# Revised Community Health and Safety Plan Hudson River PCBs Superfund Site



General Electric Company Albany, New York

**June 2003** 



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## 1. Introduction

This *Revised Community Health and Safety Plan* (Revised CHASP) presents the health and safety plan adopted by General Electric Company (GE) for the community to cover field work to be performed in support of the Hudson River PCBs Superfund Site *Remedial Design Work Plan* (RD Work Plan) (Blasland, Bouck & Lee, Inc. [BBL], 2003a), as well as future sediment sampling performed as part of the Sediment Sampling and Analysis Program (SSAP). This Revised CHASP represents a revision to, and supersedes, the *Sediment Sampling and Analysis Program - Community Health and Safety Plan*, (SSAP-CHASP) (Quantitative Environmental Analysis, LLC [QEA], 2002a), which was approved by the United States Environmental Protection Agency (USEPA) on September 27, 2002.

The RD Work Plan (BBL, 2003a) presents the framework for developing the design of the remedy selected by the USEPA to address polychlorinated biphenyls (PCBs) in sediments of the Upper Hudson River. This Revised CHASP addresses community health and safety concerns during the performance of field work associated with the following RD design support activities:

- Pre-design characterization (i.e., ongoing Design Support SSAP);
- Engineering data collection and analysis (EDCA);
- Base-mapping;
- Baseline surface water and fish monitoring;
- Habitat delineation and assessment (HDA);
- Cultural and archaeological resources assessment (CARA); and
- Treatability studies.

This Revised CHASP does not cover field activities associated with the evaluation and selection of sites for the land-based sediment processing facilities; such activities will be conducted separately in accordance with the USEPA's *Hudson River PCBs Superfund Site Facility Siting Concept Document* (Facility Siting Concept Document) (USEPA, 2002c).

A separate *Health and Safety Plan* (HASP) will be developed during the design phase to address worker health and safety concerns during RD activities. In addition, community health and safety during remedial action (RA) activities will be addressed in a RA CHASP, which will be developed as a separate, future document as part of the RD.

This Revised CHASP is available for review at the USEPA's Hudson River Field Office at 421 Lower Main Street in Fort Edward; at information repositories located in Glens Falls, Saratoga Springs, Albany, Poughkeepsie, and New York City; as well as on the USEPA's website, available at: <u>www.epa.gov/hudson</u>.

If additional field activities are identified during the course of the RD work that are not covered by this Revised CHASP, GE will develop and submit to the USEPA, as well as the State of New York, draft addenda to this Revised CHASP to cover such additional field activities. Such addenda will be consistent with the requirements applicable to the SSAP-CHASP under Paragraph 28 of the Administrative Order on Consent for the SSAP (Sediment Sampling AOC) (USEPA, 2002b), Paragraph 42 of the Administrative Order on Consent for the RD (RD AOC) (USEPA, 2003), and with the USEPA-approved modifications or additions incorporated in this Revised CHASP. Upon USEPA approval of such addenda, the addenda will be available for review at the same locations noted above, and the provisions of such addenda will be implemented.

## 1.1 Objective

The objective of this Revised CHASP is to protect the public health of the community during the performance of field activities required by the RD Work Plan (BBL, 2003a). This objective is met by establishing guidelines to minimize community exposure to hazards during RD field activities, facilitate community awareness of the potential hazards, and plan for emergency response and responding, if necessary, to emergencies.

## 1.2 Site Setting

The Hudson River is located in eastern New York State and flows approximately 300 miles in a generally southerly direction from its source, Lake Tear-of-the-Clouds in the Adirondack Mountains, to the Battery, located in New York City at the tip of Manhattan Island. The USEPA issued a Superfund Record of Decision (ROD) for the Upper Hudson River on February 1, 2002 (USEPA, 2002a). Among other things, the selected remedy calls for the removal and disposal of approximately 2.65 million cubic yards of sediments between Fort Edward, New York and the Federal Dam in Troy, New York (USEPA, 2002a). The USEPA divided the Upper Hudson River into three sections (River Section 1, River Section 2, and River Section 3) (hereafter referred to as the "Upper Hudson River") for the sediment remediation activities outlined in the USEPA's 2002 ROD. The location of each section is described below and presented on Figure 1:

- **River Section 1:** Former location of Fort Edward Dam to Thompson Island Dam (approximately 6.3 miles);
- River Section 2: Thompson Island Dam to Northumberland Dam (approximately 5.1 miles); and
- **River Section 3:** Northumberland Dam to the Federal Dam at Troy (approximately 29.5 miles).

## 1.3 RD Design Support Activities

A description of the tasks expected to be completed under each pre-design or RD activity listed on page 1-1 above is presented in the RD Work Plan (BBL, 2003a), with each such potential field activity discussed in the following subsections. The descriptions of these potential field activities are general, since the specific field activities are or will be described in more detail in future work plans, such as:

- Pre-design sediment characterization: *Sediment Sampling and Analysis Program Field Sampling Plan* (SSAP-FSP) (QEA, 2002b) and *Supplemental Field Sampling Plan* (Supplemental FSP) (QEA, 2003c);
- EDCA: Supplemental Engineering Data Collection Work Plans (to be developed);
- Base-mapping: RD Work Plan (BBL, 2003a);
- Baseline surface water and fish monitoring: *Baseline Monitoring Program Scoping Document* (QEA, 2003a);
- HDA: Habitat Delineation and Assessment Work Plan (HDA Work Plan) (BBL, 2003b);
- CARA: *Cultural and Archaeological Resources Assessment Work Plan* (CARA Work Plan) (URS Corporation [URS], 2003); and
- Treatability studies: *Treatability Studies Work Plan* (to be developed).

## 1.3.1 Pre-Design Sediment Characterization

Pre-design sediment characterization activities are being conducted under the Sediment Sampling AOC (USEPA, 2002b). The objective of these activities is to obtain site-specific information needed to develop the

RD. A separate work plan, the SSAP-FSP (QEA, 2002b), and associated *Quality Assurance Project Plan* (QAPP) (QEA and ESI, 2002) and HASP (QEA, 2002c), have been developed to specify the protocols for the pre-design sediment characterization activities. An overview of the pre-design sediment characterization activities is provided in the following subsections, with additional details provided in the SSAP-FSP (QEA, 2002b), Supplemental FSP (QEA, 2003b), and SSAP-CHASP (QEA, 2002a).

The pre-design sediment characterization activities that require a field effort include the following:

- Geophysical surveys;
- Sediment coring; and
- Sub-bottom physical characterization.

The field activities associated with each of the above-listed tasks are described below.

#### **Geophysical Surveys**

Geophysical survey activities include conducting bathymetric and side-scan sonar surveys in certain portions of each River Section. The bathymetric survey will provide riverbed depth information to augment existing data for the Upper Hudson River. The side-scan sonar survey is primarily intended to provide data regarding sediment type, but also may be used to identify the presence/absence of cultural and archaeological resources, as well as the location of debris and obstructions.

Side-scan sonar surveys were conducted in River Sections 1 and 3 in November 2002. As this survey was conducted late in the season, there was little interaction with other boats on the river. Sampling proceeded as expected and was completed for the year by the end of November.

In addition, indirect measurements of the sub-bottom profile (i.e., below the sediment) may allow for refined definition of the boundaries of the areas to be dredged. The side-scan sonar survey activities described above will provide one means to estimate the horizontal location of the interface between sediment types. Other geophysical techniques of sub-bottom profiling (such as acoustic and electromagnetic signaling) may provide a means to delineate the interface between strata and the bottom boundary for dredging. The utility of these techniques is not assured and depends on various properties of the sediment. These methods will be tested during the SSAP activities. If the methods are found to be useful, they may be employed to facilitate delineation of areas to be dredged, to gather additional data on geotechnical properties, or to better define subsurface conditions where dredging will occur. A *Sub-Bottom Profiling Test Work Plan* (SBPT Work Plan) (QEA, 2002d) has been developed under the Sediment Sampling AOC (USEPA, 2002b) that identifies the scope of work for sub-bottom profiling testing activities. Following USEPA approval, this work plan will be implemented in 2003.

The geophysical survey work will be conducted from a survey vessel traversing the river with remote sensing equipment (e.g., sonar equipment) collecting data that are reviewed and saved on a computer on the survey vessel.

### Sediment Coring

Sediment coring activities include collecting sediment samples along a predetermined grid system within each River Section using vibratory coring techniques. Vibratory coring involves attaching a tube to a vibratory device that drives the tube into the sediments. The core tubes are then removed from the river, capped on both ends and transported to the GE Fort Edward facility for processing. At the Fort Edward facility, the cores are

cut into segments and shipped to an analytical laboratory, where samples are analyzed for total PCBs and other parameters (e.g., metals). Approximately 5,000 samples (average five samples per core) were collected during the 2002 field season with an additional 25,000 samples expected to be collected in 2003.

Coring activities proceeded during the fall 2002 with no complaints by the public. Noise level from coring operations was kept to a minimum; generators were turned off when not in use and the vibratory coring process only required generator use for approximately 5 minutes at each sampling location. Due to the timing of this survey late in the season, there was little interaction with other boats on the river.

The data collected from the sediment cores, in combination with the geophysical data and the criteria specified in the USEPA's 2002 ROD, will provide the information necessary to delineate the areas and depths to be dredged. The field observations recorded during sediment core collection will provide additional data regarding the geotechnical properties of the river sediments and sub-bottom, the location of debris and obstructions in the riverbed, and sediment depth information.

If additional sediment coring data are needed beyond the data specified in the SSAP-FSP (QEA, 2002b), plans for the collection of such data will be included in the Supplemental FSP (QEA, 2003b), developed in spring 2003 (along with any necessary QAPP and HASP addenda). Additional sediment coring data may be required to fill in data gaps to more fully characterize dredge delineation areas.

### Sub-Bottom Physical Characterization

The sub-bottom physical characterization will consist of making field observations during the sediment coring activities and manually probing the river bottom. The investigation will also include the results from the sub-bottom profiling geophysical test efforts described above. This task will be performed in conjunction with the SSAP coring program.

The field work associated with the sub-bottom physical characterization includes using geophysical survey vessels described above with physical probing of the river bottom (using a thin rod inserted into the sediment to determine thickness and sub-bottom hardness) from the same vessels used for sediment coring.

## **1.3.2 Engineering Data Collection and Analysis Activities**

This section describes the following EDCA activities:

- Debris and obstruction survey;
- Geotechnical characterization of sediments;
- Sub-bottom physical characterization;
- Disposal characterization; and
- Backfill source material identification and characterization.

These descriptions are currently general; the actual need for and scope of these activities will be specified in a *Supplemental Engineering Data Collection Work Plan* to be prepared for each year of data collection (focused on those sediment areas delineated for removal) and submitted for USEPA review and approval.

#### **Debris and Obstruction Survey**

In-river surveys will be completed from Fort Edward to Troy to identify the types and locations of debris and obstructions on the river bottom. This information will be used to determine river bottom conditions, which will be important in the design of dredging activities.

This task will include collecting and analyzing debris information obtained from the side-scan sonar survey, sediment coring program, and sub-bottom physical investigation conducted as part of the SSAP activities. Additional debris and obstruction survey activities will be conducted to further characterize riverbed areas where additional information is required (e.g., anomalous results within dredge areas), as deemed necessary based on the information obtained during the SSAP activities. Debris and obstruction survey activities may employ a combination of geophysical techniques, including side-scan sonar, multi-beam sonar, sub-bottom profiling, use of a marine magnetometer, and/or use of a submerged video camera. Data interpretation will be performed to note apparent rocks, boulder fields, woody debris (e.g., trees, wood boards, and slats), and unidentified objects.

The field work associated with this activity is expected to include use of survey vessels similar to those employed during the geophysical surveys discussed above. In addition, a vessel may be used to collect underwater video via remote video equipment or underwater video may be collected using divers with video equipment.

#### **Geotechnical Characterization of Sediments**

Geotechnical characterization of sediments will be conducted to supplement the geotechnical information obtained during the SSAP. These activities may include collecting additional sediment samples and submitting them for analysis of geotechnical parameters (e.g., grain size, Atterberg limits, TOC, specific gravity, bulk density, water content, and USCS soil classification). The activities may also include other geotechnical tests (such as sediment strength testing).

The field work associated with this activity may include collecting sediment cores using vessels and equipment similar to those used for sediment coring activities, but also may include using field equipment from the vessels to measure sediment properties in place.

#### Sub-Bottom Physical Characterization

Sub-bottom physical characterization will be completed to learn more about the sub-bottom sediment (i.e., located below the sediment surface) in river areas designated for dredging. This characterization will provide geotechnical information related to defining the makeup and integrity of the sub-grade conditions. This information will be used for developing the design for dredging, anchoring, spud setting, and the installation of other structures (e.g., sheetpiling) deemed necessary for the remediation activities.

These sub-bottom physical characterization activities may include additional geophysical survey activities (e.g., sub-bottom profiling) and advancing soil borings into the river bottom to collect soil samples for laboratory analysis of geotechnical properties such as grain size, bulk density, and moisture content. The field work could consist of using the geophysical survey vessels and sediment coring procedure described above, as well as using barge-mounted drill rigs to collect deeper samples of underlying material.

### **Disposal Characterization**

Disposal characterization activities will be conducted as necessary to obtain additional data necessary to further characterize the sediments for disposal. These activities may include collecting additional sediment samples for characterization of sediments under the Resource Conservation and Recovery Act (RCRA) and the Toxic Substances Control Act (TSCA). The field work would be similar to the sediment coring activities described above.

#### **Backfill Source Material Identification and Characterization**

Backfill source material identification and characterization activities will be conducted to support the development of the backfill specifications as part of the habitat replacement design. It is anticipated that representative samples of the available materials from various potential borrow sources would be obtained to determine the physical and chemical characteristics. The field work would include collecting soil samples at potential borrow sources (some sources may be several miles from the river) and transporting the samples to GE's Fort Edward facility for packaging and shipping to laboratories for analytical testing.

### 1.3.3 Base-Mapping

This task will include developing a base map of the Upper Hudson River for the design activities. For the most part, the field work for this activity has already been completed. However, additional field work may be necessary to develop additional detailed mapping in certain areas (e.g., sediment processing facility location, near shoreline areas, etc.) where surveyors may collect locational survey data (i.e., horizontal and vertical coordinates) to develop mapping information. Additionally, field reconnaissance by the design team may be necessary to verify certain site features important for the design. These efforts would be performed by documenting features by boat or walking on shore.

### 1.3.4 Baseline Monitoring

Baseline monitoring activities are described in the *Baseline Monitoring Program Scoping Document* (QEA, 2003a) and will be conducted to establish pre-dredging conditions for use in evaluating the achievement of performance standards during the RA, and to provide data on PCB levels in fish and water to allow an evaluation of long-term recovery trends. These activities will include water column monitoring, fish monitoring, and special surface water studies.

Baseline monitoring field activities will include:

- Collection of water column samples and water velocity measurements at monitoring stations at several locations along the Upper and Lower Hudson River -- Monitoring stations will be accessed by personnel via boats and from bridges; and
- Fish survey activities at several locations along the Upper Hudson River and Albany/Troy in the Lower Hudson River -- Sampling methods may include netting, electroshocking, and angling, conducted from the shore and from boats.

## 1.3.5 HDA Activities

HDA activities are described in the HDA Work Plan (BBL, 2003b) and will be conducted for each of the three primary habitat types present within the Upper Hudson River ecosystem:

- 1. River Bottom Habitats: Both unconsolidated river bottom and aquatic vegetation beds;
- 2. Shoreline Habitats: Maintained and natural shorelines; and
- **3. Wetland Habitats:** Fringing wetlands (and other riverine hydrogeomorphic subclasses, if potentially impacted by dredging activities).

The data collection methods to be used for the HDA efforts (beyond the data being collected as part of the SSAP) include:

- Using a boat for personnel transport to document field conditions;
- Conducting an underwater inspection using standard self-contained underwater breathing apparatus (SCUBA) and/or snorkel diving equipment;
- Collecting sediment samples using clear Lexan tubes to visually inspect sediments and obtain samples for laboratory analysis;
- Taking aerial photographs;
- Verifying field position using a differential global positioning system (DGPS);
- Visually identifying fringing wetlands and wetland sediment conditions;
- Visually identifying other riverine hydrogeomorphic subclasses of wetlands, if potentially impacted by dredging activities;
- Identifying and documenting the presence or signs of wildlife;
- Measuring river velocity with a hand-held velocity meter; and
- Documenting the shoreline using tape measure, inclinometer, video tape, and a digital camera.

This Revised CHASP does not address field activities conducted to assess habitats that may be affected by the construction and operation of the land-based sediment processing facilities and associated terrestrial routes to the river; such activities will be conducted separately in accordance with the USEPA's Facility Siting Concept Document (USEPA, 2002c).

## 1.3.6 CARA Activities

CARA activities are described in the CARA Work Plan (URS, 2003) and will include an assessment of in-river archaeological resources that may be impacted by implementation of the USEPA remedy as well as shoreline areas that may become destabilized as a result of dredging.

Certain CARA field activities being conducted in conjunction with the SSAP activities under the SSAP-CHASP (QEA, 2002a) include sediment coring, side-scan surveys, bathymetric surveys, and geophysical profiling. Additional CARA field activities may also be conducted in the future as specified in the CARA Work Plan (URS, 2003), including potential magnetometer surveys, test pit installation, and SCUBA diving and/or snorkeling for data verification in dredge areas. The details of such work, if needed, will be specified in the *Archaeological Resources Assessment Reports*, as described in the CARA Work Plan (URS, 2003).

## 1.3.7 Treatability Studies

Treatability testing will be performed during the design phase to produce data for the selection, sizing, and performance confirmation of equipment for:

- Sediment dewatering;
- Water treatment;
- Sediment stabilization; and
- PCB-release control systems.

The treatability studies may also assist in designing material handling facilities, such as:

- Barge unloading and barge water separation and treatment requirements;
- Unprocessed sediment holding, mixing, and pumping;
- Sediment size separation;
- Dewatered or solidified sediment storage and loading facilities; and
- Dredged material and backfill unloading, staging, and loading facilities.

A *Treatability Studies Work Plan* will be developed during the Preliminary Design phase of the RD (as described in the RD Work Plan [BBL, 2003a]) to describe testing necessary to select and design equipment for handling and processing dredged materials, or other design support activities. Field work associated with this activity is expected to include collection of sediment samples (using equipment similar to that used for the SSAP-FSP activities) with transport of the samples to GE's Fort Edward facility for processing and packaging for shipment to treatability testing laboratories. The details on treatability studies will be provided in the *Treatability Studies Work Plan*. If additional treatability study efforts are needed to support the design, they will be specified in the *Intermediate Design Reports* (described in the RD Work Plan [BBL, 2003a]).

## **1.4 Schedule for Field Activities**

The schedule for field activities is discussed in the work plans described above (e.g., SSAP-FSP [QEA, 2002a], Supplemental FSP [QEA, 2003b], RD Work Plan [BBL, 2003a], HDA Work Plan [BBL, 2003b], CARA Work Plan [URS, 2003], etc.) and also will be discussed in any work plans to be developed for future field work (e.g., *Supplemental Engineering Data Collection Work Plan*). It is currently anticipated that field activities will be performed on the river during calendar years 2003 and 2004, as permitted by weather conditions and operations of the canal locks (expected to be from May through October). Field activities will typically occur Monday through Friday between dawn and dusk; geophysical surveys will occur from dawn to dusk 7 days per week. Some upland field investigation may be performed outside this time window. In any event, the field efforts will not be performed until the associated work plans have been reviewed and approved by the USEPA.

More detailed information on the schedule for field work will be provided to the USEPA on a monthly basis (in monthly progress reports), and the USEPA will make this information available to the public.

### 1.5 Hazard Overview

Possible hazards to the public associated with the field activities at the site include:

• Safety hazards to recreational boaters who may encounter the sampling and survey vessels on the river;

- Spill hazards due to accidental release of fuel from the sampling and survey vessels on the river;
- Traffic hazards due to ground transport of samples to the core processing facility at GE's Fort Edward facility;
- Safety hazards to the public associated with the field staging/transfer areas (locations presented in Table 1);
- Noise associated with operation of the mechanical equipment that may be used for sample collection (e.g., generators, vibracoring equipment, drill rigs); and
- Inhalation hazards from sampling/survey activities.

These potential hazards are evaluated in Sections 4.1 and 4.2. It is not anticipated that noise and inhalation hazards will be a public safety concern during RD field activities for the reasons provided in Section 4.1.

## 2. Site Layout and Control Plan

As described in Section 1.2, the Upper Hudson River (from Hudson Falls to Troy, New York) has been divided into River Sections 1, 2, and 3, as shown on Figure 1. The area includes numerous towns and villages and several major roadways. The navigational channel for the Champlain Canal includes seven locks operated by the New York State (NYS) Canal Corporation.

It is expected that several locations will be used for staging/transfer areas during RD field activities. Work trailers will be placed at the West River Road Marina for storage of field gear and necessary office gear. Additional locations will be used as transfer areas. Table1, below, presents locations that may be used for staging/transfer areas during RD field activities and the expected use of each location.

Area Name	Area Location	Expected Use
West River Road Marina	245 West River Road	River access for vessels and labor.
	Fort Edward, New York	Work trailer location.
Schuyler Yacht Basin	1 Ferry Street Schuylerville, New York	River access for vessels and labor.
Coveville Marina	288 Route 4 South Schuylerville, New York	River access for vessels and labor.
Admiral's Marina	Route 32 and Route 4 Stillwater, New York	River access for vessels and labor.
Lock 1 Marina	461 Hudson River Road Waterford, New York	River access for vessels and labor.

Table 1. Potential Locations for Staging/Transfer Areas during RD Field Activities

The locations of staging/transfer areas to be used during RD activities will be determined as the activities progress and staging/transfer area needs are identified. As staging/transfer area needs are identified, the USEPA will be provided with the location of staging/transfer areas to be used and expected duration of activities at that location. The USEPA will transmit this information to the community as part of the Agency's enhanced community involvement program.

Security measures will be implemented at each staging/transfer area. These measures will include clearly identifying work zones (e.g., using flagging tape, construction fencing, etc.) and restricting public access in these areas. If any equipment is to be left unattended overnight, additional security measures will be implemented, as necessary.

Samples that are collected from the river and need to be processed for shipment to off-site locations will be transported from the river access points to the core processing facility at GE's Fort Edward facility. The GE Fort Edward facility is located just north of the Village of Fort Edward (Figure 1), and is staffed with security personnel 24 hours a day, 7 days a week.

Field work that requires using vessels in the river will be coordinated with the NYS Canal Corporation, which operates the Champlain Canal System, and will be overseen by the USEPA or its designee. All vessels associated with the field activities will monitor marine band channel 13. The Canal lock operators will be notified on a daily basis of the likely location of field activities on the river. No work is anticipated to be performed on the river after dusk or before dawn. While performing field work within the designated

navigational channel proper, the boats will station buoys to clearly denote the area in which other boats may freely navigate. The navigational channel will not be completely blocked during field work and will yield to other vessels that may need to pass. Additionally, field work on the river will not occur if visibility is less than 200 feet at that given location.

For field efforts that require using divers for river bottom observations, appropriate protocols (i.e., dive flagging) will be used to alert boaters where diving operations are underway.

## 3. Potential Public Health and Safety Hazards

This section describes the potential health and safety hazards to the public during field work associated with the RD. More specifically, this section describes the potential health and safety hazards associated with field work on the river (Marine Hazards) and field work at access areas, sample processing facility, or other on-shore areas (Shore-Based Hazards). The control of these potential health and safety hazards is described in Section 4.

### 3.1 Marine Hazards

Boaters using this portion of the Hudson River may encounter sampling and survey vessels associated with the RD field efforts. In addition, sampling and survey vessels (e.g., boats, barges, etc.) will occasionally be stationed within and near the navigation channel, posing a potential navigational hazard. Field activities may arouse curiosity from boaters who may be unaware of the ongoing field work. Potential hazards to recreational boaters on the river include navigational hazards, noise exposures, and fuel spill exposures. Personnel wading in the river for sampling and survey purposes or performing river bottom observations may also pose a distraction to boaters on the river.

Habitat assessment in portions of the Upper Hudson River will involve using a field research vessel. This vessel will support SCUBA operations for assessing underwater habitat features related to submerged aquatic vegetation and substrate. At times, public use of the river may coincide with SCUBA operations.

### 3.2 Shore-Based Hazards

The potential hazards for shore-based activities will be centered on the staging/transfer areas and transport of cores to the core processing facility. Potential shore-based hazards to the public include contact with field personnel in boats that are leaving and returning to shore, vehicular traffic on local roadways, and noise from the activity on the shore.

Field personnel performing survey work and documenting habitat information may also be encountered on shore. Hazards associated with this work are expected to be minimal. For archaeological assessment of shoreline areas, shovel tests (i.e., removal of soils using a small shovel and screening the soil through a sieve to identify potential artifacts) may be performed along the shoreline in areas that may become unstable during dredging. The actual need for archaeological field work on shore will be determined at a later date (refer to the CARA Work Plan [URS, 2003] for additional details).

## 4.1 Control of Marine Hazards

The Hudson River is a popular recreational boating area for tourists and the surrounding local populations. The highest levels of boat traffic typically occur on Saturday and Sunday; therefore, the major control will be to limit on-water work to Monday through Friday to the extent practical. This scheduling will reduce the safety concerns associated with boat traffic.

Various methods will be used to increase public awareness of the activities on the river and to promote public safety. Buoy markers will be placed along the channel both upstream and downstream of daily field activities. Notices placed at the locks and public boat launch sites will notify boaters of field activities, and advise them to maintain a safe distance and a no-wake zone in the area of field work. The NYS Canal Corporation can also issue a Notice to Mariners requesting boaters to avoid the area where field activities are being conducted. Copies of any such notices will be provided to the USEPA Hudson River Field Office in Fort Edward. Operators of the sampling and survey vessels will be in contact with the lock operators as necessary via marine band radio on channel 13. Weekly coordination with NYS Canal Corporation headquarters also will occur during the field activities that are taking place on the river.

Notices also will be placed at public boat launch sites in the River Sections where field work is being conducted informing boaters of RD field activities and advising them to avoid the immediate field activity areas (i.e., not to pass within 10 feet of the RD field boats). The navigation channel will not be blocked during field activities, but these activities may require the placement of sample vessels in the channel. If large vessels need to pass the operation, the field vessel will yield to the boat traffic. Instructions on this procedure will be posted at the launch sites and with the NYS Canal Corporation.

Captains of the RD field vessels will be properly trained to comply with basic navigational safety while on the river. The nature of the work requires precise boat handling; therefore, boat captains will be thoroughly familiar with navigational rules. All boat operators will receive training by an experienced boater on navigational laws and United States Coast Guard (USCG) regulations. Boater safety is enforced on the river by the NYS Police Troop T, NYS Canal Corporation, New York State Department of Environmental Conservation (NYSDEC), and local sheriff agencies.

All boats will operate under the provisions of the NYS Navigation Law regarding fuel storage and spills. Fuel use on boats will not exceed what is typically found on recreational boats (i.e., proper storage containers, one or two extra containers). The amount of extra fuel on each vessel at any one time will be kept at a minimum to minimize spills in the event of an accident.

Sediment samples collected from the sample vessels will be capped to limit inhalation exposures to sedimentbound chemicals. The capping procedure is designed to control the inhalation exposure of the sampling personnel; therefore, there should be no inhalation hazard to recreational boaters or persons on the nearby shoreline.

Sampling activities may require the use of vibratory coring sampling equipment, drill rig, or other sampling methods that will create noise for a short time between the hours of dawn to dusk Monday through Friday, primarily. The USEPA and the NYS Canal Corporation will be notified if sampling activities will be performed

on weekends. Any noise-generating equipment (including generators) will be selected with consideration to sound level output, and equipment will be maintained to operate within the OSHA action level of 85 dBA (OSHA, 2002). Based on previous vibracoring in the Upper Hudson River, the vibracoring equipment is expected to be sufficiently quiet such that the OSHA action level of 85 dBA is not expected to be exceeded (OSHA 2002). Likewise, the noise generated by the vibracoring equipment is not expected to create a noise hazard for recreational boaters on the Upper Hudson River. Sound level measurements taken during the 2002 sampling, noise levels on a boat adjacent to the coring vessel during coring operations and along the staging area shoreline were below 65 dBA at both locations. Noise levels on the river are expected to be similar to those generated during the 2002 field activities.

Note that noise generated by sampling activities will attenuate with distance from the source. As a sound wave propagates, the sound energy is distributed over the ever-increasing surface diameter of the wave front surface such that for every doubling of the distance from the sound source in a free field situation, the sound intensity will diminish by 6 decibels. For example, a noise source measured at 85 dBA at a distance of 3 feet will generate a noise level of 61 dBA at a distance of 48 feet in a free field.

EDC, HDA, and CARA activities may involve the use of a field research vessel to support SCUBA operations for assessing underwater features. While the boat is at a sample location, a SCUBA diving flag will be prominently displayed from the research vessel to indicate that diving operations are underway. Similarly, and at the discretion of the Diving Supervisor, a flag will be used by divers if work is to be performed outside of the immediate vicinity of the vessel. The navigational channel will not be completely blocked during SCUBA operations. In the event that large boats need to pass, the field research vessel will make any necessary work adjustment and yield to traffic of this nature.

The field research vessel will monitor marine band channel 13. The Canal lock operators will be notified on a daily basis of the likely location of SCUBA diving activities. The boat captain will monitor the location of divers and will serve to notify on-coming vessels should these vessels approach divers where they are working.

## 4.2 Control of Shore-Based Hazards

Control of the shore-based staging/transfer area and sample processing facility is described in Section 2. For field survey work performed on shore (e.g., mapping, HDA activities, CARA activities), the property owners will be notified in advance and any limitation that may be imposed for entry to the work areas will be communicated. If needed, work areas will be clearly marked with caution tape.

Light commercial vehicle traffic (van or pick-up trucks) will transport the capped sediment cores between the staging/transfer areas and the core processing facility. The number of vehicle trips per day taken between the shore-based staging/transfer areas on the river and the core processing facility at GE's Fort Edward plant will vary based on the scheduled RD field activities. It is anticipated that the majority of the trips will be in the morning when field personnel travel to the staging/transfer area for a health and safety meeting before beginning daily activities, and during the afternoon when the samples are delivered from the staging/transfer area to the core processing facility. The driver(s) responsible for transporting the samples will adhere to all traffic laws and will turn corners cautiously to avoid toppling of the samples. All personnel driving between the two areas will have proper licenses for operating a motor vehicle. All vehicles will be properly inspected and registered.

Noise levels from the RD field activities on the river are not expected to pose a hazard to the public along the shoreline. As discussed in Section 4.1, noise levels are not expected to exceed the OSHA action level (i.e., 85 dBA [OSHA, 2002]). Based on previous vibracoring in the Upper Hudson River, the vibracoring equipment is expected to be sufficiently quiet such that the OSHA action level of 85 dBA will not be exceeded (OSHA 2002).

Likewise, the noise generated by the vibracoring equipment is not expected to create a noise hazard on shore. Sound level measurements taken during the 2002 sampling, noise levels on a boat adjacent to the coring vessel during coring operations and along the staging area shoreline were below 65 dBA at both locations. Noise levels experienced by the public on shore are expected to be similar to those generated during the 2002 field activities.

Note that noise generated by sampling activities will attenuate with distance from the source. As a sound wave propagates, the sound energy is distributed over the ever-increasing surface diameter of the wave front surface such that for every doubling of the distance from the sound source in a free field situation, the sound intensity will diminish by 6 decibels. For example, a noise source measured at 85 dBA at a distance of 3 feet will generate a noise level of 61 dBA at a distance of 48 feet in a free field.

## 4.3 Site Security

Site security will be maintained at both the shore-based staging/transfer area and the core processing facility to restrict access and potential public exposures to site hazards. Security at the staging/transfer area will be provided during the time that field efforts are being performed from the staging/transfer area. Additional security will be provided on an as-needed basis, depending on whether vandalism and/or trespass become an issue. The processing facility is located at GE's Fort Edward facility, which is controlled by site security personnel 24 hours a day, 7 days a week.

## 5.1 Contact Information for Site Safety Personnel

The names and contact information for key site safety personnel, as well as other site safety contact telephone numbers (including telephone numbers for the staging/transfer area and sample processing facility), are presented in Table 2, below. Should key site safety personnel change during the course of RA activities, modifications to this list will be provided to the USEPA for posting at the USEPA's Hudson River Field Office and on the USEPA's website. This information will be posted at the staging area trailer and the processing facility.

Project Role (Name)	Telephone Numbers
Site Health and Safety Coordinator	Office: (518) 587-2903
(Kip Score)	Cell: (518) 281-6358
QEA Field Sampling Manager	Office: (315) 453-9009
(Mark LaRue/Margaret Murphy)	Cell: (315) 730-5341 (ML)
	Cell: (315) 730-5342 (MM)
BBL Field Sampling Manager	Office: (484) 530-9119
(Steve Montagna)	Cell: (484) 433-2266
URS Field Sampling Manager	Office: (301) 652-2215 (JK)
(Jerry Kashatus/Daniel Cassedy)	Office: (919) 461-1442 (DC)
	Cell: (301) 529-6435 (JK)
	Cell: (919) 522-5885 (DC)
Staging Area Trailer	Cell: (315) 730-5340
	Cell: (315) 730-5345
Core Processing Facility	(518) 746-5289
GE Project Manager	Office: (518) 862-2736
(Robert Gibson)	Cell: (518) 527-3418
GE Program Manager	Office: (518) 862-2739
(John Haggard)	
USEPA Hudson River Field Office Coordinator	Office: (518) 747-4389
(N.G. Kaul)	
NYS Canal Corporation Coordinator	Office: (518) 471-5020
(John Dergosits)	

### Table 2. Site Contact Telephone Numbers

## 5.2 Key Site Safety Personnel

The roles of the key site safety personnel — the Site Health and Safety Coordinator and Field Sampling Manager — as they relate to the community health and safety issues, are outlined below. It is anticipated that the overall Site Health and Safety Coordinator will be supported by different Field Sampling Managers for each type of field activity.

## 5.2.1 Site Health and Safety Coordinator

The Site Health and Safety Coordinator is responsible for all on-site health and safety activities and will have the authority to suspend field activities in the event of an emergency. The Site Health and Safety Coordinator will be available either on site or via cellular phone whenever RD field activities are occurring. The Site Health and Safety Coordinator will have completed the required OSHA 40-Hour Hazardous Waste Operations Training (49 CFR 1910.120) and the additional 8-Hour Supervisor Training. In addition, the Site Health and Safety Coordinator will have current training in first aid and cardio-pulmonary resuscitation (CPR).

## 5.2.2 Field Sampling Managers

Field Sampling Managers will be available to assist in addressing community health and safety issues. The Field Sampling Manager will have completed the required OSHA 40-Hour Hazardous Waste Operations Training (49 CFR 1910.120) and the additional 8-Hour Supervisor Training.

Additional responsibilities of the Site Health and Safety Coordinator and Field Sampling Managers related to emergency response are described in Section 6.

## 6. Emergency Response

## 6.1 Notification of Site Emergencies

Before initiating field activities at the site, the response agencies (Fire Department, Police, 911 operators) from the following organizations will be notified (see Table 3 for complete listing):

- Town of Moreau, Town of Fort Edward, and Village of Fort Edward;
- NYS Canal Corporation Headquarters;
- New York State Department of Health Glens Falls District Office;
- Local hospitals;
- Sheriff;
- NYSDEC water patrol; and
- USEPA's Hudson River Field Office.

Additional Towns and Villages will be notified in advance of the field work as it progresses downriver. These organizations will be provided a copy of the appropriate HASP, this Revised CHASP, and the work plan for planned activities (work plans are identified in Section 1.3). Emergency procedures will be reviewed with each response agency to enable immediate response in case of an incident affecting public health.

In the event of an accident (e.g., traffic or boat accident involving personal or property damage) the personnel involved will immediately notify 911 so the proper emergency personnel can respond. Following the 911 call, the same personnel will notify the Site Health and Safety Coordinator and the appropriate Field Sampling Manager. In addition, appropriate emergency measures will immediately be taken by site personnel to assist those who have been injured and to protect others from hazards. These measures may include contacting the relevant authorities (depending on the nature of the emergency) and/or health care facilities (see emergency contact numbers listed in Table 3) and moving those involved to a secure location, as appropriate. If necessary, the Site Health and Safety Coordinator will call the New York State Spill Response (telephone number is provided in Table 3) to report any spills that occurred as a result of the accident.

Upon the occurrence of any event during the performance of the work which requires reporting to the National Response Center under Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), such reporting will be made, as well as the additional notifications and reports to USEPA and the NYSDEC required by Paragraph 46 of the Sediment Sampling AOC (USEPA, 2002b) and Paragraph 64 of the RD AOC (USEPA, 2003).

These notifications include oral notifications by the appropriate Field Sampling Manager to one of the USEPA Project Coordinators and to the NYSDEC Hudson River Project Manager. (Or, if they are unavailable, to the alternate contacts specified in Paragraph 46 of the Sediment Sampling AOC [USEPA, 2002b] and Paragraph 64 of the RD AOC [USEPA, 2003].)

Further, as required by Paragraph 47 of the Sediment Sampling AOC (USEPA, 2002b) and Paragraph 65 of the RD AOC (USEPA, 2003), in the event of any action or occurrence during the performance of the work which causes or threatens to cause a release of a hazardous substance that may present an immediate threat to public health or welfare or the environment, the USEPA and the NYSDEC will be notified by the appropriate Field Sampling Manager immediately upon obtaining knowledge of such action or occurrence. Such notifications

will be made to one of the USEPA Project Coordinators and to the NYSDEC Hudson River Project Manager (or, in the event of their unavailability, to their alternate contacts). In addition, if such action or occurrence is related to the performance of the activities under the SSAP or the RD AOC, GE will take abatement action as required by Paragraph 47 of the Sediment Sampling AOC (USEPA, 2002b) and Paragraph 65 of the RD AOC (USEPA, 2003).

All field sampling and survey vessels will be equipped with USCG safety equipment, including ship-to shore VHF radios and cellular phones to alert emergency response personnel of any accidents or emergency situations that arise. First-aid equipment will be maintained on each vessel. A contact person will be in the vicinity of the site to respond to any in-river emergency during field activities. This person will be responsible for communication with the RD field vessels via the ship-to-shore radios in case of cellular phone failure. In the event of a petroleum spill, the provisions of the New York State Navigation Law will be followed and New York State Spill Response will be notified (NYSDEC, 1996).

In the unlikely circumstance that a traffic accident does occur and sediment sample materials spill, the driver will have a radio or cellular phone to contact the GE Fort Edward core processing facility so that a contractor can be immediately mobilized for proper spill containment and cleanup. The driver will be responsible for contacting the proper authorities to report the accident as described above. In addition, each vehicle will be equipped with a first-aid kit.

The Field Sampling Managers will determine whether, and at what levels if any, community exposure actually occurred, the cause of such exposure, and the means to be taken to prevent similar incidents from occurring in the future. The appropriate Field Sampling Manager will direct notification, response, and follow-up actions with the concurrence of GE. Contact with any outside response personnel (e.g., ambulance, fire department, etc.) other than the USEPA and NYSDEC will be made at the direction of the Site Health and Safety Coordinator. Table 3 provides a list of emergency contact information.

The Site Health and Safety Coordinator will be responsible for responding to emergencies and will:

- Confirm that the following safety equipment is available: first-aid supplies, communication devices (cellular phone and VHF radio), personal floatation devices, and fire extinguishers; and
- Inform appropriate authorities and response agencies in the event of an accidental spill that potentially poses a hazard to the public.

## 6.2 First-Aid Procedures

Personnel trained in first-aid procedures will be present during site activities to provide appropriate treatment of injuries or illnesses occurring during operations. On-site medical and/or first-aid response to an injury or illness will only be provided by trained personnel competent in such matters. Necessary immediate medical care will be provided by individuals trained in first-aid procedures. Locations of hospitals within the three sections of the river are provided on Figure 2.

## 6.3 Fire Fighting Procedures

Fire extinguishers that conform to USCG regulations will be available on each trailer, at the core processing facility, and in each gasoline-powered vessel during field activities. When the fire cannot be controlled with the extinguisher, the field work area or vessel will be evacuated immediately. The Site Health and Safety Coordinator (or on-site designee) will determine the time to contact fire department response personnel.

## 6.4 Emergency Equipment

All vehicles will be equipped with first-aid kits and cellular phones. In addition, the following equipment for safety and emergency response will be maintained on RD field vessels:

- USCG safety equipment, which includes:
  - Fire extinguisher,
  - Paddles,
  - Personal floatation devices,
  - First-aid kit,
  - Visual distress signals (flares),
  - Sound producing device (air horn), and
  - Navigational lighting;
- Eye wash station (wash bottles at a minimum);
- Cellular phone and ship-to-shore radio; and
- Extra copy of the appropriate HASP and Revised CHASP.

The on-shore staging/transfer area will be equipped with the following emergency equipment:

- Fire extinguisher;
- Eye wash station;
- First-aid kit;
- Phone (hard-wired); and
- Extra copy of the appropriate HASP and Revised CHASP.

## 7. References

BBL. 2003a. *Remedial Design Work Plan* (RD Work Plan). Hudson River PCBs Superfund Site. Public Review Copy. Prepared for General Electric Company, Albany, NY.

BBL. 2003b. *Habitat Delineation and Assessment Work Plan* (HDA Work Plan). Hudson River PCBs Superfund Site. Public Review Copy. Prepared for General Electric Company, Albany, NY.

NYSDEC. 1996. Technical Field Guidance: Spill Reporting and Initial Notification Requirements. May 1, 1996.

OSHA. 2002. TITLE 29 CFR 1910, Washington, DC, April 25, 2002.

QEA. 2003a. *Baseline Monitoring Program Scoping Document*. Hudson River PCBs Superfund Site. Public Review Copy. Prepared for General Electric Company, Albany, NY.

QEA. 2003b. *Supplemental Field Sampling Plan* (Supplemental FSP). Hudson River PCBs Superfund Site. Public Review Copy. Prepared for General Electric Company, Albany, NY.

QEA. 2002a. *Sediment Sampling and Analysis Program - Community Health and Safety Plan* (SSAP-CHASP). Hudson River PCBs Superfund Site. Prepared for General Electric Company, Albany, NY.

QEA. 2002b. *Sediment Sampling and Analysis Program - Field Sampling Plan* (SSAP-FSP). Hudson River PCBs Superfund Site. Prepared for General Electric Company, Albany, NY.

QEA. 2002c. *Health and Safety Plan* (HASP). Hudson River PCBs Superfund Site. Prepared for General Electric Company, Albany, NY.

QEA. 2002d. *Sub-Bottom Profiling Test Work Plan* (SBPT Work Plan). Hudson River PCBs Superfund Site. Under Agency Review. Prepared for General Electric Company, Albany, NY.

QEA and ESI. 2002. *Quality Assurance Project Plan* (QAPP). Hudson River PCBs Superfund Site. Prepared for General Electric Company, Albany, NY.

URS. 2003. *Cultural and Archaeological Resources Assessment Work Plan* (CARA Work Plan). Hudson River PCBs Superfund Site. Public Review Copy. Prepared for General Electric Company, Albany, NY.

USEPA. 2002a. Hudson River PCBs Site - Record of Decision and Responsiveness Summary. New York, NY.

USEPA. 2002b. Administrative Order on Consent for Hudson River Sediment Sampling (Index No. CERCLA 02-2002-2023) (Sediment Sampling AOC). Effective Date July 26, 2002.

USEPA. 2002c. *Hudson River PCBs Superfund Site Facility Siting Concept Document* (Facility Siting Concept Document). New York, NY.

USEPA. 2003. Administrative Order on Consent for Hudson River Remedial Design and Cost Recovery (RD AOC). Draft.

BLASLAND, BOUCK & LEE, INC. engineers & scientists

## Table



## General Electric Company Hudson River PCBs Superfund Site Revised Community Health and Safety Plan

### Table 3 – Emergency Contact Telephone Numbers

Contact	Telephone Number
General	
Emergency Response (Fire, Police, Medical, etc.)	911
New York State Spill Response	(800) 457-7362
	(518) 457-7362
Poison Control Center	(800) 336-6997
NYS Canal Corporation Emergency Number/New York State	(800) 635-8856
Police Troop T Headquarters	
New York State Police Troop G Headquarters	(518) 783-3211
United States Coast Guard (New York)	(718) 354-4119
National Response Center and Terrorist Hotline	(800) 424-8802
USEPA Project Coordinator: Alison Hess	(212) 637-3959
USEPA Project Coordinator: Doug Tomchuk	(212) 637-3956
USEPA Alternate – Hudson River Team Leader: Doug Garbarini	(212) 637-3952
NYSDEC Hudson River Project Manager: Bill Ports	(518) 402-9774
NYSDEC Alternate – Director of the Bureau of Central	(518) 402-9768
Remediation Action: P. David Smith	
New York State Department of Health, Glens Falls District Office	(518) 793-3893
Albany County	
Sheriff's Department	(518) 487-5440
Fire Coordinator: Jack Brennan	(518) 447-7220
Hospital: Albany Medical Center Hospital	(518) 262-3125
NYSDEC Region 4 Law Enforcement	(518) 352-2047
NYSDEC Region 4 After Hours Emergency	(518) 891-0235
Town of Colonie EMS Service	(518) 782-2645
Town of Colonie Police Department	(518) 783-2811
Town of Colonie Fire Department	(518) 783-2833
Rensselaer County	
Sheriff's Department	(518) 270-5448
Fire Coordinator: Ivan Wager	(518) 658-2893
Hospital: Samaritan Hospital	(518) 271-3300
NYSDEC Region 4 Law Enforcement	(518) 352-2047
NYSDEC Region 4 After Hours Emergency	(518) 891-0235
Rensselaer County Office of Emergency Services	(518) 270-4162
Hoosick Valley Rescue Squad	(518) 753-6634
Troy Ambulance Service, Inc. d.b.a. Empire Ambulance Service	(518) 272-1426
New York State Police – Brunswick	(518) 279-4426
Troy Police Department	(518) 270-4411
Speigeltown District Volunteer Fire Company, Inc.	(518) 235-5431
Troy Fire Department	(518) 270-4471
Brunswick #1 Fire Department	(518) 272-9393
Hoosick Valley Fire Department	(518) 753-4664
Mountain View Fire Department	(518) 283-4530
Pleasantdale Fire Department	(518) 237-8812
Saratoga County	``'
Sheriff's Department	(518) 885-2450
	(518) 884-4702
Fire Coordinator: Edward Tremblay	
Fire Coordinator: Edward Tremblay Hospital: Saratoga Hospital	(518) 587-3222

## General Electric Company Hudson River PCBs Superfund Site Revised Community Health and Safety Plan

#### Table 3 – Emergency Contact Telephone Numbers

Contact	Telephone Number				
Saratoga County (cont'd)					
NYSDEC Region 5 After Hours Emergency	(877) 457-5680				
GE Waterford Emergency Response Services	(518) 233-3340				
Saratoga County Office of Emergency Services	(518) 885-2232				
Waterford Rescue Squad	(518) 237-2473				
General Schuyler Rescue Squad	(518) 695-6622				
John Ahern Rescue Squad	(518) 664-8354				
Malta Ambulance Squad	(518) 899-2100				
Moreau Emergency Squad	(518) 793-3011				
Saratoga Emergency Corps, Inc.	(518) 584-2109				
Stillwater Rescue Squad	(518) 664-8012				
Wilton Emergency Squad	(518) 587-5590				
Clifton Park – Halfmoon Ambulance Corps	(518) 371-3880				
Stillwater Police Department	(518) 664-6613				
New York State Police – Wilton	(518) 583-7000				
Waterford Police Department	(518) 237-3341				
Mechanicville Police Department	(518) 664-7383				
Quaker Springs Fire Department	(518) 584-3349				
Schuyler Hose Company	(518) 695-3142				
Stillwater Fire Department	(518) 664-3617				
Arvin Hart Fire Department #1	(518) 664-5191				
Clifton Park Fire Department	(518) 371-8400				
Halfmoon Station #1 Fire Department	(518) 371-9854				
Hemstreet Park Fire Department	(518) 664-1681				
Jonesville Station #1 Fire Department	(518) 877-8100				
Mechanicville Central Station Fire Department	(518) 664-6121				
Mechanicville Strang/Howland	(518) 664-5431				
Warren County	(2.2) 22.2.2.2				
Sheriff's Department	(518) 761-6477				
Fire Coordinator: Marvin Lemery	(518) 761-6497				
Hospital: Glens Falls Hospital	(518) 926-1000				
NYSDEC Region 5 Law Enforcement	(518) 897-1326				
NYSDEC Region 5 After Hours Emergency	(877) 457-5680				
South Glen Falls Fire Department	(518) 792-1674				
Washington County					
Sheriff's Department	(518) 854-9245				
Fire Coordinator: Alvon Macauley, Jr.	(518) 746-2255				
Hospital: Closest in Saratoga or Warren County					
NYSDEC Region 5 Law Enforcement	(518) 897-1326				
NYSDEC Region 5 After Hours Emergency	(877) 457-5680				
Easton Greenwich Rescue Squad	(518) 692-2555				
Fort Edward Rescue Squad	(518) 747-6198				
Town of Easton Fire Department	(518) 692-8671				
Fort Edward Fire Department	(518) 747-5127				
Fon Edward Fire Department	(518) /4/-512/				

# **Figures**





