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July 14, 2009

Ms. Sandra Lizlovs
NYS Department of Environmental Conservation
Division of Water
Bureau of Water Permits
615 Erie Boulevard West, Suite 203
Syracuse, New York 13204-2400

Re: Carrier Corporation, Thompson Road Facility, Syracuse, New York
Engineering Design Progress Report — Treatment of PCBs in Storm Water
SPDES Permit: NY 0001163

Ms. Lizlovs:

Please find attached the Progress Report summarizing the current status of pilot study testing and engineering design progress toward a planned end-of-pipe PCB treatment system, as required by Carrier's SPDES permit.

Please call me if you have any questions at (615) 255-9300.

Sincerely,

EnSafe Inc.

By: Thomas B. Green, PE
Senior Project Manager

Encl. Engineering Design Progress Report

cc: Mr. James Burke — NYSDEC, Division of Water
Mr. Brian Baker — NYSDEC, Division of Water, Albany
Mr. Dare Adelugba — NYSDEC, Division of Water, Albany
Mr. Larry Rosenmann — NYSDEC, Division of Solid and Hazardous Materials, Albany
Ms. Mary Jane Peachey — NYSDEC, Regional Engineer
Mr. William Penn — UTC
Mr. Nelson Wong — Carrier Corporation

ENGINEERING DESIGN PROGRESS REPORT
TREATMENT OF PCBs IN STORM WATER

Revision No.: 0

Carrier Corporation
Thompson Road Facility
Syracuse, New York

EnSafe Project No.: 0888807394

Prepared for:

United Technologies Corporation
UTC Shared Remediation Services
United Technologies Building
One Financial Plaza
Hartford, Connecticut 06010

Prepared by:

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July 14, 2009

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FOIL220712

1.0 SITE HISTORY

The Carrier Thompson Road Facility (Carrier) is located in the northeast portion of Syracuse, New York, approximately one mile south of the New York State Thruway (Figure 1 — Site Location Map). The facility is bordered by Sanders Creek to the north, Thompson Road with developed and undeveloped commercial land to the west, Kinne Street with residential areas to the east, and residential and commercial areas to the south. The property slopes slightly north toward Sanders Creek. The facility property covers approximately 175 acres and a large majority of the site is either paved or covered by manufacturing and office buildings.

The facility was purchased in the 1950s by Carrier. The Carrier Syracuse facility produces or has produced a variety of products associated with the HVAC (heating, ventilation, air conditioning) industry for home and commercial applications over the years. Operations include or have included the manufacture and assembly of various components associated with HVAC units.

Carrier is currently working with the New York State Department of Environment and Conservation (NYSDEC) to evaluate polychlorinated biphenyls (PCBs) in storm water effluent under terms of the State Pollution Discharge Elimination System (SPDES) permit issued to Carrier on September 14, 2007, from NYSDEC, Division of Environmental Permits, Region 7. Specifically, Carrier has developed and implemented a ***PCB Storm Water Quality Study (PSWS)*** which includes data from 12 months of monitoring PCB concentrations in storm water discharges from Outfalls 001, 002, and 01A. The monitoring period began mid-November 2007 and was completed mid-October 2008. A report on that study was submitted to the NYSDEC in November 2008. For convenience, a summary is included in Section 3.1 of this report. To address another permit requirement, implementation of the Pollutant Minimization Program (PMP) commenced in late October 2008. Three of the quarterly monitoring events have been completed, and a summary of the results is included in Section 3.2.

As required in the Schedule of Compliance in the permit, Carrier is to submit an approvable report, signed and stamped by a professional engineer licensed to practice in the State of New York, for the design and construction of a treatment system designed to assure that the discharge from Outfall 01A achieves compliance with the PCB effluent limitations and monitoring requirements listed in their permit. As granted by NYSDEC in response to a request by Carrier, this report is to be submitted to NYSDEC by November 17, 2009, 25 months from the effective date of permit modification (EDPM). The final version of this document and its attachments will serve as that submittal. This interim draft provides a progress report as requested by NYSDEC during a June 8, 2009, meeting with Carrier.

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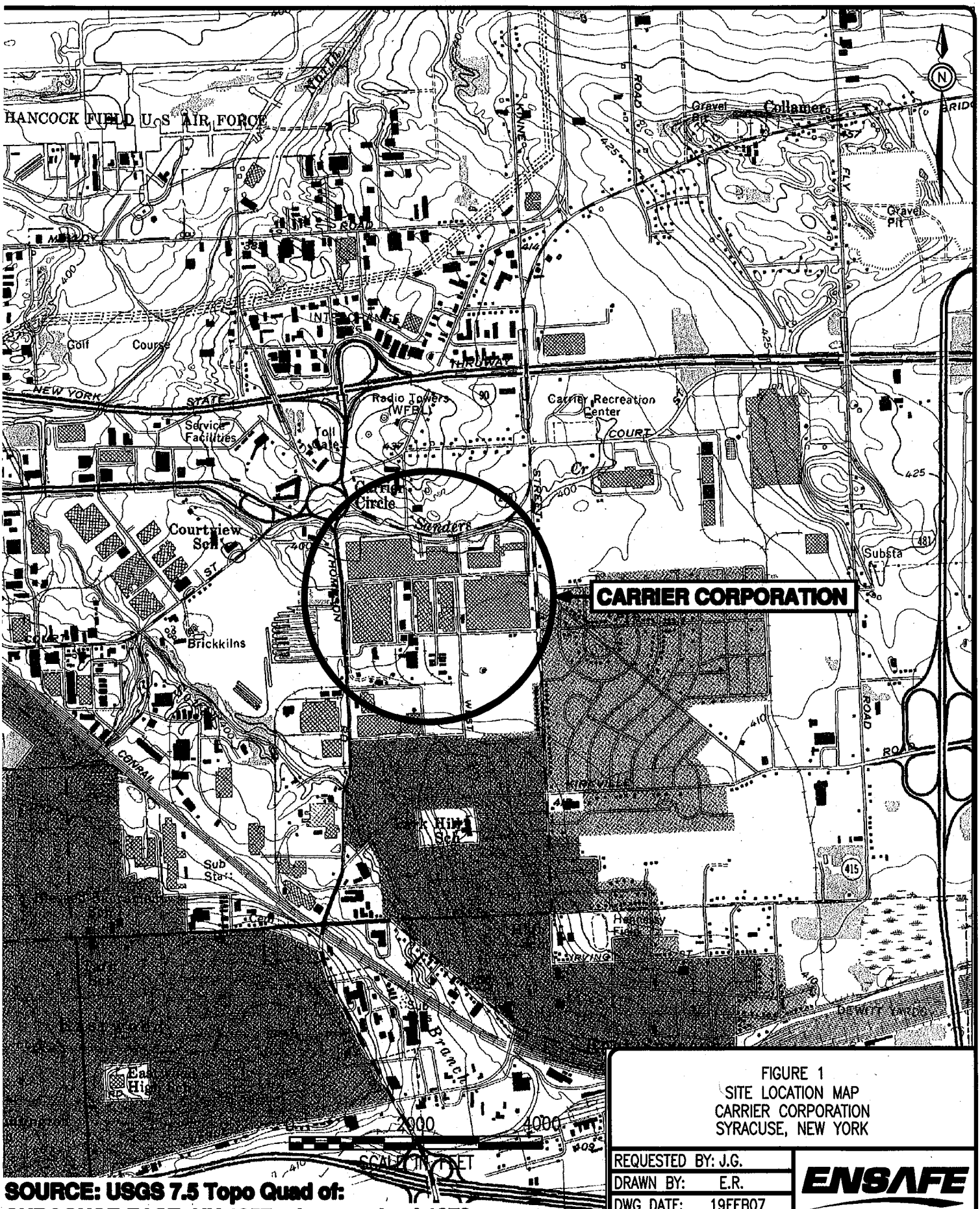

FIGURE 1
SITE LOCATION MAP
CARRIER CORPORATION
SYRACUSE, NEW YORK

REQUESTED BY: J.G.	
DRAWN BY: E.R.	
DWG DATE: 19FEB07	
DWG NO: 0800132R021	

ENSAFE
(800) 588-7962
MEMPHIS, TENNESSEE

SOURCE: USGS 7.5 Topo Quad of: SYRACUSE EAST, NY 1957; photo-revised 1978

I:\Projects-BST\0804084 Carrier Carlyle Compressor\Dwg\800132R021.dwg 2/28/2007 11:37:39 AM CST

2.0 DESIGN OBJECTIVES

With respect to PCBs specifically, the design objectives, as dictated by the permit, are:

- To control the discharge of PCBs from Outfall 01A to below the permit limits, namely 0.3 micrograms/liter (µg/L) for each of the Aroclors 1242, 1248, 1254 and 1260.

- To control the discharge of PCBs from Outfall 01A so as to avoid triggering the requirement of permit Footnote 1.b, specifically that if the concentration of any Aroclor is above the permit-specified minimum detection limit (MDL) of 0.065 µg/L for three consecutive samples, the permittee must evaluate the treatment system and identify the cause of the detectable PCBs in the discharge.

- For the discharge from Outfall 01A, to implement the maximum feasible treatment technology for treatment of PCBs (permit Footnote 1.d.)

In addition, the design will satisfy internal corporate requirements for reliability and mistake-proofing (redundancy of critical components, etc.) to assure compliance.

Based on the information to date, Carrier proposes to achieve these objectives through a phased approach by:

Phase 1

- Constructing a weir structure at the 002 Outfall to raise the elevation at which overflows commence. This will increase the capture of PCB-contaminated storm water, which originates predominantly from the 002 drainage system, and reduce the frequency, magnitude and duration of overflows at Outfall 002. Based on preliminary evaluation, the overflow elevation would be raised from 27.19 (site datum) to approximately 32.19.

- Increasing the pumping capacity of Pumping Station 2 (PS-2) from 380 gpm to 600 gpm. (In conjunction with the weir structure at Outfall 002, this will improve the capture of PCB-contaminated storm water, without overloading the existing 01A treatment system (air stripping towers) for TCE removal, and without exceeding the permitted daily maximum 01A flow of 1.5 million gallons per day.)

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- Routing the storm water pumped from PS-2 through a multi-stage, PCB-removal system, consisting of, in series (pending confirmation in the ongoing pilot study):

  - A basket strainer to protect downstream components from leaves and other debris

  - A bank of prefilters (tentatively, bag filter housings with polypropylene fabric bags with 25-micron pore size)

  - A second bank of prefilters (tentatively, bag filter housings with polypropylene fabric bags with 1-micron pore size)

  - A bank of fine filters (tentatively, cartridge filter housings with 0.35-micron pleated cartridge filters) or a sand filter

  - A bank of 1st-stage absorbent filters (1-micron cartridge filters made of polypropylene fabric treated with a special resin with an affinity for absorbing PCB from water) or activated carbon beds

  - A bank of 2nd-stage absorbent filters of the same material or carbon beds (for redundancy).

  Note: Pilot testing to date (See Section 4.0) has demonstrated that the absorbent filter technology is, or is equivalent to, the maximum feasible treatment technology (presumed to be activated carbon) in its ability to remove PCBs to non-detectable concentrations. The high frequency of change-outs of the fine cartridge filter, however, has raised questions about the operational practicality of this approach. Modifications to the pilot system are being defined and will be made to assess alternatives.

- Following treatment for PCB removal, the storm water pumped from PS-2 will be routed to the air stripping towers for TCE removal prior to discharge via Outfall 01A.

- The storm water pumping rate from PS-1 will be maintained at its current maximum of 440 gpm. This storm water will NOT be treated for PCBs because PSWS and PMP sampling data show the occurrence of any Aroclor greater than 0.065 µg/l is rare and the maximum concentration is on the order of 0.1 µg/l. When combined with PS-2 storm water from which the PCB has been removed, the resulting concentration in the 01A effluent will

be less than 0.065 µg/l. (Carrier intends to replace the pumps in PS-1 to improve reliability and prevent periodic flooding of the motors.)

Other measures under evaluation for potential implementation in **Phase 2** are:

- Segregation and direct discharge to Sanders Creek of storm water from the large roofs of Building TR-1 (~14 acres) and the majority (~10 acres) of Building TR-2, which would reduce total runoff volume and peak flows, and thus overflows, at Outfall 002. (Evaluation includes a sampling program to confirm the lack of contamination and a study of the practicality of constructing several new storm sewers to Sanders Creek.)

- Localized controls and/or treatment in the area upstream of MH76 (immediately south of TR-1 and in the vicinity of a transformer yard).

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3.0 SUMMARY OF PSWS AND PMP FINDINGS

3.1 PSWS Findings

Storm water data was collected from November 2007 through October 2008 and included over 180 samples from Outfalls 01A, PS-1/Outfall 001, PS-2/Outfall 002, and Sanders Creek. The data collected included flow rates at the pump stations and outfalls and in Sanders Creek as well as specific chemical data on these flows and discharges. PCB analysis was performed on both unfiltered and filtered samples. The complete data from the PSWS study may be found in the ***PCB Storm Water Quality Study***, which was submitted to NYSDEC in November 2008. For context, a brief discussion is presented below and data summary tables are included in Appendix A. Figure 2 shows the 001 and 002 drainage basins and the locations where storm water samples have been collected.

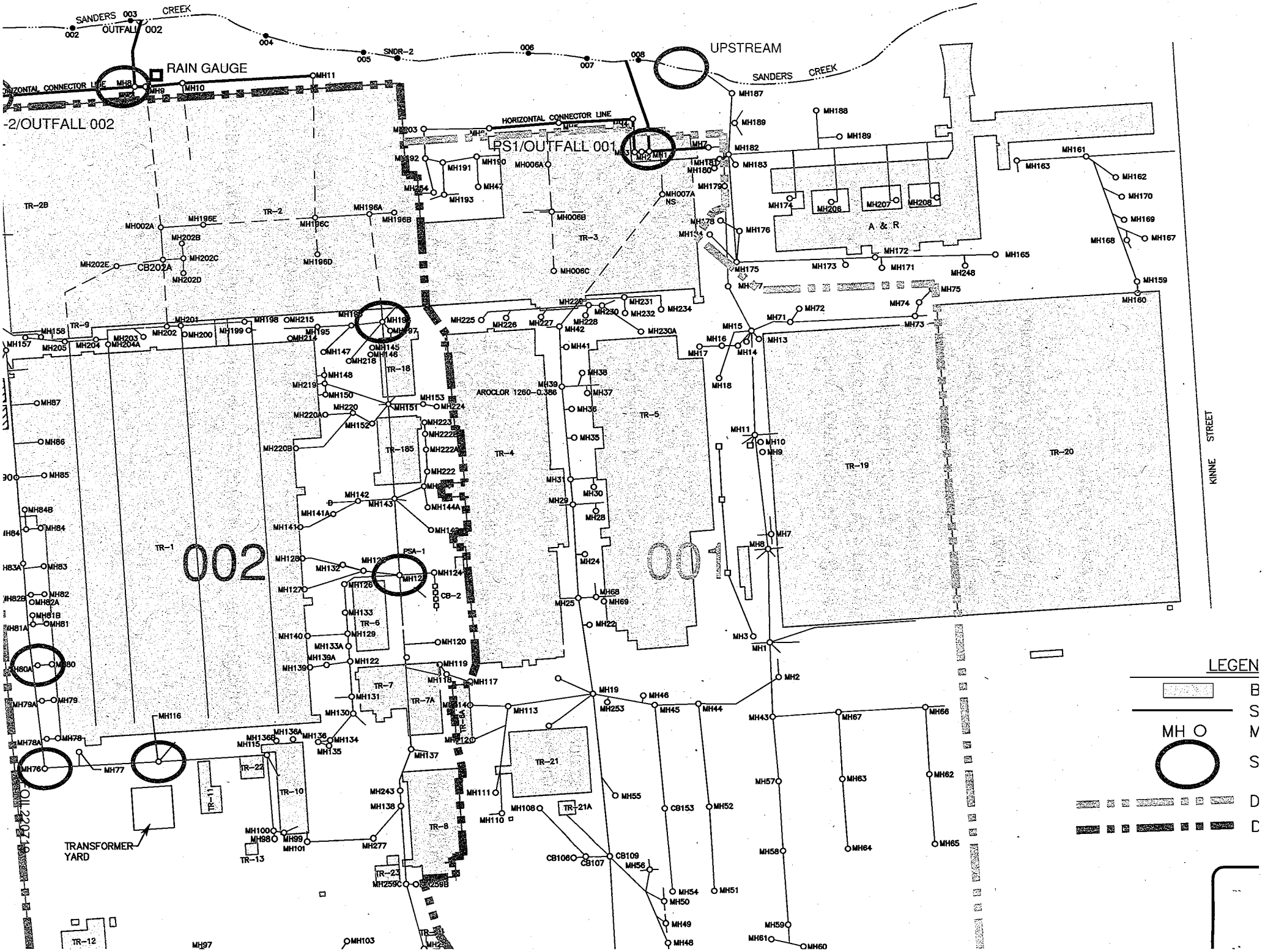
Outfall 01A

Outfall 01A discharges the combined effluent from the two air stripping towers of the existing storm water treatment system, which receives flow from Pumping Station 1 (PS-1) and Pumping Station 2 (PS-2). In addition to surface runoff from storm events, the storm sewers tributary to the two pumping stations receive infiltration of shallow groundwater, which produces a low flow even during dry weather. From November 28, 2007, through October 22, 2008, a total of 85 million gallons was pumped to and treated in the 01A air stripping towers, with approximately 40 million gallons being pumped from PS-1 and 45 million gallons from PS-2.

Samples were obtained from Outfall 01A discharges on 35 days during the 12-month PSWS period. Samples were obtained from outfall discharges at various times during the discharge events. Additionally, some samples represent grab samples and others represent composite samples, and still others represent monthly samples required by the permit and reported in monthly discharge monitoring reports (DMRs).

- On 5 of 35 days, Aroclor 1260 was detected above the permit quantification level (PQL) of 0.30 µg/l per Aroclor. No other Aroclors were detected above the PQL.

- Another 8 of the 35 sampled days showed PCB concentrations above the MDL of 0.065 µg/l per Aroclor.


SANDERS CREEK
OUTFALL 002
RAIN GAUGE
UPSTREAM
SANDERS CREEK
HORIZONTAL CONNECTOR LINE
-2/OUTFALL 002
PS1/OUTFALL 001
A & R
KINNE STREET
002
001
AROCLOR 1260-0.386
TRANSFORMER YARD
LEGEN
MH

PS-1/Outfall 001

Overall, PSWS samples were obtained on 30 days at this location, with 8 samples obtained during non-overflow conditions and 22 samples obtained during overflow conditions.

- Of the 8 days that were sampled during non-overflow conditions, none exceeded the PQL of 0.30 µg/l per Aroclor and only 1 exceeded the MDL of 0.065 µg/l per Aroclor. (Aroclor 1254 was found at 0.074 µg/l on December 4, 2007.) All flows during these conditions are pumped to the treatment building and discharged through Outfall 01A.

- During the study period, overflows occurred on 82 days of which 22 were sampled. None of the samples was above the PQL of 0.30 µg/l per Aroclor. Only 2 samples (Aroclor 1260 at 0.076 µg/l on July 13, 2008, and at 0.092 µg/l on September 27, 2008) had a PCB concentration greater than the MDL of 0.065 µg/l per Aroclor, and then only marginally.

PS-2/Outfall 002

Data was obtained from PS-2/Outfall 002 during the study period, both during non-overflow (base flow or storm water flow) and overflow conditions. Samples were obtained from outfall discharges at various times during the discharge events. Overall, samples were obtained on 35 days at this location, with 10 samples obtained during non-overflow conditions and 25 samples obtained during overflow conditions.

- Of the 10 days that were sampled during non-overflow conditions, there were 3 PCB detections. Only 1 exceeded the PQL of 0.30 µg/l per Aroclor and 2 others exceeded the MDL of 0.065 µg/l per Aroclor. All flows during these conditions are pumped to the treatment building and discharged through Outfall 01A.

- During the study period, overflows occurred on 90 days of which 25 days were sampled. There were PCB detections on 18 days of which 3 were above the PQL of 0.30 µg/l per Aroclor. Another 15 were above the MDL of 0.065 µg/l per Aroclor. On the days when overflows occurred, there was one instance when the sample was obtained after overflow conditions ended. This sample represents a composite sample taken at 4 separate intervals during the day. Overflow occurred early in the day, and the composite sample that had the PCB detection occurred late in the day.

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3.2 PMP Findings to Date

In May 2008, a PMP was developed for the Carrier facility, as required by the Special Conditions listed in their permit. The quarterly PMP sampling program began in the fourth quarter of 2008, the results of which were submitted to NYSDEC in the *Pollutant Minimization Program, Annual Update — February 1, 2009.* Since that report submittal, Carrier has conducted two additional quarterly sampling events. A summary of total PCB concentrations from each sampling event is summarized below:

Total PCB concentrations using the USEPA Method 608A (Aroclor method) and the Green Bay Method (congener method) appear to correlate closely.

PS-1/Outfall 001

To date, PMP samples have been obtained on three days at this location, with all 3 samples obtained during overflow conditions. The first two quarterly sampling events indicated the absence of any Aroclor at the MDL concentration of 0.065 µg/l. In the third event Aroclor 1260 was detected at a concentration of 0.11 µg/l.

PS-2/Outfall 002

To date, PMP samples have been obtained on three days at this location, with the 3 samples obtained during overflow conditions. All three sampling events confirmed the presence of Aroclor 1260 above the MDL of 0.065 µg/L.

Outfall 01A

Samples have been obtained on three days at this location. The first quarterly sampling event detected Aroclor 1260 at 0.076 µg/L, and in the third sampling event the sum of Aroclor 1260 and Aroclor 1254 was 0.165 µg/L. The second quarterly sampling event did not detect an individual Aroclor above the MDL.

Manhole 116

Samples were obtained from Manhole 116 during the first quarterly event, with Aroclor 1260 being detected at 0.698 µg/L in this storm water sample. Having confirmed PCB concentrations in storm water in this manhole, subsequent quarterly sampling focused on MH-76A, due to the historic findings of PCBs in sediments in this manhole.

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Table 1
PMP Data Summary (first 3 quarters)
Carrier Corporation, Syracuse, NY
(all results in nanograms/L)

Sample Period:	4th Qtr — Oct. 21 & Dec. 29, 2008		1st Qtr — February 2009		2nd Qtr — Apr. 30 & May 1, 2009	
	GB Method	USEPA 608	GB Method	USEPA 608	GB Method	USEPA 608
Outfall 001	42.2	<65.0	61.7	<65.0	113	101.3*
Outfall 002	88.8	75.7	1,250	1,190	1,120	1,463*
Outfall 01A	122	76.6	62.6	<65.0	250	165*
MH116	677	698	NS	NS	NS	NS
MH76A	NS	NS	1,593	1,630	552	483

Notes:
*Result is sum of detectable values of Aroclor 1254 and 1260. No Aroclor 1254 detected in other samples.

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Manhole 76A

Manhole 76A was sampled during the two more recent quarterly events, with Aroclor 1260 being detected in samples from both events. With the detections in storm water in this manhole and MH-116, Carrier will move progressively upgradient along this storm line, with MH-115 tentatively proposed as the next manhole to be sampled.

3.3 Conclusions

PCB detections have found predominantly in unfiltered samples, with filtered samples (in most cases) showing a marked decrease in PCB concentration. The cause of the detectable level of PCBs in the discharge appears to be contaminated sediments that wash into the storm water sewer collection system.

Each pumping station receives storm water flows from a distinct portion of the facility, and the assessment of potential treatment alternatives has taken into account the PCB contribution from each PS/Outfall. While the exact source or sources of the sediments is unknown, the data strongly suggests that the PS-2 drainage system is the primary contributor of PCB-contaminated storm water to Outfall 01A discharges. Therefore, end-of-pipe PCB treatment for PS-2 storm water is recommended to meet the requirements of the permit.

Capture and subsequent PCB-treatment of storm water from PS-1 and Outfall 001 is not necessary at this time. Storm water from this pump station and outfall will continue to be monitored as part of Carrier's approved Pollutant Management Plan (PMP), which requires annual reporting in February of each year. If data collected as part of this program shows PCB concentrations in storm water from this outfall consistently exceed the MDL, Carrier will reassess its proposed PCB treatment system for possible modifications to treat these flows.

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4.0 PILOT STUDY

To verify certain information needed for design and to identify operational issues such as frequency of filter change-out and other maintenance, a pilot-scale treatment unit has been operated at the Carrier site since late April 2009. Tentative plans are to operate the unit through at least September to evaluate operation during the runoff from late-summer thunderstorms.

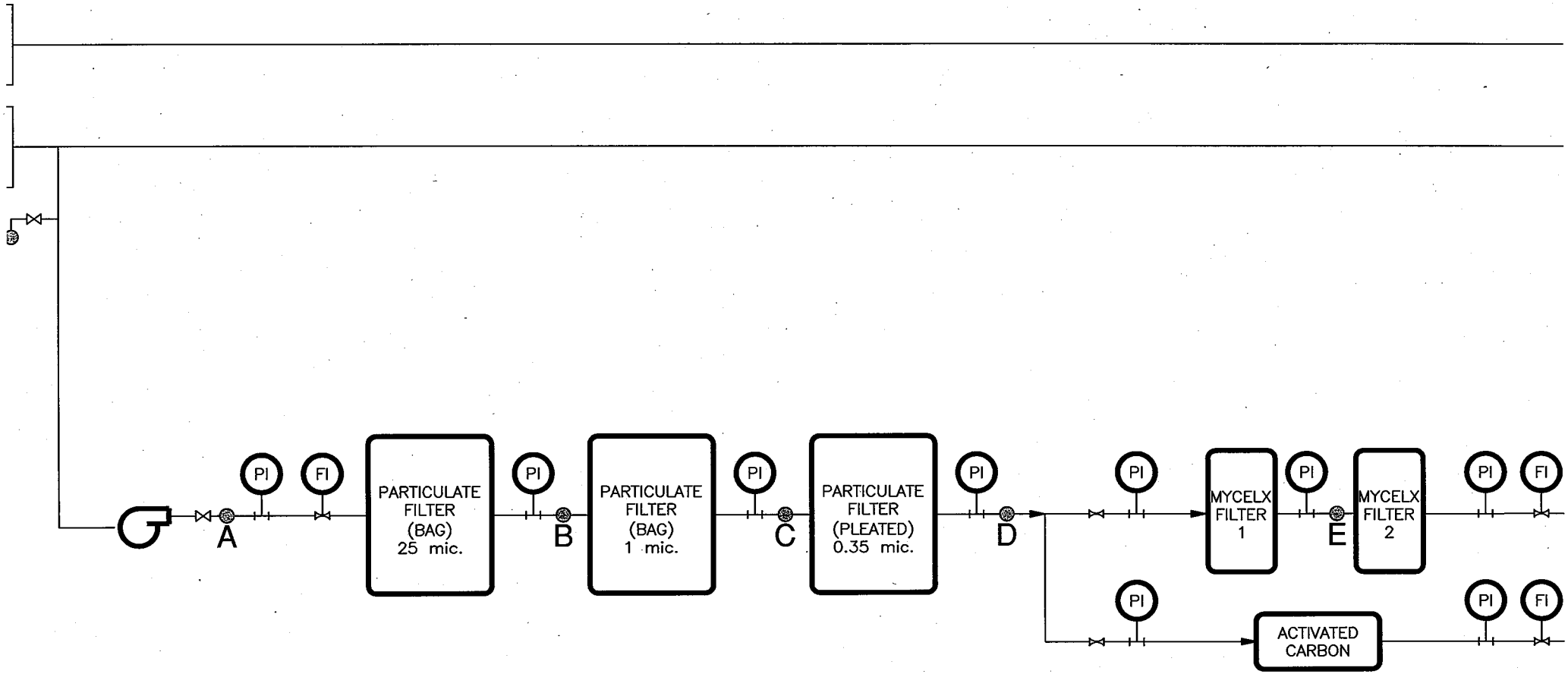
Description of System

Figure 3 is a process flow diagram of the pilot system.

An existing drain tap on the PS-2 force main inside the TR-3 wastewater treatment room was converted into a temporary sampling tap.

A 4- to 5-gpm transfer pump has been installed to convey storm water from the sampling tap to the pilot unit. The operation of the pump is activated by an electrical relay wired to a flow switch installed in the PS-2 force main.

- The pumped water is routed first through a basket strainer.
- Next, the water is routed at 4 to 5 gpm through a coarse prefilter (25-micron bag filter)
- In series, the water is routed at 4 to 5 gpm through a second particulate filter (1-micron bag filter)
- Then, in series, at 4 to 5 gpm through a third particulate filter (0.35-micron cartridge filter)
  - Downstream of the third filter, the flow is split into two 2 to 2.5 gpm streams
  - One stream flows through two 1-micron MyCelx cartridge filters in series
  - The other stream flows through an activated carbon column
- Treated water is discharged into the PS-1 wetwell in the TR-3 treatment building
- Total flow and the flows through the MyCelx filter train and through the carbon column train are measured.
- Pressures before and after each treatment vessel are measured.


PI
FI
A
PARTICULATE FILTER (BAG) 25 mic.
B
PARTICULATE FILTER (BAG) 1 mic.
C
PARTICULATE FILTER (PLEATED) 0.35 mic.
D
MYCELX FILTER 1
E
MYCELX FILTER 2
ACTIVATED CARBON

FOIL220725

Samples for PCB analysis (by Method 608) are collected ahead of the coarse filter, after each particulate filter, after each MyCelx filter and after the carbon column.

Samples are collected during high flow events at PS-2 when PCB concentrations are most likely to be high. If no high flow event occurs before the end of a week, samples are collected during base flow.

Results and Discussion

Through July 8, 2009, approximately 71,000 gallons have been treated in the pilot unit, with the flow almost evenly split between the MyCelx train (34,000 gallons) and the carbon train (37,000 gallons). Through June 26, 2009, samples have been collected during eight events. The results are summarized in Appendix B. In four of the eight events, no Aroclor was detected above 0.065 µg/L in the influent. Of the four events that had detectable PCB in the influent, filtration alone was sufficient to reduce each Aroclor to below 0.065 µg/L in three events, and in the fourth case, both the carbon bed and the MyCelx resin were effective in reducing the residual concentration of each Aroclor to below 0.065 µg/L.

On the negative side, operational data indicates that the fine (0.35 micron) filter needs to be replaced about every 2,600 gallons. At this rate, a full-scale system treating on the order of 50 million gallons per year would require more than 19,000 of these filter cartridges. The materials and labor for such a program would appear to be impractical. Therefore, EnSafe and Carrier are developing modifications to the pilot unit to evaluate alternatives. Likely candidates for immediate implementation are:

- Replacement of the 1-micron bag filter with a 1-micron pleated cartridge filter and splitting the flow to the carbon train downstream of this filter;

- Replacement of the 1-micron bag filter and the 0.35-micron cartridge filter with a sand filter, which would be backwashed periodically.

5.0 TREATMENT PROCESS DESIGN

5.1 Storm Water Pumping

5.1.1 Pump Station PS-1

- Maintain existing capacity of 440 gpm

- Modify existing pump/motor units with extended shafts and place motors on a platform above the flood elevation, or replace with submersible pumps.

5.1.2 Pump Station PS-2

- Replace existing pumps with pumps sized such that the station can deliver 560 gpm with one pump out of service

- Use existing 10-inch force main from PS-2 to TR-3

- Install a weir at Outfall 002 (either in MH-8 across the entrance of the 60-inch overflow pipe or across the pipe outlet near Sanders Creek) to reduce the frequency of overflows and minimize backflow of creek water into PS-2

- To the extent practical, divert "clean" stormwater from roofs directly to Sanders Creek to reduce hydraulic loading.

5.2 PCB Treatment

In the TR-3 treatment building install a system for PS-2 storm water treatment sized for 600 gpm. Based on preliminary evaluation, principal elements would include either a MyCelx system or a carbon system:

MyCelx Option

- Piping and valves to re-route PS-2 force main to PCB treatment system

- Basket strainer or similar

- Bank of coarse (25-micron) bag or cartridge prefilters

- Sand or mixed media filter

- Bank of 1st-stage MyCelx cartridge filters

- Bank of 2nd-stage MyCelx cartridge filters

- Filter backwash collection tank and processing system

Carbon Option

- Piping and valves to re-route PS-2 force main to PCB treatment system

- Basket strainer or similar

- Bank of coarse (25-micron) bag or cartridge prefilters

- Bank of coarse (1-micron) cartridge prefilters

- Bank of carbon beds

- Bank of coarse (1-micron) cartridge filters

Each bank of filters to include multiple units so that design flow can be handled with one unit out of service for repair or filter change-out

Piping and valves to return PCB-treated water to existing piping upstream of the air stripping towers

Appendix A
Summaries of Sampling Data Collected during PSWS

Date	Note	(inches)		mg/l	mg/l	mg/l	1260	1254	1248	Total	1260	1254	mg/l	mg/l	mg/l	1260	1254	1248	1260	1254
/16/2007	C	0.12	10:15													< 0.065	< 0.065	< 0.065		
.2/3/2007		0.68	0:05										16.4			< 0.065	< 0.065	< 0.065	< 0.065	< 0.06
			0:33	1.2			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	1.4			< 0.065	< 0.065	< 0.065	< 0.065	< 0.06
			3:33	0.4			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065								
			9:33	1.6			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065								
			23:15	0.0			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065								
.2/4/2007		0	9:15	2.8			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	0.12								
/11/2007		0.28	15:50	28.0	2.1	0.0	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	7.2	0	0	< 0.065	< 0.065	< 0.065		
			18:49	12.8	2.1	0.0	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065								
	C															< 0.065	< 0.065	< 0.065		
/12/2007		0.4	0:49	6.8	3.7	0.0	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065								
1/8/2008	C	0														< 0.065	< 0.065	< 0.065		
1/9/2008		0.13	7:05	115	3.4		< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	19.5	4.2		0.091	< 0.065	< 0.065	< 0.065	< 0.06
			9:20										28.5	1.6		0.094	< 0.065	< 0.065	< 0.065	< 0.06
			10:15	13.0	2.6		< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065								
			16:15	3.0	3.1		< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065								
/11/2008		0.54	0:39	8.6	2.0	0.41	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065								
			9:18										6.6	3.6		< 0.065	< 0.065	< 0.065	< 0.065	< 0.06
/12/2008		0.01	0:39	1.4	2.3		< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065								
2/1/2008		1.13	16:11	59	1.5		< 0.065	0.085	< 0.065	0.085	< 0.065	< 0.065	126	2.5		< 0.065	0.14	< 0.065	< 0.065	< 0.06
			19:51	5.0	2.6		< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065								
2/2/2008		0.09	3:21	9.5	1.9		< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065								
2/5/2008	C	0.5														< 0.065	< 0.065	< 0.065		
3/4/2008	C	0.4														< 0.065	< 0.065	< 0.065		
/27/2008		0.11	21:22	25.3			< 0.065	< 0.065	< 0.065	< 0.065			22.7			< 0.065	< 0.065	< 0.065		
/28/2008		0.46	0:52	13.3			< 0.065	< 0.065	< 0.065	< 0.065										
			8:22	19.5			< 0.065	< 0.065	< 0.065	< 0.065										
/31/2008		0.69	13:10	6.2			< 0.065	< 0.065	< 0.065	< 0.065			7.4			< 0.065	< 0.065	< 0.065		
			16:50	6.2			< 0.065	< 0.065	< 0.065	< 0.065										
4/1/2008		0.11	0:20	6.4			< 0.065	< 0.065	< 0.065	< 0.065										
	C															< 0.25	< 0.25	< 0.25		
4/4/2008		0.19	6:42	29.0			< 0.065	< 0.065	< 0.065	< 0.065			47.4			< 0.065	< 0.065	< 0.065		
			10:12	9.8			< 0.065	< 0.065	< 0.065	< 0.065										
			17:42	3.6			< 0.065	< 0.065	< 0.065	< 0.065										
5/7/2008		0.12	20:00		2.2	2.1	< 0.065	< 0.065	< 0.065	< 0.065				3.3	6	< 0.065	< 0.065	< 0.065		
/17/2008		0.22	15:45	13.5	3.0	3.5	< 0.065	< 0.065	< 0.065	< 0.065			129	3.4	4.2	< 0.065	< 0.065	< 0.065		
/22/2008	C	0.19	12:40													0.5	< 0.065	< 0.065		
6/6/2008		0.72	1:30			1.5	< 0.065	< 0.065	< 0.065	< 0.065				5	6	0.16	0.14	< 0.065		
/10/2008		0.52	12:27	2.8	2.6	3.2	< 0.065	< 0.065	< 0.065	< 0.065			80	0	2.8	0.22	< 0.065	< 0.065	< 0.065	< 0.06
	C		12:40													0.21	< 0.065	< 0.065		
7/3/2008		0.29	16:41	1.4	2.2	3.4	< 0.065	< 0.065	< 0.065	< 0.065			6	2.2	4.5	< 0.065	< 0.065	< 0.065		
	C		13:30													2.5	< 0.065	< 0.065		
/11/2008		0.06	13:00	109							< 0.065	< 0.065	28.3						< 0.065	< 0.06
/13/2008		0.73	11:48	21.2	0.0	0.33	0.14	< 0.065	< 0.065	0.14	< 0.065	< 0.065	1.8	1.8	0.28	0.17	< 0.065	< 0.065	< 0.065	< 0.06
/21/2008		0.03	17:45	1.2	1.8	1.1	< 0.065	< 0.065	< 0.065	< 0.065										
8/2/2008		0.42	15:48	4.4	2.2	6.2	< 0.065	< 0.065	< 0.065	< 0.065			7.8	3.7	2.7	< 0.065	< 0.065	< 0.065		
8/4/2008		0	22:10		3.1	0.38	< 0.065	< 0.065	< 0.065	< 0.065				0	0.31	< 0.065	< 0.065	< 0.065		
8/7/2008	C	0.59	14:10													0.36	< 0.065	< 0.065		
9/9/2008	C	0.29	11:00													0.5	< 0.065	< 0.065		
/27/2008		0.5	10:53	4.2	2.4	1.7	< 0.065	< 0.065	< 0.065	< 0.065			39	1.7	4.5	0.12	< 0.065	< 0.065	< 0.065	< 0.06
/30/2008		0.14	13:45		1.9	0.22	< 0.065	< 0.065	< 0.065	< 0.065				1.9	1.5	< 0.065	< 0.065	< 0.065		
			23:48	3.8									7.2							
/16/2008	C	1.28	9:10													1.6	< 0.065	< 0.065		

m s)		TSS mg/l	O&G mg/l	TOC mg/l	PCB, Unfiltered (ug/l) 1260	1254	1248	Total	PCB, Filtered (ug/l) 1260	1254	TSS mg/l	O&G mg/l	TOC mg/l	PCB, Unfiltered (ug/l) 1260	1254	1248
	11:51	4.8			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065						
	14:51	2.2			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065						
	16:01										2			< 0.065	< 0.065	< 0.065
	20:51	2.4			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065						
	23:15				< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065						
	23:59										4.4			< 0.065	< 0.065	< 0.065
	1:40	5.7			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	7.8			< 0.065	< 0.065	< 0.065
	8:15	1.3			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065						
	23:15	0.6			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065						
	11:22	3.2			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	0.074						
	1:15	4.2			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065						
	15:40	4.7	3.4	0.0	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	138	4.1	92	< 0.065	< 0.065	< 0.065
	18:50	15.7	3.1	0.0	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065						
	0:50	11.0	3.1	0.0	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065						
	6:45	118	3.3		< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	725	3.8		< 0.065	< 0.065	< 0.065
	9:15	12.0	2.9		< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	33.3	3.1		< 0.065	< 0.065	< 0.065
	16:16	6.2	1.5		< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065						
	0:39	9.0	1.6	97	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065						
	9:13										60.3	4.9		< 0.065	< 0.065	< 0.065
	0:39	4.4	2.0		< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065						
	16:13	71	1.8		< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	135	2.1		< 0.065	< 0.065	< 0.065
	19:53	7.5	2.2		< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065						
	3:23	17.3	2.4		< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065						
	21:12	36.0			< 0.065	< 0.065	< 0.065	< 0.065			59.7			< 0.065	< 0.065	< 0.065
	0:52	21.0			< 0.065	< 0.065	< 0.065	< 0.065								
	8:22	28.0			< 0.065	< 0.065	< 0.065	< 0.065								
	13:10	9.2			< 0.065	< 0.065	< 0.065	< 0.065			18.5			< 0.065	< 0.065	< 0.065
	16:50	20.3			< 0.065	< 0.065	< 0.065	< 0.065								
	0:20	9.5			< 0.065	< 0.065	< 0.065	< 0.065								
	6:42	38.3			< 0.065	< 0.065	< 0.065	< 0.065			67			< 0.065	< 0.065	< 0.065
	10:12	16.8			< 0.065	< 0.065	< 0.065	< 0.065								
	17:42	5.2			< 0.065	< 0.065	< 0.065	< 0.065								
	20:02		2.2	2.2	< 0.065	< 0.065	< 0.065	< 0.065				2.2	28.3	< 0.065	< 0.065	< 0.065
	15:47	8.7	1.9	4.4	< 0.065	< 0.065	< 0.065	< 0.065			256	3.4	6.4	< 0.065	< 0.065	< 0.065
	1:32			1.1	< 0.065	< 0.065	< 0.065	< 0.065				2.2	5.2	< 0.065	< 0.065	< 0.065
	12:28	0.67		3.2	< 0.065	< 0.065	< 0.065	< 0.065			39.3	1.8	3.6	< 0.065	< 0.065	< 0.065
	13:04	1.8	2.4	4.6	< 0.065	< 0.065	< 0.065	< 0.065			18	2.7	4.9	< 0.065	< 0.065	< 0.065
	13:00	3.2							< 0.065	< 0.065	18					
	11:50	3.5	2.0	1.2	< 0.065	< 0.065	< 0.065	< 0.065			2.8			0.076	< 0.065	< 0.065
	18:07	2.8	2.5	0.6	< 0.065	< 0.065	< 0.065	< 0.065			2.2	2	1.4	< 0.065	< 0.065	< 0.065
	15:51	33.4	2.6	3.9	< 0.065	< 0.065	< 0.065	< 0.065			5.8	2	5.8	< 0.065	< 0.065	< 0.065
	22:12		2.5	1.2	< 0.065	< 0.065	< 0.065	< 0.065					0.32	< 0.065	< 0.065	< 0.065
	10:56	18.8	3.2	0.79	0.083	< 0.065	< 0.065	0.083	< 0.065	< 0.065	13.2	2	1.3	0.092	< 0.065	< 0.065

07	0.05		0		1		6:00	1.0			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	1.4			< 0.065	< 0.065	< 0.065	< 0.065
07	1.19				1		6:00	3.8			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065							
					1		12:00	0.8			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065							
							13:00	1.0			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065							
			1		1		19:00	1.0			0.15	0.27	< 0.065	0.42	< 0.065	< 0.065							
07	0.12		1		1		19:00	0.6			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065							
07	0		0		1		19:00	0.4			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065							
07	0		0				19:00	0.4			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065							
07	0.02						0:36	0.8			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065							
			0		1		13:36	1.8			0.18	0.12	< 0.065	0.3	< 0.065	< 0.065							
					1		17:06	0.67			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065							
07	0.5	1	1	1	1		14:06	0.8			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	1			< 0.065	< 0.065	< 0.065	< 0.065
					1		17:36	4.6			< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065							
07	0.28	1	1	1	1	1	13:58	2.8	2.8	0.0	0.092	< 0.065	< 0.065	0.092	0.1	< 0.065	0.8	1.9	0	< 0.065	< 0.065	< 0.065	0.094
					1		16:58	7.7	2.5	0.0	0.081	< 0.065	< 0.065	0.081	< 0.065	< 0.065							
					1		22:58	1.6	0.0	78.0	< 0.065	< 0.065	< 0.065	< 0.065	0.1	< 0.065							
08	0.13	1	1	1	1	1	7:16	99.5	1.6		0.13	< 0.065	< 0.065	0.13	< 0.065	< 0.065	407	25.8		0.21	< 0.065	< 0.065	< 0.065
					1		10:14	4.0	3.2		< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	6.8	4		0.094	< 0.065	< 0.065	< 0.065
					1		16:16	1.0	2.9		0.068	< 0.065	< 0.065	0.068	< 0.065	< 0.065							
08	0.54	1	1	1		1	0:38	3.6	1.9	0.0	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065							
08	0.01		0	1		1	0:38	1.2	3.5		< 0.065	< 0.065	< 0.065	< 0.065	< 0.065	< 0.065							
08	1.13	1	1	1	1	1	15:38	29.7	4.4	0.0	0.19	0.23	< 0.065	0.42	< 0.065	< 0.065	74	7.2	0	0.81	0.44	0.98	< 0.065
					1		19:18	2.6	2.9	0.0	0.065	0.084	< 0.065	0.149	< 0.065	< 0.065							
08	0.09	1	1	1		1	2:48	3.8	2.4	0.0	< 0.065	0.068	< 0.065	0.068	< 0.065	< 0.065							
08	0.06	1	1		1		12:51				0.091	0.084	< 0.065	0.175	< 0.065	< 0.065				0.55	0.31	< 0.065	< 0.065
					1		16:31				< 0.065	< 0.065	< 0.065	< 0.065									
08	0		0		1		0:01				< 0.065	< 0.065	< 0.065	< 0.065									
08	0.04		0		1		23:46				0.087	< 0.065	< 0.065	0.087	< 0.065	< 0.065				0.16	0.077	< 0.065	< 0.065
08	0.02		0		1		3:26				< 0.065	< 0.065	< 0.065	< 0.065									
					1		10:56				< 0.065	< 0.065	< 0.065	< 0.065									
08	0.11	1	1	1	1	1	14:02	2.3			< 0.065	< 0.065	< 0.065	< 0.065									
							14:52										159			0.16	0.11	< 0.065	< 0.065
					1		15:02	57.2			< 0.065	< 0.065	< 0.065	< 0.065									
					1		18:32	5.7			< 0.065	< 0.065	< 0.065	< 0.065									
08	0.19		1	1	1	1	6:27	5.6			< 0.065	< 0.065	< 0.065	< 0.065			5.6			< 0.065	< 0.065	< 0.065	
					1		10:07	2.7			< 0.065	< 0.065	< 0.065	< 0.065									
					1		17:37	0.0			< 0.065	< 0.065	< 0.065	< 0.065									
08	0.21	1	1		1		1:47	2.2	3.8	1.3	0.072	< 0.065	< 0.065	0.072	< 0.065	< 0.065	8.2	27.3	1.9	0.38	0.29	< 0.065	< 0.065
08	0.12	1	0	1	1	1	20:07		2.5	4.5	0.11	0.091	< 0.065	0.201	< 0.065	< 0.065		5.3	10.9	0.35	0.2	< 0.065	
08	0.22	1	1	1	1	1	15:33	11.2	3.2	0.0	0.071	0.11	< 0.065	0.181	< 0.065	< 0.065	61	2.9	9.8	0.096	0.12	< 0.065	< 0.065
08	0.19						5:33	3.6		1.3							3.4		2.6				
08	0.72	1	1	1	1	1	1:28		1.8	3.3	0.079	0.1	< 0.065	0.179				2.3	3.7	0.19	< 0.065	< 0.065	
08	0.52	1	1	1	1	1	12:36	6.0	0	1.8	< 0.065	0.14	< 0.065	0.203	< 0.065	< 0.065	78	1.9	2.5	0.14	0.2	< 0.065	< 0.065
08	0.29	1	1	1	1	1	17:05	0.8	0	0.55	< 0.065	< 0.065	< 0.065	< 0.065			0.6	2.3	3.1	< 0.065	< 0.065	< 0.065	
08	0.06	1	1	0	0	0	13:15	35.8									9.7		3.7				< 0.065
08	0.73	1	1	1	1	1	12:49	22.0	2.1	0.65	< 0.065	< 0.065	< 0.065	< 0.065			41.5	2	8.5	0.13	0.14	< 0.065	< 0.065
08	0.16	1	1		1		15:31	3.4	1.9	1.5	< 0.065	< 0.065	< 0.065	< 0.065			28	1.9	3	0.12	< 0.065	< 0.065	< 0.065
08	0.42	1	1	1	1	1	14:57	2.8	3.3	3.1	0.074	< 0.065	< 0.065	0.074	< 0.065	< 0.065	11	2.9	3.9	0.12	< 0.065	< 0.065	< 0.065
08	0.59	1	1		1		11:33	19.2		3.5	0.09	< 0.065	< 0.065	0.09	< 0.065	< 0.065	821	3	4.8	< 0.065	< 0.065	< 0.065	
08	0.33	1	0				1:14								0.12	0.12	34.2	3.4	3.5	0.13	0.092	< 0.065	0.17
08	0.55	1	1		1		11:53	7.6	2.2	2.1	< 0.065	< 0.065	< 0.065	< 0.065			12.5	0	2.9	< 0.065	< 0.065	< 0.065	

FOIL 220732

Appendix B
Summary of Sampling Data Collected during Pilot Study

Lab Results Summary
Carrier PCB Removal Pilot Study

Sample Date	Precip. (inches)	A		B		C		D		E		F		G	
		TS	PCB	TS	PCB	TS	PCB	TS	PCB	TS	PCB	TS	PCB	TS	PCB
04/28/09	0.04	726	< 0.056	740	----	757	----	731	< 0.053	----	----	----	----	----	----
05/07/09	0.34	425	< 0.053	431	----	439	----	436	< 0.052	478	----	----	----	----	----
05/14/09	0.10	1330	**0.079**	1310	< 0.053	1300	< 0.052	1180	**0.055**	1140	< 0.050	----	----	1130	< 0.052
05/22/09	0.00	1840	< 0.053	1800	----	1810	----	1820	< 0.052	----	----	----	----	----	----
05/27/09	0.09	877	**0.089**	871	< 0.052	875	----	878	< 0.052	----	----	----	----	----	----
06/11/09	1.71	308	**0.120**	268	**0.085**	205	**0.070**	160	**0.097**	97	< 0.053	----	----	368	< 0.051
06/18/09	0.60	433	< 0.053	298	----	390	----	240	< 0.052	----	----	----	----	----	----
06/26/09	0.09	380	**0.070**	363		377		371	< 0.052	----	----	----	----	----	----

TSS Results for 6/11/09 Sampling Event (Sampling Point "A"):
- Unfiltered 93 mg/l
- Lab filtered (25 micron) 91 mg/l
- Lab filtered (0.8 micron) 94 mg/l