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Albany, New York

Supplemental Design Revisions for 2015

Hudson River PCBs Superfund Site

Revised September 2015

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Attachments

CD ROM (electronic files)

- Document PDF files
- Revised Design Dredge Prism XYZ File – CU60
- Shapefiles (Certification Units, shoreline, conceptual habitat construction locations)

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1. Introduction

This document, prepared on behalf of the General Electric Company (GE), presents updates and revisions to the design for certain dredging operations planned for 2015 and to the habitat construction design for certain areas as part of the dredging remedy selected by the United States Environmental Protection Agency (EPA) to address polychlorinated biphenyls (PCBs) in sediments of the Upper Hudson River (the river) located in New York State (EPA 2002). This document constitutes a revised version of the Supplemental Design Revisions for 2015 (2015 Design Revisions) initially submitted to EPA on February 13, 2015 and revised and re-submitted on April 16, 2015 and again on June 22, 2015. This further revised version reflects comments from and discussions with EPA regarding those prior versions.

Dredging operations in 2015 will be conducted in Certification Unit (CU) 60 in Reach 8; portions of CU64, portions of CU65, and CU66 in Reach 7 (the Landlocked Area); CU94 through CU96 in Reach 3; and portions of CU99 in Reach 1. Figure 1-1 shows the Upper Hudson River and the locations of each lock, dam, reach of river, and designated river section. Figures 1-2a through 1-2e show the locations of the CUs targeted for dredging in 2015.

This document presents updates and revisions to the designs for certain of these areas, where such design revisions are necessary. Specifically:

- The remedial design for dredging operations in CU60, which is close to the Thompson Island Dam, was revised based on further evaluation of methods for working safely in close proximity to the dam, as well as discussions with EPA regarding the procedures for dredging in sub-unit CU60-2, which is closest to the dam. Section 2 presents a description of the proposed design revisions for CU60.

- An updated dredging and material transport approach for the portion of CU95 east of Quack Island (sub-units CU95-2 and CU95-3) was developed based on further evaluation of field conditions and access limitations to this portion of the river. In addition, the habitat construction design for that portion of CU95 has been revised based on comments provided by and discussions with EPA. Section 3 describes the updated dredging and material transport approach and the proposed habitat construction design revisions for sub-units CU95-2 and CU95-3.

- The conceptual habitat construction design for CU82 in Reach 5 has been updated based on comments provided by and discussions with EPA. Figure 1-2c shows the location of CU82. Section 4 presents a description of the habitat construction design revisions for CU82.

Dredging operations conducted in 2015 in CU64 through CU66, CU94 through CU96 (other than CU95-2 and CU95-3), and CU99 will be performed following the previously approved design documents for these CUs as summarized below.

- The remedial design for dredging operations in CU64 through CU66 was presented in the Phase 2 Final Design Report for Reach 7 (the Landlocked Area) (Reach 7 FDR, ARCADIS 2014b), which was approved by EPA on July 25, 2014. In 2014, dredging operations commenced in Reach 7 and were completed in CU61, CU62, CU63, portions of CU64, and portions of CU65. Dredging operations for the remaining portions of CU64 and CU65 and for CU66 will be completed in 2015 following the previously approved design. No design revisions are proposed for the Reach 7 dredging operations.

- The design for dredging operations in CU94 through CU96 was presented in the Phase 2 Final Design Report for CU85 through CU96 (CU85-CU96 FDR, ARCADIS 2014c) and Addendum No. 1 to Revised Phase 2 Final Design Report for CU85 through CU96 (CU85-CU96 FDR Addendum 1, GE 2014c), and was approved by EPA on October 22, 2014. Dredging operations for CU94, CU95-1, and CU96 will be completed in 2015 following the previously approved design. No design revisions are proposed for these CUs. However, as noted above, Section 3 describes the updated dredging and material transport approach and habitat construction design revisions for sub-units CU95-2 and CU95-3.

- The design for dredging operations in CU99 was presented in the Phase 2 Final Design Report for 2013 Addendum No. 2 – Reaches 1 and 2 (2013 FDR Addendum 2, ARCADIS 2013b) and in Addendum No. 8 to the Phase 2 Final Design Report for 2013 (2013 FDR Addendum 8, GE 2013), which were approved by EPA on October 10, 2013 and October 16, 2014, respectively.[1] Dredging operations in portions of CU99 were conducted in 2013 and 2014. Dredging operations in the remaining portions of CU99 (CU sub-units CU99-6 and CU99-7) will be completed in 2015 following the previously approved design. No design revisions are proposed for CU99.

In addition, delineated RFW habitat in areas affected by access dredging for these CUs will be restored consistent with the backfilling and planting approach for RFW areas affected by dredging within CUs.

[1] EPA approval of 2013 FDR Addendum 8 was provided following EPA review of GE's April 4, 2014 response (GE 2014a) to EPA's February 19, 2014 comments on the 2013 FDR Addendum No. 2 and 2013 FDR Addendum No. 8.

2. CU60 Design Revisions

This section presents a summary of design revisions for CU60 in Reach 8.

CU60 is located in River Section 1 at the southern end of Reach 8 between River Mile (RM) 188.8 and RM 188.5 and is immediately upstream of the Thompson Island Dam. The entire portion of CU60 is located downstream of the New York State Canal Corporation (NYSCC) dam safety warning cable and in close proximity to the dam. CU60 is composed of two discrete dredge areas. One dredge area is located along the western shoreline of the river immediately upstream of the western section of Thompson Island Dam (Thompson Island Dam West); this area is known as CU60-1. Another dredge area is located along the eastern shoreline of the river immediately upstream of the eastern section of Thompson Island Dam (Thompson Island Dam East); this area is known as CU60-2. Figure 2-1 shows the locations of CU60-1 and CU60-2 in relation to Thompson Island Dam, the NYSCC dam safety warning cable, and the other CUs in the southern portion of Reach 8.

The design for CU60 was initially presented in the Phase 2 Final Design Report for 2013 (2013 FDR; ARCADIS 2013a), which was approved by EPA on May 1, 2013. This 2015 Design Revisions document presents updates to the design for CU60 based on the following:

- Survey information collected in 2013 along the western shore of CU60-1;
- Safety considerations associated with work to be conducted in close proximity to Thompson Island Dam;
- Experience gained during 2013 for dredging operations completed in CU59 south of the NYSCC safety cable; and
- Discussions with EPA regarding the procedures for dredging in CU60-2.

The design revisions for CU60 presented in this document supersede the design revisions that were previously presented in Addendum 3 to the Phase 2 Final Design Report for 2013 (2013 FDR Addendum 3; ARCADIS 2014a), which was submitted to EPA in March 2014.

The dredging operations in CU60 will be conducted under Contract 42A by the same contractor that performed the dredging work in CU59 in 2013 and that will be performing 2015 dredging and dredged material transport operations in other areas of the river. As described in the following sections, eight Contract 42A drawings (Drawings D-2117, D-3117, D-4217, B-2130, B-2317, B-3117, C-3117, and G-2124) have been revised to incorporate the CU60 design revisions described in this document. The revised Contract 42A drawings are provided in Attachment A.

2.1 CU60-1 Design Revisions

The design for CU60-1 (the western portion of CU60) has been revised from the approved 2013 FDR to incorporate survey information collected in 2013 along the western shore of this CU. In addition, design revisions have been made to certain operations in CU60-1 based on an assessment of safety risks, input from the contractors who will perform the work, and experience from dredging CU59 during 2013.

2.1.1 Shoreline and CU Boundary Revisions

As described in the 2013 FDR, the shoreline in Reach 8 (the Thompson Island Pool) is defined as an elevation 119 feet (ft) North American Vertical Datum of 1988 (NAVD88). As also noted in that FDR, a land survey of that shoreline elevation was conducted for Reach 8 to verify the shoreline location in those areas where CUs were identified. Subsequent to the 2008 shoreline survey activities, the boundaries of CU60-1 were expanded based on the results of data gap sampling (as summarized in Section 3.1.3 of the 2013 FDR). Due to the lack of available shoreline survey information, the shoreline limits for the expanded portions of CU60-1 were established based on aerial photography taken in the spring of 2002, corresponding to a river flow of approximately 5,000 cubic feet per second (cfs) at Fort Edward.

Field observations during 2013 in preparation for dredging operations in CU60 indicated that portions of CU60-1 were above the established 119 ft shoreline elevation. Therefore, in August 2013, GE retained Van Dusen & Steves Land Surveyors to conduct a land survey of the 119 ft NAVD88 shoreline elevation along the western shore of the river in the vicinity of CU60-1.

Based on the results of the August 2013 survey, the shoreline boundary and the shoreline extent of CU60-1 were adjusted to correspond with the surveyed location of the 119 ft elevation. Electronic data files with the updated shoreline coordinates and the updated CU boundaries are provided on the CD-ROM included with this document. The updated shoreline and CU boundaries have been incorporated into the revised Contract 42A drawings included in Attachment A.

The Design Dredge Prism XYZ File for CU60-1 was revised to incorporate the updated shoreline and CU limits. The revised electronic Design Dredge Prism XYZ file for CU60 is provided on the CD-ROM included with this document.

Table 2-1 below presents the updated area, design cut volume, and estimated polychlorinated biphenyl (PCB) mass for CU60-1 based on the revised shoreline and CU limits. The

engineering adjustments to the Elevation of Contamination (EoC) surface for CU60-1 are illustrated on a figure included in Attachment B.

Table 2-1 CU60-1 Area, Estimated PCB Mass, and Design Volume

CU	CU Area (acres)	EoC Surface Volume (cy)	Estimated PCB Mass (kg)		Design Dredge Prism Volume (cy)
			Total PCBs	Tri+ PCBs	
60-1 (West)	3.33	13,700	520	140	14,200

2.1.2 CU60-1 Dredging, Backfilling, and Habitat Construction Approach

Dredging operations in CU60-1 will follow the procedures and requirements presented in the Contract 42A specifications and will be similar to the procedures implemented in other areas of the river, except for the revisions described below that have been incorporated into the design based on safety considerations working in close proximity to the dam. The design revisions for CU60-1 include the following:

- The Dredging Contractor and the third-party bathymetric surveyor will not each conduct its own separate post-dredging bathymetric surveys following dredging in CU60-1. Instead, the post-dredging bathymetric surveys will be conducted jointly by the Dredging Contractor and third-party bathymetric surveyor in CU60-1 to confirm the removal of sediment to the required elevations. This is consistent with the survey approach that was implemented for the dredging operations completed in CU59 during 2013. This revision has been incorporated into the design to reduce risks by not requiring duplicative survey efforts in the area near the dam.

- Dredging in CU60-1 will consist of up to two dredging passes (i.e., the design-cut pass and one re-dredging pass). Residual sediment core sampling will be conducted in CU60-1 after each dredging pass, and steps will be taken to accurately define the depth of contamination (DoC) following the first dredging pass. A third dredging pass will not be performed in CU60-1. These revisions have been incorporated into the design in order to reduce risks associated with iterative dredging passes and reduce the amount of work (and time) required in close proximity to the dam as part of the dredging operations (i.e., dredging, survey, and sediment core sampling).

- Riverine fringing wetland (RFW) areas disturbed during the dredging operations will be backfilled at their current locations as described in the 2013 FDR, except that erosion control fabric will not be placed in the RFW construction areas in CU60-1. Installation of the fabric in the RFW construction areas requires personnel to physically enter the water, which would present an unnecessary risk in areas near the dam and has the potential to foul propellers on vessels, potentially causing the operator to lose control of the vessel.

This revision has been incorporated into the design to eliminate risks associated with performing this activity in CU60-1. The RFW construction area locations in CU60-1 are identified on revised Drawing B-2317 (Attachment A). Drawing B-2130 (Attachment A), has been included in the design to show details and an example cross-section applicable to the RFW construction areas in CU60-1.

- If applicable based on the post-dredging residual sampling results, isolation caps will be placed in CU60-1 in accordance with the plans and specifications presented in the approved 2013 FDR. Isolation caps, if placed, in CU60-1 will consist of medium-velocity caps. This type of cap is appropriate since CU60-1 is located in a shallow-water depositional area along the shoreline of the river and is largely protected from high flows. The water velocities predicted by the hydrodynamic model for a 100-year event for all of CU60-1 are less than the 5 feet per second design criterion for high-velocity caps, with the majority of the CU considerably below this criterion.

  The final long-term monitoring and maintenance approach for isolation caps placed in CU60-1 will be developed after the backfilling/capping work has been completed as details about the approach will be dependent on where caps, if any, are placed. This approach will not include any probing or sampling of caps placed in CU60-1 due to the proximity to the dam. The long-term monitoring and maintenance requirements for the caps installed in CU60-1 will be described in the Operation, Maintenance, and Monitoring Plan for 2015 Caps and Habitat Replacement/Reconstruction (2015 Cap/Habitat OM&M Plan), to be submitted in March 2016. They are anticipated to include alternate monitoring procedures that do not require project vessels to enter the area south of the NYSCC dam safety warning cable. It is anticipated that verification of cap integrity in RFW areas will be performed by visual observations that confirm that the constructed RFW is in place above the caps. If necessary, verification of top-of-cap elevations in shallow near-shore areas may be performed by survey personnel in areas that can be safely accessed by wading into the river from adjacent upland areas and where the workers can be tethered to a fixed object on the shore.

- If a significant sheen is observed related to the work in CU60-1, operations will be temporarily suspended, the situation will be assessed, and GE will contact EPA to determine the appropriate course of action. Potential responses to an observed sheen could include an assessment from the shore and spill containment below the dam. For CU60-1, deployment of booms and sweeping of areas where sheens are observed will not be required between the work area and the dam. Instead, spill response equipment and materials will be available for use downstream of the dam as a contingency if sheen response actions are needed below the dam.

- Post-backfill placement bathymetric surveys will not be conducted following the placement of backfill and/or cap material in CU60-1. Instead, verification that backfill material has been placed in CU60-1 to the specified requirements will be based on placing a minimum volume of each backfill component in the appropriate locations using material volumetric estimates as well as field observations by the Construction Manager. The elevation of backfill material will also be verified by touching the excavator bucket to the surface of the placed material and verifying that the material has been placed to within the required tolerance. The elevation verification with the bucket will be performed on a 10-foot by 10-foot grid, with a minimum of three bucket elevation measurements in each grid cell, to verify that the material placed meets the required elevations and thicknesses within the specified tolerances.

- Pre-planting surveys will not be conducted in CU60-1 prior to RFW habitat construction. Instead, the RFW habitat construction areas in CU60-1 will be based on the areas identified in the habitat construction design (see below). In addition, the planting contractor and Construction Manager will conduct an inspection of the RFW habitat construction areas from areas accessible along the shore at the time of planting to confirm that they remain suitable. This revision will be incorporated into the design to eliminate risks associated with performing a separate pre-planting survey in CU60-1.

- Submerged aquatic vegetation (SAV) planting will not be performed in CU60-1. Instead, the previously designated SAV planting and natural recolonization areas were relocated to EPA-approved alternate locations above the NYSCC safety cable within the Thompson Island Pool (Reach 8). The SAV areas in CU60-1 will be designated as unconsolidated river bottom (UCB) to indicate that no habitat-related operation, maintenance, and monitoring (OM&M) or adaptive management (AM) activities will be performed in these areas. These revisions have been incorporated into the design to eliminate risks associated with requiring divers and their supporting equipment and tending crews, as well as the equipment and personnel required to support habitat-related OM&M and AM activities, to be in the water in the vicinity of the dam. As shown on Figures C-1 through C-4 and Table C-1 in Attachment C, SAV reconstruction areas have been relocated from CU60-1 to other CUs in Reach 8. Approximately 1.17 acres of SAV planting (0.42 acre) and SAV natural recolonization (0.75 acre) previously identified in CU60-1 have been relocated to EPA-approved locations in CU47, CU49, and CU56 through CU58 as shown on Table C-1 in Attachment C. An electronic data file of the conceptual habitat construction areas for CU60-1 is provided on the CD-ROM included with this design addendum.

- Approximately 1.99 acres of RFW have been delineated in CU60-1. These areas will be returned to grade during the backfilling operations (as described above), but an erosion control fabric will not be placed in these areas. Planting will be performed only in those

areas that can be safely accessed by wading into the river from adjacent upland areas and where the workers can be tethered to a fixed object on the shore. RFW areas that cannot be accessed in this manner will not be planted. The area identified for RFW planting in CU60-1 was initially confined to areas at or above approximately the 118.3-foot elevation (which corresponds to an approximate 8-inch water depth at the design flow of 5,000 cfs), comprising approximately 0.84 acre. The remaining 1.15 acres of RFW designated for CU60-1 were relocated to EPA-approved locations in CU47 and CU54 through CU57, as shown on Figures C-1 through C-4 in Attachment C. However, based on subsequent discussions between GE and EPA on April 8, 2015, the area to be planted and seeded in CU60-1 has been expanded to accommodate relocation of approximately 0.66 acre of RFW from CU60-2, as described in Section 2.2.5 below. That expanded area will extend to approximately the 117.4 elevation (corresponding to an approximate 19-inch water depth at the design flow). The RFW area to be planted and seeded in CU60-1 is shown on Figure C-4 in Attachment C. Zone A seeds in this RFW area will be hand broadcast from the shoreline, and Zone B seeds will be hand broadcast by a person wading in the water, while tethered to the shore, in water depths up to approximately 19 inches. The portion of the RFW areas in CU60-1 that will not be planted or seeded will be designated as UCB to indicate that no habitat-related OM&M or AM activities will be performed in these areas.

2.2 CU60-2 Design Revisions

CU60-2 (the eastern portion of CU60) presents a number of additional operational challenges due to its very close proximity to the eastern portion of Thompson Island Dam. Because of these challenges, a modified dredging approach and design for CU60-2 have been developed.

All dredging and related operations for CU60-2 will be conducted from the land owned by NYSCC east of the dredge area, and no personnel, equipment, or vessels will be used in the river to complete dredging, backfilling, and monitoring work. To facilitate the dredging and backfilling operations, a staging area has been constructed on the eastern side of the Champlain Canal (Route 4 Staging Area), and a transload station, a material staging area, and access ways are being constructed on the western side of the canal. Dredging in CU60-2 will consist of a single dredging pass to elevations 12 inches below the EoC, using a track-mounted long-reach excavator, to the extent of the practicable reach of the excavator. The excavator will be positioned on land and outfitted with an open excavator bucket, which has a longer practicable reach than a clamshell bucket (and reduces the amount of water to be generated during the dredging process). In addition, to maximize the amount of sediment that can be dredged from land, a shoreline access road and finger piers extending into the dredge area will be constructed in an incremental manner, with dredging performed from them. The portion of CU60-2 that is situated beyond the practicable reach of the excavator, even when

the excavator is located on the finger piers, will be excluded from dredging as an engineering offset.

The dredged sediment and debris will be loaded into trucks and transferred to a bin at the transload station to be constructed on the NYSCC land adjacent to the western bank of the Champlain Canal. At the transload station, the dredged sediments and debris will be loaded from the bin into hopper barges in the land-cut section of the Champlain Canal. After the hopper barges are loaded, the barges will be transported to the Sediment Processing Facility. At the Sediment Processing Facility, the dredged material will be dewatered and loaded into railcars for transport and disposal with sediment dredged from other areas of the river. After dredging is completed in each portion of CU60-2 subject to dredging, backfill material will be placed in that portion of the CU. Backfilling operations will likewise be conducted incrementally from the shoreline access road and finger piers, as described further below. After the dredging and backfilling operations are completed, the transload station, staging area, and access ways will be removed and the property will be restored.

The following subsections summarize elements of the design associated with CU60-2, focusing on items that differ from the design approach presented in the 2013 FDR.

2.2.1 Site Preparation

As outlined above, CU60-2 dredging requires development of land adjacent to the river and canal to mobilize/demobilize equipment, to transport dredged materials, and to move backfill material onto the river for placement in the dredged areas.

A staging area has been constructed on the eastern side of the Champlain Canal (Route 4 Staging Area), and a transload station, a material staging area, and access ways have been constructed on the western side of the canal. The locations of these areas are shown on Figure 2-1.

The Route 4 Staging Area will be a temporary site used for interim staging of equipment and materials and will serve as the point of access/egress of equipment, materials, and personnel across the Champlain Canal to the land east of CU60-2.

The land west of the Champlain Canal and east of CU60-2 will be a temporary site used to: access CU60-2 to complete the dredging and backfilling operations; transload dredged sediment, debris, and water to hopper barges staged in the land-cut portion of the Champlain Canal; and temporarily stage backfill material before placement in CU60-2. The transload station and the truck access way used to transport dredged materials from CU 60-2 to the transload station will be lined to provide a containment area.

Prior to construction, a Cultural Resources Assessment was prepared that summarized readily available historic and environmental background information concerning potential historic and archaeological features that might be associated with the property (URS 2015a). That assessment, which was approved by EPA on February 25, 2015, concluded that much of the area was likely disturbed by construction of the Champlain Canal in the early 20th century, but that since a field survey prior to construction was not possible due to winter conditions, archaeological monitoring should be conducted during portions of clearing and grading to identify and document any features that might be encountered.

Site preparation work for the CU60-2 support areas began in March 2015. During the site preparation work, including limited rip-rap removal adjacent to the excavation for the transload station bin foundation, archaeological monitoring was conducted in the areas of the transload station, CU60-2 access road, and material staging area. That monitoring identified certain historic structural features in and near those areas, as described in a Cultural Resources Monitoring Report (URS 2015b) that was submitted to EPA in March 2015. As a result, as also described in that report, the layout of the CU60-2 support area was modified to avoid impacts to those features.

Details related to the construction of the Route 4 Staging Area, transload station, material staging area, and access ways have been provided to EPA under separate cover and are also included in the Phase 2 Remedial Action Work Plan for Certification Unit 60 (CU 60 RAWP, Parsons 2015a).

2.2.2 Dredging

The dredging operations in CU60-2 will be conducted in accordance with the revised approach described in the CU60 RAWP, which is based on safety considerations related to working in close proximity to the dam. The design revisions are summarized below. These dredging operations will otherwise follow the procedures and requirements presented in the Contract 42A specifications.

- All dredging and related operations for CU60-2 will be conducted from the land owned by NYSCC and the access ways constructed in the river along the shoreline east of the dredge area, and no personnel, equipment, or vessels will be used in the river to complete the dredging, backfilling, or monitoring work.

- Work in CU60-2 will be conducted only during daylight hours, unless otherwise specifically approved in writing by the Construction Manager.

- Dredging in CU60-2 will be performed using a track-mounted long-reach excavator outfitted with an open excavator bucket to the extent of the practicable reach of the

excavator. To maximize the amount of sediment that can be dredged from land, a shoreline access road and finger piers extending into the dredge area will be constructed. The shoreline access road will be constructed along the shoreline of CU60-2 and the finger piers will be constructed approximately perpendicular to the shoreline access road extending horizontally into the river until their toe of slope is coincident with the dredge prism transition which extends beyond the 117-ft elevation (NAVD88) contour. These finger piers will allow the long-reach excavator to travel by land away from the shoreline and extend its reach to dredge CU60-2. The shoreline access road and finger piers will be constructed incrementally using Type 2 backfill material to the maximum extent practicable, with placement of densely graded crushed stone in select locations where necessary to add structural stability to the roadway or finger piers. The incremental construction of the shoreline access road and finger piers and the associated dredging and backfilling that will occur during that process, including the planned sequence of these activities, are described in detail in the CU60 RAWP.

- The excavator will conduct dredging from the shoreline access road and finger piers to remove the sediment that it can practicably reach from those areas. The dredged sediment and debris will be placed in material transfer trucks that will travel along the finger piers (where used) and constructed access ways to transfer the dredged material into a bin at the transload station. The estimated extent of the practicable reach of the excavator and the footprints of the shoreline access road and finger piers are shown on Figure 2-1 and on Drawing D-2117 (Attachment A). An engineering offset will be applied to the portion of the CU60-2 that is beyond the practicable reach of the excavator and therefore will not be dredged.

- Dredging in CU60-2 will consist of a single dredging pass (i.e., the design dredging pass). Residual sediment core sampling will not be conducted in CU60-2 after the design dredging pass. Instead, dredging in CU60-2 will be performed to elevations 12 inches below the EoC presented in the approved 2013 FDR (or at least 12 inches for the shoreline access road). To accommodate this, the design dredge prism for CU60-2 presented in the 2013 FDR has been revised. An engineering offset has been applied to the portion of the CU60-2 that will not be dredged due to its location beyond the practicable reach of the excavator. The revised Design Dredge Prism XYZ file has been set at elevations 12 inches below the EoC elevations within the extent of the practicable reach of the excavator shown on Figure 2-1 and on Drawing D-2117 (Attachment A). Dredging beyond the limits of the dredge prism will be conducted if the excavator can practicably reach other sediment within CU60-2 while positioned on the shoreline access road and finger piers. The Design Dredge Prism XYZ file for CU60-2 also includes engineering considerations as described in Attachment B to the 2013 FDR (i.e., shoreline adjustments and internal slope adjustments); however, because dredging will be performed from land, the dredge prism no longer includes an offset from Thompson

Island Dam. The electronic Design Dredge Prism XYZ file developed by Parsons is provided on a CD-ROM with this submittal. The engineering adjustments to the EoC surface for CU60-2 are illustrated on a figure included in Attachment B. Table 2-2 below presents a comparison, in terms of the dredge area, targeted removal volume, and estimated PCB mass removed, between an EoC surface that would reflect the total CU60-2 sub-unit with no engineering offsets or adjustments (i.e., assuming standard dredging with no modifications) and the Design Dredge Prism (with engineering offset, engineering adjustments, and the 1-foot overcut). Approximately 30 kilograms (kg) of PCB mass will remain following application of the engineering offset.

Table 2-2 CU60-2 Area, Estimated PCB Mass, and Design Volume

Design Surface	Dredge Area (acres)	Targeted Sediment Volume (cy)	Estimated Total PCB Mass (kg)
EoC Surface (total sub-unit with no modifications or offsets)	2.08	7,300	350
Design Dredge Prism (with engineering offset and 1-foot overcut)	1.38	7,500	420 [1,2]

Notes:

1. The estimated PCB mass in the 1-foot overcut was determined by including the PCB concentrations available in the core profiles below the design cut line and above the overcut line in the calculation of the mass per volume.
2. Given the spatial distribution of the PCB concentrations in CU60-2, the vast majority of the PCB mass is near the shoreline. Therefore, after inclusion of the overcut in the estimate, the updated PCB mass to be removed is higher than the originally targeted mass, since the estimated mass in the overcut is greater than the estimated mass in the area that will be excluded as part of the engineering offset.

- Post-dredging bathymetric surveys will not be conducted following dredging in CU60-2. Instead, verification that dredging has achieved the required elevations will be performed using output data from the dredge bucket positioning system (DBPS). During dredging, the DBPS will record the dredge bucket elevations, and the output file from the DBPS will be used to generate figures showing the average of the deepest bucket elevations in each 10-foot by 10-foot grid cell. The elevations of the 10-foot by 10-foot grid will be compared with the dredge prism elevations to verify that the required elevations have been achieved within the specified tolerance.

- The procedures for responding to sheens (if any) generated as part of the work in CU60-2 will follow the same approach described above for CU60-1. For CU60-2, deployment of booms and sweeping of areas where sheens are observed will not be required between the work area and the dam. Instead, spill response equipment and materials will be available for use downstream of the dam as a contingency if sheen response actions are needed below the dam.

2.2.3 Dredged Material Transport

The dredged sediment, debris, and water loaded into material transfer trucks will be transferred to the transload station, where the material will be unloaded into a material transfer bin. At the transload station, dredged sediments, debris, and water will be loaded into hopper barges in the land-cut section of the Champlain Canal using a long-reach excavator equipped with an enclosed bucket. A spill plate will be positioned between the transload station material transfer bin and the hopper barge in the canal to catch material that may be dropped by the transloader bucket. Water that accumulates in the material transfer bin at the transload station (i.e., water released from the dredged sediment and stormwater that falls on the material transfer bin) will be pumped to the hopper barge in the land-cut section of the canal. After the hopper barges in the land-cut section are loaded, the barges will be transported to the Sediment Processing Facility for sediment unloading and dewatering with sediment dredged from other portions of the river.

2.2.4 Backfill Placement

After dredging is completed in each portion of CU60-2 subject to dredging and has been confirmed to have reached the target elevation, backfill material will be placed in that portion of the CU. The backfilling operations in CU60-2 will be conducted incrementally, and in part concurrently with the dredging operations, from the finger piers and shoreline access road, as described in the CU60 RAWP. The design revisions for backfill placement are summarized below. The backfilling operations will otherwise follow the procedures and requirements presented in the Contract 42A specifications.

- All backfilling and related operations for CU60-2 will be conducted from the land, and no personnel, equipment, or vessels will be used in the river for completion of the backfilling or monitoring work.

- Work in CU60-2 will be conducted only during daylight hours, unless otherwise specifically approved in writing by the Construction Manager.

- Backfilling in CU60-2 will be performed using the same track-mounted long-reach excavator and material transfer trucks used for dredging and dredged material transport. Visible sediment will be removed from the excavator bucket before the bucket is used to handle backfill or other clean materials. In addition, the material transfer trucks will be decontaminated as described in the CU60 RAWP by removing visible sediment prior to handling backfill or other clean materials. Similar to the dredging process in CU60-2, the excavator will place the backfill material from the shoreline access road and finger piers.

- Removal of the shoreline access road and finger piers will occur incrementally in conjunction with the backfilling operations after backfill material has been placed in the reachable portions of the dredged area. The incremental removal of the shoreline access road and finger piers and the associated backfilling of those areas and the adjacent areas of CU60-2, including the planned sequence of those activities, are described in the CU60 RAWP. During the road/pier removal activities, visible sediment observed on the shoreline access road and finger piers will be removed for disposal with the dredged sediment. The Type 2 material used to construct the shoreline access road and finger piers will be used as backfill material. Crushed stone, if any, used to construct the shoreline access road and finger piers will be removed and placed over adjacent dredge areas that have not yet received a base layer of backfill and will be covered with a minimum of 12 inches of Type 2 material or Type 5 material to reach final required grades, depending on location.

- A 1-foot layer of Type 2 material will be placed in dredged portions of CU60-2 that are located outside of the near-shore area and outside of RFW construction areas (described below). The locations where the 1-foot backfill layer will be placed are identified on Drawing B-2317 (Attachment A).

- Near-shore backfill will be placed to pre-dredging bathymetry in dredged portions of the near-shore area. Near-shore backfill will consist of Type 2 material. The locations where the near-shore backfill will be placed are identified on Drawing B-2317 (Attachment A).

- As described in Section 2.2.5 below, RFW construction activities in CU60-2 will be limited to an approximate 20-foot-wide band along the shoreline (see Figure C-4 in Attachment C). These RFW construction areas will be backfilled to pre-dredging bathymetry. The upper 1 foot of RFW construction areas will be constructed using Type 5 backfill material. Type 2 material will be placed below the upper 1-foot layer of Type 5 material or, at the contractor's option, Type 5 backfill material will be placed within the entire depth of the RFW construction areas. As noted above, crushed stone, if any, used in to construct the shoreline access road and finger piers may be placed over the dredged areas prior to placement of the Type 2 or Type 5 material. Erosion control fabric will not be placed in the RFW construction areas in CU60-2. The RFW construction area locations in CU60-2 are identified on revised Drawing B-2317 (Attachment A). Drawing B-2130 (Attachment A) has been included in the design to show details and an example cross-section for RFW construction areas in CU60-2.

- Habitat layer backfill consisting of Type 2 material will be used to reconstruct SAV natural recolonization areas in CU60-2 where the pre-dredging water depth is less than 8 feet and the water depth after dredging and backfill layer placement will be greater than 8 feet (i.e., an elevation lower than 111 ft [NAVD88] after dredging and placement of the backfill

layer is completed). Habitat layer backfill will be placed in CU60-2 to either return the area to pre-dredging bathymetry or to a water depth of 5 feet below the shoreline elevation. In areas where habitat layer backfill is required, SAV areas with pre-dredging elevations between 111 ft and 114 ft will be returned to pre-dredging bathymetry, and SAV areas with pre-dredging elevation between 114 ft and 117 ft will be returned to an elevation of 114 ft. Drawing B-2317 (Attachment A) shows the SAV natural recolonization areas in CU60-2.

- Details for shoreline stabilization in CU60-2 have not changed from the approved 2013 FDR. Shoreline stabilization in CU60-2 will consist of near-shore backfill placement and construction of RFW areas as shown on Drawing B-3117 (Attachment A).

- Isolation caps will not be placed in CU60-2. However, as discussed with EPA, if the 12-inch overcut described in Section 2.2.2 cannot be achieved in a given area, GE will meet with EPA to discuss appropriate measures as part of backfill placement, which could include placement of Type 2 material amended with total organic carbon (TOC) over the areas that cannot be dredged to the 12-inch overcut.

- Post-backfill placement bathymetric surveys will not be conducted following the placement of backfill and/or cap material in CU60-2. Instead, verification that backfill material has been placed in CU60-2 to the specified requirements will be performed, using the DBPS, by touching the excavator bucket to the surface of the placed material and verifying that the material has been placed to within the required tolerance. The backfill elevation verification with the bucket will be performed on a 10-foot by 10-foot grid using the average of a minimum of three bucket elevation measurements in each grid cell.

2.2.5 Habitat Construction

Attachment C presents the revised conceptual habitat construction design for CU60-2. The habitat construction design for CU60-2 has been developed to account for safety considerations working in close proximity to the Thompson Island Dam. Due to the close proximity to the dam, habitat construction in CU60-2 will be limited to only planting or seeding that can be conducted from the shoreline or non-inundated areas when those areas can be safely accessed during low-flow periods. No habitat construction requiring entry into the water will be undertaken in CU60-2.

No SAV planting will be performed in CU60-2 due to the close proximity to the dam. However, there is approximately 0.21 acre of SAV natural recolonization area in CU60-2. As described in Section 2.2.4, this area will receive backfill to be within the appropriate depth range for SAV natural recolonization. The SAV natural recolonization area is shown on Figure C-4 in

Attachment C. Monitoring of the natural recolonization area in CU60-2 will be conducted from the adjacent shoreline under low-flow conditions. No future SAV planting will be considered in this natural recolonization area in response to monitoring results.

There is approximately 0.94 acre of RFW located within CU60-2. The RFW area is shown on Figure C-4 in Attachment C. RFW areas will be returned to grade but an erosion control fabric will not be placed in these areas (as described in Section 2.2.4). Pre-planting surveys will not be conducted in CU60-2 prior to RFW habitat construction. Instead, the RFW habitat construction areas in CU60-2 will be based on the areas identified in the habitat construction design, as described below.

Because no habitat construction requiring entry into the water will be undertaken in CU60-2, RFW planting in CU60-2 will be limited to portions of RFW areas that are not inundated at the time of planting, and seeding in Zone A of the RFW will be conducted by hand broadcasting from the shoreline or the non-inundated areas. Specifically, as discussed between GE and EPA on April 8, 2015, due to safety considerations, RFW construction activities in CU60-2 will focus on an approximate 20-foot-wide band along the shoreline (see Figure C-4 in Attachment C), comprising approximately 0.28 acre, to the extent that such areas can be safely accessed. Within that band, vegetation will be planted only along the edge of the shoreline during low-flow periods to the extent that such areas are not inundated at the time of planting. The remainder of the 20-foot-wide band will be seeded with Zone A seeds. Those seeds will be hand broadcast from the shoreline or non-inundated areas, depending on river conditions at the time of seeding, in an effort to reach the extent of the 20-foot-wide band. The planting contractor and Construction Manager will conduct an inspection of the RFW habitat construction areas from areas accessible along the shore at the time of planting and seeding to confirm their suitability for planting or seeding. The remaining RFW acreage in CU60-2, comprising 0.66 acre, will be relocated and planted as RFW in CU60-1, as noted in Section 2.1.2 above.

2.2.6 Demobilization and Restoration

After the dredging and backfilling operations are completed, the transload station, staging area, and access ways will be decontaminated, dismantled, and removed and the property will be restored to return the areas to pre-work conditions, to the extent practicable. These activities will include, but will not be limited to: removing materials used to construct the access ways, transload station, and staging areas; demobilizing construction equipment; grading to establish appropriate topography and drainage patterns; placing topsoil and/or other necessary materials to stabilize the disturbed areas; and seeding disturbed areas for erosion control and as required by NYSCC. Further details regarding the demobilization and restoration plan for the CU60-2 support areas are presented in the CU60 RAWP.

3. Design Revisions for CU95

CU95 is located in River Section 3 at the southern end of Reach 3 and upstream of the Lower Mechanicville Dam. CU95 is composed of three discrete dredge areas (sub-units CU95-1, CU95-2, and CU95-3). One dredge area (CU95-1) is located along the western shoreline of the river near RM 164.4 and west of the southern end of an unnamed island. The other two dredge areas (CU95-2 and CU95-3) are located east of Quack Island between RM 163.6 and RM 164.1. Figure 1-2d shows the locations of CU95 in relation to Quack Island, the Lower Mechanicville Dam, and the other CUs in Reach 3.

As noted in Section 1, no design revisions are proposed for CU95-1, although habitat construction in areas affected by access dredging for that sub-unit is discussed below. An updated dredging and material transport approach for sub-units CU95-2 and CU95-3 is described below, followed by a description of proposed habitat construction design revisions for these sub-units.

3.1 Dredging and Dredged Material Transport – CU95-2 and CU95-3

The dredging operations in CU95-2 and CU95-3 will follow the procedures and requirements presented in the Contract 42A specifications and will be similar to the procedures implemented in other areas of the river, except as described below.

- Following approval of the CU85-CU96 FDR (ARCADIS 2014c) and CU85-CU96 FDR Addendum 1 (GE 2014c), GE and its dredging contractor completed an additional evaluation of the means and methods for accessing the portion of CU95 east of Quack Island. Due to limited water depths and the presence of bedrock in both the northern and southern access channel, GE determined that it is not feasible to transport dredged materials or backfill/cap materials in the river through the northern or southern access channel to the portion of CU95 east of Quack Island using the standard tugs, hopper barges, and work platforms used in the main stem of the river. In addition, access to CU95-2 is restricted by shallow water and the presence of an unnamed island that separates CU95-2 and CU95-3. To address these unique access challenges, GE and its contractor have developed a dredging and material transport approach that will enable dredging and backfilling operations to be completed in CU95-2 and CU95-3 to the limits specified in the CU85-CU96 FDR. Specifically, dredging in these portions of CU95 will be conducted using a combined land-based and water-based approach, and dredged material and backfill/cap material transport to and from CU95-2 will be conducted using a transloading approach. The proposed approach for conducting dredging and material transport operations in these portions of CU95 is described in detail in GE's Remedial Action Work Plan for Phase 2 Dredging and Facility Operations in 2015 (2015 RAWP, Parsons 2015b).

- Conservation measures for dredging activities in the vicinity of bald eagle nests are described in the Conservation Measures Plan for Eagle Nests provided as Attachment 3 to the revised 2015 RAWP submitted in June 2015.

3.2 Habitat Construction Design Revisions – CU95

The initial habitat construction approach for the portion of CU95 east of Quack Island was developed considering that a large portion of the wetland mapped by the New York State Department of Environmental Conservation (NYSDEC) east of Quack Island, in which CU95-2 and CU95-3 are located, is dominated by the invasive species water chestnut (*Trapa natans*). That approach included reconstructing the field-delineated RFW within the CU area and designation of a portion of CU95-3 within the delineated SAV bed for natural recolonization, with the remaining area designated as unconsolidated river bottom (consistent with the approach agreed upon with EPA for other areas of the river).

On February 11, 2015 and March 11, 2015, GE met with EPA to discuss the habitat construction design for CU95-2 and CU95-3. During those meetings, EPA provided verbal comments on the habitat construction design approach that was presented in the CU85-CU96 FDR for this portion of CU95.

Attachment C presents the revised habitat construction design for CU95-2 and CU95-3. The revised habitat construction design includes a modified RFW area, an area designated for planting of SAV and floating aquatic vegetation (FAV), and an SAV natural recolonization area, as shown on Figure C-6 in Attachment C. The backfill plan shown on Drawing B-2738 (Attachment A) has been updated to be consistent with the revised habitat construction design for this portion of CU95.

As noted above, the area east of Quack Island is currently dominated by water chestnut, but only a portion of those plants are within the dredge area and thus will be removed by dredging. Therefore, as agreed by EPA and GE during their discussions, removal of invasive species prior to planting (other than to facilitate dredging) will not be required in the area east of Quack Island. For purposes of long-term OM&M and habitat AM, the application of the AM benchmarks and response actions relating to invasive species in this area will be in accordance with the applicable provisions specified in Section 4.7 of the September 2015 revision of the Operation, Maintenance, and Monitoring Plan for 2014 Caps and Habitat Replacement/Reconstruction (2014 Cap/Habitat OM&M Plan; Anchor QEA and Parsons, 2015). Specifically, removal of invasive species in reconstructed SAV habitats will not be required as part of any post-construction response actions under the long-term monitoring or habitat AM programs, removal of such species in reconstructed RFW habitats in the first two years after planting will be limited to areas above the near-shore elevation (46.2 feet [NAVD88]), and any comparisons to reference areas will be to appropriate reference areas

that include invasive species, to be designated in a future Cap/Habitat OM&M Plan and mutually agreed to by EPA and GE. The long-term OM&M requirements for this area will be described in the 2015 Cap/Habitat OM&M Plan, and any proposed post-construction response actions will be described in GE's annual Monitoring, Maintenance, and Adaptive Management (MM&AM) Reports.

Access dredging will be necessary to facilitate access to CU95-2 and CU95-3 east of Quack Island and will also be necessary to facilitate access to CU95-1 on the western shoreline of the river. The access dredging east of Quack Island will disturb delineated RFW in that area, and the access dredging for CU95-1 and CU95-3 will disturb delineated SAV areas. Delineated RFW areas where access dredging is performed outside of the CU boundaries will be restored consistent with the backfilling and planting approach for RFW areas that are dredged inside the CU boundaries. The delineated SAV areas impacted by access dredging will be designated as SAV natural recolonization areas. Plans for proposed access dredging, including any required backfilling and habitat construction resulting from access dredging areas, will be reviewed with EPA prior to dredging those areas. Areas dominated by water chestnut where access dredging is performed east of Quack Island will not be re-planted. For purposes of long-term OM&M and habitat AM, the application of the AM benchmarks and response actions relating to invasive species in those areas will be the same as discussed in the prior paragraph.

4. Conceptual Habitat Construction Design for CU82

In April 2014, GE submitted responses to EPA comments on Addendum No. 7 to the 2013 FDR related to CU79 through CU84 (GE 2014b). A revised conceptual habitat construction design approach for CU82 was presented in those responses and included planting SAV within a portion of the NYSDEC-mapped wetland area where the invasive species water chestnut (*Trapa natans*) was delineated. However, based on subsequent discussions between EPA and GE, and as directed in a July 22, 2014 email from EPA, an overall acreage equal to the delineated aquatic vegetation (including SAV, FAV, and water chestnut, but excluding RFW areas) within the cove portion of CU82 will be designed for habitat construction, with one-third of that area designated for planting and the remainder of that area designated for natural recolonization. A total of 2.06 acres of SAV, FAV, and water chestnut were delineated within the cove portion of CU82.

Attachment C presents the updated conceptual habitat construction design for CU82. As shown on Figure C-5 and summarized on Table C-1 (both in Attachment C), 0.69 acre of SAV has been designated for planting in the cove portion of CU82 with the remaining areas outside of the access channel and dock access area designated for natural recolonization. As summarized in Attachment C, 0.15 acre of RFW will also be constructed within the cove portion of CU82, and SAV contingency planting areas and SAV natural recolonization areas are also included in CU82 outside of the cove.

The cove area is currently dominated by water chestnut, but CU82, which was dredged in 2014, only encompasses a portion of the cove area. Removal of invasive species prior to planting (other than that performed to facilitate dredging) will not be required in the CU82 cove area. For purposes of long-term OM&M and habitat AM, the application of the AM benchmarks and response actions relating to invasive species in this area will be in accordance with the applicable provisions specified in Section 4.7 of the September 2015 revision of the 2014 Cap/Habitat OM&M Plan. Specifically, removal of invasive species in reconstructed SAV habitats will not be required as part of any post-construction response actions under those programs, removal of such species in reconstructed RFW habitats in the first two years after planting will be limited to areas above the near-shore elevation (82.2 feet [NAVD88]), and any comparisons to reference areas will be to reference areas that contain both native and invasive species – specifically, for RFW, reference wetland WET-16R in the cove at Coveville and, for SAV, a similar appropriate reference area containing invasive species, to be designated in a future Cap/Habitat OM&M Plan and mutually agreed to by EPA and GE. The long-term OM&M requirements for this area will be described in the 2015 Cap/Habitat OM&M Plan, and any proposed post-construction response actions will be described in GE's annual MM&AM Reports.

5. References

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GE. 2014b. Letter to EPA, Response to EPA Comments and Further Design Revisions to Revised Addendum No. 5 and Addendum No. 7 to Phase 2 Final Design Report for 2013 – CUs 79 through CU84 in Reach 5. April 4.

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URS. 2015a. Cultural Resources Assessment, Certification Unit 60-2 Access Area, Washington County, New York, Hudson River PCBs Superfund Site. Prepared for GE by URS Corporation. February 20.

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6. Acronyms and Abbreviations

AM	adaptive management
ARCADIS	ARCADIS of New York, Inc.
cfs	cubic feet per second
CU	Certification Unit
cy	cubic yards
DoC	Depth of Contamination
EoC	Elevation of Contamination
EPA	U.S. Environmental Protection Agency
FAV	floating aquatic vegetation
FDR	Final Design Report
ft	feet
GE	General Electric Company
kg	kilogram
MOA	Memorandum of Agreement
NAVD88	North American Vertical Datum of 1988
NYSCC	New York State Canal Corporation
NYSDEC	New York State Department of Environmental Conservation
OM&M	Operations, Maintenance, and Monitoring
PCB	polychlorinated biphenyl
RAWP	Remedial Action Work Plan
RFW	riverine fringing wetland
RM	river mile
SAV	submerged aquatic vegetation
TOC	total organic carbon
Tri+ PCBs	PCBs with three or more chlorine atoms
UCB	unconsolidated river bottom

Figures

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RIVER SECTION 1

RIVER SECTION 2

RIVER SECTION 3

FORT EDWARD

LOCK #7

CORINTH

ARGYLE

REACH 8
THOMPSON ISLAND POOL

GRIFFIN ISLAND

WEST GRIFFIN ISLAND AREA
CU50-CU54

THOMPSON ISLAND DAM

FORT MILLER

REACH 7
LANDLOCKED AREA

SALEM

LANDLOCKED AREA
CU61-CU66

FORT MILLER DAM

LOCK #6

REACH 6
NORTHUMBERLAND POOL

NORTHUMBERLAND DAM

BATTEN KILL

LOCK #5

SCHUYLERVILLE

VICTORY

GREENWICH

SARATOGA SPRINGS

CAMBRIDGE

REACH 5
STILLWATER POOL

BALLSTON SPA

STILLWATER

ROUND LAKE

STILLWATER DAM

LOCK #4

REACH 4
UPPER MECHANICVILLE POOL

UPPER MECHANICVILLE DAM

MECHANICVILLE

LOCK #3

VALLEY FALLS

HOOSICK FALLS

REACH 3
LOWER MECHANICVILLE POOL

LOCK #2

SCHAGHTICOKE

LOWER MECHANICVILLE DAM

REACH 2
WATERFORD POOL

WATERFORD DAM

LOCK #1

WATERFORD

REACH 1
TROY POOL

COHOES

MOHAWK RIVER

FEDERAL DAM & LOCK

GREEN ISLAND

TROY

WATERVLIET

0 15000' 30000'

GRAPHIC SCALE

LEGEND:

- PHASE 1 DREDGE AREA
- PHASE 2 CUs WHERE DREDGING HAS BEEN COMPLETED
- PHASE 2 CUs PLANNED FOR DREDGING IN 2015
- INCORPORATED AREAS

GENERAL ELECTRIC COMPANY
HUDSON RIVER PCBS SUPERFUND SITE
SUPPLEMENTAL DESIGN REVISIONS FOR 2015

UPPER HUDSON RIVER

ARCADIS

FIGURE
1-1

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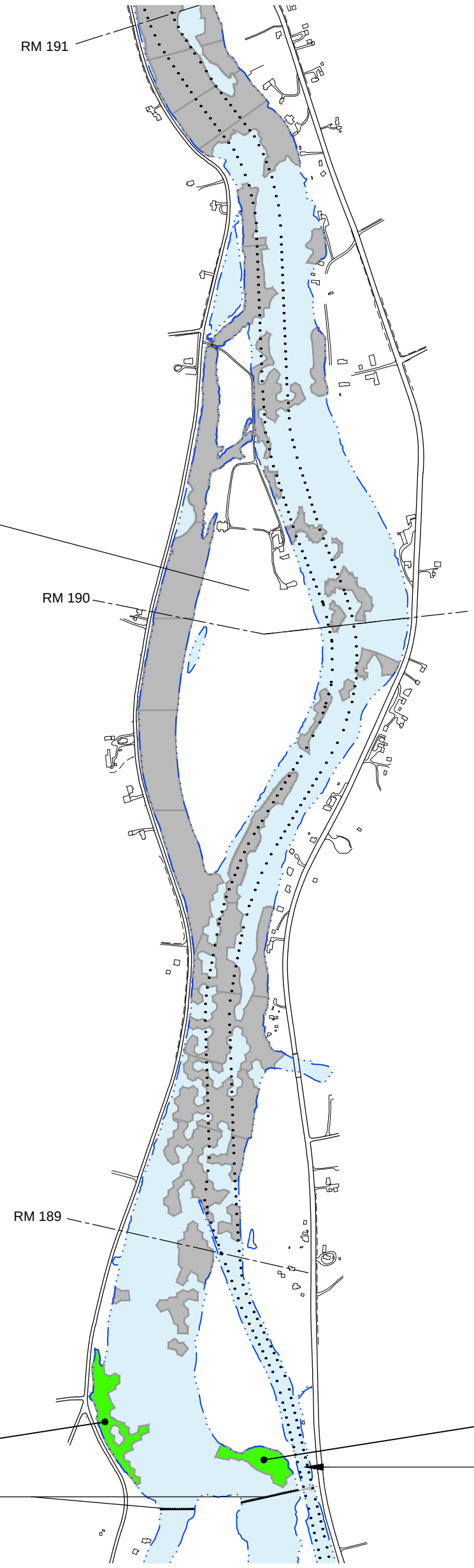

LEGEND:

- CERTIFICATION UNITS PLANNED FOR DREDGING IN 2015
- CERTIFICATION UNITS WHERE DREDGING HAS BEEN COMPLETED
- SHORELINE
- NAVIGATION CHANNEL
- RIVER MILES

0 1000' 2000'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
HUDSON RIVER PCBS SUPERFUND SITE
SUPPLEMENTAL DESIGN REVISIONS FOR 2015

PHASE 2 CERTIFICATION UNIT 60

ARCADIS

FIGURE
1-2a

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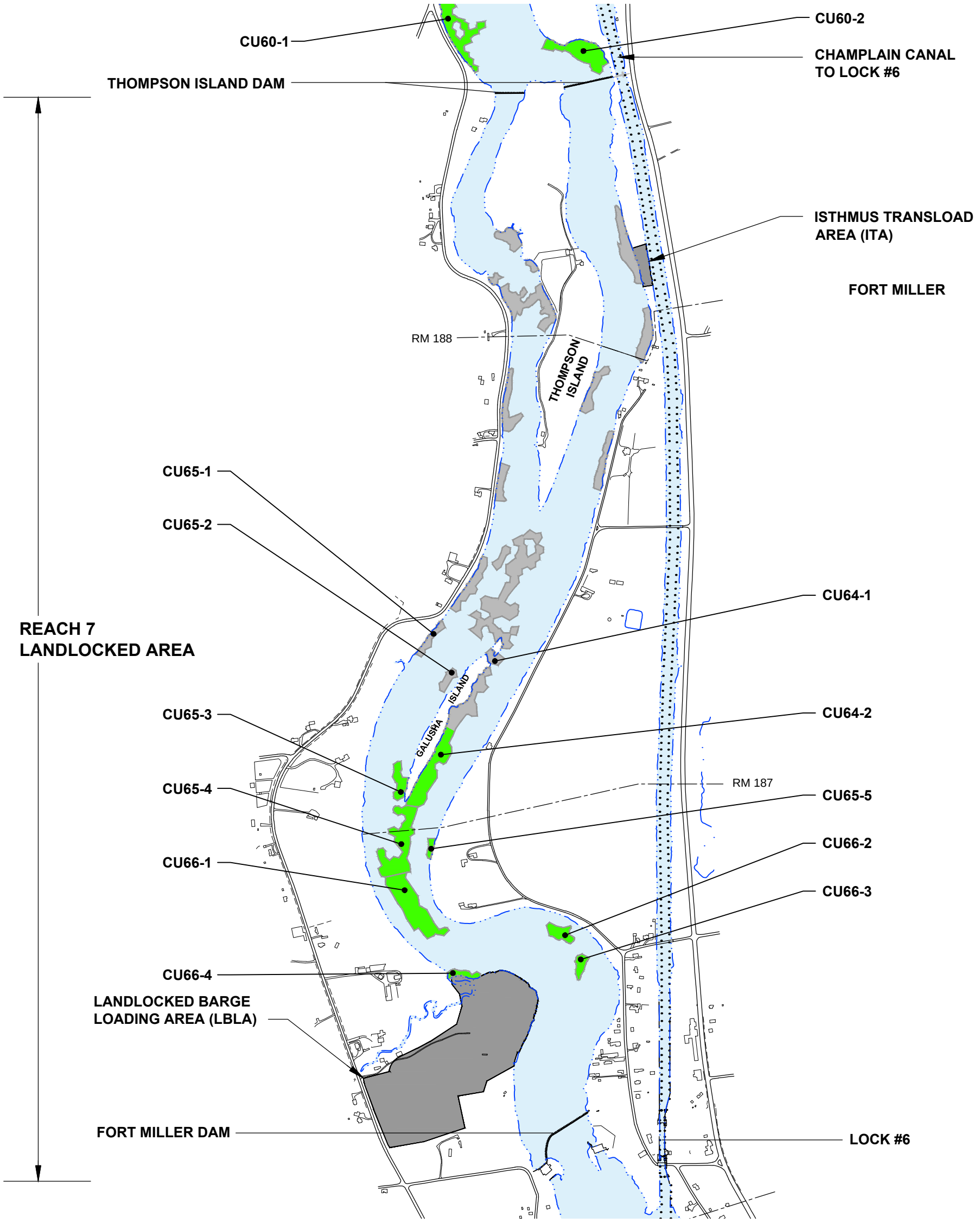

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- CERTIFICATION UNITS WHERE DREDGING HAS BEEN COMPLETED
- SHORELINE
- NAVIGATION CHANNEL
- RIVER MILES

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GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
HUDSON RIVER PCBS SUPERFUND SITE
SUPPLEMENTAL DESIGN REVISIONS FOR 2015

PHASE 2 CERTIFICATION UNITS 64 THROUGH 66

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FIGURE
1-2b

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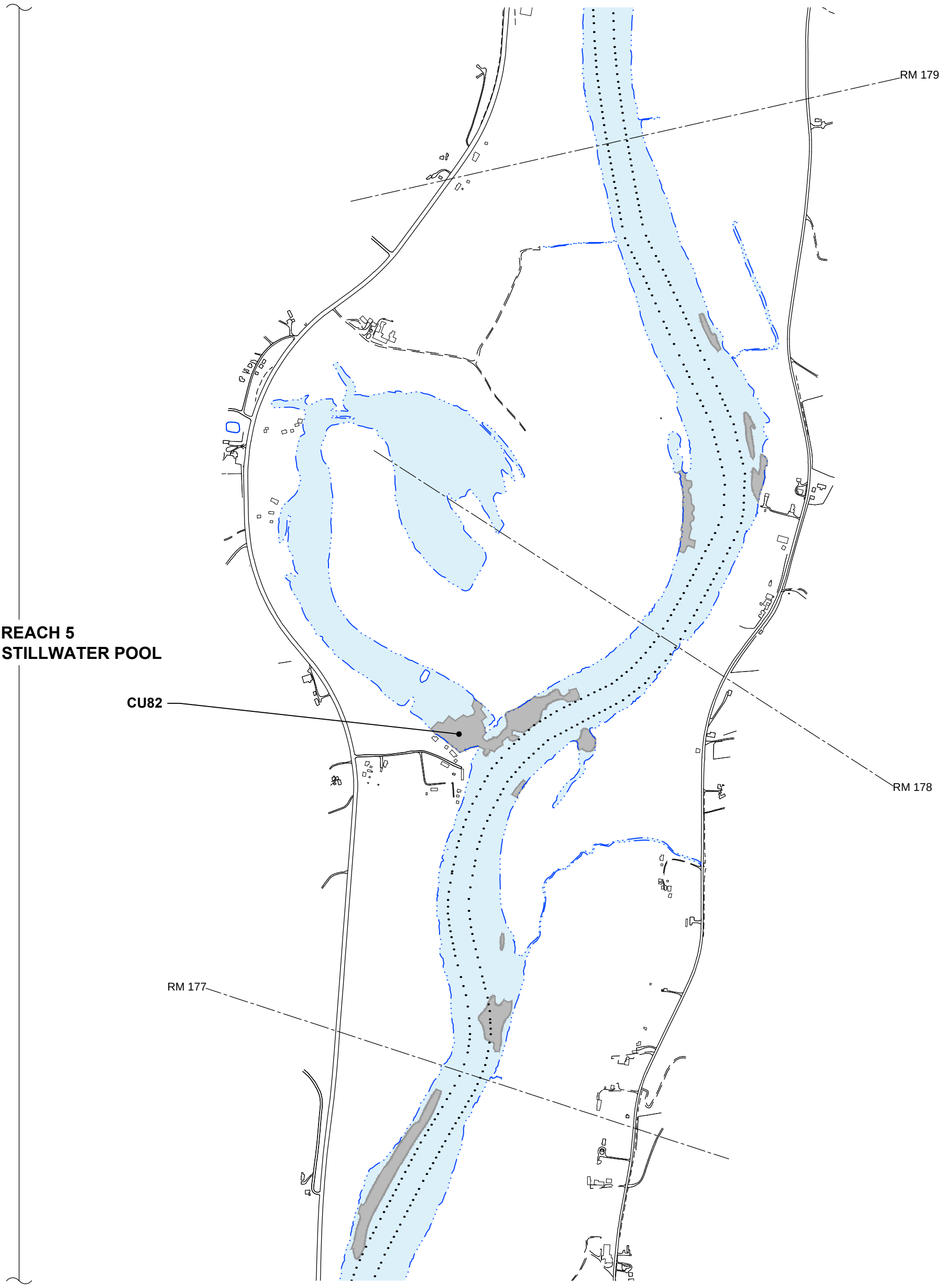

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- NAVIGATION CHANNEL
- RIVER MILES

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GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
HUDSON RIVER PCBS SUPERFUND SITE
SUPPLEMENTAL DESIGN REVISIONS FOR 2015

PHASE 2 CERTIFICATION UNIT 82

ARCADIS

FIGURE
1-2c

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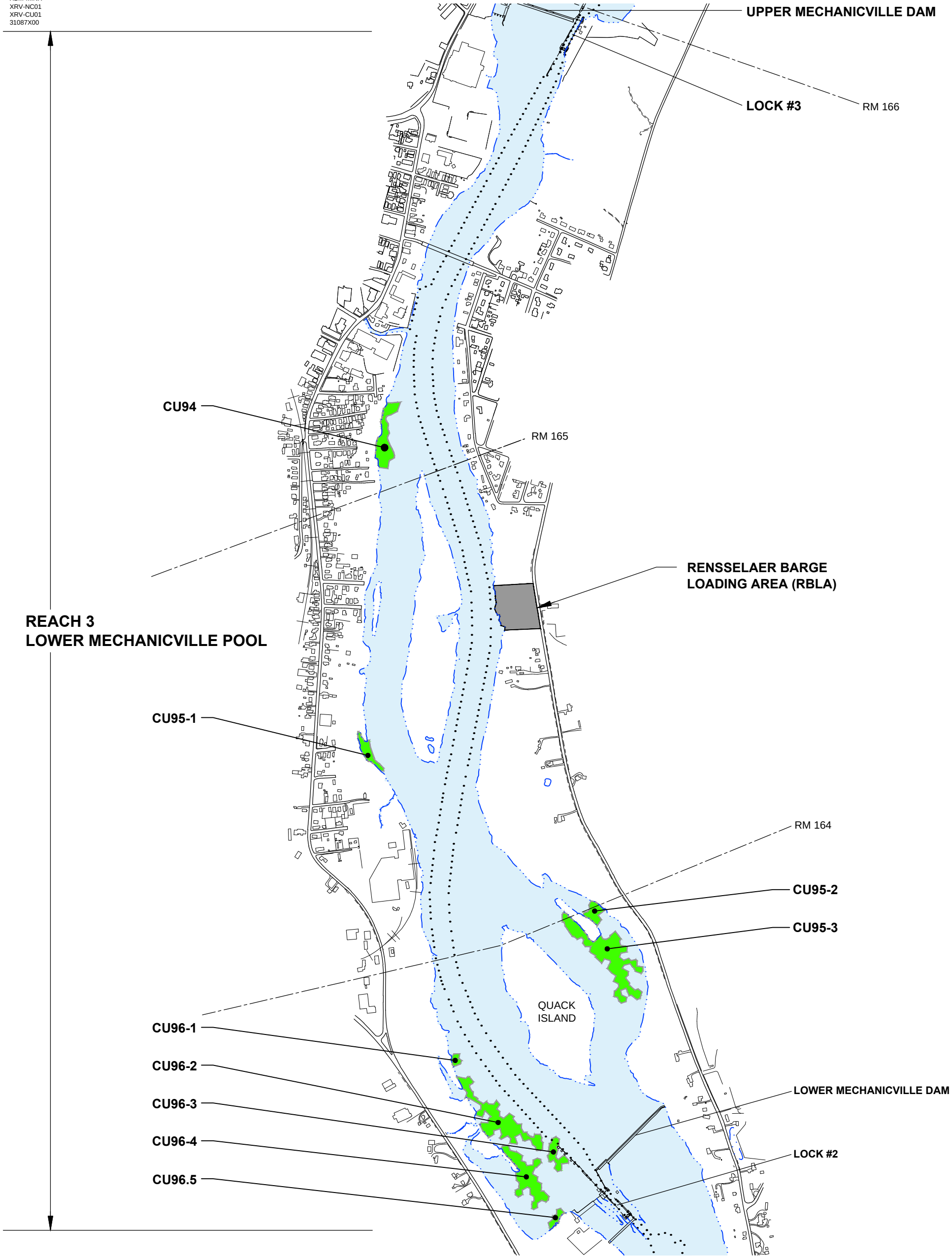

LEGEND:

- CERTIFICATION UNITS PLANNED FOR DREDGING IN 2015
- CERTIFICATION UNITS WHERE DREDGING HAS BEEN COMPLETED
- SHORELINE
- NAVIGATION CHANNEL
- RIVER MILES

0 1000' 2000'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
HUDSON RIVER PCBS SUPERFUND SITE
SUPPLEMENTAL DESIGN REVISIONS FOR 2015

PHASE 2 CERTIFICATION UNITS 94 THROUGH 96

ARCADIS

FIGURE
1-2d

CITY: SYRACUSE, NY DIV/GROUP: IMDV/CAD DB/LD: L.POSENAUER PM: C.GUEST LYR:(OPT)ON=*;OFF=*REF*
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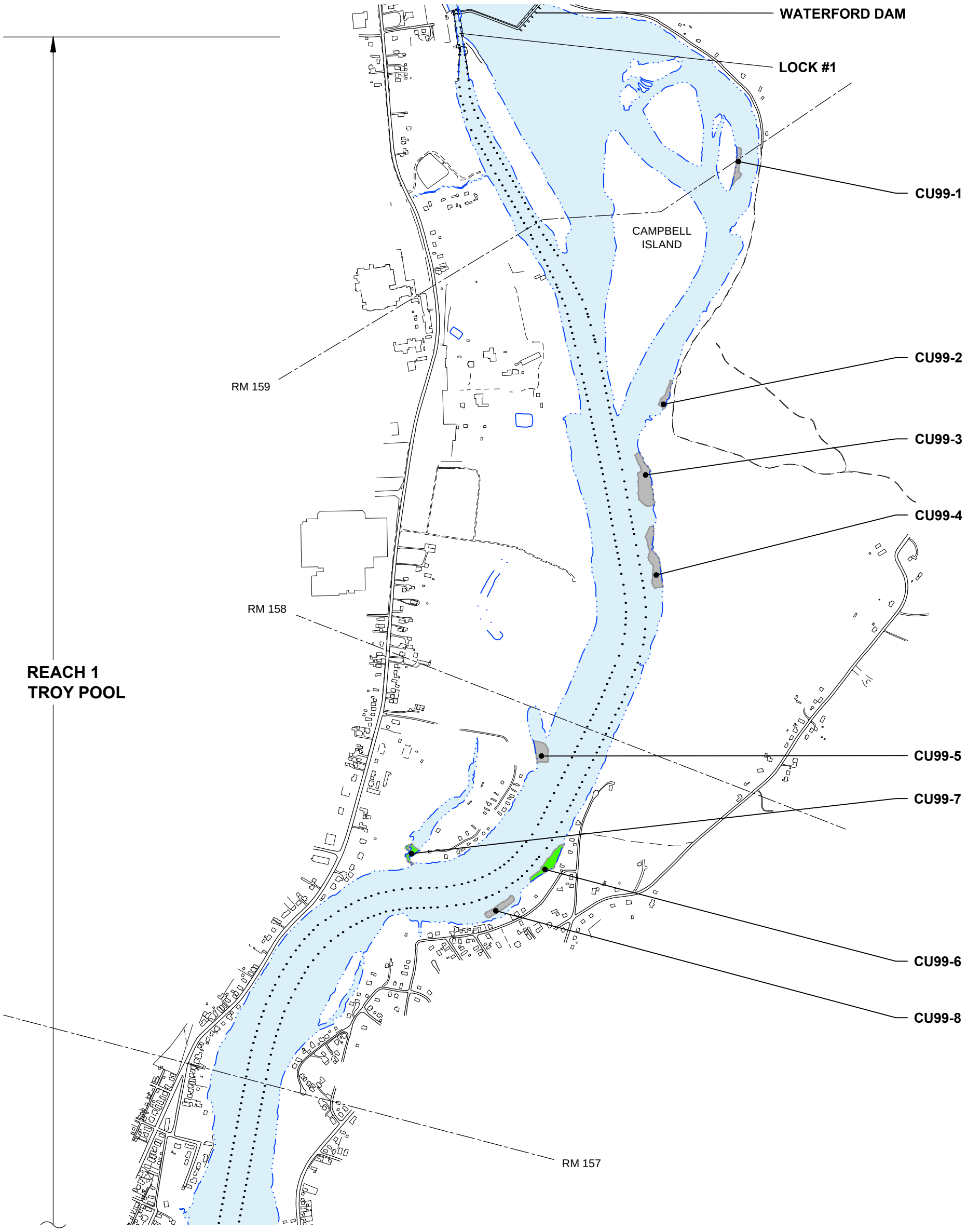
XREFS:
XBM-MAJR
XBM-MINR
XRV-NC01
XRV-CU01
31087X00

IMAGES:



REACH 1
TROY POOL

LEGEND:

- CERTIFICATION UNITS PLANNED FOR DREDGING IN 2015
- CERTIFICATION UNITS WHERE DREDGING HAS BEEN COMPLETED
- SHORELINE
- NAVIGATION CHANNEL
- RIVER MILES

0 1000' 2000'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
HUDSON RIVER PCBS SUPERFUND SITE
SUPPLEMENTAL DESIGN REVISIONS FOR 2015

PHASE 2 CERTIFICATION UNIT 99

ARCADIS

FIGURE
1-2e

CITY: SYRACUSE, NY DIV/GROUP: IMDV/CAD DB/LD: L.POSENAUER PM: C.GUEST LYR:(OPT)ON=*;OFF=*REF*
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XREFS:
XRV-CU01
31087X00

IMAGES:
orth_25.tif

RM 189.3
Moses Kill
57-1
CU #57
5.44 ACRES
RM 189.2
58-2
58-1
RM 189.1
CU #58
6.03 ACRES
58-3
APPROXIMATE LOCATION OF NYSCC DAM SAFETY WARNING CABLE
RM 189
59-1
59-2
59-3
RM 188.9
CU #59
4.02 ACRES
59-4
Champlain Canal
RM 188.8
CU60-2 ACCESS AREA, MATERIAL STAGING AREA, AND TRANSLOAD STATION
60-1
CU #60
5.41 ACRES
ESTIMATED FOOTPRINT OF THE SHORELINE ACCESS ROAD AND FINGER PIERS
RM 188.7
ROUTE 4 STAGING AREA
RM 188.6
60-2
ESTIMATED EXTENT OF THE PRACTICABLE REACH OF THE EXCAVATOR
RM 188.5
THOMPSON ISLAND DAM EAST
RM 188.6
RM 188.5
THOMPSON ISLAND DAM WEST
THOMPSON ISLAND
RM 188.4

0 300' 600'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
HUDSON RIVER PCBS SUPERFUND SITE
SUPPLEMENTAL DESIGN REVISIONS FOR 2015

CERTIFICATION UNIT 60 IN REACH 8

ARCADIS

FIGURE
2-1