



New York State Department of Health
Center for Environmental Health

Public Health Consultation

General Motors/Central Foundry Division - Update

TOWN OF MASSENA,
ST. LAWRENCE COUNTY, NEW YORK

September 28, 2007

CERCLIS No. NYD091972554

Prepared By:

New York State Department of Health
Center for Environmental Health
Under a Cooperative Agreement with
The U.S. Department of Health & Human Services
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Superfund and Program Assessment Branch
Atlanta, Georgia

For additional information about this document, you may contact the:

New York State Department of Health
Center for Environmental Health

547 River Street
Flanigan Square, Room 300
Troy, New York 12180-2216
1-800-458-1158, extension 2-7850
E-mail bee1@health.state.ny.us

TABLE OF CONTENTS

BACKGROUND AND STATEMENT OF ISSUES.....	1
Site Description and History	1
DISCUSSION	4
Environmental Contamination and Exposure Pathways	4
CONCLUSIONS.....	10
RECOMMENDATIONS	11
PUBLIC HEALTH ACTION PLAN	12
REFERENCES	13
PREPARERS OF REPORT	15
CERTIFICATION PAGE.....	17
APPENDIX A	
Figures	19
APPENDIX B	
Public Health Hazard Categories	23
APPENDIX C	
Summary of Public Comments and Responses	27

BACKGROUND AND STATEMENT OF ISSUES

In 1999, the federal Agency for Toxic Substances and Disease Registry (ATSDR) released a Public Health Assessment (PHA) for the General Motors (GM) - Central Foundry Division Massena Plant (ATSDR, 1999). The New York State Department of Health (NYS DOH) prepared the document under a cooperative agreement with ATSDR. The public health assessment, which is an analysis and statement of the public health implications posed by the facility, was based on information current to July 31, 1995 and published with the understanding that an update would be prepared when additional information became available. At that time, the site was identified as a public health hazard due to ongoing exposures, especially exposures to PCB contamination in fish and wildlife. Since 1995, GM, as required by the Records of Decision (RODs) (US EPA, 1990 and 1992) and Record of Decision Amendment (US EPA, 1999), completed several remedial actions. The purpose of this Health Consultation is to provide an update on site activities since 1995 and provide an assessment of exposures based on site conditions as of September 2007. Previous environmental data and public health implications were provided in the 1999 PHA, and are not repeated in this health consultation. A listing of reports providing a comprehensive summary of remedial activities conducted for this site are included in the Reference section of this report.

This public health consultation was distributed for public comment on September 26, 2006. The public comment period ended on October 26, 2006. A summary of the comments and the NYS DOH's responses are included in Appendix C.

Site Description and History

The GM Central Foundry is in the Town of Massena, St. Lawrence County, about eight miles east of the Village of Massena (Appendix A, Figure 1). The GM property is bordered on the north by the St. Lawrence River, on the south by the Raquette River, on the west by County Route 45 and on the east by the Franklin County line and the St. Regis Mohawk Indian (or Akwesasne) Reservation (Appendix A, Figure 2).

The GM plant is an aluminum casting facility built in 1959 to manufacture automobile components, including engines, transmissions and cylinder heads. From 1968 through the late 1970's, GM used hydraulic fluids containing polychlorinated biphenyls (PCBs) in its die casting machines. Operations at the facility generated PCB-containing sludge from oil reclamation. Subsequently, wastewater containing PCB-laden oil was sent to four on-site lagoons where solids were settled before wastewater was discharged into the St. Lawrence River. PCB sludge was periodically removed from the lagoons and wastewater plant for disposal into the North and East Disposal Areas and Industrial Landfill. Some PCB containing waste migrated from the property off-site, to adjacent property and waterways, through wastewater outfalls and storm water runoff. The contamination was discovered in the late 1970s through routine monitoring. This led to listing of the site on the New York State Registry of Hazardous Waste Sites and ultimately on the federal National Priority List (NPL) in 1983. The plant has used a process known as the "lost foam" casting method since the early

1980s. This process, historically, had been the source of air emissions that produced odor complaints by nearby residents. In the mid-1990s, GM installed upgraded air pollution controls to reduce these releases. Emissions have been and continue to be monitored under an air permit issued by the New York State Department of Environmental Conservation (NYS DEC) Division of Air Resources. In May 2007, GM announced plans to close the plant by the end of 2008.

GM initiated a remedial investigation (RI) under CERCLA in 1985, pursuant to an administrative order on consent, to determine the nature and extent of contamination. The RI and subsequent investigations determined that site contaminants included PCBs, phenolic compounds, polycyclic aromatic hydrocarbons, phthalates, and metals. PCBs are considered the primary site contaminant of concern (on- and off-site) because they are the most prevalent contaminant and present potential health-related concerns, which are addressed in the 1999 PHA. The off-site contamination was primarily identified as PCB-containing sediment in portions of the St. Lawrence River and in Turtle Cove. Turtle Cove is an embayment on the St. Lawrence River near the St. Lawrence and Franklin County boundary line, which separates the GM facility from the Akwesasne reservation of the St. Regis Mohawk Tribe (SRMT). In addition, PCBs were identified in the sediment and soils associated with a portion of the Raquette River to the south of the GM facility and Akwesasne reservation, as well as in soil on the Akwesasne Reservation known as the Mohawk Uplands. Based on the information presented in the RI, a feasibility study (FS) presenting remedial alternatives analysis was completed by GM and submitted to the US EPA for review in 1989.

To facilitate remedial activities, the site was split into two operable units. Operable Unit 1 (OU-1) includes all on-and off-site areas except for the on-site Industrial Landfill and East Disposal Area. A proposed remedial action plan for OU-1 was prepared by US EPA in March of 1990 and the ROD was signed in December of 1990. In 1992, the US EPA issued an Explanation of Significant Differences (ESD), allowing for consideration of additional data in re-evaluating the OU-1 remedy treatment requirements and PCB cleanup levels. Additionally, in 1999, the US EPA modified its 1990 ROD for OU-1 to allow off-site disposal rather than on-site treatment of material contaminated with PCBs above 10 milligrams per kilogram (mg/kg) from a specific subset of remedial activities. In 2000, a second ESD for OU-1 was issued, allowing excavated material from the 1.5 million-gallon and 350,000 gallon lagoons to be solidified prior to shipping off-site. There were no changes to the remedial cleanup goals associated with either the ROD modification or ESD. The second operable unit (OU-2) includes the Industrial Landfill and the East Disposal Area. A ROD was issued in March 1992 for Operable Unit 2 (OU-2). The Remedial Action Plan for OU-2 has not yet been finalized. Following issuance of the proposed plan for each operable unit, public meetings were conducted and public comments were addressed in the Responsiveness Summary of each ROD.

Complete summaries of site history and remedial activities are presented in the site Remedial Investigation reports, 1999 PHA, and the Five-Year Review Report (US EPA, 2005). These documents are available for review at the document repositories at the SRMT Environmental Division and USEPA Region 2 offices.

Although the RODs have not been fully implemented, GM has completed considerable remedial work since the 1990s. All remedial activities associated with the RODs for OU-1 and OU-2 are being conducted with daily US EPA oversight. Post-remedial sampling has been and will be conducted to confirm that cleanup objectives are met. As an update to the 1999 PHA, the following is a list of completed and on-going remedial activities from 1995 through 2007.

1. 1994-1995: Miscellaneous PCB-contaminated on-site soils were excavated and consolidated into the East Disposal Area;
2. 1995: A storm water retention basin was installed to capture surface water from the plant site and East Disposal Area;
3. 1995: The St. Lawrence River dredging project was completed. Sediments contaminated with PCBs were removed from the St. Lawrence River and placed in an on-site containment cell. Due to difficulties in dredging around river bottom boulders, a portion of the remedial area with elevated levels of PCBs was capped and armored (larger stones were placed on top of capping material to prevent erosion) to reduce contamination of river fish. GM will continue to inspect and monitor the integrity of the underwater sediment cap. Underwater video surveys are conducted every five years, with the most recent completed in 2006. Any repairs to the armored cap will be made when necessary. The approved plan for monitoring the St. Lawrence River will be incorporated into the Site Inspection, Monitoring, and Maintenance Program.
4. 1999: GM received permission from NYS DEC Division of Water to dredge the permitted 10 million-gallon lagoon as part of the routine maintenance program. Dredged materials from the lagoon and from the St. Lawrence River project were solidified and shipped off-site for disposal at a permitted facility. The lagoon is still an active part of the current wastewater treatment process and has the potential to receive wastewater containing residual PCBs (from internal pipes and valves that have previously been cleaned of PCBs);
5. 2000: Work began to excavate PCB-contaminated sludge, soils and debris from the 350,000- and 1.5 million-gallon lagoons for disposal. Refer to Item 9 below outlining completion of this remedial action.
6. 2000: GM completed a site-wide groundwater well evaluation and abandonment program.
7. 2003: The Raquette River remediation project was completed. PCB-contaminated river sediments and associated riverbank soils on the southern portion of the GM property were excavated for disposal. Cleanup goals were achieved and restoration activities were successful.
8. 2003: GM removed 5,000 cubic yards of PCB-contaminated soil from the toe of the slope north of the Industrial Landfill, adjacent to Turtle Cove. A groundwater collection system was installed along the southern face of the excavation. Refer to Item 10 below for additional information regarding this remedial action.
9. 2004: Remedial work was completed at the 350,000- and 1.5 million-gallon lagoons. Not all of the contaminated soils were removed from the area adjacent to the 350,000 million-gallon lagoon due to soil instability issues. A localized groundwater collection system was installed to monitor, collect and treat groundwater from this location. The 350,000 and

1.5 million gallon lagoons were backfilled to pre-remediation grades with imported clean material, lined and put into service to collect and hold treated process water and storm water.

10. 2004: A groundwater collection system transfer line was installed from the collection trench north of the on-site Industrial Landfill (OU-2) to GM's onsite wastewater treatment system.
11. 2005: GM completed excavation of contaminated sediment and associated soils from Turtle Cove. The 0.1 mg/kg PCB in sediment cleanup goal was met.
12. 2006: Soil sampling was conducted on the Akwesasne reservation, in the Mohawk Uplands east of the GM plant. Refer to Item 15 below outlining completion of this remedial action.
13. 2006: Eighteen new monitoring wells were installed for groundwater data assessment and hydrogeologic evaluation.
14. 2007: GM submitted a draft Site Inspection, Monitoring, and Maintenance Program for review by US EPA, NYS DEC, and NYS DOH.
15. 2007: Offsite remediation of PCB containing soils above the site-specific EPA remedial level is underway in the Mohawk Uplands. Access has not been granted to remediate one of the three properties containing contaminated soils; negotiations with the property owner are ongoing.

The 10-million gallon lagoon and a 500,000-gallon lagoon are a part of the current operational wastewater treatment system. The lagoons are routinely dredged during maintenance and excavated material is transported off-site to a permitted facility. Cleanup requirements for these lagoons will be met when the lagoons are taken out of service.

In accordance with the 1999 ROD modification, stockpiled soil from specific removal actions have been shipped off-site for disposal at a permitted hazardous waste disposal facility. Five sediment and soil stockpiles located west of the Industrial Landfill have not yet been shipped off-site. The sediment and soils originated from various site remedial activities. The stockpiles are engineered containment cells that are lined, bermed and capped.

Areas of concern that have not yet been remediated include Turtle Creek and localized areas on the Mohawk Uplands. These areas requiring additional remediation are all on the Akwesasne Reservation. Additional delineation of these areas was conducted in 2006 where property access was granted and remediation began in 2007. Remediation of the North Disposal Area, East Disposal Area, and Industrial Landfill is ongoing.

DISCUSSION

Environmental Contamination and Exposure Pathways

PCBs, which were used at the GM facility in the form of hydraulic fluids for die casting machines, are the primary contaminants of concern at the GM site. Below is a discussion of environmental contamination and exposure pathway issues that were not completely addressed in the 1999 PHA. The 1999 PHA contains more detail on *previously* identified contamination and exposure pathways than is presented below. The following information is an addendum to the 1999 PHA.

On-Site Contamination

Groundwater

PCBs have been detected in some on-site groundwater monitoring wells. The movement of groundwater beneath the site is predominantly northeast toward the St. Lawrence River and the Akwesasne Reservation. A permanent groundwater collection system was installed north of the Industrial Landfill to reduce the movement of contaminated groundwater into the St. Lawrence River. Groundwater monitoring wells were installed in this area and sampled in Fall 2006. An assessment of groundwater quality and hydrogeologic variables is underway following a second groundwater sampling event of site wells, including the 18 newly installed wells, in spring 2007. Exposure to contaminated groundwater is not expected as the water supply for the GM facility is taken from the St. Lawrence River and has been monitored yearly for PCBs. PCBs have not been detected in the raw, untreated water since 2000. The intake water is primarily used as process water; potable water is primarily from bottled water. Groundwater monitoring will continue at the site.

Surface Soil

Residual surface soil contamination is present on-site, primarily in the area of the disposal areas and the lagoons. Much of the contaminated soil on-site has been removed and/or covered by the remedial actions. Drainage controls are currently in place to reduce further migration of contaminants in soil. Due to capping of on-site soils and site access restrictions, exposures to on-site contamination are likely to be limited. At this time, an interim soil cap exists for on-site contaminated soils in the East Disposal Area and the Industrial Landfill [OU-2]. A permanent, engineered action has not been applied as future disposal of these soils under a Remedial Action Plan has not yet been finalized for this area. This area is currently fenced to restrict access.

Sediment

Removal of contaminated sediments and associated riverbank soils has been completed for the St. Lawrence and Raquette Rivers. Where cleanup levels could not be achieved in the St. Lawrence River, the area of residual contamination has been capped. The cap will continue to be inspected and monitored.

Off-Site Contamination

Groundwater

Limited exposures to contaminated drinking water may have occurred in the past where low levels of PCBs were detected in one well in one event. Resampling did not detect PCBs. However, all homes have now been connected to a public water supply that is regulated and monitored on yearly for PCBs. Additional information is available in the 1999 PHA and in the Five-Year Review Report (US EPA, 2005).

Subsequent to the 1999 PHA, NYS DOH received and reviewed copies of the monitoring data for the water intake of the SRMT municipal water supply during the dredging of the St. Lawrence River. No PCB contamination was found above the reporting detection limit of 0.05 micrograms per liter (mcg/l), which is well below the US EPA and New York State maximum contaminant level of 0.5 mcg/l for drinking water.

Surface Soil

Areas of off-site surface soil contamination were identified beyond the site's eastern property line on the Akwesasne Reservation. In particular, contamination is found in sediments and soils on the Mohawk Uplands and Turtle Creek. The ROD requires removal of soil on the Reservation containing greater than 1.0 mg/kg of PCBs. Potential exposure to PCB-contaminated surface soil on the Reservation may have occurred in the past from unrestricted access to contaminated soils and sediments. Exposure to PCBs in surface soil through incidental contact or ingestion of contaminated soil or by inhalation of contaminated dust particulates by individuals engaging in recreational activities may continue until remediation of the soils occurs. Actions to remove contaminated soils on residential properties on the Akwesasne Reservation began in 2007. One residential parcel has yet to provide access for remedial sampling and soil removal.

Surface Water and Sediment

PCB contamination was detected in the water and sediment of the St. Lawrence River, Turtle Cove, and Turtle Creek. Sediment in the St. Lawrence River near the plant outfall contained up to 5,700 mg/kg of PCBs. The highest level of PCB contamination found in river water was 2.2 mcg/L. In 1995, GM completed its sediment removal effort in the St. Lawrence River. The cleanup goal could not be attained in one section of the river bottom because of difficulties in dredging around river bottom boulders. This area was subsequently capped and armored (larger stones were placed on top of capping material to prevent erosion) to reduce exposure of biota to the PCBs remaining in the river. Dredged sediment was stockpiled and disposed of off-site at a permitted facility in 1999. Sediments in Turtle Cove contained up to 4,100 mg/kg of PCBs, at one sample location, and associated bank soils contained up to 49 mg/kg of PCBs. Remediation of Turtle Cove started in the fall of 2004, with restoration of the remediated area completed in the spring of 2005. The project removed impacted sediments from the cove that had PCB concentrations greater than 0.1 mg/kg and impacted soils in the upland areas that had PCB concentrations greater than 1 mg/kg. Data from the GM Phase I and Phase II RI/FS indicate that PCBs were detected as high as 3,101 mg/kg in Turtle Creek.

Direct contact with and ingestion of PCBs while engaging in recreational use of Turtle Cove and Turtle Creek has been a potential exposure pathway in the past. Direct contact with and incidental ingestion of PCB-contaminated sediments, bank soils, and surface water along Turtle

Creek remain potential exposure pathways until remediation is completed.

Biota

New York State Fish Monitoring and Advisories

NYS DOH issues advisories on eating sportfish and game because some of these foods contain chemicals at levels that may be harmful to health. The health advisories are: (1) general advice on sportfish taken from waters in New York State; (2) advice on sportfish caught in specific New York State waterbodies; (3) advice for women, infants and children, and (4) advice on eating New York State game. The general advisory for sportfish is to eat no more than one meal (1/2 pound) per week of sportfish from any of the State's fresh waters and some marine waters at the mouth of the Hudson River (NYS DOH, 2007).

NYS DEC provides the fish and wildlife data that NYS DOH uses to derive the advisories. When reviewing fish contaminant data to derive fish advisories, NYS DOH considers the following:

- fish contaminant levels, including fish sampling characteristics (e.g. number and type of samples, species, age, length, percent lipid, sample location, etc.);
- health risks;
- populations at greater potential risk;
- U.S. Food marketplace standards;
- health benefits; and,
- risk communication issues.

Waters adjacent to the GM facility that have advisories include Turtle Cove, Turtle Creek, the entire St. Lawrence River, and the Raquette River (from its mouth on the St. Lawrence River upstream to the first barrier impassable to fish). Due to concerns regarding fish contamination with PCBs (and also Mirex and dioxin), NYS DOH advises women of childbearing age and children under the age of 15 not to eat any fish of any species from the entire St. Lawrence River and the Raquette River (from its mouth on the St. Lawrence upstream to the first barrier impassable by fish); other people are advised to avoid or restrict consumption of certain fish species from these waters. Due to elevated PCB levels, NYS DOH advises no fish, of any variety, should be consumed from Turtle Cove and Turtle Creek. Although the Raquette River and Turtle Creek advisories are not specifically listed, they are tributaries of the St. Lawrence River and NYS DOH advisories apply to listed waters and their tributaries upstream to the first barrier impassable by fish. The St. Lawrence River advisories should not be interpreted as solely restricted to the area around the GM facility in Massena. For more information about the advisories and how they are established, see "Chemicals in Sportfish and Game" (NYS DOH, 2007).

It has been several years since the St. Lawrence River and Turtle Creek Cove advisories have been changed. NYS DOH has not received any site-related fish contamination data from the NYS DEC for fish advisory review since remedial actions were implemented. (The NYS DEC has collected PCB data on whole spottail shiners collected post-remediation. However, these

samples are inappropriate for fish advisory evaluation. Samples for fish advisory evaluation should consist of important species consumed by anglers and the should be prepared as DEC standard fillets. Currently, a fish monitoring plan is being developed.)

St. Regis Mohawk Tribe Fish Advisories

Fish and wildlife contamination is of particular interest to the SRMT because these game species have traditionally been an important part of their diet. Consumption of PCB-contaminated fish and wildlife occurred in the past, may be presently occurring and may continue to occur. Consumption of local fish by community members appears to have declined over time, presumably as the result of the advisories that have been issued and other educational efforts over the last decade (ATSDR/NYS DOH, 1995; Fitzgerald et al, 1999).

The SRMT Environment Division issues a general advisory to their community members to eat no more than one meal per week of any fish. The SRMT Environment Division recently issued a specific advisory for smallmouth bass due to elevated levels of PCBs and mercury. This SRMT advisory follows the NYS DOH guidance that women of childbearing age and children should not eat smallmouth bass, and women no longer having children and men to consume a ½ pound or less per week of this fish species and should restrict consumption to one meal per month. NYS DOH and ATSDR have been working with the SRMT Environment Division to promote adherence to these advisories.

Statewide Advisories on Snapping Turtles and Waterfowl

NYS DOH also has statewide advisories regarding consumption of snapping turtles (based on PCB contamination) and wild waterfowl (based on PCB, mirex, chlordane and DDT contamination), as follows:

Snapping Turtles

Snapping turtles retain contaminants in their fat, liver, eggs, and to a lesser extent, muscle. If you choose to consume snapping turtles, you may reduce your exposure by carefully trimming away all fat and discarding the fat, liver, and eggs prior to cooking the meat or preparing soup. Women of childbearing age, infants, and children under the age of 15 should avoid eating snapping turtles or soups made with their meat (NYS DOH, 2007).

Wild Waterfowl

Mergansers (a diving duck species) are the most heavily contaminated waterfowl species and should not be eaten. Eat no more than two meals per month of other wild waterfowl: you should skin them and remove all fat before cooking, and discard stuffing after cooking. Wood ducks and Canada geese are less contaminated than other wild waterfowl species and diving ducks are more contaminated than dabbling ducks (NYS DOH, 2007).

Air

PCBs in air were not fully evaluated during the RI. Since PCBs have a low volatility (do not easily evaporate), air emissions were not considered a primary route of exposure. However, fugitive airborne dust from remedial construction activities may pose inhalation concerns. As such, during construction activities, as a part of the community air monitoring plan (CAMP), air is routinely monitored for PCBs.

Historic ambient air monitoring data collected during remedial activities detected levels above the background range for rural continental areas (0.0002 micrograms per cubic meter (mcg/m^3) – 0.0015 mcg/m^3) (ATSDR, 2000). Air monitoring will continue whenever remedial construction activities occur related to contamination from the GM facility, as required in the ROD.

Monitoring for PCBs in air occurred during the 2002-2003 Raquette River remediation project. A total of 251 air samples from four air monitoring stations near the active work zone were analyzed for PCBs using National Institute for Occupational Safety and Health (NIOSH) Method 5503. No PCBs were detected in any of the 251 air samples above 1 mcg/m^3 , which is the NIOSH recommended guideline for worker safety. In addition, 38 air samples were collected from two off-site air monitoring stations using a high volume air collection method and analyzed for PCBs using US EPA Method TO-4. The monitoring stations were located near the closest potential off-site residences, east and west of the remediation area. PCBs were detected in three of the 38 air samples. Detected PCBs ranged from 0.0016 mcg/m^3 – 0.0035 mcg/m^3 . PCB background samples that collected from an upwind location prior to the initiation of remedial activities (0.0045 mcg/m^3 and 0.0042 mcg/m^3). All detected results were below site background levels and US EPA site-specific action levels (Evaluation Level of 0.07 mcg/m^3 and the Contingency Level of 0.11 mcg/m^3).

Air monitoring for PCBs was conducted throughout the 2004/2005 Turtle Cove remediation project. A total of 254 air samples were collected for analysis, using procedures described in US EPA Method TO-4. The monitoring stations were located between remediation areas and potential downwind receptors (residences). Before initiating remedial activities, baseline (background) ambient PCB air levels were established. Twelve background samples were collected in the vicinity of the remediation area between October 7, 2004 and October 15, 2004. Three samples were collected from one upwind location (Air-1) and nine samples were collected from three downwind locations (Air-2, Air-3 and Air-4) of remedial activities. Concentrations of PCBs in air downwind of remedial activities averaged 0.009 mcg/m^3 ; upwind air concentrations averaged 0.038 mcg/m^3 . During excavation activities, an air sample was to be collected once per day at each of the three downwind sample locations and analyzed for PCBs. PCB concentrations in these air samples ranged from non-detect to 0.227 mcg/m^3 . The downwind air concentration for PCBs during remedial activities at Turtle Cove averaged 0.0088 mcg/m^3 . A value equal to one-half of the lowest reported value, or, 0.0003 mcg/m^3 , was used for samples reported as non-detect for PCBs. Three of the air samples exceeded the US EPA site-specific Contingency Action Level of 0.11 mcg/m^3 (Air-2-46 with 0.227 mcg/m^3 ; Air-2-63 with 0.134 mcg/m^3 and Air-2-64 with 0.122 mcg/m^3). One sample exceeded the US EPA site-specific Evaluation Action level of 0.07 mcg/m^3 (Air-2-44 with 0.084 mcg/m^3). Exceedences of the site-specific action levels occurred only at Air-2, located on the north side of Turtle Cove, nearest the remedial activities. Air

monitoring stations Air-3 and Air-4 were located between the remedial activities and residential areas on the Akwesasne reservation. In all cases, following the notification of the exceedences, no immediate action was taken because the activity that was thought to have caused the exceedence had stopped.

Remedial measures taken to date should reduce overall exposures to PCBs in ambient air. The use of proper engineering controls, application of appropriate dust suppression methods, monitoring of ambient air for PCBs and implementation of a community air monitoring plan will continue during all future site-related remedial activities to monitor and minimize any potential exposures to PCBs in air. Ongoing soil remediation actions on the Akwasasne reservation include four air monitoring stations for fugitive airborne PCB-dust.

CONCLUSIONS

NYS DOH and ATSDR conclude that, although many actions have been taken that have reduced exposures to PCBs, some exposure at levels of health concern may continue to occur unless further actions are taken. The GM site in Massena remains a public health hazard because of the continuing presence of PCBs in Turtle Creek that may contribute to the PCB contamination of edible fish and wildlife. The RODs for both OU-1 and OU-2 have not been fully implemented. On- and off-site contamination remains and human exposures to PCB contamination are possible via several routes and pathways.

1. On-site sources of groundwater contamination remain. Although some source removal has been done, migration of contaminated groundwater toward the St. Lawrence River has not yet been controlled. Remedial design of a groundwater collection trench between OU-2 and the St. Lawrence River has been initiated. The groundwater collection system would control off-site discharge of contaminated groundwater. Collected groundwater would be monitored. The necessity of a groundwater collection trench remedy is currently being re-evaluated based on the ongoing assessment of groundwater quality and hydrogeologic variables. Exposure to contaminants in drinking water is not expected, as groundwater is not being used as a drinking water source. The municipal water system has been extended to serve local residents previously relying on groundwater as their potable water supply source. The intake for the public water supply is several miles downstream of the GM site. GM facility workers obtain their drinking water through company-supplied bottled water. Intake water from the St. Lawrence River is used for process water needs.
2. Most of the PCB-contaminated soil excavated during remedial activities has been shipped off-site to an approved disposal facility. The remaining soil containing low level PCBs has been excavated and consolidated on-site. The stockpiled soils are contained within engineered containment cells that are lined, bermed, capped, and inspected regularly. Interim remedial measures such as paving and capping have effectively reduced the potential for exposure to residual contaminated soils. The Remedial Action Plan for OU-2 has not been finalized.

3. Remediation of the St. Lawrence and Raquette Rivers and Turtle Cove has effectively reduced the potential for exposure to contaminated sediments and riverbank soils in these areas. However, areas downstream of the Raquette River remedial work should be considered for additional sediment sampling. Discussions between GM and the US EPA, NYS DEC, NYS DOH and SRMT continue regarding additional delineation requirements for sediments containing greater than 1.0 mg/kg along the Raquette River. Additionally, contaminated sediment and bank soil remains along Turtle Creek. Exposure to contaminated sediments and associated soils along Turtle Creek may occur during recreational use of this area. Activities to remediate the Mohawk Uplands began in 2007. Access to several private properties in this area has been obtained, and negotiations are continuing to obtain access to a final parcel in this area for delineation and remediation activities.
4. Fish and wildlife, including snapping turtles and waterfowl, may continue to be contaminated. Exposure to PCBs may occur through the ingestion of contaminated fish or wildlife. Consumption advisories remain in effect and are evaluated and updated periodically if new data become available for a specific water body. Fish and wildlife advisories were most recently issued by the NYS DOH in 2007.
5. In the past, PCBs were detected in air samples at levels slightly above the background range for rural continental areas. The average PCB air concentrations during remedial activities was less than the average background PCB air concentration of samples collected prior to remediation. Measures to control fugitive dust are an ongoing requirement of remedial work.

RECOMMENDATIONS

1. Since ongoing sources of groundwater contamination exist on-site, migration of contaminated groundwater toward the St. Lawrence River must be controlled. Remedial design of a groundwater collection trench between OU-2 and the St. Lawrence River has been initiated. The necessity of a groundwater collection trench remedy is currently being re-evaluated based on the ongoing assessment of groundwater quality and hydrogeologic variables.
2. Removal or containment of contaminated areas in OU-1 and OU-2, as defined in the RODs issued for this facility, should be completed to eliminate potential exposure to contaminants in on-site and off-site soils.
3. PCB-contaminated sediment and soil in off-site areas not yet remediated should be removed.
4. The current NYSDOH fish advisories should remain in effect until post-remedial sampling indicates that they can be removed or relaxed. A post-remediation fish sampling plan should be developed and executed (with NYSDOH and NYSDEC guidance and review) in order to evaluate site impacts on fish PCB levels and the

NYSDOH fish advisories. Although some remedial actions have been completed, it is our understanding that there is still an unresolved question regarding potential movement of site PCBs offsite into Turtle Creek, Turtle Cove, and the St. Lawrence River. This issue should be resolved before a fish sampling plan is devised and executed

5. Air sampling for PCBs and measures to control fugitive dust emissions during remedial activities should continue for the protection of the downwind community from potential exposures. Sample locations and collection techniques should be chosen carefully to monitor and minimize nearby residents' exposure to PCBs.

PUBLIC HEALTH ACTION PLAN

The Public Health Action Plan for the GM site describes the ongoing actions taken by ATSDR, NYS DOH, US EPA, or NYS DEC following completion of this health consultation. The purpose of the Public Health Action Plan is to ensure that this health consultation not only identifies public health hazards, but provides a plan of action designed to mitigate health hazards and prevent adverse human health effects resulting from present and/or future exposures to contaminants at or near the site. ATSDR and/or NYS DOH will ensure that this plan is implemented. The ongoing public health actions for the GM site are as follows:

1. The current NYSDOH fish advisory remains in effect. The NYSDOH fish advisory will be revised (as warranted) when appropriate fish data are made available.
2. As required by the OU-1 and OU-2 RODs, remedial actions to reduce and or eliminate PCB-contaminated media are ongoing. US EPA has provided oversight for all remedial activities, including the 2002/03 removal of contaminated sediment and associated soils from the Raquette River on the south edge of the GM property, the 2004/05 removal of contaminated sediments from Turtle Cove, and the 2007 removal of contaminated soils from the Mohawk Uplands. NYS DOH and NYS DEC will continue to work with US EPA, GM and the SRMT to facilitate implementation of the remaining ROD requirements.
3. NYS DOH, along with US EPA and NYS DEC, has reviewed and will continue to review results of air monitoring data collected in conjunction with ongoing remedial actions. Resulting information will be used to evaluate whether additional air monitoring is necessary following the completion of remedial measures at the site.
4. NYS DOH and ATSDR have coordinated efforts with the SRMT Environment Division to advise the public health professional and local medical community of the nature and

possible consequences of exposure to contaminants from the GM site. NYS DOH and ATSDR will continue to work with the SRMT Environmental Division representatives to address their health and environmental concerns.

REFERENCES

- Agency for Toxic Substances and Disease Registry (ATSDR) and the New York State Department of Health (NYS DOH), 1995. Exposure to PCBs from Hazardous Waste Among Mohawk Women and Infants at Akwesasne. U.S. Department of Health and Human Services. Atlanta, Georgia: U.S. Public Health Services. Grant #H75/ATH 290025-01
- Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Public Health Assessment for General Motors (Central Foundry Division), Massena, St. Lawrence County, New York. CERCLIS No. NYD091972554 U.S. Department of Health and Human Services. Atlanta, Georgia: U.S. Public Health Services.
- Agency for Toxic Substances and Disease Registry (ATSDR). 2000. Toxicological Profile for Polychlorinated Biphenyls. U.S. Department of Health and Human Services. Atlanta, Georgia: U.S. Public Health Services.
- BBL Environmental Services, Inc. 2006. Draft Cove Remedial Action Completion Report, General Motors Powertrain, Massena, New York
- Fitzgerald, E.F., D.A. Deres, S. Hwang, B. Bush, B. Yang, A. Tarbell, and A. Jacobs. 1999. Local Fish Consumption and Serum PCB Concentrations among Mohawk Men at Akwesasne. Environmental Research. 80: S97-S103.
- New York State Department of Health (NYSDOH). 2007. 2007-2008 Health Advisories; Chemicals in Sportfish and Game. Center for Environmental Health, Division of Environmental Health Assessment. Troy, New York. <http://www.health.state.ny.us/nysdoh/enviro/fish.htm>
- RMT, Inc. 1986. Draft Remedial Investigation Report for Remedial Investigation/Feasibility Study (Vol. I and II) at GM-CFD Massena Facility, Massena, New York.
- RMT, Inc. 1989. Draft Feasibility Study for Remedial Investigation/Feasibility Study at GM-CFD Massena Facility, Massena, New York.
- US EPA. 1990. Record of Decision. General Motors Corporation – Central Foundry Division (first operable unit) Site, Massena, St. Lawrence County, New York.
- US EPA. 1992. Record of Decision. General Motors Corporation – Central Foundry Division (second operable unit) Site, Massena, St. Lawrence County, New York.

US EPA. 1992. Explanation of Significant Differences. General Motors Corporation – Central Foundry Division Superfund Site, Massena, New York.

US EPA 1999. Record of Decision Amendment. General Motors Corporation – Central Foundry Division (first operable unit) Site, Massena, St. Lawrence County, New York.

US EPA. 2000. Explanation of Significant Differences. General Motors Corporation – Central Foundry Division Superfund Site, Massena, New York.

US EPA. 2005. Five-Year Review Report. General Motors Corporation – Central Foundry Division Superfund Site, Massena, New York.

PREPARERS OF REPORT

New York State Department of Health Bureau of Environmental Exposure Investigation

Fay S. Navratil
Public Health Specialist

John G. Sheehan
Public Health Specialist, Retired

Sharon P. McLelland
Public Health Specialist

Beth K. Guidetti
Public Health Specialist

Donald W.R. Miles
ATSDR Coordinator

Steven M. Bates
Assistant Bureau Director

Agency for Toxic Substances and Disease Registry

Arthur Block
Senior Regional Representative - Region 2
Office of Regional Operations

Gregory V. Ulirsch, Ph. D.
Technical Project Officer
Environmental Health Engineer
Superfund Site Assessment Branch
Division of Health Assessment and Consultation

Leah Escobar
Regional Representative - Region 2
Office of Regional Operations

CERTIFICATION

The Health Consultation for the General Motors/Central Foundry site was prepared by the New York State Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was initiated. Editorial review was completed by the cooperative agreement partner.



Technical Project Officer, CAT, CAPEB, DHAC

The division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this health consultation, and concurs with its findings.



Team Leader, CAT, CAPEB, DHAC, ATSDR

APPENDIX A

Figures

Figure 1. The GM Foundry study area in Massena, NY

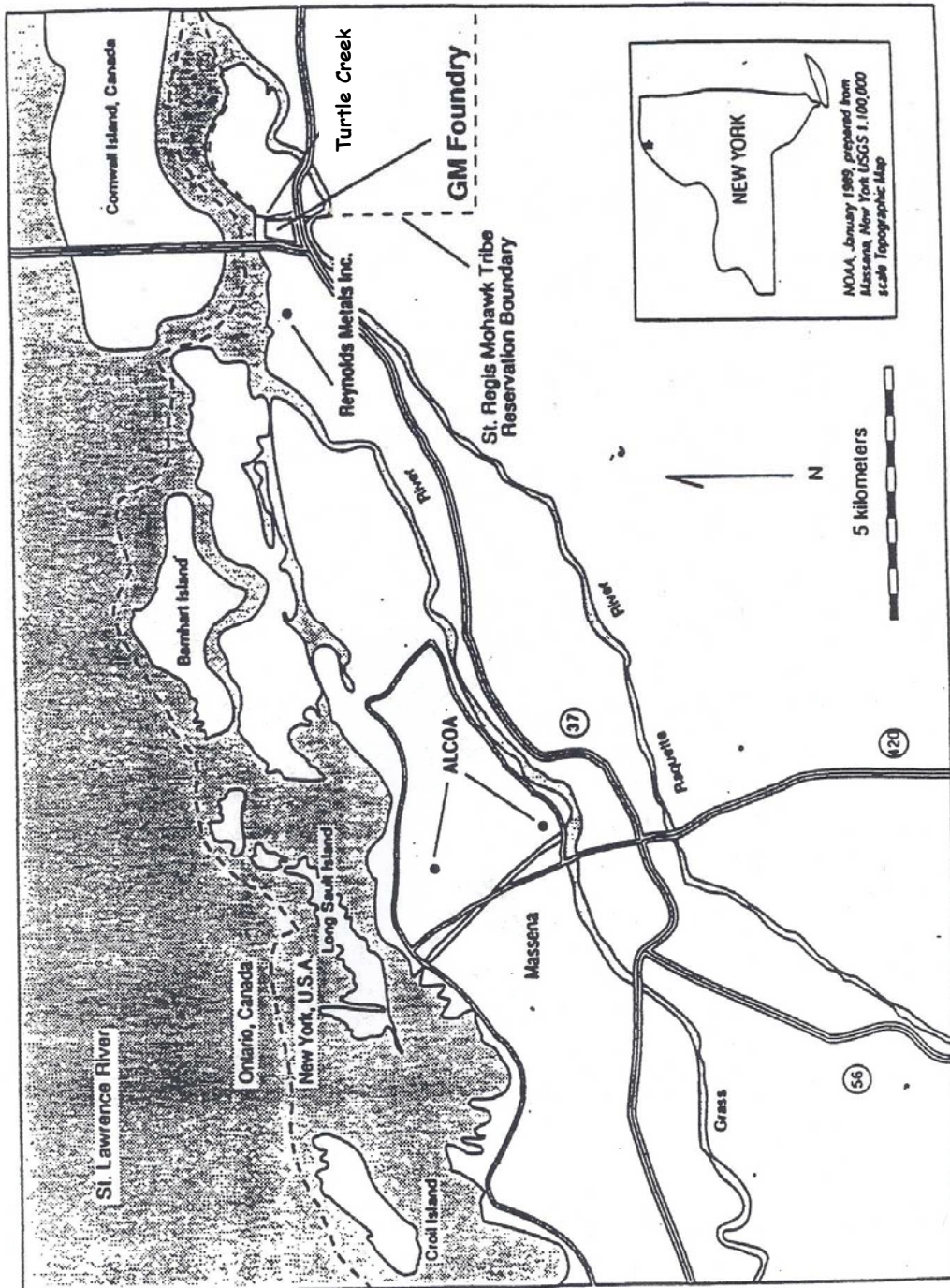
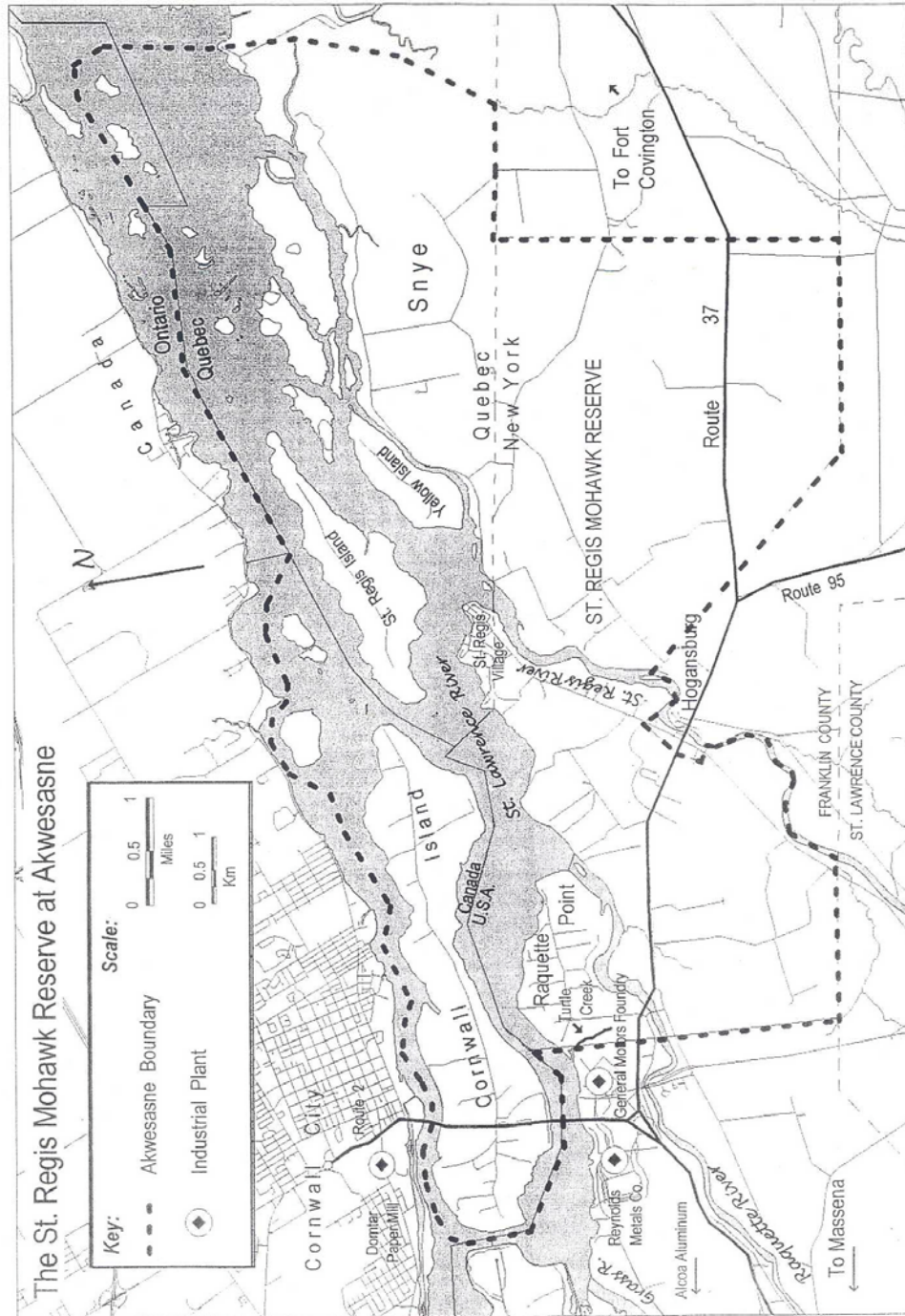


Figure 2. St. Regis Mohawk Reservation at Akwesasne



APPENDIX B
Public Health Hazard Categories

INTERIM PUBLIC HEALTH HAZARD CATEGORIES

CATEGORY / DEFINITION	DATA SUFFICIENCY	CRITERIA
A. Urgent Public Health Hazard This category is used for sites where short-term exposures (< 1 yr) to hazardous substances or conditions could result in adverse health effects that require rapid intervention.	This determination represents a professional judgement based on critical data which ATSDR has judged sufficient to support a decision. This does not necessarily imply that the available data are complete; in some cases additional data may be required to confirm or further support the decision made.	Evaluation of available relevant information* indicates that site-specific conditions or likely exposures have had, are having, or are likely to have in the future, an adverse impact on human health that requires immediate action or intervention. Such site-specific conditions or exposures may include the presence of serious physical or safety hazards.
B. Public Health Hazard This category is used for sites that pose a public health hazard due to the existence of long-term exposures (> 1 yr) to hazardous substance or conditions that could result in adverse health effects.	This determination represents a professional judgement based on critical data which ATSDR has judged sufficient to support a decision. This does not necessarily imply that the available data are complete; in some cases additional data may be required to confirm or further support the decision made.	Evaluation of available relevant information* suggests that, under site-specific conditions of exposure, long-term exposures to site-specific contaminants (including radionuclides) have had, are having, or are likely to have in the future, an adverse impact on human health that requires one or more public health interventions. Such site-specific exposures may include the presence of serious physical or safety hazards.
C. Indeterminate Public Health Hazard This category is used for sites in which “critical” data are <i>insufficient</i> with regard to extent of exposure and/or toxicologic properties at estimated exposure levels.	This determination represents a professional judgement that critical data are missing and ATSDR has judged the data are insufficient to support a decision. This does not necessarily imply all data are incomplete; but that some additional data are required to support a decision.	The health assessor must determine, using professional judgement, the “criticality” of such data and the likelihood that the data can be obtained and will be obtained in a timely manner. Where some data are available, even limited data, the health assessor is encouraged to the extent possible to select other hazard categories and to support their decision with clear narrative that explains the limits of the data and the rationale for the decision.
D. No Apparent Public Health Hazard This category is used for sites where human exposure to contaminated media may be occurring, may have occurred in the past, and/or may occur in the future, but the exposure is not expected to cause any adverse health effects.	This determination represents a professional judgement based on critical data which ATSDR considers sufficient to support a decision. This does not necessarily imply that the available data are complete; in some cases additional data may be required to confirm or further support the decision made.	Evaluation of available relevant information* indicates that, under site-specific conditions of exposure, exposures to site-specific contaminants in the past, present, or future are not likely to result in any adverse impact on human health.
E: No Public Health Hazard This category is used for sites that, because of the absence of exposure, do NOT pose a public health hazard.	Sufficient evidence indicates that no human exposures to contaminated media have occurred, none are now occurring, and none are likely to occur in the future	

*Such as environmental and demographic data; health outcome data; exposure data; community health concerns information; toxicologic, medical, and epidemiologic data; monitoring and management plans.

APPENDIX C
Summary of Public Comments and Responses

Summary of Public Comments and Responses

This summary was prepared to address comments and questions on the public comment draft of the General Motors/Central Foundry Division - Update. The public was invited to review the draft during the public comment period, which ran from September 26th 2006 to October 26th 2006. Some statements were reworded for clarity. If you have any questions about this summary, you can contact the New York State Department of Health's (NYS DOH) project manager for the site at the toll-free number: 1-800-458-1158, extension 27870.

General Comments: The Draft Public Health Consultation (PHC document) makes no reference to the Five-Year Review Report for the site prepared by US EPA in July 2005. This document provides a much more precise summary of actions completed and remaining work to be performed at the site and should be included in the list of references to the report.

Because the final PHC document will become a public record, NYS DOH should make every effort to provide an accurate summary of site information, including generalizations of activities both past and present. Much of the information presented in the report is incomplete or misleading.

Response to General Comments: The Five-Year Review will be included as a reference. NYS DOH has revised the summary of site information based on available references and according to Responses to Comments #1 through 14 below.

Comment #1: The Background and Statement of Issues, first paragraph on page 1, discusses USEPA's Records of Decision (1990 and 1992) and Records of Decision Amendment (1999). There is no mention of USEPA's issuance of Explanation of Significant Differences documents also released for the site in March 1992 and April 2000. These documents are considered by USEPA as significant and should be discussed in the text.

Response #1: Discussion of the March 1992 and April 2000 Explanation of Significant Differences documents was included in the Background and Statement of Issues section of the text. The documents were included in the list of references.

Comment #2: The Background and Statement of Issues section under Site Description & History, first paragraph on page 1, states:

"The GM plant is an aluminum casting facility built in 1959 to manufacture automobile components, including engines, transmissions and cylinder heads. The process used at the plant is known as the "lost foam" casting method; a process that historically had been the source of air emissions that had produced odor complaints by nearby residents."

These statements mischaracterize the nature of the historical operations that led to the site listing and ongoing remedial program. The historical site operations involved large die-cast metal forming. The current manufacturing process, the lost foam process, was not

introduced at the facility until the early 1980's. The text should be clarified regarding the types of manufacturing operations and the timeframe in which they were used at this facility.

In addition, the mention of odor complaints in this section is not appropriate. The styrene odor issue is not mentioned anywhere else in the PHC document and was not assessed in any way in the 1999 PHA or in this PHC document. Unless the NYSDOH intends to provide detailed information regarding the public health issues related to this issue, the discussion regarding odor complaints should be omitted.

Response #2: The issue of styrene is no longer a potential exposure issue as the operations were modified years ago and emissions are monitored under an air permit by the NYSDEC. The styrene odors were a minor issue that has been addressed by General Motors and the regulators and no longer present a potential health concern. It is a *historical* issue that had been the subject of odor complaints by residents, thus it is mentioned solely in the site background component of this document. It is not addressed as a contaminant of concern in the 1999 Public Health Assessment or the 2006 Public Health Consultation. No modification was considered necessary.

The timeframe of the use of the "lost foam" technique is specified as occurring in the 1980s and that the system was upgraded for pollution controls in the 1990s. This language was not modified.

Comment #3: The Background and Statement of Issues section under Site Description & History, first paragraph on page 1, states:

"Subsequently, wastewater containing PCB-laden oil was sent to four on-site lagoons where solids were settled before wastewater was discharged into the St. Lawrence River. PCB sludge was periodically removed from the lagoons and wastewater plant for disposal into the North and East Disposal Areas and Industrial Landfill."

This summary presents an inaccurate description of historical site operations. There were numerous changes to the GM wastewater treatment system throughout the facility's history including closure of certain lagoons, treatment buildings, and structures, as well as the construction of various lagoons and treatment facilities. The complete history of operations is presented in the remedial investigation reports for the site and in subsequent design documents submitted to USEPA as part of the remedial program. The text in this section of the report should be revised to reflect an accurate summary of past site activities.

Response #3: The statement is accurate as presented. A reference to the Remedial Investigation Reports, including the Five-Year Summary Report will be made for additional site history and completed remedial activities.

Comment #4: In the Background and Statement of Issues section under Site Description &

History, first paragraph on page 1, it is stated that:

“The contamination was discovered in the late 1970s through routine monitoring.”

This statement is also incorrect. General Motors initiated discussions with both NYSDEC and USEPA in 1980 to inform the government agencies of the presence of PCB contamination at the GM facility and to begin the process of addressing the issues associated with the site contamination. The text should be revised to accurately reflect the program’s history.

Response #4: The NYS DOH historical files indicate that the presence of PCBs in the tributaries and cove in the area of the General Motors and Reynolds Metals facilities was determined through fish and turtle sampling by NYSDEC Wildlife Pathologist Ward Stone in the 1970’s. These data led to the subsequent listing of both facilities. Discussions between NYS DEC, NYS DOH, US EPA and GM were initiated in the early 1980s for remedial investigation of potential PCB releases.

Comment #5: The Background and Statement of Issues section under Site Description & History, second paragraph on page 1, states:

“GM initiated a remedial investigation (RI) in 1985,”

GM began remedial investigation and other actions to address PCB contamination at the site in 1980 as part of the discussions GM initiated with the government agencies. The remedial investigation in 1985 was the first work performed under the CERCLA program, but significant activities had been underway prior to then, including information and plans presented to NYSDEC as early as 1980. The text in this section should be revised to accordingly.

Response #5: This sentence was modified to specify the CERCLA remedial investigation was initiated in 1985.

Comment #6: The Background and Statement of Issues section under Site Description & History, second paragraph on page 1 and top of page 2, states:

“The off-site contamination was primarily identified as PCB-containing sediment in the St. Lawrence River and in Akwesasne at Turtle Cove.”

The text incorrectly states that Turtle Cove is in Akwesasne. The referenced cove is entirely in St. Lawrence County which is not part of the St. Regis Mohawk Indian Reservation. The report should refer to the cove as an embayment on the St. Lawrence River near the St. Lawrence and Franklin County boundary line.

Response #6: The language was clarified to indicate Turtle Cove is an embayment on the St. Lawrence River near the St. Lawrence and Franklin County boundary line.

Comment #7: The Background and Statement of Issues section under Site Description & History, first full paragraph on page 2, states:

“To facilitate remedial activities, the site was split into two operable units. The first operable unit (OU-1) includes all on and off-site areas except for the on-site Industrial Landfill and the East Disposal Areas. A proposed remedial action plan for OU-1 was prepared by US EPA in March of 1990 and a ROD was signed in December 1990. A ROD was issued in March 1992 for operable unit 2 (OU-2), which includes the Industrial Landfill and East Disposal Area.”

The proposed plan issued by USEPA in March 1990 addressed the entire site, including the Industrial landfill and East Disposal Area. In August of 1990 USEPA issued new national PCB guidance related to remediation of wastes containing PCBs. After receipt of public comment, USEPA decided to withhold making a decision regarding remedial action for the Industrial Landfill and East Disposal Area in order to more fully consider the newly released PCB guidance. The site was then divided into operable units and a ROD for operable unit 1 was issued in December 1990. A second record of decision for operable unit 2 was issued by USEPA in March 1992. In addition, USEPA also released in March 1992 an Explanation of Significant Differences which acknowledged the USEPA would consider additional data to reevaluate the OU-1 remedy including the treatment requirements and PCB cleanup levels.

Response #7: Additional language was added to clarify the status of OU-1 and OU-2 and the issuance of Explanation of Significant Differences statements by the USEPA regarding treatment requirements and PCB cleanup levels.

Comment #8: The Background and Statement of Issues section under Site Description & History, middle of first complete paragraph on page 2, states:

“The modifications allowed for the excavation and off-site disposal of contaminated material rather than on-site treatment.”

This sentence should more accurately read: “The modifications allowed for the excavation and off-site disposal rather than on-site treatment of materials from a specific subset of remedial activities.”

Response #8: The sentence was modified to indicate that the modifications applied to a specific subset of remedial activities.

Comment #9: The Background and Statement of Issues section under Site Description & History, top of page 3, item 4, states:

“1999: ROD modification allows for off-site disposal, rather than on-site treatment, of material that is contaminated with PCBs above 10 milligrams per kilogram (mg/kg).”

This sentence should more accurately read: “1999: ROD modification issued by USEPA to allow for off-site disposal, rather than on-site treatment, of material contaminated with PCBs above 10 milligrams per kilogram (mg/kg) from certain remedial actions.”

Response #9: This sentence was determined to be redundant and was therefore removed from the document.

Comment #10: The Background and Statement of Issues section under Site Description & History, page 3, item 6, states:

“2000: Work begins to excavate PCB-contaminated sludge, soils and debris from the 350,000 and the 1.5 million-gallon lagoons for disposal. Cleanup goals have not yet been achieved because of difficulties in excavating around underground utilities. Additional work to address this residual contamination is planned”.

A reference to item 10 should be added such as: (see item 10 for completion of additional work.)

Response #10: A reference to item 10 was included in the revision that also changed the verb tenses from present to past, and updated information.

Comment #11: The Background and Statement of Issues section under Site Description & History, page 3, item 9, should have the following sentence appended: “Installation of a groundwater collection trench and collection sump along the southern face of the excavation. Groundwater was initially collected manually from the trench using vacuum trucks until a permanent collection system was installed to transfer the collected water to the GM wastewater treatment system. The system continues to operate at the site”

Response #11: Information regarding the installation of the groundwater collection system was included in the item description. The groundwater collection trench is discussed in more detail in other items in this section.

Comment #12: The Background and Statement of Issues section under Site Description & History, page 3, item 10, states:

“2004: Remedial work completed at the 350,000 and 1.5 million-gallon lagoons. Not all of the contaminated soils could be removed from the area adjacent to the 350,000 million-gallon lagoon due to stability issues. A localized groundwater collection system was installed to collect and treat groundwater from this

location. The 350,000 and 1.5 million gallon lagoons were backfilled, lined and put into service to collect and hold storm water”.

This item should read: “2004: Remedial work completed at the 350,000 and 1.5 million-gallon lagoons. Not all of the contaminated soils were removed from active areas due to soil instability issues adjacent to the 350,000 gallon lagoon supporting above and below ground utilities. For potentially impacted groundwater and lagoon maintenance, a localized groundwater collection system was installed to monitor, collect and treat groundwater from this location. The 350,000 and 1.5 million gallon lagoons were backfilled to near pre-remediation grades with imported clean material, lined and put into service to collect and hold treated process water and storm water respectively.”

Response #12: Clarification was made regarding the instability of the soil preventing removal of all contaminated soils, and the lagoons were backfilled to pre-remediation grades with imported clean fill. Language was also added to clarify that the lagoons collect and hold treated process water and storm water.

Comment #13: The Background and Statement of Issues section under Site Description & History, page 3, item 11, states:

“2004: Work began to install a groundwater collection system transfer line from the north side of the on-site landfill to the wastewater treatment system”.

This sentence should read: “2004: A groundwater collection pump and transfer pipeline from the collection trench north of the Industrial Landfill to the GM wastewater treatment system was installed as part of the Soils Northeast of the Industrial Landfill project initiated in 2003.”

Response #13: Clarification was made in describing the trench relative to the Industrial landfill and the wastewater treatment system. The sentence was revised to indicate that the installation was completed in 2004.

Comment #14: In the Background and Statement of Issues section under Site Description & History, paragraph at top of page 4, last two sentences state:

“There are five sediment stockpiles from the recent Turtle Cove remediation project which have not been shipped off-site. Areas of concern that have not yet been remediated include the unnamed tributary (also known as Turtle Cove Creek) which flows into Turtle Cove and localized areas on Raquette Point. These areas are all on the Akwesasne Reservation.”

This should read: “There are five stockpiles of soil and sediments from remediation projects that have not been shipped off-site. The stockpiled materials were placed over a bottom liner and are covered. Any residual water that drains from the stockpiles is collected and treated at the GM wastewater treatment plant. Areas of concern that have not yet been remediated

include an unnamed tributary which flows into the embayment on the St. Lawrence River at the northeast corner of the site and upland soils on the St. Regis Mohawk Reservation immediately to the east of the GM facility. Additional delineation of these areas was performed in 2006 where property access was granted and remediation is planned in 2007.”

Response #14: Several comments were received addressing the soil stockpiles. Language in this paragraph was clarified to specify the stockpiles are within engineered containment cells that are lined, bermed and capped. It was also clarified that additional delineation occurred in 2006 and remedial actions are anticipated in 2007.

Comment #15: In the Discussion section under Environmental Contamination and Exposure Pathways, Off-Site Contamination, Surface Water & Sediment, on page 5 states:

“PCBs were detected in some on-site groundwater monitoring wells. The movement of groundwater beneath the site is predominantly northeast towards the St. Lawrence River and the Akwesasne Reservation. An area north of the Industrial Landfill has been excavated in preparation for the installation of a permanent groundwater collection system that will reduce the movement of contaminated groundwater into the St. Lawrence River. Historic groundwater data may be found in Table 2 of the 1999 PHA. Exposure to contaminated groundwater is not expected as the water supply for the site is taken from the St. Lawrence River and has been monitored yearly for PCBs. In addition, bottled water is used for most drinking water purposes.”

The discussion of on-site groundwater conditions is not reflective of current site conditions, does not take into account groundwater sampling performed since the 1999 PHA was issued or the remedial actions implemented at the site. The following information provides a current assessment of on-site groundwater conditions and should be considered for incorporation into the text in this section.

PCBs have been detected consistently in only five monitoring wells at the site. Four of these wells (MW-16A, MW-16B, MW-304, and MW-306) are/were located immediately north of the Industrial Landfill in an area where GM performed soil excavation in 2004. The fifth well (MW-22B) was located immediately adjacent to an on site lagoon that collected oily wastewater and has since been abandoned to allow for contaminated soils to be removed from that area. There have been sporadic detections of PCBs at other wells on-site including background wells upgradient of the site. Many of these sample detections were not confirmed in repeated sampling and therefore are not representative of groundwater quality. The five wells with consistent detections were drilled through waste material and the presence of PCBs in samples from these wells may be attributed to particulate contamination from these soils or the presence of PCB containing oil in the groundwater sample. A comprehensive program to characterize on-site groundwater quality at the site is currently underway and will be completed after a second round of sampling is performed in 2007. Groundwater collection and treatment is currently in place and operating both north of the Industrial Landfill and beneath the restored lagoon – areas where these five wells are located.

Response #15: New information regarding groundwater quality and monitoring programs for groundwater, as well as changes with drinking water resources, has been obtained since the public health consultation was originally written. These changes clarify that groundwater is not used as a drinking water resource at this site, and that PCBs have not been detected in the surface water intake, used as a potential potable water source, since 2000. The comment references “Off-Site Contamination, Surface Water & Sediment” but for clarification, the referred passage is from the “On-Site Contamination, Groundwater” section, page 5.

Comment #16: The Discussion section under Environmental Contamination and Exposure Pathways, Off-Site Contamination, Surface Water & Sediment, on page 5, states:

“Data from the GM Phase I and Phase II RI/FS indicate that PCBs were detected as high as 3,101 mg/kg in the Turtle Cove/unnamed tributary.”

Based on our review of the RI/FS reports for the site, the sentence should be corrected to read: “Data from the GM Phase I and Phase II RI/FS indicate that PCBs were detected as high as 9.0 mg/kg in the unnamed tributary.”

Response #16: The RI/FS report lists a sample from the unnamed tributary to Turtle Cove as containing up to 3,101 mg/kg PCBs. This paragraph was modified to clarify the sample was obtained from Turtle Creek and not from Turtle Cove.

Comment #17: The Discussion section under Environmental Contamination and Exposure Pathways, Off-Site Contamination, Surface Water & Sediment, on page 6, states:

“Direct contact with and ingestion of PCBs while swimming or wading in Turtle Cove or the unnamed tributary has occurred in the past.”

What is the NYSDOH’s basis for this statement? Does the NYS DOH have any reliable direct evidence of contact or ingestion of PCBs by individuals swimming and wading in these areas? If not, the sentence should be deleted.

Response #17: The language in this paragraph was clarified to indicate the potential existed for direct contact and/or ingestion exposure routes from recreational activities at Turtle Cove and/or Turtle Creek.

Comment #18: In the Off-Site Contamination Section, Biota, on page 6, fish consumption advice is provided for the general public and children under 15 and women of child-bearing age as presented in NYS DOH (2006). However, the advice for children under 15 and women of child-bearing age implies that the “do not eat” advisory is specific to only the St. Lawrence River and the Raquette River, when in fact; the same advice is provided for all water bodies listed in NYS DOH (2006). This should be clarified in the PHC document.

Response #18: The language in this section was clarified so that readers are aware that the

fish advisories pertain to the entire St. Lawrence River and are not specific only to the waters in the immediate vicinity of General Motors.

Comment #19: In the Off-Site Contamination Section, Biota, on page 6, the discussion regarding current waterbodies that contain fish with elevated levels of PCBs is vague and without reference to data sources. The text seems to be making conclusions about fish concentrations based on the presence of fish consumption advisories. For instance, the report seems to indicate that fish with elevated PCBs are present up to the first impassable barrier of the Raquette River. What data does NYS DOH have to support this claim? Is there data that the NYS DOH has obtained since the remedial actions have been implemented at the site?

Other than the site specific advisory related to the embayment on the St. Lawrence River at the St. Lawrence and Franklin County line (an area that was remediated in 2004 and 2005), the fish consumption advisory applies to the entire St. Lawrence River and is not specific to the GM site. The text should be clarified on this point.

Response #19: The section was changed to clarify that the discussion is about the advisory and is not meant to refer to site-specific data on fish.

Comment #20: The text regarding consumption of snapping turtles and wild waterfowl (Page 6 and 7) is consistent with the information presented in NYS DOH (2006). Although the document briefly mentions that the advisories are statewide (in the biota section on Page 6), additional language should be added to the text pertaining to snapping turtles and wild waterfowl to clarify that the advisories for these species are not specific to just the St. Lawrence River.

Response #20: A heading was inserted to clarify that the snapping turtle and wild waterfowl advisories are statewide.

Comment #21: The Discussion section under Environmental Contamination and Exposure Pathways, Off-Site Contamination, Wild Waterfowl, page 7, states:

“Ingestion of PCB-contaminated fish and wildlife has occurred in the past, is presently occurring and may continue to occur.”

This statement is also without basis, or is at least misleading given the context of a site specific health assessment. Does the NYS DOH have reliable direct evidence that ingestion of PCB-contaminated wildlife has occurred, is occurring and may continue to occur? Does the NYS DOH have reliable direct evidence that ingestion of PCB-contaminated fish is occurring and may continue to occur? What evidence does the NYS DOH possess that indicates that PCBs currently in the fish that may be ingested are associated with the General Motors site?

Response #21: Clarifying language was added to the paragraph. However, this paragraph does not specifically state that the PCBs in the fish are associated with the General Motors site.

Comment #22: The Discussion section under Environmental Contamination and Exposure Pathways, Off-Site Contamination, Wild Waterfowl, page 7, states:

“NYS DEC routinely monitors contaminant levels in fish and game and NYS DOH issues advisories when sportfish have contaminant levels greater than federal standards.”

This use of the term ‘routinely’ is misleading. When did NYS DEC last perform sampling to monitor contaminant levels in sportfish and game in the vicinity of this site? When is the next scheduled monitoring event? What is the federal standard for PCBs in sportfish that triggers the need for consumption advisories? Does the NYS DOH have data that show that the fish concentrations in this area exceed these criteria? The text should be revised to be more specific as to how the government assesses modifications to its fish advisories.

Response #22: The statement from the document referred to in this question is not meant to be site-specific. That is, NYS DEC routinely monitors contaminant levels in fish and game, but may not do so frequently in any particular water body. The document text has been revised to adjust the concerns raised in this comment.

The fish and game advisories are important to note in this document as the population in the immediate region of the General Motors facility and St. Lawrence River have potential ingestion exposure concerns specifically related to consumption of fish, waterfowl and game in this area.

Comment #23: The Discussion section under Environmental Contamination and Exposure Pathways, Off-Site Contamination, Air, page 8, states:

“Twelve background samples were collected, including three upwind and nine downwind of the remediation area. PCB air concentrations downwind averaged 0.009 mcg/m³; upwind averaged 0.038 mcg/m³. During excavation activities, one air sample was collected per day at each of the three downwind sample locations for PCB analyses. PCB concentration in these air samples ranged from non-detect to 0.227 mcg/m³ (average of 0.0066 mcg/m³; the value of 0.0003 mcg/m³ – one-half of the lowest reported value- was used for samples that had no detection)”

Based on our review of the data included in the Remedial Action Completion Report for the Cove Area, the sentence should read: “Eleven pre-construction baseline samples were collected, including two upwind and nine downwind of the remediation area. PCB air concentrations downwind averaged 0.009 mcg/m³; upwind averaged 0.047 mcg/m³. During excavation activities, one air sample was collected per day at each of the three downwind sample locations for PCB analyses. PCB concentration in these air samples ranged from non-detect to 0.227 mcg/m³ (average of 0.0088 mcg/m³; the value of 0.0003 mcg/m³ – one-half of the lowest reported value - was used for samples that had no detection).” It appears the NYS DOH may

have unintentionally included field blank samples in their calculations and sample counts.

Response #23: The data used in making the listed calculations was revisited as requested by the commenter. It was confirmed that there were twelve sampling points analyzed in determining the upwind and downwind baseline levels. The field blank was not included. The language in this paragraph was modified to specify the locations where the baseline sampling occurred and the time period. In addition, the downwind samples collected during the remedial activities was also recalculated, with an average value of 0.0088mcg/m^3 , which is a modification from the specified 0.0066 mcg/m^3 . The data have been corrected.

Comment #24: The Conclusions section, on page 8, should note that GM has been denied access to the unnamed tributary area, preventing further sampling and remediation from being conducted.

Response #24: Access issues as they related to remedial work have been discussed in the Conclusions section, Item #3.

Comment #25: The Conclusions section, under item 1, page 8, states:

“Although some source removal has been done, migration of contaminated groundwater to the St. Lawrence River has not yet been controlled.”

Remedial actions to date have addressed all areas of consistent groundwater detections at the site. Additional sampling, which is currently underway and will be completed in 2007, will establish a final assessment of groundwater conditions at the site. The need for any additional groundwater collection will be made based on the results of this sampling program. This sentence in the text should be deleted or modified to reflect current site conditions.

Response #25: As of September 2007, contaminated groundwater continues to flow into the St. Lawrence River. A groundwater containment trench is in the remedial design process. New wells were installed and sampled in 2006-2007, as outlined in the Site Description & History section.

Comment #26: In the Conclusions section, under item 2, page 8, it should be noted that the soil stockpiles are in areas that are lined, covered, and maintained by site personnel.

Response #26: Several comments were submitted regarding the state of the stockpiles. This section has been revised to clarify the soil is stockpiled within engineered containment cells that are lined, capped and bermed.

Comment #27: The Conclusions section, under item 3, page 9, states:

“However, areas downstream of the Raquette River remedial work should be

considered for additional sediment sampling.”

What is the basis of this conclusion? Sediment sampling in the Raquette River downstream of the area subject to remedial action was performed by GM in 2005. Results from sediment samples indicated no significant increase in sediment concentrations from pre-remediation levels. The NYSDOH should explain their rationale for further sediment sampling or delete this sentence from the text. With respect to sampling at the unnamed tributary, it should again be noted in this conclusion (item 3) that GM has been denied access to perform sampling and remedial work along the bank of the unnamed tributary at Raquette Point.

Response #27: Remediation of PCB contaminated sediments along the Raquette River has been conducted; however, there have been some, thus far, only minor exceedances of PCBs downstream of the remedial activities along this river. Discussions between the governmental bodies and General Motors have occurred regarding future remedial need for this downstream area. As of September 2007, this area has not been determined to be fully remediated. The delineation sampling and remedial work along the unnamed tributary at Raquette Point, on the St. Lawrence River side of General Motors, has been addressed as modifications to this document in both the Site Description & History section and in the Conclusions section.

Comment #28: The Conclusions section, item 4, page 9, states:

“Fish and wildlife, including snapping turtles and waterfowl, continue to be contaminated.”

This conclusion does not take into consideration that significant remedial actions have been performed over the majority of off-site and on-site areas. Unless fish and wildlife sampling has been conducted post-remediation, it is inappropriate to conclude that contamination continues.

Response #28: Additional information on contamination levels in the fish, waterfowl and wildlife has not been received. It is acknowledged that significant remedial work removing elevated PCB levels from the St. Lawrence River in the area of this site has been conducted; however, it has not been demonstrated that the biota of this region no longer reflect bioaccumulated PCB levels. The text was revised to indicate that fish and wildlife may continue to be contaminated.

Comment #29: The Recommendations section, under item 1, page 9, references the need to install a groundwater interceptor trench as a critical component of the site remedy. As stated in comments 14 and 24, the need for a site-wide groundwater interceptor trench may not be necessary, given the other remedial actions that have been implemented at the site and more recent groundwater quality data. The groundwater characterization program currently underway will provide another representation of groundwater quality and will form the basis for any decisions regarding future remedial actions regarding groundwater.

Response #29: Until additional data are received demonstrating the groundwater is no longer contaminated, the remedial proposal currently accepted by the US EPA, NYS DEC, NYS DOH and the SRMT discusses a groundwater interceptor trench. This trench is currently in the design process. The text was clarified to indicate that the groundwater trench remedy is currently in the design phase, but the necessity of the collection trench remedy is currently being re-evaluated.

Comment #30: The Recommendations section, under items 2 and 3, page 9, the NYS DOH should note that GM has been denied access to address off-site soils and sediments.

Response #30: The issue relating to current off-site access approval has been addressed in this document. These recommendations remain the same. The wording was clarified to specify contaminated areas in OU-1 and OU-2.

Comment #31: In the Recommendations section, item 4, page 9, NYS DOH should make specific recommendations regarding what sampling is necessary in the cove area in order to remove the fish consumption advisory specific to that area. The other advisory, for the St. Lawrence River, covers the entire length of river from Lake Ontario to the international border, and is not associated with site specific contamination.

Response #31: As a recommendation, the wording is adequate as presented. The process for removing a fish and game consumption advisory from either a specific area of an impacted river or from the entire river, is beyond the scope of this document. For information on how NYS DOH derives fish advisories, see new text on page 8. Note that an important part of advisory evaluation is the status of source impacts, and the design of fish sampling plans to provide appropriate fish contamination data. NYS DOH routinely consults with the NYS DEC Division of Fish and Wildlife to insure that fish collections and analyses adequately represent post-remediation fish contaminant levels.

Comment #32: In the Public Health Action Plan section, under Public Health Actions Planned item 1, page 10, the discussion should be modified to specifically encourage government agencies' efforts to obtain site access in order to complete the off-site remedial actions.

Response #32: The government entities, US EPA, NYS DEC and NYS DOH, continue to work with the SRMT, also a government entity, in implementing the public health action plan to ensure public health hazards are being mitigated and adverse health effects are being prevented. Modifying the wording in this section is not considered necessary.

Comment #33: In the Public Health Action Plan section, under Public Health Actions Planned, the NYS DOH should add a specific action to determine what sampling is needed to assess whether the advisory at the cove area should remain

Response #33: It is not within the scope of this document to set a remedial requirement for

sampling delineation, which is the domain of the US EPA, as the lead agency in this remedial action. However, for your information, removal of the specific advisory for Turtle Creek Cove is contingent on the review of appropriate post-remediation fish contamination data. Because of ongoing site impacts and potential effects of remediation, this review can not occur until remediation is complete and an appropriate fish monitoring program is completed. We recommend consultation with NYS DEC Bureau of Habitat and NYS DOH Bureau of Toxic Substance Assessment staff in the design of such a program.