]

Siltronic Pilot Summary		Siltronic Influent		Siltronic Effluent	
Parameters	Units	Min	Max	Min	Max
pH	pH Units	9.53	10.2	7.31	7.6
pH Temperature	pH Units	16.4	23.7	16	22
Total Dissolved Solids	mg/L	608	744	718	1060
Total Suspended Solids	mg/L	5	56	<5.00	16
Total Organic Carbon	mg/L	<2.00	8.34	<2.00	3.72
Iron	ug/L			<100 [5] [4]	<100 [5] [4]
Manganese	ug/L			25.6 [6] [4]	46.3 [4] [4]
CYANIDE					
Cyanide, Total	mg/L	0.283	0.463	0.0226	0.152
Cyanide, WAD	mg/L	0.0438	0.0878	0.0079	0.0288
Cyanide, Amenable	mg/L	<0.00500	0.0351	<0.00500	0.0146
CATC, chlorinated	mg/L	0.392	0.428	0.026	0.137
Cyanide, Free	mg/L	<0.0100	0.0206	<0.0100	<0.0100
CATC, total	mg/L	0.283	0.463	0.0226	0.152
Available Cyanide	mg/L	<0.0020	0.0059	<0.0020	<0.0020
SEMI-VOLATILE ORGANICS					
Acenaphthylene	ug/L	<0.0792 [6]	<1.86 [4]	<0.0762 [4]	<0.0816 [3]
Acenaphthene	ug/L	0.603 [1] [4]	1.92 [2]	<0.0762 [4]	<0.0816 [3]
Anthracene	ug/L	<0.0755 [3]	<1.86 [5] [15]	<0.0762 [4]	<0.0816 [3]
Benz(a)anthracene	ug/L	<0.0755 [3]	<1.86 [5] [15]	<0.0762 [4]	<0.0816 [3]
Benzo(a)pyrene	ug/L	<0.0755 [3]	<2.14 [5] [14] [15] [8]	<0.0762 [4]	<0.0816 [3]
Benzo(b)fluoranthene	ug/L	<0.0755 [3]	<1.86 [4]	<0.0762 [4]	<0.0816 [3]
Benzo(k)fluoranthene	ug/L	<0.0755 [3]	<1.86 [4]	<0.0762 [4]	<0.0816 [3]
Benzo(g,h,i)perylene	ug/L	<0.0755 [3]	<1.86 [4]	<0.0762 [4]	<0.0816 [3]
Carbazole	ug/L	0.831 [6]	3.24 [4]	<0.0762 [4]	<0.0816 [3]
Chrysene	ug/L	<0.0755 [3]	<1.86 [4]	<0.0762 [4]	<0.0816 [3]
Dibenz(a,h)anthracene	ug/L	<0.0755 [3]	<1.86 [4]	<0.0762 [4]	<0.0816 [3]
Dibenzofuran	ug/L	<0.0755 [3]	<1.86 [4]	<0.0762 [4]	<0.0816 [3]
Fluoranthene	ug/L	<0.0755 [3]	<1.86 [4]	<0.0762 [4]	<0.0816 [3]
Fluorene	ug/L	<0.0755 [3]	<1.86 [4]	<0.0762 [4]	<0.0816 [3]
Indeno(1,2,3-cd)pyrene	ug/L	<0.0755 [3]	<1.86 [4]	<0.0762 [4]	<0.0816 [3]
2-Methylnaphthalene	ug/L	<0.0755 [3]	6.63 [2]	<0.0762 [4]	<0.0816 [3]
Naphthalene	ug/L	0.0902 [3]	141 [2]	<0.0816 [3]	0.172 [2] [4] [1]
Phenanthrene	ug/L	<0.0755 [3]	2.22 [4]	<0.0762 [4]	<0.0816 [3]
Pyrene	ug/L	<0.0755 [3]	<1.86 [4]	<0.0762 [4]	<0.0816 [3]
2-Chlorophenol	ug/L	<0.943 [3]	<23.3 [4]	<0.952 [4]	<1.02 [3]
2,4-Dichlorophenol	ug/L	<0.943 [3]	<23.3 [4]	<0.952 [4]	<1.02 [3]
2,4-Dimethylphenol	ug/L	<0.943 [3]	<23.3 [4]	<0.952 [4]	<1.02 [3]
4,6-Dinitro-2-methylphenol	ug/L	<0.943 [3]	<23.3 [4]	<0.952 [4]	<1.02 [3]
2-Methylphenol	ug/L	<0.943 [3]	<23.3 [4]	<0.952 [4]	<1.02 [3]
2-Nitrophenol	ug/L	<0.943 [3]	<23.3 [4]	<0.952 [4]	<1.02 [3]
4-Nitrophenol	ug/L	<0.943 [3]	<23.3 [4]	<0.952 [4]	<4.08 [3]
2,4,5-Trichlorophenol	ug/L	<0.943 [3]	<23.3 [4]	<0.952 [4]	<1.02 [3]
2,4,6-Trichlorophenol	ug/L	<0.943 [3]	<23.3 [4]	<0.952 [4]	<1.02 [3]
Pentachlorophenol (PCP)	ug/L	<0.943 [3]	<23.3 [4]	<0.952 [4]	<1.02 [3]
Phenol	ug/L	<0.943 [3]	<23.3 [4]	<0.952 [4]	<1.02 [3]
METALS					
Hexavalent Chromium	mg/L	<0.0100	<0.0200 [8] [19] [6] [8]	<0.0100	<0.0100
Silver	ug/L	<1.00	<1.00	<1.00	<1.00
Arsenic	ug/L	2.94	5.03 [1] [3]	3.73	5.99
Cadmium	ug/L	<1.00	<1.00	<1.00	<1.00
Chromium	ug/L	<1.00	<1.00	<1.00	<1.00
Copper	ug/L	<5.00	7.07	<5.00	<5.00
Iron	ug/L	775	5300	378	644
Mercury	ug/L	<0.0100	<0.0100	<0.0100	0.0136
Manganese	ug/L	178	359	45.9	75.9
Nickel	ug/L	1	1.77	2.66	4.81
Lead	ug/L	<1.00	6.32	<1.00	<1.00
Selenium	ug/L	2.99	5.51	2.1	2.73
Zinc	ug/L	<4.00	12.4	4.92	5.4
Calcium	ug/L	2000	6720	3230	5830
Chromium	ug/L	<1.00	<1.00		
Hardness (Calc by 6020)	mg CaCO3/L	134	160	131	150
Magnesium	ug/L	29700	36200	29900	32800
Trivalent Chromium	ug/L	<11.0	<101	<11.0	<11.0
VOLATILE ORGANICS					
Acetone	ug/L	<40.0	<400 [19]	<20.0 [15]	<20.0 [15]
Benzene	ug/L	4.04 [17]	29.2	<0.250	<0.250
2-Butanone (MEK)	ug/L	<20.0	<200 [19]	<10.0	<10.0
1,1-Dichloroethene	ug/L	2.78	<10.0 [19]	<0.500	<0.500
cis-1,2-Dichloroethene	ug/L	206 [17]	950	<0.500	<0.500
trans-1,2-Dichloroethene	ug/L	1.54 [17]	13.4	<0.500	<0.500
Ethylbenzene	ug/L	<1.00 [17]	10.2	<0.500	<0.500
Tetrachloroethene (PCE)	ug/L	<1.00	<10.0 [19]	<0.500	<0.500
Toluene	ug/L	3.08	<10.0 [19]	<0.500	<0.500
Trichloroethene (TCE)	ug/L	1.18	87.9	<0.500	<0.500
Vinyl chloride	ug/L	3.12 [17]	98.2	<0.500	<0.500
m,p-Xylene	ug/L	<10.0	98.2	<1.00 [15]	<1.00 [15]
o-Xylene	ug/L	<1.00 [17]	11.2 [19]	<0.500 [15]	<0.500 [15]

[8] Footnotes for results found in individual data in Attachment G.

- Moderate levels of dissolved iron and manganese
- High levels of VOCs including vinyl chloride, trichloroethene (TCE), and cis 1,2 dichloroethene. Other chlorinated organics (trans 1,2 dichloroethene and 1,1 dichloroethene) were detected in the wells, but were below the F002 threshold values as will be discussed later in this section
- Moderate levels of benzene, ethylbenzene, toluene, and xylene.

Siltronic Effluent Characteristics and Results

The Siltronic process flow train included equalization, oxidation, chemical addition, settling, the advanced oxidation process (AOP) using hydrogen peroxide and ultraviolet light, filtration, granular activated carbon, and final filtration. This process flow train was focused on iron and manganese removal, heavy metals removal, cyanide removal, and volatile and semi-volatile organics removal, with a particular focus on chlorinated organics removal ahead of the common NW Natural downstream processes.

The Siltronic pilot plant effluent characteristics, shown in Table 7, showed compliance with the Oregon DEQ parameters in Table 1on virtually all samples taken. Only one iron value (out of 3 final effluent samples) exceeded the requirements of Table 2. All other parameters were within the limits in Table 1, or were not detected at a laboratory detection limit below the Table 1 value.

With particular regard to the chlorinated organics, Table 8 compares the maximum influent values and effluent values to the F002 threshold values. From the table it can be concluded that the Siltronic processes readily reduced the chlorinated organic values to well below the F002 threshold values.

Table 8: Comparison of Siltronic Influent and Effluent F002 Constituents to F002 Threshold Values

F002 Constituent	Maximum Influent, ug/L	Maximum Pilot Effluent, ug/L	F002 Threshold Value, ug/L
Trichlorethene (TCE)	**87.9**	**< 0.500**	**5**
Cis 1,2 Dichloroethene (cis 1,2 DCE)	**950**	**< 0.500**	**70**
Trans 1,2 Dichloroethene (tran 1,2 DCE)	**13.4**	**< 0.500**	**100**
1,1 Dichloroethene (1,1 DCE)	**< 10.0**	**< 0.500**	**7**
Vinyl chloride (VC)	**98.2**	**< 0.500**	**2**

Bench-Scale Air Stripping Results

The purpose of the air stripping studies was to determine if standard air stripping could provide similar chlorinated organic results as the AOP process, but at significantly lower capital and operating costs. One additional concern with the AOP flow train tested during the pilot was that there were upstream processes (equalization and settling) that would produce residuals (sludge) that might also be an F002-listed waste. This sludge would then have to be handled separately from the unlisted NW Natural sludge, with attendant higher capital and operating costs.

As envisioned, the air stripping process would be located upstream of all processes to strip the volatile chlorinated organics ahead of all downstream processes. In addition to the Siltronic chlorinated organics, air stripping was evaluated for NW Natural wastewater to oxidize the reduced forms of iron and manganese, and to strip volatile organics such as benzene, toluene, and xylene. Partial stripping of the semi-volatile naphthalene was also evaluated. Air stripping of these compounds would reduce downstream costs of oxidizing chemicals and activated carbon.

NW Natural Air Stripping Results

The results of the air stripping tests are found in Attachment H.

The results of six separate air stripping runs for MW-1 showed little impact on volatile organics, as there are little or no volatile organic compounds found in the well. While iron was consistently removed below the Table 2 standards, manganese was still somewhat above the standards indicating additional processes may be required for manganese.

With regard to PW-1, the air stripping results showed close compliance for iron and manganese. Attachment H shows that volatile organic compounds, particularly benzene, ethylbenzene, toluene, and xylene were readily removed by air stripping.

Semi-volatile removals were fair as expected, though the major concern, naphthalene showed removals ranging from 28% up to 78%.

Siltronic Air Stripping Results

The Siltronic results, also in Attachment H, show removals of iron and manganese consistently below the DEQ requirements of Table 2. Semi-volatile removal was again fair, with some removals (naphthalene) in excess of 50%.

Table 9 summarizes the results of air stripping of chlorinated organics, and compares the results to the F002 threshold values. Unlike the prior analyses that compared the maximum effluent value obtained, the minimum value obtained was used because each run was performed using different parameters. The best results then would serve as the basis for full-scale design. In this case, Run 5 (pH =10; air: water ratio =30:1) was used for the comparison.

Pilot Plant Sludge Results

Sludge was generated during the pilot plant operation from two sources: from accumulated solids in the influent equalization tanks and from the settled solids from the inclined-plate clarifiers in both the NW Natural and Siltronic process flow trains.

Table 9: Comparison of Air Stripping Results to F002 Threshold Values[9]

F002 Constituent	Maximum Influent, ug/L	Run 5 Pilot Effluent, ug/L	F002 Threshold Value, ug/L
Trichlorethene (TCE)	**56**	**< 5**	**5**
Cis 1,2 Dichloroethene (cis 1,2 DCE)	**739**	**< 5**	**70**
Trans 1,2 Dichloroethene (tran 1,2 DCE)	**< 5**	**< 5**	**100**
1,1 Dichloroethene (1,1 DCE)	**< 5**	**< 5**	**7**
Vinyl chloride (VC)	**166**	**< 10**	**2**

[9] Wastestream Laboratories mean detection limits indicated as <

As the sludge volume generated during the pilot studies was not sufficient to warrant mechanical dewatering in a filter press, the sludge was removed from the vessels and allowed to air dry within the containment pad prior to disposal.

Sludge data was taken to determine the extent to which organic compounds and heavy metals were accumulating in the sludge, and the possibility that the sludge might be determined to be hazardous.

Tables 10 and 11 show the sludge analysis from the NW Natural and Siltronic pilot operation, respectively. Table 12 is a comparison of the observed levels of chlorinated organics in the Siltronic sludge to the F002 threshold values for soils.

The Contained-In values are from DEQ's RBCs as revised September, 15, 2009.

Table 10: NW Natural Sludge Characteristics

	09/10/09	08/20/09	Units	Min	Max
	NW-10 Sludge	NW-10 Sludge			
Cyanide, Total		<10.2 [18] [4]	mg/kg		
% Solids	13.4	30.9	% by Weight	13.4	30.9
Aroclor 1016	<92.8 [3]		ug/kg	<92.8 [3]	<92.8 [3]
Aroclor 1221	<92.8 [3]		ug/kg	<92.8 [3]	<92.8 [3]
Aroclor 1232	<92.8 [3]		ug/kg	<92.8 [3]	<92.8 [3]
Aroclor 1242	<92.8 [3]		ug/kg	<92.8 [3]	<92.8 [3]
Aroclor 1248	<92.8 [3]		ug/kg	<92.8 [3]	<92.8 [3]
Aroclor 1254	<92.8 [3]		ug/kg	<92.8 [3]	<92.8 [3]
Aroclor 1260	<92.8 [3]		ug/kg	<92.8 [3]	<92.8 [3]
Silver	<0.100		mg/L	<0.100	<0.100
Arsenic	<0.100		mg/L	<0.100	<0.100
Barium	<1.25		mg/L	<1.25	<1.25
Cadmium	<0.0500		mg/L	<0.0500	<0.0500
Chromium	<0.100		mg/L	<0.100	<0.100
Mercury	<0.00400		mg/L	<0.00400	<0.00400
Lead	<0.0500		mg/L	<0.0500	<0.0500
Selenium	<0.0500		mg/L	<0.0500	<0.0500
Silver		<3.56	mg/kg	<3.56	<3.56
Arsenic		7.9	mg/kg	7.9	7.9
Barium		167	mg/kg	167	167
Cadmium		<3.56	mg/kg	<3.56	<3.56
Mercury		<0.285	mg/kg	<0.285	<0.285
Lead		30.7	mg/kg	30.7	30.7
Selenium		<3.56	mg/kg	<3.56	<3.56
Acetone	<81300 [8] [10] [11] [3]		ug/kg	<81300 [8] [10] [11] [3]	<81300 [8] [10] [11] [3]
Benzene	67600 [10] [11]		ug/kg	67600 [10] [11]	67600 [10] [11]
Bromobenzene	<2030 [10] [11]		ug/kg	<2030 [10] [11]	<2030 [10] [11]
Bromochloromethane	<2030 [10] [11]		ug/kg	<2030 [10] [11]	<2030 [10] [11]
Bromodichloromethane	<2030 [10] [11]		ug/kg	<2030 [10] [11]	<2030 [10] [11]
Bromoform	<4060 [10] [11]		ug/kg	<4060 [10] [11]	<4060 [10] [11]
Bromomethane	<40600 [10] [11]		ug/kg	<40600 [10] [11]	<40600 [10] [11]
2-Butanone (MEK)	<40600 [8] [10] [11] [3]		ug/kg	<40600 [8] [10] [11] [3]	<40600 [8] [10] [11] [3]
n-Butylbenzene	8410 [10] [11]		ug/kg	8410 [10] [11]	8410 [10] [11]
sec-Butylbenzene	<4060 [10] [11]		ug/kg	<4060 [10] [11]	<4060 [10] [11]
tert-Butylbenzene	<4060 [10] [11]		ug/kg	<4060 [10] [11]	<4060 [10] [11]
Carbon tetrachloride	<8130 [10] [11]		ug/kg	<8130 [10] [11]	<8130 [10] [11]
Chlorobenzene	<2030 [10] [11]		ug/kg	<2030 [10] [11]	<2030 [10] [11]
Chloroethane	<40600 [10] [11]		ug/kg	<40600 [10] [11]	<40600 [10] [11]
Chloroform	<20300 [10] [11]		ug/kg	<20300 [10] [11]	<20300 [10] [11]
Chloromethane	<20300 [10] [11]		ug/kg	<20300 [10] [11]	<20300 [10] [11]
2-Chlorotoluene	<2030 [10] [11]		ug/kg	<2030 [10] [11]	<2030 [10] [11]
4-Chlorotoluene	<4060 [10] [11]		ug/kg	<4060 [10] [11]	<4060 [10] [11]
1,2-Dibromo-3-chloropropane	<8130 [10] [11]		ug/kg	<8130 [10] [11]	<8130 [10] [11]
Dibromochloromethane	<8130 [10] [11]		ug/kg	<8130 [10] [11]	<8130 [10] [11]
1,2-Dibromoethane (EDB)	<2030 [10] [11]		ug/kg	<2030 [10] [11]	<2030 [10] [11]
Dibromomethane	<4060 [10] [11]		ug/kg	<4060 [10] [11]	<4060 [10] [11]
1,2-Dichlorobenzene	<2030 [10] [11]		ug/kg	<2030 [10] [11]	<2030 [10] [11]
1,3-Dichlorobenzene	<2030 [10] [11]		ug/kg	<2030 [10] [11]	<2030 [10] [11]
1,4-Dichlorobenzene	<4060 [10] [11]		ug/kg	<4060 [10] [11]	<4060 [10] [11]
Dichlorodifluoromethane	<8130 [10] [11]		ug/kg	<8130 [10] [11]	<8130 [10] [11]
1,1-Dichloroethane	<2030 [10] [11]		ug/kg	<2030 [10] [11]	<2030 [10] [11]
1,2-Dichloroethane (EDC)	<2030 [10] [11]		ug/kg	<2030 [10] [11]	<2030 [10] [11]
1,1-Dichloroethene	<2030 [10] [11]		ug/kg	<2030 [10] [11]	<2030 [10] [11]
cis-1,2-Dichloroethene	<2030 [10] [11]		ug/kg	<2030 [10] [11]	<2030 [10] [11]
trans-1,2-Dichloroethene	<4060 [10] [11]		ug/kg	<4060 [10] [11]	<4060 [10] [11]
1,2-Dichloropropane	<2030 [10] [11]		ug/kg	<2030 [10] [11]	<2030 [10] [11]
1,3-Dichloropropane	<2030 [10] [11]		ug/kg	<2030 [10] [11]	<2030 [10] [11]
2,2-Dichloropropane	<4060 [10] [11]		ug/kg	<4060 [10] [11]	<4060 [10] [11]
1,1-Dichloropropene	<4060 [10] [11]		ug/kg	<4060 [10] [11]	<4060 [10] [11]
cis-1,3-Dichloropropene	<8130 [10] [11]		ug/kg	<8130 [10] [11]	<8130 [10] [11]
trans-1,3-Dichloropropene	<8130 [10] [11]		ug/kg	<8130 [10] [11]	<8130 [10] [11]
Ethylbenzene	192000 [10] [11]		ug/kg	192000 [10] [11]	192000 [10] [11]
Hexachlorobutadiene	<20300 [10] [11]		ug/kg	<20300 [10] [11]	<20300 [10] [11]
2-Hexanone	<40600 [10] [11]		ug/kg	<40600 [10] [11]	<40600 [10] [11]
Isopropylbenzene	10800 [10] [11]		ug/kg	10800 [10] [11]	10800 [10] [11]
4-Isopropyltoluene	6090 [10] [11]		ug/kg	6090 [10] [11]	6090 [10] [11]
4-Methyl-2-pentanone (MiBK)	<40600 [10] [11]		ug/kg	<40600 [10] [11]	<40600 [10] [11]
Methyl tert-butyl ether (MTBE)	<4060 [10] [11]		ug/kg	<4060 [10] [11]	<4060 [10] [11]
Methylene chloride	<20300 [8] [10] [11] [3]		ug/kg	<20300 [8] [10] [11] [3]	<20300 [8] [10] [11] [3]
Naphthalene	12000000 [10] [11]		ug/kg	12000000 [10] [11]	12000000 [10] [11]
n-Propylbenzene	6180 [10] [11]		ug/kg	6180 [10] [11]	6180 [10] [11]
Styrene	<8130 [10] [11]		ug/kg	<8130 [10] [11]	<8130 [10] [11]
1,1,1,2-Tetrachloroethane	<4060 [10] [11]		ug/kg	<4060 [10] [11]	<4060 [10] [11]
1,1,2,2-Tetrachloroethane	<4060 [10] [11]		ug/kg	<4060 [10] [11]	<4060 [10] [11]
Tetrachloroethene (PCE)	<4060 [10] [11]		ug/kg	<4060 [10] [11]	<4060 [10] [11]
Toluene	11100 [10] [11]		ug/kg	11100 [10] [11]	11100 [10] [11]
1,2,3-Trichlorobenzene	<8130 [10] [11]		ug/kg	<8130 [10] [11]	<8130 [10] [11]
1,2,4-Trichlorobenzene	<8130 [10] [11]		ug/kg	<8130 [10] [11]	<8130 [10] [11]
1,1,1-Trichloroethane	<4060 [10] [11]		ug/kg	<4060 [10] [11]	<4060 [10] [11]
1,1,2-Trichloroethane	<4060 [10] [11]		ug/kg	<4060 [10] [11]	<4060 [10] [11]
Trichloroethene (TCE)	<2030 [10] [11]		ug/kg	<2030 [10] [11]	<2030 [10] [11]
Trichlorofluoromethane	<8130 [10] [11]		ug/kg	<8130 [10] [11]	<8130 [10] [11]
1,2,3-Trichloropropane	<4060 [10] [11]		ug/kg	<4060 [10] [11]	<4060 [10] [11]
1,2,4-Trimethylbenzene	200000 [10] [11]		ug/kg	200000 [10] [11]	200000 [10] [11]
1,3,5-Trimethylbenzene	66200 [10] [11]		ug/kg	66200 [10] [11]	66200 [10] [11]
Vinyl chloride	<2030 [10] [11]		ug/kg	<2030 [10] [11]	<2030 [10] [11]
m,p-Xylene	145000 [10] [11]		ug/kg	145000 [10] [11]	145000 [10] [11]
o-Xylene	71500 [10] [11]		ug/kg	71500 [10] [11]	71500 [10] [11]
Acetone	<81300 [8] [10] [11] [3]	<83100 [19]	ug/kg	<83100 [19]	<83100 [19]
Benzene	67600 [10] [11]	1330 [19]	ug/kg	1330 [19]	67600 [10] [11]
2-Butanone (MEK)	<40600 [8] [10] [11] [3]	<41500 [19]	ug/kg	<40600 [8] [10] [11] [3]	<41500 [19]
1,1-Dichloroethene	<2030 [10] [11]	<2080 [19]	ug/kg	<2030 [10] [11]	<2080 [19]
cis-1,2-Dichloroethene	<2030 [10] [11]	<2080 [19]	ug/kg	<2030 [10] [11]	<2080 [19]
trans-1,2-Dichloroethene	<4060 [10] [11]	<4150 [19]	ug/kg	<4060 [10] [11]	<4150 [19]
Ethylbenzene	192000 [10] [11]	6890 [19]	ug/kg	6890 [19]	192000 [10] [11]
Tetrachloroethene (PCE)	<4060 [10] [11]	<4150 [19]	ug/kg	<4060 [10] [11]	<4150 [19]
Toluene	11100 [10] [11]	<8310 [19]	ug/kg	<8310 [19]	11100 [10] [11]
Trichloroethene (TCE)	<2030 [10] [11]	<2080 [19]	ug/kg	<2030 [10] [11]	<2080 [19]
Vinyl chloride	<2030 [10] [11]	<2080 [19]	ug/kg	<2030 [10] [11]	<2080 [19]
m,p-Xylene	145000 [10] [11]	11500 [19]	ug/kg	11500 [19]	145000 [10] [11]
o-Xylene	71500 [10] [11]	5730 [19]	ug/kg	5730 [19]	71500 [10] [11]

Table 11: Siltronic Sludge Characteristics

	08/27/09	Units
% Solids	16.5	% by Weight
Silver	<5.98	mg/kg
Arsenic	10.9	mg/kg
Barium	262	mg/kg
Cadmium	<5.98	mg/kg
Chromium	<12.0	mg/kg
Mercury	<0.478	mg/kg
Lead	<5.98	mg/kg
Selenium	<5.98	mg/kg
Acetone	<10500 [9]	ug/kg
Benzene	<131 [9]	ug/kg
2-Butanone (MEK)	<5240 [9]	ug/kg
1,1-Dichloroethene	<262 [9]	ug/kg
cis-1,2-Dichloroethene	587 [9]	ug/kg
trans-1,2-Dichloroethene	<524 [9]	ug/kg
Ethylbenzene	<262 [9]	ug/kg
Tetrachloroethene (PCE)	<524 [9]	ug/kg
Toluene	<1050 [9]	ug/kg
Trichloroethene (TCE)	<262 [9]	ug/kg
Vinyl chloride	<262 [9]	ug/kg
m,p-Xylene	<524 [9]	ug/kg
o-Xylene	<262 [9]	ug/kg

Table 12: Comparison of Siltronic Sludge Values to F002 Threshold Values

F002 Constituent	**Siltronic Sludge ug/kg**	**F002 Threshold Value for Soils, ug/kg**
Trichlorethene (TCE)	**< 262**	**14,000**
Cis 1,2 Dichloroethene (cis 1,2 DCE)	**587**	**10,000,000**
Trans 1,2 Dichloroethene (tran 1,2 DCE)	**< 524**	**9,200,000**
1,1 Dichloroethene (1,1 DCE)	**< 262**	**27,000,000**
Vinyl chloride (VC)	**< 262**	**3,900**

From the data in Table 12, it is clear that the Siltronic settled soil parameters are orders of magnitude below the F002 threshold values and would therefore be acceptable to be combined with the NW Natural sludge for common processing and disposal.

Implications of Pilot Plant Results for Full-Scale Plant

As a result of the pilot plant work and the air stripping studies, Sevenson has put together a process flow scheme and has begun sizing the individual unit processes. These processes have been detailed in the Interim Design Report (IDR) submitted to Oregon DEQ on November 6, 2009.

The general process approach has been to utilize the processes that have the best potential for meeting DEQ's requirements at the lowest life-cycle cost to NW Natural and Siltronic. As such, air stripping has been incorporated into both processes to reduce the level of volatile organics and chlorinated organics as early in the process as possible.

Following air stripping, the groundwater from Siltronic will be pumped in a dual-contained pipeline to the NW Natural site for blending with the NW Natural wastewater. As indicated a backup chemical oxidation system will be provided if the F002 constituents have not been reduced below the threshold values after the air stripping process.

The combined water will receive a coagulant and flocculant prior to separation in a settling tank. Heavy metals and iron and manganese will be removed. Following settling, an oxidant (either hydrogen peroxide or sodium hypochlorite will be added to the water for cyanide destruction in a designated reactor).

Following pH adjustment into the neutral range, the water will be pumped through bag filters to remove additional solids and then to granular activated carbon vessels for additional organics removal. Finally, prior to discharge to the Willamette River, the flow will be pumped through a 1-micron bag filter rack to catch any carbon particles and adsorbed organics that may escape.

Sludge from the plant, including both NW Natural and Siltronic sludge, will be thickened and dewatered, and disposed of off-site in an approved facility.

Attachment A: Pilot Plant Design Data

23-Nov-09		
NW NATURAL GROUNDWATER PILOT PLANT PROCESS DESIGN		
PRELIMINARY DESIGN DATA --50 GPM		**COMMENTS/ASSUMPTIONS**
INFLUENT CHARACTERISTICS--WASTEWATER		
DESIGN AVERAGE FLOW, GPD	18,000	6-Hour Days
, GPM	50	
AVERAGE TOTAL ORGANIC CARBON, LBS/DAY	6.0	@ 40 mg/L
TOTAL SUSPENDED SOLIDS, LBS/DAY	3.0	@ 20 mg/L
TOTAL CYANIDE, LBS/DAY	0.2	@ 1.5 mg/L
TOTAL IRON, LBS/DAY	12	@ 80 mg/L
TOTAL MANGANESE, LBS/DAY	0.2	@ 1 mg/L
REQUIRED EFFLUENT CHARACTERISTICS		
TOC, MG/L	0.05	Assumed
, LBS/DAY	0.01	
, % REMOVAL	99.9%	
VOCs, MG/L	0.02	Approximate (individual values checked)
, LBS/DAY	0.003	
SVOCs, MG/L	0.03	
, LBS/DAY	0.005	Approximate (individual values checked)
TSS, MG/L	0.04	Assumed
, LBS/DAY	0.01	
, % REMOVAL	99.8%	
FREE CYANIDE, MG/L	0.01	DEQ
, LBS/DAY	0.0180	
, % REMOVAL	92.0%	
DISSOLVED IRON, MG/L	0.3	DEQ
, LBS/DAY	0.0	
, % REMOVAL	99.6%	
DISSOLVED MANGANESE, MG/L	0.05	DEQ
, LBS/DAY	0.01	
, % REMOVAL	95.0%	
INFLUENT EQUALIZATION TANKS		Closed tanks with level control
TYPE	FRAC	
NO OF UNITS INSTALLED	2	
UNIT VOLUME, GALS	21,000	
VOLUME, GALS	42,000	
DETENTION TIME, DAYS	4.7	
REACTOR FEED PUMPS		Controlled off reactor level
TYPE	CENTRIFUGAL	
NO OF UNITS	2	
UNIT CAPACITY, GPM	100	
TDH, FT	20	
UNIT HP	3	with VFD

MAZZEI EDUCTORS--FE AERATION IN RECIRC		
STOICHIOMETRIC FACTOR IRON	0.1432	
STOICHIOMETRIC FACTOR MANGANESE	0.2912	
ASSUMED INFLUENT OXYGEN, mg/L	0	
DESIRED RESIDUAL OXYGEN, mg/L	5	
OXYGEN REQUIRED, mg/l	17	
INFLUENT FLOW METERS		
TYPE	MAGNETIC	Tied to VFDs
NUMBER	2	
SIZE, INCHES	2	
CAUSTIC FEED PUMPS		pH Adjustment as required
TYPE	Diaphragm	
CONTROL	pH	
NUMBER OF UNITS	1	
PROJECTED USAGE, GALS/DAY	18	Treatability using 25%
PROJECTED USAGE, LBS/DAY	234	
, GALS/HOUR	3.0	6 hr days
UNIT CAPACITY, GALS/HR	0-4	
STORAGE PROVIDED, GALS	260	Totes
STORAGE PROVIDED, DAYS	14.4	
HYDROGEN PEROXIDE FEED PUMPS		CYANIDE OXIDATION
TYPE	Diaphragm	pH = 10.2
CONTROL	Paced off ORP	ORP = 650 mv
NUMBER OF UNITS	1	
PROJECTED USAGE, GALS/DAY	7	Treatability & Estimate
PROJECTED USAGE, LBS/DAY	72	Estimate
, GALS/HOUR	1.2	
UNIT CAPACITY, GALS/HOUR	0-8	
STORAGE PROVIDED, GALS	260	Totes
STORAGE PROVIDED, DAYS	36.1	
CYANIDE REACTOR		
DESIRED DETENTION TIME, MINS	120	Oxidation to Cyanate
NUMBER OF UNITS	1	
LENGTH, FT	20	
WIDTH, FT	6	
DEPTH	6	
VOLUME, CU FT	720	
VOLUME, GALS	5,386	
DETENTION TIME, MINS	108	
SULFURIC ACID FEED PUMPS		pH Adjustment 8-8.5
TYPE	Diaphragm	
CONTROL	Paced off pH	
NUMBER OF UNITS	1	
PROJECTED USAGE @ 28 mg/L, LBS/DAY	6	Estimate
, GALS/HOUR	0.08	
, GALS/DAY	0.6	
UNIT CAPACITY, GALS/HOUR	0-2	
STORAGE PROVIDED, GALS	20	Drum
STORAGE PROVIDED, DAYS	31.9	

IN-LINE MIXER		
NUMBER	1	
TYPE	IN LINE STATIC	
SIZE, INCHES	2	
INCLINED-PLATE CLARIFIER		
TYPE	INCLINED PLATE	
NUMBER	1	
DIMENSIONS, FT		
LENGTH	8	
WIDTH	4	
HEIGHT	8	
PROJECTED SETTLING AREA, SQ FT	250	
LOADING RATE, GPM/SQ FT	0.20	
SOLIDS PRODUCTION		
INFLUENT SOILIDS	2	@ 75% Removal of Influent
CHEMICAL SOLIDS	36	@ 3 X Influent Iron
TOTAL SOLIDS, LBS/DAY	38	
, CONCENTRATION @	3%	
, LBS/DAY	1,276	
, GALS/DAY	150	
, GALS/MIN @ 10 MINS/HR	0.6	
IPC EFFLUENT TANK		
TYPE	Polypropylene	
NO OF UNITS INSTALLED	1	
VOLUME, GALS	2,500	
DETENTION TIME, MINS	50.0	
SLUDGE PUMP		
TYPE	DIAPHRAGM	
NUMBER	1	
CAPACITY, GPM	15	Sandpiper S05 Al
REQUIRED AIR, CFM	14	
AIR COMPRESSOR		
TYPE		
CAPACITY, CFM	25	
PRESSURE, PSI	125	
SLUDGE THICKENER/STORAGE		
NO OF UNITS	1	
UNIT VOLUME, GALS	2,500	
TOTAL VOLUME, GALS	2,500	
SLUDGE FEED, GALS/DAY	150	
STORAGE CAPACITY, DAYS	16.7	
THICKENED SLUDGE, LBS/DAY	34	@ 90% Solids capture
THICKENED SLUDGE, 2 x INFLUENT	6%	
THICKENED SLUDGE, GALS	67	
RECIRCULATED OVERFLOW, GALS/DAY	83	

ANIONIC POLYMER FEED PUMP		Settling Aid
TYPE	Diaphragm	
CONTROL	Manual Stroke	
NUMBER OF UNITS	1	
PROJECTED USAGE @ 8.6 LBS/GAL, LBS/DAY	0.8	@ 5 mg/L
PROJECTED USAGE @ 8.6 LBS/GAL, GALS/DAY	0.1	20-Gallon Carboy
, GALS/HOUR	0.01	
UNIT CAPACITY, GALS/HR	0-1	
DILUTION WATER @ 0.25%, GALS/DAY	36	
, GALS/HOUR	3	
FILTER/GAC FEED PUMPS		
TYPE	CENTRIFUGAL	
NO OF UNITS	1	
UNIT CAPACITY, GPM	75	
TDH, FT	100	
UNIT HP	25.0	
BAG FILTERS		Metals/solids removal
NO OF UNITS	2	In series
BAG MEDIA, MICRONS	10-->5	
GRANULAR ACTIVATED CARBON VESSELS		Organics Removal
DESIGN PARAMETERS		
CONTACT TIME, MINS	15	
LOADING RATE, GPM/SQ FT	4	
NO OF UNITS	3	In Parallel
UNIT DIAMETER, FT	4	
UNIT HEIGHT, FT	10	
CARBON DEPTH, FT	3.5	
UNIT AREA, SQ FT	13	
TOTAL AREA, SQ FT	38	
EFFECTIVE UNIT VOLUME, CU FT	44	
TOTAL EFFECTIVE VOLUME, CU FT	132	
HYDRAULIC LOADING, GPM/SQ FT	4.0	
LBS CARBON/UNIT @ 30 LBS/CU FT	1,319	
TOTAL AVAILABLE CARBON, LBS	3,956	
EMPTY BED CONTACT TIME , MINS	19.7	
TOTAL ORGANICS TO CARBON UNITS, LBS/DAY	4.5	25% Removal across oxidation/sedimentation
% TOTAL ORGANICS REMOVAL	99%	
EFFLUENT ORGANICS, LBS/DAY	0.05	
, mg/L	0.30	
UTILIZATION RATE, LBS TOCr/LB CARBON	0.10	
UTILIZATION RATE, LBS/CARBON/DAY	45	
, LBS/YEAR	16,274	
ESTIMATED BREAKTHROUGH LEAD COLUMN, DAYS	30	
TOTAL BED LIFE, DAYS	89	

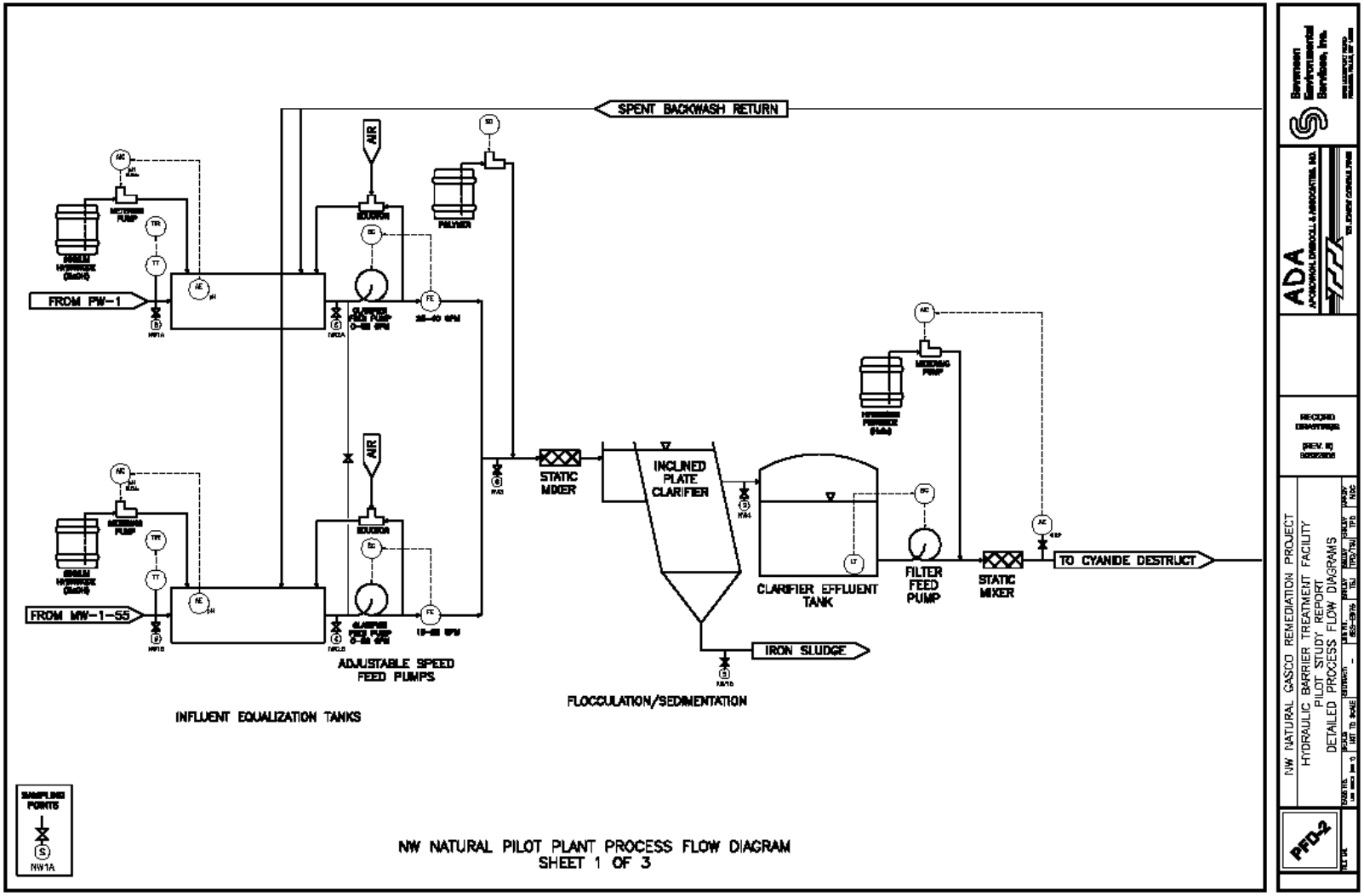
EFFLUENT HOLDING TANK		
TYPE	FRAC TANK	
NO OF UNITS INSTALLED	2	
VOLUME, GALS	20,000	
DETENTION TIME, HRS	17.8	
EFFLUENT/GAC BACKWASH PUMPS		
TYPE	CENTRIFUGAL	
NO OF UNITS INSTALLED	2	
UNIT CAPACITY, GPM	151	Backwash Rate = 12 gpm/sq ft
TDH, FT	60	
UNIT BHP	10	
BAG FILTERS		Carbon fines removal removal
NO OF UNITS	1	
BAG MEDIA, MICRONS	0.5	
EFFLUENT FLOW METER		
TYPE	MAGNETIC	
SIZE, INCHES	2	

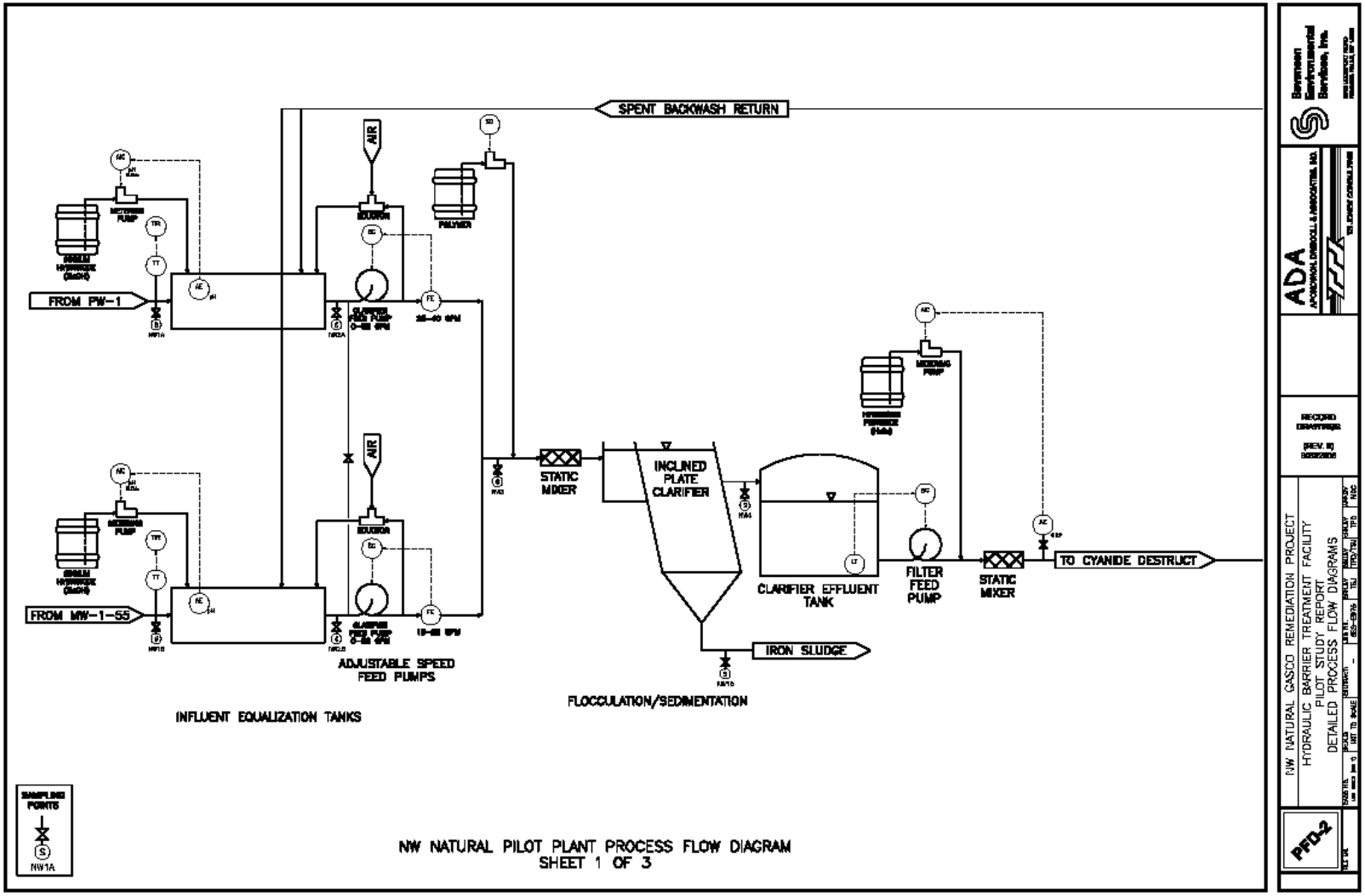
SILTRONICS GROUNDWATER PILOT PLANT PROCESS DESIGN		
PRELIMINARY DESIGN DATA --15 GPM		**COMMENTS/ASSUMPTIONS**
INFLUENT CHARACTERISTICS--WASTEWATER		
DESIGN AVERAGE FLOW, GPD	5,400	6-Hour Days
, GPM	15	
AVERAGE TOTAL ORGANIC CARBON, LBS/DAY	1.1	@ 25 mg/L
TOTAL SUSPENDED SOLIDS, LBS/DAY	0.9	@ 20 mg/L
TOTAL CYANIDE, LBS/DAY	0.02	@ 0.5 mg/L
TOTAL IRON, LBS/DAY	2.25	@ 50 mg/L
TOTAL MANGANESE, LBS/DAY	0.05	@ 1 mg/L
REQUIRED EFFLUENT CHARACTERISTICS		
TOC, MG/L	0.05	Assumed
, LBS/DAY	0.00	
, % REMOVAL	99.8%	
TSS, MG/L	0.04	Assumed
, LBS/DAY	0.00	
, % REMOVAL	99.8%	
TOTAL CYANIDE, MG/L	0.0014	DEQ
, LBS/DAY	0.0025	
, % REMOVAL	88.8%	
TOTAL IRON, MG/L	0.3	DEQ
, LBS/DAY	0.01	
, % REMOVAL	99.4%	
TOTAL MANGANESE, MG/L	0.05	DEQ
, LBS/DAY	0.002	
, % REMOVAL	95.0%	
INFLUENT EQUALIZATION TANK		Closed tanks with level control
TYPE	FRAC	
NO OF UNITS INSTALLED	1	
UNIT VOLUME, GALS	21,000	
VOLUME, GALS	21,000	
DETENTION TIME, DAYS	3.9	
REACTOR FEED PUMP		Controlled off reactor level
TYPE	CENTRIFUGAL	
NO OF UNITS	1	
UNIT CAPACITY, GPM	30	with 100% recycle
TDH, FT	20	
UNIT HP	0.5	with VFD

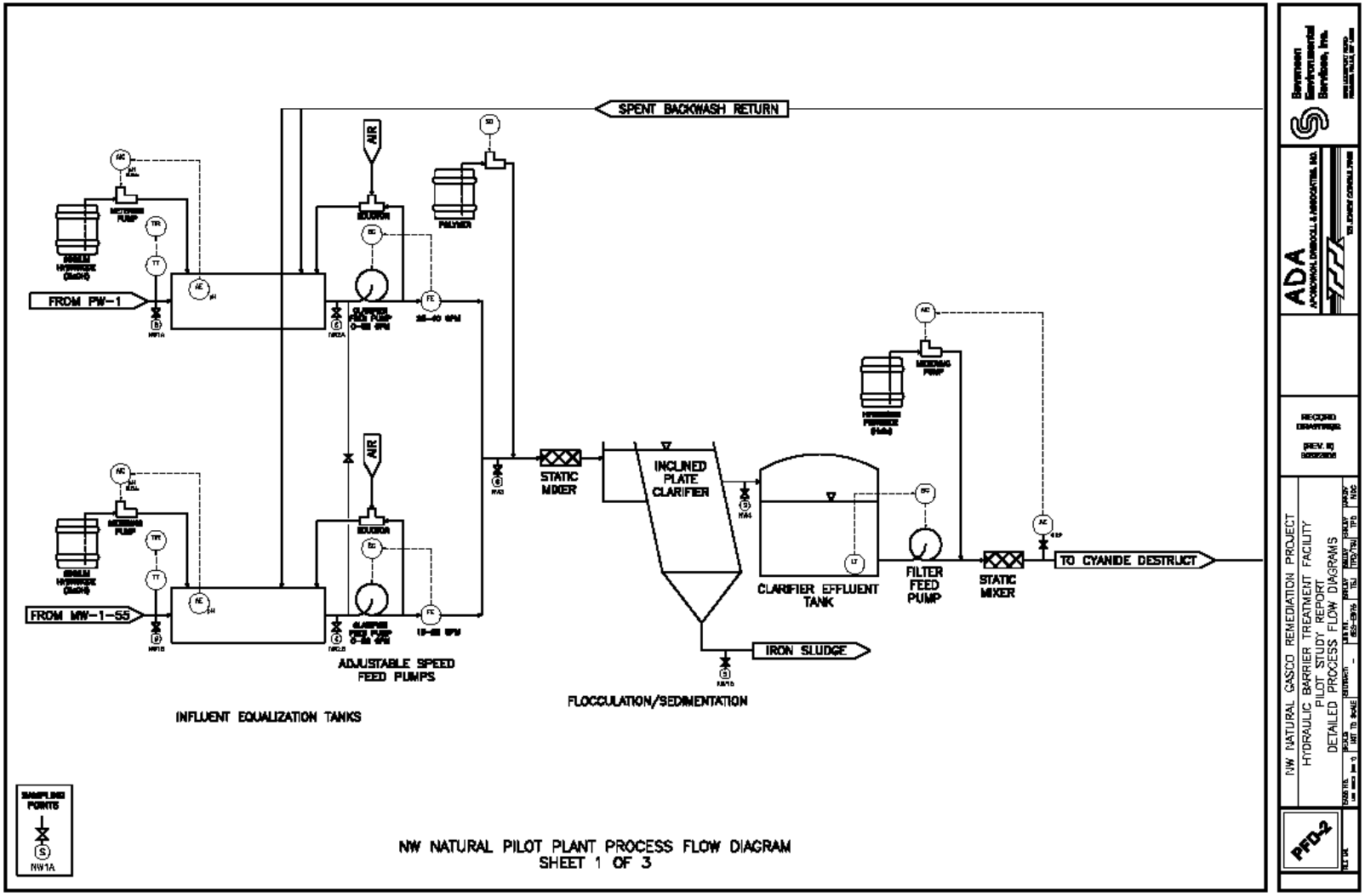
MAZZEI EDUCTORS--FE AERATION IN RECIRC		
STOICHIOMETRIC FACTOR IRON	0.1432	
STOICHIOMETRIC FACTOR MANGANESE	0.2912	
ASSUMED INFLUENT OXYGEN, mg/L	0	
DESIRED RESIDUAL OXYGEN, mg/L	5	
OXYGEN REQUIRED, mg/l	12	
INFLUENT FLOW METER		
TYPE	MAGNETIC	Tied to VFD
NUMBER	1	
SIZE, INCHES	1	
CAUSTIC FEED PUMP		pH Adjustment as required
TYPE	Diaphragm	
CONTROL	pH	
NUMBER OF UNITS	1	
PROJECTED USAGE, GALS/DAY	5	Treatability using 25%
PROJECTED USAGE, LBS/DAY	70	
, GALS/HOUR	0.9	6 hr days
UNIT CAPACITY, GALS/HR	0-2	
STORAGE PROVIDED, GALS	260	Tote
STORAGE PROVIDED, DAYS	48.1	
IN-LINE MIXER		
NUMBER	1	
TYPE	IN LINE STATIC	
SIZE, INCHES	1	
INCLINED-PLATE CLARIFIER		
TYPE	INCLINED PLATE	
NUMBER	1	
DIMENSIONS, FT		
LENGTH	8	
WIDTH	4	
HEIGHT	8	
PROJECTED SETTLING AREA, SQ FT	80	
LOADING RATE, GPM/SQ FT	0.19	
SOLIDS PRODUCTION		
INFLUENT SOILIDS	1	@ 75% Removal of Influent
CHEMICAL SOLIDS	7	@ 3 X Influent Iron
TOTAL SOLIDS, LBS/DAY	8	
, CONCENTRATION @	3%	
, LBS/DAY	255	
, GALS/DAY	30	
, GALS/MIN @ 10 MINS/HR	0.1	
IPC EFFLUENT TANK		
TYPE	Polypropylene	
NO OF UNITS INSTALLED	1	
VOLUME, GALS	2,500	
DETENTION TIME, MINS	0.5	

HYDROGEN PEROXIDE FEED PUMP		CYANIDE OXIDATION
TYPE	Diaphragm	
CONTROL	Paced off ORP	ORP = 650 mv
NUMBER OF UNITS	1	
PROJECTED USAGE, GALS/DAY	2.2	Treatability & Estimate
PROJECTED USAGE, LBS/DAY	22	Estimate
, GALS/HOUR	0.4	
UNIT CAPACITY, GALS/HOUR	0-8	
TOTAL CAPACITY, GALS/HOUR	0-16	
STORAGE PROVIDED, GALS	260	Totes
STORAGE PROVIDED, DAYS	120.4	
IN-LINE MIXER		
NUMBER	1	
TYPE	IN LINE STATIC	
SIZE, INCHES	1	
ADVANCED OXIDATION FEED PUMP		Controlled off reactor level
TYPE	CENTRIFUGAL	
NO OF UNITS	1	
UNIT CAPACITY, GPM	15	
TDH, FT	20	
UNIT HP	0.5	with VFD
ADVANCED OXIDATION REACTOR		Ultraviolet Lights
DESIRED DETENTION TIME, MINS	30	Oxidation of halogenated organics
NUMBER OF UNITS	1	
LENGTH, FT	6	
WIDTH, FT	6	
DEPTH	6	
VOLUME, CU FT	216	
VOLUME, GALS	1,616	
DETENTION TIME, MINS	108	
EFFLUENT HOLDING TANK		
TYPE	FRAC TANK	
NO OF UNITS INSTALLED	1	
VOLUME, GALS	18,000	
DETENTION TIME, HRS	26.7	
EFFLUENT PUMP		
TYPE	CENTRIFUGAL	
NO OF UNITS INSTALLED	1	
UNIT CAPACITY, GPM	25	
TDH, FT	50	
UNIT BHP	0.5	
EFFLUENT FLOW METER		
TYPE	MAGNETIC	
SIZE, INCHES	1	

Attachment B: Pilot Plant Process Diagrams


SPENT BACKWASH RETURN
AIR
EDUCTOR
POLYMER
FROM PW-1
FROM MW-1-S5
ADJUSTABLE SPEED FEED PUMPS
INFLUENT EQUALIZATION TANKS
STATIC MIXER
INCLINED PLATE CLARIFIER
FLOCCULATION/SEDIMENTATION
IRON SLUDGE
CLARIFIER EFFLUENT TANK
FILTER FEED PUMP
STATIC MIXER
TO CYANIDE DESTRUCT
SAMPLING POINTS
NW NATURAL PILOT PLANT PROCESS FLOW DIAGRAM
SHEET 1 OF 3
ADA
NW NATURAL GASCO REMEDIATION PROJECT
HYDRAULIC BARRIER TREATMENT FACILITY
PILOT STUDY REPORT
DETAILED PROCESS FLOW DIAGRAMS
PFD-2


SPENT BACKWASH RETURN
AIR
EDUCTOR
POLYMER
FROM PW-1
FROM MW-1-55
ADJUSTABLE SPEED
FEED PUMPS
INFLUENT EQUALIZATION TANKS
STATIC
MIXER
INCLINED
PLATE
CLARIFIER
FLOCCULATION/SEDIMENTATION
IRON SLUDGE
CLARIFIER EFFLUENT
TANK
FILTER
FEED
PUMP
STATIC
MIXER
TO CYANIDE DESTRUCT
SAMPLING
POINTS
NW1A
NW NATURAL PILOT PLANT PROCESS FLOW DIAGRAM
SHEET 1 OF 3
ADA
NW NATURAL GASCO REMEDIATION PROJECT
HYDRAULIC BARRIER TREATMENT FACILITY
PILOT STUDY REPORT
DETAILED PROCESS FLOW DIAGRAMS
PFD-2


SPENT BACKWASH RETURN
AIR
AIR
FROM PW-1
FROM MW-1-55
STATIC MIXER
INCLINED PLATE CLARIFIER
CLARIFIER EFFLUENT TANK
FILTER FEED PUMP
STATIC MIXER
TO CYANIDE DESTRUCT
IRON SLUDGE
ADJUSTABLE SPEED FEED PUMPS
INFLUENT EQUALIZATION TANKS
FLOCCULATION/SEDIMENTATION
SAMPLING POINTS
NW1A
NW NATURAL PILOT PLANT PROCESS FLOW DIAGRAM
SHEET 1 OF 3
ADA
NW NATURAL GASCO REMEDIATION PROJECT
HYDRAULIC BARRIER TREATMENT FACILITY
PILOT STUDY REPORT
DETAILED PROCESS FLOW DIAGRAMS
PFD-2

Attachment C: Bench-Scale Air Stripping Procedure

Siltronics Air Stripping Pilot Procedure

Run 1

1.8L of Sitronics water were continuously mixed. The initial pH (6.72) was recorded. 1.5mL Sodium hydroxide (NaOH) was added to raise the pH to **10.07.** Once the pH was near 10.0 the sample was aerated at 600mL/min for **30** minutes. After the aeration period, 15ppm AE 843 was added to floc and settle the solids. The sample was then filtered through a 1um filter and bottled for Fe, Mn, VOC, SVOC and cyanide analyses.

Run 1	
Initial Sample	**9H25009-01**
Sample/Addition	**pH**
1.8L - Initial	6.72
+ 1.5mL NaOH	10.07
Aerate 30 minutes	--
+ 15ppm AE843	--
Filter through 1mm filter	**--**
Sample taken	**9H25009-05**

Run 2

1.8L of Siltronics water were continuously mixed. The initial pH (6.78) was recorded. 1.0mL Sodium hydroxide (NaOH) was added to raise the pH to **9.53**. Once the pH was above 9.5 the sample was aerated at 600mL/min for **30** minutes. After the aeration period, 15ppm AE 843 was added to floc and settle the solids. The sample was then filtered through a 1um filter and bottled for Fe, Mn, VOC, SVOC and cyanide analyses.

Run 2	
Initial Sample	**9H25009-01**
Sample/Addition	**pH**
1.8L - Initial	6.78
+ 1.0mL NaOH	9.53
Aerate 30 minutes	--
+ 15ppm AE843	--
Filter through 1mm filter	**--**
Sample taken	**9H25015-01**

Run 3

1.8L of Siltronics water were continuously mixed. The initial pH (6.41) was recorded. 1.5mL Sodium hydroxide (NaOH) was added to raise the pH to **10.04**. Once the pH was near 10.0 the sample was aerated at 600mL/min for **60** minutes. After the aeration period, 15ppm AE 843 was added to filter and bottled for Fe, Mn, VOC, SVOC and cyanide analyses.

Run 3	
Initial Sample	**9H25009-01**
Sample/Addition	**pH**
1.8L - Initial	6.41
+ 1.5mL NaOH	10.07
Aerate 60 minutes	--
+ 15ppm AE843	--
Filter through 1mm filter	**--**
Sample taken	**9H25009-02**

Run 4

1.8L of Siltronics water were continuously mixed. The initial pH (6.82) was recorded. 1.0mL Sodium hydroxide (NaOH) was added to raise the pH to **9.52**. Once the pH was near 9.5 the sample was aerated at 600mL/min for **60** minutes. After the aeration period, 15ppm AE 843 was added to floc and settle the solids. The sample was then filtered through a 1um filter and bottled for Fe, Mn, VOC, SVOC and cyanide analyses.

Run 4	
Initial Sample	**9H25009-01**
Sample/Addition	**pH**
1.8L - Initial	6.82
+ 1.0mL NaOH	9.52
Aerate 60 minutes	--
+ 15ppm AE843	--
Filter through 1mm filter	**--**
Sample taken	**9H25015-02**

Run 5

1.8L of Siltronics water were continuously mixed. The initial pH (6.75) was recorded. 1.5mL Sodium hydroxide (NaOH) was added to raise the pH to **10.02** Once the pH was near 10.0 the sample was aerated at 600mL/min for **90** minutes. After the aeration period, 15ppm AE 843 was added to floc and settle the solids. The sample was then filtered through a 1um filter and bottled for Fe, Mn, VOC, SVOC and cyanide analyses.

Run 5	
Initial Sample	**9H25009-01**
Sample/Addition	**pH**
1.8L - Initial	6.75
+ 1.5mL NaOH	10.02
Aerate 90 minutes	--
+ 15ppm AE843	--
Filter through 1mm filter	**--**
Sample taken	**9H25009-03**

Run 6

1.8L of Siltronics water were continuously mixed. The initial pH (6.71) was recorded. 1.0mL Sodium hydroxide (NaOH) was added to raise the pH to **9.50**. Once the pH was above 9.5 the sample was aerated at 600mL/min for **90** minutes. After the aeration period, 15ppm AE 843 was added to floc and settle the solids. The sample was then filtered through a 1um filter and bottled for Fe, Mn, VOC, SVOC and cyanide analyses.

Run 6	
Initial Sample	**9H25009-01**
Sample/Addition	**pH**
1.8L - Initial	6.71
+ 2.0mL NaOH	9.50
Aerate 90 minutes	--
+ 15ppm AE843	--
Filter through 1mm filter	**--**
Sample taken	**9H25009-04**

Attachment D: NW Natural Pilot Results—Through Process by Date

7/23/2009	Units	NW-1A	NW-2A	NW-1B	NW-2B	NW-3	NW-4	NW-5	NW-6	NW-7	NW-8	NW-9
		PW-1 Influent	PW-1 Eq Eff	MW-1 Influent	MW-1 Eq Eff	Combined IPC Inf	IPC Effluent	Cyanide Destruct Eff	Bag Filter Eff	GAC Midpoint	GAC Eff	Eff Storage Tank
pH	pH Units	6.73		6.17								
pH Temperature	pH Units	14.2		13.3								
Total Dissolved Solids	mg/L	553		3080	10							
Total Suspended Solids	mg/L	39		184	13.7							
Total Organic Carbon	mg/L	31.6		7.82	982							
Total Iron	ug/L				90							
Total Manganese	ug/L				6.75							
CYANIDE												
Cyanide, Total	mg/L	1.11		0.408	0.401							
Cyanide, WAD	mg/L	0.136		0.0559	0.0641							
Cyanide, Amenable	mg/L	<0.0500		0.0887	<0.00500							
CATC, chlorinated	mg/L	1.08		0.32	0.436							
Cyanide, Free	mg/L	<0.0100		<0.0100	<0.0100							
CATC, total	mg/L	1.11		0.408	0.401							
SEMI-VOLATILE ORGANICS												
Acenaphthylene	ug/L	125 [4] [5] [5]		0.0993	0.117							
Acenaphthene	ug/L	193 [4] [5] [5]		0.162	0.281							
Anthracene	ug/L	45.2 [4]		<0.0777	<0.0777							
Benz(a)anthracene	ug/L	23.7 [4] [6] [7]		<0.0777	<0.0777							
Benzo(a)pyrene	ug/L	29.0 [4]		0.0832	<0.0777							
Benzo(b)fluoranthene(s)	ug/L			0.088	<0.0777							
Benzo(k)fluoranthene(s)	ug/L			<0.0777	<0.0777							
Benzo(b+k)fluoranthene(s)	ug/L	32.5 [4] [16] [9]										
Benzo(g,h,i)perylene	ug/L	23.8 [4]		0.0943	0.129							
Carbazole	ug/L	184 [4] [5] [5]		0.0857	<0.0777							
Chrysene	ug/L	26.0 [4]		<0.0777	<0.0777							
Dibenz(a,h)anthracene	ug/L	2.50 [4]		<0.0777	<0.0777							
Dibenzofuran	ug/L	21.5 [4]		<0.0777	<0.0777							
Fluoranthene	ug/L	90.7 [4]		0.199	0.159							
Fluorene	ug/L	61.9 [4] [5] [5]		0.166	0.132							
Indeno(1,2,3-cd)pyrene	ug/L	20.7 [4]		<0.0777	<0.0777							
2-Methylnaphthalene	ug/L	595 [1] [3] [4] [1] [3]		0.153	0.675							
Naphthalene	ug/L	8000 [1] [3] [4] [1] [3]		0.676	3.62							
Phenanthrene	ug/L	220 [4] [5] [5]		0.589	0.439							
Pyrene	ug/L	103 [4] [5] [5]		0.223	0.169							
2-Chlorophenol	ug/L	<3.92 [4]		<0.971	<0.971							
2,4-Dichlorophenol	ug/L	<3920 [4]		<0.971	<0.971							
2,4-Dimethylphenol	ug/L	<3920 [4]		<0.971	<0.971							
4,6-Dinitro-2-methylphenol	ug/L	<3.92 [4]		<0.971	<0.971							
2-Methylphenol	ug/L	<3.92 [4]		<0.971	<0.971							
2-Nitrophenol	ug/L	<3920 [4] [15] [8]		<0.971	<0.971							
4-Nitrophenol	ug/L	<3.92 [4]		<0.971	<0.971							
2,4,5-Trichlorophenol	ug/L	<3.92 [4]		<0.971	<0.971							
2,4,6-Trichlorophenol	ug/L	<3.92 [4]		<0.971	<0.971							
Pentachlorophenol (PCP)	ug/L	<3.92 [4]		<0.971	<0.971							
Phenol	ug/L	5.38 [4]		<0.971	<0.971							
METALS												
Hexavalent Chromium	mg/L	<0.0100		0.0112	<0.0100 [6] [7]							
Silver	ug/L	<1.00		<1.00	<1.00							
Arsenic	ug/L	3.92		1.11								
Cadmium	ug/L	<1.00		<1.00	<1.00							
Chromium	ug/L	5.48		<1.00	<1.00							
Copper	ug/L	<5.00		21.5	<5.00							
Dissolved Iron	ug/L	27800		218000	6490							
Mercury	ug/L	<0.0100		<0.0100	<0.0100							
Dissolved Manganese	ug/L	3100		6790	282							
Nickel	ug/L	3.03		9.04	1.97							
Lead	ug/L	5.52		17.4	<1.00							
Selenium	ug/L	1.61		2.06	2.52							
Zinc	ug/L	441		34.9	<4.00							
Calcium	ug/L	78300		318000	163000							
Chromium	ug/L											
Hardness (Calc by 6020)	mg CaCO3/L	412		1620	1200							
Magnesium	ug/L	52700		202000	193000							
Trivalent Chromium	ug/L	<11.0		<11.0	<11.0							
VOLATILE ORGANICS												
Acetone	ug/L	<10000		<20.0	<20.0							
Benzene	ug/L	7540		<0.250	<0.250							
2-Butanone (MEK)	ug/L	<5000		<10.0	17.9							
1,1-Dichloroethene	ug/L	<250		<0.500	<0.500							
cis-1,2-Dichloroethene	ug/L	<250		<0.500	<0.500							
trans-1,2-Dichloroethene	ug/L	<250		<0.500	<0.500							
Ethylbenzene	ug/L	620		<0.500	<0.500							
Tetrachloroethene (PCE)	ug/L	<250		<0.500	<0.500							
Toluene	ug/L	<250		<0.500	<0.500							
Trichloroethene (TCE)	ug/L	<250		<0.500	<0.500							
Vinyl chloride	ug/L	<250		<0.500	<0.500							
m,p-Xylene	ug/L	<500		<1.00	<1.00							
o-Xylene	ug/L	<250		<0.500	<0.500							

7/29/2009	Units	NW-1A	NW-2A	NW-1B	NW-2B	NW-3	NW-4	NW-5	NW-6	NW-7	NW-8	NW-9
		PW-1 Influent	PW-1 Eq Eff	MW-1 Influent	MW-1 Eq Eff	Combined IPC Inf	IPC Effluent	Cyanide Destruct Eff	Bag Filter Eff	GAC Midpoint	GAC Eff	Eff Storage Tank
pH	pH Units	6.73										8.23
pH Temperature	pH Units	14.2										31.8
Total Dissolved Solids	mg/L	553										518
Total Suspended Solids	mg/L	39										<5.00
Total Organic Carbon	mg/L	31.6										2.95
Total Iron	ug/L											<100 [4] [9]
Total Manganese	ug/L											43.0 [4] [9]
CYANIDE												
Cyanide, Total	mg/L	1.11										0.0200 [1] [2] [1] [6]
Cyanide, WAD	mg/L	0.136										0.0101
Cyanide, Amenable	mg/L	<0.0500										<0.00500
CATC, chlorinated	mg/L	1.08										0.0193
Cyanide, Free	mg/L	<0.0100										<0.0100
CATC, total	mg/L	1.11										0.0200 [2] [6]
SEMI-VOLATILE ORGANICS												
Acenaphthylene	ug/L	125 [4] [5] [5]										<0.0784
Acenaphthene	ug/L	193 [4] [5] [5]										<0.0784
Anthracene	ug/L	45.2 [4]										<0.0784
Benz(a)anthracene	ug/L	23.7 [4] [6] [7]										<0.0784
Benzo(a)pyrene	ug/L	29.0 [4]										<0.0784
Benzo(b)fluoranthene(s)	ug/L											<0.0784
Benzo(k)fluoranthene(s)	ug/L											<0.0784
Benzo(b+k)fluoranthene(s)	ug/L	32.5 [4] [16] [9]										
Benzo(g,h,i)perylene	ug/L	23.8 [4]										<0.0784
Carbazole	ug/L	184 [4] [5] [5]										<0.0784
Chrysene	ug/L	26.0 [4]										<0.0784
Dibenz(a,h)anthracene	ug/L	2.50 [4]										<0.0784
Dibenzofuran	ug/L	21.5 [4]										<0.0784
Fluoranthene	ug/L	90.7 [4]										0.0794
Fluorene	ug/L	61.9 [4] [5] [5]										<0.0784
Indeno(1,2,3-cd)pyrene	ug/L	20.7 [4]										<0.0784
2-Methylnaphthalene	ug/L	595 [1] [3] [4] [1] [3]										<0.0784
Naphthalene	ug/L	8000 [1] [3] [4] [1] [3]										<0.0784
Phenanthrene	ug/L	220 [4] [5] [5]										<0.0784
Pyrene	ug/L	103 [4] [5] [5]										<0.0784
2-Chlorophenol	ug/L	<3.92 [4]										<0.980
2,4-Dichlorophenol	ug/L	<3920 [4]										<0.980
2,4-Dimethylphenol	ug/L	<3920 [4]										<0.980
4,6-Dinitro-2-methylphenol	ug/L	<3.92 [4]										<0.980
2-Methylphenol	ug/L	<3.92 [4]										<0.980
2-Nitrophenol	ug/L	<3920 [4] [15] [8]										<0.980
4-Nitrophenol	ug/L	<3.92 [4]										<0.980
2,4,5-Trichlorophenol	ug/L	<3.92 [4]										<0.980
2,4,6-Trichlorophenol	ug/L	<3.92 [4]										<0.980
Pentachlorophenol (PCP)	ug/L	<3.92 [4]										<0.980
Phenol	ug/L	5.38 [4]										5.84
METALS												
Hexavalent Chromium	mg/L	<0.0100										<0.0100
Silver	ug/L	<1.00										<1.00
Arsenic	ug/L	3.92										30.5
Cadmium	ug/L	<1.00										<1.00
Chromium	ug/L	5.48										2.2
Copper	ug/L	<5.00										17.9
Dissolved Iron	ug/L	27800										1990
Mercury	ug/L	<0.0100										0.0176
Dissolved Manganese	ug/L	3100										47.1
Nickel	ug/L	3.03										31.5
Lead	ug/L	5.52										4.34
Selenium	ug/L	1.61										1.9
Zinc	ug/L	441										30.7
Calcium	ug/L	78300										13300
Chromium	ug/L											
Hardness (Calc by 6020)	mg CaCO3/L	412										133
Magnesium	ug/L	52700										24200
Trivalent Chromium	ug/L	<11.0										<11.0
VOLATILE ORGANICS												
Acetone	ug/L	<10000										<200 [11] [12] [11]
Benzene	ug/L	7540										<2.50 [12]
2-Butanone (MEK)	ug/L	<5000										<100 [11] [12] [11]
1,1-Dichloroethene	ug/L	<250										<5.00 [12]
cis-1,2-Dichloroethene	ug/L	<250										<5.00 [12]
trans-1,2-Dichloroethene	ug/L	<250										<5.00 [12]
Ethylbenzene	ug/L	620										<5.00 [12]
Tetrachloroethene (PCE)	ug/L	<250										<5.00 [12]
Toluene	ug/L	<250										<5.00 [12]
Trichloroethene (TCE)	ug/L	<250										<5.00 [12]
Vinyl chloride	ug/L	<250										<5.00 [12]
m,p-Xylene	ug/L	<500										<10.0 [12]
o-Xylene	ug/L	<250										<5.00 [12]

8/3/2009	Units	NW-1A	NW-2A	NW-1B	NW-2B	NW-3	NW-4	NW-5	NW-6	NW-7	NW-8	NW-9
		PW-1 Influent	PW-1 Eq Eff	MW-1 Influent	MW-1 Eq Eff	Combined IPC Inf	IPC Effluent	Cyanide Destruct Eff	Bag Filter Eff	GAC Midpoint	GAC Eff	Eff Storage Tank
pH	pH Units	6.53	10.1	6.09	7.72							7.91
pH Temperature	pH Units	20.3	20.8	20.7	21.5							20.6
Total Dissolved Solids	mg/L	548	893	2760	3170							1500
Total Suspended Solids	mg/L	68	7	107	42				<5.00			<5.00
Total Organic Carbon	mg/L	26	23.8 [1] [1]	6.34 [1] [1]	4.75 [1] [1]			22.5 [1] [1]	23.4 [1] [1]	<2.00	3.41	2.82 [1] [2]
Total Iron	ug/L					8500	910		2880 [13] [6]			157 [13] [9]
Total Manganese	ug/L					537	76.3		578 [13] [6]			100 [13] [9]
CYANIDE												
Cyanide, Total	mg/L	1.09	1.08	0.368	0.399			0.723	0.703			0.0929
Cyanide, WAD	mg/L	0.114	0.121	0.0583	0.0654			0.104	0.124			0.0165
Cyanide, Amenable	mg/L	<0.0500	<0.0500	0.169	<0.00500			<0.0100	<0.0100			<0.00500
CATC, chlorinated	mg/L	1.06	1.13	0.2	0.429			0.837	0.804			0.1
Cyanide, Free	mg/L	<0.0100	<0.0100	<0.0100	<0.0100			<0.0100	<0.0100			<0.0100
CATC, total	mg/L	1.09	1.08	0.368	0.399			0.723	0.703			0.0929
SEMI-VOLATILE ORGANICS												
Acenaphthylene	ug/L	396	169 [11]	<1.95	<0.152			59.8 [11]	106 [11]	<0.0777	0.392 [11]	<0.0816 [11]
Acenaphthene	ug/L	529	244 [11]	<1.95	<0.152			77.3 [11]	146 [11]	<0.0777	0.404 [11]	<0.0816 [11]
Anthracene	ug/L	99.8	27.2 [11]	<1.95	<0.152			<38.5 [11]	10.7 [11]	<0.0777	<0.377 [11]	<0.0816 [11]
Benz(a)anthracene	ug/L	50.5 [14] [7]	<19.2 [11]	<1.95	<0.152			<38.5 [11]	<3.81 [11]	<0.0777	<0.377 [11]	<0.0816 [11]
Benzo(a)pyrene	ug/L	68.3	<24.0 [11] [28] [7]	<1.95	<0.152			<38.5 [11]	<4.76 [11] [28] [8]	<0.0971 [28] [8]	<0.377 [11]	<0.102 [11] [28] [12]
Benzo(b)fluoranthene(s)	ug/L	83.9 [24] [9]	<19.2 [11]	<1.95	<0.152			<38.5 [11]	<3.81 [11]		<0.377 [11]	<0.0816 [11]
Benzo(k)fluoranthene(s)	ug/L		<19.2 [11]	<1.95	<0.152			<38.5 [11]	<3.81 [11]		<0.377 [11]	<0.0816 [11]
Benzo(b+k)fluoranthene(s)	ug/L	57								<0.155 [24] [6]		
Benzo(g,h,i)perylene	ug/L	378	<19.2 [11]	<1.95	<0.152			<38.5 [11]	<3.81 [11]	<0.0777	<0.377 [11]	<0.0816 [11]
Carbazole	ug/L	58.8	131 [11]	<1.95	<0.152			63.9 [11]	82.0 [11]	<0.0777	0.425 [11]	<0.0816 [11]
Chrysene	ug/L	<9.52	<19.2 [11]	<1.95	<0.152			<38.5 [11]	<3.81 [11]	<0.0777	<0.377 [11]	<0.0816 [11]
Dibenz(a,h)anthracene	ug/L	45.1	<19.2 [11]	<1.95	<0.152			<38.5 [11]	<3.81 [11]	<0.0777	<0.377 [11]	<0.0816 [11]
Dibenzofuran	ug/L	208	20.8 [11]	<1.95	<0.152			<38.5 [11]	13.0 [11]	<0.0777	<0.377 [11]	<0.0816 [11]
Fluoranthene	ug/L	237	35.8 [11]	<1.95	<0.152			<38.5 [11]	13.6 [11]	0.0806	<0.377 [11]	<0.0816 [11]
Fluorene	ug/L	45.5	100 [11]	<1.95	<0.152			<38.5 [11]	60.6 [11]	<0.0777	<0.377 [11]	<0.0816 [11]
Indeno(1,2,3-cd)pyrene	ug/L	1260	<19.2 [11]	<1.95	<0.152			<38.5 [11]	<3.81 [11]	<0.0777	<0.377 [11]	<0.0816 [11]
2-Methylnaphthalene	ug/L	14200 [9] [1]	629 [9] [11] [3]	5.67	<0.152			189 [9] [11] [3]	409 [9] [11] [4]	<0.0777	1.11 [9] [11] [3]	0.104 [9] [11] [6]
Naphthalene	ug/L	808	4200 [9] [11] [3]	56.0 [9] [7]	349 [3] [9] [4] [5]			1550 [9] [11] [3]	3140 [9] [11] [4]	0.143 [3] [9] [3] [4]	8.73 [2] [9] [11] [1] [3]	0.955 [2] [9] [11] [4] [6]
Phenanthrene	ug/L	242	251 [11]	<1.95	<0.152			72.2 [11]	129 [11]	<0.0777	<0.377 [11]	<0.0816 [11]
Pyrene	ug/L	<119	36.4 [11]	<1.95	0.156			<38.5 [11]	13.5 [11]	0.0927	<0.377 [11]	<0.0816 [11]
2-Chlorophenol	ug/L	<119	<240 [11]	<24.4	<1.90			<481 [11]	<47.6 [11]	<0.971	<4.72 [11]	<1.02 [11]
2,4-Dichlorophenol	ug/L	<119	<240 [11]	<24.4	<1.90			<481 [11]	<47.6 [11]	<0.971	<4.72 [11]	<1.02 [11]
2,4-Dimethylphenol	ug/L	<119	<240 [11]	<24.4	<1.90			<481 [11]	<47.6 [11]	<0.971	<4.72 [11]	<1.02 [11]
4,6-Dinitro-2-methylphenol	ug/L	<119	<240 [11]	<24.4	<1.90			<481 [11]	<47.6 [11]	<0.971	<4.72 [11]	<1.02 [11]
2-Methylphenol	ug/L	<119	<240 [11]	<24.4	<1.90			<481 [11]	<47.6 [11]	<0.971	<4.72 [11]	<1.02 [11]
2-Nitrophenol	ug/L	<119	<240 [11]	<24.4	<1.90			<481 [11]	<47.6 [11]	<0.971	<4.72 [11]	<1.02 [11]
4-Nitrophenol	ug/L	<119	<240 [11]	<24.4	<1.90			<481 [11]	<47.6 [11]	<0.971	<4.72 [11]	<1.02 [11]
2,4,5-Trichlorophenol	ug/L	<119	<240 [11]	<24.4	<1.90			<481 [11]	<47.6 [11]	<0.971	<4.72 [11]	<1.02 [11]
2,4,6-Trichlorophenol	ug/L	<119	<240 [11]	<24.4	<1.90			<481 [11]	<47.6 [11]	<0.971	<4.72 [11]	<1.02 [11]
Pentachlorophenol (PCP)	ug/L	<119	<240 [11]	<24.4	<1.90			<481 [11]	<47.6 [11]	<0.971	<4.72 [11]	<1.02 [11]
Phenol	ug/L		<240 [11]	<24.4	<1.90			<481 [11]	65.9 [11]	<0.971	<4.72 [11]	<1.02 [11]
METALS												
Hexavalent Chromium	mg/L											
Silver	ug/L	<1.00	<1.00	<1.00	<1.00				<1.00			<1.00
Arsenic	ug/L	4.46		<1.00		1.6	1.38	2.09	1.7		6.07	7.48
Cadmium	ug/L	<1.00	<1.00	<1.00	<1.00				<1.00			<1.00
Chromium	ug/L	1.66	1.41	<1.00	<1.00				1.17			<1.00
Copper	ug/L	<5.00	<5.00	5.82	<5.00				39.8			<5.00
Dissolved Iron	ug/L	32400	1050	176000	22200	344 [13] [2]	294 [13] [2]		648			168
Mercury	ug/L	<0.0100	<0.0100	<0.0100	<0.0100				0.108			<0.0100
Dissolved Manganese	ug/L	3150	265	6180	786	14.6 [13] [2]	7.28 [13] [2]		51.6			98.3
Nickel	ug/L	<1.00	<1.00	3.42	1.38				7.09			8.42
Lead	ug/L	<1.00	<1.00	4.37	<1.00				18.1			1.82
Selenium	ug/L	<1.00	1.03	1.09	1.13				2.21			1.86
Zinc	ug/L	492	20.6	9.26	4.87				341			6.66
Calcium	ug/L	77700	4450	294000	138000							21700
Chromium	ug/L											
Hardness (Calc by 6020)	mg CaCO3/L	396	200	1450	1020				345			360
Magnesium	ug/L	48900	45800	173000	164000							74300
Trivalent Chromium	ug/L	1.66	1.41	<1.00	<1.00				1.17			<1.00
VOLATILE ORGANICS												
Acetone	ug/L	<4000 [32]	<400	<20.0 [4] [33]	<20.0			<200	<200	<20.0	<20.0	<20.0
Benzene	ug/L	7820 [32]	4570	<0.250 [4] [33]	<0.250			1880	1760	<0.250	<0.250	<0.250
2-Butanone (MEK)	ug/L	<2000 [32]	<200	<10.0 [4] [33]	<10.0			<100	<100	<10.0	<10.0	<10.0
1,1-Dichloroethene	ug/L	<100 [32]	<10.0	<0.500 [4] [33]	<0.500			<5.00	<5.00	<0.500	<0.500	<0.500
cis-1,2-Dichloroethene	ug/L	<100 [32]	<10.0	<0.500 [4] [33]	<0.500			<5.00	<5.00	<0.500	<0.500	<0.500
trans-1,2-Dichloroethene	ug/L	<100 [32]	<10.0	<0.500 [4] [33]	<0.500			<5.00	<5.00	<0.500	<0.500	<0.500
Ethylbenzene	ug/L	752 [32]	101	<0.500 [4] [33]	<0.500			44.5	40.7	<0.500	<0.500	<0.500
Tetrachloroethene (PCE)	ug/L	<100 [32]	<10.0	<0.500 [4] [33]	<0.500			<5.00	<5.00	<0.500	<0.500	<0.500
Toluene	ug/L	152 [32]	64.8	<0.500 [4] [33]	<0.500			22	22.2	<0.500	<0.500	<0.500
Trichloroethene (TCE)	ug/L	<100 [32]	<10.0	<0.500 [4] [33]	<0.500			<5.00	<5.00	<0.500	<0.500	<0.500
Vinyl chloride	ug/L	<100 [32]	<10.0	<0.500 [4] [33]	<0.500			<5.00	<5.00	<0.500	<0.500	<0.500
m,p-Xylene	ug/L	364 [32]	227	<1.00 [4] [33]	<1.00			50.7	56.1	<1.00	<1.00	<1.00
o-Xylene	ug/L	200 [32]	148	<0.500 [4] [33]	<0.500			41.6	42.9	<0.500	<0.500	<0.500

8/7/2009	Units	NW-1A	NW-2A	NW-1B	NW-2B	NW-3	NW-4	NW-5	NW-6	NW-7	NW-8	NW-9
		PW-1 Influent	PW-1 Eq Eff	MW-1 Influent	MW-1 Eq Eff	Combined IPC Inf	IPC Effluent	Cyanide Destruct Eff	Bag Filter Eff	GAC Midpoint	GAC Eff	Eff Storage Tank
pH	pH Units	6.74	9.99	6.32	10.1							7.74
pH Temperature	pH Units	16.9	14	18.7	15.7							15.9
Total Dissolved Solids	mg/L	573	1040	3000	2920							1590
Total Suspended Solids	mg/L	58	10	63	64				<5.00			<5.00
Total Organic Carbon	mg/L	21.8	29.9	4.07	6.48			24.3	21.5	2.14	<2.00	<2.00
Total Iron	ug/L					4940	3660		442 [4] [6]			125 [4] [9]
Total Manganese	ug/L					375	284		169 [4] [6]			63.5 [4] [9]
CYANIDE												
Cyanide, Total	mg/L	0.926	0.546	0.257	0.299			0.458	0.611			0.135
Cyanide, WAD	mg/L	0.125	0.132	0.111	0.0711			0.0777	0.0827			0.0244
Cyanide, Amenable	mg/L	<0.0250	0.174	<0.0500	<0.00500			<0.0100	<0.0100			<0.00500
CATC, chlorinated	mg/L	0.933	0.372	1.09	0.438			0.904	0.858			0.153
Cyanide, Free	mg/L	<0.0100	<0.0100	<0.0100	<0.0100			<0.0100	0.0102			<0.0100
CATC, total	mg/L	0.926	0.546	0.257	0.299			0.458	0.611			0.135
Available Cyanide	mg/L	0.011	0.0033	0.0083	0.0061			0.023	0.029			<0.0020
SEMI-VOLATILE ORGANICS												
Acenaphthylene	ug/L	<381 [3]	116 [3]	<1.90 [3]	<0.0779 [3]			79.4 [3]	84.3 [3]	0.103 [3]	<0.756 [3] [15]	<0.0800 [3]
Acenaphthene	ug/L	404 [3]	248 [3]	<1.90 [3]	<0.0779 [3]			155 [3]	156 [3]	0.137 [3]	<0.756 [3] [15]	<0.0800 [3]
Anthracene	ug/L	<381 [3]	30.5 [3]	<1.90 [3]	<0.0779 [3]			<38.5 [3]	<39.6 [3]	<0.0760 [3]	<0.756 [3] [15]	<0.0800 [3]
Benz(a)anthracene	ug/L	<381 [3]	<15.2 [3]	<1.90 [3]	<0.0779 [3]			<38.5 [3]	<39.6 [3]	<0.0760 [3]	<0.756 [3] [15]	<0.0800 [3]
Benzo(a)pyrene	ug/L	724 [3]	<15.2 [3]	<2.14 [3] [14] [14]	<0.0876 [3] [14] [8]			<38.5 [3]	<39.6 [3]	<0.114 [3] [14] [8]	<0.756 [3] [15]	<0.100 [3] [14] [12]
Benzo(b)fluoranthene(s)	ug/L		<15.2 [3]	<1.90 [3]	<0.0779 [3]			<38.5 [3]	<39.6 [3]	<0.0760 [3]	<0.756 [3] [15]	<0.0800 [3]
Benzo(k)fluoranthene(s)	ug/L		<15.2 [3]	<1.90 [3]	<0.0779 [3]			<38.5 [3]	<39.6 [3]	<0.0760 [3]	<0.756 [3] [15]	<0.0800 [3]
Benzo(b+k)fluoranthene(s)	ug/L	<762 [3] [12] [9]										
Benzo(g,h,i)perylene	ug/L	397 [3]	<15.2 [3]	<1.90 [3]	<0.0779 [3]			<38.5 [3]	<39.6 [3]	<0.0760 [3]	<0.756 [3] [15]	<0.0800 [3]
Carbazole	ug/L	<381 [3]	129 [3]	<1.90 [3]	0.0988 [3]			106 [3]	112 [3]	0.107 [3]	<0.756 [3] [15]	<0.0800 [3]
Chrysene	ug/L	<381 [3]	<15.2 [3]	<1.90 [3]	<0.0779 [3]			<38.5 [3]	<39.6 [3]	<0.0760 [3]	<0.756 [3] [15]	<0.0800 [3]
Dibenz(a,h)anthracene	ug/L	<381 [3]	<15.2 [3]	<1.90 [3]	<0.0779 [3]			<38.5 [3]	<39.6 [3]	<0.0760 [3]	<0.756 [3] [15]	<0.0800 [3]
Dibenzofuran	ug/L	<381 [3]	20.1 [3]	<1.90 [3]	<0.0779 [3]			<38.5 [3]	<39.6 [3]	<0.0760 [3]	<0.756 [3] [15]	<0.0800 [3]
Fluoranthene	ug/L	838 [3]	33.4 [3]	<1.90 [3]	<0.0779 [3]			<38.5 [3]	<39.6 [3]	0.196 [3]	<0.756 [3] [15]	0.127 [3]
Fluorene	ug/L	<381 [3]	107 [3]	<1.90 [3]	<0.0779 [3]			66.4 [3]	68.9 [3]	<0.0760 [3]	<0.756 [3] [15]	<0.0800 [3]
Indeno(1,2,3-cd)pyrene	ug/L	<381 [3]	<15.2 [3]	<1.90 [3]	<0.0779 [3]			<38.5 [3]	<39.6 [3]	<0.0760 [3]	<0.756 [3] [15]	<0.0800 [3]
2-Methylnaphthalene	ug/L	742 [3]	36.7 [3]	<1.90 [3]	<0.0779 [3]			74.4 [3]	60.4 [3]	0.114 [3]	<0.756 [3] [15]	<0.0800 [3]
Naphthalene	ug/L	6280 [3]	21.7 [3]	4.59 [3]	<0.0779 [3]			440 [3]	303 [3]	0.765 [3]	<0.756 [3] [15]	0.201 [3]
Phenanthrene	ug/L	1450 [3]	259 [3]	<1.90 [3]	<0.0779 [3]			154 [3]	148 [3]	0.250 [3]	<0.756 [3] [15]	0.121 [3]
Pyrene	ug/L	947 [3]	34.2 [3]	<1.90 [3]	<0.0779 [3]			<38.5 [3]	<39.6 [3]	0.237 [3]	<0.756 [3] [15]	0.148 [3]
2-Chlorophenol	ug/L	<4760 [3]	<190 [3]	<23.8 [3]	<0.974 [3]			<481 [3]	<495 [3]	<0.951 [3]	<9.45 [3] [15]	<1.00 [3]
2,4-Dichlorophenol	ug/L	<4760 [3]	<190 [3]	<23.8 [3]	<0.974 [3]			<481 [3]	<495 [3]	<0.951 [3]	<9.45 [3] [15]	<1.00 [3]
2,4-Dimethylphenol	ug/L	<4760 [3]	<190 [3]	<23.8 [3]	<0.974 [3]			<481 [3]	<495 [3]	<0.951 [3]	<9.45 [3] [15]	<1.00 [3]
4,6-Dinitro-2-methylphenol	ug/L	<4760 [3]	<190 [3]	<23.8 [3]	<0.974 [3]			<481 [3]	<495 [3]	<0.951 [3]	<9.45 [3] [15]	<1.00 [3]
2-Methylphenol	ug/L	<4760 [3]	<190 [3]	<23.8 [3]	<0.974 [3]			<481 [3]	<495 [3]	<0.951 [3]	<9.45 [3] [15]	<1.00 [3]
2-Nitrophenol	ug/L	<4760 [3]	<190 [3]	<23.8 [3]	<0.974 [3]			<481 [3]	<495 [3]	<0.951 [3]	<9.45 [3] [15]	<1.00 [3]
4-Nitrophenol	ug/L	<4760 [3]	<190 [3]	<23.8 [3]	<0.974 [3]			<481 [3]	<495 [3]	<0.951 [3]	<9.45 [3] [15]	<1.00 [3]
2,4,5-Trichlorophenol	ug/L	<4760 [3]	<190 [3]	<23.8 [3]	<0.974 [3]			<481 [3]	<495 [3]	<0.951 [3]	<9.45 [3] [15]	<1.00 [3]
2,4,6-Trichlorophenol	ug/L	<4760 [3]	<190 [3]	<23.8 [3]	<0.974 [3]			<481 [3]	<495 [3]	<0.951 [3]	<9.45 [3] [15]	<1.00 [3]
Pentachlorophenol (PCP)	ug/L	<4760 [3]	<190 [3]	<23.8 [3]	<0.974 [3]			<481 [3]	<495 [3]	<0.951 [3]	<9.45 [3] [15]	<1.00 [3]
Phenol	ug/L	<4760 [3]	<190 [3]	<23.8 [3]	<0.974 [3]			<481 [3]	<495 [3]	<0.951 [3]	<9.45 [3] [15]	<1.00 [3]
METALS												
Hexavalent Chromium	mg/L	<0.0200	<0.0200		<0.0200				<0.0200			<0.0200
Silver	ug/L	<1.00	<1.00		<1.00				<1.00			<1.00
Arsenic	ug/L	5.11	<1.00	1.09			1.76	2.63	1.63		3.81	3.87
Cadmium	ug/L	<1.00	1.02	<1.00	<1.00				<1.00			<1.00
Chromium	ug/L	2.18	<5.00	<1.00	<1.00				<1.00			<1.00
Copper	ug/L	<5.00	4640	5.87	<5.00				33.3			<5.00
Dissolved Iron	ug/L	33800	<0.0100	182000	6270		347 [4] [2]		724			222
Mercury	ug/L	<0.0100	444	<0.0100	<0.0100				0.117 [1] [2]			<0.0100
Dissolved Manganese	ug/L	3320	<1.00	6360	268		20.7 [4] [2]		112			68
Nickel	ug/L	2.33	<1.00	2.81	<1.00				1.49			7.63
Lead	ug/L	3.69	1.32	1.52	<1.00				14.7			<1.00
Selenium	ug/L	1.27	54.2	1	1.31				1.89			2.19
Zinc	ug/L	1210	3700	5.83	<4.00				160			8.18
Calcium	ug/L	76000		296000	67600							14200
Chromium	ug/L		198									
Hardness (Calc by 6020)	mg CaCO3/L	391	45900	1490	854							351
Magnesium	ug/L	49000	<21.0	181000	166000							76600
Trivalent Chromium	ug/L	<21.0		<101	<21.0				<21.0			<21.0
VOLATILE ORGANICS												
Acetone	ug/L	<2000	<1000	<20.0	<20.0			<400	<200		<20.0	<20.0
Benzene	ug/L	9100	4150	0.31	<0.250			1740	1700		<0.250	<0.250
2-Butanone (MEK)	ug/L	<1000	<500	<10.0	<10.0			<200	<100		<10.0	<10.0
1,1-Dichloroethene	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<5.00		<0.500	<0.500
cis-1,2-Dichloroethene	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<5.00		<0.500	<0.500
trans-1,2-Dichloroethene	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<5.00		<0.500	<0.500
Ethylbenzene	ug/L	988	118	<0.500	<0.500			42	49.2		<0.500	<0.500
Tetrachloroethene (PCE)	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<5.00		<0.500	<0.500
Toluene	ug/L	367	84	<0.500	<0.500			27.2	31.6		<0.500	<0.500
Trichloroethene (TCE)	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<5.00		<0.500	<0.500
Vinyl chloride	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<5.00		<0.500	<0.500
m,p-Xylene	ug/L	474	196	<1.00	<1.00			35.4	74.8		<1.00	<1.00
o-Xylene	ug/L	229	125	<0.500	<0.500			35.2	55.5		<0.500	<0.500

8/11/2009	Units	NW-1A	NW-2A	NW-1B	NW-2B	NW-3	NW-4	NW-5	NW-6	NW-7	NW-8	NW-9
		PW-1 Influent	PW-1 Eq Eff	MW-1 Influent	MW-1 Eq Eff	Combined IPC Inf	IPC Effluent	Cyanide Destruct Eff	Bag Filter Eff	GAC Midpoint	GAC Eff	Eff Storage Tank
pH	pH Units	6.79		6.26								7.6
pH Temperature	pH Units	20.1		20.6								20.2
Total Dissolved Solids	mg/L	493		3310								1540
Total Suspended Solids	mg/L	37		67					<5.00			<5.00
Total Organic Carbon	mg/L	49.6		6.81					24.6			<2.00
Total Iron	ug/L								467 [7] [6]			162 [7] [9]
Total Manganese	ug/L								123 [7] [6]			118 [7] [9]
CYANIDE												
Cyanide, Total	mg/L	0.892		0.47					0.709			0.133
Cyanide, WAD	mg/L	0.0722		0.0591					0.0161			0.0689
Cyanide, Amenable	mg/L	<0.0250		<0.00500					<0.0100			<0.00500
CATC, chlorinated	mg/L	0.938		0.467					0.808			0.142
Cyanide, Free	mg/L	<0.0100		<0.0100					<0.0100			<0.0100
CATC, total	mg/L	0.892		0.47					0.709			0.133
SEMI-VOLATILE ORGANICS												
Acenaphthylene	ug/L	413 [6]		0.347 [6]					52.3 [6]			<0.0808 [6]
Acenaphthene	ug/L	658 [6]		1.51 [6] [8] [10]					104 [6]			<0.0808 [6]
Anthracene	ug/L	455 [6]		0.128 [6]					<18.6 [6]			<0.0808 [6]
Benz(a)anthracene	ug/L	503 [6]		<0.0755 [6]					<18.6 [6]			<0.0808 [6]
Benzo(a)pyrene	ug/L	894 [6]		0.106 [6]					<23.3 [6] [17] [8]			0.104 [6]
Benzo(b)fluoranthene(s)	ug/L			<0.151 [6] [16] [11]					<18.6 [6]			
Benzo(k)fluoranthene(s)	ug/L			<0.151 [6] [16] [11]					<18.6 [6]			
Benzo(b+k)fluoranthene(s)	ug/L	1080 [6] [16] [9]										0.164 [6] [16] [10]
Benzo(g,h,i)perylene	ug/L	621 [6]		<0.0755 [6]					<18.6 [6]			0.107 [6]
Carbazole	ug/L	385 [6]		0.170 [6]					73.2 [6]			<0.0808 [6]
Chrysene	ug/L	605 [6]		<0.0755 [6]					<18.6 [6]			<0.0808 [6]
Dibenz(a,h)anthracene	ug/L	<372 [6]		<0.0755 [6]					<18.6 [6]			<0.0808 [6]
Dibenzofuran	ug/L	<372 [6]		<0.0755 [6]					<18.6 [6]			<0.0808 [6]
Fluoranthene	ug/L	1690 [6]		0.214 [6]					27.4 [6]			0.104 [6]
Fluorene	ug/L	397 [6]		0.317 [6]					44.0 [6]			<0.0808 [6]
Indeno(1,2,3-cd)pyrene	ug/L	<372 [6]		<0.0755 [6]					<18.6 [6]			<0.0808 [6]
2-Methylnaphthalene	ug/L	928 [6]		1.25 [6]					166 [6]			<0.0808 [6]
Naphthalene	ug/L	5520 [3] [6] [1]		5.15 [3] [6] [7]					1500 [3] [6] [4]			0.0809 [3] [6] [6]
Phenanthrene	ug/L	3130 [6]		1.01 [6]					123 [6]			<0.0808 [6]
Pyrene	ug/L	1990 [6]		0.223 [6]					29.1 [6]			0.125 [6]
2-Chlorophenol	ug/L	<4650 [6]		<0.943 [6]					<233 [6]			<1.01 [6]
2,4-Dichlorophenol	ug/L	<4650 [6]		<0.943 [6]					<233 [6]			<1.01 [6]
2,4-Dimethylphenol	ug/L	<4650 [6]		<0.943 [6]					<233 [6]			<1.01 [6]
4,6-Dinitro-2-methylphenol	ug/L	<4650 [6]		<0.943 [6]					<233 [6]			<1.01 [6]
2-Methylphenol	ug/L	<4650 [6]		<0.943 [6]					<233 [6]			<1.01 [6]
2-Nitrophenol	ug/L	<4650 [6]		<0.943 [6]					<233 [6]			<1.01 [6]
4-Nitrophenol	ug/L	<4650 [6]		<0.943 [6]					<233 [6]			<1.01 [6]
2,4,5-Trichlorophenol	ug/L	<4650 [6]		<0.943 [6]					<233 [6]			<1.01 [6]
2,4,6-Trichlorophenol	ug/L	<4650 [6]		<0.943 [6]					<233 [6]			<1.01 [6]
Pentachlorophenol (PCP)	ug/L	<4650 [6]		<0.943 [6]					<233 [6]			<1.01 [6]
Phenol	ug/L	<4650 [6]		<0.943 [6]					<233 [6]			<1.01 [6]
METALS												
Hexavalent Chromium	mg/L	<0.0100		0.0436					<0.0100			<0.0100
Silver	ug/L	<1.00		<1.00					<1.00			<1.00
Arsenic	ug/L	4.48		1.53					1.87			3.83
Cadmium	ug/L	<1.00		<1.00					<1.00			<1.00
Chromium	ug/L	1.04		<1.00					<1.00			<1.00
Copper	ug/L	<5.00		5.22					14			8.62
Dissolved Iron	ug/L	29600		216000					591			234
Mercury	ug/L	<0.0100		<0.0100					0.0798			<0.0100
Dissolved Manganese	ug/L	3080		7280					131			121
Nickel	ug/L	1.36		3.12					1.17			11.7
Lead	ug/L	<1.00		<1.00					3.79			2.27
Selenium	ug/L	1.41		1.19					2.27			2.93
Zinc	ug/L	339		8.26					60.7			17.9
Calcium	ug/L	64800		310000								18000
Chromium	ug/L											
Hardness (Calc by 6020)	mg CaCO3/L	343		1610								352
Magnesium	ug/L	44100		202000								74600
Trivalent Chromium	ug/L	<11.0		<11.0					<11.0			<11.0
VOLATILE ORGANICS												
Acetone	ug/L	<2000		<20.0					<400			<20.0
Benzene	ug/L	9060		<0.250 [22]					1650			<0.250
2-Butanone (MEK)	ug/L	<1000		<10.0					<200			<10.0
1,1-Dichloroethene	ug/L	<50.0		<0.500					<10.0			<0.500
cis-1,2-Dichloroethene	ug/L	<50.0		<0.500					<10.0			<0.500
trans-1,2-Dichloroethene	ug/L	<50.0		<0.500					<10.0			<0.500
Ethylbenzene	ug/L	798		<0.500					125			<0.500
Tetrachloroethene (PCE)	ug/L	<50.0		<0.500					<10.0			<0.500
Toluene	ug/L	317		<0.500					37.2			<0.500
Trichloroethene (TCE)	ug/L	<50.0		<0.500					<10.0			<0.500
Vinyl chloride	ug/L	<50.0		<0.500					<10.0			<0.500
m,p-Xylene	ug/L	360		<1.00					78.6			<1.00
o-Xylene	ug/L	195		<0.500					52			<0.500

8/12/2009	Units	NW-1A PW-1 Influent	NW-2A PW-1 Eq Eff	NW-1B MW-1 Influent	NW-2B MW-1 Eq Eff	NW-3 Combined IPC Inf	NW-4 IPC Effluent	NW-5 Cyanide Destruct Eff	NW-6 Bag Filter Eff	NW-7 GAC Midpoint	NW-8 GAC Eff	NW-9 Eff Storage Tank
pH	pH Units	6.54	10.1	6.17	10.4							7.58
pH Temperature	pH Units	20.2	19.8	21.3	19.8							16.3
Total Dissolved Solids	mg/L	529	1020	3340	2900							1600
Total Suspended Solids	mg/L	102	84	140	91				<5.00			<5.00
Total Organic Carbon	mg/L	29.9	31.6	7.33	5			13.2	20.9	2.5	2.8	2.09
Total Iron	ug/L					9930	3960		413 [10] [6]			158 [10] [9]
Total Manganese	ug/L					814	346		110 [10] [6]			64.9 [10] [9]
CYANIDE												
Cyanide, Total	mg/L	0.586	0.81	0.377	0.322			0.457	0.706			0.183
Cyanide, WAD	mg/L	0.067	0.0868	0.06	0.0703			0.0503	0.0585			0.0175
Cyanide, Amenable	mg/L	<0.0100	<0.0500	<0.0100	<0.00500			<0.0100	<0.0100			<0.00500
CATC, chlorinated	mg/L	0.847	0.998	0.586	0.462			0.807	0.876			0.226
Cyanide, Free	mg/L	<0.0100	<0.0100	<0.0100	<0.0100			<0.0100	<0.0100			<0.0100
CATC, total	mg/L	0.586	0.81	0.377	0.322			0.457	0.706			0.183
Available Cyanide	mg/L	0.0060	0.0060	0.0051	0.0045			0.019	0.033			<0.0020
SEMI-VOLATILE ORGANICS												
Acenaphthylene	ug/L	1580 [6]	264 [6]	0.0954 [6]	<0.0777 [6]			40.3 [6]	73.1 [9]	0.0876 [6]	<0.0762 [9]	<0.0816 [9]
Acenaphthene	ug/L	2730 [6]	374 [6]	1.35 [6] [16] [14]	0.874 [6] [17] [8]			137 [6]	107 [9]	<0.0800 [6]	<0.0762 [9]	<0.0816 [9]
Anthracene	ug/L	1470 [6]	96.4 [6]	<0.0833 [6]	<0.0777 [6]			<18.6 [6]	<18.6 [9]	0.119 [6]	<0.0762 [9]	<0.0816 [9]
Benz(a)anthracene	ug/L	1300 [6]	74.7 [6]	<0.0833 [6]	<0.0777 [6]			<18.6 [6]	<18.6 [9]	0.592 [6]	0.156 [9]	<0.0816 [9]
Benzo(a)pyrene	ug/L	1720 [6]	109 [6]	0.110 [6] [16] [14]	<0.0777 [6]			28.8 [6]	<21.4 [9] [18] [8]	0.890 [6]	0.255 [9]	0.171 [9]
Benzo(b)fluoranthene(s)	ug/L			<0.0833 [6]	<0.0777 [6]				<18.6 [9]			
Benzo(k)fluoranthene(s)	ug/L			<0.0833 [6]	<0.0777 [6]				<18.6 [9]			
Benzo(b+k)fluoranthene(s)	ug/L	2200 [6] [15] [9]	133 [6] [16] [6]					<37.2 [6] [16] [6]		1.18 [6] [16] [6]	0.386 [9] [17] [5]	
Benzo(g,h,i)perylene	ug/L	1160 [6]	71.7 [6]	<0.0833 [6]	<0.0777 [6]			<18.6 [6]	<18.6 [9]	0.670 [6]	0.249 [9]	0.123 [9]
Carbazole	ug/L	636 [6]	184 [6]	<0.0833 [6]	<0.0777 [6]			94.6 [6]	97.5 [9]	<0.0800 [6]	<0.0762 [9]	<0.0816 [9]
Chrysene	ug/L	1370 [6]	94.7 [6]	<0.0833 [6]	<0.0777 [6]			<18.6 [6]	<18.6 [9]	0.647 [6]	0.152 [9]	<0.0816 [9]
Dibenz(a,h)anthracene	ug/L	<372 [6]	<18.6 [6]	<0.0833 [6]	<0.0777 [6]			<18.6 [6]	<18.6 [9]	<0.0800 [6]	<0.0762 [9]	<0.0816 [9]
Dibenzofuran	ug/L	<372 [6]	35.0 [6]	<0.0833 [6]	<0.0777 [6]			<18.6 [6]	<18.6 [9]	<0.0800 [6]	<0.0762 [9]	<0.0816 [9]
Fluoranthene	ug/L	4270 [6]	269 [6]	0.167 [6]	<0.0777 [6]			54.8 [6]	30.8 [9]	1.13 [6]	0.210 [9]	0.111 [9]
Fluorene	ug/L	1640 [6]	180 [6]	0.120 [6]	<0.0777 [6]			67.7 [6]	47.1 [9]	<0.0800 [6]	<0.0762 [9]	<0.0816 [9]
Indeno(1,2,3-cd)pyrene	ug/L	952 [6]	58.6 [6]	<0.0833 [6]	<0.0777 [6]			<18.6 [6]	<18.6 [9]	0.473 [6]	0.178 [9]	0.0818 [9]
2-Methylnaphthalene	ug/L	6110 [6]	1070 [6]	0.283 [6]	<0.0777 [6]			365 [6]	297 [9]	<0.0800 [6]	<0.0762 [9]	<0.0816 [9]
Naphthalene	ug/L	31100 [4] [6] [1]	9760 [3] [6] [3]	0.654 [4] [6] [7]	0.358 [3] [6] [5]			3460 [3] [6] [3]	2980 [5] [9] [4]	0.142 [3] [6] [4]	0.123 [5] [9] [3]	<0.0816 [8] [9] [7]
Phenanthrene	ug/L	9510 [6]	717 [6]	0.521 [6]	<0.0777 [6]			203 [6]	120 [9]	0.617 [6]	0.0921 [9]	<0.0816 [9]
Pyrene	ug/L	5190 [6]	323 [6]	0.180 [6]	<0.0777 [6]			60.9 [6]	33.2 [9]	1.63 [6]	0.296 [9]	0.138 [9]
2-Chlorophenol	ug/L	<4650 [6]	<233 [6]	<1.04 [6]	<0.971 [6]			<233 [6]	<233 [9]	<1.00 [6]	<0.952 [9]	<1.02 [9]
2,4-Dichlorophenol	ug/L	<4650 [6]	<233 [6]	<1.04 [6]	<0.971 [6]			<233 [6]	<233 [9]	<1.00 [6]	<0.952 [9]	<1.02 [9]
2,4-Dimethylphenol	ug/L	<4650 [6]	<233 [6]	<1.04 [6]	<0.971 [6]			<233 [6]	<233 [9]	<1.00 [6]	<0.952 [9]	<1.02 [9]
4,6-Dinitro-2-methylphenol	ug/L	<4650 [6]	<233 [6]	<1.04 [6]	<0.971 [6]			<233 [6]	<233 [9]	<1.00 [6]	<0.952 [9]	<1.02 [9]
2-Methylphenol	ug/L	<4650 [6]	<233 [6]	<1.04 [6]	<0.971 [6]			<233 [6]	<233 [9]	<1.00 [6]	<0.952 [9]	<1.02 [9]
2-Nitrophenol	ug/L	<4650 [6]	<233 [6]	<1.04 [6]	<0.971 [6]			<233 [6]	<233 [9]	<1.00 [6]	<0.952 [9]	<1.02 [9]
4-Nitrophenol	ug/L	<4650 [6]	<233 [6]	<1.04 [6]	<0.971 [6]			<233 [6]	<233 [9]	<1.00 [6]	<0.952 [9]	<1.02 [9]
2,4,5-Trichlorophenol	ug/L	<4650 [6]	<233 [6]	<1.04 [6]	<0.971 [6]			<233 [6]	<233 [9]	<1.00 [6]	<0.952 [9]	<1.02 [9]
2,4,6-Trichlorophenol	ug/L	<4650 [6]	<233 [6]	<1.04 [6]	<0.971 [6]			<233 [6]	<233 [9]	<1.00 [6]	<0.952 [9]	<1.02 [9]
Pentachlorophenol (PCP)	ug/L	<4650 [6]	<233 [6]	<1.04 [6]	<0.971 [6]			<233 [6]	<233 [9]	<1.00 [6]	<0.952 [9]	<1.02 [9]
Phenol	ug/L	<4650 [6]	<233 [6]	<1.04 [6]	<0.971 [6]			<233 [6]	<233 [9]	<1.00 [6]	<0.952 [9]	<1.02 [9]
METALS												
Hexavalent Chromium	mg/L	<0.0100	<0.0100	0.130 [2] [3]	<0.100 [17] [8]				<0.0100			<0.0100
Silver	ug/L	<1.00	<1.00	<1.00	<1.00				<1.00			<1.00
Arsenic	ug/L	4.57		1.37		2.63	2.12	2.18	1.92		3.52	4.02
Cadmium	ug/L	<1.00	<1.00	<1.00	<1.00				<1.00			<1.00
Chromium	ug/L	1.38	1.36	<1.00	<1.00				1.02			<1.00
Copper	ug/L	<5.00	<5.00	<5.00	<5.00				36.5			6.14
Dissolved Iron	ug/L	29600	10800	222000	6770	369 [7] [2]	353 [10] [2]		701			255
Mercury	ug/L	<0.0100	<0.0100	<0.0100	<0.0100				0.253 [2] [3]			0.0130 [2] [3]
Dissolved Manganese	ug/L	2860	1070	7470	227	21.7 [7] [2]	24.3 [10] [2]		118			66.1
Nickel	ug/L	1.26	<1.00	2.9	1.07				3.1			9.68
Lead	ug/L	<1.00	<1.00	2.46	<1.00				7.19			2.7
Selenium	ug/L	1.09	1.02	1.14	1.32				1.76			3.01
Zinc	ug/L	151	96.2	113	<4.00				150			21
Calcium	ug/L	64400	18000	326000	72100							13000
Chromium	ug/L											
Hardness (Calc by 6020)	mg CaCO3/L	345	218	1660	819							342
Magnesium	ug/L	44700	42100	206000	155000							75100
Trivalent Chromium	ug/L	<11.0	<11.0	<11.0	<101				<11.0			<11.0
VOLATILE ORGANICS												
Acetone	ug/L	<2000	<1000	<20.0	<20.0 [22]			<400	<400	<20.0	<20.0	<20.0
Benzene	ug/L	8690	5250	<0.250	<0.250 [22]			2690	2460	<0.250	<0.250	<0.250
2-Butanone (MEK)	ug/L	<1000	<500	<10.0	<10.0 [22]			<200	<200	<10.0	<10.0	<10.0
1,1-Dichloroethene	ug/L	<50.0	<25.0	<0.500	<0.500 [22]			<10.0	<10.0	<0.500	<0.500	<0.500
cis-1,2-Dichloroethene	ug/L	<50.0	<25.0	<0.500	<0.500 [22]			<10.0	<10.0	<0.500	<0.500	<0.500
trans-1,2-Dichloroethene	ug/L	<50.0	<25.0	<0.500	<0.500 [22]			<10.0	<10.0	<0.500	<0.500	<0.500
Ethylbenzene	ug/L	1220	622	<0.500	<0.500 [22]			286	252	<0.500	<0.500	<0.500
Tetrachloroethene (PCE)	ug/L	<50.0	<25.0	<0.500	<0.500 [22]			<10.0	<10.0	<0.500	<0.500	<0.500
Toluene	ug/L	248	160	<0.500	<0.500 [22]			77.4	66	<0.500	<0.500	<0.500
Trichloroethene (TCE)	ug/L	<50.0	<25.0	<0.500	<0.500 [22]			<10.0	<10.0	<0.500	<0.500	<0.500
Vinyl chloride	ug/L	<50.0	<25.0	<0.500	<0.500 [22]			<10.0	<10.0	<0.500	<0.500	<0.500
m,p-Xylene	ug/L	596	426	<1.00	<1.00 [22]			180	157	<1.00	<1.00	<1.00
o-Xylene	ug/L	306	218	<0.500	<0.500 [22]			106	93.8	<0.500	<0.500	<0.500

8/18/2009	Units	NW-1A PW-1 Influent	NW-2A PW-1 Eq Eff	NW-1B MW-1 Influent	NW-2B MW-1 Eq Eff	NW-3 Combined IPC Inf	NW-4 IPC Effluent	NW-5 Cyanide Destruct Eff	NW-6 Bag Filter Eff	NW-7 GAC Midpoint	NW-8 GAC Eff	NW-9 Eff Storage Tank
pH	pH Units	6.57	9.82	6.08	10							7.62
pH Temperature	pH Units	14.8	17.2	17.5	17.3							16.2
Total Dissolved Solids	mg/L	514	996	4460	2810							1490
Total Suspended Solids	mg/L	82	27	86	5				<5.00			<5.00
Total Organic Carbon	mg/L	29.8	30.9	7.59	6.04			21.5	18.9	3.34	3.77	3.85
Total Iron	ug/L					110000	5070		411 [7] [6]			171 [7] [9]
Total Manganese	ug/L					9750	427		223 [7] [6]			53.1 [7] [9]
CYANIDE												
Cyanide, Total	mg/L	1.22	1.08	0.679	0.415			0.804	0.807			0.26
Cyanide, WAD	mg/L	0.0972	0.0916	0.0845	0.0687			0.0825	0.083			0.0238
Cyanide, Amenable	mg/L	<0.0500	0.089	0.0304	<0.00500			0.131	0.138			<0.00500
CATC, chlorinated	mg/L	1.27	0.987	0.649	0.489			0.673	0.668			0.259
Cyanide, Free	mg/L	<0.0100	<0.0100	<0.0100	<0.0100			<0.0100	<0.0100			<0.0100
CATC, total	mg/L	1.22	1.08	0.679	0.415			0.804	0.807			0.26
SEMI-VOLATILE ORGANICS												
Acenaphthylene	ug/L	736 [6]	130 [6]	<0.0784 [6]	<0.0755 [6]			<19.0 [6]	35.4 [6]	<0.0777 [6]	<0.0784 [6]	<0.0800 [6]
Acenaphthene	ug/L	1170 [6]	248 [6]	<0.0784 [6]	<0.0755 [6]			60.1 [6]	101 [6]	<0.0777 [6]	<0.0784 [6]	<0.0800 [6]
Anthracene	ug/L	642 [6]	21.1 [6]	<0.0784 [6]	<0.0755 [6]			<19.0 [6]	<18.6 [6]	<0.0777 [6]	<0.0784 [6]	<0.0800 [6]
Benz(a)anthracene	ug/L	634 [6]	4.12 [6]	<0.0784 [6]	<0.0755 [6]			<19.0 [6]	<18.6 [6]	0.137 [6]	0.0932 [6]	0.0893 [6]
Benzo(a)pyrene	ug/L	1070 [6]	5.98 [6]	<0.0980 [6] [20] [14]	<0.0755 [6]			<21.4 [6] [20] [7]	<18.6 [6]	0.233 [6]	0.168 [6]	0.133 [6]
Benzo(b)fluoranthene(s)	ug/L			<0.0882 [6] [20] [14]	<0.0755 [6]			<19.0 [6]	<18.6 [6]			
Benzo(k)fluoranthene(s)	ug/L			<0.0784 [6]	<0.0755 [6]			<19.0 [6]	<18.6 [6]			
Benzo(b+k)fluoranthene(s)	ug/L	1240 [6] [19] [9]	7.99 [6] [19] [6]						0.280 [6] [19] [6]	28 [6] [19] [5]	17 [6] [19] [10]	
Benzo(g,h,i)perylene	ug/L	602 [6]	3.59 [6]	<0.0784 [6]	<0.0755 [6]			<19.0 [6]	<18.6 [6]	0.135 [6]	0.112 [6]	0.110 [6]
Carbazole	ug/L	498 [6]	151 [6]	<0.0784 [6]	<0.0755 [6]			19.4 [6]	88.3 [6]	<0.0777 [6]	<0.0784 [6]	<0.0800 [6]
Chrysene	ug/L	588 [6]	4.49 [6]	<0.0784 [6]	<0.0755 [6]			<19.0 [6]	<18.6 [6]	0.130 [6]	0.0835 [6]	<0.0800 [6]
Dibenz(a,h)anthracene	ug/L	<381 [6]	<1.90 [6]	<0.0784 [6]	<0.0755 [6]			<19.0 [6]	<18.6 [6]	<0.0777 [6]	<0.0784 [6]	<0.0800 [6]
Dibenzofuran	ug/L	<381 [6]	22.9 [6]	<0.0784 [6]	<0.0755 [6]			<19.0 [6]	<18.6 [6]	<0.0777 [6]	<0.0784 [6]	<0.0800 [6]
Fluoranthene	ug/L	1900 [6]	32.6 [6]	0.184 [6]	<0.0755 [6]			29.3 [6]	25.2 [6]	0.300 [6]	0.210 [6]	0.191 [6]
Fluorene	ug/L	710 [6]	105 [6]	<0.0784 [6]	<0.0755 [6]			68.9 [6]	49.0 [6]	<0.0777 [6]	<0.0784 [6]	<0.0800 [6]
Indeno(1,2,3-cd)pyrene	ug/L	419 [6]	2.27 [6] [8] [5]	<0.0784 [6]	<0.0755 [6]			<19.0 [6]	<18.6 [6]	0.0905 [6]	<0.0784 [6]	<0.0800 [6]
2-Methylnaphthalene	ug/L	2600 [6]	534 [6]	<0.0784 [6]	<0.0755 [6]			272 [6]	226 [6]	<0.0777 [6]	<0.0784 [6]	<0.0800 [6]
Naphthalene	ug/L	15900 [4] [6] [1]	3450 [4] [6] [3]	0.302 [3] [4] [6] [4] [7]	[3] [4] [6] [3] [5]			2210 [4] [6] [3]	720 [4] [6] [4]	[4] [6] [2] [4]	[4] [6] [2] [3]	[4] [6] [5] [6]
Phenanthrene	ug/L	4030 [6]	230 [6]	0.438 [6]	<0.0755 [6]			126 [6]	119 [6]	0.263 [6]	0.155 [6]	0.118 [6]
Pyrene	ug/L	2290 [6]	36.3 [6]	0.188 [6]	<0.0755 [6]			27.9 [6]	24.9 [6]	0.402 [6]	0.276 [6]	0.247 [6]
2-Chlorophenol	ug/L	<4760 [6]	<23.8 [6]	<0.980 [6]	<0.943 [6]			<238 [6]	<233 [6]	<0.971 [6]	<0.980 [6]	<1.00 [6]
2,4-Dichlorophenol	ug/L	<4760 [6]	<23.8 [6]	<0.980 [6]	<0.943 [6]			<238 [6]	<233 [6]	<0.971 [6]	<0.980 [6]	<1.00 [6]
2,4-Dimethylphenol	ug/L	<4760 [6]	<23.8 [6]	<0.980 [6]	<0.943 [6]			<238 [6]	<233 [6]	<0.971 [6]	<0.980 [6]	<1.00 [6]
4,6-Dinitro-2-methylphenol	ug/L	<4760 [6]	<23.8 [6]	<0.980 [6]	<0.943 [6]			<238 [6]	<233 [6]	<0.971 [6]	<0.980 [6]	<1.00 [6]
2-Methylphenol	ug/L	<4760 [6]	<23.8 [6]	<0.980 [6]	<0.943 [6]			<238 [6]	<233 [6]	<0.971 [6]	<0.980 [6]	<1.00 [6]
2-Nitrophenol	ug/L	<4760 [6]	<23.8 [6]	<0.980 [6]	<0.943 [6]			<238 [6]	<233 [6]	<0.971 [6]	<0.980 [6]	<1.00 [6]
4-Nitrophenol	ug/L	<4760 [6]	<23.8 [6]	<0.980 [6]	<0.943 [6]			<238 [6]	<233 [6]	<0.971 [6]	<0.980 [6]	<1.00 [6]
2,4,5-Trichlorophenol	ug/L	<4760 [6]	<23.8 [6]	<0.980 [6]	<0.943 [6]			<238 [6]	<233 [6]	<0.971 [6]	<0.980 [6]	<1.00 [6]
2,4,6-Trichlorophenol	ug/L	<4760 [6]	<23.8 [6]	<0.980 [6]	<0.943 [6]			<238 [6]	<233 [6]	<0.971 [6]	<0.980 [6]	<1.00 [6]
Pentachlorophenol (PCP)	ug/L	<4760 [6]	<23.8 [6]	<0.980 [6]	<0.943 [6]			<238 [6]	<233 [6]	<0.971 [6]	<0.980 [6]	<1.00 [6]
Phenol	ug/L	<4760 [6]	52.4 [6]	<0.980 [6]	<0.943 [6]			<238 [6]	<233 [6]	<0.971 [6]	<0.980 [6]	<1.00 [6]
METALS												
Hexavalent Chromium	mg/L	<0.0100	<0.0200 [20] [7]	0.204	<0.0400 [20] [8]				<0.0400 [20] [8]			<0.0400 [20] [12]
Silver	ug/L	<1.00	<1.00	<1.00	<1.00				<1.00			<1.00
Arsenic	ug/L	4.56	<1.00	1.71	<1.00	9.72	2.24	2.67	1.31		4.12	3.82
Cadmium	ug/L	<1.00	1.18	<1.00	<1.00				<1.00			<1.00
Chromium	ug/L	2.34	<5.00	<1.00	<5.00				<1.00			<1.00
Copper	ug/L	<5.00	7590	<5.00	682				21.4			19.6
Dissolved Iron	ug/L	34000	<0.0100	268000	<0.0100	366 [7] [2]	354 [7] [2]		860			464
Mercury	ug/L	<0.0100	675	<0.0100	6.62				0.0969			<0.0100
Dissolved Manganese	ug/L	3160	<1.00	9360	<1.00	105 [7] [2]	42.9 [7] [2]		330			62.2
Nickel	ug/L	1.57	<1.00	3.47	<1.00				3.76			9.98
Lead	ug/L	<1.00	<1.00	<1.00	1.22				6.61			7.66
Selenium	ug/L	<1.00	65.2	1.86	<4.00				1.54			2.02
Zinc	ug/L	301	2410	15.4	63700				156			30.6
Calcium	ug/L	74100		431000								10200
Chromium	ug/L											
Hardness (Calc by 6020)	mg CaCO3/L	384	178	2170	771							313
Magnesium	ug/L	48300	41800	266000	149000							69900
Trivalent Chromium	ug/L	<11.0	<21.0	<41.0	<41.0				<41.0			<41.0
VOLATILE ORGANICS												
Acetone	ug/L	<2000	<1000	<20.0	<20.0			<400	<400	<20.0	<20.0	<20.0
Benzene	ug/L	9070	3620	<0.500 [22] [16]	<0.250			1610	1340	0.500 [22] [9]	<0.250	<0.250
2-Butanone (MEK)	ug/L	<1000	<500	<10.0	<10.0			<200	<200	<10.0	<10.0	<10.0
1,1-Dichloroethene	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
cis-1,2-Dichloroethene	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
trans-1,2-Dichloroethene	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
Ethylbenzene	ug/L	1090	42	<0.500	<0.500			60.6	47.6	<0.500	<0.500	<0.500
Tetrachloroethene (PCE)	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
Toluene	ug/L	290	102	<0.500	<0.500			39.4	30	<0.500	<0.500	<0.500
Trichloroethene (TCE)	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
Vinyl chloride	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
m,p-Xylene	ug/L	561	256	<1.00	<1.00			74.8	57	<1.00	<1.00	<1.00
o-Xylene	ug/L	282	150	<0.500	<0.500			51.6	39.6	<0.500	<0.500	<0.500

8/19/2009	Units	NW-1A PW-1 Influent	NW-2A PW-1 Eq Eff	NW-1B MW-1 Influent	NW-2B MW-1 Eq Eff	NW-3 Combined IPC Inf	NW-4 IPC Effluent	NW-5 Cyanide Destruct Eff	NW-6 Bag Filter Eff	NW-7 GAC Midpoint	NW-8 GAC Eff	NW-9 Eff Storage Tank
pH	pH Units	6.55	9.83	6.08	10.1							7.65
pH Temperature	pH Units	24.9	24	24.8	23.7							23.9
Total Dissolved Solids	mg/L	551	977	4080	3070							1600
Total Suspended Solids	mg/L	65	143	101	52				<5.00			<5.00
Total Organic Carbon	mg/L	27.1	28	<2.00	6.09			26.3	20.3	8.15	7.1	6.83
Total Iron	ug/L	4330				11800	2360		418 [4] [6]			
Total Manganese	ug/L	2810				1210	251		104 [4] [6]			
CYANIDE												
Cyanide, Total	mg/L	1.05	0.979	0.493	0.387			0.709	0.773			0.333
Cyanide, WAD	mg/L	0.0723	0.0819	0.0634	0.0636			0.0693	0.0671			0.0738
Cyanide, Amenable	mg/L	0.0392	0.0342	<0.0100	<0.00500			0.0951	0.0482			<0.00500
CATC, chlorinated	mg/L	1.01	0.944	0.544	0.435			0.614	0.725			0.347
Cyanide, Free	mg/L	<0.0100	<0.0100	<0.0100	<0.0100			<0.0100	<0.0100			<0.0100
CATC, total	mg/L	1.05	0.979	0.493	0.387			0.709	0.773			0.333
SEMI-VOLATILE ORGANICS												
Acenaphthylene	ug/L	<190 [3]	228 [3]	<0.0777 [3]	<0.0769 [3]			<19.0 [3]	67.2 [3]	<0.0777 [3]	<0.762 [3] [17]	<0.0800 [3]
Acenaphthene	ug/L	284 [3]	349 [3]	<0.0777 [3]	<0.0769 [3]			120 [3]	118 [3]	<0.0777 [3]	<0.762 [3] [17]	<0.0800 [3]
Anthracene	ug/L	<190 [3]	89.0 [3]	<0.0777 [3]	<0.0769 [3]			<19.0 [3]	<19.0 [3]	<0.0777 [3]	<0.762 [3] [17]	<0.0800 [3]
Benz(a)anthracene	ug/L	250 [3]	78.2 [3]	<0.0777 [3]	<0.0769 [3]			<19.0 [3]	<19.0 [3]	0.0975 [3]	<0.762 [3] [17]	<0.0800 [3]
Benzo(a)pyrene	ug/L	361 [3]	119 [3]	0.0874 [3] [16] [14]	<0.0769 [3]			<21.9 [3] [16] [7]	<19.0 [3]	0.167 [3]	<0.762 [3] [17]	0.14 [3] [16] [12]
Benzo(b)fluoranthene(s)	ug/L			<0.0777 [3]	<0.0769 [3]			<19.0 [3]	<19.0 [3]		<0.762 [3] [17]	<0.0800 [3]
Benzo(k)fluoranthene(s)	ug/L			<0.0777 [3]	<0.0769 [3]			<19.0 [3]	<19.0 [3]		<0.762 [3] [17]	<0.0800 [3]
Benzo(b+k)fluoranthene(s)	ug/L	406 [3] [15] [9]	143 [3] [15] [6]							0.205 [3] [15] [6]		
Benzo(g,h,i)perylene	ug/L	<190 [3]	64.9 [3]	<0.0777 [3]	<0.0769 [3]			<19.0 [3]	<19.0 [3]	<0.0777 [3]	<0.762 [3] [17]	<0.0800 [3]
Carbazole	ug/L	<190 [3]	150 [3]	<0.0777 [3]	<0.0769 [3]			53.9 [3]	82.0 [3]	<0.0777 [3]	<0.762 [3] [17]	<0.0800 [3]
Chrysene	ug/L	<190 [3]	96.4 [3]	<0.0777 [3]	<0.0769 [3]			<19.0 [3]	<19.0 [3]	0.0897 [3]	<0.762 [3] [17]	<0.0800 [3]
Dibenz(a,h)anthracene	ug/L	<190 [3]	<38.1 [3]	<0.0777 [3]	<0.0769 [3]			<19.0 [3]	<19.0 [3]	<0.0777 [3]	<0.762 [3] [17]	<0.0800 [3]
Dibenzofuran	ug/L	<190 [3]	<38.1 [3]	<0.0777 [3]	<0.0769 [3]			<19.0 [3]	<19.0 [3]	<0.0777 [3]	<0.762 [3] [17]	<0.0800 [3]
Fluoranthene	ug/L	602 [3]	299 [3]	<0.0777 [3]	<0.0769 [3]			26.3 [3]	<19.0 [3]	0.215 [3]	<0.762 [3] [17]	<0.0800 [3]
Fluorene	ug/L	<190 [3]	171 [3]	<0.0777 [3]	<0.0769 [3]			60.0 [3]	50.4 [3]	<0.0777 [3]	<0.762 [3] [17]	<0.0800 [3]
Indeno(1,2,3-cd)pyrene	ug/L	<190 [3]	66.1 [3]	<0.0777 [3]	<0.0769 [3]			<19.0 [3]	<19.0 [3]	<0.0777 [3]	<0.762 [3] [17]	<0.0800 [3]
2-Methylnaphthalene	ug/L	538 [3]	963 [3]	<0.0777 [3]	0.0811 [3]			387 [3]	327 [3]	<0.0777 [3]	<0.762 [3] [17]	<0.0800 [3]
Naphthalene	ug/L	4360 [1] [3] [1]	8690 [1] [3] [3]	0.271 [1] [3] [7]	0.408 [1] [3] [5]			3940 [1] [3] [3]	4400 [1] [3] [4]	0.157 [1] [3] [4]	<0.762 [3] [17]	0.0837 [1] [3] [6]
Phenanthrene	ug/L	1130 [3]	706 [3]	0.0892 [3]	<0.0769 [3]			138 [3]	123 [3]	0.156 [3]	<0.762 [3] [17]	<0.0800 [3]
Pyrene	ug/L	745 [3]	364 [3]	<0.0777 [3]	<0.0769 [3]			29.8 [3]	<19.0 [3]	0.291 [3]	<0.762 [3] [17]	<0.0800 [3]
2-Chlorophenol	ug/L	<2380 [3]	<476 [3]	<0.971 [3]	<0.962 [3]			<238 [3]	<238 [3]	<0.971 [3]	<9.52 [3] [17]	<1.00 [3]
2,4-Dichlorophenol	ug/L	<2380 [3]	<476 [3]	<0.971 [3]	<0.962 [3]			<238 [3]	<238 [3]	<0.971 [3]	<9.52 [3] [17]	<1.00 [3]
2,4-Dimethylphenol	ug/L	<2380 [3]	<476 [3]	<0.971 [3]	<0.962 [3]			<238 [3]	<238 [3]	<0.971 [3]	<9.52 [3] [17]	<1.00 [3]
4,6-Dinitro-2-methylphenol	ug/L	<2380 [3]	<476 [3]	<0.971 [3]	<0.962 [3]			<238 [3]	<238 [3]	<0.971 [3]	<9.52 [3] [17]	<1.00 [3]
2-Methylphenol	ug/L	<2380 [3]	<476 [3]	<0.971 [3]	<0.962 [3]			<238 [3]	<238 [3]	<0.971 [3]	<9.52 [3] [17]	<1.00 [3]
2-Nitrophenol	ug/L	<2380 [3]	<476 [3]	<0.971 [3]	<0.962 [3]			<238 [3]	<238 [3]	<0.971 [3]	<9.52 [3] [17]	<1.00 [3]
4-Nitrophenol	ug/L	<2380 [3]	<476 [3]	<0.971 [3]	<0.962 [3]			<238 [3]	<238 [3]	<0.971 [3]	<9.52 [3] [17]	<1.00 [3]
2,4,5-Trichlorophenol	ug/L	<2380 [3]	<476 [3]	<0.971 [3]	<0.962 [3]			<238 [3]	<238 [3]	<0.971 [3]	<9.52 [3] [17]	<1.00 [3]
2,4,6-Trichlorophenol	ug/L	<2380 [3]	<476 [3]	<0.971 [3]	<0.962 [3]			<238 [3]	<238 [3]	<0.971 [3]	<9.52 [3] [17]	<1.00 [3]
Pentachlorophenol (PCP)	ug/L	<2380 [3]	<476 [3]	<0.971 [3]	<0.962 [3]			<238 [3]	<238 [3]	<0.971 [3]	<9.52 [3] [17]	<1.00 [3]
Phenol	ug/L	<2380 [3]	<476 [3]	<0.971 [3]	<0.962 [3]			<238 [3]	<238 [3]	<0.971 [3]	<9.52 [3] [17]	<1.00 [3]
METALS												
Hexavalent Chromium	mg/L	<0.0100	<0.0100	<0.0500 [17] [15]	<0.0500 [17] [9]				<0.0100			<0.0100
Silver	ug/L	<1.00	<1.00	<1.00	<1.00				<1.00			<1.00
Arsenic	ug/L	4.22 [1] [1]		1.41 [1] [7]		2.27 [1] [1]	1.82 [1] [1]	2.46	2.10 [1] [4]		2.86	2.92 [1] [6]
Cadmium	ug/L	<1.00	<1.00	<1.00	<1.00				<1.00			<1.00
Chromium	ug/L	1.22	<1.00	<1.00	<1.00				1.29			<1.00
Copper	ug/L	<5.00	<5.00	<5.00	<5.00				11.9			<5.00
Dissolved Iron	ug/L	30800	15600	238000	3960	372 [4] [2]	356 [4] [2]		627			283
Mercury	ug/L	<0.0100	<0.0100	<0.0100	<0.0100				0.0676			<0.0100
Dissolved Manganese	ug/L	2790	1720	8120	126	56.1 [4] [2]	46.3 [4] [2]		108			65.5
Nickel	ug/L	1.41	<1.00	3.3	1.1				<1.00			4.57
Lead	ug/L	<1.00	<1.00	<1.00	<1.00				6.86			<1.00
Selenium	ug/L	<1.00	<1.00	1.31	1.6				2.14			2.19
Zinc	ug/L	1500	126	13.3	<4.00				45.1			9.02
Calcium	ug/L	74400	31200	398000	72400							14100
Chromium	ug/L											
Hardness (Calc by 6020)	mg CaCO3/L	376	260	1960	722							313
Magnesium	ug/L	46200	44200	234000	131000							67500
Trivalent Chromium	ug/L	<11.0	<11.0	<51.0	<51.0				<11.0			<11.0
VOLATILE ORGANICS												
Acetone	ug/L	<2000	<1000	<20.0	<20.0			<400	<400	<20.0	<20.0	<20.0
Benzene	ug/L	8390	5590	<0.500 [18] [16]	<0.500 [18] [10]			2380	2410	<0.550 [18] [9]	<0.250	<0.250
2-Butanone (MEK)	ug/L	<1000	<500	<10.0	<10.0			<200	<200	<10.0	<10.0	<10.0
1,1-Dichloroethene	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
cis-1,2-Dichloroethene	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
trans-1,2-Dichloroethene	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
Ethylbenzene	ug/L	827	613	<0.500	<0.500			229	240	<0.500	<0.500	<0.500
Tetrachloroethene (PCE)	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
Toluene	ug/L	235	136	<0.500	<0.500			59	61.4	<0.500	<0.500	<0.500
Trichloroethene (TCE)	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
Vinyl chloride	ug/L	<50.0	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
m,p-Xylene	ug/L	378	330	<1.00	<1.00			123	143	<1.00	<1.00	<1.00
o-Xylene	ug/L	194	179	<0.500	<0.500			78.2	90.2	<0.500	<0.500	<0.500

8/21/2009	Units	NW-1A PW-1 Influent	NW-2A PW-1 Eq Eff	NW-1B MW-1 Influent	NW-2B MW-1 Eq Eff	NW-3 Combined IPC Inf	NW-4 IPC Effluent	NW-5 Cyanide Destruct Eff	NW-6 Bag Filter Eff	NW-7 GAC Midpoint	NW-8 GAC Eff	NW-9 Eff Storage Tank
pH	pH Units	6.72	10.1	6.2	10.5							7.84
pH Temperature	pH Units	27.6	23.2	27.5	24.8							23.6
Total Dissolved Solids	mg/L	505	1040	4100	3140							1610
Total Suspended Solids	mg/L	79	72	122	184				6			<5.00
Total Organic Carbon	mg/L	26.3	25.5	2.21	6.24		31.0 [2] [2]		17.5	2.82	<2.00	<2.00
Total Iron	ug/L					12900	2980		427 [7] [6]			337 [7] [9]
Total Manganese	ug/L					972	233		62.2 [7] [6]			42.7 [7] [9]
CYANIDE												
Cyanide, Total	mg/L	0.873	0.873	0.587	0.412			0.686	0.716			0.558
Cyanide, WAD	mg/L	0.0607	0.0988	0.0619	0.0592			0.0663	0.0532			0.0392
Cyanide, Amenable	mg/L	<0.0150	<0.0150	<0.0100	<0.00500			<0.0200	<0.0100			<0.0100
CATC, chlorinated	mg/L	0.939	0.956	0.589	0.472			1.65	0.789			0.589
Cyanide, Free	mg/L	<0.0100	<0.0100	<0.0100	<0.0100			<0.0100	<0.0100			<0.0100
CATC, total	mg/L	0.873	0.873	0.587	0.412			0.686	0.716			0.558
Available Cyanide	mg/L	0.0030	0.0037	0.012	0.0041			0.0056	0.0051			<0.0020
SEMI-VOLATILE ORGANICS												
Acenaphthylene	ug/L	<372 [6]	198 [6]	<0.0755 [6]	<0.0769 [6]			37.6 [6]	69.8 [6]	<0.0777 [6]	<0.0748 [6]	<0.0784 [6]
Acenaphthene	ug/L	538 [6]	267 [6]	<0.0755 [6]	<0.0769 [6]			131 [6]	123 [6]	<0.0777 [6]	<0.0748 [6]	<0.0784 [6]
Anthracene	ug/L	<372 [6]	61.6 [6]	<0.0755 [6]	<0.0769 [6]			<18.6 [6]	<18.6 [6]	<0.0777 [6]	<0.0748 [6]	<0.0784 [6]
Benz(a)anthracene	ug/L	<372 [6]	45.3 [6]	<0.0755 [6]	<0.0769 [6]			<18.6 [6]	<18.6 [6]	0.114 [6]	<0.0748 [6]	<0.0784 [6]
Benzo(a)pyrene	ug/L	686 [6]	73.9 [6]	<0.0755 [6]	<0.0808 [6] [18] [8]			<22.3 [6] [18] [7]	24.2 [6]	0.201 [6]	0.148 [6]	0.117 [6]
Benzo(b)fluoranthene(s)	ug/L			<0.0755 [6]	<0.0769 [6]			<18.6 [6]	20.4 [6]			
Benzo(k)fluoranthene(s)	ug/L			<0.0755 [6]	<0.0769 [6]			<18.6 [6]	<18.6 [6]			
Benzo(b+k)fluoranthene(s)	ug/L	<744 [6] [16] [9]	81.3 [6] [16] [6]							0.247 [6] [16] [6]	0.185 [6] [16] [5]	<0.157 [6] [16] [10]
Benzo(g,h,i)perylene	ug/L	389 [6]	45.6 [6]	<0.0755 [6]	<0.0769 [6]			<18.6 [6]	<18.6 [6]	0.153 [6]	0.123 [6]	0.0913 [6]
Carbazole	ug/L	<372 [6]	157 [6]	<0.0755 [6]	<0.0769 [6]			83.6 [6]	94.0 [6]	<0.0777 [6]	<0.0748 [6]	<0.0784 [6]
Chrysene	ug/L	<372 [6]	45.6 [6]	<0.0755 [6]	<0.0769 [6]			<18.6 [6]	<18.6 [6]	0.106 [6]	<0.0748 [6]	<0.0784 [6]
Dibenz(a,h)anthracene	ug/L	<372 [6]	<18.6 [6]	<0.0755 [6]	<0.0769 [6]			<18.6 [6]	<18.6 [6]	<0.0777 [6]	<0.0748 [6]	<0.0784 [6]
Dibenzofuran	ug/L	<372 [6]	25.8 [6]	<0.0755 [6]	<0.0769 [6]			<18.6 [6]	<18.6 [6]	<0.0777 [6]	<0.0748 [6]	<0.0784 [6]
Fluoranthene	ug/L	979 [6]	182 [6]	<0.0755 [6]	<0.0769 [6]			26.2 [6]	22.9 [6]	0.273 [6]	0.0996 [6]	<0.0784 [6]
Fluorene	ug/L	<372 [6]	135 [6]	<0.0755 [6]	<0.0769 [6]			63.4 [6]	57.1 [6]	<0.0777 [6]	<0.0748 [6]	<0.0784 [6]
Indeno(1,2,3-cd)pyrene	ug/L	<372 [6]	35.1 [6]	<0.0755 [6]	<0.0769 [6]			<18.6 [6]	<18.6 [6]	0.113 [6]	0.0831 [6]	<0.0784 [6]
2-Methylnaphthalene	ug/L	1020 [6]	835 [6]	<0.0755 [6]	0.0973 [6]			397 [6]	366 [6]	<0.0777 [6]	<0.0748 [6]	<0.0784 [6]
Naphthalene	ug/L	8640 [3] [4] [6] [1] [2]	8050 [3] [6] [3]	[1] [3] [6] [2] [7]	0.577 [1] [3] [6] [2] [5]			4100 [3] [4] [6] [3] [4]	3850 [3] [6] [4]	0.199 [3] [6] [4]	<0.0748 [6]	0.0986 [3] [6] [6]
Phenanthrene	ug/L	1900 [6]	450 [6]	<0.0755 [6]	<0.0769 [6]			144 [6]	125 [6]	0.167 [6]	<0.0748 [6]	<0.0784 [6]
Pyrene	ug/L	1160 [6]	222 [6]	<0.0755 [6]	<0.0769 [6]			29.1 [6]	23.6 [6] [17] [7]	0.395 [6] [17] [7]	0.138 [6] [17] [7]	<0.0784 [6]
2-Chlorophenol	ug/L	<4650 [6]	<233 [6]	<0.943 [6]	<0.962 [6]			<233 [6]	<233 [6]	<0.971 [6]	<0.935 [6]	<0.980 [6]
2,4-Dichlorophenol	ug/L	<4650 [6]	<233 [6]	<0.943 [6]	<0.962 [6]			<233 [6]	<233 [6]	<0.971 [6]	<0.935 [6]	<0.980 [6]
2,4-Dimethylphenol	ug/L	<4650 [6]	<233 [6]	<0.943 [6]	<0.962 [6]			<233 [6]	<233 [6]	<0.971 [6]	<0.935 [6]	<0.980 [6]
4,6-Dinitro-2-methylphenol	ug/L	<4650 [6]	<233 [6]	<0.943 [6]	<0.962 [6]			<233 [6]	<233 [6]	<0.971 [6]	<0.935 [6]	<0.980 [6]
2-Methylphenol	ug/L	<4650 [6]	<233 [6]	<0.943 [6]	<0.962 [6]			<233 [6]	<233 [6]	<0.971 [6]	<0.935 [6]	<0.980 [6]
2-Nitrophenol	ug/L	<4650 [6]	<233 [6]	<0.943 [6]	<0.962 [6]			<233 [6]	<233 [6]	<0.971 [6]	<0.935 [6]	<0.980 [6]
4-Nitrophenol	ug/L	<4650 [6]	<233 [6]	<0.943 [6]	<0.962 [6]			<233 [6]	<233 [6]	<0.971 [6]	<0.935 [6]	<0.980 [6]
2,4,5-Trichlorophenol	ug/L	<4650 [6]	<233 [6]	<0.943 [6]	<0.962 [6]			<233 [6]	<233 [6]	<0.971 [6]	<0.935 [6]	<0.980 [6]
2,4,6-Trichlorophenol	ug/L	<4650 [6]	<233 [6]	<0.943 [6]	<0.962 [6]			<233 [6]	<233 [6]	<0.971 [6]	<0.935 [6]	<0.980 [6]
Pentachlorophenol (PCP)	ug/L	<4650 [6]	<233 [6]	<0.943 [6]	<0.962 [6]			<233 [6]	<233 [6]	<0.971 [6]	<0.935 [6]	<0.980 [6]
Phenol	ug/L	<4650 [6]	<233 [6]	<0.943 [6]	<0.962 [6]			<233 [6]	<233 [6]	<0.971 [6]	<0.935 [6]	<0.980 [6]
METALS												
Hexavalent Chromium	mg/L	<0.0100	<0.0100	<0.0100	<0.0100				<0.0100			<0.0100
Silver	ug/L	<1.00	<1.00	<1.00	<1.00				<1.00			<1.00
Arsenic	ug/L	5.13 [3] [1]		1.34 [3] [7]		2.64 [3] [1]	1.66 [3] [1]	2.53	2.40 [3] [4]		2.96	3.32 [3] [6]
Cadmium	ug/L	<1.00	<1.00	<1.00	<1.00				<1.00			<1.00
Chromium	ug/L	2.38	1.23	<1.00	<1.00				<1.00			<1.00
Copper	ug/L	<5.00	<5.00	<5.00	<5.00				7.13			10.1
Dissolved Iron	ug/L	31400	14800	243000	7500	368 [7] [2]	368 [7] [2]		887			761
Mercury	ug/L	<0.0100	<0.0100	<0.0100	<0.0100				0.073			<0.0100
Dissolved Manganese	ug/L	2940	1260	8180	276	11.1 [7] [2]	21.7 [7] [2]		83.8			55
Nickel	ug/L	2.92	<1.00	3.24	1.12				<1.00			7.92
Lead	ug/L	1.51	<1.00	<1.00	<1.00				3.76			1.93
Selenium	ug/L	<1.00	<1.00	1.02	<1.00				3.23			5.3
Zinc	ug/L	98.8	50.5	8.3	<4.00				10.6			17.3
Calcium	ug/L	67900	13200	377000	81700							9300
Chromium	ug/L											
Hardness (Calc by 6020)	mg CaCO3/L	346	207	1890	442							181
Magnesium	ug/L	42900	42200	230000	57800							38300
Trivalent Chromium	ug/L	<11.0	<11.0	<11.0	<11.0				<11.0			<11.0
VOLATILE ORGANICS												
Acetone	ug/L	<2000 [22]	<1000	<20.0	<20.0			<400	<400	<20.0	<20.0	<20.0
Benzene	ug/L	7880 [22]	7200	<0.250	<0.250			3150	2990	<0.500 [19] [9]	<0.250	<0.250
2-Butanone (MEK)	ug/L	<1000 [22]	<500	<10.0	<10.0			<200	<200	<10.0	<10.0	<10.0
1,1-Dichloroethene	ug/L	<50.0 [22]	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
cis-1,2-Dichloroethene	ug/L	<50.0 [22]	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
trans-1,2-Dichloroethene	ug/L	<50.0 [22]	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
Ethylbenzene	ug/L	808 [22]	868	<0.500	<0.500			342	318	<0.500	<0.500	<0.500
Tetrachloroethene (PCE)	ug/L	<50.0 [22]	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
Toluene	ug/L	224 [22]	200	<0.500	<0.500			79.2	77.2	<0.500	<0.500	<0.500
Trichloroethene (TCE)	ug/L	<50.0 [22]	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
Vinyl chloride	ug/L	<50.0 [22]	<25.0	<0.500	<0.500			<10.0	<10.0	<0.500	<0.500	<0.500
m,p-Xylene	ug/L	374 [22]	463	<1.00	<1.00			181	178	<1.00	<1.00	<1.00
o-Xylene	ug/L	190 [22]	242	<0.500	<0.500			103	103	<0.500	<0.500	<0.500

8/25/2009	Units	NW-1A	NW-2A	NW-1B	NW-2B	NW-3	NW-4	NW-5	NW-6	NW-7	NW-8	NW-9
		PW-1 Influent	PW-1 Eq Eff	MW-1 Influent	MW-1 Eq Eff	Combined IPC Inf	IPC Effluent	Cyanide Destruct Eff	Bag Filter Eff	GAC Midpoint	GAC Eff	Eff Storage Tank
pH	pH Units	6.73	10.4	6.16	9.65							7.89
pH Temperature	pH Units	21.4	20.3	20.8	21.3							21.3
Total Dissolved Solids	mg/L	577	1190	5030	3180							1720
Total Suspended Solids	mg/L	63	74	74	55				<5.00			<5.00
Total Organic Carbon	mg/L	30	33.5	8.67	3.74			22.8	21.1	2.04	3.07	2.03
Total Iron	ug/L					11400	2060		419 [4] [6]			337 [4] [9]
Total Manganese	ug/L					869	154		165 [4] [6]			63.9 [4] [9]
CYANIDE												
Cyanide, Total	mg/L	0.941	0.97	0.704	0.434			0.705	0.718			0.627
Cyanide, WAD	mg/L	0.0805	0.0924	0.0801	0.0765			0.0989	0.0755			0.0463
Cyanide, Amenable	mg/L	<0.0200	0.0755	0.0537	<0.0100			<0.0100	<0.0100			<0.0100
CATC, chlorinated	mg/L	1.12	0.894	0.65	0.449			0.773	0.785			0.668
Cyanide, Free	mg/L	<0.0100	<0.0100	<0.0100	<0.0100			<0.0100	<0.0100			<0.0100
CATC, total	mg/L	0.0941	0.97	0.704	0.434			0.705	0.718			0.627
Available Cyanide	mg/L	0.0066	0.0088	0.0093	0.0082			0.0088	0.0089			<0.0020
SEMI-VOLATILE ORGANICS												
Acenaphthylene	ug/L	<186 [3]	164 [3]	<0.0755 [3]	<0.0755 [3]			46.1 [3]	104 [3]	<0.0816 [3]	<0.0777 [3]	<0.0769 [3]
Acenaphthene	ug/L	<186 [3]	247 [3]	1.42 [3] [12] [14]	0.755 [3] [12] [8]			102 [3]	142 [3]	<0.0816 [3]	<0.0777 [3]	<0.0769 [3]
Anthracene	ug/L	<186 [3]	<93.0 [3]	<0.0755 [3]	<0.0755 [3]			<18.6 [3]	<18.6 [3]	<0.0816 [3]	<0.0777 [3]	<0.0769 [3]
Benz(a)anthracene	ug/L	<186 [3]	<93.0 [3]	<0.0755 [3]	<0.0755 [3]			<18.6 [3]	<18.6 [3]	<0.0816 [3]	<0.0777 [3]	<0.0769 [3]
Benzo(a)pyrene	ug/L	<209 [3] [12] [10]	<100 [3] [12] [7]	<0.0755 [3]	<0.0755 [3]			<18.6 [3]	<18.6 [3]	357 [3] [12] [8]	0.0995 [3]	55 [3] [12] [12]
Benzo(b)fluoranthene(s)	ug/L		<93.0 [3]	<0.0755 [3]	<0.0755 [3]			<18.6 [3]	<18.6 [3]	<0.0816 [3]	352 [3] [11] [6]	<0.0769 [3]
Benzo(k)fluoranthene(s)	ug/L		<93.0 [3]	<0.0755 [3]	<0.0755 [3]			<18.6 [3]	<18.6 [3]	<0.0816 [3]	777 [3] [11] [6]	<0.0769 [3]
Benzo(b+k)fluoranthene(s)	ug/L	<186 [3]										
Benzo(g,h,i)perylene	ug/L	<186 [3]	<93.0 [3]	<0.0755 [3]	<0.0755 [3]			<18.6 [3]	<18.6 [3]	<0.0816 [3]	<0.0777 [3]	<0.0769 [3]
Carbazole	ug/L	<186 [3]	114 [3]	<0.0755 [3]	<0.0755 [3]			82.9 [3]	81.7 [3]	<0.0816 [3]	<0.0777 [3]	<0.0769 [3]
Chrysene	ug/L	<186 [3]	<93.0 [3]	<0.0755 [3]	<0.0755 [3]			<18.6 [3]	<18.6 [3]	<0.0816 [3]	<0.0777 [3]	<0.0769 [3]
Dibenz(a,h)anthracene	ug/L	<186 [3]	<93.0 [3]	<0.0755 [3]	<0.0755 [3]			<18.6 [3]	<18.6 [3]	<0.0816 [3]	<0.0777 [3]	<0.0769 [3]
Dibenzofuran	ug/L	<186 [3]	<93.0 [3]	<0.0755 [3]	<0.0755 [3]			<18.6 [3]	<18.6 [3]	<0.0816 [3]	<0.0777 [3]	<0.0769 [3]
Fluoranthene	ug/L	<186 [3]	<93.0 [3]	<0.0755 [3]	<0.0755 [3]			<18.6 [3]	<18.6 [3]	<0.0816 [3]	<0.0777 [3]	<0.0769 [3]
Fluorene	ug/L	<186 [3]	107 [3]	<0.0755 [3]	<0.0755 [3]			48.4 [3]	57.4 [3]	<0.0816 [3]	<0.0777 [3]	<0.0769 [3]
Indeno(1,2,3-cd)pyrene	ug/L	<186 [3]	<93.0 [3]	<0.0755 [3]	<0.0755 [3]			<18.6 [3]	<18.6 [3]	<0.0816 [3]	<0.0777 [3]	<0.0769 [3]
2-Methylnaphthalene	ug/L	441 [3]	750 [3]	<0.0755 [3]	<0.0755 [3]			274 [3]	423 [3]	<0.0816 [3]	<0.0777 [3]	<0.0769 [3]
Naphthalene	ug/L	5880 [3]	7540 [3]	0.450 [3]	0.312 [3]			2620 [3]	4120 [3]	0.215 [3]	0.158 [3]	0.0795 [3]
Phenanthrene	ug/L	322 [3]	311 [3]	<0.0755 [3]	<0.0755 [3]			115 [3]	111 [3]	<0.0816 [3]	<0.0777 [3]	<0.0769 [3]
Pyrene	ug/L	<186 [3]	104 [3]	<0.0755 [3]	<0.0755 [3]			19.2 [3]	<18.6 [3]	<0.0816 [3]	0.0952 [3]	<0.0769 [3]
2-Chlorophenol	ug/L	<2330 [3]	<1160 [3]	<0.943 [3]	<0.943 [3]			<233 [3]	<233 [3]	<1.02 [3]	<0.971 [3]	<0.962 [3]
2,4-Dichlorophenol	ug/L	<2330 [3]	<1160 [3]	<0.943 [3]	<0.943 [3]			<233 [3]	<233 [3]	<1.02 [3]	<0.971 [3]	<0.962 [3]
2,4-Dimethylphenol	ug/L	<2330 [3]	<1160 [3]	<0.943 [3]	<0.943 [3]			<233 [3]	<233 [3]	<1.02 [3]	<0.971 [3]	<0.962 [3]
4,6-Dinitro-2-methylphenol	ug/L	<2330 [3]	<1160 [3]	<0.943 [3]	<0.943 [3]			<233 [3]	<233 [3]	<1.02 [3]	<0.971 [3]	<0.962 [3]
2-Methylphenol	ug/L	<2330 [3]	<1160 [3]	<0.943 [3]	<0.943 [3]			<233 [3]	<233 [3]	<1.02 [3]	<0.971 [3]	<0.962 [3]
2-Nitrophenol	ug/L	<2330 [3]	<1160 [3]	<0.943 [3]	<0.943 [3]			<233 [3]	<233 [3]	<1.02 [3]	<0.971 [3]	<0.962 [3]
4-Nitrophenol	ug/L	<2330 [3]	<1160 [3]	6.42 [3] [12] [14]	<0.943 [3]			<233 [3]	<233 [3]	<1.02 [3]	<0.971 [3]	<0.962 [3]
2,4,5-Trichlorophenol	ug/L	<2330 [3]	<1160 [3]	<0.943 [3]	<0.943 [3]			<233 [3]	<233 [3]	<1.02 [3]	<0.971 [3]	<0.962 [3]
2,4,6-Trichlorophenol	ug/L	<2330 [3]	<1160 [3]	<0.943 [3]	<0.943 [3]			<233 [3]	<233 [3]	<1.02 [3]	<0.971 [3]	<0.962 [3]
Pentachlorophenol (PCP)	ug/L	<2330 [3]	<1160 [3]	<0.943 [3]	<0.943 [3]			<233 [3]	<233 [3]	<1.02 [3]	<0.971 [3]	<0.962 [3]
Phenol	ug/L	<2330 [3]	<1160 [3]	<0.943 [3]	<0.943 [3]			<233 [3]	<233 [3]	<1.02 [3]	<0.971 [3]	<0.962 [3]
METALS												
Hexavalent Chromium	mg/L	<0.0100	<0.0100	<0.0100	<0.0100				<0.0100			<0.0100
Silver	ug/L	<1.00	<1.00	<1.00	<1.00				<1.00			<1.00
Arsenic	ug/L	5.03 [1] [1]		1.14 [1] [7]		2.26 [1] [1]	1.74 [1] [1]	2.57	1.50 [1] [4]		2.37	2.67 [1] [6]
Cadmium	ug/L	<1.00	<1.00	<1.00	<1.00				<1.00			<1.00
Chromium	ug/L	1.37 [1] [1]	<1.00	<1.00	<1.00				<1.00			<1.00
Copper	ug/L	<5.00	<5.00	<5.00	<5.00				15.6			<5.00
Dissolved Iron	ug/L	34000	13100	266000	6900	339 [4] [2]	337 [4] [2]		443			409
Mercury	ug/L	<0.0100	<0.0100	<0.0100	<0.0100				0.0192			<0.0100
Dissolved Manganese	ug/L	3110	1150	10000	225	12.2 [4] [2]	13.3 [4] [2]		201			67
Nickel	ug/L	1.7	<1.00	4.16	1.06				1.39			3.09
Lead	ug/L	<1.00	<1.00	<1.00	<1.00				3.48			<1.00
Selenium	ug/L	1.36 [1] [1]	<1.00	1.67 [1] [7]	3.02 [1] [5]				1.96 [1] [4]			3.94 [1] [6]
Zinc	ug/L	892	56.1	21.4	<4.00				116			6.5
Calcium	ug/L	74500	10500	482000	80700							15300
Chromium	ug/L	1.37 [1] [1]	<1.00	<1.00	<1.00				<1.00			<1.00
Hardness (Calc by 6020)	mg CaCO3/L	384	202	2430	404							234
Magnesium	ug/L	48000	42600	298000	49200							47600
Trivalent Chromium	ug/L	<11.0	<11.0	<11.0	<11.0				<11.0			<11.0
VOLATILE ORGANICS												
Acetone	ug/L	<2000	<2000	<20.0	<20.0			<1000		<20.0	<20.0	<20.0
Benzene	ug/L	8730	6590	<0.250	<0.250			2850		<0.250	<0.250	<0.250
2-Butanone (MEK)	ug/L	<1000	<1000	<10.0	<10.0			<500		<10.0	<10.0	<10.0
1,1-Dichloroethene	ug/L	<50.0	<50.0	<0.500	<0.500			<25.0		<0.500	<0.500	<0.500
cis-1,2-Dichloroethene	ug/L	<50.0	<50.0	<0.500	<0.500			<25.0		<0.500	<0.500	<0.500
trans-1,2-Dichloroethene	ug/L	<50.0	<50.0	<0.500	<0.500			<25.0		<0.500	<0.500	<0.500
Ethylbenzene	ug/L	733	602	<0.500	<0.500			234		<0.500	<0.500	<0.500
Tetrachloroethene (PCE)	ug/L	<50.0	<50.0	<0.500	<0.500			<25.0		<0.500	<0.500	<0.500
Toluene	ug/L	179	152	<0.500	<0.500			65.5		<0.500	<0.500	<0.500
Trichloroethene (TCE)	ug/L	<50.0	<50.0	<0.500	<0.500			<25.0		<0.500	<0.500	<0.500
Vinyl chloride	ug/L	<50.0	<50.0	<0.500	<0.500			<25.0		<0.500	<0.500	<0.500
m,p-Xylene	ug/L	285	330	<1.00	<1.00			132		<1.00	<1.00	<1.00
o-Xylene	ug/L	162	190	<0.500	<0.500			77.5		<0.500	<0.500	<0.500

08/26/09	Units	NW-1A	NW-2A	NW-1B	NW-2B	NW-3	NW-4	NW-5	NW-6	NW-7	NW-8	NW-9
		PW-1 Influent	PW-1 Eq Eff	MW-1 Influent	MW-1 Eq Eff	Combined IPC Inf	IPC Effluent	Cyanide Destruct Eff	Bag Filter Eff	GAC Midpoint	GAC Eff	Eff Storage Tank
pH	pH Units	6.65	10.2	6.08	9.92							7.95
pH Temperature	pH Units	20.7	20.7	21.5	21							21.8
Total Dissolved Solids	mg/L	537	1270	4780	3490							1360
Total Suspended Solids	mg/L	49	43	86	3530				5			<5.00
Total Organic Carbon	mg/L	25	28	4.69	14.6			30.8	29	<2.00	<2.00	3.97
Total Iron	ug/L					344000	1260					279 [5] [9]
Total Manganese	ug/L					11900	50.2					9.44 [5] [9]
CYANIDE												
Cyanide, Total	mg/L	1.04	0.977	0.702	0.585			0.708	0.763			0.554
Cyanide, WAD	mg/L	0.1	0.094	0.0874	0.0498			0.0789	0.0801			0.0441
Cyanide, Amenable	mg/L	<0.0200	<0.0200	<0.0100	<0.0300			<0.0100	<0.0100			<0.0100
CATC, chlorinated	mg/L	1.07	0.961	0.725	0.739			0.806	0.854			0.584
Cyanide, Free	mg/L	<0.0100	<0.0100	<0.0100	<0.0100			<0.0100	<0.0100			<0.0100
CATC, total	mg/L	1.04	0.977	0.702	0.585			0.708	0.763			0.554
SEMI-VOLATILE ORGANICS												
Acenaphthylene	ug/L	88.4 [4]	179 [4]	<0.0748 [4]	<0.100 [4]			<18.6 [4]	52.2 [4]	<0.0777 [4]	<0.0769 [4]	<0.0792 [4]
Acenaphthene	ug/L	171 [4]	257 [4]	1.12 [4] [17] [14]	<0.100 [4]			85.7 [4]	126 [4]	<0.0777 [4]	<0.0769 [4]	<0.0792 [4]
Anthracene	ug/L	71.4 [4]	<37.2 [4]	<0.0748 [4]	<0.100 [4]			<18.6 [4]	<18.6 [4]	<0.0777 [4]	<0.0769 [4]	<0.0792 [4]
Benz(a)anthracene	ug/L	69.2 [4]	<37.2 [4]	<0.0748 [4]	<0.100 [4]			<18.6 [4]	<18.6 [4]	<0.0777 [4]	<0.0769 [4]	<0.0792 [4]
Benzo(a)pyrene	ug/L	88.4 [4]	46.3 [4]	<0.0748 [4]	<0.100 [4]			<18.6 [4]	<18.6 [4]	0.0926 [4]	08 [4] [17] [8]	32 [4] [17] [12]
Benzo(b)fluoranthene(s)	ug/L			<0.0748 [4]	<0.100 [4]			<18.6 [4]	<18.6 [4]		<0.0769 [4]	<0.0792 [4]
Benzo(k)fluoranthene(s)	ug/L			<0.0748 [4]	<0.100 [4]			<18.6 [4]	<18.6 [4]		<0.0769 [4]	<0.0792 [4]
Benzo(b+k)fluoranthene(s)	ug/L	84.6 [4] [15] [9]							<0.155 [4] [15] [6]			
Benzo(g,h,i)perylene	ug/L	49.0 [4]		<0.0748 [4]	<0.100 [4]			<18.6 [4]	<18.6 [4]	<0.0777 [4]	<0.0769 [4]	<0.0792 [4]
Carbazole	ug/L	55.1 [4]	<74.4 [4] [15] [6]	<0.0748 [4]	<0.100 [4]			36.9 [4]	79.6 [4]	<0.0777 [4]	<0.0769 [4]	<0.0792 [4]
Chrysene	ug/L	69.4 [4]	<37.2 [4]	<0.0748 [4]	<0.100 [4]			<18.6 [4]	<18.6 [4]	<0.0777 [4]	<0.0769 [4]	<0.0792 [4]
Dibenz(a,h)anthracene	ug/L	<37.2 [4]	129 [4]	<0.0748 [4]	<0.100 [4]			<18.6 [4]	<18.6 [4]	<0.0777 [4]	<0.0769 [4]	<0.0792 [4]
Dibenzofuran	ug/L	<37.2 [4]	<37.2 [4]	<0.0748 [4]	<0.100 [4]			<18.6 [4]	<18.6 [4]	<0.0777 [4]	<0.0769 [4]	<0.0792 [4]
Fluoranthene	ug/L	254 [4]	<37.2 [4]	<0.0748 [4]	<0.100 [4]			<18.6 [4]	<18.6 [4]	0.106 [4]	<0.0769 [4]	<0.0792 [4]
Fluorene	ug/L	99.6 [4]	<37.2 [4]	<0.0748 [4]	<0.100 [4]			48.6 [4]	55.1 [4]	<0.0777 [4]	<0.0769 [4]	<0.0792 [4]
Indeno(1,2,3-cd)pyrene	ug/L	55.9 [4]	70.1 [4]	<0.0748 [4]	<0.100 [4]			<18.6 [4]	<18.6 [4]	<0.0777 [4]	<0.0769 [4]	<0.0792 [4]
2-Methylnaphthalene	ug/L	334 [4]	109 [4]	<0.0748 [4]	<0.100 [4]			325 [4]	385 [4]	<0.0777 [4]	<0.0769 [4]	<0.0792 [4]
Naphthalene	ug/L	3030 [4]	<37.2 [4]	0.214 [4]	0.484 [4]			3350 [4]	3890 [4]	0.327 [4]	0.142 [4]	<0.0792 [4]
Phenanthrene	ug/L	540 [4]	823 [4]	<0.0748 [4]	<0.100 [4]			97.6 [4]	116 [4]	0.0848 [4]	<0.0769 [4]	<0.0792 [4]
Pyrene	ug/L	307 [4]	7770 [4]	<0.0748 [4]	<0.100 [4]			<18.6 [4]	<18.6 [4]	0.148 [4]	<0.0769 [4]	<0.0792 [4]
2-Chlorophenol	ug/L	<465 [4]	278 [4]	<0.935 [4]	<1.25 [4]			<233 [4]	<233 [4]	<0.971 [4]	<0.962 [4]	<0.990 [4]
2,4-Dichlorophenol	ug/L	<465 [4]	82.5 [4]	<0.935 [4]	<1.25 [4]			<233 [4]	<233 [4]	<0.971 [4]	<0.962 [4]	<0.990 [4]
2,4-Dimethylphenol	ug/L	<465 [4]	<465 [4]	<0.935 [4]	<1.25 [4]			<233 [4]	<233 [4]	<0.971 [4]	<0.962 [4]	<0.990 [4]
4,6-Dinitro-2-methylphenol	ug/L	<465 [4]	<465 [4]	<0.935 [4]	<1.25 [4]			<233 [4]	<233 [4]	<0.971 [4]	<0.962 [4]	<0.990 [4]
2-Methylphenol	ug/L	<465 [4]	<465 [4]	<0.935 [4]	<1.25 [4]			<233 [4]	<233 [4]	<0.971 [4]	<0.962 [4]	<0.990 [4]
2-Nitrophenol	ug/L	<465 [4]	<465 [4]	<0.935 [4]	<1.25 [4]			<233 [4]	<233 [4]	<0.971 [4]	<0.962 [4]	<0.990 [4]
4-Nitrophenol	ug/L	<465 [4]	<465 [4]	<0.935 [4]	<1.25 [4]			<233 [4]	<233 [4]	<0.971 [4]	<0.962 [4]	<0.990 [4]
2,4,5-Trichlorophenol	ug/L	<465 [4]	<465 [4]	<0.935 [4]	<1.25 [4]			<233 [4]	<233 [4]	<0.971 [4]	<0.962 [4]	<0.990 [4]
2,4,6-Trichlorophenol	ug/L	<465 [4]	<465 [4]	<0.935 [4]	<1.25 [4]			<233 [4]	<233 [4]	<0.971 [4]	<0.962 [4]	<0.990 [4]
Pentachlorophenol (PCP)	ug/L	<465 [4]	<465 [4]	<0.935 [4]	<1.25 [4]			<233 [4]	<233 [4]	<0.971 [4]	<0.962 [4]	<0.990 [4]
Phenol	ug/L	<465 [4]	<465 [4]	<0.935 [4]	<1.25 [4]			<233 [4]	<233 [4]	<0.971 [4]	<0.962 [4]	<0.990 [4]
METALS												
Hexavalent Chromium	mg/L	0.0626	<0.0100 [1] [2]	<0.0100	<0.0100				<0.0100			<0.0100
Silver	ug/L	<1.00	<1.00	<1.00	<1.00				<1.00			<1.00
Arsenic	ug/L	4.49	<1.00	1.2		4.21	1.41	2.03 [2] [3]	2.09		2.34 [2] [3]	2.79
Cadmium	ug/L	<1.00	1.17	<1.00	<1.00				<1.00			<1.00
Chromium	ug/L	1.9		<1.00	5.66				<1.00			<1.00
Copper	ug/L	<5.00	<5.00	18.5	7.99				<5.00			<5.00
Dissolved Iron	ug/L	32900	6780	263000	925000	323 [5] [2]	298 [5] [2]		904			432
Mercury	ug/L	<0.0100	<0.0100	<0.0100	<0.0100				<0.0100			<0.0100
Dissolved Manganese	ug/L	2990	624	9920	32300	1.94 [5] [2]	2.79 [5] [2]		53.7			11.5
Nickel	ug/L	2	<1.00	5.86	16.6				<1.00			2.57
Lead	ug/L	<1.00	<1.00	1.01	<1.00				<1.00			<1.00
Selenium	ug/L	1.74	1.49	2.24	2.64				2.64			4.5
Zinc	ug/L	156	20.9	19.1	26.3				8.62			9.11
Calcium	ug/L	68900	11000	470000	1390000							8540
Chromium	ug/L											
Hardness (Calc by 6020)	mg CaCO3/L	354	194	2380	6920							204
Magnesium	ug/L	44100	40400	293000	838000							44500
Trivalent Chromium	ug/L	<11.0	<11.0	<11.0	<11.0				<11.0			<11.0
VOLATILE ORGANICS												
Acetone	ug/L	<2000	<2000	<20.0				<1000	<1000	<20.0	<20.0	<20.0
Benzene	ug/L	8080	6150	<0.250				2100	3300	1.12	<0.250	<0.250
2-Butanone (MEK)	ug/L	<1000	<1000	<10.0				<500	<500	<10.0	<10.0	<10.0
1,1-Dichloroethene	ug/L	<50.0	<50.0	<0.500				<25.0	<25.0	<0.500	<0.500	<0.500
cis-1,2-Dichloroethene	ug/L	<50.0	<50.0	<0.500				<25.0	<25.0	<0.500	<0.500	<0.500
trans-1,2-Dichloroethene	ug/L	<50.0	<50.0	<0.500				<25.0	<25.0	<0.500	<0.500	<0.500
Ethylbenzene	ug/L	888	669	<0.500				186	330	<0.500	<0.500	<0.500
Tetrachloroethene (PCE)	ug/L	<50.0	<50.0	<0.500				<25.0	<25.0	<0.500	<0.500	<0.500
Toluene	ug/L	235	159	<0.500				47	80.5	<0.500	<0.500	<0.500
Trichloroethene (TCE)	ug/L	<50.0	<50.0	<0.500				<25.0	<25.0	<0.500	<0.500	<0.500
Vinyl chloride	ug/L	<50.0	<50.0	<0.500				<25.0	<25.0	<0.500	<0.500	<0.500
m,p-Xylene	ug/L	380	372	<1.00				91	178	<1.00	<1.00	<1.00
o-Xylene	ug/L	194	187	<0.500				56	110	<0.500	<0.500	<0.500

Attachment E: NW Natural Pilot Plant Results—By Sample Point

PW-1 Influent	08/26/09	08/25/09	08/21/09	08/19/09	08/18/09	08/12/09	08/11/09	08/07/09	08/03/09	07/23/09	Units	Min	Max
pH	6.65	6.73	6.72	6.55	6.57	6.54	6.79	6.74	6.53	6.73	pH Units	6.53	6.79
pH Temperature	20.7	21.4	27.6	24.9	14.8	20.2	20.1	16.9	20.3	14.2	pH Units	14.2	27.6
Total Dissolved Solids	537	577	505	551	514	529	493	573	548	553	mg/L	493	577
Total Suspended Solids	49	63	79	65	82	102	37	58	68	39	mg/L	37	102
Total Organic Carbon	25	30	26.3	27.1	29.8	29.9	49.6	21.8	26	31.6	mg/L	21.8	49.6
Total Iron				4330							ug/L		
Total Manganese				2810							ug/L		
CYANIDE													
Cyanide, Total	1.04	0.941	0.873	1.05	1.22	0.586	0.892	0.926	1.09	1.11	mg/L	0.586	1.22
Cyanide, WAD	0.1	0.0805	0.0607	0.0723	0.0972	0.067	0.0722	0.125	0.114	0.136	mg/L	0.0607	0.136
Cyanide, Amenable	<0.0200	<0.0200	<0.0150	0.0392	<0.0500	<0.0100	<0.0250	<0.0250	<0.0500	<0.0500	mg/L	<0.0100	<0.0500
CATC, chlorinated	1.07	1.12	0.939	1.01	1.27	0.847	0.938	0.933	1.06	1.08	mg/L	0.847	1.27
Cyanide, Free	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	mg/L	<0.0100	<0.0100
CATC, total	1.04	0.0941	0.873	1.05	1.22	0.586	0.892	0.926	1.09	1.11	mg/L	0.586	1.22
Available Cyanide		0.0030	0.0066			0.0060		0.0110			mg/L	0.0030	0.0110
SEMI-VOLATILE ORGANICS													
Acenaphthylene	88.4 [4]	<186 [3]	<372 [6]	<190 [3]	736 [6]	1580 [6]	413 [6]	<381 [3]	396	125 [4] [5] [5]	ug/L	88.4 [4]	1580 [6]
Acenaphthene	171 [4]	<186 [3]	538 [6]	284 [3]	1170 [6]	2730 [6]	658 [6]	404 [3]	529	193 [4] [5] [5]	ug/L	171 [4]	2730 [6]
Anthracene	71.4 [4]	<186 [3]	<372 [6]	<190 [3]	642 [6]	1470 [6]	455 [6]	<381 [3]	99.8	45.2 [4]	ug/L	45.2 [4]	1470 [6]
Benz(a)anthracene	69.2 [4]	<186 [3]	<372 [6]	250 [3]	634 [6]	1300 [6]	503 [6]	<381 [3]	50.5 [14] [7]	23.7 [4] [6] [7]	ug/L	23.7 [4] [6] [7]	1300 [6]
Benzo(a)pyrene	88.4 [4]	<209 [3] [12] [10]	686 [6]	361 [3]	1070 [6]	1720 [6]	894 [6]	724 [3]	68.3	29.0 [4]	ug/L	29.0 [4]	1720 [6]
Benzo(b+k)fluoranthene(s)	84.6 [4] [15] [9]	<186 [3]	<744 [6] [16] [9]	406 [3] [15] [9]	1240 [6] [19] [9]	2200 [6] [15] [9]	1080 [6] [16] [9]	<762 [3] [12] [9]	83.9 [24] [9]	32.5 [4] [16] [9]	ug/L	32.5 [4] [16] [9]	2200 [6] [15] [9]
Benzo(g,h,i)perylene	49.0 [4]	<186 [3]	389 [6]	<190 [3]	602 [6]	1160 [6]	621 [6]	397 [3]	57	23.8 [4]	ug/L	23.8 [4]	1160 [6]
Carbazole	55.1 [4]	<186 [3]	<372 [6]	<190 [3]	498 [6]	636 [6]	385 [6]	<381 [3]	378	184 [4] [5] [5]	ug/L	55.1 [4]	636 [6]
Chrysene	69.4 [4]	<186 [3]	<372 [6]	<190 [3]	588 [6]	1370 [6]	605 [6]	<381 [3]	58.8	26.0 [4]	ug/L	26.0 [4]	1370 [6]
Dibenz(a,h)anthracene	<37.2 [4]	<186 [3]	<372 [6]	<190 [3]	<381 [6]	<372 [6]	<372 [6]	<381 [3]	<9.52	2.50 [4]	ug/L	2.50 [4]	<381 [6]
Dibenzofuran	<37.2 [4]	<186 [3]	<372 [6]	<190 [3]	<381 [6]	<372 [6]	<372 [6]	<381 [3]	45.1	21.5 [4]	ug/L	21.5 [4]	<381 [3]
Fluoranthene	254 [4]	<186 [3]	979 [6]	602 [3]	1900 [6]	4270 [6]	1690 [6]	838 [3]	208	90.7 [4]	ug/L	90.7 [4]	4270 [6]
Fluorene	99.6 [4]	<186 [3]	<372 [6]	<190 [3]	710 [6]	1640 [6]	397 [6]	<381 [3]	237	61.9 [4] [5] [5]	ug/L	61.9 [4] [5] [5]	1640 [6]
Indeno(1,2,3-cd)pyrene	55.9 [4]	<186 [3]	<372 [6]	<190 [3]	419 [6]	952 [6]	<372 [6]	<381 [3]	45.5	20.7 [4]	ug/L	20.7 [4]	952 [6]
2-Methylnaphthalene	334 [4]	441 [3]	1020 [6]	538 [3]	2600 [6]	6110 [6]	928 [6]	742 [3]	1260	595 [1] [3] [4] [1] [3]	ug/L	334 [4]	6110 [6]
Naphthalene	3030 [4]	5880 [3]	8640 [3] [4] [6] [1] [2]	4360 [1] [3] [1]	15900 [4] [6] [1]	31100 [4] [6] [1]	5520 [3] [6] [1]	6280 [3]	14200 [9] [1]	8000 [1] [3] [4] [1] [3]	ug/L	3030 [4]	31100 [4] [6] [1]
Phenanthrene	540 [4]	322 [3]	1900 [6]	1130 [3]	4030 [6]	9510 [6]	3130 [6]	1450 [3]	808	220 [4] [5] [5]	ug/L	220 [4] [5] [5]	9510 [6]
Pyrene	307 [4]	<186 [3]	1160 [6]	745 [3]	2290 [6]	5190 [6]	1990 [6]	947 [3]	242	103 [4] [5] [5]	ug/L	103 [4] [5] [5]	5190 [6]
2-Chlorophenol	<465 [4]	<2330 [3]	<4650 [6]	<2380 [3]	<4760 [6]	<4650 [6]	<4650 [6]	<4760 [3]	<119	<3.92 [4]	ug/L	<3.92 [4]	<4760 [6]
2,4-Dichlorophenol	<465 [4]	<2330 [3]	<4650 [6]	<2380 [3]	<4760 [6]	<4650 [6]	<4650 [6]	<4760 [3]	<119	<3920 [4]	ug/L	<119	<4760 [3]
2,4-Dimethylphenol	<465 [4]	<2330 [3]	<4650 [6]	<2380 [3]	<4760 [6]	<4650 [6]	<4650 [6]	<4760 [3]	<119	<3920 [4]	ug/L	<119	<4760 [3]
4,6-Dinitro-2-methylphenol	<465 [4]	<2330 [3]	<4650 [6]	<2380 [3]	<4760 [6]	<4650 [6]	<4650 [6]	<4760 [3]	<119	<3.92 [4]	ug/L	<3.92 [4]	<4760 [3]
2-Methylphenol	<465 [4]	<2330 [3]	<4650 [6]	<2380 [3]	<4760 [6]	<4650 [6]	<4650 [6]	<4760 [3]	<119	<3.92 [4]	ug/L	<3.92 [4]	<4760 [3]
2-Nitrophenol	<465 [4]	<2330 [3]	<4650 [6]	<2380 [3]	<4760 [6]	<4650 [6]	<4650 [6]	<4760 [3]	<119	<3920 [4] [15] [8]	ug/L	<119	<4760 [3]
4-Nitrophenol	<465 [4]	<2330 [3]	<4650 [6]	<2380 [3]	<4760 [6]	<4650 [6]	<4650 [6]	<4760 [3]	<119	<3.92 [4]	ug/L	<3.92 [4]	<4760 [3]
2,4,5-Trichlorophenol	<465 [4]	<2330 [3]	<4650 [6]	<2380 [3]	<4760 [6]	<4650 [6]	<4650 [6]	<4760 [3]	<119	<3.92 [4]	ug/L	<3.92 [4]	<4760 [3]
2,4,6-Trichlorophenol	<465 [4]	<2330 [3]	<4650 [6]	<2380 [3]	<4760 [6]	<4650 [6]	<4650 [6]	<4760 [3]	<119	<3.92 [4]	ug/L	<3.92 [4]	<4760 [3]
Pentachlorophenol (PCP)	<465 [4]	<2330 [3]	<4650 [6]	<2380 [3]	<4760 [6]	<4650 [6]	<4650 [6]	<4760 [3]	<119	<3.92 [4]	ug/L	<3.92 [4]	<4760 [3]
Phenol	<465 [4]	<2330 [3]	<4650 [6]	<2380 [3]	<4760 [6]	<4650 [6]	<4650 [6]	<4760 [3]	<119	5.38 [4]	ug/L	5.38 [4]	<4760 [3]
METALS													
Hexavalent Chromium	0.0626	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0200		<0.0100	mg/L	<0.0100	0.0626
Silver	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Arsenic	4.49	5.03 [1] [1]	5.13 [3] [1]	4.22 [1] [1]	4.56	4.57	4.48	5.11	4.46	3.92	ug/L	3.92	5.13 [3] [1]
Cadmium	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Chromium	1.9	1.37 [1] [1]	2.38	1.22	2.34	1.38	1.04	2.18	1.66	5.48	ug/L	1.04	5.48
Copper	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	ug/L	<5.00	<5.00
Dissolved Iron	32900	34000	31400	30800	34000	29600	29600	33800	32400	27800	ug/L	27800	34000
Mercury	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	ug/L	<0.0100	<0.0100
Dissolved Manganese	2990	3110	2940	2790	3160	2860	3080	3320	3150	3100	ug/L	2790	3320
Nickel	2	1.7	2.92	1.41	1.57	1.26	1.36	2.33	<1.00	3.03	ug/L	<1.00	3.03
Lead	<1.00	<1.00	1.51	<1.00	<1.00	<1.00	<1.00	3.69	<1.00	5.52	ug/L	<1.00	5.52
Selenium	1.74	1.36 [1] [1]	<1.00	<1.00	<1.00	1.09	1.41	1.27	<1.00	1.61	ug/L	<1.00	1.74
Zinc	156	892	98.8	1500	301	151	339	1210	492	441	ug/L	98.8	1500
Calcium	68900	74500	67900	74400	74100	64400	64800	76000	77700	78300	ug/L	64400	78300
Chromium		1.37 [1] [1]									ug/L	1.37 [1] [1]	1.37 [1] [1]
Hardness (Calc by 6020)	354	384	346	376	384	345	343	391	396	412	mg CaCO3/L	343	412
Magnesium	44100	48000	42900	46200	48300	44700	44100	49000	48900	52700	ug/L	42900	52700
Trivalent Chromium	<11.0	<11.0	<11.0	<11.0	<11.0	<11.0	<11.0	<21.0	1.66	<11.0	ug/L	1.66	<21.0
VOLATILE ORGANICS													
Acetone	<2000	<2000	<2000 [22]	<2000	<2000	<2000	<2000	<2000	<4000 [32]	<10000	ug/L	<2000	<10000
Benzene	8080	8730	7880 [22]	8390	9070	8690	9060	9100	7820 [32]	7540	ug/L	7540	9100
2-Butanone (MEK)	<1000	<1000	<1000 [22]	<1000	<1000	<1000	<1000	<1000	<2000 [32]	<5000	ug/L	<1000	<5000
1,1-Dichloroethene	<50.0	<50.0	<50.0 [22]	<50.0	<50.0	<50.0	<50.0	<50.0	<100 [32]	<250	ug/L	<50.0	<250
cis-1,2-Dichloroethene	<50.0	<50.0	<50.0 [22]	<50.0	<50.0	<50.0	<50.0	<50.0	<100 [32]	<250	ug/L	<50.0	<250
trans-1,2-Dichloroethene	<50.0	<50.0	<50.0 [22]	<50.0	<50.0	<50.0	<50.0	<50.0	<100 [32]	<250	ug/L	<50.0	<250
Ethylbenzene	888	733	808 [22]	827	1090	1220	798	988	752 [32]	620	ug/L	620	1220
Tetrachloroethene (PCE)	<50.0	<50.0	<50.0 [22]	<50.0	<50.0	<50.0	<50.0	<50.0	<100 [32]	<250	ug/L	<50.0	<250
Toluene	235	179	224 [22]	235	290	248	317	367	152 [32]	<250	ug/L	152 [32]	367
Trichloroethene (TCE)	<50.0	<50.0	<50.0 [22]	<50.0	<50.0	<50.0	<50.0	<50.0	<100 [32]	<250	ug/L	<50.0	<250
Vinyl chloride	<50.0	<50.0	<50.0 [22]	<50.0	<50.0	<50.0	<50.0	<50.0	<100 [32]	<250	ug/L	<50.0	<250
m,p-Xylene	380	285	374 [22]	378	561	596	360	474	364 [32]	<500	ug/L	285	596
o-Xylene	194	162	190 [22]	194	282	306	195	229	200 [32]	<250	ug/L	162	306

FootNumber	TextBody	Qualifier
1	Analyte detected in the associated extraction blank.	B
2	Analyte detected in the extraction blank at a level greater than the MRL. All associated samples contain the same analyte at a level that is greater than 10 times the method blank.	B-01
3	Analyte was detected in the associated extraction blank at a level greater than the MRL. The result for the analyte in this sample is greater than 5 times the result in the extraction blank.	B-04
4	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A.	C-05
5	Estimated Value. The result is above the calibration range of the instrument.	E
6	Estimated Result . Result detected below the lowest point of the calibration curve, but above the statistical MDL.	J
7	Due to matrix interference, this analyte cannot be accurately quantified. The reported result is estimated.	M-02
8	Recovery of Continuing Calibration Verification standard was above acceptable limits. Analyte was not detected in reported client samples, therefore Data Quality is not affected.	Q-25
9	Peak separation for Benzo(b) and Benzo(k)fluoranthenes does not meet method specified criteria. Reported result includes the combined area of the two isomers and should be considered the total of Benzo(b+k)Fluoranthenes.	Q-26
10	The Reporting Limit for this analyte has been raised to account for matrix interference.	R-01
11	Surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interference.	S-01
12	Surrogate recovery cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.	S-02
13	Surrogate recovery is outside of established control limits due to a sample matrix effect.	S-04
14	Surrogate recovery cannot be accurately quantified due to sample dilution required from high analyte concentration and/or matrix interference.	S-05
15	Surrogate recovery is outside of established control limits.	S-06
16	Sample aliquot taken from VOA vial with headspace (air bubble greater than 6 mm diameter).	V-01

MW-1 Influent	08/26/09	08/25/09	08/21/09	08/19/09	08/18/09	08/12/09	08/11/09	08/07/09	08/03/09	07/23/09	Units	Min	Max
pH	6.08	6.16	6.2	6.08	6.08	6.17	6.26	6.32	6.09	6.17	pH Units	6.08	6.32
pH Temperature	21.5	20.8	27.5	24.8	17.5	21.3	20.6	18.7	20.7	13.3	pH Units	13.3	27.5
Total Dissolved Solids	4780	5030	4100	4080	4460	3340	3310	3000	2760	3080	mg/L	2760	5030
Total Suspended Solids	86	74	122	101	86	140	67	63	107	184	mg/L	63	184
Total Organic Carbon	4.69	8.67	2.21	<2.00	7.59	7.33	6.81	4.07	6.34 [1] [1]	7.82	mg/L	<2.00	8.67
CYANIDE													
Cyanide, Total	0.702	0.704	0.587	0.493	0.679	0.377	0.47	0.257	0.368	0.408	mg/L	0.257	0.704
Cyanide, WAD	0.0874	0.0801	0.0619	0.0634	0.0845	0.06	0.0591	0.111	0.0583	0.0559	mg/L	0.0591	0.111
Cyanide, Amenable	<0.0100	0.0537	<0.0100	<0.0100	0.0304	<0.0100	<0.00500	<0.0500	0.169	0.0887	mg/L	<0.00500	0.0887
CATC, chlorinated	0.725	0.65	0.589	0.544	0.649	0.586	0.467	1.09	0.2	0.32	mg/L	0.2	1.09
Cyanide, Free	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	mg/L	<0.0100	<0.0100
CATC, total	0.702	0.704	0.587	0.493	0.679	0.377	0.47	0.257	0.368	0.408	mg/L	0.257	0.704
Available Cyanide		0.0093	0.0120			0.0051		0.0083			mg/L	0.0051	0.0120
SEMI-VOLATILE ORGANICS													
Acenaphthylene	<0.0748 [4]	<0.0755 [3]	<0.0755 [6]	<0.0777 [3]	<0.0784 [6]	0.0954 [6]	0.347 [6]	<1.90 [3]	<1.95	0.0993	ug/L	<0.0755 [3]	<1.95
Acenaphthene	<1.12 [4] [17] [14]	<1.42 [3] [12] [14]	<0.0755 [6]	<0.0777 [3]	<0.0784 [6]	<1.35 [6] [16] [14]	1.51 [6] [8] [10]	<1.90 [3]	<1.95	0.162	ug/L	<0.0755 [6]	<1.95
Anthracene	<0.0748 [4]	<0.0755 [3]	<0.0755 [6]	<0.0777 [3]	<0.0784 [6]	<0.0833 [6]	0.128 [6]	<1.90 [3]	<1.95	<0.0777	ug/L	<0.0748 [4]	<1.95
Benz(a)anthracene	<0.0748 [4]	<0.0755 [3]	<0.0755 [6]	<0.0777 [3]	<0.0784 [6]	<0.0833 [6]	<0.0755 [6]	<1.90 [3]	<1.95	<0.0777	ug/L	<0.0748 [4]	<1.95
Benzo(a)pyrene	<0.0748 [4]	<0.0755 [3]	<0.0755 [6]	<0.0874 [3] [16] [14]	<0.0980 [6] [20] [14]	<0.110 [6] [16] [14]	0.106 [6]	<2.14 [3] [14] [14]	<1.95	0.0832	ug/L	<0.0748 [4]	<2.14 [3] [14] [14]
Benzo(b)fluoranthene	<0.0748 [4]	<0.0755 [3]	<0.0755 [6]	<0.0777 [3]	<0.0882 [6] [20] [14]	<0.0833 [6]	<0.151 [6] [16] [11]	<1.90 [3]	<1.95	0.088	ug/L	<0.0748 [4]	<1.95
Benzo(k)fluoranthene	<0.0748 [4]	<0.0755 [3]	<0.0755 [6]	<0.0777 [3]	<0.0784 [6]	<0.0833 [6]	<0.151 [6] [16] [11]	<1.90 [3]	<1.95	<0.0777	ug/L	<0.0748 [4]	<1.90 [3]
Benzo(g,h,i)perylene	<0.0748 [4]	<0.0755 [3]	<0.0755 [6]	<0.0777 [3]	<0.0784 [6]	<0.0833 [6]	<0.0755 [6]	<1.90 [3]	<1.95	0.0943	ug/L	<0.0748 [4]	<1.95
Carbazole	<0.0748 [4]	<0.0755 [3]	<0.0755 [6]	<0.0777 [3]	<0.0784 [6]	<0.0833 [6]	0.170 [6]	<1.90 [3]	<1.95	0.0857	ug/L	<0.0748 [4]	<1.95
Chrysene	<0.0748 [4]	<0.0755 [3]	<0.0755 [6]	<0.0777 [3]	<0.0784 [6]	<0.0833 [6]	<0.0755 [6]	<1.90 [3]	<1.95	<0.0777	ug/L	<0.0748 [4]	<1.95
Dibenz(a,h)anthracene	<0.0748 [4]	<0.0755 [3]	<0.0755 [6]	<0.0777 [3]	<0.0784 [6]	<0.0833 [6]	<0.0755 [6]	<1.90 [3]	<1.95	<0.0777	ug/L	<0.0748 [4]	<1.95
Dibenzofuran	<0.0748 [4]	<0.0755 [3]	<0.0755 [6]	<0.0777 [3]	<0.0784 [6]	<0.0833 [6]	<0.0755 [6]	<1.90 [3]	<1.95	<0.0777	ug/L	<0.0748 [4]	<1.95
Fluoranthene	<0.0748 [4]	<0.0755 [3]	<0.0755 [6]	<0.0777 [3]	0.184 [6]	0.167 [6]	0.214 [6]	<1.90 [3]	<1.95	0.199	ug/L	0.167 [6]	<1.95
Fluorene	<0.0748 [4]	<0.0755 [3]	<0.0755 [6]	<0.0777 [3]	<0.0784 [6]	0.120 [6]	0.317 [6]	<1.90 [3]	<1.95	0.166	ug/L	<0.0748 [4]	<1.95
Indeno(1,2,3-cd)pyrene	<0.0748 [4]	<0.0755 [3]	<0.0755 [6]	<0.0777 [3]	<0.0784 [6]	<0.0833 [6]	<0.0755 [6]	<1.90 [3]	<1.95	<0.0777	ug/L	<0.0748 [4]	<1.95
2-Methylnaphthalene	<0.0748 [4]	<0.0755 [3]	<0.0755 [6]	<0.0777 [3]	<0.0784 [6]	0.283 [6]	1.25 [6]	<1.90 [3]	5.67	0.153	ug/L	<0.0748 [4]	5.67
Naphthalene	0.214 [4]	0.450 [3]	0.331 [1] [3] [6] [2] [7]	0.271 [1] [3] [7]	0.302 [3] [4] [6] [4] [7]	0.654 [4] [6] [7]	5.15 [3] [6] [7]	4.59 [3]	56.0 [9] [7]	0.676	ug/L	0.214 [4]	56.0 [9] [7]
Phenanthrene	<0.0748 [4]	<0.0755 [3]	<0.0755 [6]	0.0892 [3]	0.438 [6]	0.521 [6]	1.01 [6]	<1.90 [3]	<1.95	0.589	ug/L	0.589	<1.95
Pyrene	<0.0748 [4]	<0.0755 [3]	<0.0755 [6]	<0.0777 [3]	0.188 [6]	0.180 [6]	0.223 [6]	<1.90 [3]	<1.95	0.223	ug/L	<0.0755 [3]	<1.95
2-Chlorophenol	<0.935 [4]	<0.943 [3]	<0.943 [6]	<0.971 [3]	<0.980 [6]	<1.04 [6]	<0.943 [6]	<23.8 [3]	<24.4	<0.971	ug/L	<0.943 [3]	<24.4
2,4-Dichlorophenol	<0.935 [4]	<0.943 [3]	<0.943 [6]	<0.971 [3]	<0.980 [6]	<1.04 [6]	<0.943 [6]	<23.8 [3]	<24.4	<0.971	ug/L	<0.935 [4]	<24.4
2,4-Dimethylphenol	<0.935 [4]	<0.943 [3]	<0.943 [6]	<0.971 [3]	<0.980 [6]	<1.04 [6]	<0.943 [6]	<23.8 [3]	<24.4	<0.971	ug/L	<0.935 [4]	<24.4
4,6-Dinitro-2-methylphenol	<0.935 [4]	<0.943 [3]	<0.943 [6]	<0.971 [3]	<0.980 [6]	<1.04 [6]	<0.943 [6]	<23.8 [3]	<24.4	<0.971	ug/L	<0.935 [4]	<24.4
2-Methylphenol	<0.935 [4]	<0.943 [3]	<0.943 [6]	<0.971 [3]	<0.980 [6]	<1.04 [6]	<0.943 [6]	<23.8 [3]	<24.4	<0.971	ug/L	<0.935 [4]	<24.4
2-Nitrophenol	<0.935 [4]	<0.943 [3]	<0.943 [6]	<0.971 [3]	<0.980 [6]	<1.04 [6]	<0.943 [6]	<23.8 [3]	<24.4	<0.971	ug/L	<0.935 [4]	<24.4
4-Nitrophenol	<0.935 [4]	<6.42 [3] [12] [14]	<0.943 [6]	<0.971 [3]	<0.980 [6]	<1.04 [6]	<0.943 [6]	<23.8 [3]	<24.4	<0.971	ug/L	<0.935 [4]	<24.4
2,4,5-Trichlorophenol	<0.935 [4]	<0.943 [3]	<0.943 [6]	<0.971 [3]	<0.980 [6]	<1.04 [6]	<0.943 [6]	<23.8 [3]	<24.4	<0.971	ug/L	<0.935 [4]	<24.4
2,4,6-Trichlorophenol	<0.935 [4]	<0.943 [3]	<0.943 [6]	<0.971 [3]	<0.980 [6]	<1.04 [6]	<0.943 [6]	<23.8 [3]	<24.4	<0.971	ug/L	<0.935 [4]	<24.4
Pentachlorophenol (PCP)	<0.935 [4]	<0.943 [3]	<0.943 [6]	<0.971 [3]	<0.980 [6]	<1.04 [6]	<0.943 [6]	<23.8 [3]	<24.4	<0.971	ug/L	<0.935 [4]	<24.4
Phenol	<0.935 [4]	<0.943 [3]	<0.943 [6]	<0.971 [3]	<0.980 [6]	<1.04 [6]	<0.943 [6]	<23.8 [3]	<24.4	<0.971	ug/L	<0.935 [4]	<24.4
METALS													
Hexavalent Chromium	<0.0100	<0.0100	<0.0100	<0.0500 [17] [15]	0.204	0.130 [2] [3]	0.0436	0.265		0.0112	mg/L	<0.0100	0.265
Silver	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Arsenic	1.2	1.14 [1] [7]	1.34 [3] [7]	1.41 [1] [7]	1.71	1.37	1.53	1.09	<1.00	1.11	ug/L	<1.00	1.71
Cadmium	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Chromium	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Copper	18.5	<5.00	<5.00	<5.00	<5.00	<5.00	5.22	5.87	5.82	21.5	ug/L	<5.00	21.5
Iron	263000	266000	243000	238000	268000	222000	216000	182000	176000	218000	ug/L	176000	268000
Mercury	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	ug/L	<0.0100	<0.0100
Manganese	9920	10000	8180	8120	9360	7470	7280	6360	6180	6790	ug/L	6180	10000
Nickel	5.86	4.16	3.24	3.3	3.47	2.9	3.12	2.81	3.42	9.04	ug/L	2.81	9.04
Lead	1.01	<1.00	<1.00	<1.00	<1.00	2.46	<1.00	1.52	4.37	17.4	ug/L	<1.00	17.4
Selenium	2.24	1.67 [1] [7]	1.02	1.31	1.86	1.14	1.19	1	1.09	2.06	ug/L	1	2.06
Zinc	19.1	21.4	8.3	13.3	15.4	113	8.26	5.83	9.26	34.9	ug/L	5.83	113
Calcium	470000	482000	377000	398000	431000	326000	310000	296000	294000	318000	ug/L	294000	482000
Chromium		<1.00									ug/L	<1.00	<1.00
Hardness (Calc by 6020)	2380	2430	1890	1960	2170	1660	1610	1490	1450	1620	mg CaCO3/L	1450	2430
Magnesium	293000	298000	230000	234000	266000	206000	202000	181000	173000	202000	ug/L	173000	298000
Trivalent Chromium	<11.0	<11.0	<11.0	<51.0	<41.0	<11.0	<11.0	<101	<1.00	<11.0	ug/L	<1.00	<101
VOLATILE ORGANICS													
Acetone	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0 [4] [33]	<20.0	ug/L	<20.0	<20.0
Benzene	<0.250	<0.250	<0.250	<0.500 [18] [16]	<0.500 [22] [16]	<0.250	<0.250 [22]	0.31	<0.250 [4] [33]	<0.250	ug/L	<0.250	<0.500 [22] [16]
2-Butanone (MEK)	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0 [4] [33]	<10.0	ug/L	<10.0	<10.0
1,1-Dichloroethene	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [4] [33]	<0.500	ug/L	<0.500	<0.500
cis-1,2-Dichloroethene	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [4] [33]	<0.500	ug/L	<0.500	<0.500
trans-1,2-Dichloroethene	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [4] [33]	<0.500	ug/L	<0.500	<0.500
Ethylbenzene	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [4] [33]	<0.500	ug/L	<0.500	<0.500
Tetrachloroethene (PCE)	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [4] [33]	<0.500	ug/L	<0.500	<0.500
Toluene	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [4] [33]	<0.500	ug/L	<0.500	<0.500
Trichloroethene (TCE)	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [4] [33]	<0.500	ug/L	<0.500	<0.500
Vinyl chloride	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [4] [33]	<0.500	ug/L	<0.500	<0.500
m,p-Xylene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00 [4] [33]	<1.00	ug/L	<1.00	<1.00
o-Xylene	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [4] [33]	<0.500	ug/L	<0.500	<0.500

FootNumber	Qualifier	TextBody
1	A-01	Ending CCV fails at 89% (limit 90-110). Data possibly biased slightly low.
2	A-01	Naphthalene was detected in this sample is less than ten times the amount detected in the blank. Results may be biased high.
3	A-01a	Sample reanalyzed outside of hold time, intitial analysis failed to meet QC criteria.
4	A-01b	Naphthalene detected in sample is less then ten times the level detected in the method blank. Results may be biased high.
5	A-01c	Results from 3 voas are not consistent.
6	A-02	Result for 2-Butanone is much higher than the other two VOAs.
7	B	Analyte detected in the associated extraction blank.
8	C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A.
9	E	Estimated Value. The result is above the calibration range of the instrument.
10	M-02	Due to matrix interference, this analyte cannot be accurately quantified. The reported result is estimated.
11	Q-26	Peak separation for Benzo(b) and Benzo(k)fluoranthenes does not meet method specified criteria. Reported result includes the combined area of the two isomers and should be considered the total of Benzo(b+k)Fluoranthenes.
12	Q-30	Recovery for Lab Control Spike (LCS) is below the lower control limit. Data may be biased low.
13	Q-32	Benz(a)Anthracene and Chrysene can not be resolved. Reported result includes the contribution from both analytes and contains a high bias.
14	R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
15	R-04	Reporting levels elevated due to dilution necessary for analysis.
16	R-06	Reporting level raised due to possible carryover from a previous sample.
17	S-04	Surrogate recovery is outside of established control limits due to a sample matrix effect.
18	S-07	Surrogate recovery above control limits. Related target analytes were not detected, or detected below reporting limits, therefore data quality is not affected.
19	X	See Case Narrative.

PW-1 Eq Efflent	08/26/09	08/25/09	08/21/09	08/19/09	08/18/09	08/12/09	08/07/09	08/03/09	Units	Min	Max
pH	10.2	10.4	10.1	9.83	9.82	10.1	9.99	10.1	pH Units	9.82	10.4
pH Temperature	20.7	20.3	23.2	24	17.2	19.8	14	20.8	pH Units	14	24
Total Dissolved Solids	1270	1190	1040	977	996	1020	1040	893	mg/L	893	1270
Total Suspended Solids	43	74	72	143	27	84	10	7	mg/L	7	143
Total Organic Carbon	28	33.5	25.5	28	30.9	31.6	29.9	23.8 [1] [1]	mg/L	23.8 [1] [1]	33.5
CYANIDE											
Cyanide, Total	0.977	0.97	0.873	0.979	1.08	0.81	0.546	1.08	mg/L	0.546	1.08
Cyanide, WAD	0.094	0.0924	0.0988	0.0819	0.0916	0.0868	0.132	0.121	mg/L	0.0819	0.121
Cyanide, Amenable	<0.0200	0.0755	<0.0150	0.0342	0.089	<0.0500	0.174	<0.0500	mg/L	<0.0150	0.174
CATC, chlorinated	0.961	0.894	0.956	0.944	0.987	0.998	0.372	1.13	mg/L	0.372	1.13
Cyanide, Free	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	mg/L	<0.0100	<0.0100
CATC, total	0.977	0.97	0.873	0.979	1.08	0.81	0.546	1.08	mg/L	0.546	1.08
Available Cyanide		0.0088	0.0037			0.0060	0.0033		mg/L	0.0033	0.0088
SEMI-VOLATILE ORGANICS											
Acenaphthylene	179 [4]	164 [3]	198 [6]	228 [3]	130 [6]	264 [6]	116 [3]	169 [11]	ug/L	116 [3]	264 [6]
Acenaphthene	257 [4]	247 [3]	267 [6]	349 [3]	248 [6]	374 [6]	248 [3]	244 [11]	ug/L	244 [11]	374 [6]
Anthracene	<37.2 [4]	<93.0 [3]	61.6 [6]	89.0 [3]	21.1 [6]	96.4 [6]	30.5 [3]	27.2 [11]	ug/L	21.1 [6]	96.4 [6]
Benz(a)anthracene	<37.2 [4]	<93.0 [3]	45.3 [6]	78.2 [3]	4.12 [6]	74.7 [6]	<15.2 [3]	<19.2 [11]	ug/L	4.12 [6]	<93.0 [3]
Benzo(a)pyrene	46.3 [4]	<100 [3] [12] [7]	73.9 [6]	119 [3]	5.98 [6]	109 [6]	<15.2 [3]	<24.0 [11] [28] [7]	ug/L	5.98 [6]	119 [3]
Benzo(b)fluoranthene		<93.0 [3]					<15.2 [3]	<19.2 [11]	ug/L	<15.2 [3]	<93.0 [3]
Benzo(k)fluoranthene		<93.0 [3]					<15.2 [3]	<19.2 [11]	ug/L	<15.2 [3]	<93.0 [3]
Benzo(b+k)fluoranthene(s)	<74.4 [4] [15] [6]		81.3 [6] [16] [6]	143 [3] [15] [6]	7.99 [6] [19] [6]	133 [6] [16] [6]			ug/L	7.99 [6] [19] [6]	143 [3] [15] [6]
Benzo(g,h,i)perylene	<37.2 [4]	<93.0 [3]	45.6 [6]	64.9 [3]	3.59 [6]	71.7 [6]	<15.2 [3]	<19.2 [11]	ug/L	3.59 [6]	<93.0 [3]
Carbazole	129 [4]	114 [3]	157 [6]	150 [3]	151 [6]	184 [6]	129 [3]	131 [11]	ug/L	114 [3]	184 [6]
Chrysene	<37.2 [4]	<93.0 [3]	45.6 [6]	96.4 [3]	4.49 [6]	94.7 [6]	<15.2 [3]	<19.2 [11]	ug/L	4.49 [6]	96.4 [3]
Dibenz(a,h)anthracene	<37.2 [4]	<93.0 [3]	<18.6 [6]	<38.1 [3]	<1.90 [6]	<18.6 [6]	<15.2 [3]	<19.2 [11]	ug/L	<1.90 [6]	<93.0 [3]
Dibenzofuran	<37.2 [4]	<93.0 [3]	25.8 [6]	<38.1 [3]	22.9 [6]	35.0 [6]	20.1 [3]	20.8 [11]	ug/L	20.1 [3]	<93.0 [3]
Fluoranthene	70.1 [4]	<93.0 [3]	182 [6]	299 [3]	32.6 [6]	269 [6]	33.4 [3]	35.8 [11]	ug/L	32.6 [6]	299 [3]
Fluorene	109 [4]	107 [3]	135 [6]	171 [3]	105 [6]	180 [6]	107 [3]	100 [11]	ug/L	100 [11]	180 [6]
Indeno(1,2,3-cd)pyrene	<37.2 [4]	<93.0 [3]	35.1 [6]	66.1 [3]	2.27 [6] [8] [5]	58.6 [6]	<15.2 [3]	<19.2 [11]	ug/L	2.27 [6] [8] [5]	<93.0 [3]
2-Methylnaphthalene	823 [4]	750 [3]	835 [6]	963 [3]	534 [6]	1070 [6]	36.7 [3]	629 [9] [11] [3]	ug/L	36.7 [3]	1070 [6]
Naphthalene	7770 [4]	7540 [3]	8050 [3] [6] [3]	8690 [1] [3] [3]	3450 [4] [6] [3]	9760 [3] [6] [3]	21.7 [3]	4200 [9] [11] [3]	ug/L	21.7 [3]	9760 [3] [6] [3]
Phenanthrene	278 [4]	311 [3]	450 [6]	706 [3]	230 [6]	717 [6]	259 [3]	251 [11]	ug/L	230 [6]	717 [6]
Pyrene	82.5 [4]	104 [3]	222 [6]	364 [3]	36.3 [6]	323 [6]	34.2 [3]	36.4 [11]	ug/L	34.2 [3]	364 [3]
2-Chlorophenol	<465 [4]	<1160 [3]	<233 [6]	<476 [3]	<23.8 [6]	<233 [6]	<190 [3]	<240 [11]	ug/L	<23.8 [6]	<1160 [3]
2,4-Dichlorophenol	<465 [4]	<1160 [3]	<233 [6]	<476 [3]	<23.8 [6]	<233 [6]	<190 [3]	<240 [11]	ug/L	<23.8 [6]	<1160 [3]
2,4-Dimethylphenol	<465 [4]	<1160 [3]	<233 [6]	<476 [3]	<23.8 [6]	<233 [6]	<190 [3]	<240 [11]	ug/L	<23.8 [6]	<1160 [3]
4,6-Dinitro-2-methylphenol	<465 [4]	<1160 [3]	<233 [6]	<476 [3]	<23.8 [6]	<233 [6]	<190 [3]	<240 [11]	ug/L	<23.8 [6]	<1160 [3]
2-Methylphenol	<465 [4]	<1160 [3]	<233 [6]	<476 [3]	<23.8 [6]	<233 [6]	<190 [3]	<240 [11]	ug/L	<23.8 [6]	<1160 [3]
2-Nitrophenol	<465 [4]	<1160 [3]	<233 [6]	<476 [3]	<23.8 [6]	<233 [6]	<190 [3]	<240 [11]	ug/L	<23.8 [6]	<1160 [3]
4-Nitrophenol	<465 [4]	<1160 [3]	<233 [6]	<476 [3]	<23.8 [6]	<233 [6]	<190 [3]	<240 [11]	ug/L	<23.8 [6]	<1160 [3]
2,4,5-Trichlorophenol	<465 [4]	<1160 [3]	<233 [6]	<476 [3]	<23.8 [6]	<233 [6]	<190 [3]	<240 [11]	ug/L	<23.8 [6]	<1160 [3]
2,4,6-Trichlorophenol	<465 [4]	<1160 [3]	<233 [6]	<476 [3]	<23.8 [6]	<233 [6]	<190 [3]	<240 [11]	ug/L	<23.8 [6]	<1160 [3]
Pentachlorophenol (PCP)	<465 [4]	<1160 [3]	<233 [6]	<476 [3]	<23.8 [6]	<233 [6]	<190 [3]	<240 [11]	ug/L	<23.8 [6]	<1160 [3]
Phenol	<465 [4]	<1160 [3]	<233 [6]	<476 [3]	52.4 [6]	<233 [6]	<190 [3]	<240 [11]	ug/L	<23.8 [6]	<1160 [3]
METALS											
Hexavalent Chromium	<0.0100 [1] [2]	<0.0100	<0.0100	<0.0100	<0.0200 [20] [7]	<0.0100	<0.0200		mg/L	<0.0100	<0.0200
Silver	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Cadmium	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Chromium	1.17	<1.00	1.23	<1.00	1.18	1.36	1.02	1.41	ug/L	<1.00	1.41
Copper	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	ug/L	<5.00	<5.00
Iron	6780	13100	14800	15600	7590	10800	4640	1050	ug/L	1050	15600
Mercury	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	ug/L	<0.0100	<0.0100
Manganese	624	1150	1260	1720	675	1070	444	265	ug/L	265	1720
Nickel	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Lead	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Selenium	1.49	<1.00	<1.00	<1.00	<1.00	1.02	1.32	1.03	ug/L	<1.00	1.49
Zinc	20.9	56.1	50.5	126	65.2	96.2	54.2	20.6	ug/L	20.6	126
Calcium	11000	10500	13200	31200	2410	18000	3700	4450	ug/L	2410	18000
Chromium		<1.00							ug/L	<1.00	<1.00
Hardness (Calc by 6020)	194	202	207	260	178	218	198	200	mg CaCO3/L	178	260
Magnesium	40400	42600	42200	44200	41800	42100	45900	45800	ug/L	40400	45800
Trivalent Chromium	<11.0	<11.0	<11.0	<11.0	<21.0	<11.0	<21.0	1.41	ug/L	1.41	<21.0
VOLATILE ORGANICS											
Acetone	<2000	<2000	<1000	<1000	<1000	<1000	<1000	<400	ug/L	<400	<2000
Benzene	6150	6590	7200	5590	3620	5250	4150	4570	ug/L	3620	7200
2-Butanone (MEK)	<1000	<1000	<500	<500	<500	<500	<500	<200	ug/L	<200	<1000
1,1-Dichloroethene	<50.0	<50.0	<25.0	<25.0	<25.0	<25.0	<25.0	<10.0	ug/L	<10.0	<50.0
cis-1,2-Dichloroethene	<50.0	<50.0	<25.0	<25.0	<25.0	<25.0	<25.0	<10.0	ug/L	<10.0	<50.0
trans-1,2-Dichloroethene	<50.0	<50.0	<25.0	<25.0	<25.0	<25.0	<25.0	<10.0	ug/L	<10.0	<50.0
Ethylbenzene	669	602	868	613	42	622	118	101	ug/L	42	868
Tetrachloroethene (PCE)	<50.0	<50.0	<25.0	<25.0	<25.0	<25.0	<25.0	<10.0	ug/L	<10.0	<50.0
Toluene	159	152	200	136	102	160	84	64.8	ug/L	64.8	200
Trichloroethene (TCE)	<50.0	<50.0	<25.0	<25.0	<25.0	<25.0	<25.0	<10.0	ug/L	<10.0	<50.0
Vinyl chloride	<50.0	<50.0	<25.0	<25.0	<25.0	<25.0	<25.0	<10.0	ug/L	<10.0	<50.0
m,p-Xylene	372	330	463	330	256	426	196	227	ug/L	196	463
o-Xylene	187	190	242	179	150	218	125	148	ug/L	125	242

FootNumber	Qualifier	TextBody
1	A-01	Ending CCV fails at 89% (limit 90-110). Data possibly biased slightly low.
2	A-01	Sample analyzed 5 min past EPA recommended hold time.
3	B	Analyte detected in the associated extraction blank.
4	C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A.
5	M-02	Due to matrix interference, this analyte cannot be accurately quantified. The reported result is estimated.
6	Q-26	Peak separation for Benzo(b) and Benzo(k)fluoranthenes does not meet method specified criteria. Reported result includes the combined area of the two isomers and should be considered the
7	R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
8	S-04	Surrogate recovery is outside of established control limits due to a sample matrix effect.
9	S-05	Surrogate recovery cannot be accurately quantified due to sample dilution required from high analyte concentration and/or matrix interference.
10	S-06	Surrogate recovery is outside of established control limits.

	08/26/09	08/25/09	08/21/09	08/19/09	08/18/09	08/12/09	08/07/09	08/03/09	07/23/09	Units	Min	Max
MW-1 Eq Eff												
pH	9.92	9.65	10.5	10.1	10	10.4	10.1	7.72	10	pH Units	7.72	10.5
pH Temperature	21	21.3	24.8	23.7	17.3	19.8	15.7	21.5	13.7	pH Units	13.7	24.8
Total Dissolved Solids	3490	3180	3140	3070	2810	2900	2920	3170	982	mg/L	982	3490
Total Suspended Solids	3530	55	184	52	5	91	64	42	90	mg/L	5	3530
Total Organic Carbon	14.6	3.74	6.24	6.09	6.04	5	6.48	4.75 [1] [1]	6.75	mg/L	3.74	14.6
CYANIDE												
Cyanide, Total	0.585	0.434	0.412	0.387	0.415	0.322	0.299	0.399	0.401	mg/L	0.299	0.585
Cyanide, WAD	0.0498	0.0765	0.0592	0.0636	0.0687	0.0703	0.0711	0.0654	0.0641	mg/L	0.0498	0.0765
Cyanide, Amenable	<0.0300	<0.0100	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	mg/L	<0.00500	<0.0300
CATC, chlorinated	0.739	0.449	0.472	0.435	0.489	0.462	0.438	0.429	0.436	mg/L	0.429	0.739
Cyanide, Free	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	mg/L	<0.0100	<0.0100
CATC, total	0.585	0.434	0.412	0.387	0.415	0.322	0.299	0.399	0.401	mg/L	0.299	0.585
Available Cyanide		0.0093	0.0041			0.0045	0.0061			mg/L	0.0041	0.0093
SEMI-VOLATILE ORGANICS												
Acenaphthylene	<0.100 [4]	<0.0755 [3]	<0.0769 [6]	<0.0769 [3]	<0.0755 [6]	<0.0777 [6]	<0.0779 [3]	<0.152	0.117	ug/L	<0.0755 [3]	<0.152
Acenaphthene	<0.100 [4]	<0.755 [3] [12] [8]	<0.0769 [6]	<0.0769 [3]	<0.0755 [6]	<0.874 [6] [17] [8]	<0.0779 [3]	<0.152	0.281	ug/L	<0.0755 [3]	<0.152
Anthracene	<0.100 [4]	<0.0755 [3]	<0.0769 [6]	<0.0769 [3]	<0.0755 [6]	<0.0777 [6]	<0.0779 [3]	<0.152	<0.0777	ug/L	<0.0755 [3]	<0.152
Benz(a)anthracene	<0.100 [4]	<0.0755 [3]	<0.0769 [6]	<0.0769 [3]	<0.0755 [6]	<0.0777 [6]	<0.0779 [3]	<0.152	<0.0777	ug/L	<0.0755 [3]	<0.152
Benzo(a)pyrene	<0.100 [4]	<0.0755 [3]	<0.0808 [6] [18] [8]	<0.0769 [3]	<0.0755 [6]	<0.0777 [6]	<0.0876 [3] [14] [8]	<0.152	<0.0777	ug/L	<0.0755 [3]	<0.152
Benzo(b)fluoranthene	<0.100 [4]	<0.0755 [3]	<0.0769 [6]	<0.0769 [3]	<0.0755 [6]	<0.0777 [6]	<0.0779 [3]	<0.152	<0.0777	ug/L	<0.0755 [3]	<0.152
Benzo(k)fluoranthene	<0.100 [4]	<0.0755 [3]	<0.0769 [6]	<0.0769 [3]	<0.0755 [6]	<0.0777 [6]	<0.0779 [3]	<0.152	<0.0777	ug/L	<0.0755 [3]	<0.152
Benzo(g,h,i)perylene	<0.100 [4]	<0.0755 [3]	<0.0769 [6]	<0.0769 [3]	<0.0755 [6]	<0.0777 [6]	<0.0779 [3]	<0.152	0.129	ug/L	<0.0755 [3]	<0.152
Carbazole	<0.100 [4]	<0.0755 [3]	<0.0769 [6]	<0.0769 [3]	<0.0755 [6]	<0.0777 [6]	0.0988 [3]	<0.152	<0.0777	ug/L	<0.0755 [3]	0.0988 [3]
Chrysene	<0.100 [4]	<0.0755 [3]	<0.0769 [6]	<0.0769 [3]	<0.0755 [6]	<0.0777 [6]	<0.0779 [3]	<0.152	<0.0777	ug/L	<0.0755 [3]	<0.152
Dibenz(a,h)anthracene	<0.100 [4]	<0.0755 [3]	<0.0769 [6]	<0.0769 [3]	<0.0755 [6]	<0.0777 [6]	<0.0779 [3]	<0.152	<0.0777	ug/L	<0.0755 [3]	<0.152
Dibenzofuran	<0.100 [4]	<0.0755 [3]	<0.0769 [6]	<0.0769 [3]	<0.0755 [6]	<0.0777 [6]	<0.0779 [3]	<0.152	<0.0777	ug/L	<0.0755 [3]	<0.152
Fluoranthene	<0.100 [4]	<0.0755 [3]	<0.0769 [6]	<0.0769 [3]	<0.0755 [6]	<0.0777 [6]	<0.0779 [3]	<0.152	0.159	ug/L	<0.0755 [3]	0.159
Fluorene	<0.100 [4]	<0.0755 [3]	<0.0769 [6]	<0.0769 [3]	<0.0755 [6]	<0.0777 [6]	<0.0779 [3]	<0.152	0.132	ug/L	<0.0755 [3]	<0.152
Indeno(1,2,3-cd)pyrene	<0.100 [4]	<0.0755 [3]	<0.0769 [6]	<0.0769 [3]	<0.0755 [6]	<0.0777 [6]	<0.0779 [3]	<0.152	<0.0777	ug/L	<0.0755 [3]	<0.152
2-Methylnaphthalene	<0.100 [4]	<0.0755 [3]	0.0973 [6]	0.0811 [3]	<0.0755 [6]	<0.0777 [6]	<0.0779 [3]	<0.152	0.675	ug/L	<0.0755 [3]	0.675
Naphthalene	0.484 [4]	0.312 [3]	0.577 [1] [3] [6] [2] [5]	0.408 [1] [3] [5]	0.215 [3] [4] [6] [3] [5]	0.358 [3] [6] [5]	<0.0779 [3]	0.349 [3] [9] [4] [5]	3.62	ug/L	<0.0779 [3]	3.62
Phenanthrene	<0.100 [4]	<0.0755 [3]	<0.0769 [6]	<0.0769 [3]	<0.0755 [6]	<0.0777 [6]	<0.0779 [3]	<0.152	0.439	ug/L	<0.0755 [3]	0.439
Pyrene	<0.100 [4]	<0.0755 [3]	<0.0769 [6]	<0.0769 [3]	<0.0755 [6]	<0.0777 [6]	<0.0779 [3]	0.156	0.169	ug/L	<0.0755 [3]	0.169
2-Chlorophenol	<1.25 [4]	<0.943 [3]	<0.962 [6]	<0.962 [3]	<0.943 [6]	<0.971 [6]	<0.974 [3]	<1.90	<0.971	ug/L	<0.943 [3]	<1.90
2,4-Dichlorophenol	<1.25 [4]	<0.943 [3]	<0.962 [6]	<0.962 [3]	<0.943 [6]	<0.971 [6]	<0.974 [3]	<1.90	<0.971	ug/L	<0.943 [3]	<1.90
2,4-Dimethylphenol	<1.25 [4]	<0.943 [3]	<0.962 [6]	<0.962 [3]	<0.943 [6]	<0.971 [6]	<0.974 [3]	<1.90	<0.971	ug/L	<0.943 [3]	<1.90
4,6-Dinitro-2-methylphenol	<1.25 [4]	<0.943 [3]	<0.962 [6]	<0.962 [3]	<0.943 [6]	<0.971 [6]	<0.974 [3]	<1.90	<0.971	ug/L	<0.943 [3]	<1.90
2-Methylphenol	<1.25 [4]	<0.943 [3]	<0.962 [6]	<0.962 [3]	<0.943 [6]	<0.971 [6]	<0.974 [3]	<1.90	<0.971	ug/L	<0.943 [3]	<1.90
2-Nitrophenol	<1.25 [4]	<0.943 [3]	<0.962 [6]	<0.962 [3]	<0.943 [6]	<0.971 [6]	<0.974 [3]	<1.90	<0.971	ug/L	<0.943 [3]	<1.90
4-Nitrophenol	<1.25 [4]	<0.943 [3]	<0.962 [6]	<0.962 [3]	<0.943 [6]	<0.971 [6]	<0.974 [3]	<1.90	<0.971	ug/L	<0.943 [3]	<1.90
2,4,5-Trichlorophenol	<1.25 [4]	<0.943 [3]	<0.962 [6]	<0.962 [3]	<0.943 [6]	<0.971 [6]	<0.974 [3]	<1.90	<0.971	ug/L	<0.943 [3]	<1.90
2,4,6-Trichlorophenol	<1.25 [4]	<0.943 [3]	<0.962 [6]	<0.962 [3]	<0.943 [6]	<0.971 [6]	<0.974 [3]	<1.90	<0.971	ug/L	<0.943 [3]	<1.90
Pentachlorophenol (PCP)	<1.25 [4]	<0.943 [3]	<0.962 [6]	<0.962 [3]	<0.943 [6]	<0.971 [6]	<0.974 [3]	<1.90	<0.971	ug/L	<0.943 [3]	<1.90
Phenol	<1.25 [4]	<0.943 [3]	<0.962 [6]	<0.962 [3]	<0.943 [6]	<0.971 [6]	<0.974 [3]	<1.90	<0.971	ug/L	<0.943 [3]	<1.90
METALS												
Hexavalent Chromium	<0.0100	<0.0100	<0.0100	<0.0500 [17] [9]	<0.0400 [20] [8]	<0.100 [17] [8]	<0.0200		<0.0100 [6] [7]	mg/L	<0.0100	<0.0500 [17] [9]
Silver	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Cadmium	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Chromium	5.66	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	5.66
Copper	7.99	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	ug/L	<5.00	7.99
Iron	925000	6900	7500	3960	682	6770	6270	22200	6490	ug/L	682	925000
Mercury	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	ug/L	<0.0100	<0.0100
Manganese	32300	225	276	126	6.62	227	268	786	282	ug/L	126	32300
Nickel	16.6	1.06	1.12	1.1	<1.00	1.07	<1.00	1.38	1.97	ug/L	<1.00	16.6
Lead	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Selenium	2.64	3.02 [1] [5]	<1.00	1.6	1.22	1.32	1.31	1.13	2.52	ug/L	1.13	3.02 [1] [5]
Zinc	26.3	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	4.87	<4.00	ug/L	<4.00	26.3
Calcium	1390000	80700	81700	72400	63700	72100	67600	138000	163000	ug/L	63700	1390000
Chromium		<1.00								ug/L	<1.00	<1.00
Hardness (Calc by 6020)	6920	404	442	722	771	819	854	1020	1200	mg CaCO3/L	404	6920
Magnesium	838000	49200	57800	131000	149000	155000	166000	164000	193000	ug/L	49200	838000
Trivalent Chromium	<11.0	<11.0	<11.0	<51.0	<41.0	<101	<21.0	<1.00	<11.0	ug/L	<1.00	<101
VOLATILE ORGANICS												
Acetone	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0 [22]	<20.0	<20.0	<20.0	ug/L	<20.0	<20.0
Benzene	<0.250	<0.250	<0.250	<0.500 [18] [10]	<0.250	<0.250 [22]	<0.250	<0.250	<0.250	ug/L	<0.250 [22]	<0.500 [18] [10]
2-Butanone (MEK)	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0 [22]	<10.0	<10.0	17.9	ug/L	<10.0	17.9
1,1-Dichloroethene	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [22]	<0.500	<0.500	<0.500	ug/L	<0.500	<0.500
cis-1,2-Dichloroethene	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [22]	<0.500	<0.500	<0.500	ug/L	<0.500	<0.500
trans-1,2-Dichloroethene	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [22]	<0.500	<0.500	<0.500	ug/L	<0.500	<0.500
Ethylbenzene	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [22]	<0.500	<0.500	<0.500	ug/L	<0.500	<0.500
Tetrachloroethene (PCE)	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [22]	<0.500	<0.500	<0.500	ug/L	<0.500	<0.500
Toluene	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [22]	<0.500	<0.500	<0.500	ug/L	<0.500	<0.500
Trichloroethene (TCE)	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [22]	<0.500	<0.500	<0.500	ug/L	<0.500	<0.500
Vinyl chloride	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [22]	<0.500	<0.500	<0.500	ug/L	<0.500	<0.500
m,p-Xylene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00 [22]	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
o-Xylene	0.54	<0.500	<0.500	<0.500	<0.500	<0.500 [22]	<0.500	<0.500	<0.500	ug/L	<0.500	0.54

FootNumber	Qualifier	TextBody
1	A-01	Ending CCV fails at 89% (limit 90-110). Data possibly biased slightly low.
2	A-01	Naphthalene was detected in this sample is less than ten times the amount detected in the blank. Results may be biased high.
3	A-01b	Naphthalene detected in sample is less then ten times the level detected in the method blank. Results may be biased high.
4	A-01b	Result less than 10 times the amount detected in the method blank. Results may be biased high.
5	B	Analyte detected in the associated extraction blank.
6	C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A.
7	M-02	Due to matrix interference, this analyte cannot be accurately quantified. The reported result is estimated.
8	R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
9	R-04	Reporting levels elevated due to dilution necessary for analysis.
10	R-06	Reporting level raised due to possible carryover from a previous sample.
11	S-04	Surrogate recovery is outside of established control limits due to a sample matrix effect.
12	S-07	Surrogate recovery above control limits. Related target analytes were not detected, or detected below reporting limits, therefore data quality is not affected.
13	X	See Case Narrative.

Combined IPC Inf		08/26/09	08/25/09	08/21/09	08/19/09	08/18/09	08/12/09	08/07/09	08/03/09	Units	**Min**	**Max**
		NW-3	NW-3	NW-3	NW-3	NW-3	NW-3	NW-3	NW-3			
Dissolved Iron	ug/L	323 [5] [2]	339 [4] [2]	368 [7] [2]	372 [4] [2]	366 [7] [2]	369 [7] [2]	381 [4] [2]	344 [13] [2]	ug/L	323 [5] [2]	381 [4] [2]
Dissolved Manganese	ug/L	1.94 [5] [2]	12.2 [4] [2]	11.1 [7] [2]	56.1 [4] [2]	105 [7] [2]	21.7 [7] [2]	14.2 [4] [2]	14.6 [13] [2]	ug/L	1.94 [5] [2]	105 [7] [2]
Arsenic	ug/L	4.21	2.26 [1] [1]	2.64 [3] [1]	2.27 [1] [1]	9.72	2.63	1.88	1.6	ug/L	1.6	9.72
Iron	ug/L	344000	11400	12900	11800	110000	9930	4940	8500	ug/L	4940	344000
Manganese	ug/L	11900	869	972	1210	9750	814	375	537	ug/L	375	11900
FootNumber	Qualifier	TextBody										
1	B	Analyte detected in the associated extraction blank.										
2	FILT	Sample was lab filtered and acid preserved prior to analysis. See sample preparation section of report for date and time of filtration.										

	Units	08/26/09	08/25/09	08/21/09	08/19/09	08/18/09	08/12/09	08/07/09	08/03/09	Units	Min	Max
IPC Effluent												
Dissolved Iron	ug/L	298 [5] [2]	337 [4] [2]	368 [7] [2]	356 [4] [2]	354 [7] [2]	353 [10] [2]	347 [4] [2]	294 [13] [2]	ug/L	294 [13] [2]	368 [7] [2]
Dissolved Manganese	ug/L	2.79 [5] [2]	13.3 [4] [2]	21.7 [7] [2]	46.3 [4] [2]	42.9 [7] [2]	24.3 [10] [2]	20.7 [4] [2]	7.28 [13] [2]	ug/L	2.79 [5] [2]	46.3 [4] [2]
Arsenic	ug/L	1.41	1.74 [1] [1]	1.66 [3] [1]	1.82 [1] [1]	2.24	2.12	1.76	1.38	ug/L	1.38	2.24
Iron	ug/L	1260	2060	2980	2360	5070	3960	3660	910	ug/L	910	5070
Manganese	ug/L	50.2	154	233	251	427	346	284	76.3	ug/L	50.2	427
FootNumber	Qualifier	TextBody										
1	B	Analyte detected in the associated extraction blank.										
2	FILT	Sample was lab filtered and acid preserved prior to analysis. See sample preparation section of report for date and time of filtration.										

Cyanide Destruct Effluent	08/26/09	08/25/09	08/21/09	08/19/09	08/18/09	08/12/09	08/07/09	08/03/09	Units	Min	Max
Total Organic Carbon	30.8	22.8	31.0 [2] [2]	26.3	21.5	13.2	24.3	22.5 [1] [1]	mg/L	13.2	31.0 [2] [2]
CYANIDE											
Cyanide, Total	0.708	0.705	0.686	0.709	0.804	0.457	0.458	0.723	mg/L	0.457	0.804
Cyanide, WAD	0.0789	0.0989	0.0663	0.0693	0.0825	0.0503	0.0777	0.104	mg/L	0.0503	0.104
Cyanide, Amenable	<0.0100	<0.0100	<0.0200	0.0951	0.131	<0.0100	<0.0100	<0.0100	mg/L	<0.0100	0.131
CATC, chlorinated	0.806	0.773	1.65	0.614	0.673	0.807	0.904	0.837	mg/L	0.614	1.65
Cyanide, Free	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	mg/L	<0.0100	<0.0100
CATC, total	0.708	0.705	0.686	0.709	0.804	0.457	0.458	0.723	mg/L	0.457	0.804
Available Cyanide		0.0088	0.0056			0.0190	0.0230		mg/L	0.0056	0.0230
SEMI-VOLATILE ORGANICS											
Acenaphthylene	<18.6 [4]	46.1 [3]	37.6 [6]	<19.0 [3]	<19.0 [6]	40.3 [6]	79.4 [3]	59.8 [11]	ug/L	<18.6 [4]	79.4 [3]
Acenaphthene	85.7 [4]	102 [3]	131 [6]	120 [3]	60.1 [6]	137 [6]	155 [3]	77.3 [11]	ug/L	60.1 [6]	155 [3]
Anthracene	<18.6 [4]	<18.6 [3]	<18.6 [6]	<19.0 [3]	<19.0 [6]	<18.6 [6]	<38.5 [3]	<38.5 [11]	ug/L	<18.6 [6]	<38.5 [11]
Benz(a)anthracene	<18.6 [4]	<18.6 [3]	<18.6 [6]	<19.0 [3]	<19.0 [6]	<18.6 [6]	<38.5 [3]	<38.5 [11]	ug/L	<18.6 [6]	<38.5 [11]
Benzo(a)pyrene	<18.6 [4]	<18.6 [3]	<22.3 [6] [18] [7]	<21.9 [3] [16] [7]	<21.4 [6] [20] [7]	28.8 [6]	<38.5 [3]	<38.5 [11]	ug/L	<18.6 [6]	<38.5 [11]
Benzo(b)fluoranthene	<18.6 [4]	<18.6 [3]	<18.6 [6]	<19.0 [3]	<19.0 [6]		<38.5 [3]	<38.5 [11]	ug/L	<18.6 [6]	<38.5 [11]
Benzo(k)fluoranthene	<18.6 [4]	<18.6 [3]	<18.6 [6]	<19.0 [3]	<19.0 [6]		<38.5 [3]	<38.5 [11]	ug/L	<18.6 [6]	<38.5 [11]
Benzo(b+k)fluoranthene(s)						<37.2 [6] [16] [6]			ug/L	<37.2 [6] [16] [6]	<37.2 [6] [16] [6]
Benzo(g,h,i)perylene	<18.6 [4]	<18.6 [3]	<18.6 [6]	<19.0 [3]	<19.0 [6]	<18.6 [6]	<38.5 [3]	<38.5 [11]	ug/L	<18.6 [6]	<38.5 [11]
Carbazole	36.9 [4]	82.9 [3]	83.6 [6]	53.9 [3]	19.4 [6]	94.6 [6]	106 [3]	63.9 [11]	ug/L	19.4 [6]	106 [3]
Chrysene	<18.6 [4]	<18.6 [3]	<18.6 [6]	<19.0 [3]	<19.0 [6]	<18.6 [6]	<38.5 [3]	<38.5 [11]	ug/L	<18.6 [6]	<38.5 [11]
Dibenz(a,h)anthracene	<18.6 [4]	<18.6 [3]	<18.6 [6]	<19.0 [3]	<19.0 [6]	<18.6 [6]	<38.5 [3]	<38.5 [11]	ug/L	<18.6 [6]	<38.5 [11]
Dibenzofuran	<18.6 [4]	<18.6 [3]	<18.6 [6]	<19.0 [3]	<19.0 [6]	<18.6 [6]	<38.5 [3]	<38.5 [11]	ug/L	<18.6 [6]	<38.5 [11]
Fluoranthene	<18.6 [4]	<18.6 [3]	26.2 [6]	26.3 [3]	29.3 [6]	54.8 [6]	<38.5 [3]	<38.5 [11]	ug/L	<18.6 [3]	54.8 [6]
Fluorene	48.6 [4]	48.4 [3]	63.4 [6]	60.0 [3]	68.9 [6]	67.7 [6]	66.4 [3]	<38.5 [11]	ug/L	<38.5 [11]	68.9 [6]
Indeno(1,2,3-cd)pyrene	<18.6 [4]	<18.6 [3]	<18.6 [6]	<19.0 [3]	<19.0 [6]	<18.6 [6]	<38.5 [3]	<38.5 [11]	ug/L	<18.6 [6]	<38.5 [11]
2-Methylnaphthalene	325 [4]	274 [3]	397 [6]	387 [3]	272 [6]	365 [6]	74.4 [3]	189 [9] [11] [3]	ug/L	74.4 [3]	397 [6]
Naphthalene	3350 [4]	2620 [3]	4100 [3] [4] [6] [3] [4]	3940 [1] [3] [3]	2210 [4] [6] [3]	3460 [3] [6] [3]	440 [3]	1550 [9] [11] [3]	ug/L	440 [3]	4100 [3] [4] [6] [3] [4]
Phenanthrene	97.6 [4]	115 [3]	144 [6]	138 [3]	126 [6]	203 [6]	154 [3]	72.2 [11]	ug/L	72.2 [11]	203 [6]
Pyrene	<18.6 [4]	19.2 [3]	29.1 [6]	29.8 [3]	27.9 [6]	60.9 [6]	<38.5 [3]	<38.5 [11]	ug/L	<18.6 [4]	60.9 [6]
2-Chlorophenol	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<238 [6]	<233 [6]	<481 [3]	<481 [11]	ug/L	<233 [6]	<481 [11]
2,4-Dichlorophenol	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<238 [6]	<233 [6]	<481 [3]	<481 [11]	ug/L	<233 [6]	<481 [11]
2,4-Dimethylphenol	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<238 [6]	<233 [6]	<481 [3]	<481 [11]	ug/L	<233 [6]	<481 [11]
4,6-Dinitro-2-methylphenol	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<238 [6]	<233 [6]	<481 [3]	<481 [11]	ug/L	<233 [6]	<481 [11]
2-Methylphenol	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<238 [6]	<233 [6]	<481 [3]	<481 [11]	ug/L	<233 [6]	<481 [11]
2-Nitrophenol	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<238 [6]	<233 [6]	<481 [3]	<481 [11]	ug/L	<233 [6]	<481 [11]
4-Nitrophenol	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<238 [6]	<233 [6]	<481 [3]	<481 [11]	ug/L	<233 [6]	<481 [11]
2,4,5-Trichlorophenol	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<238 [6]	<233 [6]	<481 [3]	<481 [11]	ug/L	<233 [6]	<481 [11]
2,4,6-Trichlorophenol	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<238 [6]	<233 [6]	<481 [3]	<481 [11]	ug/L	<233 [6]	<481 [11]
Pentachlorophenol (PCP)	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<238 [6]	<233 [6]	<481 [3]	<481 [11]	ug/L	<233 [6]	<481 [11]
Phenol	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<238 [6]	<233 [6]	<481 [3]	<481 [11]	ug/L	<233 [6]	<481 [11]
METALS											
Arsenic	2.03 [2] [3]	2.57	2.53	2.46	2.67	2.18	2.63	2.09	ug/L	2.03 [2] [3]	2.67
VOLATILE ORGANICS											
Acetone	<1000	<1000	<400	<400	<400	<400	<400	<200	ug/L	<200	<1000
Benzene	2100	2850	3150	2380	1610	2690	1740	1880	ug/L	1610	3150
2-Butanone (MEK)	<500	<500	<200	<200	<200	<200	<200	<100	ug/L	<100	<500
1,1-Dichloroethene	<25.0	<25.0	<10.0	<10.0	<10.0	<10.0	<10.0	<5.00	ug/L	<5.00	<25.0
cis-1,2-Dichloroethene	<25.0	<25.0	<10.0	<10.0	<10.0	<10.0	<10.0	<5.00	ug/L	<5.00	<25.0
trans-1,2-Dichloroethene	<25.0	<25.0	<10.0	<10.0	<10.0	<10.0	<10.0	<5.00	ug/L	<5.00	<25.0
Ethylbenzene	186	234	342	229	60.6	286	42	44.5	ug/L	42	342
Tetrachloroethene (PCE)	<25.0	<25.0	<10.0	<10.0	<10.0	<10.0	<10.0	<5.00	ug/L	<5.00	<25.0
Toluene	47	65.5	79.2	59	39.4	77.4	27.2	22	ug/L	22	79.2
Trichloroethene (TCE)	<25.0	<25.0	<10.0	<10.0	<10.0	<10.0	<10.0	<5.00	ug/L	<5.00	<25.0
Vinyl chloride	<25.0	<25.0	<10.0	<10.0	<10.0	<10.0	<10.0	<5.00	ug/L	<5.00	<25.0
m,p-Xylene	91	132	181	123	74.8	180	35.4	50.7	ug/L	35.4	181
o-Xylene	56	77.5	103	78.2	51.6	106	35.2	41.6	ug/L	35.2	106

FootNumber	Qualifier	TextBody
1	A-01	Ending CCV fails at 89% (limit 90-110). Data possibly biased slightly low.
2	A-01a	Used HCl preserved VOA. No H2SO4 preserved provided.
3	B	Analyte detected in the associated extraction blank.
4	B-01	Analyte detected in the extraction blank at a level greater than the MRL. All associated samples contain the same analyte at a level that is greater than 10 times the method blank.
5	C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A.
6	Q-26	Peak separation for Benzo(b) and Benzo(k)fluoranthenes does not meet method specified criteria. Reported result includes the combined area of the two isomers and should be considered the total of Benzo(b+k)F
7	R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
8	S-01	Surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interference.
9	S-04	Surrogate recovery is outside of established control limits due to a sample matrix effect.
10	S-05	Surrogate recovery cannot be accurately quantified due to sample dilution required from high analyte concentration and/or matrix interference.
11	S-06	Surrogate recovery is outside of established control limits.
12	S-07	Surrogate recovery above control limits. Related target analytes were not detected, or detected below reporting limits, therefore data quality is not affected.

Bag Filter Effluent	Units	08/26/09	08/25/09	08/21/09	08/19/09	08/18/09	08/12/09	08/11/09	08/07/09	08/03/09	Units	Min	Max
Total Suspended Solids	mg/L	5	<5.00	6	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	mg/L	<5.00	6
Total Organic Carbon	mg/L	29	21.1	17.5	20.3	18.9	20.9	24.6	21.5	23.4 [1] [1]	mg/L	17.5	29
Iron	ug/L	366 [5] [6]	419 [4] [6]	427 [7] [6]	418 [4] [6]	411 [7] [6]	413 [10] [6]	467 [7] [6]	442 [4] [6]	2880 [13] [6]	ug/L	366 [5] [6]	2880 [13] [6]
Manganese	ug/L	49.0 [5] [6]	165 [4] [6]	62.2 [7] [6]	104 [4] [6]	223 [7] [6]	110 [10] [6]	123 [7] [6]	169 [4] [6]	578 [13] [6]	ug/L	49.0 [5] [6]	578 [13] [6]
CYANIDE													
Cyanide, Total	mg/L	0.763	0.718	0.716	0.773	0.807	0.706	0.709	0.611	0.703	mg/L	0.611	0.807
Cyanide, WAD	mg/L	0.0801	0.0755	0.0532	0.0671	0.083	0.0585	0.0161	0.0827	0.124	mg/L	0.0532	0.124
Cyanide, Amenable	mg/L	<0.0100	<0.0100	<0.0100	0.0482	0.138	<0.0100	<0.0100	<0.0100	<0.0100	mg/L	<0.0100	0.138
CATC, chlorinated	mg/L	0.854	0.785	0.789	0.725	0.668	0.876	0.808	0.858	0.804	mg/L	0.668	0.876
Cyanide, Free	mg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0102	<0.0100	mg/L	<0.0100	0.0102
CATC, total	mg/L	0.763	0.718	0.716	0.773	0.807	0.706	0.709	0.611	0.703	mg/L	0.611	0.807
Available Cyanide	mg/L		0.0089	0.0051			0.033		0.029		mg/L	0.0051	0.0330
SEMI-VOLATILE ORGANICS													
Acenaphthylene	ug/L	52.2 [4]	104 [3]	69.8 [6]	67.2 [3]	35.4 [6]	73.1 [9]	52.3 [6]	84.3 [3]	106 [11]	ug/L	35.4 [6]	106 [11]
Acenaphthene	ug/L	126 [4]	142 [3]	123 [6]	118 [3]	101 [6]	107 [9]	104 [6]	156 [3]	146 [11]	ug/L	101 [6]	156 [3]
Anthracene	ug/L	<18.6 [4]	<18.6 [3]	<18.6 [6]	<19.0 [3]	<18.6 [6]	<18.6 [9]	<18.6 [6]	<39.6 [3]	10.7 [11]	ug/L	10.7 [11]	<39.6 [3]
Benz(a)anthracene	ug/L	<18.6 [4]	<18.6 [3]	<18.6 [6]	<19.0 [3]	<18.6 [6]	<18.6 [9]	<18.6 [6]	<39.6 [3]	<3.81 [11]	ug/L	<3.81 [11]	<39.6 [3]
Benzo(a)pyrene	ug/L	<18.6 [4]	<18.6 [3]	24.2 [6]	<19.0 [3]	<18.6 [6]	<21.4 [9] [18] [8]	<23.3 [6] [17] [8]	<39.6 [3]	<4.76 [11] [28] [8]	ug/L	<4.76 [11] [28] [8]	<39.6 [3]
Benzo(b)fluoranthene	ug/L	<18.6 [4]	<18.6 [3]	20.4 [6]	<19.0 [3]	<18.6 [6]	<18.6 [9]	<18.6 [6]	<39.6 [3]	<3.81 [11]	ug/L	<3.81 [11]	<39.6 [3]
Benzo(k)fluoranthene	ug/L	<18.6 [4]	<18.6 [3]	<18.6 [6]	<19.0 [3]	<18.6 [6]	<18.6 [9]	<18.6 [6]	<39.6 [3]	<3.81 [11]	ug/L	<3.81 [11]	<39.6 [3]
Benzo(g,h,i)perylene	ug/L	<18.6 [4]	<18.6 [3]	<18.6 [6]	<19.0 [3]	<18.6 [6]	<18.6 [9]	<18.6 [6]	<39.6 [3]	<3.81 [11]	ug/L	<3.81 [11]	<39.6 [3]
Carbazole	ug/L	79.6 [4]	81.7 [3]	94.0 [6]	82.0 [3]	88.3 [6]	97.5 [9]	73.2 [6]	112 [3]	82.0 [11]	ug/L	73.2 [6]	97.5 [9]
Chrysene	ug/L	<18.6 [4]	<18.6 [3]	<18.6 [6]	<19.0 [3]	<18.6 [6]	<18.6 [9]	<18.6 [6]	<39.6 [3]	<3.81 [11]	ug/L	<3.81 [11]	<39.6 [3]
Dibenz(a,h)anthracene	ug/L	<18.6 [4]	<18.6 [3]	<18.6 [6]	<19.0 [3]	<18.6 [6]	<18.6 [9]	<18.6 [6]	<39.6 [3]	<3.81 [11]	ug/L	<3.81 [11]	<39.6 [3]
Dibenzofuran	ug/L	<18.6 [4]	<18.6 [3]	<18.6 [6]	<19.0 [3]	<18.6 [6]	<18.6 [9]	<18.6 [6]	<39.6 [3]	13.0 [11]	ug/L	13.0 [11]	<39.6 [3]
Fluoranthene	ug/L	<18.6 [4]	<18.6 [3]	22.9 [6]	<19.0 [3]	25.2 [6]	30.8 [9]	27.4 [6]	<39.6 [3]	13.6 [11]	ug/L	13.6 [11]	<39.6 [3]
Fluorene	ug/L	55.1 [4]	57.4 [3]	57.1 [6]	50.4 [3]	49.0 [6]	47.1 [9]	44.0 [6]	68.9 [3]	60.6 [11]	ug/L	44.0 [6]	68.9 [3]
Indeno(1,2,3-cd)pyrene	ug/L	<18.6 [4]	<18.6 [3]	<18.6 [6]	<19.0 [3]	<18.6 [6]	<18.6 [9]	<18.6 [6]	<39.6 [3]	<3.81 [11]	ug/L	<3.81 [11]	<39.6 [3]
2-Methylnaphthalene	ug/L	385 [4]	423 [3]	366 [6]	327 [3]	226 [6]	297 [9]	166 [6]	60.4 [3]	409 [9] [11] [4]	ug/L	60.4 [3]	423 [3]
Naphthalene	ug/L	3890 [4]	4120 [3]	3850 [3] [6] [4]	3400 [1] [3] [4]	1720 [4] [6] [4]	2980 [5] [9] [4]	1500 [3] [6] [4]	303 [3]	3140 [9] [11] [4]	ug/L	303 [3]	4120 [3]
Phenanthrene	ug/L	116 [4]	111 [3]	125 [6]	123 [3]	119 [6]	120 [9]	123 [6]	148 [3]	129 [11]	ug/L	111 [3]	148 [3]
Pyrene	ug/L	<18.6 [4]	<18.6 [3]	23.6 [6] [17] [7]	<19.0 [3]	24.9 [6]	33.2 [9]	29.1 [6]	<39.6 [3]	13.5 [11]	ug/L	13.5 [11]	<39.6 [3]
2-Chlorophenol	ug/L	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<233 [6]	<233 [9]	<233 [6]	<495 [3]	<47.6 [11]	ug/L	<47.6 [11]	<495 [3]
2,4-Dichlorophenol	ug/L	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<233 [6]	<233 [9]	<233 [6]	<495 [3]	<47.6 [11]	ug/L	<47.6 [11]	<495 [3]
2,4-Dimethylphenol	ug/L	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<233 [6]	<233 [9]	<233 [6]	<495 [3]	<47.6 [11]	ug/L	<47.6 [11]	<495 [3]
4,6-Dinitro-2-methylphenol	ug/L	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<233 [6]	<233 [9]	<233 [6]	<495 [3]	<47.6 [11]	ug/L	<47.6 [11]	<495 [3]
2-Methylphenol	ug/L	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<233 [6]	<233 [9]	<233 [6]	<495 [3]	<47.6 [11]	ug/L	<47.6 [11]	<495 [3]
2-Nitrophenol	ug/L	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<233 [6]	<233 [9]	<233 [6]	<495 [3]	<47.6 [11]	ug/L	<47.6 [11]	<495 [3]
4-Nitrophenol	ug/L	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<233 [6]	<233 [9]	<233 [6]	<495 [3]	<47.6 [11]	ug/L	<47.6 [11]	<495 [3]
2,4,5-Trichlorophenol	ug/L	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<233 [6]	<233 [9]	<233 [6]	<495 [3]	<47.6 [11]	ug/L	<47.6 [11]	<495 [3]
2,4,6-Trichlorophenol	ug/L	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<233 [6]	<233 [9]	<233 [6]	<495 [3]	<47.6 [11]	ug/L	<47.6 [11]	<495 [3]
Pentachlorophenol (PCP)	ug/L	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<233 [6]	<233 [9]	<233 [6]	<495 [3]	<47.6 [11]	ug/L	<47.6 [11]	<495 [3]
Phenol	ug/L	<233 [4]	<233 [3]	<233 [6]	<238 [3]	<233 [6]	<233 [9]	<233 [6]	<495 [3]	65.9 [11]	ug/L	65.9 [11]	<495 [3]
METALS													
Hexavalent Chromium	mg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0400 [20] [8]	<0.0100	<0.0100	<0.0200		mg/L	<0.0100	<0.0400 [20] [8]
Silver	ug/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Arsenic	ug/L	2.09	1.50 [1] [4]	2.40 [3] [4]	2.10 [1] [4]	1.31	1.92	1.87	1.63	1.7	ug/L	1.31	2.40 [3] [4]
Cadmium	ug/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Chromium	ug/L	<1.00	<1.00	<1.00	1.29	<1.00	1.02	<1.00	<1.00	1.17	ug/L	<1.00	1.29
Copper	ug/L	<5.00	15.6	7.13	11.9	21.4	36.5	14	33.3	39.8	ug/L	<5.00	39.8
Iron	ug/L	904	443	887	627	860	701	591	724	648	ug/L	443	904
Mercury	ug/L	<0.0100	0.0192	0.073	0.0676	0.0969	0.253 [2] [3]	0.0798	0.117 [1] [2]	0.108	ug/L	<0.0100	0.253 [2] [3]
Manganese	ug/L	53.7	201	83.8	108	330	118	131	112	51.6	ug/L	51.6	330
Nickel	ug/L	<1.00	1.39	<1.00	<1.00	3.76	3.1	1.17	1.49	7.09	ug/L	<1.00	7.09
Lead	ug/L	<1.00	3.48	3.76	6.86	6.61	7.19	3.79	14.7	18.1	ug/L	<1.00	18.1
Selenium	ug/L	2.64	1.96 [1] [4]	3.23	2.14	1.54	1.76	2.27	1.89	2.21	ug/L	1.54	2.64
Zinc	ug/L	8.62	116	10.6	45.1	156	150	60.7	160	341	ug/L	8.62	341
Chromium	ug/L		<1.00								ug/L	<1.00	<1.00
Hardness (Calc by 6020)	mg CaCO3/L									345	mg CaCO3/L	345	345
Trivalent Chromium	ug/L	<11.0	<11.0	<11.0	<11.0	<41.0	<11.0	<11.0	<21.0	1.17	ug/L	1.17	<41.0
VOLATILE ORGANICS													
Acetone	ug/L	<1000	<1000	<400	<400	<400	<400	<400	<200	<200	ug/L	<200	<1000
Benzene	ug/L	3300	2930	2990	2410	1340	2460	1650	1700	1760	ug/L	1340	3300
2-Butanone (MEK)	ug/L	<500	<500	<200	<200	<200	<200	<200	<100	<100	ug/L	<100	<500
1,1-Dichloroethene	ug/L	<25.0	<25.0	<10.0	<10.0	<10.0	<10.0	<10.0	<5.00	<5.00	ug/L	<5.00	<25.0
cis-1,2-Dichloroethene	ug/L	<25.0	<25.0	<10.0	<10.0	<10.0	<10.0	<10.0	<5.00	<5.00	ug/L	<5.00	<25.0
trans-1,2-Dichloroethene	ug/L	<25.0	<25.0	<10.0	<10.0	<10.0	<10.0	<10.0	<5.00	<5.00	ug/L	<5.00	<25.0
Ethylbenzene	ug/L	330	238	318	240	47.6	252	125	49.2	40.7	ug/L	40.7	330
Tetrachloroethene (PCE)	ug/L	<25.0	<25.0	<10.0	<10.0	<10.0	<10.0	<10.0	<5.00	<5.00	ug/L	<5.00	<25.0
Toluene	ug/L	80.5	68	77.2	61.4	30	66	37.2	31.6	22.2	ug/L	22.2	80.5
Trichloroethene (TCE)	ug/L	<25.0	<25.0	<10.0	<10.0	<10.0	<10.0	<10.0	<5.00	<5.00	ug/L	<5.00	<25.0
Vinyl chloride	ug/L	<25.0	<25.0	<10.0	<10.0	<10.0	<10.0	<10.0	<5.00	<5.00	ug/L	<5.00	<25.0
m,p-Xylene	ug/L	178	136	178	143	57	157	78.6	74.8	56.1	ug/L	56.1	178
o-Xylene	ug/L	110	83.5	103	90.2	39.6	93.8	52	55.5	42.9	ug/L	39.6	110

FootNumber	Qualifier	TextBody
1	A-01	Ending CCV fails at 89% (limit 90-110). Data possibly biased slightly low.
2	A-01	Low level mercury samples are supposed to be preserved within 24 hours of sampling. This sample was not properly preserved until 8/10/09 @ 14:30, approximately 72 hours after sampling.
3	A-01a	Low level mercury samples are preferably preserved within 24 hours of sampling. This sample was preserved on 8/17/09 @ 11:45, approximately 110 hours after sampling.
4	B	Analyte detected in the associated extraction blank.
5	C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A.
6	FILT	Sample was lab filtered and acid preserved prior to analysis. See sample preparation section of report for date and time of filtration.
7	Q-29	Recovery for Lab Control Spike (LCS) is above the upper control limit. Data may be biased high.
8	R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
9	S-01	Surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interference.
10	S-04	Surrogate recovery is outside of established control limits due to a sample matrix effect.
11	S-05	Surrogate recovery cannot be accurately quantified due to sample dilution required from high analyte concentration and/or matrix interference.
12	S-06	Surrogate recovery is outside of established control limits.

	Units	08/26/09	08/25/09	08/21/09	08/19/09	08/18/09	08/12/09	08/11/09	08/07/09	08/03/09	Units	Min	Max
GAC Midpoint													
Total Organic Carbon	mg/L	<2.00	2.04	2.82	8.15	3.34	2.5	<2.22 [1] [1]	2.14	<2.00	mg/L	<2.00	8.15
SEMI-VOLATILE ORGANICS													
Acenaphthylene	ug/L	<0.0777 [4]	<0.0816 [3]	<0.0777 [6]	<0.0777 [3]	<0.0777 [6]	0.0876 [6]		0.103 [3]	<0.0777	ug/L	<0.0777	0.103 [3]
Acenaphthene	ug/L	<0.0777 [4]	<0.0816 [3]	<0.0777 [6]	<0.0777 [3]	<0.0777 [6]	<0.0800 [6]		0.137 [3]	<0.0777	ug/L	<0.0777	0.137 [3]
Anthracene	ug/L	<0.0777 [4]	<0.0816 [3]	<0.0777 [6]	<0.0777 [3]	<0.0777 [6]	0.119 [6]		<0.0760 [3]	<0.0777	ug/L	<0.0760 [3]	0.119 [6]
Benz(a)anthracene	ug/L	<0.0777 [4]	<0.0816 [3]	0.114 [6]	0.0975 [3]	0.137 [6]	0.592 [6]		<0.0760 [3]	<0.0777	ug/L	<0.0760 [3]	0.592 [6]
Benzo(a)pyrene	ug/L	0.0926 [4]	<0.0857 [3] [12] [8]	0.201 [6]	0.167 [3]	0.233 [6]	0.890 [6]		<0.114 [3] [14] [8]	<0.0971 [28] [8]	ug/L	<0.0857 [3] [12] [8]	0.201 [6]
Benzo(b)fluoranthene	ug/L		<0.0816 [3]						<0.0760 [3]		ug/L	<0.0760 [3]	<0.0816 [3]
Benzo(k)fluoranthene	ug/L		<0.0816 [3]						<0.0760 [3]		ug/L	<0.0760 [3]	<0.0816 [3]
Benzo(b+k)fluoranthene(s)	ug/L	<0.155 [4] [15] [6]		0.247 [6] [16] [6]	0.205 [3] [15] [6]	0.280 [6] [19] [6]	1.18 [6] [16] [6]			<0.155 [24] [6]	ug/L	1.18 [6] [16] [6]	0.280 [6] [19] [6]
Benzo(g,h,i)perylene	ug/L	<0.0777 [4]	<0.0816 [3]	0.153 [6]	<0.0777 [3]	0.135 [6]	0.670 [6]		<0.0760 [3]	<0.0777	ug/L	<0.0760 [3]	0.670 [6]
Carbazole	ug/L	<0.0777 [4]	<0.0816 [3]	<0.0777 [6]	<0.0777 [3]	<0.0777 [6]	<0.0800 [6]		0.107 [3]	<0.0777	ug/L	<0.0777	0.107 [3]
Chrysene	ug/L	<0.0777 [4]	<0.0816 [3]	0.106 [6]	0.0897 [3]	0.130 [6]	0.647 [6]		<0.0760 [3]	<0.0777	ug/L	<0.0760 [3]	0.647 [6]
Dibenz(a,h)anthracene	ug/L	<0.0777 [4]	<0.0816 [3]	<0.0777 [6]	<0.0777 [3]	<0.0777 [6]	<0.0800 [6]		<0.0760 [3]	<0.0777	ug/L	<0.0760 [3]	<0.0816 [3]
Dibenzofuran	ug/L	<0.0777 [4]	<0.0816 [3]	<0.0777 [6]	<0.0777 [3]	<0.0777 [6]	<0.0800 [6]		<0.0760 [3]	<0.0777	ug/L	<0.0760 [3]	<0.0816 [3]
Fluoranthene	ug/L	0.106 [4]	<0.0816 [3]	0.273 [6]	0.215 [3]	0.300 [6]	1.13 [6]		0.196 [3]	0.0806	ug/L	0.0806	0.300 [6]
Fluorene	ug/L	<0.0777 [4]	<0.0816 [3]	<0.0777 [6]	<0.0777 [3]	<0.0777 [6]	<0.0800 [6]		<0.0760 [3]	<0.0777	ug/L	<0.0760 [3]	<0.0800 [6]
Indeno(1,2,3-cd)pyrene	ug/L	<0.0777 [4]	<0.0816 [3]	0.113 [6]	<0.0777 [3]	0.0905 [6]	0.473 [6]		<0.0760 [3]	<0.0777	ug/L	<0.0760 [3]	0.473 [6]
2-Methylnaphthalene	ug/L	<0.0777 [4]	<0.0816 [3]	<0.0777 [6]	<0.0777 [3]	<0.0777 [6]	<0.0800 [6]		0.114 [3]	<0.0777	ug/L	<0.0777	0.114 [3]
Naphthalene	ug/L	0.327 [4]	0.215 [3]	0.199 [3] [6] [4]	0.157 [1] [3] [4]	0.144 [3] [4] [6] [2] [4]	0.142 [3] [6] [4]		0.765 [3]	).143 [3] [9] [3] [4]	ug/L	).143 [3] [9] [3] [4]	0.765 [3]
Phenanthrene	ug/L	0.0848 [4]	<0.0816 [3]	0.167 [6]	0.156 [3]	0.263 [6]	0.617 [6]		0.250 [3]	<0.0777	ug/L	<0.0777	0.617 [6]
Pyrene	ug/L	0.148 [4]	<0.0816 [3]	0.395 [6] [17] [7]	0.291 [3]	0.402 [6]	1.63 [6]		0.237 [3]	0.0927	ug/L	<0.0816 [3]	0.402 [6]
2-Chlorophenol	ug/L	<0.971 [4]	<1.02 [3]	<0.971 [6]	<0.971 [3]	<0.971 [6]	<1.00 [6]		<0.951 [3]	<0.971	ug/L	<0.951 [3]	<1.02 [3]
2,4-Dichlorophenol	ug/L	<0.971 [4]	<1.02 [3]	<0.971 [6]	<0.971 [3]	<0.971 [6]	<1.00 [6]		<0.951 [3]	<0.971	ug/L	<0.951 [3]	<1.02 [3]
2,4-Dimethylphenol	ug/L	<0.971 [4]	<1.02 [3]	<0.971 [6]	<0.971 [3]	<0.971 [6]	<1.00 [6]		<0.951 [3]	<0.971	ug/L	<0.951 [3]	<1.02 [3]
4,6-Dinitro-2-methylphenol	ug/L	<0.971 [4]	<1.02 [3]	<0.971 [6]	<0.971 [3]	<0.971 [6]	<1.00 [6]		<0.951 [3]	<0.971	ug/L	<0.951 [3]	<1.02 [3]
2-Methylphenol	ug/L	<0.971 [4]	<1.02 [3]	<0.971 [6]	<0.971 [3]	<0.971 [6]	<1.00 [6]		<0.951 [3]	<0.971	ug/L	<0.951 [3]	<1.02 [3]
2-Nitrophenol	ug/L	<0.971 [4]	<1.02 [3]	<0.971 [6]	<0.971 [3]	<0.971 [6]	<1.00 [6]		<0.951 [3]	<0.971	ug/L	<0.951 [3]	<1.02 [3]
4-Nitrophenol	ug/L	<0.971 [4]	<1.02 [3]	<0.971 [6]	<0.971 [3]	<0.971 [6]	<1.00 [6]		<0.951 [3]	<0.971	ug/L	<0.951 [3]	<1.02 [3]
2,4,5-Trichlorophenol	ug/L	<0.971 [4]	<1.02 [3]	<0.971 [6]	<0.971 [3]	<0.971 [6]	<1.00 [6]		<0.951 [3]	<0.971	ug/L	<0.951 [3]	<1.02 [3]
2,4,6-Trichlorophenol	ug/L	<0.971 [4]	<1.02 [3]	<0.971 [6]	<0.971 [3]	<0.971 [6]	<1.00 [6]		<0.951 [3]	<0.971	ug/L	<0.951 [3]	<1.02 [3]
Pentachlorophenol (PCP)	ug/L	<0.971 [4]	<1.02 [3]	<0.971 [6]	<0.971 [3]	<0.971 [6]	<1.00 [6]		<0.951 [3]	<0.971	ug/L	<0.951 [3]	<1.02 [3]
Phenol	ug/L	<0.971 [4]	<1.02 [3]	<0.971 [6]	<0.971 [3]	<0.971 [6]	<1.00 [6]		<0.951 [3]	<0.971	ug/L	<0.951 [3]	<1.02 [3]
VOLATILE ORGANICS													
Acetone	ug/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0			<20.0	ug/L	<20.0	<20.0
Benzene	ug/L	1.12	<0.250	<0.500 [19] [9]	<0.550 [18] [9]	<0.500 [22] [9]	<0.250			<0.250	ug/L	<0.250	1.12
2-Butanone (MEK)	ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0			<10.0	ug/L	<10.0	<10.0
1,1-Dichloroethene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500			<0.500	ug/L	<0.500	<0.500
cis-1,2-Dichloroethene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500			<0.500	ug/L	<0.500	<0.500
trans-1,2-Dichloroethene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500			<0.500	ug/L	<0.500	<0.500
Ethylbenzene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500			<0.500	ug/L	<0.500	<0.500
Tetrachloroethene (PCE)	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500			<0.500	ug/L	<0.500	<0.500
Toluene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500			<0.500	ug/L	<0.500	<0.500
Trichloroethene (TCE)	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500			<0.500	ug/L	<0.500	<0.500
Vinyl chloride	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500			<0.500	ug/L	<0.500	<0.500
m,p-Xylene	ug/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00			<1.00	ug/L	<1.00	<1.00
o-Xylene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500			<0.500	ug/L	<0.500	<0.500

FootNumber	Qualifier	TextBody
1	A-01	Due to high alkalinity, H3PO4 was added to remove excess IOC.
2	A-01b	Naphthalene detected in sample is less then ten times the level detected in the method blank. Results may be biased high.
3	A-01b	Result less than 10 times the amount detected in the method blank. Results may be biased high.
4	B	Analyte detected in the associated extraction blank.
5	C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A.
6	Q-26	Peak separation for Benzo(b) and Benzo(k)fluoranthenes does not meet method specified criteria. Reported result includes the combined area of the two isomers and should be considered the total of Benzo(b+k)Fluoranthenes.
7	Q-29	Recovery for Lab Control Spike (LCS) is above the upper control limit. Data may be biased high.
8	R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
9	R-06	Reporting level raised due to possible carryover from a previous sample.
10	S-04	Surrogate recovery is outside of established control limits due to a sample matrix effect.
11	S-06	Surrogate recovery is outside of established control limits.

	Units	08/26/09	08/25/09	08/21/09	08/19/09	08/18/09	08/12/09	08/07/09	08/03/09	Units	Min	Max
GAC Effluent												
Total Organic Carbon	mg/L	<2.00	3.07	<2.00	7.1	3.77	2.8	<2.00	3.41	mg/L	<2.00	7.1
SEMI-VOLATILE ORGANICS												
Acenaphthylene	ug/L	<0.0769 [4]	<0.0777 [3]	<0.0748 [6]	<0.762 [3] [17]	<0.0784 [6]	<0.0762 [9]	<0.756 [3] [15]	0.392 [11]	ug/L	<0.0748 [6]	<0.762 [3] [17]
Acenaphthene	ug/L	<0.0769 [4]	<0.0777 [3]	<0.0748 [6]	<0.762 [3] [17]	<0.0784 [6]	<0.0762 [9]	<0.756 [3] [15]	0.404 [11]	ug/L	<0.0748 [6]	<0.762 [3] [17]
Anthracene	ug/L	<0.0769 [4]	<0.0777 [3]	<0.0748 [6]	<0.762 [3] [17]	<0.0784 [6]	<0.0762 [9]	<0.756 [3] [15]	<0.377 [11]	ug/L	<0.0748 [6]	<0.762 [3] [17]
Benz(a)anthracene	ug/L	<0.0769 [4]	<0.0777 [3]	<0.0748 [6]	<0.762 [3] [17]	0.0932 [6]	0.156 [9]	<0.756 [3] [15]	<0.377 [11]	ug/L	<0.0748 [6]	<0.762 [3] [17]
Benzo(a)pyrene	ug/L	<0.0808 [4] [17] [8]	0.0995 [3]	0.148 [6]	<0.762 [3] [17]	0.168 [6]	0.255 [9]	<0.756 [3] [15]	<0.377 [11]	ug/L	<0.0808 [4] [17] [8]	<0.762 [3] [17]
Benzo(b)fluoranthene	ug/L	<0.0769 [4]	0.0852 [3] [11] [6]		<0.762 [3] [17]			<0.756 [3] [15]	<0.377 [11]	ug/L	<0.0769 [4]	<0.762 [3] [17]
Benzo(k)fluoranthene	ug/L	<0.0769 [4]	<0.0777 [3] [11] [6]		<0.762 [3] [17]			<0.756 [3] [15]	<0.377 [11]	ug/L	<0.0769 [4]	<0.762 [3] [17]
Benzo(b+k)fluoranthene(s)	ug/L			0.185 [6] [16] [5]		0.228 [6] [19] [5]	0.386 [9] [17] [5]			ug/L	0.185 [6] [16] [5]	0.386 [9] [17] [5]
Benzo(g,h,i)perylene	ug/L	<0.0769 [4]	<0.0777 [3]	0.123 [6]	<0.762 [3] [17]	0.112 [6]	0.249 [9]	<0.756 [3] [15]	<0.377 [11]	ug/L	<0.0769 [4]	<0.762 [3] [17]
Carbazole	ug/L	<0.0769 [4]	<0.0777 [3]	<0.0748 [6]	<0.762 [3] [17]	<0.0784 [6]	<0.0762 [9]	<0.756 [3] [15]	0.425 [11]	ug/L	<0.0748 [6]	<0.762 [3] [17]
Chrysene	ug/L	<0.0769 [4]	<0.0777 [3]	<0.0748 [6]	<0.762 [3] [17]	0.0835 [6]	0.152 [9]	<0.756 [3] [15]	<0.377 [11]	ug/L	<0.0748 [6]	<0.762 [3] [17]
Dibenz(a,h)anthracene	ug/L	<0.0769 [4]	<0.0777 [3]	<0.0748 [6]	<0.762 [3] [17]	<0.0784 [6]	<0.0762 [9]	<0.756 [3] [15]	<0.377 [11]	ug/L	<0.0748 [6]	<0.762 [3] [17]
Dibenzofuran	ug/L	<0.0769 [4]	<0.0777 [3]	<0.0748 [6]	<0.762 [3] [17]	<0.0784 [6]	<0.0762 [9]	<0.756 [3] [15]	<0.377 [11]	ug/L	<0.0748 [6]	<0.762 [3] [17]
Fluoranthene	ug/L	<0.0769 [4]	<0.0777 [3]	0.0996 [6]	<0.762 [3] [17]	0.210 [6]	0.210 [9]	<0.756 [3] [15]	<0.377 [11]	ug/L	<0.0769 [4]	<0.762 [3] [17]
Fluorene	ug/L	<0.0769 [4]	<0.0777 [3]	<0.0748 [6]	<0.762 [3] [17]	<0.0784 [6]	<0.0762 [9]	<0.756 [3] [15]	<0.377 [11]	ug/L	<0.0748 [6]	<0.762 [3] [17]
Indeno(1,2,3-cd)pyrene	ug/L	<0.0769 [4]	<0.0777 [3]	0.0831 [6]	<0.762 [3] [17]	<0.0784 [6]	0.178 [9]	<0.756 [3] [15]	<0.377 [11]	ug/L	<0.0769 [4]	<0.762 [3] [17]
2-Methylnaphthalene	ug/L	<0.0769 [4]	<0.0777 [3]	<0.0748 [6]	<0.762 [3] [17]	<0.0784 [6]	<0.0762 [9]	<0.756 [3] [15]	1.11 [9] [11] [3]	ug/L	<0.0748 [6]	<0.756 [3] [15]
Naphthalene	ug/L	0.142 [4]	0.158 [3]	<0.0748 [6]	<0.762 [3] [17]	0.105 [3] [4] [6] [2] [3]	0.123 [5] [9] [3]	<0.756 [3] [15]	8.73 [2] [9] [11] [1] [3]	ug/L	<0.0748 [6]	8.73 [2] [9] [11] [1] [3]
Phenanthrene	ug/L	<0.0769 [4]	<0.0777 [3]	<0.0748 [6]	<0.762 [3] [17]	0.155 [6]	0.0921 [9]	<0.756 [3] [15]	<0.377 [11]	ug/L	<0.0748 [6]	<0.377 [11]
Pyrene	ug/L	<0.0769 [4]	0.0952 [3]	0.138 [6] [17] [7]	<0.762 [3] [17]	0.276 [6]	0.296 [9]	<0.756 [3] [15]	<0.377 [11]	ug/L	<0.0769 [4]	<0.756 [3] [15]
2-Chlorophenol	ug/L	<0.962 [4]	<0.971 [3]	<0.935 [6]	<9.52 [3] [17]	<0.980 [6]	<0.952 [9]	<9.45 [3] [15]	<4.72 [11]	ug/L	<0.935 [6]	<9.52 [3] [17]
2,4-Dichlorophenol	ug/L	<0.962 [4]	<0.971 [3]	<0.935 [6]	<9.52 [3] [17]	<0.980 [6]	<0.952 [9]	<9.45 [3] [15]	<4.72 [11]	ug/L	<0.935 [6]	<9.52 [3] [17]
2,4-Dimethylphenol	ug/L	<0.962 [4]	<0.971 [3]	<0.935 [6]	<9.52 [3] [17]	<0.980 [6]	<0.952 [9]	<9.45 [3] [15]	<4.72 [11]	ug/L	<0.935 [6]	<9.52 [3] [17]
4,6-Dinitro-2-methylphenol	ug/L	<0.962 [4]	<0.971 [3]	<0.935 [6]	<9.52 [3] [17]	<0.980 [6]	<0.952 [9]	<9.45 [3] [15]	<4.72 [11]	ug/L	<0.935 [6]	<9.52 [3] [17]
2-Methylphenol	ug/L	<0.962 [4]	<0.971 [3]	<0.935 [6]	<9.52 [3] [17]	<0.980 [6]	<0.952 [9]	<9.45 [3] [15]	<4.72 [11]	ug/L	<0.935 [6]	<9.52 [3] [17]
2-Nitrophenol	ug/L	<0.962 [4]	<0.971 [3]	<0.935 [6]	<9.52 [3] [17]	<0.980 [6]	<0.952 [9]	<9.45 [3] [15]	<4.72 [11]	ug/L	<0.935 [6]	<9.52 [3] [17]
4-Nitrophenol	ug/L	<0.962 [4]	<0.971 [3]	<0.935 [6]	<9.52 [3] [17]	<0.980 [6]	<0.952 [9]	<9.45 [3] [15]	<4.72 [11]	ug/L	<0.935 [6]	<9.52 [3] [17]
2,4,5-Trichlorophenol	ug/L	<0.962 [4]	<0.971 [3]	<0.935 [6]	<9.52 [3] [17]	<0.980 [6]	<0.952 [9]	<9.45 [3] [15]	<4.72 [11]	ug/L	<0.935 [6]	<9.52 [3] [17]
2,4,6-Trichlorophenol	ug/L	<0.962 [4]	<0.971 [3]	<0.935 [6]	<9.52 [3] [17]	<0.980 [6]	<0.952 [9]	<9.45 [3] [15]	<4.72 [11]	ug/L	<0.935 [6]	<9.52 [3] [17]
Pentachlorophenol (PCP)	ug/L	<0.962 [4]	<0.971 [3]	<0.935 [6]	<9.52 [3] [17]	<0.980 [6]	<0.952 [9]	<9.45 [3] [15]	<4.72 [11]	ug/L	<0.935 [6]	<9.52 [3] [17]
Phenol	ug/L	<0.962 [4]	<0.971 [3]	<0.935 [6]	<9.52 [3] [17]	<0.980 [6]	<0.952 [9]	<9.45 [3] [15]	<4.72 [11]	ug/L	<0.935 [6]	<9.52 [3] [17]
METALS												
Arsenic	ug/L	2.34 [2] [3]	2.37	2.96	2.86	4.12	3.52	3.81	6.07	ug/L	2.34 [2] [3]	6.07
VOLATILE ORGANICS												
Acetone	ug/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	ug/L	<20.0	<20.0
Benzene	ug/L	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	ug/L	<0.250	<0.250
2-Butanone (MEK)	ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	ug/L	<10.0	<10.0
1,1-Dichloroethene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	ug/L	<0.500	<0.500
cis-1,2-Dichloroethene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	ug/L	<0.500	<0.500
trans-1,2-Dichloroethene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	ug/L	<0.500	<0.500
Ethylbenzene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	ug/L	<0.500	<0.500
Tetrachloroethene (PCE)	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	ug/L	<0.500	<0.500
Toluene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	ug/L	<0.500	<0.500
Trichloroethene (TCE)	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	ug/L	<0.500	<0.500
Vinyl chloride	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	ug/L	<0.500	<0.500
m,p-Xylene	ug/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
o-Xylene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	ug/L	<0.500	<0.500

FootNumber	Qualifier	TextBody
1	A-01a	Result less than 10 times amount detected in method blank. Results may be biased high.
2	A-01b	Naphthalene detected in sample is less then ten times the level detected in the method blank. Results may be biased high.
3	B	Analyte detected in the associated extraction blank.
4	C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A.
5	Q-26	Peak separation for Benzo(b) and Benzo(k)fluoranthenes does not meet method specified criteria. Reported result includes the combined area of the two isomers and should be considered the total of Benzo(b+k)Fluoranthenes.
6	Q-28	Peak separation for Benzo(b) and Benzo(k)fluoranthenes does not meet method specified criteria. Data not reported. See result for Benzo(b+k)Fluoranthene(s).
7	Q-29	Recovery for Lab Control Spike (LCS) is above the upper control limit. Data may be biased high.
8	R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
9	R-04	Reporting levels elevated due to dilution necessary for analysis.
10	S-04	Surrogate recovery is outside of established control limits due to a sample matrix effect.
11	S-05	Surrogate recovery cannot be accurately quantified due to sample dilution required from high analyte concentration and/or matrix interference.
12	S-06	Surrogate recovery is outside of established control limits.

Effluent Storage Tank	Units	09/09/09	08/26/09	08/25/09	08/21/09	08/19/09	08/18/09	08/12/09	08/11/09	08/07/09	08/03/09	07/29/09	Units	Min	Max
pH	pH Units	7.14	7.95	7.89	7.84	7.65	7.62	7.58	7.6	7.74	7.91	8.23	pH Units	7.14	8.23
pH Temperature	pH Units	24.2	21.8	21.3	23.6	23.9	16.2	16.3	20.2	15.9	20.6	31.8	pH Units	15.9	31.8
Total Dissolved Solids	mg/L	1300	1360	1720	1610	1600	1490	1600	1540	1590	1500	518	mg/L	518	1720
Total Suspended Solids	mg/L	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	mg/L	<5.00	<5.00
Total Organic Carbon	mg/L	7.97	3.97	2.03	<2.00	6.83	3.85	2.09	<2.00	<2.00	2.82 [1] [2]	2.95	mg/L	<2.00	7.97
Total Iron	ug/L	338 [6] [9]	279 [5] [9]	337 [4] [9]	337 [7] [9]		171 [7] [9]	158 [10] [9]	162 [7] [9]	125 [4] [9]	157 [13] [9]	<100 [4] [9]	ug/L	<100 [4] [9]	338 [6] [9]
Total Manganese	ug/L	171 [6] [9]	9.44 [5] [9]	63.9 [4] [9]	42.7 [7] [9]		53.1 [7] [9]	64.9 [10] [9]	118 [7] [9]	63.5 [4] [9]	100 [13] [9]	43.0 [4] [9]	ug/L	9.44 [5] [9]	171 [6] [9]
CYANIDE															
Cyanide, Total	mg/L	0.712	0.554	0.627	0.558	0.333	0.26	0.183	0.133	0.135	0.0929	0.0200 [1] [2] [1] [6]	mg/L	0.0200 [1] [2] [1] [6]	0.712
Cyanide, WAD	mg/L	0.0449	0.0441	0.0463	0.0392	0.0738	0.0238	0.0175	0.0689	0.0244	0.0165	0.0101	mg/L	0.0101	0.0738
Cyanide, Amenable	mg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	mg/L	<0.00500	<0.0100
CATC, chlorinated	mg/L	0.739	0.584	0.668	0.589	0.347	0.259	0.226	0.142	0.153	0.1	0.0193	mg/L	0.0193	0.739
Cyanide, Free	mg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	mg/L	<0.0100	<0.0100
CATC, total	mg/L	0.712	0.554	0.627	0.558	0.333	0.26	0.183	0.133	0.135	0.0929	0.0200 [2] [6]	mg/L	0.0200 [2] [6]	0.712
Available Cyanide	mg/L			<0.0020	<0.0020			<0.0020		<0.0020			mg/L	<0.0020	<0.0020
SEMIVOLATILE ORGANICS															
Acenaphthylene	ug/L	0.169 [5]	<0.0792 [4]	<0.0769 [3]	<0.0784 [6]	<0.0800 [3]	<0.0800 [6]	<0.0816 [9]	<0.0808 [6]	<0.0800 [3]	<0.0816 [11]	<0.0784	ug/L	<0.0769 [3]	0.169 [5]
Acenaphthene	ug/L	<0.0762 [5]	<0.0792 [4]	<0.0769 [3]	<0.0784 [6]	<0.0800 [3]	<0.0800 [6]	<0.0816 [9]	<0.0808 [6]	<0.0800 [3]	<0.0816 [11]	<0.0784	ug/L	<0.0762 [5]	<0.0816 [11]
Anthracene	ug/L	0.0863 [5]	<0.0792 [4]	<0.0769 [3]	<0.0784 [6]	<0.0800 [3]	<0.0800 [6]	<0.0816 [9]	<0.0808 [6]	<0.0800 [3]	<0.0816 [11]	<0.0784	ug/L	<0.0769 [3]	0.0863 [5]
Benz(a)anthracene	ug/L	0.625 [5]	<0.0792 [4]	<0.0769 [3]	<0.0784 [6]	<0.0800 [3]	0.0893 [6]	<0.0816 [9]	<0.0808 [6]	<0.0800 [3]	<0.0816 [11]	<0.0784	ug/L	0.625 [5]	0.0893 [6]
Benzo(a)pyrene	ug/L	1.84 [5]	0.0832 [4] [17] [12]	0.0865 [3] [12] [12]	0.117 [6]	<0.114 [3] [16] [12]	0.133 [6]	0.171 [9]	0.104 [6]	<0.100 [3] [14] [12]	<0.102 [11] [28] [12]	<0.0784	ug/L	<0.0784	1.84 [5]
Benzo(b)fluoranthene	ug/L		<0.0792 [4]	<0.0769 [3]		<0.0800 [3]				<0.0800 [3]	<0.0816 [11]	<0.0784	ug/L	<0.0769 [3]	<0.0816 [11]
Benzo(k)fluoranthene	ug/L		<0.0792 [4]	<0.0769 [3]		<0.0800 [3]				<0.0800 [3]	<0.0816 [11]	<0.0784	ug/L	<0.0769 [3]	<0.0816 [11]
Benzo(b+k)fluoranthene(s)	ug/L	2.22 [5] [15] [10]			<0.157 [6] [16] [10]		0.217 [6] [19] [10]		0.164 [6] [16] [10]				ug/L	<0.157 [6] [16] [10]	2.22 [5] [15] [10]
Benzo(g,h,i)perylene	ug/L	1.74 [5]	<0.0792 [4]	<0.0769 [3]	0.0913 [6]	<0.0800 [3]	0.110 [6]	0.123 [9]	0.107 [6]	<0.0800 [3]	<0.0816 [11]	<0.0784	ug/L	<0.0769 [3]	1.74 [5]
Carbazole	ug/L	<0.0762 [5]	<0.0792 [4]	<0.0769 [3]	<0.0784 [6]	<0.0800 [3]	<0.0800 [6]	<0.0816 [9]	<0.0808 [6]	<0.0800 [3]	<0.0816 [11]	<0.0784	ug/L	<0.0762 [5]	<0.0816 [9]
Chrysene	ug/L	0.743 [5]	<0.0792 [4]	<0.0769 [3]	<0.0784 [6]	<0.0800 [3]	<0.0800 [6]	<0.0816 [9]	<0.0808 [6]	<0.0800 [3]	<0.0816 [11]	<0.0784	ug/L	<0.0769 [3]	<0.0816 [11]
Dibenz(a,h)anthracene	ug/L	0.171 [5]	<0.0792 [4]	<0.0769 [3]	<0.0784 [6]	<0.0800 [3]	<0.0800 [6]	<0.0816 [9]	<0.0808 [6]	<0.0800 [3]	<0.0816 [11]	<0.0784	ug/L	<0.0769 [3]	0.171 [5]
Dibenzofuran	ug/L	<0.0762 [5]	<0.0792 [4]	<0.0769 [3]	<0.0784 [6]	<0.0800 [3]	<0.0800 [6]	<0.0816 [9]	<0.0808 [6]	<0.0800 [3]	<0.0816 [11]	<0.0784	ug/L	<0.0762 [5]	<0.0816 [9]
Fluoranthene	ug/L	0.660 [5]	<0.0792 [4]	<0.0769 [3]	<0.0784 [6]	<0.0800 [3]	0.191 [6]	0.111 [9]	0.104 [6]	0.127 [3]	<0.0816 [11]	0.0794	ug/L	<0.0769 [3]	0.660 [5]
Fluorene	ug/L	<0.0762 [5]	<0.0792 [4]	<0.0769 [3]	<0.0784 [6]	<0.0800 [3]	<0.0800 [6]	<0.0816 [9]	<0.0808 [6]	<0.0800 [3]	<0.0816 [11]	<0.0784	ug/L	<0.0762 [5]	<0.0816 [9]
Indeno(1,2,3-cd)pyrene	ug/L	1.57 [5]	<0.0792 [4]	<0.0769 [3]	<0.0784 [6]	<0.0800 [3]	<0.0800 [6]	0.0818 [9]	<0.0808 [6]	<0.0800 [3]	<0.0816 [11]	<0.0784	ug/L	<0.0769 [3]	1.57 [5]
2-Methylnaphthalene	ug/L	<0.0762 [5]	<0.0792 [4]	<0.0769 [3]	<0.0784 [6]	<0.0800 [3]	<0.0800 [6]	<0.0816 [9]	<0.0808 [6]	<0.0800 [3]	0.104 [9] [11] [6]	<0.0784	ug/L	<0.0769 [3]	0.104 [9] [11] [6]
Naphthalene	ug/L	<0.0762 [5]	<0.0792 [4]	0.0795 [3]	0.0986 [3] [6] [6]	0.0837 [1] [3] [6]	0.144 [3] [4] [6] [5] [6]	<0.0816 [8] [9] [7]	0.0809 [3] [6] [6]	0.201 [3]	0.955 [2] [9] [11] [4] [6]	<0.0784	ug/L	<0.0762 [5]	0.955 [2] [9] [11] [4] [6]
Phenanthrene	ug/L	0.317 [5]	<0.0792 [4]	<0.0769 [3]	<0.0784 [6]	<0.0800 [3]	0.118 [6]	<0.0816 [9]	<0.0808 [6]	0.121 [3]	<0.0816 [11]	<0.0784	ug/L	<0.0769 [3]	0.317 [5]
Pyrene	ug/L	0.980 [5]	<0.0792 [4]	<0.0769 [3]	<0.0784 [6]	<0.0800 [3]	0.247 [6]	0.138 [9]	0.125 [6]	0.148 [3]	<0.0816 [11]	<0.0784	ug/L	<0.0769 [3]	0.980 [5]
2-Chlorophenol	ug/L	<0.952 [5]	<0.990 [4]	<0.962 [3]	<0.980 [6]	<1.00 [3]	<1.00 [6]	<1.02 [9]	<1.01 [6]	<1.00 [3]	<1.02 [11]	<0.980	ug/L	<0.952 [5]	<1.02 [11]
2,4-Dichlorophenol	ug/L	<0.952 [5]	<0.990 [4]	<0.962 [3]	<0.980 [6]	<1.00 [3]	<1.00 [6]	<1.02 [9]	<1.01 [6]	<1.00 [3]	<1.02 [11]	<0.980	ug/L	<0.952 [5]	<1.02 [11]
2,4-Dimethylphenol	ug/L	<0.952 [5]	<0.990 [4]	<0.962 [3]	<0.980 [6]	<1.00 [3]	<1.00 [6]	<1.02 [9]	<1.01 [6]	<1.00 [3]	<1.02 [11]	<0.980	ug/L	<0.952 [5]	<1.02 [11]
4,6-Dinitro-2-methylphenol	ug/L	<0.952 [5]	<0.990 [4]	<0.962 [3]	<0.980 [6]	<1.00 [3]	<1.00 [6]	<1.02 [9]	<1.01 [6]	<1.00 [3]	<1.02 [11]	<0.980	ug/L	<0.952 [5]	<1.02 [11]
2-Methylphenol	ug/L	<0.952 [5]	<0.990 [4]	<0.962 [3]	<0.980 [6]	<1.00 [3]	<1.00 [6]	<1.02 [9]	<1.01 [6]	<1.00 [3]	<1.02 [11]	<0.980	ug/L	<0.952 [5]	<1.02 [11]
2-Nitrophenol	ug/L	<0.952 [5]	<0.990 [4]	<0.962 [3]	<0.980 [6]	<1.00 [3]	<1.00 [6]	<1.02 [9]	<1.01 [6]	<1.00 [3]	<1.02 [11]	<0.980	ug/L	<0.952 [5]	<1.02 [11]
4-Nitrophenol	ug/L	<3.81 [5]	<0.990 [4]	<0.962 [3]	<0.980 [6]	<1.00 [3]	<1.00 [6]	<1.02 [9]	<1.01 [6]	<1.00 [3]	<1.02 [11]	<0.980	ug/L	<3.81 [5]	<1.02 [11]
2,4,5-Trichlorophenol	ug/L	<0.952 [5]	<0.990 [4]	<0.962 [3]	<0.980 [6]	<1.00 [3]	<1.00 [6]	<1.02 [9]	<1.01 [6]	<1.00 [3]	<1.02 [11]	<0.980	ug/L	<0.952 [5]	<1.02 [11]
2,4,6-Trichlorophenol	ug/L	<0.952 [5]	<0.990 [4]	<0.962 [3]	<0.980 [6]	<1.00 [3]	<1.00 [6]	<1.02 [9]	<1.01 [6]	<1.00 [3]	<1.02 [11]	<0.980	ug/L	<0.952 [5]	<1.02 [11]
Pentachlorophenol (PCP)	ug/L	<0.952 [5]	<0.990 [4]	<0.962 [3]	<0.980 [6]	<1.00 [3]	<1.00 [6]	<1.02 [9]	<1.01 [6]	<1.00 [3]	<1.02 [11]	<0.980	ug/L	<0.952 [5]	<1.02 [11]
Phenol	ug/L	<0.952 [5]	<0.990 [4]	<0.962 [3]	<0.980 [6]	<1.00 [3]	<1.00 [6]	<1.02 [9]	<1.01 [6]	<1.00 [3]	<1.02 [11]	5.84	ug/L	<0.952 [5]	5.84
METALS															
Hexavalent Chromium	mg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0400 [20] [12]	<0.0100	<0.0100	<0.0200		<0.0100	mg/L	<0.0100	<0.0400 [20] [12]
Silver	ug/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Arsenic	ug/L	4.02	2.79	2.67 [1] [6]	3.32 [3] [6]	2.92 [1] [6]	3.82	4.02	3.83	3.87	7.48	30.5	ug/L	2.67 [1] [6]	30.5
Cadmium	ug/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Chromium	ug/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	2.2	ug/L	<1.00	2.2
Copper	ug/L	<5.00	<5.00	<5.00	10.1	<5.00	19.6	6.14	8.62	<5.00	<5.00	17.9	ug/L	<5.00	17.9
Dissolved Iron	ug/L	577	432	409	761	283	464	255	234	222	168	1990	ug/L	168	1990
Mercury	ug/L	0.0107	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0130 [2] [3]	<0.0100	<0.0100	<0.0100	0.0176	ug/L	<0.0100	0.0176
Dissolved Manganese	ug/L	175	11.5	67	55	65.5	62.2	66.1	121	68	98.3	47.1	ug/L	11.5	175
Nickel	ug/L	3.29	2.57	3.09	7.92	4.57	9.98	9.68	11.7	7.63	8.42	31.5	ug/L	2.57	31.5
Lead	ug/L	<1.00	<1.00	<1.00	1.93	<1.00	7.66	2.7	2.27	<1.00	1.82	4.34	ug/L	<1.00	7.66
Selenium	ug/L	5.6	4.5	3.94 [1] [6]	5.3	2.19	2.02	3.01	2.93	2.19	1.86	1.9	ug/L	1.86	5.6
Zinc	ug/L	6.26	9.11	6.5	17.3	9.02	30.6	21	17.9	8.18	6.66	30.7	ug/L	6.26	30.7
Calcium	ug/L	6950	8540	15300	9300	14100	10200	13000	18000	14200	21700	13300	ug/L	6950	21700
Chromium	ug/L			<1.00									ug/L	<1.00	<1.00
Hardness (Calc by 6020)	mg CaCO3/L	173	204	234	181	313	313	342	352	351	360	133	mg CaCO3/L	133	360
Magnesium	ug/L	37800	44500	47600	38300	67500	69900	75100	74600	76600	74300	24200	ug/L	24200	76600
Trivalent Chromium	ug/L	<11.0	<11.0	<11.0	<11.0	<11.0	<41.0	<11.0	<11.0	<21.0	<1.00	<11.0	ug/L	<1.00	<41.0
SEMI-VOLATILE ORGANICS															
Acetone	ug/L	<20.0 [16] [11]	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<200 [11] [12] [11]	ug/L	<20.0	<200 [11] [12] [11]
Benzene	ug/L	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<2.50 [12]	ug/L	<0.250	<2.50 [12]
2-Butanone (MEK)	ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<100 [11] [12] [11]	ug/L	<10.0	<100 [11] [12] [11]
1,1-Dichloroethene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<5.00 [12]	ug/L	<5.00 [12]	<5.00 [12]
cis-1,2-Dichloroethene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<5.00 [12]	ug/L	<5.00 [12]	<5.00 [12]
trans-1,2-Dichloroethene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<5.00 [12]	ug/L	<5.00 [12]	<5.00 [12]
Ethylbenzene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<5.00 [12]	ug/L	<5.00 [12]	<5.00 [12]
Tetrachloroethene (PCE)	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<5.00 [12]	ug/L	<5.00 [12]	<5.00 [12]
Toluene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<5.00 [12]	ug/L	<5.00 [12]	<5.00 [12]
Trichloroethene (TCE)	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<5.00 [12]	ug/L	<5.00 [12]	<5.00 [12]
Vinyl chloride	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<5.00 [12]	ug/L	<5.00 [12]	<5.00 [12]
m,p-Xylene	ug/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0 [12]	ug/L	<1.00	<10.0 [12]
o-Xylene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<5.00 [12]	ug/L	<0.500	<5.00 [12]

FootNumber	Qualifier	TextBody
1	A-01	Analyte detected in the method blank at the MRL. All samples less than 10 times the MRL may be biased high.
2	A-01	Ending CCV fails at 89% (limit 90-110). Data possibly biased slightly low.
3	A-01a	Low level mercury samples are preferably preserved within 24 hours of sampling. This sample was preserved on 8/17/09 @ 11:45, approximately 110 hours after sampling.
4	A-01a	Result less than 10 times amount detected in method blank. Results may be biased high.
5	A-01b	Naphthalene detected in sample is less then ten times the level detected in the method blank. Results may be biased high.
6	B	Analyte detected in the associated extraction blank.
7	B-05	Analyte was detected in the Method Blank at a level above the MRL. This analyte was not detected above the MRL in any of the associated samples.
8	C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A.
9	FILT	Sample was lab filtered and acid preserved prior to analysis. See sample preparation section of report for date and time of filtration.
10	Q-26	Peak separation for Benzo(b) and Benzo(k)fluoranthenes does not meet method specified criteria. Reported result includes the combined area of the two isomers and should be considered the total of Benzo(b+k)Fluoranthenes.
11	Q-30	Recovery for Lab Control Spike (LCS) is below the lower control limit. Data may be biased low.
12	R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
13	R-04	Reporting levels elevated due to dilution necessary for analysis.
14	S-04	Surrogate recovery is outside of established control limits due to a sample matrix effect.
15	S-06	Surrogate recovery is outside of established control limits.

Attachment F: Siltronic Pilot Plant Results—Through Process

31-Jul-09	Units	Influent S-1	EQ Effluent S-2	Clarifier Effluent S-3	AOP Effluent S-4	GAC Effluent NW-9S
pH	pH Units					
pH Temperature	pH Units					
Total Dissolved Solids	mg/L					
Total Suspended Solids	mg/L					
Total Organic Carbon	mg/L				9.11	
Total Iron	mg/L			9340		
Total Manganese	mg/L			366		
CYANIDE						
Cyanide, Total	mg/L				0.0479	
Cyanide, WAD	mg/L				0.0228	
Cyanide, Amenable	mg/L				<0.00500	
CATC, chlorinated	mg/L				0.0456	
Cyanide, Free	mg/L				<0.0100	
CATC, total	mg/L				0.0479	
SEMI-VOLATILE ORGANICS						
Acenaphthylene	ug/L				<0.0769	
Acenaphthene	ug/L				<0.0769	
Anthracene	ug/L				<0.0769	
Benz(a)anthracene	ug/L				<0.0769	
Benzo(a)pyrene	ug/L				<0.0769	
Benzo(b)fluoranthene	ug/L				<0.0769	
Benzo(k)fluoranthene	ug/L				<0.0769	
Benzo(g,h,i)perylene	ug/L				<0.0769	
Carbazole	ug/L				<0.0769	
Chrysene	ug/L				<0.0769	
Dibenz(a,h)anthracene	ug/L				<0.0769	
Dibenzofuran	ug/L				<0.0769	
Fluoranthene	ug/L				<0.0769	
Fluorene	ug/L				<0.0769	
Indeno(1,2,3-cd)pyrene	ug/L				<0.0769	
2-Methylnaphthalene	ug/L				<0.0769	
Naphthalene	ug/L				0.234	
Phenanthrene	ug/L				<0.0769	
Pyrene	ug/L				<0.0769	
2-Chlorophenol	ug/L				<0.962	
2,4-Dichlorophenol	ug/L				<0.962	
2,4-Dimethylphenol	ug/L				<0.962	
4,6-Dinitro-2-methylphenol	ug/L				<0.962	
2-Methylphenol	ug/L				<0.962	
2-Nitrophenol	ug/L				<0.962	
4-Nitrophenol	ug/L				<0.962	
2,4,5-Trichlorophenol	ug/L				<0.962	
2,4,6-Trichlorophenol	ug/L				<0.962	
Pentachlorophenol (PCP)	ug/L				<0.962	
Phenol	ug/L				<0.962	
METALS						
Hexavalent Chromium	mg/L					
Silver	ug/L					
Arsenic	ug/L			4.39	5.16	
Cadmium	ug/L					
Chromium	ug/L					
Copper	ug/L					
Dissolved Iron	ug/L			173 [4] [2]		
Mercury	ug/L					
Dissolved Manganese	ug/L			10.2 [4] [2]		
Nickel	ug/L					
Lead	ug/L					
Selenium	ug/L					
Zinc	ug/L					
Calcium	ug/L					
Chromium	ug/L					
Hardness (Calc by 6020)	mg CaCO3/L					
Magnesium	ug/L					
Trivalent Chromium	ug/L					
VOLATILE ORGANICS						
Acetone	ug/L				133 [15]	
Benzene	ug/L				<0.250 [15]	
2-Butanone (MEK)	ug/L				50.4 [15]	
1,1-Dichloroethene	ug/L				<0.500 [15]	
cis-1,2-Dichloroethene	ug/L				5.22 [15]	
trans-1,2-Dichloroethene	ug/L				0.640 [15]	
Ethylbenzene	ug/L				<0.500 [15]	
Tetrachloroethene (PCE)	ug/L				<0.500 [15]	
Toluene	ug/L				<0.500 [15]	
Trichloroethene (TCE)	ug/L				1.06 [15]	
Vinyl chloride	ug/L				<0.500 [15]	
m,p-Xylene	ug/L				<1.00 [15]	
o-Xylene	ug/L				<0.500 [15]	

3-Aug-09	Units	Influent S-1	EQ Effluent S-2	Clarifier Effluent S-3	AOP Effluent S-4	GAC Effluent NW-9S
pH	pH Units	6.85				
pH Temperature	pH Units	18.4				
Total Dissolved Solids	mg/L	462				
Total Suspended Solids	mg/L	<5.00				
Total Organic Carbon	mg/L	10.7 [1] [1]			5.38	
Total Iron	mg/L			4640		
Total Manganese	mg/L			244		
CYANIDE						
Cyanide, Total	mg/L	0.338			0.0733	
Cyanide, WAD	mg/L	0.0617			0.0402	
Cyanide, Amenable	mg/L	<0.0250			<0.00500	
CATC, chlorinated	mg/L	0.434			0.0815	
Cyanide, Free	mg/L	<0.0100			0.0154	
CATC, total	mg/L	0.338			0.0733	
SEMI-VOLATILE ORGANICS						
Acenaphthylene	ug/L				<0.0755 [5] [11]	
Acenaphthene	ug/L				<0.0755 [5] [11]	
Anthracene	ug/L				<0.0755 [5] [11]	
Benz(a)anthracene	ug/L				<0.0755 [5] [11]	
Benzo(a)pyrene	ug/L				<0.0755 [5] [11]	
Benzo(b)fluoranthene	ug/L				<0.0755 [5] [11]	
Benzo(k)fluoranthene	ug/L				<0.0755 [5] [11]	
Benzo(g,h,i)perylene	ug/L				<0.0755 [5] [11]	
Carbazole	ug/L				<0.113 [5] [11] [28] [9]	
Chrysene	ug/L				<0.0755 [5] [11]	
Dibenz(a,h)anthracene	ug/L				<0.0755 [5] [11]	
Dibenzofuran	ug/L				<0.0755 [5] [11]	
Fluoranthene	ug/L				<0.0755 [5] [11]	
Fluorene	ug/L				<0.0755 [5] [11]	
Indeno(1,2,3-cd)pyrene	ug/L				<0.0755 [5] [11]	
2-Methylnaphthalene	ug/L				<0.0755 [5] [11]	
Naphthalene	ug/L				0.672 [2] [5] [9] [11] [2] [5]	
Phenanthrene	ug/L				<0.0755 [5] [11]	
Pyrene	ug/L				<0.0755 [5] [11]	
2-Chlorophenol	ug/L				<0.943 [5] [11]	
2,4-Dichlorophenol	ug/L				<0.943 [5] [11]	
2,4-Dimethylphenol	ug/L				<0.943 [5] [11]	
4,6-Dinitro-2-methylphenol	ug/L				<0.943 [5] [11]	
2-Methylphenol	ug/L				<0.943 [5] [11]	
2-Nitrophenol	ug/L				<0.943 [5] [11]	
4-Nitrophenol	ug/L				<0.943 [5] [11]	
2,4,5-Trichlorophenol	ug/L				<0.943 [5] [11]	
2,4,6-Trichlorophenol	ug/L				<0.943 [5] [11]	
Pentachlorophenol (PCP)	ug/L				<0.943 [5] [11]	
Phenol	ug/L				<0.943 [5] [11]	
METALS						
Hexavalent Chromium	mg/L					
Silver	ug/L	<0.0100				
Arsenic	ug/L	2.93		4.01	4.76	
Cadmium	ug/L	<1.00				
Chromium	ug/L	<1.00				
Copper	ug/L	<5.00				
Dissolved Iron	ug/L	2060		153 [13] [2]		
Mercury	ug/L	<0.0100				
Dissolved Manganese	ug/L	1380		2.81 [13] [2]		
Nickel	ug/L	12.1				
Lead	ug/L	3.92				
Selenium	ug/L	5				
Zinc	ug/L	12.8				
Calcium	ug/L	62800				
Chromium	ug/L					
Hardness (Calc by 6020)	mg CaCO3/L	318				
Magnesium	ug/L	39100				
Trivalent Chromium	ug/L	<1.00				
VOLATILE ORGANICS						
Acetone	ug/L	<200			65.3 [26] [8]	
Benzene	ug/L	42.1			<0.250	
2-Butanone (MEK)	ug/L	247			34.4 [26] [8]	
1,1-Dichloroethene	ug/L	<5.00			<0.500	
cis-1,2-Dichloroethene	ug/L	1060			14.5	
trans-1,2-Dichloroethene	ug/L	<5.00			0.64	
Ethylbenzene	ug/L	5.9			<0.500	
Tetrachloroethene (PCE)	ug/L	<5.00			<0.500	
Toluene	ug/L	<5.00			<0.500	
Trichloroethene (TCE)	ug/L	80.4			1.89	
Vinyl chloride	ug/L	172			<0.500	
m,p-Xylene	ug/L	<10.0			<1.00	
o-Xylene	ug/L	<5.00			<0.500	

4-Aug-09	Units	Influent S-1	EQ Effluent S-2	Clarifier Effluent S-3	AOP Effluent S-4	GAC Effluent NW-9S
pH	pH Units	6.85	10.2			
pH Temperature	pH Units	17.4	17.1			
Total Dissolved Solids	mg/L	441	744			
Total Suspended Solids	mg/L	22	25			
Total Organic Carbon	mg/L	9.35	7.56		6.9	
Total Iron	mg/L			4070		
Total Manganese	mg/L			224		
CYANIDE						
Cyanide, Total	mg/L	0.362	0.463		0.031	
Cyanide, WAD	mg/L	0.0504	0.0878		0.0174	
Cyanide, Amenable	mg/L	<0.00500	0.0351		<0.00500	
CATC, chlorinated	mg/L	0.4	0.428		0.0287	
Cyanide, Free	mg/L	<0.0100	0.0206		<0.0100	
CATC, total	mg/L	0.362	0.463		0.031	
SEMI-VOLATILE ORGANICS						
Acenaphthylene	ug/L	<1.90 [4]	0.217 [4]		<0.0769 [4]	
Acenaphthene	ug/L	2.61 [4]	0.642 [4]		<0.0769 [4]	
Anthracene	ug/L	<1.90 [4]	0.184 [4] [6] [7]		<0.0769 [4]	
Benz(a)anthracene	ug/L	<1.90 [4]	<0.0762 [4]		<0.0769 [4]	
Benzo(a)pyrene	ug/L	<1.90 [4]	<0.952 [4] [18] [8]		<0.0769 [4]	
Benzo(b)fluoranthene	ug/L	<1.90 [4]	<0.762 [4]		<0.0769 [4]	
Benzo(k)fluoranthene	ug/L	<1.90 [4]	<0.762 [4]		<0.0769 [4]	
Benzo(g,h,i)perylene	ug/L	<1.90 [4]	<0.0762 [4]		<0.0769 [4]	
Carbazole	ug/L	3.88 [4]	3.24 [4]		<0.0769 [4]	
Chrysene	ug/L	<1.90 [4]	0.116 [4]		<0.0769 [4]	
Dibenz(a,h)anthracene	ug/L	<1.90 [4]	<0.0762 [4]		<0.0769 [4]	
Dibenzofuran	ug/L	<1.90 [4]	0.211 [4]		<0.0769 [4]	
Fluoranthene	ug/L	<1.90 [4]	0.762 [4]		<0.0769 [4]	
Fluorene	ug/L	<1.90 [4]	0.292 [4]		<0.0769 [4]	
Indeno(1,2,3-cd)pyrene	ug/L	<1.90 [4]	<0.0762 [4]		<0.0769 [4]	
2-Methylnaphthalene	ug/L	9.16 [4]	1.17 [4]		<0.0769 [4]	
Naphthalene	ug/L	196 [2] [4] [2]	36.6 [2] [4] [3]		0.248 [2] [4] [5]	
Phenanthrene	ug/L	<1.90 [4]	2.22 [4]		<0.0769 [4]	
Pyrene	ug/L	<1.90 [4]	0.401 [4]		<0.0769 [4]	
2-Chlorophenol	ug/L	<23.8 [4]	<0.952 [4]		<0.962 [4]	
2,4-Dichlorophenol	ug/L	<23.8 [4]	<0.952 [4]		<0.962 [4]	
2,4-Dimethylphenol	ug/L	<23.8 [4]	<0.952 [4]		<0.962 [4]	
4,6-Dinitro-2-methylphenol	ug/L	<23.8 [4]	<0.952 [4]		<0.962 [4]	
2-Methylphenol	ug/L	<23.8 [4]	<0.952 [4]		<0.962 [4]	
2-Nitrophenol	ug/L	<23.8 [4]	<0.952 [4]		<0.962 [4]	
4-Nitrophenol	ug/L	<23.8 [4]	<0.952 [4]		<0.962 [4]	
2,4,5-Trichlorophenol	ug/L	<23.8 [4]	<0.952 [4]		<0.962 [4]	
2,4,6-Trichlorophenol	ug/L	<23.8 [4]	<0.952 [4]		<0.962 [4]	
Pentachlorophenol (PCP)	ug/L	<23.8 [4]	<0.952 [4]		<0.962 [4]	
Phenol	ug/L	<23.8 [4]	<0.952 [4]		<0.962 [4]	
METALS						
Hexavalent Chromium	mg/L	<0.0100	<0.0100			
Silver	ug/L	<1.00	<1.00			
Arsenic	ug/L	4.91	3.83	4.4	5.2	
Cadmium	ug/L	<1.00	<1.00			
Chromium	ug/L	<1.00	1			
Copper	ug/L	<5.00	7.07			
Dissolved Iron	ug/L	14700	3630	<100 [5] [2]		
Mercury	ug/L	<0.0100	<0.0100			
Dissolved Manganese	ug/L	1370	219	6.30 [5] [2]		
Nickel	ug/L	2.43	1.32			
Lead	ug/L	1.74	<1.00			
Selenium	ug/L	4.11	4.58			
Zinc	ug/L	7.11	12.4			
Calcium	ug/L	61800	3350			
Chromium	ug/L					
Hardness (Calc by 6020)	mg CaCO3/L	313	157			
Magnesium	ug/L	38400	36200			
Trivalent Chromium	ug/L	<11.0	<11.0			
VOLATILE ORGANICS						
Acetone	ug/L	<200	<400 [19]		104 [17] [8]	
Benzene	ug/L	54.3	9.00 [19]		<0.250	
2-Butanone (MEK)	ug/L	<100	<200 [19]		30.9 [17] [8]	
1,1-Dichloroethene	ug/L	9.1	<10.0 [19]		<0.500	
cis-1,2-Dichloroethene	ug/L	1560	275 [19]		4.77	
trans-1,2-Dichloroethene	ug/L	7.4	<10.0 [19]		<0.500	
Ethylbenzene	ug/L	17.8	<10.0 [19]		<0.500	
Tetrachloroethene (PCE)	ug/L	<5.00	<10.0 [19]		<0.500	
Toluene	ug/L	7.3	<10.0 [19]		<0.500	
Trichloroethene (TCE)	ug/L	208	29.0 [19]		0.52	
Vinyl chloride	ug/L	333	21.4 [19]		<0.500	
m,p-Xylene	ug/L	25	27.4 [19]		<1.00	
o-Xylene	ug/L	9.1	11.2 [19]		<0.500	

5-Aug-09	Units	Influent S-1	EQ Effluent S-2	Clarifier Effluent S-3	AOP Effluent S-4	GAC Effluent NW-9S
pH	pH Units	6.96	9.69			
pH Temperature	pH Units	18.4	17.7			
Total Dissolved Solids	mg/L	437	608			
Total Suspended Solids	mg/L	35	34			
Total Organic Carbon	mg/L	13.6	4.01		3.1	
Total Iron	mg/L			2320		
Total Manganese	mg/L			327		
CYANIDE						
Cyanide, Total	mg/L	0.245	0.283		0.0558	
Cyanide, WAD	mg/L	0.0603	0.0635		0.0442	
Cyanide, Amenable	mg/L	<0.00500	<0.00500		<0.00500	
CATC, chlorinated	mg/L	0.387	0.4		0.0591	
Cyanide, Free	mg/L	<0.0100	<0.0100		0.0163	
CATC, total	mg/L	0.245	0.283		0.0558	
Available Cyanide	mg/L	0.0042	0.0059		0.034	
SEMI-VOLATILE ORGANICS						
Acenaphthylene	ug/L	<1.86 [2]	0.563 [2]		<0.0755 [2]	
Acenaphthene	ug/L	<1.86 [2]	1.92 [2]		<0.0755 [2]	
Anthracene	ug/L	<1.86 [2]	<0.0784 [2]		<0.0755 [2]	
Benz(a)anthracene	ug/L	<1.86 [2]	<0.0784 [2]		<0.0755 [2]	
Benzo(a)pyrene	ug/L	<1.86 [2]	<0.0980 [2] [12] [8]		<0.0755 [2]	
Benzo(b)fluoranthene	ug/L	<1.86 [2]	<0.0784 [2]		<0.0755 [2]	
Benzo(k)fluoranthene	ug/L	<1.86 [2]	<0.0784 [2]		<0.0755 [2]	
Benzo(g,h,i)perylene	ug/L	<1.86 [2]	<0.0784 [2]		<0.0755 [2]	
Carbazole	ug/L	3.16 [2]	2.48 [2]		<0.0755 [2]	
Chrysene	ug/L	<1.86 [2]	<0.0784 [2]		<0.0755 [2]	
Dibenz(a,h)anthracene	ug/L	<1.86 [2]	<0.0784 [2]		<0.0755 [2]	
Dibenzofuran	ug/L	<1.86 [2]	0.0859 [2]		<0.0755 [2]	
Fluoranthene	ug/L	<1.86 [2]	<0.0784 [2]		<0.0755 [2]	
Fluorene	ug/L	<1.86 [2]	0.376 [2]		<0.0755 [2]	
Indeno(1,2,3-cd)pyrene	ug/L	<1.86 [2]	<0.0784 [2]		<0.0755 [2]	
2-Methylnaphthalene	ug/L	2.91 [2]	6.63 [2]		<0.0755 [2]	
Naphthalene	ug/L	95.6 [2]	141 [2]		<0.113 [2] [12] [9]	
Phenanthrene	ug/L	<1.86 [2]	0.258 [2]		<0.0755 [2]	
Pyrene	ug/L	<1.86 [2]	<0.0784 [2]		<0.0755 [2]	
2-Chlorophenol	ug/L	<23.3 [2]	<0.980 [2]		<0.943 [2]	
2,4-Dichlorophenol	ug/L	<23.3 [2]	<0.980 [2]		<0.943 [2]	
2,4-Dimethylphenol	ug/L	<23.3 [2]	<0.980 [2]		<0.943 [2]	
4,6-Dinitro-2-methylphenol	ug/L	<23.3 [2]	<0.980 [2]		<0.943 [2]	
2-Methylphenol	ug/L	<23.3 [2]	<0.980 [2]		<0.943 [2]	
2-Nitrophenol	ug/L	<23.3 [2]	<0.980 [2]		<0.943 [2]	
4-Nitrophenol	ug/L	<23.3 [2]	<0.980 [2]		<0.943 [2]	
2,4,5-Trichlorophenol	ug/L	<23.3 [2]	<0.980 [2]		<0.943 [2]	
2,4,6-Trichlorophenol	ug/L	<23.3 [2]	<0.980 [2]		<0.943 [2]	
Pentachlorophenol (PCP)	ug/L	<23.3 [2]	<0.980 [2]		<0.943 [2]	
Phenol	ug/L	<23.3 [2]	<0.980 [2]		<0.943 [2]	
METALS						
Hexavalent Chromium	mg/L	<0.0100	<0.0100			
Silver	ug/L	<1.00	<1.00			
Arsenic	ug/L	5.06	3.72	3.92	4.43	
Cadmium	ug/L	<1.00	<1.00			
Chromium	ug/L	<1.00	<1.00			
Copper	ug/L	<5.00	<5.00			
Dissolved Iron	ug/L	14300	2220	167 [4] [2]		
Mercury	ug/L	<0.0100	<0.0100			
Dissolved Manganese	ug/L	1380	351	34.5 [4] [2]		
Nickel	ug/L	5.73	1.49			
Lead	ug/L	2.79	1.31			
Selenium	ug/L	2.86	3.06			
Zinc	ug/L	7.08	<4.00			
Calcium	ug/L	62500	8480			
Chromium	ug/L					
Hardness (Calc by 6020)	mg CaCO3/L	312	160			
Magnesium	ug/L	37900	33800			
Trivalent Chromium	ug/L	<11.0	<11.0			
VOLATILE ORGANICS						
Acetone	ug/L	<200	<200		46.7	
Benzene	ug/L	51.4	29.2		<0.250	
2-Butanone (MEK)	ug/L	<100	<100		14.8	
1,1-Dichloroethene	ug/L	<5.00	<5.00		<0.500	
cis-1,2-Dichloroethene	ug/L	1580	950		<0.500	
trans-1,2-Dichloroethene	ug/L	<5.00	<5.00		0.52	
Ethylbenzene	ug/L	13.7	9		<0.500	
Tetrachloroethene (PCE)	ug/L	<5.00	<5.00		<0.500	
Toluene	ug/L	7.3	5.1		<0.500	
Trichloroethene (TCE)	ug/L	70.6	87.9		1.72	
Vinyl chloride	ug/L	344	98.2		<0.500	
m,p-Xylene	ug/L	20	14.3		<1.00	
o-Xylene	ug/L	7.4	5.4		<0.500	

6-Aug-09	Units	Influent S-1	EQ Effluent S-2	Clarifier Effluent S-3	AOP Effluent S-4	GAC Effluent NW-9S
pH	pH Units	6.83	9.7			
pH Temperature	pH Units	22.8	22.5			
Total Dissolved Solids	mg/L	471	659			
Total Suspended Solids	mg/L	60	16			
Total Organic Carbon	mg/L	12.5	5.73		6.62	
Total Iron	mg/L			1890		
Total Manganese	mg/L			259		
CYANIDE						
Cyanide, Total	mg/L	0.259	0.321		0.0413	
Cyanide, WAD	mg/L	0.0468	0.0489		0.0267	
Cyanide, Amenable	mg/L	<0.00500	<0.00500		<0.00500	
CATC, chlorinated	mg/L	0.401	0.401		0.0634	
Cyanide, Free	mg/L	<0.0100	<0.0100		<0.0100	
CATC, total	mg/L	0.259	0.321		0.0413	
Available Cyanide	mg/L	0.0035	0.0048		0.020	
SEMI-VOLATILE ORGANICS						
Acenaphthylene	ug/L	<1.90 [2]	0.419 [2]		<0.0762 [2]	
Acenaphthene	ug/L	<1.90 [2]	1.36 [2]		<0.0762 [2]	
Anthracene	ug/L	<1.90 [2]	<0.0777 [2]		<0.0762 [2]	
Benz(a)anthracene	ug/L	<1.90 [2]	<0.0777 [2]		<0.0762 [2]	
Benzo(a)pyrene	ug/L	<2.38 [2] [12] [6]	<0.0971 [2] [12] [8]		<0.0762 [2]	
Benzo(b)fluoranthene	ug/L	<2.38 [2]	<0.0777 [2]		<0.0762 [2]	
Benzo(k)fluoranthene	ug/L	<1.90 [2]	<0.0777 [2]		<0.0762 [2]	
Benzo(g,h,i)perylene	ug/L	<1.90 [2]	<0.0777 [2]		<0.0762 [2]	
Carbazole	ug/L	3.87 [2]	2.06 [2]		<0.0762 [2]	
Chrysene	ug/L	<1.90 [2]	<0.0777 [2]		<0.0762 [2]	
Dibenz(a,h)anthracene	ug/L	<1.90 [2]	<0.0777 [2]		<0.0762 [2]	
Dibenzofuran	ug/L	<1.90 [2]	<0.0777 [2]		<0.0762 [2]	
Fluoranthene	ug/L	<1.90 [2]	<0.0777 [2]		<0.0762 [2]	
Fluorene	ug/L	<1.90 [2]	0.262 [2]		<0.0762 [2]	
Indeno(1,2,3-cd)pyrene	ug/L	<1.90 [2]	<0.0777 [2]		<0.0762 [2]	
2-Methylnaphthalene	ug/L	5.46 [2]	4.42 [2]		<0.0762 [2]	
Naphthalene	ug/L	113 [2]	104 [2]		<0.114 [2] [12] [9]	
Phenanthrene	ug/L	<1.90 [2]	0.190 [2]		<0.0762 [2]	
Pyrene	ug/L	<1.90 [2]	<0.0777 [2]		<0.0762 [2]	
2-Chlorophenol	ug/L	<23.8 [2]	<0.971 [2]		<0.952 [2]	
2,4-Dichlorophenol	ug/L	<23.8 [2]	<0.971 [2]		<0.952 [2]	
2,4-Dimethylphenol	ug/L	<23.8 [2]	<0.971 [2]		<0.952 [2]	
4,6-Dinitro-2-methylphenol	ug/L	<23.8 [2]	<0.971 [2]		<0.952 [2]	
2-Methylphenol	ug/L	<23.8 [2]	<0.971 [2]		<0.952 [2]	
2-Nitrophenol	ug/L	<23.8 [2]	<0.971 [2]		<0.952 [2]	
4-Nitrophenol	ug/L	<23.8 [2]	<0.971 [2]		<0.952 [2]	
2,4,5-Trichlorophenol	ug/L	<23.8 [2]	<0.971 [2]		<0.952 [2]	
2,4,6-Trichlorophenol	ug/L	<23.8 [2]	<0.971 [2]		<0.952 [2]	
Pentachlorophenol (PCP)	ug/L	<23.8 [2]	<0.971 [2]		<0.952 [2]	
Phenol	ug/L	<23.8 [2]	<0.971 [2]		<0.952 [2]	
METALS						
Hexavalent Chromium	mg/L	<0.0100	<0.0100			
Silver	ug/L	<1.00	<1.00			
Arsenic	ug/L	7.54	4	3.93	4.56	
Cadmium	ug/L	<1.00	<1.00			
Chromium	ug/L	<1.00	<1.00			
Copper	ug/L	<5.00	<5.00			
Dissolved Iron	ug/L	30100	1900	1890		
Mercury	ug/L	<0.0100	<0.0100			
Dissolved Manganese	ug/L	1250	270	259		
Nickel	ug/L	1.22	1.77			
Lead	ug/L	<1.00	1.5			
Selenium	ug/L	2.72	2.99			
Zinc	ug/L	<4.00	5.37			
Calcium	ug/L	61800	4460			
Chromium	ug/L					
Hardness (Calc by 6020)	mg CaCO3/L	310	147			
Magnesium	ug/L	37700	32900			
Trivalent Chromium	ug/L	<11.0	<11.0			
VOLATILE ORGANICS						
Acetone	ug/L	<200	<200		51.4	
Benzene	ug/L	102	18.4		<0.250	
2-Butanone (MEK)	ug/L	<100	<100		47.4	
1,1-Dichloroethene	ug/L	16	<5.00		<0.500	
cis-1,2-Dichloroethene	ug/L	1720	624		6.82	
trans-1,2-Dichloroethene	ug/L	12.1	<5.00		<0.500	
Ethylbenzene	ug/L	22.2	5.3		<0.500	
Tetrachloroethene (PCE)	ug/L	<5.00	<5.00		<0.500	
Toluene	ug/L	13.5	<5.00		<0.500	
Trichloroethene (TCE)	ug/L	59.7	53		1.02	
Vinyl chloride	ug/L	638	44.7		<0.500	
m,p-Xylene	ug/L	16.1	<10.0		<1.00	
o-Xylene	ug/L	11.6	<5.00		<0.500	

10-Aug-09	Units	Influent S-1	EQ Effluent S-2	Clarifier Effluent S-3	AOP Effluent S-4	GAC Effluent NW-9S
pH	pH Units	6.58	9.53			
pH Temperature	pH Units	21.6	23.7			
Total Dissolved Solids	mg/L	504	638			
Total Suspended Solids	mg/L	70	8			
Total Organic Carbon	mg/L	31.9	3.03		4.72 [1] [1]	
Total Iron	mg/L			1480		
Total Manganese	mg/L			202		
CYANIDE						
Cyanide, Total	mg/L	0.479	0.363		0.0405	
Cyanide, WAD	mg/L	0.0528	0.0443		0.0189	
Cyanide, Amenable	mg/L	<0.0100	<0.00500		0.0072	
CATC, chlorinated	mg/L	0.504	0.392		0.0333	
Cyanide, Free	mg/L	<0.0100	<0.0100		<0.0100	
CATC, total	mg/L	0.479	0.363		0.0405	
Available Cyanide	mg/L	<0.0020	0.0021		0.066	
SEMI-VOLATILE ORGANICS						
Acenaphthylene	ug/L	<1.86 [4]	<1.86 [4]		<0.0762 [4]	
Acenaphthene	ug/L	<1.86 [4]	<1.86 [4]		<0.0762 [4]	
Anthracene	ug/L	<1.86 [4]	<1.86 [4]		<0.0762 [4]	
Benz(a)anthracene	ug/L	<1.86 [4]	<1.86 [4]		<0.0762 [4]	
Benzo(a)pyrene	ug/L	<1.86 [4]	<2.09 [4] [15] [8]		<0.0762 [4]	
Benzo(b)fluoranthene	ug/L	<1.86 [4]	<1.86 [4]		<0.0762 [4]	
Benzo(k)fluoranthene	ug/L	<1.86 [4]	<1.86 [4]		<0.0762 [4]	
Benzo(g,h,i)perylene	ug/L	<1.86 [4]	<1.86 [4]		<0.0762 [4]	
Carbazole	ug/L	4.20 [4]	2.89 [4]		0.0784 [4]	
Chrysene	ug/L	<1.86 [4]	<1.86 [4]		<0.0762 [4]	
Dibenz(a,h)anthracene	ug/L	<1.86 [4]	<1.86 [4]		<0.0762 [4]	
Dibenzofuran	ug/L	<1.86 [4]	<1.86 [4]		<0.0762 [4]	
Fluoranthene	ug/L	<1.86 [4]	<1.86 [4]		<0.0762 [4]	
Fluorene	ug/L	<1.86 [4]	<1.86 [4]		<0.0762 [4]	
Indeno(1,2,3-cd)pyrene	ug/L	<1.86 [4]	<1.86 [4]		<0.0762 [4]	
2-Methylnaphthalene	ug/L	5.15 [4]	<1.86 [4]		<0.0762 [4]	
Naphthalene	ug/L	113 [4]	<1.86 [4]		<0.0762 [4]	
Phenanthrene	ug/L	<1.86 [4]	<1.86 [4]		<0.0762 [4]	
Pyrene	ug/L	<1.86 [4]	<1.86 [4]		<0.0762 [4]	
2-Chlorophenol	ug/L	<23.3 [4]	<23.3 [4]		<0.952 [4]	
2,4-Dichlorophenol	ug/L	<23.3 [4]	<23.3 [4]		<0.952 [4]	
2,4-Dimethylphenol	ug/L	<23.3 [4]	<23.3 [4]		<0.952 [4]	
4,6-Dinitro-2-methylphenol	ug/L	<23.3 [4]	<23.3 [4]		<0.952 [4]	
2-Methylphenol	ug/L	<23.3 [4]	<23.3 [4]		<0.952 [4]	
2-Nitrophenol	ug/L	<23.3 [4]	<23.3 [4]		<0.952 [4]	
4-Nitrophenol	ug/L	<23.3 [4]	<23.3 [4]		<0.952 [4]	
2,4,5-Trichlorophenol	ug/L	<23.3 [4]	<23.3 [4]		<0.952 [4]	
2,4,6-Trichlorophenol	ug/L	<23.3 [4]	<23.3 [4]		<0.952 [4]	
Pentachlorophenol (PCP)	ug/L	<23.3 [4]	<23.3 [4]		<0.952 [4]	
Phenol	ug/L	<23.3 [4]	<23.3 [4]		<0.952 [4]	
METALS						
Hexavalent Chromium	mg/L	<0.0100	<0.0100			
Silver	ug/L	<1.00	<1.00			
Arsenic	ug/L	5.71	2.94	3.13	4.01	
Cadmium	ug/L	<1.00	<1.00			
Chromium	ug/L	<1.00	<1.00			
Copper	ug/L	<5.00	<5.00			
Dissolved Iron	ug/L	36000	1590	142 [5] [2]		
Mercury	ug/L	<0.0100	<0.0100			
Dissolved Manganese	ug/L	2030	221	8.04 [5] [2]		
Nickel	ug/L	1	1.18			
Lead	ug/L	<1.00	1.21			
Selenium	ug/L	5.6	4.29			
Zinc	ug/L	<4.00	4.52			
Calcium	ug/L	75700	2000			
Chromium	ug/L					
Hardness (Calc by 6020)	mg CaCO3/L	381	141			
Magnesium	ug/L	46700	33000			
Trivalent Chromium	ug/L	<11.0	<11.0			
VOLATILE ORGANICS						
Acetone	ug/L	<200	<40.0 [17]		43.3	
Benzene	ug/L	73	4.04 [17]		<0.250	
2-Butanone (MEK)	ug/L	<100	<20.0 [17]		<10.0	
1,1-Dichloroethene	ug/L	16.6	<1.00 [17]		<0.500	
cis-1,2-Dichloroethene	ug/L	1560	206 [17]		1.82	
trans-1,2-Dichloroethene	ug/L	11.7	1.54 [17]		<0.500	
Ethylbenzene	ug/L	18.8	<1.00 [17]		<0.500	
Tetrachloroethene (PCE)	ug/L	7	<1.00 [17]		<0.500	
Toluene	ug/L	15.2	<1.00 [17]		<0.500	
Trichloroethene (TCE)	ug/L	44	8.60 [17]		<0.500	
Vinyl chloride	ug/L	698	3.12 [17]		<0.500	
m,p-Xylene	ug/L	23.7	98.2		<1.00	
o-Xylene	ug/L	13.6	<1.00 [17]		<0.500	

12-Aug-09	Units	Influent S-1	EQ Effluent S-2	Clarifier Effluent S-3	AOP Effluent S-4	GAC Effluent NW-9S
pH	pH Units	6.62	9.87			7.31
pH Temperature	pH Units	20.8	21.1			22
Total Dissolved Solids	mg/L	423	660			718
Total Suspended Solids	mg/L	62.9	27			<5.00
Total Organic Carbon	mg/L	11.3	<2.00		<2.00	<2.00
Total Iron	mg/L			1010		<100 [5] [4]
Total Manganese	mg/L			189		34.6 [5] [4]
CYANIDE						
Cyanide, Total	mg/L	0.353			0.0691	0.0226
Cyanide, WAD	mg/L	0.0619			0.0312	0.0079
Cyanide, Amenable	mg/L	3.17			0.0166	<0.00500
CATC, chlorinated	mg/L	0.359			0.0525	0.026
Cyanide, Free	mg/L	<0.0100			0.0324	<0.0100
CATC, total	mg/L	3.53			0.0691	0.0226
Available Cyanide	mg/L	0.0088	0.0035		0.059	<0.0020
SEMI-VOLATILE ORGANICS						
Acenaphthylene	ug/L	<1.86 [5]	<1.86 [5] [15]		<0.0762 [5]	<0.0762 [4]
Acenaphthene	ug/L	<1.86 [5]	<1.86 [5] [15]		<0.0762 [5]	<0.0762 [4]
Anthracene	ug/L	<1.86 [5]	<1.86 [5] [15]		<0.0762 [5]	<0.0762 [4]
Benz(a)anthracene	ug/L	<1.86 [5]	<1.86 [5] [15]		<0.0762 [5]	<0.0762 [4]
Benzo(a)pyrene	ug/L	<1.86 [5]	<2.14 [5] [14] [15] [8]		<0.0762 [5]	<0.0762 [4]
Benzo(b)fluoranthene	ug/L	<1.86 [5]	<1.86 [5] [15]		<0.0762 [5]	<0.0762 [4]
Benzo(k)fluoranthene	ug/L	<1.86 [5]	<1.86 [5] [15]		<0.0762 [5]	<0.0762 [4]
Benzo(g,h,i)perylene	ug/L	<1.86 [5]	<1.86 [5] [15]		<0.0762 [5]	<0.0762 [4]
Carbazole	ug/L	3.46 [5]	2.92 [5] [15]		<0.0762 [5]	<0.0762 [4]
Chrysene	ug/L	<1.86 [5]	<1.86 [5] [15]		<0.0762 [5]	<0.0762 [4]
Dibenz(a,h)anthracene	ug/L	<1.86 [5]	<1.86 [5] [15]		<0.0762 [5]	<0.0762 [4]
Dibenzofuran	ug/L	<1.86 [5]	<1.86 [5] [15]		<0.0762 [5]	<0.0762 [4]
Fluoranthene	ug/L	<1.86 [5]	<1.86 [5] [15]		<0.0762 [5]	<0.0762 [4]
Fluorene	ug/L	<1.86 [5]	<1.86 [5] [15]		<0.0762 [5]	<0.0762 [4]
Indeno(1,2,3-cd)pyrene	ug/L	<1.86 [5]	<1.86 [5] [15]		<0.0762 [5]	<0.0762 [4]
2-Methylnaphthalene	ug/L	4.13 [5]	<1.86 [5] [15]		<0.0762 [5]	<0.0762 [4]
Naphthalene	ug/L	68.5 [3] [5] [2]	2.01 [3] [5] [15] [3]		<0.0762 [5]	0.172 [2] [4] [1]
Phenanthrene	ug/L	<1.86 [5]	<1.86 [5] [15]		<0.0762 [5]	<0.0762 [4]
Pyrene	ug/L	<1.86 [5]	<1.86 [5] [15]		<0.0762 [5]	<0.0762 [4]
2-Chlorophenol	ug/L	<23.3 [5]	<23.3 [5] [15]		<0.952 [5]	<0.952 [4]
2,4-Dichlorophenol	ug/L	<23.3 [5]	<23.3 [5] [15]		<0.952 [5]	<0.952 [4]
2,4-Dimethylphenol	ug/L	<23.3 [5]	<23.3 [5] [15]		<0.952 [5]	<0.952 [4]
4,6-Dinitro-2-methylphenol	ug/L	<23.3 [5]	<23.3 [5] [15]		<0.952 [5]	<0.952 [4]
2-Methylphenol	ug/L	<23.3 [5]	<23.3 [5] [15]		<0.952 [5]	<0.952 [4]
2-Nitrophenol	ug/L	<23.3 [5]	<23.3 [5] [15]		<0.952 [5]	<0.952 [4]
4-Nitrophenol	ug/L	<23.3 [5]	<23.3 [5] [15]		<0.952 [5]	<0.952 [4]
2,4,5-Trichlorophenol	ug/L	<23.3 [5]	<23.3 [5] [15]		<0.952 [5]	<0.952 [4]
2,4,6-Trichlorophenol	ug/L	<23.3 [5]	<23.3 [5] [15]		<0.952 [5]	<0.952 [4]
Pentachlorophenol (PCP)	ug/L	<23.3 [5]	<23.3 [5] [15]		<0.952 [5]	<0.952 [4]
Phenol	ug/L	<23.3 [5]	<23.3 [5] [15]		<0.952 [5]	<0.952 [4]
METALS						
Hexavalent Chromium	mg/L	0.0398	<0.100 [14] [8]			<0.0100 [6] [5]
Silver	ug/L	<1.00	<1.00			<1.00
Arsenic	ug/L	5.2	3.32	3.19	4.03	5.99
Cadmium	ug/L	<1.00	<1.00			<1.00
Chromium	ug/L	2.96	<1.00			<1.00
Copper	ug/L	145	<5.00			<5.00
Dissolved Iron	ug/L	32200	775	152 [6] [2]		378
Mercury	ug/L	<0.0100	<0.0100			<0.0100
Dissolved Manganese	ug/L	1530	178	21.8 [6] [2]		56.2
Nickel	ug/L	24.1	1			4.81
Lead	ug/L	39.7	6.32			<1.00
Selenium	ug/L	4.79	4.61			2.1
Zinc	ug/L	311	<4.00			4.92
Calcium	ug/L	56800	4790			3230
Chromium	ug/L					
Hardness (Calc by 6020)	mg CaCO3/L	298	134			135
Magnesium	ug/L	38100	29700			30700
Trivalent Chromium	ug/L	<11.0	<101			<11.0
VOLATILE ORGANICS						
Acetone	ug/L	<200	<40.0		33.0 [19]	<20.0 [15]
Benzene	ug/L	23.2	22.6		<0.250 [19]	<0.250 [15]
2-Butanone (MEK)	ug/L	<100	<20.0		<10.0 [19]	<10.0 [15]
1,1-Dichloroethene	ug/L	<5.00	2.78		<0.500 [19]	<0.500 [15]
cis-1,2-Dichloroethene	ug/L	761	880 [19]		7.23 [19]	<0.500 [15]
trans-1,2-Dichloroethene	ug/L	<5.00	5.7		<0.500 [19]	<0.500 [15]
Ethylbenzene	ug/L	8.2	10.2		<0.500 [19]	<0.500 [15]
Tetrachloroethene (PCE)	ug/L	<5.00	<1.00		<0.500 [19]	<0.500 [15]
Toluene	ug/L	<5.00	3.08		<0.500 [19]	<0.500 [15]
Trichloroethene (TCE)	ug/L	<5.00	1.18		<0.500 [19]	<0.500 [15]
Vinyl chloride	ug/L	43.7	113		<0.500 [19]	<0.500 [15]
m,p-Xylene	ug/L	13.1	13.2		<1.00 [19]	<1.00 [15]
o-Xylene	ug/L	<5.00	5.02		<0.500 [19]	<0.500 [15]

18-Aug-09	Units	Influent S-1	EQ Effluent S-2	Clarifier Effluent S-3	AOP Effluent S-4	GAC Effluent NW-9S (8-20)
pH	pH Units	6.56	9.88			
pH Temperature	pH Units	13.1	18.8			
Total Dissolved Solids	mg/L	432	638			
Total Suspended Solids	mg/L	61	31			
Total Organic Carbon	mg/L	19.1	7.44		8.8	
Total Iron	mg/L			4280		
Total Manganese	mg/L			247		
CYANIDE						
Cyanide, Total	mg/L	0.416	0.39		0.143	
Cyanide, WAD	mg/L	0.0617	0.0543		0.06	
Cyanide, Amenable	mg/L	<0.00500	<0.00500		0.0365	
CATC, chlorinated	mg/L	0.455	0.422		0.106	
Cyanide, Free	mg/L	<0.0100	<0.0100		0.0474	
CATC, total	mg/L	0.416	0.39		0.143	
SEMI-VOLATILE ORGANICS						
Acenaphthylene	ug/L	0.879 [6]	<0.0792 [6]		<0.0769 [6]	
Acenaphthene	ug/L	2.20 [6]	0.550 [6]		<0.0769 [6]	
Anthracene	ug/L	<0.755 [6]	<0.0792 [6]		<0.0769 [6]	
Benz(a)anthracene	ug/L	<0.755 [6]	<0.0792 [6]		<0.0769 [6]	
Benzo(a)pyrene	ug/L	<0.755 [6]	<0.0990 [6] [19] [8]		<0.0769 [6]	
Benzo(b)fluoranthene	ug/L	<0.755 [6]	<0.0792 [6]		<0.0769 [6]	
Benzo(k)fluoranthene	ug/L	<0.755 [6]	<0.0792 [6]		<0.0769 [6]	
Benzo(g,h,i)perylene	ug/L	<0.755 [6]	<0.0792 [6]		<0.0769 [6]	
Carbazole	ug/L	3.07 [6]	0.831 [6]		<0.0769 [6]	
Chrysene	ug/L	<0.755 [6]	<0.0792 [6]		<0.0769 [6]	
Dibenz(a,h)anthracene	ug/L	<0.755 [6]	<0.0792 [6]		<0.0769 [6]	
Dibenzofuran	ug/L	<0.755 [6]	<0.0792 [6]		<0.0769 [6]	
Fluoranthene	ug/L	<0.755 [6]	0.0811 [6]		<0.0769 [6]	
Fluorene	ug/L	<0.755 [6]	<0.119 [6] [19] [8]		<0.0769 [6]	
Indeno(1,2,3-cd)pyrene	ug/L	<0.755 [6]	<0.0792 [6]		<0.0769 [6]	
2-Methylnaphthalene	ug/L	6.40 [6]	0.0899 [6]		<0.0769 [6]	
Naphthalene	ug/L	111 [4] [6] [2]	0.196 [3] [4] [6] [1] [3]		<0.0769 [6]	
Phenanthrene	ug/L	<0.755 [6]	<0.0792 [6]		<0.0769 [6]	
Pyrene	ug/L	<0.755 [6]	0.0891 [6]		<0.0769 [6]	
2-Chlorophenol	ug/L	<9.43 [6]	<0.990 [6]		<0.962 [6]	
2,4-Dichlorophenol	ug/L	<9.43 [6]	<0.990 [6]		<0.962 [6]	
2,4-Dimethylphenol	ug/L	<9.43 [6]	<0.990 [6]		<0.962 [6]	
4,6-Dinitro-2-methylphenol	ug/L	<9.43 [6]	<0.990 [6]		<0.962 [6]	
2-Methylphenol	ug/L	<9.43 [6]	<0.990 [6]		<0.962 [6]	
2-Nitrophenol	ug/L	<9.43 [6]	<0.990 [6]		<0.962 [6]	
4-Nitrophenol	ug/L	<9.43 [6]	<0.990 [6]		<0.962 [6]	
2,4,5-Trichlorophenol	ug/L	<9.43 [6]	<0.990 [6]		<0.962 [6]	
2,4,6-Trichlorophenol	ug/L	<9.43 [6]	<0.990 [6]		<0.962 [6]	
Pentachlorophenol (PCP)	ug/L	<9.43 [6]	<0.990 [6]		<0.962 [6]	
Phenol	ug/L	<9.43 [6]	<0.990 [6]		<0.962 [6]	
METALS						
Hexavalent Chromium	mg/L	.0200 [8] [19] [5] [6]	<0.0200 [8] [19] [6] [8]			
Silver	ug/L	<1.00	<1.00			
Arsenic	ug/L	7.34	3.7	3.82	4.52	
Cadmium	ug/L	<1.00	<1.00			
Chromium	ug/L	<1.00	<1.00			
Copper	ug/L	<5.00	<5.00			
Dissolved Iron	ug/L	31100	4510	167 [7] [2]		
Mercury	ug/L	<0.0100	<0.0100			
Dissolved Manganese	ug/L	1390	258	7.92 [7] [2]		
Nickel	ug/L	1.07	<1.00			
Lead	ug/L	1.6	<1.00			
Selenium	ug/L	5.18	4.71			
Zinc	ug/L	<4.00	<4.00			
Calcium	ug/L	65300	6720			
Chromium	ug/L					
Hardness (Calc by 6020)	mg CaCO3/L	321	143			
Magnesium	ug/L	38500	30700			
Trivalent Chromium	ug/L	<21.0	<21.0			
VOLATILE ORGANICS						
Acetone	ug/L	<400	<200		42.5	
Benzene	ug/L	75.4	7.8		<0.250	
2-Butanone (MEK)	ug/L	<200	<100		<10.0	
1,1-Dichloroethene	ug/L	14.2	<5.00		<0.500	
cis-1,2-Dichloroethene	ug/L	1760	390		14.6	
trans-1,2-Dichloroethene	ug/L	<10.0	13.4		0.97	
Ethylbenzene	ug/L	14.2	<5.00		<0.500	
Tetrachloroethene (PCE)	ug/L	<10.0	<5.00		<0.500	
Toluene	ug/L	10.4	<5.00		<0.500	
Trichloroethene (TCE)	ug/L	233	17.5		0.85	
Vinyl chloride	ug/L	676	29.9		<0.500	
m,p-Xylene	ug/L	<20.0	<10.0		<1.00	
o-Xylene	ug/L	<10.0	<5.00		<0.500	

19-Aug-09	Units	Influent S-1	EQ Effluent S-2	Clarifier Effluent S-3	AOP Effluent S-4	GAC Effluent NW-9S (8-20)
pH	pH Units	6.59	9.79			7.55
pH Temperature	pH Units	16.3	16.4			16
Total Dissolved Solids	mg/L	494	636			1060
Total Suspended Solids	mg/L	44	56			<5.00
Total Organic Carbon	mg/L	14.4	7.47		7.23	2.95
Total Iron	mg/L			3140		<100 [6] [4]
Total Manganese	mg/L			253		25.6 [6] [4]
CYANIDE						
Cyanide, Total	mg/L	0.406	0.366		0.118	0.0801
Cyanide, WAD	mg/L	0.0554	0.0543		0.0448	0.0139
Cyanide, Amenable	mg/L	<0.00500	<0.00500		0.0348	<0.00500
CATC, chlorinated	mg/L	0.415	0.413		0.0829	0.0886
Cyanide, Free	mg/L	<0.0100	<0.0100		0.034	<0.0100
CATC, total	mg/L	0.406	0.366		0.118	0.0801
SEMI-VOLATILE ORGANICS						
Acenaphthylene	ug/L	0.794 [4]	<0.0842 [1] [4]		<0.0800 [1] [4]	<0.0769 [5]
Acenaphthene	ug/L	2.67 [4]	0.603 [1] [4]		<0.0800 [1] [4]	<0.0769 [5]
Anthracene	ug/L	<0.755 [4]	<0.0842 [1] [4]		<0.0800 [1] [4]	<0.0769 [5]
Benz(a)anthracene	ug/L	<0.755 [4]	<0.0842 [1] [4]		<0.0800 [1] [4]	<0.0769 [5]
Benzo(a)pyrene	ug/L	<0.755 [4]	<0.0842 [1] [4]		<0.0800 [1] [4]	<0.0808 [5] [17] [7]
Benzo(b)fluoranthene	ug/L	<0.755 [4]	<0.0842 [1] [4]		<0.0800 [1] [4]	<0.0769 [5]
Benzo(k)fluoranthene	ug/L	<0.755 [4]	<0.0842 [1] [4]		<0.0800 [1] [4]	<0.0769 [5]
Benzo(g,h,i)perylene	ug/L	<0.755 [4]	<0.0842 [1] [4]		<0.0800 [1] [4]	<0.0769 [5]
Carbazole	ug/L	3.82 [4]	1.05 [1] [4]		<0.0800 [1] [4]	<0.0769 [5]
Chrysene	ug/L	<0.755 [4]	<0.0842 [1] [4]		<0.0800 [1] [4]	<0.0769 [5]
Dibenz(a,h)anthracene	ug/L	<0.755 [4]	<0.0842 [1] [4]		<0.0800 [1] [4]	<0.0769 [5]
Dibenzofuran	ug/L	<0.755 [4]	<0.0842 [1] [4]		<0.0800 [1] [4]	<0.0769 [5]
Fluoranthene	ug/L	<0.755 [4]	<0.0842 [1] [4]		<0.0800 [1] [4]	<0.0769 [5]
Fluorene	ug/L	<0.755 [4]	0.105 [1] [4] [15] [8]		<0.0800 [1] [4]	<0.0769 [5]
Indeno(1,2,3-cd)pyrene	ug/L	<0.755 [4]	<0.0842 [1] [4]		<0.0800 [1] [4]	<0.0769 [5]
2-Methylnaphthalene	ug/L	9.20 [4]	<0.0842 [1] [4]		<0.0800 [1] [4]	<0.0769 [5]
Naphthalene	ug/L	167 [2] [4] [2]	0.119 [1] [2] [4] [3]		0.134 [1] [2] [4] [5]	127 [2] [3] [5] [1] [2]
Phenanthrene	ug/L	<0.755 [4]	<0.0842 [1] [4]		<0.0800 [1] [4]	<0.0769 [5]
Pyrene	ug/L	<0.755 [4]	<0.0842 [1] [4]		<0.0800 [1] [4]	<0.0769 [5]
2-Chlorophenol	ug/L	<9.43 [4]	<1.05 [1] [4]		<1.00 [1] [4]	<0.962 [5]
2,4-Dichlorophenol	ug/L	<9.43 [4]	<1.05 [1] [4]		<1.00 [1] [4]	<0.962 [5]
2,4-Dimethylphenol	ug/L	<9.43 [4]	<1.05 [1] [4]		<1.00 [1] [4]	<0.962 [5]
4,6-Dinitro-2-methylphenol	ug/L	<9.43 [4]	<1.05 [1] [4]		<1.00 [1] [4]	<0.962 [5]
2-Methylphenol	ug/L	<9.43 [4]	<1.05 [1] [4]		<1.00 [1] [4]	<0.962 [5]
2-Nitrophenol	ug/L	<9.43 [4]	<1.05 [1] [4]		<1.00 [1] [4]	<0.962 [5]
4-Nitrophenol	ug/L	<9.43 [4]	<1.05 [1] [4]		<1.00 [1] [4]	<0.962 [5]
2,4,5-Trichlorophenol	ug/L	<9.43 [4]	<1.05 [1] [4]		<1.00 [1] [4]	<0.962 [5]
2,4,6-Trichlorophenol	ug/L	<9.43 [4]	<1.05 [1] [4]		<1.00 [1] [4]	<0.962 [5]
Pentachlorophenol (PCP)	ug/L	<9.43 [4]	<1.05 [1] [4]		<1.00 [1] [4]	<0.962 [5]
Phenol	ug/L	<9.43 [4]	<1.05 [1] [4]		<1.00 [1] [4]	<0.962 [5]
METALS						
Hexavalent Chromium	mg/L	<0.0100	<0.0100			<0.0100
Silver	ug/L	<1.00	<1.00			<1.00
Arsenic	ug/L	7.81	3.97 [2] [3]	3.98 [2] [1]	4.31	4.83 [2] [1]
Cadmium	ug/L	<1.00	<1.00			<1.00
Chromium	ug/L	1.04	1.02			<1.00
Copper	ug/L	<5.00	<5.00			<5.00
Dissolved Iron	ug/L	30500	3310	123 [5] [2]		463
Mercury	ug/L	<0.0100	<0.0100			0.0136
Dissolved Manganese	ug/L	1380	359	15.5 [5] [2]		45.9
Nickel	ug/L	1.01	1.72			2.99
Lead	ug/L	<1.00	1.8			<1.00
Selenium	ug/L	3.51	3.78			2.73
Zinc	ug/L	<4.00	<4.00			5.27
Calcium	ug/L	62700	5680			3310
Chromium	ug/L					
Hardness (Calc by 6020)	mg CaCO3/L	317	155			131
Magnesium	ug/L	38900	34200			29900
Trivalent Chromium	ug/L	<11.0	<11.0			<11.0
VOLATILE ORGANICS						
Acetone	ug/L	<400	<200		30	<20.0
Benzene	ug/L	80.4	9.9		<0.250	<0.250
2-Butanone (MEK)	ug/L	<200	<100		<10.0	<10.0
1,1-Dichloroethene	ug/L	12.4	<5.00		<0.500	<0.500
cis-1,2-Dichloroethene	ug/L	1940	488		13.4	<0.500
trans-1,2-Dichloroethene	ug/L	10.4	<5.00		0.67	<0.500
Ethylbenzene	ug/L	16.2	<5.00		<0.500	<0.500
Tetrachloroethene (PCE)	ug/L	<10.0	<5.00		<0.500	<0.500
Toluene	ug/L	10.6	<5.00		<0.500	<0.500
Trichloroethene (TCE)	ug/L	168	31.7		1.1	<0.500
Vinyl chloride	ug/L	706	37.7		<0.500	<0.500
m,p-Xylene	ug/L	<20.0	<10.0		<1.00	<1.00
o-Xylene	ug/L	<10.0	<5.00		<0.500	<0.500

21-Aug-09	Units	Influent S-1	EQ Effluent S-2	Clarifier Effluent S-3	AOP Effluent S-4	GAC Effluent NW-9S
pH	pH Units	6.58	9.82			
pH Temperature	pH Units	18.8	19.5			
Total Dissolved Solids	mg/L	477	620			
Total Suspended Solids	mg/L	57	24			
Total Organic Carbon	mg/L	11.1	8.34		5.19	
Total Iron	mg/L			3880		
Total Manganese	mg/L			304		
CYANIDE						
Cyanide, Total	mg/L	0.356	0.333		0.118	
Cyanide, WAD	mg/L	0.0479	0.0438		0.0386	
Cyanide, Amenable	mg/L	<0.00500	<0.00500		0.0159	
CATC, chlorinated	mg/L	0.371	0.398		0.102	
Cyanide, Free	mg/L	<0.0100	<0.0100		0.0376	
CATC, total	mg/L	0.356	0.333		0.118	
Available Cyanide	mg/L	<0.0020	<0.0020		0.032	<0.0020
SEMI-VOLATILE ORGANICS						
Acenaphthylene	ug/L	<0.816 [4]	0.182 [4]		<0.0762 [4]	
Acenaphthene	ug/L	1.73 [4]	1.07 [4]		<0.0762 [4]	
Anthracene	ug/L	<0.816 [4]	<0.0816 [4]		<0.0762 [4]	
Benz(a)anthracene	ug/L	<0.816 [4]	<0.0816 [4]		<0.0762 [4]	
Benzo(a)pyrene	ug/L	<0.816 [4]	<0.0898 [4] [16] [8]		<0.0800 [4] [16] [9]	
Benzo(b)fluoranthene	ug/L	<0.816 [4]	<0.0816 [4]		<0.0762 [4]	
Benzo(k)fluoranthene	ug/L	<0.816 [4]	<0.0816 [4]		<0.0762 [4]	
Benzo(g,h,i)perylene	ug/L	<0.816 [4]	<0.0816 [4]		<0.0762 [4]	
Carbazole	ug/L	2.76 [4]	1.68 [4]		<0.0762 [4]	
Chrysene	ug/L	<0.816 [4]	<0.0816 [4]		<0.0762 [4]	
Dibenz(a,h)anthracene	ug/L	<0.816 [4]	<0.0816 [4]		<0.0762 [4]	
Dibenzofuran	ug/L	<0.816 [4]	<0.0816 [4]		<0.0762 [4]	
Fluoranthene	ug/L	<0.816 [4]	<0.0816 [4]		<0.0762 [4]	
Fluorene	ug/L	<0.816 [4]	0.126 [4] [6] [7]		<0.0762 [4]	
Indeno(1,2,3-cd)pyrene	ug/L	<0.816 [4]	<0.0816 [4]		<0.0762 [4]	
2-Methylnaphthalene	ug/L	5.56 [4]	<0.0816 [4]		<0.0762 [4]	
Naphthalene	ug/L	104 [1] [2] [4] [2] [3]	283 [1] [2] [4] [3] [4]		0.213 [1] [2] [4] [5] [6]	
Phenanthrene	ug/L	<0.816 [4]	<0.0816 [4]		<0.0762 [4]	
Pyrene	ug/L	<0.816 [4]	<0.0816 [4]		<0.0762 [4]	
2-Chlorophenol	ug/L	<10.2 [4]	<1.02 [4]		<0.952 [4]	
2,4-Dichlorophenol	ug/L	<10.2 [4]	<1.02 [4]		<0.952 [4]	
2,4-Dimethylphenol	ug/L	<10.2 [4]	<1.02 [4]		<0.952 [4]	
4,6-Dinitro-2-methylphenol	ug/L	<10.2 [4]	<1.02 [4]		<0.952 [4]	
2-Methylphenol	ug/L	<10.2 [4]	<1.02 [4]		<0.952 [4]	
2-Nitrophenol	ug/L	<10.2 [4]	<1.02 [4]		<0.952 [4]	
4-Nitrophenol	ug/L	<10.2 [4]	<1.02 [4]		<0.952 [4]	
2,4,5-Trichlorophenol	ug/L	<10.2 [4]	<1.02 [4]		<0.952 [4]	
2,4,6-Trichlorophenol	ug/L	<10.2 [4]	<1.02 [4]		<0.952 [4]	
Pentachlorophenol (PCP)	ug/L	<10.2 [4]	<1.02 [4]		<0.952 [4]	
Phenol	ug/L	<10.2 [4]	<1.02 [4]		<0.952 [4]	
METALS						
Hexavalent Chromium	mg/L	<0.0100	<0.0100			
Silver	ug/L	<1.00	<1.00			
Arsenic	ug/L	7.59	4.36 [1] [3]	4.38 [1] [1]	4.77	
Cadmium	ug/L	<1.00	<1.00			
Chromium	ug/L	1.27	1.07			
Copper	ug/L	<5.00	<5.00			
Dissolved Iron	ug/L	30500	4330	253 [5] [2]		
Mercury	ug/L	<0.0100	<0.0100			
Dissolved Manganese	ug/L	1380	309	22.2 [5] [2]		
Nickel	ug/L	1.12	1.63			
Lead	ug/L	<1.00	1.34			
Selenium	ug/L	3.97	5.51			
Zinc	ug/L	<4.00	4.01			
Calcium	ug/L	58200	5630			
Chromium	ug/L					
Hardness (Calc by 6020)	mg CaCO3/L	295	150			
Magnesium	ug/L	36300	33000			
Trivalent Chromium	ug/L	<11.0	<11.0			
VOLATILE ORGANICS						
Acetone	ug/L	<400	<200		38.6	
Benzene	ug/L	85	15.2		<0.250	
2-Butanone (MEK)	ug/L	<200	<100		<10.0	
1,1-Dichloroethene	ug/L	11.8	<5.00		<0.500	
cis-1,2-Dichloroethene	ug/L	1550	519		15	
trans-1,2-Dichloroethene	ug/L	<10.0	<5.00		0.57	
Ethylbenzene	ug/L	18.2	<5.00		<0.500	
Tetrachloroethene (PCE)	ug/L	<10.0	<5.00		<0.500	
Toluene	ug/L	11.2	<5.00		<0.500	
Trichloroethene (TCE)	ug/L	107	46		1.77	
Vinyl chloride	ug/L	664	61.3		<0.500	
m,p-Xylene	ug/L	<20.0	<10.0		<1.00	
o-Xylene	ug/L	<10.0	<5.00		<0.500	

25-Aug-09	Units	Influent S-1	EQ Effluent S-2	Clarifier Effluent S-3	AOP Effluent S-4	GAC Effluent NW-9S
pH	pH Units	6.61	9.96			
pH Temperature	pH Units	19.3	18.8			
Total Dissolved Solids	mg/L	515	709			
Total Suspended Solids	mg/L	31	20			
Total Organic Carbon	mg/L	10.3	8.07		6.21	
Total Iron	mg/L			3280		
Total Manganese	mg/L			236		
CYANIDE						
Cyanide, Total	mg/L	0.467	0.396		0.135	
Cyanide, WAD	mg/L	0.051	0.0528		0.0331	
Cyanide, Amenable	mg/L	<0.0100	<0.00500		0.0202	
CATC, chlorinated	mg/L	0.488	0.407		0.115	
Cyanide, Free	mg/L	<0.0100	<0.0100		0.0342	
CATC, total	mg/L	0.467	0.396		0.135	
Available Cyanide	mg/L	0.0025	<0.0020		0.076	
SEMI-VOLATILE ORGANICS						
Acenaphthylene	ug/L	<0.825 [3]	0.186 [3]		<0.0755 [3]	
Acenaphthene	ug/L	1.78 [3]	0.924 [3]		<0.0755 [3]	
Anthracene	ug/L	<0.825 [3]	<0.0808 [3]		<0.0755 [3]	
Benz(a)anthracene	ug/L	<0.825 [3]	<0.0808 [3]		<0.0755 [3]	
Benzo(a)pyrene	ug/L	<0.825 [3]	<0.0808 [3]		<0.0755 [3]	
Benzo(b)fluoranthene	ug/L	<0.825 [3]	<0.0808 [3]		<0.0755 [3]	
Benzo(k)fluoranthene	ug/L	<0.825 [3]	<0.0808 [3]		<0.0755 [3]	
Benzo(g,h,i)perylene	ug/L	<0.825 [3]	<0.0808 [3]		<0.0755 [3]	
Carbazole	ug/L	1.53 [3]	1.33 [3]		<0.0755 [3]	
Chrysene	ug/L	<0.825 [3]	<0.0808 [3]		<0.0755 [3]	
Dibenz(a,h)anthracene	ug/L	<0.825 [3]	<0.0808 [3]		<0.0755 [3]	
Dibenzofuran	ug/L	<0.825 [3]	<0.0808 [3]		<0.0755 [3]	
Fluoranthene	ug/L	<0.825 [3]	<0.0808 [3]		<0.0755 [3]	
Fluorene	ug/L	<0.825 [3]	0.0998 [3]		<0.0755 [3]	
Indeno(1,2,3-cd)pyrene	ug/L	<0.825 [3]	<0.0808 [3]		<0.0755 [3]	
2-Methylnaphthalene	ug/L	4.71 [3]	0.129 [3]		<0.0755 [3]	
Naphthalene	ug/L	86.2 [3]	1.49 [3]		0.133 [3]	
Phenanthrene	ug/L	<0.825 [3]	0.0966 [3]		<0.0755 [3]	
Pyrene	ug/L	<0.825 [3]	<0.0808 [3]		<0.0755 [3]	
2-Chlorophenol	ug/L	<10.3 [3]	<1.01 [3]		<0.943 [3]	
2,4-Dichlorophenol	ug/L	<10.3 [3]	<1.01 [3]		<0.943 [3]	
2,4-Dimethylphenol	ug/L	<10.3 [3]	<1.01 [3]		<0.943 [3]	
4,6-Dinitro-2-methylphenol	ug/L	<10.3 [3]	<1.01 [3]		<0.943 [3]	
2-Methylphenol	ug/L	<10.3 [3]	<1.01 [3]		<0.943 [3]	
2-Nitrophenol	ug/L	<10.3 [3]	<1.01 [3]		<0.943 [3]	
4-Nitrophenol	ug/L	<10.3 [3]	<1.01 [3]		<0.943 [3]	
2,4,5-Trichlorophenol	ug/L	<10.3 [3]	<1.01 [3]		<0.943 [3]	
2,4,6-Trichlorophenol	ug/L	<10.3 [3]	<1.01 [3]		<0.943 [3]	
Pentachlorophenol (PCP)	ug/L	<10.3 [3]	<1.01 [3]		<0.943 [3]	
Phenol	ug/L	<10.3 [3]	<1.01 [3]		<0.943 [3]	
METALS						
Hexavalent Chromium	mg/L	<0.0100	0.0173			
Silver	ug/L	<1.00	<1.00			
Arsenic	ug/L	7.31	5.03 [1] [3]	4.3	4.93	
Cadmium	ug/L	<1.00	<1.00			
Chromium	ug/L	<1.00	<1.00			
Copper	ug/L	<5.00	<5.00			
Dissolved Iron	ug/L	31100	5300	192 [4] [2]		
Mercury	ug/L	<0.0100	<0.0100			
Dissolved Manganese	ug/L	1260	298	23.1 [4] [2]		
Nickel	ug/L	1.08	1.44			
Lead	ug/L	<1.00	<1.00			
Selenium	ug/L	4.80 [1] [2]	5.21 [1] [3]			
Zinc	ug/L	4.33	<4.00			
Calcium	ug/L	58500	5850			
Chromium	ug/L	<1.00	<1.00			
Hardness (Calc by 6020)	mg CaCO3/L	309	153			
Magnesium	ug/L	39600	33600			
Trivalent Chromium	ug/L	<11.0	<11.0			
SEMI-VOLATILE ORGANICS						
Acetone	ug/L	<400	<200		36.8	
Benzene	ug/L	69.6	12.4		<0.250	
2-Butanone (MEK)	ug/L	<200	<100		<10.0	
1,1-Dichloroethene	ug/L	17.2	<5.00		<0.500	
cis-1,2-Dichloroethene	ug/L	2530	545		22.1	
trans-1,2-Dichloroethene	ug/L	<10.0	<5.00		1.08	
Ethylbenzene	ug/L	<10.0	<5.00		<0.500	
Tetrachloroethene (PCE)	ug/L	<10.0	<5.00		<0.500	
Toluene	ug/L	10.8	<5.00		<0.500	
Trichloroethene (TCE)	ug/L	372	44.7		3.11	
Vinyl chloride	ug/L	890	60.7		<0.500	
m,p-Xylene	ug/L	<20.0	<10.0		<1.00	
o-Xylene	ug/L	<10.0	<5.00		<0.500	

26-Aug-09	Units	Influent	EQ Effluent	Clarifier Effluent	AOP Effluent	GAC Effluent
		S-1	S-2	S-3	S-4	NW-9S (8-28)
pH	pH Units	6.56	9.76			7.6
pH Temperature	pH Units	19.6	19.3			19.5
Total Dissolved Solids	mg/L	458	664			723
Total Suspended Solids	mg/L	59	5			16
Total Organic Carbon	mg/L	7.92	5.01		5.76	3.72
Total Iron	mg/L			4870		<100 [4] [4]
Total Manganese	mg/L			270		46.3 [4] [4]
CYANIDE						
Cyanide, Total	mg/L	0.399	0.348		0.187	0.152
Cyanide, WAD	mg/L	0.0484	0.0508		0.0667	0.0288
Cyanide, Amenable	mg/L	<0.00500	<0.00500		0.0116	0.0146
CATC, chlorinated	mg/L	0.436	0.42		0.175	0.137
Cyanide, Free	mg/L	<0.0100	<0.0100		0.0536	<0.0100
CATC, total	mg/L	0.399	0.348		0.187	0.152
SEMI-VOLATILE ORGANICS						
Acenaphthylene	ug/L	<0.792 [3]	0.0894 [3]		<0.0769 [3]	<0.0816 [3]
Acenaphthene	ug/L	2.54 [3]	0.716 [3]		<0.0769 [3]	<0.0816 [3]
Anthracene	ug/L	<0.792 [3]	<0.0755 [3]		<0.0769 [3]	<0.0816 [3]
Benz(a)anthracene	ug/L	<0.792 [3]	<0.0755 [3]		<0.0769 [3]	<0.0816 [3]
Benzo(a)pyrene	ug/L	<0.792 [3]	<0.0755 [3]		<0.0769 [3]	<0.0816 [3]
Benzo(b)fluoranthene	ug/L	<0.792 [3]	<0.0755 [3]		<0.0769 [3]	<0.0816 [3]
Benzo(k)fluoranthene	ug/L	<0.792 [3]	<0.0755 [3]		<0.0769 [3]	<0.0816 [3]
Benzo(g,h,i)perylene	ug/L	<0.792 [3]	<0.0755 [3]		<0.0769 [3]	<0.0816 [3]
Carbazole	ug/L	2.39 [3]	0.859 [3]		<0.0769 [3]	<0.0816 [3]
Chrysene	ug/L	<0.792 [3]	<0.0755 [3]		<0.0769 [3]	<0.0816 [3]
Dibenz(a,h)anthracene	ug/L	<0.792 [3]	<0.0755 [3]		<0.0769 [3]	<0.0816 [3]
Dibenzofuran	ug/L	<0.792 [3]	<0.0755 [3]		<0.0769 [3]	<0.0816 [3]
Fluoranthene	ug/L	<0.792 [3]	<0.0755 [3]		<0.0769 [3]	<0.0816 [3]
Fluorene	ug/L	<0.792 [3]	<0.0755 [3]		<0.0769 [3]	<0.0816 [3]
Indeno(1,2,3-cd)pyrene	ug/L	<0.792 [3]	<0.0755 [3]		<0.0769 [3]	<0.0816 [3]
2-Methylnaphthalene	ug/L	8.91 [3]	<0.0755 [3]		<0.0769 [3]	<0.0816 [3]
Naphthalene	ug/L	147 [3]	0.0902 [3]		0.707 [3]	<0.0816 [3]
Phenanthrene	ug/L	<0.792 [3]	<0.0755 [3]		<0.0769 [3]	<0.0816 [3]
Pyrene	ug/L	<0.792 [3]	<0.0755 [3]		<0.0769 [3]	<0.0816 [3]
2-Chlorophenol	ug/L	<9.90 [3]	<0.943 [3]		<0.962 [3]	<1.02 [3]
2,4-Dichlorophenol	ug/L	<9.90 [3]	<0.943 [3]		<0.962 [3]	<1.02 [3]
2,4-Dimethylphenol	ug/L	<9.90 [3]	<0.943 [3]		<0.962 [3]	<1.02 [3]
4,6-Dinitro-2-methylphenol	ug/L	<9.90 [3]	<0.943 [3]		<0.962 [3]	<1.02 [3]
2-Methylphenol	ug/L	<9.90 [3]	<0.943 [3]		<0.962 [3]	<1.02 [3]
2-Nitrophenol	ug/L	<9.90 [3]	<0.943 [3]		<0.962 [3]	<1.02 [3]
4-Nitrophenol	ug/L	<9.90 [3]	<0.943 [3]		<0.962 [3]	<4.08 [3]
2,4,5-Trichlorophenol	ug/L	<9.90 [3]	<0.943 [3]		<0.962 [3]	<1.02 [3]
2,4,6-Trichlorophenol	ug/L	<9.90 [3]	<0.943 [3]		<0.962 [3]	<1.02 [3]
Pentachlorophenol (PCP)	ug/L	<9.90 [3]	<0.943 [3]		<0.962 [3]	<1.02 [3]
Phenol	ug/L	<9.90 [3]	<0.943 [3]		<0.962 [3]	<1.02 [3]
METALS						
Hexavalent Chromium	mg/L	<0.0100	<0.0100			<0.0100
Silver	ug/L	<1.00	<1.00			<1.00
Arsenic	ug/L	7.00 [1] [2]	4.32 [1] [3]	4.99 [1] [1]	5.44	3.73
Cadmium	ug/L	<1.00	<1.00			<1.00
Chromium	ug/L	<1.00	<1.00			<1.00
Copper	ug/L	<5.00	<5.00			<5.00
Dissolved Iron	ug/L	30900	5040	165 [4] [2]		644
Mercury	ug/L	<0.0100	<0.0100			<0.0100
Dissolved Manganese	ug/L	1370	277	14.7 [4] [2]		75.9
Nickel	ug/L	1.06	1.12			2.66
Lead	ug/L	3.28	<1.00			<1.00
Selenium	ug/L	4.18 [1] [2]	4.84 [1] [3]			2.54
Zinc	ug/L	<4.00	7.78			5.4
Calcium	ug/L	60400	2920			5830
Chromium	ug/L	<1.00	<1.00			
Hardness (Calc by 6020)	mg CaCO3/L	309	147			150
Magnesium	ug/L	38300	34000			32800
Trivalent Chromium	ug/L	<11.0	<11.0			<11.0
SEMI-VOLATILE ORGANICS						
Acetone	ug/L	<400	<200		20.6	<20.0
Benzene	ug/L	72	9.2		0.62	<0.250
2-Butanone (MEK)	ug/L	<200	<100		<10.0	<10.0
1,1-Dichloroethene	ug/L	13.2	<5.00		<0.500	<0.500
cis-1,2-Dichloroethene	ug/L	1490	420		50	<0.500
trans-1,2-Dichloroethene	ug/L	<10.0	<5.00		2.16	<0.500
Ethylbenzene	ug/L	14.8	<5.00		<0.500	<0.500
Tetrachloroethene (PCE)	ug/L	<10.0	<5.00		<0.500	<0.500
Toluene	ug/L	<10.0	<5.00		<0.500	<0.500
Trichloroethene (TCE)	ug/L	106	33.7		4.88	<0.500
Vinyl chloride	ug/L	715	43.7		1.21	<0.500
m,p-Xylene	ug/L	<20.0	<10.0		<1.00	<1.00
o-Xylene	ug/L	<10.0	<5.00		<0.500	<0.500

Attachment G: Siltronic Pilot Plant Results—By Sample Point

Siltronic Influent	Units	08/26/09	08/25/09	08/21/09	08/19/09	08/18/09	08/12/09	08/10/09	08/06/09	08/05/09	08/04/09	08/03/09	Units	Min	Max
pH	pH Units	6.56	6.61	6.58	6.59	6.56	6.62	6.58	6.83	6.96	6.85	6.85	pH Units	6.56	6.96
pH Temperature	pH Units	19.6	19.3	18.8	16.3	13.1	20.8	21.6	22.8	18.4	17.4	18.4	pH Units	13.1	22.8
Total Dissolved Solids	mg/L	458	515	477	494	432	423	504	471	437	441	462	mg/L	423	504
Total Suspended Solids	mg/L	59.0	31.0	57.0	44.0	61.0	62.9	70.0	60.0	35.0	22.0	<5.00	mg/L	<5.00	70.0
Total Organic Carbon	mg/L	7.92	10.3	11.1	14.4	19.1	11.3	31.9	12.5	13.6	9.35	10.7 [1] [1]	mg/L	7.92	31.9
CYANIDE															
Cyanide, Total	mg/L	0.399	0.467	0.356	0.406	0.416	0.353	0.479	0.259	0.245	0.362	0.338	mg/L	0.245	0.479
Cyanide, WAD	mg/L	0.0484	0.0510	0.0479	0.0554	0.0617	0.0619	0.0528	0.0468	0.0603	0.0504	0.0617	mg/L	0.0468	0.0617
Cyanide, Amenable	mg/L	<0.00500	<0.0100	<0.00500	<0.00500	<0.00500	3.17	<0.0100	<0.00500	<0.00500	<0.00500	<0.0250	mg/L	<0.00500	3.17
CATC, chlorinated	mg/L	0.436	0.488	0.371	0.415	0.455	0.359	0.504	0.401	0.387	0.400	0.434	mg/L	0.359	0.504
Cyanide, Free	mg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	mg/L	<0.0100	<0.0100
CATC, total	mg/L	0.399	0.467	0.356	0.406	0.416	3.53	0.479	0.259	0.245	0.362	0.338	mg/L	0.245	0.479
Available Cyanide	mg/L		0.0025	<0.0020			0.0088	<0.0020	0.0035	0.0042			mg/L	<0.0020	0.0088
SEMI-VOLATILE ORGANIC															
Acenaphthylene	ug/L	<0.792 [3]	<0.825 [3]	<0.816 [4]	0.794 [4]	0.879 [6]	<1.86 [5]	<1.86 [4]	<1.90 [2]	<1.86 [2]	<1.90 [4]		ug/L	<0.792 [3]	0.879 [6]
Acenaphthene	ug/L	2.54 [3]	1.78 [3]	1.73 [4]	2.67 [4]	2.20 [6]	<1.86 [5]	<1.86 [4]	<1.90 [2]	<1.86 [2]	2.61 [4]		ug/L	1.73 [4]	2.67 [4]
Anthracene	ug/L	<0.792 [3]	<0.825 [3]	<0.816 [4]	<0.755 [4]	<0.755 [6]	<1.86 [5]	<1.86 [4]	<1.90 [2]	<1.86 [2]	<1.90 [4]		ug/L	<0.755 [6]	<1.90 [4]
Benz(a)anthracene	ug/L	<0.792 [3]	<0.825 [3]	<0.816 [4]	<0.755 [4]	<0.755 [6]	<1.86 [5]	<1.86 [4]	<1.90 [2]	<1.86 [2]	<1.90 [4]		ug/L	<0.755 [6]	<1.90 [4]
Benzo(a)pyrene	ug/L	<0.792 [3]	<0.825 [3]	<0.816 [4]	<0.755 [4]	<0.755 [6]	<1.86 [5]	<1.86 [4]	<2.38 [2] [12] [6]	<1.86 [2]	<1.90 [4]		ug/L	<0.755 [4]	<2.38 [2] [12] [6]
Benzo(b)fluoranthene	ug/L	<0.792 [3]	<0.825 [3]	<0.816 [4]	<0.755 [4]	<0.755 [6]	<1.86 [5]	<1.86 [4]	<2.38 [2]	<1.86 [2]	<1.90 [4]		ug/L	<0.755 [4]	<2.38 [2] [12] [6]
Benzo(k)fluoranthene	ug/L	<0.792 [3]	<0.825 [3]	<0.816 [4]	<0.755 [4]	<0.755 [6]	<1.86 [5]	<1.86 [4]	<1.90 [2]	<1.86 [2]	<1.90 [4]		ug/L	<0.755 [6]	<1.90 [4]
Benzo(g,h,i)perylene	ug/L	<0.792 [3]	<0.825 [3]	<0.816 [4]	<0.755 [4]	<0.755 [6]	<1.86 [5]	<1.86 [4]	<1.90 [2]	<1.86 [2]	<1.90 [4]		ug/L	<0.755 [6]	<1.90 [4]
Carbazole	ug/L	2.39 [3]	1.53 [3]	2.76 [4]	3.82 [4]	3.07 [6]	3.46 [5]	4.20 [4]	3.87 [2]	3.16 [2]	3.88 [4]		ug/L	1.53 [3]	4.20 [4]
Chrysene	ug/L	<0.792 [3]	<0.825 [3]	<0.816 [4]	<0.755 [4]	<0.755 [6]	<1.86 [5]	<1.86 [4]	<1.90 [2]	<1.86 [2]	<1.90 [4]		ug/L	<0.755 [6]	<1.90 [4]
Dibenz(a,h)anthracene	ug/L	<0.792 [3]	<0.825 [3]	<0.816 [4]	<0.755 [4]	<0.755 [6]	<1.86 [5]	<1.86 [4]	<1.90 [2]	<1.86 [2]	<1.90 [4]		ug/L	<0.755 [6]	<1.90 [4]
Dibenzofuran	ug/L	<0.792 [3]	<0.825 [3]	<0.816 [4]	<0.755 [4]	<0.755 [6]	<1.86 [5]	<1.86 [4]	<1.90 [2]	<1.86 [2]	<1.90 [4]		ug/L	<0.755 [6]	<1.90 [4]
Fluoranthene	ug/L	<0.792 [3]	<0.825 [3]	<0.816 [4]	<0.755 [4]	<0.755 [6]	<1.86 [5]	<1.86 [4]	<1.90 [2]	<1.86 [2]	<1.90 [4]		ug/L	<0.755 [6]	<1.90 [4]
Fluorene	ug/L	<0.792 [3]	<0.825 [3]	<0.816 [4]	<0.755 [4]	<0.755 [6]	<1.86 [5]	<1.86 [4]	<1.90 [2]	<1.86 [2]	<1.90 [4]		ug/L	<0.755 [6]	<1.90 [4]
Indeno(1,2,3-cd)pyrene	ug/L	<0.792 [3]	<0.825 [3]	<0.816 [4]	<0.755 [4]	<0.755 [6]	<1.86 [5]	<1.86 [4]	<1.90 [2]	<1.86 [2]	<1.90 [4]		ug/L	<0.755 [6]	<1.90 [4]
2-Methylnaphthalene	ug/L	8.91 [3]	4.71 [3]	5.56 [4]	9.20 [4]	6.40 [6]	4.13 [5]	5.15 [4]	5.46 [2]	2.91 [2]	9.16 [4]		ug/L	2.91 [2]	9.20 [4]
Naphthalene	ug/L	147 [3]	86.2 [3]	04 [1] [2] [4] [2] [3]	167 [2] [4] [2]	111 [4] [6] [2]	68.5 [3] [5] [2]	113 [4]	113 [2]	95.6 [2]	196 [2] [4] [2]		ug/L	68.5 [3] [5] [2]	196 [2] [4] [2]
Phenanthrene	ug/L	<0.792 [3]	<0.825 [3]	<0.816 [4]	<0.755 [4]	<0.755 [6]	<1.86 [5]	<1.86 [4]	<1.90 [2]	<1.86 [2]	<1.90 [4]		ug/L	<0.755 [6]	<1.90 [4]
Pyrene	ug/L	<0.792 [3]	<0.825 [3]	<0.816 [4]	<0.755 [4]	<0.755 [6]	<1.86 [5]	<1.86 [4]	<1.90 [2]	<1.86 [2]	<1.90 [4]		ug/L	<0.755 [6]	<1.90 [4]
2-Chlorophenol	ug/L	<9.90 [3]	<10.3 [3]	<10.2 [4]	<9.43 [4]	<9.43 [6]	<23.3 [5]	<23.3 [4]	<23.8 [2]	<23.3 [2]	<23.8 [4]		ug/L	<9.43 [6]	<23.8 [4]
2,4-Dichlorophenol	ug/L	<9.90 [3]	<10.3 [3]	<10.2 [4]	<9.43 [4]	<9.43 [6]	<23.3 [5]	<23.3 [4]	<23.8 [2]	<23.3 [2]	<23.8 [4]		ug/L	<9.43 [6]	<23.8 [4]
2,4-Dimethylphenol	ug/L	<9.90 [3]	<10.3 [3]	<10.2 [4]	<9.43 [4]	<9.43 [6]	<23.3 [5]	<23.3 [4]	<23.8 [2]	<23.3 [2]	<23.8 [4]		ug/L	<9.43 [6]	<23.8 [4]
4,6-Dinitro-2-methylphenol	ug/L	<9.90 [3]	<10.3 [3]	<10.2 [4]	<9.43 [4]	<9.43 [6]	<23.3 [5]	<23.3 [4]	<23.8 [2]	<23.3 [2]	<23.8 [4]		ug/L	<9.43 [6]	<23.8 [4]
2-Methylphenol	ug/L	<9.90 [3]	<10.3 [3]	<10.2 [4]	<9.43 [4]	<9.43 [6]	<23.3 [5]	<23.3 [4]	<23.8 [2]	<23.3 [2]	<23.8 [4]		ug/L	<9.43 [6]	<23.8 [4]
2-Nitrophenol	ug/L	<9.90 [3]	<10.3 [3]	<10.2 [4]	<9.43 [4]	<9.43 [6]	<23.3 [5]	<23.3 [4]	<23.8 [2]	<23.3 [2]	<23.8 [4]		ug/L	<9.43 [6]	<23.8 [4]
4-Nitrophenol	ug/L	<9.90 [3]	<10.3 [3]	<10.2 [4]	<9.43 [4]	<9.43 [6]	<23.3 [5]	<23.3 [4]	<23.8 [2]	<23.3 [2]	<23.8 [4]		ug/L	<9.43 [6]	<23.8 [4]
2,4,5-Trichlorophenol	ug/L	<9.90 [3]	<10.3 [3]	<10.2 [4]	<9.43 [4]	<9.43 [6]	<23.3 [5]	<23.3 [4]	<23.8 [2]	<23.3 [2]	<23.8 [4]		ug/L	<9.43 [6]	<23.8 [4]
2,4,6-Trichlorophenol	ug/L	<9.90 [3]	<10.3 [3]	<10.2 [4]	<9.43 [4]	<9.43 [6]	<23.3 [5]	<23.3 [4]	<23.8 [2]	<23.3 [2]	<23.8 [4]		ug/L	<9.43 [6]	<23.8 [4]
Pentachlorophenol (PCP)	ug/L	<9.90 [3]	<10.3 [3]	<10.2 [4]	<9.43 [4]	<9.43 [6]	<23.3 [5]	<23.3 [4]	<23.8 [2]	<23.3 [2]	<23.8 [4]		ug/L	<9.43 [6]	<23.8 [4]
Phenol	ug/L	<9.90 [3]	<10.3 [3]	<10.2 [4]	<9.43 [4]	<9.43 [6]	<23.3 [5]	<23.3 [4]	<23.8 [2]	<23.3 [2]	<23.8 [4]		ug/L	<9.43 [6]	<23.8 [4]
METALS															
Hexavalent Chromium	mg/L	<0.0100	<0.0100	<0.0100	<0.0100	0200 [8] [19] [5] [6]	0.0398	<0.0100	<0.0100	<0.0100	<0.0100		mg/L	<0.0100	0.0398
Silver	ug/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<0.0100	ug/L	<0.0100	<0.0100
Arsenic	ug/L	7.00 [1] [2]	7.31	7.59	7.81	7.34	5.20	5.71	7.54	5.06	4.91	2.93	ug/L	2.93	7.81
Cadmium	ug/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Chromium	ug/L	<1.00	<1.00	1.27	1.04	<1.00	2.96	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	2.96
Copper	ug/L	<5.00	<5.00	<5.00	<5.00	<5.00	145	<5.00	<5.00	<5.00	<5.00	<5.00	ug/L	<5.00	145
Iron	ug/L	30900	31100	30500	30500	31100	32200	36000	30100	14300	14700	2060	ug/L	2060	36000
Mercury	ug/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	ug/L	<0.0100	<0.0100
Manganese	ug/L	1370	1260	1380	1380	1390	1530	2030	1250	1380	1370	1380	ug/L	1250	1530
Nickel	ug/L	1.06	1.08	1.12	1.01	1.07	24.1	1.00	1.22	5.73	2.43	12.1	ug/L	1.00	24.1
Lead	ug/L	3.28	<1.00	<1.00	<1.00	1.60	39.7	<1.00	<1.00	2.79	1.74	3.92	ug/L	<1.00	39.7
Selenium	ug/L	4.18 [1] [2]	4.80 [1] [2]	3.97	3.51	5.18	4.79	5.60	2.72	2.86	4.11	5.00	ug/L	2.72	5.60
Zinc	ug/L	<4.00	4.33	<4.00	<4.00	<4.00	311	<4.00	<4.00	7.08	7.11	12.8	ug/L	<4.00	311
Calcium	ug/L	60400	58500	58200	62700	65300	56800	75700	61800	62500	61800	62800	ug/L	56800	75700
Chromium	ug/L	<1.00	<1.00										ug/L	<1.00	<1.00
Hardness (Calc by 6020)	mg CaCO3/L	309	309	295	317	321	298	381	310	312	313	318	mg CaCO3/L	295	381
Magnesium	ug/L	38300	39600	36300	38900	38500	38100	46700	37700	37900	38400	39100	ug/L	36300	46700
Trivalent Chromium	ug/L	<11.0	<11.0	<11.0	<11.0	<21.0	<11.0	<11.0	<11.0	<11.0	<11.0	<1.00	ug/L	<1.00	<21.0
VOLATILE ORGANICS															
Acetone	ug/L	<400	<400	<400	<400	<400	<200	<200	<200	<200	<200	<200	ug/L	<200	<400
Benzene	ug/L	72.0	69.6	85.0	80.4	75.4	23.2	73.0	102	51.4	54.3	42.1	ug/L	23.2	102
2-Butanone (MEK)	ug/L	<200	<200	<200	<200	<200	<100	<100	<100	<100	<100	247	ug/L	<100	247
1,1-Dichloroethene	ug/L	13.2	17.2	11.8	12.4	14.2	<5.00	16.6	16.0	<5.00	9.10	<5.00	ug/L	<5.00	17.2
cis-1,2-Dichloroethene	ug/L	1490	2530	1550	1940	1760	761	1560	1720	1580	1560	1060	ug/L	761	2530
trans-1,2-Dichloroethene	ug/L	<10.0	<10.0	<10.0	10.4	<10.0	<5.00	11.7	12.1	<5.00	7.40	<5.00	ug/L	<5.00	12.1
Ethylbenzene	ug/L	14.8	<10.0	18.2	16.2	14.2	8.20	18.8	22.2	13.7	17.8	5.90	ug/L	5.90	22.2
Tetrachloroethene (PCE)	ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	<5.00	7.00	<5.00	<5.00	<5.00	<5.00	ug/L	<5.00	<10.0
Toluene	ug/L	<10.0	10.8	11.2	10.6	10.4	<5.00	15.2	13.5	7.30	7.30	<5.00	ug/L	<5.00	15.2
Trichloroethene (TCE)	ug/L	106	372	107	168	233	<5.00	44.0	59.7	70.6	208	80.4	ug/L	<5.00	372
Vinyl chloride	ug/L	715	890	664	706	676	43.7	698	638	344	333	172	ug/L	43.7	890
m,p-Xylene	ug/L	<20.0	<20.0	<20.0	<20.0	<20.0	13.1	23.7	16.1	20.0	25.0	<10.0	ug/L	<10.0	25.0
o-Xylene	ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	<5.00	13.6	11.6	7.40	9.10	<5.00	ug/L	<5.00	13.6

FootNumber	Qualifier	
1	A-01	Ending CCV fails at 89% (limit 90-110). Data possibly biased slightly low.
2	B	Analyte detected in the associated extraction blank.
3	B-01	Analyte detected in the extraction blank at a level greater than the MRL. All associated samples contain the same analyte at a level that is greater than 10 times the method blank.
4	C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A.
5	H-01	This sample was analyzed outside the EPA recommended holding time.
6	R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
7	S-04	Surrogate recovery is outside of established control limits due to a sample matrix effect.
8	S-05	Surrogate recovery cannot be accurately quantified due to sample dilution required from high analyte concentration and/or matrix interference.
9	S-07	Surrogate recovery above control limits. Related target analytes were not detected, or detected below reporting limits, therefore data quality is not affected.

Siltronic EQ Effluent	Units	08/26/09	08/25/09	08/21/09	08/19/09	08/18/09	08/12/09	08/10/09	08/06/09	08/05/09	08/04/09	Units	Min	Max
pH	pH Units	9.76	9.96	9.82	9.79	9.88	9.87	9.53	9.7	9.69	10.2	pH Units	9.53	10.2
pH Temperature	pH Units	19.3	18.8	19.5	16.4	18.8	21.1	23.7	22.5	17.7	17.1	pH Units	16.4	23.7
Total Dissolved Solids	mg/L	664	709	620	636	638	660	638	659	608	744	mg/L	608	744
Total Suspended Solids	mg/L	5.00	20.0	24.0	56.0	31.0	27.0	8	16	34	25	mg/L	5	56
Total Organic Carbon	mg/L	5.01	8.07	8.34	7.47	7.44	<2.00	3.03	5.73	4.01	7.56	mg/L	<2.00	8.34
CYANIDE														
Cyanide, Total	mg/L	0.348	0.396	0.333	0.366	0.390		0.363	0.321	0.283	0.463	mg/L	0.283	0.463
Cyanide, WAD	mg/L	0.0508	0.0528	0.0438	0.0543	0.0543		0.0443	0.0489	0.0635	0.0878	mg/L	0.0438	0.0878
Cyanide, Amenable	mg/L	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500		<0.00500	<0.00500	<0.00500	0.0351	mg/L	<0.00500	0.0351
CATC, chlorinated	mg/L	0.420	0.407	0.398	0.413	0.422		0.392	0.401	0.4	0.428	mg/L	0.392	0.428
Cyanide, Free	mg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100		<0.0100	<0.0100	<0.0100	0.0206	mg/L	<0.0100	0.0206
CATC, total	mg/L	0.348	0.396	0.333	0.366	0.390		0.363	0.321	0.283	0.463	mg/L	0.283	0.463
Available Cyanide	mg/L		<0.0020	<0.0020			0.0035	0.0021	0.0048	0.0059		mg/L	<0.0020	0.0059
SEMI-VOLATILE ORGANICS														
Acenaphthylene	ug/L	0.0894 [3]	0.186 [3]	0.182 [4]	<0.0842 [1] [4]	<0.0792 [6]	<1.86 [5] [15]	<1.86 [4]	0.419 [2]	0.563 [2]	0.217 [4]	ug/L	<0.0792 [6]	<1.86 [4]
Acenaphthene	ug/L	0.716 [3]	0.924 [3]	1.07 [4]	0.603 [1] [4]	0.550 [6]	<1.86 [5] [15]	<1.86 [4]	1.36 [2]	1.92 [2]	0.642 [4]	ug/L	0.603 [1] [4]	1.92 [2]
Anthracene	ug/L	<0.0755 [3]	<0.0808 [3]	<0.0816 [4]	<0.0842 [1] [4]	<0.0792 [6]	<1.86 [5] [15]	<1.86 [4]	<0.0777 [2]	<0.0784 [2]	0.184 [4] [6] [7]	ug/L	<0.0755 [3]	<1.86 [5] [15]
Benz(a)anthracene	ug/L	<0.0755 [3]	<0.0808 [3]	<0.0816 [4]	<0.0842 [1] [4]	<0.0792 [6]	<1.86 [5] [15]	<1.86 [4]	<0.0777 [2]	<0.0784 [2]	<0.0762 [4]	ug/L	<0.0755 [3]	<1.86 [5] [15]
Benzo(a)pyrene	ug/L	<0.0755 [3]	<0.0808 [3]	<0.0898 [4] [16] [8]	<0.0842 [1] [4]	<0.0990 [6] [19] [8]	<2.14 [5] [14] [15] [8]	<2.09 [4] [15] [8]	<0.0971 [2] [12] [8]	<0.0980 [2] [12] [8]	<0.952 [4] [18] [8]	ug/L	<0.0755 [3]	<2.14 [5] [14] [15] [8]
Benzo(b)fluoranthene	ug/L	<0.0755 [3]	<0.0808 [3]	<0.0816 [4]	<0.0842 [1] [4]	<0.0792 [6]	<1.86 [5] [15]	<1.86 [4]	<0.0777 [2]	<0.0784 [2]	<0.762 [4]	ug/L	<0.0755 [3]	<1.86 [4]
Benzo(k)fluoranthene	ug/L	<0.0755 [3]	<0.0808 [3]	<0.0816 [4]	<0.0842 [1] [4]	<0.0792 [6]	<1.86 [5] [15]	<1.86 [4]	<0.0777 [2]	<0.0784 [2]	<0.762 [4]	ug/L	<0.0755 [3]	<1.86 [4]
Benzo(g,h,i)perylene	ug/L	<0.0755 [3]	<0.0808 [3]	<0.0816 [4]	<0.0842 [1] [4]	<0.0792 [6]	<1.86 [5] [15]	<1.86 [4]	<0.0777 [2]	<0.0784 [2]	<0.0762 [4]	ug/L	<0.0755 [3]	<1.86 [4]
Carbazole	ug/L	0.859 [3]	1.33 [3]	1.68 [4]	1.05 [1] [4]	0.831 [6]	2.92 [5] [15]	2.89 [4]	2.06 [2]	2.48 [2]	3.24 [4]	ug/L	0.831 [6]	3.24 [4]
Chrysene	ug/L	<0.0755 [3]	<0.0808 [3]	<0.0816 [4]	<0.0842 [1] [4]	<0.0792 [6]	<1.86 [5] [15]	<1.86 [4]	<0.0777 [2]	<0.0784 [2]	0.116 [4]	ug/L	<0.0755 [3]	<1.86 [4]
Dibenz(a,h)anthracene	ug/L	<0.0755 [3]	<0.0808 [3]	<0.0816 [4]	<0.0842 [1] [4]	<0.0792 [6]	<1.86 [5] [15]	<1.86 [4]	<0.0777 [2]	<0.0784 [2]	<0.0762 [4]	ug/L	<0.0755 [3]	<1.86 [4]
Dibenzofuran	ug/L	<0.0755 [3]	<0.0808 [3]	<0.0816 [4]	<0.0842 [1] [4]	<0.0792 [6]	<1.86 [5] [15]	<1.86 [4]	<0.0777 [2]	0.0859 [2]	0.211 [4]	ug/L	<0.0755 [3]	<1.86 [4]
Fluoranthene	ug/L	<0.0755 [3]	<0.0808 [3]	<0.0816 [4]	<0.0842 [1] [4]	0.0811 [6]	<1.86 [5] [15]	<1.86 [4]	<0.0777 [2]	<0.0784 [2]	0.762 [4]	ug/L	<0.0755 [3]	<1.86 [4]
Fluorene	ug/L	<0.0755 [3]	0.0998 [3]	0.126 [4] [6] [7]	<0.105 [1] [4] [15] [8]	<0.119 [6] [19] [8]	<1.86 [5] [15]	<1.86 [4]	0.262 [2]	0.376 [2]	0.292 [4]	ug/L	<0.0755 [3]	<1.86 [4]
Indeno(1,2,3-cd)pyrene	ug/L	<0.0755 [3]	<0.0808 [3]	<0.0816 [4]	<0.0842 [1] [4]	<0.0792 [6]	<1.86 [5] [15]	<1.86 [4]	<0.0777 [2]	<0.0784 [2]	<0.0762 [4]	ug/L	<0.0755 [3]	<1.86 [4]
2-Methylnaphthalene	ug/L	<0.0755 [3]	0.129 [3]	<0.0816 [4]	<0.0842 [1] [4]	0.0899 [6]	<1.86 [5] [15]	<1.86 [4]	4.42 [2]	6.63 [2]	1.17 [4]	ug/L	<0.0755 [3]	6.63 [2]
Naphthalene	ug/L	0.0902 [3]	1.49 [3]	0.283 [1] [2] [4] [3] [4]	0.119 [1] [2] [4] [3]	0.196 [3] [4] [6] [1] [3]	2.01 [3] [5] [15] [3]	<1.86 [4]	104 [2]	141 [2]	36.6 [2] [4] [3]	ug/L	0.0902 [3]	141 [2]
Phenanthrene	ug/L	<0.0755 [3]	0.0966 [3]	<0.0816 [4]	<0.0842 [1] [4]	<0.0792 [6]	<1.86 [5] [15]	<1.86 [4]	0.190 [2]	0.258 [2]	2.22 [4]	ug/L	<0.0755 [3]	2.22 [4]
Pyrene	ug/L	<0.0755 [3]	<0.0808 [3]	<0.0816 [4]	<0.0842 [1] [4]	0.0891 [6]	<1.86 [5] [15]	<1.86 [4]	<0.0777 [2]	<0.0784 [2]	0.401 [4]	ug/L	<0.0755 [3]	<1.86 [4]
2-Chlorophenol	ug/L	<0.943 [3]	<1.01 [3]	<1.02 [4]	<1.05 [1] [4]	<0.990 [6]	<23.3 [5] [15]	<23.3 [4]	<0.971 [2]	<0.980 [2]	<0.952 [4]	ug/L	<0.943 [3]	<23.3 [4]
2,4-Dichlorophenol	ug/L	<0.943 [3]	<1.01 [3]	<1.02 [4]	<1.05 [1] [4]	<0.990 [6]	<23.3 [5] [15]	<23.3 [4]	<0.971 [2]	<0.980 [2]	<0.952 [4]	ug/L	<0.943 [3]	<23.3 [4]
2,4-Dimethylphenol	ug/L	<0.943 [3]	<1.01 [3]	<1.02 [4]	<1.05 [1] [4]	<0.990 [6]	<23.3 [5] [15]	<23.3 [4]	<0.971 [2]	<0.980 [2]	<0.952 [4]	ug/L	<0.943 [3]	<23.3 [4]
4,6-Dinitro-2-methylphenol	ug/L	<0.943 [3]	<1.01 [3]	<1.02 [4]	<1.05 [1] [4]	<0.990 [6]	<23.3 [5] [15]	<23.3 [4]	<0.971 [2]	<0.980 [2]	<0.952 [4]	ug/L	<0.943 [3]	<23.3 [4]
2-Methylphenol	ug/L	<0.943 [3]	<1.01 [3]	<1.02 [4]	<1.05 [1] [4]	<0.990 [6]	<23.3 [5] [15]	<23.3 [4]	<0.971 [2]	<0.980 [2]	<0.952 [4]	ug/L	<0.943 [3]	<23.3 [4]
2-Nitrophenol	ug/L	<0.943 [3]	<1.01 [3]	<1.02 [4]	<1.05 [1] [4]	<0.990 [6]	<23.3 [5] [15]	<23.3 [4]	<0.971 [2]	<0.980 [2]	<0.952 [4]	ug/L	<0.943 [3]	<23.3 [4]
4-Nitrophenol	ug/L	<0.943 [3]	<1.01 [3]	<1.02 [4]	<1.05 [1] [4]	<0.990 [6]	<23.3 [5] [15]	<23.3 [4]	<0.971 [2]	<0.980 [2]	<0.952 [4]	ug/L	<0.943 [3]	<23.3 [4]
2,4,5-Trichlorophenol	ug/L	<0.943 [3]	<1.01 [3]	<1.02 [4]	<1.05 [1] [4]	<0.990 [6]	<23.3 [5] [15]	<23.3 [4]	<0.971 [2]	<0.980 [2]	<0.952 [4]	ug/L	<0.943 [3]	<23.3 [4]
2,4,6-Trichlorophenol	ug/L	<0.943 [3]	<1.01 [3]	<1.02 [4]	<1.05 [1] [4]	<0.990 [6]	<23.3 [5] [15]	<23.3 [4]	<0.971 [2]	<0.980 [2]	<0.952 [4]	ug/L	<0.943 [3]	<23.3 [4]
Pentachlorophenol (PCP)	ug/L	<0.943 [3]	<1.01 [3]	<1.02 [4]	<1.05 [1] [4]	<0.990 [6]	<23.3 [5] [15]	<23.3 [4]	<0.971 [2]	<0.980 [2]	<0.952 [4]	ug/L	<0.943 [3]	<23.3 [4]
Phenol	ug/L	<0.943 [3]	<1.01 [3]	<1.02 [4]	<1.05 [1] [4]	<0.990 [6]	<23.3 [5] [15]	<23.3 [4]	<0.971 [2]	<0.980 [2]	<0.952 [4]	ug/L	<0.943 [3]	<23.3 [4]
METALS														
Hexavalent Chromium	mg/L	<0.0100	0.0173	<0.0100	<0.0100	0.0200 [8] [19] [6] [8]	<0.100 [14] [8]	<0.0100	<0.0100	<0.0100	<0.0100	mg/L	<0.0100	<0.0200 [8] [19] [6] [8
Silver	ug/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Arsenic	ug/L	4.32 [1] [3]	5.03 [1] [3]	4.36 [1] [3]	3.97 [2] [3]	3.70	3.32	2.94	4	3.72	3.83	ug/L	2.94	5.03 [1] [3]
Cadmium	ug/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Chromium	ug/L	<1.00	<1.00	1.07	1.02	<1.00	<1.00	<1.00	<1.00	<1.00	1	ug/L	<1.00	<1.00
Copper	ug/L	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	7.07	ug/L	<5.00	7.07
Iron	ug/L	5040	5300	4330	3310	4510	775	1590	1900	2220	3630	ug/L	775	5300
Mercury	ug/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	ug/L	<0.0100	<0.0100
Manganese	ug/L	277	298	309	359	258	178	221	270	351	219	ug/L	178	359
Nickel	ug/L	1.12	1.44	1.63	1.72	<1.00	1.00	1.18	1.77	1.49	1.32	ug/L	1	1.77
Lead	ug/L	<1.00	<1.00	1.34	1.80	<1.00	6.32	1.21	1.5	1.31	<1.00	ug/L	<1.00	6.32
Selenium	ug/L	4.84 [1] [3]	5.21 [1] [3]	5.51	3.78	4.71	4.61	4.29	2.99	3.06	4.58	ug/L	2.99	5.51
Zinc	ug/L	7.78	<4.00	4.01	<4.00	<4.00	<4.00	4.52	5.37	<4.00	12.4	ug/L	<4.00	12.4
Calcium	ug/L	2920	5850	5630	5680	6720	4790	2000	4460	8480	3350	ug/L	2000	6720
Chromium	ug/L	<1.00	<1.00									ug/L	<1.00	<1.00
Hardness (Calc by 6020)	mg CaCO3/L	147	153	150	155	143	134	141	147	160	157	mg CaCO3/L	134	160
Magnesium	ug/L	34000	33600	33000	34200	30700	29700	33000	32900	33800	36200	ug/L	29700	36200
Trivalent Chromium	ug/L	<11.0	<11.0	<11.0	<11.0	<21.0	<101	<11.0	<11.0	<11.0	<11.0	ug/L	<11.0	<101
VOLATILE ORGANICS														
Acetone	ug/L	<200	<200	<200	<200	<200	<40.0	<40.0 [17]	<200	<200	<400 [19]	ug/L	<40.0	<400 [19]
Benzene	ug/L	9.20	12.4	15.2	9.90	7.80	22.6	4.04 [17]	18.4	29.2	9.00 [19]	ug/L	4.04 [17]	29.2
2-Butanone (MEK)	ug/L	<100	<100	<100	<100	<100	<20.0	<20.0 [17]	<100	<100	<200 [19]	ug/L	<20.0	<200 [19]
1,1-Dichloroethene	ug/L	<5.00	<5.00	<5.00	<5.00	<5.00	2.78	<1.00 [17]	<5.00	<5.00	<10.0 [19]	ug/L	2.78	<10.0 [19]
cis-1,2-Dichloroethene	ug/L	420	545	519	488	390	880 [19]	206 [17]	624	950	275 [19]	ug/L	206 [17]	950
trans-1,2-Dichloroethene	ug/L	<5.00	<5.00	<5.00	<5.00	13.4	5.70	1.54 [17]	<5.00	<5.00	<10.0 [19]	ug/L	1.54 [17]	13.4
Ethylbenzene	ug/L	<5.00	<5.00	<5.00	<5.00	<5.00	10.2	<1.00 [17]	5.3	9	<10.0 [19]	ug/L	<1.00 [17]	10.2
Tetrachloroethene (PCE)	ug/L	<5.00	<5.00	<5.00	<5.00	<5.00	<1.00	<1.00 [17]	<5.00	<5.00	<10.0 [19]	ug/L	<1.00	<10.0 [19]
Toluene	ug/L	<5.00	<5.00	<5.00	<5.00	<5.00	3.08	<1.00 [17]	<5.00	5.1	<10.0 [19]	ug/L	3.08	<10.0 [19]
Trichloroethene (TCE)	ug/L	33.7	44.7	46.0	31.7	17.5	1.18	8.60 [17]	53	87.9	29.0 [19]	ug/L	1.18	87.9
Vinyl chloride	ug/L	43.7	60.7	61.3	37.7	29.9	113	3.12 [17]	44.7	98.2	21.4 [19]	ug/L	3.12 [17]	98.2
m,p-Xylene	ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	13.2	98.2	<10.0	14.3	27.4 [19]	ug/L	<10.0	98.2
o-Xylene	ug/L	<5.00	<5.00	<5.00	<5.00	<5.00	5.02	<1.00 [17]	<5.00	5.4	11.2 [19]	ug/L	<1.00 [17]	11.2 [19]

FootNumber	Qualifier	TextBody
1	A-01b	Naphthalene detected in sample is less then ten times the level detected in the method blank. Results may be biased high.
2	A-02	Naphthalene less than amount detected in blank. Potentially biased high.
3	B	Analyte detected in the associated extraction blank.
4	B-01	Analyte detected in the extraction blank at a level greater than the MRL. All associated samples contain the same analyte at a level that is greater than 10 times the method blank.
5	C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A.
6	H-01	This sample was analyzed outside the EPA recommended holding time.
7	M-02	Due to matrix interference, this analyte cannot be accurately quantified. The reported result is estimated.
8	R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
9	R-04	Reporting levels elevated due to dilution necessary for analysis.
10	RR-1	Not Reported - Overdiluted. Sample will be Rerun.
11	S-04	Surrogate recovery is outside of established control limits due to a sample matrix effect.
12	S-06	Surrogate recovery is outside of established control limits.
13	S-07	Surrogate recovery above control limits. Related target analytes were not detected, or detected below reporting limits, therefore data quality is not affected.
14	X	See Case Narrative.

Siltronic IPC Effluent	Units	08/26/09	08/25/09	08/21/09	08/19/09	08/18/09	08/12/09	08/10/09	08/06/09	08/05/09	08/04/09	08/03/09	07/31/09	Units	Min	Max
Dissolved Iron	ug/L	165 [4] [2]	192 [4] [2]	253 [5] [2]	123 [5] [2]	167 [7] [2]	152 [6] [2]	142 [5] [2]	<100 [4] [2]	167 [4] [2]	<100 [5] [2]	153 [13] [2]	173 [4] [2]	ug/L	<100 [5] [2]	253 [5] [2]
Dissolved Manganese	ug/L	14.7 [4] [2]	23.1 [4] [2]	22.2 [5] [2]	15.5 [5] [2]	7.92 [7] [2]	21.8 [6] [2]	8.04 [5] [2]	29.3 [4] [2]	34.5 [4] [2]	6.30 [5] [2]	2.81 [13] [2]	10.2 [4] [2]	ug/L	2.81 [13] [2]	34.5 [4] [2]
Arsenic	ug/L	4.99 [1] [1]	4.3	4.38 [1] [1]	3.98 [2] [1]	3.82	3.19	3.13	3.93	3.92	4.4	4.01	4.39	ug/L	3.13	4.99 [1] [1]
Iron	ug/L	4870	3280	3880	3140	4280	1010	1480	1890	2320	4070	4640	9340	ug/L	1010	9340
Manganese	ug/L	270	236	304	253	247	189	202	259	327	224	244	366	ug/L	189	366
FootNumber	Qualifier	TextBody														
1	B	Analyte detected in the associated extraction blank.														
2	FILT	Sample was lab filtered and acid preserved prior to analysis. See sample preparation section of report for date and time of filtration.														

Siltronic AOP Effluent	Units	08/26/09	08/25/09	08/21/09	08/19/09	08/18/09	08/12/09	08/10/09	08/06/09	08/05/09	08/04/09	08/03/09	07/31/09	Units	Min	Max
Total Organic Carbon	mg/L	5.76	6.21	5.19	7.23	8.8	<2.00	4.72 [1] [1]	6.62	3.1	6.9	5.38	9.11	mg/L	<2.00	9.11
CYANIDE																
Cyanide, Total	mg/L	0.187	0.135	0.118	0.118	0.143	0.0691	0.0405	0.0413	0.0558	0.031	0.0733	0.0479	mg/L	0.031	0.187
Cyanide, WAD	mg/L	0.0667	0.0331	0.0386	0.0448	0.06	0.0312	0.0189	0.0267	0.0442	0.0174	0.0402	0.0228	mg/L	0.0174	0.0667
Cyanide, Amenable	mg/L	0.0116	0.0202	0.0159	0.0348	0.0365	0.0166	0.0072	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	mg/L	<0.00500	0.0365
CATC, chlorinated	mg/L	0.175	0.115	0.102	0.0829	0.106	0.0525	0.0333	0.0634	0.0591	0.0287	0.0815	0.0456	mg/L	0.0287	0.175
Cyanide, Free	mg/L	0.0536	0.0342	0.0376	0.034	0.0474	0.0324	<0.0100	<0.0100	0.0163	<0.0100	0.0154	<0.0100	mg/L	<0.0100	0.0536
CATC, total	mg/L	0.187	0.135	0.118	0.118	0.143	0.0691	0.0405	0.0413	0.0558	0.031	0.0733	0.0479	mg/L	0.031	0.187
Available Cyanide	mg/L		0.0760	0.0320			0.0590	0.0660	0.0200	0.0340				mg/L	0.0200	0.0760
SEMI-VOLATILE ORGANICS																
Acenaphthylene	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0762 [4]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	<0.0755 [5] [11]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
Acenaphthene	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0762 [4]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	<0.0755 [5] [11]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
Anthracene	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0762 [4]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	<0.0755 [5] [11]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
Benz(a)anthracene	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0762 [4]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	<0.0755 [5] [11]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
Benzo(a)pyrene	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0800 [4] [16] [9]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	<0.0755 [5] [11]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
Benzo(b)fluoranthene	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0762 [4]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	<0.0755 [5] [11]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
Benzo(k)fluoranthene	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0762 [4]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	<0.0755 [5] [11]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
Benzo(g,h,i)perylene	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0762 [4]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	<0.0755 [5] [11]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
Carbazole	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0762 [4]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	0.0784 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	13 [5] [11] [28] [9]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
Chrysene	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0762 [4]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	<0.0755 [5] [11]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
Dibenz(a,h)anthracene	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0762 [4]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	<0.0755 [5] [11]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
Dibenzofuran	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0762 [4]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	<0.0755 [5] [11]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
Fluoranthene	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0762 [4]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	<0.0755 [5] [11]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
Fluorene	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0762 [4]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	<0.0755 [5] [11]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
Indeno(1,2,3-cd)pyrene	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0762 [4]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	<0.0755 [5] [11]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
2-Methylnaphthalene	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0762 [4]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	<0.0755 [5] [11]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
Naphthalene	ug/L	0.707 [3]	0.133 [3]	13 [1] [2] [4] [5] [6]	0.134 [1] [2] [4] [5]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.114 [2] [12] [9]	<0.113 [2] [12] [9]	0.248 [2] [4] [5]	[5] [9] [11] [2] [5]	0.234	ug/L	<0.113 [2] [12] [9]	0.707 [3]
Phenanthrene	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0762 [4]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	<0.0755 [5] [11]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
Pyrene	ug/L	<0.0769 [3]	<0.0755 [3]	<0.0762 [4]	<0.0800 [1] [4]	<0.0769 [6]	<0.0762 [5]	<0.0762 [4]	<0.0762 [2]	<0.0755 [2]	<0.0769 [4]	<0.0755 [5] [11]	<0.0769	ug/L	<0.0755 [3]	<0.0800 [1] [4]
2-Chlorophenol	ug/L	<0.962 [3]	<0.943 [3]	<0.952 [4]	<1.00 [1] [4]	<0.962 [6]	<0.952 [5]	<0.952 [4]	<0.952 [2]	<0.943 [2]	<0.962 [4]	<0.943 [5] [11]	<0.962	ug/L	<0.943 [5] [11]	<1.00 [1] [4]
2,4-Dichlorophenol	ug/L	<0.962 [3]	<0.943 [3]	<0.952 [4]	<1.00 [1] [4]	<0.962 [6]	<0.952 [5]	<0.952 [4]	<0.952 [2]	<0.943 [2]	<0.962 [4]	<0.943 [5] [11]	<0.962	ug/L	<0.943 [5] [11]	<1.00 [1] [4]
2,4-Dimethylphenol	ug/L	<0.962 [3]	<0.943 [3]	<0.952 [4]	<1.00 [1] [4]	<0.962 [6]	<0.952 [5]	<0.952 [4]	<0.952 [2]	<0.943 [2]	<0.962 [4]	<0.943 [5] [11]	<0.962	ug/L	<0.943 [5] [11]	<1.00 [1] [4]
4,6-Dinitro-2-methylphenol	ug/L	<0.962 [3]	<0.943 [3]	<0.952 [4]	<1.00 [1] [4]	<0.962 [6]	<0.952 [5]	<0.952 [4]	<0.952 [2]	<0.943 [2]	<0.962 [4]	<0.943 [5] [11]	<0.962	ug/L	<0.943 [5] [11]	<1.00 [1] [4]
2-Methylphenol	ug/L	<0.962 [3]	<0.943 [3]	<0.952 [4]	<1.00 [1] [4]	<0.962 [6]	<0.952 [5]	<0.952 [4]	<0.952 [2]	<0.943 [2]	<0.962 [4]	<0.943 [5] [11]	<0.962	ug/L	<0.943 [5] [11]	<1.00 [1] [4]
2-Nitrophenol	ug/L	<0.962 [3]	<0.943 [3]	<0.952 [4]	<1.00 [1] [4]	<0.962 [6]	<0.952 [5]	<0.952 [4]	<0.952 [2]	<0.943 [2]	<0.962 [4]	<0.943 [5] [11]	<0.962	ug/L	<0.943 [5] [11]	<1.00 [1] [4]
4-Nitrophenol	ug/L	<0.962 [3]	<0.943 [3]	<0.952 [4]	<1.00 [1] [4]	<0.962 [6]	<0.952 [5]	<0.952 [4]	<0.952 [2]	<0.943 [2]	<0.962 [4]	<0.943 [5] [11]	<0.962	ug/L	<0.943 [5] [11]	<1.00 [1] [4]
2,4,5-Trichlorophenol	ug/L	<0.962 [3]	<0.943 [3]	<0.952 [4]	<1.00 [1] [4]	<0.962 [6]	<0.952 [5]	<0.952 [4]	<0.952 [2]	<0.943 [2]	<0.962 [4]	<0.943 [5] [11]	<0.962	ug/L	<0.943 [5] [11]	<1.00 [1] [4]
2,4,6-Trichlorophenol	ug/L	<0.962 [3]	<0.943 [3]	<0.952 [4]	<1.00 [1] [4]	<0.962 [6]	<0.952 [5]	<0.952 [4]	<0.952 [2]	<0.943 [2]	<0.962 [4]	<0.943 [5] [11]	<0.962	ug/L	<0.943 [5] [11]	<1.00 [1] [4]
Pentachlorophenol (PCP)	ug/L	<0.962 [3]	<0.943 [3]	<0.952 [4]	<1.00 [1] [4]	<0.962 [6]	<0.952 [5]	<0.952 [4]	<0.952 [2]	<0.943 [2]	<0.962 [4]	<0.943 [5] [11]	<0.962	ug/L	<0.943 [5] [11]	<1.00 [1] [4]
Phenol	ug/L	<0.962 [3]	<0.943 [3]	<0.952 [4]	<1.00 [1] [4]	<0.962 [6]	<0.952 [5]	<0.952 [4]	<0.952 [2]	<0.943 [2]	<0.962 [4]	<0.943 [5] [11]	<0.962	ug/L	<0.943 [5] [11]	<1.00 [1] [4]
METALS																
Arsenic	ug/L	5.44	4.93	4.77	4.31	4.52	4.03	4.01	4.56	4.43	5.2	4.76	5.16	ug/L	4.01	5.44
VOLATILE ORGANICS																
Acetone	ug/L	20.6	36.8	38.6	30	42.5	33.0 [19]	43.3	51.4	46.7	104 [17] [8]	65.3 [26] [8]	133 [15]	ug/L	20.6	133 [15]
Benzene	ug/L	0.62	<0.250	<0.250	<0.250	<0.250	<0.250 [19]	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250 [15]	ug/L	<0.250 [15]	0.62
2-Butanone (MEK)	ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0 [19]	<10.0	47.4	14.8	30.9 [17] [8]	34.4 [26] [8]	50.4 [15]	ug/L	<10.0	50.4 [15]
1,1-Dichloroethene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [19]	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [15]	ug/L	<0.500 [15]	<0.500 [15]
cis-1,2-Dichloroethene	ug/L	50	22.1	15	13.4	14.6	7.23 [19]	1.82	6.82	<0.500	4.77	14.5	5.22 [15]	ug/L	1.82	50
trans-1,2-Dichloroethene	ug/L	2.16	1.08	0.57	0.67	0.97	<0.500 [19]	<0.500	<0.500	0.52	<0.500	0.64	0.640 [15]	ug/L	<0.500	2.16
Ethylbenzene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [19]	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [15]	ug/L	<0.500 [15]	<0.500 [15]
Tetrachloroethene (PCE)	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [19]	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [15]	ug/L	<0.500 [15]	<0.500 [15]
Toluene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [19]	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [15]	ug/L	<0.500 [15]	<0.500 [15]
Trichloroethene (TCE)	ug/L	4.88	3.11	1.77	1.1	0.85	<0.500 [19]	<0.500	1.02	1.72	0.52	1.89	1.06 [15]	ug/L	<0.500	4.88
Vinyl chloride	ug/L	1.21	<0.500	<0.500	<0.500	<0.500	<0.500 [19]	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [15]	ug/L	<0.500 [15]	1.21
m,p-Xylene	ug/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00 [19]	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00 [15]	ug/L	<1.00 [15]	<1.00 [15]
o-Xylene	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [19]	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500 [15]	ug/L	<0.500 [15]	<0.500 [15]

FootNumber	Qualifier	TextBody
1	A-01	Due to high alkalinity, H3PO4 was added to drive off IOC.
2	A-01a	Result less than 10 times amount detected in method blank. Results may be biased high.
3	A-01d	Sample injected 2 minutes outside the 12 hour tune window. Data accepted.
4	A-02	Naphthalene less than amount detected in blank. Potentially biased high.
5	B	Analyte detected in the associated extraction blank.
6	B-01	Analyte detected in the extraction blank at a level greater than the MRL. All associated samples contain the same analyte at a level that is greater than 10 times the method blank.
7	C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A.
8	Q-30	Recovery for Lab Control Spike (LCS) is below the lower control limit. Data may be biased low.
9	R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
10	S-04	Surrogate recovery is outside of established control limits due to a sample matrix effect.
11	S-06	Surrogate recovery is outside of established control limits.
12	V-01	Sample aliquot taken from VOA vial with headspace (air bubble greater than 6 mm diameter).

Final Siltronic Effluent Thru GAC	Units	08/28/09	08/20/09	08/12/09	Units	Min	Max
pH	pH Units	7.6	7.55	7.31	pH Units	7.31	7.6
pH Temperature	pH Units	19.5	16	22	pH Units	16	22
Total Dissolved Solids	mg/L	723	1060	718	mg/L	718	1060
Total Suspended Solids	mg/L	16	<5.00	<5.00	mg/L	<5.00	16
Total Organic Carbon	mg/L	3.72	2.95	<2.00	mg/L	<2.00	3.72
Iron	ug/L	<100 [4] [4]	<100 [6] [4]	<100 [5] [4]	ug/L	<100 [5] [4]	<100 [5] [4]
Manganese	ug/L	46.3 [4] [4]	25.6 [6] [4]	34.6 [5] [4]	ug/L	25.6 [6] [4]	46.3 [4] [4]
CYANIDE							
Cyanide, Total	mg/L	0.152	0.0801	0.0226	mg/L	0.0226	0.152
Cyanide, WAD	mg/L	0.0288	0.0139	0.0079	mg/L	0.0079	0.0288
Cyanide, Amenable	mg/L	0.0146	<0.00500	<0.00500	mg/L	<0.00500	0.0146
CATC, chlorinated	mg/L	0.137	0.0886	0.026	mg/L	0.026	0.137
Cyanide, Free	mg/L	<0.0100	<0.0100	<0.0100	mg/L	<0.0100	<0.0100
CATC, total	mg/L	0.152	0.0801	0.0226	mg/L	0.0226	0.152
Available Cyanide	mg/L		<0.0020	<0.0020	mg/L	<0.0020	<0.0020
SEMI-VOLATILE ORGANICS							
Acenaphthylene	ug/L	<0.0816 [3]	<0.0769 [5]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
Acenaphthene	ug/L	<0.0816 [3]	<0.0769 [5]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
Anthracene	ug/L	<0.0816 [3]	<0.0769 [5]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
Benz(a)anthracene	ug/L	<0.0816 [3]	<0.0769 [5]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
Benzo(a)pyrene	ug/L	<0.0816 [3]	<0.0808 [5] [17] [7]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
Benzo(b)fluoranthene	ug/L	<0.0816 [3]	<0.0769 [5]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
Benzo(k)fluoranthene	ug/L	<0.0816 [3]	<0.0769 [5]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
Benzo(g,h,i)perylene	ug/L	<0.0816 [3]	<0.0769 [5]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
Carbazole	ug/L	<0.0816 [3]	<0.0769 [5]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
Chrysene	ug/L	<0.0816 [3]	<0.0769 [5]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
Dibenz(a,h)anthracene	ug/L	<0.0816 [3]	<0.0769 [5]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
Dibenzofuran	ug/L	<0.0816 [3]	<0.0769 [5]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
Fluoranthene	ug/L	<0.0816 [3]	<0.0769 [5]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
Fluorene	ug/L	<0.0816 [3]	<0.0769 [5]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
Indeno(1,2,3-cd)pyrene	ug/L	<0.0816 [3]	<0.0769 [5]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
2-Methylnaphthalene	ug/L	<0.0816 [3]	<0.0769 [5]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
Naphthalene	ug/L	<0.0816 [3]	0.127 [2] [3] [5] [1] [2]	0.172 [2] [4] [1]	ug/L	<0.0816 [3]	0.172 [2] [4] [1]
Phenanthrene	ug/L	<0.0816 [3]	<0.0769 [5]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
Pyrene	ug/L	<0.0816 [3]	<0.0769 [5]	<0.0762 [4]	ug/L	<0.0762 [4]	<0.0816 [3]
2-Chlorophenol	ug/L	<1.02 [3]	<0.962 [5]	<0.952 [4]	ug/L	<0.952 [4]	<1.02 [3]
2,4-Dichlorophenol	ug/L	<1.02 [3]	<0.962 [5]	<0.952 [4]	ug/L	<0.952 [4]	<1.02 [3]
2,4-Dimethylphenol	ug/L	<1.02 [3]	<0.962 [5]	<0.952 [4]	ug/L	<0.952 [4]	<1.02 [3]
4,6-Dinitro-2-methylphenol	ug/L	<1.02 [3]	<0.962 [5]	<0.952 [4]	ug/L	<0.952 [4]	<1.02 [3]
2-Methylphenol	ug/L	<1.02 [3]	<0.962 [5]	<0.952 [4]	ug/L	<0.952 [4]	<1.02 [3]
2-Nitrophenol	ug/L	<1.02 [3]	<0.962 [5]	<0.952 [4]	ug/L	<0.952 [4]	<1.02 [3]
4-Nitrophenol	ug/L	<4.08 [3]	<0.962 [5]	<0.952 [4]	ug/L	<0.952 [4]	<4.08 [3]
2,4,5-Trichlorophenol	ug/L	<1.02 [3]	<0.962 [5]	<0.952 [4]	ug/L	<0.952 [4]	<1.02 [3]
2,4,6-Trichlorophenol	ug/L	<1.02 [3]	<0.962 [5]	<0.952 [4]	ug/L	<0.952 [4]	<1.02 [3]
Pentachlorophenol (PCP)	ug/L	<1.02 [3]	<0.962 [5]	<0.952 [4]	ug/L	<0.952 [4]	<1.02 [3]
Phenol	ug/L	<1.02 [3]	<0.962 [5]	<0.952 [4]	ug/L	<0.952 [4]	<1.02 [3]
METALS							
Hexavalent Chromium	mg/L	<0.0100	<0.0100	<0.0100 [6] [5]	mg/L	<0.0100	<0.0100
Silver	ug/L	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Arsenic	ug/L	3.73	4.83 [2] [1]	5.99	ug/L	3.73	5.99
Cadmium	ug/L	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Chromium	ug/L	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Copper	ug/L	<5.00	<5.00	<5.00	ug/L	<5.00	<5.00
Iron	ug/L	644	463	378	ug/L	378	644
Mercury	ug/L	<0.0100	0.0136	<0.0100	ug/L	<0.0100	0.0136
Manganese	ug/L	75.9	45.9	56.2	ug/L	45.9	75.9
Nickel	ug/L	2.66	2.99	4.81	ug/L	2.66	4.81
Lead	ug/L	<1.00	<1.00	<1.00	ug/L	<1.00	<1.00
Selenium	ug/L	2.54	2.73	2.1	ug/L	2.1	2.73
Zinc	ug/L	5.4	5.27	4.92	ug/L	4.92	5.4
Calcium	ug/L	5830	3310	3230	ug/L	3230	5830
Hardness (Calc by 6020)	mg CaCO3/L	150	131	135	mg CaCO3/L	131	150
Magnesium	ug/L	32800	29900	30700	ug/L	29900	32800
Trivalent Chromium	ug/L	<11.0	<11.0	<11.0	ug/L	<11.0	<11.0
VOLATILE ORGANICS							
Acetone	ug/L	<20.0	<20.0	<20.0 [15]	ug/L	<20.0 [15]	<20.0 [15]
Benzene	ug/L	<0.250	<0.250	<0.250 [15]	ug/L	<0.250	<0.250
2-Butanone (MEK)	ug/L	<10.0	<10.0	<10.0 [15]	ug/L	<10.0	<10.0
1,1-Dichloroethene	ug/L	<0.500	<0.500	<0.500 [15]	ug/L	<0.500	<0.500
cis-1,2-Dichloroethene	ug/L	<0.500	<0.500	<0.500 [15]	ug/L	<0.500	<0.500
trans-1,2-Dichloroethene	ug/L	<0.500	<0.500	<0.500 [15]	ug/L	<0.500	<0.500
Ethylbenzene	ug/L	<0.500	<0.500	<0.500 [15]	ug/L	<0.500	<0.500
Tetrachloroethene (PCE)	ug/L	<0.500	<0.500	<0.500 [15]	ug/L	<0.500	<0.500
Toluene	ug/L	<0.500	<0.500	<0.500 [15]	ug/L	<0.500	<0.500
Trichloroethene (TCE)	ug/L	<0.500	<0.500	<0.500 [15]	ug/L	<0.500	<0.500
Vinyl chloride	ug/L	<0.500	<0.500	<0.500 [15]	ug/L	<0.500	<0.500
m,p-Xylene	ug/L	<1.00	<1.00	<1.00 [15]	ug/L	<1.00 [15]	<1.00 [15]
o-Xylene	ug/L	<0.500	<0.500	<0.500 [15]	ug/L	<0.500 [15]	<0.500 [15]

FootNumber	Qualifier	TextBody
1	B	Analyte detected in the associated extraction blank.
2	B-01	Analyte detected in the extraction blank at a level greater than the MRL. All associated samples contain the same analyte at a level that is greate
3	C-05	Extract has undergone a GPC (Gel-Permeation Chromotography) cleanup per EPA 3640A.
4	FILT	Sample was lab filtered and acid preserved prior to analysis. See sample preparation section of report for date and time of filtration.
5	H-01	This sample was analyzed outside the EPA recommended holding time.
6	Q-23	Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Data is likely biased high.
7	R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
8	S-04	Surrogate recovery is outside of established control limits due to a sample matrix effect.
9	X	See Case Narrative.

Attachment H: NW Natural Bench-Scale Air Stripping Results

GASCO

MW-1 Treatment Results

METALS GROUNDWATER DATA - ASP00 METHODS 6010/6020/7470/7471							
MW-1							
	Initial	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
	9H21003-02	9H21003-03	9H21003-05	9H21003-04	9H21017-01	9H21003-01	9H21017-02
Units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Iron - Total	1.77	0.232	0.194	0.213	0.178	0.194	0.262
Manganese - Total	7.72	0.118	0.292	0.115	0.103	0.292	0.192
Conventional Chemistry Parameters by EPA Methods							
MW-1							
	Initial	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
	9H21003-02	9H21003-03	9H21003-05	9H21003-04	9H21017-01	9H21003-01	9H21017-02
Units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Cyanide (total)	0.449	0.446	0.229	0.43	0.404	0.419	0.486
Cyanide (amenable)	0.036	0.033	0.559	0.027	0.033	0.015	0.082
VOC GROUNDWATER DATA - SW846 METHOD 8260B							
MW-1							
	Initial	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
	9H21003-02	9H21003-03	9H21003-05	9H21003-04	9H21017-01	9H21003-01	9H21017-02
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Acetone	<10	<10	<10	<10	11	<10	13
Methylene chloride	<2	3	3	4	3	3	4
Toluene	1	<1	<1	<1	<1	<1	<1
Naphthalene	<1	<1	<1	<1	<1	<1	1
SVOC GROUNDWATER DATA - SW846 METHOD 8270C							
MW-1							
	Initial	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
	9H21003-02	9H21003-03	9H21003-05	9H21003-04	9H21017-01	9H21003-01	9H21017-02
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
bis(2-Ethylhexyl)phthalate	<2	<2	<2	<2	<2	<2	2

GASCO

PW-1 Treatment Results

METALS GROUNDWATER DATA - ASP00 METHODS 6010/6020/7470/7471							
PW-1							
	Initial	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
	9H21017-03	9H21017-04	9H24002-01	9H21017-05	9H21017-06	9H21017-07	9H21017-08
Units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Iron - Total	2.08	0.375	0.392	0.377	0.301	0.312	0.302
Manganese - Total	3.05	<0.005	0.026	0.016	0.049	<0.005	0.074
Conventional Chemistry Parameters by EPA Methods							
PW-1							
	Initial	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
	9H21017-03	9H21017-04	9H24002-01	9H21017-05	9H21017-06	9H21017-07	9H21017-08
Units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Cyanide (total)	0.91	0.918	0.861	0.986	1.34	0.886	0.854
Cyanide (amenable)	<0.010	0.033	<0.010	0.147	0.699	0.123	0.164
VOC GROUNDWATER DATA - SW846 METHOD 8260B							
PW-1							
	Initial	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
	9H21017-03	9H21017-04	9H24002-01	9H21017-05	9H21017-06	9H21017-07	9H21017-08
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Methylene chloride	25	26	28	23	28	22	22
Benzene	3580	145	133	63	100	16	24
Toluene	46	<10	<10	<10	<10	<10	<10
Ethylbenzene	66	<10	<10	<10	<10	<10	<10
m,p-xylene	31	<20	<20	<20	<20	<20	<20
o-xylene	28	<10	<10	<10	<10	<10	<10
Naphthalene	773	208	55	226	250	174	178
SVOC GROUNDWATER DATA - SW846 METHOD 8270C							
PW-1							
	Initial	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
	9H21017-03	9H21017-04	9H24002-01	9H21017-05	9H21017-06	9H21017-07	9H21017-08
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Phenol	21	26	36	26	33	29	33
2,4-Dimethylphenol	<4	4	6	4	5	5	5
Naphthalene	184	46	40	51	132	124	118
2-Methylnaphthalene	6	<2	4	<2	5	4	4
Acenaphthylene	4	<2	4	<2	4	3	4
Acenaphthene	3	<2	4	<2	4	3	4
Phenanthrene	2	<2	4	<2	3	<2	3
Carbazole	25	32	4	26	24	31	26

Attachment I: Siltronic Bench-Scale Air Stripping Results

Siltronic
Rec'd 8/24/09

Treatment Results

METALS GROUNDWATER DATA - ASP00 METHODS 6010/6020/7470/7471							
	Initial	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
	9H25009-01	9H25009-05	9H25015-01	9H25009-02	9H25015-02	9H25009-03	9H25009-04
Units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Iron - Total	25.2	0.241	0.190	0.158	0.172	0.16	0.149
Manganese - Total	1.40	0.011	0.040	<0.005	0.009	<0.005	0.033
Conventional Chemistry Parameters by EPA Methods							
	Initial	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
	9H25009-01	9H25009-05	9H25015-01	9H25009-02	9H25015-02	9H25009-03	9H25009-04
Units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Cyanide (total)	0.349	0.413	0.403	0.413	0.398	0.398	0.41
Cyanide (amenable)	0.141	0.043	<0.010	0.043	0.028	0.273	0.410
VOC GROUNDWATER DATA - SW846 METHOD 8260B							
	Initial	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
	9H25009-01	9H25009-05	9H25015-01	9H25009-02	9H25015-02	9H25009-03	9H25009-04
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Vinyl chloride	166	<10	<10	<10	<10	<10	<10
Methylene chloride	10	10	10	14	15	11	11
cis-1,2-dichloroethene	739	71	9	10	<5	<5	<5
Benzene	23	<5	<5	<5	<5	<5	<5
Trichloroethene	56	<5	<5	<5	<5	<5	<5
Naphthalene	25	14	6	6	5	<5	6
SVOC GROUNDWATER DATA - SW846 METHOD 8270C							
	Initial	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
	9H25009-01	9H25009-05	9H25015-01	9H25009-02	9H25015-02	9H25009-03	9H25009-04
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
3 & 4-methylphenol	<4	59	11	51	17	52	56
Naphthalene	19	9	7	7	8	5	4
bis (2-Ethylhexyl)phthalate	<3	<3	4	<3	2	<3	<3

Attachment J: Pilot Plant PowerPoint Site Presentation

NW Natural and Siltronic Groundwater Treatment Pilot Plants

Sevenson Environmental Services, Inc.

1

Pilot Issues

- Verify process treatment effectiveness
- Optimize chemical dosages
- NW Natural
  - Use initial oxidation step to remove iron, manganese, and cyanide (if possible)
- Siltronic
  - Use initial oxidation step to remove iron, manganese, and chlorinated organics (if possible).

Sevenson Environmental Services, Inc.

2

Pollutants of Concern

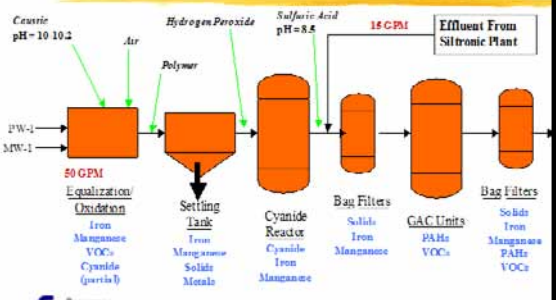
NW Natural
- DNAPL
- Iron and Manganese
- Cyanide
- Heavy Metals
- Volatile Organics
- Polyaromatic Hydrocarbons (PAHs)

Siltronic
- Iron and Manganese
- Heavy Metals
- Volatile Organics
- Chlorinated Organics
  - Vinyl chloride
  - TCE/DCE
- Polyaromatic Hydrocarbons (PAHs)

Sevenson Environmental Services, Inc.

3

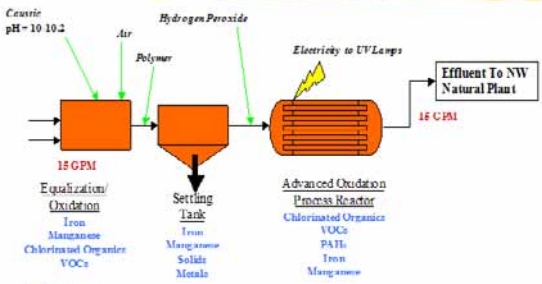
NW Natural Pilot Process Flow



Sevenson Environmental Services, Inc.

4

Siltronic Pilot Process Flow



Sevenson Environmental Services, Inc.

5

Pilot Plant Results & Schedule

- Pilot Startup
  - Started NW Natural July 23
  - Started Siltronic July 31
- Initial samples (not complete) show compliance with DEQ parameters
- Pilot Schedule
  - Run through approx. Aug 21
  - Depending upon results

Sevenson Environmental Services, Inc.

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