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PHASE IA LITERATURE REVIEW AND ARCHEOLOGICAL SENSITIVITY ASSESSMENT

Champlain-Hudson Power Express

Multiple Municipalities and Counties
New York and Connecticut

HAA # 4268-11

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MANAGEMENT SUMMARY

SHPO Project Review Number:
Involved State and Federal Agencies: U.S. Department of Energy, United States Army Corps of Engineers, New York State Public Service Commission, Connecticut Siting Council
Phase of Survey: Phase IA Literature Review and Archeological Sensitivity Assessment

LOCATION INFORMATION

Location: Lake Champlain, Champlain Canal, Hudson River, Spuyten Duyvil Creek, Harlem River, East River, and Long Island Sound; as well as 70-mi overland section on railroads in Washington, Saratoga, Schenectady, and Albany Counties.
Minor Civil Division: Multiple.
County: Clinton, Essex, Washington, Saratoga, Schenectady, Albany, Greene, Rensselaer, Columbia, Ulster, Dutchess, Orange, Rockland, Putnam, Westchester, Bronx, and New York.

SURVEY AREA

Length: 620 km (385 mi)
Width: varies

RESULTS OF RESEARCH

Terrestrial sites within or adjacent to Project APE: 26
Underwater sites within or adjacent to Project APE: 41
Surveys within or adjacent to Project APE: 47
NR/NRE sites within or adjacent to Project APE: 51
Precontact Sensitivity: Varied.
Historic Sensitivity: Varied

RECOMMENDATIONS

Phase IB field reconnaissance recommended for much of the overland portion. Underwater survey recommended for submarine cable installation. Monitoring recommended for some urban areas and previously disturbed locations.

Report Authors: Corey McQuinn; Matthew Kirk; Tracy S. Miller
Date of Report: August 2010

PLEASE NOTE

ARCHEOLOGICAL SITES AND SHIPWRECK LOCATIONS ARE CONSIDERED PRIVLEDGED AND CONFIDENTIAL INFORMATION

MAPS WITH SITE LOCATIONS ARE NOT TO BE MADE AVAILABLE TO THE PUBLIC

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PHASE IA LITERATURE REVIEW AND ARCHEOLOGICAL SENSITIVITY ASSESSMENT

INTRODUCTION

Champlain Hudson Power Express, Inc. (CHPEI) proposes to develop the 2,000 megawatt (MW) Champlain Hudson Power Express Project (Project) to connect renewable sources of power generation in central and eastern Canada with load centers in and around the New York City and southwestern Connecticut regions. To the extent possible, CHPEI proposes to bury the transmission cables along existing waterways to minimize overland routes. CHPEI believes that this innovative approach will minimize the visual and landscape impacts associated with traditional overhead transmission lines, while simultaneously providing the additional capacity required to meet the increasing clean energy demands of the greater New York City metropolitan area and the State of Connecticut.

The proposed Project comprises two 1,000-MW underwater/underground high-voltage direct current (HVDC) bipoles. Each of these two bipoles includes two submarine or underground cables connected as a bipole pair. In total, four cables will be laid between Quebec and a converter station in Yonkers, New York, where two cables will be terminated. The remaining two cables will continue to an HVDC converter station in Bridgeport, Connecticut. Approximately 620 km (385 mi) of proposed transmission cables will be located within in the United States. CHPEI will not own or operate the Canadian portion of the transmission cables; thus, this pre-screening survey does not include the Canadian section of the proposed route (Maps 1-2).

The Project will require permits from several state and federal regulatory agencies, including the U.S. Department of Energy (DOE), the U.S. Army Corps of Engineers, the New York State Public Service Commission, and the Connecticut Siting Council. Therefore, this review and sensitivity assessment was conducted to comply with Section 106 of the National Historic Preservation Act of 1966 and Section 14.09 of the New York State Historic Preservation Act. The investigation was conducted according to the New York Archaeological Council's (NYAC) *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State* (NYAC 1994). The organization and content of this report also follows the guidelines of the *Environmental Review Primer for Connecticut's Archaeological Resources* (1987) published by the Connecticut Commission for Culture and Tourism and Section 10a-112 of Connecticut's state historic preservation legislation implemented in 1987.

The Phase IA report covers nearly 400 miles of diverse environments in New York State and Connecticut. Organization of the report largely follows the Project from north to south, breaking the alignment up into geographic areas: Lake Champlain, Champlain Canal, Overland, Hudson River, Converter Stations, Spuyten Duyvil/East River, and Long Island Sound. Discussion of environmental and historical factors in the sensitivity assessment of the Project is divided into sections as well, with application of the discussion topics to each of the geographic areas. The report includes:

- discussion of the proposed project impacts and installation methodologies;
- summary of the pre-screening document findings and identification of cultural resources within or adjacent to the Project APE;
- environmental background;
- summary and discussion of relevant precontact sites and potential contexts within or adjacent to the Project APE;
- summary and discussion of relevant historic sites and potential contexts within or adjacent to the Project APE;
- recommendations for Phase IB testing based on the literature review and sensitivity assessment.

At the request of CHPEI, Hartgen Archaeological Associates, Inc. (HAA or Hartgen) prepared a report, entitled: *Pre-Phase IA Cultural Resources Screening Report, Champlain Hudson Power Express, Lake Champlain to Long Island*. The pre-screening document contained a broad precontact and historical overview of the entire APE. More detailed discussion of precontact and historical cultural backgrounds is provided in the Phase IA report with relation to known cultural resources within, adjacent to, or (as needed) within 305 m (1,000 ft) of the Project APE. As the Project is not yet in the final design phase, the term "APE" refers to areas that will likely be impacted by Project construction or operation, including the proposed transmission cable route. This route (and therefore the APE) may change based on engineering decisions, avoidance of sensitive cultural or environmental resources, or other matters, although the alterations are not expected to be significant.

A site visit was conducted for this project over the course of several days in March 2010 by Matthew Kirk. Access to the railroad property of the overland portion of the project was restricted, and the site visit focused on areas that could be viewed from public roadways. Current conditions and existing structures are discussed throughout the document and accompanied by photographs based on the results of the site visit.

PROJECT INFORMATION

Project Location

The Project will originate at an HVDC converter station near Hydro-Québec TransÉnergie's ±300-kilovolt (kV) Hertel substation, south of Montreal. From the substation, the transmission cables will traverse an overland route for a distance of approximately 21 km (13 mi) to the Richelieu River. Underwater transmission cables will follow the Richelieu River for about 35.4 km (22 mi) south to the international border between the United States and Canada.

The transmission cables will continue south from the international boundary underwater through Lake Champlain to the northern entrance of the Champlain Canal in Whitehall, New York. To the extent practicable, the submerged cables will continue through the Champlain Canal section of the modern Barge Canal to a point just north of Fort Edward, where the canal joins the Hudson River.

An overland bypass will be necessary to circumvent Lock C12 at Whitehall and Lock C11 Fort Ann. These bypass sections will have a combined length of approximately 3.4 km (2.1 mi) and will utilize an existing railroad right-of-way. Just north of Lock C9, the HVDC cables will exit the Champlain Canal and will be buried for 0.7 km (0.45 mi) within New York State Canal Corporation (NYSCC)-owned land on the eastern shore of Lock C9. The HVDC cables re-enter the canal just south of Lock C9 and continue through (buried) the canal for 4.3 km (2.7 mi) towards Lock C8.

An overland bypass will also be necessary south of the Champlain Canal and Hudson River confluence to avoid activities associated with the Hudson River Polychlorinated Biphenyls (PCBs) Dredging Project in the Upper Hudson River. The transmission cables will exit the Champlain Canal north of Lock C8 near Durham Basin, where an existing railroad right-of-way is located immediately adjacent to the canal. From Durham Basin, the cables will be buried within an existing railroad right-of-way for a distance of approximately 101 km (69.9 mi) through Saratoga, Schenectady, and Albany counties. The cables will re-enter the Hudson River near the Town of Coeymans in Albany County, south of the City of Albany. Much of the railroad was formerly part of the Delaware & Hudson Railroad. Today, the railroad is operated by Canadian Pacific (CP) from Rotterdam, Schenectady County, north to Whitehall and by CSX south from Rotterdam to the Hudson River.

Upon entering the Hudson River at Coeymans, the HVDC cables are buried within the Hudson River for 190 km (118 mi) towards New York City. Two cables (one bipole) will terminate 566 km (354 mi) south of the Hertel substation at an HVDC converter station to be constructed at a property located on Wells Avenue in Yonkers, New York. The remaining two cables (one bipole) will continue along the Hudson River to the entrance of Spuyten Duyvil Creek. The cables will then follow a 101-km (63-mi) route through Spuyten Duyvil Creek, the Harlem River, and the East River to Long Island Sound before terminating at a converter station to be constructed near Cedar Creek Drive in the City of Bridgeport, Fairfield County, Connecticut.

Alternating current (AC) cables will transmit electricity from the converter stations to substations connected to the electrical grid. From the Yonkers converter station, AC cables will re-enter the Hudson River and travel south along Spuyten Duyvil Creek, the Harlem River, and the East River for a distance of approximately 8.5 km (5.3 mi). The AC cables will terminate at the existing Consolidated Edison (ConEd) Sherman Creek/Academy substation, near the intersection of West 201st Street and 9th Street, in the Borough of Manhattan. From the Bridgeport converter station, AC cables will carry electricity a distance of approximately 2.5 km (1.6 mi) to an existing United Illuminating Company (UI) substation.

Regulatory Context and Resource Overview

Although previous studies have identified several historic and archaeological resources in the Project's vicinity, the varying levels of analyses and investigation conducted for these studies have resulted in vastly different degrees of reporting and evaluation. At one end of this spectrum, resources within the proposed transmission cable corridor include "historic properties" that have been listed in or determined to be eligible for inclusion in the National Register of Historic Places (National Register). These historic properties include significant buildings, structures, sites, districts, and individual objects that meet the National Register Criteria for Evaluation (36 CFR § 60.4).

A smaller subset of historic properties within the vicinity of the Project has been designated as National Historic Landmarks (NHL) by the Secretary of the Interior. These NHL properties are considered significant historic places that possess exceptional value or quality in illustrating or interpreting the heritage of the United States.

Resources in the Project's vicinity also include properties listed in or eligible for inclusion in the New York State Register of Historic Places (State Register), established under Section 14.09 of the New York State Preservation Act of 1980 (Section 14.09). The State Register also includes a limited number of properties that have not been listed on the National Register. However, none of these properties occur within the vicinity of the Project.

The Connecticut State Historic Preservation Office (CTSHPO) also maintains the Connecticut State Register of Historic Places (State Register) that includes historic buildings, structures, and districts that are considered historically significant to the community. All properties listed in the National Register or recommended as eligible for the National Register by the CTSHPO are included in the State Register.

Other sites reported in the vicinity of the cable transmission route and aboveground facilities have not been subject to the same level of study or evaluation as properties listed in or determined eligible for inclusion in the State or National Registers. The nature and quality of available data regarding these unevaluated sites often varies significantly. In several instances, documentation regarding the integrity or geographical boundaries of these sites has not been collected or is not presently available. Several archeological sites recorded during the early 20th century fall into this category, as do many of the shipwrecks reported along waterways that comprise the majority of the transmission cable corridor. Many of these resources may potentially be eligible for inclusion in the National Register. However, in other instances, the integrity of these reported sites may be compromised or their geographical extent inaccurately reported. In either case, there is insufficient information currently available regarding these sites to make a recommendation or determination regarding their eligibility.

In addition to the resources discussed above, designated New York City Landmarks have also been identified within the general vicinity of the Project. New York City Landmarks and Landmark Districts are designated by the City of New York Landmarks Preservation Commission (LPC) to preserve important physical elements of New York City. Many of these Landmarks and components of Landmark Districts also share distinction as historic properties listed in or determined eligible for inclusion in the National Register.

Other related resources within the vicinity of the Project include National Heritage Areas. National Heritage Areas are designated by Congress and administered through a partnership between the NPS and local coordinating entities. The goal of the National Heritage Program is to expand on traditional approaches to

conservation by supporting large-scale, community centered initiatives that engage citizens in the preservation and planning process. While these National Heritage Areas contain historic resources listed in or eligible for inclusion in the National Register, the heritage areas themselves are not considered historic properties as defined in 36 CFR § 800.16(l).

In addition to the National Heritage Areas, the Project's proposed alignment is encompassed within several New York State Heritage Areas, including the Mohawk Valley Heritage Corridor and the "RiverSpark" (Hudson-Mohawk) Heritage Area. Other State Heritage Areas in the vicinity of the Project include the North Shore State Heritage Area on the North Shore of Long Island Sound, and several Urban Heritage Areas/Corridors. These state-designated urban areas include the Whitehall, Saratoga Springs, Albany, Kingston, Ossining, Heights (New York City), and Harbor Park (New York City) Heritage Areas. Similar to the National Heritage Areas, New York State Heritage Areas also contain properties listed in or eligible for inclusion in the National Register, but the areas themselves are not considered historic properties.

Federal, state, and local statutes governing the protection of historic properties have applicability to the proposed Project. Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (Section 106), establishes the statutory responsibilities of federal agencies to consider the effects of their undertakings on historic properties listed in or eligible for inclusion in the National Register. Because the Project will require federal permits, Section 106 and its implementing regulations at 36 CFR Part 800 are applicable to the entire undertaking. 36 CFR Part 800 defines the procedures for identifying historic properties in consultation with federally recognized Indian tribes, the applicable State Historic Preservation Office (SHPO), and other parties, including the public.

In addition to Section 106, portions of the Project to be approved by the New York State Public Service Commission (NYSPSC) are subject to the provisions of Section 14.09. Section 14.09 requires state agencies to consult with the NYSHPO if it appears that any project may cause any change, beneficial or adverse, to historic properties listed in or eligible for inclusion in the National or State Registers of Historic Places.

The LPC serves as the city's expert agency for historic resources and is typically consulted prior to authorizing projects that require discretionary action by city agencies. Pursuant to the New York City Landmarks Law of 1965, the LPC is also the agency responsible for regulating construction and improvements at New York City Landmark sites and districts.

The consultation procedures required pursuant to these applicable statutes will be coordinated during the permitting process. The consultation process, identification, and assessment requirements described in 36 CFR 800 provide the opportunity to address the requirements of Section 14.09 and requirements promulgated by the LPC. Accordingly, CHPEI anticipates that the Section 106 process will guide the identification of historic properties and the assessment of Project effects.

CHPEI anticipates that the U.S. Department of Energy (USDOE) will serve as the lead federal agency for purposes of consultation pursuant to Section 106. Consequently, the USDOE remains largely responsible for the findings and determinations made through the Section 106 process. As provided in 36 CFR § 800.2(c)(4), the USDOE may authorize CHPEI to act as the agency's non-federal designee for purposes of consultation under Section 106.

Description of the Area of Potential Effects (APE)

The Section 106 process requires identification of historic properties within the Project's Area of Potential Effects (APE), through consultation with the SHPO, Indian tribes, and other stakeholders. Although the APE for this undertaking has not yet been established, CHPEI anticipates that it will include all areas along the transmission cable corridor where ground- disturbing activities will be conducted. The APE will also likely include areas outside the transmission cable corridor, including the converter station sites, the AC cable alignment, transmission interconnection sites, laydown areas, and other locations that may be affected by Project construction and operations. Additionally, the APE will take into account standing historic properties

(i.e., buildings, structures, individual objects, and districts) that may be indirectly affected blasting or the use of heavy equipment, particularly along the overland sections of the project.

36 CFR § 800.16(d) defines the APE as the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. Project activities, both temporary and permanent, have the potential to impact cultural resources during the construction and operation phases of the Project. Although an APE has not been formally determined pursuant to 18 CFR Part 800, for purposes of this report, the term "APE" is used synonymously with "Project corridor" or "Project route." These terms were used universally in the pre-screening document to describe the preliminary design of the project. Another term used in the pre-screening report was "Study" or "Search corridor," which was used to describe the buffer area around the Project corridor defined for a site file search. This site file search radius differed along the length of the Project based on the proposed impacts and environment. For this report, the Project corridor will be referred to as the APE since much of the purpose of the report is to establish recommendations for Phase IB reconnaissance testing. The APE encompasses the entire alignment of the 620-km (385-mi) Project. Width of the APE varies based on installation techniques and environment.

The Project has the potential to effect archeological sites, historic properties, and shipwrecks, including resources listed in or eligible for inclusion in the National Register. Several of these cultural resources lie within or adjacent to the Project APE. The proposed transmission cable corridor will be located along historically significant waterways in New York that have been designated as archeologically sensitive by the New York State Office of Parks, Recreation and Historic Preservation (OPRHP). Construction of the Project has the potential for ground disturbance that may affect the integrity and character-defining features of archeological sites located within the transmission cable corridor. Installation of the transmission cables will require subsurface excavation that could impact buried archeological deposits or damage historic shipwrecks. Although there are limited terrestrial portions of the transmission line, overland sections are located in areas that may have significant prehistoric and historic period cultural deposits.

Several historic buildings, structures, and districts that are listed in the National Register are located along the proposed Project APE. These historic properties comprise several locks along the Champlain Canal, military fortifications, and other properties listed in or eligible for inclusion in the State or National Registers, including NHL districts that encompass portions of Lake Champlain and the Hudson River. While the Project is unlikely to have a significant effect on standing historic structures or buildings within the Project's vicinity, archeological deposits associated with these resources may by impacted by ground-disturbing activities resulting from both terrestrial and submarine cable installation. Other resources within the Project's vicinity may be indirectly affected by Project activities, including construction of the above-ground converter stations.

Project Construction Activities

Transmission Cables and Installation Methodologies

CHPEI will use solid dielectric cross-link polyethylene (XLPE) cables for this Project. The HVDC cables contain no insulating or cooling fluids, and their strength and flexibility make them well suited for submarine and terrestrial installation. In general, each cable is comprised of a 1,400 mm^2 copper conductor, conductor screen, insulation, insulation screen, lead sheath, steel armor, and outer serving. The HVDC transmission cables use a triple-extruded, dry-cured polymer insulation system. Submarine cables include a polyethylene sheath extruded over a lead alloy sheath to provide superior mechanical and corrosion protection. A layer of tensile armor comprised of galvanized steel wires embedded in bitumen and laid in counter helix provides additional protection for submarine cables. The outer surface of the submarine cables will consist of an asphaltic compound with polypropylene reinforcement. For terrestrial cables, the outer sheathing will be an ultraviolet-stabilized, extruded polyethylene layer. The outside diameter of each proposed submarine HVDC transmission cable will be approximately 5 inches, and the cables will each have a weight of about 30 lb per ft. Terrestrial cables will have an outside diameter of approximately 4.5 inches, and each cable will have weight of about 20 lb per ft.

Occasional variations in the size of the conductor and diameter of the HVDC cables may be necessary along certain sections of the Project's APE. These required variations will be identified and detailed through the engineering design process.

Given the length of the Project (approximately 400 miles) and the diversity of landforms and water areas that are crossed by the Project APE, a variety of methods and equipment will be employed during the construction phase of the Project. The goal of the cable installation will be to construct an HVDC cable system (and a relatively small section of HVAC cable system from the converter station to the substation) that, once properly installed and commissioned, will minimize the need for extensive maintenance and repair work during the operational life of the Project.

Submarine Cable Installation – Lake Champlain, Champlain Canal, Hudson River, Spuyten Duyvil Creek, East River, and Long Island Sound

As described above, the Project's APE follows existing waterways along a majority of the preferred alignment. Two submarine cables associated with each transmission system bipole will be laid approximately 1.8 m (6 ft) apart, and the two bipoles will typically be separated by approximately 9 m (30 ft). The separation distance between bipoles may vary with depth of water, with greater separation for deep water and reduced separation in shallow water and submarine to terrestrial transition areas. The minimum separation will never be less than 3.7 m (12 ft) between bipoles. Generally, the submarine power cables will be armored and buried primarily to a standard 0.9-m (3-ft) depth. Cable burial may be performed at the same time the cable is laid or at a later date, as deemed appropriate. The cables will be laid by specialized cable-laying vessels or a specially outfitted laybarge, depending on navigation constraints along the route. Several methods will be employed to ensure that the cable is sufficiently buried.

The majority of the proposed Project route is located within waterways. The proposed method of installation of the submarine HVDC cables is by the water jetting embedment process. This method involves the use of a positioned cable-laying vessel and a hydraulically-powered water jetting device that simultaneously lays and embeds the submarine cable in one continuous trench. The primary proposed installation vessel will be dynamically positioned, using thrusters. Dynamically positioned cable installation vessels do not contact or directly disturb the bottom; however, depending on navigation limitations along the route, it is possible that a tugboat positioned vessel or an anchor-positioned vessel may be used for some of the submarine cable installation. An anchor-positioned vessel would propel itself along the route with forward winches while letting out on rear winches and the other lateral anchors holding the alignment during the installation. The 4-to-8 point mooring system would allow a support tug to move anchors while the installation and burial proceeds uninterrupted on a 24-hour basis.

Water jetting embedment methods for submarine cable installations are considered to be the most effective and least environmentally damaging when compared to traditional mechanical dredging and trenching operations. This method of laying and burying the cables simultaneously ensures the placement of the submarine cable system at the target burial depth with minimum bottom disturbance, with much of the fluidized sediment settling back into the trench.

Water jetting equipment uses pressurized water to fluidize sediments. The water jetting device is typically fitted with hydraulic pressure nozzles located down the length of "swords" that create a direct downward and backward "swept flow" force inside the trench. This provides a down and back flow of re-suspended sediments within the trench, thereby "fluidizing" the in situ sediment column as it progresses along the predetermined submarine cable route such that the submarine cable settles into the trench under its own weight to the planned depth of burial. The water jetting device's hydrodynamic forces do not work to produce an upward movement of sediment into the water column, since the objective of this method is to maximize gravitational replacement of re-suspended sediments within the trench to bury or "embed" the cable system as it progresses along its route. The pre-determined (and adjustable hydraulics on the water jetting device) deployment depth of the jetting swords controls the cable burial depth.

In relatively shallow water depths (typically less than 15 feet), shallow draft vessels/barges, which typically use anchors for positioning, may be used for installation. Deeper draft vessels equipped with dynamic positioning thrusters are proposed for deeper water locations.

Burial can be performed by an independent or towed burial machine. The self-propelled water jetting device moves forward by the reaction of the backward thrust of the hydraulic jetting power that is fluidizing the soil and keeping the created trench open for the cable to sink into. The forward rate of progress is regulated by the varying types of soil and the water pressure applied through the jets. A towed skid/pontoon-mounted water jetting device or wheeled, frame-mounted water jetting device, can be deployed and operated in conjunction with the cable-laying vessel where appropriate.

It is anticipated that installing each of the four cables to the required depth (a minimum of 3 feet of cover) in the sediments that are generally found along the proposed underwater cable route will require that the water jetting device fluidize a pathway approximately 2 feet wide and 4 feet deep. Each cable will settle into the trench through its own weight.

The geometry of the "trench" is typically described as trapezoidal, with the width gradually narrowing with depth. Temporarily re-suspended in situ sediments are largely contained within the limits of the wall, with only a minor percentage of the re-suspended sediment traveling outside of the trench (more so for fine sediments than coarse). Any re-suspended sediments that leave the trench tend to settle out quickly in areas immediately flanking the trench, depending upon the sediment grain-size, composition, water currents and the hydraulic jetting forces imposed on the sediment column necessary to achieve desired burial depths.

As the water jetting device progresses along the route, the water pressure at the device nozzles will be adjusted as sediment types and/or densities change to achieve the required minimum burial depth. A test trench may be preformed to ensure proper depth of burial. In the unlikely event that the minimum burial depth is not met during water jetting embedment, additional passes with the water jetting device or the use of diver-assisted water jet probes will be utilized to achieve the required depth.

In certain small areas – typically transition areas between horizontal directional drilling (HDD) and cable trenches – a diver-operated hand jet may be used to bury the cable. In this process, a support vessel provides pressurized water through a hose with a nozzle that is maneuvered by a diver. The diver works the sediment under the cable to create a trench into which the cable settles. This method would be employed for short distances only, typically less than 100 feet.

For sections where water jetting is not possible, "plowing" may be necessary. For the plowing technique, a trench is made for the cable by towing a plow, and the cable settles into the trench, either at the same time or in a subsequent pass of the cable-laying vessel. There are pre-lay and post-lay plows, depending on the needs of the Project. For a pre-lay plow, the cable is simultaneously fed into the trench as it is created by the plow. For a post-lay plow, the cable has already been laid, the plow is lowered on the bottom and the cable placed inside the plow device, which then embeds it into the bottom as the plow is pulled forward. In either situation, the plow is not self-propelled, but is instead tethered to a surface support vessel which supplies the pulling power. Usually, the bottom sediment is allowed to naturally backfill the trench over the cable by slumping of the trench walls, wave action, or bed load transport of sediments. If the sediments are not likely to result in adequate backfill over the cable, a backfill plow can be used which employs horizontal blades that capture some of the sediment pushed off to the sides during plowing and pulls it back into the trench over the cable.

While it is intended that the use of conventional underwater trench excavation methods will be minimized, there will be some locations where conventional dredging will be required. These circumstances may include instances where the cable route is located within an existing navigation channel. In these locations, either a clam-shell dredge or a barge-mounted excavator will be used to pre-dredge a trench into which the cable will be laid. The trench will typically be over-excavated by approximately 20 percent to allow for slumping of trench sidewalls prior to cable installation. Trench spoil will be brought to the surface and placed on barges, either for re-use as backfill or for approved disposal. This work will most likely occur from spud barges,

although anchor-moored or jack-up barges may also be employed depending upon equipment availability and site conditions. A typical spud dredge barge will be equipped with three spuds, with one spud being a walk-away spud. The barge will have a crane, typically outfitted with a 6 to 9 cubic yard clamshell bucket. Alternatively, the barge may have a track hoe excavator working off the deck of the barge, possibly with an extended boom for areas of deeper water. Once a segment of trench is excavated, cable will be laid and the clam-shell dredge or excavator will place sediment back into the trench.

In limited areas along the Project APE, surficial geology or existing infrastructure (e.g., electric cables, gas pipelines, ferry cables, etc.) may not permit adequate cable burial depths within the lake/canal/river/seabed to ensure adequate cable protection. In these areas, the HVDC cables will be laid on the lake/canal/river/ seabed with protective coverings, such as rip-rap or articulated concrete mattresses. Areas where this method may occur are at foreign pipeline or cable crossings, small unavoidable bedrock areas, and potentially in areas of contaminated sediments. In these locations, the plow or water jetting device will be lifted off the bottom moved forward past the obstacle and then re deployed to the bottom once safely across. In a separate activity, the cable laying on the sediment surface would be covered with sloping stone rip-rap or articulated concrete mats. Typically this method will be used only for short distances.

Articulated concrete mattresses are made of small pre-formed blocks of concrete that are interconnected by cables or synthetic ropes in a two dimensional grid, typically creating shapes ranging from 6 feet by 6 feet to 8 feet by 25 feet. The concrete mattresses are lifted off barges and lowered into the water over the cable using a crane. Positioning is monitored by divers. Rip-rap would be sized to remain in place under current and wave conditions expected at the site. Rip-rap would be lowered from a supply barge using either a clamshell dredge or an excavator. Rip-rap thickness would be monitored by divers to prevent over- or under-placement of material.

Crossing of utilities owned by a third party, such as existing cables and pipelines, will require formal crossing agreements to be made. The design of the protection at these crossings will be subject to such agreements. Detailed discussions on methodologies and safety issues will be conducted with the owners of these infrastructures.

Water to Land Transition – Horizontal Directional Drilling

The transition of the HVDC submarine cables from water to land will be accomplished through the use of horizontal directional drilling (HDD). HDD is a preferred methodology because it minimizes disturbance within the intertidal zone and nearshore areas. HDD will be used not only on the Hudson River transition to land but also at the Champlain Canal locks in Washington County, New York, and the Bridgeport, Connecticut, converter station. At each shoreline transition location, the HDD will be staged at the onshore landfall area. Each cable will be installed within an 8 to 10-inch-diameter high density polyethylene (HDPE) casing. These HDPE casings will each require individual HDD sites. A drill rig will be setup onshore behind a bentonite pit, where a 40-foot–long drill pipe with a pilot-hole drill bit would be set in place to begin the horizontal drilling. Drilling fluid will then be pumped into the hole. The HDD construction process will involve the use of drilling fluid in order to transport drill cuttings to the surface for recycling, aid in stabilization of the *in situ* sediment drilling formations, and to provide lubrication for the HDD drill string and down-hole assemblies.

After each 40-foot-long section of drilling, an additional length of drill pipe is added until the final drill length is achieved. When the drill bit emerges in the pre-excavated pit, the bit is replaced with a series of hole opening tools called reamers to widen the borehole. For this project, it is anticipated that a single reaming pass would be necessary to allow installation of the conduit. Once the desired hole diameter is achieved, a pulling head is attached to the end of the drill pipe and the drill pipe is used to pull back the HDPE conduit pipe into the bored hole from the offshore end.

Smaller conduits with pulling wires would be placed inside the HDPE pipe to house the submarine cable system. Once the internal cable conduits have been inserted into the HDPE conduit, a clay/bentonite medium would be injected into the conduit system to fill the void between the cable conduits and the pipe.

The conduits would be sealed at both ends until the submarine cable system is ready to be pulled through the conduit. After submarine cable system installation, the conduits would be permanently sealed at each end to complete the installation process.

To further facilitate the HDD operation, a temporary cofferdam may be constructed at the exit hole location. The cofferdam would be rectangular in shape and would be open at the end facing towards the shore to allow for manipulation and pull back of the conduits. The cofferdam would be constructed using steel sheet piles driven from a barge-mounted crane. The cofferdam is intended to help reduce turbidity associated with the dredging and HDD operations.

Sediment inside the cofferdam would be excavated to expose the seaward end of the borehole. At the end of cable installation, the cofferdam excavation would be backfilled rather than allowed to in-fill over time. The dredged material would be temporarily placed on a barge for storage, and dredged area of the cofferdam would then be backfilled with the dredged material. If necessary, the dredged material backfill material would be supplemented with imported clean sandy backfill material to restore the bottom to preconstruction grade

Terrestrial Cable Installation – Washington, Saratoga, Schenectady, and Albany Counties

To the extent practicable, the transmission cable route will follow existing waterways extending from the United States/Canadian border to the New York City and southwestern Connecticut regions. However, engineering and environmental constraints will require overland installation of the cables along certain sections of the Project's route. The HVDC cables will follow overland bypass routes around Locks C12, C11, C9 (there is no Lock C10), and the Upper Hudson River Dredging Project area. The HVDC cables will be buried within existing railroad rights-of-way located adjacent to the associated waterways along the proposed Project APE, with the exception of the Lock C9 bypass, which utilizes NYSCC-owned land for cable installation/burial.

The underground portion of the Project APE is located within or immediately adjacent to the existing Canadian Pacific Railroad (CP) and the CSX Transportation, Inc. (CSX) railroad rights-of-way. A minimum separation distance is required from the rails to the cables by each railroad, with CP requiring a minimum separation of 3 m (10 ft) from the centerline of the outermost track to the cable trench and CSX requiring a minimum separation of 7.6 m (25 ft) from the centerline of the outermost track to the cable trench. The typical and preferred layout is to have one bipole (two cables) installed on either side of the railroad tracks. With this layout, the limits of construction activity extend 4.6 m (15 ft) beyond the required minimum setback of the railroads. This 4.6-m (15-ft) area will include the area needed for excavation of the trench, installation of erosion and sediment control measures, installation of the two cables, and stockpiling of excavated material. In total, the CP construction APE will amount to approximately 15 m (50 ft) (7.6 m [25 ft] on either side of the track) and the CSX construction APE will amount to approximately 24 m (80 ft) (12 m [40 ft] on either side of the track). There are areas that will require different configuration and pose additional engineering challenges, such as steep slopes, environmentally sensitive areas, and existing structures. Map 3 shows the different owners of the railroad and Figures 1 and 2 present schematic drawings of a typical APE segment for both CP and CSX operated railroads.

Each of the four underground cables will require a number of splicing joints and a flat pad will be installed underneath each joint for splicing activities. The number of joints will be kept to a minimum and will be determined either by the maximum length of cable that can be transported in a single piece or by the maximum length of cable that can be pulled, whichever is the least. The jointing is performed in a jointing pit, with typical general dimensions for four cables being 9 m (30 ft) long, 12 m (40 ft) wide, and 2.1 m (7 ft) deep. For land installation, typical segment lengths range from 0.5 to 0.1 miles. The following sections identify the general construction sequence for routine cable installation along the underground portion of the Project:

- Initial clearing operations (where necessary) and storm water and erosion control installation;

- Trench excavation;
- Cable installation;
- Backfilling; and
- Restoration and revegetation.

Initial clearing operations will include the removal of vegetation within the cable trench area, along with any temporary additional construction workspace (e.g., HDD workspace), either by mechanical or hand cutting. The cleared width within the right-of-way and temporary construction workspace will be kept to a minimum that will allow for spoil storage, staging, assembly of materials, and all other activities required to safely install the cable.

The typical trench will be up to 2.7 m (9 ft) wide at the top and approximately 0.9 m (3 ft) deep to allow for the proper depth and separation required for the burial of the cables. In general, the trench will be deep enough to provide for 0.9 m (3 ft) of cover over the cable and the excavated material will be placed next to the trench. In normal terrain, where the soil consists of unconsolidated rock and earth, the trench will be excavated using rail-mounted equipment. When this is not possible, traditional excavation equipment will be used.

Based on review of soils and geologic maps of the Project area, shallow bedrock has the potential to be encountered along some portions of the land segment of the proposed Project route. Rock encountered during trenching will be removed using one of the following techniques. The technique selected is dependent on relative hardness, fracture susceptibility, and expected volume of the material. Techniques include:

- Conventional excavation with a backhoe;
- Hammering with a pointed backhoe attachment followed by backhoe excavation; or
- Blasting followed by backhoe excavation.

For the overland sections of the Project's route, two cables comprising each bipole system will typically be laid side-by-side (approximately 3 feet apart) in a trench approximately 0.9 m (3 ft) deep. Once a pre-selected length of trench is excavated to the necessary depth and the base prepared, rollers will be placed in the bottom of the trench to facilitate pulling the cable into the trench. A cable attached to a winch at the opposite end of the trench from the cable spool will be attached to the cable and reeled in, pulling the cable down the length of the trench on the rollers. Depending upon the soil conditions on the bottom of the trench, the bottom of the trench may have some padding fill placed before pulling the cable into the trench. Once the cable segment is pulled down the length of the trench, it is moved off the rollers.

Given the need to schedule work with the railroad and the overall Project schedule, it is anticipated that cable installation activities will occur 24 hours per day/7 days per week in most areas, with nighttime shutdowns occurring in select sensitive receptor areas. This will require that nighttime lighting be used. To the extent possible, directed lighting will be employed when in residential areas to minimize lighting of areas outside of the workspace. In addition, the continual construction schedule will result in the operation of heavy machinery and equipment (e.g., generators, excavators, vehicle engines) during all hours of the day and night. Depending upon noise sensitivity of nearby areas, certain activities may be limited to daytime periods (e.g., blasting, if required).

Subsequent to laying the cables, the trenches will be backfilled with low thermal resistivity material. Because the operation of the cables results in the generation of heat, and heat reduces the electrical conductivity of the cables, it is important to backfill with this material to prevent heat from one cable affecting a nearby cable. There will be a protective concrete cover or a layer of weak concrete directly above the low thermal resistive backfill material. The whole assembly will have a marker tape placed 0.3-0.6 m (1-2 ft) above the cables. Where two bipole transmission systems are present, two trenches will be required, and the bipoles will have a

minimum separation of approximately 3.7 m (12 ft). The top of the trench may be slightly crowned to compensate for settling. In wetland areas, the segregated topsoil will be spread across the trench area.

In areas of wetlands or perched water tables, trench plugs or other methods to prevent draining of wetlands or surface waters down the trench will be used. In areas of wetland soils, the organic surface layer will be backfilled over the subsoil backfill to reestablish an adequate soil profile for wetland restoration objectives. Another component of the backfilling process that will be assessed and addressed is soil compaction. Soil compaction is a small concern if the trenching, stockpiling, cable installation and backfilling are conducted from the railroad, as heavy equipment operation on the ground surface along the cable trenches will be minimal. In addition, location of the construction corridor within the railroad right-of-way (and not on adjacent fields or agricultural lands) further reduces the likelihood of soil compaction concerns.

A cleanup crew will complete the restoration and revegetation of the rights-of-way and temporary construction workspace. In conjunction with backfilling operations, any woody material and construction debris will be removed from the rights-of-way. The temporary construction area will be seeded with an approved seed mix for the area and allowed to revegetate naturally.

Permanent changes to vegetation cover are not anticipated except in limited areas where forested cover may be converted to a shrub community where the cables are installed outside of the existing portion of the right-of-way currently undergoing vegetation management. During operation of the Project, these areas will be managed to prevent the establishment of trees directly over the cables. Vegetation clearing will occur only if it is necessary to conduct repairs or maintenance along the transmission cables. The use of herbicides for construction and maintenance of the cables is not anticipated at this time.

Converter Stations

CHPEI proposes to construct converter stations near existing substation locations at Wells Avenue in Yonkers, New York and at Seaside Park in Bridgeport, Connecticut. The HVDC converter station will be of a "compact type" (Siemens HVDC Plus™ or ABB HVDC Light™). The dimension of the converter station facilities is approximately 160 m (525 ft) by 70 m (230 ft) and 25 m (81 ft) tall, requiring approximately 1.2 ha (3 ac) of land. The proposed converter stations will require concrete foundations to support the equipment and superstructure. The specific methods for converter station construction will be dependent on the existing conditions at the proposed locations.

PRE-SCREENING DOCUMENT AND PERMIT APPLICATIONS

In order to progress the permitting process while Project plans were initially being prepared, HDR|DTA (CHPEI's primary consultant for the permitting phase of this Project) distributed a letter in February, 2010, to state and federal agencies, non-governmental organization (NGOs), Indian tribes, and other potential stakeholders with a prospective interest in the Project's potential effects on cultural and historic resources. The letter provided an overview of the proposed Project and included a request for additional information from the parties described above. The letter also described the need for additional studies to identify historic properties within the Project's vicinity and to determine the Project's potential effects on these resources.

To this end, CHPEI requested that Hartgen undertake a pre-screening study to identify all known and recorded cultural resources and cultural resource surveys within or adjacent to the proposed APE (HAA 2010). The resulting report, entitled: *Pre-Phase IA Cultural Resources Screening Report, Champlain Hudson Power Express, Lake Champlain to Long Island*, was prepared by Hartgen under the direction of HDR|DTA and was distributed to the CTSHPO, NYSHPO, Indian tribes, and other parties in April 2010. The goal of this effort was to compile all known resources to help planners avoid known resources and also to assess the sensitivity of certain portions of the Project. In all, over a thousand sites and National Register properties were identified.

For the pre-screening report, the search corridor in Lake Champlain included all of the New York shoreline for terrestrial archeological sites and National Register properties, and a 610-m (2,000-ft) wide search corridor

for the cable installation. The Lake Champlain Maritime Museum (LCMM) provided Hartgen with data pertaining to the underwater sites. A total of 53 underwater sites were identified; once the cable path was adjusted, only eight of those initial sites were within or adjacent to the path of the APE. There were also thirty National Register-listed and -eligible properties, including National Historic Landmarks, and 115 terrestrial sites identified in the search corridor. Numbers of sites within or adjacent to the Project APE have been adjusted in this report due to changes in the proposed corridor.

The search corridor for the Champlain Barge Canal was limited to 150 m (500 ft) on either side of the centerline of the canal. The Projects proposes to bypass four locks in the installation process. No shipwrecks were identified in the canal and none are expected, since this waterway was regularly dredged to maintain its use as a shipping channel. There were, however, 28 National Register-listed or –eligible properties and 32 archeological sites identified within the search corridor. A few of these sites are intersected by the lock bypasses. Otherwise, no impact to archeological sites is expected from the underwater cable installation along this section of the Project's alignment.

The overland portion of the Project APE comprises the bulk of this report, since much of the Phase IB reconnaissance will focus on this 112-km (70-mi) section. For the pre-screening document, 30 National Register-listed and –eligible properties and 72 archeological sites were identified in the search corridor, which was limited to 150 m (500 ft) on either side of the center line of the APE. Along this section, the cable will be installed in the railroad ROW. Although numbers have been adjusted since the pre-screening document, the APE does intersect a number of sites and NR properties.

For the pre-screening report, Hartgen examined the Hudson River for terrestrial sites along the banks and underwater sites within virtually the entire breadth of the river. The search corridor included both shorelines to account for staging and/or laydown areas. As a component of this research, HAA, Inc. also obtained data from the New York State Department of Environmental Conservation (NYSDEC) associated with the Benthic Mapping Program for the Hudson River. Hartgen utilized the high-resolution, 2-meter sun-illuminated bathymetric maps generated by the NYSDEC survey to identify the locations of shipwreck sites and anomalies in the Hudson River Estuary, extending from Troy to New York City. A total of 272 archeological sites were identified along the riverbanks, along with 90 National Register properties, and 474 underwater resources. Underwater resources included both confirmed and reported shipwrecks and other resources as well as anomalies identified in waters over 6.1 m (20 ft) deep. These anomaly signatures were compared with confirmed signatures to assess the likelihood that these unknown features were indeed cultural, but all anomalies were included in mapping for the Hudson River. Although the cable route was realigned during the process, 26 identified sites remained within or adjacent to the Project APE. This number has since been refined and is discussed below.

The Spuyten Duyvil Creek, Harlem River, East River, and Long Island Sound were also examined for underwater sites, National Register properties, and terrestrial sites. The smaller waterways had search corridors that included all of the water and river banks. The Long Island Sound search corridor was 300 m (1,000 ft) from either side of the center line of the cable route. There were 38 terrestrial sites, 37 National Register-eligible or –listed properties, and 74 underwater resources (including 65 confirmed wrecks). Additional data has subsequently been gathered from the Connecticut Department of Environmental Protection for shipwrecks in the Long Island Sound. This information is presented in this report, as it was not available at the time the pre-screening document was produced.

Finally, the two converter stations in Yonkers and Bridgeport and substation in Academy/Sherman Creek were investigated for cultural resources within a 300-m (1,000-ft) radius. Twenty-two resources were identified, limited to terrestrial sites and National Register properties within the search radius. At Bridgeport and Academy/Sherman Creek, precontact sites have been identified within the Project APE. This report includes detailed map reviews of all three sites and further explication of archeological sensitivity and potential.

The pre-screening document was accompanied by four series of maps and a table listing all of the resources located on the maps. Sites, surveys, and properties were numbered on the pre-screening maps. These

numbers are referred to in this report as well, when discussing resources that effect the sensitivity of a particular segment of the Project APE or resources within or adjacent to the APE.

LAKE CHAMPLAIN – CLINTON, ESSEX, AND WASHINGTON COUNTIES, NEW YORK

The majority of the transmission cables' alignment in Lake Champlain is within the lake and will require underwater installation. There is one segment north of the Village of Whitehall where the transmission cables exit the lake and is placed along the Delaware and Hudson Railroad right-of-way and into the village limits. Discussion in this section covers the entire APE from the Canadian border to the beginning of the overland portion leading into the Village of Whitehall, Washington County, New York.

Environmental Background

Much of the APE alignment is along the lake bottom. Lake Champlain was once part of an inland reach of the sea, for a brief period after the last glacial retreat, about 10,000 years ago. The Champlain Sea was an arm of the Atlantic Ocean, and covered many thousands of square miles more than the present-day Lake Champlain. Geophysical information concerning the lake bottom is being collected as part of the current testing for Project engineering. Interpretations of this geophysical data–particularly information concerning potential shipwrecks sites indicated on side-scan sonar and sub-bottom profiles–will be presented to the OPRHP as part of a later submission. The short overland segment near Whitehall is characterized by very poorly drained soils characteristic of the wetlands along the south end of the lake. No bedrock outcrops are known for that part of the APE.

Results of Pre-Screening Site File Search

The pre-screening document (Hartgen 2010) identified 114 terrestrial archeological sites, 53 submerged archeological sites, 27 previous cultural resource surveys, and 30 National Register-listed or –eligible properties within the search corridor within the lake and immediately along the lake shores. The search corridor for underwater sites covered a 305-m (1,000-ft) wide strip centered on the proposed cable route. The search corridor for terrestrial sites covered all of the shoreline along the New York side of the lake.

Lake Champlain was a major draw for thousands of years for settlers in what is now New York State. Sites representing every major temporal phase of Native American occupation have been found on the shores, representing about 10,000 years of human settlement in the area. Historically, the lake has been widely traveled by military, commercial, and recreational parties and continues to be a major attraction in the Northeast.

Since the Project APE lies principally within the lakebed, many of the cultural resources identified in the pre-screening have been avoided or are not threatened based on the nature of the Project. Table 1 shows the resources intersected by the project. These include four terrestrial sites that may have components within the lake and six submerged sites. The Project APE also skirts or intersects five National Register-listed properties.

Archeological Sites

There are four terrestrial-based archeological sites which appear to be intersected by the Project APE. Due to the use of generalizations, OPRHP site file maps indicate that some of these sites extend into the water. This may or not be the case, as often testing has not been conducted within the water near these sites. The Project APE crosses close enough to some sites that there is the potential for cultural resources extending into the water.

The Project APE also intersects or lies adjacent to six known underwater sites, including a mid nineteenth-century canal boat, the *Ella E. Bagley*, a railroad drawboat that burned in 1902, two other canal boats, and two anomalies that may be sunken vessels or other cultural resources (Table 1).

The Project APE also approaches a handful of Revolutionary War sites in Lake Champlain. Fort Montgomery at the north end of the lake is indicated as "ruins" on the most recent USGS quadrangle. The

Project APE passes within 100 m (300 ft) of this fort. The Project APE also approaches Cumberland Head and Valcour Island, both locations associated with the naval battles during the Revolutionary War and War of 1812. Site forms and National Register listings indicate that the archeological contexts are concentrated largely on the west side of the landforms, while the APE passes within 610 m (2,000 ft) to the east. It is unlikely that the Project APE will have any impact on these resources.

Previous Cultural Resource Surveys

Three previous surveys extended into the Project APE. One survey (Survey 27) identified a mill site and four precontact lithic scatters on Cooke's Island just north of the village of Whitehall. The Project APE crosses very similar terrain to this area throughout the narrow inlet of Lake Champlain where the lake is flanked by marshes and dotted by lateral islands.

The other two surveys (Surveys 17 and 26) are historic underwater surveys focusing on eighteenth-century military occupations around Crown Point and Ticonderoga. The surveys identified a number of submerged resources, including ships and wood and stone caissons from the eighteenth-century Great Bridge. In addition to immovable features, there are also likely thousands of smaller artifacts strewn across the lake bottom in these locations (McLaughlin 2000; Cohn 1995).

Archeological Sensitivity and Potential

The Project will, whenever possible, utilize existing facilities for storage of construction materials and equipment. Most of the cable installation work will be conducted from the water.

Sensitivity along the lake shore is considered high. There are likely areas along the lake with prior disturbance, but precontact and historic site density is fairly concentrated, especially north of the narrow, steeply banked southern reaches of the lake. Archeological sites on the shore may have components that extend into the lake, either deriving from military engagements and activities or from precontact sites that date to times when lake levels may have been lower.

There is very high sensitivity for underwater sites along the entire Project APE in the lake. Work by the LCMM has identified dozens of sites, ranging from eighteenth-century naval ships to twentieth-century commercial barges. To date, the Project APE has been rerouted to avoid many of the known sites. Forthcoming sonar and bathymetry surveys and allied geophysical testing may identify more sites within the APE. Due to engineering concerns and concerns for protecting significant historical resources, the APE will be changed where appropriate to avoid underwater sites.

Table 1. Cultural Resources Intersected by Lake Champlain Segment of Project APE, Champlain-Hudson Power Express.

Resource	Description	Location
Possible *Ella E. Bagley* (LC 1)	Mid 19th-c. canal boat, possibly buried.	-
NYSM 11628 (LC3)	Railroad drawboat, burned in 1902.	-
NYSM 11633 (LC 8)	Anomaly, possible wreck.	-
VT-AD-1019 (LC 29)	Wreck of a canal boat identified during Mt. Independence survey.	-
VT-RU-262 (LC 47)	Mid 19th-c. canal boat, intact.	-
VT-RU-263 (LC 48)	Scattered debris, unidentified vessel.	-
NYSM 5108 (Site 92)	Traces of occupation identified by Parker.	Town of Putnam, Washington County.
Flat Rock Bay, NYSM 1344 (Site 94)	Woodland period site.	Town of Putnam, Washington County.
Pulpit Point, NYSM 1350 (Site 97)	Contact period French fort and settlement.	Town of Dresden, Washington County.
NYSM 5106 (Site 101).	Traces of occupation identified by Parker.	Town of Dresden, Washington County.
Plattsburgh Bay NHL (NRL 1)	Military historic district.	Cumberland Bay, Clinton County.

Resource	Description	Location
Camp Dudley Road Historic District (NRL 11)	Nineteenth-century historic district.	Town of Westport, Essex County.
Ft. Crown Point NHL (NRL 17)	Contact period and military historic landmark.	Town of Crown Point, Essex County.
Lake Champlain Bridge (NRL 15)	20th-c. bridge, now demolished.	Between Crown Point, NY, and Chimney Point, VT.
Ft. Ticonderoga NHL (NRL 18)	Military historic district.	Town of Ticonderoga, Essex County.

CHAMPLAIN CANAL – WASHINGTON COUNTY, NEW YORK

CHPEI proposes to install cables within the Champlain Canal portion of the New York State Barge Canal. This will require the bypass of four canal locks by a combination of horizontal directional drilling and overland trenching. Since most of the cable route is proposed for the bed of the Champlain Barge Canal, the Phase IA report focuses on the four bypass sections, which includes an overland section from the southernmost lock to the south edge of the Village of Fort Edward, and the crossing of Rogers Island (Maps 13-16). This last lock bypass begins the long overland portion through Washington, Saratoga, Schenectady, and Albany Counties, ending in the Hudson River at the Town of Coeymans. The bed of the canal is often dredged and no potential for intact archeological sites is expected.

Environmental Background

The soils in and around the canal have been partially disturbed by canal and lock construction, however, the USDA soil maps provides some information concerning what the original soils in the area may have been, and what the undisturbed soils of the area may include. The northernmost bypass at Lock C12 bears Orthents and Psamments on the west side with sections of Hollis-Charlton and Hollis-Rock outcrop soil units on the east (Table 2). The former soil types largely derive from canal dredge and pump deposits that form along the banks of the canal. The soil survey describes these as excessively drained soils with outcrops of granitic bedrock within 26-51 cm (10-20 in) of the ground surface. The bedrock geology map (NYSM 1970) shows no chert-bearing bedrock sources within this bypass APE.

At the Lock C11 bypass, Orthents and Psamments dominate the soil types on both sides of the canal. These long, lateral patches are flanked by Kingsbury silty clay on the northwest and Palms muck on the southeast (Table 2). Both are characterized by boggy soils and marshes that formed in former lake plains. Bedrock is likely too deep in this section for any outcrops. The swampy terrain to the east would have been an attraction for Native Americans traveling between the lake and the Hudson River.

Soils in the southern overland portion of the Canal segment largely consist of Claverack sandy loam roughly south of the Village of Whitehall corporation line and Carlisle muck north of that point to the APE's reentry into the canal (Table 2). Both of these soil types form in ancient lake plains and neither holds potential for deeply buried archeological deposits. Soils in this area are too deep for any bedrock outcropping.

Cultural Background and Known Resources

The Champlain Canal was formed by following natural water routes along what is known as the Champlain lowlands. This corridor was regularly traveled by Native Americans and later European settlers. The economic and strategic military importance of this corridor was particularly high during the French and Indian War, the American Revolution, and the War of 1812–as evidenced by the numerous forts along the way. In peacetime, the need for a canal system to speed the passage of people and goods became obvious to many, however, it was not until after the War of 1812 that a canal between Lake Champlain and the Hudson River was deemed of national importance (Larkin 1998:47).

In 1817, construction of the Champlain Canal was authorized by the State of New York. Originally forty feet wide (12 m) by four feet deep (1 m), the canal contained 19 lift locks and four guard locks to navigate the

elevation changes over the 106 km (66-mi) trek between Whitehall and Waterford, New York. Locks 9, 11, and 12 are in the Project APE (there is no Lock 10). Two water supply canals (feeders) were also constructed, one at Fort Edward in Washington County (1818) and the other at Glens Falls in Warren County (1828). The canal along with the feeders allowed cargo from the Erie Canal and Albany to be carried north into the Champlain Valley to the St. Lawrence River, northwest into Glens Falls and then overland into the Adirondacks, or northeast into Vermont (Larkin 1998:48).

Shipments carried along the canal included lumber from the Adirondacks, iron ore from the Champlain Valley, along with marble, ice, and various manufactured goods from Vermont (Eisenstadt 2005:1122). Though the original canal was designed for tow barges pulled by donkeys, mules, and horses, as industrialism progressed, tug boats and machine powered canal boats became common sights. The broad success of the canal spurred improvements to the waterway and the canal was enlarged in 1860 to 50 feet wide (16 m) by 5 feet deep (1.5 m). A second and third enlargement in 1870 and 1896 widened the route to 58 feet wide (18 m) and seven feet deep (2 m). By the early 1900s, boats could transport cargo loads weighing up to 190 tons (Eisenstadt 2005:1122). A final expansion of the canal occurred between 1905 and 1918 and the waterway was expanded to 123 feet wide (37.5 m) and 12 feet (4 m) deep as part of the NYS Barge Canal Program. By and large, the Barge Canal occupies a different route than the original Champlain Canal. The Project intersects the old canal in two locations within Whitehall and Fort Edward.

By the mid-1900s, petroleum products were one of the largest segments of the shipping industry along the canal. Gasoline, kerosene, and jet fuel were transported from major refineries in New Jersey and shipped to the Plattsburgh Air Force Base. With the closing of the base, the largest portion of commercial transport along the canal was discontinued (Saratoga Associates 1993).

Table 2. Soils Types, Champlain Canal Lock Bypasses, Champlain-Hudson Power Express Project.

Name and symbol	Soil Horizon Depth in (cm)	Color	Texture, Inclusions	Slope	Drainage	Landform
Lock C12						
Orthents and Psamments	-	-	-	-	Various	Derived from dredge and pump deposits from the canal bed.
Hollis-Charlton association	-	-	-	3-15%	Somewhat excessively drained.	Glacial till.
Hollis-Rock outcrop association	0-10 cm (0-4 in) 10-20 cm (4-8 in) 20-48 cm (8-19 in) 48+ cm (19+ in)	Dk br Br Y br -	Lo Fi sa lo Fi sa lo Bedrock	3-15%	Somewhat excessively drained.	Glacial till and bedrock.
Lock C11						
Orthents and Psamments	-	-	-	-	Various	Derived from dredge and pump deposits from the canal bed.
Kingsbury silt loam	0-15 cm (0-6 in) 15-20 cm (6-8 in) 20-46 cm (8-16 in) 46-71 cm (18-28 in) 71-127 cm (28-50 in)	Gr br Gr br Dk gr br Dk gr br Dk gr br	Si cl Si cl Cl Cl Cl	0-2%	Somewhat poorly drained.	Lake deposits.

Name and symbol	Soil Horizon Depth in (cm)	Color	Texture, Inclusions	Slope	Drainage	Landform
Palms muck (Pa)	0-163 cm (0-64 in) 163-386 cm (64-152 in)	-	Muck Cl lo, fi sa lo, si cl lo.	0-3%	Very poorly drained.	Marshes, swamps.
Lock C9 and Overland Segment						
Claverack sandy loam	0-51 cm (0-20 in) 51-175 cm (20-69 in) 175-201 cm (69-79 in) 201-465 cm (79-183 in)	-	Lo fi sa Fi sa, lo fi sa, sa Si lo, very fi sa lo Cl, sic l, si cl lo	0-3%	Moderately well drained	Lake plains.
Carlisle muck (Ca)	0-516 cm (0-203 in).	-	Muck	0-2%	Very poorly drained.	Marshes, swamps.

Key: Color: Br-Brown, Dk-Dark, Gr-Gray, Re-Red, Y-Yellow, Bk-Black, Ol-Olive
Texture: Co-Coarse, Fi-Fine, Gv-Gravel(ly), Lo-Loam, Sa-Sand, Si-Silt, Vy-Very

Source: USDA SCS 1975.

Today, the canal is generally used for recreational boaters (Saratoga Associates 1993). It provides access between the Atlantic Coast, St. Lawrence River, Hudson River, Lake Champlain, the Finger Lakes, and the Great Lakes. Historic sites and scenic areas abound along the canal and draw tourists into the region. The original Champlain Canal was placed on the National Register of Historic Places in 1976 as part of the nation's Bicentennial celebration (Eisenstadt 2005:1122).

The Village of Fort Edward is named for the mid-eighteenth-century fort built by the English to defend the interior of the colony of New York from the French. The fort figured prominently in the French and Indian War and the Revolutionary War and later served as an outlet for travel from Lake Champlain into the Hudson River Valley. Archeological surveys in the village have repeatedly found intact evidence of the fort and its outer earthworks as well as an extensive precontact settlement site that spans much of the town and adjacent creek valleys.

The CP railroad was originally built as the Delaware & Hudson Railroad and reached Whitehall from Albany by 1850 (Kudish 1996:99). The line was extended to Westport by 1877 and eventually all the way up the lake to Plattsburgh. The railroad ROW will be used as the Project APE from Dunham's Basin, just northeast of Fort Edward to the river, as well as a short stretch to circumvent Lock C11 and through the Village of Whitehall from the lake to its intersection with the Champlain Canal south of the village.

Analysis of historical maps focused on the four bypasses. For the Lock C12 bypass through the Village of Whitehall, the Project APE exits the lake and parallels the CP railroad into town. Historical maps of the area show a number of structures north of the village center along the railroad, including a cluster of structures on the 1902 USGS map, possibly industrial, at the north end of the line (Maps 8 and 9). The APE follows the railroad track into the village and turns east onto an existing railroad spur towards Rutland and back into the Champlain Canal. At this point, the APE crosses the old canal, which parallels the Barge Canal. The canal is in largely intact in this area.

At Lock C11, the 1904 USGS quadrangle shows two structures around the lock, where the road once crossed the canal and paralleled the railroad (Map 10). These structures may have been used for tending the lock. No indication of these structures is shown on the most recent maps of the Project APE, indicating that they were gone by mid-twentieth century.

Smith's Basin is a small hamlet situated just north of Lock C9 in the Town of Kingsbury. This hamlet was established c. 1822, prompted by the completion of the Champlain Canal. Nineteenth-century accounts of the

village state that the site remained small with a few railroad structures, hotel, store, public house (tavern), blacksmith, and wagon shop (Johnson 1979:432). The 1866 Stone and Stewart map indicates no structures in the Project APE. The 1904 USGS quadrangle depicts the present structure located at the lock, which was probably built about the same time the Champlain Canal lock was constructed at the turn of the twentieth century.

The railroad overland segment in the Town of Fort Edward appears to lie adjacent to a structure on the 1866 Stone and Stewart map just outside of the main village, attributed as the J. Case house (Map 11). No structures are depicted within the APE at Dunhams Basin on the same map or on the 1897 USGS topographic quadrangle. However, once the railroad enters the Village of Fort Edward and the population density starts to rise, several structures are depicted as adjacent to the Project APE (Maps 12-13). The Project APE also crosses the former bed of the original Champlain Canal within the village (Map 12).

Results of Pre-Screening Site File Search

The site file search for the pre-screening document identified a total of 56 archeological sites, 14 previous archeological surveys, 25 National Register eligible properties, and seven National Register listed properties within or adjacent to or within the respective search corridor in the canal segment of the Project (Maps 4-7). No underwater sites were located in the canal, however, a number of shipwrecks and other land-based sites were identified as part of a survey for the PCB dredging project in 2005 and 2006 around Rogers Island (PanAmerican 2005; URS 2005, 2006).

Archeological Sites

There are 56 known archeological sites within or adjacent to the Project or within this portion of the search corridor. Large "traces of precontact occupation" sites were mapped by Arthur C. Parker, noted State Archaeologist, in the early twentieth century. Three of these sites fall within or adjacent to the Project APE. Parker located these sites based on information from local informants and never visited most of the sites he reported. Often these sites have indefinite boundaries and are loosely drawn based written descriptions of the sites. The Parker sites (Sites 145, 146, 148, and 149; Maps 4-7) are described as trails and traces of occupation as well as a village site (Table 3). Since much of the Project APE is within the canal, there is no concern for the direct effect of the cable installation on these resources. However, eight archeological sites, including three Parker sites lies within or adjacent to the Project APE in the lock bypass or overland sections.

Also identified within the APE were three components of the 1834 Canal Village Archeological District, which is described as well in the survey portion of this discussion. The House Ruins, Fisher Barn, and Smith's Landing sites are all elements of an archeological district recommended for inclusion on the National Register based on the results of a New York State Museum (NYSM) survey in 1984. The APE in this location requires a bypass around Lock C11 and may encounter similar archeological resources.

Table 3. Archeological Sites within Canal Lock Bypasses, Champlain-Hudson Power Express Project.

Site #	Site Name	NYSM/OPRHP #	Description	Location
129	House Ruins	11505.000007	Structural remains of house.	Lock C12
130	Fisher Barn	11505.000008	19th-c. structural remains possibly associated with a stagecoach tavern.	Lock C12
132	Smith's Landing Archaeological District	11505.000030	Stone foundation remains adjacent to Champlain Canal.	Lock C12
145	ACP Wash 4	5089	Precontact village site identified by Parker.	Lock C11
147	Champlain Canal Remnants at Dunham Basin	11513.000027	c. 1820 stone blocks associated with canal.	Lock C11
148	ACP Wash	7412	Traces of precontact occupation and trail identified by Parker.	Lock C9

Site #	Site Name	NYSM/OPRHP #	Description	Location
149	ACP Wash	7413	Traces of precontact occupation and trail identified by Parker.	Lock C9
683	TH1	11542.000339	Precontact and late 19th-early 20th c. sheet midden and lithic scatters.	Lock C9

Previous Cultural Resource Surveys

A total of 14 surveys have been conducted within or near the Project APE. Many of these have been for transportation-related projects, such as bridge replacements. Seven of these surveys fall into the overland portions of the canal Project segment. The NYSM conducted a survey at the first canal lock bypass, identifying an historic house site with little integrity and research potential. Although no further work was recommended for this house site, preservation and avoidance was recommended for the 1834 Canal Village Archeological District. This grouping of archeological and architectural contexts was attributed to the early nineteenth-century occupation of the hamlet of Smith's Landing, which evolved around the Champlain Canal. The proposed bypass crosses through this identified archeological district (NYSM 1984) and it is very likely the Project will encounter cultural resources that contribute to the archeological district. No listing for this resource was found in OPRHP's National Register eligible files.

URS and PanAmerican Consultants conducted surveys in the Hudson River at the southwest end of the canal portion of the Project APE. These surveys were conducted in 2005 and 2006 in advance of the PCB dredging project. Although shipwrecks and terrestrial shoreline archeological resources were identified during the survey, no further work was recommended as the dredging avoided the resources. The survey conducted by NYSM for the reconstruction of US 4 in the Village of Fort Edward identified a number of French and Indian War features during excavations and later construction monitoring. A final report for this project has yet to be generated, however, discussions with the project archeologist indicate that the APE immediately along the shoreline in Fort Edwards (within the defensive outworks of the French and Indian War fort) are likely to contain intact archeological deposits. The Project APE crosses US 4 along the existing CP railroad and may encounter similar deposits in the installation trench. Finally, a Phase II survey was conducted by Columbia Heritage, Ltd. in 2008 on a mid-nineteenth-century farmstead site situated between the CP railroad and the old Champlain Canal. Since the archeological material appeared to be redeposited refuse, no further work was recommended (Columbia 2008).

National Register Listed and Eligible Properties

The Project intersects 14 National Register eligible properties and one listed property. Since the Project APE in this location is largely within the existing canal bed and railroad right-of-way, the majority of these properties will not be affected. The single listed-property is the Main Street Historic Bridge over the canal in Whitehall, although the associated map seems to indicate a larger area reminiscent of a historic district. The eligible property includes a number of canal-related features and bridges, including the former Delaware & Hudson Railroad Bridge crossing Rogers Island to the Town of Gansevoort in Saratoga County. As the Project may use the bridge to carry the cables over the Hudson, there may be minor impacts to the bridge. Besides the railroad bridge in Fort Edward and the original Champlain Canal, none of the properties are expected to be effected by the Project in the canal portion from Whitehall to Fort Edward..

Archeological Sensitivity and Recommendations

Since much of this portion of the Project will be installed within the canal bed, Phase IB testing is recommended only for the three lock bypasses, the overland section in Fort Edward, and the short overland section in Whitehall.

The Whitehall portion of the Project APE crosses through the north end of the village along the former Delaware & Hudson Railroad and enters the canal just south of the US 4 crossing. Much of this route traverses the historic village. Sensitivity for both precontact and historic archeological deposits is considered high. However, the presence of surrounding disturbance and construction lowers the potential for finding

intact sites, especially in the center of the village. The archeological potential increases on the north and south end of the Project APE where the railroad enters and exits the village.

Archeological sensitivity and potential vary with distance from the twentieth-century construction limits of the existing Barge Canal around Lock C11. Lock C11 is situated on the west side of a steep rock waterfall. The cable will likely be placed along both sides of the CP railroad ROW located immediately to the west of the lock. The areas immediately adjacent to the lock appear to be heavily disturbed from its construction. The areas near where the cable will exit and enter the water appear to be less disturbed, especially farther from the water's edge and the associated retaining walls of the lock (Photograph 1). Lock C9 incorporates a unique siphon spillway in its design that features a dam-like spillway to the east. The spillway is listed on the National Register in recognition of its engineering significance. The lock and spillway thus form an artificial island in the canal. The proposed route is along the east shore of the canal, crossing a lateral branch of the D&H line, and returning to the canal approximately 460 m (1,500 ft) south of the island. The east side of the canal lock is largely level, undeveloped, and appears to be mostly undisturbed. Sensitivity at Lock C9 is considered moderate due to the lack of reported sites, but it possesses favorable environmental characteristics for precontact sites (Photograph 2). Potential for finding intact archeological deposits appears to be good based on the lack of appreciable disturbance in the APE.

Immediately south of NY 196 in Fort Edward the cable will pass under a segment of the Glens Falls Feeder Canal, which is listed on the National Register. This portion of the canal is the most recently constructed as it connected the old Champlain Canal with the new Barge Canal to the east. It was likely constructed around 1905, concurrent with the Barge Canal. The route continues to the south into the village of Fort Edward following along the railroad ROW. Immediately north of the village is a substantial rail yard that is heavily developed with storage structures, transfer equipment and allied appurtenances. Currently, the facility is being utilized by the EPA in its Hudson River PCB dredging operation. Development along the railroad increases significantly to the south towards the center of the village along the Hudson River (Photographs 3-5).

One of the most sensitive portions of the Project is that which runs through Fort Edward and the northern portion of the defensive outworks and the portion along Rogers Island (Maps 14-16). The fort and island were likely settled by Europeans as early as the beginning of the eighteenth century, and was well known for its strategic position along the Hudson River corridor for millennia. With the French and Indian War, Fort Edward and Roger Island was populated with thousands of British soldiers, protecting the American colonies from French advances from Canada. During the war, Fort Edward became one of the most populous places in North America (Starbuck 1999). After the war, Fort Edward was an important seat of early industry replete with mills and allied businesses, while Rogers Island was left largely undeveloped.

Today, both Fort Edward and Rogers Island are known for their rich archeological resources. David Starbuck and other archeologists have located not only vestiges of the fort and other defensive features, but camps associated with eighteenth-century soldiers, as well as graves associated with the army hospital that was located on Rogers Island. In addition, there have been extensive deposits associated with precontact peoples who lived on the sites for thousands of years. Many of these sites are found in well-stratified alluvial deposits that have been left undisturbed over the years and buried by additional alluvial and more recent dredging projects along the Hudson River.

Photograph 1. View facing south of the Champlain Canal (left), access road (center), and railroad (right) at Lock C11, Town of Fort Ann, Washington County. The Project APE will run from the canal below the lock to the railroad and back into the canal above the lock.

Photograph 2. View facing west of the APE at Lock C9, Town of Kingsbury, Washington County. The Project APE leaves the canal above the lock, meets the railroad spur in the woods (background), and reenters the canal below the lock to the right. The lock is visible on the right.

Photograph 3. View facing south of the Project APE at the foot of the NY 196 overpass in the Town of Fort Edward, Washington County, for the Lock C8 bypass.

Photograph 4. View facing south of the at-grade crossing of the Project APE near the railroad station in the Village of Fort Edward, Washington County, Lock C8 bypass.

Photograph 5. View facing west of the crossing over the Hudson River to Rogers Island from the Village of Fort Edward, Washington County, Lock C8 bypass. The railroad grade and Project APE is on the right.

ROGERS ISLAND, WASHINGTON COUNTY

The transmission cables will cross Rogers Island from Fort Edward via HDD excavations and then cross the Hudson River west to the Town of Moreau. The segment on the island is only about 150 m (500 ft) long but crosses some of the most sensitive terrain in the entire Project APE. Rogers Island was a major stopping point for Native Americans and figured largely in the French and Indian War and Revolutionary War. Besides the National Register-eligible railroad bridge, there are several archeological contexts both in the water and on the island both from precontact and historic contexts.

Environmental Background

The Project APE passes across about the mid point of the island, which is surrounded on both sides by shallow riffles and rapids. This made the island a natural portage just south of the bend in the Hudson River. Soils on the island are mostly alluvium, raising the possibility of deeply buried sites. Archeological investigations have uncovered stratified sites in alluvial settings on the island. Archeological testing should include both backhoe trenches and shovel tests. There are no bedrock outcrops on the island.

Cultural Background and Resources

Rogers Island served as a natural portage along the Hudson River as well as a convenient crossing. Contexts from the Late Archaic through the Contact period have been reported all along the island, including several sites at the north end along NY 9. Historically, the island was a main feature in the French and Indian War and Revolutionary War. Robert Rogers made this island his headquarters for a couple of years during the French and Indian War for the Rangers, a small group of specially trained soldiers in New York and New England. The island served as a hospital and burial grounds, both of which were located south of the current railroad crossing and APE. Based on an historical map of the island presented in David Starbuck's book, the

Project APE appears to pass just north of the fortifications built in the center of the island and across what appears to be a picket line, facing west to defend against attack (1999:55).

Historical maps of the island depict slow development after the end of the eighteenth century. None of the maps from the war period depict any structures in this area. Both of the fortifications and the hospital investigated by Starbuck were located in the southern half of the island. However, much of this area was depicted as cleared of forest, suggesting that the north end of the island served some other purpose, possibly as encampments or agricultural fields (Maps 14-15). During the nineteenth century, development was limited to the northern end of the island where there was a road and railroad crossing over the Hudson River (Map 16). No structures are depicted on historic maps south of the railroad.

Results of the Pre-Screening Document

One National Register-eligible property is reported for the Project APE: the Delaware & Hudson Railroad Bridge stretching across the Hudson River. Much of the bridge on the island is set on an earthen embankment with a road curling around the east end and traversing the length of the island. The island itself is also listed on the National Register for the rich archeological deposits that have been located there, but no listing information could be found at the time of the site file search. Three different surveys in the water surrounding the island and along the shoreline have identified remains of wooden structures possibly related to the fort on the mainland and fortifications shown on historical maps (PanAmerican 2005; URS 2005, 2006).

Archeological Sensitivity and Potential

Based on historical accounts and results of archeological survey, the Project APE on Rogers Island is considered extremely sensitive for both precontact and historic deposits. The potential for finding intact archeological contexts is considered good, especially taking into account the possibility that precontact deposits are deeply buried under alluvium. There were no obvious signs of disturbance on the island with in the Project APE aside from the massive railroad grade built to accommodate the tracks over the island to connect the line to the elevated terraces along the east and west sides of the river (Photographs 6-7).

Photograph 6. View facing southwest of the eastern footing of the railroad bridge on Rogers Island. The road in the foreground traverses the length of the island.

Photograph 7. View facing southeast of the railroad embankment on Rogers Island.

OVERLAND PORTION, SARATOGA COUNTY – SEGMENTS 1-5

The Project proposes to follow an overland route south along the Canadian Pacific (CP) railroad beginning from the shore of the Hudson River opposite Rogers Island in the Town of Moreau, Saratoga County. This portion of the Project APE is composed of five segments, parts of which fall into the Town of Glenville, Schenectady County, at the Mohawk River crossing. The APE intersects 10 known cultural resources and nine previous archeological surveys. There are a number of natural and historic features along the way that contribute to a high to moderate assessment of archeological sensitivity for most of the alignment.

Hudson River to NY 32 Crossing, Gansevoort – Segment 1

Segment 1 covers about 16.9 km (10.6 mi) between the proposed HDD excavation at the west bank of the Hudson River along the former Delaware & Hudson railroad (now CP) to the NY 32 crossing in the hamlet of Gansevoort in the Town of Moreau (Map 17). One archeological site and one National Register-eligible property were discovered within or adjacent to the APE. Alluvial soils are known along the Hudson River in two short segments.

Environmental Background

Segment 1 largely crosses upland sandy deltaic and lake plain soils, derived from the drainage of post-glacial Lake Albany and the outflow of the ancient channel of the Mohawk River. Two small segments of Limerick silt loam were identified in soil surveys along the Hudson River. Both are less than 76 m (250 ft) long and are located at the river crossing and separated by about 2.8 km (1.8 mi) (Map 17). There is the potential for deeply buried archeological deposits in both locations.

The route in Segment 1 passes through a largely undeveloped area that consists largely of a mixture of agricultural fields, fallow fields, and secondary forests. The terrain is relatively flat. There are two crossings of the Snook Kill and a minor tributary just north of Gansevoort. Much of the Project APE in this segment drains into this major creek and the Hudson River (Map 17). There are no chert-bearing bedrock sources in this segment.

Cultural Background and Resources

The railroad within the APE was completed as the Saratoga & Whitehall Railroad in 1848 and leased by Delaware & Hudson in perpetuity in 1867 (Johnstone 1980:131). The hamlet of Gansevoort was established prior to the railroad as early as the late eighteenth century. The settlement figured in the French and Indian War and the Revolutionary War.

Precontact settlement of this segment likely focused mostly on the use of the Snook Kill for resources and transportation and along the Hudson River, where Rogers Island offered a natural crossing point of the river. Although not unique to the vicinity, the Snook Kill phase of the Late Archaic period was first identified along the creek of the same name. Other Snook Kill sites have been found across all of eastern New York as well as Connecticut, Massachusetts, and Vermont. Ritchie suggests that little is known of this phase, except that people during this phase appeared to favor the sandy, high terraces along post-glacial Lake Albany and produced a distinctive namesake projectile point (1965:134-140). Since Ritchie's volume, several other New York archeologists have contributed to our understanding of the Snook Kill phase by identifying additional sites and expanding the constellation of artifacts associated with this cultural phase in eastern New York.

Historical maps of Segment 1 show few structures near the APE during the 1800s. The only structures near or adjacent to the APE in the 1860s were two structures seen in the hamlet of Gansevoort (Map 18).

Results of Pre-Screening Site File Search

The site file search for the pre-screening document identified one archeological site and three National Register eligible or listed properties within or adjacent to or within the respective search corridor in Segment 1 of the Project.

The only known site intersected by the Project APE in this segment is the Gansevoort Rail Station (Site 685). This site is described as a mid- to late nineteenth-century rail station in the hamlet of Gansevoort. Sheet midden refuse relating to the construction and use of the structure was reported. Two National Register-listed and one eligible property are located within 150 m (500 ft) of the APE in Gansevoort. These include the Dutch Reformed Church, Gansevoort Mansion (NRL 135 and 136) and the United Methodist Church (NRE 300). They will no be directly impacted by the Project.

No previous cultural resource surveys intersect the Project APE. Two surveys were conducted east of the APE along the Hudson River in terrain much like that found at the crossing portion of the segment. Both surveys encountered precontact and historic cultural deposits at varied depths (URS 2007; PAF 2008).

Archeological Sensitivity and Potential

Historic sensitivity appears to be largely limited to the nineteenth-century domestic sites that appear at the small settlement in Gansevoort. There is also potential for small, undocumented eighteenth-century military sites in Gansevoort, since historical accounts attest to several skirmishes and encampments in this vicinity. The potential for finding historic archeological sites is considered good. There was relatively little disturbance observed in Gansevoort despite the fact that the railroad crosses through the center of the hamlet.

Based on archeological literature and the presence of other archeological sites outside of the search corridor, this segment has a high sensitivity for precontact archeological deposits. This is especially true for the Snook Kill crossings and the segment along the Hudson River where other archeological have been reported outside of the search corridor. Potential for finding precontact sites is considered moderate to high as well. There are a number of locations where the railroad cuts into landforms, to lower the grade of the rail. These cuts sometimes extent to the end of the ROW and have likely destroyed any archeological potential within the proposed APE. In other places, undisturbed land is located adjacent to the cut, but still within the ROW (Photographs 8-11).

Photograph 8. View facing south of the crossing at West River Road in the Town of Moreau, Saratoga County, Segment 1. There is some previous disturbance noted in this area, including the buried natural gas pipeline that parallels the east (left) side of the railroad.

Photograph 9. View facing north of the crossing at Clar Road in the Town of Moreau, Saratoga County, Segment 1. A service road, following the alignment of removed tracks, parallels the current tracks in some sections, such as the road seen on the left in this photograph.

Photograph 10. View facing north from the crossing at Mott Road, Town of Moreau, Saratoga County, Segment 1.

Photograph 11. View facing south of the crossing over NY 32, hamlet of Gansevoort, Saratoga County, Segment 1. One of the structures indicated on the 1866 Beers map (Map 18) was formerly located between the railroad and NY 32 (left).

NY 32 Crossing, Gansevoort, to Interstate 87 Overpass, Wilton – Segment 2

Continuing south, the Project's route is largely undeveloped and characterized by mature stands of trees until the route approaches the Adirondack Northway (I-87). Segment 2 covers about 11.9 km (7.4 mi) between the NY 32 crossing in the hamlet of Gansevoort in the Town of Moreau to the Interstate 87 overpass in the Town of Wilton (Map 19). The APE intersects no known archeological sites or National Register properties.

Environmental Background

Segment 2 largely crosses upland sandy deltaic and lake plain soils, derived from the drained of post-glacial Lake Albany and the outflow of the ancient channel of the Mohawk River. The majority of the segment crosses a forested, hilly landscape. Several small creeks, wetlands, and ponds and the highly varied hilly landscape suggest that this segment and the surrounding terrain were likely used by Native Americans as resource procurement areas and not for primary habitation. Some small dunes are present in the project area owing to its origins as a sandy delta of the former Lake Albany. There are no chert-bearing bedrock sources in this segment. Immediately northeast of the interstate, is relatively new, large housing development is situated immediately adjacent to the railroad ROW.

Cultural Background and Resources

This portion of the Project APE would have likely served as a large resource procurement area and hunting ground for people primarily living along the Hudson River and major creeks, such as the Snook Kill. Likely archeological deposits might be limited to low-density lithic scatters.

The railroad in the section, like that to the north, was established in 1848 as the Saratoga & Whitehall (later the Rensselaer, Saratoga, & Whitehall). and later leased by the Delaware & Hudson Railroad. There is some

evidence from historical maps of a mill pond constructed at Camp Saratoga on Scout Road, where a pond has formed on the Delegan Creek (Map 19).

Historical maps show three structures near the APE at crossings on the 1866 Beers maps, but nothing directly intersected by the proposed Project.

Results of Pre-Screening Site File Search

No archeological sites, National Register properties, or previous cultural resource surveys were identified in Segment 2 during the site file search.

Archeological Sensitivity and Potential

Historic sensitivity is low for the majority of the project area with only moderate sensitivity at the various road crossings. Precontact sensitivity is also considered low, owing mostly to the remote nature of this interior section of Saratoga County. Potential sites would likely be limited to small lithic scatter sites. The potential for finding such sites, should they be present, is quite high based on the lack of obvious disturbances along the APE and the sandy soils (Photographs 12-13).

Photograph 12. View facing north of the northern crossing of the APE over Pettis Road, Town of Northumberland, Saratoga County, Segment 2.

Photograph 13. View facing south of the southern crossing over Pettis Road, Town of Northumberland, Saratoga County, Segment 2. In many cases, disturbance was limited to the immediate road side where railroad safety features and road cuts were located, such as the push pile at the right of the crossing signal.

Interstate 87 Overpass, Wilton, to NY 50 Crossing, Saratoga – Segment 3

Segment 3 covers about 11.4 km (7.1 mi) between the Interstate 87 overpass in the Town of Wilton and the NY 50 crossing in the City of Saratoga Springs (Map 20). The APE intersects one Parker-type archeological site and passes within 150 m (500 ft) of four other historic sites. There are no National Register properties within the APE. A large portion of the APE falls within a previous cultural resource survey conducted by Hartgen for a water line project, in which extensive Phase IB testing located archeological sites outside of the current Project APE. South of Route 9N, the proposed route passes the newly constructed Saratoga Springs railroad station that services Amtrak passengers. Approximately 1.2 km (4,000 ft) south of the station lies a small rail yard that is heavily developed. To the south, the rail line occupies a large embankment that helps to keep a level grade over the Kayderosseras Creek.

Environmental Background

Segment 3 largely crosses excessively drained upland sandy deltaic and lake plain soils, derived from the drained post-glacial Lake Albany and the outflow of the ancient channel of the Mohawk River. There are less well-drained silt loams in small patches throughout. Some small dunes are present in the project area owing to its origins as a sandy delta of the former Lake Albany. The APE crosses several creeks and drainages leading into the City of Saratoga Springs and Saratoga Spa State Park, where the unique natural spring features of the area were a draw for Native Americans and Euro-American settlers. There are no chert-bearing bedrock sources in this segment.

Cultural Background and Resources

Native Americans are known to have frequented the several springs and natural features that make Saratoga Spa State Park unique. Other surveys in the area have uncovered small precontact sites, including one

identified in the Hartgen survey of the Saratoga County water facilities (Hartgen 2006), located near the crossing at NY 50.

The original alignment of the Delaware & Hudson railroad was built in the 1830s. Formerly, the line crossed directly through the City of Saratoga Springs. The current railroad deviates from the historic alignment just south of the crossing with NY 50 and runs west through Wilton into the Town of Greenfield. Analysis of the 1866 Stone and Stewart map indicates the railroad largely crosses behind several farms in the western end of Wilton, but no structures are within the APE. Although not built at that time, the 1902 USGS quadrangle shows that the railroad largely arched through undeveloped areas to the west of the City of Saratoga Springs. No structures were noted within the Project APE (Map 21). Previous surveys have identified eighteenth-century settlement sites in the vicinity of Saratoga Springs, including the Denton site, located about 300 m (1,000 ft) northeast of the APE crossing over Denton Road, Town of Greenfield.

Results of Pre-Screening Site File Search

No archeological sites or National Register properties were found within or adjacent to the Project APE in Segment 3. The segment crosses or passes adjacent to three different surveys. Four historic sites are reported within the 150-m (500-ft) search corridor. An additional precontact lithic scatter site was identified in one of the surveys, but no further work was recommended.

All of the surveys were conducted in the vicinity of the northwest side of Saratoga Springs. Greenhouse Consultants, Inc. (Greenhouse) conducted a Phase I/II survey for the Maple Avenue Middle School expansion project in 2000. The archeologists identified the remains of several buildings and sheet midden contexts related to the late nineteenth-century St. Clement's College. The site (Site 686) was recommended for National Register eligibility, but no official determination was ever produced by OPRHP. A chain link fence separated the survey from the current Project APE and no testing was conducted beyond that fence (Greenhouse 2000). Since the railroad and the college campus were largely contemporary, contexts associated with the college site are not expected in the Project APE.

Hartgen conducted two surveys along the Project APE, largely within the City of Saratoga Springs. The first was a Phase I investigation of a proposed renovation of the Saratoga Spring Railroad Station on Station Lane. A large area alongside the existing tracks was avoided due to disturbance and paved surfaces. Much of the east side of the Project APE appears to have been disturbed by the construction of the railroad station and the former Saratoga Flour Company factory (Hartgen 2000a, 2000b). No further testing was recommended for a scatter of historic artifacts found at the north end of the project area, about 30 m (100 ft) east of the railroad.

The latest survey within the Project APE was a water treatment and supply survey conducted by Hartgen in 2006. The long survey covered two segments of the Project APE, one within Segment 3. About 2.7 km (1.7 mi) of the APE, from a point north of the city line to a point about 300 m (1,000 ft) south of Union Avenue, was previously surveyed along the west side of the railroad for the installation of a water line. Two historic sites were identified as part of the that survey including the Williams site (Site 688) and the Tate Road site (Site 689), that contained early to late nineteenth-century sheet middens associated with adjacent historic structures (Hartgen 2006). A lithic scatter was also uncovered as part of the investigation, although it appeared to have resulted from erosion caused by cut and fill and no further work was recommended.

One other historic site was identified within 150 m (500 ft) of the Project APE. The Denton site (Site 687) is described as a late eighteenth-century site consisting of a cellar hole, well, and cistern. The circumstances surrounding the discovery of the site and whether any testing was conducted could not be determined.

The only reported archeological site directly intersected by this portion of the Project APE is NYSM 6907, a site identified by Parker as "camps." This broad swath of precontact camps occupies the high terrace overlooking the broad floodplain of Kayaderosseras Creek. Further discussion of this is offered below in Segment 4.

Archeological Sensitivity and Potential

Based on the presence of unique natural features (springs and several brooks) and several sites in the surrounding area, precontact sensitivity is considered moderate to high. Close-interval testing is recommended at the southern end of the segment where the APE intersects NYSM 6907. High sensitivity is also expected at the Geyser Brook crossing near a small rail yard south of the rail station.

Since the realignment of this railroad around the northwest corner of the city during the twentieth century post-dates many of the reported historic sites, it is possible that the limits of these sites may extend into the Project APE or that other eighteenth- and nineteenth-century sites were impacted by the construction of the railroad. The St. Clement's College site appears to be contemporary to, and likely is confined within, the fenced portion of the middle school property. Sensitivity in the vicinity of known historic sites is considered high and close-interval testing is recommended.

In general, the potential for finding intact archeological sites is considered good. There is little obvious disturbance besides localized cutting and filling for the railroad and around the extant station at the west end of the City of Saratoga Springs (Photographs 14-17).

Photograph 14. View facing south of the crossing over Carr Road, Town of Wilton, Saratoga County, Segment 3.

Photograph 15. View of the crossing over US 9 in the Town of Wilton, Saratoga County, Segment 3.

Photograph 16. View facing east of the crossing over the intersection of Bloomfield and Denton Roads, Town of Wilton, Saratoga County, Segment 3.

Photograph 17. View facing north of the rail station in Saratoga Springs, Saratoga County, Segment 3. Testing will avoid the parking area on the right and focus on the undisturbed portions to the west side of the tracks.

NY 50 Crossing, Saratoga, to NY 146a Crossing, Burnt Hills – Segment 4

The route continues to the south from Saratoga Springs through a heavily wooded section parallel to the western shore of Ballston Lake. Segment 4 covers about 15.8 km (9.9 mi) between the NY 50 crossing in the City of Saratoga Springs and the NY 146a crossing the Village of Burnt Hills, Town of Ballston (Map 22). The route passes just to the east of the Village of Ballston Spa, which largely avoids much of the development associated with that settlement. The APE intersects one Parker-type archeological site and two historic sites and passes within 150 m (500 ft) of three other sites. Two previous cultural resource surveys were conducted adjacent to the Project APE in the Town of Ballston and a third parallels the APE for about 1.8 km (1.1 mi), extending north from the crossing over Kayaderosseras Creek. There are no National Register listed properties within the APE.

This segment is undeveloped and largely undisturbed, and likely sensitive for precontact Native American archeological sites. A small section of commercial and residential development is located along NY 146A, just east of the hamlet of Burnt Hills.

Environmental Background

Segment 4 comprises one of the few Saratoga County areas where the soil types are largely upland soils formed in benches, terrains, and drumlinoid ridges. This owes largely to the situation of the Project APE along the elevated portions of the west side of Ballston Lake, formerly a channel of the post-glacial Mohawk River. There are some less well-drained silt loams in small patches throughout as well. The APE crosses two major creeks – Kayaderosseras and Morning Kill – and runs parallel to both Ballston Lake and the large wetlands surrounding the outlet of Ballston Creek. There are no chert-bearing bedrock sources in this segment.

Cultural Background and Resources

Precontact habitation sites have been found around Ballston Lake and the associated wetlands, although no sites have been found within the Project APE. There is also an extensive array of campsites along the terrace overlooking the Kayaderasseros Creek floodplain in the northern part of the segment.

The Town of Ballston and Villages of Burnt Hills and Ballston Spa were settled around the time of the Revolutionary War (Briaddy 1997:7). The railroad was first built in 1831 as the Saratoga and Schenectady line and stood as the second railroad in New York State. Ballston Spa became a tourist attraction and retreat during the late nineteenth century, mostly for the healing benefits of the many spas and springs found in the village. An electric trolley also operated in the town and ran along the lake between the villages and Saratoga Springs. The electric traction powerhouse identified within the APE was likely part of this early trolley line (Site 691). Historical accounts of the town also state that ice houses once operated on the shores of Ballston Lake (Briaddy 1997:17).

Some of the first Euro-American settlers in the town may have lived very near or adjacent to the Project APE. The McDonald brothers settled along the west shore of Ballston Lake in c. 1763 (Johnstone 1980:20-22). Their early cabin and cemetery may correlate with the location of Site 695.

Historical maps show very few structures within or adjacent to the Project APE. These are largely limited to the villages of South Ballston and Burnt Hills at the south end of Ballston Lake. The 1866 Beers maps shows several structures very near the railroad in this area, including a wagon shop, store and several residences (Map 23).

Results of Pre-Screening Site File Search

No National Register properties were found within or adjacent to the Project APE in Segment 4. Three historic sites are reported within the 150-m (500-ft) search corridor and three surveys are directly intersected by the Project APE.

The southern portion of the Hartgen survey for the Saratoga County water facilities overlaps about 1.8 km (1.1 mi) of the Project APE.

Arch Tech conducted a survey in 2005 for the construction of a residential subdivision on Saunders Lane adjacent to the railroad. The survey consisted of shovel testing at a 15-m (50-ft) interval throughout the project area. Remains of a stream-side midden were found in the south end of the project area. The remains of an electric traction powerhouse were found in the northeast corner of the project area, adjacent to the Delaware & Hudson Railroad. Although this structure was obviously used by the railroad, it is unclear if any archeological deposits associated with this site will be found within the Project APE.

One other historic site was identified within 150 m (500 ft) of the Project APE. NYSM 9175 (Site 695) unfortunately had no additional information, however, it is located near the supposed site of the McDonald brothers' cabin site. The circumstances surrounding the discovery of the site and whether any testing was conducted could not be determined.

The only precontact archeological site directly intersected by the Project APE is NYSM 6907, a site identified by Parker as "camps." This broad swath of precontact camps occupies the high terrace overlooking the broad floodplain of Kayaderosseras Creek.

Archeological Sensitivity and Potential

Based on the presence of several sites in the surrounding area and the proximity of several lakes, streams and wetlands, precontact sensitivity is considered moderate to high. Close-interval testing is recommended at the northern end of the segment where the APE intersects NYSM 6907.

Historic sensitivity is highest in and near the three villages along the way south to the end of the lake. Close-interval testing is recommended for the vicinity of the two historic sites on the railroad. Close-interval testing

may also be conducted in the Village of Burnt Hills, where the APE crosses the center of the settlement, if field conditions warrant. There is also a potential for eighteenth-century deposits around Site 695, possibly the location of the McDonald homestead. At large, the potential for finding intact archeological sites is considered good. There is little obvious disturbance besides localized cutting and filling (Photographs 18-20).

Photograph 18. View facing north of the APE near the end of Oak Street, Ballston Spa, Segment 4. The spur continuing to the left is an abandoned track leading into the village.

Photograph 19. View facing south of the crossing at Outlet Road, Town of Ballston, Saratoga County, Segment 4.

Photograph 20. View facing south of crossing at NY 146a in the Village of Burnt Hills, Saratoga County, Segment 4. Several houses and businesses are very close to the tracks in this settlement.

NY 146a Crossing, Burnt Hills, to Mohawk River Crossing, Glenville – Segment 5

Segment 5 covers about 9.8 km (6.1 mi).between the NY 146a crossing in the Village of Burnt Hills, Town of Ballston, and the Mohawk River crossing in the Town of Glenville, Schenectady County (Map 24). The railroad to the south follows along the Alplaus Kill until its confluence with the Mohawk River. The route passes through a large, restricted rail yard that services the nearby Stratton Air National Guard Base located in Glenville. Although this area appears disturbed since it is located along the Mohawk River there is a possibility of undisturbed deeply buried deposits in this area. The APE intersects three archeological sites and passes within 150 m (500 ft) of three other sites. Two previous cultural resource surveys intersect the Project APE in the Town of Glenville. There is one National Register-eligible property within or adjacent to the APE.

Environmental Background

Soils in Segment 5 largely derive from glacial lake plains and depressions. There may have historically been alluvial soils along the Mohawk River in the APE, but modern railroad development has masked the natural soil types in this area. The APE crosses two major creeks – the Alplaus and Indian Kills – and terminates at the high banks of the Mohawk River. There are no chert-bearing bedrock sources in this segment.

Cultural Background and Resources

Precontact habitation sites have been found all along the Mohawk River and its immediate tributaries. Two sites have been noted in the APE, including a large site consisting of Late Archaic and Transitional encampments.

The Town of Glenville was settled during the eighteenth century around the time that Schenectady was developing into a city. The APE also intersects Clifton Park but avoids most historic settlement until about Alplaus Avenue when it crosses through a hamlet at a crossroads.

Historical maps show no structures within or adjacent to the Project APE during the nineteenth century. The project largely avoids dense settlement besides the hamlet mentioned above. The 1898 USGS quadrangle shows increased railroad traffic along the segment, but still very few structures around the APE besides the hamlet of Alplaus.

Results of Pre-Screening Site File Search

One National Register-eligible property was found within or adjacent to the Project APE in Segment 5: The Joseph Yates House and Cemetery on Maple Road in Glenville. The segment crosses or passes adjacent to two different surveys, although these were focused on road reconstruction projects and largely avoided the present project APE. The other three archeological sites within 150 m (500 ft) of the project APE include a nineteenth-century mill site on the Alplaus Kill in Glenville, a precontact lithic scatter and encampment, and a site of unknown provenience.

Archeological Sensitivity and Potential

Based on the presence of several sites in the surrounding area, including a large Parker site in Schenectady on the other side of the river and the location on the Mohawk River and Alplaus Kill, precontact sensitivity is considered moderate to high. Close-interval testing is recommended in Glenville where the APE intersects the Yates 2 Precontact Site and the Alplaus School House Historic site. The Yates house and cemetery predate the railroad and the National Register-eligible property abuts the project APE. There is potential for historic deposits associated with this eighteenth-century residence within the APE.

Potential for finding archeological sites is considered good (Photographs 21-22). There may be significant disturbance near the river crossing and around the rail yards at the Air National Guard and county airport facilities. Monitoring is recommended for this portion of the project comprising about 2.1 km (1.3 mi) beginning at the river and heading north.

Photograph 21. View facing west of the crossing over Glenridge Road, Town of Glenville, Schenectady County, Segment 5.

Photograph 22. View facing north of the crossing at Alplaus Avenue, Town of Glenville, Schenectady County, Segment 5.

OVERLAND PORTION, SCHENECTADY COUNTY – SEGMENTS 6-8

From the Mohawk River, the proposed Project will continue following an overland route along the CP railroad through the City of Schenectady and the Town of Rotterdam, Schenectady County. In Rotterdam, the Project APE will move to the former West Shore Railroad, currently owned and operated by CSX. This portion of the Project APE is composed of three segments, the last part of which falls in the Town of Guilderland, Albany County, south of the switch to CSX right-of-way. The APE intersects 15 known cultural resources and eight previous archeological surveys. There are a number of natural and historic features along the way that contribute to a high to moderate assessment of archeological sensitivity for most of the alignment.

Mohawk River Crossing, Schenectady, to Interstate 890, Schenectady – Segment 6

The Project APE passes through the City of Schenectady and crosses through a densely populated urban city and an extensive rail yard system. Although railroad and urban development is extensive in this part of the Project APE, there is still high sensitivity throughout for both precontact and historic deposits. The proposed route parallels the southern portion of the Schenectady Stockade District, the oldest settled portion of Schenectady and a historic property listed on the National Register.

Segment 6 covers about 3.6 km (2.3 mi).between the Mohawk River crossing to the Interstate 890 overpass in the City of Schenectady (Map 25). The APE intersects ten archeological sites and passes within 150 m (500 ft) of three other sites. Two previous cultural resource surveys intersect the Project APE in the City of Schenectady. There are four National Register-eligible or -listed properties within or adjacent to the APE.

Environmental Background

Soils in Segment 6 are described as urban land complexes, a combination of cut-and-fill landscapes, udorthents, and other artificial land types. Historically, Schenectady was often flooded, suggesting that much of the APE lies in what was originally an alluvial landscape. Precontact and early historic archeological sites are likely to be very deeply buried beneath both urban fill and alluvium. There are no chert-bearing bedrock sources in this segment.

Cultural Background and Resources

Precontact habitation sites have been found all along the Mohawk River and its immediate tributaries. The site file search for Schenectady revealed several expansive Parker sites, typical of this stretch of the Mohawk River. Native Americans figured largely in the colonial history of Schenectady and interacted with Euro-American settlers for years after colonization.

Schenectady County and the city itself were settled by Dutch and English colonists through a series of patents during the 1660s. The flats along the Mohawk River were chosen for their fertile soils and access to market. The Project APE arcs east and south of the Stockade, the historical term for the original walled portion of the city built close to the river and walled for defense. Forts were built in 1735 and 1780 and military skirmishes infrequently disrupted the town. Growth of the city during the second quarter of the nineteenth century owed largely to transportation improvements, especially the Erie Canal and railroads. The Project APE crosses the Erie Canal just south of the river crossing. Another big spark to development in Schenectady was fostered by the construction of Thomas Edison's machine works in the western side of the city, which later became the General Electric facility (Hart 1975:113).

Historical maps show that the Project APE largely parallels the original railroad path through the City of Schenectady. The 1866 Beers map shows that the Delaware & Hudson railroad through the center of town, although not leased by the company then, was in place by the mid-nineteenth century (Map 26). Segments to the west of the center of town ran through a low-lying area, cross-cut by a small stream. Many of the streets in this part of Schenectady were not in place yet. Heading east out of the city, the railroad follows Fonda Street paralleling the Erie Canal and rejoins the New York Central Railroad as shown on the map.

The more detailed Sanborn maps of the City of Schenectady show that the entire Project APE through the city appears on existing railroads in 1889 and 1915 (Map 27). Development surrounding the railroad is largely industrial and commercial throughout. Nearest the Stockade district, the railroad was adjacent to the rear of several businesses and residences facing S. Centre Street to the south and a long block of buildings on the north known as the Central Arcade (Map 27).

Results of Pre-Screening Site File Search

Four National Register-eligible or -listed properties were found within or adjacent to the Project APE in Segment 6. The Project APE skirts the southeast edge of the Stockade Historic District, a section of Schenectady noted for its early nineteenth-century architecture and encompassing some of the original settlement area of the city. The APE also passes adjacent to the Public Market Building on Van Guysling Street, a National Register-eligible structure. The former Schenectady Gazette and Hough buildings, both eligible for listing, are both adjacent to the Project APE as well. These are both large late nineteenth- and early twentieth-century structures in the downtown section of the city.

The segment intersects the bounds of two different surveys. The easternmost was road rehabilitation and the Project APE only crosses over a small section of the survey area. The Western Gateway Transportation Center project, on the other hand, focused on a large area around the rail yards downtown in an effort to construct a new intermodal transportation center. The Phase IA study recommended field reconnaissance due to the high likelihood of the presence of deeply buried historic and precontact archeological deposits (Hartgen 2001).

The Project APE intersects ten archeological sites between the river and Interstate 890. Most of these are large Parker-type sites, including a village site, which indicates the likelihood of Native American sites in the area. Three of the sites were nineteenth-century urban contexts identified during a later investigation of the Western Gateway project area.

Archeological Sensitivity and Potential

Judging by the number of precontact sites in the site file search and the densely populated nature of this location, Segment 6 is considered highly sensitive for both precontact and historic archeological deposits. Although the rail yards in this part of the project area are extensive, these facilities are usually built up, rather excavated, especially in places where flooding is historically an issue, such as the flats of Schenectady. Depending on the presence of utilities, deep excavations from historic buildings, and other documented disturbance, there is a high potential that intact sites will be encountered in this part of the Project APE (Photographs 23-25).

Photograph 23. View facing west of the crossing over Nott Street from Erie Boulevard, City of Schenectady, Schenectady County, Segment 6.

Photograph 24. View facing northeast of the crossing over Union Street, City of Schenectady, Schenectady Count, Segment 6.

Photograph 25. View facing northwest of the crossing over State Street (NY 5), City of Schenectady, Schenectady County, Segment 6.

Interstate 890, Schenectady, to CSX Transition, Rotterdam – Segment 7

Beyond Interstate 890 in Schenectady, the Project APE passes the GE facility and crosscuts a steep grade to meet the transition to CSX railroads just west of the Campbell Avenue crossing. Segment 7 covers about 4.8 km (3.0 mi) in the City of Schenectady and Town of Rotterdam (Map 28). The proposed route of the cable along the railroad ROW appears to have been heavily disturbed through the GE property as much of the area was, and still is, a busy rail yard. The railroad follows along the base of a steep hillside, known as Bellevue, in a relatively level and open area of the city. The railroad climbs out of the Mohawk River Valley via a cross-cut grade embankment and through a narrow hollow created by the Poentic Kill, eventually leveling in Rotterdam. The APE intersects one very large Parker precontact site and passes within 150 m (500 ft) of two other sites. One previous cultural resource survey intersects the Project APE in the Town of Rotterdam at the end of the segment. There are no National Register-eligible or -listed properties within or adjacent to the APE.

Environmental Background

Soils in Segment 7 are split between Colonie and Plainfield sandy loams in the upland setting and Wayland silt loam and cut-and-fill land in the lower portions. Most of the GE facility and the urban corridor heading east towards Interstate 890 is cut-and-fill land, although historically this was once part of the great Schenectady flats. However, the railroad behind GE begins to slowly climb the steep embankment to meet the grade in Rotterdam at this point. Therefore, much of the project area from the GE campus to just east of Campbell Avenue is sloped. There are no chert-bearing bedrock sources in this segment.

Cultural Background and Resources

The Project APE runs through an expansive Parker precontact site. Precontact deposits have been found along the river in varied contexts not covered in the narrow search corridor. It is understood from historical

accounts and archeological investigation that the flats of Schenectady were a draw for Native Americans for many millennia.

Historical maps show a heavily settled industrial village along the Poentic Kill within or adjacent to the Project APE in 1866 (Map 29). Several mills, shops, and factories were built along the Poentic Kill and other tributaries during the nineteenth century. The Project APE appears to be close to several mills in the deep creek valley. There are also a few structures near Schenectady, southeast of the existing GE facility (Map 29). The 1898 USGS quadrangle shows that the West Shore Railroad had been built by this time and the settlement along the Poentic Kill was greatly diminished (Map 30). The current alignment of the railroad takes the Project APE north and west of a horse track and fair ground rendered on both maps.

Results of Pre-Screening Site File Search

The Project APE passes through the large Parker site, NYSM 6479, which was discussed in the previous segment as well. There are no National Register-eligible or listed properties within the search corridor or Project APE. Two other archeological sites within 150 m (500 ft) of the Project APE have no additional information.

The NYSM's study for the replacement of the County Road 18R bridge over the Poentic Kill, which runs parallel to the south of the railroad conducted in 1981 identified no significant resources near the Project APE. Five shovel tests were excavated along the proposed new bridge, located about 15 m (50 ft) south of the end of the Delaware & Hudson railroad portion of the Project APE and no significant cultural resources were found (NYSM 1981).

Archeological Sensitivity and Potential

Based on the presence of the large Parker site and two other sites very near the Project APE, precontact sensitivity is considered moderate to high. The APE also passes through the Poentic Kill valley, where several mills were located in the mid-nineteenth century and possibly earlier. Historic sensitivity in the area surrounding the transition to CSX rails is also considered high.

Potential for finding archeological sites is considered good west of Campbell Avenue (Photographs 26-28). It appears that the cross-cut alignment of the railroad places the Project APE in a sloped area. Monitoring is recommended for the portion of the APE east of the GE campus.

Photograph 26. View of the General Electric facility and the Project APE from Broadway facing northeast, City of Schenectady, Schenectady County, Segment 7.

Photograph 27. View facing northwest of the Project APE west of GE, Town of Rotterdam, Schenectady County, Segment 7. The railroad cross-cuts the grade to climb to the switchyards in Rotterdam in this location.

Photograph 28. View facing north of the Campbell Road crossing in the Town of Rotterdam, Schenectady County, Segment 7.

CSX Transition, Rotterdam, to US 20 Crossing, Fullers – Segment 8

After the transition to CSX railroads, the Project APE crosses an upland setting across sandy deltaic soils. The Project APE passes the Rotterdam Army Depot, an extensive rail yard originally developed during World War One, and passes beneath the New York State Thruway. Much of the depot area appears to have been disturbed and is still heavily utilized by the surrounding manufacturing and distribution centers. Segment 8 covers 9.0 km (5.6 mi) in the Town of Rotterdam, Schenectady County, and Town of Guilderland, Albany County (Map 31). The APE intersects one Parker precontact site at the outlet of Watervliet Reservoir and passes within 150 m (500 ft) of two other precontact sites. Five previous cultural resource surveys intersect the Project APE in the Town of Rotterdam at the end of the segment. There are no National Register-eligible or -listed properties within or adjacent to the APE.

Environmental Background

Soils in Segment 8 consist of upland sandy, lake-laid and deltaic soils. The Project APE also lies along the western edge of the ecosystem known as the Pine Bush. The Project APE crosses several small creeks and drainages, most of which drain into the Normans Kill, which feeds the Watervliet Reservoir, a man-made lake built in the early twentieth century. There are no chert-bearing bedrock sources in this segment.

Cultural Background and Resources

The Project APE runs through a moderately-sized Parker precontact site at the outlet of the Watervliet Reservoir. Two other Parker sites are located south of the hamlet of Fullers, indicating the importance of the Normans Kill and its access to the Mohawk and Hudson Rivers. Two other precontact sites are located near and within the Army depot in Rotterdam.

The growth of the hamlet of Fullers seems to have relied on the introduction of the railroad crossing over US 20, the former turnpike. The settlement was not named on the 1866 map (not reproduced here) but was by

1898, after the railroad was built. Watervliet Reservoir was created as part of the City of Watervliet's water supply in the 1910s.

Results of Pre-Screening Site File Search

The Project APE passes through a Parker site, NYSM 2780, which consists of several camp sites identified by Parker. Two other archeological sites within 150 m (500 ft) of the Project APE consisted of Early Archaic to Late Woodland components located in and near the Army Depot in Rotterdam.

Five surveys were conducted within or adjacent to parts of the Project APE. Four of the five surveys involved field work and three of those identified precontact sites. The Helderberg Meadows project also identified a number of historic sites. One of those was a late eighteenth- and early nineteenth-century farmstead, outside of the current APE. The results of these surveys suggest a higher sensitivity for precontact and historic deposits (NYSM n.d.; Hartgen 2000, 2003, 2007; Sugihara and Curtin 1987).

Archeological Sensitivity and Potential

Based on the presence of the large Parker site and two other sites very near the Project APE, and the results of surveys within and adjacent to the APE precontact sensitivity is considered moderate to high. The APE also traverses the deep creek valleys entering the Normans Kill and Watervliet Reservoir. Historic sensitivity in the area surrounding the transition to CSX rails is also considered high due to the proximity of the APE to the hamlet of Fuller. Potential for finding archeological sites appears to be good based on the narrow tracks (Photographs 29-30).

Photograph 29. View facing north of the crossing at Burdick Road, Town of Rotterdam, Schenectady County, Segment 8, just south of the transition from CP to CSX rails. South of here the tracks widen into a small yard.

Photograph 30. View facing west of the crossing over Western Turnpike (US 20), Town of Guilderland, Albany County, Segment 8. Many of the crossings consist now of a railroad overpass over a road cut to improve safety and travel efficiency.

US 20 Crossing, Fullers, to Maple Road Crossing, NY 85a, Voorheesville – Segment 9

From Fullers, the Project APE crosses an upland setting across sandy deltaic soils across the outlet of Watervliet Reservoir to the Village of Voorheesville. The Project APE also parallels the east side of a large rail yard south of Guilderland Center. The rail yard was once an Army Depot during World War Two; eventually it serviced the nearby Army National Guard rifle range. The yard is no longer operated by the military and is known as the Northeast Industrial Park with associated warehouses and distribution facilities. Segment 9 is 9.1 km (5.7 mi) long and runs through the Towns of Guilderland and New Scotland, Albany County (Map 32). The APE intersects one Parker precontact site at the outlet of Watervliet Reservoir and passes within 150 m (500 ft) of one precontact site and one historic site. Three previous cultural resource surveys intersect small sections of the Project APE. There are no National Register-eligible or -listed properties within or adjacent to the APE.

Environmental Background

The Project APE in Segment 9 crosses a number of small soil series, owing largely to the varied landscape. Soils primarily consist of Riverhead fine sandy loam and the poorly drained Burdett and Ilion silt loams. There are a number of Udorthents series paralleling the route of the railroad, indicating a number of deep cuts required to traverse the hilly terrain. There is also a small area of Fluvaquents soil near the village of Voorheesville. This soil type consists of frequently flooded, poorly drained, recent alluvium. There may be deeply buried sites in this location, but the environment suggested a high-energy flood plain where materials may be scoured away and redeposited, instead of buried. There are no chert-bearing outcrops within the project area in this segment. The APE also crosses several creeks and drainages, including Black Creek and Vly Creek.

Cultural Background and Resources

The Project APE crosses through a moderately-sized Parker precontact site at the outlet of the Watervliet Reservoir (NYSM 2780). One other Parker site is located to the east in the flat hollow on the north side of the Normans Kill and including several deep gorges created by drainages leading into the creek.

The 1866 Beers map shows no structures adjacent to the Project APE in Guilderland or New Scotland outside of the two hamlets on either end of the segment (Map 33). The village of Voorheesville (at the south end) largely evolved around the railroad and several structures were built adjacent to the right-of-way. The growth of the hamlet of Fullers (at the north end) seems to have relied on the introduction of the railroad crossing over US 20, formerly part of the Great Western turnpike (an early toll road). The settlement was not named on the 1866 map but was by 1898, after the railroad was built.

Results of Pre-Screening Site File Search

The Project APE passes through a Parker site, NYSM 2780, at the north end of the segment, which consists of several camp sites identified by Parker. Another precontact site is located east of there in a broad flat area at the foot of several deep creek valleys draining into the Normans Kill.

Three surveys were conducted within or adjacent to parts of the Project APE. Many of these surveys were transportation projects, where the overlap consists simply of a road crossing over or under the Project APE. A survey at the north end of the segment at the outlet of Watervliet Reservoir found disturbed soils throughout and no further work was recommended (Landmark 2002; NYSM n.d., 1981; Environmental Archaeology 1982).

Archeological Sensitivity and Potential

Based on the presence of the large Parker site, the two other sites very near the Project APE, and the results of surveys within and adjacent to the APE, precontact sensitivity is considered moderate throughout with high sensitivity near the sites and at major stream crossings. Historic sensitivity is limited to the two settlements at either end of the segment (Photographs 31-32).

Photograph 31. View facing north of the railroad crossing at Stone Road, Town of New Scotland, Segment 9.

Photograph 32. View facing south of the railroad crossing at Stone Road, Town of New Scotland, Segment 9.

Maple Road Crossing, NY 85a, Voorheesvile, to NY 443 Crossing, Unionville – Segment 10

From Voorheesville, the Project APE crosses a number of small streams and hilly terrain to the hamlet of Unionville. Part of the segment traverses between Five Rivers Education Center, a location with several reported small precontact sites, and the foot of the Helderberg Escarpment where several chert quarries have been reported. Segment 10 is 6.1 km (3.8 mi) long and runs through the Town of New Scotland, Albany County (Map 34). Although there are no reported archeological sites within or adjacent to the Project APE, Hartgen has identified a sequence of sites on either side of the alignment that appear to exhibit a chert resource extraction relationship between quarries southwest of the railroad and the extensive wetlands to the east and north. There are no National Register-eligible or -listed properties or previous cultural resource surveys within or adjacent to the APE.

Environmental Background

The Project APE in Segment 10 parallels the Vloman Kill and traverses the foot of the Helderberg Escarpment. Soils primarily consist of Rhinebeck silt loam, Burdett silt loam, and several small areas of sandy deltaic deposits. There are chert-bearing outcrops located in the hills just to the west of Segment 10, some of which are evident in road cuts. The APE also crosses several small creeks and drainages, which drain into the Vloman Kill.

Cultural Background and Resources

Previous archeological investigations near Five Rivers Education Center have identified a complex of sites that show a relation between chert sources west of the railroad and the wetland resources to the east. Historical maps show increased development around the hamlet of Unionville, largely due to the new railroad (Map 35). No structures appear to be within the Project APE, although several structures in Unionville are likely very near the tracks.

Results of Pre-Screening Site File Search

No archeological sites, previous surveys, or National Register properties have been identified in the Project APE for Segment 10.

Archeological Sensitivity and Potential

Based on the presence of a complex of precontact sites between the chert outcrops on the west and wetlands on the east near the Five Rivers Education Center, Segment 10 is thought to have high sensitivity for precontact deposits in this vicinity. Elsewhere, precontact sensitivity is considered moderate. Historic sensitivity is limited to the two settlements at either end of the segment (Photographs 33-34). There is very little obvious disturbance in the Project APE, suggesting a good potential for locating intact archeological deposits.

Photograph 33. View facing south at the crossing over Voorhees Avenue in the Village of Voorheesville, Albany County, Segment 10.

Photograph 34. View facing north of the crossing at Game Farm Road, Town of Bethlehem, Albany County, Segment 10.

NY 443 Crossing, Unionville, to US 9W Crossing, Bethlehem – Section 11

Segment 11 is relatively level and open; most of the land surrounding the rail line is agricultural fields or recently fallowed fields with few trees (Map 36). The proposed cable route subsequently crosses the largest and most active of the rail yards at Selkirk. The Selkirk Rail Yard is one of Conrail's largest yards and is situated at the convergence of several main rail routes, covering over 1,250 acres of land. It was initially opened in 1924.

Segment 11 covers about 10.4 km (6.5 mi) of the Project APE. One previous archeological survey intersects the APE just south of Unionville. No other known cultural resources were found in site file searches of the segment.

Environmental Background

Most of the Project APE segment is characterized as Udorthents and other man-made soil types owing to the large cuts and fills in the area surrounding the Selkirk Rail Yards. There are short sections of Rhinebeck silty loam and Elnora loamy fine sand at either end of the segment. No alluvial soils or bedrock outcrops are noted for the segment. Vloman Kill still parallels the Project APE to the north, but deviates to the east where it enters a circuitous valley. To the south, Coeymans Creek and Onesquethaw Creek meet near the southern terminus.

Cultural Background and Resources

Historical maps show very little development along this stretch of the Project APE. The Selkirk Rail Yards were started in 1924 and expanded during World War Two. Most of the historic residential development took place at either end of the segment where the railroad crosses major roads. Otherwise, most of the interior of Segment 11 was farm fields and forest.

Results of the Pre-Screening Document

No reported archeological sites or National Register properties were identified within or adjacent to Segment 11. Only one survey intersected the Project APE just south of Unionville where a gas pipeline was constructed. Public Archaeology Facility (PAF) conducted a Phase I survey for this project and identified no cultural resources near the current APE (PAF 1992).

Archeological Sensitivity and Potential

Sensitivity is limited within the Selkirk Rail Yards and moderate on either end where disturbance is less evident. The potential for finding sites outside of the rail yards is good, but the disturbance, fill deposits, and accessibility of the yards makes the potential for finding intact sites very low. Monitoring is recommended for the part of Segment 11 within the Selkirk Rail Yards, defined for this report as any portion of the segment where three or more tracks are present (Photograph 35-36).

Photograph 35. View facing north of the Selkirk Rail Yards from NY 396, Town of Bethlehem, Albany County, Segment 11.

Photograph 36. View facing northwest of the US 9W crossing over the Project APE, Town of Bethlehem, Albany County, Segment 11.

US 9W Crossing, Bethlehem, to Hudson River – Segment 12

The final overland portion, Segment 12, runs from the US 9W crossing in the Town of Bethlehem to the Hudson River in the Town of Coeymans (Map 37). No archeological sites or National Register properties were identified within or adjacent to the Project APE. One survey intersects the APE at US 9W. Segment 12 covers about 3.6 km (2.3 mi).

Environmental Background

The Project APE in Segment 12 crosses a small tributary of Coeymans Creek and traverses relatively level, open terrain, before descending rapidly to the Hudson River. Soils largely consist of steeply sloped Nunda and Manlius channery silt loam at the riverbank, where the APE drops precipitously to the river, and Ensberg and Claverack sand and Hudson and Rhinebeck silt loam on the flat level part east of US 9W. None of the soils in the APE are alluvial and no deep testing is recommended.

Cultural Background and Resources

There is a great potential for Native American sites on the high portion of the segment, as this area lies between the river and several known chert quarries to the west and southwest. Historic maps show very little settlement near the APE, although there is potential for seventeenth- and eighteenth-century colonial sites this close to the river.

Results of Pre-Screening Document

Only one previous archeological survey was identified in the pre-screening site file search. This survey was conducted for the proposed Selkirk Bypass, joining US 9W with NY 396. A sheet midden of historic artifacts was encountered in one area, but this was associated with railroad dumping and agricultural activities and did not represent an archeological site with further research or National Register potential (NYSM n.d.).

Archeological Sensitivity and Potential

Based on its proximity to the Hudson River and Coeymans Creek and its location between the river and chert quarries several miles to the west, Segment 12 is thought to have high sensitivity for Native American sites on the high, flat portion of the APE. There is also a moderate sensitivity for historic sites, especially colonial-period farmsteads. The steeply sloped river bank has a low sensitivity for any cultural sites. There is little likelihood that the hillside would host brick yards or similar features, since these industries tended to gravitate towards clay soils, rather than the gravelly silt present in the APE. There is little disturbance noted in the APE, outside of the Selkirk Rail Yard, and the potential for finding intact sites is considered good (Photographs 37-39).

Photograph 37. View facing southeast from the US 9W crossing over the APE, Town of Bethlehem, Albany County, Segment 12.

Photograph 38. View facing southeast of the APE from the NY 144 crossing, Town of Coeymans, Albany County, Segment 12. The bridge over the Hudson River is visible in the distance.

Photograph 39. View facing west of the APE from the east bank of the Hudson River, Town of Coeymans, Albany County, Segment 12.

HUDSON RIVER AND ESTUARY

The pre-screening document examined a relatively wide search corridor for the Hudson River to account for the cable construction corridor and potential cable laydown and possible staging and laydown areas. The study focused on all waters over 6.1 m (20 ft) deep with sonar data and identified all previously reported terrestrial sites along the shoreline and within the river from OPRHP's library. The study identified 272 terrestrial sites and 474 underwater resources and anomalies.

Results of Pre-Screening Document

There were 272 terrestrial sites identified along the shore. None of those sites are directly intersected by the Project's proposed alignment, as the cables will be installed in the Hudson River. Of those sites, 56 sites were found within the 610-m (2,000-ft) wide buffer, centering on the cable route. The outlines of several sites appear to extend out into the water from the shore. These notations are likely errors, but the Hudson River has experienced changes in the water level since the last glaciers receded at the end of the Pleistocene glaciation. It is possible that precontact sites that were occupied or utilized during periods when the water levels were far below the current norms. However, natural process such as ice rafting and scouring flood events likely adversely affected these deposits. In addition, cultural process such as dredging, shoreline filling, clay mining for the brick industry, and ice harvesting may have adversely affected these potentially submerged portions of terrestrial sites. The same can be said for historic sites, especially some of the industrial sites that relied on the river for transportation or any of the military sites where exercises and engagement extended into the river.

Ninety NRE, NRL, or NHL properties were identified in the study area. Seven of those are directly intersected by the Project APE (Table 4). Since the Project involves submarine installation of a cable with no above ground features besides the converter station at Yonkers, no additional archeological studies are recommended for the 84 properties identified in the search corridor but not intersected by the Project. Of the

seven properties, five are railroad and highway bridges and no impacts are expected. The Project APE intersects the Hudson River Heritage District in a very rural, steeply banked area. There are not expected to be a cultural resources contributing to this listing in the Project corridor.

The U.S. Military Academy is listed as a NHL. Due to its history as an important fort and military installation from the Revolutionary War onward, it is possible that associated archeological resources may be found along the shoreline and in the river that have yet to be documented.

Table 4. National Register Properties in Hudson River Intersected by Project APE, CHPE.

Property Name	Description	Location	Potential Impacts
Rip Van Winkle Bridge (NRE 247)	Highway bridge, constructed 1930s.	Catskill, Greene County; Greenport, Columbia County	None
Hudson River Heritage District (NHL 69)	Historic district, encompassing much of Columbia and Dutchess County, east side of Hudson River.	Intersects NHL just south of Rhinecliff, Dutchess County; district extends about 150 m (500 ft) into water.	Cable installation, sites unknown.
Poughkeepsie Railroad Bridge (NRL 89)	Steel truss railroad bridge, built 1876-1888; now used as pedestrian path.	Lloyd, Ulster County; Poughkeepsie, Dutchess County.	None
Mid-Hudson Bridge (NRE 253)	US 44 across the Hudson River, highway bridge.	Lloyd, Ulster County; Poughkeepsie, Dutchess County.	None
U.S. Military Academy (NHL 102)	Military academy established 1802; includes structures and archeological sites on 2,500 ac.	Highlands, Orange County.	Cable installation, potential military sites underwater.
Bear Mountain Bridge and Toll House (NRL 112)	Steel suspension bridge built 1923-1924.	Cortlandt, Westchester County; Stony Point, Rockland County.	None
Tappan Zee Bridge (NRE 256)	Steel cantilever bridge built 1952-1955	Tarrytown, Westchester County; Nyack, Rockland County.	None

The Project APE also intersects 12 potential and confirmed underwater cultural resources. Since the first round of site file searches and resource identification, the Project APE has undergone at least one realignment. Still, a number of identified, but undocumented, underwater resources mostly noted as anomalies identified by Hartgen based on NYSDEC data remain within the Project APE. As described in the pre-screening document, Hartgen used comparative data from NOAA files to identify anomalies that resemble the signature of confirmed shipwrecks in order to confirm the potential resources in the search corridor.

Eleven of the 12 potential underwater cultural resources are marked as "anomalies" in the pre-screening. However, these were based on their resemblance to confirmed shipwreck signatures found elsewhere in the Hudson River. Any of these anomalies may be confirmed as cultural resources through more survey, such as side-scan sonar or dives. The single reported site is a sunken schooner near the outlet of the Corlaer Kill in Athens, Greene County in about 3 m (15 ft) of water. The site is reported through the USGS, although no archeological investigations have confirmed its location or integrity.

Table 5. Underwater Archeological Sites Within or Adjacent to Hudson River Portion of the APE, CHPEI.

Site Number	Description	Location	Potential Impacts
79	Anomaly.	Greene County.	Within cable route.
84	Anomaly.	New Baltimore, Greene County.	Cable installation, sites unknown.

Site Number	Description	Location	Potential Impacts
87	Anomaly.	Lloyd, Ulster County; Poughkeepsie, Dutchess County.	Cable installation.
88	Anomaly.	Coxsackie, Greene County	Cable installation.
490	Anomaly.	Hudson, Columbia County.	Cable installation.
14	Confirmed wreck.	Athens, Greene County.	Cable installation.
150	Anomaly.	Rhinecliff, Dutchess County.	Cable installation.
204	Anomaly.	Lloyd, Ulster County; Poughkeepsie, Dutchess County.	Cable installation.
285	Anomaly.	United States Military Academy, Orange County.	Cable installation.
346	Anomaly.	Haverstraw, Rockland County.	Cable installation.
385	Anomaly.	Greensburgh, Westchester County.	Cable installation.
389	Anomaly.	Greensburgh, Westchester County.	Cable installation.

Previous Archeological Surveys in the Hudson River

The potential for using side-scan sonar, magnetometer, and other remote sensing techniques in the Hudson River has been investigated recently by Roger Flood, SUNY Stony Brook and his colleagues. Operating with grants from the National Oceanic and Atmospheric Administration, the DEC, and the National Park Service (through its National Center for Protective Technology and Training), Flood undertook more intensive remote sensing along several stretches of the lower Hudson River where there were suspected clusters of cultural resources. In all, there were three subsequent fieldwork expeditions that primarily relied on data obtained from Flood's 2003 bathymetric study of the Hudson River for the DEC (Flood 2005, 2006, 2007a, 2007b, and 2009).

Beginning in 2004, Flood focused on a section of the Hudson north of Poughkeepsie to near Bear Mountain. Within this stretch, his team of researchers spent five days aboard a Coast Guard vessel collecting high-resolution, multi-beam bathymetric data including side-scan sonar and magnetometer studies. Utilizing this higher resolution data, they selected three targets, and divers from the LCMM documented the results of the remote-sensing data. The divers, despite difficult conditions of visibility and strong currents, confirmed the location of three ships including; a Morris Canal Boat (HR 51), a New York Harbor Lighter (a relatively small sailing ship) filled with coal (HR 43), and a small sailing ship of unknown date and type (HR 18) (Flood 2005).

In addition, the sonar data suggested the location of an important Revolutionary War feature in the Hudson, a *cheveux-de-frise*, near the mouth of the Fish Kill (Flood 2005). The cheveux-de-frise consisted of wooden caissons, about 40 feet square, filled with rock and sunk to the bottom of the river. The platforms continued above the water where an armature of wood was fixed with long poles tipped with iron spikes designed to puncture the sides of vessels that tried to penetrate the system and sail further upstream. This features was later dived on by West Point divers in 2006, who confirmed that portions of the wooden defense system were still in situ at the bottom of the river (Flood 2007a).

In 2005, Flood conducted more intensive sonar mapping in the section of the Hudson between West Point and the City of Hudson. Similar to the earlier study, areas of interest that were produced by the new data were dived on by the LCMM. Targets included an Erie Canal barge from circa 1856 to 1862 (HR 36), a Hudson River sloop circa 1834 to 1856 (HR 1014), and a Hudson River Schooner (HR 49) (Flood 2007b).

Flood and his team returned to the river in 2007 to document the section from New York City to Peekskill, about 80 km (50 mi) in length (Flood 2009). In all, 250 potential cultural targets were identified. From these targets, five were selected for dives by a team from the Lake Champlain Maritime Museum. The team

confirmed the location a canal boat (HR 1369), Hudson River Schooner filled with a cargo of bluestone (HR 1257), a Hudson River Schooner filled with brick (HR 1254), another Hudson River Schooner filled with brick (HR 1378), and finally a small metal launch from the modern period (HR 1265).

In a synthesis report, Flood suggested that underwater sonar target could be classified into six general categories: debris, modern vessels historic vessels, curious mounds, other cultural artifacts, and unknown (Flood 2009). Debris was often distinguished by its relatively small size, angular shape, and the distinctive "donut" shaped sand waves that are created around them. Modern vessels could be readily distinguished by their relatively high profile in the water, meaning that the steel or metal vessels had not broken down nor had there been enough time for sediments to deeply bury the crafts. Historic vessels could be distinguished by the distinctive shapes and relatively large debris fields. Curious mounds were elevated river bed surfaces that were of similar size and shape as historic vessels, but lacked clearly interpretable features. Flood speculates that these are older craft that have decayed or been buried by sediments. Sub-bottom profiling was recommended to investigate these types of deposits to determine if they are historic vessels. Other cultural artifacts included the cheveux-de-frise as well as piers and other type features. And, finally, unknown targets are simply those features of unknown origin that could be cultural or natural.

While the data compiled by Flood revealed dozens of potential archeological sites, the Project intersects only a small few. Comparison of the Flood data with known resource compiled for the pre-screening document found three sites that overlap with Hartgen's data, although none of the sites were within or adjacent to the APE.

Archeological Sensitivity and Potential

Recent side-scan sonar surveys and other investigations of cultural resources within the Hudson River have shown that archeological sites exist in the river and still retain integrity. Although shipwrecks are more concentrated around major settlements, anomalies and confirmed sites are found throughout the river, both in the shipping channel and along the shore. Sensitivity for underwater resources is considered high. Currently, side-scan sonar, magnetometer, sub-bottom profiling, and vibracore sampling studies are being completed for the entire extent of the Project's alignment. These geophysical studies will assist in determining the presence of additional underwater resources not previously located in earlier studies or in the site files.

In order to increase the potential for identifying sensitive areas in the river or recognizing small archeological sites as they arise, Hartgen has coordinated with the geophysical teams. In meetings between Hartgen and the geophysical consultants, Hartgen identified several features and artifacts that would be helpful in identifying areas of high archeological sensitivity. This included identification of Native American artifacts and description of the stratigraphic characteristics of former landscape surfaces. It is hoped that the geophysical studies will identify specific areas that warrant additional archeological testing. Unfortunately, the Hudson River has proven to be a difficult and dangerous for reconnaissance dives owing to the turbidity and currents. As a result, broad-scale survey of the river bottom by diving is both dangerous and unproductive. Once specific areas are identified for more detailed studies a combination of dives and reconnaissance through submersible vessels may be used to document and mitigate potential archeological sites, if necessary.

Studies along the east coast suggest that the rate of sea level rise slowed drastically about 4,000 years ago when sea level was about 4.6 m (15 ft) below its current level. Over the past 4000 years or so, the modern coastal line took its current shape (Friedman et al. 1992). The river levels in the Hudson appear not to have changed dramatically during the late Holocene. Any potential areas of submerged archeological sites are likely within the shallow areas of the river. To protect the transmission cables from anthropogenic and natural impacts, CHPEI has sited the cables in deeper sections of the waterway. Therefore, the nearshore areas with the highest potential to retain intact precontact deposits are largely avoided by the proposed Project corridor.

Apart form the natural changes to the river course due to rising sea levels, floods, and tectonic changes, the Hudson River has been heavily altered in the historic period by man. Major industries along the river during the nineteenth century included bluestone quarrying, brick making, ice harvesting, ports and shipping, and

rendering facilities. Many of these operations required access to the river, which were often facilitated by piers, conveyors, bulkheads, and other features. River access has always been at a premium. As a result, shallow waters along the river, particularly in urban areas and near historic ports, have been filled in over the years. Dredging has removed shallow areas and sand bars from the shipping channels. Quarrying has removed shoreline and river bottom sediments. The props of commercial and recreational vessels operating in nearshore areas have disturbed bottom sediments. All these activities have changed the natural course of the river and altered the features that we now encounter both within and along the Hudson.

The 1891 Beers atlas of the Hudson River Valley gives a good sense of the reach of many of the industries that affected the river and also left behind their own unique archeological signatures (Maps 38a and 38b). For instance, the ice houses in the upper reaches of the Hudson River used conveyors set on concrete or stone piers in the river to get the blocks from the water into the storage facility. Ice was loaded from the ice house onto trains or ships. Often, these ice companies had rights to water within a certain distance from their facility. In some cases, the 1891 atlas shows the bounds of ice rights. Ice houses also could only operate down to the Kingston area, below which the water became too salty to use. Many of the companies bore names that indicated their metropolitan owners: Yonkers Ice House, Knickerbocker Ice House, Montauk Ice House. The facilities also avoided shallow waters, where the tidal flow broke up the ice floes and created untenable material for stocking.

Brick yards also had a major influence on the river and produced a unique archeological signature both within the river and along the shoreline. Brick making in the Hudson Valley began as early as 1650, as evidenced by the archeological remains of a brickyard in Albany (Hartgen 2005). By 1905, the Hudson Valley boasted on 131 sites producing as much as 1.3 billion bricks per year. The brick were produced from clay and sand mined from the banks of the river initially, and then from the shallow waters of the river when inland supplies ran low. The industry died in the twentieth century, and by 1945 only 12 sites still produced bricks (Serravallo 2005:206). In addition to mining, the brick industry influenced the river with the construction of made-land for drying kiln, piers and docks for shipping on barges, and other appurtenant structures. These facilities also left behind numerous archeological features and deposits, including numerous sunken barges and scows that were often scuttled after they were used beyond repair. The majority of shipwrecks in the Hudson are likely allied with the brick making industry.

Daniel Miller of the NYSDEC Hudson River Estuary Program conducted a historical survey of dredging and channel maintenance in the Hudson River from the beginning of the period of modern shipping about the early nineteenth century (2005). Historically, the upper Hudson River estuary was described as much shallower than modern depths and with multiple channels. Early engineers thought that the hurdle to successfully maintaining a channel deep enough for larger ships lay in the "consequent diversion of the river water through too many channels" (Miller 2005). Through the nineteenth century, ACOE continued a program of jetty and dike construction in an effort to improve the shipping channel. Twentieth-century dredging finally established a shipping channel depth of 27 ft in 1925 and 32 ft in 1954. Miller showed how the channel creation and maintenance had resulted in a massive of water surface area and loss of habitat in the secondary channels and backwaters along the upper estuary. From an archeological standpoint, it shows how twentieth-century dredging practices may have affected cultural resources and illustrates landscape changes.

SPUYTEN DUYVIL CREEK, HARLEM AND EAST RIVER, AND LONG ISLAND SOUND

The pre-screening document examined the entire channel of all three smaller waterways in New York City as well as the riverbanks. The study identified 38 terrestrial sites, 55 underwater resources and anomalies, and 37 National Register properties within the search corridor. Archeological sensitivity is greatly limited in this portion of the APE. Although there are a number of confirmed wrecks and anomalies in the rivers, there is also a significant amount of dredging to keep these channels open. Potential contexts in the rivers are limited to shipwrecks and features related to ports, wharves, and bulkheads. These resources detail the dynamic history of New York City's waterfront. Additional information was collected since the submission of the pre-

screening document regarding underwater cultural resources on the Connecticut portion of the Long Island Sound. The new data are discussed in this Phase IA report.

Historical maps show that the Spuyten Duyvil Creek and Harlem River were channelized between 1895 and the 1930s as a shipping corridor by the United States Army Corps of Engineers (NYC DPR 2000). Maps of the vicinity predating the change in the creek's course show a circuitous route to the northeast of its present alignment, meeting the Harlem River further to the north than its current outlet. The former channel was filled shortly after the project and used for urban development. Therefore, it is expected that any cultural resources found within Spuyten Duyvil Creek and the Harlem River would likely date to the twentieth century.

Results of Pre-Screening Document

The pre-screening document covered the entire width and riverbanks of the three small New York City waterways. Underwater sites were found listed in both OPRHP site files and on NOAA charts. In all, 40 confirmed wrecks were identified in these three small waterways. Nearly all of the sites are located in the deep East River, where water depths reach to about 30 m (100 ft). Of the riverine wreck sites, one in the East River and ten in Spuyten Duyvil Creek are adjacent or within the Project APE. The confirmed wreck in the East River lies at 15 m (50 ft) near the Whitestone Bridge and consists of a 20-m (65-ft) long ship; no other information was available from the site file. The only information available on the Spuyten Duyvil Creek wrecks indicated that one of the sites was an eighteenth-century frigate in Bronx County.

There are thirteen National Register properties within the Project APE in the Harlem and East River and Spuyten Duyvil Creek. All of these are railroad, automobile, and pedestrian bridges and none will be impacted by the Project.

Three previous surveys intersect the Project APE. Two of those surveys were for transportation projects and no examination of the Project APE was undertaken. There was one survey in 2006 and 2008 for an underwater transmission cable from Westchester County to the Bronx, but this survey never proceeded beyond a Phase IA literature review with a determination of no further work (TRC 2006; Milner 2008).

Terrestrial archeological sites are mostly limited to Parker precontact sites and no effect is expected on any of these resources from the cable installation. Staging and laydown areas, if necessary in this stretch, should avoid these sites.

The Long Island Sound portion of the APE intersects two previous surveys. One was for a similar underwater installation project for the Eastchester Marine Pipeline. This survey identified 53 magnetic targets and 29 acoustic targets during side-scan sonar and bathymetric surveys of two proposed alignments. Eleven of those were selected for further study, although no record of subsequent work was found. The survey paralleled the current Project APE and remained on the New York side of the Sound, terminating at Northport, Suffolk County, on Long Island (Goodwin 2000). The other survey was a broad analysis of historical accounts, cartographic information, and archeological surveys to compile a universe of underwater resources for the Connecticut side of Long Island Sound. This survey is described in more detail below.

No National Register properties or terrestrial sites are intersected by the Long Island Sound portion of the Project APE. One underwater cultural resource is adjacent to the Project APE in New York waters. This is a confirmed wreck site listed on NOAA charts west of Execution Rocks in Westchester County, although no additional information was found in the site file. This site has not been evaluated for National Register eligibility.

Underwater Cultural Resources and Background of Long Island Sound

Geology of Long Island Sound

Heritage Consultants LLC (Heritage) produced an extensive review of the known shipwreck data in the Connecticut waters of the Long Island Sound. The report produced in 2007 was made possible through a

grant from the Connecticut Department of Environmental Conservation utilizing funds raised by the Long Island Sound License Plate Program. Heritage's 2007 report provided a detailed context of the geology and history of the sound. Largely utilizing their work, a brief summary is offered here.

Long Island Sound is a large tidal estuary located along the southern shore of Connecticut and the northern shores of New York's Long Island stretching over 176 km (110 mi) in length and 34 km (21 mi) in width. The sound is fed by open ocean to the east that pushes westward into the East River and eventually through the complex of tidal rivers that surround Manhattan. The sound is mixture of saltwater and fresh water fed by numerous tributaries along the shore (McKeen 2004:927).

The sound, and Long Island itself, was primarily formed at the end of the last ice age. The island is a large terminal moraine created at the edge of a massive ice sheet some 20,000 years ago. When the glacier was at its maximum, the shoreline was about 96 km (60 mi) to the south of Long Island and sea levels were 91 m (300 ft) lower than today (Lewis 2010). As glacial melt continued, a large freshwater glacial lake formed to the north of Long Island. This lake is known today as glacial Lake Connecticut. Deep core samples of the sound bottom and recent sonar data clearly indicate the lake bottom, as evidenced by deep clay deposits (DiGiacomo-Cohen and Lewis 2000; Knebel et al. 2000)

Through a process known as isostatic rebound, the sound, once overburdened with deep and heavy sheets of ice, slowly began to rise. Due in part to rebound and diminishing sources of fresh water from glacial melt, glacial Lake Connecticut eventually drained around 18,000 years ago (Varekamp et al. 2005). Current evidence suggests that sound remained relatively dry for several thousands years. The sound eventually filled with salt water from rising sea levels. Equivocal lines of evidence have fostered debate concerning the timing of the marine transgression over the years (DiGiacomo-Cohen and Lewis 2000; Lewis 1997; Knebel et al. 2000). More recent data suggest a marine transgression into the sound around 10,000 years ago, at the end of a brief climatic cool period known as the Younger Dryas (Varekamp 2005). This suggests that Paleoindian people, who had recently migrated into New York, were present at the filling of the sound with salt water. The onslaught of the ocean into the sound was geologically very rapid. The sound achieved near modern conditions around 7,000 years ago. Smaller variations in sea level have been detected since that time, but most fluctuations range from 3 m (10 ft) below modern conditions to 3 m (10 ft) above (Salwen 1962).

With the marine transgression, the former glacial lake bottom and exposed land surfaces during the dry period were rapidly filled with new sediments. Sub-bottom sonar profiles of the sound floor indicate that up to 45 m (148 ft) of transgression material in the form of sand, shell and other debris now cover the late Pleistocene deposits (DiGiacomo-Cohen and Lewis 2000).

The soils at the bottom of the sound vary greatly. Tidal forces create a strong east to west flow. As a result, scouring forces at the bottom of the eastern end of the sound have left a gravelly bottom with coarse grained sand sediments. The sand sediments at the bottom of the sound become more sorted towards the west, especially in the central portion of the sound. The soils at the western end of the sound transition to silts and sands and even silt and clay deposits (Beaulieau et al. 2005). The latter are more typical of lower energy environments of deep water and more still portions of the western basin (Knebel et al. 2000). The northern portion of the sound is dominated by a rocky bottom created by glacial till and drift that occurred behind the moraine. The till and drift were also affected by shallow bedrock common along portions of southern Connecticut (Lewis 1997).

The sound is relatively shallow, with deep water varying between 65 and 300 feet deep, and part of a unique environment that hosts a large variety of fish and shellfish (McKeen 2004:927). The waters of the sound are largely protected from the wind and waves of the open shore, thus creating a stable shoreline that is home to a variety of birds and other animals.

The sound attracted Native American populations for millennia. Between 10,000 years ago and 6,000 years ago, sea levels and shorelines were still fluctuating. Many of these fluctuations were relatively minor, with sea level rising and falling about 20 feet. These changes likely affected near-shore areas the most.

The soils and sea levels of the sound suggest that the potential for locating submerged precontact archeological sites along the proposed Project corridor is very low. The landscapes associated with Paleoindian people were likely the low-lying areas of sound that contained residual wetlands associated with the draining of glacial Lake Connecticut. These potential sites are now in the deepest portions of the sound. Further, the marine transgression which occurred around 7,000 years ago and the continued tidal activities of the sound have deeply buried these potential sites under many feet of sediments. The sound shoreline largely stabilized around 6,000 years ago, or about the time of Late Archaic people. At this time, the sea level still fluctuated about 20 feet in total. As s result, potential sites that may now be submerged associated with Late Archaic people (and Native Americans from later periods), are most likely to be found in near-shore areas of relatively shallow depth. Further, due to tidal forces, these sites would need to be located in well-protected bays and inlet that were not subject to strong tidal forces that may have eroded such landforms or buried them deeply under new deposits.

Much of the proposed line is currently in the deeper navigation channels. Near-shore areas of impact will be limited to the area directly south of Bridgeport.

Recent studies of the Long Island Sound floor near Bridgeport, Connecticut suggest the near shore-environment is highly complex (Beaulieu et al. 2005). Bathymetric data, side-scan sonar, and vibracore data suggest that a varied textured bottom that is impacted by modern human activity. In deeper water, fine-grained sediments are still rapidly accumulating from deposits washed into the sound from fresh water tributaries and material brought in from the ocean on tidal movement. In more shallow areas, there are broad swathes of sediments that are constantly being reworked and/or sorted. Even closer to shore, erosion or scouring is occurring; sometimes these scoured surface are overlain by coarse bed transports formed in marine deltas (Beaulieu et al. 2005).

The sound bottom varies from clayey silt in deeper water to coarse sand and gravelly sand in near-shore areas. The data collected from the Beaulieu et al. (2005) study indicated that portions of the sound bottom were also impacted by cultural, as well as natural, forces. For instance, a large area of dredge spoil was located in the deep water immediately south of Bridgeport, approximately miles. The dredge was from the excavation of a deep shipping channel which had extended over 8 meters in depth (Beaulieu et al. 2005). The channel extends some miles and is approximately 300 feet wide. The current route of the Project is west and north of the channel.

Nearer to shore, trawl marks were visible on the sea floor. The marks were likely created from shell fisherman scraping their nets along the sea bottom. It is unclear what, if any impacts, these scars may have on potential archeological sites. The study also identified several shipwreck sites that were subsequently included in the Heritage Consultants' data, and as part of the larger GIS database presented with this report.

Maritime History of Long Island Sound

As briefly alluded to previously, the area of Long Island Sound was likely first inhabited by Paleoindian people at the end of the last ice age, when the sound was relatively dry with fresh water lakes and ponds. Between around 10,000 and 7,000 years ago the sound rapidly filled with salt water and Native American settlement largely focused on the emerging and dynamic shoreline. Certainly through time, canoes and other small craft were utilized by Native American groups to fish and move around the sound. To date, there are no known precontact craft that have been archeologically identified in the sound.

European exploration of the sound likely began in the fifteenth century, but the earliest recorded visit is credited to Giovanni Verrazzano in 1524. Adriaen Block, sailing for the Dutch East India Company, was the first to extensively explore and map the sound and its environs. By the seventeenth century, Dutch settlers made permanent homes along the shoreline of Long Island and Connecticut. Much of the settled resulted in a growing agricultural economy. The transport of raw materials such as wood, furs, and agricultural products and livestock to larger markets overseas helped to bolster the colonial economy. As a result, numerous ports within the sound quickly emerged, taking advantage of the shelter provided by the sound as a whole, as well as smaller coves and bays.

With the development of ports, came the industry of shipbuilding. The first sustained efforts at shipbuilding in the sound occurred in New London around 1660, and eventually spread to other locales. Trade increased in the sound through the seventeenth and eighteenth century, in part fueled by the growth of the West Indies economy. As a result, the number of ships sailing the waters of the sound continued to increase though time. Commerce increased, especially in the period following the Revolutionary War, when the prohibitive trading laws of the British Empire were lifted and the American mercantile economy flourished. Commerce within the sound particularly advanced with the rise of New York City as a principal port city, in part driven by its connection to inland ports via the Erie and other canal systems.

After 1809, steamships began to slowly replace sail vessels within the sound. Initially steam vessels were dedicated to ferrying passengers, but in time included commercial hauling and cargo vessels.

The fishing industry within and along the sound developed with the earliest explorers and settlers to the region. Fish and shellfish within the sound were plentiful and relatively easy to exploit, in part due to relative calm and shallow waters of the sound. By 1662, whaling started to become an important component of the sound fishery (although whales were actually hunted in deeper waters off of the coast, and eventually, when supplies diminished, throughout the world). By the mid nineteenth century, the American whaling industry largely collapsed due to declining populations and the replacement of whale products with synthetics.

There is still a strong fishing economy in the sound as oysters, clams, lobsters and other shell fish are still harvested. A large dedicated fleet of fishing vessels continues to ply the sound.

With the advent of the railroad in the mid nineteenth century, there was a dramatic decline in volume of shipping within the sound. Today, the larger ports of call still continue as active trade centers but many of the smaller ports have largely disappeared, replaced with small marinas. As much of the traffic on the sound today results from personal, pleasure crafts including motorized and wind driven vessels.

This brief review of the maritime history of Long Island Sound to provides a context for the evolution of sailing craft on the sound, and a general sense of the types of wrecked vessels that might be expected on the bottom of the sound and their frequency.

Long Island Sound Shipwrecks

Heritage's 2007 report represents the first systematic effort to document the underwater cultural resources of the Long Island Sound. Information on the location of known and suspected shipwreck sites were managed through a GIS database that provided detailed data concerning the types of vessels, age of the vessel, condition, and source of information, along with their locations (or suspected locations) in the sound.

Data sources included both archival records and recent sonar scans of the sound bottom. The largest single source of data was obtained from Automated Wreck and Obstruction System (AWOIS) GIS database maintained by the National Oceanic and Atmospheric and Administration (NOAA). Historical newspaper accounts, archeological site forms at the Connecticut State Historic Preservation Office, and even internet sites were canvassed for possible shipwreck locations. As a result, the data set includes GIS points with wide variations in accuracy and detail. To account for the inherent issues of reliably in the data, Heritage Consultants developed a ranking system. The system uses a scale of 1 to 4 to indicate the level of confidence in the GIS point. A score of "1" indicates a site with a precise location, while a "4" represents a site with a vague location.

In all, 617 anomalies were located within the sound. They included 214 "obstructions" that may or may not represent shipwrecks and another 403 sites likely to be shipwrecks. The location of sites within the vicinity of the proposed transmission cables are represented on a set of maps appended to this report (Appendix 1). Following the conventions of the Heritage report, site locations are represented based on circles of varying size dependent on their reliability ranking. A site with a rank of "1" is located within a circle with a diameter of 50 m (164 ft), "2" with a circle of 500 m (1,644 ft), "3" 1.5 km (0.94 mi), and, finally, "4" with a diameter of 5 km (3.1 mi).

The data indicates clusters of shipwrecks within treacherous locations in the sound and particularly in nearshore areas. In these areas it was not uncommon for vessels to be intentionally scuttled or to be lost by grounding in shallow waters or poor weather. A significant cluster of wrecks is noted in the Bridgeport area near where the line will make landfall. Two of these are crossed by the currently proposed route: C133 and C134. C133 is location of the *S.E. Vincent* barge and C134 is the *Blue Jacket* barge. The wrecks' locations are based on documentary evidence obtained at National Archives in Waltham (Table 5).

In the deeper water of the proposed route the line crossed over the predicted location of three other sites: C283, C545, and C620. Two of these are listed as "unknown" sites and the locations obtained through the AWOIS database. It is not certain if these are shipwrecks or other pieces of debris. The third is the reported location of *Garrett*, a cargo carrier of unknown age, and is based on AWOIS data. The route also crosses in close proximity, less than 500 feet, to six additional sites: C278, C490, C566, C573, C577, and C578 (Table 5). All are listed as "obstructions" or "unknown" and their locations obtained from AWOIS data, suggesting their locations are fairly well known.

The proposed line intersects or passes near 11 different areas that include known or suspected shipwrecks, obstructions of an unknown origin that could be cultural or natural, and features of uncertain origin identified in sonar data that have yet to be verified with more detailed reconnaissance. To the extent practicable, CHPEI intends to reroute the proposed Project to avoid all of the points identified in the Heritage database.

Table 6. Underwater Cultural Resources Near Bridgeport, Connecticut, from AWOIS Database, Champlain-Hudson Power Express

Map ID #	Vessel Name	Vessel Type	Location Rank	Source	Vicinity to APE	MP
C133	S. E. Vincent	Barge	4	NARA-Waltham	within	59
C134	Blue Jacket	Barge	4	NARA-Waltham	within	59
C283	Unknown 216		2	AWOIS	within	50
C545	Garrett	Cargo Carrier	3	AWOIS-USCS	within	35
C620	Unknown 169		2	AWOIS	within	35
C278	Unknown 212		2	AWOIS	near	55
C490	Obstruction172		2	AWOIS	near	59
C544	Unknown 26		2	AWOIS	near	35
C566	Unknown 124		2	AWOIS	near	35
C573	Obstruction153		2	AWOIS	near	35
C577	Obstruction149		2	AWOIS	near	55
C578	Obstruction190		2	AWOIS	near	55

CONVERTER STATIONS AND SUBSTATION – YONKERS, ACADEMY/SHERMAN CREEK, AND BRIDGEPORT

Yonkers Converter Station, Wells Avenue

The Yonkers converter station is proposed for a triangular lot on the north side of Wells Avenue, about 150 m (500 ft) east of the modern shoreline. Historical maps show that during the nineteenth century a railroad bordering the lot to the west once marked the Yonkers waterfront. The lot was largely an industrial environment serving the port facilities along the river.

Results of Pre-Screening Document

There are no National Register properties or underwater sites intersected by the Yonkers converter station portion of the Project APE. One previous archeological survey was conducted very near the Project APE, closer to the river, on land that was created for the modern waterfront during the late nineteenth and early twentieth century. Hunter Research conducted a Phase IB field reconnaissance on the suspected location of the early nineteenth-century Peene's Wharf (Hunter Research 2004). Although no features associated with that early historic facility were found, two shipwrecks were discovered buried below the modern landfill at the former outlet of the Saw Kill River into the Hudson River. These sites (S627-628) were below the proposed impact of the project and no further work was recommended. Late nineteenth- and early twentieth-century foundations remains were also found, but no intact strata could be associated with these living quarters (Hunter Research 2004).

Historical Map Review

The proposed converter station in Yonkers, New York will be constructed on Wells Avenue. The proposed converter station site is located in a wedge-shaped area bound by Woodworth Avenue (formerly Atherton Street) on the east, Wells Avenue on the south, and Metro North Railroad on the west.

Historical maps of Yonkers reveal that the vicinity of the proposed converter station was once directly along the riverfront. The 1868 Beers atlas shows that the Hudson River was located just west of the railroad tracks and street that border the west edge of the site. River Street extended south to north through the western edge of the site (Map 39). The site itself is divided into individual lots with two structures depicted. The S. and G. Stewart drugstore was at the southwest corner of the site at the intersection of Wells Avenue and River Street. D. Sanders had a building at 23 Atherton Street. M.K. Couzens owned 27-41 Atherton Street. Other development surrounding the vicinity is a mixture of somewhat sparsely distributed residential and industrial buildings. H.W.B. Bashford owned the lots at 43-51 Atherton Street.

The 1886 Sanborn fire insurance map shows that there is a greater density of development in and around the site (Map 39). River Street was incorporated into the western portion of the site and railroad tracks now bordered this edge. The Lawrence Brothers Lumber Yard complex occupied the southern third of the site. The complex included a lumber shed and a two-story dwelling facing onto Wells Avenue, a wagon shop and stable behind the lumber shed, and a lumberyard at the corner of Atherton Street and Wells Avenue. A few small outbuildings were located in the southwest corner of the site. D. Saunders' Sons tool and machine manufacture complex was located at 21-31 Atherton Street. The Saunders' Sons' complex included several shop buildings and storage shed and the Saunders dwelling at 23 Atherton Street. A small outbuilding was located along the western end of 25 Atherton Street. The 1886 maps shows that the northern portion of the site (33-48 Atherton Street) contained at small blacksmith shop at 37 Atherton Street, a tenement at 41 Atherton Street, dwellings at 43 and 49 Atherton, and saloons at 45 and 47 Atherton Street. Each of these buildings also had outbuildings in the rear of the lots.

The 1898 Sanborn map of the site shows that the most significant change occurred outside of the western edge of the site as waterfront wharves were built further out into the Hudson River (Map 39). More buildings were constructed in the site, namely along the western edge of the site to access the railroad. The Lawrence Brother Lumber Yard complex added several buildings in the southwest and southeast corner of the site. The D. Saunders' Sons complex added larger fireproof structures in the rear of 17-33 Atherton Street. The Saunders dwelling was depicted as the business office and was surrounded with an area described as lawn. The northern portion of the site contained the same number of structures. The blacksmith shop at 37 Atherton Street expanded to a larger shed. The tenement at 41 Atherton Street added an open wall structure to the north. The saloon at 45 Atherton Street was now the Westchester Beer Company. The dwelling at 49 Atherton Street was now H. Clauson and Son Brewing Company Depot.

The 1917 Sanborn map shows that the Otis Elevator Company constructed a three to four-story building across 51-59 Well Avenue (Map 39). The D. Saunders' Sons' complex still occupied 23-31 Atherton Street. Otis Elevator Company had also constructed a two-story warehouse at 35-43 Atherton Street. The tenement

at 41 Atherton Street was demolished. The dwelling at 43 Atherton Street was demolished. The buildings at 43-49 Atherton Street remained as storage, store, and beer storage buildings. An oil house owned by Otis Elevator Company was located at the north end of the site at 51 Atherton Street.

There were no major changes in the development within the site between 1917 and 1957. The 1957 Sanborn maps still shows the Otis Elevator Company and D. Saunders' Sons' in most of the southern portion of the site. The buildings in the northern end of the site at 45-49 Atherton Street are now lumber storage and 51 Atherton Street is still oil storage for the Otis Elevator Company.

Today the proposed converter station site is mostly covered with an asphalt parking lot. All of the buildings shown on the 1886-1957 Sanborn maps have been demolished.

Archeological Sensitivity and Potential

There is high sensitivity along the cable route to the converter station for buried remains of Yonker's former waterfront. Waterfront studies have recently been highlighted in archeological research as tangible remains of early attempts of city land management as city managers and business interests struggled to control the future of the lucrative waterfronts in cities including Albany and New York City. There is also high sensitivity for historic deposits in the converter station portion of the Project APE where historical development involved varied commercial and industrial interesting, including lumber yards, breweries, and a machine shop. Much of the development may have taken place without basements, based on the Sanborn maps, and large areas of open space were left undeveloped to retain access across the block from Atherton Street to the railroad. This also raises the potential for precontact sites in the Project APE, although the potential for locating these sites relies heavily on the extent of the disturbance from construction and subsequent demolition at the site. The parking lot over the site may seal historic deposits and creates a high potential for finding intact, stratified contexts relating to the industrial history of this block.

Academy/Sherman Creek Substation

The connection at the existing Academy/Sherman Creek substation in New York City, will occur at the small facility located on West 201st Street and Ninth Avenue on the west bank of the Harlem River. The only potential impact in this location would be the use of HDD for the transition from the river to the substation.

Results of the Pre-Screening Document

The Academy/Sherman Creek portion of the Project APE intersects one previously reported archeological site and is adjacent to two previous cultural resource surveys. The archeological site, NYSM 4069, was a Parker precontact site described as "traces of occupation" (S654).

One of the surveys was a continuation of the underwater transmission cable previously discussed in the Harlem River portion of this report (TRC 2006; Milner 2008). The other survey covered a small open port area south of the substation. A Phase IA study conducted by the United States Army Corps of Engineers determined that the archeological sensitivity in this underwater and shoreline location was low based on modern and historic landscape modifications. No further work was recommended for this habitat restoration project (USACOE 2003).

Archeological Sensitivity and Potential

Since the Project APE in this location has very minimal impacts, Phase IB survey would be limited to the opening of the HDD excavation at the riverbank. Sensitivity within the substation is considered high based on the presence of a precontact site, but the potential for finding intact deposits is considered poor. Substations require several, small deep excavations for the installation of the various transformer and converter towers and disturbance is very likely spread throughout. At the river's edge, on the other hand, sensitivity includes waterfront improvements, and the potential for finding historic deposits relating to these sorts of episodes is good depending on the current state of the Project APE.

Bridgeport Converter Station

The Project APE in Bridgeport is located at Seaside Park off Barnum Boulevard. Three surveys have been conducted near the park as well as a fourth in the Sound, about one mile off shore. One archeological site was identified within 610 m (2,000 ft) of the Project APE on Tongue Point. The park itself was designed by Olmstead and Vaux in the 1860s and is listed on the National Register of Historic Places. Discussions between HDR|DTA and the Connecticut SHPO have indicated that monitoring the installation of the transmission lined and construction of the converter station would be an appropriate measure. The park is the site of reported precontact deposits as well as Native American burials.

The Project proposes to directionally drill about 610 m (2,000 ft) of the cable from off shore to a parking lot adjacent to the beach. From here, the cable will be installed underground within the shoulder or road bed of Barnum Boulevard for a distance of about 646 m (2,120 ft). The receiving excavation in the parking lot will measure about 418 m^2 (4,500 ft^2). CHPEI has proposed to site the converter station on land that is currently bare and used by the City of Bridgeport for mulch and topsoil storage. This element covers about 1.9 ha (4.8 ac).

Results of the Pre-Screening Document

One terrestrial archeological site and one National Register eligible property were found within the search corridor for the converter station, but no cultural resources were reported within the APE besides the park itself. The Seaside Park archeological site, which is not actually in the park, but on Tongue Point in the neighborhood of Seaside Park, consists of burials, shell middens, and camp sites associated with Archaic through Woodland period habitation. The site inventory form noted that the site was disturbed, but archeological materials were still present.

Three surveys have been conducted on Tongue Point, about 610 m (2,000 ft) to the east. These surveys all identified deep fill deposits and disturbance as a result of industrial construction. It is not known to what extent Seaside Park has been filled, but there is likely disturbance associated with the creation of the park during the nineteenth century.

Seaside Park was evaluated as eligible for inclusion in the National Register under National Register Criterion C. The park serves as an example of the aesthetic and principles of the American parks movement and as an important work of 19th-century civil engineering (Gilchrist 1981). The park was also evaluated as eligible for inclusion in the National Register under criterion B for its association with circus impresario P.T. Barnum (Gilchrist 1981).

Seaside Park is visually divided into three sections which correspond to the historical phases of development at the park. The earliest, eastern section of the park features clusters of shade trees and open greens that are linked by curvilinear paths and drives. The earliest section of the Seaside Park is believed to have been designed by Fredrick Law Olmstead, but documentary evidence to confirm the involvement of Olmstead in the park's design is lacking.

The central section of Seaside Park is relatively low and flat, and features several ball fields. The western section of Seaside Park was created from reclaimed marshland in between 1895 and 1912. A masonry seawall extends along the sound and meets a breakwater at the end of Barnum Boulevard. The breakwater extends to Fayerwheather Island, an approximately 9.5-acre island located at the entrance to Black Rock Harbor. Black Rock Harbor Lighthouse and the remains on the associated lighthouse keeper's house are located on the island.

Seaside Park includes a large bathhouse that overlooks the sound and stables that now serve as a maintenance complex. Both the bathhouse and the stables were designed and built in the Renaissance Revival style and maintain many of their character-defining features. Several monuments are also scattered across the park (particularly within the eastern section), including statues of P.T. Barnum and Elias Howe. The P.T. Barnum statue, in particular, reflects his longtime involvement in the design and development of Seaside Park.

Seaside Park is bounded by Long Island Sound to the south and Black Rock Harbor to the north. The boundary of the historic site excludes the dump site on the northwestern portion of the park. The proposed converter station location is located north of the bathhouse in an area that is currently used as a mulch site by the City of Bridgeport. This site has been significantly disturbed and currently lacks the character-defining features of the remaining portions of the park within the National Register boundary.

Historical Map Review

The 1951 USGS quadrangle shows a pond where the converter station is proposed. Today, this area is used for mulch and other storage. The 1875 lithographic bird's-eye-view of the city of Bridgeport only shows the eastern end of the park, east of Waldemeier Avenue, excluding the location of the Project APE.

Archeological Sensitivity and Potential

Much of the proposed APE has likely been affected by the creation of the park and subsequent maintenance and landscape modifications. The presence of a National Register-listed park encompassing the location of the converter station, and the reported presence of extensive precontact archeological deposits in the park suggests a high degree of sensitivity. The potential for finding intact archeological sites may be poor based on the knowledge of extensive disturbance stemming from the construction of the park and modern shoreline development. This location may be monitored during construction.

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APPENDIX 1: RECOMMENDATIONS FOR PHASE IB ARCHEOLOGICAL FIELD RECONNAISSANCE

RECOMMENDATIONS FOR PHASE IB ARCHEOLOGICAL FIELD RECONNAISSANCE

The Phase IB field reconnaissance for the CHPEI Project will require several different techniques based on the widely varied environmental and cultural characteristics of the nearly 400-mile Project APE. This appendix provides recommendations for testing methodologies and efforts for each of the major Project segments based on the result of the pre-screening document and the Phase IA study.

Discussion of testing intervals and transects are based on the number of tracks along the railroad, as the route will primarily follow along the CP Rail and CSX railroad rights-of-way from Whitehall to Coeymans, New York. In general, any segment of track with more than one track will involve separate transects by a distance of greater than 15 m (50 ft). This will require twin transects of tests at 15-m (50-ft) intervals, rather than the staggered single transect. Figures 3 and 4 in the Phase IA report offer schematic illustrations of a typical testing alignment and the use of twin and single staggered transects. Hartgen used a number of sources to determine the testing interval and intensity of investigation. These included data from the pre-screening document (cultural resources, previous surveys), large wetlands observable via Google Maps, number of tracks in any given segments as observed on the ground and in modern satellite imagery, and the degree of slope as seen during the site visit and on modern topographic maps. Based on the available information for a very long Project corridor, Hartgen assumes that 10% of each APE segment is not testable due to prior disturbance, slope over 15%, or extensive wetlands with standing water. Shovel test totals are figured by determining the total length of a segment; number and size of known archeological sites; width of the railroad track; and mitigating factors (wetlands, slope, disturbance, health and safety hazards).

Phase IB Field Reconnaissance Recommendations – Underwater

During the siting process, the LCMM provided data regarding known and potential cultural resources within the vicinity of the Project's alignment in Lake Champlain. Side-scan sonar and bathymetric data provided by the NYSDEC was also analyzed by Hartgen to identify shipwrecks, potential resources, and anomalies along the Hudson River. Based on the information provided by both the LCMM and the NYSDEC data, CHPEI sited the transmission cables to avoid nearly all of the submerged sites and anomalies.

CHPEI is also collecting additional geophysical data of Project's entire alignment, A detailed bathymetric and side-scan sonar geophysical marine survey of Lake Champlain and Hudson River have recently been completed by CHPEI. At this time, it is anticipated that the resulting geophysical data will be evaluated by the LCMM's experienced team to determine if any acoustic or magnetic targets identified along the route require additional investigation, as necessary

Based on the results of these studies, CHPEI will consult with the NYSHPO, and other appropriate parties, to develop measures to avoid, minimize or mitigate impacts to identified resources, as appropriate. If necessary, the submarine route may be further modified to avoid adverse effects to significant resources. Dives and the use of remote-operated submersible vehicles may also be utilized in subsequent evaluation or mitigation efforts.

Phase IB Field Reconnaissance Recommendations – Terrestrial

At this time, no significant staging and laydown areas for the Project on the New York shore of Lake Champlain have been identified by CHPEI. If such sites are necessary, these locations will be determined as the Project moves closer to construction. Any potential construction-related area along the lakeshore will be examined based on the information gathered in the pre-screening document. Depending on the presence of cultural resources, evidence of extensive disturbance, or coverage by a previous survey, recommendations will be made for Phase IB survey. Phase IB methodologies will depend on environmental (soil types) or cultural (site location) variables.

Lake Champlain

The Project APE through Lake Champlain starts at the Canadian border and ends in Whitehall, where the cable will enter a railroad ROW via a HDD landing site. The APE passes through a heavily traveled channel where countless ships have sunk over the past three centuries. Several shipwrecks have been noted in site files and many have been confirmed by the LCMM. The current alignment of the Project APE intersects four terrestrial sites that may have components within the lake and six submerged sites. The Project APE also skirts or intersects five National Register-listed properties.

Approximate Length: 166 km (104 mi).

Reported Cultural Resources Within or Adjacent to APE:

- Terrestrial Sites:
  - NYSM 5106 and 5108 (Sites 101 and 92): Parker-type sites, traces of occupation.
  - Flat Rock Bay, NYSM 1344 (Site 94): Woodland period site;
  - Pulpit Point, NYSM 1350 (Site 97): Contact period French fort and settlement.
- Underwater Sites:
  - NYSM 11628 and 11633 (LC 3 and LD 8): Railroad drawboat and possible wreck;
  - *Ella E. Bagley* (LC 1): Mid-nineteenth century canal boat, possibly buried;
  - VT-AD-1019, VT-RU-262, 263 (LC 29, 47, and 48): Wrecks identified during Mt. Independence survey.
- National Register Properties:
  - Plattsburgh Bay NHL (NRL 17): Military historic district centered on Cumberland Head;
  - Camp Dudley Road Historic District (NRL 11): Nineteenth-century residential historic district;
  - Ft. Crown Point NHL and Ft. Ticonderoga NHL (NRL 17 and 18): Eighteenth-century forts and associated features;
  - Lake Champlain Bridge (NRL 15): Twentieth-century automobile bridge, demolished 2010.

Archeologically Sensitive Areas: Fort Montgomery, Clinton County (Revolutionary War fort, marked as "ruins" on most recent USGS quadrangle); Valcour Island NHL; Plattsburgh Bay NHL; Fort Ticonderoga NHL; Fort Crown Point NHL.

CP Rail: Whitehall to Fort Edward– Segment 1A

The proposed cable will emerge from Lake Champlain on the north side of Whitehall near the existing CP Rail line. The cable will follow the railroad southward. In general, the railroad parallels the former Champlain Canal and the more recent Barge Canal, often located between the two. This segment of the Project has been recently advanced in favor of the Barge Canal. Although it is not directly addressed in the Pre-Screening and Phase IA reports, due to its proximity to the canal there is already a great deal known about the route as it relates to previously reported archeological sites, National Register listed and eligible properties, and previous archeological surveys since this new segment lies within the original study corridor. Primarily this section is single track in width, except for a small rail yard located south of Whitehall. The

railroad is carried under several overpasses within the Village of Whitehall and over several drainages including a large causeway that carries the grade over a large wetland north of Fort Ann.

Approximate Length: 19.4 miles (31.2 km)

Soils: Principally Claverack-Cosad association which is comprised of sandy soils over a silty clay lake bottom deposit. The sands are later deltaic formations over glacial lake sediments. Cultural deposits are expected to be in relatively shallow deposits. Also along the route are minor areas of Hollis-Charlton associated soils. These soils are typically shallow with coarse textured sand and gravel that were formed in glacial till. Cultural deposits would be expected to be relatively shallow based on the soil types along the extent of the proposed route; therefore shovel testing is the most appropriate archeological technique.

Reported Cultural Resources Within or Adjacent to APE:

- Sites:
  - NYSM 9377, 5105, 7501, and 7500 (Sites 118, 123, 127, and 143): Parker-type sites, traces of occupation;
  - Battle Hill, OPRHP 11505.00004 (Site 135): Revolutionary War Battlefield (1777);
  - Canal Locks, OPRHP 11546.00016 (Site 141): Former Champlain Canal locks built around 1870.
- National Register Properties:
  - Within Whitehall the route passes through the Main Street Historic Bridge District (NRL 19) which is listed on the National Register;
  - The route also passes near the Whitehall Post Office which is listed separately (NRL 21).
  - There are also a number of National Register-eligible residential structures within 150 meters of the route in Whitehall including NRE 13, 15, 16, 17, 18, 19, 20, 21, and 22.
  - At Fort Ann the route passes close to the National Register-eligible sites NRE 28, 29, and 30 which include a freight station, wagon shop, and post office respectively. None of these properties appear to be within the corridor.
  - At Smith's Basin, further to the south, the railroad grade passes over the National Register-eligible canal spillway (NRE 32).

Archeologically Sensitive Areas: Various undisturbed locations along the grade between Whitehall and Fort Ann are archeologically sensitive.

Shovel Tests: 1,675 at 15-m (50-ft) interval in twin, offset transects along the single tack sections of the right-of-way. Monitoring will be conducted in the short segment though the rail yard south of Whitehall.

Rogers Island, Fort Edward– Segment 1B

The Project APE also crosses Rogers Island in the Hudson River outside of the village of Fort Edward. The cable will be brought to and from the island under the decks of the two railroad bridges that carry the line over the river and placed within the railroad grade on the island. Soils within the APE on the island are characterized as dredge and alluvial. Hartgen backhoe trenching may be needed following shovel testing, should the bottom of cultural deposits not be reached with hand-excavation.

Approximate Length: 150 m (500 ft).

Reported Cultural Resources Within or Adjacent to APE:

- Delaware & Hudson Railroad Bridge (NRE 295): Nineteenth-century iron trestle bridge on earthen embankment.

Soils: Oakville sand (water-borne deltaic deposits), although most of this within the APE may be covered with Orthents and Psamments from dredging, which may contribute to deeply buried sites.

Archeologically Sensitive Areas: Although the APE does not intersect any sites identified in the site file search, Rogers Island is known for extensive precontact occupational deposits and eighteenth-century military occupation. It is likely that the APE will encounter intact soil horizons within the depth of impact.

Backhoe Trenches and Shovel Tests: 52 shovel tests and up to 8 square meters of deep unit excavation, if necessary. The shovel tests will be excavated first to determine the need for additional unit excavation. If backhoe trenches are eventually needed they should be excavated prior to construction, rather than postponing monitoring until construction, as the archeological sensitivity of the island is considered high..

Hudson River to NY 32 Crossing, Gansevoort – Segment 1C

Approximate Length: 16.9 km (10.6 mi).

Reported Cultural Resources Within or Adjacent to APE:

- Gansevoort Rail Station (Site 685): Documented location of rail station in village, built and operated mid to late nineteenth century.

- Former United Methodist Church, Maple Avenue, Gansevoort (NRE 300):

Soils: Limerick and Teel silt loams, floodplains, short sections of less than 100 m near the Hudson River. All others include lake plains and uplands soils in which deposits will be at relatively shallow depths.

Archeologically Sensitive Areas: Snook Kill crossings, hamlet of Gansevoort, within 150 m (500 ft) of the Hudson River.

Shovel Tests: 870 tests at 15-m (50-ft) interval in twin, offset transects.

NY 32 Crossing, Gansevoort, to Interstate 87 Overpass, Wilton – Segment 2

Approximate Length: 11.9 km (7.4 mi).

Reported Cultural Resources Within or Adjacent to APE: None

Soils: Mostly Oakville sandy loam, a well drained deltaic and lake plain deposit. There are some small areas of Cosad fine sandy loam (somewhat poorly drained, lake plains) and Deerfield loamy fine sand (well drained, lake plains, outwash deltas). No deep testing necessary.

Archeologically Sensitive Areas: Several very small wetlands in a largely upland, sandy setting.

Shovel Tests: 610 tests at 15-m (50-ft) interval in twin, offset transects.

Interstate 87 Overpass, Wilton, to NY 50 Crossing, Saratoga – Segment 3

Approximate Length: 11.4 km (7.1 mi).

Reported Cultural Resources Within or Adjacent to APE:

- NYSM 6907 (Site 690): Native American camps identified by Parker centered on Saratoga Spa State Park and associated natural features and extending southwest down NY 50. The Project APE intersects this site near the NY 50 crossing.

Soils: Mostly Oakville and Windsor sandy loams, both excessively drained and forming in lake plains, deltas and outwash terraces. There are several smaller areas of somewhat poorly drained Rhinebeck silty loam and other soil series, but no alluvial soils.

Archeologically Sensitive Areas: Vicinity of NYSM 6907 and waterways leading to various springs and natural resources unique to the location. There are also four historic sites identified within 150 m (500 ft) of the Project APE in the City of Saratoga Springs, which may raise the historic sensitivity of this segment. Moderately sized rail yards at the Geyser Brook crossing may bear intact precontact deposits as well.

Shovel Tests: 690 at 15-m (50-ft) interval in twin, offset transects. Additional 50 shovel tests at a 7.5-m (25-ft) interval in the last 300 m (1,000 ft) of the segment within NYSM 6907.

NY 50 Crossing, Saratoga, to NY 146a Crossing, Burnt Hills – Segment 4

Approximate Length: 15.8 km (9.9 mi).

Reported Cultural Resources Within or Adjacent to APE:

- NYSM 6907 (Site 690): Native American camps identified by Parker centered on Saratoga Spa State Park and associated natural features and extending southwest down NY 50. The Project APE intersects this site near the NY 50 crossing.
- Zepko Road (Site 691): Late nineteenth- and early twentieth-century sheet midden deposit.
- Ballston Lake Electric Traction Powerhouse (Site 694): Mid-nineteenth-century industrial site with associated sheet midden.
- South Ballston Railroad Station (Site 696): Mid-nineteenth-century railroad station in Village of Burnt Hills.

Soils: Owing to its location within the post-glacial channel of the Mohawk River, much of the APE in this segment runs along the side of a slope leading to Ballston Lake to the east. Soils are dominated by upland soils forming along benches, terraces, and drumlinoid ridges, such as the moderately well drained Broadalbin-Manlius-Nassau complex and Mosherville silt loam. There are no alluvial soils in this portion of the APE.

Archeologically Sensitive Areas: Vicinity of NYSM 6907 and waterways leading to various springs and natural resources unique to the location. There are also three small sites identified within 150 m (500 ft) of the Project APE between Ballston Center and Burnt Hills, which may raise the sensitivity of this segment. One of those sites (Site 695; Map 36a) may be the McDonald cabin site, the reputed location of the first Euroamerican settler along Ballston Lake. The Project APE parallels Mourning Kill and a large wetland at the head of Ballston Lake which would have been an attractive draw for Native Americans.

Shovel Tests: 1,150 at 15-m (50-ft) interval in twin, offset transects. This includes 170 shovel tests at a 7.5-m (25-ft) interval in the first 3.03 km (1.9 mi) of the segment within NYSM 6907. Additional shovel tests will also be excavated in the vicinity of Sites 691, 694, and 696.

NY 146a Crossing, Burnt Hills, to Mohawk River, Glenville – Segment 5

Approximate Length: 9.8 km (6.1 mi).

Reported Cultural Resources Within or Adjacent to APE:

- Yates Farm Precontact Site 2 (Site 699): Precontact camp site, determined ineligible inclusion in the National Register.

- Alplaus Schoolhouse Historic Site (Site 700): Nineteenth and twentieth-century sheet midden behind standing late nineteenth-century schoolhouse, determined ineligible for inclusion in the National Register.

- ALB 103 (Site 702): Nineteenth- and twentieth-century sheet midden deposits along with Late Archaic and Transitional period Native American encampments.

Soils: The Project APE does not intersect any alluvial soil series near the Mohawk River. Most of the soils series are Raynham silty loam (somewhat poorly drained, lake plains); Scio silt loam (moderately well drained, lake plains); and Madalin silty clay loam (poorly drained, depressions). The soils gradually change from the sandy loams in the uplands north of the river to less well drained silty loams in the valley.

Archeologically Sensitive Areas: There is ample evidence of Native American inhabitation along the Mohawk River, although only two precontact sites were identified in the Project APE. There are also three other historic and precontact sites within 150 m (500 ft) of the Project APE. The crossing over the Alplaus Kill and Indian Kill, just north of NY 146, is considered a highly sensitive area for precontact deposits.

Shovel Tests: 602 at 15-m (50-ft) interval in twin, offset transects. Monitoring is recommended for the larger track sections south of Alplaus Avenue. This part of the Project will require an excavated trench for the HDD transition from land to water.

Mohawk River Crossing, Schenectady, to Interstate 890, Schenectady – Segment 6

Segment 6 constitutes the most urban portion of the Project APE along the overland route. The APE intersects several archeological sites and is adjacent to National Register listed properties and historically sensitive areas. Monitoring is recommended for this segment, focusing on the downtown section, where the Project APE approaches the eighteenth-century stockade that once surrounded the colonial village (see Maps 25-27).

Approximate Length: 3.7 km (2.3 mi).

Reported Cultural Resources Within or Adjacent to APE:

- NYSM 4752, 7903 and 6479 (Site 705-706, 715): Precontact "traces of occupation" identified by Parker.

- Old D&H Freight Yards, Western Gateway Historic Sites 1-3, and NYSM 4747 (Sites 709, 711-714): Nineteenth-century industrial and residential contexts and Contact period village site.

- Stockade Historic District (NRL 138): Historic district of mostly nineteenth-century residences within the bounds of the eighteenth-century stockade that surrounded the colonial village of Schenectady.

- Former Schenectady Gazette Building, Hough Building, Public Market Building (NRE 311-312, 314): Nineteenth and early twentieth-century structures in downtown Schenectady, adjacent to project area.

Soils: Urban land complexes; historically, this was likely a natural flood plain with alluvial soils throughout. Deep testing is recommended for the Phase IB field reconnaissance.

Archeologically Sensitive Areas: The entire segment is sensitive for both precontact and historic deposits.

Testing Recommendations: Based on terrain conditions, it appears that the segment from the Mohawk River crossing to the Nott Street crossing is testable. This length covers about 1.5 km (5,000 ft) and would require a maximum of 140 shovel tests at a 15-m (50-ft) interval in a single staggered transect since much of this is likely disturbed. The rest of the alignment through the downtown section of Schenectady will be monitored.

Interstate 890, Schenectady, to Conrail Crossing, Rotterdam – Segment 7

This segment of the Project APE skirts the large General Electric facility in Schenectady, around a large wetland and alluvial plain and begins a climb into the hills of Rotterdam and Albany County. There is still high sensitivity for Native American deposits but the level and depth of disturbance in this very industrial corridor is unknown.

Approximate Length: 4.8 km (3.0 mi).

Reported Cultural Resources Within or Adjacent to APE:

- NYSM 6479 (Site 715): Parker-type "traces of occupation" site. Site extends from downtown Schenectady west almost to the transition to CSX railroad.

Soils: Much of the General Electric campus is on soil characterized as cut and fill land, although historically, this was likely part of a large, poorly drained alluvial Wayland silt loam series on Van Slyck Island. Wayland silt loam borders the Project APE to the north before the railroad begins to climb into Rotterdam just before the transition to CSX and the end of this segment. Most of the rest of the alignment is composed of sandy, deltaic Colonie and Plainfield sandy loams.

Archeologically Sensitive Areas: Nearly the entire Project APE segment is within NYSM 6479 (Site 715) and has some sensitivity for precontact Native American deposits. However, the potential for finding intact archeological sites depends on the extent of modern development in the area and the depth of disturbance, especially as it relates to the GE facility. There are two other sites within 150 m (500 ft) of the Project APE adjacent east of Campbell Road; no additional information was available on these sites.

Testing Recommendations: No testing is recommended for much of the cross-cut portion of Segment 7. This covers a length of about 1.8 km (1.1 mi). This leaves about 3.0 km (1.9 mi) of Segment 7 for testing. About 4,000 ft (1.2 km) of the segment appears to be untestable due to disturbance, paving, and the like. Shovel testing is limited to the remaining 1.8 km (1.1 mi) from the beginning of the level portion of the Project APE to the Segment 7 terminus at the CSX switch yards, about 72 shovel tests in total. Also, the portions of the Poentic Kill valley within the APE should be visually examined for early nineteenth-century mill remains, which were indicated on the 1866 Beers map of the town.

CSX Transition, Rotterdam, to US 20 Crossing, Fullers – Segment 8

Approximate Length: 9.0 km (5.6 mi).

Reported Cultural Resources Within or Adjacent to APE:

- NYSM 2780 (Site 720): Precontact camp site identified by Parker.

Soils: The Project APE crosses a number of sandy, lake-laid and deltaic soils, such as Plainfield, Cheektowaga, and Claverack fine sandy loam and Junius loamy fine sand. This segment of the APE lies at the west edge of the ecosystem known as the Pine Bush.

Archeologically Sensitive Areas: The crossing over the Normans Kill near Watervliet Reservoir is considered a highly sensitive area for precontact deposits based on the presence of three, previously-recorded precontact sites on either side of the creek. There is also some historic sensitivity in the railroad hamlet of Fullers, where the Project APE remains on the single track and avoids the larger rail yard to the east. This suggests that the

Project remains in the historically older alignment in this segment. Finally, there are two other precontact sites in Schenectady County within 150 m (500 ft) of the Project APE, the Golub Late Archaic site (Site 719) and the Army Depot site (Site 718). The Former Schenectady General Reserve Depot is also considered eligible for listing on the National Register (NRE 315).

Shovel Tests: 675 at 15-m (50-ft) interval in twin, offset transects, plus an additional 80 additional shovel tests at a 7.5-m (25-ft) interval will be excavated in the vicinity of NYSM 2780 (Site 720) just north of Fullers.

US 20 Crossing, Fullers, to Maple Road Crossing, NY 85a, Voorheesville – Segment 9

Approximate Length: 9.1 km (5.7 mi).

Reported Cultural Resources Within or Adjacent to APE:

- NYSM 2780 (Site 722): Precontact camp site identified by Parker.

Soils: The Project APE crosses a number of small soil series, owing largely to the varied landscape. Soils primarily consist of Riverhead fine sandy loam and the poorly drained Burdett and Ilion silt loams. There are a number of Udorthents series paralleling the route of the railroad, indicating a number of deep cuts required to traverse the hilly terrain. There is also a small area of Fluvaquent soil near the village of Voorheesville. This soil type consists of frequently flooded, poorly drained, recent alluvium. There may be deeply buried sites in this location, but the environment suggested a high-energy flood plain where materials may be scoured away and redeposited, instead of buried.

Archeologically Sensitive Areas: There is high historic sensitivity in the railroad hamlet of Voorheesville as well where the Project APE passes through the center of the settlement. There are two other sites in Guilderland within 150 m (500 ft) of the Project APE. NYSM 2781 (Site 721) is a Parker site described as a village site centered on high ground overlooking the Normans Kill and Watervliet Reservoir to the east of the Project APE. NYSM 340 (Site 723) is the Covered Bridge site and no further information was available on this site from the OPRHP files. The French's Mill Road Bridge, adjacent to the east of the Project APE crossing over the Watervliet Reservoir outlet, is eligible for listing on the National Register of Historic Places.

Shovel Tests: 1,000 at 15-m (50-ft) interval in twin, offset transects. This includes about 80 additional shovel tests at a 7.5-m (25-ft) interval will be excavated in the vicinity of NYSM 2780 (Site 722) centered on the outlet of the reservoir. Backhoe testing may be necessary in the Fluvaquent soils around Vly Creek in the village of Voorheesville. This will be conducted during construction via monitoring.

Maple Road Crossing, NY 85a, Voorheesvile, to NY 443 Crossing, Unionville – Segment 10

Approximate Length: 6.1 km (3.8 mi).

Reported Cultural Resources Within or Adjacent to APE: None

Soils: The Project APE crosses a number of lake-laid and till deposits including Rhinebeck silt loam, Burdett silt loam, and several small areas of sandy deltaic deposits. There are no alluvial soils in this segment.

Archeologically Sensitive Areas: Despite the absence of archeological sites within the 300-m (1,000-ft) search corridor, the Project APE passes near known chert (a type of stone frequently selected by Native Americans for precontact tool making) sources located in the hills to the west of the New York State Department of Environmental Conservation's Five Rivers Education Center. Hartgen has worked on a number of small precontact encampments located near the educational center in the past. Archeological sensitivity for precontact quarrying deposits is considered high in the vicinity of Five Rivers.

Shovel Tests: 652 at 15-m (50-ft) interval in twin, offset transects. Also careful analysis of bedrock outcrops in vicinity for potential chert quarry sites.

NY 443 Crossing, Unionville, to US 9W Crossing, Bethlehem – Segment 11

Approximate Length: 10.4 km (6.5 mi).

Reported Cultural Resources Within or Adjacent to APE: None

Soils: Most of the Project APE segment is characterized as Udorthents and other man-made soil types owing to the large cuts and fills in the area surrounding the Selkirk Rail yards. There are short sections of Rhinebeck silty loam and Elnora loamy fine sand at either end of the segment. No alluvial soils are noted for the segment.

Archeologically Sensitive Areas: Sensitivity and the potential for finding intact archeological sites depends largely on the nature of disturbance created for the construction of the Selkirk Rail Yards. This portion of the Project APE crosses parts of the Town of Bethlehem where early eighteenth-century Dutch settlements are mentioned in historical accounts.

Shovel Tests: Shovel testing will cover the eastern end of Segment 11 to a point 1.7 km (1.04 mi) west of the US 9W crossing, before the APE enters the heart of the yards. Just west of Old School Road or South Albany Road, which crosses over and through the yards, the Project APE skirts the southern portion of the yards, making shovel testing possible in a single transect. Overall, a portion of the Project APE measuring about 2.4 km (1.5 mi) will be avoided within the yards due to safety concerns and impervious surfaces. Testing in Segment 11 will be limited to about 420 shovel tests at a 15-m (50-ft) interval in a single transect on the southwest side of the tracks.

US 9W Crossing, Bethlehem, to Hudson River – Segment 12

Approximate Length: 3.6 km (2.3 mi).

Reported Cultural Resources Within or Adjacent to APE: None

Soils: Soils largely consist of steeply sloped Nunda and Manlius channery silt loam at the riverbank, where the APE drops precipitously to the river, and Ensberg and Claverack sand and Hudson and Rhinebeck silt loam on the flat level part east of US 9W. None of the soils in the APE are alluvial and no deep testing is recommended.

Archeologically Sensitive Areas: Archeologically sensitive areas include the edge of the riverbank facing the Hudson and stream crossings. There are few historic settlements near the APE in this segment.

Shovel Tests: 390 at 15-m (50-ft) interval in twin, offset transects.

Hudson River and Estuary

The proposed transmission cables will be installed along about 189 km (118 mi) of the Hudson River from the Town of Coeymans, Albany County, to the outlet of Spuyten Duyvil Creek, Bronx, Bronx County. Hundreds of cultural resources were identified during the pre-screening document within the river and along the banks. The current project alignment intersects seven National Register properties and 12 underwater sites. The Project APE within the river has a very high sensitivity for shipwreck sites as well as cultural resources associated with some of the intersecting National Historic Landmarks. A detailed bathymetric and side-scan sonar geophysical marine survey of the Hudson River have recently been completed by CHPEI

Approximate Length: 189 km (118 mi).

Reported Cultural Resources:

- Seven National Register properties. Five of those properties are automobile and railroad bridges over the Hudson River. Another site, the Hudson Valley Heritage District, does not extend very far into

the water and the sensitivity for archeological sites is low along this stretch. The United States Military Academy National Historic Landmark is the most sensitive for historic military and underwater sites.

- Twelve underwater resources, eleven of which are listed in NOAA charts as anomalies. The single reported site is a sunken schooner near the outlet of the Corlaer Kill in Athens, Greene County in about 3 m (15 ft) of water. The site is reported through the USGS, although no archeological investigations have confirmed its location or integrity.

Archeologically Sensitive Areas: U.S. Military Academy NHL; near shore areas in Albany, Greene, and Ulster Counties (ice houses, brick yards, etc.); Stony Point and other military fortifications along the Hudson.

Testing Recommendations: A detailed bathymetric and side-scan sonar geophysical marine survey of Lake Champlain and Hudson River have recently been completed by CHPEI The results of these surveys are currently being analyzed and are likely to provide a detailed picture of the river bottom. The data will be used to try and distinguish between shipwrecks, pier footings, beams, and other features based on the shape and size of the signature. The diving conditions in the Hudson River are hazardous due to turbidity, suspended sediments, and currents and diving on wrecks is not recommended for this Project. Efforts will be made to avoid any cultural resources identified during the ongoing surveys. If necessary, alternate methods of investigation could include remote sensing, remote-operated submersible vehicles, and limited diving.

There will likely be staging areas established along the Hudson River. Hartgen recommends using existing facilities, such as ports, fishing areas, and boat launches, as staging areas and field office locations. Location of these sites should also take into consideration any cultural resources identified in the pre-screening document. Establishment of a staging area or other installation-related features along the riverbank will require Phase IB field reconnaissance. Testing methodologies will depend on the environmental and cultural characteristics of the location.

Yonkers Converter Station, Wells Avenue

The Yonkers converter station is proposed for a vacant lot (currently a parking lot) at the corner of Wells Avenue and Atherton Street. Historically, the lot was an industrial block separated from the Hudson River by a railroad on River Street. There are a number of cultural resources nearby, but none with the Project APE. Consideration for the Phase IB survey includes the approximately 250-m (820-ft) section of cable from the Hudson River to the new converter station.

Approximate Size and Length: Converter station, 2 ha (5.0 ac); cable from Hudson River, 250 m (820 ft).

Soils: Urban land complexes; majority of cable route within nineteenth-century landfill behind bulkhead.

Reported Cultural Resources Within or Adjacent to APE: None.

Archeologically Sensitive Areas: Sensitive areas include the nineteenth-century former bulkhead or other retaining structure along River Street, as seen on the 1868 Beers map. The Wells Avenue lot is also sensitive for industrial deposits from any of the nineteenth-century manufactories. Intervening open space seen on the Sanborn maps may be potential locations for deeply buried colonial or precontact deposits.

Testing Recommendations: Testing in this portion of the Project APE should include monitoring and backhoe trenches. The cable installation should be monitored at or near the crossing over the former waterfront bulkhead in order to determine the integrity of this landscape feature. Also, trenches should be excavated in the Wells Avenue lot in an effort to locate former structural remains and determine the potential for deeply buried cultural deposits predating the property's industrial use. A total of 100 m (300 ft) of backhoe trenches are recommended for this portion of the Project APE.

Astoria, Queens Substation, Queens, New York City

The submarine AC cables will carry electricity from the Yonkers Converter Station to a substation currently under construction at the Astoria, Queens Substation at 20th Avenue in Queens, New York. The cable will emerge from the East River via a HDD. From this point the cable will be carried a short distance to the substation.

The site was once known as Lawrence Point, just to the west was Berrian Creek that separated the mainland from Berrian Island. This area was largely utilized for agriculture purposes throughout the 19th century. The area was subsequently part of a large (45-acre) estate owned by Edward J. Woolsey along the waterfront. This portion of the property remained largely undeveloped. Beginning in about 1900, after Woolsey's death, Consolidated Gas Company began to develop the site for a massive coal gasification plant, later recognized as the largest in the world. The plant evolved and expanded through time. By 1924 Berrian Island was incorporated into the mainland as part of the plant facilities once the creek was filled. At about this time, the facility's name was changed to Astoria Light, Heat and Power (although the facility remained a wholly owned subsidiary of Consolidated Gas). The coal gasification plant remained in operation until about 1955 when a natural gas pipeline was brought to the area. The large grounds of the gas plant have been subdivided more recently and utilized by other generating facilities.

Approximate Size: 1 acre (0.4 ha)

Soils: Urban land complexes.

Reported Cultural Resources Within or Adjacent to APE:

- NYSM 4535 (Site 667): Described by Parker as shell middens.

Archeologically Sensitive Areas: Although the area has heightened sensitivity for precontact deposits, the archeological potential is dramatically reduced due to the intensive industrial use of the site throughout the 20th century.

Testing Recommendations: Monitoring for cable landing site and the short segment from the HDD terminus to the substation. At this time it is anticipated that additional faculties at the substation will be construction in areas previously disturbed.

Table 1. Environmental and Cultural Summary of Segments with Testing Recommendations, Champlain-Hudson Power Express.

Segment	Length	Soils	Archeo. Sites	NRE/NRL	Sensitivity	Recommendations
1A: Whitehall to Fort Edward	31.2 km (19.4 mi)	Water-borne deltaic deposits and some glacial till	NYSM 9377, 5105, 7501, and 7500 OPRHP 11505.00004 and 11546.00016	Main Street Historic Bridge District NR22	Moderate for precontact and historic sites, particularly Revo. War sites near fort Ann	1,675 STPs at 15-m (50 ft) intervals, monitoring at Whitehall rail yard
1B: Rogers Island	150 m (500 ft)	Water-borne deltaic deposits, dredge.	-	NRE 295.	Very high for historic military and precontact.	52 STPs at 7.5-m (25-ft) interval.
1C	16.9 km (10.6 mi)	Less than 100 m of alluvium along river; upland lake plains.	Site 685 (H).	NRE 300.	High at Snook Kill crossings, hamlet of Gansevoort, within 150 m (500 ft) of river.	Two 30-m (100-ft) trenches; 870 STPs at 15-m (50-ft) interval.
2	11.9 km (7.4 mi)	Deltaic and lake plain deposits.	None	None	High around several small wetlands in largely upland, sandy setting.	610 STPs at 15-m (50-ft) interval.
3	11.4 km (7.1 mi)	Deltaic, lake plain, and outwash deposits.	Site 690 (P).	None.	High around Saratoga Spa State Park and historic sites near APE in Saratoga Springs.	690 STPs at 7.5-15-m (25-50-ft) intervals.
4	15.8 km (9.9 mi)	Upland soils, benches, terraces, and drumlinoid ridges.	Site 690 (P), 691, 694, 696 (H).	None.	High around Saratoga Spa State Park, Mourning Kill and Ballston Lake wetlands, and possible location of a late 18th-c. pioneer site.	1,150 STPs at 7.5-15-m (25-50-ft) intervals.
5	9.8 km (6.1 mi).	Lake plains and depressions.	Site 699 (P), 700 (H), 702 (P/H).	None.	High at Mohawk River crossing, Alplaus and Indian Kills crossings.	602 STPs at 7.5-15-m (25-50-ft) intervals; monitoring south of Alplaus Avenue (approx. 3.0 km).
6	3.7 km (2.3 mi)	Urban land, likely overlying lake plains and alluvium	Site 704-706, 715 (P); 709, 711-713 (H); 703 (P/H); 714 (C).	NRE 311-312, 314; NRL 138.	High sensitivity for precontact and historic deposits throughout.	140 STPs from river to Nott Street. Monitoring.
7	4.8 km (3.0 mi).	Cut and fill, alluvium, and deltaic sands.	Site 715 (P).	None.	Site 715 extends entire alignment, high sensitivity for precontact.	72 STPs. Monitoring.
8	9.0 km (5.6 mi).	Lake plains and deltaic sands.	Site 720 (P).	None.	Norman Kill crossing and several nearby precontact sites; hamlet of Fullers.	675 STPs at 7.5-15-m (25-50-ft) intervals.
9	9.1 km (5.7 mi).	Deltaic sands and lake plain silt, Fluvaquents in Voorheesville.	Site 722 (P).	None.	Normans Kill crossing; hamlet of Voorheesville; several nearby precontact sites throughout.	1,000 STPs at 7.5-15-m (25-50-ft); 30 m (100 ft) backhoe trench.

10	6.1 km (3.8 mi).	Lake plains and glacial till, some deltaic sands.	None.	None.	High sensitivity near Five Rivers Education Center; nearby quarries in this vicinity.	652 STPs at 15-m (50-ft) intervals.
11	10.4 km (6.5 mi).	Udorthents at Selkirk Rail Yards; short sections of lake plain and deltaic sands at either end.	None.	None.	Sensitive for precontact and early 18th-c. historic sites.	420 STPs. Monitoring in yards.
12	3.6 km (2.3 mi).	Lake plain and glacial outwash.	None	None.	Sensitive for precontact and early 18th-c. historic sites.	390 STPs at 15-m (50-ft) intervals.
Yonkers Converter Station	2 ha (5 ac)	Urban land complexes	None.	None.	Sensitive for waterfront and 19th century industrial deposits.	Backhoe trenches, up to 100m (30 ft) and monitoring
Astoria Campus Substation	0.4 ha (1 ac)	Urban land complexes	NYSM 4539	None.	Precontact sensitivity but poor potential	Monitoring
Total	**143 km (89.1 mi) and 2.4 ha (6 ac)**	-	-	-	-	**8,998 STPs at 7.5-15-m (25-50-ft) intervals; backhoe testing, monitoring.**

MAPS

PLEASE NOTE

ARCHEOLOGICAL SITES AND SHIPWRECK LOCATIONS ARE CONSIDERED PRIVLEDGED AND CONFIDENTIAL INFORMATION

MAPS WITH SITE LOCATIONS ARE NOT TO BE MADE AVAILABLE TO THE PUBLIC

Proposed Transmission Centerline

CHAMPLAIN-HUDSON EXPRESS ROUTE
HVdc SUBMARINE CABLE PROJECT
General Location Map

N

Legend

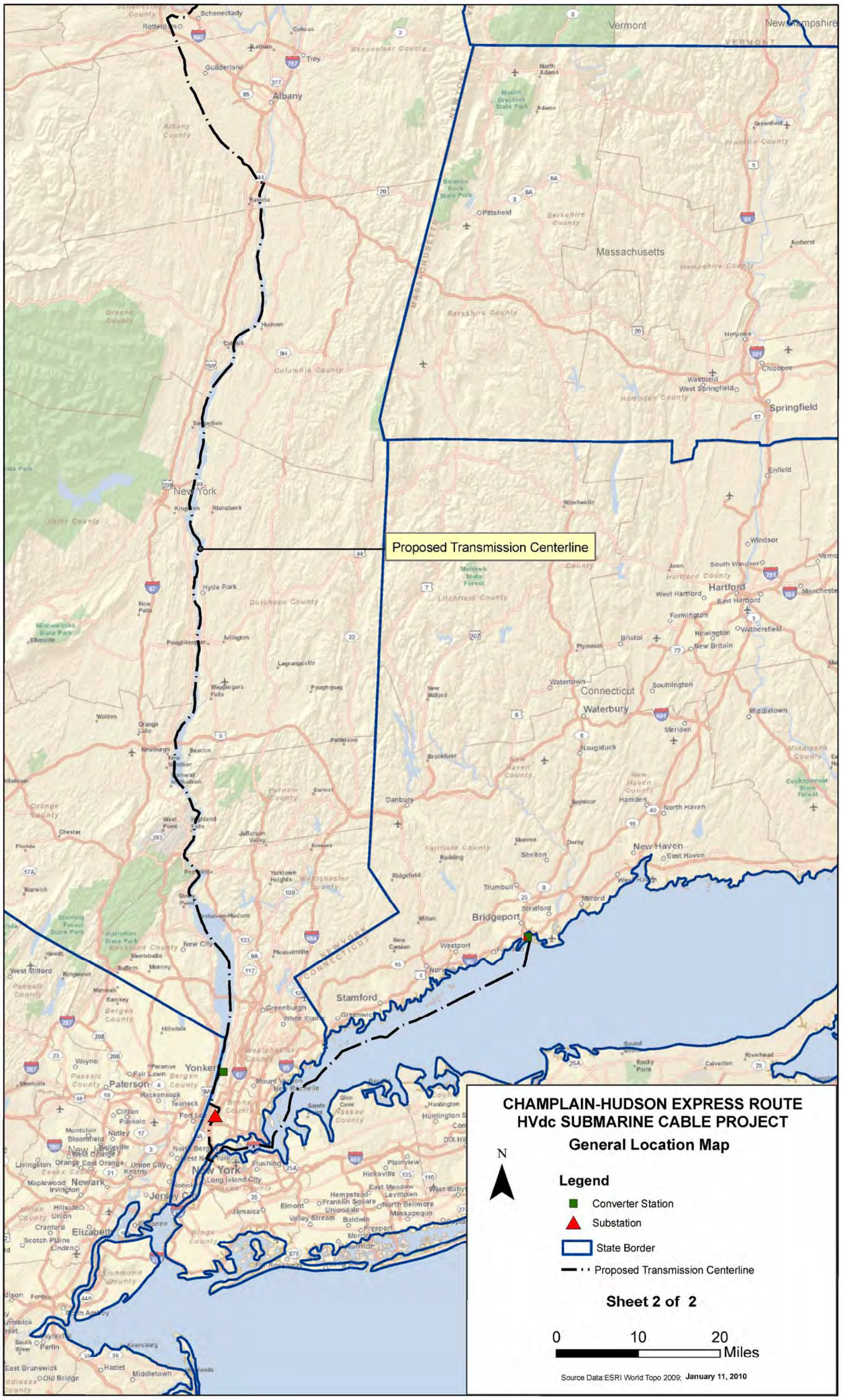
- Converter Station
- Substation
- State Border
- Proposed Transmission Centerline

Sheet 1 of 2

0 10 20 Miles

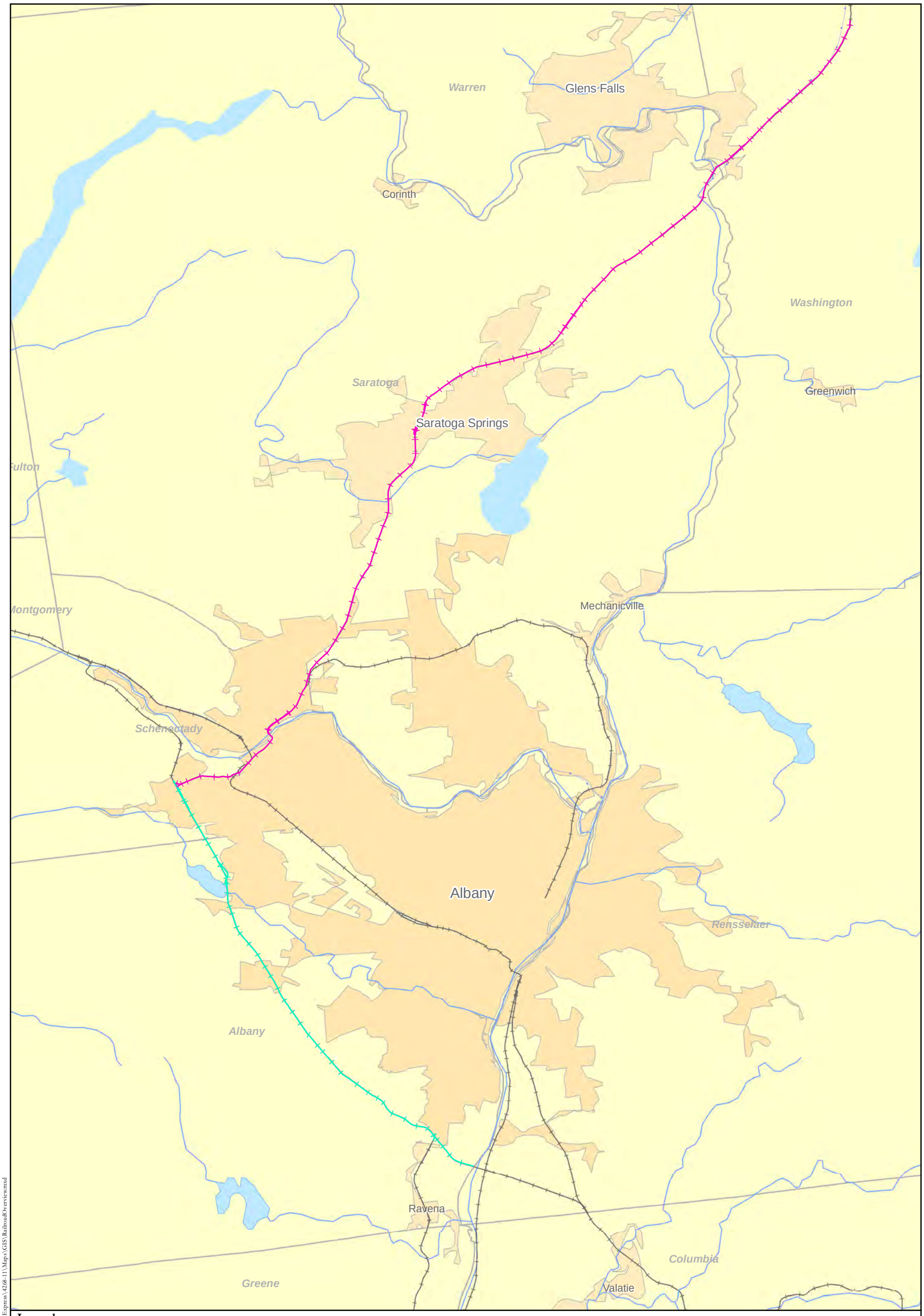
Source Data:ESRI World Topo 2009; **January 11, 2010**

Map 1



IS May 17, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 1-Location.mxd

Map 2



Legend

- Canadian Pacific Railroad Track in Project Alignment
- CSX Transportation, Inc. Railroad Track in Project Alignment
- Railroad Track outside Project Alignment

N

5 0 5 Miles

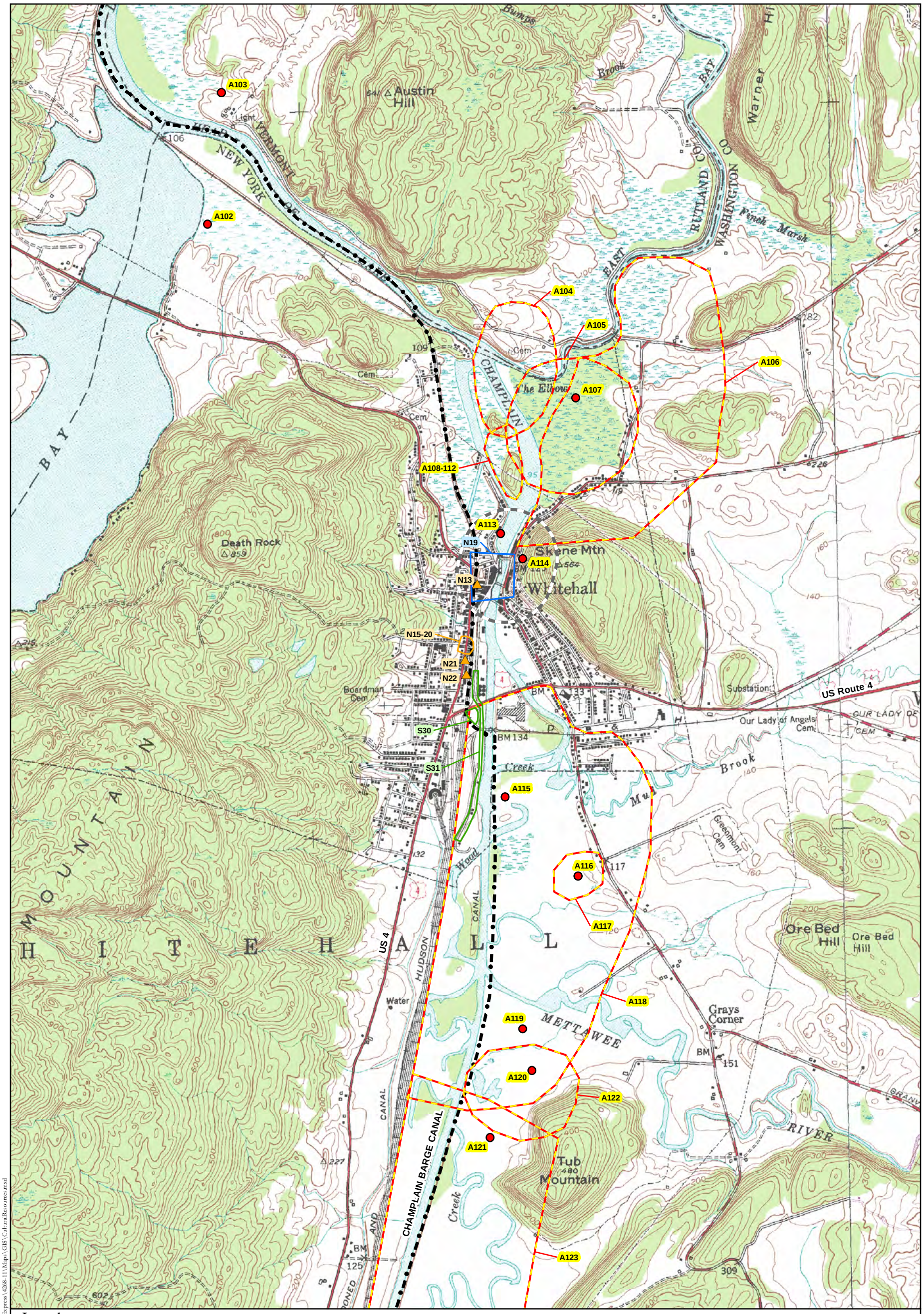
8 0 8 Kilometers

Location of Canadian Pacific Railroad and CSX Transportation, Inc. Railroad Tracks within Project Alignment
(HAA, Inc. 2010, ESRI 2005)

HARTGEN archeological associates inc

Map 3

ES April 19, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\RailroadOverviewmxd



Legend

- Archeological Site
- Previous Archeological Survey
- National Register Eligible (NRE) Property
- National Register Listed (NRL) Property
- Photograph Angle
- Proposed Alignment
- Overland Study Area

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

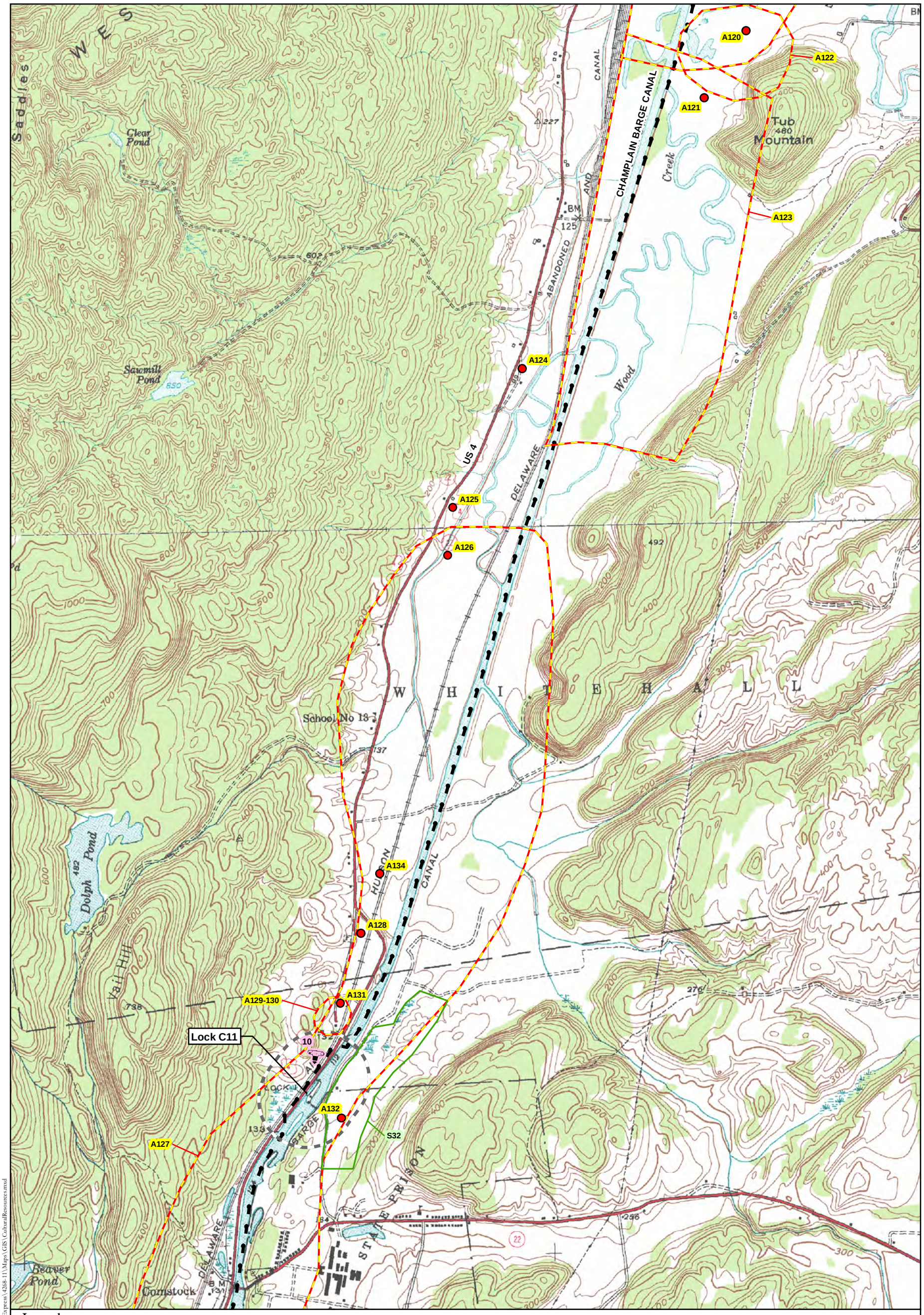
Note: Contour interval is 20 feet.

Project Location and Cultural Resources,
Champlain Canal Lock C12
(Hartgen 2010)

HARTGEN archeological associates inc

Map 4

ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd



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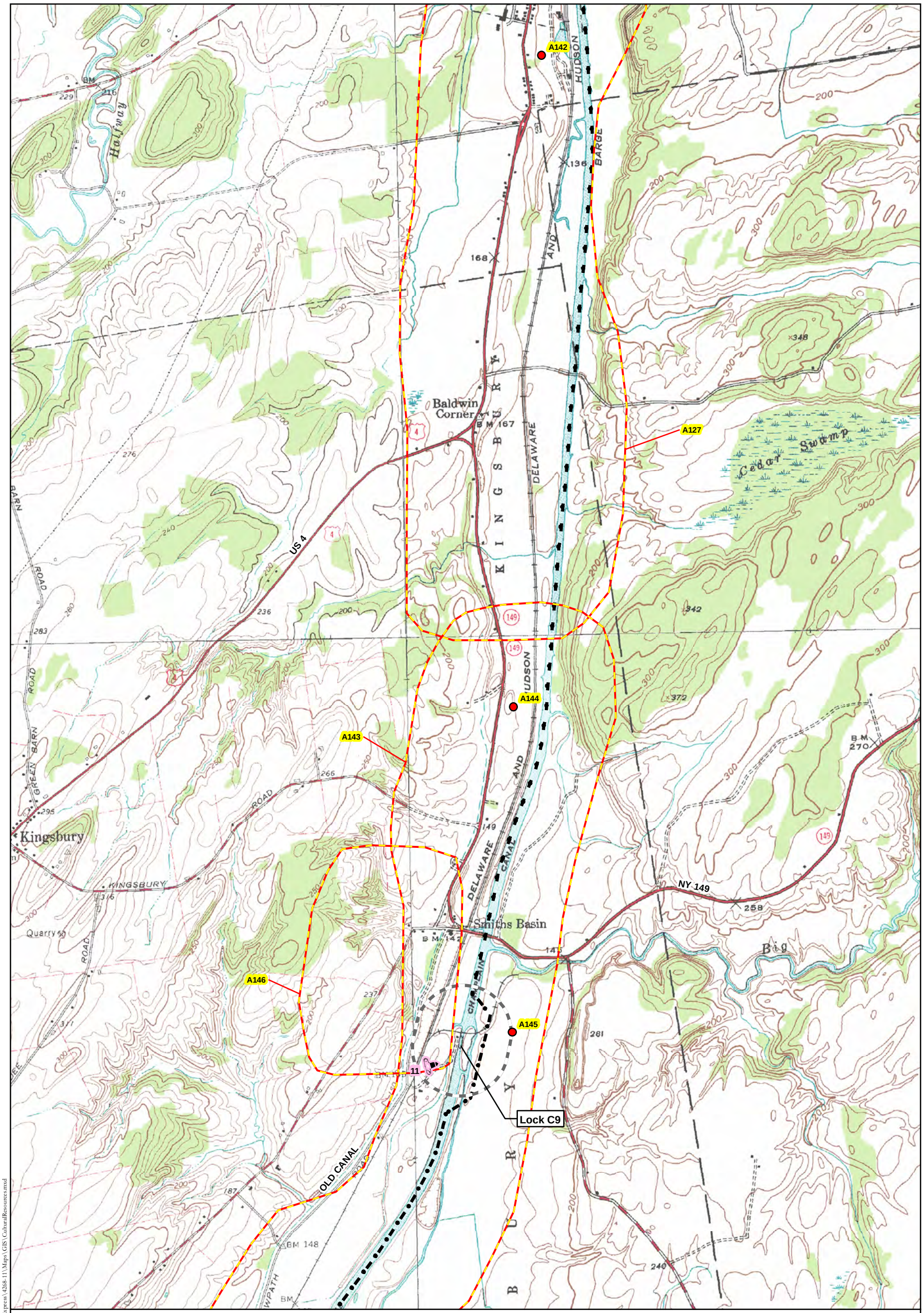


Legend

- Archeological Site
- Previous Archeological Survey
- National Register Eligible (NRE) Property
- National Register Listed (NRL) Property
- Photograph Angle
- Proposed Alignment
- Overland Study Area

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

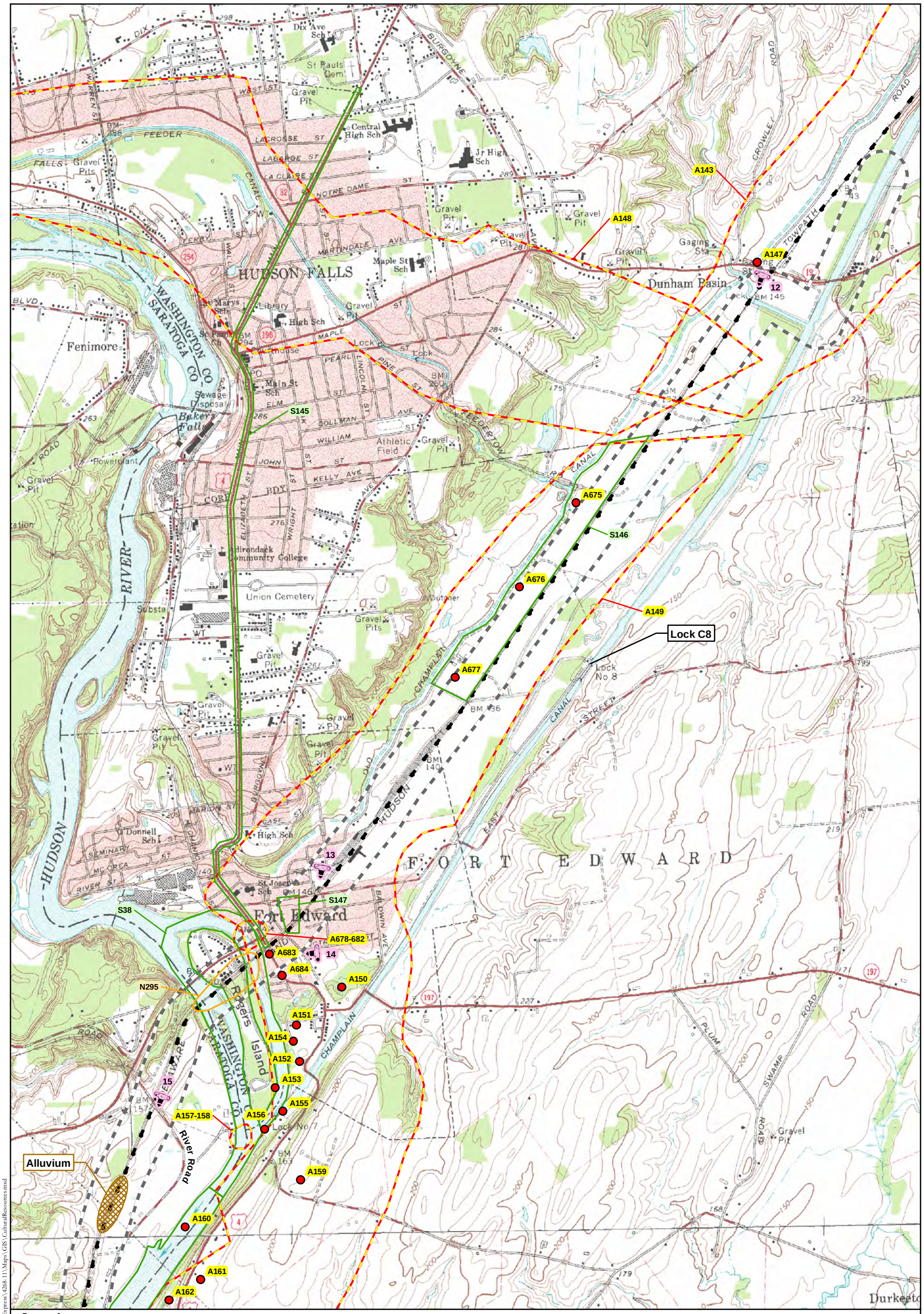
Note: Contour interval is 20 feet.

Project Location and Cultural Resources,
Champlain Canal Lock C9
(Hartgen 2010)

HARTGEN archeological associates inc

Map 6

ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd



Legend

- Archeological Site
- Previous Archeological Survey
- National Register Eligible (NRE) Property
- National Register Listed (NRL) Property
- Photograph Angle
- Proposed Alignment
- Overland Study Area

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

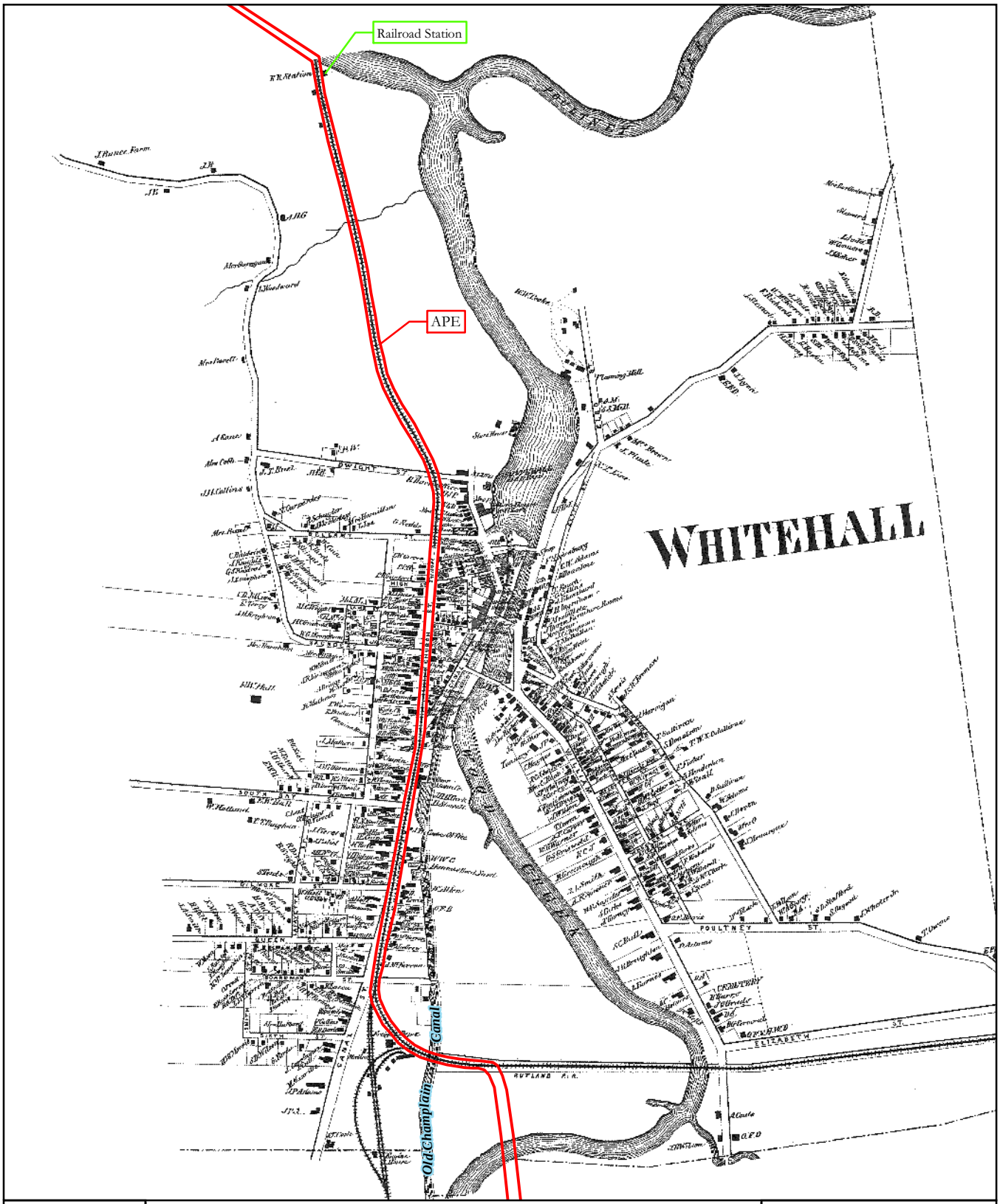
Note: Contour interval is 20 feet.

Project Location and Cultural Resources,
Champlain Canal Lock C8 and Roger's Island
(Hartgen 2010)

HARTGEN archeological associates inc

Map 7

ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd



N

500 0 500 1,000 Feet

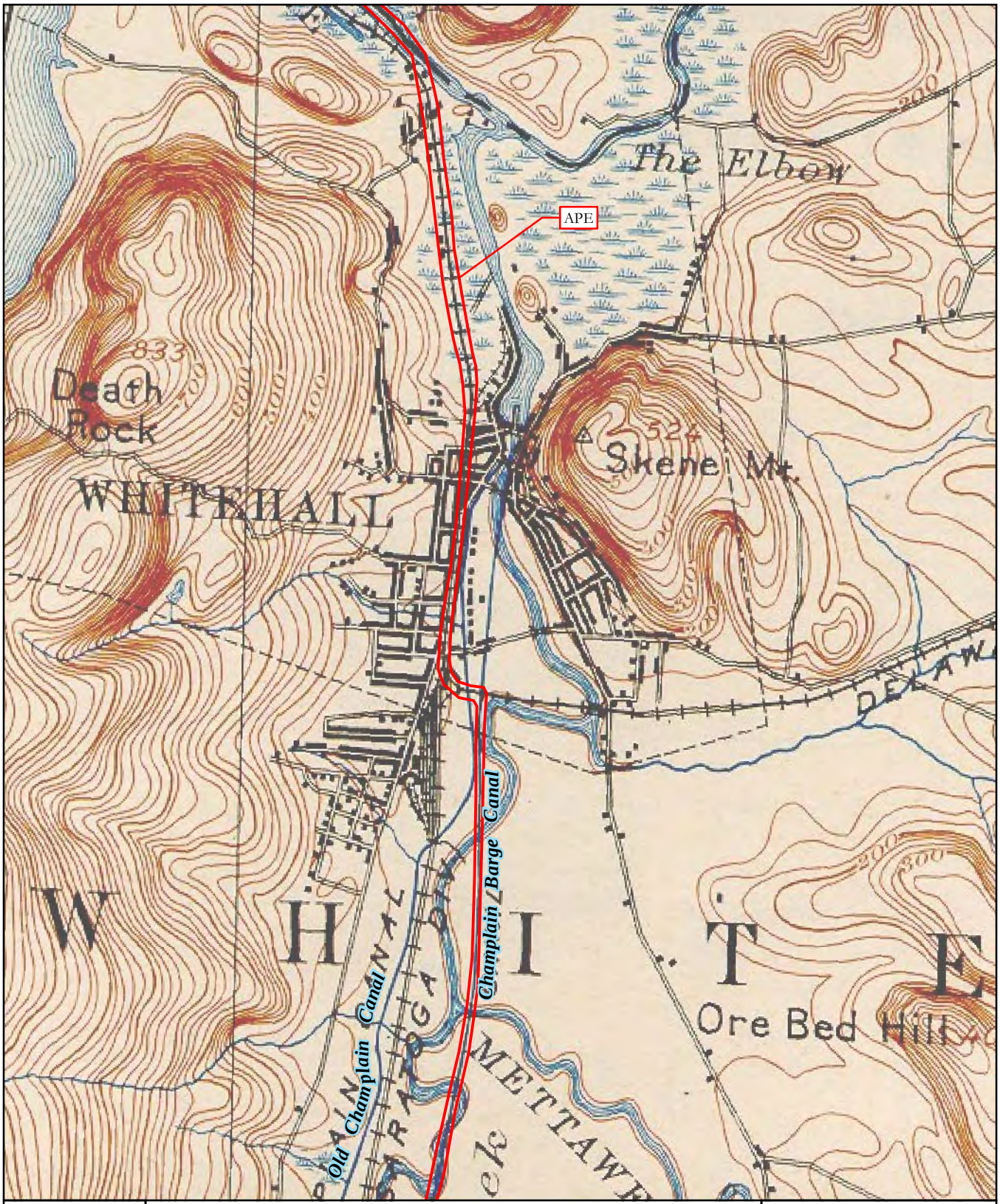
150 0 150 300 Meters

Historic Map, Champlain Canal Lock C12
(Stone and Stewart 1866)

HARTGEN archeological associates inc

Map 8

ES May 20, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 8-Lock C12.mxd

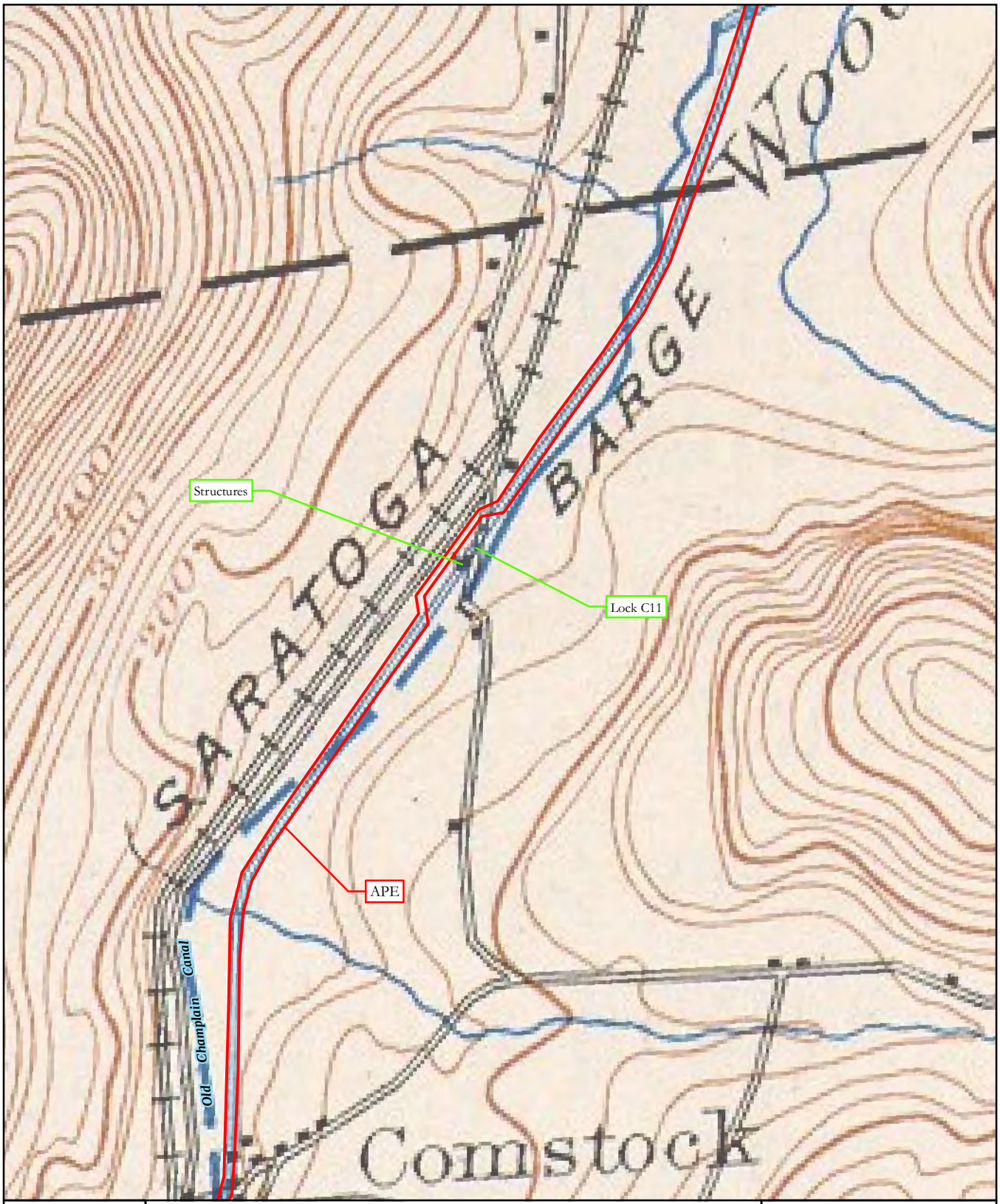


Historic Map, Champlain Canal Lock C12
(USGS 1902)

HARTGEN archeological associates inc

Map 9

ES May 20, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 9-Lock C12.mxd



N

500 0 500 1,000 Feet

150 0 150 300 Meters

Historic Map, Champlain Canal Lock C11
(USGS 1904)

HARTGEN archeological associates inc

Map 10

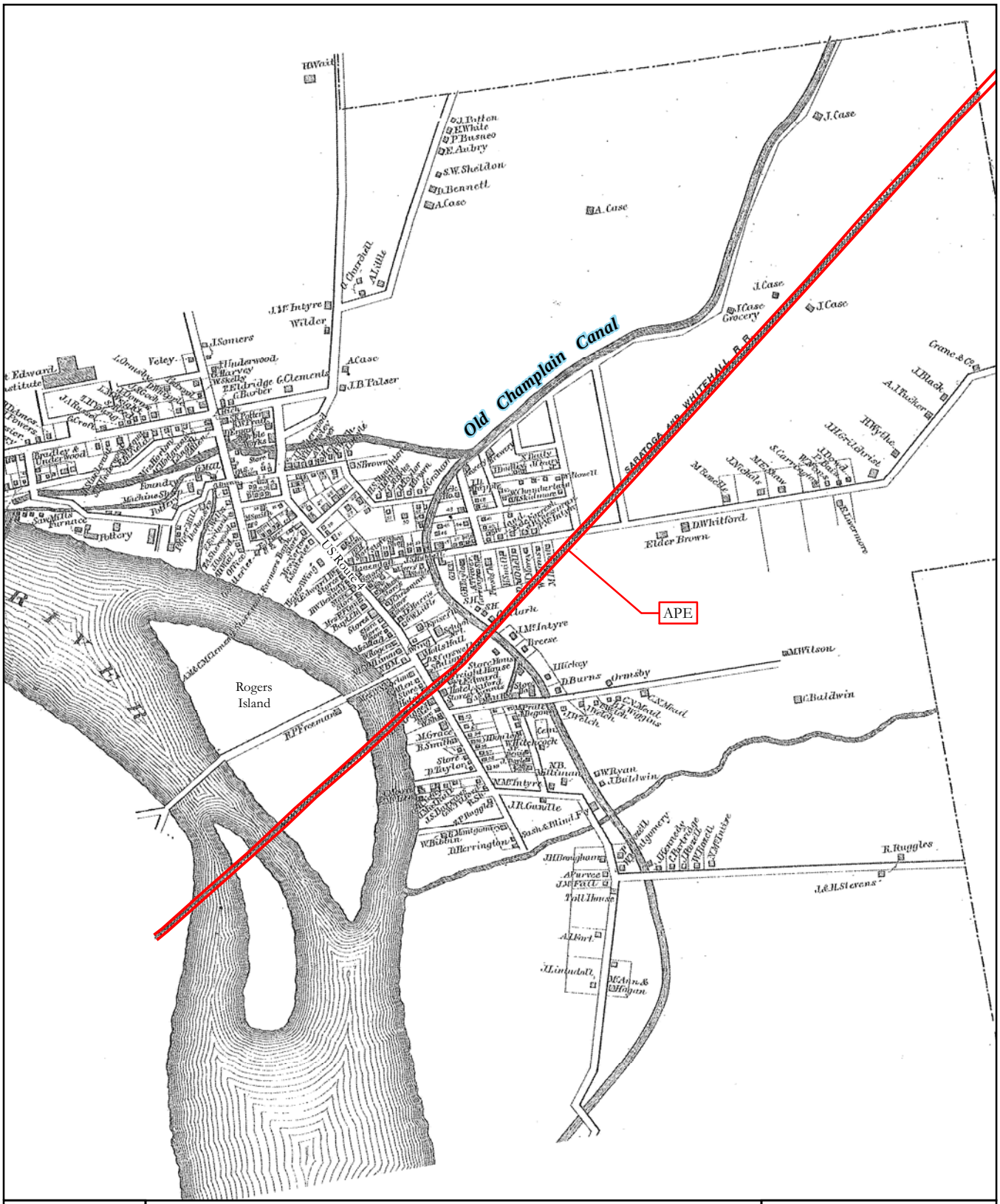
ES May 20, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 10-Lock C11.mxd

Historic Map, Champlain Canal Lock C8
(Stone and Stewart 1866)

HARTGEN archeological associates inc

Map 11

ES May 20, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 11-Lock C8.mxd



N

500 0 500 1,000 Feet

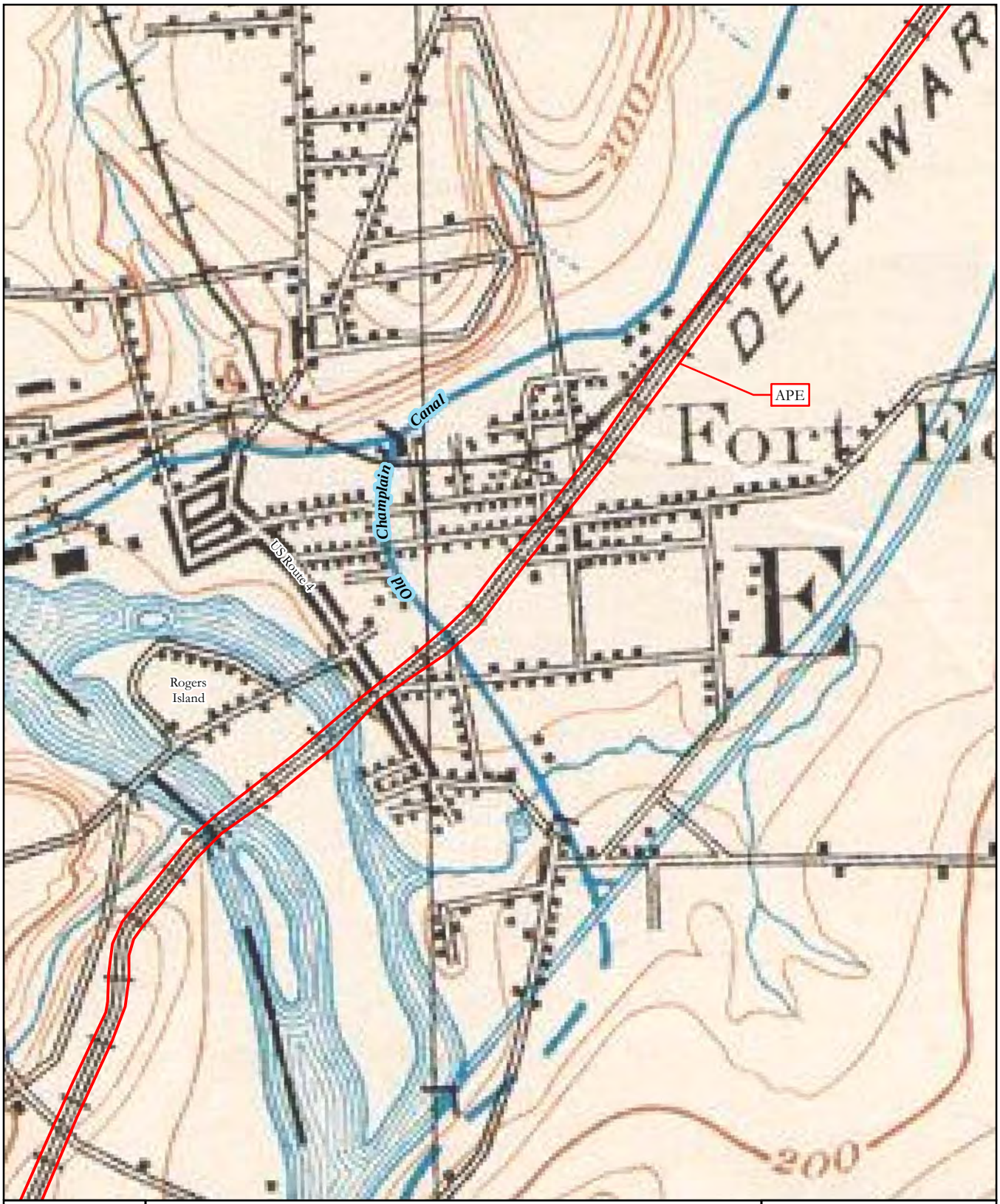
150 0 150 300 Meters

Historic Map, Champlain Canal Lock C8
(Stone and Stewart 1866, inset)

HARTGEN archeological associates inc

Map 12

ES May 20, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 12-Lock C8.mxd



N

500 0 500 1,000 Feet

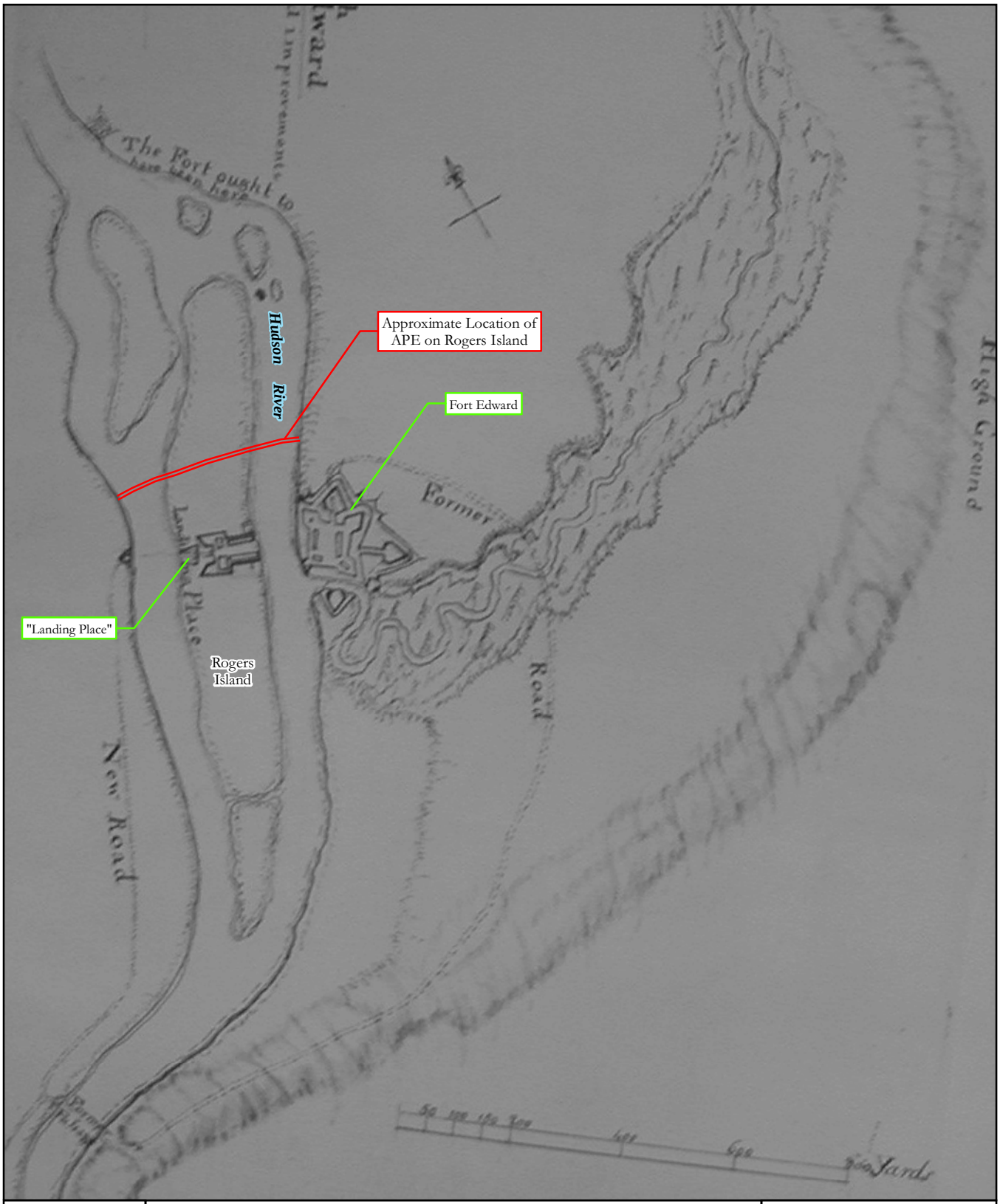
150 0 150 300 Meters

Historic Map, Champlain Canal Lock C8
(USGS 1897)

HARTGEN archeological associates inc

Map 13

ES May 20, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 12-Lock C8.mxd



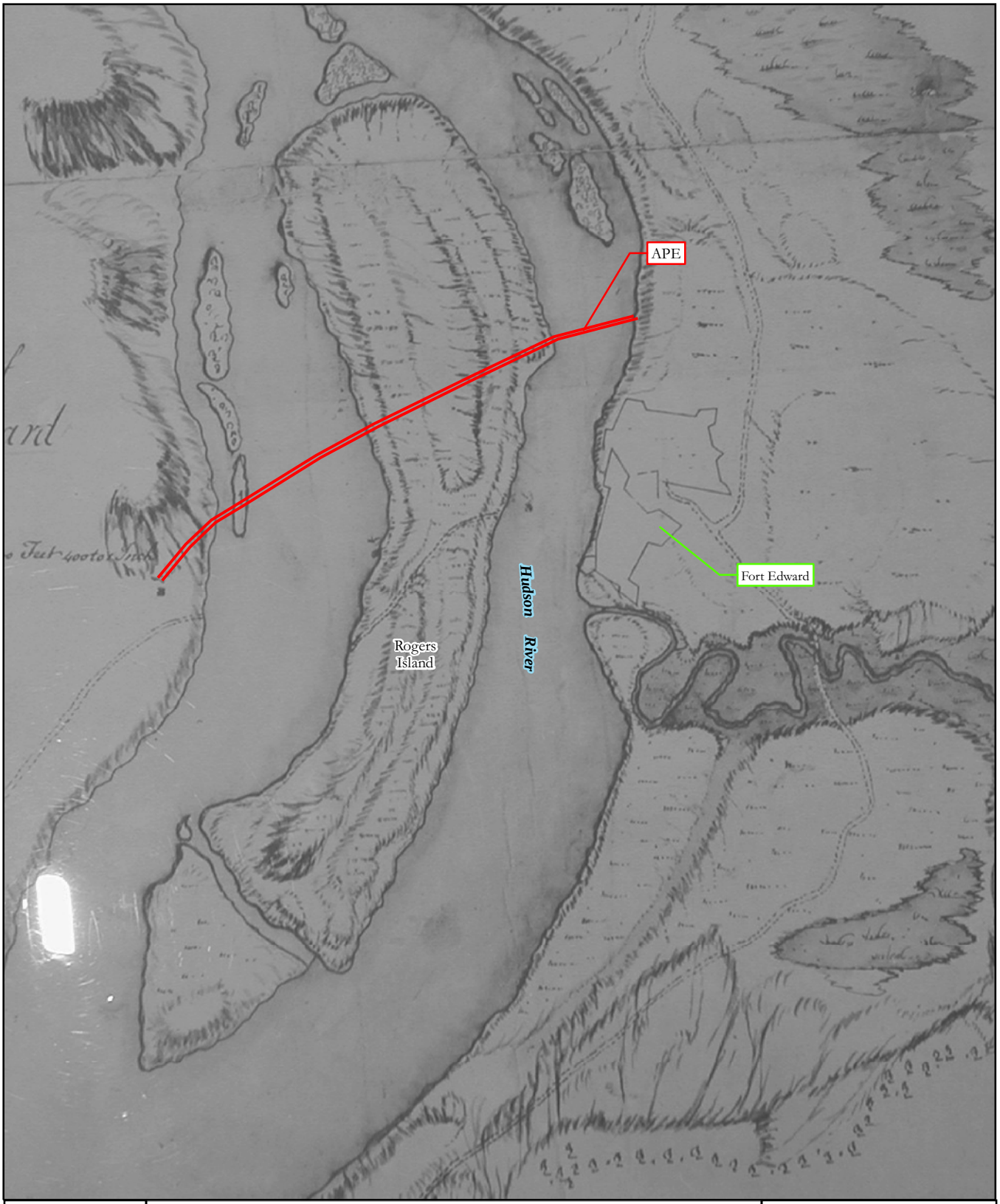
Note: Graphic not to scale.

Historic Map, Rogers Island
(Anonymous 1755)

HARTGEN archeological associates inc

Map 14

ES May 20, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 16-Rogers.mxd



N

Note: Graphic not to scale.

Historic Map, Rogers Island
(Anonymous c. 1750s)

HARTGEN
archeological associates inc

Map 15

ES May 20, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 15-Rogers.mxd

N

500 0 500 1,000
Feet

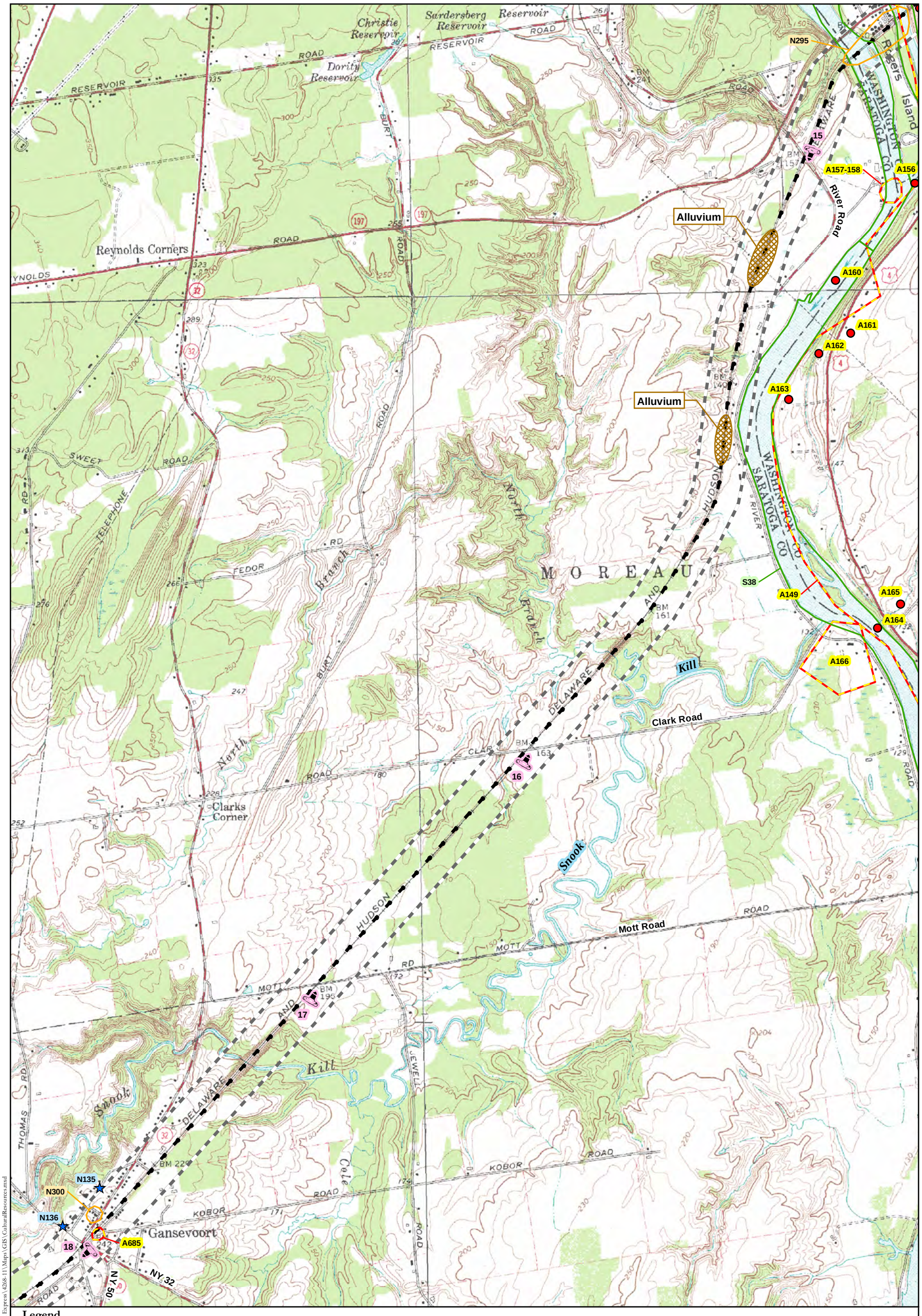
150 0 150 300
Meters

Historic Map, Rogers Island
(USGS 1897)

HARTGEN
archeological associates inc

Map 16

ES May 20, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 16-Rogers.mxd



Legend

- Archeological Site
- Previous Archeological Survey
- National Register Eligible (NRE) Property
- National Register Listed (NRL) Property
- Photograph Angle
- Proposed Alignment
- Overland Study Area

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

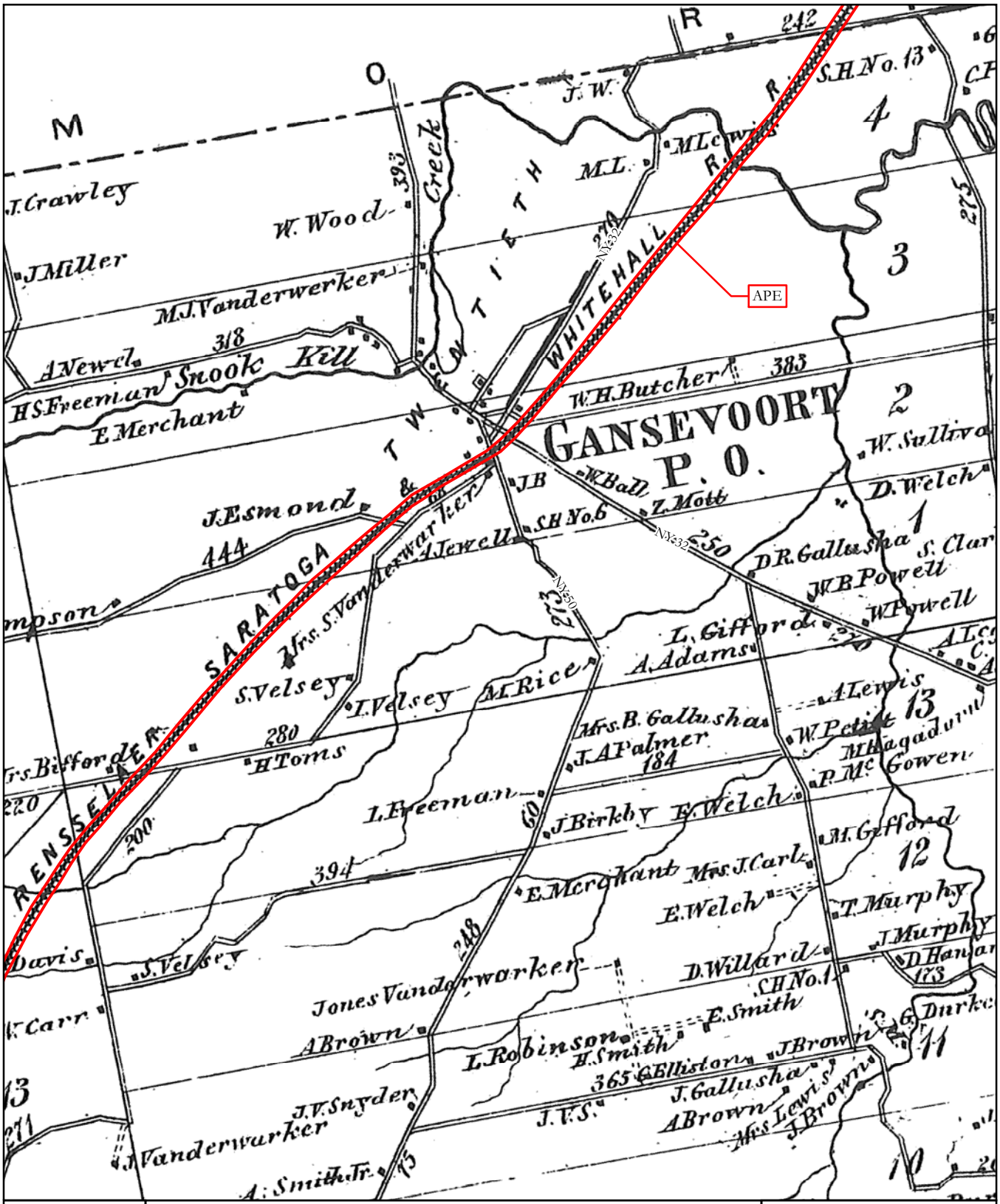
Note: Contour interval is 20 feet.

Project Location and Cultural Resources, Segment 1 (Hartgen 2010)

HARTGEN archeological associates inc

Map 17

ES May 18, 2010 R:\Active Projects \4268 Oswego-Hudson Express \4268-11 \Maps \GIS \CulturalResources.mxd

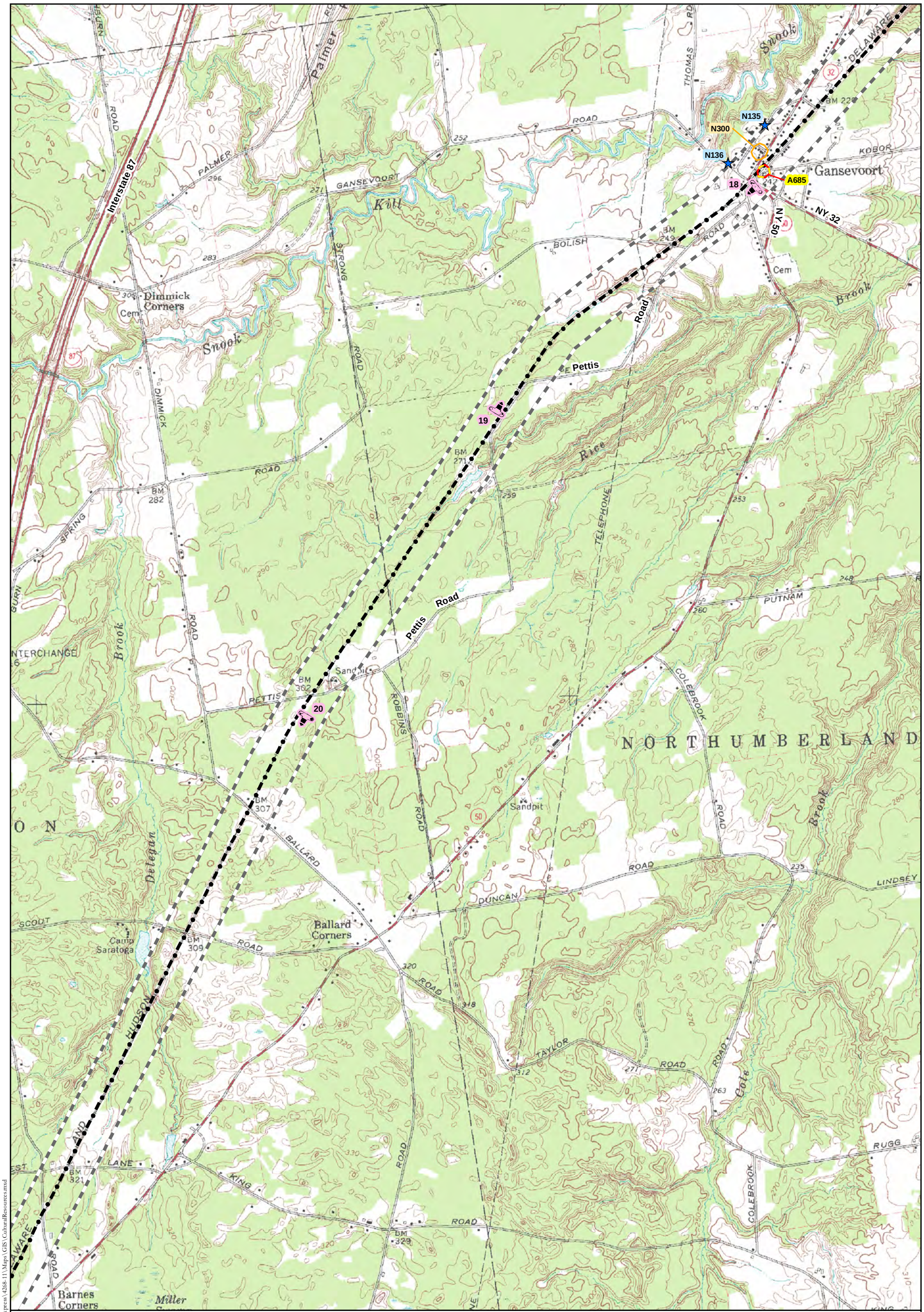


Historic Map, Segment 1
(Beers 1866)

HARTGEN archeological associates inc

Map 18

ES May 20, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 18-Segment1.mxd



Legend

- Archeological Site
- Previous Archeological Survey
- National Register Eligible (NRE) Property
- National Register Listed (NRL) Property
- Photograph Angle
- Proposed Alignment
- Overland Study Area

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

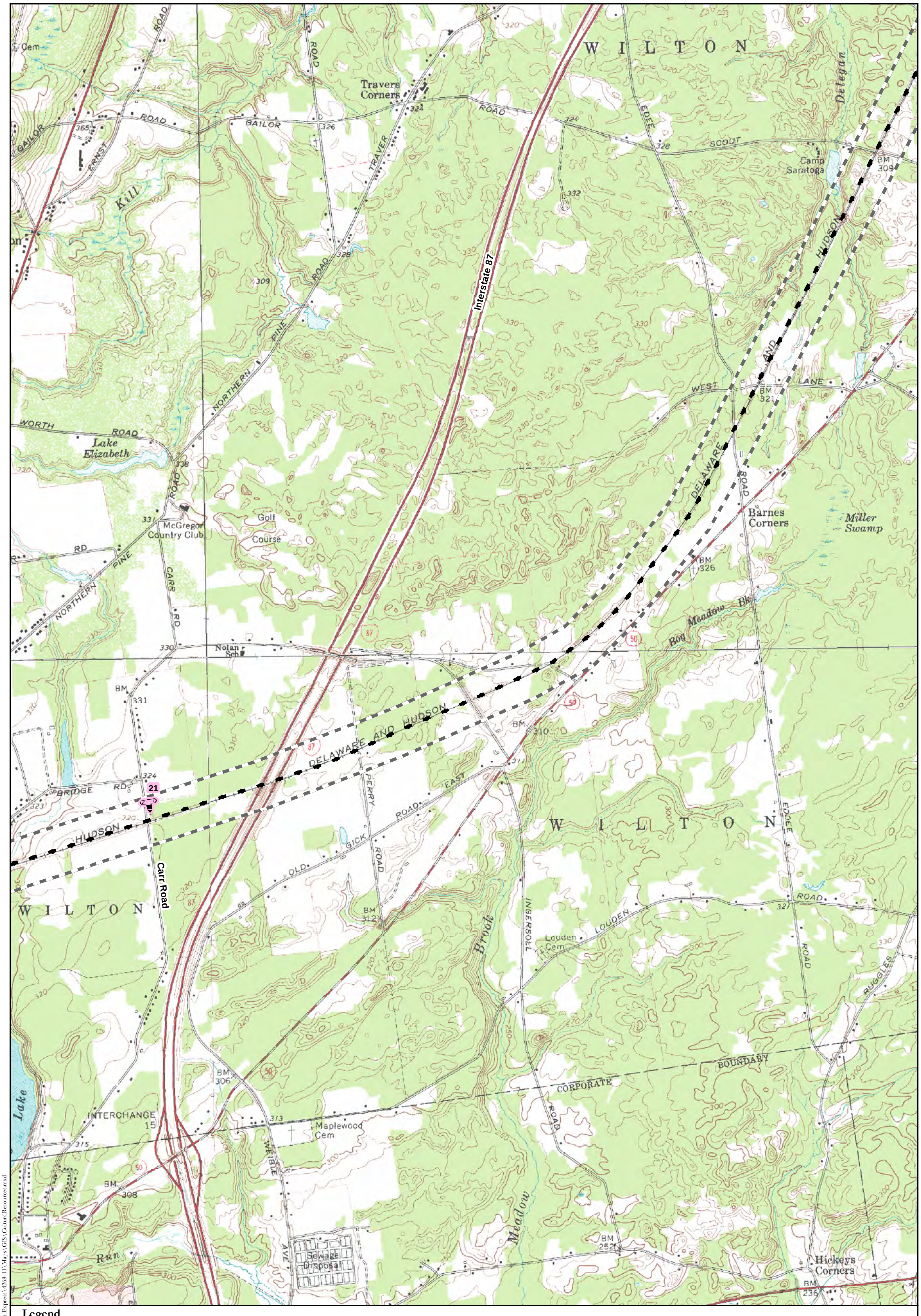
Note: Contour interval is 20 feet.

Project Location and Cultural Resources, Segment 2 (Hartgen 2010)

HARTGEN archeological associates inc

Map 19a

ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd



Legend

- Archeological Site
- Previous Archeological Survey
- National Register Eligible (NRE) Property
- National Register Listed (NRL) Property
- Photograph Angle
- Proposed Alignment
- Overland Study Area

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

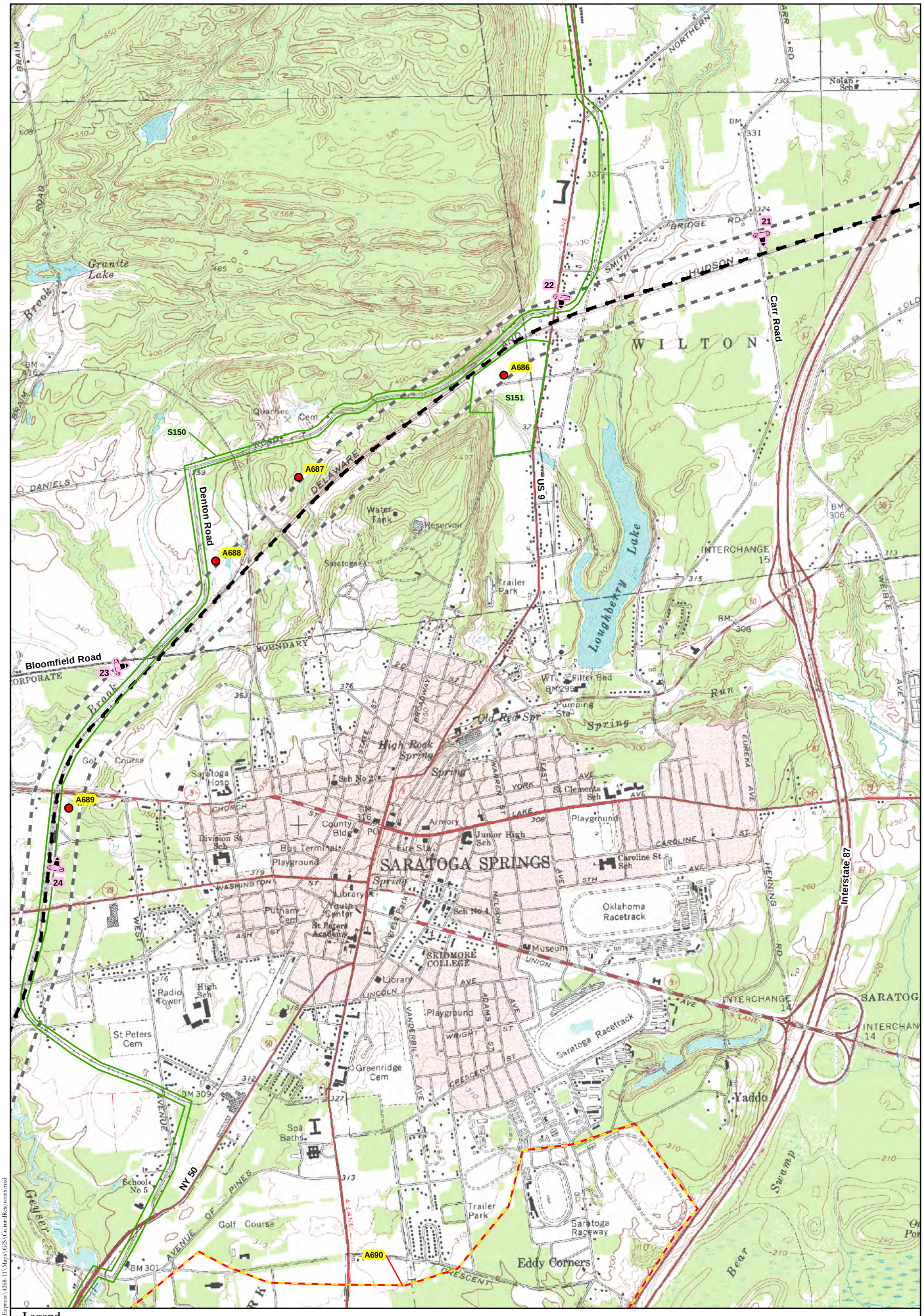
Note: Contour interval is 20 feet.

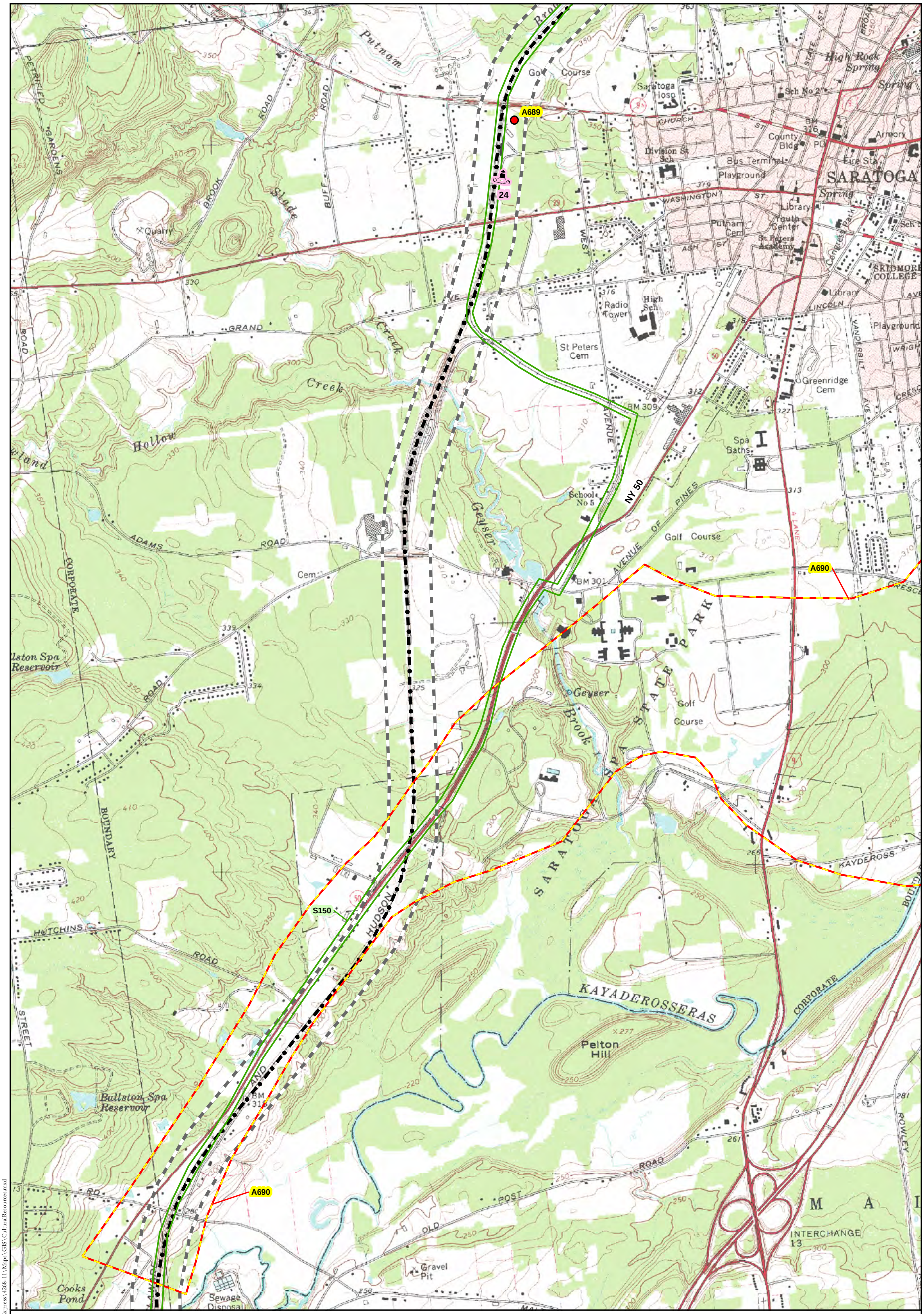
Project Location and Cultural Resources, Segment 2 (Hartgen 2010)

HARTGEN archeological associates inc

Map 19b

ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd


A686
A687
A688
A689
A690
S150
S151
21
22
23
24
Denton Road
Bloomfield Road
Carr Road
US 9
Interstate 87
NY 50
WILTON
SARATOGA SPRINGS
Eddy Corners
Longbeery Lake
Granite Lake
Oklahoma Racetrack
Saratoga Racetrack
Saratoga Raceway
Legend
Archeological Site
Previous Archeological Survey
National Register Eligible (NRE) Property
National Register Listed (NRL) Property
Photograph Angle
Proposed Alignment
Overland Study Area
N
1,000 0 1,000 2,000 Feet
300 0 300 600 Meters
Note: Contour interval is 20 feet.
Project Location and Cultural Resources, Segment 3 (Hartgen 2010)
HARTGEN archeological associates inc
Map 20a
ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd



Legend

- Archeological Site
- Previous Archeological Survey
- National Register Eligible (NRE) Property
- National Register Listed (NRL) Property
- Photograph Angle
- Proposed Alignment
- Overland Study Area

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

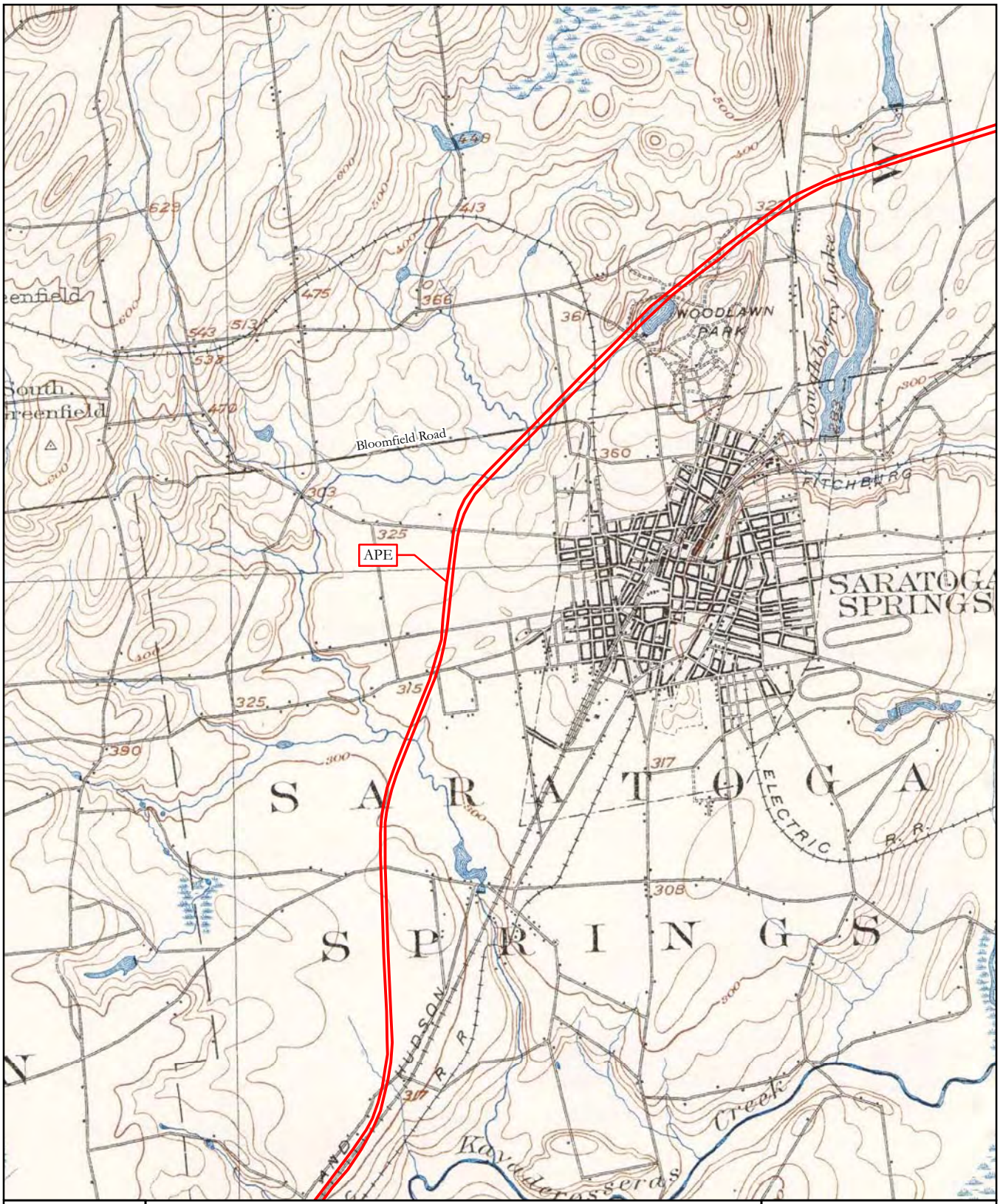
Note: Contour interval is 20 feet.

Project Location and Cultural Resources, Segment 3 (Hartgen 2010)

HARTGEN archeological associates inc

Map 20b

ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd



N

1,000 0 1,000 2,000 3,000 4,000 Feet

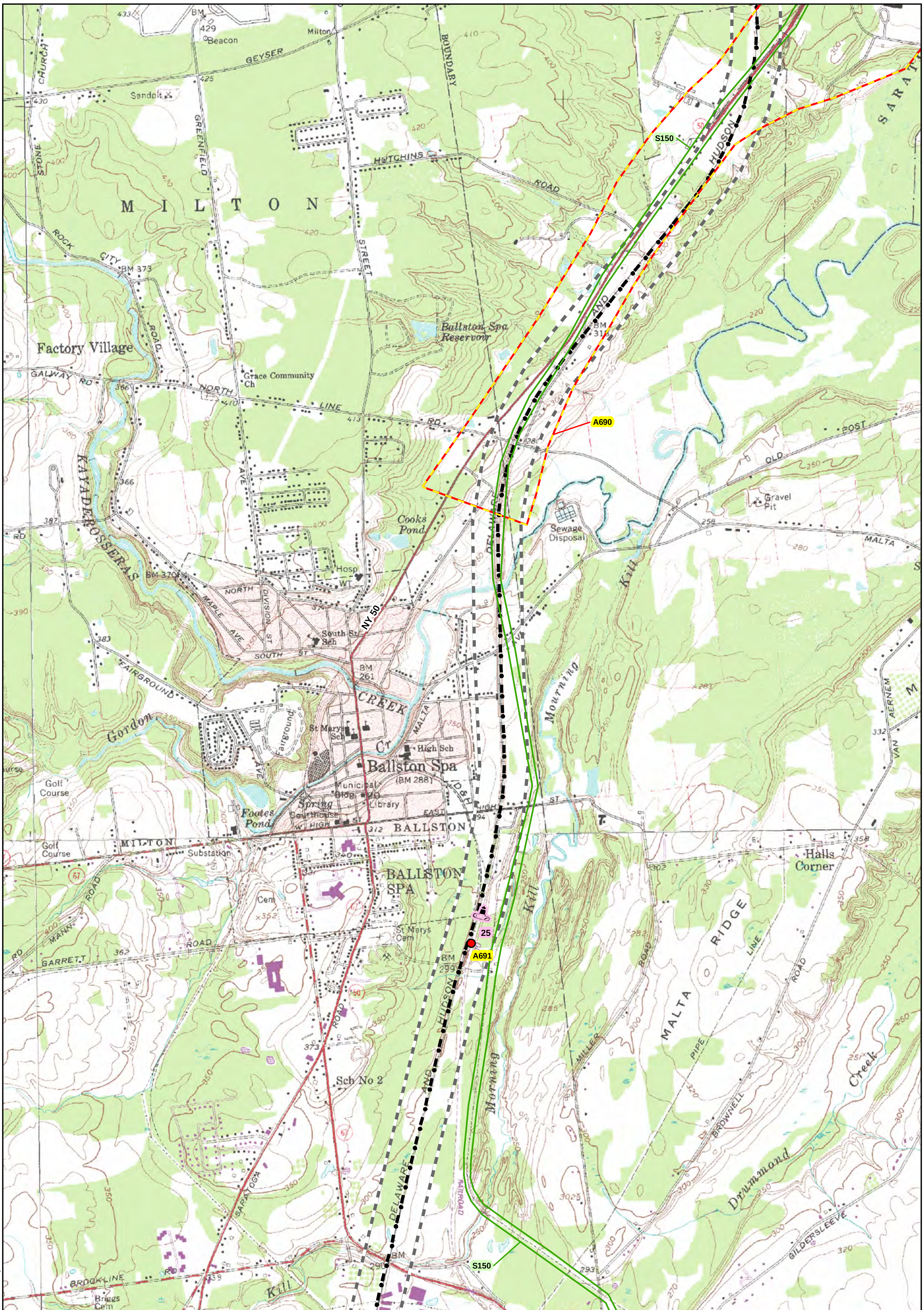
300 0 300 600 900 1,200 Meters

Historic Map, Segment 3
(USGS 1902)

HARTGEN archeological associates inc

Map 21

ES May 20, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 21-Segment3.mxd



Legend
- Archeological Site
- Previous Archeological Survey
- National Register Eligible (NRE) Property
- National Register Listed (NRL) Property
- Photograph Angle
- Proposed Alignment
- Overland Study Area

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

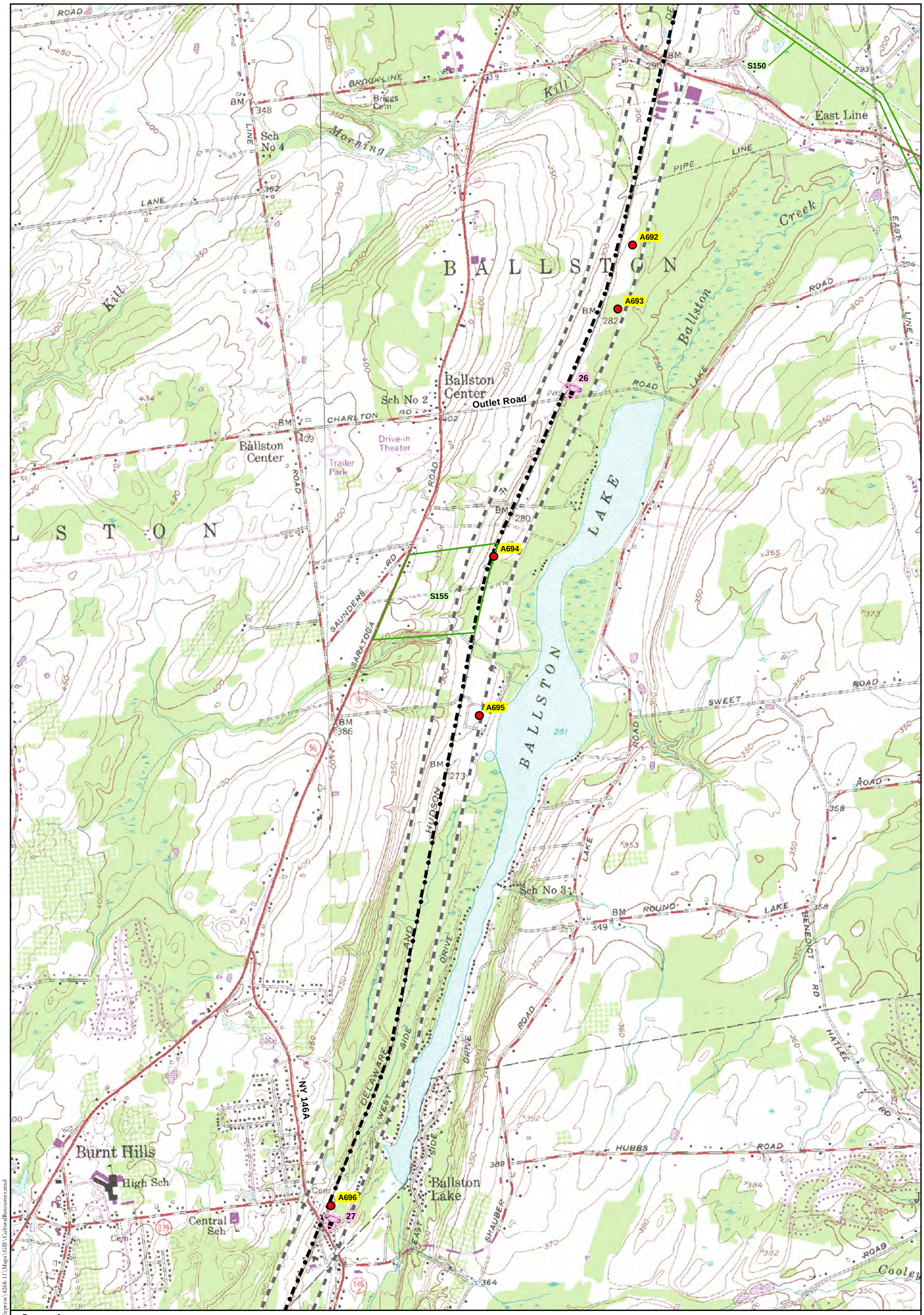
Note: Contour interval is 20 feet.

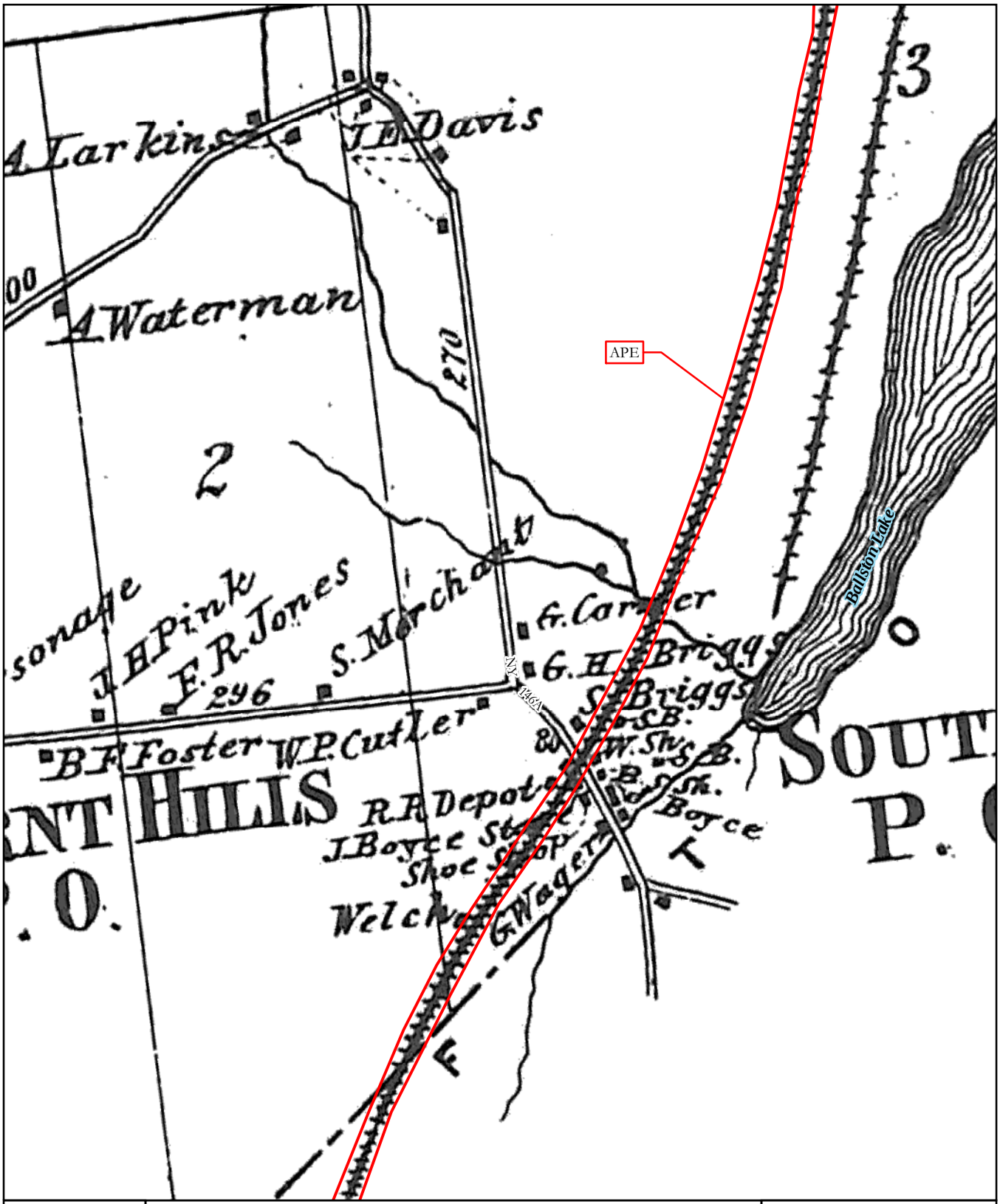
Project Location and Cultural Resources,
Segment 4
(Hartgen 2010)

HARTGEN archeological associates inc

Map 22a

ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd


A692
A693
A694
A695
A696
S150
S155
26
27
Ballston Center
Sch No 4
Sch No 2
Sch No 3
East Line
Outlet Road
Drive-in Theater
Trailer Park
Burnt Hills
High Sch
Central Sch
Ballston Lake
BALLSTON LAKE
NY 146A
Legend
Archeological Site
Previous Archeological Survey
National Register Eligible (NRE) Property
National Register Listed (NRL) Property
Photograph Angle
Proposed Alignment
Overland Study Area
N
1,000 0 1,000 2,000
Feet
300 0 300 600
Meters
Note: Contour interval is 20 feet.
Project Location and Cultural Resources, Segment 4 (Hartgen 2010)
HARTGEN archeological associates inc
Map 22b
ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd



N

500 0 500 1,000 Feet

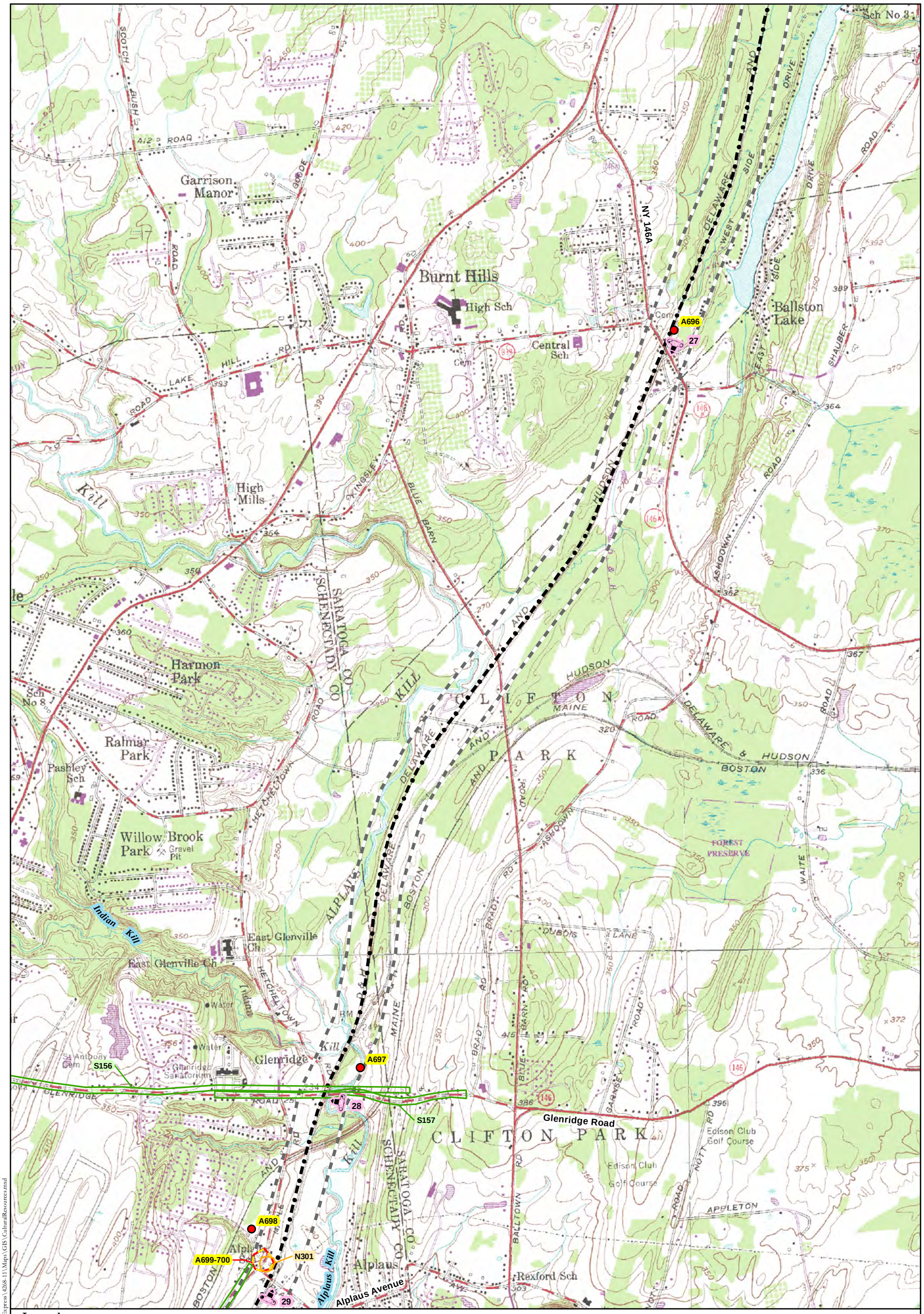
150 0 150 300 Meters

Historic Map, Segment 4
(Beers 1866)

HARTGEN archeological associates inc

Map 23

ES May 20, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 23-Segment4.mxd



Legend

- Archeological Site
- Previous Archeological Survey
- National Register Eligible (NRE) Property
- National Register Listed (NRL) Property
- Photograph Angle
- Proposed Alignment
- Overland Study Area

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

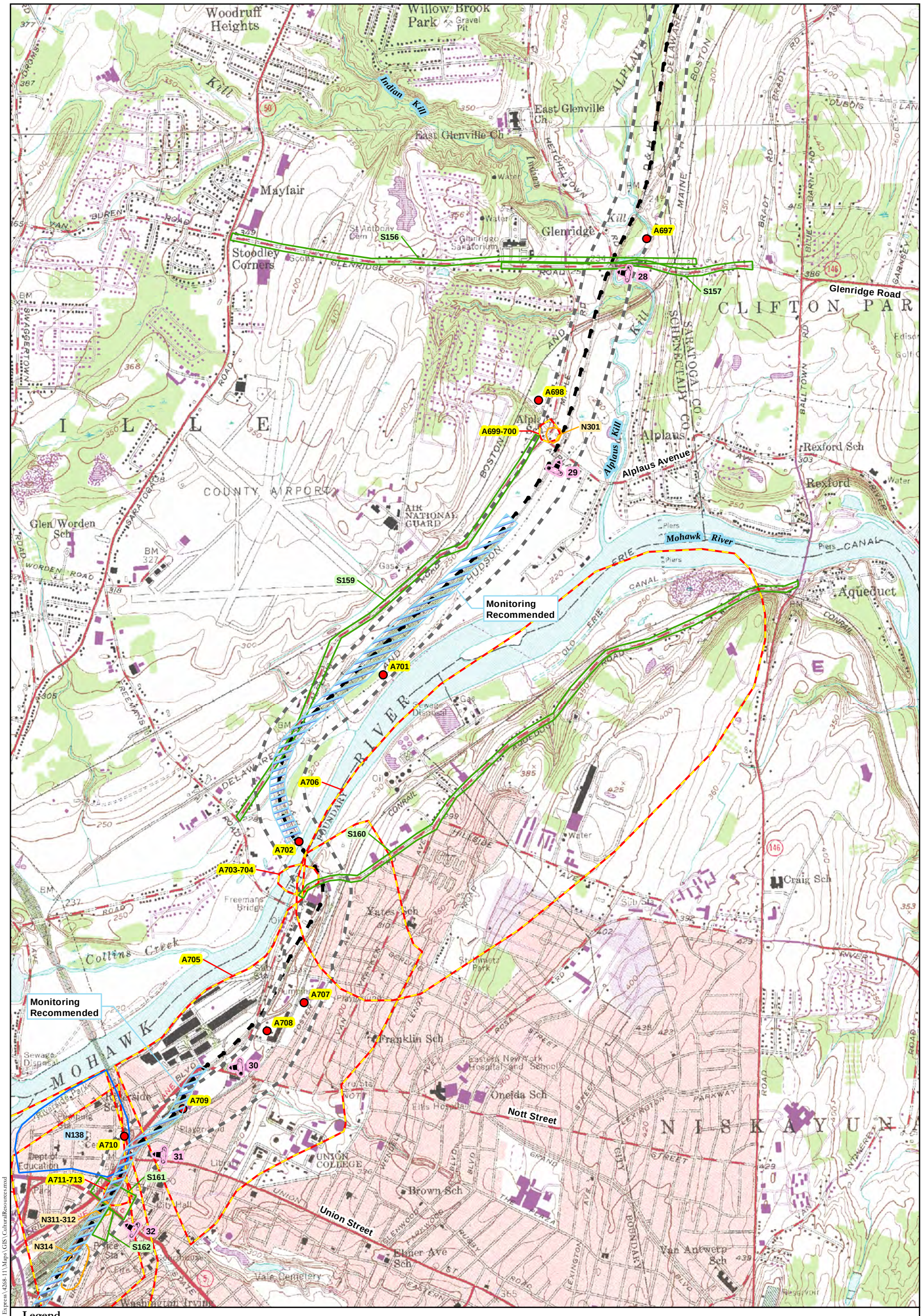
Note: Contour interval is 20 feet.

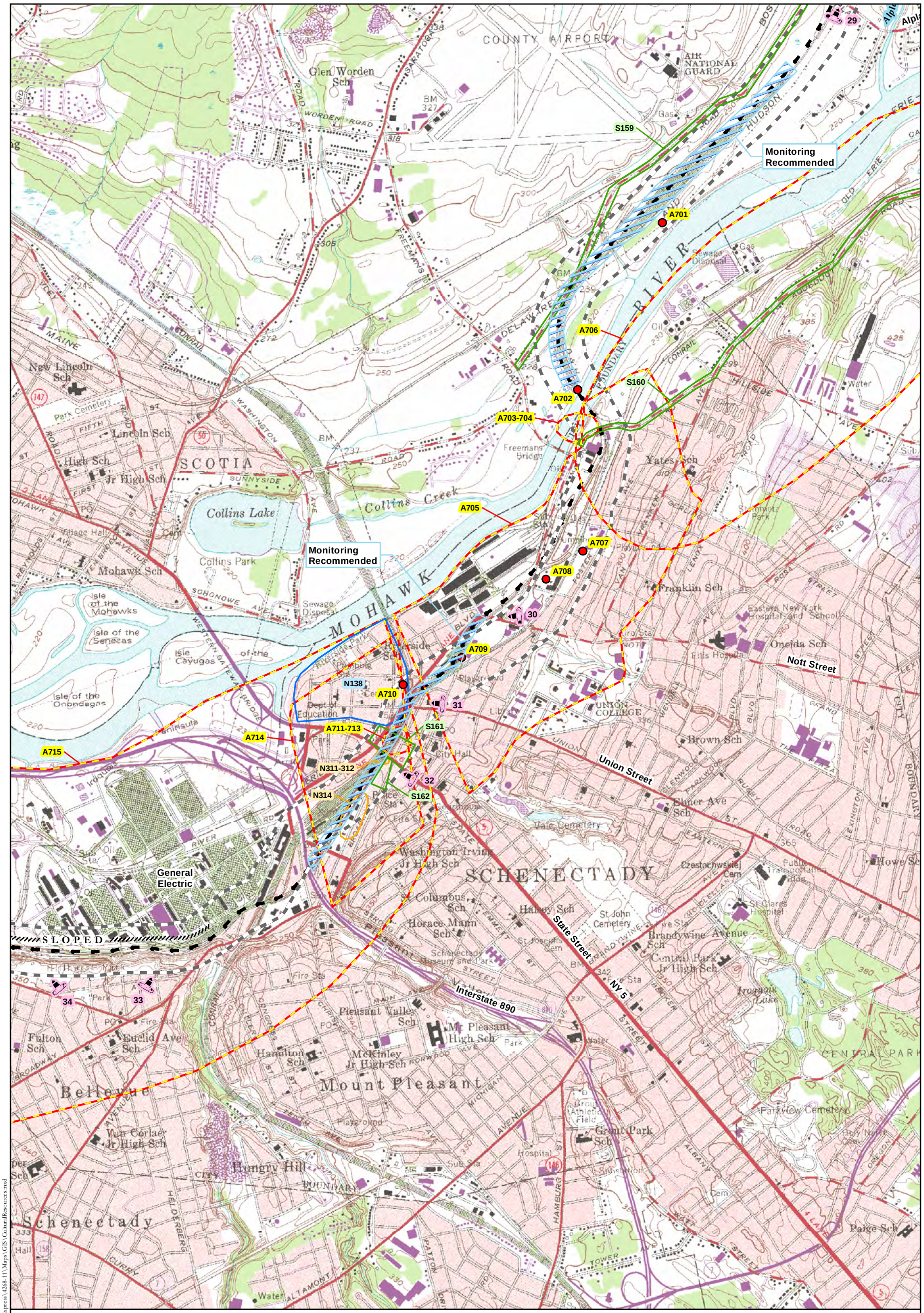
Project Location and Cultural Resources, Segment 5 (Hartgen 2010)

HARTGEN archeological associates inc

Map 24a

ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd


A697
A698
A699-700
N301
A701
A702
A703-704
A705
A706
A707
A708
A709
A710
A711-713
N138
N311-312
N314
S156
S157
S159
S160
S161
S162
28
29
30
31
32
Monitoring Recommended
Monitoring Recommended
Glenridge Road
Alplaus Avenue
Nott Street
Union Street
Mohawk River
Indian Kill
Collins Creek
Legend
Archeological Site
Previous Archeological Survey
National Register Eligible (NRE) Property
National Register Listed (NRL) Property
Photograph Angle
Proposed Alignment
Overland Study Area
N
1,000 0 1,000 2,000 Feet
300 0 300 600 Meters
Note: Contour interval is 20 feet.
Project Location and Cultural Resources, Segment 5 (Hartgen 2010)
HARTGEN archeological associates inc
Map 24b
ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd



Legend

- Archeological Site
- Previous Archeological Survey
- National Register Eligible (NRE) Property
- National Register Listed (NRL) Property
- Photograph Angle
- Proposed Alignment
- Overland Study Area

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

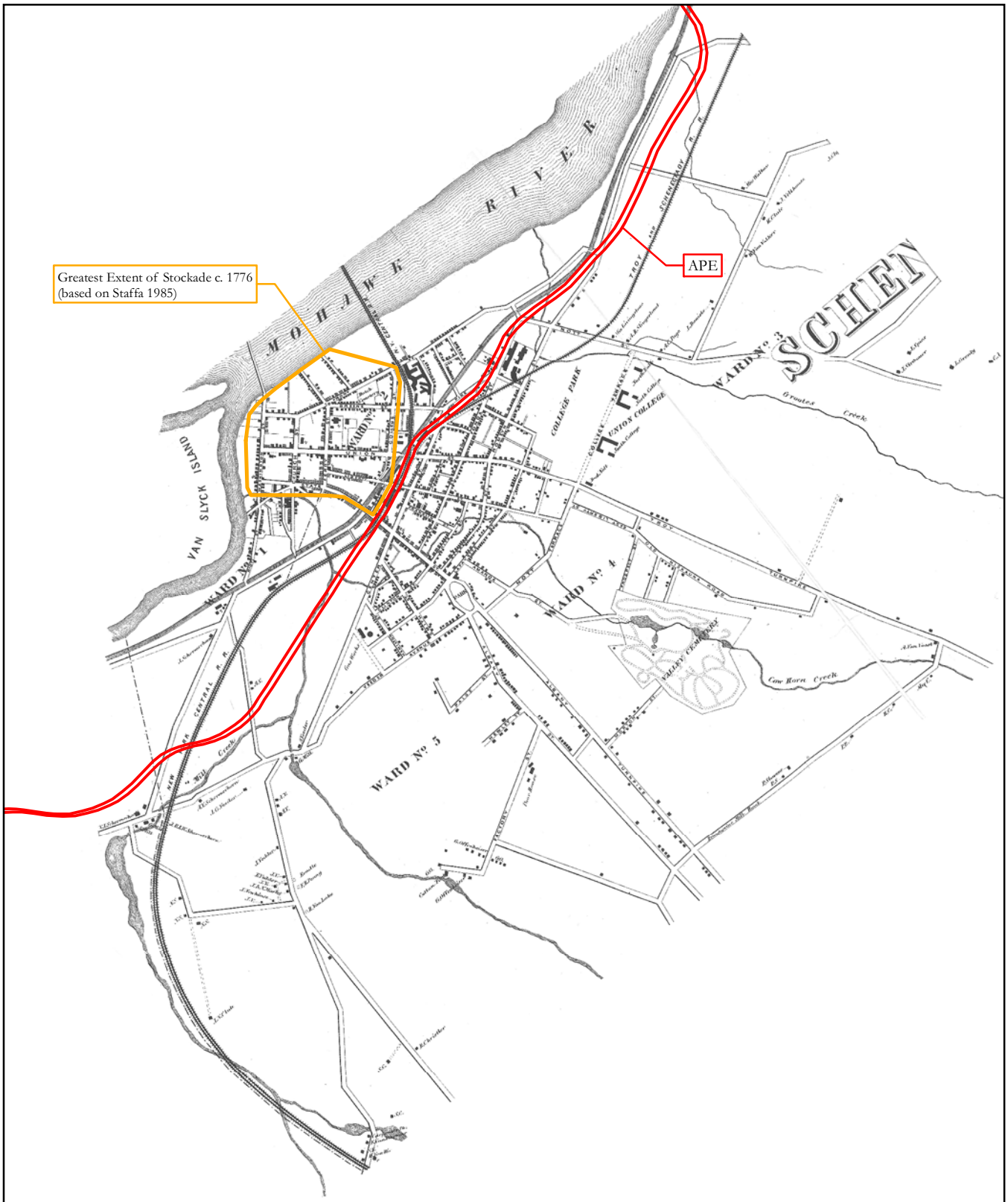
Note: Contour interval is 20 feet.

Project Location and Cultural Resources, Segment 6 (Hartgen 2010)

HARTGEN archeological associates inc

Map 25

ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd



N

1,000 0 1,000 2,000 Feet

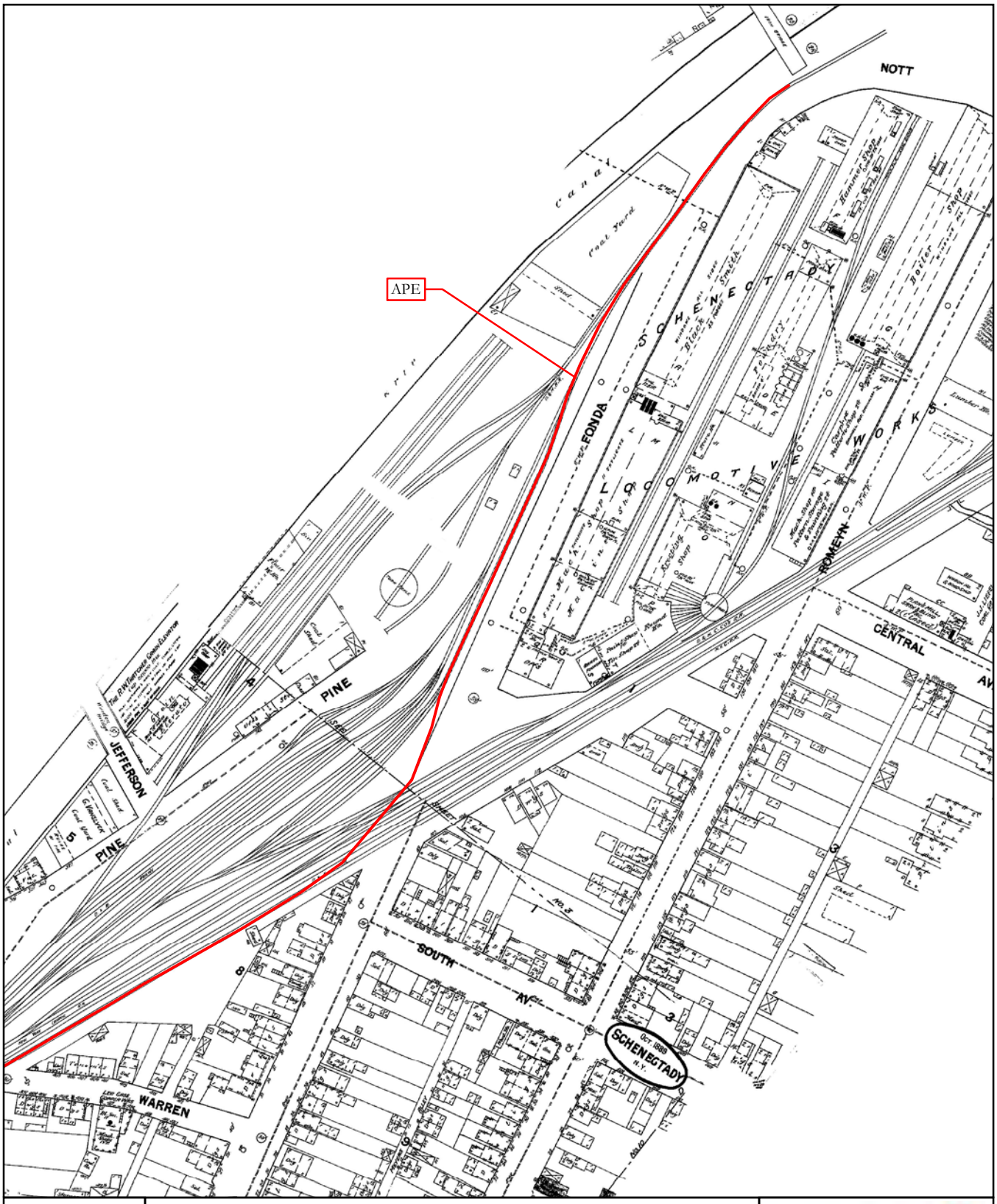
300 0 300 600 Meters

Historic Map, Segment 6
(Beers 1866)

HARTGEN archeological associates inc

Map 26

ES May 21, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 26-Segment6.mxd



N

100 0 100 200 Feet

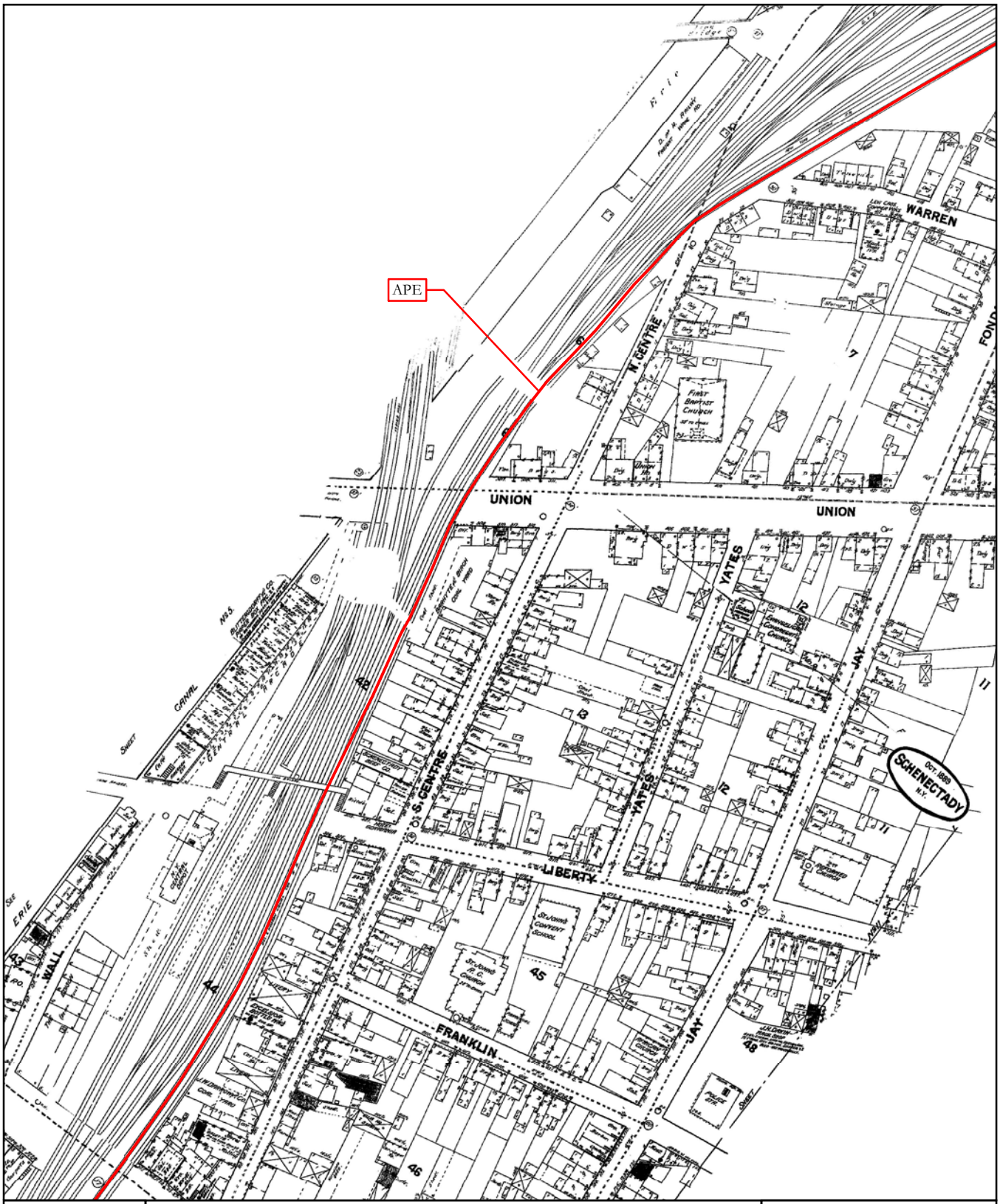
30 0 30 60 Meters

Historic Map, Segment 6
Sanborn 1889, 1915)

HARTGEN archeological associates inc

Map 27a

ES May 28, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 27-Segment6.mxd

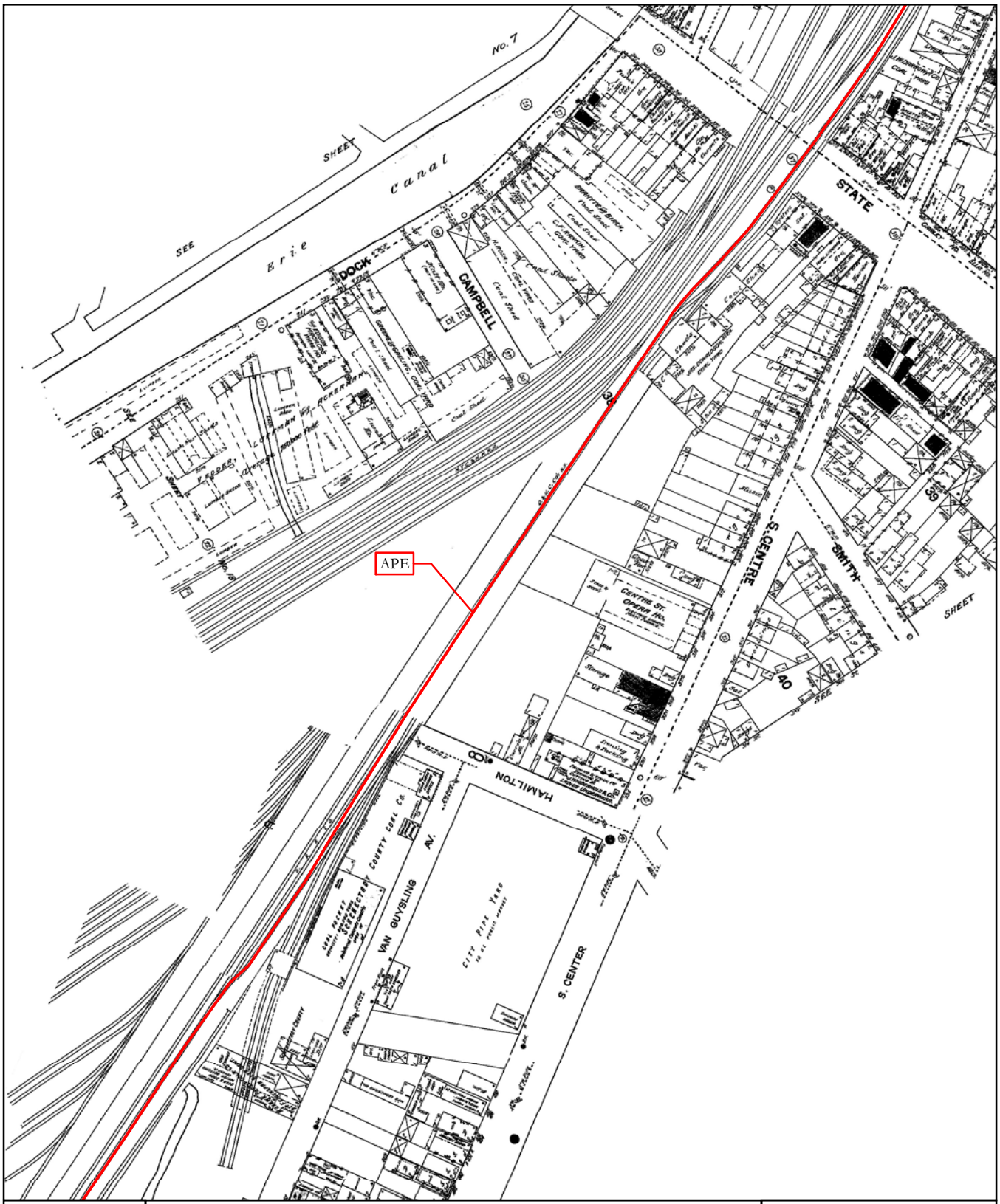


Historic Map, Segment 6
Sanborn 1889, 1915)

HARTGEN archeological associates inc

Map 27b

ES May 28, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 27-Segment6.mxd



N

100 0 100 200 Feet

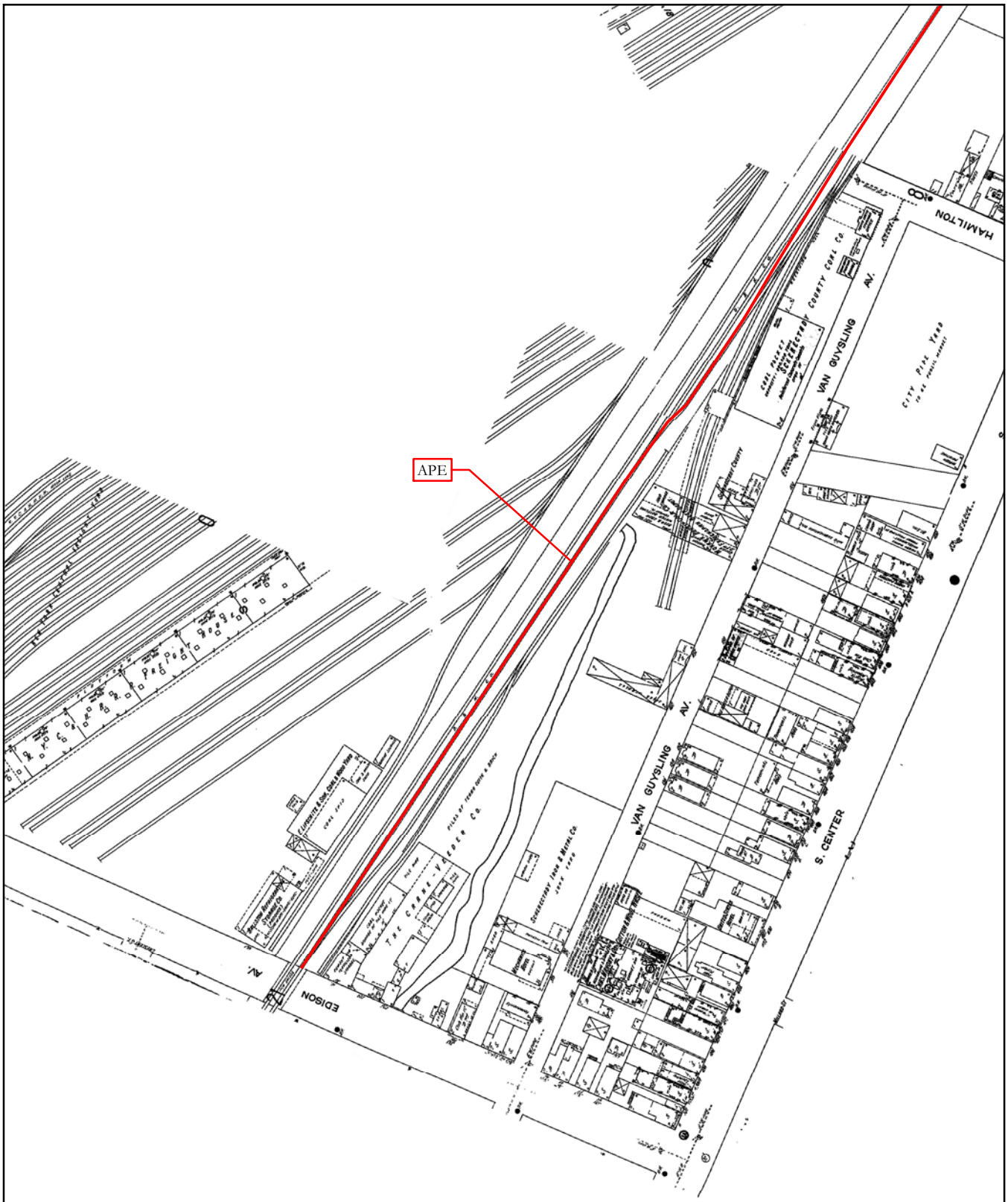
30 0 30 60 Meters

Historic Map, Segment 6
Sanborn 1889, 1915)

HARTGEN archeological associates inc

Map 27c

ES May 28, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 27-Segment6.mxd



N

100 0 100 200
Feet

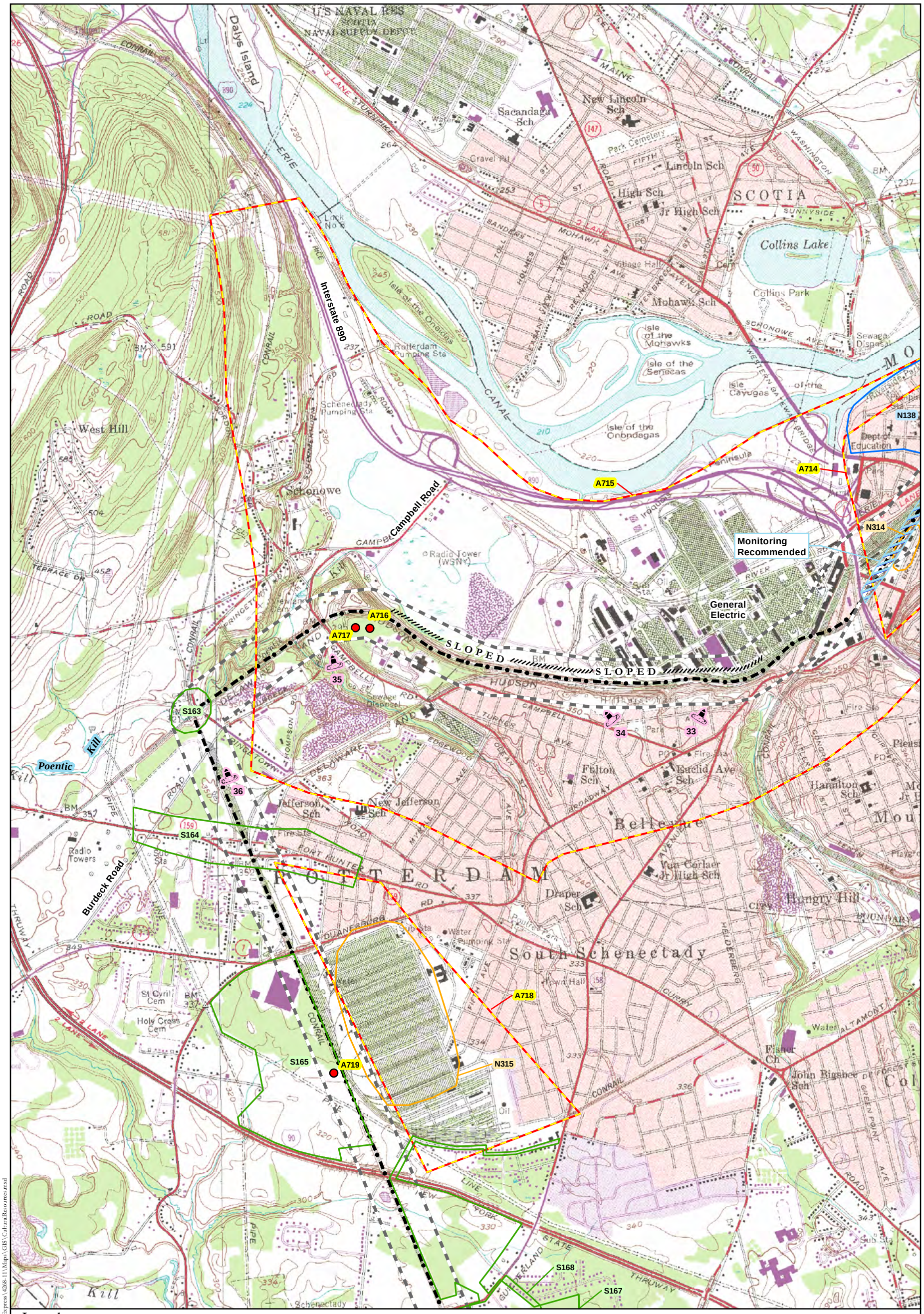
30 0 30 60
Meters

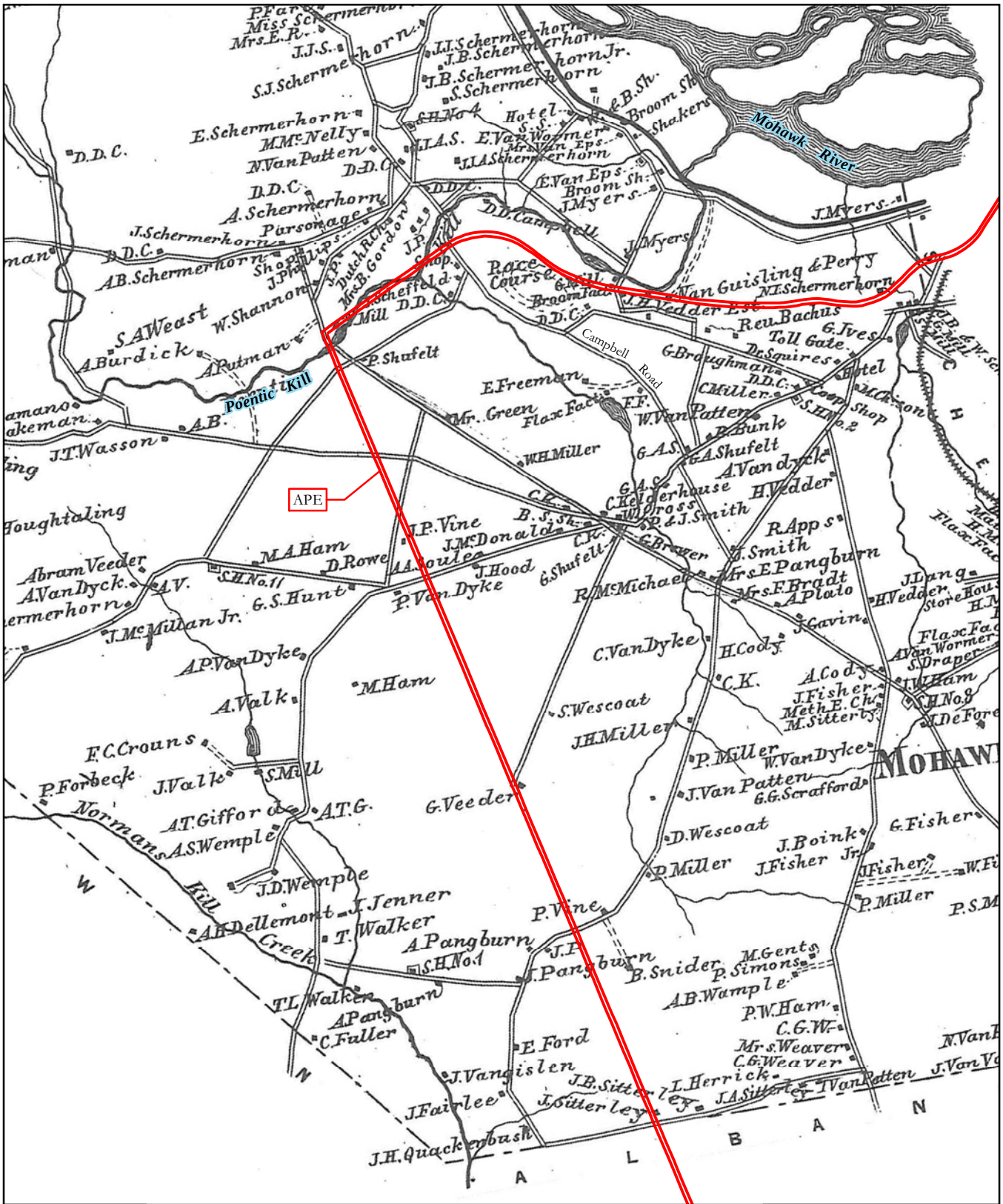
Historic Map, Segment 6
Sanborn 1889, 1915)

HARTGEN
archeological associates inc

Map 27d

ES May 28, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 27-Segment6.mxd


U.S NAVAL RES
SCOTIA
NAVAL SUPPLY DEPOT
Dalys Island
CONRAIL
3 LANE TURNPIKE
MAINE
New Lincoln Sch
Sacandaga Sch
Park Cemetery
Gravel Pit
Lincoln Sch
High Sch
Jr High Sch
SCOTIA
SUNNYSIDE
WASHINGTON
ERIE
Lock No 8
MOHAWK
SANDERS
HOLMES
REYNOLDS
PLEASANT VIEW
Village Hall
PO
Cem
Collins Lake
Collins Park
Mohawk Sch
SCHONOWE
Sewage Disposal
Isle of the Oneidas
Rotterdam Pumping Sta
Isle of the Mohawks
Isle of the Senecas
Isle Cayugas
Isle of the Onondagas
CANAL
WESTERN GATEWAY BRIDGE
Dept of Education
Peninsula
Interstate 890
West Hill
Schonowe
Campbell Road
Radio Tower (WSNY)
Monitoring Recommended
General Electric
A714
A715
A716
A717
A718
A719
N138
N314
N315
S163
S164
S165
S167
S168
35
36
33
34
SLOPED
SLOPED
Poentic
Kill
Burdeck Road
ROTTERDAM
South Schenectady
Schenectady
Jefferson Sch
New Jefferson Sch
Fulton Sch
Euclid Ave Sch
Bellevue
Van Corlaer Jr High Sch
Draper Sch
Hungry Hill
Fisher Ch
John Bigsbee Sch
Radio Towers
Sub Sta
Water Pumping Sta
Holy Cross Cem
St Cyril Cem
Fire Sta
Oil
Legend
Archeological Site
Previous Archeological Survey
National Register Eligible (NRE) Property
National Register Listed (NRL) Property
Photograph Angle
Proposed Alignment
Overland Study Area
N
1,000 0 1,000 2,000 Feet
300 0 300 600 Meters
Note: Contour interval is 20 feet.
Project Location and Cultural Resources, Segment 7 (Hartgen 2010)
HARTGEN archeological associates inc
Map 28
ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd



N

1,500 0 1,500 3,000 Feet

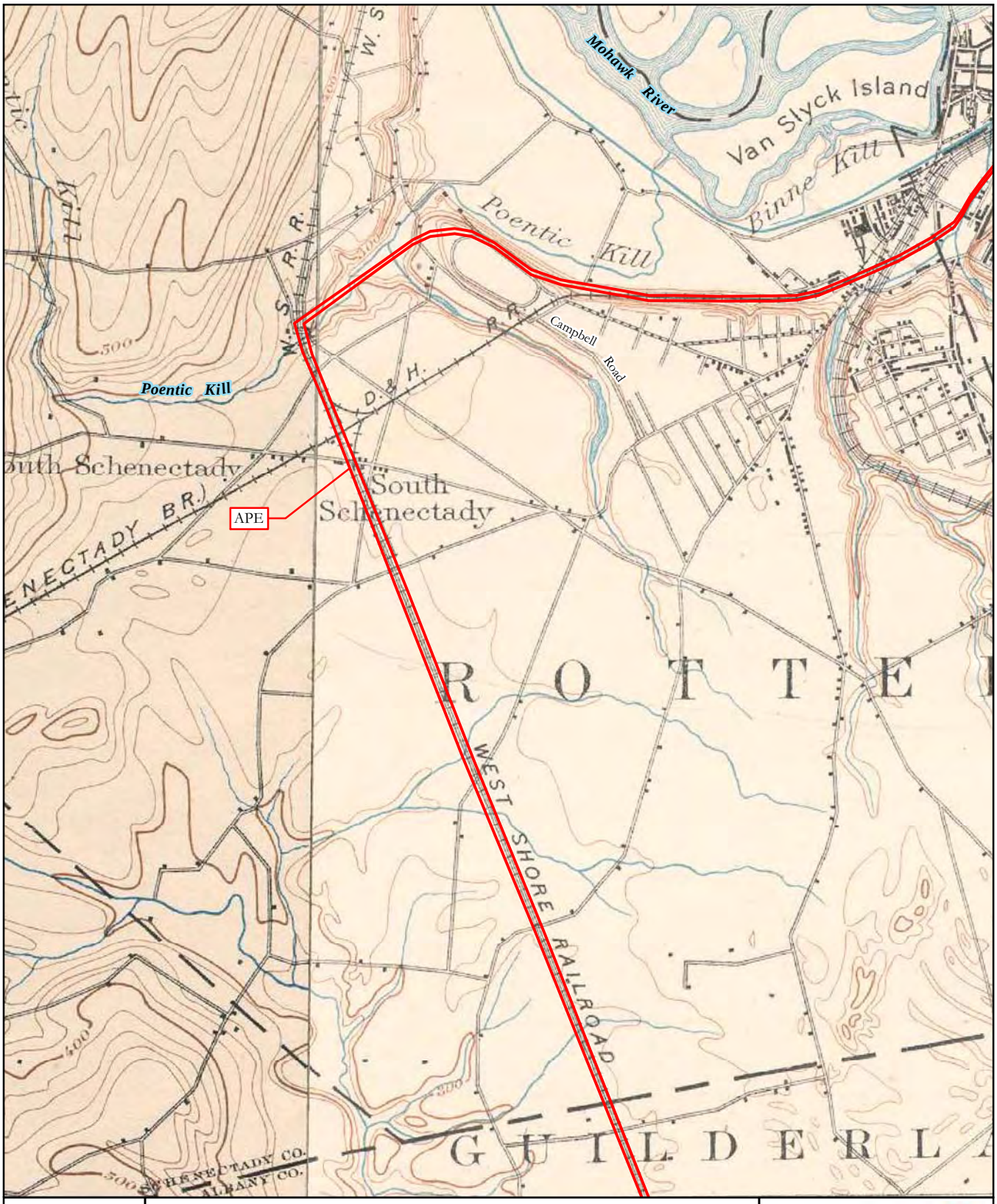
500 0 500 1,000 Meters

Historic Map, Segment 7
(Beers 1866)

HARTGEN
archeological associates inc

Map 29

ES May 20, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 29-Segment7.mxd



N

1,500 0 1,500 3,000 Feet

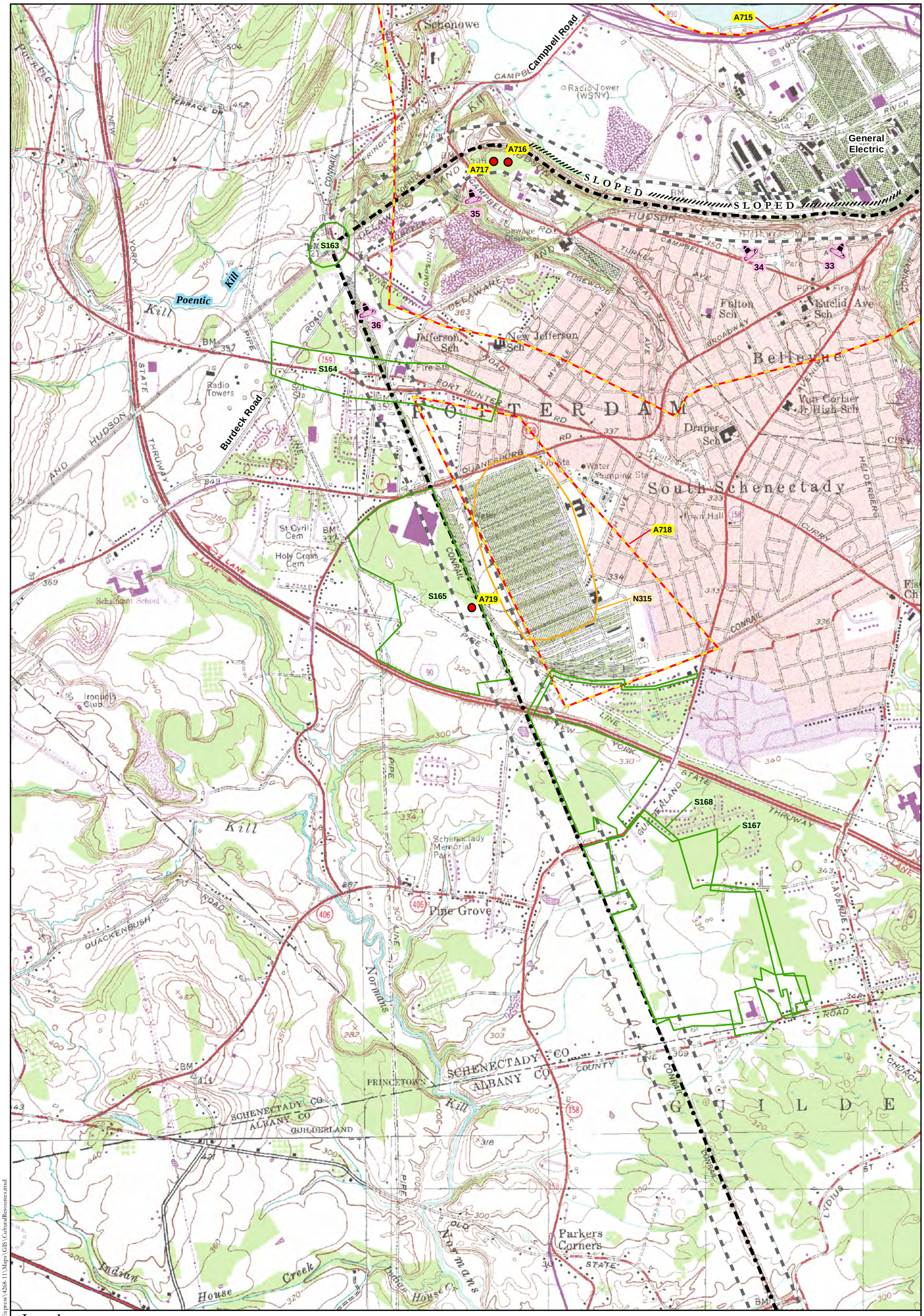
500 0 500 1,000 Meters

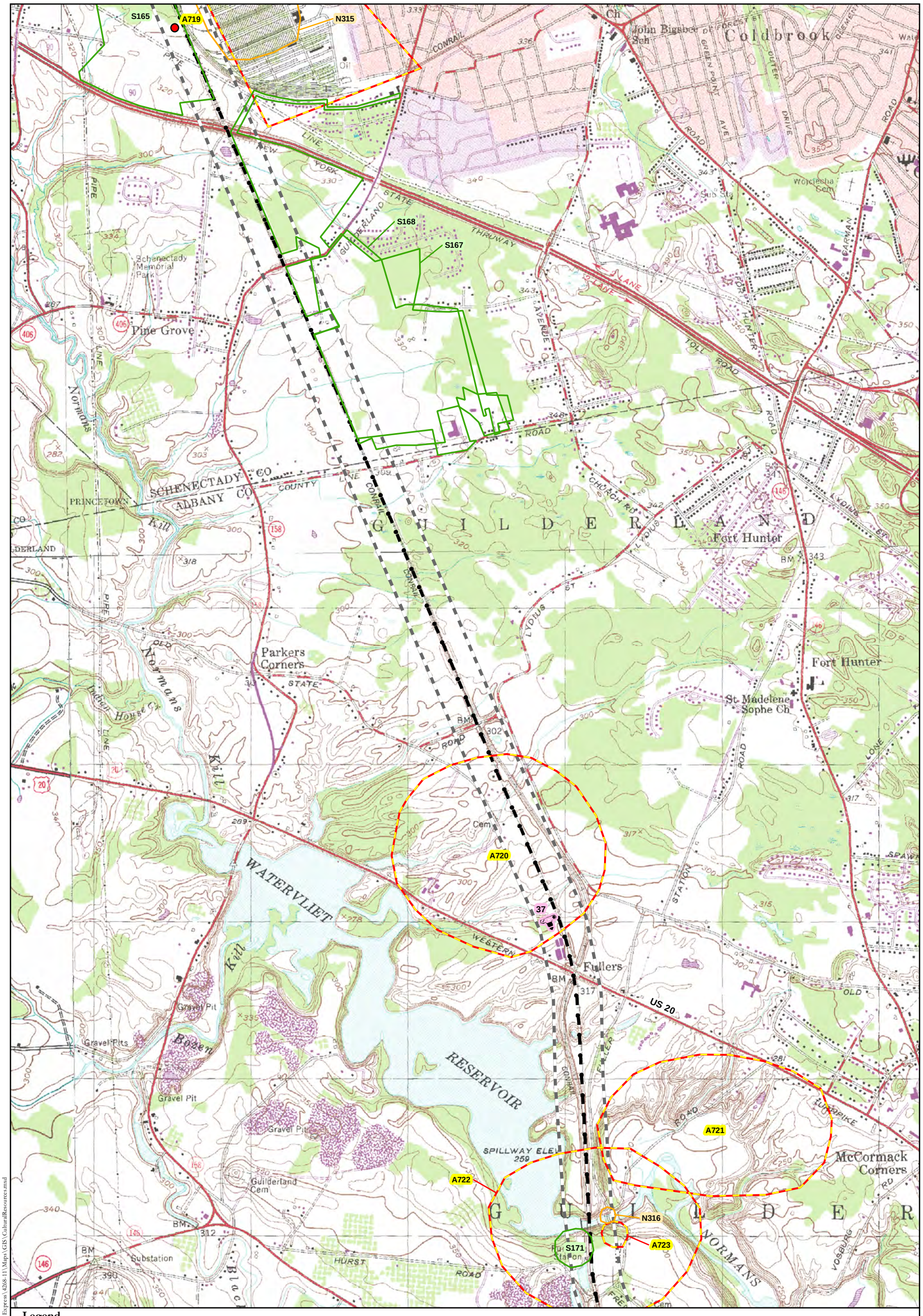
Historic Map, Segment 7
(USGS 1895 and 1898)

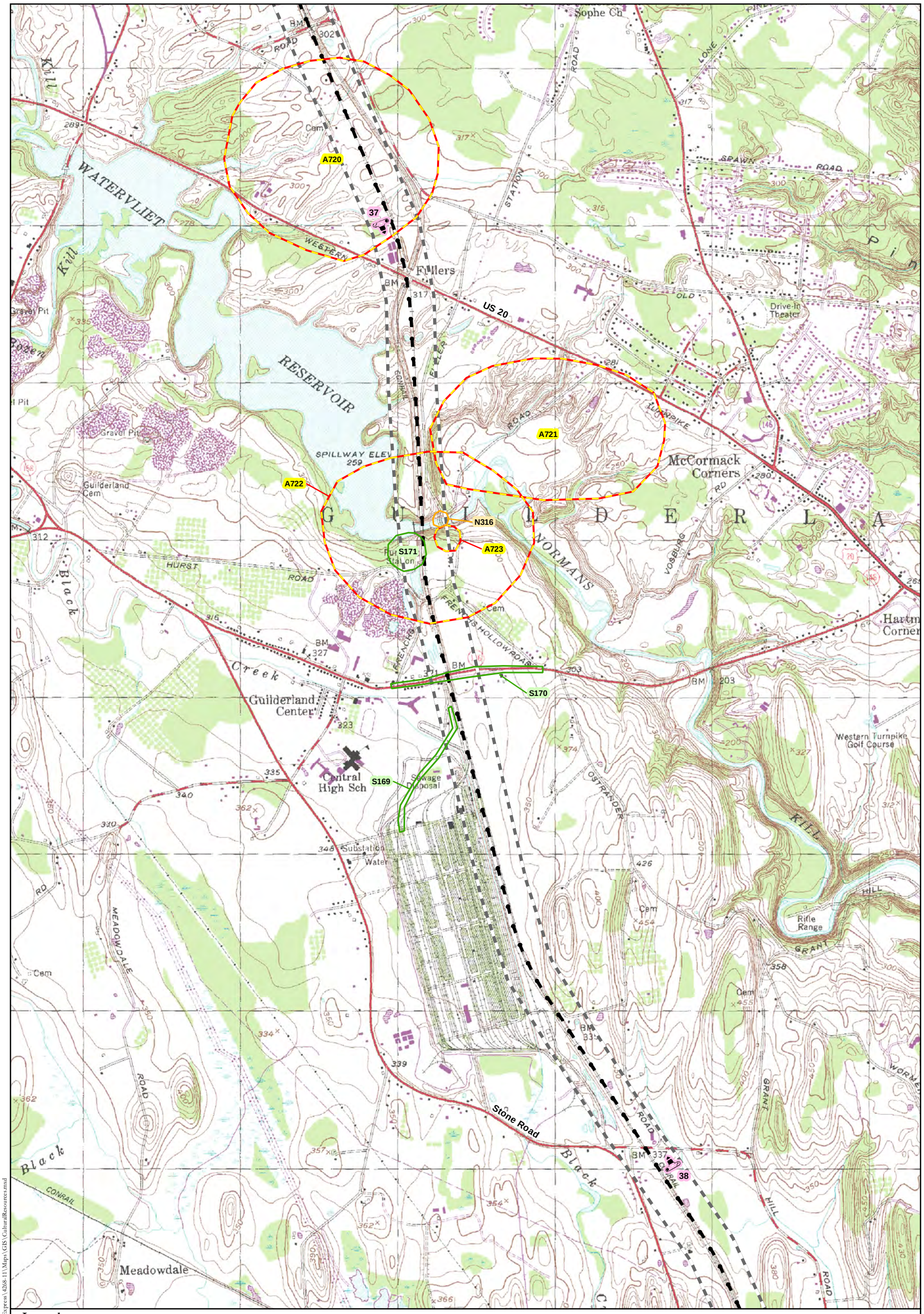
HARTGEN archeological associates inc

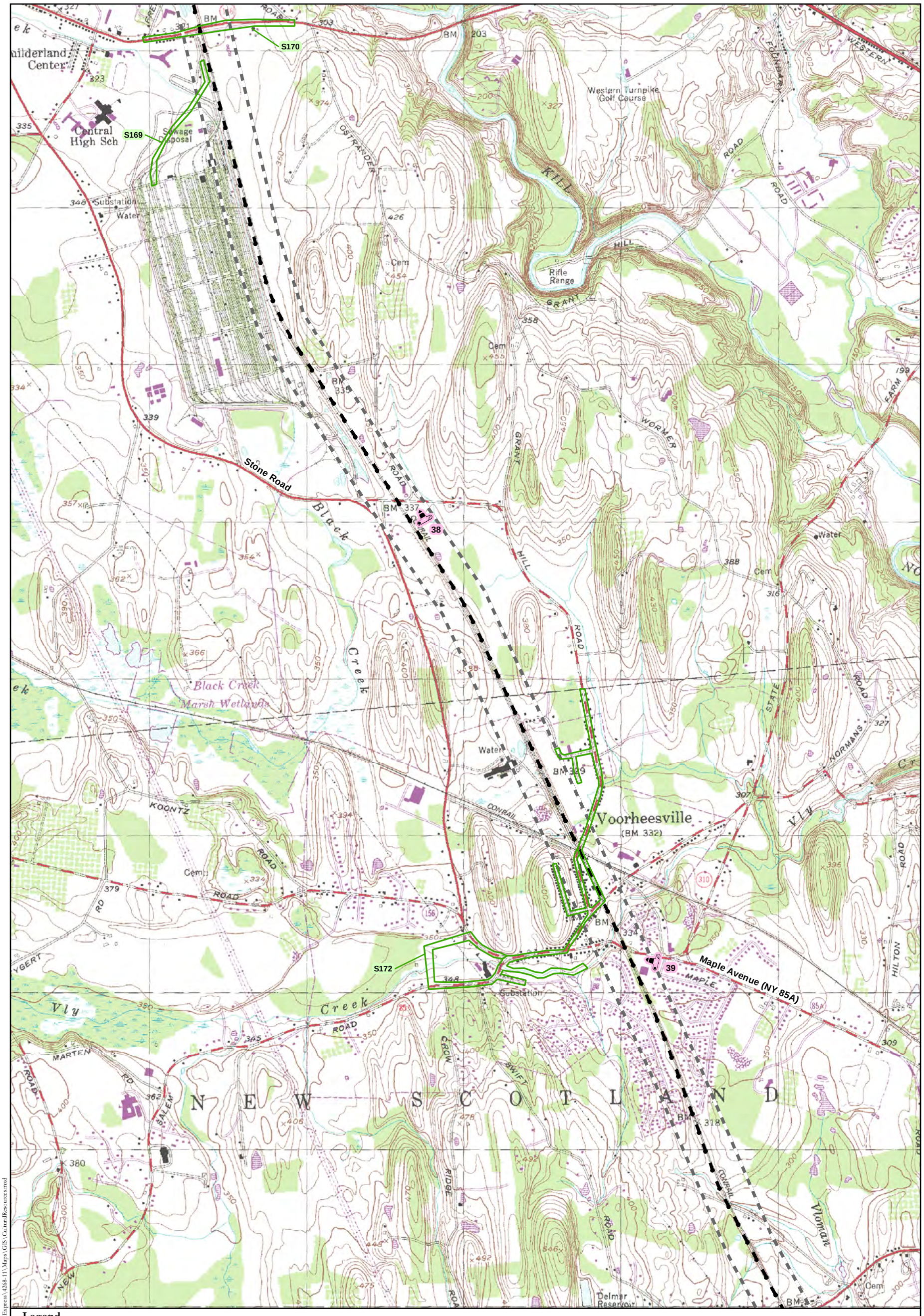
Map 30

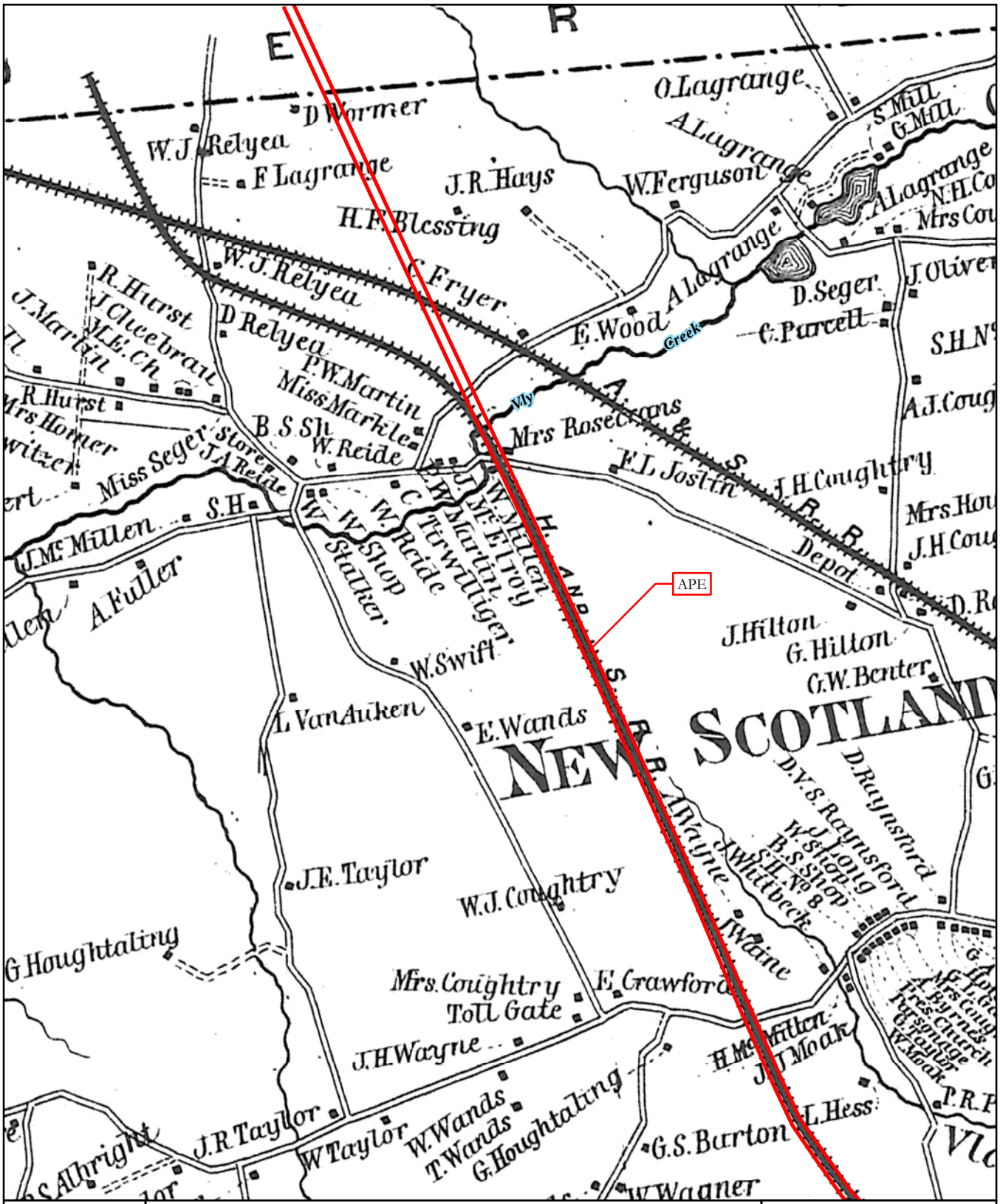
ES May 20, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 30-Segment7.mxd


A715
A716
A717
A718
A719
S163
S164
S165
S167
S168
N315
35
36
34
33
Campbell Road
Burdeck Road
SLOPED
SLOPED
General Electric
Poentic Kill
Schonowe
Radio Tower (WSNY)
Fulton Sch
Euclid Ave Sch
Jefferson Sch
New Jefferson Sch
Van Corlaer Jr High Sch
Draper Sch
Bellevue
ROTTERDAM
South Schenectady
Radio Towers
Sub Sta
Fire Sta
Water Pumping Sta
Town Hall
St Cyril Cem
Holy Cross Cem
Schalmont School
Iroquois Club
Schenectady Memorial Park
Pine Grove
Parkers Corners
GUILDERLAND
PRINCETOWN
SCHENECTADY CO
ALBANY CO
Indian House Creek
Normans Kill
CONRAIL
PIPE LINE
NEW YORK STATE THRUWAY
HUDSON AND
DELAWARE AND
TERRACE DR
CAMPBELL RD
HUDSON TURNER AVE
EDGEWOOD AVE
BROADWAY
FORT HUNTER RD
DUANESBURG RD
CURRY RD
QUACKENBUSH ROAD
CHURCH ST
LYDIUS ST
2 LANE
Legend
Archeological Site
Previous Archeological Survey
National Register Eligible (NRE) Property
National Register Listed (NRL) Property
Photograph Angle
Proposed Alignment
Overland Study Area
N
1,000 0 1,000 2,000 Feet
300 0 300 600 Meters
Note: Contour interval is 20 feet.
Project Location and Cultural Resources, Segment 8 (Hartgen 2010)
HARTGEN archeological associates inc
Map 31a
ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd


S165
A719
N315
S168
S167
A720
37
A721
A722
N316
A723
S171
Coldbrook
Fort Hunter
Pine Grove
Parkers Corners
Fullers
McCormack Corners
St Madelene Sophe Ch
Schenectady Memorial Park
Guilderland Cem
Gravel Pits
Substation
PRINCETOWN
SCHENECTADY CO
ALBANY CO
GUILDERLAND
NORMANS
WATERVLIET RESERVOIR
NEW YORK STATE THRUWAY
CONRAIL
PIPE LINE
GUILDERLAND TOLL ROAD
NORMANS KILL
BOZEN KILL
LYDIUS ST
FORT HUNTER ROAD
CHURCH RD
STATION ROAD
HURST ROAD
US 20
SPILLWAY ELEV 259
Legend
Archeological Site
Previous Archeological Survey
National Register Eligible (NRE) Property
National Register Listed (NRL) Property
Photograph Angle
Proposed Alignment
Overland Study Area
N
1,000 0 1,000 2,000 Feet
300 0 300 600 Meters
Note: Contour interval is 20 feet.
Project Location and Cultural Resources, Segment 8 (Hartgen 2010)
HARTGEN archeological associates inc
Map 31b
ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd


A720
37
A721
A722
N316
A723
S171
S170
S169
38
WATERVLIET RESERVOIR
Kill
Black Creek
Fullers
Guilderland Center
Central High Sch
McCormack Corners
Sophe Ch
Drive-In Theater
Western Turnpike Golf Course
Rifle Range
Meadowdale
Stone Road
GUILDERLAND
WESTERN
US 20
SPRAWL ROAD
STATION ROAD
LONE PINE
OLD
TURNPIKE
HURST ROAD
FRENCHS HOLLOW ROAD
VORMANS
OSTRANDER
GRANT
HILL
MEADOWDALE
CONRAIL
SPILLWAY ELEV 259
Sewage Disposal
Substation
Water
Cem
Gravel Pit
BM
Legend
Archeological Site
Previous Archeological Survey
National Register Eligible (NRE) Property
National Register Listed (NRL) Property
Photograph Angle
Proposed Alignment
Overland Study Area
N
1,000 0 1,000 2,000
Feet
300 0 300 600
Meters
Note: Contour interval is 20 feet.
HARTGEN
archeological associates inc
Project Location and Cultural Resources, Segment 9 (Hartgen 2010)
Map 32a
ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd


S170
S169
S172
38
39
Central High Sch
Sewage Disposal
Substation
Water
Western Turnpike Golf Course
Rifle Range
Cem
BM 203
BM 337
BM 329
BM 334
Black Creek Marsh Wetlands
Voorheesville
(BM 332)
Stone Road
Maple Avenue (NY 85A)
Delmar Reservoir
NEW SCOTLAND
Legend
Archeological Site
Previous Archeological Survey
National Register Eligible (NRE) Property
National Register Listed (NRL) Property
Photograph Angle
Proposed Alignment
Overland Study Area
N
1,000 0 1,000 2,000 Feet
300 0 300 600 Meters
Note: Contour interval is 20 feet.
Project Location and Cultural Resources, Segment 9 (Hartgen 2010)
HARTGEN archeological associates inc
Map 32b
ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd

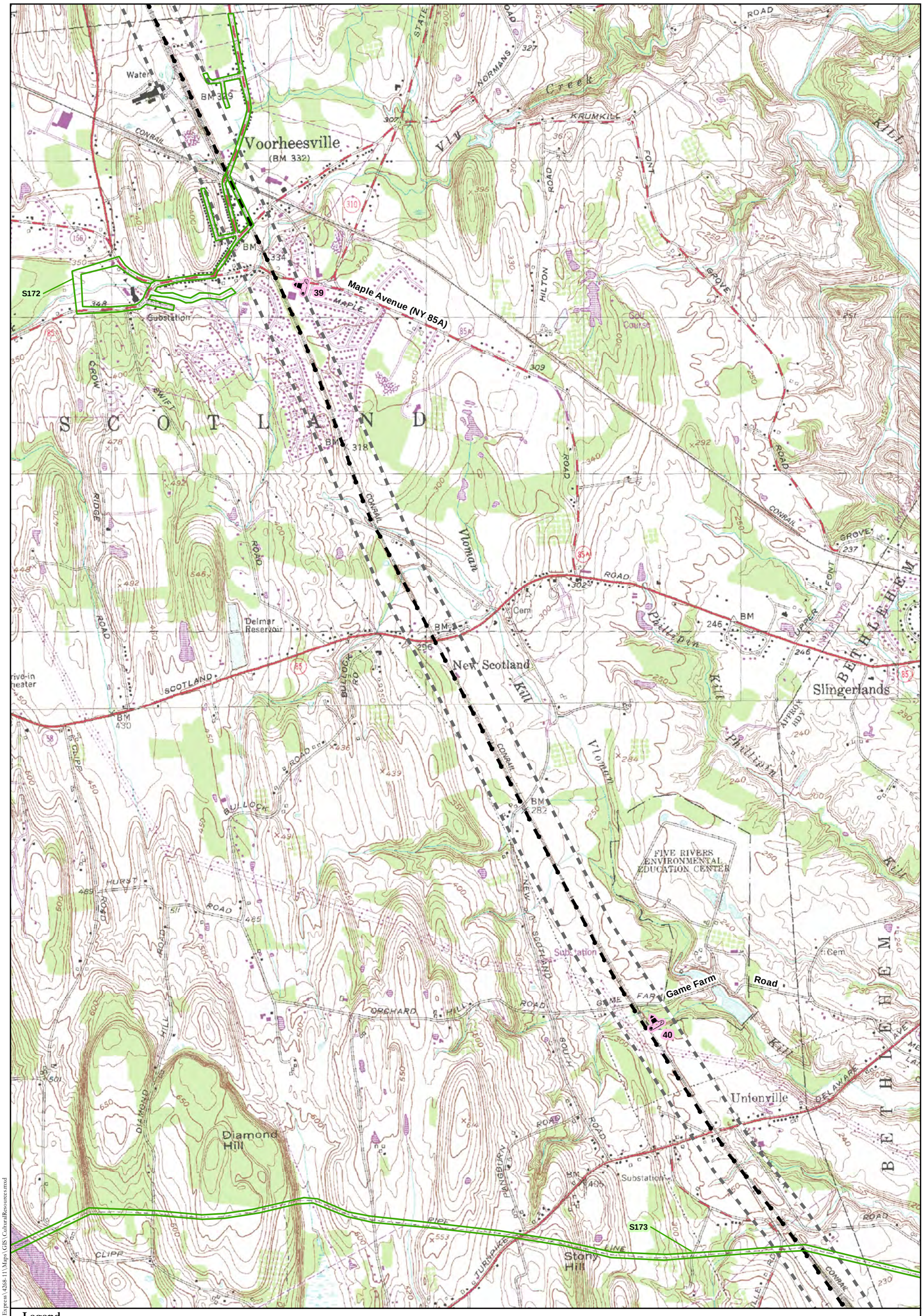


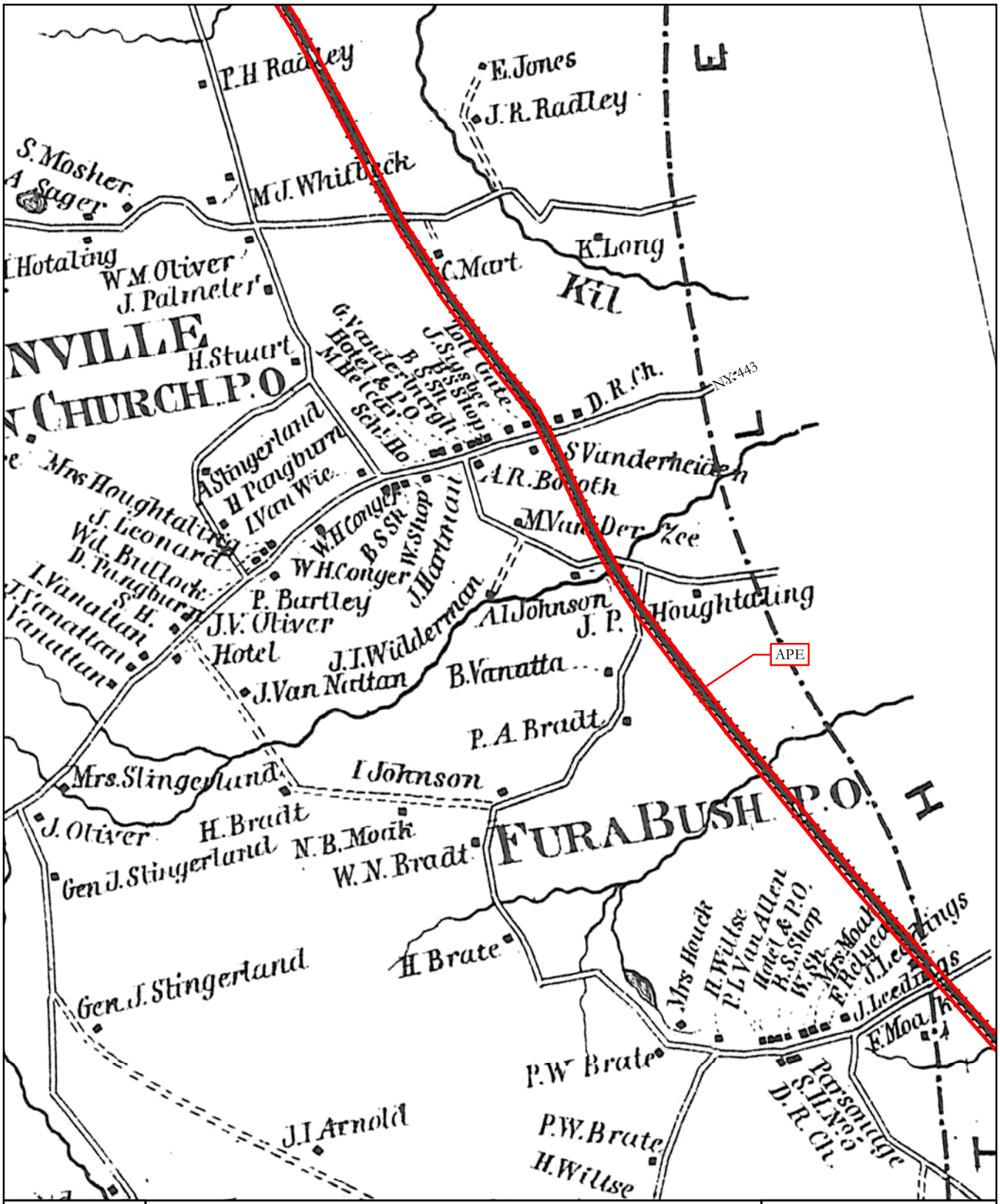
Historic Map, Segment 9
(Beers 1866)

HARTGEN archeological associates inc

Map 33

ES May 20, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 33-Segment9.mxd


Voorheesville
(BM 332)
New Scotland
Slingerlands
Unionville
Delmar Reservoir
Diamond Hill
Stony Hill
Maple Avenue (NY 85A)
Game Farm Road
S172
S173
39
40
Substation
Golf Course
FIVE RIVERS ENVIRONMENTAL EDUCATION CENTER
Vly Creek
Vloman Kill
Phillipin Kill
Normans Kill
CONRAIL
SCOTLAND
BETHLEHEM
KRUMKILL ROAD
FONT GROVE
BULLOCK ROAD
ORCHARD HILL ROAD
PANGBURN ROAD
DELAWARE AVE
CLIPP ROAD
RIDGE ROAD
HURST ROAD
SWIFT CROW
HILTON MAPLE
PIPE LINE TURNPIKE
BM 339
BM 334
BM 318
BM 430
BM 282
BM 246
Water
Cem
Legend
Archeological Site
Previous Archeological Survey
National Register Eligible (NRE) Property
National Register Listed (NRL) Property
Photograph Angle
Proposed Alignment
Overland Study Area
N
1,000 0 1,000 2,000 Feet
300 0 300 600 Meters
Note: Contour interval is 20 feet.
Project Location and Cultural Resources, Segment 10 (Hartgen 2010)
HARTGEN archeological associates inc
Map 34
ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd



N

1,000 0 1,000 2,000 Feet

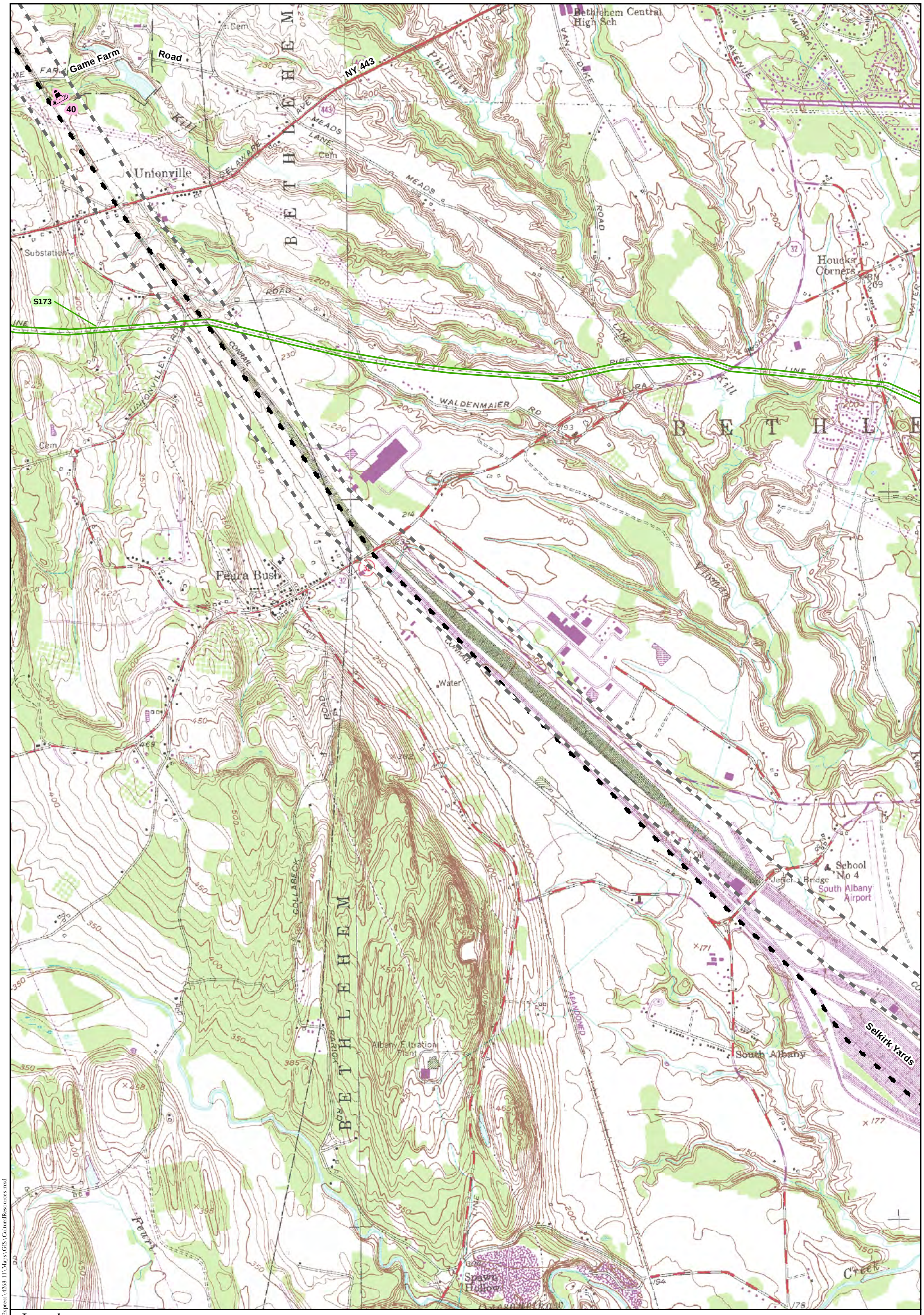
300 0 300 600 Meters

Historic Map, Segment 10
(Beers 1866)

HARTGEN archeological associates inc

Map 35

ES May 20, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 35-Segment10.mxd



Legend

- Archeological Site
- Previous Archeological Survey
- National Register Eligible (NRE) Property
- National Register Listed (NRL) Property
- Photograph Angle
- Proposed Alignment
- Overland Study Area

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

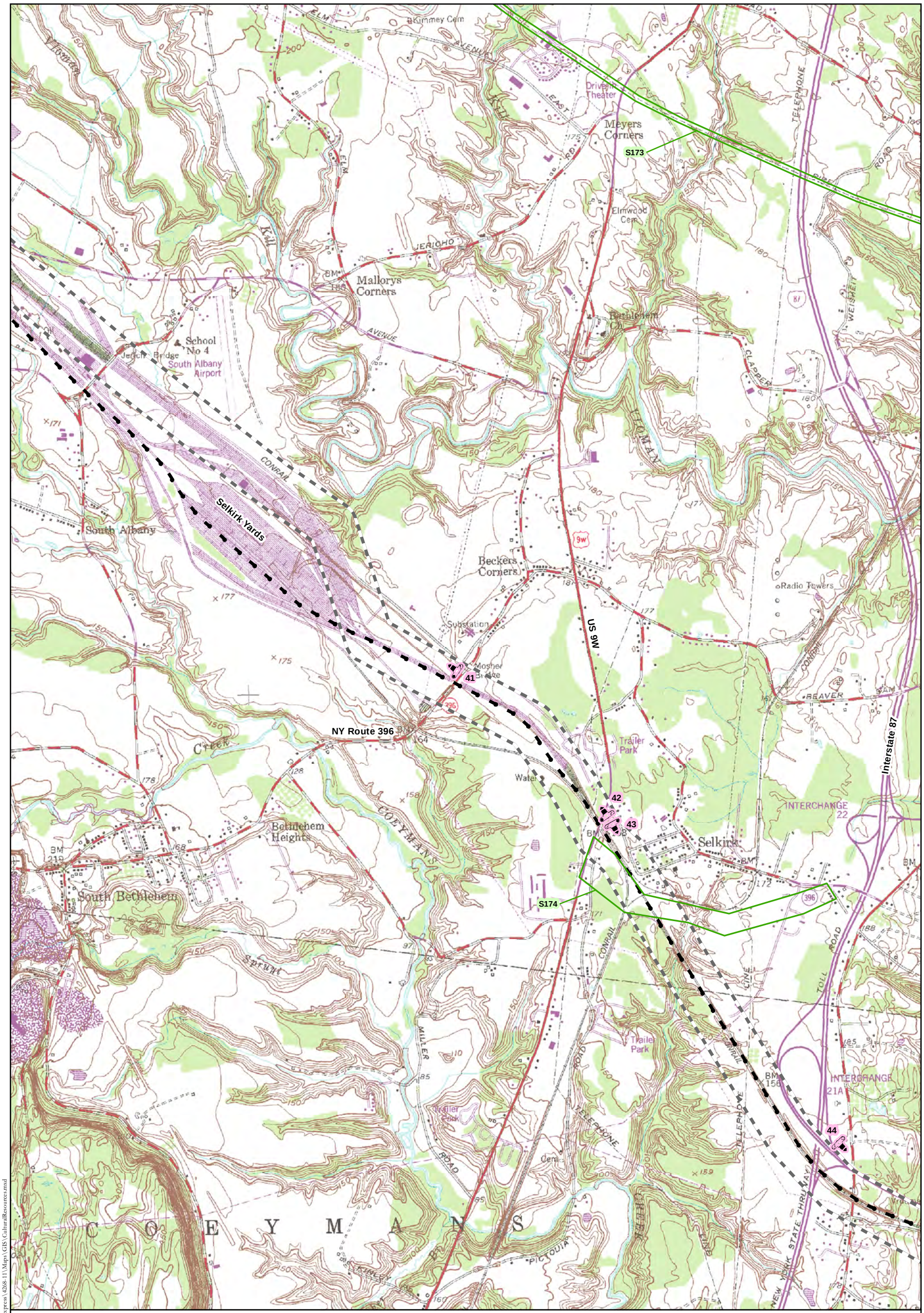
Note: Contour interval is 20 feet.

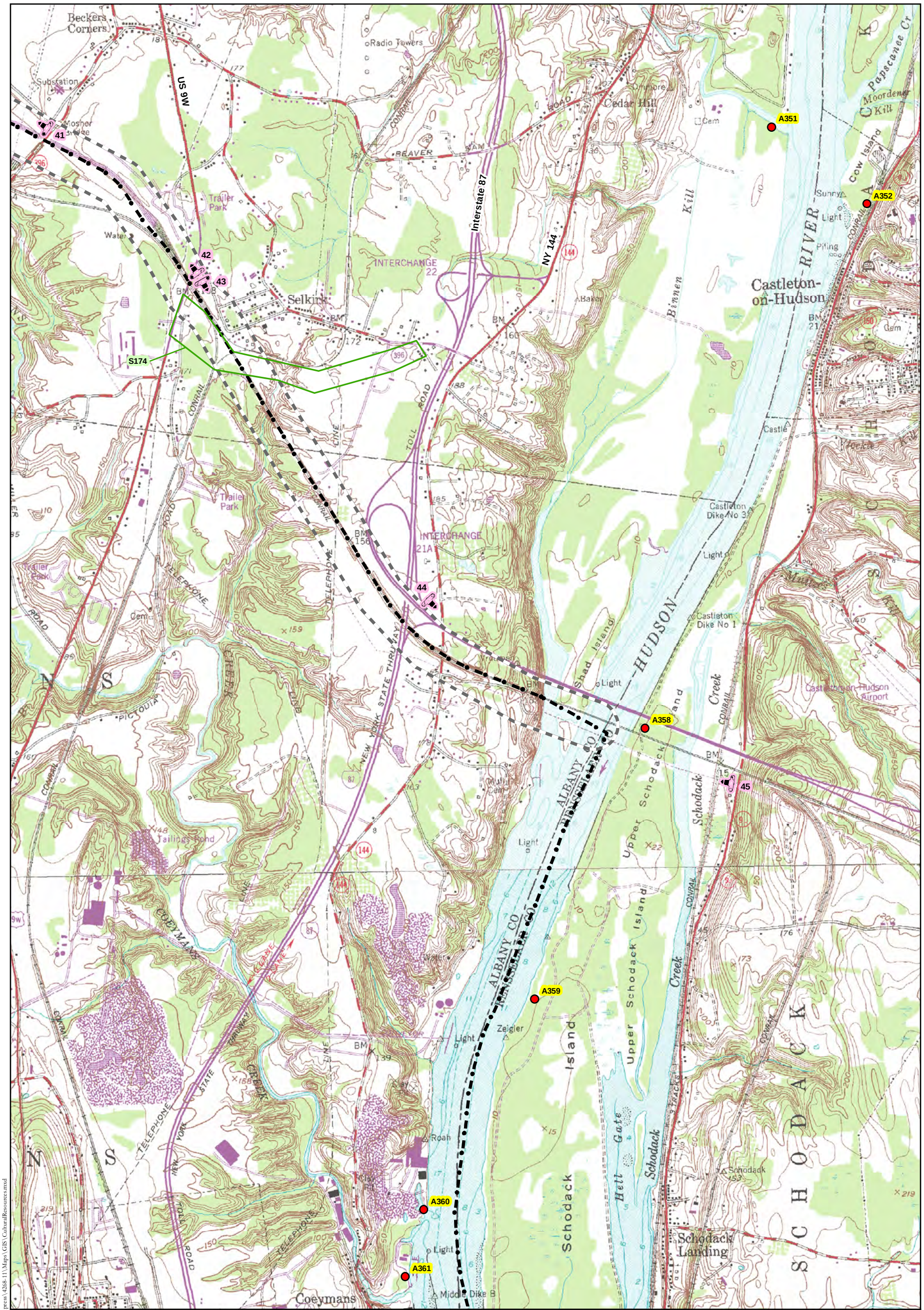
Project Location and Cultural Resources, Segment 11 (Hartgen 2010)

HARTGEN archeological associates inc

Map 36a

ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd


Kimmey Cem
Drive-In Theater
Meyers Corners
S173
Elmwood Cem
Mallorys Corners
JERICHO
AVENUE
School No 4
Jerich Bridge
South Albany Airport
Selkirk Yards
South Albany
Beckers Corners
Radio Towers
Substation
US 9W
41
NY Route 396
Trailer Park
Interstate 87
42
43
INTERCHANGE 22
Selkirk
S174
Bethlehem Heights
South Bethlehem
Sprunt
COEYMANS
INTERCHANGE 21A
44
Legend
Archeological Site
Previous Archeological Survey
National Register Eligible (NRE) Property
National Register Listed (NRL) Property
Photograph Angle
Proposed Alignment
Overland Study Area
N
1,000 0 1,000 2,000 Feet
300 0 300 600 Meters
Note: Contour interval is 20 feet.
Project Location and Cultural Resources, Segment 11 (Hartgen 2010)
HARTGEN archeological associates inc
Map 36b
ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd



Legend

- Archeological Site
- Previous Archeological Survey
- National Register Eligible (NRE) Property
- National Register Listed (NRL) Property
- Photograph Angle
- Proposed Alignment
- Overland Study Area

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

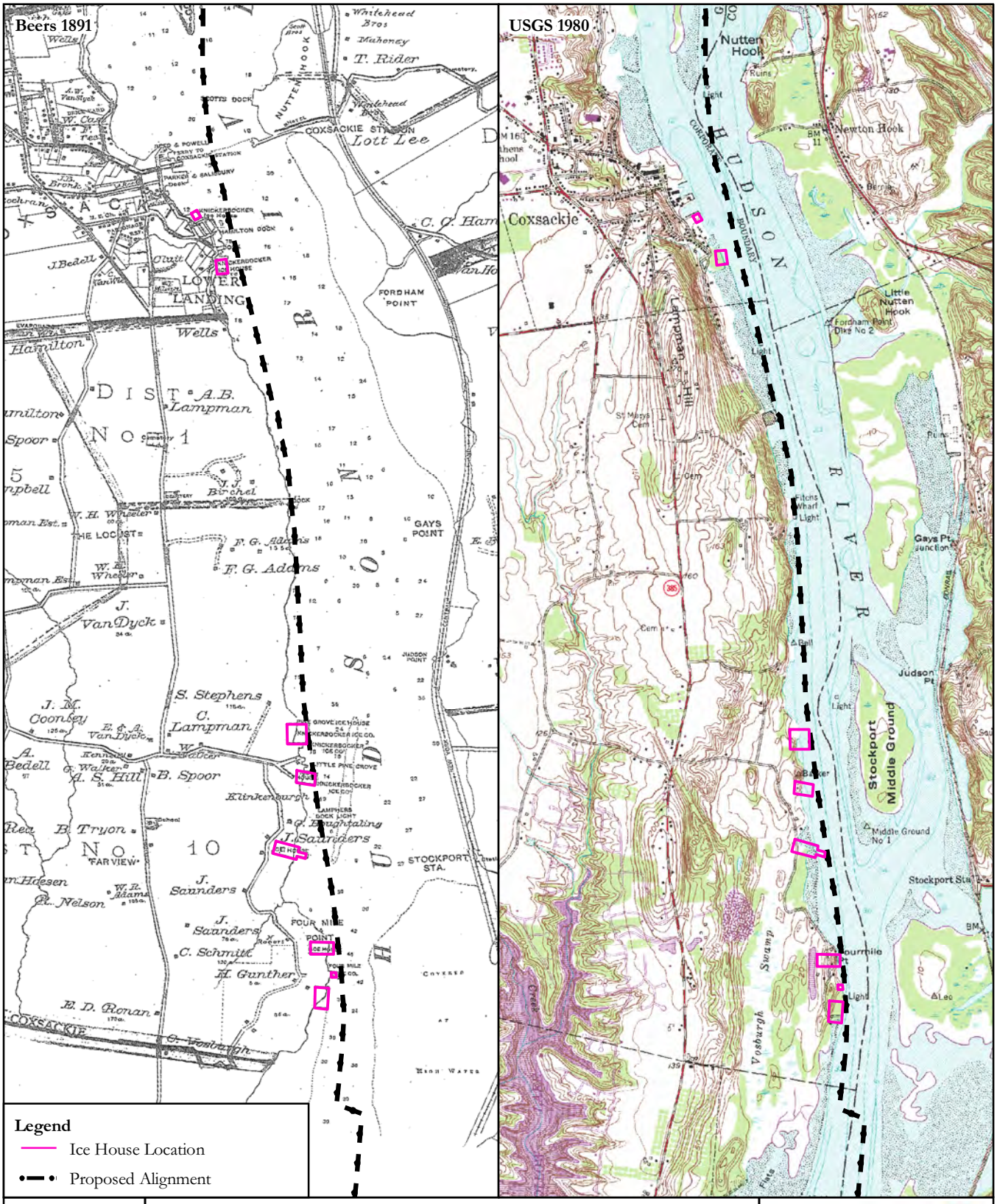
Note: Contour interval is 20 feet.

Project Location and Cultural Resources, Segment 12 (Hartgen 2010)

HARTGEN archeological associates inc

Map 37

ES May 18, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\CulturalResources.mxd

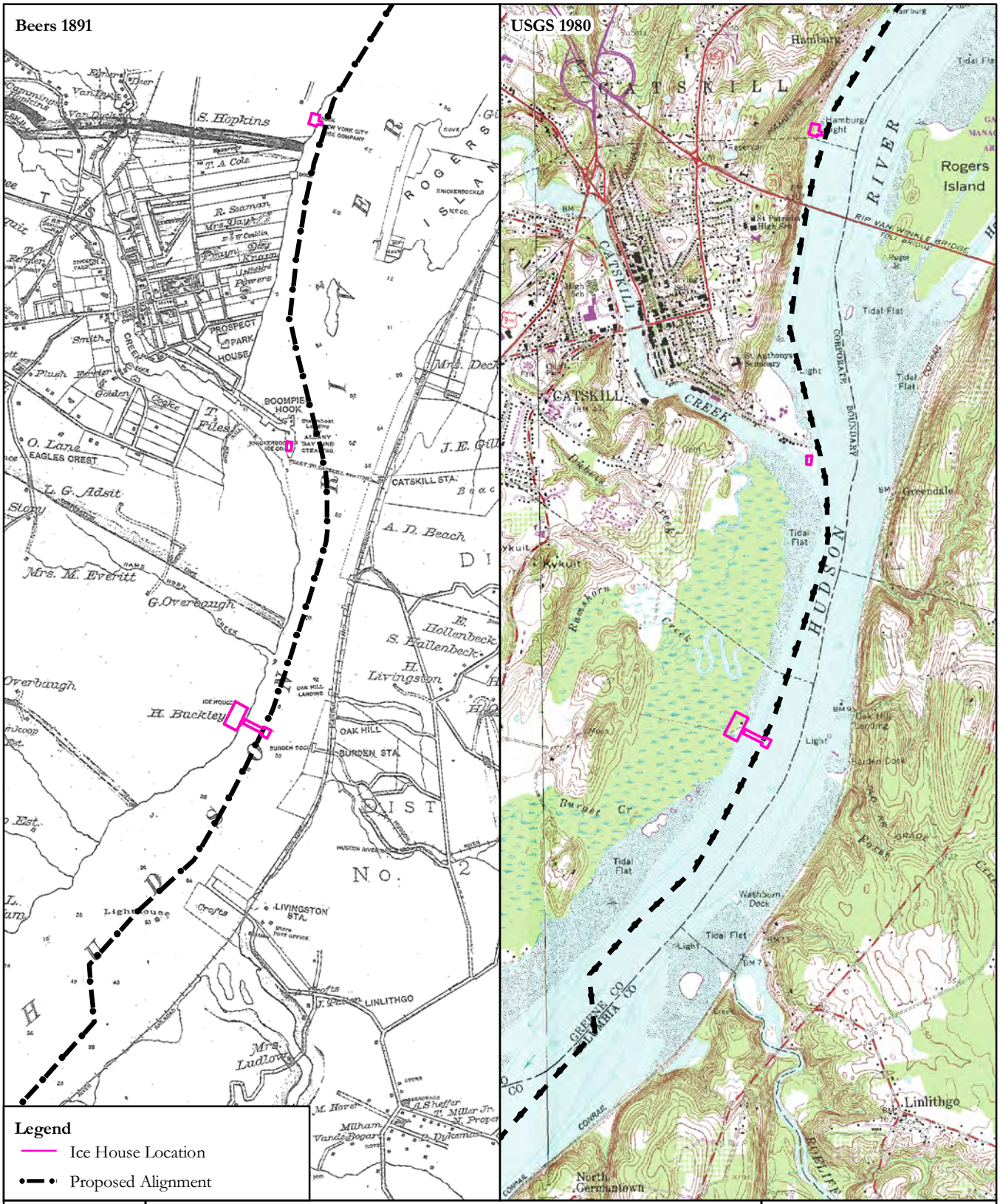


Ice House Locations
Along the Hudson River
(Beers 1891, USGS 1980)

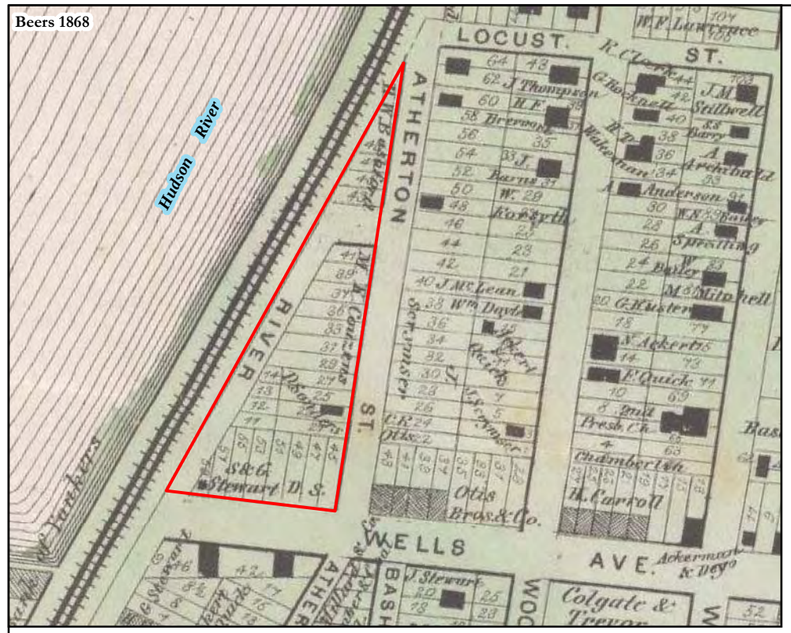
HARTGEN archeological associates inc

Map 38a

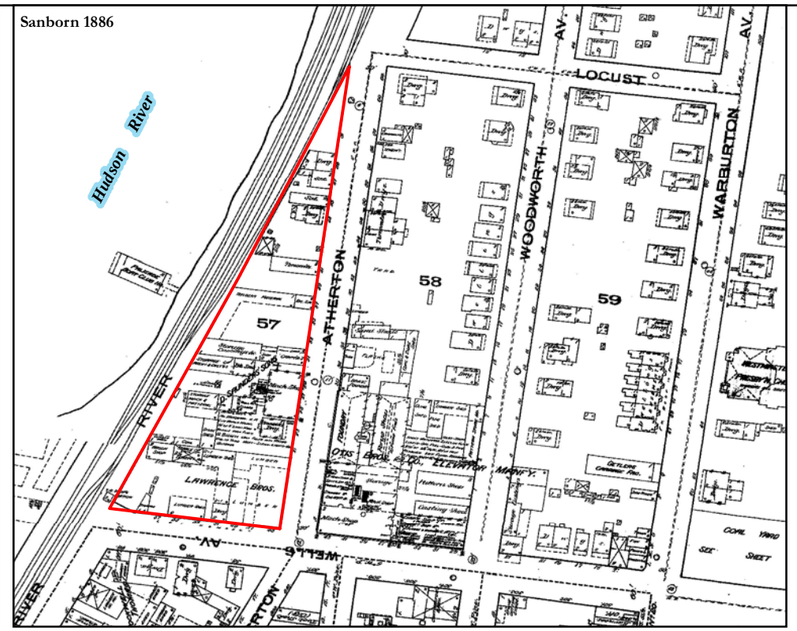
ES May 26, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 38-IceHouses.mxd


Beers 1891
USGS 1980
Legend
Ice House Location
Proposed Alignment
N
1,500 0 1,500 3,000
Feet
400 0 400 800
Meters
Ice House Locations
Along the Hudson River
(Beers 1891, USGS 1980)
HARTGEN
archeological associates inc
Map 38b
ES May 26, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Map 38b-IceHouses.mxd

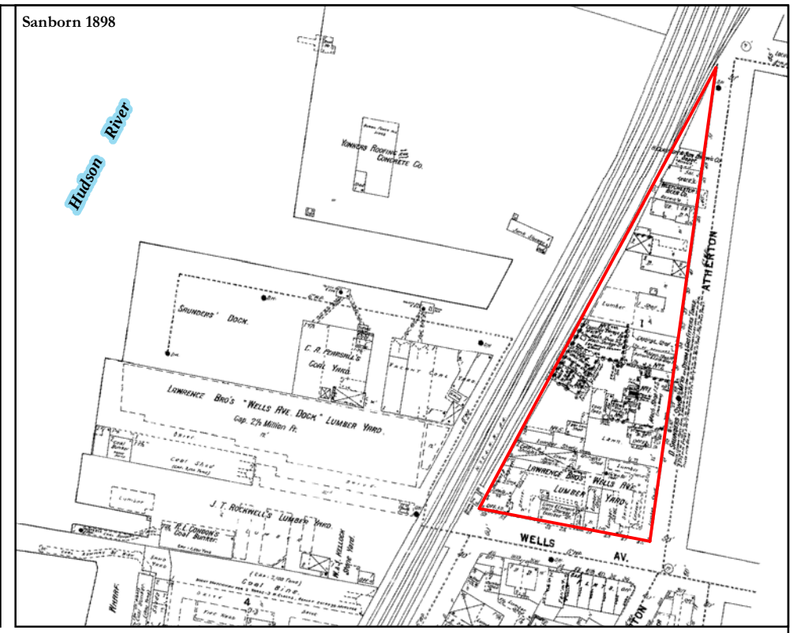
Beers 1868



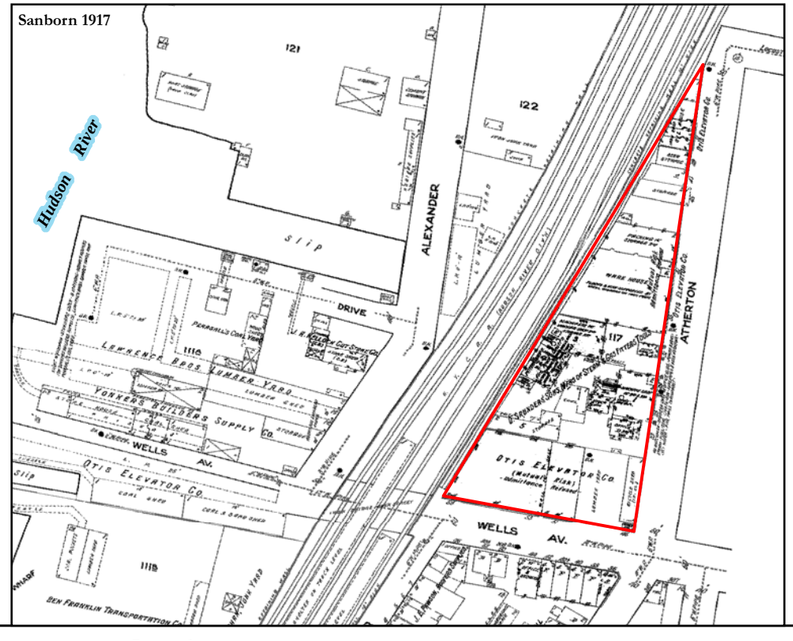
Sanborn 1886



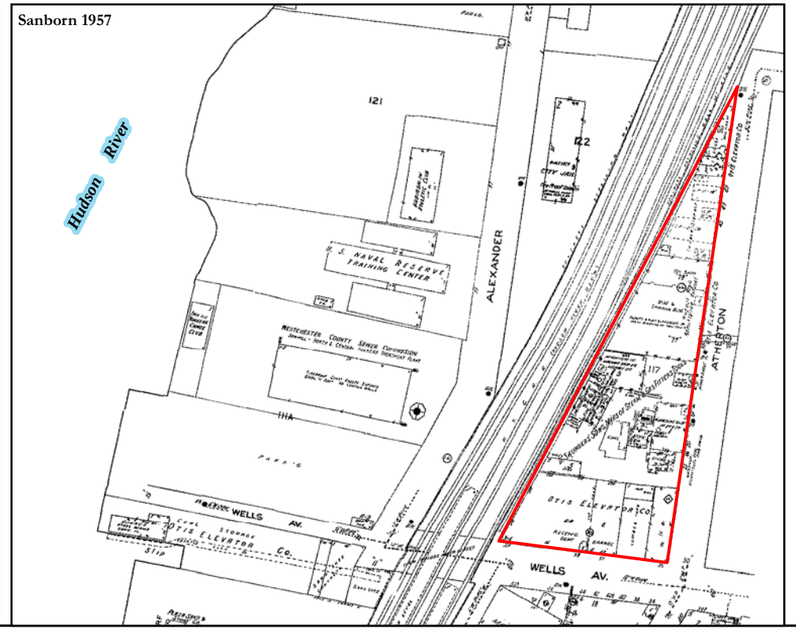
Sanborn 1898



Sanborn 1917



Sanborn 1957



N

100 0 100 200 Feet

30 0 30 60 Meters

Legend

Yonkers Converter Station APE

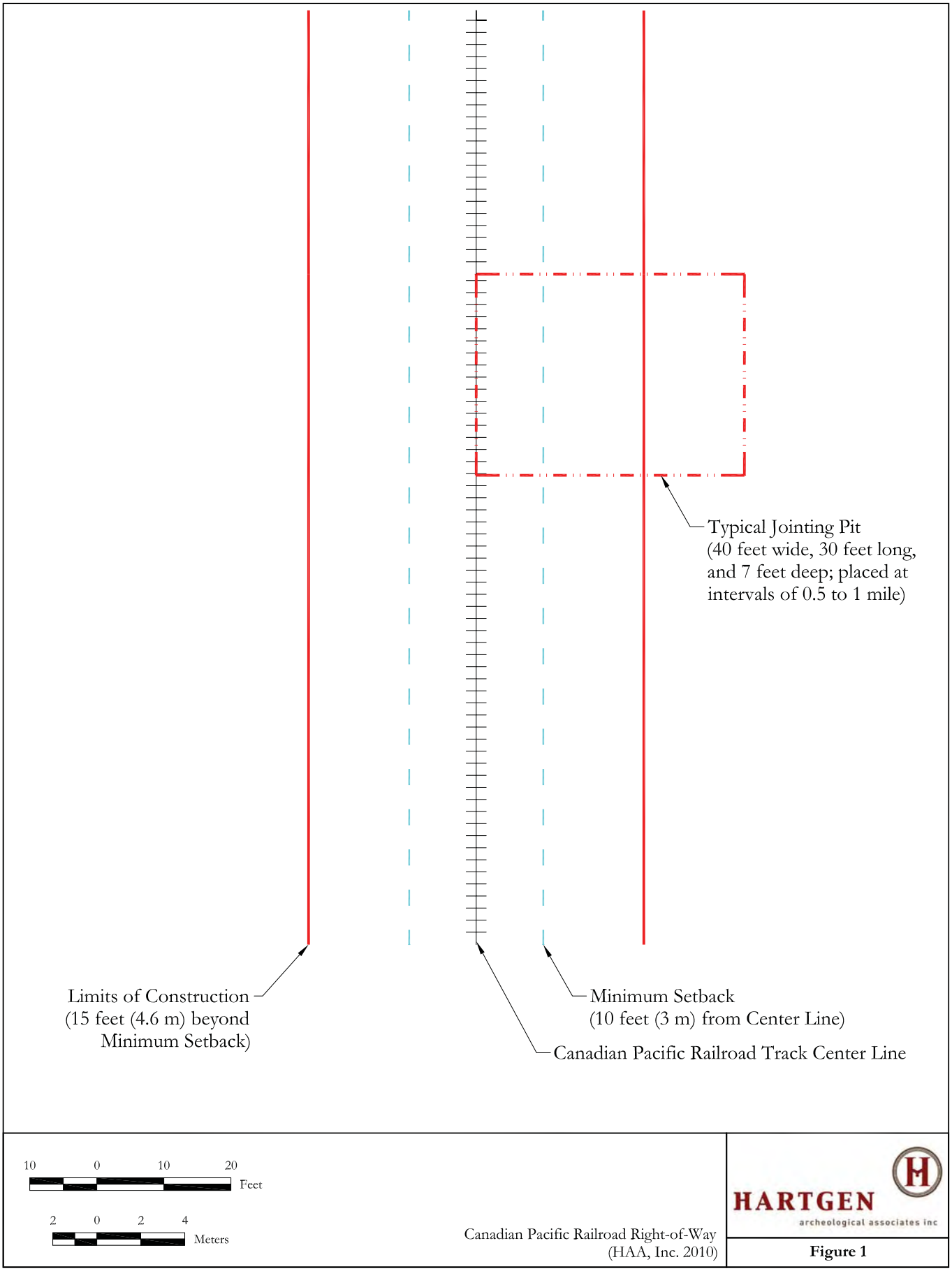
Historic Map Progression, Yonkers Converter Station
(Beers 1868; Sanborn 1886, 1898, 1917, 1957)

HARTGEN archeological associates inc

Map 39

IS May 26, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268 11\Maps\GIS\Map 39-Yonkers.mxd

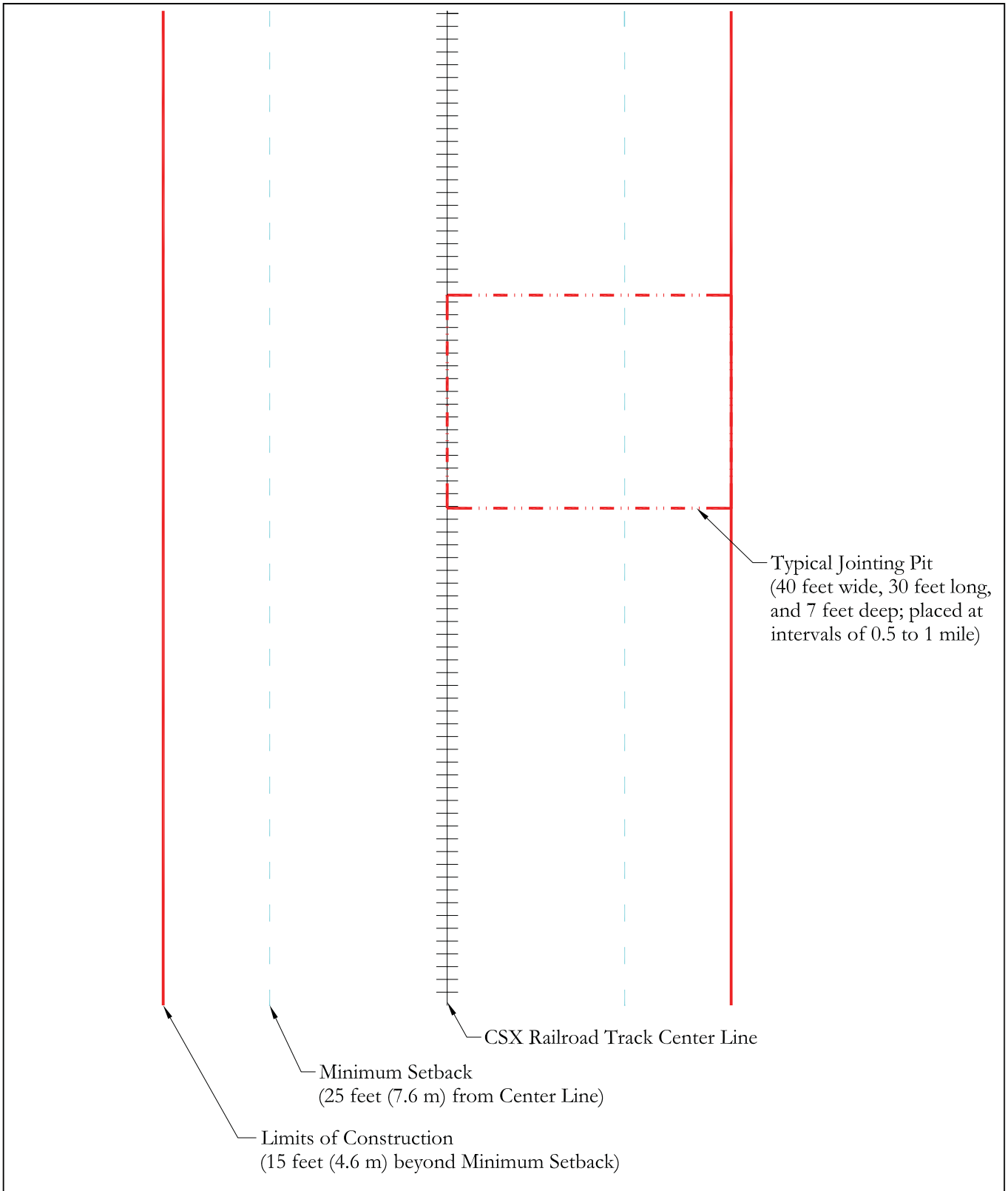
FIGURES



Canadian Pacific Railroad Right-of-Way
(HAA, Inc. 2010)

HARTGEN archeological associates inc

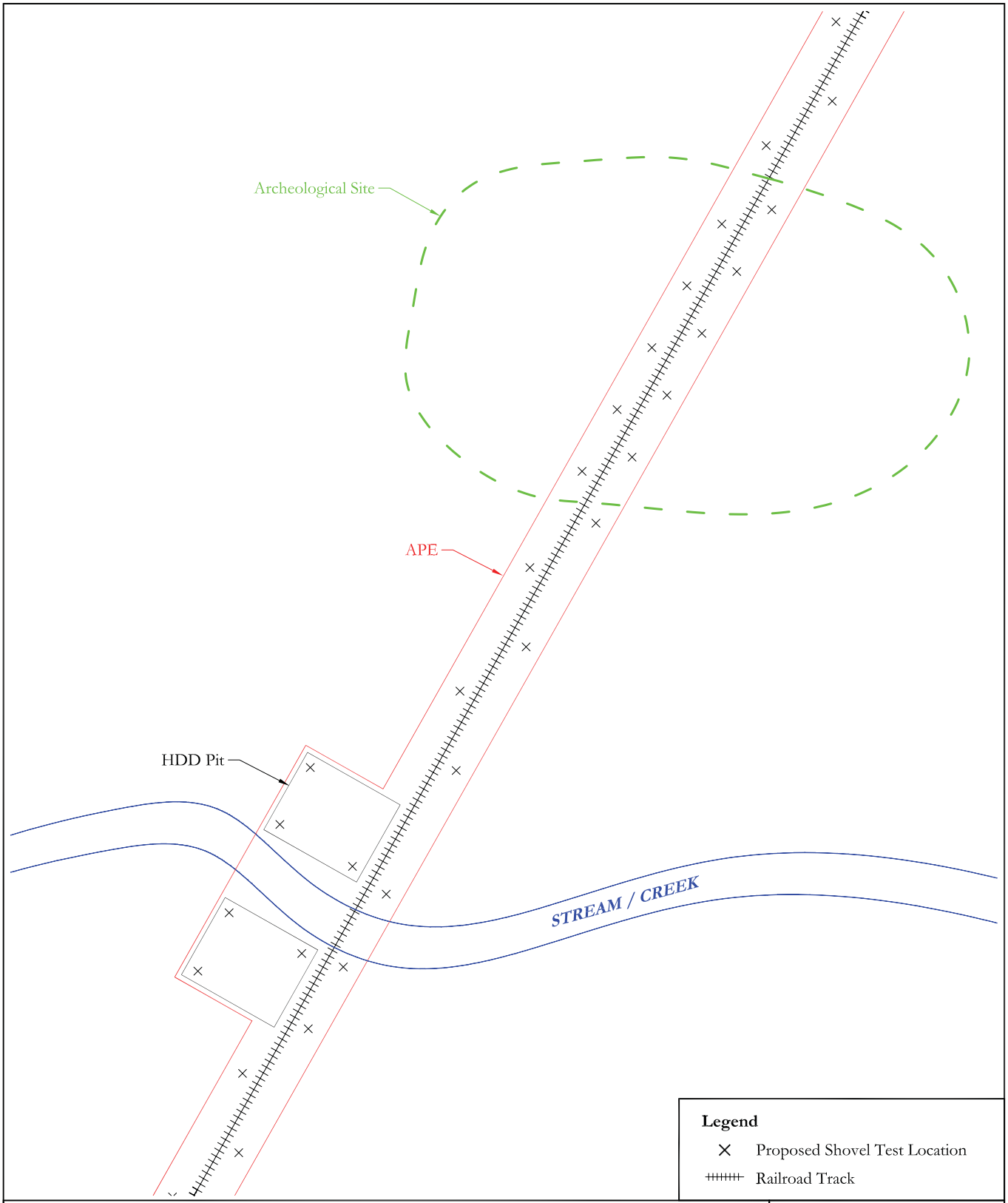
Figure 1



CSX Transportation, Inc. Railroad Right-of-Way
(HAA, Inc. 2010)

HARTGEN archeological associates inc

Figure 2



Proposed Testing Strategy - Single-track Area
(HAA, Inc. 2010)

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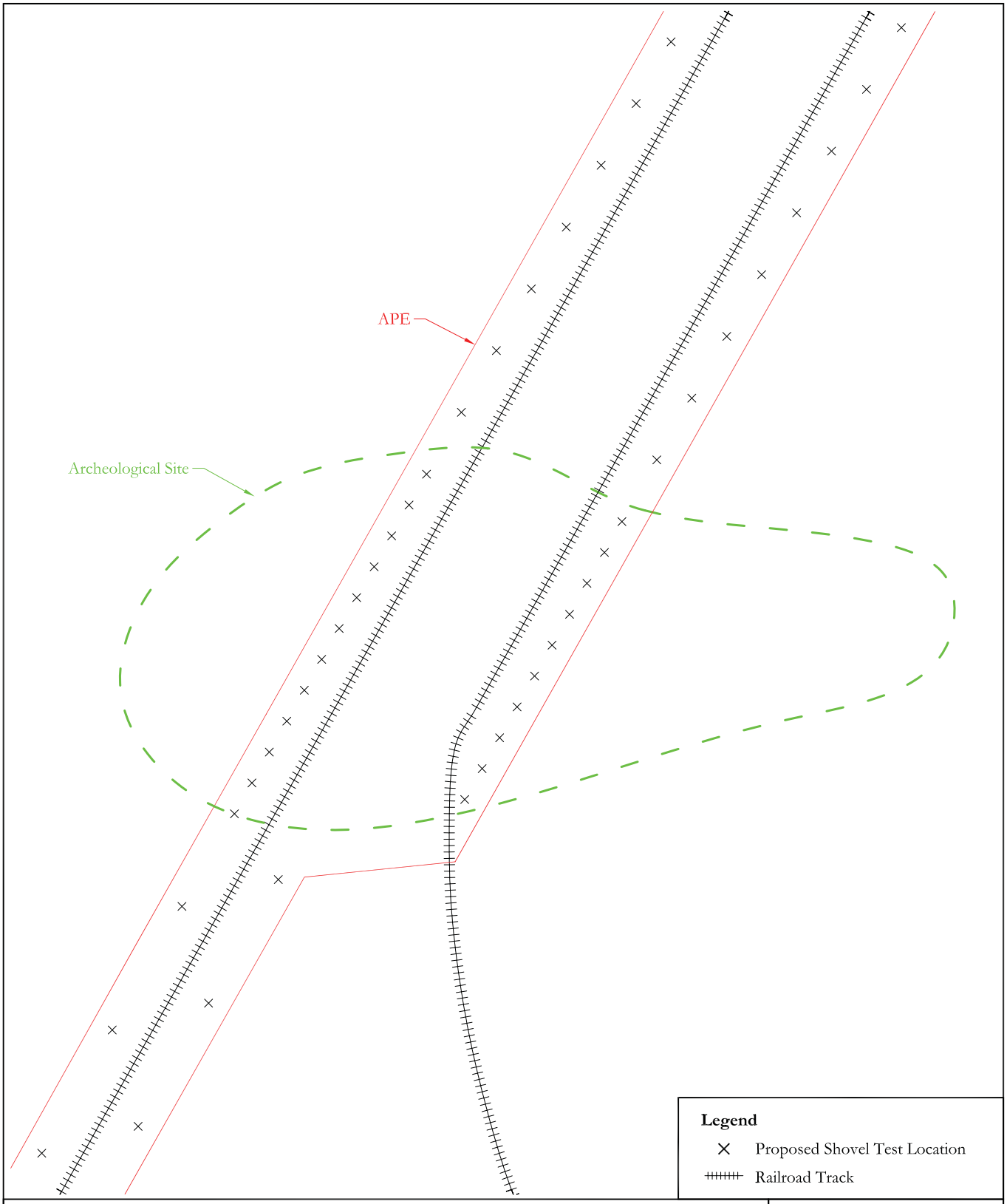
Figure 3



Proposed Testing Strategy - Multiple-track Area
(HAA, Inc. 2010)

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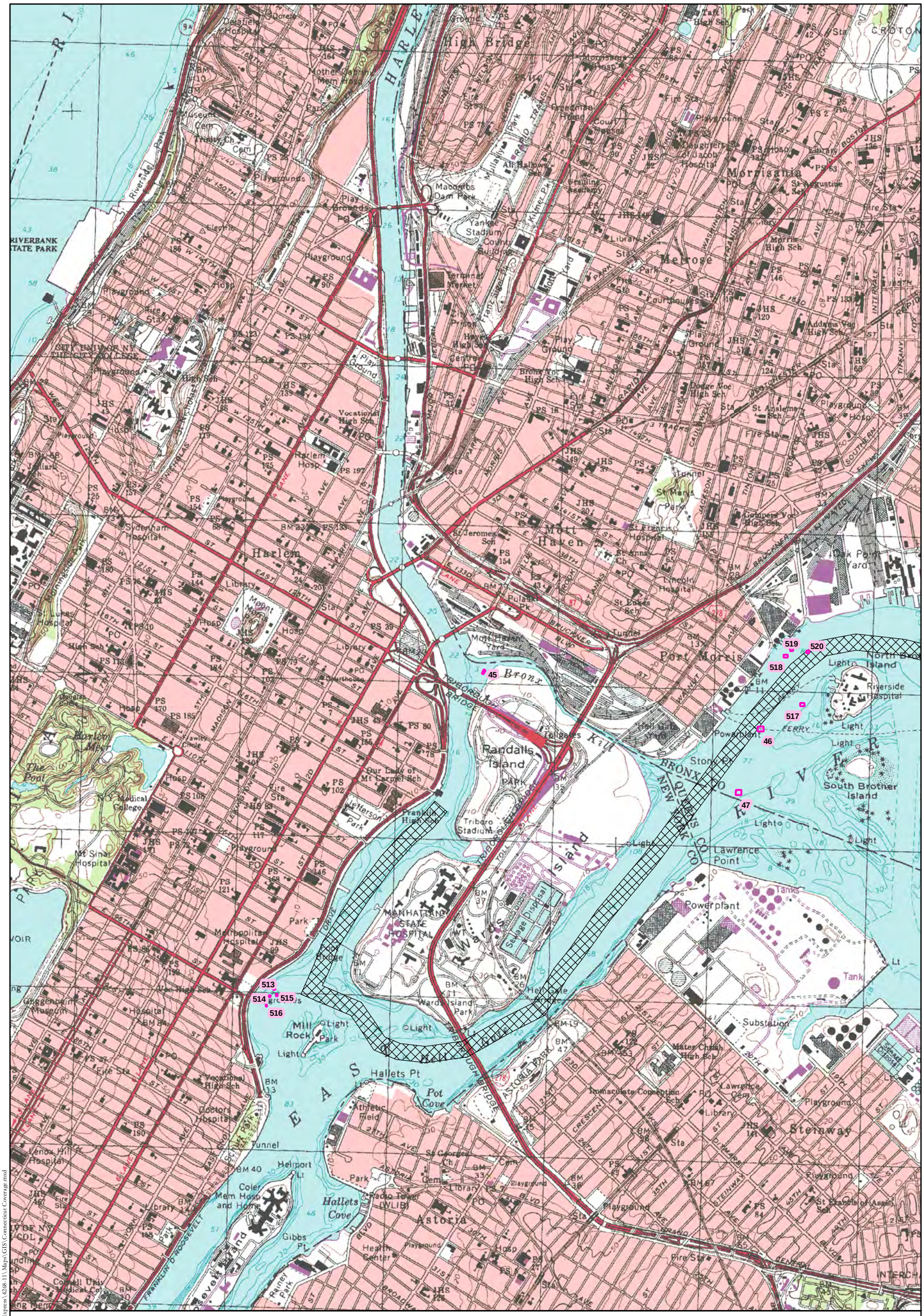
Figure 4

APPENDIX 2: Long Island Sound Shipwreck Locations, within Connecticut (Heritage Consultants LLC 2007; Maps A1-A15)

PLEASE NOTE

ARCHEOLOGICAL SITES AND SHIPWRECK LOCATIONS ARE CONSIDERED PRIVLEDGED AND CONFIDENTIAL INFORMATION

MAPS WITH SITE LOCATIONS ARE NOT TO BE MADE AVAILABLE TO THE PUBLIC


513
514
515
516
45
46
47
517
518
519
520
Legend
Shipwreck Location
CT# Shipwreck ID (See Table A1)
Project Alignment (Including Study Corridors)
Converter Station Footprint
Underground Cable to Converter Station
Construction Corridor
N
1,000 0 1,000 2,000 Feet
300 0 300 600 Meters
Note: Contour interval is 10 feet.
Confidential, Not for Public Disclosure.
Long Island Sound Shipwreck Locations, within Connecticut (Heritage Consultants LLC 2007)
HARTGEN archeological associates inc
A1
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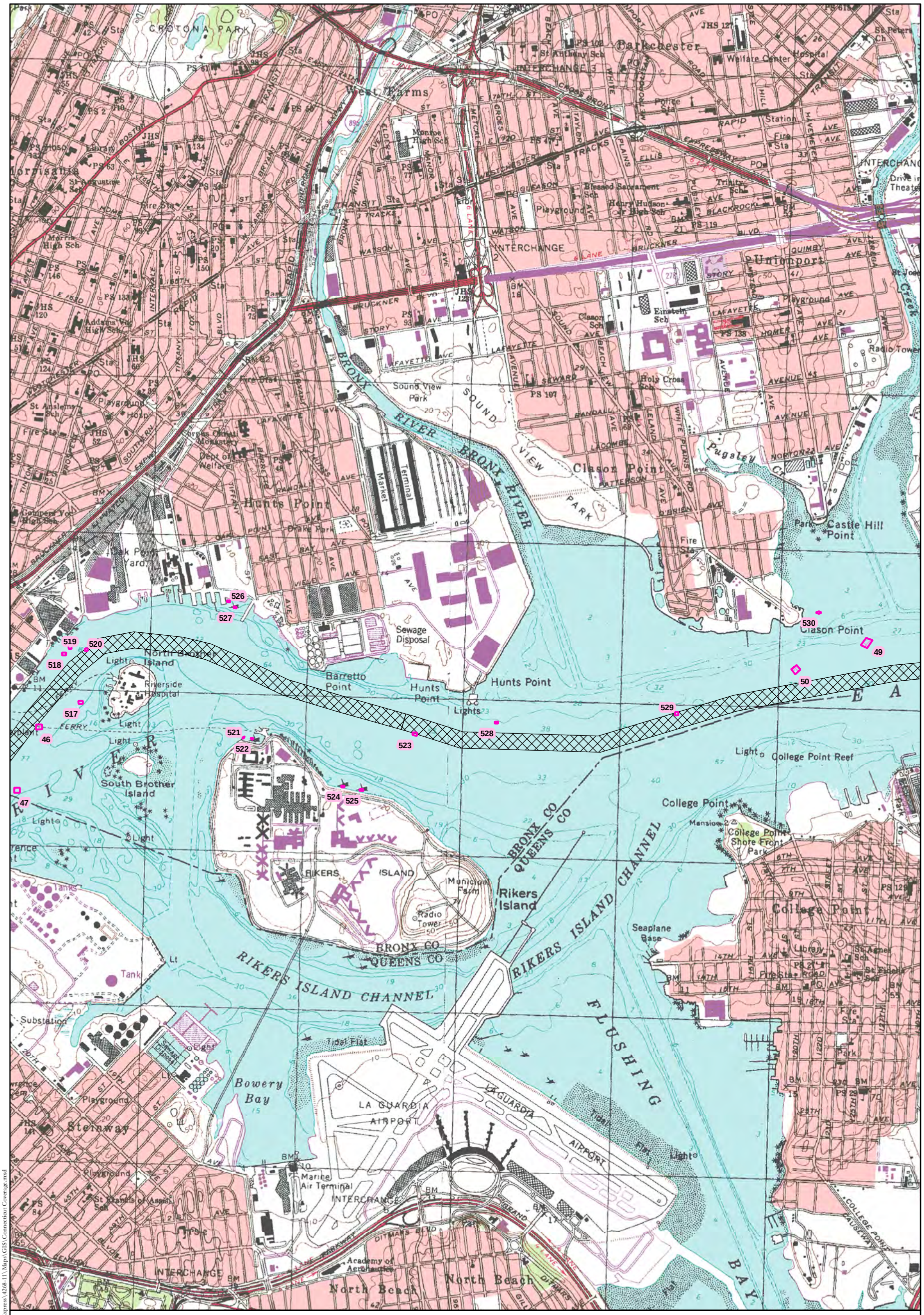

Legend

- Shipwreck Location
- CT# Shipwreck ID (See Table A1)
- Project Alignment (Including Study Corridors)
- Converter Station Footprint
- Underground Cable to Converter Station
- Construction Corridor

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

Note: Contour interval is 10 feet.

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Long Island Sound Shipwreck Locations, within Connecticut (Heritage Consultants LLC 2007)

HARTGEN archeological associates inc

A2

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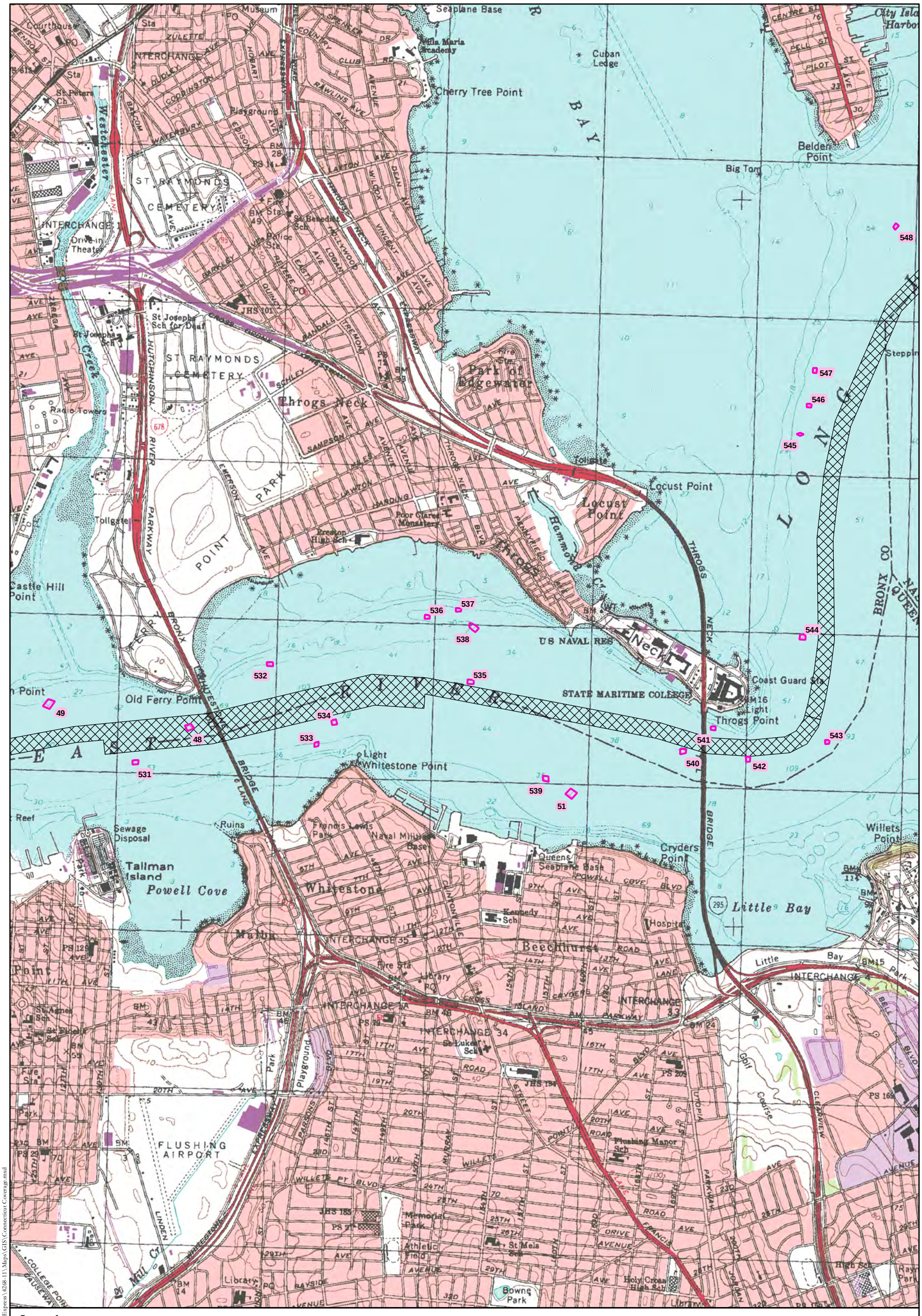

Legend

- Shipwreck Location
- CT# Shipwreck ID (See Table A1)
- Project Alignment (Including Study Corridors)
- Converter Station Footprint
- Underground Cable to Converter Station
- Construction Corridor

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

Note: Contour interval is 10 feet.

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Long Island Sound Shipwreck Locations, within Connecticut
(Heritage Consultants LLC 2007)

HARTGEN archeological associates inc

A3

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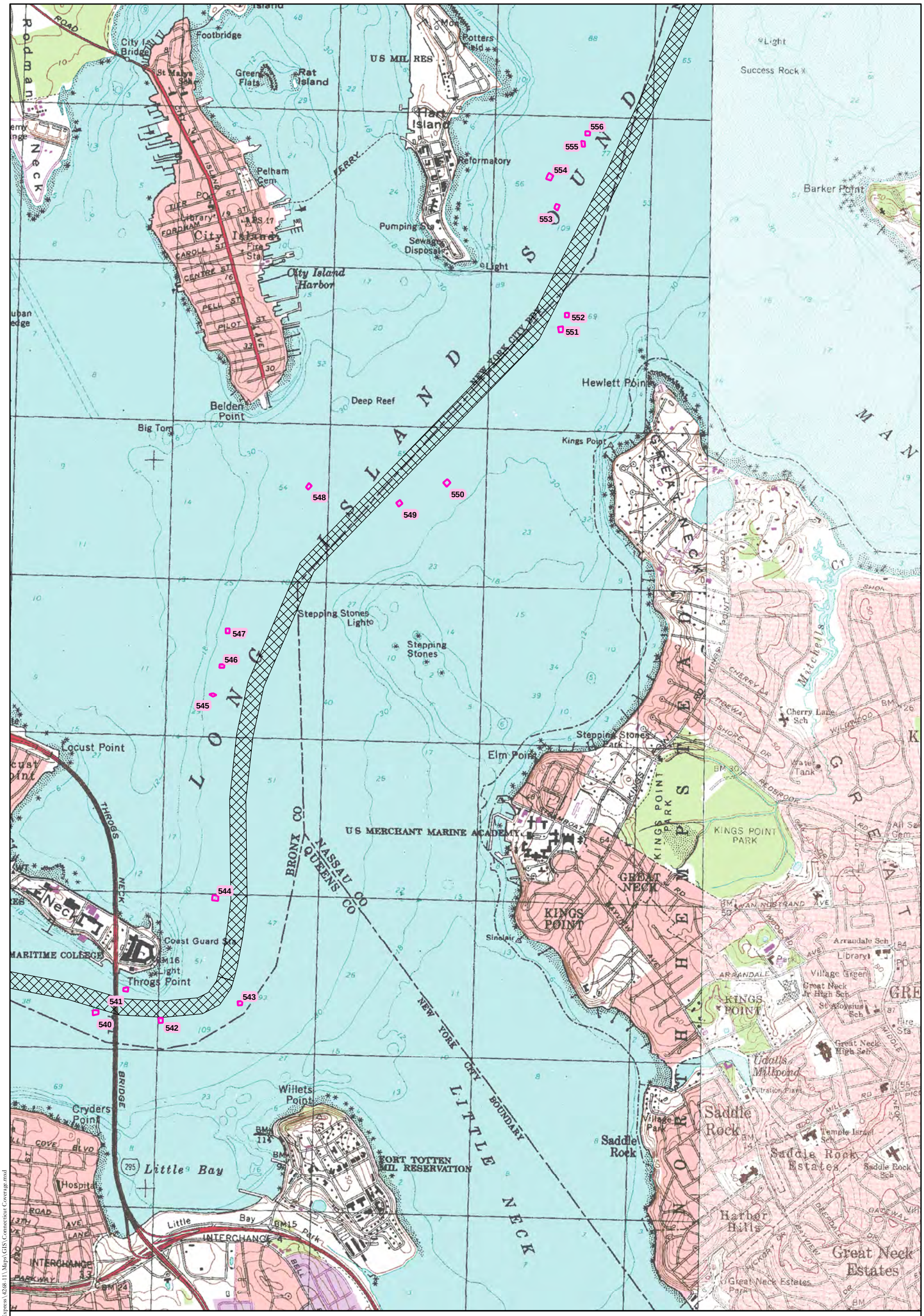

Legend

- Shipwreck Location
- CT# Shipwreck ID (See Table A1)
- Project Alignment (Including Study Corridors)
- Converter Station Footprint
- Underground Cable to Converter Station
- Construction Corridor

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

Note: Contour interval is 10 feet.

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Long Island Sound Shipwreck Locations, within Connecticut
(Heritage Consultants LLC 2007)

HARTGEN archeological associates inc

A4

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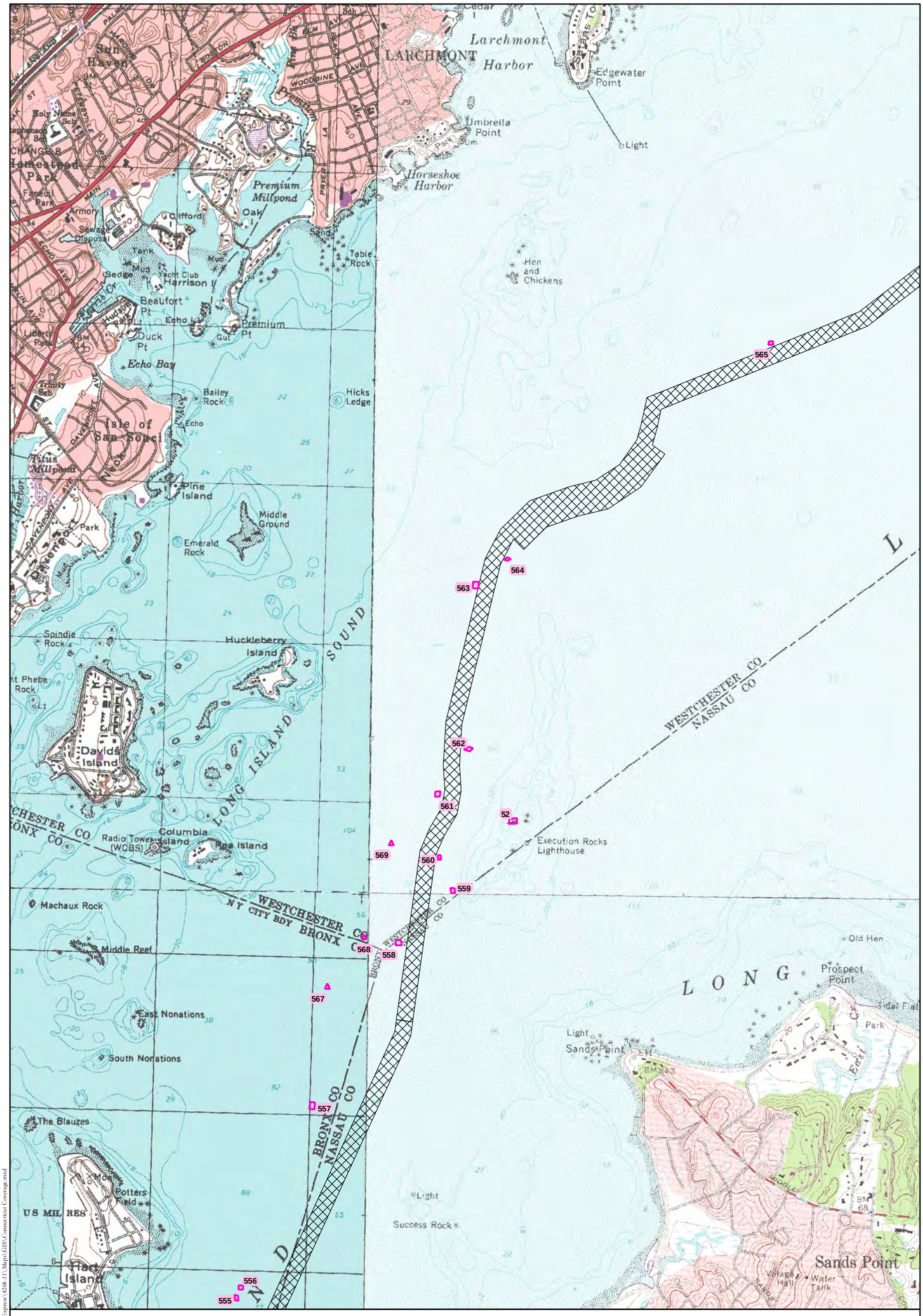

Legend

- Shipwreck Location
- CT# Shipwreck ID (See Table A1)
- Project Alignment (Including Study Corridors)
- Converter Station Footprint
- Underground Cable to Converter Station
- Construction Corridor

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

Note: Contour interval is 10 feet.

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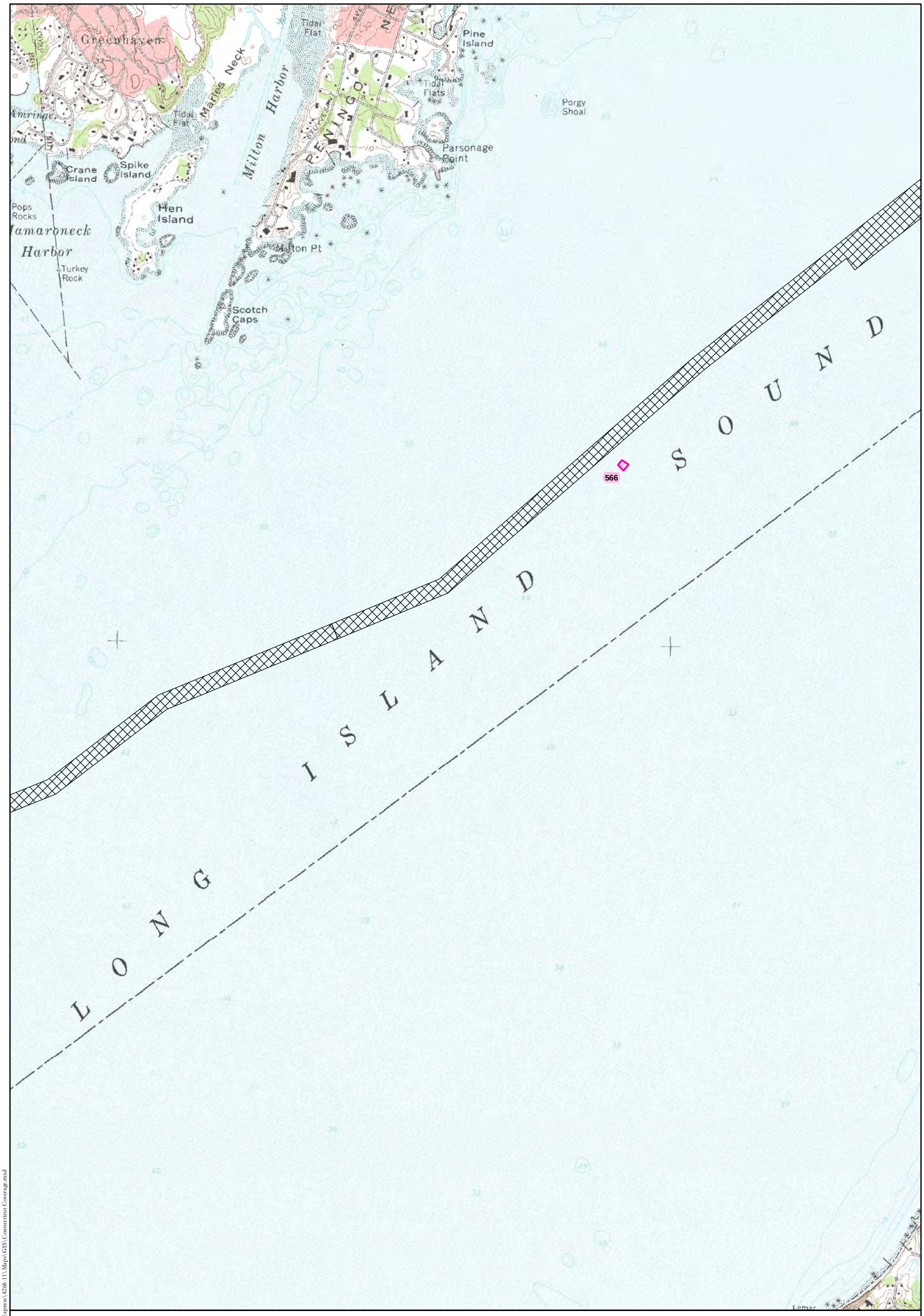
Long Island Sound Shipwreck Locations, within Connecticut
(Heritage Consultants LLC 2007)

HARTGEN archeological associates inc

A5

ES June 4, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Connecticut Coverage.mxd



Legend

- Shipwreck Location
- CT# Shipwreck ID (See Table A1)
- Project Alignment (Including Study Corridors)
- Converter Station Footprint
- Underground Cable to Converter Station
- Construction Corridor

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

Note: Contour interval is 10 feet.

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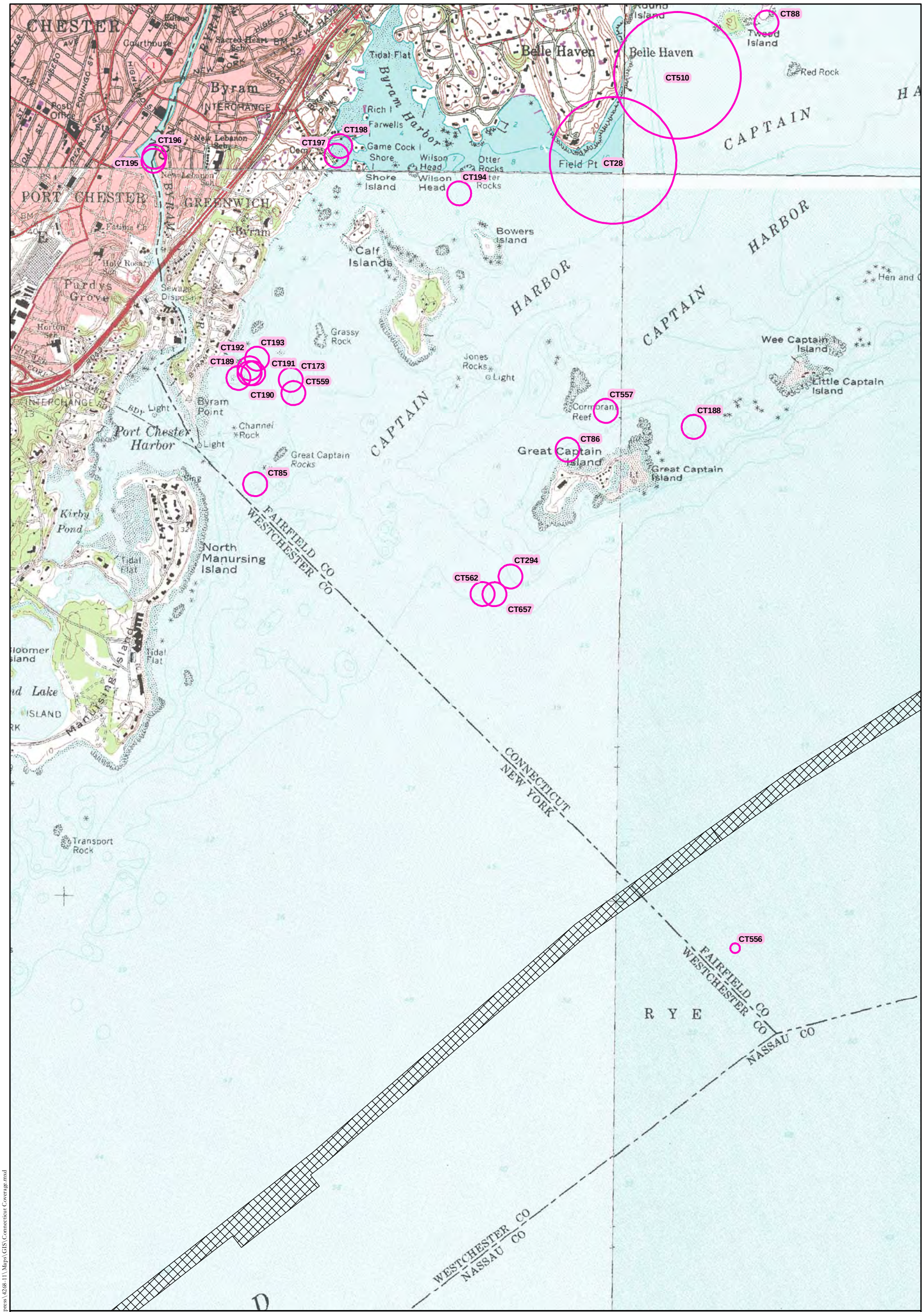
Long Island Sound Shipwreck Locations, within Connecticut
(Heritage Consultants LLC 2007)

HARTGEN archeological associates inc

A6

ES June 4, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Connecticut Coverage.mxd



Legend

- Shipwreck Location
- CT# Shipwreck ID (See Table A1)
- Project Alignment (Including Study Corridors)
- Converter Station Footprint
- Underground Cable to Converter Station
- Construction Corridor

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

Note: Contour interval is 10 feet.

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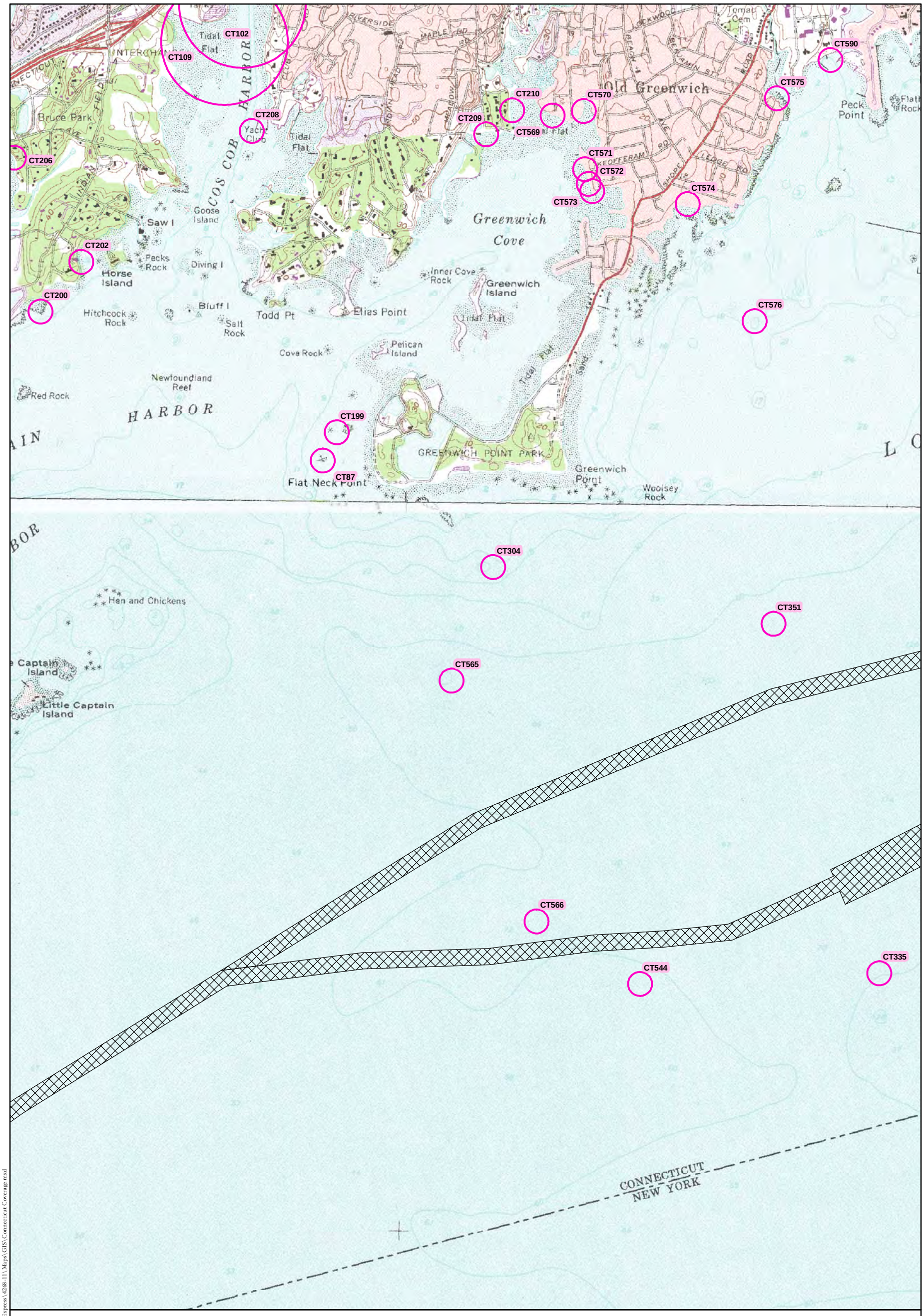
Long Island Sound Shipwreck Locations, within Connecticut
(Heritage Consultants LLC 2007)

HARTGEN archeological associates inc

A7

ES June 4, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Connecticut Coverage.mxd



Legend

- Shipwreck Location
- CT# Shipwreck ID (See Table A1)
- Project Alignment (Including Study Corridors)
- Converter Station Footprint
- Underground Cable to Converter Station
- Construction Corridor

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

Note: Contour interval is 10 feet.

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Long Island Sound Shipwreck Locations, within Connecticut
(Heritage Consultants LLC 2007)

HARTGEN archeological associates inc

A8

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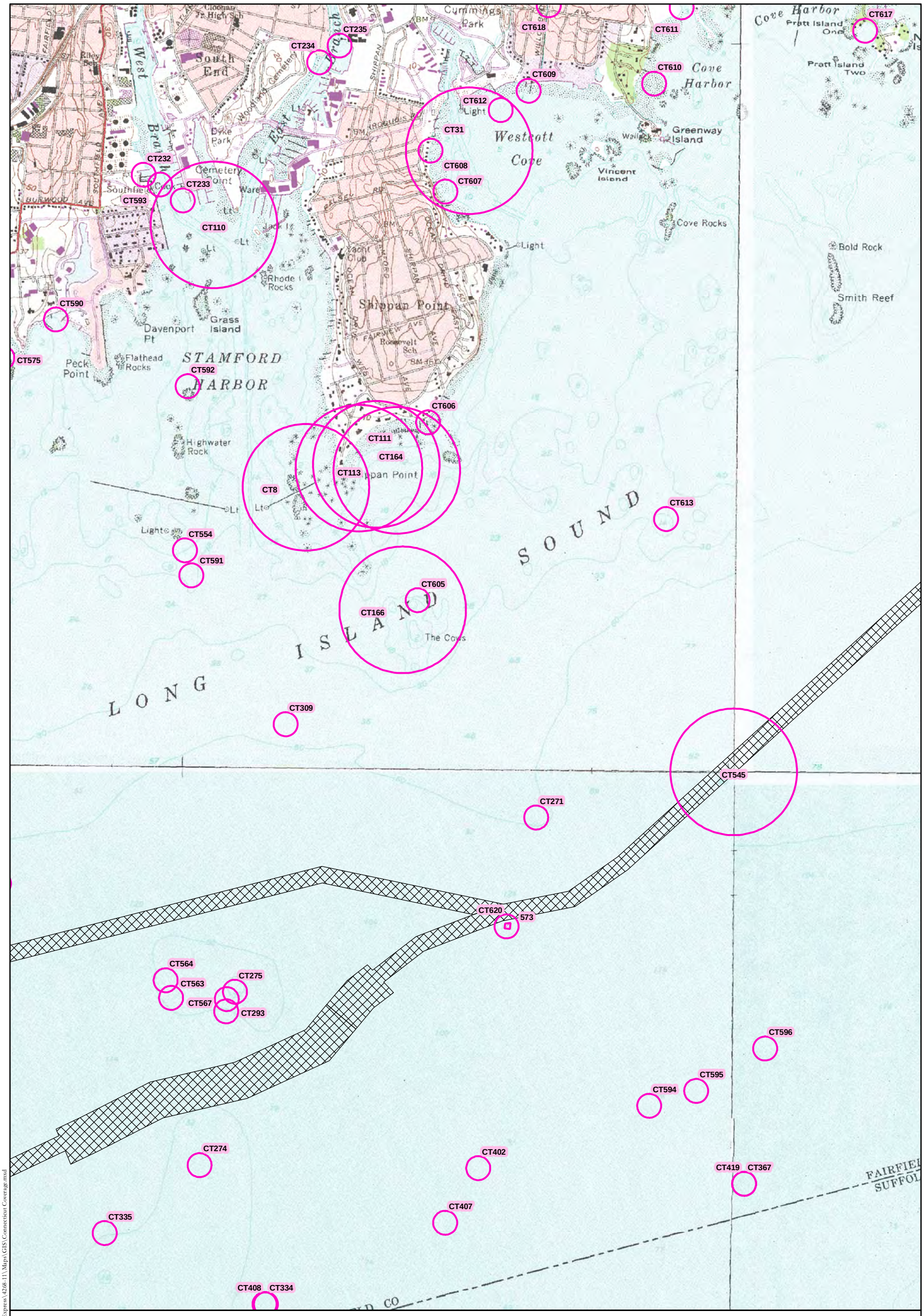

Legend

- Shipwreck Location
- CT# Shipwreck ID (See Table A1)
- Project Alignment (Including Study Corridors)
- Converter Station Footprint
- Underground Cable to Converter Station
- Construction Corridor

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

Note: Contour interval is 10 feet.

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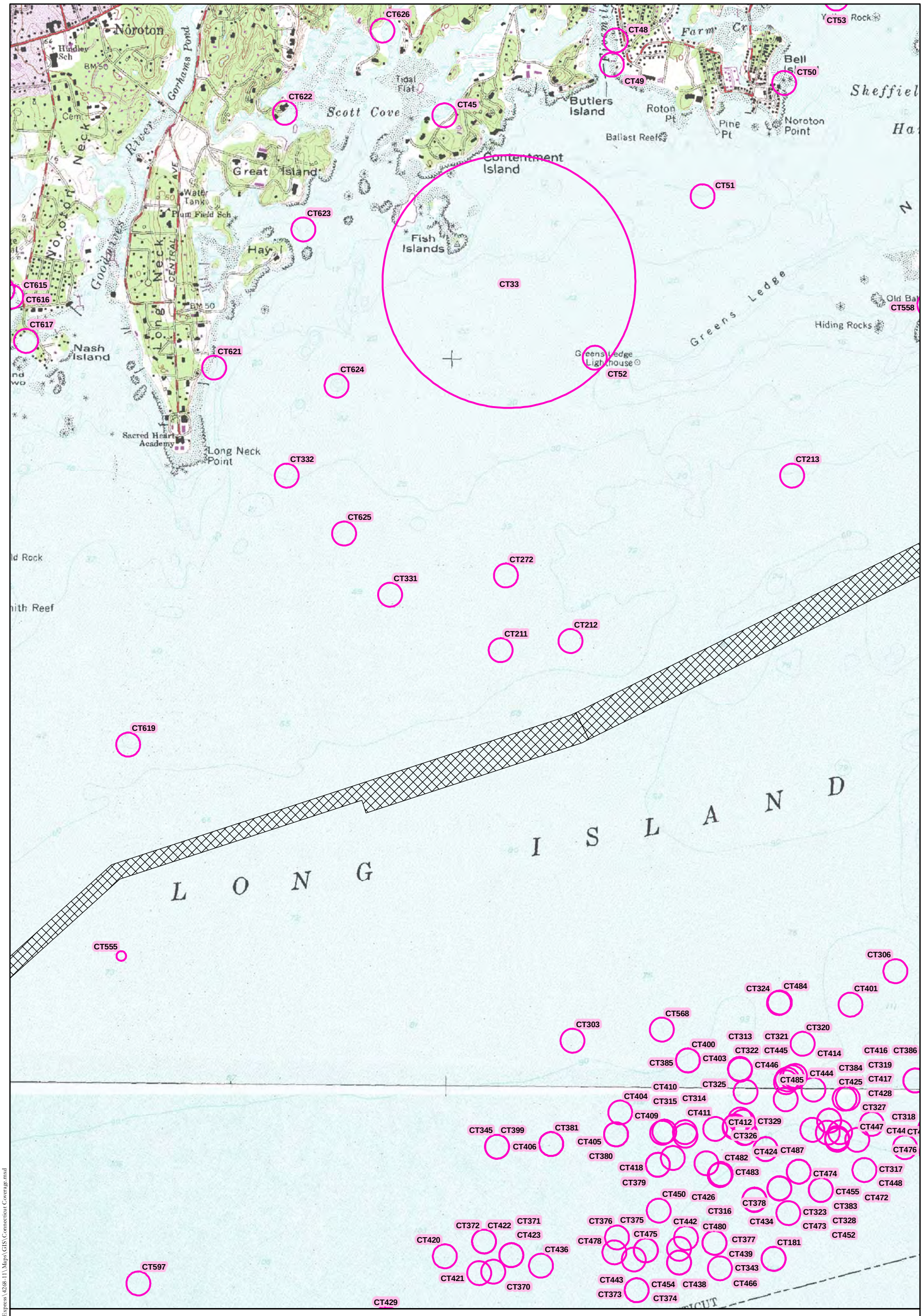
Long Island Sound Shipwreck Locations, within Connecticut
(Heritage Consultants LLC 2007)

HARTGEN archeological associates inc

A9

ES June 4, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Connecticut Coverage.mxd



Legend

- Shipwreck Location
- CT# Shipwreck ID (See Table A1)
- Project Alignment (Including Study Corridors)
- Converter Station Footprint
- Underground Cable to Converter Station
- Construction Corridor

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

Note: Contour interval is 10 feet.

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Long Island Sound Shipwreck Locations, within Connecticut
(Heritage Consultants LLC 2007)

HARTGEN archeological associates inc

A10

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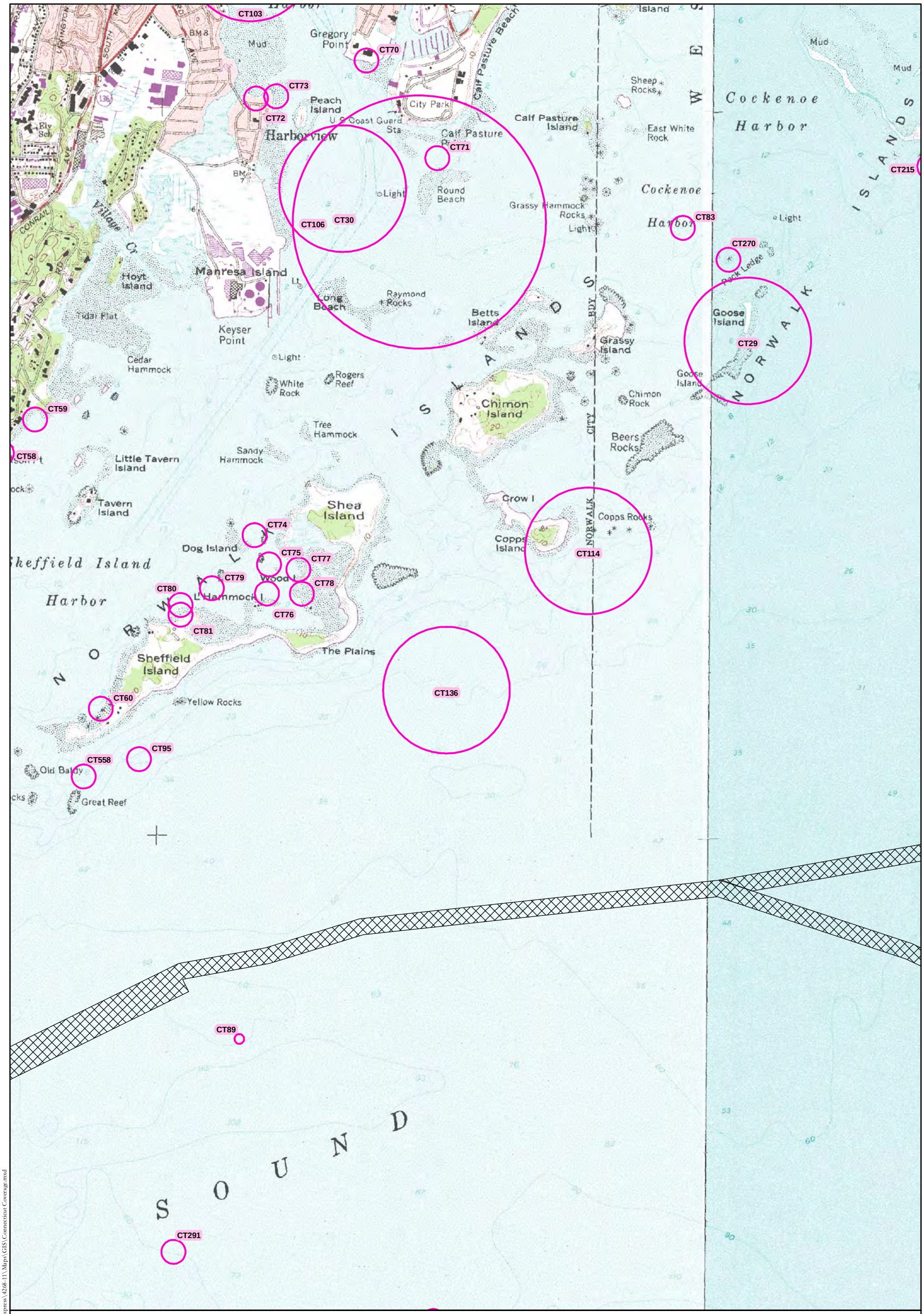

Legend

- Shipwreck Location
- CT# Shipwreck ID (See Table A1)
- Project Alignment (Including Study Corridors)
- Converter Station Footprint
- Underground Cable to Converter Station
- Construction Corridor

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

Note: Contour interval is 10 feet.

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Long Island Sound Shipwreck Locations, within Connecticut
(Heritage Consultants LLC 2007)

HARTGEN archeological associates inc

A11

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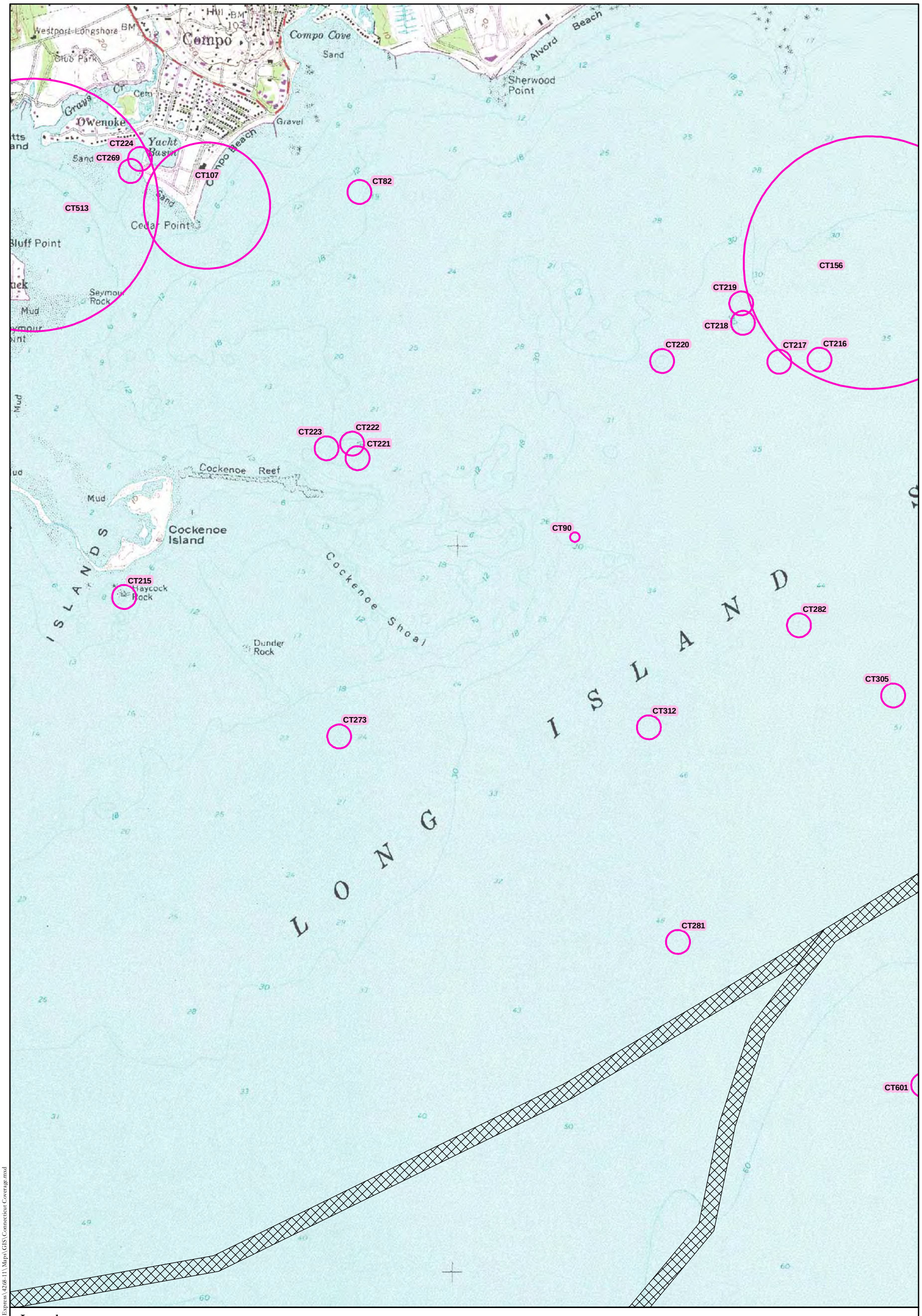

Legend

- Shipwreck Location
- CT# Shipwreck ID (See Table A1)
- Project Alignment (Including Study Corridors)
- Converter Station Footprint
- Underground Cable to Converter Station
- Construction Corridor

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

Note: Contour interval is 10 feet.

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Long Island Sound Shipwreck Locations, within Connecticut
(Heritage Consultants LLC 2007)

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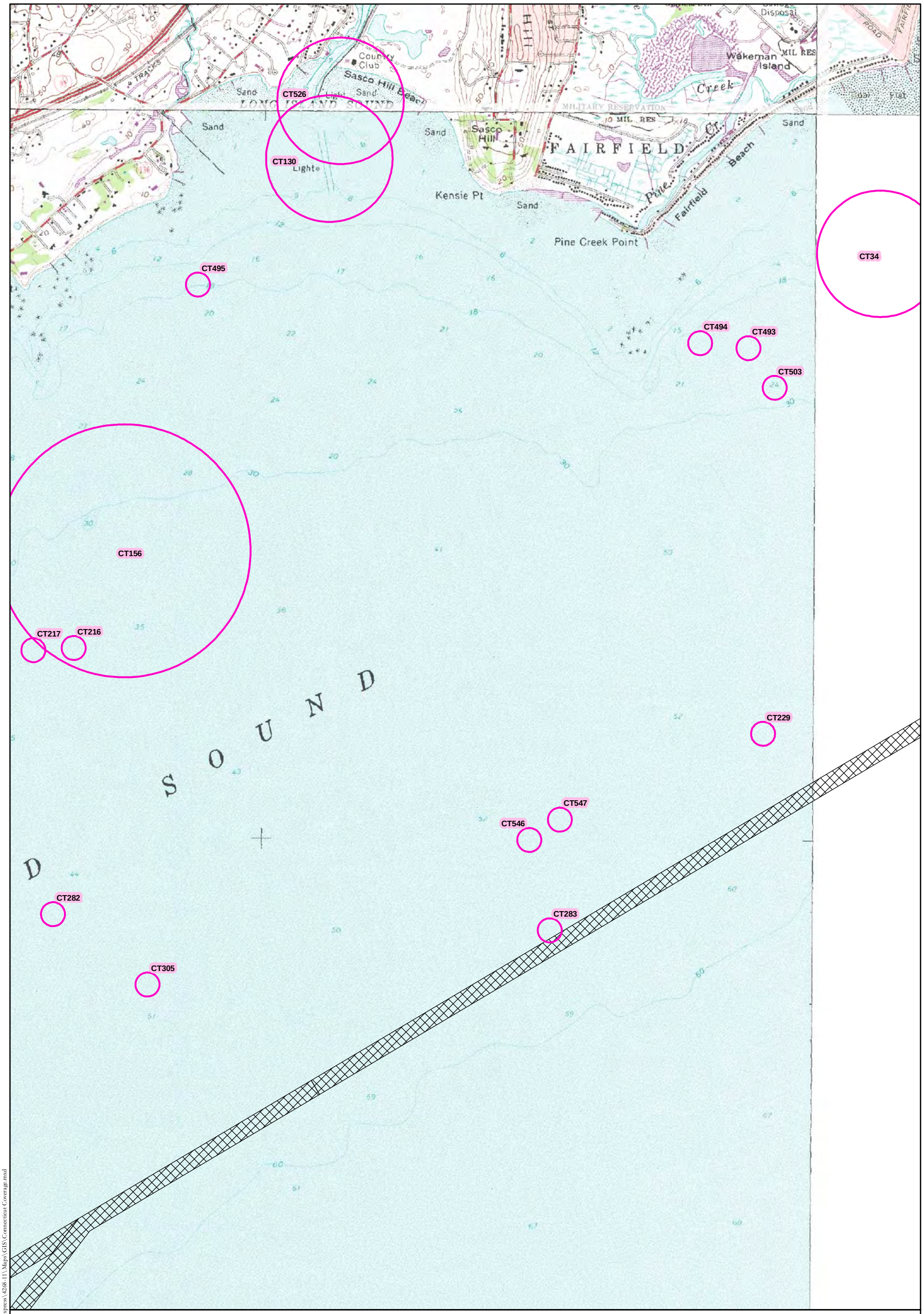
A12

ES June 4, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-111\Maps\GIS\Connecticut Coverage.mxd



Legend

- Shipwreck Location
- CT# Shipwreck ID (See Table A1)
- Project Alignment (Including Study Corridors)
- Converter Station Footprint
- Underground Cable to Converter Station
- Construction Corridor

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

Note: Contour interval is 10 feet.

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Long Island Sound Shipwreck Locations,
within Connecticut
(Heritage Consultants LLC 2007)

HARTGEN archeological associates inc

A13

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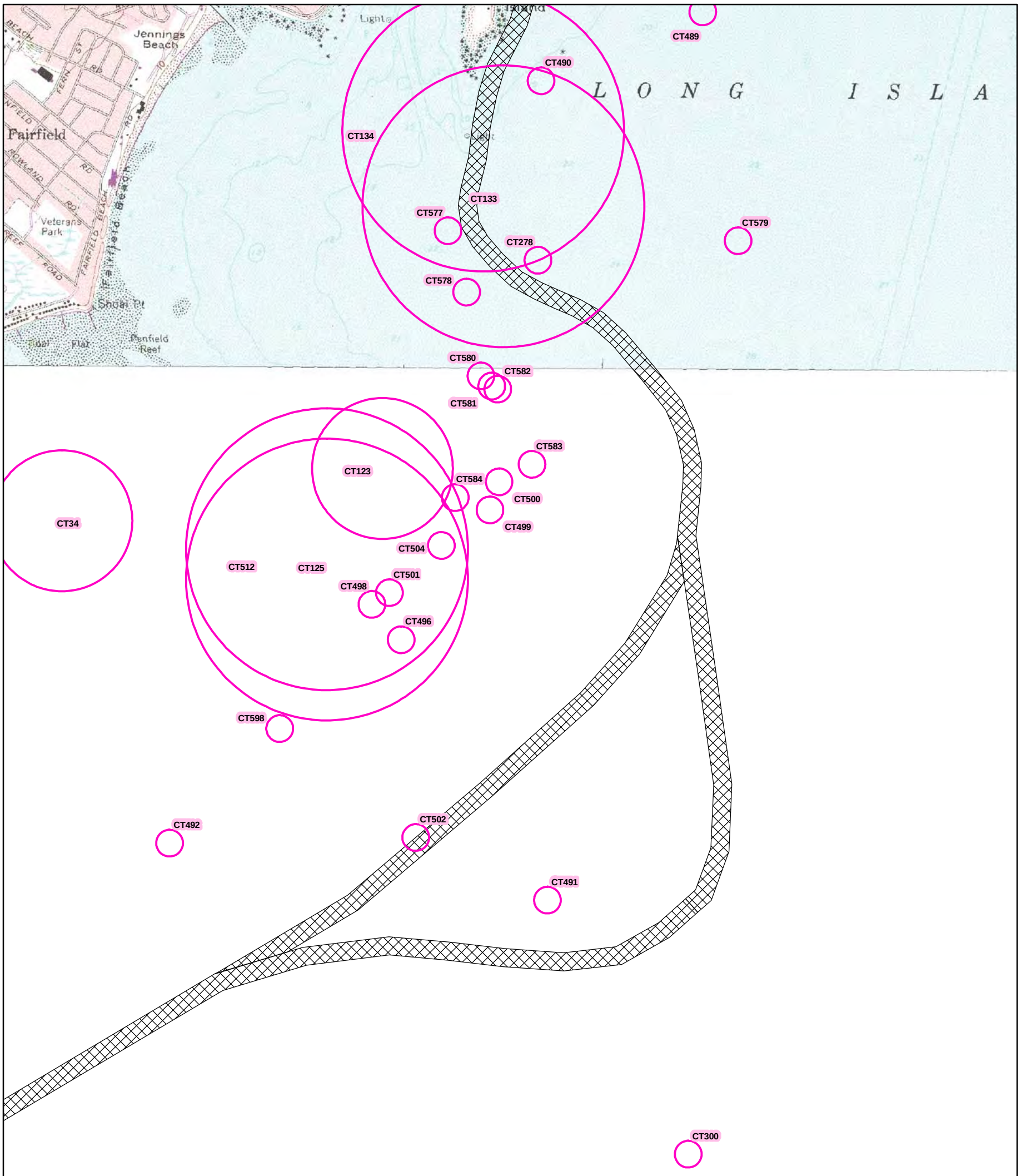

Legend

- Shipwreck Location
- CT# Shipwreck ID (See Table A1)
- Project Alignment (Including Study Corridors)
- Converter Station Footprint
- Underground Cable to Converter Station
- Construction Corridor

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

Note: Contour interval is 10 feet.

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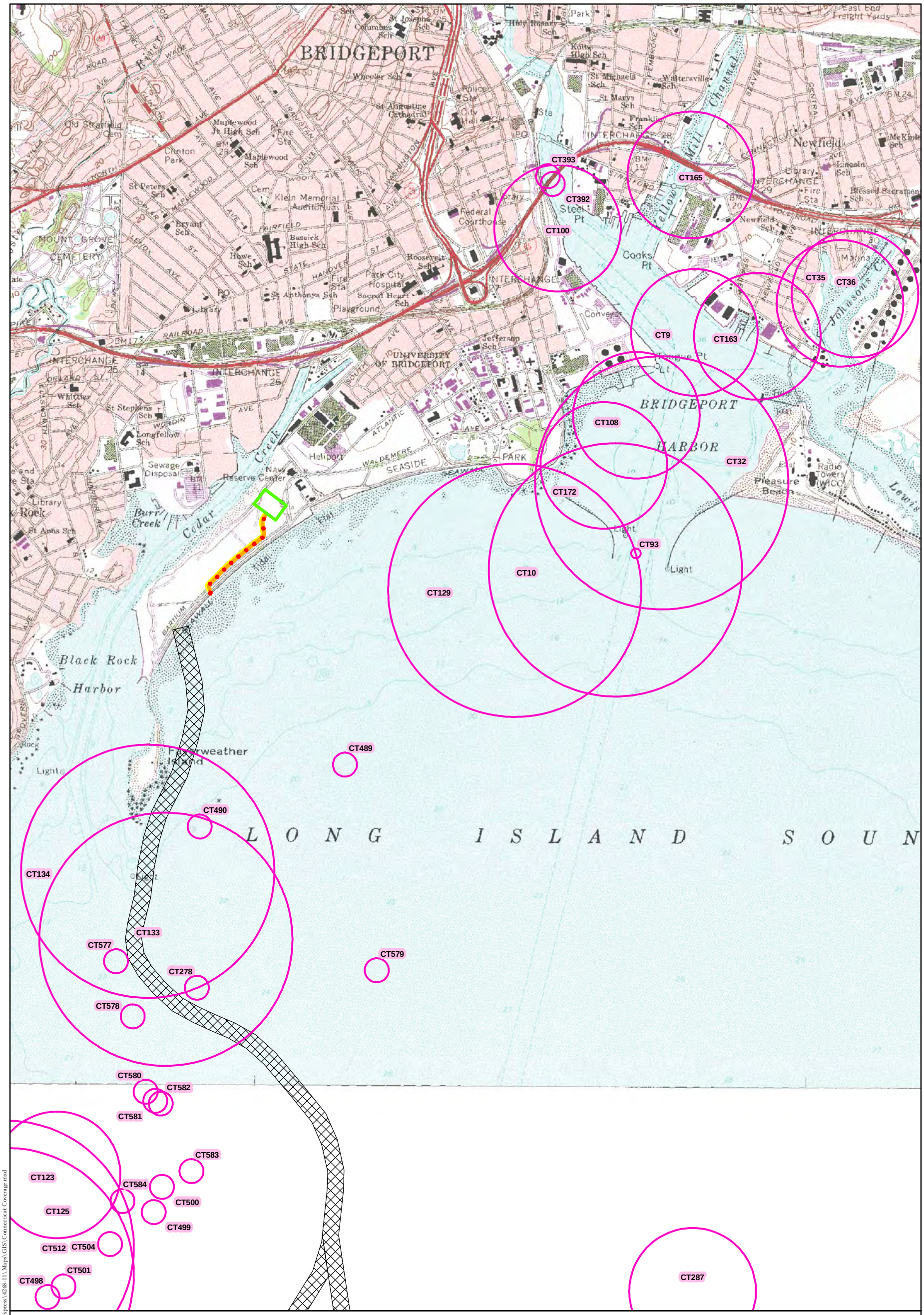
Long Island Sound Shipwreck Locations, within Connecticut
(Heritage Consultants LLC 2007)

HARTGEN archeological associates inc

A14

ES June 4, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Connecticut Coverage.mxd



Legend

- Shipwreck Location
- CT# Shipwreck ID (See Table A1)
- Project Alignment (Including Study Corridors)
- Converter Station Footprint
- Underground Cable to Converter Station
- Construction Corridor

N

1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

Note: Contour interval is 10 feet.

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Long Island Sound Shipwreck Locations, within Connecticut
(Heritage Consultants LLC 2007)

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A15

ES June 4, 2010 R:\Active Projects\4268 Oswego-Hudson Express\4268-11\Maps\GIS\Connecticut Coverage.mxd

Map ID #	Vessel Name	Vessel Type	Vessel Use	Year Built	Date Lost	Nearby Landmark	Depth (ft)	Location Rank	Source
1	Massachusetts						0	1	AWOIS-USCS
2	Carlos French	Barge				New London Harbor	0	1	AWOIS-USCS
3	G-2	Submarine	Warship	1909		Goshen Point	0	1	AWOIS-USCS
4	Lazy Days	Cabin Cruiser				between New London Ledge Light and Littl	40	2	AWOIS-USCS
5	Seguina	Schooner		1865	12/21/1875	Long Point		3	NARA-Waltham
6	Cloud	Schooner		1866	10/27/1875			3	NARA-Waltham
7	A. Irving	Barge		1885	7/9/1885			4	NARA-Waltham
8	Daisy			1885	10/8/1900	Shippan Point		3	NARA-Waltham
9	Stephan E. Dabwell			1863				3	NARA-Waltham
10	Town Harbor			1901	1/1/1913			4	NARA-Waltham
11	G. M. Brainard	Schooner			1904			4	NARA-Waltham
12	Portland	Ferry Boat		1870	4/2/1889			4	NARA-Waltham
13	Blanche	Barge		1882	6/9/1891			4	NARA-Waltham
14	Volunteer	Barge		1887	9/5/1895	Middletown RR Bridge Pier		3	NARA-Waltham
15	Sorsen	Steamboat		1883	11/30/1900	New London		3	NARA-Waltham
16	R. M. Clark	Schooner		1863	7/3/1892	Crane Reef		3	NARA-Waltham
17	Couder	Schooner			1/15/1879	Millstone Point		3	NARA-Waltham
18	Ruth	Schooner		1881	1/13/1915	New London Lighthouse		3	NARA-Waltham
19	Janus Halliday	Barge		1873	11/19/1894	off the Guilford Coast		4	NARA-Waltham
20	Mohawk	Steamboat			12/8/1904	Cornfield Light ship		4	AWOIS-USCS
21	Betty J. S.				3/19/1906			4	NARA-Waltham
22	Meteor	Schooner		1866	8/11/1895	Saybrook Lighthouse		4	NARA-Waltham
23	Vandlia	Schooner		1855	7/31/1896	Cornfield Light ship		4	NARA-Waltham
24	John W. Wilson	Barge		1865	4/9/1886	Rapid Death & Bartletts Reef Light Ship		4	NARA-Waltham
25	Louisa Bliss	Ferry Boat		1869	12/9/1885	Cornfield Shoal		4	NARA-Waltham
26	Circassian						0	4	AWOIS-USCS
27	Ann Amelia	Schooner		1859	11/6/1899			3	NARA-Waltham
28	Rhea II			1922	7/5/1928	Field Point		3	NARA-Waltham
29	Annie May	Schooner		1892	7/22/1931	Goose Island		3	NARA-Waltham
30	Sunshine			1888	12/22/1931			4	NARA-Waltham
31	Bimbo	Cabin Cruiser		1924	7/20/1934			3	NARA-Waltham
32	Evelyn R. Baker	Tug Boat	Tug Boat	1886	3/22/1936			4	NARA-Waltham
33	Florence B.	Sloop		1891	11/30/1923			4	NARA-Waltham
34	C. A. Dolliver	Schooner		1894	9/18/1936	Flat Island		3	NARA-Waltham
35	City Of Utica	Ship		1874				3	NARA-Waltham
36	Gettman	Ship						3	NARA-Waltham
37	Sylvester Hale	Schooner		1864	2/12/1907			3	NARA-Waltham
38	Menawa	Schooner			1908			3	NARA-Waltham
39	Marise	Schooner					0	1	AWOIS-USCS
40	Obstruction37						0	2	AWOIS
41	Obstruction34a						0	2	AWOIS
42	Obstruction9						0	2	AWOIS
43	Obstruction43						38	2	AWOIS
44	Obstruction108						0	2	AWOIS
45	Obstruction80						13	2	AWOIS
46	Unknown 172						0	2	AWOIS
47	Unknown 173						0	2	AWOIS
48	Obstruction117						0	2	AWOIS
49	Obstruction88						0	2	AWOIS
50	Obstruction87						0	2	AWOIS
51	Obstruction86						7	2	AWOIS

Map ID #	Vessel Name	Vessel Type	Vessel Use	Year Built	Date Lost	Nearby Landmark	Depth (ft)	Location Rank	Source
52	Obstruction85						0	2	AWOIS
53	Obstruction84						0	2	AWOIS
54	Obstruction83						0	2	AWOIS
55	Obstruction73						0	2	AWOIS
56	Obstruction81						0	2	AWOIS
57	Obstruction90						0	2	AWOIS
58	Obstruction79						0	2	AWOIS
59	Obstruction78						0	2	AWOIS
60	Obstruction77						0	2	AWOIS
61	Unknown 174						0	2	AWOIS
62	Obstruction76						0	2	AWOIS
63	Obstruction75						0	2	AWOIS
64	Obstruction74						0	2	AWOIS
65	Obstruction99						0	2	AWOIS
66	Obstruction101						0	2	AWOIS
67	Obstruction82						0	2	AWOIS
68	Obstruction107						0	2	AWOIS
69	Unknown 175						0	2	AWOIS
70	Obstruction105						0	2	AWOIS
71	Obstruction103						0	2	AWOIS
72	Obstruction102						0	2	AWOIS
73	Obstruction91						0	2	AWOIS
74	Obstruction100						0	2	AWOIS
75	Obstruction109						0	2	AWOIS
76	Obstruction98						0	2	AWOIS
77	Obstruction97						0	2	AWOIS
78	Obstruction96						0	2	AWOIS
79	Obstruction95						0	2	AWOIS
80	Obstruction94						0	2	AWOIS
81	Obstruction93						0	2	AWOIS
82	Obstruction92						0	2	AWOIS
83	Obstruction145						0	2	AWOIS
84	Unknown 176						0	2	AWOIS
85	Unknown 189						12	2	AWOIS
86	Unknown 190						4.2	2	AWOIS
87	Thames (Sugar Boat)						1	2	AWOIS-USCS
88	S.E. Spring						3.3	2	AWOIS-USCS
89	Celtic And Caperace	Tug Boat	Tug Boat				32	1	AWOIS-USCS
90	Doc Delight	Cabin Cruiser					0	1	AWOIS-USCS
91	Dighton	Barge				Faulkner's Island and Duck Island	28.3	4	NARA-Waltham
92	James Sheridan	Barge					16.1	2	AWOIS-USCS
93	Thunder 1	Cabin Cruiser					0	1	AWOIS-USCS
94	Benjamin Packard						0	2	AWOIS-USCS
95	Dolphin						0	2	AWOIS-USCS
96	Bur	Ship						3	AWOIS-USCS
97	Emma A. Chesebro	Schooner						3	NARA-Waltham
98	John O Ireland	Schooner			12/8/1864	New London Lighthouse		3	CSL
99	Shane D. Conner	Steamboat		1890	5/30/1892			3	NARA-Waltham
100	Matthew Rowe	Steamboat			7/7/1895	Marine Railway		3	NARA-Waltham
101	Mark	Barge		1864				3	NARA-Waltham
102	Sarah E. Babcock	Schooner		1871				3	NARA-Waltham
103	Freddie A. Decker	Schooner		1881	8/3/1902			3	NARA-Waltham

Map ID #	Vessel Name	Vessel Type	Vessel Use	Year Built	Date Lost	Nearby Landmark	Depth (ft)	Location Rank	Source
104	D. J. Mclanson	Schooner		1897	10/11/1904	Stratford Shore		3	NARA-Waltham
105	Bettie	Schooner		1872	10/1/1903	Saybrook Point		3	NARA-Waltham
106	Ajar			1906	4/14/1908			3	NARA-Waltham
107	Mosetta H.	Schooner		1883	8/26/1908	Compo Beach		3	NARA-Waltham
108	Wacora			1903	8/22/1909			3	NARA-Waltham
109	Wharhifo			1910	9/13/1910	Cos Cob Harbor		3	NARA-Waltham
110	Adrienne	Schooner		1892	6/7/1911			3	NARA-Waltham
111	Isabel	Steamboat		1894	9/28/1915	Shippan Point		3	NARA-Waltham
112	W. H. Barhorn			1906	7/9/1920			4	NARA-Waltham
113	John T. Roswell	Schooner		1873	1913	Shippan Point		3	NARA-Waltham
114	Industry	Schooner		1837	6/25/1900			3	NARA-Waltham
115	Maine							4	NARA-Waltham
116	Captain Snow	Barge			5/3/1909			3	NARA-Waltham
117	Barge 76	Barge			10/30/1908			3	NARA-Waltham
118	City Of Lawrence	Steamboat		1867	7/2/1907	Eastern Point (Mouth of Thames River)		3	NARA-Waltham
119	Eclipse	Schooner			4/11/1908	Fort Hale/the Sandy Point dike		3	NARA-Waltham
120	Mildred A. Pope	Schooner			1907	Long Wharf		3	NARA-Waltham
121	E. M. Duffield	Schooner		1851	1/1/1908			3	NARA-Waltham
122	H. N. Conklin	Barge			1918			4	NARA-Waltham
123	Mary Alice	Steamboat		1897	10/1918	Penfield Reef Light House		3	NARA-Waltham
124	Adamant Plaster	Ship			1917	Ferry Street and Grand Avenue Bridges		3	NARA-Waltham
125	Blue Line				1918	Penfield Reef		4	NARA-Waltham
126	Laura S. Hatch	Schooner			10/3/1917			3	NARA-Waltham
127	Stoddard	Barge			4/25/1917	Pond Point		4	NARA-Waltham
128	Barge 792	Barge			11/24/1916			4	NARA-Waltham
129	Grandma	Barge						4	NARA-Waltham
130	Charles W. Russell	Tug Boat			10/18/1916			3	NARA-Waltham
131	Marcia Bailey	Schooner		1883	11/2/1916	Cornfield Point		4	NARA-Waltham
132	Lucy Van Orden	Ship			1910	Saybrook Point		4	NARA-Waltham
133	S. E. Vincent	Barge				Bridgeport/Penfield Lights		4	NARA-Waltham
134	Blue Jacket	Barge				Bridgeport/Penfield Lights		4	NARA-Waltham
135	Snowflake	Ship						4	NARA-Waltham
136	Frank Leaming	Schooner			11/11/1915	Greens Ledge		3	NARA-Waltham
137	David Currie	Schooner		1866	12/20/1907	Duck Island		4	NARA-Waltham
138	President	Schooner		1851	3/14/1877	Rocky Point		3	NARA-Waltham
139	J. Fish	Schooner		1868	10/12/1878			4	NARA-Waltham
140	J. B. Blakes	Schooner		1846	10/6/1878	New Haven Harbor		4	NARA-Waltham
141	H. A. Deming	Schooner		1864	11/5/1894			3	NARA-Waltham
142	A. S.	Schooner		1852	11/27/1898			4	NARA-Waltham
143	Ella Powell	Schooner		1872	10/06/1906			3	NARA-Waltham
144	Bristol	Sloop			2/15/1890	Black Point		3	NARA-Waltham
145	Isaac Merritt	Schooner		1835	12/30/1874			4	NARA-Waltham
146	Richard	Sloop		1857	10/10/1886			3	NARA-Waltham
147	Marion	Sloop			3/6/1887	Millstone point		3	NARA-Waltham
148	Mary H.	Ferry Boat		1851	10/29/1879	Black Point		3	NARA-Waltham
149	Woods?	Ferry Boat		1872	6/22/1878			3	NARA-Waltham
150	J. H. Governor?	Schooner		1854	12/9/1876	Morris Cove		3	NARA-Waltham
151	H. C. French	Steamboat		1888	3/19/1906			4	NARA-Waltham
152	Robert	Barge		1883	1/30/1900			3	NARA-Waltham
153	Cornelius	Schooner		1851	1899	Pleasure Beach		4	NARA-Waltham

Map ID #	Vessel Name	Vessel Type	Vessel Use	Year Built	Date Lost	Nearby Landmark	Depth (ft)	Location Rank	Source
154	Stella O. Callahan	Barge			12/8/1910	New London Light		4	NARA-Waltham
155	Angler	Schooner				Duck Island		3	AWOIS-USCS
156	Mary Jane	Sloop		1857	10/28/1896	Faulkners Island		4	NARA-Waltham
157	Enterprise	Tug Boat			2/13/1915			3	NARA-Waltham
158	Harry P. Percy	Schooner		1845	4/7/1875	Faulkner's Island		4	NARA-Waltham
159	Atlantic	Ferry Boat		1831	9/12/1878	Faulkner's Island		4	NARA-Waltham
160	Aflon	Barge			5/1/1903	Faulkner's Island		4	NARA-Waltham
161	P. Donna	Barge		1873	10/22/1907	Faulkner's Island		3	NARA-Waltham
162	Towanda				12/17/1914	Main Street Bridge, Mystic CT		3	NARA-Waltham
163	Harry A. Wheeler	Barge						3	NARA-Waltham
164	Florence Russell	Schooner			10/30/1913	Shippan Point		3	NARA-Waltham
165	Margaret Ann	Schooner			1913			3	NARA-Waltham
166	John T. Russel	Schooner			1913	Shippan Point		3	NARA-Waltham
167	Laura Thompson	Schooner						4	NARA-Waltham
168	A. J. Miller	Schooner			11/10/1913			4	NARA-Waltham
169	Stephen E. Babcock	Tug Boat		1883	8/8/1911	Stratford Shoal		3	NARA-Waltham
170	G. A.	Schooner		1857				3	NARA-Waltham
171	H. S. Van Santford	Barge				Sybrook Outer Light		3	NARA-Waltham
172	Jennie C. May	Schooner		1890				3	NARA-Waltham
173	Unknown 191						11	2	AWOIS
174	Obstruction129							2	AWOIS
175	Obstruction130							2	AWOIS
176	Unknown 415						45	2	AWOIS
177	Unknown 416						44	2	AWOIS
178	Unknown 417						29	2	AWOIS
179	Obstruction131							2	AWOIS
180	Obstruction132							2	AWOIS
181	Unknown 599						126	2	AWOIS
182	Unknown 600						104	2	AWOIS
183	Unknown 601						120	2	AWOIS
184	Unknown 606						135.73	2	AWOIS
185	Unknown 607						136	2	AWOIS
186	Unknown 609						145.87	2	AWOIS
187	Unknown 610						132	2	AWOIS
188	Obstruction133						4	2	AWOIS
189	Obstruction134						0	2	AWOIS
190	Obstruction135						0	2	AWOIS
191	Obstruction146						0	2	AWOIS
192	Obstruction137						0	2	AWOIS
193	Obstruction128						0	2	AWOIS
194	Obstruction139						0	2	AWOIS
195	Unknown 192						0	2	AWOIS
196	Obstruction140						13.78	2	AWOIS
197	Obstruction141						0	2	AWOIS
198	Obstruction142						0	2	AWOIS
199	Unknown 193						1	2	AWOIS
200	Obstruction143						0	2	AWOIS
201	Obstruction144						0	2	AWOIS
202	Obstruction119						4.3	2	AWOIS
203	Obstruction138						16.4	2	AWOIS
204	Obstruction136						0	2	AWOIS
205	Obstruction111						0	2	AWOIS

Map ID #	Vessel Name	Vessel Type	Vessel Use	Year Built	Date Lost	Nearby Landmark	Depth (ft)	Location Rank	Source
206	Obstruction112						0	2	AWOIS
207	Obstruction113						0	2	AWOIS
208	Obstruction114						0	2	AWOIS
209	Obstruction115						0	2	AWOIS
210	Obstruction116						0	2	AWOIS
211	Obstruction127						0	2	AWOIS
212	Obstruction118						0	2	AWOIS
213	Obstruction110						0	2	AWOIS
214	Obstruction120						0	2	AWOIS
215	Unknown 195						0	2	AWOIS
216	Obstruction121						0	2	AWOIS
217	Obstruction122						0	2	AWOIS
218	Obstruction123						0	2	AWOIS
219	Obstruction124						0	2	AWOIS
220	Obstruction125						0	2	AWOIS
221	Obstruction126						0	2	AWOIS
222	Obstruction71						0	2	AWOIS
223	Obstruction17						0	2	AWOIS
224	Obstruction89						0	2	AWOIS
225	Obstruction20						46	2	AWOIS
226	Obstruction21						41	2	AWOIS
227	Obstruction22						41	2	AWOIS
228	Obstruction23						43	2	AWOIS
229	Unknown 691						53	2	AWOIS
230	Unknown 692						71	2	AWOIS
231	Unknown 693						71	2	AWOIS
232	Unknown 164						0	2	AWOIS
233	Obstruction24						0	2	AWOIS
234	Unknown 165						0	2	AWOIS
235	Unknown 166						0	2	AWOIS
236	Obstruction25						0	2	AWOIS
237	Obstruction35						0	2	AWOIS
238	Unknown 225						12.6	2	AWOIS
239	Unknown 235						0	2	AWOIS
240	Unknown 517						40	2	AWOIS
241	Unknown 518						55	2	AWOIS
242	Unknown 519						81	2	AWOIS
243	Unknown 520						39	2	AWOIS
244	Obstruction27						37	2	AWOIS
245	Unknown 521						66	2	AWOIS
246	Obstruction19						29	2	AWOIS
247	Unknown 522						38	2	AWOIS
248	Obstruction29						51	2	AWOIS
249	Obstruction30						13.6	2	AWOIS
250	Obstruction31						12.8	2	AWOIS
251	Unknown 392						16.9	2	AWOIS
252	Unknown 393						22.8	2	AWOIS
253	Obstruction32						13.5	2	AWOIS
254	Obstruction33						0	2	AWOIS
255	Obstruction34b							2	AWOIS
256	Unknown 499							2	AWOIS
257	Obstruction11							2	AWOIS
258	Obstruction28							2	AWOIS

Map ID #	Vessel Name	Vessel Type	Vessel Use	Year Built	Date Lost	Nearby Landmark	Depth (ft)	Location Rank	Source
259	Obstruction26							2	AWOIS
260	Obstruction2							2	AWOIS
261	Obstruction3						1	2	AWOIS
262	Obstruction4						25	2	AWOIS
263	Obstruction5							2	AWOIS
264	Unknown 505						52	2	AWOIS
265	Obstruction6						58	2	AWOIS
266	Obstruction7						4	2	AWOIS
267	Obstruction8						28	2	AWOIS
268	Obstruction18						33	2	AWOIS
269	Obstruction10						0	2	AWOIS
270	Obstruction1						0	2	AWOIS
271	Obstruction12						40	2	AWOIS
272	Obstruction13						35	2	AWOIS
273	Unknown 206						0	2	AWOIS
274	Obstruction14						31	2	AWOIS
275	Obstruction15						29	2	AWOIS
276	Unknown 207						0	2	AWOIS
277	Unknown 208						36	2	AWOIS
278	Unknown 212						22	2	AWOIS
279	Unknown 213						0	2	AWOIS
280	Obstruction16						14	2	AWOIS
281	Unknown 214						42	2	AWOIS
282	Unknown 215						39	2	AWOIS
283	Unknown 216						53	2	AWOIS
284	Unknown 217						0	2	AWOIS
285	Conn-10 To 12				1781	New London Harbor		3	Shomette 2003
286	Conn-8 (eagle)		Cargo			New London		3	Shomette 2003
287	Conn-9 (mary Alice)				10/1918	Bridgeport Harbor		3	Shomette 2003
290	Obstruction55						0	2	AWOIS
291	Unknown 258						54	2	AWOIS
292	Unknown 271						29.9	2	AWOIS
293	Unknown 276						37	2	AWOIS
657	Obstruction212a							2	AWOIS
294	Obstruction56						25	2	AWOIS
299	Obstruction57						0	2	AWOIS
300	Obstruction58						50	2	AWOIS
301	Unknown 283						0	2	AWOIS
302	Unknown 284						0	2	AWOIS
303	Unknown 285						0	2	AWOIS
304	Unknown 286						0	2	AWOIS
305	Unknown 287						0	2	AWOIS
306	Unknown 288						0	2	AWOIS
307	Unknown 289						0	2	AWOIS
308	Obstruction59						56	2	AWOIS
309	Unknown 290						0	2	AWOIS
310	Unknown 291						0	2	AWOIS
311	Unknown 292						0	2	AWOIS
312	Unknown 293						0	2	AWOIS
313	Obstruction60						35	2	AWOIS
314	Obstruction61						85	2	AWOIS
315	Obstruction72						93	2	AWOIS
316	Obstruction63						96	2	AWOIS

Map ID #	Vessel Name	Vessel Type	Vessel Use	Year Built	Date Lost	Nearby Landmark	Depth (ft)	Location Rank	Source
317	Obstruction54						95	2	AWOIS
318	Obstruction65						0	2	AWOIS
319	Obstruction66						0	2	AWOIS
320	Obstruction67						98	2	AWOIS
321	Obstruction68						71	2	AWOIS
322	Obstruction69						77	2	AWOIS
323	Obstruction70						87	2	AWOIS
324	Obstruction45						121	2	AWOIS
325	Obstruction64						72	2	AWOIS
326	Obstruction62						95	2	AWOIS
327	Obstruction173						101	2	AWOIS
328	Obstruction38						91	2	AWOIS
329	Obstruction104						121	2	AWOIS
330	Obstruction39						100	2	AWOIS
331	Unknown 307						66	2	AWOIS
332	Unknown 308						47	2	AWOIS
333	Obstruction40						25	2	AWOIS
334	Obstruction41						0	2	AWOIS
335	Unknown 372						59	2	AWOIS
336	Unknown 374						0	2	AWOIS
337	Unknown 394						31	2	AWOIS
338	Unknown 488						134	2	AWOIS
339	Unknown 489						105	2	AWOIS
340	Unknown 490						108	2	AWOIS
341	Obstruction42						105	2	AWOIS
342	Unknown 491						131	2	AWOIS
343	Unknown 493						111	2	AWOIS
344	Unknown 495						124	2	AWOIS
345	Unknown 497						101	2	AWOIS
346	Unknown 498						83	2	AWOIS
347	Unknown 511						43	2	AWOIS
348	Unknown 512						26	2	AWOIS
349	Unknown 514						78	2	AWOIS
350	Unknown 515						79	2	AWOIS
351	Unknown 516						38	2	AWOIS
352	Unknown 399						0	2	AWOIS
353	Obstruction53							2	AWOIS
354	Obstruction44							2	AWOIS
355	Obstruction36							2	AWOIS
356	Obstruction46							2	AWOIS
357	Obstruction47						22	2	AWOIS
358	Obstruction48						38	2	AWOIS
359	Unknown 422						44	2	AWOIS
360	Unknown 423						44	2	AWOIS
363	Unknown 424							2	AWOIS
364	Obstruction49						25	2	AWOIS
365	Unknown 425						30	2	AWOIS
366	Obstruction50						22	2	AWOIS
367	Obstruction51							2	AWOIS
368	Unknown 451						65.6	2	AWOIS
369	Unknown 454						93.7	2	AWOIS
370	Unknown 455						94.9	2	AWOIS
371	Unknown 456							2	AWOIS

Map ID #	Vessel Name	Vessel Type	Vessel Use	Year Built	Date Lost	Nearby Landmark	Depth (ft)	Location Rank	Source
372	Unknown 457						94.9	2	AWOIS
373	Unknown 458						87.5	2	AWOIS
374	Unknown 459						86.2	2	AWOIS
375	Unknown 460						97	2	AWOIS
376	Unknown 461						90.6	2	AWOIS
377	Unknown 462						82.2	2	AWOIS
378	Unknown 463						109.6	2	AWOIS
379	Unknown 464						118.9	2	AWOIS
380	Unknown 465						88	2	AWOIS
381	Unknown 466						95	2	AWOIS
382	Unknown 467						85.6	2	AWOIS
383	Unknown 468						118	2	AWOIS
384	Unknown 469						132.8	2	AWOIS
385	Unknown 470						90	2	AWOIS
386	Unknown 471						78.5	2	AWOIS
387	Unknown 472						71.2	2	AWOIS
388	Obstruction52						49	2	AWOIS
389	Obstruction106						34	2	AWOIS
390	Unknown 473						91.6	2	AWOIS
392	Obstruction207							2	AWOIS
393	Obstruction208							2	AWOIS
394	Obstruction209							2	AWOIS
395	Unknown 476						104.1	2	AWOIS
396	Obstruction210						45	2	AWOIS
397	Obstruction211						38	2	AWOIS
398	Obstruction212						23	2	AWOIS
399	Unknown 530						83	2	AWOIS
400	Unknown 531						78	2	AWOIS
401	Unknown 532						80	2	AWOIS
402	Unknown 533						73	2	AWOIS
403	Unknown 534						85	2	AWOIS
404	Unknown 535						96.75	2	AWOIS
405	Unknown 536						95	2	AWOIS
406	Unknown 537						85.69	2	AWOIS
407	Unknown 538						65	2	AWOIS
408	Unknown 539						59.81	2	AWOIS
409	Unknown 540						96	2	AWOIS
410	Unknown 541						92.13	2	AWOIS
411	Unknown 542						100	2	AWOIS
412	Unknown 543						102	2	AWOIS
413	Unknown 544						104.72	2	AWOIS
414	Unknown 545						96	2	AWOIS
415	Unknown 546						66	2	AWOIS
416	Unknown 547						71	2	AWOIS
417	Unknown 548						96	2	AWOIS
418	Unknown 549						88	2	AWOIS
419	Unknown 550						65.68	2	AWOIS
420	Unknown 551						90.87	2	AWOIS
421	Unknown 552						98	2	AWOIS
422	Unknown 553						87.59	2	AWOIS
423	Unknown 554						95	2	AWOIS
424	Unknown 555						118	2	AWOIS
425	Unknown 556						100	2	AWOIS

Map ID #	Vessel Name	Vessel Type	Vessel Use	Year Built	Date Lost	Nearby Landmark	Depth (ft)	Location Rank	Source
426	Unknown924						102	2	AWOIS-USCS
427	Unknown 558						104	2	AWOIS
428	Unknown 559						90	2	AWOIS
429	Unknown 560						102	2	AWOIS
430	Unknown 561						106	2	AWOIS
431	Unknown 562						106	2	AWOIS
432	Unknown 567						110	2	AWOIS
433	Unknown 568						101.77	2	AWOIS
434	Unknown 569						135	2	AWOIS
435	Unknown 570						95	2	AWOIS
436	Unknown 571						97	2	AWOIS
437	Unknown 573						93.798	2	AWOIS
438	Unknown 574						97	2	AWOIS
439	Unknown 575						109.64	2	AWOIS
440	Unknown 576						129.65	2	AWOIS
441	Unknown 577						130.77	2	AWOIS
442	Unknown 579						107.64	2	AWOIS
443	Unknown 580						86	2	AWOIS
444	Unknown 581						104	2	AWOIS
445	Unknown 582						84.74	2	AWOIS
446	Unknown 583						96.78	2	AWOIS
447	Unknown 584						115	2	AWOIS
448	Unknown 585						103	2	AWOIS
449	Unknown 586						98	2	AWOIS
450	Unknown 587						109	2	AWOIS
451	Unknown 588						155.87	2	AWOIS
452	Unknown 589						132.84	2	AWOIS
453	Unknown 590						109	2	AWOIS
454	Unknown 591						83	2	AWOIS
455	Unknown 592						121	2	AWOIS
456	Unknown 593						118	2	AWOIS
457	Unknown 594						119	2	AWOIS
458	Unknown 595						118.77	2	AWOIS
459	Unknown 596						130.86	2	AWOIS
460	Unknown 598						102.62	2	AWOIS
461	Unknown 611						141.57	2	AWOIS
462	Unknown 612						154.82	2	AWOIS
463	Unknown 613						111.68	2	AWOIS
464	Unknown 614						134.68	2	AWOIS
465	Unknown 615						131.82	2	AWOIS
466	Unknown 616						119	2	AWOIS
467	Unknown 617						148.65	2	AWOIS
468	Unknown 618						163	2	AWOIS
469	Unknown 619						166.63	2	AWOIS
470	Unknown 620						170	2	AWOIS
471	Unknown 621						113	2	AWOIS
472	Unknown 622						121.72	2	AWOIS
473	Unknown 623						119	2	AWOIS
474	Unknown 624						123	2	AWOIS
475	Unknown 625						90.62	2	AWOIS
476	Unknown 626						126.51	2	AWOIS
477	Unknown 627						173	2	AWOIS
478	Unknown 628						82.6	2	AWOIS

Map ID #	Vessel Name	Vessel Type	Vessel Use	Year Built	Date Lost	Nearby Landmark	Depth (ft)	Location Rank	Source
479	Unknown 629						91.7	2	AWOIS
480	Unknown 630						82	2	AWOIS
481	Unknown 631						105	2	AWOIS
482	Unknown 632						103	2	AWOIS
483	Unknown 633						104	2	AWOIS
484	Unknown 634						70	2	AWOIS
485	Obstruction148						69.65	2	AWOIS
486	Obstruction175						49.02	2	AWOIS
487	Unknown 635						106.76	2	AWOIS
488	Obstruction192						134	2	AWOIS
489	Obstruction174						16	2	AWOIS
490	Obstruction172						17	2	AWOIS
491	Unknown 694						40	2	AWOIS
492	Unknown 695						48	2	AWOIS
493	Obstruction171						6.13	2	AWOIS
494	Obstruction170						18	2	AWOIS
495	Unknown 696						15	2	AWOIS
496	Unknown 697						35	2	AWOIS
497	Unknown 698						72	2	AWOIS
498	Unknown 700						16	2	AWOIS
499	Unknown 701						32	2	AWOIS
500	Unknown 702						29	2	AWOIS
501	Unknown 703						16	2	AWOIS
502	Unknown 704						20	2	AWOIS
503	Unknown 705						22	2	AWOIS
504	Unknown 706						20	2	AWOIS
505	Unknown 708							2	AWOIS
506	Obstruction169							2	AWOIS
507	Obstruction168						11	2	AWOIS
508	Cabin Cruiser							2	AWOIS
509	Revenge		Warship					3	NARA-Waltham
510	Unknown930	Barge			1917	Grass Island		3	NARA-Waltham
511	Unknown928	Schooner			7/31/1917			4	NARA-Waltham
512	Unknown927	Barge						4	NARA-Waltham
513	Unknown926	Barge			9/27/1916			4	NARA-Waltham
514	Unknown925	Barge			8/1915	White Beach		4	NARA-Waltham
515	Unknown929					Mystic Railroad Bridge		4	NARA-Waltham
516	Vessel 1							3	NARA-Waltham
517	Vessel 2							3	NARA-Waltham
518	Vessel 3							3	NARA-Waltham
519	Submersible Chamber (85-75)		Salvage			Rogers Ave		2	CT SHPO
520	Sloops	Sloop	Cargo Carrier		6/00/1813	Lyndes Point		3	CHS-coll 25 p179
521	Multiple Boats	Ship	Mixed		5/18/1814	Niantic Rope ferry		3	CHS-Coll v27 p69
522	Multiple Boats				4/12/1814			3	CHC-Coll V26-P220-239
523	Multiple Boats				7/5/1779			3	Osterweis-- 1953
524	Conn-7 (hannah)	Ship	Warship		9/7/1781	Millers Wharf		3	Caulkins-1852 p553
525	Unknown Schooner #1		Warship		1/19/1734	Mason's Island		3	Caulkins 1852 p243
526	Conn-1 (sloop)		Warship		11/13/1776			3	Shomette 2003
527	Conn-2 (sloop)	Sloop	Warship		12/13/1776	New London Light House		3	CHPC-1272 and Crawford vol 1
528	Conn-3 (schooner)		Warship			Black Point Bay		3	CHPC-1272
529	Conn-11 A To G (Torpedo Boats)							2	Shomette 2003
530	Conn-11 A To G (Torpedo Boats)							2	Shomette 2003
531	Conn-11 A To G (Torpedo Boats)							2	Shomette 2003

Map ID #	Vessel Name	Vessel Type	Vessel Use	Year Built	Date Lost	Nearby Landmark	Depth (ft)	Location Rank	Source
532	Conn-11 A To G (Torpedo Boats)							2	Shomette 2003
533	Conn-11 A To G (Torpedo Boats)							2	Shomette 2003
534	Conn-12		Warship	1918		New London		3	DANFS,II P100
535	Conn 13		Warship		10/10/1961	Off New London		3	Shomette 2003
536	Conn-14		Warship		10/25/1976			3	Shomette 2003
539	Obstruction167						48	2	AWOIS
540	Obstruction166						45	2	AWOIS
541	Unknown 707							2	AWOIS
542	Obstruction165						35	2	AWOIS
543	Obstruction164						44	2	AWOIS
544	Unknown 26						54	2	AWOIS
545	Garrett		Cargo Carrier				0	3	AWOIS-USCS
546	Unknown 37						35	2	AWOIS
547	Unknown 38						51	2	AWOIS
548	Unknown 43						48	2	AWOIS
549	Unknown 45						62	2	AWOIS
550	Lake Hemlock	Barge				Kelsey Point	56	2	AWOIS-USCS
551	Bubi	Cabin Cruiser					33	1	AWOIS-USCS
552	Unknown 50						0	2	AWOIS
553	G.S. Repplier		Cargo Carrier				0	3	AWOIS-USCS
554	Blue Hummer						12	2	AWOIS-USCS
555	Condor	Tug Boat	Tug Boat				44	1	AWOIS-USCS
556	Hunter	Fishing Vessel	Fishing				48	1	AWOIS-USCS
557	Obstruction163						0	2	AWOIS
558	Unknown 710						0	2	AWOIS
559	Unknown 711						0	2	AWOIS
560	Obstruction147						27	2	AWOIS
561	Obstruction161						27	2	AWOIS
562	Unknown 123						24	2	AWOIS
563	Obstruction176						32	2	AWOIS
564	Obstruction159						32	2	AWOIS
565	Obstruction158						21	2	AWOIS
566	Unknown 124						61	2	AWOIS
567	Unknown 125						45	2	AWOIS
568	Unknown 126						75	2	AWOIS
569	Obstruction157						0	2	AWOIS
570	Obstruction156						0	2	AWOIS
571	Obstruction155						0	2	AWOIS
572	Obstruction154						0	2	AWOIS
573	Obstruction153						0	2	AWOIS
574	Obstruction152						0	2	AWOIS
575	Obstruction151						0	2	AWOIS
576	Obstruction150						0	2	AWOIS
577	Obstruction149						19	2	AWOIS
578	Obstruction190						20	2	AWOIS
579	Obstruction160						20	2	AWOIS
580	Obstruction162						21	2	AWOIS
581	Obstruction205						21	2	AWOIS
582	Obstruction204						23	2	AWOIS
583	Obstruction203						25	2	AWOIS
584	Obstruction202							2	AWOIS
585	Obstruction201							2	AWOIS
586	Unknown 507						53	2	AWOIS

Map ID #	Vessel Name	Vessel Type	Vessel Use	Year Built	Date Lost	Nearby Landmark	Depth (ft)	Location Rank	Source
587	Unknown 508						55	2	AWOIS
588	Unknown 509						51	2	AWOIS
589	Unknown 510						56	2	AWOIS
590	Obstruction200						0	2	AWOIS
591	Obstruction199						0	2	AWOIS
592	Unknown 163						0	2	AWOIS
593	Obstruction198						0	2	AWOIS
594	Unknown 528						78	2	AWOIS
595	Obstruction197						88	2	AWOIS
596	Unknown 529						95	2	AWOIS
597	Obstruction196						100	2	AWOIS
598	Unknown 683						56	2	AWOIS
599	Unknown 686						88	2	AWOIS
600	Unknown 687						73	2	AWOIS
601	Unknown 688						60	2	AWOIS
602	Unknown 689						63	2	AWOIS
603	Unknown 690						125	2	AWOIS
604	Obstruction195						0	2	AWOIS
605	Unknown 167						8	2	AWOIS
606	Obstruction194						0	2	AWOIS
607	Obstruction193						1.3	2	AWOIS
608	Unknown 168						0	2	AWOIS
609	Obstruction177						9	2	AWOIS
610	Obstruction191						8	2	AWOIS
611	Obstruction206						0	2	AWOIS
612	Obstruction189						0	2	AWOIS
613	Obstruction188						0	2	AWOIS
614	Obstruction187						1.6	2	AWOIS
615	Obstruction186						5	2	AWOIS
616	Obstruction185						6	2	AWOIS
617	Obstruction184						0	2	AWOIS
618	Obstruction183						1	2	AWOIS
619	Obstruction182						32	2	AWOIS
620	Unknown 169						105	2	AWOIS
621	Obstruction181						5	2	AWOIS
622	Obstruction180						0	2	AWOIS
623	Obstruction179						4	2	AWOIS
624	Unknown 170						12	2	AWOIS
625	Unknown 171						33	2	AWOIS
626	Obstruction178						0	2	AWOIS
659	Cornfield Point Light Vessel LV-51	Lightship	Navigational	1892	4/14/1919	Cornfield Point		1	CHPC Light Vessel LV-51

APPENDIX 3: OPRHP Project Review Cover Form

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island Resource Center, PO Box 189, Waterford, NY 12188-0189 (Mail)
Delaware Avenue, Cohoes 12047 (Delivery) **(518) 237-8643**

PROJECT REVIEW COVER FORM

Rev. 10-04

*Please complete this form and attach it to the top of **any and all information submitted to this office** for review.*
Accurate and complete forms will assist this office in the timely processing and response to your request.

This information relates to a previously submitted project.

PROJECT NUMBER __ PR _____

COUNTY _____

☐ If you have checked this box and noted the previous Project Review (PR) number assigned by this office you do not need to continue unless any of the required information below has changed.

2. This is a new project. ☒ If you have checked this box you will need to complete ALL of the following information.

Project Name Champlain-Hudson Power Express

Location _____
You MUST include street number, street name and/or County, State or Interstate route number if applicable

City/Town/Village _____
List the correct municipality in which your project is being undertaken. If in a hamlet you must also provide the name of the town.

County Clinton, Essex, Washington, Saratoga, Schenectady, Albany, Rensselaer, Columbia, Gree
If your undertaking* covers multiple communities/counties please attach a list defining all municipalities/counties included.

TYPE OF REVIEW REQUIRED/REQUESTED (Please answer both questions)

A. Does this action involve a permit approval or funding, now or ultimately from any other governmental agency?

☐ No ☒ Yes

If Yes, list agency name(s) and permit(s)/approval(s)

Agency involved	Type of permit/approval	State	Federal
		☐	☐
		☐	☐
		☐	☐

B. Have you consulted the NYSHPO web site at http://www.nysparks.state.ny.us/shpo to determine the preliminary presence or absence of previously identified cultural resources within or adjacent to the project area? If yes: ☒ Yes ☐ No

Was the project site wholly or partially included within an identified archeologically sensitive area? ☒ Yes ☐ No

Does the project site involve or is it substantially contiguous to a property listed or recommended for listing in the NY State or National Registers of Historic Places? ☒ Yes ☐ No

CONTACT PERSON FOR PROJECT

Name Robert Quiggle **Title** Regulatory Specialist

Firm/Agency HDR DTA

Address 1304 Buckley Road, Suite 202 **City** Syracuse **STATE** NY **Zip** 13212

Phone (315) 4142216 **Fax** (_____)_____ **E-Mail** robert.quiggle@hdrinc.com