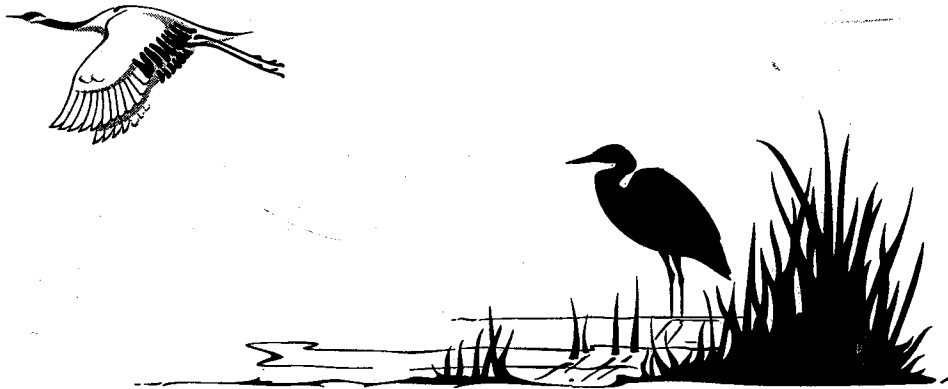


Charles River  
Sediment/Water Quality Analysis  
Project Report



January 1997

Prepared by:

U.S. Environmental Protection Agency  
Region I, New England

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Ecosystem Assessment

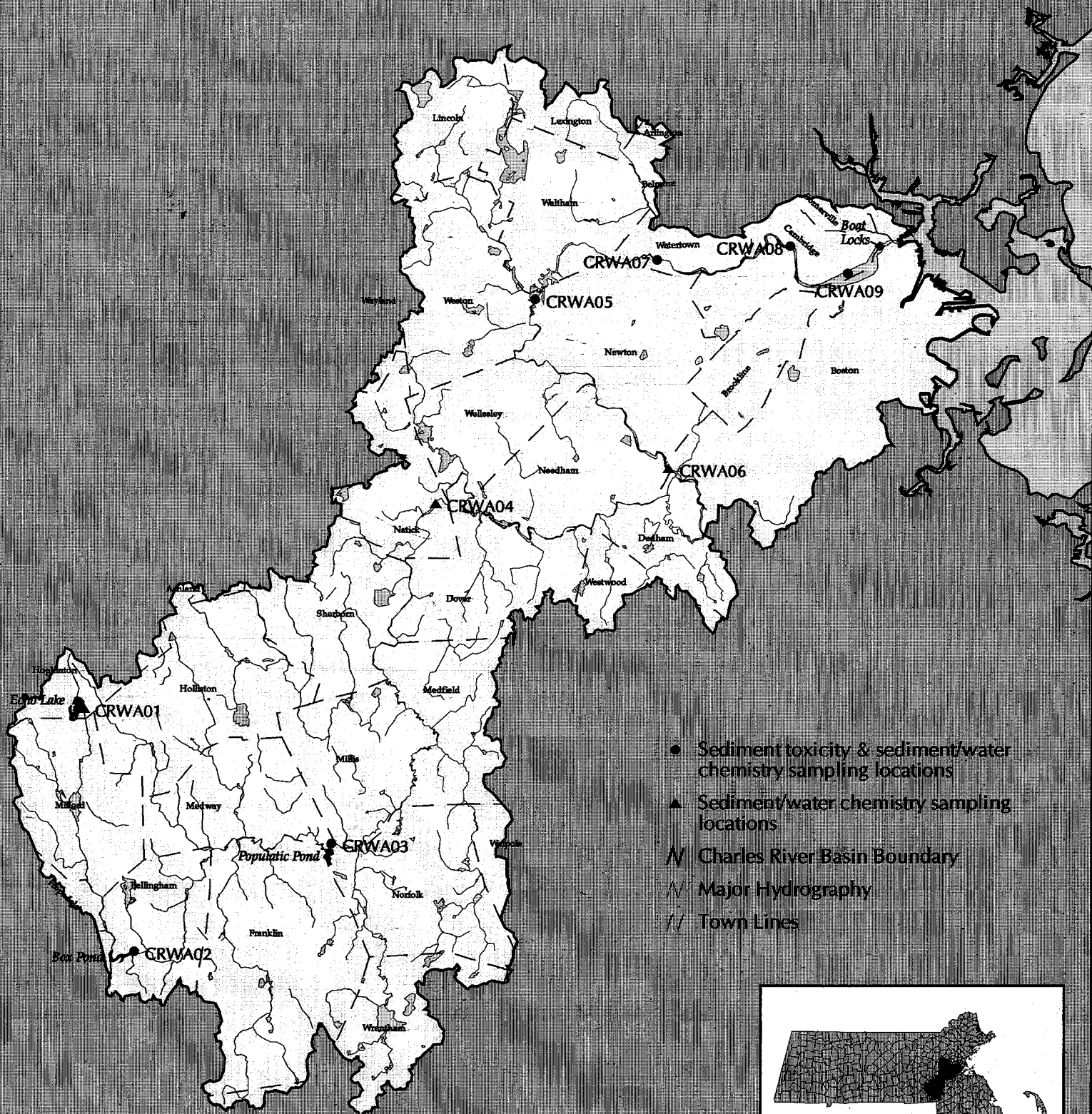
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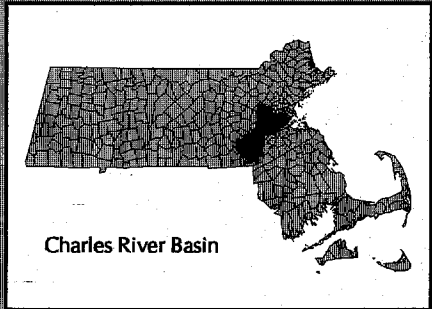
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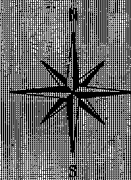
# Figure 1: Charles River Sampling Locations



- Sediment toxicity & sediment/water chemistry sampling locations
- ▲ Sediment/water chemistry sampling locations
- ▮ Charles River Basin Boundary
- ▮ Major Hydrography
- ▮ Town Lines



Sampling was conducted by OEME on May 29th and 30th, 1996



## EXECUTIVE SUMMARY

### Purpose and Scope

In January 1996, EPA's Charles River Task Force 2005 and the Charles River Watershed Association (CRWA) requested assistance from EPA's Office of Environmental Measurement and Evaluation (OEME) to evaluate the water and sediment quality at selected sites in the Charles River Basin. The Charles River is a priority waterbody for EPA Region 1 - New England and current data on water and sediment quality are lacking. In addition, the Massachusetts Department of Environmental Protection (MADEP) is scheduled to monitor the river in the summer of 1997 as part of the Commonwealth's basin-wide assessment program. Conducting this study gained added importance because it would provide information about present conditions which could also be used to target geographical areas for monitoring in 1997 and focus the scope of those monitoring activities.

The EPA, CRWA and MADEP collaborated on the scope and objectives of the study. The project objectives identified in the quality assurance project plan were to determine current water quality conditions, chemical concentrations in the sediments, and to evaluate if the sediments are toxic to aquatic life. CRWA, EPA, and MADEP will use the results of this study to make decisions, model conditions, and target future monitoring.

During May 29-30, 1996, a team of OEME and CRWA personnel collected water and sediment samples at nine sites in the River. Sampling was conducted from the headwaters at Echo Lake in Hopkinton, MA to the lower basin upstream from the Charles River Boat Locks in Boston. Sampling locations had been selected after several meetings and site visits among EPA, CRWA and the MADEP. Figure 1 shows the sampling locations.

Sediment and water quality samples were collected at all sites. Six of the nine sites were examined for sediment toxicity. Table 1 lists the parameters analyzed at each site. EPA's New England Regional Laboratory in Lexington, MA, performed all the analyses and testing.

## Conclusions

All metal results in the water column were less than the method reporting limits. Chromium and zinc concentrations in the water column were less than the water quality chronic criteria at all sites. The sediments in the lower basin (sites CRWA08 and CRWA09) were the most contaminated. They had the highest levels of total polyaromatic hydrocarbons (PAHs) concentrations, elevated metals concentrations and exhibited sediment toxicity with amphipods. Sediment from site CRWA09 (between Harvard and Longfellow bridges) had the greatest toxicity to both midges and amphipods. Chlorinated pesticides were detected at all nine sites and polychlorinated biphenyls (PCBs) were detected at sites CRWA05 (lakes district) and at CRWA08 (near the North Harvard Street Bridge). Site CRWA03 (downstream from Populatic Pond and Charles River Pollution Control District plant's discharge) had the lowest concentrations of metals, chlorinated pesticides and total PAHs.

## BACKGROUND

The Charles River is the longest river in Massachusetts and flows 80 miles from its headwaters at Echo Lake in Hopkinton to the outlet in the Boston Harbor. From Echo Lake to the Watertown Dam the River flows over many dams and drops approximately 340 feet. From the Watertown Dam the River is primarily flat water to the Charles River boat locks in Boston (Medcalf & Eddy 1994).

The Charles River watershed is located in eastern Massachusetts and drains 311 square miles. There are 24 cities and towns in the watershed. The basin contains pockets of urban areas and is highly urbanized from Newton/Waltham through the lower basin to its mouth.

The Charles has been polluted and physically altered for more than a century. The lower basin, once a tidal estuary, is now impounded. The banks and shoreline are defined by sea walls. Present conditions in the River are the result of current and historical pollution sources. The basin is influenced by point sources and storm water runoff. In the lower basin, combined sewer overflows (CSOs) are major sources of pollutants.

## SAMPLING PROGRAM

On May 29 & 30, 1996, staff from EPA and CRWA collected water and sediment samples at nine sites in the Charles River. The water was analyzed for metals, total organic carbon (TOC), dissolved oxygen (D.O.), and temperature. Conductivity and pH were monitored at six sites. All sediments were analyzed for metals, base neutral acids (BNAs), PCBs, chlorinated pesticides, acid volatile sulfide and simultaneously extracted metals (AVS&SEM), and total organic carbon (TOC) concentrations. Sediment toxicity and grain size distributions were determined at six of the sites. Table 1 summarizes the sampling at each site.

All sampling was conducted from a boat near center channel except for samples collected at sites CRWA01 (Echo Lake) and CRWA02 (Box Pond). Here the samples were collected at the deep holes near the outlets. The latitude and longitude were determined at each site using Global Positioning System (GPS) and are presented in the Appendix. Site locations are plotted on Figure 1.

At site CRWA03, blind duplicate samples were collected for all reported compounds. At Site CRWA06, a marked duplicate sample was collected for pesticides and PCBs. Laboratory blanks were analyzed for BNAs and pesticides and PCBs. For further discussion refer to the Data Usability section.

### Water Sampling

Field water quality measurements were made with an electronic multi-parameter monitor (YSI 6000 Sonde) connected to a lap top computer or with a YSI model 57 D.O. and temperature meter. All sites were monitored for D.O. and temperature. Conductivity and pH were monitored at the six sites sampled on May 29. On May 30, rain interfered with the computer's electronics which prevented the collection of conductivity and pH measurements. Field water quality measurements were collected at 0.2 meters below the water's surface. If the water depth was greater than 1 meter, field measurements were made at 1 meter depth intervals.

Metals and TOC samples were collected 0.1 meters below the water's surface at every site. Water and sediment samples were collected at the same sites.

### Sediment sampling

The sampling crew attempted to collect sediments from silty and clay bottoms since contaminants tend to bind to these substrates. A stainless steel petite ponar dredge was used to collect sediment samples from the upper six inches of aquatic substrate. The dredge was used several times at each site to obtain adequate sample volumes. Samples were emptied from the dredge into a clean plastic tray. Detritus and pebbles were removed and excess water was poured off. Samples for metal analyses were collected first. A new plastic spoon was used at each site to take samples from the sediment in the plastic tray. The samples were placed directly in the sample jar. Additional samples were taken from the sediment in the plastic tray and placed in a clean stainless steel bowl where they were mixed (homogenized) with a clean stainless steel spoon. BNAs, PCBs, pesticides, TOC and grain size samples were taken from this homogenized sample. The sample remaining in the plastic tray was homogenized and saved for toxicity testing. The dredge, plastic tray, stainless steel bowl, and stainless steel spoon were decontaminated between sampling stations with soapy water, tap water and deionized water. All samples were placed in precleaned containers. Samples were collected according to OEME Standard Operating Procedures.

**Table 1: Sampling Site Summary**

| Station   | Water column Analyses |            |     |                                     | Sediment Analyses                   |                                  |                     |     |                       |
|---|-----------------------|------------|-----|-------------------------------------|-------------------------------------|----------------------------------|---------------------|-----|-----------------------|
|   | D.O. Temp.            | Cond. & pH | TOC | Metals (Cu, Zn, Pb, Cd, Cr, Ni, Hg) | Metals (Cu, Zn, Pb, Cd, Cr, Ni, Hg) | AVS&SEM (Cu, Zn, Pb, Cd, Ni, Hg) | BNAs, PCBs, & Pest. | TOC | Toxicity & Grain Size |
| CRWA01, Echo Lake Dam, Hopkinton  | X                     |            | X   | X                                   | X                                   |                                  | X                   | X   |                       |
| CRWA02, Box Pond Dam, Bellingham  | X                     | X          | X   | X                                   | X                                   | X                                | X                   | X   | X                     |
| CRWA03, Downstream of Populatic Pond, Medway                                | X                     | X          | X   | X                                   | X                                   | X                                | X                   | X   | X                     |
| CRWA04, Upstream from the Natick Dam  | X                     |            | X   | X                                   | X                                   |                                  | X                   | X   |                       |
| CRWA05, Lake District, Newton   | X                     | X          | X   | X                                   | X                                   | X                                | X                   | X   | X                     |
| CRWA06, Downstream from Landfill, Boston                                    | X                     |            | X   | X                                   | X                                   |                                  | X                   | X   |                       |
| CRWA07, Upstream from the Watertown Dam                                     | X                     | X          | X   | X                                   | X                                   | X                                | X                   | X   | X                     |
| CRWA08, Lower Basin between N Harvard Street bridge and foot bridge, Boston | X                     | X          | X   | X                                   | X                                   | X                                | X                   | X   | X                     |
| CRWA09, Lower Basin between Harvard and Longfellow bridges, Boston          | X                     | X          | X   | X                                   | X                                   | X                                | X                   | X   | X                     |



## DATA SUMMARY

### Water Column Analysis

All metal concentrations in the water column were less than the method reporting limits. Method reporting limits for chromium, and zinc were less than the freshwater quality chronic criteria. Cadmium, copper, nickel, lead, and mercury reporting limits were higher than these criteria. Except for mercury, the toxicity of the metals tested are dependent on water hardness. The lower the hardness of the water the more toxic the metals. The method for calculating water quality criteria is shown in 40 CFR part 131.36. These criteria are goals established to protect the waterbody uses. The published freshwater quality chronic criteria based upon 100 mg/L CaCO<sub>3</sub> were re-calculated using 25 mg/L CaCO<sub>3</sub> to represent the hardness in the Charles River. The results, reporting limits, chronic criteria are shown below in Table 2.

TOC concentrations ranged from a high of 12.2 ppm at site CRWA06 to a low of 4.3 ppm at site CRWA01. These concentrations are shown in the Appendix.

**Table 2: Metal Results in the Water Column Summary**

| Metal    |    | Sample results for all stations<br>(µg/L) | Reporting limit<br>(µg/L) | Freshwater chronic criterion hardness adjusted <sup>1</sup><br>(µg/L) |
|----------|----|---|---------------------------|---|
| Cadmium  | Cd | ND  | 15                        | 0.3   |
| Chromium | Cr | ND  | 15                        | 57.2  |
| Copper   | Cu | ND  | 15                        | 3.5   |
| Nickel   | Ni | ND  | 60                        | 48.6  |
| Lead     | Pb | ND  | 100                       | 0.4   |
| zinc     | Zn | ND  | 20                        | 32.3  |
| Mercury  | Hg | ND  | 0.5                       | 0.012 <sup>2</sup>  |

Notes:

ND =Not detected above the associated reporting limit.

<sup>1</sup> =Values were calculated using a total hardness of 25 mg/L

CaCO<sub>3</sub> <sup>2</sup> =Value is not hardness dependent

## Sediment Analysis

Whole sediment toxicity tests were conducted using two EPA approved test organisms; *Chironomus tentans* (midges) and *Hyallela azteca* (amphipods). The 10 day acute toxicity tests measured survival and did not evaluate chronic or subchronic effects (i.e. growth and reproductive effects). The tests results were used to determine if the sediments adversely affect aquatic life. The chemistry results were used to aid in identifying potential causes of sediment toxicity. Results from acid volatile sulfide and simultaneously extracted metals (AVS&SEM) analyses were used in an attempt to correlate toxicity with the SEM/AVS ratio.

Sediment chemistry results were compared to 1993 sediment quality guidelines prepared by the Ontario Ministry of the Environment (OMOE). Reported concentrations were compared to the Lowest Effect Level (LEL) and the Severe Effect Level (SEL) guidelines. The LEL indicates a level of sediment contamination that can be tolerated by the majority of the benthic organisms. The SEL is the sediment concentration of a compound that would be detrimental to the majority of benthic species (Persaud and others 1993). Sediment quality guidelines were available for all metals and some of the BNAs, pesticides, and PCBs. The SELs used for BNA's and pesticides comparisons were adjusted based on the TOC concentration in the sediment. A summary of sediment conditions at each site appears in Table 3.

Sediment Analysis by Site

**Table 3: Site Summary** (from least to most contaminated)

| Rank | Site   | Summary Comments   |
|------|--------|--|
| 1    | CRWA03 | (Downstream from Populatic Pond and the Charles River Pollution Control District plant's discharge)<br>The sediment had a mercury concentration greater than the LEL. The SEM/AVS ratio was 0.16 and total PAH was 834 ug/Kg. No toxicity was observed at this site. The sediment consisted of mostly sand and a small percent of silt and clay.                       |
| 2    | CRWA01 | (At the deep hole near the Echo Lake dam in Echo Lake)<br>This lake is the water supply for the towns of Milford and Mendon. The sediment had copper, lead, zinc, mercury, and 2 pesticides concentrations greater than their LEL's. The SEM/AVS ratio was 0.16 and total PAH was 922 ug/Kg. Toxicity testing and grain size analyses were not performed at this site. |
| 3    | CRWA04 | (Upstream from the Natick Dam)<br>Chromium, copper, lead, zinc, mercury, and 2 pesticides in the sediment exceeded their LEL's. The SEM/AVS ratio was 0.93 and total PAH was 1406 ug/Kg. Toxicity testing and grain size analyses were not performed at this site.   |
| 4    | CRWA06 | (Just downstream from the City of Boston - Gardner Street Landfill)<br>The sediment had lead, mercury, 2 pesticides, 2 BNAs, and total PAH concentrations greater than their LEL's. The SEM/AVS ratio was 1.3 and total PAH was 3,598 ug/Kg. Toxicity testing and grain size analyses were not performed at this site.   |
| 5    | CRWA07 | (Upstream from the Watertown Dam)<br>The sediment had copper, lead, 2 pesticides, 10 BNAs, and total PAH concentrations greater than their LEL's. The SEM/AVS ratio was 0.58 and total PAH was 41,930 ug/Kg. No toxicity was observed at this site. The sediment consisted mostly of sand and very little silt and clay.   |

| Rank | Site   | Summary Comments  |
|------|--------|---|
| 6    | CRWA02 | <p>(Near the outlet dam in Box Pond in Bellingham)</p> <p>The sediment had chromium, copper, and zinc concentrations greater than their SEL's. Copper was greater than 5 times its SEL. This site had 3 pesticides, 1 BNA, and total PAH concentrations greater than their LEL's. The SEM/AVS ratio was 0.28 and the total PAH was 2,600 ug/Kg. No toxicity was observed at this site. The sediment consisted of a mixture of sand, silt and clay. The BNA results were reported with high analytical detection limits. This could reduce the number of reported compounds and the total PAH value.</p> |
| 7    | CRWA05 | <p>(The Lakes district in Newton)</p> <p>The sediment had cadmium, chromium, copper, nickel, lead, zinc, mercury, 2 pesticides, 8 BNAs, 1 PCB and total PAH concentrations greater than their LEL's. The SEM/AVS ratio was 0.45 and the total PAH was 22,910 ug/Kg. No toxicity was observed at this site. The sediment consisted of a sandy silty clay mixture.</p>  |
| 8    | CRWA08 | <p>(The lower basin between North Harvard Street and a footbridge in Boston)</p> <p>The sediment had chromium, copper, and lead concentrations greater than their SEL's. Cadmium, nickel, zinc, mercury, 2 pesticides, 10 BNAs, 1 PCB, and total PAHs concentrations were greater than their LEL's. The SEM/AVS ratio was 0.7 and the total PAH was 62,800 ug/Kg. Amphipod toxicity occurred at this site and the sediment consisted of a mixture of sand, silt and clay.</p>   |
| 9    | CRWA09 | <p>(The lower basin between Harvard and Longfellow bridges in Boston)</p> <p>The sediment had chromium, copper, lead, and mercury concentrations greater than their SEL's. Cadmium, nickel, zinc, 3 pesticides, 8 BNAs, and total PAHs concentrations were greater than their LEL's. The SEM/AVS ratio was 0.05 and the total PAH was 59,600 ug/Kg. Midge and amphipod toxicity occurred at this site and the sediment consisted of a mixture of sand and silt and clay.</p>  |

## Sediment Analyses by Parameter

### Metals

Metals were analyzed in the sediment at all sites. Results were compared to the LEL and SEL sediment quality guidelines. Mercury concentrations exceeded the LEL at all sites. Site CRWA02 had copper concentrations six times higher than the SEL. The Lower Basin sites (CRWA08 and CRWA09) had levels of chromium, copper and lead above their SEL's. Site CRWA09 was the only site with a mercury concentration higher than the SEL.

### Acid Volatile Sulfide and Simultaneously Extracted Metals

AVS&SEM concentrations and the SEM/AVS ratio were determined at every site. The SEM/AVS ratio can be used to predict the bioavailability and potential toxicity for nickel, zinc, cadmium, copper, and lead. Sulfides bind these metals to the sediment which reduces their availability to benthic biota. AVS is typically highest during summer months because warmer temperatures, increased microbial activity, and lower dissolved oxygen, produce an environment where sulfides predominate. In the winter time AVS is lower and these metals are more bioavailable. At any time of the year, if there is an excess of SEM over AVS or if the SEM/AVS ratio is greater than one the metals are usually bioavailable and may cause toxicity. If the SEM/AVS ratio is less than one the metals are usually not bioavailable to cause toxicity (W. Berry 1996). Site CRWA06 was the only site which had an SEM/AVS ratio greater than one.

### Total Organic Carbon

TOC concentrations were analyzed at each site. The highest concentration measured was 12.69% at site CRWA02. The sediment at this site was a sandy-silt mixture and had high metals concentrations in the sediment. Site CRWA08 and CRWA09 had TOC concentrations of 11.40% and 11.92%, respectively. Sediment from both sites were toxic and grossly contaminated. Site CRWA03 had the lowest measured TOC of 0.84%. The sediment at this site consisted of mostly fine sand and had the least sediment contamination.

### Grain Size Distribution

Grain size distributions were determined at sites CRWA02, CRWA03, CRWA05, CRWA07, CRWA08, CRWA09. Sites CRWA03 and CRWA07 had higher percentages of sand. These two sites were associated with narrow river widths and swift current. Sites CRWA02, CRWA05, CRWA08, and CRWA09 had the highest composition of silt and clay. These sites were located in slow moving water and wide river widths.

### Base Neutral Acids, Chlorinated Pesticides and Polychlorinated Biphenyls

BNAs, PCBs, and chlorinated pesticides were analyzed at each site. The sediment results were compared to LELs and SELs from the Ontario Ministry of the environment's sediment quality guidelines. The available SELs were adjusted for each site by multiplying the actual percent TOC in the sediment (to a maximum of 10%) by the SEL in ug/g organic carbon. This was done to convert the SELs to site specific bulk sediment values (Persaud and others 1993). The site specific bulk sediment SELs were compared to the reported concentration and are shown with the reported results. None of the BNA, pesticide or PCB compounds reported exceeded its SEL at any site. Site CRWA03 was the only site where none of the reported compounds exceeded its LEL.

The concentration of the pesticides, 4,4'DDD and 4,4'DDE exceeded the LEL at 8 of the 9 sites. Sites CRWA05 and CRWA08 were the only sites where PCBs were detected. Aroclor-1254, the only PCB detected, exceeded the LEL at both sites.

The total PAH was calculated by adding the concentrations of the compounds in Table 4. Site CRWA08 in the lower basin had the highest total PAH of 62,800 ug/Kg and site CRWA03 with 834 ug/Kg had the lowest.

**Table 4: PAHs Used to Determine Total PAH**

|                      |                        |                        |
|----------------------|------------------------|------------------------|
| acenaphthene         | benzo[a]pyrene         | fluorene               |
| acenaphthylene       | benzo[g,h,i]perylene   | indeno[1,2,3-cd]pyrene |
| anthracene           | chrysene               | naphthalene            |
| benzo[k]fluoranthene | dibenzo[a,h]anthracene | phenanthrene           |
| benzo[a]anthracene   | fluoranthene           | pyrene                 |

(Persaud and others 1993)

### Toxicity

Toxicity tests were performed on sediment from sites CRWA02, CRWA03, CRWA05, CRWA07, CRWA08, and CRWA09. The amphipod test had statistically significant toxicity at sites CRWA08 and CRWA09. Sites CRWA08 and CRWA09 had survivals of 74% and 12.5%, respectively. The reference sediment for the amphipod test had 100% organism survival for all eight replicates. When compared to the reference sediment, site CRWA08 shows significant toxicity even with the relatively high survival of 74%.

Sediments from site CRWA09 showed statically significant toxicity with the midge test; survival was 23.7%. The SEM/AVS ratio was less than 1 at sites CRWA08 and CRWA09. This reduces the probability that nickel, zinc, cadmium, copper, and lead caused toxicity. Chromium was just above the SEL at both sites and mercury was greater than the SEL at site CRWA09. The highest total PAH concentrations were measured at both these sites. The individual or synergistic effects of the high PAHs, chromium, and mercury concentrations may have caused toxicity. Some of the silty sediments appeared to contain oil. Since total petroleum hydrocarbons (TPH) were not analyzed, this could not be correlated with toxicity. Additional studies need to be conducted to define pollution effects in the area. These could include: benthic community analysis, laboratory bio-accumulation studies, sediment TPH analysis, and/or fish tissue analysis.

## Data Usability

Chain of custody records were maintained for all collected samples. Holding times were met for all analyzed parameters. Field duplicates were collected at site CRWA03. A second duplicate sample was collected at site CRWA06 for PCBs and pesticides. All reported compounds from the duplicate samples met the relative percent difference goals established in the Quality Assurance Project Plan. Duplicate sample results are presented in the Appendix.

Method blanks were analyzed for BNAs, metals, PCBS, and pesticides. The results indicate no significant laboratory contamination. The BNA results show low level contamination of a common laboratory contaminate bis-(2-ethylhexyl)phthalate.

All samples were analyzed for a full scan BNA analysis. Some BNA samples had elevated reporting limits because the combination of a high percent moisture and excess foaming when the extracts were being concentrated. All BNA compounds met the laboratory and field duplicate quality control limits.

In order to gain lower detection limits for the PAHs, an additional PAH analysis was performed on the extracts using GC/MS in the selected ion mode. Some PAHs from this analysis had to be rejected because they did not meet the quality control limits. All PAHs were rejected for samples CRWA07, CRWA08, and CRWA09 because of poor surrogate recoveries. Six PAHs were rejected from all other sites due to inconsistent recoveries from the laboratory control sample. The reported results for these compounds are from the full scan BNA analysis. The BNA results had high reporting limits which in most cases were above the LELs for the PAHs. High reporting limits can reduce the number of identified compounds and reduce the total PAH value. Site CRWA02 had the highest reporting limits for most PAHs and BNAs.

Some of the PCB and pesticide reporting limits were above the LELs. Except for site CRWA01, all reporting limits for chlordane were above the SEL.



## REFERENCES

Metcalf & Eddy. 1994. Baseline Water Quality Assessment. Master Planning and CSO Facility Planning. Report prepared for MWRA

D. Persaud, R. Jaagumagi, and A. Hayton. 1993. Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario. Ontario Ministry of Environment. Toronto. 26 pp.

W. Berry. 1996. An Overview of Sediment Assessment Methods For Metals Contaminated Sediments and the EPA Approach to Developing Metals Sediment Quality Criteria. USEPA, Atlantic Ecology Division. Narragansett, RI. 4 pp

# APPENDIX

## ANALYTICAL RESULTS

Sampling site: CRWA 01  
 Site description: Echo Lake Dam, Hopkinton  
 Sampling date: 5/30/96  
 Latitude: 42 11' 34.551"      Longitude: 71 30' 30.338"  
 Water depth: 28.2 meters

### Water column analysis

#### Field measurements

| Depth of sample (meters) | 0.2  | 1    | 2    | 3    | 4    | 5    | 6    | 7   | 8   |
|--------------------------|------|------|------|------|------|------|------|-----|-----|
| D.O. (mg/l)              | 8.7  | 8.5  | 8.6  | 8.5  | 8.8  | 8.3  | 7.2  | 4.4 | 3.8 |
| Temp (C)                 | 17.5 | 17.5 | 17.5 | 17.4 | 13.2 | 12.5 | 10.8 | 8.5 | 7.8 |

| Metals & TOC<br>Parameter | Sample<br>result<br>(ug/L) | Reporting<br>limit<br>(ug/L) |
|---------------------------|----------------------------|------------------------------|
| Cd                        | ND                         | 15                           |
| Cr                        | ND                         | 15                           |
| Cu                        | ND                         | 15                           |
| Ni                        | ND                         | 60                           |
| Pb                        | ND                         | 100                          |
| Zn                        | ND                         | 20                           |
| Hg                        | ND                         | 0.5                          |
| TOC                       | 4300                       |                              |

### Sediment Analysis

| Metals<br>Parameter | Sample<br>result<br>(ug/gm)* | Reporting<br>limit<br>(ug/gm)* | OMOE Biological Guidelines |                 |
|---------------------|------------------------------|--------------------------------|----------------------------|-----------------|
|                     |                              |                                | LEL<br>(ug/gm)*            | SEL<br>(ug/gm)* |
| Cd                  | ND                           | 1.3                            | 0.6                        | 10              |
| Cr                  | 21.4                         |                                | 26                         | 110             |
|                     | 29.4                         |                                | 16                         | 110             |
| Ni                  | 11.9                         |                                | 16                         | 75              |
|                     | 132                          |                                | 31                         | 250             |
|                     | 150                          |                                | 120                        | 820             |
|                     | 0.64                         |                                | 0.2                        | 2               |

OMOE = Ontario Ministry of the Environment  
 [redacted] = greater than Lowest Effect Level (LEL)  
 [redacted] = greater than Severe Effect Level (SEL)

| AVS&SEM<br>Parameter | Sample<br>result<br>(umole/gm)* | Reporting<br>limit<br>(umole/gm)* |
|----------------------|---------------------------------|-----------------------------------|
| Cd                   | ND                              | 0.04                              |
| Cr                   | ND                              | 0.80                              |
| Cu                   | 0.49                            |                                   |
| Hg                   | ND                              | 0.0006                            |
| Ni                   | ND                              | 0.66                              |
| Pb                   | 0.55                            |                                   |
| Zn                   | 1.9                             |                                   |
| AVS                  | 17.9                            |                                   |
| SEM/ AVS ratio       | 0.16                            |                                   |

| TOC | Sample<br>result (%) |
|-----|----------------------|
| TOC | 6.95                 |

Note:  
 Toxicity and Grain Size Analysis not performed at this site  
 \* = Reported as dry weight  
 ND = Not detected above reporting limit

| CRWA01<br>BNAs                     |              |                             |                             |                               |                            |                | OMOE Biological Guidelines      |  |
|------------------------------------|--------------|-----------------------------|-----------------------------|-------------------------------|----------------------------|----------------|---------------------------------|--|
| CAS<br>NO                          | STORET<br>NO | Compound                    | Sample<br>Result<br>(ug/Kg) | Reporting<br>limit<br>(ug/Kg) | Qualifier<br>or<br>comment | LEL<br>(ug/Kg) | SEL<br>TOC corrected<br>(ug/Kg) |  |
| <b>Priority Pollutants</b>         |              | <b>Priority Pollutants</b>  |                             |                               |                            |                |                                 |  |
| 83-32-9                            | 34205        | Acenaphthene                | ND                          | 28                            |                            |                |                                 |  |
| 208-96-8                           | 34200        | Acenaphthylene              | 43                          | 28                            |                            |                |                                 |  |
| 120-12-7                           | 34220        | Anthracene                  | 30                          | 28                            |                            | 220            | 25715                           |  |
| 56-55-3                            | 34526        | Benzo(a)anthracene          | 99                          | 28                            |                            | 320            | 102860                          |  |
| 205-99-2                           | 34230        | Benzo(b)fluoranthene        | ND                          | 4400                          |                            |                |                                 |  |
| 207-08-9                           | 34242        | Benzo(k)fluoranthene        | ND                          | 4400                          |                            | 240            | 93130                           |  |
| 50-32-8                            | 34247        | Benzo(a)pyrene              | ND                          | 4400                          |                            | 370            | 100080                          |  |
| 191-24-2                           | 34521        | Benzo(ghi)perylene          | ND                          | 4400                          |                            | 170            | 22240                           |  |
| 85-68-7                            | 34292        | Benzyl butyl phthalate      | ND                          | 4400                          |                            |                |                                 |  |
| 111-44-4                           | 34273        | Bis(2-chloroethyl)ether     | ND                          | 4400                          |                            |                |                                 |  |
| 111-91-1                           | 34278        | Bis(2-chloroethoxy)methane  | ND                          | 4400                          |                            |                |                                 |  |
| 117-81-7                           | 39100        | Bis(2-ethylhexyl)phthalate  | ND                          | 4400                          |                            |                |                                 |  |
| 108-60-1                           | 34283        | Bis(2-chloroisopropyl)ether | ND                          | 4400                          |                            |                |                                 |  |
| 101-55-3                           | 34636        | 4-Bromophenylphenyl ether   | ND                          | 4400                          |                            |                |                                 |  |
| 86-74-8                            |              | Carbazole                   | ND                          | 4400                          |                            |                |                                 |  |
| 59-50-7                            | 34452        | 4-Chloro-3-methylphenol     | ND                          | 8900                          |                            |                |                                 |  |
| 91-58-7                            | 34581        | 2-Chloronaphthalene         | ND                          | 4400                          |                            |                |                                 |  |
| 95-57-8                            | 34586        | 2-Chlorophenol              | ND                          | 8900                          |                            |                |                                 |  |
| 7005-72-3                          | 34641        | 4-Chlorophenylphenyl ether  | ND                          | 4400                          |                            |                |                                 |  |
| 218-01-9                           | 34320        | Chrysene                    | 160                         | 28                            |                            | 340            | 31970                           |  |
| 53-70-3                            | 34556        | Dibenzo(a,h)anthracene      | ND                          | 4400                          |                            | 60             | 9035                            |  |
| 84-74-2                            | 39110        | Di-n-butylphthalate         | ND                          | 4400                          |                            |                |                                 |  |
| 541-73-1                           | 34566        | 1,3-Dichlorobenzene         | ND                          | 4400                          |                            |                |                                 |  |
| 95-50-1                            | 34536        | 1,2-Dichlorobenzene         | ND                          | 4400                          |                            |                |                                 |  |
| 106-46-7                           | 34571        | 1,4-Dichlorobenzene         | ND                          | 4400                          |                            |                |                                 |  |
| 91-94-1                            | 34631        | 3,3'-Dichlorobenzidine      | ND                          | 4400                          |                            |                |                                 |  |
| 120-83-2                           | 34601        | 2,4-Dichlorophenol          | ND                          | 8900                          |                            |                |                                 |  |
| 84-66-2                            | 34336        | Diethylphthalate            | ND                          | 4400                          |                            |                |                                 |  |
| 105-67-9                           | 34606        | 2,4-Dimethylphenol          | ND                          | 8900                          |                            |                |                                 |  |
| 131-11-3                           | 34341        | Dimethylphthalate           | ND                          | 4400                          |                            |                |                                 |  |
| 51-28-5                            | 34616        | 2,4-Dinitrophenol           | ND                          | 11000                         |                            |                |                                 |  |
| 121-14-2                           | 34611        | 2,4-Dinitrotoluene          | ND                          | 4400                          |                            |                |                                 |  |
| 606-20-2                           | 34626        | 2,6-Dinitrotoluene          | ND                          | 4400                          |                            |                |                                 |  |
| 117-84-0                           | 34596        | Di-n-octylphthalate         | ND                          | 4400                          |                            |                |                                 |  |
| 206-44-0                           | 34376        | Fluoranthene                | 260                         | 28                            |                            | 750            | 70890                           |  |
| 86-73-7                            | 34381        | Fluorene                    | ND                          | 28                            |                            | 190            | 11120                           |  |
| 118-74-1                           | 39700        | Hexachlorobenzene           | ND                          | 4400                          |                            |                |                                 |  |
| 87-68-3                            | 34391        | Hexachlorobutadiene         | ND                          | 4400                          |                            |                |                                 |  |
| 77-47-4                            | 34386        | Hexachlorocyclopentadiene   | ND                          | 4400                          |                            |                |                                 |  |
| 67-72-1                            | 34396        | Hexachloroethane            | ND                          | 4400                          |                            |                |                                 |  |
| 193-39-5                           | 34403        | Indeno(1,2,3-cd)pyrene      | ND                          | 4400                          |                            | 200            | 22240                           |  |
| 78-59-1                            | 34408        | Isophorone                  | ND                          | 4400                          |                            |                |                                 |  |
| 534-52-1                           | 34657        | 2-Methyl-4,6-dinitrophenol  | ND                          | 11000                         |                            |                |                                 |  |
| 91-20-3                            | 34696        | Naphthalene                 | ND                          | 28                            |                            |                |                                 |  |
| 98-95-3                            | 34447        | Nitrobenzene                | ND                          | 4400                          |                            |                |                                 |  |
| 88-75-5                            | 34591        | 2-Nitrophenol               | ND                          | 8900                          |                            |                |                                 |  |
| 100-02-7                           | 34646        | 4-Nitrophenol               | ND                          | 11000                         |                            |                |                                 |  |
| 86-30-3                            | 34433        | N-Nitrosodiphenylamine      | ND                          | 4400                          |                            |                |                                 |  |
| 621-64-7                           | 34428        | N-Nitrosodi-n-propylamine   | ND                          | 4400                          |                            |                |                                 |  |
| 87-86-5                            | 39032        | Pentachlorophenol           | ND                          | 11000                         |                            |                |                                 |  |
| 85-01-8                            | 34461        | Phenanthrene                | 130                         | 28                            |                            | 560            | 66025                           |  |
| 108-95-2                           | 34694        | Phenol                      | ND                          | 8900                          |                            |                |                                 |  |
| 129-00-0                           | 34469        | Pyrene                      | 200                         | 28                            |                            | 490            | 59075                           |  |
| 120-82-1                           | 34551        | 1,2,4-Trichlorobenzene      | ND                          | 4400                          |                            |                |                                 |  |
| 88-06-2                            | 34621        | 2,4,6-Trichlorophenol       | ND                          | 8900                          |                            |                |                                 |  |
|                                    |              | Total PAH                   | 922                         |                               |                            | 4000           | 695000                          |  |
| <b>Hazardous Substances</b>        |              |                             |                             |                               |                            |                |                                 |  |
| 65-53-3                            | 77089        | Aniline                     | ND                          | 4400                          |                            |                |                                 |  |
| 65-85-0                            | 77247        | Benzoic Acid                | ND                          | 11000                         |                            |                |                                 |  |
| 100-51-6                           | 77147        | Benzyl Alcohol              | ND                          | 4400                          |                            |                |                                 |  |
| 106-47-8                           |              | 4-Chloroaniline             | ND                          | 4400                          |                            |                |                                 |  |
| 132-64-9                           | 81302        | Dibenzofuran                | ND                          | 4400                          |                            |                |                                 |  |
| 91-57-6                            |              | 2-Methylnaphthalene         | ND                          | 4400                          |                            |                |                                 |  |
| 95-48-7                            |              | 2-Methylphenol              | ND                          | 4400                          |                            |                |                                 |  |
| 106-44-5                           |              | 4-Methylphenol              | ND                          | 4400                          |                            |                |                                 |  |
| 88-74-4                            |              | 2-Nitroaniline              | ND                          | 11000                         |                            |                |                                 |  |
| 99-09-2                            |              | 3-Nitroaniline              | ND                          | 11000                         |                            |                |                                 |  |
| 100-01-6                           |              | 4-Nitroaniline              | ND                          | 11000                         |                            |                |                                 |  |
| 95-95-4                            | 34621        | 2,4,5-Trichlorophenol       | ND                          | 11000                         |                            |                |                                 |  |
| <b>Other Compounds Quantitated</b> |              |                             |                             |                               |                            |                |                                 |  |
|                                    |              | Diphenylhydrazine           | ND                          | 4400                          |                            |                |                                 |  |

CRWA01

## PCBs &amp; Pesticides

| CAS NO     | STORET NO | Compound              | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment | OMOE Biological Guidelines |                           |
|------------|-----------|-----------------------|-----------------------|-------------------------|----------------------|----------------------------|---------------------------|
|            |           |                       |                       |                         |                      | LEL (ug/Kg)                | SEL TOC corrected (ug/Kg) |
| 309-00-2   | 39330     | Aldrin                | ND                    | 3                       |                      | 2                          | 556                       |
| 319-84-6   | 39337     | alpha-BHC             | ND                    | 3                       |                      | 6                          | 695                       |
| 319-85-7   | 39338     | beta-BHC              | ND                    | 3                       |                      | 5                          | 1459.5                    |
| 319-86-8   | 34259     | delta-BHC             | ND                    | 3                       |                      |                            |                           |
| 58-89-9    | 39340     | gamma-BHC             | ND                    | 3                       |                      | 3                          | 69.5                      |
| 5103-71-9  | ---       | Alpha Chlordane       | ND                    | 3                       |                      |                            |                           |
| 5103-74-2  | ---       | gamma Chlordane       | ND                    | 3                       |                      |                            |                           |
| 57-74-9    | 39350     | Chlordane (technical) | ND                    | 300                     |                      | 7                          | 417                       |
| 72-54-8    | 39310     | 4,4'-DDD              | 34                    | 3                       |                      | 8                          | 417                       |
| 72-55-9    | 39320     | 4,4'-DDE              | 24                    | 3                       |                      | 5                          | 1320.5                    |
| 50-29-3    | 39300     | 4,4'-DDT              | ND                    | 3                       |                      |                            |                           |
| 60-57-1    | 39380     | Dieldrin              | ND                    | 3                       |                      | 2                          | 6324.5                    |
| 959-98-8   | 34361     | Endosulfan I          | ND                    | 3                       |                      |                            |                           |
| 33212-65-9 | 34356     | Endosulfan II         | ND                    | 3                       |                      |                            |                           |
| 1031-078   | 34351     | Endosulfan sulfate    | ND                    | 3                       |                      |                            |                           |
| 72-20-8    | 39390     | Endrin                | ND                    | 3                       |                      | 3                          | 9035                      |
| 7421-93-4  | 34366     | Endrin aldehyde       | ND                    | 3                       |                      |                            |                           |
| 53494-70-5 | ---       | Endrin ketone         | ND                    | 3                       |                      |                            |                           |
| 76-44-8    | 39410     | Heptachlor            | ND                    | 3                       |                      |                            |                           |
| 1024-57-3  | 39420     | Heptachlor epoxide    | ND                    | 3                       |                      | 5                          | 347.5                     |
| 72-43-5    | ---       | Methoxychlor          | ND                    | 3                       |                      |                            |                           |
| 8001-35-2  | 39400     | Toxaphene             | ND                    | 300                     |                      |                            |                           |
| 12674-11-2 | 34671     | Aroclor-1016          | ND                    | 90                      |                      | 7                          | 3683.5                    |
| 11104-28-2 | 39488     | Aroclor-1221          | ND                    | 90                      |                      |                            |                           |
| 11141-16-5 | 39492     | Aroclor-1232          | ND                    | 90                      |                      |                            |                           |
| 53469-21-9 | 39496     | Aroclor-1242          | ND                    | 90                      |                      |                            |                           |
| 12672-29-6 | 39500     | Aroclor-1248          | ND                    | 90                      |                      | 30                         | 10425                     |
| 11097-69-1 | 39504     | Aroclor-1254          | ND                    | 90                      |                      | 60                         | 2363                      |
| 11096-82-5 | 39508     | Aroclor-1260          | ND                    | 90                      |                      | 5                          | 1668                      |
| 11100-14-4 | 81649     | Aroclor-1262          | ND                    | 90                      |                      |                            |                           |
| 37324-23-5 | 81650     | Aroclor-1268          | ND                    | 90                      |                      |                            |                           |

## Note:

ND = Not detected above reporting limit

= Greater than Lowest Effect Level (LEL)

= Greater than Severe Effect Level (SEL)

LELs and SELs are based on the 5th and 95th percentiles respectively of the screening level concentration except where noted below.

gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, SELs are based on 90% screening level concentrations gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs are based on 10% screening level concentrations gamma-BHC, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs and SELs are tentative guidelines.

Sampling site: CRWA 02  
 Site description: Box Pond, Bellingham  
 Sampling date: 5/29/96  
 Latitude: 42 05' 41.042" Longitude: 71 29' 08.958"  
 Approximate water depth: 1.5 meters

### Water column analysis

#### Field measurements

|                          |       |
|--------------------------|-------|
| Depth of sample (meters) | 0.2   |
| D.O. (mg/l)              | 10.8  |
| Temp (C)                 | 18.27 |
| pH                       | 7.29  |
| Conductivity (mS/cm)     | 0.549 |

| Metals & TOC<br>Parameter | Sample result<br>(ug/L) | Reporting limit<br>(ug/L) |
|---------------------------|-------------------------|---------------------------|
| Cd                        | ND                      | 15                        |
| Cr                        | ND                      | 15                        |
| Cu                        | ND                      | 15                        |
| Ni                        | ND                      | 60                        |
| Pb                        | ND                      | 100                       |
| Zn                        | ND                      | 20                        |
| Hg                        | ND                      | 0.5                       |
| TOC                       | 8300                    |                           |

### Sediment Analysis

| Metals<br>Parameter | Sample result<br>(ug/gm)* | Reporting limit<br>(ug/gm)* | OMOE Biological Guidelines |                 |
|---------------------|---------------------------|-----------------------------|----------------------------|-----------------|
|                     |                           |                             | LEL<br>(ug/gm)*            | SEL<br>(ug/gm)* |
| Cd                  | 5.9                       |                             | 0.6                        | 10              |
| Cr                  | 134                       |                             | 26                         | 110             |
| Cu                  | 627                       |                             | 16                         | 110             |
| Ni                  | 33.3                      |                             | 16                         | 75              |
| Pb                  | 219                       |                             | 31                         | 250             |
| Zn                  | 853                       |                             | 120                        | 820             |
| Hg                  | 1.6                       |                             | 0.2                        | 2               |

OMOE = Ontario Ministry of the Environment  
 [shaded] = greater than Lowest Effect Level (LEL)  
 [shaded] = greater than Severe Effect Level (SEL)

| AVS&SEM<br>Parameter | Sample result<br>(umole/gm)* | Reporting limit<br>(umole/gm)* |
|----------------------|------------------------------|--------------------------------|
| Cd                   | 0.07                         |                                |
| Cr                   | 2                            |                                |
| Cu                   | 10                           |                                |
| Hg                   | ND                           | 0.0001                         |
| Ni                   | 0.57                         |                                |
| Pb                   | 1.2                          |                                |
| Zn                   | 15.2                         |                                |
| AVS                  | 95.9                         |                                |
| SEM/ AVS ratio       | 0.28                         |                                |

| TOC | Sample result (%) |
|-----|-------------------|
| TOC | 12.69             |

| Grain Size    | Course sand         | Medium sand          | Fine sand                | Silt & clay |
|---------------|---------------------|----------------------|--------------------------|-------------|
|               | < 4.75 mm<br>> 2 mm | < 2 mm<br>> 0.425 mm | < 0.425 mm<br>> 0.075 mm | < 0.075 mm  |
| % composition | 30                  | 20                   | 16                       | 34          |

| Toxicity<br>Organism      | type     | % Survival-10 days |
|---------------------------|----------|--------------------|
| <i>Chironomus tentans</i> | midge    | 89                 |
| <i>Hyallela azteca</i>    | amphipod | 96                 |

Note:  
 \* = Reported as dry weight  
 ND = Not detected above reporting limit

| CAS NO                             | STORET NO | Compound                    | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment | OMOE Biological Guidelines |                           |
|------------------------------------|-----------|-----------------------------|-----------------------|-------------------------|----------------------|----------------------------|---------------------------|
|                                    |           |                             |                       |                         |                      | LEL (ug/Kg)                | SEL TOC corrected (ug/Kg) |
| <b>Priority Pollutants</b>         |           |                             |                       |                         |                      |                            |                           |
| 83-32-9                            | 34205     | Acenaphthene                | ND                    | 120                     |                      |                            |                           |
| 208-96-8                           | 34200     | Acenaphthylene              | 180                   | 120                     |                      |                            |                           |
| 120-12-7                           | 34220     | Anthracene                  | 130                   | 120                     |                      | 220                        | 37000                     |
| 56-55-3                            | 34526     | Benzo(a)anthracene          | 310                   | 120                     |                      | 320                        | 148000                    |
| 205-99-2                           | 34230     | Benzo(b)fluoranthene        | ND                    | 16000                   |                      |                            |                           |
| 207-08-9                           | 34242     | Benzo(k)fluoranthene        | ND                    | 16000                   |                      | 240                        | 134000                    |
| 50-32-8                            | 34247     | Benzo(a)pyrene              | ND                    | 16000                   |                      | 370                        | 144000                    |
| 191-24-2                           | 34521     | Benzo(ghi)perylene          | ND                    | 16000                   |                      | 170                        | 32000                     |
| 85-68-7                            | 34292     | Benzyl butyl phthalate      | ND                    | 16000                   |                      |                            |                           |
| 111-44-4                           | 34273     | Bis(2-chloroethyl)ether     | ND                    | 16000                   |                      |                            |                           |
| 111-91-1                           | 34278     | Bis(2-chloroethoxy)methan   | ND                    | 16000                   |                      |                            |                           |
| 117-81-7                           | 39100     | Bis(2-ethylhexyl)phthalate  | 22000                 | 16000                   | B                    |                            |                           |
| 108-60-1                           | 34283     | Bis(2-chloroisopropyl)ether | ND                    | 16000                   |                      |                            |                           |
| 101-55-3                           | 34636     | 4-Bromophenylphenyl ether   | ND                    | 16000                   |                      |                            |                           |
| 86-74-8                            |           | Carbazole                   | ND                    | 16000                   |                      |                            |                           |
| 59-50-7                            | 34452     | 4-Chloro-3-methylphenol     | ND                    | 31000                   |                      |                            |                           |
| 91-58-7                            | 34581     | 2-Chloronaphthalene         | ND                    | 16000                   |                      |                            |                           |
| 95-57-8                            | 34586     | 2-Chlorophenol              | ND                    | 31000                   |                      |                            |                           |
| 7005-72-3                          | 34641     | 4-Chlorophenylphenyl ether  | ND                    | 16000                   |                      |                            |                           |
| 218-01-9                           | 34320     | Chrysene                    | 480                   | 120                     |                      | 340                        | 46000                     |
| 53-70-3                            | 34556     | Dibenzo(a,h)anthracene      | ND                    | 16000                   |                      | 60                         | 13000                     |
| 84-74-2                            | 39110     | Di-n-butylphthalate         | ND                    | 16000                   |                      |                            |                           |
| 541-73-1                           | 34566     | 1,3-Dichlorobenzene         | ND                    | 16000                   |                      |                            |                           |
| 95-50-1                            | 34536     | 1,2-Dichlorobenzene         | ND                    | 16000                   |                      |                            |                           |
| 106-46-7                           | 34571     | 1,4-Dichlorobenzene         | ND                    | 16000                   |                      |                            |                           |
| 91-94-1                            | 34631     | 3,3'-Dichlorobenzidine      | ND                    | 16000                   |                      |                            |                           |
| 120-83-2                           | 34601     | 2,4-Dichlorophenol          | ND                    | 31000                   |                      |                            |                           |
| 84-66-2                            | 34336     | Diethylphthalate            | ND                    | 16000                   |                      |                            |                           |
| 105-67-9                           | 34606     | 2,4-Dimethylphenol          | ND                    | 31000                   |                      |                            |                           |
| 131-11-3                           | 34341     | Dimethylphthalate           | ND                    | 16000                   |                      |                            |                           |
| 51-28-5                            | 34616     | 2,4-Dinitrophenol           | ND                    | 39000                   |                      |                            |                           |
| 121-14-2                           | 34611     | 2,4-Dinitrotoluene          | ND                    | 16000                   |                      |                            |                           |
| 606-20-2                           | 34626     | 2,6-Dinitrotoluene          | ND                    | 16000                   |                      |                            |                           |
| 117-84-0                           | 34596     | Di-n-octylphthalate         | ND                    | 16000                   |                      |                            |                           |
| 206-44-0                           | 34376     | Fluoranthene                | 610                   | 120                     |                      | 750                        | 102000                    |
| 86-73-7                            | 34381     | Fluorene                    | ND                    | 120                     |                      | 190                        | 16000                     |
| 118-74-1                           | 39700     | Hexachlorobenzene           | ND                    | 16000                   |                      |                            |                           |
| 87-68-3                            | 34391     | Hexachlorobutadiene         | ND                    | 16000                   |                      |                            |                           |
| 77-47-4                            | 34386     | Hexachlorocyclopentadiene   | ND                    | 16000                   |                      |                            |                           |
| 67-72-1                            | 34396     | Hexachloroethane            | ND                    | 16000                   |                      |                            |                           |
| 193-39-5                           | 34403     | Indeno(1,2,3-cd)pyrene      | ND                    | 16000                   |                      | 200                        | 32000                     |
| 78-59-1                            | 34408     | Isophorone                  | ND                    | 16000                   |                      |                            |                           |
| 534-52-1                           | 34657     | 2-Methyl-4,6-dinitrophenol  | ND                    | 39000                   |                      |                            |                           |
| 91-20-3                            | 34696     | Naphthalene                 | ND                    | 120                     |                      |                            |                           |
| 98-95-3                            | 34447     | Nitrobenzene                | ND                    | 16000                   |                      |                            |                           |
| 88-75-5                            | 34591     | 2-Nitrophenol               | ND                    | 31000                   |                      |                            |                           |
| 100-02-7                           | 34646     | 4-Nitrophenol               | ND                    | 39000                   |                      |                            |                           |
| 86-30-3                            | 34433     | N-Nitrosodiphenylamine      | ND                    | 16000                   |                      |                            |                           |
| 621-64-7                           | 34428     | N-Nitrosodi-n-propylamine   | ND                    | 16000                   |                      |                            |                           |
| 87-86-5                            | 39032     | Pentachlorophenol           | ND                    | 39000                   |                      |                            |                           |
| 85-01-8                            | 34461     | Phenanthrene                | 290                   | 120                     |                      | 560                        | 95000                     |
| 108-95-2                           | 34694     | Phenol                      | ND                    | 31000                   |                      |                            |                           |
| 129-00-0                           | 34469     | Pyrene                      | 600                   | 120                     |                      | 490                        | 85000                     |
| 120-82-1                           | 34551     | 1,2,4-Trichlorobenzene      | ND                    | 16000                   |                      |                            |                           |
| 88-06-2                            | 34621     | 2,4,6-Trichlorophenol       | ND                    | 31000                   |                      |                            |                           |
|                                    |           | <b>Total PAH</b>            | 2600                  |                         |                      | 4000                       | 1000000                   |
| <b>Hazardous Substances</b>        |           |                             |                       |                         |                      |                            |                           |
| 65-53-3                            | 77089     | Aniline                     | ND                    | 16000                   |                      |                            |                           |
| 65-85-0                            | 77247     | Benzoic Acid                | ND                    | 39000                   |                      |                            |                           |
| 100-51-6                           | 77147     | Benzyl Alcohol              | ND                    | 16000                   |                      |                            |                           |
| 106-47-8                           |           | 4-Chloroaniline             | ND                    | 16000                   |                      |                            |                           |
| 132-64-9                           | 81302     | Dibenzofuran                | ND                    | 16000                   |                      |                            |                           |
| 91-57-6                            |           | 2-Methylnaphthalene         | ND                    | 16000                   |                      |                            |                           |
| 95-48-7                            |           | 2-Methylphenol              | ND                    | 16000                   |                      |                            |                           |
| 106-44-5                           |           | 4-Methylphenol              | ND                    | 16000                   |                      |                            |                           |
| 88-74-4                            |           | 2-Nitroaniline              | ND                    | 39000                   |                      |                            |                           |
| 99-09-2                            |           | 3-Nitroaniline              | ND                    | 39000                   |                      |                            |                           |
| 100-01-6                           |           | 4-Nitroaniline              | ND                    | 39000                   |                      |                            |                           |
| 95-95-4                            | 34621     | 2,4,5-Trichlorophenol       | ND                    | 39000                   |                      |                            |                           |
| <b>Other Compounds Quantitated</b> |           |                             |                       |                         |                      |                            |                           |
|                                    |           | Diphenylhydrazine           | ND                    | 16000                   |                      |                            |                           |

CRWA02

## PCBs &amp; Pesticides

| CAS<br>NO  | STORET<br>NO | Compound              | Sample<br>Result<br>(ug/Kg) | Reporting<br>limit<br>(ug/Kg) | Qualifier<br>or<br>comment | OMOE Biological Guidelines |                                 |
|------------|--------------|-----------------------|-----------------------------|-------------------------------|----------------------------|----------------------------|---------------------------------|
|            |              |                       |                             |                               |                            | LEL<br>(ug/Kg)             | SEL<br>TOC corrected<br>(ug/Kg) |
| 309-00-2   | 39330        | Aldrin                | ND                          | 10                            |                            | 2                          | 800                             |
| 319-84-6   | 39337        | alpha-BHC             | ND                          | 10                            |                            | 6                          | 1000                            |
| 319-85-7   | 39338        | beta-BHC              | ND                          | 10                            |                            | 5                          | 2100                            |
| 319-86-8   | 34259        | delta-BHC             | ND                          | 10                            |                            |                            |                                 |
| 58-89-9    | 39340        | gamma-BHC             | ND                          | 10                            |                            | 3                          | 100                             |
| 5103-71-9  | —            | Alpha Chlordane       | 62                          | 10                            |                            |                            |                                 |
| 5103-74-2  | —            | gamma Chlordane       | 26                          | 10                            |                            |                            |                                 |
| 57-74-9    | 39350        | Chlordane (technical) | ND                          | 1000                          |                            | 7                          | 600                             |
| 72-54-8    | 39310        | 4,4'-DDD              | 86                          | 10                            |                            | 8                          | 600                             |
| 72-55-9    | 39320        | 4,4'-DDE              | 200                         | 10                            |                            | 5                          | 1900                            |
| 50-29-3    | 39300        | 4,4'-DDT              | ND                          | 10                            |                            |                            |                                 |
| 60-57-1    | 39380        | Dieldrin              | 26                          | 10                            |                            | 2                          | 9100                            |
| 959-98-8   | 34361        | Endosulfan I          | ND                          | 10                            |                            |                            |                                 |
| 33212-65-9 | 34356        | Endosulfan II         | ND                          | 10                            |                            |                            |                                 |
| 1031-078   | 34351        | Endosulfan sulfate    | ND                          | 10                            |                            |                            |                                 |
| 72-20-8    | 39390        | Endrin                | ND                          | 10                            |                            | 3                          | 13000                           |
| 7421-93-4  | 34366        | Endrin aldehyde       | ND                          | 10                            |                            |                            |                                 |
| 53494-70-5 | —            | Endrin ketone         | ND                          | 10                            |                            |                            |                                 |
| 76-44-8    | 39410        | Heptachlor            | ND                          | 10                            |                            |                            |                                 |
| 1024-57-3  | 39420        | Heptachlor epoxide    | ND                          | 10                            |                            | 5                          | 500                             |
| 72-43-5    | —            | Methoxychlor          | ND                          | 10                            |                            |                            |                                 |
| 8001-35-2  | 39400        | Toxaphene             | ND                          | 1000                          |                            |                            |                                 |
| 12674-11-2 | 34671        | Aroclor-1016          | ND                          | 300                           |                            | 7                          | 5300                            |
| 11104-28-2 | 39488        | Aroclor-1221          | ND                          | 300                           |                            |                            |                                 |
| 11141-16-5 | 39492        | Aroclor-1232          | ND                          | 300                           |                            |                            |                                 |
| 53469-21-9 | 39496        | Aroclor-1242          | ND                          | 300                           |                            |                            |                                 |
| 12672-29-6 | 39500        | Aroclor-1248          | ND                          | 300                           |                            | 30                         | 15000                           |
| 11097-69-1 | 39504        | Aroclor-1254          | ND                          | 300                           |                            | 60                         | 3400                            |
| 11096-82-5 | 39508        | Aroclor-1260          | ND                          | 300                           |                            | 5                          | 2400                            |
| 11100-14-4 | 81649        | Aroclor-1262          | ND                          | 300                           |                            |                            |                                 |
| 37324-23-5 | 81650        | Aroclor-1268          | ND                          | 300                           |                            |                            |                                 |

## Note:

ND = Not detected above reporting limit

B = Analyte is associated with lab blank contamination

L = Estimated value is below the calibration range

[Redacted] = Greater than Lowest Effect Level (LEL)

[Redacted] = Greater than Severe Effect Level (SEL)

LELs and SELs are based on the 5th and 95th percentiles respectively of the screening level concentration except where noted below.

gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, SELs are based on 90% screening level concentrations

gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs are based on 10% screening level concentrations

gamma-BHC, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs and SELs are tentative guidelines.

Sampling site: CRWA 03  
 Site description: Down stream of Populatic Pond, Medway  
 Sampling date: 5/29/96  
 Latitude: 42 08' 07.478" Longitude: 71 22' 41.022"  
 Water depth: 2.1 meters

### Water column analysis

#### Field measurements

| Depth of sample (meters) | 0.2   | 1     |
|--------------------------|-------|-------|
| D.O. (mg/l)              | 9.37  | 9.25  |
| Temp (C)                 | 18.72 | 17.77 |
| pH                       | 6.9   | 6.96  |
| Conductivity (mS/cm)     | 0.286 | 0.303 |

#### Metals & TOC

| Parameter | Sample result (ug/L) | Reporting limit (ug/L) |
|-----------|----------------------|------------------------|
| Cd        | ND                   | 15                     |
| Cr        | ND                   | 15                     |
| Cu        | ND                   | 15                     |
| Ni        | ND                   | 60                     |
| Pb        | ND                   | 100                    |
| Zn        | ND                   | 20                     |
| Hg        | ND                   | 0.5                    |
| TOC       | 10400                |                        |

### Sediment Analysis

#### Metals

| Parameter | Sample result (ug/gm)* | Reporting limit (ug/gm)* | OMOE Biological Guidelines |              |
|-----------|------------------------|--------------------------|----------------------------|--------------|
|           |                        |                          | LEL (ug/gm)*               | SEL (ug/gm)* |
| Cd        | ND                     | 1.1                      | 0.6                        | 10           |
| Cr        | 12.3                   |                          | 26                         | 110          |
| Cu        | 9.8                    |                          | 16                         | 110          |
| Ni        | ND                     | 4.2                      | 16                         | 75           |
| Pb        | 11.9                   |                          | 31                         | 250          |
| Zn        | 62.1                   |                          | 120                        | 820          |
| As        | 0.33                   |                          | 0.2                        | 2            |

OMOE = Ontario Ministry of the Environment

█ = greater than Lowest Effect Level (LEL)  
 █ = greater than Severe Effect Level (SEL)

#### AVS&SEM

| Parameter      | Sample result (umole/gm)* | Reporting limit (umole/gm)* |
|----------------|---------------------------|-----------------------------|
| Cd             | ND                        | 0.006                       |
| Cr             | ND                        | 0.15                        |
| Cu             | ND                        | 0.15                        |
| Hg             | ND                        | 0.0001                      |
| Ni             | ND                        | 0.12                        |
| Pb             | 0.05                      |                             |
| Zn             | 1                         |                             |
| AVS            | 1.8                       |                             |
| SEM/ AVS ratio | 0.67                      |                             |

| TOC | Sample result (%) |
|-----|-------------------|
| TOC | 0.84              |

| Grain Size    | Course sand < 4.75 mm > 2 mm | Medium sand < 2 mm > 0.425 mm | Fine sand < 0.425 mm > 0.075 mm | Silt & clay < 0.075 mm |
|---------------|------------------------------|-------------------------------|---------------------------------|------------------------|
| % composition | 9                            | 33                            | 51                              | 7                      |

#### Toxicity

| Organism                  | type     | % Survival-10 days |
|---------------------------|----------|--------------------|
| <i>Chironomus tentans</i> | midge    | 87.5               |
| <i>Hyalalela azteca</i>   | amphipod | 94                 |

Note:  
 \* = Reported as dry weight  
 ND = Not detected above reporting limit



| CAS NO                             | STORET NO | Compound                    | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment | OMOE Biological Guidelines |                           |
|------------------------------------|-----------|-----------------------------|-----------------------|-------------------------|----------------------|----------------------------|---------------------------|
|                                    |           |                             |                       |                         |                      | LEL (ug/Kg)                | SEL TOC corrected (ug/Kg) |
| <b>Priority Pollutants</b>         |           |                             |                       |                         |                      |                            |                           |
| 83-32-9                            | 34205     | Acenaphthene                | ND                    | 9.5                     |                      |                            |                           |
| 208-96-8                           | 34200     | Acenaphthylene              | 15                    | 9.5                     |                      |                            |                           |
| 120-12-7                           | 34220     | Anthracene                  | 12                    | 9.5                     |                      | 220                        | 3108                      |
| 56-55-3                            | 34526     | Benzo(a)anthracene          | 79                    | 9.5                     |                      | 320                        | 12432                     |
| 205-99-2                           | 34230     | Benzo(b)fluoranthene        | 110                   | 300                     | L                    |                            |                           |
| 207-08-9                           | 34242     | Benzo(k)fluoranthene        | 110                   | 300                     | L                    | 240                        | 11256                     |
| 50-32-8                            | 34247     | Benzo(a)pyrene              | 96                    | 300                     | L                    | 370                        | 12096                     |
| 191-24-2                           | 34521     | Benzo(ghi)perylene          | ND                    | 300                     |                      | 170                        | 2688                      |
| 85-68-7                            | 34292     | Benzyl butyl phthalate      | ND                    | 300                     |                      |                            |                           |
| 111-44-4                           | 34273     | Bis(2-chloroethyl)ether     | ND                    | 300                     |                      |                            |                           |
| 111-91-1                           | 34278     | Bis(2-chloroethoxy)methane  | ND                    | 300                     |                      |                            |                           |
| 117-81-7                           | 39100     | Bis(2-ethylhexyl)phthalate  | 330                   | 300                     | B                    |                            |                           |
| 108-60-1                           | 34283     | Bis(2-chloroisopropyl)ether | ND                    | 300                     |                      |                            |                           |
| 101-55-3                           | 34636     | 4-Bromophenylphenyl ether   | ND                    | 300                     |                      |                            |                           |
| 86-74-8                            |           | Carbazole                   | ND                    | 300                     |                      |                            |                           |
| 59-50-7                            | 34452     | 4-Chloro-3-methylphenol     | ND                    | 600                     |                      |                            |                           |
| 91-58-7                            | 34581     | 2-Chloronaphthalene         | ND                    | 300                     |                      |                            |                           |
| 95-57-8                            | 34586     | 2-Chlorophenol              | ND                    | 600                     |                      |                            |                           |
| 7005-72-3                          | 34641     | 4-Chlorophenylphenyl ether  | ND                    | 300                     |                      |                            |                           |
| 218-01-9                           | 34320     | Chrysene                    | 98                    | 9.5                     |                      | 340                        | 3864                      |
| 53-70-3                            | 34556     | Dibenzo(a,h)anthracene      | ND                    | 300                     |                      | 60                         | 1092                      |
| 84-74-2                            | 39110     | Di-n-butylphthalate         | 48                    | 300                     | L,B                  |                            |                           |
| 541-73-1                           | 34566     | 1,3-Dichlorobenzene         | ND                    | 300                     |                      |                            |                           |
| 95-50-1                            | 34536     | 1,2-Dichlorobenzene         | ND                    | 300                     |                      |                            |                           |
| 106-46-7                           | 34571     | 1,4-Dichlorobenzene         | ND                    | 300                     |                      |                            |                           |
| 91-94-1                            | 34631     | 3,3'-Dichlorobenzidine      | ND                    | 300                     |                      |                            |                           |
| 120-83-2                           | 34601     | 2,4-Dichlorophenol          | ND                    | 600                     |                      |                            |                           |
| 84-66-2                            | 34336     | Diethylphthalate            | ND                    | 300                     |                      |                            |                           |
| 105-67-9                           | 34606     | 2,4-Dimethylphenol          | ND                    | 600                     |                      |                            |                           |
| 131-11-3                           | 34341     | Dimethylphthalate           | ND                    | 300                     |                      |                            |                           |
| 51-28-5                            | 34616     | 2,4-Dinitrophenol           | ND                    | 740                     |                      |                            |                           |
| 121-14-2                           | 34611     | 2,4-Dinitrotoluene          | ND                    | 300                     |                      |                            |                           |
| 606-20-2                           | 34626     | 2,6-Dinitrotoluene          | ND                    | 300                     |                      |                            |                           |
| 117-84-0                           | 34596     | Di-n-octylphthalate         | ND                    | 300                     |                      |                            |                           |
| 206-44-0                           | 34376     | Fluoranthene                | 130                   | 9.5                     |                      | 750                        | 8568                      |
| 86-73-7                            | 34381     | Fluorene                    | ND                    | 9.5                     |                      | 190                        | 1344                      |
| 118-74-1                           | 39700     | Hexachlorobenzene           | ND                    | 300                     |                      |                            |                           |
| 87-68-3                            | 34391     | Hexachlorobutadiene         | ND                    | 300                     |                      |                            |                           |
| 77-47-4                            | 34386     | Hexachlorocyclopentadiene   | ND                    | 300                     |                      |                            |                           |
| 67-72-1                            | 34396     | Hexachloroethane            | ND                    | 300                     |                      |                            |                           |
| 193-39-5                           | 34403     | Indeno(1,2,3-cd)pyrene      | ND                    | 300                     |                      | 200                        | 2688                      |
| 78-59-1                            | 34408     | Isophorone                  | ND                    | 300                     |                      |                            |                           |
| 534-52-1                           | 34657     | 2-Methyl-4,6-dinitrophenol  | ND                    | 740                     |                      |                            |                           |
| 91-20-3                            | 34696     | Naphthalene                 | ND                    | 9.5                     |                      |                            |                           |
| 98-95-3                            | 34447     | Nitrobenzene                | ND                    | 300                     |                      |                            |                           |
| 88-75-5                            | 34591     | 2-Nitrophenol               | ND                    | 600                     |                      |                            |                           |
| 100-02-7                           | 34646     | 4-Nitrophenol               | ND                    | 740                     |                      |                            |                           |
| 86-30-3                            | 34433     | N-Nitrosodiphenylamine      | ND                    | 300                     |                      |                            |                           |
| 621-64-7                           | 34428     | N-Nitrosodi-n-propylamine   | ND                    | 300                     |                      |                            |                           |
| 87-86-5                            | 39032     | Pentachlorophenol           | ND                    | 740                     |                      |                            |                           |
| 85-01-8                            | 34461     | Phenanthrene                | 54                    | 9.5                     |                      | 560                        | 7980                      |
| 108-95-2                           | 34694     | Phenol                      | ND                    | 600                     |                      |                            |                           |
| 129-00-0                           | 34469     | Pyrene                      | 130                   | 9.5                     |                      | 490                        | 7140                      |
| 120-82-1                           | 34551     | 1,2,4-Trichlorobenzene      | ND                    | 300                     |                      |                            |                           |
| 88-06-2                            | 34621     | 2,4,6-Trichlorophenol       | ND                    | 600                     |                      |                            |                           |
|                                    |           | Total PAH                   | 834                   |                         |                      | 4000                       | 84000                     |
| <b>Hazardous Substances</b>        |           |                             |                       |                         |                      |                            |                           |
| 65-53-3                            | 77089     | Aniline                     | ND                    | 300                     |                      |                            |                           |
| 65-85-0                            | 77247     | Benzoic Acid                | 150                   | 740                     | L                    |                            |                           |
| 100-51-6                           | 77147     | Benzyl Alcohol              | ND                    | 300                     |                      |                            |                           |
| 106-47-8                           |           | 4-Chloroaniline             | ND                    | 300                     |                      |                            |                           |
| 132-64-9                           | 81302     | Dibenzofuran                | ND                    | 300                     |                      |                            |                           |
| 91-57-6                            |           | 2-Methylnaphthalene         | ND                    | 300                     |                      |                            |                           |
| 95-48-7                            |           | 2-Methylphenol              | ND                    | 300                     |                      |                            |                           |
| 106-44-5                           |           | 4-Methylphenol              | ND                    | 300                     |                      |                            |                           |
| 88-74-4                            |           | 2-Nitroaniline              | ND                    | 740                     |                      |                            |                           |
| 99-09-2                            |           | 3-Nitroaniline              | ND                    | 740                     |                      |                            |                           |
| 100-01-6                           |           | 4-Nitroaniline              | ND                    | 740                     |                      |                            |                           |
| 95-95-4                            | 34621     | 2,4,5-Trichlorophenol       | ND                    | 740                     |                      |                            |                           |
| <b>Other Compounds Quantitated</b> |           |                             |                       |                         |                      |                            |                           |
|                                    |           | Diphenylhydrazine           | ND                    | 300                     |                      |                            |                           |

CRWA03

## PCBs &amp; Pesticides

| CAS NO     | STORET NO | Compound              | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment | OMOE Biological Guidelines |                           |
|------------|-----------|-----------------------|-----------------------|-------------------------|----------------------|----------------------------|---------------------------|
|            |           |                       |                       |                         |                      | LEL (ug/Kg)                | SEL TOC corrected (ug/Kg) |
| 309-00-2   | 39330     | Aldrin                | ND                    | 1                       |                      | 2                          | 67.2                      |
| 319-84-6   | 39337     | alpha-BHC             | ND                    | 1                       |                      | 6                          | 84                        |
| 319-85-7   | 39338     | beta-BHC              | ND                    | 1                       |                      | 5                          | 176.4                     |
| 319-86-8   | 34259     | delta-BHC             | ND                    | 1                       |                      |                            |                           |
| 58-89-9    | 39340     | gamma-BHC             | ND                    | 1                       |                      | 3                          | 8.4                       |
| 5103-71-9  | ---       | Alpha Chlordane       | 1.2                   | 1                       |                      |                            |                           |
| 5103-74-2  | ---       | gamma Chlordane       | ND                    | 1                       |                      |                            |                           |
| 57-74-9    | 39350     | Chlordane (technical) | ND                    | 100                     |                      | 7                          | 50.4                      |
| 72-54-8    | 39310     | 4,4'-DDD              | 3.9                   | 1                       |                      | 8                          | 50.4                      |
| 72-55-9    | 39320     | 4,4'-DDE              | 4.2                   | 1                       |                      | 5                          | 159.6                     |
| 50-29-3    | 39300     | 4,4'-DDT              | ND                    | 1                       |                      |                            |                           |
| 60-57-1    | 39380     | Dieldrin              | ND                    | 1                       |                      | 2                          | 764.4                     |
| 959-98-8   | 34361     | Endosulfan I          | ND                    | 1                       |                      |                            |                           |
| 33212-65-9 | 34356     | Endosulfan II         | ND                    | 1                       |                      |                            |                           |
| 1031-078   | 34351     | Endosulfan sulfate    | ND                    | 1                       |                      |                            |                           |
| 72-20-8    | 39390     | Endrin                | ND                    | 1                       |                      | 3                          | 1092                      |
| 7421-93-4  | 34366     | Endrin aldehyde       | ND                    | 1                       |                      |                            |                           |
| 53494-70-5 | ---       | Endrin ketone         | ND                    | 1                       |                      |                            |                           |
| 76-44-8    | 39410     | Heptachlor            | ND                    | 1                       |                      |                            |                           |
| 1024-57-3  | 39420     | Heptachlor epoxide    | ND                    | 1                       |                      | 5                          | 42                        |
| 72-43-5    | ---       | Methoxychlor          | ND                    | 1                       |                      |                            |                           |
| 8001-35-2  | 39400     | Toxaphene             | ND                    | 100                     |                      |                            |                           |
| 12674-11-2 | 34671     | Aroclor-1016          | ND                    | 30                      |                      | 7                          | 445.2                     |
| 11104-28-2 | 39488     | Aroclor-1221          | ND                    | 30                      |                      |                            |                           |
| 11141-16-5 | 39492     | Aroclor-1232          | ND                    | 30                      |                      |                            |                           |
| 53469-21-9 | 39496     | Aroclor-1242          | ND                    | 30                      |                      |                            |                           |
| 12672-29-6 | 39500     | Aroclor-1248          | ND                    | 30                      |                      | 30                         | 1260                      |
| 11097-69-1 | 39504     | Aroclor-1254          | ND                    | 30                      |                      | 60                         | 285.6                     |
| 11096-82-5 | 39508     | Aroclor-1260          | ND                    | 30                      |                      | 5                          | 201.6                     |
| 11100-14-4 | 81649     | Aroclor-1262          | ND                    | 30                      |                      |                            |                           |
| 37324-23-5 | 81650     | Aroclor-1268          | ND                    | 30                      |                      |                            |                           |

## Note:

ND = Not detected above reporting limit

B = Analyte is associated with lab blank contamination

L = Estimated value is below the calibration range

= Greater than Lowest Effect Level (LEL)

= Greater than Severe Effect Level (SEL)

LELs and SELs are based on the 5th and 95th percentiles respectively of the screening level concentration except where noted below.

gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, SELs are based on 90% screening level concentrations gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs are based on 10% screening level concentrations gamma-BHC, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs and SELs are tentative guidelines.

Sampling site: CRWA 04  
 Site description: Upstream from the Natick Dam, Natick  
 Sampling date: 5/30/96  
 Latitude: 42 16' 13.98" Longitude: 71 18' 56.977"  
 Water depth: 1.5 meters

### Water column analysis

#### Field measurements

| Depth of sample (meters) | 0.2 | 1    |
|--------------------------|-----|------|
| D.O. (mg/l)              | 6   | 5.9  |
| Temp (C)                 | 16  | 16.2 |

#### Metals & TOC

| Parameter | Sample result (ug/L) | Reporting limit (ug/L) |
|-----------|----------------------|------------------------|
|-----------|----------------------|------------------------|

|     |       |     |
|-----|-------|-----|
| Cd  | ND    | 15  |
| Cr  | ND    | 15  |
| Cu  | ND    | 15  |
| Ni  | ND    | 60  |
| Pb  | ND    | 100 |
| Zn  | ND    | 20  |
| Hg  | ND    | 0.5 |
| TOC | 12000 |     |

### Sediment Analysis

| Metals Parameter | Sample result (ug/gm)* | Reporting limit (ug/gm)* | OMOE Biological Guidelines |              |
|------------------|------------------------|--------------------------|----------------------------|--------------|
|                  |                        |                          | LEL (ug/gm)*               | SEL (ug/gm)* |
| Cd               | ND                     | 1.3                      | 0.6                        | 10           |
| Cr               | 61.1                   |                          | 26                         | 110          |
| Cu               | 29.4                   |                          | 16                         | 110          |
| Ni               | 10.8                   |                          | 16                         | 75           |
| Pb               | 57                     |                          | 31                         | 250          |
| Zn               | 195                    |                          | 120                        | 820          |
| Hg               | 0.63                   |                          | 0.2                        | 2            |

OMOE = Ontario Ministry of the Environment  
 [shaded] = greater than Lowest Effect Level (LEL)  
 [shaded] = greater than Severe Effect Level (SEL)

| AVS&SEM Parameter | Sample result (umole/g) | Reporting limit (umole/gm)* |
|-------------------|-------------------------|-----------------------------|
| Cd                | ND                      | 0.01                        |
| Cr                | 0.42                    |                             |
| Cu                | 0.44                    |                             |
| Hg                | ND                      | 0.0002                      |
| Ni                | ND                      | 0.21                        |
| Pb                | 0.28                    |                             |
| Zn                | 3.1                     |                             |
| AVS               | 4.1                     |                             |
| SEM/ AVS ratio    | 0.93                    |                             |

| TOC | Sample result (%) |
|-----|-------------------|
| TOC | 5.64              |

Note:  
 Toxicity and Gain Size Analysis not performed at this site  
 \* = Reported as dry weight  
 ND = Not detected above reporting limit

| BNAs<br>CAS<br>NO                  | STORET<br>NO | Compound                    | Sample<br>Result<br>(ug/Kg) | Reporting<br>limit<br>(ug/Kg) | Qualifier<br>or<br>comment | OMOE Biological Guidelines |                                 |
|------------------------------------|--------------|-----------------------------|-----------------------------|-------------------------------|----------------------------|----------------------------|---------------------------------|
|                                    |              |                             |                             |                               |                            | LEL<br>(ug/Kg)             | SEL<br>TOC corrected<br>(ug/Kg) |
| <b>Priority Pollutants</b>         |              |                             |                             |                               |                            |                            |                                 |
| 83-32-9                            | 34205        | Acenaphthene                | ND                          | 17                            |                            |                            |                                 |
| 208-96-8                           | 34200        | Acenaphthylene              | 58                          | 17                            |                            |                            |                                 |
| 120-12-7                           | 34220        | Anthracene                  | 48                          | 17                            |                            | 220                        | 20868                           |
| 56-55-3                            | 34526        | Benzo(a)anthracene          | 120                         | 17                            |                            | 320                        | 83472                           |
| 205-99-2                           | 34230        | Benzo(b)fluoranthene        | 170                         | 550                           | L                          |                            |                                 |
| 207-08-9                           | 34242        | Benzo(k)fluoranthene        | 220                         | 550                           | L                          | 240                        | 75576                           |
| 50-32-8                            | 34247        | Benzo(a)pyrene              | 170                         | 550                           | L                          | 370                        | 81216                           |
| 191-24-2                           | 34521        | Benzo(ghi)perylene          | ND                          | 550                           |                            | 170                        | 18048                           |
| 85-68-7                            | 34292        | Benzyl butyl phthalate      | ND                          | 550                           |                            |                            |                                 |
| 111-44-4                           | 34273        | Bis(2-chloroethyl)ether     | ND                          | 550                           |                            |                            |                                 |
| 111-91-1                           | 34278        | Bis(2-chloroethoxy)methane  | ND                          | 550                           |                            |                            |                                 |
| 117-81-7                           | 39100        | Bis(2-ethylhexyl)phthalate  | 520                         | 550                           | L                          |                            |                                 |
| 108-60-1                           | 34283        | Bis(2-chloroisopropyl)ether | ND                          | 550                           |                            |                            |                                 |
| 101-55-3                           | 34636        | 4-Bromophenylphenyl ether   | ND                          | 550                           |                            |                            |                                 |
| 86-74-8                            |              | Carbazole                   | 94                          | 550                           | L                          |                            |                                 |
| 59-50-7                            | 34452        | 4-Chloro-3-methylphenol     | ND                          | 1100                          |                            |                            |                                 |
| 91-58-7                            | 34581        | 2-Chloronaphthalene         | ND                          | 550                           |                            |                            |                                 |
| 95-57-8                            | 34586        | 2-Chlorophenol              | ND                          | 1100                          |                            |                            |                                 |
| 7005-72-3                          | 34641        | 4-Chlorophenylphenyl ether  | ND                          | 550                           |                            |                            |                                 |
| 218-01-9                           | 34320        | Chrysene                    | 180                         | 17                            |                            | 340                        | 25944                           |
| 53-70-3                            | 34556        | Dibenzo(a,h)anthracene      | ND                          | 550                           |                            | 60                         | 7332                            |
| 84-74-2                            | 39110        | Di-n-butylphthalate         | 88                          | 550                           | L                          |                            |                                 |
| 541-73-1                           | 34566        | 1,3-Dichlorobenzene         | ND                          | 550                           |                            |                            |                                 |
| 95-50-1                            | 34536        | 1,2-Dichlorobenzene         | ND                          | 550                           |                            |                            |                                 |
| 106-46-7                           | 34571        | 1,4-Dichlorobenzene         | ND                          | 550                           |                            |                            |                                 |
| 91-94-1                            | 34631        | 3,3'-Dichlorobenzidine      | ND                          | 550                           |                            |                            |                                 |
| 120-83-2                           | 34601        | 2,4-Dichlorophenol          | ND                          | 1100                          |                            |                            |                                 |
| 84-66-2                            | 34336        | Diethylphthalate            | ND                          | 550                           |                            |                            |                                 |
| 105-67-9                           | 34606        | 2,4-Dimethylphenol          | ND                          | 1100                          |                            |                            |                                 |
| 131-11-3                           | 34341        | Dimethylphthalate           | ND                          | 550                           |                            |                            |                                 |
| 51-28-5                            | 34616        | 2,4-Dinitrophenol           | ND                          | 1400                          |                            |                            |                                 |
| 121-14-2                           | 34611        | 2,4-Dinitrotoluene          | ND                          | 550                           |                            |                            |                                 |
| 606-20-2                           | 34626        | 2,6-Dinitrotoluene          | ND                          | 550                           |                            |                            |                                 |
| 117-84-0                           | 34596        | Di-n-octylphthalate         | ND                          | 550                           |                            |                            |                                 |
| 206-44-0                           | 34376        | Fluoranthene                | 240                         | 17                            |                            | 750                        | 57528                           |
| 86-73-7                            | 34381        | Fluorene                    | 16                          | 17                            | L                          | 190                        | 9024                            |
| 118-74-1                           | 39700        | Hexachlorobenzene           | ND                          | 550                           |                            |                            |                                 |
| 87-68-3                            | 34391        | Hexachlorobutadiene         | ND                          | 550                           |                            |                            |                                 |
| 77-47-4                            | 34386        | Hexachlorocyclopentadiene   | ND                          | 550                           |                            |                            |                                 |
| 67-72-1                            | 34396        | Hexachloroethane            | ND                          | 550                           |                            |                            |                                 |
| 193-39-5                           | 34403        | Indeno(1,2,3-cd)pyrene      | ND                          | 550                           |                            | 200                        | 18048                           |
| 78-59-1                            | 34408        | Isophorone                  | ND                          | 550                           |                            |                            |                                 |
| 534-52-1                           | 34657        | 2-Methyl-4,6-dinitrophenol  | ND                          | 1400                          |                            |                            |                                 |
| 91-20-3                            | 34696        | Naphthalene                 | ND                          | 17                            |                            |                            |                                 |
| 98-95-3                            | 34447        | Nitrobenzene                | ND                          | 550                           |                            |                            |                                 |
| 88-75-5                            | 34591        | 2-Nitrophenol               | ND                          | 1100                          |                            |                            |                                 |
| 100-02-7                           | 34646        | 4-Nitrophenol               | ND                          | 1400                          |                            |                            |                                 |
| 86-30-3                            | 34433        | N-Nitrosodiphenylamine      | ND                          | 550                           |                            |                            |                                 |
| 621-64-7                           | 34428        | N-Nitrosodi-n-propylamine   | ND                          | 550                           |                            |                            |                                 |
| 87-86-5                            | 39032        | Pentachlorophenol           | ND                          | 1400                          |                            |                            |                                 |
| 85-01-8                            | 34461        | Phenanthrene                | 140                         | 17                            |                            | 560                        | 53580                           |
| 108-95-2                           | 34694        | Phenol                      | ND                          | 1100                          |                            |                            |                                 |
| 129-00-0                           | 34469        | Pyrene                      | 270                         | 17                            |                            | 490                        | 47940                           |
| 120-82-1                           | 34551        | 1,2,4-Trichlorobenzene      | ND                          | 550                           |                            |                            |                                 |
| 88-06-2                            | 34621        | 2,4,6-Trichlorophenol       | ND                          | 1100                          |                            |                            |                                 |
|                                    |              | Total PAH                   | 1406                        |                               |                            | 4000                       | 564000                          |
| <b>Hazardous Substances</b>        |              |                             |                             |                               |                            |                            |                                 |
| 65-53-3                            | 77089        | Aniline                     | ND                          | 550                           |                            |                            |                                 |
| 65-85-0                            | 77247        | Benzoic Acid                | 270                         | 1400                          | L                          |                            |                                 |
| 100-51-6                           | 77147        | Benzyl Alcohol              | ND                          | 550                           |                            |                            |                                 |
| 106-47-8                           |              | 4-Chloroaniline             | ND                          | 550                           |                            |                            |                                 |
| 132-64-9                           | 81302        | Dibenzofuran                | ND                          | 550                           |                            |                            |                                 |
| 91-57-6                            |              | 2-Methylnaphthalene         | ND                          | 550                           |                            |                            |                                 |
| 95-48-7                            |              | 2-Methylphenol              | ND                          | 550                           |                            |                            |                                 |
| 106-44-5                           |              | 4-Methylphenol              | ND                          | 550                           |                            |                            |                                 |
| 88-74-4                            |              | 2-Nitroaniline              | ND                          | 1400                          |                            |                            |                                 |
| 99-09-2                            |              | 3-Nitroaniline              | ND                          | 1400                          |                            |                            |                                 |
| 100-01-6                           |              | 4-Nitroaniline              | ND                          | 1400                          |                            |                            |                                 |
| 95-95-4                            | 34621        | 2,4,5-Trichlorophenol       | ND                          | 1400                          |                            |                            |                                 |
| <b>Other Compounds Quantitated</b> |              |                             |                             |                               |                            |                            |                                 |
|                                    |              | Diphenylhydrazine           | ND                          | 550                           |                            |                            |                                 |

CRWA04

## PCBs &amp; Pesticides

| CAS NO     | STORET NO | Compound              | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment | OMOE Biological Guidelines |                           |
|------------|-----------|-----------------------|-----------------------|-------------------------|----------------------|----------------------------|---------------------------|
|            |           |                       |                       |                         |                      | LEL (ug/Kg)                | SEL TOC corrected (ug/Kg) |
| 309-00-2   | 39330     | Aldrin                | ND                    | 5                       |                      | 2                          | 451.2                     |
| 319-84-6   | 39337     | alpha-BHC             | ND                    | 5                       |                      | 6                          | 564                       |
| 319-85-7   | 39338     | beta-BHC              | ND                    | 5                       |                      | 5                          | 1184.4                    |
| 319-86-8   | 34259     | delta-BHC             | ND                    | 5                       |                      |                            |                           |
| 58-89-9    | 39340     | gamma-BHC             | ND                    | 5                       |                      | 3                          | 56.4                      |
| 5103-71-9  | —         | Alpha Chlordane       | ND                    | 5                       |                      |                            |                           |
| 5103-74-2  | —         | gamma Chlordane       | ND                    | 5                       |                      |                            |                           |
| 57-74-9    | 39350     | Chlordane (technical) | ND                    | 500                     |                      | 7                          | 338.4                     |
| 72-54-8    | 39310     | 4,4'-DDD              | 68                    | 5                       |                      | 8                          | 338.4                     |
| 72-55-9    | 39320     | 4,4'-DDE              | 55                    | 5                       |                      | 5                          | 1071.6                    |
| 50-29-3    | 39300     | 4,4'-DDT              | ND                    | 5                       |                      |                            |                           |
| 60-57-1    | 39380     | Dieldrin              | ND                    | 5                       |                      | 2                          | 5132.4                    |
| 959-98-8   | 34361     | Endosulfan I          | ND                    | 5                       |                      |                            |                           |
| 33212-65-9 | 34356     | Endosulfan II         | ND                    | 5                       |                      |                            |                           |
| 1031-078   | 34351     | Endosulfan sulfate    | ND                    | 5                       |                      |                            |                           |
| 72-20-8    | 39390     | Endrin                | ND                    | 5                       |                      | 3                          | 7332                      |
| 7421-93-4  | 34366     | Endrin aldehyde       | ND                    | 5                       |                      |                            |                           |
| 53494-70-5 | —         | Endrin ketone         | ND                    | 5                       |                      |                            |                           |
| 76-44-8    | 39410     | Heptachlor            | ND                    | 5                       |                      |                            |                           |
| 1024-57-3  | 39420     | Heptachlor epoxide    | ND                    | 5                       |                      | 5                          | 282                       |
| 72-43-5    | —         | Methoxychlor          | ND                    | 5                       |                      |                            |                           |
| 8001-35-2  | 39400     | Toxaphene             | ND                    | 500                     |                      |                            |                           |
| 12674-11-2 | 34671     | Aroclor-1016          | ND                    | 100                     |                      | 7                          | 2989.2                    |
| 11104-28-2 | 39488     | Aroclor-1221          | ND                    | 100                     |                      |                            |                           |
| 11141-16-5 | 39492     | Aroclor-1232          | ND                    | 100                     |                      |                            |                           |
| 53469-21-9 | 39496     | Aroclor-1242          | ND                    | 100                     |                      |                            |                           |
| 12672-29-6 | 39500     | Aroclor-1248          | ND                    | 100                     |                      | 30                         | 8460                      |
| 11097-69-1 | 39504     | Aroclor-1254          | ND                    | 100                     |                      | 60                         | 1917.6                    |
| 11096-82-5 | 39508     | Aroclor-1260          | ND                    | 100                     |                      | 5                          | 1353.6                    |
| 11100-14-4 | 81649     | Aroclor-1262          | ND                    | 100                     |                      |                            |                           |
| 37324-23-5 | 81650     | Aroclor-1268          | ND                    | 100                     |                      |                            |                           |

## Note:

ND = Not detected above reporting limit

L = Estimated value is below the calibration range

[Redacted] = Greater than Lowest Effect Level (LEL)

[Redacted] = Greater than Severe Effect Level (SEL)

LELs and SELs are based on the 5th and 95th percentiles respectively of the screening level concentration except where noted below.

gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, SELs are based on 90% screening level concentrations

gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs are based on 10% screening level concentrations

gamma-BHC, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs and SELs are tentative guidelines.

Sampling site: CRWA 05  
 Site description: Lakes district, Newton  
 Sampling date: 5/29/96  
 Latitude: 42 21' 04.229" Longitude: 71 15' 30.691"  
 Water depth: 2.1 meters

### Water column analysis

#### Field measurements

| Depth of sample (meters) | 0.2  | 1     |
|--------------------------|------|-------|
| D.O. (mg/l)              | 9.5  | 8.6   |
| Temp (C)                 | 21.8 | 18.77 |
| pH                       | 6.98 | 6.92  |
| Conductivity (mS/cm)     | 6.98 | 0.303 |

| Metals & TOC<br>Parameter | Sample result<br>(ug/L) | Reporting limit<br>(ug/L) |
|---------------------------|-------------------------|---------------------------|
| Cd                        | ND                      | 15                        |
| Cr                        | ND                      | 15                        |
| Cu                        | ND                      | 15                        |
| Ni                        | ND                      | 60                        |
| Pb                        | ND                      | 100                       |
| Zn                        | ND                      | 20                        |
| Hg                        | ND                      | 0.5                       |
| TOC                       | 11900                   |                           |

### Sediment Analysis

| Metals<br>Parameter | Sample result<br>(ug/gm)* | Reporting limit<br>(ug/gm)* | OMOE Biological Guidelines |                 |
|---------------------|---------------------------|-----------------------------|----------------------------|-----------------|
|                     |                           |                             | LEL<br>(ug/gm)*            | SEL<br>(ug/gm)* |
| Cd                  | 2                         |                             | 0.6                        | 10              |
| Cr                  | 68.7                      |                             | 26                         | 110             |
| Cu                  | 69                        |                             | 16                         | 110             |
| Ni                  | 18.6                      |                             | 16                         | 75              |
| Pb                  | 218                       |                             | 31                         | 250             |
| Zn                  | 306                       |                             | 120                        | 820             |
| Hg                  | 1.1                       |                             | 0.2                        | 2               |

OMOE = Ontario Ministry of the Environment  
 [redacted] = greater than Lowest Effect Level (LEL)  
 [redacted] = greater than Severe Effect Level (SEL)

| AVS&SEM<br>Parameter | Sample result<br>(umole/gm)* | Reporting limit<br>(umole/gm)* |
|----------------------|------------------------------|--------------------------------|
| Cd                   | ND                           | 0.02                           |
| Cr                   | 0.64                         |                                |
| Cu                   | 1                            |                                |
| Hg                   | ND                           | 0.0002                         |
| Ni                   | 0.34                         |                                |
| Pb                   | 1.2                          |                                |
| Zn                   | 4.8                          |                                |
| AVS                  | 16.3                         |                                |
| SEM/ AVS ratio       | 0.45                         |                                |

| TOC | Sample result (%) |
|-----|-------------------|
| TOC | 7.74              |

| Grain Size    | Course sand         | Medium sand          | Fine sand                | Silt & clay |
|---------------|---------------------|----------------------|--------------------------|-------------|
|               | < 4.75 mm<br>> 2 mm | < 2 mm<br>> 0.425 mm | < 0.425 mm<br>> 0.075 mm | <0.075 mm   |
| % composition | 6                   | 25                   | 28                       | 41          |

| Toxicity<br>Organism      | % Survival-10 days |      |
|---------------------------|--------------------|------|
| <i>Chironomus tentans</i> | midge              | 92.5 |
| <i>Hyallolela azteca</i>  | amphipod           | 95   |

Note:  
 \* = Reported as dry weight  
 ND = Not detected above reporting limit

| CRWA05<br>BNAs<br>CAS<br>NO        | STORET<br>NO | Compound                    | Sample<br>Result<br>(ug/Kg) | Reporting<br>limit<br>(ug/Kg) | Qualifier<br>or<br>comment | OMOE Biological Guidelines<br>LEL<br>(ug/Kg) | SEL<br>TOC corrected<br>(ug/Kg) |
|------------------------------------|--------------|-----------------------------|-----------------------------|-------------------------------|----------------------------|--|---------------------------------|
| <b>Priority Pollutants</b>         |              |                             |                             |                               |                            |  |                                 |
| 83-32-9                            | 34205        | Acenaphthene                | ND                          | 110                           |                            |  |                                 |
| 208-96-8                           | 34200        | Acenaphthylene              | 190                         | 110                           |                            |  |                                 |
| 120-12-7                           | 34220        | Anthracene                  | 320                         | 110                           |                            | 220  | 28638                           |
| 56-55-3                            | 34526        | Benzo(a)anthracene          | 2000                        | 110                           |                            | 320  | 114552                          |
| 205-99-2                           | 34230        | Benzo(b)fluoranthene        | 3100                        | 3600                          | L                          |  |                                 |
| 207-08-9                           | 34242        | Benzo(k)fluoranthene        | 2700                        | 3600                          | L                          | 240  | 103716                          |
| 50-32-8                            | 34247        | Benzo(a)pyrene              | 2900                        | 3600                          | L                          | 370  | 111456                          |
| 191-24-2                           | 34521        | Benzo(ghi)perylene          | ND                          | 3600                          |                            | 170  | 24768                           |
| 85-68-7                            | 34292        | Benzyl butyl phthalate      | ND                          | 3600                          |                            |  |                                 |
| 111-44-4                           | 34273        | Bis(2-chloroethyl)ether     | ND                          | 3600                          |                            |  |                                 |
| 111-91-1                           | 34278        | Bis(2-chloroethoxy)methane  | ND                          | 3600                          |                            |  |                                 |
| 117-81-7                           | 39100        | Bis(2-ethylhexyl)phthalate  | 6600                        | 3600                          | B                          |  |                                 |
| 108-60-1                           | 34283        | Bis(2-chloroisopropyl)ether | ND                          | 3600                          |                            |  |                                 |
| 101-55-3                           | 34636        | 4-Bromophenylphenyl ether   | ND                          | 3600                          |                            |  |                                 |
| 86-74-8                            |              | Carbazole                   | 740                         | 3600                          |                            |  |                                 |
| 59-50-7                            | 34452        | 4-Chloro-3-methylphenol     | ND                          | 7200                          |                            |  |                                 |
| 91-58-7                            | 34581        | 2-Chloronaphthalene         | ND                          | 3600                          |                            |  |                                 |
| 95-57-8                            | 34586        | 2-Chlorophenol              | ND                          | 7200                          |                            |  |                                 |
| 7005-72-3                          | 34641        | 4-Chlorophenylphenyl ether  | ND                          | 3600                          |                            |  |                                 |
| 218-01-9                           | 34320        | Chrysene                    | 2600                        | 110                           |                            | 340  | 35604                           |
| 53-70-3                            | 34556        | Dibenzo(a,h)anthracene      | ND                          | 3600                          |                            | 60   | 10062                           |
| 84-74-2                            | 39110        | Di-n-butylphthalate         | ND                          | 3600                          |                            |  |                                 |
| 541-73-1                           | 34566        | 1,3-Dichlorobenzene         | ND                          | 3600                          |                            |  |                                 |
| 95-50-1                            | 34536        | 1,2-Dichlorobenzene         | ND                          | 3600                          |                            |  |                                 |
| 106-46-7                           | 34571        | 1,4-Dichlorobenzene         | ND                          | 3600                          |                            |  |                                 |
| 91-94-1                            | 34631        | 3,3'-Dichlorobenzidine      | ND                          | 3600                          |                            |  |                                 |
| 120-83-2                           | 34601        | 2,4-Dichlorophenol          | ND                          | 7200                          |                            |  |                                 |
| 84-66-2                            | 34336        | Diethylphthalate            | ND                          | 3600                          |                            |  |                                 |
| 105-67-9                           | 34606        | 2,4-Dimethylphenol          | ND                          | 7200                          |                            |  |                                 |
| 131-11-3                           | 34341        | Dimethylphthalate           | ND                          | 3600                          |                            |  |                                 |
| 51-28-5                            | 34616        | 2,4-Dinitrophenol           | ND                          | 8900                          |                            |  |                                 |
| 121-14-2                           | 34611        | 2,4-Dinitrotoluene          | ND                          | 3600                          |                            |  |                                 |
| 606-20-2                           | 34626        | 2,6-Dinitrotoluene          | ND                          | 3600                          |                            |  |                                 |
| 117-84-0                           | 34596        | Di-n-octylphthalate         | ND                          | 3600                          |                            |  |                                 |
| 206-44-0                           | 34376        | Fluoranthene                | 4100                        | 110                           |                            | 750  | 78948                           |
| 86-73-7                            | 34381        | Fluorene                    | 120                         | 110                           |                            | 190  | 12384                           |
| 118-74-1                           | 39700        | Hexachlorobenzene           | ND                          | 3600                          |                            |  |                                 |
| 87-68-3                            | 34391        | Hexachlorobutadiene         | ND                          | 3600                          |                            |  |                                 |
| 77-47-4                            | 34386        | Hexachlorocyclopentadiene   | ND                          | 3600                          |                            |  |                                 |
| 67-72-1                            | 34396        | Hexachloroethane            | ND                          | 3600                          |                            |  |                                 |
| 193-39-5                           | 34403        | Indeno(1,2,3-cd)pyrene      | ND                          | 3600                          |                            | 200  | 24768                           |
| 78-59-1                            | 34408        | Isophorone                  | ND                          | 3600                          |                            |  |                                 |
| 534-52-1                           | 34657        | 2-Methyl-4,6-dinitrophenol  | ND                          | 8900                          |                            |  |                                 |
| 91-20-3                            | 34696        | Naphthalene                 | ND                          | 110                           |                            |  |                                 |
| 98-95-3                            | 34447        | Nitrobenzene                | ND                          | 3600                          |                            |  |                                 |
| 88-75-5                            | 34591        | 2-Nitrophenol               | ND                          | 7200                          |                            |  |                                 |
| 100-02-7                           | 34646        | 4-Nitrophenol               | ND                          | 8900                          |                            |  |                                 |
| 86-30-3                            | 34433        | N-Nitrosodiphenylamine      | ND                          | 3600                          |                            |  |                                 |
| 621-64-7                           | 34428        | N-Nitrosodi-n-propylamine   | ND                          | 3600                          |                            |  |                                 |
| 87-86-5                            | 39032        | Pentachlorophenol           | ND                          | 8900                          |                            |  |                                 |
| 85-01-8                            | 34461        | Phenanthrene                | 1600                        | 110                           |                            | 560  | 73530                           |
| 108-95-2                           | 34694        | Phenol                      | ND                          | 7200                          |                            |  |                                 |
| 129-00-0                           | 34469        | Pyrene                      | 3400                        | 110                           |                            | 490  | 65790                           |
| 120-82-1                           | 34551        | 1,2,4-Trichlorobenzene      | ND                          | 3600                          |                            |  |                                 |
| 88-06-2                            | 34621        | 2,4,6-Trichlorophenol       | ND                          | 7200                          |                            |  |                                 |
|                                    |              | <b>Total PAH</b>            | 22910                       |                               |                            | 4000   | 774000                          |
| <b>Hazardous Substances</b>        |              |                             |                             |                               |                            |  |                                 |
| 65-53-3                            | 77089        | Aniline                     | ND                          | 3600                          |                            |  |                                 |
| 65-85-0                            | 77247        | Benzoic Acid                | ND                          | 8900                          |                            |  |                                 |
| 100-51-6                           | 77147        | Benzyl Alcohol              | ND                          | 3600                          |                            |  |                                 |
| 106-47-8                           |              | 4-Chloroaniline             | ND                          | 3600                          |                            |  |                                 |
| 132-64-9                           | 81302        | Dibenzofuran                | ND                          | 3600                          |                            |  |                                 |
| 91-57-6                            |              | 2-Methylnaphthalene         | ND                          | 3600                          |                            |  |                                 |
| 95-48-7                            |              | 2-Methylphenol              | ND                          | 3600                          |                            |  |                                 |
| 106-44-5                           |              | 4-Methylphenol              | ND                          | 3600                          |                            |  |                                 |
| 88-74-4                            |              | 2-Nitroaniline              | ND                          | 8900                          |                            |  |                                 |
| 99-09-2                            |              | 3-Nitroaniline              | ND                          | 8900                          |                            |  |                                 |
| 100-01-6                           |              | 4-Nitroaniline              | ND                          | 8900                          |                            |  |                                 |
| 95-95-4                            | 34621        | 2,4,5-Trichlorophenol       | ND                          | 8900                          |                            |  |                                 |
| <b>Other Compounds Quantitated</b> |              |                             |                             |                               |                            |  |                                 |
|                                    |              | Diphenylhydrazine           | ND                          | 3600                          |                            |  |                                 |

## PCBs &amp; Pesticides

| CAS NO     | STORET NO | Compound              | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment | OMOE Biological Guidelines |                           |
|------------|-----------|-----------------------|-----------------------|-------------------------|----------------------|----------------------------|---------------------------|
|            |           |                       |                       |                         |                      | LEL (ug/Kg)                | SEL TOC corrected (ug/Kg) |
| 309-00-2   | 39330     | Aldrin                | ND                    | 6                       |                      | 2                          | 619.2                     |
| 319-84-6   | 39337     | alpha-BHC             | ND                    | 6                       |                      | 6                          | 774                       |
| 319-85-7   | 39338     | beta-BHC              | 25                    | 6                       |                      | 5                          | 1625.4                    |
| 319-86-8   | 34259     | delta-BHC             | ND                    | 6                       |                      |                            |                           |
| 58-89-9    | 39340     | gamma-BHC             | ND                    | 6                       |                      | 3                          | 77.4                      |
| 5103-71-9  | ---       | Alpha Chlordane       | 42                    | 6                       |                      |                            |                           |
| 5103-74-2  | ---       | gamma Chlordane       | 32                    | 6                       | P                    |                            |                           |
| 57-74-9    | 39350     | Chlordane (technical) | ND                    | 600                     |                      | 7                          | 464.4                     |
| 72-54-8    | 39310     | 4,4'-DDD              | 100                   | 6                       |                      | 8                          | 464.4                     |
| 72-55-9    | 39320     | 4,4'-DDE              | 68                    | 6                       |                      | 5                          | 1470.6                    |
| 50-29-3    | 39300     | 4,4'-DDT              | 40                    | 6                       |                      |                            |                           |
| 60-57-1    | 39380     | Dieldrin              | ND                    | 6                       |                      | 2                          | 7043.4                    |
| 959-98-8   | 34361     | Endosulfan I          | ND                    | 6                       |                      |                            |                           |
| 33212-65-9 | 34356     | Endosulfan II         | ND                    | 6                       |                      |                            |                           |
| 1031-078   | 34351     | Endosulfan sulfate    | ND                    | 6                       |                      |                            |                           |
| 72-20-8    | 39390     | Endrin                | ND                    | 6                       |                      | 3                          | 10062                     |
| 7421-93-4  | 34366     | Endrin aldehyde       | ND                    | 6                       |                      |                            |                           |
| 53494-70-5 | ---       | Endrin ketone         | ND                    | 6                       |                      |                            |                           |
| 76-44-8    | 39410     | Heptachlor            | ND                    | 6                       |                      |                            |                           |
| 1024-57-3  | 39420     | Heptachlor epoxide    | ND                    | 6                       |                      | 5                          | 387                       |
| 72-43-5    | ---       | Methoxychlor          | ND                    | 6                       |                      |                            |                           |
| 8001-35-2  | 39400     | Toxaphene             | ND                    | 600                     |                      |                            |                           |
| 12674-11-2 | 34671     | Aroclor-1016          | ND                    | 100                     |                      | 7                          | 4102.2                    |
| 11104-28-2 | 39488     | Aroclor-1221          | ND                    | 100                     |                      |                            |                           |
| 11141-16-5 | 39492     | Aroclor-1232          | ND                    | 100                     |                      |                            |                           |
| 53469-21-9 | 39496     | Aroclor-1242          | ND                    | 100                     |                      |                            |                           |
| 12672-29-6 | 39500     | Aroclor-1248          | ND                    | 100                     |                      | 30                         | 11610                     |
| 11097-69-1 | 39504     | Aroclor-1254          | 590                   | 100                     |                      | 60                         | 2631.6                    |
| 11096-82-5 | 39508     | Aroclor-1260          | ND                    | 100                     |                      | 5                          | 1857.6                    |
| 11100-14-4 | 81649     | Aroclor-1262          | ND                    | 100                     |                      |                            |                           |
| 37324-23-5 | 81650     | Aroclor-1268          | ND                    | 100                     |                      |                            |                           |

## Note:

ND = Not detected above reporting limit

B = Analyte is associated with lab blank contamination

P = The confirmation value exceeded 35% difference and is less than 100 The lower value is reported.

[REDACTED] = Greater than Lowest Effect Level (LEL)

[REDACTED] = Greater than Severe Effect Level (SEL)

LELs and SELs are based on the 5th and 95th percentiles respectively of the screening level concentration except where noted below.

gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, SELs are based on 90% screening level concentrations gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs are based on 10% screening level concentrations gamma-BHC, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs and SELs are tentative guidelines.



Sampling site: CRWA 06  
 Site description: Downstream from Landfill, Boston  
 Sampling date: 5/30/96  
 Latitude: 42 16' 52.789" Longitude: 71 11' 23.496"  
 Water depth: 1.5 meters

### Water column analysis

#### Field measurements

|                          |      |      |
|--------------------------|------|------|
| Depth of sample (meters) | 0.2  | 1    |
| D.O. (mg/l)              | 8.4  | 8.3  |
| Temp (C)                 | 17.2 | 17.2 |

#### Metals & TOC

| Parameter | Sample result (ug/L) | Reporting limit (ug/L) |
|-----------|----------------------|------------------------|
|-----------|----------------------|------------------------|

|     |       |     |
|-----|-------|-----|
| Cd  | ND    | 15  |
| Cr  | ND    | 15  |
| Cu  | ND    | 15  |
| Ni  | ND    | 60  |
| Pb  | ND    | 100 |
| Zn  | ND    | 20  |
| Hg  | ND    | 0.5 |
| TOC | 12200 |     |

### Sediment Analysis

| Metals Parameter | Sample result (ug/gm)* | Reporting limit (ug/gm)* | OMOE Biological Guidelines |              |
|------------------|------------------------|--------------------------|----------------------------|--------------|
|                  |                        |                          | LEL (ug/gm)*               | SEL (ug/gm)* |
| Cd               | ND                     | 1.3                      | 0.6                        | 10           |
| Cr               | 20.4                   |                          | 26                         | 110          |
| Cu               | 14.7                   |                          | 16                         | 110          |
| Ni               | 7.9                    |                          | 16                         | 75           |
| Pb               | 49.1                   |                          | 31                         | 250          |
| Zn               | 99.8                   |                          | 120                        | 820          |
| Hg               | 0.27                   |                          | 0.2                        | 2            |

OMOE = Ontario Ministry of the Environment

█ = greater than Lowest Effect Level (LEL)

█ = greater than Severe Effect Level (SEL)

#### AVS&SEM

| Parameter | Sample result (umole/g) | Reporting limit (umole/gm)* |
|-----------|-------------------------|-----------------------------|
|-----------|-------------------------|-----------------------------|

|                |      |        |
|----------------|------|--------|
| Cd             | ND   | 0.02   |
| Cr             | 0.42 |        |
| Cu             | 0.18 |        |
| Hg             | ND   | 0.0003 |
| Ni             | ND   | 0.3    |
| Pb             | 0.2  |        |
| Zn             | 1.4  |        |
| AVS            | 1.4  |        |
| SEM/ AVS ratio | 1.3  |        |

| TOC | Sample result (%) |
|-----|-------------------|
| TOC | 2.44              |

Note:  
 Toxicity and Grain Size Analysis not performed at this site  
 \* = Reported as dry weight  
 ND = Not detected above reporting limit

| CAS NO                             | STORET NO | Compound                    | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment | OMOE Biological Guidelines |                           |
|------------------------------------|-----------|-----------------------------|-----------------------|-------------------------|----------------------|----------------------------|---------------------------|
|                                    |           |                             |                       |                         |                      | LEL (ug/Kg)                | SEL TOC corrected (ug/Kg) |
| <b>Priority Pollutants</b>         |           |                             |                       |                         |                      |                            |                           |
| 83-32-9                            | 34205     | Acenaphthene                | 50                    | 13                      |                      |                            |                           |
| 208-96-8                           | 34200     | Acenaphthylene              | 32                    | 13                      |                      |                            |                           |
| 120-12-7                           | 34220     | Anthracene                  | 92                    | 13                      |                      | 220                        | 9028                      |
| 56-55-3                            | 34526     | Benzo(a)anthracene          | 280                   | 13                      |                      | 320                        | 36112                     |
| 205-99-2                           | 34230     | Benzo(b)fluoranthene        | 390                   | 410                     | L                    |                            |                           |
| 207-08-9                           | 34242     | Benzo(k)fluoranthene        | 420                   | 410                     |                      | 240                        | 32696                     |
| 50-32-8                            | 34247     | Benzo(a)pyrene              | 370                   | 410                     | L                    | 370                        | 35136                     |
| 191-24-2                           | 34521     | Benzo(ghi)perylene          | ND                    | 410                     |                      | 170                        | 7808                      |
| 85-68-7                            | 34292     | Benzyl butyl phthalate      | ND                    | 410                     |                      |                            |                           |
| 111-44-4                           | 34273     | Bis(2-chloroethyl)ether     | ND                    | 410                     |                      |                            |                           |
| 111-91-1                           | 34278     | Bis(2-chloroethoxy)methane  | ND                    | 410                     |                      |                            |                           |
| 117-81-7                           | 39100     | Bis(2-ethylhexyl)phthalate  | 1200                  | 410                     |                      |                            |                           |
| 108-60-1                           | 34283     | Bis(2-chloroisopropyl)ether | ND                    | 410                     |                      |                            |                           |
| 101-55-3                           | 34636     | 4-Bromophenylphenyl ether   | ND                    | 410                     |                      |                            |                           |
| 86-74-8                            |           | Carbazole                   | 190                   | 410                     |                      |                            |                           |
| 59-50-7                            | 34452     | 4-Chloro-3-methylphenol     | ND                    | 820                     |                      |                            |                           |
| 91-58-7                            | 34581     | 2-Chloronaphthalene         | ND                    | 410                     |                      |                            |                           |
| 95-57-8                            | 34586     | 2-Chlorophenol              | ND                    | 820                     |                      |                            |                           |
| 7005-72-3                          | 34641     | 4-Chlorophenylphenyl ether  | ND                    | 410                     |                      |                            |                           |
| 218-01-9                           | 34320     | Chrysene                    | 280                   | 13                      |                      | 340                        | 11224                     |
| 53-70-3                            | 34556     | Dibenzo(a,h)anthracene      | ND                    | 410                     |                      | 60                         | 3172                      |
| 84-74-2                            | 39110     | Di-n-butylphthalate         | ND                    | 410                     |                      |                            |                           |
| 541-73-1                           | 34566     | 1,3-Dichlorobenzene         | ND                    | 410                     |                      |                            |                           |
| 95-50-1                            | 34536     | 1,2-Dichlorobenzene         | ND                    | 410                     |                      |                            |                           |
| 106-46-7                           | 34571     | 1,4-Dichlorobenzene         | ND                    | 410                     |                      |                            |                           |
| 91-94-1                            | 34631     | 3,3'-Dichlorobenzidine      | ND                    | 410                     |                      |                            |                           |
| 120-83-2                           | 34601     | 2,4-Dichlorophenol          | ND                    | 820                     |                      |                            |                           |
| 84-66-2                            | 34336     | Diethylphthalate            | ND                    | 410                     |                      |                            |                           |
| 105-67-9                           | 34606     | 2,4-Dimethylphenol          | ND                    | 820                     |                      |                            |                           |
| 131-11-3                           | 34341     | Dimethylphthalate           | ND                    | 410                     |                      |                            |                           |
| 51-28-5                            | 34616     | 2,4-Dinitrophenol           | ND                    | 1000                    |                      |                            |                           |
| 121-14-2                           | 34611     | 2,4-Dinitrotoluene          | ND                    | 410                     |                      |                            |                           |
| 606-20-2                           | 34626     | 2,6-Dinitrotoluene          | ND                    | 410                     |                      |                            |                           |
| 117-84-0                           | 34596     | Di-n-octylphthalate         | ND                    | 410                     |                      |                            |                           |
| 206-44-0                           | 34376     | Fluoranthene                | 610                   | 13                      |                      | 750                        | 24888                     |
| 86-73-7                            | 34381     | Fluorene                    | 49                    | 13                      |                      | 190                        | 3904                      |
| 118-74-1                           | 39700     | Hexachlorobenzene           | ND                    | 410                     |                      |                            |                           |
| 87-68-3                            | 34391     | Hexachlorobutadiene         | ND                    | 410                     |                      |                            |                           |
| 77-47-4                            | 34386     | Hexachlorocyclopentadiene   | ND                    | 410                     |                      |                            |                           |
| 67-72-1                            | 34396     | Hexachloroethane            | ND                    | 410                     |                      |                            |                           |
| 193-39-5                           | 34403     | Indeno(1,2,3-cd)pyrene      | ND                    | 410                     |                      | 200                        | 7808                      |
| 78-59-1                            | 34408     | Isophorone                  | ND                    | 410                     |                      |                            |                           |
| 534-52-1                           | 34657     | 2-Methyl-4,6-dinitrophenol  | ND                    | 1000                    |                      |                            |                           |
| 91-20-3                            | 34696     | Naphthalene                 | 15                    | 13                      |                      |                            |                           |
| 98-95-3                            | 34447     | Nitrobenzene                | ND                    | 410                     |                      |                            |                           |
| 88-75-5                            | 34591     | 2-Nitrophenol               | ND                    | 820                     |                      |                            |                           |
| 100-02-7                           | 34646     | 4-Nitrophenol               | ND                    | 1000                    |                      |                            |                           |
| 86-30-3                            | 34433     | N-Nitrosodiphenylamine      | ND                    | 410                     |                      |                            |                           |
| 621-64-7                           | 34428     | N-Nitrosodi-n-propylamine   | ND                    | 410                     |                      |                            |                           |
| 87-86-5                            | 39032     | Pentachlorophenol           | ND                    | 1000                    |                      |                            |                           |
| 85-01-8                            | 34461     | Phenanthrene                | 460                   | 13                      |                      | 560                        | 23180                     |
| 108-95-2                           | 34694     | Phenol                      | ND                    | 820                     |                      |                            |                           |
| 129-00-0                           | 34469     | Pyrene                      | 550                   | 13                      |                      | 490                        | 20740                     |
| 120-82-1                           | 34551     | 1,2,4-Trichlorobenzene      | ND                    | 410                     |                      |                            |                           |
| 88-06-2                            | 34621     | 2,4,6-Trichlorophenol       | ND                    | 820                     |                      |                            |                           |
|                                    |           | <b>Total PAH</b>            | 3598                  |                         |                      | 4000                       | 244000                    |
| <b>Hazardous Substances</b>        |           |                             |                       |                         |                      |                            |                           |
| 65-53-3                            | 77089     | Aniline                     | ND                    | 410                     |                      |                            |                           |
| 65-85-0                            | 77247     | Benzoic Acid                | ND                    | 1000                    |                      |                            |                           |
| 100-51-6                           | 77147     | Benzyl Alcohol              | ND                    | 410                     |                      |                            |                           |
| 106-47-8                           |           | 4-Chloroaniline             | ND                    | 410                     |                      |                            |                           |
| 132-64-9                           | 81302     | Dibenzofuran                | ND                    | 410                     |                      |                            |                           |
| 91-57-6                            |           | 2-Methylnaphthalene         | ND                    | 410                     |                      |                            |                           |
| 95-48-7                            |           | 2-Methylphenol              | ND                    | 410                     |                      |                            |                           |
| 106-44-5                           |           | 4-Methylphenol              | ND                    | 410                     |                      |                            |                           |
| 88-74-4                            |           | 2-Nitroaniline              | ND                    | 1000                    |                      |                            |                           |
| 99-09-2                            |           | 3-Nitroaniline              | ND                    | 1000                    |                      |                            |                           |
| 100-01-6                           |           | 4-Nitroaniline              | ND                    | 1000                    |                      |                            |                           |
| 95-95-4                            | 34621     | 2,4,5-Trichlorophenol       | ND                    | 1000                    |                      |                            |                           |
| <b>Other Compounds Quantitated</b> |           |                             |                       |                         |                      |                            |                           |
|                                    |           | Diphenylhydrazine           | ND                    | 410                     |                      |                            |                           |

## PCBs &amp; Pesticides

| CAS NO     | STORET NO | Compound              | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment | OMOE Biological Guidelines |                           |
|------------|-----------|-----------------------|-----------------------|-------------------------|----------------------|----------------------------|---------------------------|
|            |           |                       |                       |                         |                      | LEL (ug/Kg)                | SEL TOC corrected (ug/Kg) |
| 309-00-2   | 39330     | Aldrin                | ND                    | 2                       |                      | 2                          | 195.2                     |
| 319-84-6   | 39337     | alpha-BHC             | ND                    | 2                       |                      | 6                          | 244                       |
| 319-85-7   | 39338     | beta-BHC              | ND                    | 2                       |                      | 5                          | 512.4                     |
| 319-86-8   | 34259     | delta-BHC             | ND                    | 2                       |                      |                            |                           |
| 58-89-9    | 39340     | gamma-BHC             | ND                    | 2                       |                      | 3                          | 24.4                      |
| 5103-71-9  | ---       | Alpha Chlordane       | 4.3                   | 2                       |                      |                            |                           |
| 5103-74-2  | ---       | gamma Chlordane       | 2.5                   | 2                       | P                    |                            |                           |
| 57-74-9    | 39350     | Chlordane (technical) | ND                    | 200                     |                      | 7                          | 146.4                     |
| 72-54-8    | 39310     | 4,4'-DDD              | 12                    | 2                       |                      | 8                          | 146.4                     |
| 72-55-9    | 39320     | 4,4'-DDE              | 11                    | 2                       |                      | 5                          | 463.6                     |
| 50-29-3    | 39300     | 4,4'-DDT              | ND                    | 2                       |                      |                            |                           |
| 60-57-1    | 39380     | Dieldrin              | ND                    | 2                       |                      | 2                          | 2220.4                    |
| 959-98-8   | 34361     | Endosulfan I          | ND                    | 2                       |                      |                            |                           |
| 33212-65-9 | 34356     | Endosulfan II         | ND                    | 2                       |                      |                            |                           |
| 1031-078   | 34351     | Endosulfan sulfate    | ND                    | 2                       |                      |                            |                           |
| 72-20-8    | 39390     | Endrin                | ND                    | 2                       |                      | 3                          | 3172                      |
| 7421-93-4  | 34366     | Endrin aldehyde       | ND                    | 2                       |                      |                            |                           |
| 53494-70-5 | ---       | Endrin ketone         | ND                    | 2                       |                      |                            |                           |
| 76-44-8    | 39410     | Heptachlor            | ND                    | 2                       |                      |                            |                           |
| 1024-57-3  | 39420     | Heptachlor epoxide    | ND                    | 2                       |                      | 5                          | 122                       |
| 72-43-5    | ---       | Methoxychlor          | ND                    | 2                       |                      |                            |                           |
| 8001-35-2  | 39400     | Toxaphene             | ND                    | 200                     |                      |                            |                           |
| 12674-11-2 | 34671     | Aroclor-1016          | ND                    | 40                      |                      | 7                          | 1293.2                    |
| 11104-28-2 | 39488     | Aroclor-1221          | ND                    | 40                      |                      |                            |                           |
| 11141-16-5 | 39492     | Aroclor-1232          | ND                    | 40                      |                      |                            |                           |
| 53469-21-9 | 39496     | Aroclor-1242          | ND                    | 40                      |                      |                            |                           |
| 12672-29-6 | 39500     | Aroclor-1248          | ND                    | 40                      |                      | 30                         | 3660                      |
| 11097-69-1 | 39504     | Aroclor-1254          | ND                    | 40                      |                      | 60                         | 829.6                     |
| 11096-82-5 | 39508     | Aroclor-1260          | ND                    | 40                      |                      | 5                          | 585.6                     |
| 11100-14-4 | 81649     | Aroclor-1262          | ND                    | 40                      |                      |                            |                           |
| 37324-23-5 | 81650     | Aroclor-1268          | ND                    | 40                      |                      |                            |                           |

## Note:

ND = Not detected above reporting limit

L = Estimated value is below the calibration range

P = The confirmation value exceeded 35% difference and is less than 100 %. The lower value is reported.

= Greater than Lowest Effect Level (LEL)

= Greater than Severe Effect Level (SEL)

LELs and SELs are based on the 5th and 95th percentiles respectively of the screening level concentration except where noted below.

gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, SELs are based on 90% screening level concentrations

gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs are based on 10% screening level concentrations

gamma-BHC, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs and SELs are tentative guidelines.

Sampling site: CRWA 07  
 Site description: Upstream from the Watertown Dam, Watertown  
 Sampling date: 5/29/96  
 Latitude: 42 21' 54.578" Longitude: 71 11' 31.215"  
 Water depth: 1.5 meters

## Water column analysis

### Field Measurements

| Depth of sample (meters) | 0.2   | 1     |
|--------------------------|-------|-------|
| D.O. (mg/l)              | 7.1   | 7     |
| Temp (C)                 | 19.6  | 19.5  |
| pH                       | 6.9   | 6.91  |
| Conductivity (mS/cm)     | 0.317 | 0.317 |

### Metals & TOC

| Parameter | Sample result (ug/L) | Reporting limit (ug/L) |
|-----------|----------------------|------------------------|
|-----------|----------------------|------------------------|

|     |       |     |
|-----|-------|-----|
| Cd  | ND    | 15  |
| Cr  | ND    | 15  |
| Cu  | ND    | 15  |
| Ni  | ND    | 60  |
| Pb  | ND    | 100 |
| Zn  | ND    | 20  |
| Hg  | ND    | 0.5 |
| TOC | 11400 |     |

## Sediment Analysis

| Metals Parameter | Sample result (ug/gm)* | Reporting limit (ug/gm)* | OMOE Biological Guidelines |              |
|------------------|------------------------|--------------------------|----------------------------|--------------|
|                  |                        |                          | LEL (ug/gm)*               | SEL (ug/gm)* |
| Cd               | ND                     | 1.1                      | 0.6                        | 10           |
| Cr               | 18.9                   |                          | 26                         | 110          |
| Cu               | 23.7                   |                          | 16                         | 110          |
| Ni               | 10.7                   |                          | 16                         | 75           |
| Pb               | 85.2                   |                          | 31                         | 250          |
| Zn               | 100                    |                          | 120                        | 820          |
| Hg               | 0.13                   |                          | 0.2                        | 2            |

OMOE = Ontario Ministry of the Environment

█ = greater than Lowest Effect Level (LEL)

█ = greater than Severe Effect Level (SEL)

| AVS&SEM Parameter | Sample result (umole/gm)* | Reporting limit (umole/gm)* |
|-------------------|---------------------------|-----------------------------|
| Cd                | ND                        | 0.01                        |
| Cr                | 0.29                      |                             |
| Cu                | 0.33                      |                             |
| Hg                | ND                        | 0.0001                      |
| Ni                | 0.16                      |                             |
| Pb                | 0.41                      |                             |
| Zn                | 1.6                       |                             |
| AVS               | 4.3                       |                             |
| SEM/ AVS ratio    | 0.58                      |                             |

| TOC | Sample result (%) |
|-----|-------------------|
| TOC | 1.92              |

| Grain Size    | Course sand<br>< 4.75 mm<br>> 2 mm | Medium sand<br>< 2 mm<br>> 0.425 mm | Fine sand<br>< 0.425 mm<br>> 0.075 mm | Silt & clay<br><0.075 mm |
|---------------|------------------------------------|-------------------------------------|---------------------------------------|--------------------------|
| % composition | 13                                 | 47                                  | 40                                    | <1                       |

| Toxicity Organism         | type     | % Survival-10 days |
|---------------------------|----------|--------------------|
| <i>Chironomus tentans</i> | midge    | 81                 |
| <i>Hyallela azteca</i>    | amphipod | 95                 |

Note:  
 \* = Reported as dry weight  
 ND = Not detected above reporting limit

## BNAs

| CAS NO                             | STORE NO | Compound                    | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment | OMOE Biological Guidelines |                           |
|------------------------------------|----------|-----------------------------|-----------------------|-------------------------|----------------------|----------------------------|---------------------------|
|                                    |          |                             |                       |                         |                      | LEL (ug/Kg)                | SEL TOC corrected (ug/Kg) |
| <b>Priority Pollutants</b>         |          |                             |                       |                         |                      |                            |                           |
| 83-32-9                            | 34205    | Acenaphthene                | ND                    | 3400                    |                      |                            |                           |
| 208-96-8                           | 34200    | Acenaphthylene              | 730                   | 3400                    | L                    |                            |                           |
| 120-12-7                           | 34220    | Anthracene                  | 1300                  | 3400                    | L                    | 220                        | 7104                      |
| 56-55-3                            | 34526    | Benzo(a)anthracene          | 3800                  | 3400                    |                      | 320                        | 28416                     |
| 205-99-2                           | 34230    | Benzo(b)fluoranthene        | 3200                  | 3400                    | L                    |                            |                           |
| 207-08-9                           | 34242    | Benzo(k)fluoranthene        | 3800                  | 3400                    |                      | 240                        | 25728                     |
| 50-32-8                            | 34247    | Benzo(a)pyrene              | 3800                  | 3400                    |                      | 370                        | 27648                     |
| 191-24-2                           | 34521    | Benzo(ghi)perylene          | 1600                  | 3400                    | L                    | 170                        | 6144                      |
| 85-68-7                            | 34292    | Benzyl butyl phthalate      | ND                    | 3400                    |                      |                            |                           |
| 111-44-4                           | 34273    | Bis(2-chloroethyl)ether     | ND                    | 3400                    |                      |                            |                           |
| 111-91-1                           | 34278    | Bis(2-chloroethoxy)methane  | ND                    | 3400                    |                      |                            |                           |
| 117-81-7                           | 39100    | Bis(2-ethylhexyl)phthalate  | 4100                  | 3400                    | B                    |                            |                           |
| 108-60-1                           | 34283    | Bis(2-chloroisopropyl)ether | ND                    | 3400                    |                      |                            |                           |
| 101-55-3                           | 34636    | 4-Bromophenylphenyl ether   | ND                    | 3400                    |                      |                            |                           |
| 86-74-8                            |          | Carbazole                   | 1000                  | 3400                    | L                    |                            |                           |
| 59-50-7                            | 34452    | 4-Chloro-3-methylphenol     | ND                    | 6700                    |                      |                            |                           |
| 91-58-7                            | 34581    | 2-Chloronaphthalene         | ND                    | 3400                    |                      |                            |                           |
| 95-57-8                            | 34586    | 2-Chlorophenol              | ND                    | 6700                    |                      |                            |                           |
| 7005-72-3                          | 34641    | 4-Chlorophenylphenyl ether  | ND                    | 3400                    |                      |                            |                           |
| 218-01-9                           | 34320    | Chrysene                    | 4000                  | 3400                    |                      | 340                        | 8832                      |
| 53-70-3                            | 34556    | Dibenzo(a,h)anthracene      | ND                    | 3400                    |                      | 60                         | 2496                      |
| 84-74-2                            | 39110    | Di-n-butylphthalate         | ND                    | 3400                    |                      |                            |                           |
| 541-73-1                           | 34566    | 1,3-Dichlorobenzene         | ND                    | 3400                    |                      |                            |                           |
| 95-50-1                            | 34536    | 1,2-Dichlorobenzene         | ND                    | 3400                    |                      |                            |                           |
| 106-46-7                           | 34571    | 1,4-Dichlorobenzene         | ND                    | 3400                    |                      |                            |                           |
| 91-94-1                            | 34631    | 3,3'-Dichlorobenzidine      | ND                    | 3400                    |                      |                            |                           |
| 120-83-2                           | 34601    | 2,4-Dichlorophenol          | ND                    | 6700                    |                      |                            |                           |
| 84-66-2                            | 34336    | Diethylphthalate            | ND                    | 3400                    |                      |                            |                           |
| 105-67-9                           | 34606    | 2,4-Dimethylphenol          | ND                    | 6700                    |                      |                            |                           |
| 131-11-3                           | 34341    | Dimethylphthalate           | ND                    | 3400                    |                      |                            |                           |
| 51-28-5                            | 34616    | 2,4-Dinitrophenol           | ND                    | 8400                    |                      |                            |                           |
| 121-14-2                           | 34611    | 2,4-Dinitrotoluene          | ND                    | 3400                    |                      |                            |                           |
| 606-20-2                           | 34626    | 2,6-Dinitrotoluene          | ND                    | 3400                    |                      |                            |                           |
| 117-84-0                           | 34596    | Di-n-octylphthalate         | ND                    | 3400                    |                      |                            |                           |
| 206-44-0                           | 34376    | Fluoranthene                | 7100                  | 3400                    |                      | 750                        | 19584                     |
| 86-73-7                            | 34381    | Fluorene                    | ND                    | 3400                    |                      | 190                        | 3072                      |
| 118-74-1                           | 39700    | Hexachlorobenzene           | ND                    | 3400                    |                      |                            |                           |
| 87-68-3                            | 34391    | Hexachlorobutadiene         | ND                    | 3400                    |                      |                            |                           |
| 77-47-4                            | 34386    | Hexachlorocyclopentadiene   | ND                    | 3400                    |                      |                            |                           |
| 67-72-1                            | 34396    | Hexachloroethane            | ND                    | 3400                    |                      |                            |                           |
| 193-39-5                           | 34403    | Indeno(1,2,3-cd)pyrene      | 1200                  | 3400                    | L                    | 200                        | 6144                      |
| 78-59-1                            | 34408    | Isophorone                  | ND                    | 3400                    |                      |                            |                           |
| 534-52-1                           | 34657    | 2-Methyl-4,6-dinitrophenol  | ND                    | 8400                    |                      |                            |                           |
| 91-20-3                            | 34696    | Naphthalene                 | ND                    | 3400                    |                      |                            |                           |
| 98-95-3                            | 34447    | Nitrobenzene                | ND                    | 3400                    |                      |                            |                           |
| 88-75-5                            | 34591    | 2-Nitrophenol               | ND                    | 6700                    |                      |                            |                           |
| 100-02-7                           | 34646    | 4-Nitrophenol               | ND                    | 8400                    |                      |                            |                           |
| 86-30-3                            | 34433    | N-Nitrosodiphenylamine      | ND                    | 3400                    |                      |                            |                           |
| 621-64-7                           | 34428    | N-Nitrosodi-n-propylamine   | ND                    | 3400                    |                      |                            |                           |
| 87-86-5                            | 39032    | Pentachlorophenol           | ND                    | 8400                    |                      |                            |                           |
| 85-01-8                            | 34461    | Phenanthrene                | 4100                  | 3400                    |                      | 560                        | 18240                     |
| 108-95-2                           | 34694    | Phenol                      | ND                    | 6700                    |                      |                            |                           |
| 129-00-0                           | 34469    | Pyrene                      | 7300                  | 3400                    |                      | 490                        | 16320                     |
| 120-82-1                           | 34551    | 1,2,4-Trichlorobenzene      | ND                    | 3400                    |                      |                            |                           |
| 88-06-2                            | 34621    | 2,4,6-Trichlorophenol       | ND                    | 6700                    |                      |                            |                           |
|                                    |          | Total PAH                   | 41930                 |                         |                      | 4000                       | 192000                    |
| <b>Hazardous Substances</b>        |          |                             |                       |                         |                      |                            |                           |
| 65-53-3                            | 77089    | Aniline                     | ND                    | 3400                    |                      |                            |                           |
| 65-85-0                            | 77247    | Benzoic Acid                | ND                    | 8400                    |                      |                            |                           |
| 100-51-6                           | 77147    | Benzyl Alcohol              | ND                    | 3400                    |                      |                            |                           |
| 106-47-8                           |          | 4-Chloroaniline             | ND                    | 3400                    |                      |                            |                           |
| 132-64-9                           | 81302    | Dibenzofuran                | ND                    | 3400                    |                      |                            |                           |
| 91-57-6                            |          | 2-Methylnaphthalene         | ND                    | 3400                    |                      |                            |                           |
| 95-48-7                            |          | 2-Methylphenol              | ND                    | 3400                    |                      |                            |                           |
| 106-44-5                           |          | 4-Methylphenol              | ND                    | 3400                    |                      |                            |                           |
| 88-74-4                            |          | 2-Nitroaniline              | ND                    | 8400                    |                      |                            |                           |
| 99-09-2                            |          | 3-Nitroaniline              | ND                    | 8400                    |                      |                            |                           |
| 100-01-6                           |          | 4-Nitroaniline              | ND                    | 8400                    |                      |                            |                           |
| 95-95-4                            | 34621    | 2,4,5-Trichlorophenol       | ND                    | 8400                    |                      |                            |                           |
| <b>Other Compounds Quantitated</b> |          |                             |                       |                         |                      |                            |                           |
|                                    |          | Diphenylhydrazine           | ND                    | 3400                    |                      |                            |                           |

CRWA07

## PCBs &amp; Pesticides

| CAS NO    | STORE NO | Compound              | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment | OMOE Biological Guidelines |                           |
|-----------|----------|-----------------------|-----------------------|-------------------------|----------------------|----------------------------|---------------------------|
|           |          |                       |                       |                         |                      | LEL (ug/Kg)                | SEL TOC corrected (ug/Kg) |
| 309-00-2  | 39330    | Aldrin                | ND                    | 4                       |                      | 2                          | 153.6                     |
| 319-84-6  | 39337    | alpha-BHC             | ND                    | 4                       |                      | 6                          | 192                       |
| 319-85-7  | 39338    | beta-BHC              | ND                    | 4                       |                      | 5                          | 403.2                     |
| 319-86-8  | 34259    | delta-BHC             | ND                    | 4                       |                      |                            |                           |
| 58-89-9   | 39340    | gamma-BHC             | ND                    | 4                       |                      | 3                          | 19.2                      |
| 5103-71-9 | —        | Alpha Chlordane       | 12                    | 4                       |                      |                            |                           |
| 5103-74-2 | —        | gamma Chlordane       | ND                    | 4                       |                      |                            |                           |
| 57-74-9   | 39350    | Chlordane (technical) | ND                    | 400                     |                      | 7                          | 115.2                     |
| 72-54-8   | 39310    | 4,4'-DDD              | 38                    | 4                       |                      | 8                          | 115.2                     |
| 72-55-9   | 39320    | 4,4'-DDE              | 8                     | 4                       |                      | 5                          | 364.8                     |
| 50-29-3   | 39300    | 4,4'-DDT              | ND                    | 4                       |                      |                            |                           |
| 60-57-1   | 39380    | Dieldrin              | ND                    | 4                       |                      | 2                          | 1747.2                    |
| 959-98-8  | 34361    | Endosulfan I          | ND                    | 4                       |                      |                            |                           |
| 33212-65- | 34356    | Endosulfan II         | ND                    | 4                       |                      |                            |                           |
| 1031-078  | 34351    | Endosulfan sulfate    | ND                    | 4                       |                      |                            |                           |
| 72-20-8   | 39390    | Endrin                | ND                    | 4                       |                      | 3                          | 2496                      |
| 7421-93-4 | 34366    | Endrin aldehyde       | ND                    | 4                       |                      |                            |                           |
| 53494-70- | —        | Endrin ketone         | ND                    | 4                       |                      |                            |                           |
| 76-44-8   | 39410    | Heptachlor            | ND                    | 4                       |                      |                            |                           |
| 1024-57-3 | 39420    | Heptachlor epoxide    | ND                    | 4                       |                      | 5                          | 96                        |
| 72-43-5   | —        | Methoxychlor          | ND                    | 4                       |                      |                            |                           |
| 8001-35-2 | 39400    | Toxaphene             | ND                    | 400                     |                      |                            |                           |
| 12674-11- | 34671    | Aroclor-1016          | ND                    | 100                     |                      | 7                          | 1017.6                    |
| 11104-28- | 39488    | Aroclor-1221          | ND                    | 100                     |                      |                            |                           |
| 11141-16- | 39492    | Aroclor-1232          | ND                    | 100                     |                      |                            |                           |
| 53469-21- | 39496    | Aroclor-1242          | ND                    | 100                     |                      |                            |                           |
| 12672-29- | 39500    | Aroclor-1248          | ND                    | 100                     |                      | 30                         | 2880                      |
| 11097-69- | 39504    | Aroclor-1254          | ND                    | 100                     |                      | 60                         | 652.8                     |
| 11096-82- | 39508    | Aroclor-1260          | ND                    | 100                     |                      | 5                          | 460.8                     |
| 11100-14- | 81649    | Aroclor-1262          | ND                    | 100                     |                      |                            |                           |
| 37324-23- | 81650    | Aroclor-1268          | ND                    | 100                     |                      |                            |                           |

## Note:

ND = Not detected above reporting limit

B = Analyte is associated with lab blank contamination

L = Estimated value is below the calibration range

= Greater than Lowest Effect Level (LEL)

= Greater than Severe Effect Level (SEL)

LELs and SELs are based on the 5th and 95th percentiles respectively of the screening level concentration except where noted below.

gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, SELs are based on 90% screening level concentrations  
 gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs are based on 10% screening level concentrations  
 gamma-BHC, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs and SELs are tentative guidelines.

Sampling site: CRWA 08  
 Site description: Lower basin between N. Harvard Street & foot Bridge, Boston  
 Sampling date: 5/29/96  
 Latitude: 42 22' 07.164" Longitude: 71 07' 11.623"  
 Water depth: Not determined

## Water column analysis

### Field measurements

| Depth of sample (meters) | 0.2   | 1     | 2     |
|--------------------------|-------|-------|-------|
| D.O. (mg/l)              | 7.5   | 7.5   | 7.2   |
| Temp (C)                 | 19.79 | 19.85 | 19.82 |
| pH                       | 7.01  | 7.02  | 6.98  |
| Conductivity (mS/cm)     | 0.328 | 0.329 | 0.329 |

### Metals & TOC

| Parameter | Sample result (ug/L) | Reporting limit (ug/L) |
|-----------|----------------------|------------------------|
|-----------|----------------------|------------------------|

|     |       |     |
|-----|-------|-----|
| Cd  | ND    | 15  |
| Cr  | ND    | 15  |
| Cu  | ND    | 15  |
| Ni  | ND    | 60  |
| Pb  | ND    | 100 |
| Zn  | ND    | 20  |
| Hg  | ND    | 0.5 |
| TOC | 10700 |     |

## Sediment Analysis

| Metals Parameter | Sample result (ug/gm)* | Reporting limit (ug/gm)* | OMOE Biological Guidelines |              |
|------------------|------------------------|--------------------------|----------------------------|--------------|
|                  |                        |                          | LEL (ug/gm)*               | SEL (ug/gm)* |
| Cd               | 9.3                    | 0.6                      | 0.6                        | 10           |
| Cr               | 113                    | 26                       | 26                         | 110          |
| Cu               | 242                    | 16                       | 16                         | 110          |
| Ni               | 32.3                   | 16                       | 16                         | 75           |
| Pb               | 610                    | 31                       | 31                         | 250          |
| Zn               | 675                    | 120                      | 120                        | 820          |
| Hg               | 1.59                   | 0.2                      | 0.2                        | 2            |

OMOE = Ontario Ministry of the Environment

█ = greater than Lowest Effect Level (LEL)

█ = greater than Severe Effect Level (SEL)

### AVS&SEM

| Parameter | Sample result (umole/gm)* | Reporting limit (umole/gm)* |
|-----------|---------------------------|-----------------------------|
|-----------|---------------------------|-----------------------------|

|                |      |        |
|----------------|------|--------|
| Cd             | 0.08 |        |
| Cr             | 1.7  |        |
| Cu             | 3.9  |        |
| Hg             | ND   | 0.0007 |
| Ni             | 0.69 |        |
| Pb             | 3    |        |
| Zn             | 10.5 |        |
| AVS            | 26   |        |
| SEM/ AVS ratio | 0.7  |        |

### TOC

| Parameter | Sample result (%) |
|-----------|-------------------|
|-----------|-------------------|

|     |      |
|-----|------|
| TOC | 11.4 |
|-----|------|

| Grain Size    | Course sand<br>< 4.75 mm<br>> 2 mm | Medium sand<br>< 2 mm<br>> 0.425 mm | Fine sand<br>< 0.425 mm<br>> 0.075 mm | Silt & clay<br>< 0.075 mm |
|---------------|------------------------------------|-------------------------------------|---------------------------------------|---------------------------|
| % composition | 5                                  | 39                                  | 24                                    | 32                        |

| Toxicity Organism         |          | % Survival-10 days                      |
|---------------------------|----------|---|
| <i>Chironomus tentans</i> | midge    | 85                                      |
| <i>Hyallela azteca</i>    | amphipod | 74 (statistically significant toxicity) |

Note:  
 \* = Reported as dry weight  
 ND = Not detected above reporting limit

| BNAs<br>CAS<br>NO                  | STORET<br>NO | Compound                    | Sample<br>Result<br>(ug/Kg) | Reporting<br>limit<br>(ug/Kg) | Qualifier<br>or<br>comment | OMOE Biological Guidelines |                                 |
|------------------------------------|--------------|-----------------------------|-----------------------------|-------------------------------|----------------------------|----------------------------|---------------------------------|
|                                    |              |                             |                             |                               |                            | LEL<br>(ug/Kg)             | SEL<br>TOC corrected<br>(ug/Kg) |
| <b>Priority Pollutants</b>         |              |                             |                             |                               |                            |                            |                                 |
| 83-32-9                            | 34205        | Acenaphthene                | ND                          | 5100                          |                            |                            |                                 |
| 208-96-8                           | 34200        | Acenaphthylene              | 1100                        | 5100                          | L                          |                            |                                 |
| 120-12-7                           | 34220        | Anthracene                  | 1600                        | 5100                          | L                          | 220                        | 37000                           |
| 56-55-3                            | 34526        | Benzo(a)anthracene          | 4400                        | 5100                          | L                          | 320                        | 148000                          |
| 205-99-2                           | 34230        | Benzo(b)fluoranthene        | 7200                        | 5100                          |                            |                            |                                 |
| 207-08-9                           | 34242        | Benzo(k)fluoranthene        | 7900                        | 5100                          |                            | 240                        | 134000                          |
| 50-32-8                            | 34247        | Benzo(a)pyrene              | 5700                        | 5100                          |                            | 370                        | 144000                          |
| 191-24-2                           | 34521        | Benzo(ghi)perylene          | 2500                        | 5100                          |                            | 170                        | 32000                           |
| 85-68-7                            | 34292        | Benzyl butyl phthalate      | ND                          | 5100                          |                            |                            |                                 |
| 111-44-4                           | 34273        | Bis(2-chloroethyl)ether     | ND                          | 5100                          |                            |                            |                                 |
| 111-91-1                           | 34278        | Bis(2-chloroethoxy)methan   | ND                          | 5100                          |                            |                            |                                 |
| 117-81-7                           | 39100        | Bis(2-ethylhexyl)phthalate  | 44000                       | 5100                          |                            |                            |                                 |
| 108-60-1                           | 34283        | Bis(2-chloroisopropyl)ether | ND                          | 5100                          |                            |                            |                                 |
| 101-55-3                           | 34636        | 4-Bromophenylphenyl ether   | ND                          | 5100                          |                            |                            |                                 |
| 86-74-8                            |              | Carbazole                   | 2100                        | 5100                          | L                          |                            |                                 |
| 59-50-7                            | 34452        | 4-Chloro-3-methylphenol     | ND                          | 10000                         |                            |                            |                                 |
| 91-58-7                            | 34581        | 2-Chloronaphthalene         | ND                          | 5100                          |                            |                            |                                 |
| 95-57-8                            | 34586        | 2-Chlorophenol              | ND                          | 10000                         |                            |                            |                                 |
| 7005-72-3                          | 34641        | 4-Chlorophenylphenyl ether  | ND                          | 5100                          |                            |                            |                                 |
| 218-01-9                           | 34320        | Chrysene                    | 6600                        | 5100                          | L                          | 340                        | 46000                           |
| 53-70-3                            | 34556        | Dibenzo(a,h)anthracene      | ND                          | 5100                          |                            | 60                         | 13000                           |
| 84-74-2                            | 39110        | Di-n-butylphthalate         | ND                          | 5100                          |                            |                            |                                 |
| 541-73-1                           | 34566        | 1,3-Dichlorobenzene         | ND                          | 5100                          |                            |                            |                                 |
| 95-50-1                            | 34536        | 1,2-Dichlorobenzene         | ND                          | 5100                          |                            |                            |                                 |
| 106-46-7                           | 34571        | 1,4-Dichlorobenzene         | ND                          | 5100                          |                            |                            |                                 |
| 91-94-1                            | 34631        | 3,3'-Dichlorobenzidine      | ND                          | 5100                          |                            |                            |                                 |
| 120-83-2                           | 34601        | 2,4-Dichlorophenol          | ND                          | 10000                         |                            |                            |                                 |
| 84-66-2                            | 34336        | Diethylphthalate            | ND                          | 5100                          |                            |                            |                                 |
| 105-67-9                           | 34606        | 2,4-Dimethylphenol          | ND                          | 10000                         |                            |                            |                                 |
| 131-11-3                           | 34341        | Dimethylphthalate           | ND                          | 5100                          |                            |                            |                                 |
| 51-28-5                            | 34616        | 2,4-Dinitrophenol           | ND                          | 13000                         |                            |                            |                                 |
| 121-14-2                           | 34611        | 2,4-Dinitrotoluene          | ND                          | 5100                          |                            |                            |                                 |
| 606-20-2                           | 34626        | 2,6-Dinitrotoluene          | ND                          | 5100                          |                            |                            |                                 |
| 117-84-0                           | 34596        | Di-n-octylphthalate         | ND                          | 5100                          |                            |                            |                                 |
| 206-44-0                           | 34376        | Floranthene                 | 9200                        | 5100                          |                            | 750                        | 102000                          |
| 86-73-7                            | 34381        | Fluorene                    | ND                          | 5100                          |                            | 190                        | 16000                           |
| 118-74-1                           | 39700        | Hexachlorobenzene           | ND                          | 5100                          |                            |                            |                                 |
| 87-68-3                            | 34391        | Hexachlorobutadiene         | ND                          | 5100                          |                            |                            |                                 |
| 77-47-4                            | 34386        | Hexachlorocyclopentadiene   | ND                          | 5100                          |                            |                            |                                 |
| 67-72-1                            | 34396        | Hexachloroethane            | ND                          | 5100                          |                            |                            |                                 |
| 193-39-5                           | 34403        | Indeno(1,2,3-cd)pyrene      | 1200                        | 5100                          |                            | 200                        | 32000                           |
| 78-59-1                            | 34408        | Isophorone                  | ND                          | 5100                          |                            |                            |                                 |
| 534-52-1                           | 34657        | 2-Methyl-4,6-dinitrophenol  | ND                          | 13000                         |                            |                            |                                 |
| 91-20-3                            | 34696        | Naphthalene                 | ND                          | 5100                          |                            |                            |                                 |
| 98-95-3                            | 34447        | Nitrobenzene                | ND                          | 5100                          |                            |                            |                                 |
| 88-75-5                            | 34591        | 2-Nitrophenol               | ND                          | 10000                         |                            |                            |                                 |
| 100-02-7                           | 34646        | 4-Nitrophenol               | ND                          | 13000                         |                            |                            |                                 |
| 86-30-3                            | 34433        | N-Nitrosodiphenylamine      | ND                          | 5100                          |                            |                            |                                 |
| 621-64-7                           | 34428        | N-Nitrosodi-n-propylamine   | ND                          | 5100                          |                            |                            |                                 |
| 87-86-5                            | 39032        | Pentachlorophenol           | ND                          | 13000                         |                            |                            |                                 |
| 85-01-8                            | 34461        | Phenanthrene                | 4400                        | 5100                          | L                          | 560                        | 95000                           |
| 108-95-2                           | 34694        | Phenol                      | ND                          | 10000                         |                            |                            |                                 |
| 129-00-0                           | 34469        | Pyrene                      | 11000                       | 5100                          |                            | 490                        | 85000                           |
| 120-82-1                           | 34551        | 1,2,4-Trichlorobenzene      | ND                          | 5100                          |                            |                            |                                 |
| 88-06-2                            | 34621        | 2,4,6-Trichlorophenol       | ND                          | 10000                         |                            |                            |                                 |
|                                    |              | <b>Total PAH</b>            | 62800                       |                               |                            | 4000                       | 1000000                         |
| <b>Hazardous Substances</b>        |              |                             |                             |                               |                            |                            |                                 |
| 65-53-3                            | 77089        | Aniline                     | ND                          | 5100                          |                            |                            |                                 |
| 65-85-0                            | 77247        | Benzoic Acid                | ND                          | 13000                         |                            |                            |                                 |
| 100-51-6                           | 77147        | Benzyl Alcohol              | ND                          | 5100                          |                            |                            |                                 |
| 106-47-8                           |              | 4-Chloroaniline             | ND                          | 5100                          |                            |                            |                                 |
| 132-64-9                           | 81302        | Dibenzofuran                | ND                          | 5100                          |                            |                            |                                 |
| 91-57-6                            |              | 2-Methylnaphthalene         | ND                          | 5100                          |                            |                            |                                 |
| 95-48-7                            |              | 2-Methylphenol              | ND                          | 5100                          |                            |                            |                                 |
| 106-44-5                           |              | 4-Methylphenol              | ND                          | 5100                          |                            |                            |                                 |
| 88-74-4                            |              | 2-Nitroaniline              | ND                          | 13000                         |                            |                            |                                 |
| 99-09-2                            |              | 3-Nitroaniline              | ND                          | 13000                         |                            |                            |                                 |
| 100-01-6                           |              | 4-Nitroaniline              | ND                          | 13000                         |                            |                            |                                 |
| 95-95-4                            | 34621        | 2,4,5-Trichlorophenol       | ND                          | 13000                         |                            |                            |                                 |
| <b>Other Compounds Quantitated</b> |              |                             |                             |                               |                            |                            |                                 |
|                                    |              | Diphenylhydrazine           | ND                          | 5100                          |                            |                            |                                 |



CRWA08

## PCBs &amp; Pesticides

| CAS NO     | STORET NO | Compound              | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment | OMOE Biological Guidelines |                           |
|------------|-----------|-----------------------|-----------------------|-------------------------|----------------------|----------------------------|---------------------------|
|            |           |                       |                       |                         |                      | LEL (ug/Kg)                | SEL TOC corrected (ug/Kg) |
| 309-00-2   | 39330     | Aldrin                | ND                    | 8                       |                      | 2                          | 800                       |
| 319-84-6   | 39337     | alpha-BHC             | ND                    | 8                       |                      | 6                          | 1000                      |
| 319-85-7   | 39338     | beta-BHC              | ND                    | 8                       |                      | 5                          | 2100                      |
| 319-86-8   | 34259     | delta-BHC             | ND                    | 8                       |                      |                            |                           |
| 58-89-9    | 39340     | gamma-BHC             | ND                    | 8                       |                      | 3                          | 100                       |
| 5103-71-9  | —         | Alpha Chlordane       | 76                    | 8                       |                      |                            |                           |
| 5103-74-2  | —         | gamma Chlordane       | 60                    | 8                       | P                    |                            |                           |
| 57-74-9    | 39350     | Chlordane (technical) | ND                    | 800                     |                      | 7                          | 600                       |
| 72-54-8    | 39310     | 4,4'-DDD              | 140                   | 8                       |                      | 8                          | 600                       |
| 72-55-9    | 39320     | 4,4'-DDE              | 110                   | 8                       |                      | 5                          | 1900                      |
| 50-29-3    | 39300     | 4,4'-DDT              | ND                    | 8                       |                      |                            |                           |
| 60-57-1    | 39380     | Dieldrin              | ND                    | 8                       |                      | 2                          | 9100                      |
| 959-98-8   | 34361     | Endosulfan I          | ND                    | 8                       |                      |                            |                           |
| 33212-65-9 | 34356     | Endosulfan II         | ND                    | 8                       |                      |                            |                           |
| 1031-078   | 34351     | Endosulfan sulfate    | ND                    | 8                       |                      |                            |                           |
| 72-20-8    | 39390     | Endrin                | ND                    | 8                       |                      | 3                          | 13000                     |
| 7421-93-4  | 34366     | Endrin aldehyde       | ND                    | 8                       |                      |                            |                           |
| 53494-70-5 | —         | Endrin ketone         | ND                    | 8                       |                      |                            |                           |
| 76-44-8    | 39410     | Heptachlor            | ND                    | 8                       |                      |                            |                           |
| 1024-57-3  | 39420     | Heptachlor epoxide    | ND                    | 8                       |                      | 5                          | 500                       |
| 72-43-5    | —         | Methoxychlor          | ND                    | 8                       |                      |                            |                           |
| 8001-35-2  | 39400     | Toxaphene             | ND                    | 800                     |                      |                            |                           |
| 12674-11-2 | 34671     | Aroclor-1016          | ND                    | 200                     |                      | 7                          | 5300                      |
| 11104-28-2 | 39488     | Aroclor-1221          | ND                    | 200                     |                      |                            |                           |
| 11141-16-5 | 39492     | Aroclor-1232          | ND                    | 200                     |                      |                            |                           |
| 53469-21-9 | 39496     | Aroclor-1242          | ND                    | 200                     |                      |                            |                           |
| 12672-29-6 | 39500     | Aroclor-1248          | ND                    | 200                     |                      | 30                         | 15000                     |
| 11097-69-1 | 39504     | Aroclor-1254          | 1100                  | 200                     |                      | 60                         | 3400                      |
| 11096-82-5 | 39508     | Aroclor-1260          | ND                    | 200                     |                      | 5                          | 2400                      |
| 11100-14-4 | 81649     | Aroclor-1262          | ND                    | 200                     |                      |                            |                           |
| 37324-23-5 | 81650     | Aroclor-1268          | ND                    | 200                     |                      |                            |                           |

## Note:

ND = Not detected above reporting limit

L = Estimated value is below the calibration range

P = The confirmation value exceeded 35% difference and is less than 100%. The lower value is reported.

[REDACTED] = Greater than Lowest Effect Level (LEL)

[REDACTED] = Greater than Severe Effect Level (SEL)

LELs and SELs are based on the 5th and 95th percentiles respectively of the screening level concentration except where noted below.

gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, SELs are based on 90% screening level concentrations

gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs are based on 10% screening level concentrations

gamma-BHC, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs and SELs are tentative guidelines.

Sampling site: CRWA 09  
 Site description: Lower basin between Harvard & Longfellow bridges, Boston  
 Sampling date: 5/29/96  
 Latitude: 42 21' 24.522" Longitude: 71 05' 22.491"  
 Approximate water depth: 7 meters

## Water column analysis

### Field measurements

| Depth of sample (meters) | 0.2   | 1     | 2     | 3     | 4     | 5     | 6     |
|--------------------------|-------|-------|-------|-------|-------|-------|-------|
| D.O. (mg/l)              | 6.8   | 7.1   | 6.8   | 6.7   | 6.8   | 6.7   | 6.5   |
| Temp (C)                 | 19.49 | 19.5  | 19.42 | 19.49 | 19.47 | 19.45 | 19.05 |
| pH                       | 6.94  | 6.96  | 6.97  | 6.97  | 6.94  | 6.95  | 6.8   |
| Conductivity (mS/cm)     | 0.352 | 0.352 | 0.352 | 0.352 | 0.352 | 0.352 | 0.361 |

### Metals & TOC

| Parameter | Sample result (ug/L) | Reporting limit (ug/L) |
|-----------|----------------------|------------------------|
| Cd        | ND                   | 15                     |
| Cr        | ND                   | 15                     |
| Cu        | ND                   | 15                     |
| Ni        | ND                   | 60                     |
| Pb        | ND                   | 100                    |
| Zn        | ND                   | 20                     |
| Hg        | ND                   | 0.5                    |
| TOC       | 10200                |                        |

## Sediment Analysis

| Metals Parameter | Sample result (ug/gm)* | Reporting limit (ug/gm)* | OMOE Biological Guidelines |              |
|------------------|------------------------|--------------------------|----------------------------|--------------|
|                  |                        |                          | LEL (ug/gm)*               | SEL (ug/gm)* |
|                  | 8.8                    |                          | 0.6                        | 10           |
|                  | 111                    |                          | 26                         | 110          |
|                  | 362                    |                          | 16                         | 110          |
|                  | 42                     |                          | 16                         | 75           |
|                  | 895                    |                          | 31                         | 250          |
|                  | 729                    |                          | 120                        | 820          |
|                  | 2.08                   |                          | 0.2                        | 2            |

OMOE = Ontario Ministry of the Environment

= greater than Lowest Effect Level (LEL)  
 = greater than Severe Effect Level (SEL)

| AVS&SEM Parameter | Sample result (umole/gm)* | Reporting limit (umole/gm)* |
|-------------------|---------------------------|-----------------------------|
| Cd                | ND                        | 0.13                        |
| Cr                | 2.6                       |                             |
| Cu                | 5.2                       |                             |
| Hg                | ND                        | 0.0005                      |
| Ni                | 1.2                       |                             |
| Pb                | 3.9                       |                             |
| Zn                | 11.2                      |                             |
| AVS               | 418                       |                             |
| SEM/ AVS ratio    | 0.05                      |                             |

| TOC | Sample result (%) |
|-----|-------------------|
| TOC | 11.92             |

| Grain Size    | Course sand < 4.75 mm | Medium sand < 2 mm | Fine sand < 0.425 mm | Silt & clay < 0.075 mm |
|---------------|-----------------------|--------------------|----------------------|------------------------|
|               | > 2 mm                | > 0.425 mm         | > 0.075 mm           |                        |
| % composition | 11                    | 34                 | 15                   | 40                     |

| Toxicity Organism         | type     | % Survival-10 days                        |
|---------------------------|----------|---|
| <i>Chironomus tentans</i> | midge    | 23.7 (statistically significant toxicity) |
| <i>Hyallela azteca</i>    | amphipod | 12.5 (statistically significant toxicity) |

Note:  
 \* = Reported as dry weight  
 ND = Not detected above reporting limit

| CAS NO                             | STORET NO | Compound                    | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment | OMOE Biological Guidelines |                           |
|------------------------------------|-----------|-----------------------------|-----------------------|-------------------------|----------------------|----------------------------|---------------------------|
|                                    |           |                             |                       |                         |                      | LEL (ug/Kg)                | SEL TOC corrected (ug/Kg) |
| <b>Priority Pollutants</b>         |           |                             |                       |                         |                      |                            |                           |
| 83-32-9                            | 34205     | Acenaphthene                | ND                    | 9800                    |                      |                            |                           |
| 208-96-8                           | 34200     | Acenaphthylene              | ND                    | 9800                    |                      |                            |                           |
| 120-12-7                           | 34220     | Anthracene                  | 1700                  | 9800                    | L                    | 220                        | 37000                     |
| 56-55-3                            | 34526     | Benzo(a)anthracene          | 5200                  | 9800                    | L                    | 320                        | 148000                    |
| 205-99-2                           | 34230     | Benzo(b)fluoranthene        | 6500                  | 9800                    | L                    |                            |                           |
| 207-08-9                           | 34242     | Benzo(k)fluoranthene        | 7300                  | 9800                    | L                    | 240                        | 134000                    |
| 50-32-8                            | 34247     | Benzo(a)pyrene              | 5100                  | 9800                    | L                    | 370                        | 144000                    |
| 191-24-2                           | 34521     | Benzo(ghi)perylene          | ND                    | 9800                    |                      | 170                        | 32000                     |
| 85-68-7                            | 34292     | Benzyl butyl phthalate      | ND                    | 9800                    |                      |                            |                           |
| 111-44-4                           | 34273     | Bis(2-chloroethyl)ether     | ND                    | 9800                    |                      |                            |                           |
| 111-91-1                           | 34278     | Bis(2-chloroethoxy)methane  | ND                    | 9800                    |                      |                            |                           |
| 117-81-7                           | 39100     | Bis(2-ethylhexyl)phthalate  | 81000                 | 9800                    | B                    |                            |                           |
| 108-60-1                           | 34283     | Bis(2-chloroisopropyl)ether | ND                    | 9800                    |                      |                            |                           |
| 101-55-3                           | 34636     | 4-Bromophenylphenyl ether   | ND                    | 9800                    |                      |                            |                           |
| 86-74-8                            |           | Carbazole                   | 2400                  | 9800                    | L                    |                            |                           |
| 59-50-7                            | 34452     | 4-Chloro-3-methylphenol     | ND                    | 20000                   |                      |                            |                           |
| 91-58-7                            | 34581     | 2-Chloronaphthalene         | ND                    | 9800                    |                      |                            |                           |
| 95-57-8                            | 34586     | 2-Chlorophenol              | ND                    | 20000                   |                      |                            |                           |
| 7005-72-3                          | 34641     | 4-Chlorophenylphenyl ether  | ND                    | 9800                    |                      |                            |                           |
| 218-01-9                           | 34320     | Chrysene                    | 7000                  | 9800                    | L                    | 340                        | 46000                     |
| 53-70-3                            | 34556     | Dibenzo(a,h)anthracene      | ND                    | 9800                    |                      | 60                         | 13000                     |
| 84-74-2                            | 39110     | Di-n-butylphthalate         | ND                    | 9800                    |                      |                            |                           |
| 541-73-1                           | 34566     | 1,3-Dichlorobenzene         | ND                    | 9800                    |                      |                            |                           |
| 95-50-1                            | 34536     | 1,2-Dichlorobenzene         | ND                    | 9800                    |                      |                            |                           |
| 106-46-7                           | 34571     | 1,4-Dichlorobenzene         | ND                    | 9800                    |                      |                            |                           |
| 91-94-1                            | 34631     | 3,3'-Dichlorobenzidine      | ND                    | 9800                    |                      |                            |                           |
| 120-83-2                           | 34601     | 2,4-Dichlorophenol          | ND                    | 20000                   |                      |                            |                           |
| 84-66-2                            | 34336     | Diethylphthalate            | ND                    | 9800                    |                      |                            |                           |
| 105-67-9                           | 34606     | 2,4-Dimethylphenol          | ND                    | 20000                   |                      |                            |                           |
| 131-11-3                           | 34341     | Dimethylphthalate           | ND                    | 9800                    |                      |                            |                           |
| 51-28-5                            | 34616     | 2,4-Dinitrophenol           | ND                    | 24000                   |                      |                            |                           |
| 121-14-2                           | 34611     | 2,4-Dinitrotoluene          | ND                    | 9800                    |                      |                            |                           |
| 606-20-2                           | 34626     | 2,6-Dinitrotoluene          | ND                    | 9800                    |                      |                            |                           |
| 117-84-0                           | 34596     | Di-n-octylphthalate         | ND                    | 9800                    |                      |                            |                           |
| 206-44-0                           | 34376     | Fluoranthene                | 9700                  | 9800                    | L                    | 750                        | 102000                    |
| 86-73-7                            | 34381     | Fluorene                    | ND                    | 9800                    |                      | 190                        | 16000                     |
| 118-74-1                           | 39700     | Hexachlorobenzene           | ND                    | 9800                    |                      |                            |                           |
| 87-68-3                            | 34391     | Hexachlorobutadiene         | ND                    | 9800                    |                      |                            |                           |
| 77-47-4                            | 34386     | Hexachlorocyclopentadiene   | ND                    | 9800                    |                      |                            |                           |
| 67-72-1                            | 34396     | Hexachloroethane            | ND                    | 9800                    |                      |                            |                           |
| 193-39-5                           | 34403     | Indeno(1,2,3-cd)pyrene      | ND                    | 9800                    |                      | 200                        | 32000                     |
| 78-59-1                            | 34408     | Isophorone                  | ND                    | 9800                    |                      |                            |                           |
| 534-52-1                           | 34657     | 2-Methyl-4,6-dinitrophenol  | ND                    | 24000                   |                      |                            |                           |
| 91-20-3                            | 34696     | Naphthalene                 | ND                    | 9800                    |                      |                            |                           |
| 98-95-3                            | 34447     | Nitrobenzene                | ND                    | 9800                    |                      |                            |                           |
| 88-75-5                            | 34591     | 2-Nitrophenol               | ND                    | 20000                   |                      |                            |                           |
| 100-02-7                           | 34646     | 4-Nitrophenol               | ND                    | 24000                   |                      |                            |                           |
| 86-30-3                            | 34433     | N-Nitrosodiphenylamine      | ND                    | 9800                    |                      |                            |                           |
| 621-64-7                           | 34428     | N-Nitrosodi-n-propylamine   | ND                    | 9800                    |                      |                            |                           |
| 87-86-5                            | 39032     | Pentachlorophenol           | ND                    | 24000                   |                      |                            |                           |
| 85-01-8                            | 34461     | Phenanthrene                | 5100                  | 9800                    | L                    | 560                        | 95000                     |
| 108-95-2                           | 34694     | Phenol                      | ND                    | 20000                   |                      |                            |                           |
| 129-00-0                           | 34469     | Pyrene                      | 12000                 | 9800                    |                      | 490                        | 85000                     |
| 120-82-1                           | 34551     | 1,2,4-Trichlorobenzene      | ND                    | 9800                    |                      |                            |                           |
| 88-06-2                            | 34621     | 2,4,6-Trichlorophenol       | ND                    | 20000                   |                      |                            |                           |
|                                    |           | <b>Total PAH</b>            | 59600                 |                         |                      | 4000                       | 1000000                   |
| <b>Hazardous Substances</b>        |           |                             |                       |                         |                      |                            |                           |
| 65-53-3                            | 77089     | Aniline                     | ND                    | 9800                    |                      |                            |                           |
| 65-85-0                            | 77247     | Benzoic Acid                | ND                    | 24000                   |                      |                            |                           |
| 100-51-6                           | 77147     | Benzyl Alcohol              | ND                    | 9800                    |                      |                            |                           |
| 106-47-8                           |           | 4-Chloroaniline             | ND                    | 9800                    |                      |                            |                           |
| 132-64-9                           | 81302     | Dibenzofuran                | ND                    | 9800                    |                      |                            |                           |
| 91-57-6                            |           | 2-Methylnaphthalene         | ND                    | 9800                    |                      |                            |                           |
| 95-48-7                            |           | 2-Methylphenol              | ND                    | 9800                    |                      |                            |                           |
| 106-44-5                           |           | 4-Methylphenol              | ND                    | 9800                    |                      |                            |                           |
| 88-74-4                            |           | 2-Nitroaniline              | ND                    | 24000                   |                      |                            |                           |
| 99-09-2                            |           | 3-Nitroaniline              | ND                    | 24000                   |                      |                            |                           |
| 100-01-6                           |           | 4-Nitroaniline              | ND                    | 24000                   |                      |                            |                           |
| 95-95-4                            | 34621     | 2,4,5-Trichlorophenol       | ND                    | 24000                   |                      |                            |                           |
| <b>Other Compounds Quantitated</b> |           |                             |                       |                         |                      |                            |                           |
|                                    |           | Diphenylhydrazine           | ND                    | 9800                    |                      |                            |                           |

CRWA09

## PCBs &amp; Pesticides

| CAS NO     | STORET NO | Compound              | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment | OMOE Biological Guidelines |                           |
|------------|-----------|-----------------------|-----------------------|-------------------------|----------------------|----------------------------|---------------------------|
|            |           |                       |                       |                         |                      | LEL (ug/Kg)                | SEL TOC corrected (ug/Kg) |
| 309-00-2   | 39330     | Aldrin                | ND                    | 10                      |                      | 2                          | 800                       |
| 319-84-6   | 39337     | alpha-BHC             | ND                    | 10                      |                      | 6                          | 1000                      |
| 319-85-7   | 39338     | beta-BHC              | 66                    | 10                      |                      | 5                          | 2100                      |
| 319-86-8   | 34259     | delta-BHC             | ND                    | 10                      |                      |                            |                           |
| 58-89-9    | 39340     | gamma-BHC             | ND                    | 10                      |                      | 3                          | 100                       |
| 5103-71-9  | —         | Alpha Chlordane       | 110                   | 10                      |                      |                            |                           |
| 5103-74-2  | —         | gamma Chlordane       | 91                    | 10                      |                      |                            |                           |
| 57-74-9    | 39350     | Chlordane (technical) | ND                    | 1000                    |                      | 7                          | 600                       |
| 72-54-8    | 39310     | 1,1-DDD               | 140                   | 10                      |                      | 8                          | 600                       |
| 72-55-9    | 39320     | 1,1-DDE               | 120                   | 10                      |                      | 5                          | 1900                      |
| 50-29-3    | 39300     | 4,4'-DDT              | ND                    | 10                      |                      |                            |                           |
| 60-57-1    | 39380     | Dieldrin              | ND                    | 10                      |                      | 2                          | 9100                      |
| 959-98-8   | 34361     | Endosulfan I          | ND                    | 10                      |                      |                            |                           |
| 33212-65-9 | 34356     | Endosulfan II         | ND                    | 10                      |                      |                            |                           |
| 1031-078   | 34351     | Endosulfan sulfate    | ND                    | 10                      |                      |                            |                           |
| 72-20-8    | 39390     | Endrin                | ND                    | 10                      |                      | 3                          | 13000                     |
| 7421-93-4  | 34366     | Endrin aldehyde       | ND                    | 10                      |                      |                            |                           |
| 53494-70-5 | —         | Endrin ketone         | ND                    | 10                      |                      |                            |                           |
| 76-44-8    | 39410     | Heptachlor            | ND                    | 10                      |                      |                            |                           |
| 1024-57-3  | 39420     | Heptachlor epoxide    | ND                    | 10                      |                      | 5                          | 500                       |
| 72-43-5    | —         | Methoxychlor          | ND                    | 10                      |                      |                            |                           |
| 8001-35-2  | 39400     | Toxaphene             | ND                    | 1000                    |                      |                            |                           |
| 12674-11-2 | 34671     | Aroclor-1016          | ND                    | 300                     |                      | 7                          | 5300                      |
| 11104-28-2 | 39488     | Aroclor-1221          | ND                    | 300                     |                      |                            |                           |
| 11141-16-5 | 39492     | Aroclor-1232          | ND                    | 300                     |                      |                            |                           |
| 53469-21-9 | 39496     | Aroclor-1242          | ND                    | 300                     |                      |                            |                           |
| 12672-29-6 | 39500     | Aroclor-1248          | ND                    | 300                     |                      | 30                         | 15000                     |
| 11097-69-1 | 39504     | Aroclor-1254          | ND                    | 300                     |                      | 60                         | 3400                      |
| 11096-82-5 | 39508     | Aroclor-1260          | ND                    | 300                     |                      | 5                          | 2400                      |
| 11100-14-4 | 81649     | Aroclor-1262          | ND                    | 300                     |                      |                            |                           |
| 37324-23-5 | 81650     | Aroclor-1268          | ND                    | 300                     |                      |                            |                           |

## Note:

ND = Not detected above reporting limit

B = Analyte is associated with lab blank contamination

L = Estimated value is below the calibration range

= Greater than Lowest Effect Level (LEL)

= Greater than Severe Effect Level (SEL)

LELs and SELs are based on the 5th and 95th percentiles respectively of the screening level concentration except where noted below.

gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, SELs are based on 90% screening level concentrations  
gamma-BHC, Heptachlor epoxide, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs are based on 10% screening level concentrations  
gamma-BHC, Aroclor-1016, Aroclor-1248, Aroclor-1254, Aroclor-1260, LELs and SELs are tentative guidelines.

## Field and Laboratory Duplicate Data

Sampling site: CRWA 03

### Water column analysis

| Metals & TOC |                      |                        | Field Duplicate      |                        | Actual RPD (%) | Goal RPD (%) |
|--------------|----------------------|------------------------|----------------------|------------------------|----------------|--------------|
| Parameter    | Sample result (ug/L) | Reporting limit (ug/L) | Sample result (ug/L) | Reporting limit (ug/L) |                |              |
| Cd           | ND                   | 15                     | ND                   | 15                     | 0              | 25           |
| Cr           | ND                   | 15                     | ND                   | 15                     | 0              | 25           |
| Cu           | ND                   | 15                     | ND                   | 15                     | 0              | 25           |
| Ni           | ND                   | 60                     | ND                   | 60                     | 0              | 25           |
| Pb           | ND                   | 100                    | ND                   | 100                    | 0              | 25           |
| Zn           | ND                   | 20                     | ND                   | 20                     | 0              | 25           |
| Hg           | ND                   | 0.5                    | ND                   | 0.5                    | 0              | 25           |
| TOC          | 10400                |                        | 10100                |                        | 2.9            | 35           |

### Sediment Analysis

| Metals    |                        |                          | Field Duplicate        |                          | Actual RPD (%) | Goal RPD (%) |
|-----------|------------------------|--------------------------|------------------------|--------------------------|----------------|--------------|
| Parameter | Sample result (ug/gm)* | Reporting limit (ug/gm)* | Sample result (ug/gm)* | Reporting limit (ug/gm)* |                |              |
| Cd        | ND                     | 1.1                      | ND                     | 1.1                      |                | 35           |
| Cr        | 12.3                   |                          | 12.5                   |                          | 1.6            | 35           |
| Cu        | 9.8                    |                          | 10.6                   |                          | 7.8            | 35           |
| Ni        | ND                     | 4.2                      | ND                     | 4.5                      |                | 35           |
| Pb        | 11.9                   |                          | 12.1                   |                          | 1.7            | 35           |
| Zn        | 62.1                   |                          | 64.5                   |                          | 3.8            | 35           |
| Hg        | 0.33                   |                          | 0.13                   |                          | NC             | 35           |

| AVS&SEM   |                           |                             | Field Duplicate           |                             | Actual RPD (%) | Goal RPD (%) |
|-----------|---------------------------|-----------------------------|---------------------------|-----------------------------|----------------|--------------|
| Parameter | Sample result (umole/gm)* | Reporting limit (umole/gm)* | Sample result (umole/gm)* | Reporting limit (umole/gm)* |                |              |
| Cd        | ND                        | 0.006                       | ND                        | 0.01                        |                | 35           |
| Cr        | ND                        | 0.15                        | ND                        | 0.22                        |                | 35           |
| Cu        | ND                        | 0.15                        | 0.13                      |                             | NC             | 35           |
| Hg        | ND                        | 0.0001                      | ND                        | 0.0002                      |                | 35           |
| Ni        | ND                        | 0.12                        | ND                        | 0.18                        |                | 35           |
| Pb        | 0.05                      |                             | 0.06                      |                             | 18.2           | 35           |
| Zn        | 1                         |                             | 0.91                      |                             | 9.4            | 35           |
| AVS       | 1.8                       |                             | 2.1                       |                             | 15.4           | 35           |
| SEM/ AVS  | 0.67                      |                             | 0.52                      |                             | 25.2           | 35           |

| TOC | Field Duplicate   |               |                             | Goal RPD (%) |
|-----|-------------------|---------------|-----------------------------|--------------|
|     | Sample result (%) | Sample Result | Relative Percent Difference |              |
| TOC | 0.84              | 0.97          | 14.4                        | 35           |

Note:

\* = Reported as dry weight

ND = Not detected above reporting limit

RPD = Relative Percent Difference

NC = Not calculated, since reported concentration is less than twice the reporting limit

## BNAs (Duplicate data)

| CAS NO                             | STORET NO | Compound                    | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment | Field Duplicate data  |                         |                      | Actual RPD (%) | Goal RPD (%) |
|------------------------------------|-----------|-----------------------------|-----------------------|-------------------------|----------------------|-----------------------|-------------------------|----------------------|----------------|--------------|
|                                    |           |                             |                       |                         |                      | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment |                |              |
| <b>Priority Pollutants</b>         |           |                             |                       |                         |                      |                       |                         |                      |                |              |
| 83-32-9                            | 34205     | Acenaphthene                | ND                    | 9.5                     |                      | ND                    | 10                      |                      |                | 35           |
| 208-96-8                           | 34200     | Acenaphthylene              | 15                    | 9.5                     |                      | 13                    | 10                      |                      | 14.3           | 35           |
| 120-12-7                           | 34220     | Anthracene                  | 12                    | 9.5                     |                      | 14                    | 10                      |                      | 15.4           | 35           |
| 56-55-3                            | 34526     | Benzo(a)anthracene          | 110                   | 300                     | L                    | 46                    | 10                      |                      | NA             | 35           |
| 205-99-2                           | 34230     | Benzo(b)fluoranthene        | 110                   | 300                     | L                    | 68                    | 320                     | L                    | NA             | 35           |
| 207-08-9                           | 34242     | Benzo(k)fluoranthene        | 96                    | 300                     | L                    | 63                    | 320                     | L                    | NA             | 35           |
| 50-32-8                            | 34247     | Benzo(a)pyrene              | ND                    | 300                     |                      | 58                    | 320                     | L                    | NA             | 35           |
| 191-24-2                           | 34521     | Benzo(ghi)perylene          | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 85-68-7                            | 34292     | Benzyl butyl phthalate      | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 111-44-4                           | 34273     | Bis(2-chloroethyl)ether     | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 111-91-1                           | 34278     | Bis(2-chloroethoxy)methane  | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 117-81-7                           | 39100     | Bis(2-ethylhexyl)phthalate  | 330                   | 300                     | B                    | 970                   | 320                     | B                    | NA             | 35           |
| 108-60-1                           | 34283     | Bis(2-chloroisopropyl)ether | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 101-55-3                           | 34636     | 4-Bromophenylphenyl ether   | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 86-74-8                            |           | Carbazole                   | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 59-50-7                            | 34452     | 4-Chloro-3-methylphenol     | ND                    | 600                     |                      | ND                    | 630                     |                      |                | 35           |
| 91-58-7                            | 34581     | 2-Chloronaphthalene         | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 95-57-8                            | 34586     | 2-Chlorophenol              | ND                    | 600                     |                      | ND                    | 630                     |                      |                | 35           |
| 7005-72-3                          | 34641     | 4-Chlorophenylphenyl ether  | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 218-01-9                           | 34320     | Chrysene                    | 98                    | 9.5                     |                      | 69                    | 10                      |                      | 34.7           | 35           |
| 53-70-3                            | 34556     | Dibenzo(a,h)anthracene      | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 84-74-2                            | 39110     | Di-n-butylphthalate         | 48                    | 300                     | L,B                  | ND                    | 320                     |                      | NA             | 35           |
| 541-73-1                           | 34566     | 1,3-Dichlorobenzene         | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 95-50-1                            | 34536     | 1,2-Dichlorobenzene         | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 106-46-7                           | 34571     | 1,4-Dichlorobenzene         | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 91-94-1                            | 34631     | 3,3'-Dichlorobenzidine      | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 120-83-2                           | 34601     | 2,4-Dichlorophenol          | ND                    | 600                     |                      | ND                    | 630                     |                      |                | 35           |
| 84-66-2                            | 34336     | Diethylphthalate            | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 105-67-9                           | 34606     | 2,4-Dimethylphenol          | ND                    | 600                     |                      | ND                    | 630                     |                      |                | 35           |
| 131-11-3                           | 34341     | Dimethylphthalate           | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 51-28-5                            | 34616     | 2,4-Dinitrophenol           | ND                    | 740                     |                      | ND                    | 780                     |                      |                | 35           |
| 121-14-2                           | 34611     | 2,4-Dinitrotoluene          | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 606-20-2                           | 34626     | 2,6-Dinitrotoluene          | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 117-84-0                           | 34596     | Di-n-octylphthalate         | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 206-44-0                           | 34376     | Fluoranthene                | 130                   | 9.5                     |                      | 93                    | 10                      |                      | 33.2           | 35           |
| 86-73-7                            | 34381     | Fluorene                    | ND                    | 9.5                     |                      | ND                    | 10                      |                      |                | 35           |
| 118-74-1                           | 39700     | Hexachlorobenzene           | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 87-68-3                            | 34391     | Hexachlorobutadiene         | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 77-47-4                            | 34386     | Hexachlorocyclopentadiene   | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 67-72-1                            | 34396     | Hexachloroethane            | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 193-39-5                           | 34403     | Indeno(1,2,3-cd)pyrene      | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 78-59-1                            | 34408     | Isophorone                  | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 534-52-1                           | 34657     | 2-Methyl-4,6-dinitrophenol  | ND                    | 740                     |                      | ND                    | 780                     |                      |                | 35           |
| 91-20-3                            | 34696     | Naphthalene                 | ND                    | 9.5                     |                      | ND                    | 10                      |                      |                | 35           |
| 98-95-3                            | 34447     | Nitrobenzene                | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 88-75-5                            | 34591     | 2-Nitrophenol               | ND                    | 600                     |                      | ND                    | 630                     |                      |                | 35           |
| 100-02-7                           | 34646     | 4-Nitrophenol               | ND                    | 740                     |                      | ND                    | 780                     |                      |                | 35           |
| 86-30-3                            | 34433     | N-Nitrosodiphenylamine      | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 621-64-7                           | 34428     | N-Nitrosodi-n-propylamine   | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 87-86-5                            | 39032     | Pentachlorophenol           | ND                    | 740                     |                      | ND                    | 780                     |                      |                | 35           |
| 85-01-8                            | 34461     | Phenanthrene                | 54                    | 9.5                     |                      | 49                    | 10                      |                      | 9.7            | 35           |
| 108-95-2                           | 34694     | Phenol                      | ND                    | 600                     |                      | ND                    | 630                     |                      |                | 35           |
| 129-00-0                           | 34469     | Pyrene                      | 130                   | 9.5                     |                      | 100                   | 10                      |                      | 26.1           | 35           |
| 120-82-1                           | 34551     | 1,2,4-Trichlorobenzene      | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 88-06-2                            | 34621     | 2,4,6-Trichlorophenol       | ND                    | 600                     |                      | ND                    | 630                     |                      |                | 35           |
|                                    |           | Total PAH                   | 755                   |                         |                      | 573                   |                         |                      | 27.4           | 35           |
| <b>Hazardous Substances</b>        |           |                             |                       |                         |                      |                       |                         |                      |                |              |
| 65-53-3                            | 77089     | Aniline                     | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 65-85-0                            | 77247     | Benzoic Acid                | 150                   | 740                     | L                    | 70                    | 780                     | L                    | NA             | 35           |
| 100-51-6                           | 77147     | Benzyl Alcohol              | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 106-47-8                           |           | 4-Chloroaniline             | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 132-64-9                           | 81302     | Dibenzofuran                | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 91-57-6                            |           | 2-Methylnaphthalene         | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 95-48-7                            |           | 2-Methylphenol              | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 106-44-5                           |           | 4-Methylphenol              | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |
| 88-74-4                            |           | 2-Nitroaniline              | ND                    | 740                     |                      | ND                    | 780                     |                      |                | 35           |
| 99-09-2                            |           | 3-Nitroaniline              | ND                    | 740                     |                      | ND                    | 780                     |                      |                | 35           |
| 100-01-6                           |           | 4-Nitroaniline              | ND                    | 740                     |                      | ND                    | 780                     |                      |                | 35           |
| 95-95-4                            | 34621     | 2,4,5-Trichlorophenol       | ND                    | 740                     |                      | ND                    | 780                     |                      |                | 35           |
| <b>Other Compounds Quantitated</b> |           |                             |                       |                         |                      |                       |                         |                      |                |              |
|                                    |           | Diphenylhydrazine           | ND                    | 300                     |                      | ND                    | 320                     |                      |                | 35           |

## CRWA03

## PCBs &amp; Pesticides (duplicate data)

| CAS NO    | STORET NO | Compound              | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment | Field Duplicate data  |                         |                      | Actual RPD (%) | Goal RPD (%) |
|-----------|-----------|-----------------------|-----------------------|-------------------------|----------------------|-----------------------|-------------------------|----------------------|----------------|--------------|
|           |           |                       |                       |                         |                      | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment |                |              |
| 309-00-2  | 39330     | Aldrin                | ND                    | 1                       |                      | ND                    | 1                       |                      |                | 35           |
| 319-84-6  | 39337     | alpha-BHC             | ND                    | 1                       |                      | ND                    | 1                       |                      |                | 35           |
| 319-85-7  | 39338     | beta-BHC              | ND                    | 1                       |                      | ND                    | 1                       |                      |                | 35           |
| 319-86-8  | 34259     | delta-BHC             | ND                    | 1                       |                      | ND                    | 1                       |                      |                | 35           |
| 58-89-9   | 39340     | gamma-BHC             | ND                    | 1                       |                      | ND                    | 1                       |                      |                | 35           |
| 5103-71-9 | ---       | Alpha Chlordane       | 1.2                   | 1                       |                      | 1.2                   | 1                       |                      | 0.0            | 35           |
| 5103-74-2 | ---       | gamma Chlordane       | ND                    | 1                       |                      | ND                    | 1                       |                      |                | 35           |
| 57-74-9   | 39350     | Chlordane (technical) | ND                    | 100                     |                      | ND                    | 100                     |                      |                | 35           |
| 72-54-8   | 39310     | 4,4'-DDD              | 3.9                   | 1                       |                      | 4                     | 1                       |                      | 2.5            | 35           |
| 72-55-9   | 39320     | 4,4'-DDE              | 4.2                   | 1                       |                      | 4.2                   | 1                       |                      | 0.0            | 35           |
| 50-29-3   | 39300     | 4,4'-DDT              | ND                    | 1                       |                      | ND                    | 1                       |                      |                | 35           |
| 60-57-1   | 39380     | Dieldrin              | ND                    | 1                       |                      | ND                    | 1                       |                      |                | 35           |
| 959-98-8  | 34361     | Endosulfan I          | ND                    | 1                       |                      | ND                    | 1                       |                      |                | 35           |
| 33212-65- | 34356     | Endosulfan II         | ND                    | 1                       |                      | ND                    | 1                       |                      |                | 35           |
| 1031-078  | 34351     | Endosulfan sulfate    | ND                    | 1                       |                      | ND                    | 1                       |                      |                | 35           |
| 72-20-8   | 39390     | Endrin                | ND                    | 1                       |                      | ND                    | 1                       |                      |                | 35           |
| 7421-93-4 | 34366     | Endrin aldehyde       | ND                    | 1                       |                      | ND                    | 1                       |                      |                | 35           |
| 53494-70- | ---       | Endrin ketone         | ND                    | 1                       |                      | ND                    | 1                       |                      |                | 35           |
| 76-44-8   | 39410     | Heptachlor            | ND                    | 1                       |                      | ND                    | 1                       |                      |                | 35           |
| 1024-57-3 | 39420     | Heptachlor epoxide    | ND                    | 1                       |                      | ND                    | 1                       |                      |                | 35           |
| 72-43-5   | ---       | Methoxychlor          | ND                    | 1                       |                      | ND                    | 1                       |                      |                | 35           |
| 8001-35-2 | 39400     | Toxaphene             | ND                    | 100                     |                      | ND                    | 100                     |                      |                | 35           |
| 12674-11- | 34671     | Aroclor-1016          | ND                    | 30                      |                      | ND                    | 30                      |                      |                | 35           |
| 11104-28- | 39488     | Aroclor-1221          | ND                    | 30                      |                      | ND                    | 30                      |                      |                | 35           |
| 11141-16- | 39492     | Aroclor-1232          | ND                    | 30                      |                      | ND                    | 30                      |                      |                | 35           |
| 53469-21- | 39496     | Aroclor-1242          | ND                    | 30                      |                      | ND                    | 30                      |                      |                | 35           |
| 12672-29- | 39500     | Aroclor-1248          | ND                    | 30                      |                      | ND                    | 30                      |                      |                | 35           |
| 11097-69- | 39504     | Aroclor-1254          | ND                    | 30                      |                      | ND                    | 30                      |                      |                | 35           |
| 11096-82- | 39508     | Aroclor-1260          | ND                    | 30                      |                      | ND                    | 30                      |                      |                | 35           |
| 11100-14- | 81649     | Aroclor-1262          | ND                    | 30                      |                      | ND                    | 30                      |                      |                | 35           |
| 37324-23- | 81650     | Aroclor-1268          | ND                    | 30                      |                      | ND                    | 30                      |                      |                | 35           |

## CRWA06

## PCBs &amp; Pesticides (duplicate data)

| CAS NO    | STORET NO | Compound              | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment | Field Duplicate       |                         |                      | Actual RPD (%) | Goal RPD (%) |
|-----------|-----------|-----------------------|-----------------------|-------------------------|----------------------|-----------------------|-------------------------|----------------------|----------------|--------------|
|           |           |                       |                       |                         |                      | Sample Result (ug/Kg) | Reporting limit (ug/Kg) | Qualifier or comment |                |              |
| 309-00-2  | 39330     | Aldrin                | ND                    | 2                       |                      | ND                    | 2                       |                      |                | 25           |
| 319-84-6  | 39337     | alpha-BHC             | ND                    | 2                       |                      | ND                    | 2                       |                      |                | 25           |
| 319-85-7  | 39338     | beta-BHC              | ND                    | 2                       |                      | ND                    | 2                       |                      |                | 25           |
| 319-86-8  | 34259     | delta-BHC             | ND                    | 2                       |                      | ND                    | 2                       |                      |                | 25           |
| 58-89-9   | 39340     | gamma-BHC             | ND                    | 2                       |                      | ND                    | 2                       |                      |                | 25           |
| 5103-71-9 | ---       | Alpha Chlordane       | 4.3                   | 2                       |                      | 4.6                   | 2                       |                      | 6.7            | 25           |
| 5103-74-2 | ---       | gamma Chlordane       | 2.5                   | 2                       | P                    | 3.1                   | 2                       | P                    | 21.4           | 25           |
| 57-74-9   | 39350     | Chlordane (technical) | ND                    | 200                     |                      | ND                    | 200                     |                      |                | 25           |
| 72-54-8   | 39310     | 4,4'-DDD              | 12                    | 2                       |                      | 14                    | 2                       |                      | 15.4           | 25           |
| 72-55-9   | 39320     | 4,4'-DDE              | 11                    | 2                       |                      | 10                    | 2                       |                      | 9.5            | 25           |
| 50-29-3   | 39300     | 4,4'-DDT              | ND                    | 2                       |                      | ND                    | 2                       |                      |                | 25           |
| 60-57-1   | 39380     | Dieldrin              | ND                    | 2                       |                      | ND                    | 2                       |                      |                | 25           |
| 959-98-8  | 34361     | Endosulfan I          | ND                    | 2                       |                      | ND                    | 2                       |                      |                | 25           |
| 33212-65- | 34356     | Endosulfan II         | ND                    | 2                       |                      | ND                    | 2                       |                      |                | 25           |
| 1031-078  | 34351     | Endosulfan sulfate    | ND                    | 2                       |                      | ND                    | 2                       |                      |                | 25           |
| 72-20-8   | 39390     | Endrin                | ND                    | 2                       |                      | ND                    | 2                       |                      |                | 25           |
| 7421-93-4 | 34366     | Endrin aldehyde       | ND                    | 2                       |                      | ND                    | 2                       |                      |                | 25           |
| 53494-70- | ---       | Endrin ketone         | ND                    | 2                       |                      | ND                    | 2                       |                      |                | 25           |
| 76-44-8   | 39410     | Heptachlor            | ND                    | 2                       |                      | ND                    | 2                       |                      |                | 25           |
| 1024-57-3 | 39420     | Heptachlor epoxide    | ND                    | 2                       |                      | ND                    | 2                       |                      |                | 25           |
| 72-43-5   | ---       | Methoxychlor          | ND                    | 2                       |                      | ND                    | 2                       |                      |                | 25           |
| 8001-35-2 | 39400     | Toxaphene             | ND                    | 200                     |                      | ND                    | 200                     |                      |                | 25           |
| 12674-11- | 34671     | Aroclor-1016          | ND                    | 40                      |                      | ND                    | 40                      |                      |                | 25           |
| 11104-28- | 39488     | Aroclor-1221          | ND                    | 40                      |                      | ND                    | 40                      |                      |                | 25           |
| 11141-16- | 39492     | Aroclor-1232          | ND                    | 40                      |                      | ND                    | 40                      |                      |                | 25           |
| 53469-21- | 39496     | Aroclor-1242          | ND                    | 40                      |                      | ND                    | 40                      |                      |                | 25           |
| 12672-29- | 39500     | Aroclor-1248          | ND                    | 40                      |                      | ND                    | 40                      |                      |                | 25           |
| 11097-69- | 39504     | Aroclor-1254          | ND                    | 40                      |                      | ND                    | 40                      |                      |                | 25           |
| 11096-82- | 39508     | Aroclor-1260          | ND                    | 40                      |                      | ND                    | 40                      |                      |                | 25           |
| 11100-14- | 81649     | Aroclor-1262          | ND                    | 40                      |                      | ND                    | 40                      |                      |                | 25           |
| 37324-23- | 81650     | Aroclor-1268          | ND                    | 40                      |                      | ND                    | 40                      |                      |                | 25           |

## Note:

ND = Not detected above reporting limit

P = The confirmation value exceeded 35% difference and is less than 100%. The lower value is reported.

B = Analyte is associated with lab blank contamination

L = Estimated value is below the calibration range

NA = Not applicable, because of qualifier or comment