River Mile 10.9 Removal Action High Sub-Grade Sediment Sampling Plan, Lower Passaic River Study Area

Prepared for

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Acronyms and Abbreviations

COPC	chemical of potential concern
LPR	Lower Passaic River
LPRSA	Lower Passaic River Study Area
PCB	Polychlorinated Biphenyl
PCDD	Polychlorinated Dibenzo-p-dioxins
PCDF	Polychlorinated Dibenzofurans
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RM	River Mile
TAT	Turn-Around Time
USEPA	United States Environmental Protection Agency

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1.Introduction

1.1. Overview

The CPG has agreed to perform the actions necessary to remove, treat, and/or properly dispose of sediment from the RM 10.9 Removal Area due to elevated concentrations of polychlorinated dibenzo-p-dioxins/polychlorinated dibenzofurans (PCDDs/PCDFs), polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), mercury, and other chemicals of potential concern (COPCs) and the potential for receptors to be exposed to them.

The RM 10.9 Removal Action objectives are to mitigate potential threats to public health and the environment posed by the presence of COPCs in the RM 10.9 Removal Area surface sediment and to minimize COPC bioavailability. The RM 10.9 Removal Action includes dredging of sediment to a predetermined depth (uppermost 2 ft), followed by an engineered cap, constructed, monitored, and maintained as described in the RM 10.9 design.

1.2. Sampling Objectives

As required by the approved Final Design and pursuant to the RM 10.9 Removal Action Waterfront Permit Equivalent issued by NJDEP, the top of cap elevation must be less than the original sediment surface elevation. Over the vast majority of the RM 10.9 sediment removal area, the top of the dredged surface is 2 feet below the original sediment surface elevation, which is greater than the 22-inch-thick cap design thickness. The 22-inch-thick cap design consists of an average of 10 inches of active layer material, geotextile, 12 inches of Type A (D50 = 4.5 inches) armor stone, and a thin sand layer just covering the top of the armor stone.

However, in some near shore areas, the dredging team encountered very hard-packed material comprising of weathered stone, clay and cobble (see photos in Appendix A). The presence of this material resulted in refusal (i.e., an inability to dredge with an environmental bucket), which prevented sediment removal to the depth acceptance criteria of 1.75 feet. As a result, the cap will be modified to reduce its thickness in those areas.

USEPA has directed the CPG collect sediment samples within the dredged areas proposed for a modified cap to characterize COPC concentrations in the residual post- dredge sediments. This sediment sampling plan presents the proposed sample locations, sampling methods, and analytical methods that will be used.

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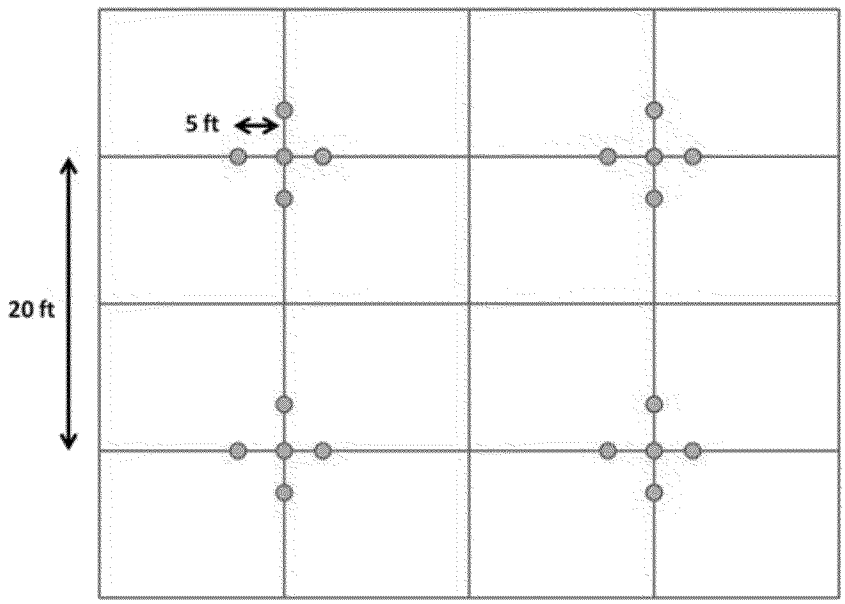
2. Field Activities

2.1. Sediment Probing

Sediment probing will be performed to determine the approximate sediment thickness within each of the modified cap areas. The probing will be accomplished using a calibrated steel rod at 5, 10, and 20 foot intervals as shown in the diagram below. At each location, the depth of penetration and GPS coordinates will be recorded. A total of approximately 80 sediment thickness measurements will be completed within dredge cut 4T and 15 measurements will be made within dredge cut 6T.



2.2. Sediment Sample Collection

Sediment grab samples will be collected at 7 locations using a stainless steel shovel or ponar grab sampler. The surface sediment samples will be collected up to 0.5 foot in depth below the sediment surface. If the accessible sediment depth at a given location is not sufficient to generate the required sediment volumes for analysis of PCDDs/PCDFs, total PCBs, and mercury (as presented in Section 3.2), additional sediment volume will be collected and composited within a 1 to 2 foot radius from the original location.

The proposed sample locations are presented in Figures 1 and 2 for the modified cap areas within dredge cuts 4T and 6T, respectively. At this time, dredge cuts 4T and 6T are the only areas that currently have dredged sediment elevations that do not meet the acceptance criteria of -1.75 feet. If any additional areas are found prior to completion of dredging, they will be characterized using the same transect/sample spacing as presented in this section for dredge cuts 4T and 6T.

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2.3. Duplicates and Quality Control

A single field duplicate will be collected as part of this sampling based on a frequency of 1 per 20 samples. The field duplicate will be collected by homogenizing the sediment collected from the grab sample and then distributing the sample material between two sets of containers, each uniquely identified. The parent sample and the field duplicate will be submitted to the laboratory, analyzed, and reported as separate samples. One equipment rinsate blank will be collected if dedicated (single location) supplies are not used.

2.4. Equipment decontamination

The grab sampler, stainless steel bowls/containers, and stainless steel spoons/spatulas will be cleaned prior to initial use and between each sampling station. A sufficient supply of pre-decontaminated small equipment will be mobilized to the sampling locations to minimize the need for performing field decontamination. If used, larger equipment (e.g., ponar grab sampler), will however require field decontamination on the vessel between sampling stations.

2.5. Investigative Derived Waste (IDW)

PPE and disposable sampling equipment will be characterized based on whether these materials have come in contact with contaminants. If direct contact is experienced or suspected, the wastes (PPE or disposable sampling equipment) take on the same characteristics as the contacted media. Unstained equipment will be disposed of as municipal solid waste at the time of generation. Stained gloves and other sampling equipment will be wiped down, double bagged, and disposed of as municipal trash. Because of their nature and use, these types of waste cannot be reused, recycled, or treated. Plastic buckets will be decontaminated with an appropriate decontamination solution and reused to the maximum practicable extent.

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3. Analytical Methods

3.1. Sample Analysis

All sampling procedures and analytical methods will be performed pursuant to the RM 10.9 Lower Passaic River Study Area River Mile 10.9 Characterization QAPP, Revision 3, dated October 21, 2011 (AECOM, 2011a). The sediment samples will be analyzed for the following parameters:

- PCDD/PCDF congeners using EPA Method 1613B
- PCB (homologs and congeners) using EPA Method 1668A
- Low-Level Mercury using EPA Method 1631

3.2. Sample Handling Requirements

Sediment samples will be collected and handled in accordance with the requirements summarized in the table below.

Matrix	Analytical Group	Sample Size (Minimum)	Containers	Preservation Requirements
Sediment	PCBs (Homologs and Congeners)	45 g	8 oz wide mouth glass	During shipment: 0-6°C; store in the dark; upon arrival at lab: store at <-10°C in the dark
Sediment	PCDD/PCDFs	20 g	2 oz wide mouth glass	During shipment: 0-6°C; store in the dark; upon arrival at lab: store at <-10°C in the dark
Sediment	Low Level Mercury	20 g	2 oz wide mouth glass	0-6°C during shipment; upon arrival at lab: store at ≤ -15°C

3.3. Analytical Turn-Around Times

To facilitate receipt of analytical results, samples will be delivered to the laboratories on the same day that they were collected (to the extent possible) and expedited turn-around times (TAT) will be requested for all parameters. However, the exact TAT per analyte will be unique to the analytical method/procedure, and therefore will vary.

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4. Reporting

Unvalidated analytical sampling results will be reported to USEPA within 24 hours of data receipt. Note that the laboratory reports PCB and PCDD/PCDF congener values and therefore totals (e.g., total PCBs) are calculated by the CPG. The purpose of the rapid turn-around times and reporting is to allow USEPA sufficient time to review the data for purposes of approving capping within the modified capping areas presented in Figures 1 and 2.

Figures

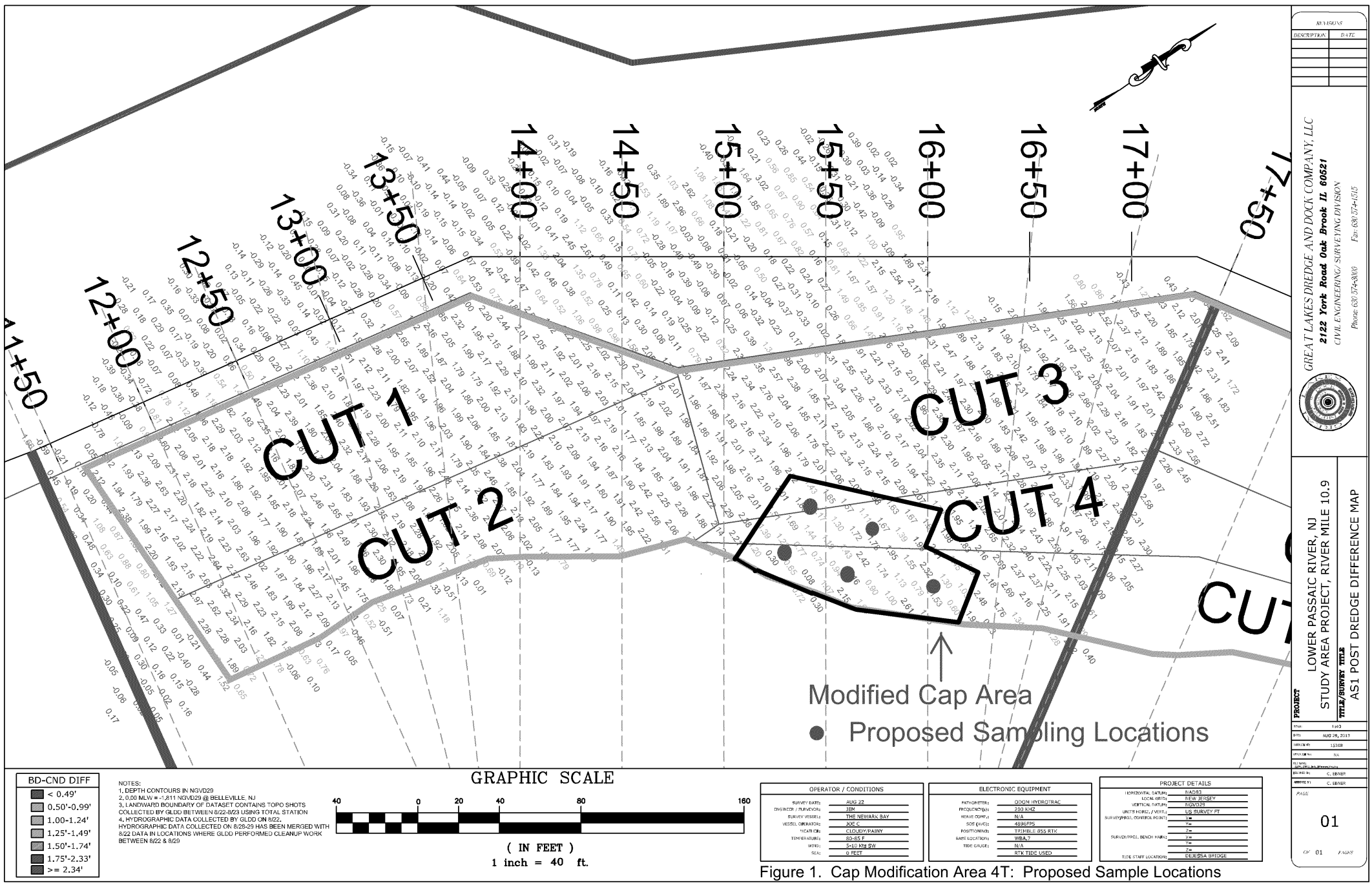

Figure 1. Cap Modification Area 4T: Proposed Sample Locations

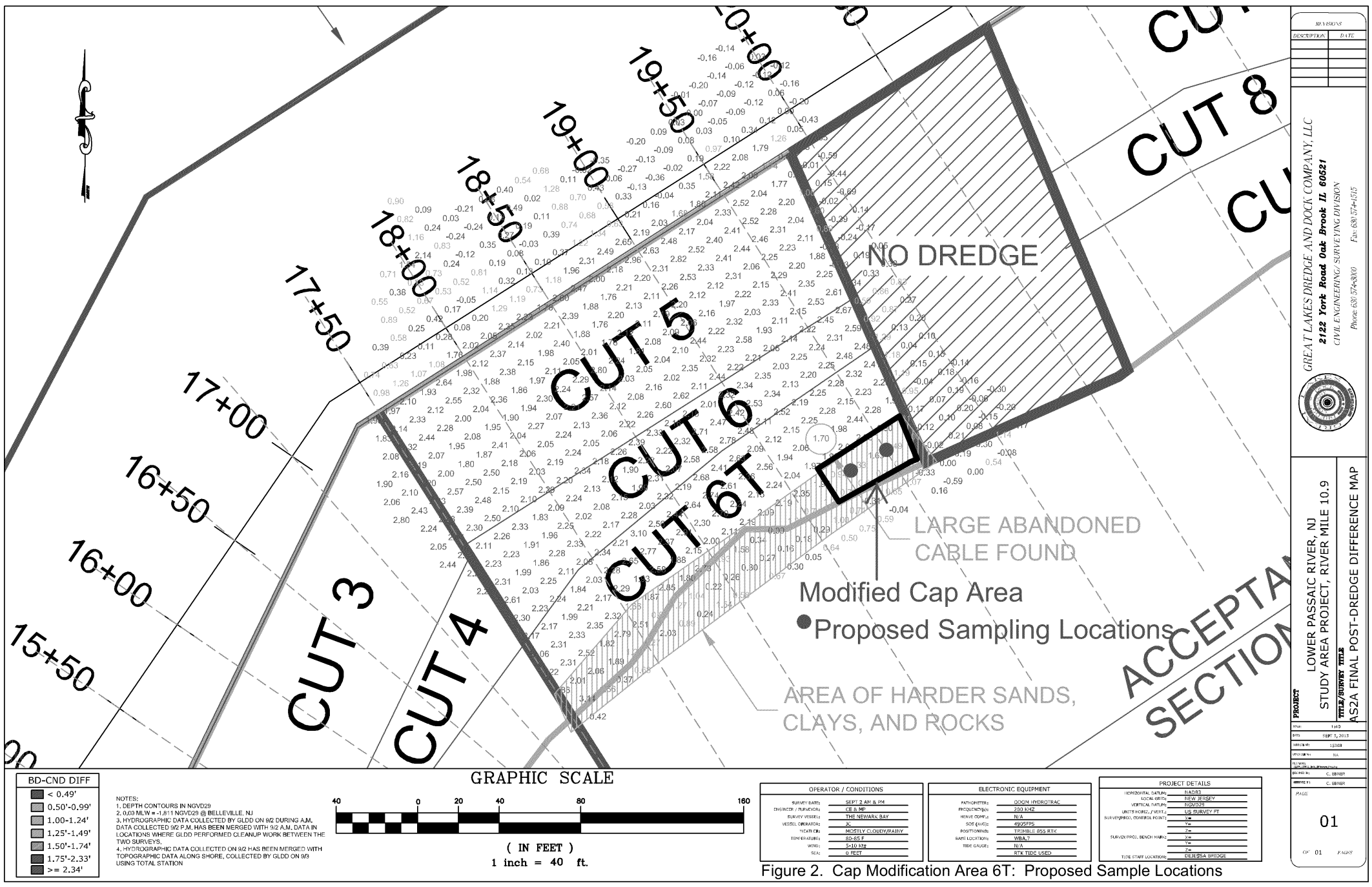

Figure 2. Cap Modification Area 6T: Proposed Sample Locations

Appendix A: Dredge Cut 4T Photos