

WORK PLAN

*Cultural and Archaeological
Resources Assessment
Work Plan for the Hudson
River PCBs Superfund Site*



**General Electric Company
Albany, New York**

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1.0 Introduction

URS Corporation (URS) has prepared this Cultural and Archaeological Resources Assessment (CARA) Work Plan on behalf of General Electric Company (GE). The activities described in the CARA Work Plan will be conducted to document the existence of cultural and archaeological resources in the Upper Hudson River that could be impacted by implementation of the remedy selected by the United States Environmental Protection Agency (USEPA) for the Hudson River PCBs Superfund Site (USEPA 2002a). This work will constitute a Phase I archaeological resource sensitivity study, consistent with Section 106 of the National Historic Preservation Act (NHPA), as necessary to support the Remedial Design (RD) for the USEPA remedy.

This work plan identifies the data and other information that will be collected in the performance of and/or to support the CARA and the methods that will be used to collect these data and other information. As described below, some of the field data that will be used to support the CARA are already being collected as part of a separate program – namely, the Sediment Sampling and Analysis Program (SSAP) that GE is currently conducting pursuant to an Administrative Order on Consent (AOC) effective July 26, 2002, and the Sediment Field Sampling Plan (SSAP-FSP) (QEA, 2002) attached thereto. This work plan also describes the reports and other documents to be developed as part of the CARA and how they relate to other aspects of the RD.

The activities described in this CARA Work Plan are limited to in-river archaeological resources that may be impacted by implementation of the USEPA remedy. Assessment of potential archaeological resources that may be affected by the siting of the land-based sediment processing/transfer facility(ies) is beyond the scope of this work plan and will be performed consistent with the Facility Siting Concept Document (USEPA 2002b).

As described in greater detail in Section 2.0, the CARA will be performed in a manner consistent with Section 106 of NHPA, the implementing regulations issued by the Advisory

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Council on Historic Preservation (ACHP) (36 C.F.R. Part 800), and the *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State*, prepared by the New York Archaeological Council and adopted by the Office of Parks, Recreation, and Historic Preservation (OPRHP 1994).

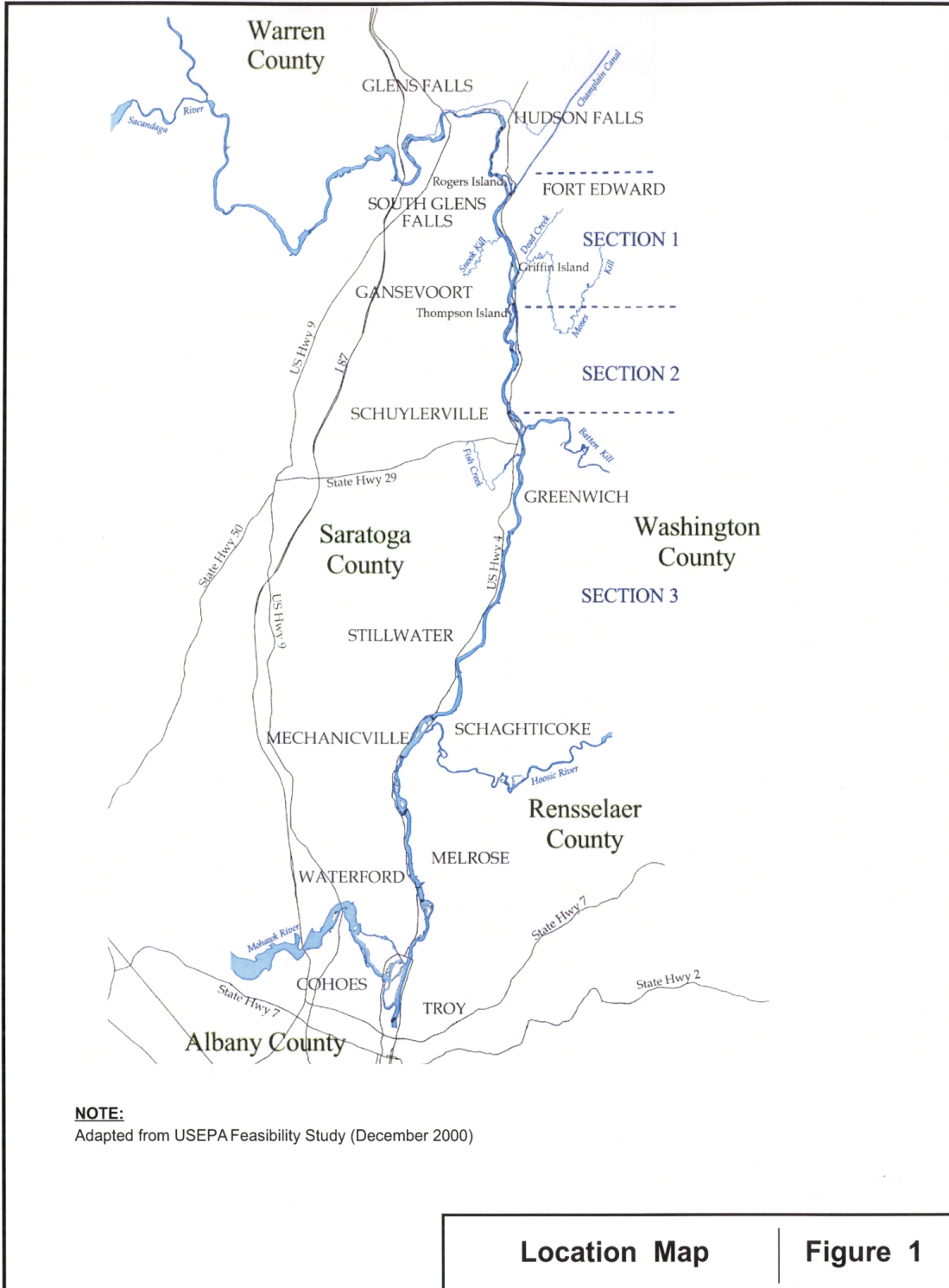
The CARA will be implemented by professional staff who meet the professional qualifications standards and guidelines for archaeologists and historians established by the Secretary of the Interior (36 C.F.R. Part 61) and who have experience with archaeological and historical research in the Hudson Valley region. The archaeologists responsible for the project will be members of the Register of Professional Archaeologists.

1.1 Background

The Hudson River is located in eastern New York State and flows approximately 300 miles in a 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) 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, NY and the Federal Dam in Troy, NY. The USEPA divided the Upper Hudson River into three sections (River Sections 1, 2, and 3). The location of each section is described below and presented in Figure 1.

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

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1.2 The Regulatory Framework

Section 106 of NHPA of 1966, as amended (16 U.S.C. §§ 470 et seq.), provides that federal agencies must take into account the effects of their actions on any district, site, building, structure, or object listed in, or eligible for inclusion in, the National Register of Historic Places. Implementing regulations for Section 106, promulgated by the ACHP, are contained in 36 C.F.R. Part 800. These regulations set out a process for conducting reviews and provide specific criteria for assessing the effects of federal undertakings on historic properties and identifying adverse effects on historic properties. The general approach is to determine the Area of Potential Effects (APE), identify and collect information about the historic properties within this area and whether they are listed or eligible for the National Register, and then assess the potential for the undertaking to impact these properties (36 C.F.R. § 800.4[a]-[d]). The APE is the area “within which an undertaking may directly or indirectly cause changes in the character or use of the historic properties” (36 C.F.R. § 800.16[d]).

The effects of an undertaking on a cultural resource are predicted by evaluating the significant characteristics of the resource and the design and anticipated consequences of the undertaking. Effects to cultural resources listed in, or eligible for listing in, the National Register are evaluated with regard to the Criteria of Adverse Effect, set forth in 36 C.F.R. § 800.5. Under these regulations, an adverse effect occurs “when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property’s location, setting, materials, workmanship, feeling, or association” (36 C.F.R. § 800.5[a][1]).

The New York Archaeological Council has prepared *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State* (NYAC 1994),

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which have been adopted by the New York State Office of Parks, Recreation and Historic Preservation. These standards divide cultural resource assessments into two general phases. Phase I is intended to identify archaeologically sensitive areas, cultural/sacred areas, and standing structures at least 50 years old that may be affected by the proposed project. Phase I may be undertaken in two subphases, Phase IA and IB. Phase IA is an information-gathering phase, which consists of literature searches and an assessment of the archaeological sensitivity of the project area. Phase IB consists of field investigations designed to collect additional information about cultural and archaeological resources in the project area.

If, following completion of Phase I investigations, it is determined that the project will adversely affect cultural or archaeological resources and that such effects cannot be mitigated or avoided, a Phase II investigation can be conducted to assess the eligibility of the identified resources for the National Register of Historic Places. Phase II can consist of both background literature reviews and fieldwork.

This CARA Work Plan is intended to complete the Phase I survey work begun by the USEPA Stage 1A report and documented in the ROD (USEPA 2002a).

1.3 Previous Surveys

As part of its remedial decision, USEPA conducted a Stage 1A Cultural Resources Survey (USEPA 2002a). The Stage 1A Survey was intended to initiate the collection of information about cultural resources within the APE identified by USEPA and to establish the basis for further work to identify the potential effects to cultural resources. For purposes of this Survey, the USEPA identified the APE as the 50-mile stretch of the Hudson River, including a

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2,000-foot-wide strip of land running along the east and west banks of the river, between Glens Falls and the Port of Albany. The Survey identified 89 National Register-listed cultural resources and multiple National Register-eligible resources within that APE. The USEPA concluded that the selected remedy would have no effect on the majority of listed properties but that the remedy might temporarily affect seven National Register-listed and one National Register-eligible resource. Of these eight resources, however, the Agency concluded that the remedy might result in adverse effects on portions of only two: Rogers Island and the Mechanicville hydroelectric plant.

The USEPA concluded that the selected remedy could result in adverse effects if sites associated with Rogers Island extended into the river in areas targeted for sediment removal. The USEPA stated that although only post-World War II sediments contain targeted PCBs, either mechanical or hydraulic dredging along the channel adjacent to Rogers Island could have the potential to disturb older sediments that may have some prehistoric and historic archaeological sensitivity. The Stage 1A Survey stated: “Given the potential for adverse effects, if sites associated with Rogers Island are determined to extend into areas targeted for dredging or shoreline stabilization, EPA will try to avoid such impacts during remedial design while maintaining the effectiveness of the remediation. If avoidance through design of the dredging process in those areas is not feasible, alternative appropriate mitigative strategies would be implemented.”

With respect to the Mechanicville hydroelectric plant, the USEPA Survey concluded that dredging might result in adverse effects to the Mechanicville hydroelectric plant because sediments targeted for dredging are within the boundary of the National Register resource. The USEPA stated that, although no damage to the building is anticipated as part of this project,

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dredging could result in temporary visual effects to the historic plant. The Agency suggested that potential mitigation measures could include designing the remedy to preserve the historic integrity of the plant's contributing features.

The Stage 1A Survey also concluded that, of the 329 identified archaeological sites within 2,000 feet of the banks of the Upper Hudson River, only 14 were located within 150 feet of areas targeted for dredging, with five extending to the river's edge or beyond, and thus were potentially affected by the remedy. The Survey suggested that if the presence of these archaeological sites was confirmed through future investigations, the remedy could be designed to mitigate these impacts while maintaining its effectiveness.

As a result of these conclusions, the Stage 1A Survey stated that additional surveys and studies would need to be conducted, including additional identification and evaluation efforts during the remedial design to determine the extent of potential effects to National Register-listed or eligible resources. This CARA Work Plan identifies these additional identification and evaluation efforts.

1.4 Scope

As noted above, this CARA Work Plan is limited to assessing the potential effects of the in-river portion of the remedy (dredging, backfilling, and restoration) on cultural and historical resources along the Upper Hudson River. This assessment will include potential impacts to archaeological or historic architectural resources (if any) in those shoreline areas, which as a result of dredging activities, may become unstable. As noted above, CARA activities to assess potential effects from the siting of the land-based sediment processing/transfer facility(ies) are

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beyond the scope of this work plan and will be conducted consistent with the Facility Siting Concept Document (USEPA 2002b). Accordingly, the Archaeological APE for this work plan extends from Fort Edward to Troy, New York, within those areas of the Upper Hudson River and its immediate shoreline, which could potentially be dredged or disturbed during implementation of the USEPA-selected remedy. The Archaeological APE thus includes the areas that are being investigated or will be investigated under the SSAP and the immediately adjacent shorelines that could be rendered unstable by the dredging.

The Historic Architectural APE is defined as those historic properties that may be visible from the river in areas to be dredged or that may be in shoreline areas, which as a result of dredging activities, may become unstable. As noted above, the USEPA's Stage 1A study determined that dredging might have a temporary adverse (visual) effect on only one historic standing structure (the Mechanicville hydroelectric plant). Further, as dredging design plans are finalized, they will be carefully reviewed to ensure that there will be no physical impacts on the Mechanicville hydroelectric plant building. Since dredging has taken place historically in the Upper Hudson River (for navigational and maintenance purposes), and given that the remedial action is temporary, dredging should not result in any further changes in the character or use of standing historical or architectural resources listed in or eligible for listing in the National Register of Historic Places (or as-yet-unidentified, potentially eligible historic resources visible from the river). Therefore, these resources will not be subject to further investigations under this work plan unless they are shown to be in shoreline locations that could potentially be rendered unstable by dredging.

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1.5 Overview of Work

GE plans to use the information provided in the USEPA's Stage 1A Survey as the starting point in its assessment. GE will expand upon the Stage 1A Survey with additional historical information gained from further research, as well as field data being collected by GE as part of the SSAP and recent aerial photography from USEPA (as part of base-mapping work). The information collected and reviewed by GE will be used to develop archaeological sensitivity maps of the Upper Hudson River showing areas of "no," "low," and "high" potential to contain archaeological sites within the project's APE. This information will then be overlain by maps identifying the areas and depths to be dredged, as identified in the *Dredge Area Delineation Reports* (described in the Remedial Design [RD] Work Plan), to assess the potential for the remedy to affect areas of "high" potential to contain archaeological sites. In the event that such areas of "high" potential are located within areas and depths to be dredged, then further evaluations will be made as to whether an archaeological site is in fact present, whether the dredging could have an adverse impact on a possible National Register-eligible resource, whether any such area(s) can be avoided in dredging consistent with the overall goal of the dredging program, and whether additional investigations are necessary to obtain the requisite information. A similar evaluation will be made for the immediately adjacent shorelines that could be rendered unstable by the dredging, once those shoreline areas have been identified through the engineering design process.

This approach is generally consistent with the additional assessment efforts identified in the USEPA's Stage 1A survey (USEPA 2002a). The specific methods to be used for this work are described in Section 2.0; scheduling and reporting are discussed in Section 3.0; and the

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ownership and curation of any artifactual materials recovered during the investigations are addressed in Section 4.0.

2.0 Methodology

2.1 Literature Review

GE plans to use the information provided in the USEPA's Stage 1A Survey as the starting point in its assessment. To supplement that information, an additional background literature review will be conducted, as needed, to: 1) develop historical and archaeological contexts for interpretation and evaluation of any archaeological materials or deposits determined to be present within the Archaeological APE; 2) review the results of previous archaeological work within the APE and vicinity; and 3) develop a specific strategy for creating an archaeological sensitivity map. This background literature review will cover both the Upper Hudson River itself and the immediately adjacent shorelines. Specifically, the following sources will be reviewed for pertinent additional information relating to the project:

- New York Office of Parks, Recreation, and Historic Preservation (Waterford, NY): Historic and prehistoric site files and Cultural Resource Management (CRM) reports.
- New York State Museum (Albany, NY): Prehistoric site project screening files (0.5 mile screening usually done by fax, but extensive project area might require visit).
- New York State Library and New York State Archives (Albany, NY): Historical maps, local, state, and regional histories, and manuscript collection.
- New York Public Library (New York, NY): Historical maps, local, state, and regional histories, and manuscript collection.
- New York Army Corps of Engineers (New York, NY): Cultural resource reports.

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- Albany Institute of History & Art (Albany, NY): Historical maps, local, and regional histories, and manuscript collection.
- Schenectady County Historical Society (Schenectady, NY): Historical maps, local and regional histories.
- Adirondack Research Library (Schenectady, NY): Historical maps, local and regional histories.
- Renssalaer County Historical Society (Renssalaer, NY): Historical maps, local and regional histories.
- Washington County Historical Society (Fort Edward, NY): Historical maps, local and regional histories.

The above sources will be reviewed for information on the area's prehistory and history. Specific sources on the area's prehistory will include reports, articles, papers, reports, and volumes on archaeological investigations within the region, as well as historic maps and atlases that delineate earlier landforms and drainage systems. Data from these sources will be used specifically to evaluate the area's potential to contain prehistoric deposits and features.

To obtain information on the area's history, published works on the history of the area at the above-mentioned repositories will be examined. Local archaeologists, historians, librarians, and public officials will also be contacted, such as:

- The Town of Fort Edward Cultural Resource Advisory Board.
- The Rogers Island Visitors Center.
- The Old Fort House Museum.
- Brookside Museum at Saratoga Springs.
- The Historical Society of Moreau and South Glens Falls.
- The Fulbright Center at Crandall Library, Glens Falls.

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Other sources to be consulted include unpublished monographs and reports, historical architecture files, documentary photographs, county atlases, and fire insurance maps. Engineering studies for canal building and maintenance will also be examined. The focus of this background historical research will be to reconstruct historic and modern land use within the Archaeological APE, paying particular attention to documenting disturbances within the river and the immediate shoreline. In addition, information will be obtained on relevant cultural and archaeological items that may be encountered in the project area, including information on vessel types that might be expected in the area.

Research will also focus on the terraces and other geomorphic features associated with Lake Albany, other glacial lakes, and the ancestral Hudson River as landforms possessing the potential for past human habitation that are submerged today. Specifically, five previous studies within the Hudson Valley and upstate New York will be examined to provide an outline of geoarchaeological evidence relevant to the APE: the Hoosic River drainage (Cesarski 1996); the Fort Drum area (Jefferson and Lewis Counties) (Rush et al. 2000); central and lower Hudson Valley (Dineen 1992); Dogan Point (Shuldenrein 1995); and the Goldkrest Site in Rensselaer County (Claassen 1996). Published and open-file information from the U.S. Geological Survey (USGS), USEPA, New York Geological Survey (in New York State Museum Publications), and other sources will be reviewed.

The following maps will be examined: historic topographic maps of upper Hudson Valley; current 7.5' USGS quadrangle maps; geologic maps of upper Hudson River Valley; and Hudson River navigation charts.

Current and historic aerial photographs (including black-and-white stereoscopic pairs, natural color, and false-color infrared aerial photographs, if available) will be reviewed to note natural and human-induced changes to river-associated landforms. Photo interpretation of stereo pairs is an effective way of conducting geomorphic studies, detecting subtle variations in topography and landform expression, identifying the results of recent geomorphic processes, and

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identifying landforms that might indicate past habitation. Known archaeological sites from the New York State Historic Preservation Office (NYSHPO) location maps will be correlated with the aerial photo analysis to evaluate potential landforms.

2.2 Collection of Additional Field Data (Part of SSAP)

The *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State* (NYAC 1994) note that remote sensing and soil borings may be used to reveal areas of disturbance in which no sites could remain intact. Remote-sensing studies and sediment soil borings are appropriate methods of assessing archaeologically sensitive areas, given the environmental characteristics of potential site locations in underwater contexts. As described below, information obtained from the geophysical surveys and sediment sampling activities being conducted as part of the SSAP will be evaluated to assist in the identification of archaeological resources within the Archaeological APE. Depending on the results of the analysis of the SSAP data, additional field data relevant to completing the CARA may be needed, as described in Section 2.3 below.

2.2.1 Geophysical Surveys

Geophysical surveys are being conducted as part of the SSAP. These include side-scan sonar and bathymetric surveys. The side-scan sonar surveys are primarily intended to provide data regarding sediment type in all three river sections, but may also identify the presence/absence of cultural and archaeological resources in those areas (QEA 2002). They use a high-resolution, dual-frequency side-scan sonar system and obtain bank-to bank survey coverage by running multiple survey lines with overlapping coverage. These surveys have already been completed in River Sections 1 and 3 and a portion of River Section 2 under the SSAP. The bathymetric surveys will be conducted in River Sections 2 and 3 (existing

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bathymetric data collected in Fall 2001 will be used for River Section 1). These surveys, which are scheduled to be conducted in 2003 under the SSAP, will provide riverbed depth and contour information for the project. In addition, a geophysical sub-bottom profiling test will be conducted to assess the ability of other geophysical techniques to identify submerged objects and subbottom geology, perhaps not identifiable with side-scan sonar. Details concerning the locations and methods for these activities are provided in the SSAP-FSP (QEA 2002) and the SSAP Quality Assurance Project Plan (QEA and ESI 2002) and associated documents.

During the performance of these geophysical surveys, personnel with appropriate training and experience in the archeological applications of geophysical remote sensing techniques have coordinated, and will continue to coordinate, closely with the field survey teams collecting data for the SSAP program. This coordination includes periodic field visits by such personnel during the data collection process as needed to ensure that the data collected can be applied to the CARA Work Plan. In addition archaeologically trained personnel have worked and will continue to work with the teams employed in the processing and interpreting of the geophysical data to identify images or other aspects of the data that could indicate the potential presence of submerged archaeological resources.

For purposes of this CARA Work Plan, the data obtained from these geophysical SSAP studies will be evaluated to identify: (1) submerged archaeological sites (e.g., river barges, wharfs, ships, and shell middens); and (2) any submerged former land surface that was once terrestrial and could have sustained human habitation in the past (i.e., a submerged "A" soil horizon) and thus could potentially contain archaeological resources. As explained in Section 2.3, these data will be reviewed together with the information obtained from the historical literature search and the sediment coring program to prepare archaeological sensitivity maps.

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2.2.2 Sediment Coring

The SSAP field program involves the collection of sediment cores, primarily for chemical analysis (QEA 2002). This sediment collection effort began in 2002 and will continue in 2003. Key elements of the SSAP are described below.

The SSAP is being performed to obtain data to delineate areas within the Upper Hudson River to be targeted for environmental dredging. This program includes the collection, processing, and laboratory analysis of sediment core samples. To obtain these samples, sampling vessels are guided to pre-programmed coordinates for each sampling location using a real-time kinematic global positioning system (RTK-GPS). Upon arrival, probing is conducted to estimate the approximate thickness and grain size of the sediment. Depending on sediment thickness, either a sediment core sample is collected or a grab sample is collected with a ponar dredge. Sediment core samples are collected using a vibracorer equipped with a 3-inch diameter core tube (either aluminum or lexan tubing for coarse or fine-grained sediment, respectively). The core tube is advanced into the sediment until refusal. If a satisfactory core can not be collected after three attempts, the station is abandoned. Field data are recorded, including water depth, probing depth, sediment type, core penetration depth, and approximate length of recovered core, into a field database. Cores are stored on ice in insulated core racks and kept out of direct sunlight until transported to the core processing facility located at the GE Fort Edward facility.

When core samples arrive at the core processing facility, they are transferred to sample custodians for processing. First, overlying water is drained from the cores and the cores are weighed. Cores are then fastened to a clamping system and cut into segments. The length of these segments is based on the total length of the recovered core. A visual description of each core segment (grain type, color, odor) is entered into the database. As described below, each core segment is also examined for potential cultural resources or other dateable anomalies. The core segment is then thoroughly homogenized and placed into containers for shipment to the analytical laboratory.

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Project staff responsible for sediment core processing have been trained by an experienced geomorphologist and an experienced archaeologist to gather the appropriate soil data (for example, color, grain size, mottling, and other characteristics) using standard ASTM methods. In accordance with the SSAP, materials that are observed in the sediment samples that are believed to have the potential to be cultural resources are separated from the sediment in the processing laboratory; placed in sealable plastic bags; labeled with core identification, sample identification, and date; and placed in storage for subsequent evaluation by a qualified cultural resource specialist.

A preliminary review of the 2002 core data has been accomplished. A total of 264 cultural items were obtained from 122 of the 967 cores recovered from River Sections 1 and 2. Most of these were pieces of wood waste, accounting for 243 of the items from 102 of the cores. Twenty-one other artifacts were recovered from the remaining 20 cores, including slag, coal, concrete, brick, ceramics, glass, iron, and wood. No prehistoric artifacts were recovered, and most of the historic period artifacts were water-worn. Detailed study of their proveniences has not yet been completed.

As described in the SSAP (QEA 2002), the sediment cores have been and will continue to be examined to identify both submerged archaeological artifacts and submerged “A” soil horizons. During the processing of the sediment samples at the laboratory, the samples are examined by processing technicians trained by a geomorphologist to be aware of soil data that will assist in determining the potential presence of “A” soil horizons or submerged archaeological sites. The soil data documented for each core include:

- Qualitative grain size.
- Soil type.
- Sediment stratigraphy, including location of hard bottom by soil horizons.
- Color.

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- Presence of organic material.
- Presence of artifacts.

During the sediment coring field activities, there have been and will continue to be regular periodic visits by a geomorphologist to the Fort Edward core processing facility, where the sediment cores are processed. These visits help the geomorphologist obtain empirical knowledge to assist in interpretation of the soil cores and in determining the depositional characteristics and age of the soil sediments. Specifically, the geomorphologist determines if any soil horizon identified in the sediment core is indicative of a submerged “A” soil horizon. A submerged “A” horizon is characterized as having high organic content and generally produces the darkest colors in a soil profile.

Given the project’s largely underwater context and the expected lack of archaeological site integrity, low quantities of recovered artifacts are expected for the soil core program. Consistent with the approach that has been followed to date in the SSAP, as artifacts are recovered, proveniences will be recorded (core number, soil type, location, and depth). Any recovered artifacts will be rinsed and stored in plastic bags at the core processing facility, and will subsequently be analyzed, catalogued, and stabilized (as necessary) by an archaeologist, either at the core processing facility or after transfer to the URS laboratory, as described in Section 4 of this Work Plan. Prehistoric artifacts may include lithic debris, fire-cracked rock, and ceramics, as well as various tool categories. Historic artifacts may include ceramics, glass, metal objects, and perhaps various architectural materials. Storage, cataloging, and curation of artifacts will be conducted in accordance with the *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State* (NYAC 1994) and the procedures described in Section 4 of this Work Plan. The geomorphologist and archaeologist have provided the core processing team with appropriate training to ensure that these standards are followed.

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2.3 Evaluation to Assess Potential Impacts on Archaeological Sites

Based on the information collected through the literature review, aerial photo interpretation, geologic mapping, geophysical data, and sediment cores, an archaeologist and a geomorphologist will collaborate to develop GIS-based “sensitivity maps” showing areas of “no,” “low,” and “high” potential to contain archaeological sites. These maps will cover the areas of the Upper Hudson River that could potentially be dredged or disturbed by dredging. They will also cover the immediate shorelines that could potentially be affected by the dredging activities, to the extent that information is available at that time to classify such areas. (The assessment of potentially affected shorelines is discussed further below.)

The different sensitivity ratings reflect the likelihood that archaeological sites are present within the project’s Archaeological APE. For each category, it is anticipated that multiple data sources (background, geophysical, and coring) will be combined in an analytical matrix to define the archaeological sensitivity of a given area. Although the exact structure of the analytical matrix cannot be finalized until more data are gathered, the following criteria provide an outline of the classification scheme to be used:

- *No Potential:* These will consist of areas where sediments are disturbed or no submerged, formerly exposed ground surfaces (older than 50 years) are evident, and there are no data from the geophysical surveys indicating the potential for submerged archaeological resources. Areas with either no sediment (i.e., bedrock exposed) or areas excavated for dam construction and recently dredged river channels (e.g., the Champlain Canal navigational channel) are examples of areas with “no potential” to contain archaeological sites. In addition, sediments that are found to contain PCBs will, in general, be considered to have “no potential” to contain archaeological sites over 50 years old, because PCBs were not used by GE in this area before the late 1940s and thus the presence of PCBs in sediments indicates that such sediments do not contain resources older than approximately 50 years. However, if other data sources such as background data or geophysical surveys indicate the potential

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presence of archaeological resources in such sediments, then the presence of PCBs alone will not be sufficient to classify an area as of “no potential.”

- *Low Potential:* These will consist of areas where a submerged, formerly exposed ground surface (i.e., a submerged soil “A” horizon) older than 50 years is present, but multiple lines of other data (as available) indicate that the area is not likely to contain archaeological sites -- e.g., no artifacts are identified in the vicinity, there is no indication from the literature review that the area is of archaeological significance, and there are no data from the geophysical surveys indicating the potential for submerged archaeological resources. It is anticipated that, as a result of geomorphological reconstruction, these “low potential” areas will consist of landforms that would be defined as “low potential” areas if they were encountered during conventional terrestrial archaeological surveys. These might include areas such as back swamps behind natural levees, where organic material accumulates but the landform is wet and poorly drained.
- *High Potential:* These will consist of areas where submerged archaeological resources (e.g., barges, ships, wharfs, etc.) are found or where a submerged, formerly exposed ground surface (i.e., submerged soil “A” horizon) older than 50 years is present and there is some other evidence indicating the potential presence of archaeological sites (e.g., identified artifacts within the submerged soil “A” horizon, relevant side-scan images, geomorphological landform reconstruction, or information from the literature search that the area is of archaeological significance).

The sensitivity maps showing these areas will then be compared with the areas and depths targeted for dredging, as defined in the *Dredge Area Delineation Reports* described in the RD Work Plan. The objective of this comparison will be to determine whether any areas identified as having a “high potential” to contain archaeological sites are situated within the areas and depths to be dredged (considering both the horizontal and vertical limits of the dredge areas).

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This will be done after USEPA approval of each *Dredge Area Delineation Report* – and the results will be presented in the corresponding Archaeological Resources Assessment Report (as described in Section 3).

In the event that, during the process of making these comparisons, data gaps are identified in the existing field data that would prevent classification of particular river areas (e.g., gaps or anomalies in the SSAP geophysical data as they relate to potential archaeological resources), an evaluation will be made as to the need for and scope of additional field data collection to fill those gaps. This evaluation, and, if appropriate, a proposal to collect the necessary additional data, will be included in the relevant Archaeological Resources Assessment Report.

In addition, in the event that areas having a “high potential” to contain archaeological sites are situated within areas and depths to be dredged, a further evaluation will be made to:

- determine whether an archaeological resource is actually present;
- evaluate whether any resources present are potentially significant (eligible for the National Register of Historic Places); and
- determine if any potentially significant resources could be adversely affected by the dredging program.

This evaluation will consider the nature of the evidence in the “high potential” area (e.g., the types of artifacts identified) and the likely effect of the dredging on the area. This evaluation may also require the collection of additional data. Examples of additional activities that may be conducted for the further evaluation of “high potential” areas include:

- Additional remote sensing (e.g., use of a magnetometer) designed specifically to target potential archaeological resources;

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- Additional core sampling;
- Field reconnaissance by archaeologists, which may include underwater diver verification of targets and/or terrestrial inspections of targets, as appropriate; and
- Field survey using surface inspection and test pit excavation.

The foregoing evaluations relate primarily to the areas of the Upper Hudson River that will be subject to environmental dredging. A similar evaluation will be made for the immediately adjacent shorelines that could be disturbed and rendered unstable by the dredging, once an engineering assessment has been made to identify those shoreline areas that could become unstable due to the dredging. Once those shoreline areas have been identified, field activities will be proposed in the Archaeological Resources Assessment Report for those areas to identify their potential to contain archaeological or historic sites, as necessary to supplement the results of the literature review relevant to such areas. Examples of such activities for potentially impacted shoreline areas may include visual inspections and/or test pit excavations (by hand, shovel, or mechanically assisted, as appropriate). Again, such areas will be classified as having “no,” “low,” or “high” potential to contain archaeological or historic resources, and, if necessary, a further evaluation will be made to determine whether the areas of “high potential” in fact contain such resources.

Finally, for areas of both the river and the immediately adjacent shorelines where the dredging program could result in an adverse effect to archaeological or historic resources, an assessment will be made in the Archaeological Resources Assessment Report as to whether the areas containing or affecting the archaeological or historic resources can be avoided in the dredging program consistent with the overall goal of that program. If not, then additional

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information will be obtained to evaluate whether the archaeological or historic resources in question meet the criteria for eligibility for the National Register.

3.0 Schedule and Reporting

The literature review will be initiated following USEPA approval of this CARA Work Plan and execution of an Administrative Order on Consent for Remedial Design (RD AOC). Aerial photograph interpretation will also begin following USEPA approval of this Work Plan and execution of the RD AOC. The geophysical surveys (side-scan sonar and bathymetric) and sediment coring are underway as part of the SSAP and will be conducted in accordance with the schedule for those activities as set forth in the SSAP-FSP.

Based on the foregoing information, the sensitivity maps showing areas of “no,” “low,” and “high” potential to contain archaeological sites will be developed—initially for the candidate Phase I areas (as defined in the RD Work Plan) and subsequently for the remaining areas subject to dredging. Then, following USEPA approval of the *Dredge Area Delineation Report* for the relevant areas, the sensitivity maps will be compared to the dredging limits to determine whether areas of “high potential” are within the areas/depths targeted for dredging and to ascertain the potential for the dredging to result in adverse effects to archaeological resources.

An initial Archaeological Resources Assessment Report covering the Phase I candidate areas will be submitted to USEPA, NYSDEC and SHPO within 30 days of USEPA approval of the *Dredge Area Delineation Report*. An additional Archaeological Resources Assessment Report(s) covering the remaining areas sampled in the SSAP will be submitted to USEPA, NYSDEC, and SHPO within 90 days of USEPA approval of the *Dredge Area Delineation Report* for such areas. The format of each report will follow the *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State* (NYAC 1994). The first Archaeological Resources Assessment Report will include background

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information on the history of the Upper Hudson River and the results of the literature review. That background information need not be repeated in subsequent reports. Each such report will summarize the results of the field activities for the areas covered by that report as they relate to potential archaeological resources. These will include any pertinent results from the geophysical surveys and sediment coring program, including selected soil core stratigraphy profiles and artifact analyses (if any).

Each Archaeological Resources Assessment Report will also provide the sensitivity maps showing areas of “no,” “low,” and “high” potential to contain archaeological sites, the basis for those classifications, the results of the comparison of “high potential” areas with the areas/depths targeted for dredging, and the results of the evaluation of the potential for dredging of these areas to result in adverse effects to archaeological resources. If there are areas of potential adverse effects, the report will consider whether these areas can be avoided during the dredging program. The report will also identify areas, if any, where additional data or other information are needed to fulfill the objectives of the CARA. Such additional data needs may include:

- (1) Additional field data to complete the classification of particular river areas into the above-referenced categories;
- (2) Additional data necessary to evaluate whether “high potential” river areas in fact contain an archaeological resource that could be potentially affected by the dredging program;
- (3) Additional data to assess whether shorelines that could potentially be rendered unstable by the dredging have a high potential to contain or do in fact contain archaeological resources; and/or
- (4) If such a resource is present in an area that could be impacted by dredging and that area cannot be avoided during dredging, additional information to ascertain whether the resource meets the criteria for eligibility in the National Register.

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If such additional data or other information are necessary, the Archaeological Resources Assessment Report will propose the collection of such data or information (to the extent that such a proposal can be made based on then-available information) and will include a proposed schedule for collection of such information and submittal of an addendum to the report to present and evaluate such information. For particular areas where other additional information is needed before such a proposal can be made (e.g., for shoreline areas, where an engineering analysis is necessary to identify those shoreline areas that could be rendered unstable by dredging), the report will propose a schedule for submission of that proposal; and that subsequent proposal in turn will propose a schedule for collecting the necessary archaeological and cultural information and submitting an addendum to present and evaluate that information.

Updates on the progress of the CARA activities will be included in GE's monthly reports under the RD AOC.

All CARA work plans, reports and addenda will be submitted to the USEPA, NYSDEC and SHPO. To ensure compliance with the confidentiality requirements of Section 304 of the National Historic Preservation Act (if applicable), GE will not release information regarding the locations of identified archaeological resources to the public without authorization from USEPA.

4.0 Curation and Ownership of Artifacts

In most cases, the underwater bottomlands of the Hudson River are owned by the State of New York. In accordance with Section 233 of the State Education Law, any artifacts recovered from New York State lands are the property of New York State and are initially to be curated by the New York State Museum. In many circumstances, the New York State Museum will work with communities to establish long-term loan arrangements at appropriate local facilities. Under Section 106 of the NHPA, USEPA, as the lead federal agency, will be involved in the decision-

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making regarding the curation of any artifactual materials and their effective presentation to the public.

As discussed in Section 2.2.2, all artifacts collected during the conduct of this program will be rinsed and stored in plastic bags at the core processing facility. These artifacts will then be analyzed, catalogued, and stabilized (if necessary) by an archaeologist (either at the core processing facility or after transfer to the URS laboratory), and all identified artifacts will be temporarily curated at the URS laboratory. Storage, cataloging, and curation of artifacts will be conducted in accordance with the *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State* (NYAC 1994). Following completion of the studies, artifacts from the underwater bottomlands will be made available to the New York State Museum to the extent permitted by, and in accordance with, applicable legal requirements that pertain to the transport and disposal of materials with PCBs. Any artifacts recovered from private properties will be returned to the appropriate landowners if requested subject to the same legal requirements described above. Artifacts not requested by private landowners will be made available to the New York State Museum, with the same opportunities for local curation as noted above.

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