ATTACHMENT O

Best Management Practices

Champlain Hudson Power Express Inc.

Best Management Practices

General Information
Regarding Application

February 10, 2012

TABLE OF CONTENTS

ACRONYMS ..... **ix**

1.0 INTRODUCTION **1-1**

1.1 BEST MANAGEMENT PRACTICES OBJECTIVES 1-1
1.2 GENERAL PLANNING OBJECTIVES 1-1
1.3 FACILITY SEQUENCING AND CONSTRUCTION SEQUENCING 1-1

2.0 CONSTRUCTION SUPERVISION AND INSPECTION **2-1**

2.1 ENVIRONMENTAL INSPECTOR 2-1
2.1.1 Responsibilities 2-1
2.1.2 Qualifications 2-3
2.2 AGRICULTURAL INSPECTOR 2-3
2.2.1 Responsibilities 2-3
2.2.2 Qualifications 2-4
2.3 AQUATIC INSPECTOR 2-5
2.3.1 Responsibilities 2-5
2.3.2 Qualifications 2-5
2.4 CONSTRUCTION INSPECTOR 2-6
2.4.1 Responsibilities 2-6
2.4.2 Qualifications 2-6
2.5 SAFETY INSPECTOR 2-7
2.5.1 Responsibilities 2-7
2.5.2 Qualifications 2-7
2.6 QUALITY CONTROL AND QUALITY ASSURANCE INSPECTOR 2-8
2.6.1 Responsibilities 2-8
2.6.2 Qualifications 2-9

3.0 SITE PREPARATION **3-1**

3.1 OBJECTIVES 3-1
3.2 STAKING AND RIGHT-OF-WAY DELINEATION (SURVEY) 3-1

4.0 EROSION AND SEDIMENT CONTROL **4-1**

4.1 OBJECTIVES 4-1
4.2 MEASURES AND DEVICES 4-1
4.2.1 French Drains 4-2
4.2.2 Inlet Protection 4-2
4.2.3 Dewatering 4-2
4.2.4 Concrete Wash Out 4-3
4.2.5 Clearing, Excavation, and Grading 4-3
4.2.6 Site Stabilization 4-4
4.2.7 Responsibilities 4-4
4.2.8 Inspection and Record-keeping 4-4

5.0 VEGETATION CLEARING IN UPLAND AREAS along the overland route **5-1**

5.1 OBJECTIVES 5-1
5.2 DEFINITIONS 5-1
5.3 EQUIPMENT 5-1
5.4 CLEARING METHODS AND PROCEDURES 5-2

5.4.1 Upland Areas 5-2
5.4.2 Wetlands and Other Sensitive Resources 5-3
5.5 LOG DISPOSAL 5-3
5.5.1 Construction Use 5-4
5.5.2 Log Piles 5-4
5.5.3 Sale 5-4
5.5.4 Chipping 5-4
5.6 SLASH AND STUMP DISPOSAL 5-4
5.6.1 Chipping 5-4
5.6.2 Hauling 5-5
5.6.3 Burial 5-5
5.7 VEGETATION BUFFER AREAS 5-5
5.8 WALLS AND FENCES 5-5
5.8.1 Stone Walls 5-6
5.8.2 Fences 5-6

6.0 GRADING AND ROAD CONSTRUCTION 6-1

6.1 OBJECTIVES 6-1
6.2 TECHNIQUES AND EQUIPMENT 6-1
6.3 ACCESS ROADS AND CONSTRUCTION PATHS 6-1
6.3.1 Construction Access Roads or Paths 6-1
6.3.2 Off Right-of-Way Access Roads 6-2

7.0 OVERLAND CABLE INSTALLATION 7-1

7.1 PRECONSTRUCTION STUDIES 7-1
7.2 CORRIDOR PREPARATION 7-1
7.3 TRADITIONAL TRENCH AND SPOIL METHOD 7-1
7.3.1 Cable Pulling 7-2
7.3.2 Length of Open Trench 7-2
7.3.3 Splicing/Jointing 7-3
7.3.4 Padding and Thermal Cover 7-3
7.3.5 Backfilling 7-3
7.4 SERIES INSTALLATION METHOD 7-4
7.4.1 Cable Pulling 7-4
7.4.2 Length of Open Trench 7-4
7.4.3 Splicing/Jointing 7-5
7.4.4 Padding and Thermal Cover 7-5
7.4.5 Backfilling 7-5
7.5 MECHANICAL ROCK REMOVAL AND BLASTING 7-5
7.5.1 Monitoring and Inspection 7-6
7.5.2 Time Constraints and Notification 7-6
7.5.3 Remediation 7-6
7.6 TRENCH PLUGS 7-7
7.7 TRENCH DEWATERING 7-7

8.0 TRENCHLESS CABLE INSTALLATION 8-1

8.1 HORIZONTAL DIRECTIONAL DRILLING 8-1
8.1.1 Pre-site Planning 8-1
8.1.2 Site Planning 8-1
8.1.3 Installation and Performance Controls 8-2
8.1.4 Site Specifics and Contingencies 8-3

8.1.5 Drilling a Pilot Hole 8-3
8.1.6 Expanding the Pilot Hole by Reaming 8-4
8.1.7 Cable Pulling 8-4
8.2 JACK AND BORE 8-5
8.3 HORIZONTAL DIRECTIONAL DRILLING AND JACK AND BORE ROAD CROSSINGS 8-6
8.4 HORIZONTAL DIRECTION DRILLING AT SHORELINE CROSSINGS 8-6

9.0 UNDERWATER CABLE LAYING 9-1

9.1 WATER JETTING/HYDRO-PLOW 9-2
9.2 SHEAR PLOW 9-4
9.3 CONVENTIONAL DREDGING 9-4
9.4 NON-BURIAL METHODS 9-7
9.4.1 Cable Protection 9-7
9.4.1.1 Grout Filled Mattresses 9-8
9.4.1.2 Articulated Concrete Mats 9-8
9.4.1.3 Uraduct® 9-9
9.4.1.4 Rock or Rip-Rap 9-9

10.0 TRANSPORTATION AND UTILITY CROSSINGS 10-1

10.1 ROAD AND HIGHWAY CROSSINGS 10-1
10.1.1 Preconstruction Planning 10-1
10.1.2 Road Crossing Methods 10-2
10.1.2.1 Trenched or Open Cut 10-2
10.1.2.2 Trenchless – Horizontal Directional Drilling or Jack and Bore 10-3
10.1.3 Longitudinal In-Road Construction 10-4
10.1.4 Signs 10-5
10.1.5 Repairs and Restoration 10-5
10.2 RAILROAD CROSSINGS 10-6
10.3 UTILITY CROSSINGS 10-6
10.3.1 Overhead Electric Facilities 10-6
10.3.1.1 Perpendicular Crossings 10-7
10.3.1.2 Overhead Linear Right-of-Way Co-occupation 10-7
10.3.2 Underground Utility Crossings on the Overland Route 10-8
10.3.3 Underwater Utility Crossings 10-8
10.3.3.1 Bridges 10-9
10.3.3.2 Crossing Chain Ferry 10-9
10.3.3.3 Crossing of Fiber Optic and Telecommunication Cables 10-9
10.3.3.4 Crossing Over Gas or Oil Pipeline and Power Cables 10-10
10.3.3.5 Crossing Under Gas or Oil Pipeline 10-10

11.0 GENERAL CLEANUP AND RESTORATION 11-1

11.1 CLEANUP 11-1
11.2 RESTORATION 11-1
11.2.1 Non-Agricultural and Non-Urban/Residential Areas 11-1
11.2.1.1 Grading 11-1
11.2.1.2 Lime Application 11-2
11.2.1.3 Fertilizing 11-2
11.2.1.4 Aerating and Raking 11-2
11.2.1.5 Seeding and Planting 11-2
11.2.2 Restoration – Urban/Residential 11-3

11.2.3 Restoration – Railway Ballast....11-3

12.0 SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN....12-1

12.1 REGULATORY CONCERNS....12-1
12.2 SPILL CONTROL EQUIPMENT....12-2
12.2.1 Overland Construction Locations....12-3
12.2.2 Vessels and Equipment Operating on the Water....12-4
12.3 STORAGE AND HANDLING....12-4
12.3.1 Equipment Refueling....12-5
12.4 SPILL RESPONSE PROCEDURES....12-6
12.5 EXCAVATION AND DISPOSAL....12-7
12.5.1 Unanticipated Discoveries of Contaminated Soil and Trench Water....12-8
12.6 HAZARDOUS WASTE CONTACT....12-8
12.7 NOTIFICATIONS OF HAZARDOUS MATERIAL....12-9
12.8 HAZARDOUS MATERIAL HANDLING AND WASTE DISPOSAL....12-10
12.9 ON-WATER AND UNDERWATER SPILL PREVENTION, CONTROL AND COUNTERMEASURES OF PETROLEUM PRODUCTS....12-11

13.0 COMMUNICATIONS PLAN....13-1

13.1 AQUATIC SAFETY AND COMMUNICATIONS PLAN....13-1
13.2 OPERATIONAL PHASE COMMUNICATIONS PLAN....13-3

14.0 OPERATIONS, RIGHT-OF-WAY MANAGEMENT AND MAINTENANCE....14-1

14.1 RIGHT-OF-WAY MAINTENANCE....14-1
14.2 INSPECTION....14-1
14.3 VEGETATION MAINTENANCE....14-1
14.3.1 Mechanical Treatment....14-2
14.3.1.1 Mowing....14-2
14.3.1.2 Hand Cutting....14-2
14.3.2 Chemical Treatment....14-2
14.3.2.1 Stem-Specific Treatments....14-4
14.3.2.1.1 Basal Treatments....14-4
14.3.2.1.2 Stem Injection....14-4
14.3.2.1.3 Cut and Treat Methods....14-4
14.3.2.2 Non-Stem Specific Herbicide Applications....14-4
14.4 SITE ACCESS....14-4
14.4.1 Gates....14-4
14.5 PERMANENT STORMWATER FEATURES....14-5
14.6 FACILITY LOCATION AND IDENTIFICATION MARKERS....14-5
14.7 ABOVE-GROUND FACILITIES....14-5

15.0 PROCEDURES FOR IDENTIFICATION AND PROTECTION OF SENSITIVE RESOURCES....15-1

16.0 THREATENED AND ENDANGERED WILDLIFE SPECIES AND RARE, THREATENED AND ENDANGERED PLANT SPECIES....16-1

16.1 OVERLAND ROUTE....16-2
16.2 UNDERWATER ROUTE....16-3
16.2.1 Aquatic Threatened and Endangered Species....16-4
16.3 UNANTICIPATED DISCOVERY OF THREATENED AND ENDANGERED SPECIES 16-6
16.3.1 Significant Natural Communities....16-6

17.0 CULTURAL RESOURCES 17-1

17.1 CULTURAL RESOURCES MANAGEMENT PLAN 17-2
17.2 USE OF QUALIFIED CULTURAL RESOURCES PROFESSIONALS 17-5
17.3 PROCEDURES FOR THE INADVERTENT DISCOVERY OF HUMAN REMAINS 17-5
17.4 STANDARDS FOR CULTURAL RESOURCES INVESTIGATIONS IN NEW YORK STATE 17-6

18.0 WATERBODY CROSSING PROCEDURES AND PROTECTION MEASURES 18-1

18.1 INTRODUCTION 18-1
18.2 MITIGATION MEASURES TO COMPLY WITH STANDARDS AND MINIMIZE IMPACT 18-1
18.2.1 WATERBODY CONSTRUCTION TIMING WINDOWS 18-1
18.2.2 WATERBODY DRY CROSSING METHODS 18-2
18.2.2.1 Flumed Crossing Method 18-3
18.2.2.2 Dam and Pump Crossing Procedures 18-4
18.2.2.2.1 Upstream Water Intake or Sump Hole 18-4
18.2.2.2.2 Pump Set-Up 18-4
18.2.2.2.3 Water Barrier Installation 18-5
18.2.2.3 Horizontal Directional Drilling 18-6
18.3.3 OPEN CUT STREAM CROSSING METHOD 18-6
18.3 EQUIPMENT CROSSINGS 18-7
18.4 STREAM PROTECTION MEASURES, CLEANUP AND RESTORATION 18-8

19.0 WETLAND AND OTHER WATER RESOURCES PROTECTION 19-1

19.1 INTRODUCTION 19-1
19.2 WETLAND CONSTRUCTION PROCEDURES 19-1
19.2.1 Erosion and Sediment Control 19-3
19.2.2 Clearing 19-3
19.2.3 Access Roads 19-4
19.2.3.1 Swamp Mats and Timber Mats 19-4
19.2.3.2 Geotextile and Stone 19-5
19.2.3.3 Bridges and Flotation Devices 19-6
19.2.4 Trenching 19-6
19.2.5 Backfilling 19-7
19.3 SPRINGS AND WELLS 19-7
19.4 CLEANUP AND RESTORATION 19-7
19.4.1 Post-Construction Restoration Monitoring 19-8

20.0 AGRICULTURAL LANDS 20-1

20.1 TYPES OF AGRICULTURAL LANDS 20-1
20.2 CLEARING 20-1
20.3 GRADING AND TOPSOIL SEGREGATION 20-1
20.3.1 Grading 20-1
20.3.2 Topsoil Segregation – Cropland/Pasture/Grazing 20-2
20.4 DRAIN LINES 20-2
20.5 CLEANUP AND RESTORATION 20-2
20.6 REVEGETATION 20-3
20.6.1 Seed Mixtures 20-3
20.6.2 Timing 20-3
20.6.3 Mulching 20-3

20.7 REMEDIATION AND MONITORING 20-4

21.0 INVASIVE SPECIES CONTROL PROCEDURES 21-1

21.1 PLANTS 21-1
21.1.1 Measures to Prevent or Control the Transport of Invasive Plant Species 21-3
21.2 INVASIVE INSECT CONTROL 21-5
21.3 AQUATIC INVASIVE SPECIES CONTROL PROCEDURES 21-5
21.4 FRESHWATER 21-6
21.5 ESTUARINE 21-9

22.0 ALTERNATIVE/CONFLICTING LAND USES 22-1

23.0 STEEP SLOPES, HIGHLY ERODIBLE SOILS AND FLOOD PLAINS 23-1

23.1 CONSTRUCTION – STEEP SLOPES 23-1
23.2 RESTORATION – STEEP SLOPES 23-2
23.3 POST-PLANTING EROSION CONTROL – STEEP SLOPES 23-4
23.4 POST-RESTORATION MONITORING – STEEP SLOPES 23-4
23.5 CONSTRUCTION – FLOODPLAINS 23-5
23.6 RESTORATION-FLOODPLAINS 23-6

24.0 VISUAL RESOURCES 24-1

24.1 OVERLAND CABLE IMPACTS 24-1
24.2 ON-WATER AND UNDERWATER CONSTRUCTION 24-3

25.0 NOISE IMPACT AND MITIGATION 25-1

25.1 NOISE SENSITIVE RECEPTORS 25-1
25.2 REMEDIATION AND CONTROL 25-1
25.2.1 Noise Control Measures for Equipment and Linear Construction 25-1
25.2.2 Noise Control Measures for Point Source Producers 25-3
25.3 CONVERTER STATION 25-3

26.0 CONSTRUCTION WINDOWS 26-1

26.1 OVERLAND CONSTRUCTION 26-1
26.2 UNDERWATER CONSTRUCTION 26-1

TABLES

Table 7.1 Trench Plug Slope and Spacing Specifications.....7-7
Table 21.1 NYSDEC Interim Invasive Plant Species.....21-1
Table 25.1 Construction Phase Noise Levels of the Transmission Line.....25-2

ATTACHMENT A

New York State Standards and Specifications for Erosion Control

ATTACHMENT B FIGURES

Figure 4-1 French Drain
Figure 4-2A Inlet Protection (Gravel Bag)
Figure 4-2B Inlet Protection (Silt Fence)
Figure 4-2C Inlet Protection (Notes)
Figure 4-3 Silt Sack
Figure 4-4 Concrete Washout
Figure 5-1A Barbed Wire Fence with Gate
Figure 5-1B Agricultural Steel Gate
Figure 6-1 Temporary Access Road
Figure 6-2 Stabilized Construction Entrance
Figure 7-1 Right-of-Way Topsoil Segregation Techniques
Figure 7-2 Typical Trench Cross-Section
Figure 7-3 Trench Plug
Figure 7-4 Sediment Filter Bag
Figure 8-1 HDD Multi-stage Process
Figure 8-2 HDD At-Grade Crossing
Figure 9-1 Grout Filled Mattress Utility Crossing Surface Laid
Figure 9-2 Grout Filled Mattress Utility Crossing Near Surface Laid
Figure 9-3 Articulated Concrete Mat Protective Covering
Figure 9-4 Uraduct®
Figure 10-1 Rural Street Crossing
Figure 10-2 Unpaved Road Crossing
Figure 10-3 Typical Rural Highway
Figure 10-4 Interstate Crossing
Figure 10-5 Typical Open Cut Utility Crossing
Figure 10-6 HDD Utility Crossing
Figure 18-1 Typical Flumed Crossing
Figure 18-2 Typical Dam and Pump Stream Crossing
Figure 18-3 Typical Open Cut Stream Crossing
Figure 18-4 Temporary Equipment Bridge (Wooden Mat)
Figure 18-5 Temporary Equipment Bridge (Flexi-Float or Portable)
Figure 18-6 Typical Matting Streambanks
Figure 19-1 Typical Temporary Access Road Equipment Mat Cross-Section

Additional Figures

HDD Longitudinal Section
HDD UG Bridge Section
HDD OH Bridge Section
HDD Layout CP Right of Way
HDD Layout CSX Right of Way
Cable Splice
Seep Collar
Perimeter Dike/Swale
Earthen Berm
Typical Navigation Channel Section
Hudson River Side Slope
Hudson River Channel
Hudson River
CP Temporary Construction ROW
CSX Temporary Construction ROW
CP In-Line Trencher Right of Way
CSX In-Line Trencher Right of Way
Wide CP Right of Way
Wide CSX Right of Way
Typical Splice Vault
Hydro-Plow or Jet Plow
Conventional Dredge Barge
Typical Road Repair Section

ACRONYMS

AASHTO	American Association of State Highway Transportation Officials
AC	Alternating Current
Ag & Mkts	New York State Department of Agricultural and Markets
APA	Adirondack Park Agency
APE	Facility's prospective area of potential effects
BMPs	Best Management Practices
Consulted Parties	NYSHPO, the Council, the USACE, federal and state agencies, and the public as appropriate collectively
Council	Advisory Council on Historic Preservation's
CPESC	Professional in Erosion and Sediment Control
CPSWQ	Professional in Storm Water Quality
CRMP	Cultural Resources Management Plan
CTD	conductivity temperature and depth
dBA	decibels
DOE	U.S. Department of Energy
DOS	Department of State
DPS	New York State Department of Public Service
EM&CP	Environmental Management and Construction Plan
EPC Contractor	Engineering, Procurement, & Construction
Facility	Champlain Hudson Power Express HVDC Transmission System and the Astoria-Rainey Cable
FERC	U.S. Federal Energy Regulatory Commission
FIRM	FEMA Flood Insurance Rate Mapping
FO	Fiber Optic
GPS	Global Positioning System
HA	Mechanical Clearing Machine
HAA, Inc.	Hartgen Archaeological Associates, Inc.
HABS/HAER	Historic American Building Survey/Historic American Engineering Record
HAZCOM	Construction Hazardous Communication Standard
HC	Hand Cutting
HDD	Horizontal Directional Drill, Drills, or Drilling (as the context requires)
HDPE	high-density polyethylene
HVDC	high-voltage direct current

IEA	Illuminating Engineers Association
IMO	International Maritime Organization
J&B	Jack and Bore
kV	kilovolt
MPT	Maintenance and Protection of Traffic
MSDS	Material Safety Data Sheets
MUTCD	Manual of Uniform Traffic Control Devices
MW	megawatt
NAGPRA	Native American Graves Protection and Repatriation Act
NANPCA	National Aquatic Nuisance Prevention and Control Act of 1990
National Register	National Register of Historic Places
NESC	National Electrical Safety Code
NHL	National Historic Landmarks
NMFS	National Marine Fisheries Service
NOT	Notice of Termination
NRC	National Response Center
NRCS	Natural Resources Conservation Service
NYS Natural Heritage Program	New York State Natural Heritage Program
NYSCC	New York State Canal Corporation
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
NYSGIS	New York State Geographic Information Systems
NYSHPO	State Historic Preservation Office
OPRHP	New York State Office of Parks, Recreation, and Historic Preservation
OSCP	Oil Spill Contingency Plan
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
PPE	Personal Protection Equipment
PSC	New York State Public Service Commission
psi	Pounds per square inch
RA	Regional Administrator
RTE plants	Rare, Threatened or Endangered Plant Species under 6 NYCRR Part 182
SAV	submerged aquatic vegetation
SCADA	Supervisory Control & Data Acquisition
SCFWHs	Significant Coastal Fish and Wildlife Habitats

SPCC Plan	Spill Prevention, Control, and Countermeasure
SPDES	State Pollutant Discharge Elimination System
SSESC	New York State Standards and Specifications for Erosion and Sediment Control
State Register	New York State Register of Historic Places
SWPPP	Stormwater Pollution and Prevention Plan
TE species	Threatened or Endangered Wildlife Species under 6 NYCRR Part 193
TOC	total organic carbon
TSDR	Treat, Store, Dispose, Recycle
TSS	total suspended solids
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

1.0 INTRODUCTION

1.1 BEST MANAGEMENT PRACTICES OBJECTIVES

The objectives of the Best Management Practices ("BMPs") are to establish basic procedures to be used in developing the Environmental Management and Construction Plan ("EM&CP") to protect environmental, agricultural, historic, cultural and other resources that may be encountered in the process of constructing, operating and maintaining the Champlain Hudson Power Express HVDC Transmission System and the Astoria-Rainey Cable (collectively, "the Facility").

The BMPs will include general methods and procedures to be followed in preparation of the EM&CP and implemented during construction, operation and maintenance. Topics covered in these BMPs include methods and procedures for: basic stormwater pollution prevention; clearing of right-of-ways for installation and maintenance; access to work sites; disposal of debris; protection for streams and wetlands; soils and groundwater management; protection of agricultural lands; cleanup and restoration of disturbed areas; control of invasive species; avoidance and minimization of impacts on threatened and endangered wildlife species under 6 NYCRR Part 193 ("TE species") and rare, threatened and endangered plant species under 6 NYCRR Part 182 ("RTE plants"); and qualifications for various inspectors that will be utilized on the Facility. The BMPs are generalized and will be prescribed on a site specific basis during the EM&CP development and shown on the EM&CP Plan and Profile drawings.

It is important to note that the EM&CP will incorporate the Stormwater Pollution Prevention Plan ("SWPPP") required by the Stormwater SPDES General Permit for Construction Activities. As such, the EM&CP incorporates by reference the SWPPP.

In the event of any conflict between the terms of the Certificate (including the Water Quality Certificate incorporated therein) and the provisions of the Joint Proposal (to the extent adopted by the Commission), the BMPs or the EM&CP Guidelines, the provisions of the Certificate shall govern.

1.2 GENERAL PLANNING OBJECTIVES

Facility planning will develop an overall construction schedule that will optimize efficiency while avoiding and/or minimizing impacts to environmental and natural resources. Objectives will include avoiding significant spawning and breeding seasons for fish and wildlife to the greatest extent possible, given other seasonally dependent construction variables. Resources traversed by the Facility that have a seasonal specific sensitivity will be identified along with the preferred construction season to avoid and/or minimize impacts and will be reflected in Facility scheduling.

1.3 FACILITY SEQUENCING AND CONSTRUCTION SEQUENCING

Facility sequencing and construction sequencing will proceed in a logical progression based on the availability of construction materials and right-of-way access and will focus initially on construction areas requiring a long lead time. The construction sequencing for the Facility will

be established early in the Facility planning process and incorporate seasonal restrictions and construction windows, material fabrication schedule, and overall timeline requirements to complete each segment of the Facility. More information on construction windows is included in Section 26.0.

2.0 CONSTRUCTION SUPERVISION AND INSPECTION

During the construction, multiple Inspectors will be employed to ensure appropriate adherence to all Certificate Conditions, EM&CP requirements, plans, and specifications. The qualifications and duties of each type of inspector are provided below.

In addition to the inspector specific qualifications listed in the following sections, the following attributes are highly recommended for all inspectors:

a) Possess good communication skills, both oral and written;

b) Be honest, fair, straightforward, sincere, and not easily intimidated;

c) Be able to communicate effectively with all parties: Certificate Holders' staff and fellow Facility inspectors; construction/restoration contractors, foremen, equipment operators and laborers; agency inspectors, etc.; and

d) Be experienced with underground utilities.

2.1 ENVIRONMENTAL INSPECTOR

At least one Environmental Inspector will be employed full-time during construction and restoration. Additional Environmental Inspectors may be utilized as required to meet environmental inspection requirements set out in the EM&CP and any relevant permit conditions. The lead Environmental Inspector will be responsible for determining when additional inspectors are needed to meet inspection requirements.

2.1.1 Responsibilities

The Environmental Inspector will assume responsibility for the following duties:

a) Monitoring all construction activities including: clearing, trenching, cable installation, installation and maintenance of temporary erosion controls, work involving wetlands, streams, agricultural lands, avoidance and minimization of impacts to TE species and their occupied habitat and RTE plants, restoration work, etc.;

b) Providing New York State Department of Public Service ("DPS"), New York State Department of Environmental Conservation staff ("NYSDEC"), and for construction within the Adirondack Park, the Adirondack Park Agency staff, and Facility team members with weekly status reports summarizing construction activities from the week prior to the report and identifying construction activities and locations scheduled for the next two weeks;

c) Coordinating inspections of the Facility by NYSDEC, New York State Department of Agricultural and Markets ("Ag & Mkts"), U.S. Army Corps of Engineers ("USACE"), and other involved agencies;

d) Monitoring and managing all environmental protection requirements of the EM&CP and closely coordinating these requirements with the Construction Inspector and the Engineering, Procurement, & Construction ("EPC") Contractor;

e) Monitoring Contractor compliance with the provisions of the Certificate and permits, applicable sections of the Public Service Law, and the EM&CP;

f) Verifying that the right-of-way and any access roads are marked prior to construction;

g) Identifying, documenting, and overseeing corrective actions as necessary to bring an activity back into compliance;

h) Installing and maintaining signs and flagging/marking the boundaries of sensitive resource areas (e.g., waterbodies and wetlands) or other areas where special requirements will be in effect;

i) Locating slope breakers, drivable berms, and waterbars to ensure that they will not direct water into sensitive resources such as wetlands or waterbodies;

j) Directing the Construction Inspector when site conditions make it advisable to restrict construction activities in areas of sensitive environmental resources;

k) Ensuring restoration of preconstruction contours, topsoil and vegetation;

l) Determining the need for additional erosion and sediment controls other than those already required by the Certificate and the EM&CP and ensuring that these controls are properly installed to prevent sediment flow into wetlands, waterbodies, streams, or other sensitive environmental resources;

m) Inspecting and ensuring the maintenance of all temporary soil erosion and sedimentation controls in fulfillment of the requirements for a qualified inspector as defined in the SPDES Construction General Permit (GP-0-10-001).

n) Ensuring the repair of all ineffective erosion and sediment control devices within twenty four (24) hours of identification;

o) Keeping records of compliance with the environmental conditions of the Certificate, the EM&CP, and other federal, state, or local agency requirements. The Environmental Inspector shall have stop work authority over all aspects of the Facility;

p) Identifying areas that will be given special attention to ensure stabilizations and restoration after the construction phase;

q) Being the point of contact for all emergency response procedures such as oil spills, encountering hazardous wastes, etc.;

r) Monitoring all construction activities on, above, below or in the vicinity of State highways to assure that any work in the right-of-way of a State highway is performed in accordance with a Highway Work Permit issued by NYSDOT and, as applicable, any use and occupancy permits, leases or other permits or agreements issued by, with or involving NYSDOT; and

s) Monitoring all construction activities in the vicinity of railroad tracks, equipment or facilities to assure that any alteration of railroad-related improvements paid for by NYSDOT is made in accordance with requirements of NYSDOT and the railroad operating the tracks, equipment or facility.

2.1.2 Qualifications

The Environmental Inspector must meet the following qualifications:

a) Sufficient knowledge and experience to manage the environmental compliance procedures described in the EM&CP;

b) A bachelor's degree in geology, soil science, natural resource science or management, forestry, or a related environmental discipline or a demonstrated equivalent knowledge, including courses in ecological sciences and experience in environmental construction inspection; and

c) Necessary qualifications consistent with a "Qualified Inspector" pursuant to the NYSDEC State Pollutant Discharge Elimination System ("SPDES") General Permit for Stormwater Discharges from Construction Activity (Permit No. GP-0-10-001).

2.2 AGRICULTURAL INSPECTOR

A qualified Agricultural Inspector will be engaged during each phase: EM&CP development, construction, initial restoration, post-construction monitoring, and follow-up restoration. If qualified, the Environmental Inspector may perform the duties of the Agricultural Inspector.

2.2.1 Responsibilities

The fundamental duty of the Agricultural Inspector is ensuring all aspects of the Facility that affect farmland, either fully meet (comply with) or exceed: a) the basic standards of Ag & Mkts including the recommendations in the Pipeline Right-of-Way Construction Project guidance document (Ag & Mkts 1997), and b) Facility-specific conditions or orders of certification, relevant to agricultural resources, which are incorporated by the lead or certifying agency (e.g.: Public Service Commission ("PSC"); U.S. Federal Energy Regulatory Commission ("FERC"); etc.).

The Agricultural Inspector will assume responsibility for the following duties:

a) Informal and formal training of other company/sponsor staff (e.g.: land men, craft inspectors, assistant agricultural compliance inspectors, environmental inspectors, etc.) and construction personnel in the proper use and application of the agricultural right-of-way standards and case-specific orders of certification;

b) Directing all aspects of the Facility that affect agricultural resources through every stage of on-site work: right-of-way clearing, construction, cleanup, and initial restoration stages;

c) Directing the on-site monitoring of, and the follow-up restoration in, agricultural lands;

d) Communicating with affected farmland owners and operators over the Facility's duration: preliminary planning through construction/initial restoration to completion of monitoring and follow-up restoration; and

e) Communicating with the County Soil and Water Conservation Districts and Ag & Mkts.

2.2.2 Qualifications

The Agricultural Inspector must meet the following qualifications:

a) A bachelor's or associate's degree in applied science: agronomy or environmental sciences, with concentration in: agriculture, soils, horticulture, forestry, or closely allied science, and employment in the respective field, regionally, for not less than five (5) years; or

b) Steady advancement in a career through on-the-job training and performance, regionally, for a minimum of ten years as a soil and water conservation field technician with a practical working knowledge of soil conservation, farming, surveying, land excavation and drainage, or similar types of work: from the land review, field planning and design/layout phase, through construction inspection and site completion; or

c) Combination of a and b above; or

d) Steady advancement in a career through on-the-job training and field performance for a minimum of five (5) years in construction/restoration right-of-way work, with at least two (2) full years serving as an assistant to either a qualified agricultural or environmental compliance inspector, and a certification as, either:

   i. Professional in Erosion and Sediment Control (CPESC); or
   ii. Professional in Storm Water Quality (CPSWQ); or
   iii. Certified Crop Advisor.

2.3 AQUATIC INSPECTOR

At least one Aquatic Inspector will be employed full time per spread for all underwater installation procedures for the Facility. They will be on site at the start-up of each field operation and during environmentally sensitive phases of installation. If in-water installation operations are to occur continuously (24 hours a day) a minimum of two (2) Aquatic inspectors will be employed. At least one inspector must be on duty during underwater installation operations.
Additional Aquatic Inspectors will be employed if necessary to adequately cover all areas of active construction.

2.3.1 Responsibilities

The responsibilities of the Aquatic Inspector are to ensure compliance with regulatory and permit requirements for the underwater portions of the cable installation.

The Aquatic Inspector will assume responsibility for the following duties:

a) Conducting field inspections of installation activities to confirm that the site remains in compliance with all applicable statutes, regulations and permit conditions, and the EM&CP;

b) Working closely with other Environmental Inspectors and Health and Safety officers;

c) Requiring construction to cease immediately if it is determined that continuation of installation activities would result in a violation of the Certificate of Environmental Compatibility and Public Need. The Aquatic Inspector will attempt to direct preventative or remedial action, prior to exercising stop-work authority;

d) Monitor all construction activities on, above, below or in the vicinity of waters of the State; and

e) Collecting water quality samples and performing real-time water quality and suspended sediment monitoring during jet plow operations and dredging/trenching.

2.3.2 *Qualifications*

The Aquatic Inspector must meet the following qualifications:

a) Sufficient knowledge and experience to manage the environmental compliance procedures described in the EM&CP;

b) Four (4) year degree in environmental science or engineering, or equivalent experience; and

c) A minimum of one (1) to three (3) years of applicable marine construction experience.

2.4 CONSTRUCTION INSPECTOR

One or more Construction Inspectors will be employed full-time on the Facility as needed.

2.4.1 Responsibilities

The Construction Inspector will assume responsibility for the following duties:

a) Ensuring that high standards of contract compliance are consistently maintained;

b) Working with the appropriate individuals to fully understand contract program needs and ensure that promised commitments are delivered on time and within budget;

c) Participating in construction conference calls and meetings to provide weekly updates and reports;

d) Assuring that site personnel are properly directed, trained, licensed, and evaluated;

e) Monitoring all construction activities on, above, below or in the vicinity of State highways to assure that any work in the right of way of a State highway is performed in accordance with a Highway Work Permit issued by NYSDOT and, as applicable, any use and occupancy permits, leases or other permits or agreements issued by, with or involving NYSDOT; and

f) Monitoring all construction activities in the vicinity of railroad tracks, equipment or facilities to assure that any alteration of railroad-related improvements paid for by NYSDOT is made in accordance with requirements of NYSDOT and the railroad operating the tracks, equipment or facility.

2.4.2 Qualifications

The Construction Inspector must meet the following qualifications:

a) An associate degree or higher in a construction related discipline;

b) Five (5) years of experience in construction of transmission facilities with an understanding of the applicable construction standards and work methods, construction field issues, prints specification sheets, schematics, one-line diagrams, instructional information to construct, maintain, troubleshoot cable installation and general aspects of converter station and substation construction;

c) Knowledge of federal, state, Occupational Safety and Health Administration ("OSHA"), local, and applicable environmental rules and regulations;

d) A thorough understanding of electrical principles and the hazards associated with electrical transmission work; and

e) The ability to travel throughout the Facility area and work extended hours and weekends in emergency situations, as needed.

2.5 SAFETY INSPECTOR

One Safety Inspector will work full time on the Facility and will be present for any higher risk procedures.

2.5.1 Responsibilities

The Safety Inspector will assume responsibility for the following duties:

a) Assisting in the establishment and implementation of regulatory compliance and incident-prevention activities regarding the safety and health of employees, contractor and subcontractor personnel, and the public;

b) Assisting management and directing safety specialists in analyzing any serious incidents;

c) Advising management on problem solving or decision making to eliminate safety hazards and to develop incident-prevention and regulatory compliance programs to reduce incidents that may lead to personal injury or property damage;

d) Monitoring all construction activities on, above, below or in the vicinity of State highways to assure that any work in the right-of-way of a State highway is performed in accordance with a Highway Work Permit issued by NYSDOT and, as applicable, any use and occupancy permits, leases or other permits or agreements issued by, with or involving NYSDOT; and

e) Monitoring all construction activities in the vicinity of railroad tracks, equipment or facilities to assure that any alteration of railroad-related improvements paid for by NYSDOT is made in accordance with requirements of NYSDOT and the railroad operating the tracks, equipment or facility.

2.5.2 Qualifications

The Safety Inspector must meet the following qualifications:

a) A bachelor's degree – preferably in Safety Management, a related science or engineering discipline;

b) Five (5) to seven (7) years of professional safety experience;

c) Five (5) to seven (7) years of experience in electric or gas operations or in a related industry, preferably in a supervisory or leadership role;

d) Certified as a Safety Professional or Occupational Health Professional or other equivalent recognized credential;

e) Knowledge of federal, state, and local safety and health laws and regulations;

f) Knowledge of electric operations, experience with underground utilities is a plus;

g) Knowledge of industrial hygiene principles;

h) Proven interpersonal skills coupled with the ability to lead in connection with various broad occupational safety and health principles in a constantly changing work environment;

i) Demonstrated ability to manage multiple high-priority tasks and engage in complex problem-solving;

j) Demonstrated high level of ethical behavior; and

k) Excellent judgment and decision-making skills.

2.6 QUALITY CONTROL AND QUALITY ASSURANCE INSPECTOR

One Quality Control and Quality Assurance Inspector may be employed on a part-time basis as needed for the overland segments, and one Quality Control and Quality Assurance Inspector shall be employed at all times during any activity for the submarine segments in the vicinity of utility cables and other infrastructure.

2.6.1 Responsibilities

The Quality Control and Quality Assurance Inspector will assume responsibility for the following duties:

a) Performing quality audits on transmission lines, converter stations and substations;

b) Verifying that installation of the cable complies with construction specifications;

c) Writing and publishing reports detailing results of field construction audits;

d) Tracking non-conformances for work not meeting the required specifications;

e) Requiring submission of corrective and preventive action from the Certificate Holders for any non-conformance with the construction plans;

f) Maintaining documentation in a systematic and orderly manner;

g) Indentifying areas where the quality of work can be improved;

h) Participating in conference calls and meetings;

i) Developing in-process quality statistical reporting forms and charts to support the quality program; and

j) Conducting audits of compliance with the Certificate, Orders, and legal requirements as required by the Certificate Conditions.

2.6.2 Qualifications

The Quality Control and Quality Assurance Inspector must meet the following qualifications:

a) A bachelor's degree and a minimum of three (3) years experience in a quality assurance role; or an equivalent combination of technical education and training and a minimum of eight (8) years experience in a quality assurance role;

b) Ability to undertake tasks with limited supervision and be highly motivated;

c) Demonstrated analytical skills with the ability to evaluate and produce routine reports;

d) Ability to collect, enter, analyze, track, and produce data;

e) Demonstrated organization and planning skills, with the ability to schedule and perform quality audits across internal and external functions;

f) The ability to solve complex issues; and

g) Familiarity with construction job sites that may be in harsh climates and terrain, and in controlled conditions that require the use of Personal Protection Equipment ("PPE").

References - Section 2.0

[NYSDAM] New York State Department of Agriculture and Markets. November 1997. Pipeline Right-of-Way Construction Projects: Agricultural Mitigation Through the Stages of Project Planning, Construction/Restoration and Follow-up Monitoring.

[NYSPSC] New York State Public Service Commission. February 18, 2003, Environmental Management and Construction Standards and Practices for Underground Transmission and Distribution Facilities in New York State.

3.0 SITE PREPARATION

3.1 OBJECTIVES

This section identifies the site preparation activities associated with the Facility and measures to minimize adverse environmental impacts associated with these activities. Site preparation activities are intended to ensure compliance with plans developed and included in the EM&CP that take into account associated permits and restrictions including safety plans, Highway Work Permits, RR operation procedures, environmental protection measures and any other conditions and restrictions.

All right-of-way boundary locations will be determined during EM&CP development by a duly licensed NYS Land Surveyor or under his direction by his agents or employees. Any access to adjoining parcels will be performed under the Right of Entry provisions of Section 105, Article 9 of the NYS General Obligations Law.

3.2 STAKING AND RIGHT-OF-WAY DELINEATION (SURVEY)

As part of site preparation, the right-of-way will be surveyed and staked clearly identifying work area limits to avoid and/or minimize potential environmental impacts. When staking out or delineating the work areas for construction the following steps will be taken:

a) The transmission cable centerline, right-of-way edges, access roads, extra workspace boundaries and marshaling yards will be surveyed and marked with stakes and colored flagging in accordance with the approved EM&CP Plan and Profile drawings;

b) Stakes and flags along the right-of-way will be spaced at appropriate intervals (i.e., fifty (50) feet or more depending on site-specific right-of-way conditions) to ensure that unauthorized clearing and grading does not occur outside of the approved right-of-way boundaries. Flags may be placed on trees or wooden stakes that may be installed as needed along the outside edge of the work area;

c) Flags and staking will be checked by the Environmental Inspector or Facility Construction Inspector before construction to ensure proper alignment;

d) Wetland and stream adjacent areas will be clearly marked in the field to avoid inadvertent disturbance of wetlands and streams by construction equipment;

e) Areas of occupied habitat of TE species will be identified on the EM&CP Plan and Profile drawings and marked in the field with signs or high visibility flags prior to construction;

f) Areas where RTE plants are observed to be present will be identified on the EM&CP Plan and Profile drawings and marked in the field with signs or high visibility flags prior to construction;

g) Areas designated as “no vehicular access” will be clearly marked in the field with a silt fence or construction fence to avoid inadvertent intrusion by construction equipment;

h) In wooded areas, any clearing needed to facilitate surveying will be minimized to the extent possible;

i) In residential areas where landscaping is maintained by adjacent property owners, trees or shrubs that are selected for protection by the Environmental Inspector will be marked;

j) In populated areas along the right-of-way, temporary construction fencing may be used to delineate the work area. Fencing left in place during construction may also help restrict unauthorized access to the right-of-way; and

k) Areas to be used for work areas at the converter station and substation sites will be marked with stakes and colored flags. In addition, the area will be fenced, in accordance with the approved EM&CP Plan and Profile drawings.

4.0 EROSION AND SEDIMENT CONTROL

Construction activities associated with the Facility, including cable installation, and construction of the new converter station and substation will involve soil disturbances of one (1) acre or more, and therefore will obtain coverage under the SPDES General Permit for Stormwater Discharges from Construction Activity prior to the commencement of the construction activity. Construction Activity, for purposes of the SPDES General Permit for Stormwater Discharges, is defined as "any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

The EM&CP will serve as the Stormwater Pollution Prevention Plan in compliance with the SPDES General Permit for Stormwater Discharges (GP-0-10-001). Detailed construction maps including contours, slopes, drainage patterns and locations of erosion control structures will be included in the EM&CP Plan and Profile drawings. This plan will accompany a Notice of Intent that will be submitted to NYSDEC prior to any construction activities. All contractors and subcontractors will be required to sign the contractor certification statements and have a trained individual on site daily, as required by GP-0-10-001.

4.1 OBJECTIVES

The purpose of erosion and sedimentation control is to prevent erosion both on the construction site itself and on adjacent undisturbed areas, as well as to prevent environmental degradation resulting from the transport of sediment and pollutants into undisturbed areas including wetlands and waterbodies. This is accomplished through stabilization, structural controls, and good housekeeping practices on the construction site.

4.2 MEASURES AND DEVICES

New York State Standards and Specifications for Erosion and Sediment Control ("SSESC") (NYSDEC 2005) specify BMPs for addressing erosion and sediment control. These measures will be installed prior to, and maintained in acceptable condition for the duration of, any clearing or earthmoving operations. Erosion and sediment control devices will be installed in accordance with the SSESC standards (Attachment A), the EM&CP Plan and Profile drawings, permit conditions, regulatory approvals, and as otherwise necessary or directed by the Environmental Inspector to prevent adverse impacts to environmentally sensitive areas. Additional erosion and sediment control devices to be used are described below. During each work day, all erosion control devices will be inspected in each work area and repaired (if necessary) to ensure proper functioning. The temporary measures will be continually monitored and maintained until final stabilization within the effected corridor is established. At that point, temporary measures will be removed from the site.

Additional measures and devices appropriate for control of erosion and stormwater drainage in the linear co-occupation of railroad ROW will be developed for inclusion in the EM&CP. These measures will address linear drainage ditches aligned parallel to the proposed facility location, which are common on many areas of the railroad alignment. Culvert sizing, installation, and maintenance details will be developed for inclusion in the EM&CP.

4.2.1 French Drains

A French drain is a stone-filled trench, with or without drain tile, used to intercept both surface runoff and subsurface flow, and to firm unstable soils. French drains will be installed where needed for equipment crossings or during restoration under the supervision of the Environmental Inspector and, if applicable, the affected landowner. Construction of a French drain involves lining a trench with geotextile fabric followed by filling the trench with cobble or stone (six (6) inches or larger) (Figure 4-1). During construction, if it is necessary for equipment to cross the French drain, the crossing will be covered with filter fabric and clean fill to prevent clogging the void spaces of the French drain with dirt from tires and treads.

4.2.2 Inlet Protection

Inlet protection will be provided to prevent sediment-laden runoff from entering adjacent drainage systems. Within State highway right-of-way, inlet protection will be provided in accordance with the Highway Design Manual (Figures 4-2A, B and C) and the highway work permit issued by NYSDOT. Alternatively, with approval of DPS and NYSDEC, silt sacks (Figure 4-3) may be used. Inlet protection will be inspected after every major rain event.

4.2.3 Dewatering

During construction it may be necessary to remove surface or subsurface water from work areas. Where dewatering of the trench is necessary, the discharges of water from the excavated trench will be pumped into a portable sediment tank. The intakes of the hoses used to withdraw the water from the trench will be elevated and screened to minimize pumping of deposited sediments. Soil excavated from the hole shall be stockpiled separately within a straw bale/silt fence barrier to prevent siltation into surrounding areas.

Where there is not sufficient room in the right-of-way to utilize a portable sediment tank as described above, commercial sediment filter bags (Figure 7-4) may be used to remove sediments from dewatering effluent. The dewatering hose will be connected to a filter bag placed on the ground surface within a stabilized area (e.g., vegetated or permeable surface such as aggregate). Once passing through the filter bag, the dewatering effluent will be discharge onto a vegetated area. Additional erosion and sedimentation controls may be installed as determined by the Environmental Inspector. Sediment filter bags will be inspected regularly. The filter bag and accumulated sediment shall be disposed of in an upland location at least one hundred (100) feet from a wetland or waterbody, or disposed of offsite in a state approved solid waste disposal facility.

Trapped sediment collected during dewatering activities shall be graded on the right-of-way in areas where it cannot be washed into the adjacent stream, wetland, or other sensitive resource. Dewatering structures will be removed as soon as possible following the completion of dewatering activities.

Any contaminated waters removed from a work site may not be discharged without a SPDES permit or must be discharged at a waste water treatment plant following chemical analysis.

4.2.4 Concrete Wash Out

After placement of concrete, wash water used to clean the concrete truck will be directed to a concrete washout structure at designated areas only. These concrete washout area(s) will be located a minimum of one hundred (100) feet from all wetlands, waterbodies, and drainage structures. Self-installed or pre-fabricated containers may be used and are intended to capture the wash water to allow for evaporation or off-site disposal. Washout structures or containers will be inspected after each use to determine if they are filled to seventy five (75) percent of capacity and to make sure that the plastic linings are intact and not leaking. Material in washout structures or containers will be removed when they reach seventy five (75) percent capacity. (Figure 4-4).

4.2.5 Clearing, Excavation, and Grading

In general, the right-of-way will be cleared to provide safe operation of construction equipment. Typical clearing methods are described in Section 5.0.

Excavated material will be stockpiled temporarily within the right-of-way, away from stormwater conveyance areas in a manner that prevents erosion and the transport of sediments (*e.g.*, by installing silt fences). Where sufficient space for stockpiling within the ROW is not available, excavated material will be transported to staging areas and stabilized in accordance with the SSESC. The locations of proposed staging areas will be identified on the EM&CP Plan and Profile drawings. A Soil Management Plan will be developed as part of the EM&CP. Following restoration, excess or unsuitable material will be removed from the right-of-way to an approved upland disposal location on or off the right-of-way, spread evenly, seeded, and mulched in accordance with seed mixes and application rates prescribed in the Facility-specific EM&CP.

Any contaminated soils removed from a work site may not be used as backfill and shall be analyzed and disposed of in accordance with the applicable regulations.

The EPC Contractor will exercise all necessary and reasonable precautions to minimize sedimentation, soil erosion, and permanent impacts to wetlands and watercourses in the work areas and along the right-of-way. Special conditions and erosion and sedimentation controls will be prescribed on the EM&CP Plan and Profile drawings by work location in these special areas. Excavated material will be stockpiled with proper stabilization, erosion controls, and drainage outside the wetland or watercourse, and thereafter disposed of at approved upland locations.

Landgrading will be conducted in accordance with the standard specifications in pp. 5B.49-54 of the SSESC (Attachment A). Railway drainages which are impacted by the Facility will be restored as if they were a grass waterway and will follow restoration and stabilization procedures as described in the SSESC. All graded or disturbed areas will be protected with erosion and sediment controls as described in the EM&CP and SWPPP until they are adequately stabilized.

4.2.6 Site Stabilization

In addition to the structural controls described above, stabilization measures that will or may be used during Facility construction also include non-structural controls. Surface-stabilization techniques will be used during construction to reduce the potential of sediment loading in stormwater runoff from disturbed areas. All disturbed areas that will be left exposed more than seven (7) days, and not subject to construction traffic, will receive temporary seeding or stabilization in accordance with the SSESC (Attachment A).

Site clearing, excavation, grading and stabilization will be closely sequenced to minimize impacts to exposed areas.

4.2.7 Responsibilities

The EPC contractor will be responsible for the installation of stormwater control structures. The installation of stormwater control structures may be sub-contracted. Responsibilities will be defined in the EM&CP that will also serve as the SWPPP.

4.2.8 Inspection and Record-keeping

For construction activities along the right-of-way, the Environmental Inspector(s) will perform inspections of all erosion and sediment control in accordance with the SPDES General Permit. The Environmental Inspector will also establish a protocol with the contractor for the identification and repair of all erosion and sediment control measures deemed to be in need of repair or reinstallation. The Environmental Inspector is also responsible for record-keeping required by the EM&CP and the Stormwater General Permit.

References - Section 4.0

[NYSDEC] New York State Department of Environmental Conservation. August 2005. New York State Standards and Specifications for Erosion and Sediment Control.

[NYSDOT] New York State Department of Transportation. Highway Design Manual. Accessed online December 1, 2010 at: https://www.nysdot.gov/divisions/engineering/design/dqab/hdm

[USEPA] United States Environmental Protection Agency. January 2008. National Menu of Best Management Practices. January 9, 2008. Site accessed on August 30, 2010. http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm

5.0 VEGETATION CLEARING IN UPLAND AREAS ALONG THE OVERLAND ROUTE

5.1 OBJECTIVES

The objective of vegetation clearing is to remove the vegetation from the work area that is necessary for safe and proper installation of the Facility and selection of the appropriate vegetation clearing methods to avoid and/or minimize impact to RTE plants and sensitive areas (e.g., streams and wetlands or areas of high visual sensitivity, such as the Lakes to Locks scenic byway). This is accomplished through site specific prescriptions for clearing and disposal of woody vegetation and selective retention of vegetative buffer zones. Limits of clearing and site specific clearing and disposal prescriptions will be provided on the EM&CP Plan and Profile drawings.

5.2 DEFINITIONS

Clearing – the cutting and physical removal, either by hand or mechanical means, of all vegetation from the work area.

Grubbing – the mechanical removal of the stump and root mass of felled woody vegetation.

Slash – shrubs, saplings, and tops of trees four (4) inches in diameter or less at the large end for hardwood and six (6) inches in diameter or less at the large end for softwoods.

Stumps – the woody stem and fibrous root mass left in the soil after removing the trunk at the butt.

Timber/Logs – trunks and limbs greater than six (6) inches in diameter at the small end, with a minimum eight (8) foot length.

5.3 EQUIPMENT

Vegetation clearing operations will be carried out with the following equipment:

a) Bulldozers or crawlers equipped with forestry brush rakes or hydraulic clams;

b) Bladed mowers (hydro axe or brush hog), and chain thrashers;

c) Hydraulic shears or mechanized felling saws;

d) Chain saws;

e) Skidders or forwarders; and

f) Excavators equipped with grapple arms.

5.4 CLEARING METHODS AND PROCEDURES

The cleared width within the right-of-way and temporary construction workspace will be kept to the minimum that will allow for spoil storage, staging, assembly of materials, construction vehicle passage, and all other activities required to safely install the Facility. The Certificate Holders will also limit the removal of stumps and roots that are not in the footprint of the excavated trench to allow re-sprouting and assist in the recovery of woody species, except where removal is required for safe construction.

During clearing operations, crews, in coordination with the Environmental Inspector, will scout the terrain ahead for unexpected conditions, check right-of-way boundaries and review property-specific conditions or restrictions noted on the EM&CP Plan and Profile drawings. Trees will be felled into the right-of-way to avoid off-right-of-way damage, using the following methods:

a) Hand Cutting (HC) – This method employs a hand-held chain saw. It is selective, but is slower and more expensive than motorized mechanical devices. Residential areas, buffer zones, wetlands, and highway screens are areas where hand cutting is typically prescribed.

b) Mechanical Clearing Machine (HA) – This term usually refers to a machine known as the Hydro-ax or Kershaw mower. This machine can cut trees up to ten (10) inches in diameter at the rate of several acres a day, depending on stem density and terrain. It is essentially nonselective and a good device for clearing rights-of-way that are composed of young undesirable species in a relatively uniform stand.

c) Mowing – This technique is primarily used in areas of herbaceous vegetation. Terrain must be relatively flat with no gullies or rocks.

d) Mechanical whole-tree felling equipment – This method allows controlled felling and loading of whole trees while minimizing damage to adjacent trees.

Where vegetation is cleared, erosion and sediment control measures will be installed and monitored until the topsoil is stabilized and can support grassy vegetation.

5.4.1 Upland Areas

Initial clearing operations will include the removal of vegetation within the cable trench area and within any temporary additional construction workspace (e.g., Horizontal Directional Drilling ("HDD") workspace) either by mechanical or hand cutting. Vegetation will be cut at ground level, leaving existing root systems intact except for the immediate trench area, and the aboveground vegetation removed for chipping or disposal. Tree stumps and rootstock will be left undisturbed in the temporary workspace wherever possible to encourage natural revegetation. Brush and tree limbs will be chipped and spread in approved locations or hauled off-site for disposal. Timber will be removed from the right-of-way for salvage or to approved locations. Any vegetation removal within the right-of-way of a State highway will be conducted pursuant to a highway work permit issued by NYSDOT and as shown on the EM&CP Plan and

Profile drawings. Within the Adirondack Park, any vegetation removal in a State highway right-of-way shall be in accord with the Adirondack State Land Master Plan, in order to achieve and maintain a park-like atmosphere that compliments the total Adirondack environment and with the NYSDOT Guidelines for the Adirondack Park ("Green Book").

5.4.2 Wetlands and Other Sensitive Resources

BMPs for clearing in wetlands are included in Section 19.2. BMPs for RTE plants are included in Section 16.

To avoid and/or minimize impacts to occupied habitat of TE species, the Certificate Holders will minimize the cutting of mature trees. Unless required for safety, the Certificate Holders will limit the removal of stumps and roots that are not in the footprint of the excavated trench. In addition, the following species-specific measures will be taken: (Please see Section 16.0 for further discussion of sub-sections a-c below).

a) Indiana bat –The Certificate Holders will identify and avoid and/or minimize impacts to large specimen trees of shagbark hickory (*Carya ovata*), which could potentially serve as maternity or roost trees.

b) Karner blue butterfly and frosted elfin – Areas of potential and occupied habitat for Karner blue butterfly (*Lycaeides melissa samuelis*) and frosted elfin (*Callophrys irus*) were identified by field investigators. These areas will be identified on the EM&CP Plan and Profile drawings and marked in the field with signs or high visibility flags prior to construction. To avoid and/or minimize impacts on areas of potential or occupied habitat of the Karner blue butterfly and frosted elfin, clearing and disposal activities within these areas will be performed in accordance with the Karner Blue Butterfly Impact Avoidance and Minimization Report.

c) TE species and RTE plants – If any new or previously undiscovered TE species or RTE plants are observed to be present in the Facility areas during construction, the Certificate Holders will consult with the NYSDEC and U.S. Fish and Wildlife Service ("USFWS") to determine measures to avoid and/or minimize any impacts to the observed TE species or RTE plants. If it is determined impacts cannot be avoided and it is determined a "take" will occur the Certificate Holder will seek to modify the certificate.

5.5 LOG DISPOSAL

In general, the log disposal method along the right-of-way will be selected after assessing each designated clearing area, and with consideration of:

a) Tree species and potential volumes of marketable timber;

b) Soil and terrain conditions that would allow mechanized collection and skidding without creating severe rutting or significantly increasing erosion potential;

c) Sufficient marketable volumes of wood to make economic utilization practical;

d) Whether adequate log-hauling access exists between the nearest public road and the yarding area on the right-of-way or yarding directly to a highway is desirable and economically feasible; and

e) Abutter/landowner cooperation, as well as clearing and trimming rights.

The following log disposal methods have been selected for the Facility.

5.5.1 Construction Use

Logs may be utilized as needed during construction for wetland access, cribbing, retaining walls, or other uses. Following use, any logs unsuitable for firewood, saw logs, or chipping will be transported off the right-of-way to an approved disposal site.

5.5.2 Log Piles

Logs not needed for construction will be removed from the right-of-way to an approved disposal area, as shown on the EM&CP Plan and Profile drawings.

5.5.3 Sale

Where sufficient merchantable volume exists on the site, logs may be sold to a third party. Where appropriate and practical, and with the agreement of landowners, unsold logs will be hauled to accessible locations for salvage by the general public in accordance with the substantive requirements of 6 NYCRR Part 192.5, firewood restrictions to protect forests from invasive species.

5.5.4 Chipping

When logs cannot be reused or sold, they will be chipped on site. The resulting wood chips will be piled in upland areas within the right-of-way or transported off right-of-way to an approved disposal site. Wood chips will be spread three (3) to five (5) inches thick with fertilizer spread over the chips to minimize soil nitrogen depletion due to cellulose decomposition.

5.6 SLASH AND STUMP DISPOSAL

Slash and stumps will be disposed of using the following methods.

5.6.1 Chipping

Slash may be chipped to reduce debris volume. See Section 5.5.4 above for the handling of chips.

5.6.2 Hauling

Slash and stumps may be hauled to a NYSDEC approved landfill or other suitable off-site location with the approval of the landowner and all applicable permitting agencies.

5.6.3 Burial

Stumps may be buried on the right-of-way with landowner agreement. The burial areas will be sufficiently compacted and monitored after construction to assure that settling does not occur. Where significant settling after construction has been identified by the Construction Inspector et. al., finished grade will be re-established using locally obtained run-of-bank material and/or topsoil and re-seeded as appropriate as specified in the approved EM&CP. Areas where significant amounts of stump burial occurs will be noted on as-built drawings, and monitored for settling during ROW condition surveys and maintenance activities.

5.7 VEGETATION BUFFER AREAS

Vegetative buffers adjacent to sensitive areas such as wetlands and streams will be maintained to the maximum extent practicable. Tree cutting in buffer areas will be limited to hand cutting methods. Buffer areas will be clearly marked on the EM&CP Plan and Profile drawings and marked in the field to avoid unintentional clearing. Additionally, the Environmental Inspector or construction supervisor will notify clearing and other crews of buffer areas that will be encountered that day.

To prevent soil erosion along streams, vegetation (ground cover, shrubs, and tree stumps) will be left in place along a minimum twenty five (25) foot wide zone on each bank until the time of crossing. Existing vegetation buffers will be maintained at selected road and stream crossings and other visually sensitive locations, where possible, especially at HDD drilling or boring sites, residential areas, and the peripheries of historic sites.

To the greatest extent possible, trees that provide a buffer to visually sensitive areas will be avoided. Where buffer areas cannot be avoided, a qualified arborist will be consulted before construction in these areas and Tree Protections Zones ("TPZ") will be established. The TPZs and all tree work in these buffer areas will be done using the American National Standards Institute ("ANSI") A300 Standards for Tree Care Operations. Visually sensitive areas will be restored as described in Section 11.2.2.

5.8 WALLS AND FENCES

In limited locations existing stone walls and fences may be crossed by the proposed right-of-way. Unless otherwise requested by the landowner, walls or fences will be restored or replaced during restoration.

5.8.1 Stone Walls

Where stone walls are encountered, the following standards will apply:

a) Improved stone walls will be photographed during construction and the landowner will be consulted regarding the level of restoration;

b) Wall stone will be carefully removed, stockpiled, and re-used, or comparable replacement stone will be used;

c) Walls will be restored to a comparable standard of material and design unless otherwise agreed to by the landowner;

d) Walls of historical or archaeological significance will be restored using original stone in accordance with landowner and permit conditions; and

e) At landowner direction, walls of lesser quality (e.g., loose piles for field separation or all-terrain vehicle control) or fencing may be substituted for the original stone wall.

5.8.2 Fences

Where fences (wood, wire, mesh, etc.) and gates are encountered during construction, the following guidelines apply:

a) Landowner will be consulted prior to removing fencing during construction;

b) Segments of fences and gates affected by construction will be restored to a comparable standard of material and design upon completion of construction unless otherwise agreed to by the landowner;

c) The base of all new posts will be secured to a reasonable depth below the surface to prevent frost heave;

d) If existing livestock fencing is removed, temporary fencing or gates will be installed to control livestock (Figure 5-1A and B);

e) Existing fencing will be dismantled and stored for re-use where practical; and

f) Any damaged fencing material will be replaced with new material.

References - Section 5.0

[APA] Adirondack Park Agency. 2001. State of New York Adirondack Park State Land Master Plan. Accessed online April 26, 2011 at: http://www.apa.state.ny.us/Documents/Laws_Regs/SlmpPDF2001.pdf

[NYSDOT] New York State Department of Transportation. Guidelines for the Adirondack Park. Accessed online April 26, 2011 at: https://www.nysdot.gov/divisions/engineering/environmental-analysis/manuals-and-guidance/greenbook

6.0 GRADING AND ROAD CONSTRUCTION

6.1 OBJECTIVES

The objective of grading and access road construction is to establish a safe and accessible work area. Grading will be required for access for cable installation, additional work space areas such as HDD locations and jointing as well as access roads to marshaling yards. All temporary roads and workspaces will be graded to direct runoff away from streams, wetlands, and adjacent areas. Any road improvements, including relocation of gas pipelines or utility poles needed for the transportation of heavy equipment/machinery, will be assessed and will be included as part of the EM&CP.

6.2 TECHNIQUES AND EQUIPMENT

The majority of the overland route has existing railroad access roads. These roads will be used wherever possible. Where the existing access road does not provide adequate construction access, new access will be established. Backhoes and bulldozers will be used for grading and road construction. Typical road construction will consist of a stabilized construction entrance (Figure 6-2) to limit material being tracked off site and onto public roads the remainder of the access roads will be installed based on site specific conditions. Where appropriate, topsoil will be stripped for road installation or work space preparation. Site specific access and work area construction methods will be identified on the EM&CP Plan and Profile drawings. Topsoil will be stockpiled and reused in-site whenever practicable following construction.

6.3 ACCESS ROADS AND CONSTRUCTION PATHS

The objective of access road and construction path construction is to provide safe access for personnel and equipment to the work site while minimizing impact to sensitive resources.

6.3.1 Construction Access Roads or Paths

Construction access roads will be built to facilitate safe access to the construction site for personnel, equipment, and supplies where no access currently exists. Any access roads that require a temporary or permanent access point to a State highway, or work within the right-of-way of a State highway, will be undertaken pursuant to a highway work permit issued by NYSDOT. The travel way width will be limited to a single lane to minimize impacts to soil and drainage with passing lanes provided as needed in non-sensitive areas. Standard construction methods in compliance with the SWPPP and General Permit GP-0-10-001 will be used. All erosion control and sedimentation control devices will be installed prior to the initiation of road construction activities.

In areas where the slope of the terrain is favorable and the soils are deep, stable, and well-drained, little or no earth grading is needed to prepare the access roads (Figure 6-1). Where slopes are steep or where unstable soil conditions are encountered, it will be necessary to modify the construction path to make it stable for safe use. The following modifications will be considered and applied, as appropriate:

a) Rough grading to smooth the working surface to improve drainage;

b) Stripping and storing topsoil;

c) Placing crushed stone on the construction access road;

d) Placing geotextile fabric covered by clean fill;

e) Using prefabricated wooden or metal construction mats; or

f) Employing pontoon bridges in areas of standing water.

Location of stripped soil storage will vary based on construction installation methods selected and construction right-of-way available. See Section 7.0 for description of various overland trenching procedures. In all cases soil stockpiling will be outside of environmentally sensitive locations and properly protected as described in Section 4.0.

6.3.2 Off Right-of-Way Access Roads

To facilitate delivery of materials and equipment along the right-of-way, where site conditions interrupt a continuous travel way, off right-of-way access roads will be utilized, pursuant to appropriate review and approval procedures. Off right-of-way access roads that include temporary or permanent access points to State highways, or work within the right-of-way of State highways, will be undertaken pursuant to a highway work permit issued by NYSDOT. Off right-of-way access roads will be similar to the construction access roads. Where practical, existing private roads, driveways, farm lanes, etc. will be used, with landowner and DPS approval. The location of proposed access roads will be shown on the EM&CP Plan and Profile drawings. If the access road must cross agricultural land, agriculture protection procedures identified in Section 20.0 will be used. Standard construction methods in compliance with the SWPPP and General Permit GP-0-10-001 will be used. These access roads will be restored to preconstruction conditions or better.

7.0 OVERLAND CABLE INSTALLATION

The objective of the overland trenching operations for the Facility is to safely and efficiently install the HVDC cable within the railroad right-of-way, minimize the use of land outside of the railroad right-of-way and avoid and/or minimize environmental impacts. Over the length of the overland portion of the Facility the railroad right-of-way varies in width, grade, and number of rails, which will require variation of the installation methods. The three primary installation methods will be traditional trench and spoil method, series trenching method and trenchless installation method. Variation among these three installation methods will be prescribed based on site specific evaluations with the EPC Contractor selected by the Certificate Holders and then identified on the EM&CP Plan and Profile drawings. General descriptions of traditional trench and spoil installation and series installation are provided in the following sections and trenchless installation is described in Section 8.0. The installation construction method for each segment of the Facility will be identified on the EM&CP Plan and Profile drawings.

7.1 PRECONSTRUCTION STUDIES

Preconstruction studies will include identifying available right-of-way construction areas, identifying structural crossings and verification of landforms along the cable route, including geotechnical investigations where needed, to determine the geology in the area to be trenched. These preconstruction studies will be used to identify the areas where various installation methods will be effective. In addition to preconstruction studies, agreements with the railroads will be completed to determine protection measures to be utilized to assure the Facility does not interfere with operations or safety of railroads and highways and the Facility will comply with New York State's Dig Safely Program ("One-Call") notification system, 16 NYCRR Part 753. The construction work area, specific installation method and site specific details for installation of the Facility will be identified on the EM&CP Plan and Profile drawings.

7.2 CORRIDOR PREPARATION

A linear work corridor ranging from twenty (20) feet to in excess of fifty (50) feet where right-of-way permits, will first be cleared, grubbed and graded to establish an access path for subsequent steps. The width of the work corridor prepared will vary based on the selected installation method for a given section of the overland cable route. Multiple installation methods and variations of each method will be developed to facilitate installation of the Facility in areas with limited right-of-way widths. Further description of clearing and grubbing to prepare the work area is provided in Sections 5.0 and 6.0, respectively.

7.3 TRADITIONAL TRENCH AND SPOIL METHOD

Traditional trench and spoil procedures are typically the most efficient for underground cable installation. The trench and spoil method involves excavation of the trench by traditional back hoe or bulldozer from an access road established adjacent to the trench area, segregating and stockpiling the excavated trench material next to the trench (Figure 7-1). Although typically the most efficient, this method requires the widest construction corridor.

Trenching will be conducted in accordance with OSHA's Technical Manual for open trenching (i.e., Section V, Chapter 2) and Section 10.1.2.1. The excavated trench will be four (4) feet wide and four (4) or five (5) feet deep (depending upon individual railroad requirements). Figure 7-2 provides a typical trench cross section. In all agricultural areas a minimum depth of forty-eight inches of cover over the Facility is required. In areas where the depth of soil over bedrock ranges from zero to forty-eight inches, the cable shall be buried entirely below the top of the bedrock. Material removed from the trench will be stockpiled next to the trench and segregated as ballast, cinders, topsoil, and subsoil, as appropriate. Geotextile fabric or similar material may be used where space constraints require layering of various materials. In locations where the right-of-way limits stockpiling next to the trench, trench material may be removed from the immediate construction area and stockpiled in an approved location until backfilling and restoration. Excavated materials stockpiled away from the immediate excavation will be set back at least one hundred (100) feet from streambanks and wetlands and will be protected with appropriate erosion and sedimentation controls.

7.3.1 Cable Pulling

Cables of the size and voltage design used on the Facility are supplied spooled on a steel reel. A suitable trailer or rail car will be used for transporting the cable reel to the pulling sites. The cable is pulled into the trench off the trailer. If the cable is not to be laid directly off the trailer, it will be unloaded as close as possible to where it is to be pulled out along the right-of-way and lowered into the trench at a later time.

When cables are pulled out, the cable corridor is prepared with cable rollers along the ground surface. The cable reels will be placed on stable ground, firmed up by rock fill and steel plates if necessary. The cables are pulled by pulling machines placed evenly along the cable route. Alternatively, a nose pull by a winch or continuous bond pull may be applied. The cable will not be pulled over hard and pointed obstacles, as these could damage the corrosion protection and/or insulation, nor will the cable be bent more than the minimum bending radius. An appropriate communication system will be established and tested for all operators.

During wet weather, operations will be suspended in areas with unstable soil conditions to prevent potential rutting, erosion, and other site hazards. Any erosion control devices that are moved or damaged by construction equipment will be replaced or repaired by the end of the work day or sooner during wet weather.

7.3.2 Length of Open Trench

The length of the open trench for traditional installation will be determined 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. For land installation, typical segment lengths range from three tenths (0.3) to six tenths (0.6) miles.

Where local physical or environmental conditions preclude leaving long sections of trench open for cable pulling, it may become necessary to install conduit and backfill in those portions of trench. The cable would then be pulled into these sections of conduit at a later date. This,

however, typically causes more friction during cable pulling and potential casing damage. This method requires installation in shorter cable sections than the maximum transportable length.

7.3.3 Splicing/Jointing

The number of splices required 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. Joints may also be required where trenching methods change and where there are transitions from underwater to overland cable. Although electrically identical to the underground cable, underwater cable is armored, has an overall larger diameter, is heavier and has a larger minimum bend radius. These properties make it more difficult and expensive to install than underground cable.

Jointing and termination will be performed by skilled jointers according to detailed installation instructions. The work is performed in a jointing enclosure ("house") supported on a stable work base of crushed stone, concrete or suitable native soil. The jointing house controls the ambient conditions during the splicing operation, including controlled levels of humidity, temperature, and airborne dust. The jointing house is assembled from pre-constructed modular units that can be modified in terms of length and width. The units include heating, air conditioners, dehumidifiers, and lifting equipment such as traverse carriers. Where necessary, the jointing house and splicing location ("bay") may include a concrete base and side walls for mechanical protection and separation from parallel utilities.

7.3.4 Padding and Thermal Cover

To protect the cables, imported or screened on-site material may be used to pad the cables. Subsequent to cable laying, the trenches will be backfilled with low thermal resistivity uniformly graded sand or excavatable, low density concrete. In some locations where the risk of dig-in or damage is higher, a protective concrete layer or steel plate may be installed over the thermal sand or flowable fill cover above the low thermal resistive backfill material. Excavated material with boulders and large cobbles removed will then be placed in the trench. Stockpiled trench material will be replaced in the trench in reverse order and stabilized in accordance with SSESC as described in Section 4.0. Unsuitable native material (wet clay, silt, organic matter or material having large cobbles) will be replaced with appropriate backfill. The whole assembly will have a marker tape placed one (1) to two (2) feet above the cables.

7.3.5 Backfilling

Following cable installation, and placement of thermal cover and top protection, the trench will be backfilled with screened native material or material imported to the site. These materials will be tested to ensure they possess the proper thermal characteristics to meet engineering specifications. The upper portion of the trench will use the native spoil as backfill free of boulders, large cobbles, foreign matter, or other deleterious materials. Where it is permissible to open cut roadways, the upper portions of the trench will be backfilled with roadway base material meeting NYSDOT standard specifications. Any excess natural material, except shot rock will be spread over the cable trench area or in upland areas within the right-of-way, in a

manner that does not detrimentally affect pre-existing surface drainage. Excess unnatural road base material must be disposed of in compliance with all applicable environmental regulations. Backfilling in agricultural lands in conformance with the agricultural mitigation standards in the guidance developed by Ag & Mkts (1997) (Section 20.0).

All granular backfill material will be placed when conditions are dry and compacted to the density required by the cable design. Backfill or fill material will not be placed on surfaces that are muddy, frozen, or contain frost or ice. Excavated areas will be dewatered pursuant to Section 4.2.3 as required to perform the work and in such a manner as to preserve the undisturbed state of the approved subgrade material. Flowable fill may be placed by tremie where dewatering is unsuccessful to create a dry situation. Backfill, fill and site topsoil will either be compacted to match the surrounding grade or a crown will be left over the trench to accommodate settling.

Railroad ballast and cinder materials will be replaced and spread where it had been removed.

Any contaminated soils removed from a work site may not be used as backfill and shall be analyzed and disposed of in accordance with the applicable regulations.

After rough grading, the topsoil will be York-raked and seeded, or similarly prepared for an acceptable vegetative cover. Crowned trenches will be periodically inspected following restoration, and necessary measures will be taken to restore grade and stabilize the right-of-way. Backfill will be completed within two (2) days of lowering-in the cable.

7.4 SERIES INSTALLATION METHOD

Series installation involves specialized equipment that excavates and lays the cable in one step. The series installation method utilizes the trench area as the access for installation equipment, minimizing the construction work space needed. Following preparation of the work corridor, the cable would be unreeled and laid along the surface of the corridor by equipment moving along the corridor, or pulled over blocks along the ground surface. A specialized excavator straddles the cable and lifts and passes it overhead while excavating the trench; placing the excavated material on one or both sides of the trench. The cable is then lowered into the trench in one pass. Series operations can also backfill the trench as the work progresses, but this is most readily accomplished in areas where the native soil does not have to be replaced with thermal fill.

7.4.1 Cable Pulling

With the series installation method the cable pulling is very similar to the traditional method described in Section 7.3.1 except that the cable is laid on the surface and not in a trench.

7.4.2 Length of Open Trench

When utilizing the series installation method, the linear length of the open trench will be very short because backfilling occurs quickly after the cable laying. It is expected that by the end of each day the trench will be backfilled to a point very close to the excavator. Any excavations

left open overnight will be marked as a safety precaution. Open excavations at locations such as roadsides, access roads, or in villages shall be marked with lighting and barricades.

Another alternative installation method includes a process of directly laying the cable and immediately backfilling it. Use of this method will be limited to locations where thermal backfill will not be necessary, the soil is stable enough not to require shoring, and the right-of-way width will allow installation at the required depth without violation of established railroad construction criteria (theoretical embankment boundaries).

7.4.3 Splicing/Jointing

Jointing and splicing may be performed using two different approaches. The first and most likely method would use a procedure similar to that of the traditional installation method. The second approach would leave a short section of trench open, with the ends of the cable exposed within the open excavation. After the installation operation has moved forward, the splice area will be prepared to receive the splice house. The splice operation itself is identical to that previously described. When complete, the splice house and related equipment will be removed and the pit backfilled.

7.4.4 Padding and Thermal Cover

Padding and thermal cover will be installed in the same manner as in the traditional method discussed in Section 7.3.4, unless native material is suitable for this use. If native material is used the trench would be backfilled in the same process as the trench excavation and cable laying.

7.4.5 Backfilling

Backfilling will occur immediately following placement of low thermal resistive fill and follow the same procedures as used in the traditional method.

7.5 MECHANICAL ROCK REMOVAL AND BLASTING

During preconstruction studies, areas where rock or ledge may be encountered during construction will be identified. Rock and ledge encountered above the minimum cable installation depth will be removed by mechanical equipment if possible. Often the rock surface has been weathered enough that mechanical removal is possible. Where it is not, three options exist: evaluation of a more shallow cable installation with enhanced concrete or steel cover protection, an increase in the amount of cover (if the changed topography is not problematic), or blasting to achieve the standard depth.

Mechanical removal would be the preferred method of achieving the required burial depth; however if any blasting is required it will be performed by licensed professionals pursuant to New York State Department of Labor's regulations 12 NYCRR Part 39, Possession, Handling, Storage and Transportation of Explosives, and in strict accordance with guidelines designed to

control energy release. DPS will be provided with a copy of the blaster's license prior to any blasting that might be necessary.

In areas where blasting is anticipated, pre-blast surveys of foundations, underground wells, and other susceptible in ground and above ground structures will be performed to determine pre-blasting condition of the structures.

Proper safeguards will be taken to protect personnel and property in the area. Charges will be kept to the minimum required to break up the rock. Where appropriate, mats made of heavy steel mesh or other comparable material will be utilized to prevent the scattering of rock and debris. Blasting will strictly adhere to all industry standards applying to controlled blasting and blast vibration limits with regard to structures and underground utilities. No fly rock will be allowed to leave the right-of-way. Blasting in the vicinity of nearby utilities will be coordinated with the owner, as necessary. Blasted rock will be hauled off-site and disposed of in an appropriate manner. Details of blasting controls and safety procedures will be specified in the site-specific EM&CP documents.

In agricultural areas of till over bedrock where blasting is required, the Certificate Holders will use matting or controlled blasting to limit the dispersion of rock fragments. All blasted rock not used as backfill will be removed from croplands, haylands, and improved pastures. The till and topsoil shall be returned in natural sequence to restore the soil profile. Farm owners/operators will be given timely notice prior to blasting on farm property.

7.5.1 Monitoring and Inspection

A Safety Inspector and Construction Inspector will be present for areas that require blasting. In addition, an independent consultant will be hired to monitor blasting and the effects of the blasting on structures, wells and other infrastructure and to investigate claims of damage.

7.5.2 Time Constraints and Notification

Explosives use will be limited to the hours of 9:00 am to one hour before sunset on non-holiday weekdays, unless otherwise approved by DPS. Fly rock or other airborne debris will be controlled by heavy steel mesh or other comparable material. DPS staff, NYSDOT, and local and state public safety officials will be notified at least forty eight (48) hours prior to the initiation of blasting, and each morning with planned blasting locations. Inhabitants of occupied structures and farm operators within one- quarter (0.25) mile of the blasting area will be notified at least forty eight (48) hours before blasting in that area.

7.5.3 Remediation

Any claims of damage from blasting that are documented and verified as having been caused by such blasting by an independent consultant will be assessed for remediation by the Certificate Holders.

7.6 TRENCH PLUGS

After cable installation, permanent sand bag trench plugs will be installed before backfilling (Figure 7-3). Trench plugs will be installed at the locations shown on the EM&CP Plan and Profile drawings or as determined by the Environmental Inspector. If not specified, the following spacing will be used:

Table 7.1
Trench Plug Slope and Spacing Specifications

Slope (%)	Spacing (feet)
<5	No Structure
5-15	300
>15 – 30	200
>30	100

Trench plugs will be installed at the base of slopes adjacent to waterbodies and wetlands and where needed to avoid draining of a resource area.

7.7 TRENCH DEWATERING

Dewatering of the trench may be required in areas with a high water table or after a heavy rain. All trench water will be discharged into well-vegetated upland areas or properly constructed dewatering structures to allow the water to infiltrate back into the ground, thereby minimizing any long-term impacts on the water table. If trench dewatering is necessary in or near a waterbody or wetland, the trench water will be discharged into a portable sediment tank or sediment filter bags (see Section 4.2.4.3 and Figure 7-4) located away from the waterbody to prevent silt-laden water from flowing into the waterbody (Section 4.2.4.1).

Any contaminated waters removed from a work site may not be discharged without a SPDES permit or must be discharged at a waste water treatment plant following chemical analysis.

References - Section 7.0

[OSHA] Occupational Safety and Health Administration. January 20, 1999. OHSA Technical Manual.

8.0 TRENCHLESS CABLE INSTALLATION

Trenchless cable installation is a construction technique used to install cables without disruption to surface structures. There are two types of trenchless installation that will be used in construction of the Facility: HDD and Jack and Bore ("J&B").

8.1 HORIZONTAL DIRECTIONAL DRILLING

HDD is a trenchless installation process used to install cables beneath obstacles or sensitive areas utilizing equipment and techniques derived from oil well drilling technology.

HDD is used for transmission cable installation to avoid and/or minimize environmental impacts. It is a preferred technology because surface disruption is minimized. HDD technology is used in many situations including the following: lake crossings, wetland crossings, canal and watercourse crossings, valley crossings, sensitive wildlife habitat, and road and railway crossings. HDD is a multi-stage process composed of the steps listed below and further depicted by Figure 8-1.

a) Drilling a pilot hole;
b) Expanding the pilot hole by reaming;
c) Pull back of drill string with simultaneous installation of conduit; and
d) Cable pulled through conduit.

8.1.1 Pre-site Planning

The HDD rig and associated equipment is set up on one side of the obstacle to be crossed. For each proposed HDD location, two separate drills will be required, one for each cable. Each cable will be installed within an eight (8) to ten (10) inch-diameter high-density polyethylene ("HDPE") casing. Each HDD location will be evaluated during the EM&CP process. Planning and execution of each HDD shall include applicable requirements of ASTM F 1962, Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings.

8.1.2 Site Planning

Site planning will involve the production of a Preliminary Site Investigation and Planning Report, a Geotechnical Analysis Report, and Engineering Plans and Profiles as applicable.

The Preliminary Site Investigation and Planning Report will verify the embankment stability, roads or other major features to be traversed and explain entry and exit staging areas, accessibility to HDD operations and staging areas, and availability and accessibility to a water source.

The Geotechnical Analysis Report will include a geological model describing the stratigraphic profile of the drill zone. Detailed data logs, results and analysis of all subsurface investigation methods used to develop the geologic model and stratigraphic profile will be provided and may

include: test pits, test bores, core samples, and groundwater elevation surveys. This report will provide soil and bedrock characterizations of the proposed HDD locations. Should additional subsurface investigations be required, methods may include: dynamic cone testing, seismic studies, sonar studies, ground penetrating radar, electromagnetic and electrical resistivity tomography surveys, groundwater well installation, down-hole geophysical logging, and water quality sampling and analysis.

If results of the geotechnical data reveal the presence of gravels, boulders, or cobbles, or with transitions from non-lithified materials into solid rock, then a monitoring procedure and a list of specialized equipment to be used such as special purpose drill heads or use of optimized drilling fluids will be described. A geologic risk assessment for the HDD will be performed for each proposed HDD location.

Engineering Plans and Profiles developed for each HDD will include Bore Path Layout Plans, including base maps of the surrounding area, horizontal bore path distances from existing features and staging locations with distances from existing features. Profiles of each HDD path will include the following: elevations of the bore path and existing features (including utilities), the radii of curvature, points of tangency and bore entry and exit angles. Engineering Plans associated with the HDD work will consist of duct bank sections, trench sections, transition pit or vault sections and details, cable/pipe support details and casing requirements. Methods to mark and protect collocated infrastructure and a detailed Restoration Plan (including pavement/sidewalk sections when applicable) will be provided. An As Built Profile for each HDD location will be developed upon completion of the Facility.

8.1.3 Installation and Performance Controls

During installation of each HDD, Certificate Holders will implement an access plan and an Environmental Impacts Mitigation and Restoration Plan to avoid and/or minimize impacts to the following, where applicable: aquatic and wetlands species habitats, rare and endangered plant and wildlife species, wetlands, drinking water aquifers, historic and cultural resources and nearby residents and commercial sites. Soil Erosion & Sediment Control Plans & Details, backfilling and borehole stabilization method descriptions and details, and dewatering methods and control descriptions will be provided as applicable. If hazardous materials are expected to be used and/or environmental contamination is known or expected to be encountered, a Hazardous Materials Handling and Hazardous Waste Disposal Plan and a Contaminated Materials Monitoring, Management and Remediation Plan will be developed.

In order to protect public and worker health and safety, Barrier Plans, a protective enclosure plan and protective work practices will be implemented. Barriers and protective measures implemented are intended to protect workers, non-essential personnel and bystanders. Requirements of the Occupational Safety and Health Administration OSHA Technical Manual (OTM) will be adhered to at all times

A Drilling Fluid Management and Disposal Plan will be implemented. The Bentonite used will be National Sanitation Foundation (NSF) certified and methods for recycling and reuse will be

created. The methods for handling and disposal of drilling fluids and drill cuttings will also be described in the plan.

During construction, a noise analysis and control plan will be implemented, as needed. Additionally, vibration monitoring procedures, a surface elevation survey and land deflection and subsidence monitoring plan will be developed and implemented, as needed. Where HDD operations will occur within one hundred (100) feet of existing structures, existing facilities and structures protection and foundation monitoring plan may be developed.

8.1.4 Site Specifics and Contingencies

Site specific environmental and cultural resource protection measures will be planned and implemented. Such measures may include Phase 1A and Phase 1B archeological studies and development of wildlife habitat restoration plans. Where HDD will be used at shoreline and water body crossings, a navigational coordination plan, cofferdam design details and a dredging plan will be provided, as applicable.

Where HDD will be performed in urban and residential areas and at road crossings, detailed traffic control plans will be provided. Certificate holders will obtain Revocable Consent / DOT Permits where necessary. Written descriptions of any anticipated impacts to vehicular and pedestrian traffic will be included in the plan. The detailed traffic plans shall exhibit, as appropriate to the setting, access widths, roads/sidewalks, business access ways, municipal access way widths, signage and channelizing devices, street/sidewalk closures and detours and temporary/final traffic signal plans.

In railroad rights-of-way, railroad traffic coordination plans will be developed and implemented. For installations in close proximity to railroad tracks, HDD activities will be in accordance with applicable requirements of the American Railway Engineering and Maintenance-of-Way Association ("AREMA") Manual for Railway Engineering. Additionally, HDD operations will adhere to applicable requirements of ASTM 'Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings', the National Electrical Safety Code ("NESC"), including Part 3: Safety Rules for Underground Lines, Sections 32 through 39, and the Plastic Pipe Institute PPI Standard TR 46 as applicable. The Plastic Pipe Standard can be found at http://plasticpipe.org/pdf/tr-46-hdd-guidelines.pdf.

8.1.5 Drilling a Pilot Hole

Drilling will progress beneath the obstacle towards the exit target on the other side. The pilot hole is drilled using a non-rotating small diameter drill string and a drill bit consisting of an asymmetric jetting head. The hydraulic cutting action of the drill head is remotely operated to control its orientation and direction. The position of the drill string is electronically monitored during the drilling operation. Directional corrections are made as necessary to ensure that the drill string maintains the desired profile and alignment.

The selected carrier fluid for this drilled crossing will consist of water and bentonite clay. The bentonite clay is a naturally occurring hydrated aluminosilicate composed of sodium, calcium, magnesium and iron that is environmentally benign. Bentonite drilling fluid is delivered to the cutting head through the drill string to provide the hydraulic cutting action, cooling of the cutting head, lubricate the drill bit, stabilize the hole, and to remove cutting spoil as the drilling fluid returns to the entry point of the pilot hole to a containment pit or tank. Typically, bentonite clay is returned to a reclaimer and processed to remove the cuttings. The bentonite is recycled for use as the drilling operation continues. Other materials that could be added to drilling fluid include polymers and soda ash.

The amount of drilling fluid used is determined by the length and diameter of the HDD bore as the drilling fluid completely fills the bore hole. Therefore, as the horizontal drilling proceeds more drilling fluid is required and as a result more bentonite must be added to provide enough drilling fluid with the characteristics needed to convey the excavated soil up to the surface. It is anticipated that the HDD bore diameter will be fourteen (14) inches. As a result, the amount of drilling fluid in the ground during the HDD boring process will be eight (8) gallons per running foot of HDD bore. Every one thousand (1,000) gallons of water/fluid will have about one and one-half (1.5) cubic feet of bentonite, 0.15 to 0.38 cubic feet of polymer, and one (1) pound of soda ash.

8.1.6 Expanding the Pilot Hole by Reaming

Enlarging the pilot hole is an incremental process accomplished with one to several reaming passes, depending upon the cable diameter and the subsurface geology. The rotating reaming/cutting tool is attached to the drill string at the exit point, and drawn back toward the drilling rig situated at the entry point of the pilot hole. Drill pipe is added behind the reaming tool as it progresses toward the drill rig to ensure that a continuous drill string is maintained in the drilled hole. Bentonite drilling fluid is again utilized during the reaming process to remove cutting spoil from the hole.

8.1.7 Cable Pulling

Once reaming is completed, the cable is attached to the drill string at the exit point, and drawn back toward the drilling rig at the entry location.

In the event that drilling fluid forces its way to the surface (a “frac-out”) associated with a HDD operation, immediate and appropriate action will be taken to assess the situation and to minimize and contain or stop the bentonite “frac-out” to the extent practicable. On-land a “frac-out” is easily controlled and contained with a variety of materials (lumber shoring, straw bales, earth berms, or sand bags). Water quality and downstream impacts resulting from an in-water “frac-out” can be minimized using containment buoys and silt curtains to control turbidity. In certain in-water situations, bentonite can be pumped (vacuumed) for removal and proper disposal. A contingency plan for “frac-out” mitigation or drill failure will be included in the EM&CP.

8.2 JACK AND BORE

Another method for trenchless installation is called J&B. This method involves pushing a casing of steel or other material, larger than the HDD pipe, through soils from one side of an existing road or railroad to the other. J&B is limited to a maximum length of several hundred feet limited by the soil friction that J&B equipment can overcome. In addition, only a straight generally horizontal casing can be installed. J&B also requires the subsurface material to be of consistent gravel, silt, clay, soft rock materials or a combination of these materials. Encountering variable materials and obstructions such as rock ledge surfaces, boulders or large cobbles is problematic.

J&B can be considered for stream crossings having uniform subsurface soil material (often not the case), but a high water table could require dewatering of the jacking and receiving pits. The first step in the J&B construction process is to clear and grade a flat work area at the each end of the proposed crossing to construct two working pits. The jacking pit contains a machine to jack sections of casing under the road or railroad, and auger the soil material that is punched out at the front end of the casing. The other receiving pit is located where the casing will exit on the opposite side of the road or railroad.

The jacking pit is typically ten (10) feet to fifteen (15) feet wide and twenty five (25) to forty (40) feet long and somewhat deeper than the bottom elevation of the casing to be installed. These sizes vary based on the casing diameter and crossing length which determines the size of the J&B machine needed. The casing depth under the road or railroad is usually deeper than in other areas causing the pits to be within the railroad or road theoretical embankment line and live load line criteria. Consequently these pits are typically shored on all sides to support the soil loads, to provide OSHA worker safety, and also to provide a backstop for the jacking machine.

The receiving pit can be significantly smaller, on the order of ten (10) feet to fifteen (15) feet square, but shored like the jacking pit, with an opening to receive the conduit. The J&B casing size can range from seven (7) inches to one (1) foot in diameter. Separate small diameter J&B casings can be driven simultaneously, each containing one cable, or a larger sizes can contain multiple cables or cable conduits.

The jacking/augering machine is leveled on the bottom of the jacking pit at a height that will provide for discharge and removal of the augered spoil and is oriented toward the receiving pit. The jacking begins pushing a single ten (10) to twenty (20) foot length of pipe and augering the punched-out soil material out of the casing. When the section is jacked to its full length, the jack is disconnected, moved back to receive another section of pipe. Steel pipe sections are then welded together, and the jacking/augering operation resumes. This is repeated until the leading section is pushed into the receiving pit.

Sheeting is then partially removed to allow soil excavation to the adjoining trenches which are typically at a shallower elevation and often not in alignment with the J&B casing. If cable conduits are used, they will be pulled into the trench and casing, respecting the minimum cable radius requirements. If multiple cable conduits are used they will be bundled using special spacers and pulled into the casing.

The cables are then pulled in through the casing and any other open trench, closed trench or HDD conduit between the design splice points, typically two thousand (2,000) to three thousand (3,000) feet apart. The annulus between the cable or conduits and the pipe casing is pressure grouted to provide both long-term load-bearing capacity of the casing and thermal transfer for the cables.

The remaining sheeting or shoring is removed from the pits as excavated material is replaced and compacted in accordance with highway or railroad requirements.

8.3 HORIZONTAL DIRECTIONAL DRILLING AND JACK AND BORE ROAD CROSSINGS

The following specifications will apply for HDD & J&B road crossings:

a) Owners/operators of other underground utilities in the area will be consulted during the EM&CP development and notified no less than thirty (30) days prior to the start of construction;

b) All existing underground facilities will be marked prior to the start of drilling or boring;

c) Jacking and receiving pits adjacent to the road shoulder will be clearly identified and barricaded to prevent them from being a hazard to pedestrian or vehicular traffic; and

d) Bore or drill pits will be fenced and marked if left open overnight.

Typical HDD, road crossings are shown in Figure 8-2. See Section 10.1 for additional information on road crossings.

8.4 HORIZONTAL DIRECTION DRILLING AT SHORELINE CROSSINGS

At the transition of the HVDC underwater cables from water to land, installation will be accomplished through the use of HDD methodology in order to minimize disturbance to the bank and near shore area. The HDD will be staged at the onshore landfall area and involve the drilling of the boreholes from land toward the offshore exit point. Conduits will then be installed the length of the boreholes and the transmission cable will be pulled through the conduits from the submarine end toward the land. A transition manhole/transmission cable splicing vault will be installed using conventional excavation equipment (backhoe) at the onshore transition point where the underwater and overland transmission cables will be connected. Locations of all proposed crossings will be identified and all HDDs will be engineered on a site-specific basis during development of the EM&CP.

During the site preparation of a land to water HDD an offshore reception area must be prepared in the lake or river. The prime challenge at the offshore HDD reception area is to minimize or prevent the loss of drilling mud. To mitigate against the loss of drilling mud two options are available; a temporary coffer dam, or a steel casing. The following variables determine which option is used – length of drill; depth of drill, elevation difference between drilling site and

reception site, geology of route, water depth at exit, and currents; all of the will be taken into account during the detailed design / EM&CP.

Steel Casing Installation

As a first step the riser would be installed at the desired offshore target location. The riser pipe must be large enough to accommodate the diameter of the HDD bore. In this case it is anticipated that the steel casing pipe would have a diameter of 48 inches. The steel casing pipe would be driven through the overburden on the river / lake bed by using a large pneumatic pipe ram on a barge mounted crane. The driven depth of the steel casing pipe would be dependent upon the specific geotechnical conditions at the reception location. The pipe is driven into the overburden at an angle to match the planned HDD bore slope at the exit. After the conduit has been pulled into the bore the steel casing is removed.

Cofferdam Installation

The cofferdam will be a three sided rectangular shape with the open side facing away from shore. The open side allows for manipulation and pull back of the conduits and cables. The area enclosed by the cofferdam will be approximately 16 feet wide by 30 feet long with the bottom excavated to a depth of approximately 8 feet below the channel bottom. The cofferdam will be constructed using steel sheet piles driven from a barge-mounted crane. The cofferdam is intended shore the sides of the exit pit and help reduce turbidity associated with the dredging and HDD operations. Approximately 140 cubic yards of sediment will be excavated from within the cofferdam. The dredged material will be temporarily placed on a barge for storage. At the end of cable installation, the exit pit will be backfilled with imported clean backfill material, as needed. The backfill will restore the bottom to the preconstruction grade. The cofferdam will remain in place through the backfilling operation to help control turbidity. At the completion of the backfill operation the sheet pile will be removed.

A visual and operational monitoring program will be implemented during the HDD operation to detect a fluid loss. This monitoring includes:

a) Visual monitoring of surface waters along the drill path and in the vicinity of the exit hole on a daily basis to observe potential drilling fluid breakout points.

b) Drilling fluid volume monitoring by technicians throughout the drilling and reaming operations for each HDD conduit system.

c) Implementation of a fluid loss response plan and protocol by the drill operator in the event that a fluid loss occurs. The response plan could include injection of loss circulation additives such as Benseal that can be mixed in with drilling fluids at the mud tanks, and other mitigation measures as appropriate.

9.0 UNDERWATER CABLE LAYING

The installation method for the underwater cable could be simultaneous or post-lay embedment operation for the majority of the route. The preferred installation method for the underwater cable shall be simultaneous embedment operation for the majority of the route. The preferred installation method will be determined on a site-specific basis and will be developed in the detailed engineering design that will be provided in the EM&CP.

Based on existing sediment types, cable installation technique will vary along the route. The methods for cable installation will follow the guidelines below. In addition, depending on the final engineering design of the cable, bipoles may be buried:

a) On top of each other in a single trench (preferred method in Hudson River);

b) Side by side in a single trench; or

c) Separately in two trenches.

During EM&CP Development all bridges, culverts or other infrastructure encountered along the route will be evaluated and the owner/operator will be consulted as necessary to ensure the Facility installation and operation will not interfere with safe operations of the facilities.

Along the underwater cable route, cable burial depths will vary by location, existing utilities, existing marinas, substrate type and regulatory requirements. In the Hudson, Harlem, and East Rivers, the cables will be buried to a target depth of cover of six (6) feet below the sediment water interface or the maximum depth reasonably achievable, and fifteen (15) feet below authorized navigation channel depths when crossing or within a federally maintained navigation channel or existing marina channels. The Certificate Holder shall notify NYSDEC and DPS staffs of all locations where the cable burial depth is less than six (6) feet and provide sound engineering justification for determining that the actual burial depth is the maximum reasonably attainable depth. In areas where the maximum reasonably attainable depth is less than four (4) feet the Certificate Holder shall submit a proposed plan for protection of the cables to NYSDEC and DPS for their review and incorporate the plan into the EM&CP. A burial depth of fifteen (15) feet below authorized navigation channel depths must be achieved when crossing or within federally maintained channels unless authorized by the United States Army Corps of Engineers ("USACE"). This will allow future dredging of the channel without disrupting the cable. Within Lake Champlain, the cables will typically be buried to three (3) feet to four (4) feet or the maximum reasonably attainable depth, whichever is shallower. However, in areas where burial to protect the cables from mechanical damage is not necessary based on good engineering practice (e.g., waters greater than on hundred fifty [150] feet in depth), the cables may be laid on the lake bottom.

A list of existing marinas will be developed and the dimensions of their respective marina channels identified and plotted. Locations of existing marinas will be indicated on the EM&CP Plan and Profile drawings. Marina operators will be given advanced notice of cable laying in their area and an opportunity to identify and discuss any concerns with the EPC contractor.

For each cable installation technique, the EPC contractor will constantly monitor and adjust cable laying activities during cable laying operations to ensure the cable is being laid and buried properly. The cable laying machine operators will be in constant communication with the cable laying technicians to ensure the cable rotating and delivery speed is synchronized with the cable laying linear speed. The cable installation will be monitored by the Aquatic Inspector to ensure construction objectives are met.

A Water Quality Monitoring Plan, consistent with the requirements of the Water Quality Certification, will be developed in the EM&CP for pre-installation jet plow and shear plow trials and cable installation.

9.1 WATER JETTING/HYDRO-PLOW

The proposed method for cable burial for the majority of the underwater cable route is a hydraulically-powered water jetting device that simultaneously lays and embeds the cable in the sediments. Various types of equipment referred to as a water jet or hydro-plow (CAPJET 50; CAPJET 650-1MW; Hydroplow III; CMI Jet Plow are examples) are deployed from a ship that is either dynamically or anchored positioned that can continuously lay and bury the cable.

This equipment uses pressurized water to fluidize the sediment. The pre-determined deployment depth of the jetting blades controls the cable burial depth using adjustable hydraulics on the water jetting device. The device is equipped with horizontal and vertical positioning equipment that records the laying and burial conditions, position, and burial depth. This information is monitored continually on the installation vessel.

Burial can be performed by either a towed or self-propelled burial machine. The self-propelled device moves forward by the reaction of the backward thrust of the hydraulic jetting power that is fluidizing the soil and keeping the trench open for the cable to sink into. The forward rate of progress is regulated by the varying types of sediment and the water pressure applied through the jets. The towed device is tethered to a surface craft, which then applies the pulling force as it moves forward. A skid or pontoon-mounted water jetting device or wheeled, frame-mounted water jetting device, deployed and operated in conjunction with the cable laying vessel, may be used.

There are pre-lay and post-lay embedment devices and the type of device will be determined by the sediment composition, bathymetric contours, navigation constraints, and the characteristics of adjacent habitat areas. For a pre-lay device, the cable is simultaneously fed into the trench as it is created by the plow. For a post-lay device, the cable has already been laid, the plow is lowered on the bottom and the cable placed inside the device, which then embeds it into the bottom as it is pulled forward. In either situation, the device 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.

As there are various sediment types and significant resources found along the cable route, water jetting pressure will vary. In the unlikely event that the minimum burial depth (see Section 9.0) is not met during water jetting embedment and is not deemed impractical due to infrastructure or other barriers, additional passes with the water jetting device or the use of diver-assisted water jet probes will be utilized to achieve the required depth. Typical water jet pressures include: Sand and Silt - four hundred (400) to six hundred (600) pounds per square inch (psi), Soft Clay - six hundred (600) to eight (800) hundred psi and Hard Clay - eight (800) hundred to one thousand (1,000) psi.

In order to reduce the potential impact in sensitive areas, BMPs for cable installation include the following:

a) Construction work windows – Construction work windows may vary along the proposed route. Windows will be coordinated with regulatory agencies and identified in the Certificate Conditions.

b) Silt curtains – Proposed silt curtain locations will be identified in Plan and Profile drawings included in the EM&CP. The use of silt curtains and their location will depend on local hydrodynamics and navigation traffic. Silt curtains may be used near water drinking supply intake structures in Lake Champlain or in the Hudson River.

c) Water jetting operation parameter modifications – The primary modifications to the water jetting operation include a reduction in water jetting pressure and a reduction in water jetting rate of installation. Proposed areas where operational modifications may occur will be identified in Plan and Profile drawings included in the EM&CP. Operational modifications may occur as needed to avoid and/or minimize impacts in soft sediments or when crossing Significant Coastal Fish and Wildlife Habitats ("SCFWHs"). In addition, operational modifications may occur in the field, based on water quality monitoring results.

d) Installation using diver operated hand jet – For hand jetting, 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 will be employed for short distances only, typically less than one hundred (100) feet. Hand jetting is typically used at HDD exit and entry pits and cable crossing locations. Proposed areas where hand jetting will be utilized will be identified in the Plan and Profile drawings included in the EM&CP.

e) Monitoring system – The position of the cable installation equipment on the bed of the waterbody will be determined by the vessel's hydroacoustic positioning system. A transponder will be installed on the jetting machine. At regular intervals a signal will be sent to the cable laying vessel's transducer which will produce a unique code. The time difference between the beacon's answer and its direction will be used to locate the machine with respect to the vessel. The hydroacoustic signals will be processed by the navigation computer and the jetting machine position along the Facility route will be

reckoned and recorded. This datum will be sent in real time to the laying control computers.

9.2 SHEAR PLOW

For the shear plowing technique, a trench is made for the cable by towing a plow through the sediment of a waterbody, and the cables are simultaneously fed into the trench as it is created by the plow. The shear plow is not self-propelled, and does not contain jetting or hydro-plow capacity, 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. When compared to jetting or hydro-plow operations, the shear plow results in a relatively narrower estimated trench and reduced sediment disturbance, as sediment cohesive strengths and burial depths suitable for shear plow use generally require less force.

Some issues which affect the suitability of shear plows for submarine cable installation and burial are sediment cohesiveness and burial depth. Use of the shear plow is typically limited to sediments that have shear strengths (kpa) less than 20 kpa. Also, shear plows are typically used with shallower burial depths (less than 3 ft), which generally reduces the overall amount (i.e., volume) of sediment disturbed during installation.

Sediment shear strength and proposed cable burial depth in the southern portion of Lake Champlain are suitable for use of the shear plow. The shear plow will be used in the sections of southern Lake Champlain as defined in the Certificate Conditions. The soft sediments of the lake bottom permit adequate penetration to embed the cable at the desired depth. This technique will be used because it does not employ pressurized water to fluidize the sediment to create a trench for the cable. This technique will reduce the potential dispersal of sediments in the shallow reach of Lake Champlain. The shear plow to be used in Lake Champlain will be fabricated specifically for the conditions in the southern part of the lake. The shear plow will be tested for efficacy and impact on water quality standards in trials before installation takes place. The deployment of the shear plow will be consistent with the Certificate Conditions and Water Quality Certification.

9.3 CONVENTIONAL DREDGING

Conventional dredging may be needed where the cable crosses the maintained navigational channel and within temporary cofferdams. Dredge areas will be identified in the Plan and Profile drawings included in the EM&CP. At maintained federal navigational channel crossings, conventional dredging will be used to pre-dredge the cable laying area so that subsequent water jetting will embed the cable to a depth of fifteen (15) feet below the authorized navigation channel depth as required by the USACE. Dredging will include sediment accumulated in the channel above its authorized depth as well as the material below the existing channel bottom. At each location, the dredged material will be placed in scows. A disposal site will be selected based, in part, on the results of sediment testing for the presence of potential contaminants. In accordance with federal and state regulations, the selected EPC Contractor will develop a detailed Dredge Plan and attain the necessary dredge and disposal approvals. Based on current

regulatory requirements, the following outline addresses the major components associated with dredging permit process:

a) Development of a dredge plan;

    i. Identification of dredge locations on map or survey based on hydrographic survey of each location
    ii. Estimate of dredge volumes
    iii. Develop pre-dredge sampling plan

b) Pre-application meeting with regulatory agencies, typically USACE and NYSDEC;

    i. Review proposed sampling plan
    ii. Coordinate dredging work windows and BMPs
    iii. Coordinate any specialized handling requirements

c) Conduct sediment sampling based on approved sampling plan;

d) Identify dredge spoil disposal options and locations;

e) Submit Joint Application;

f) Public notice and review period;

g) Permit approval; and

h) Contract dredge contractors.

Typically, sediment sampling is required within one (1) to three (3) years of applicant filing date thus the plan will be provided included in the EM&CP and coordinated with USACE and NYSDEC.

Sediment testing is required to determine the level of chemical contaminants present in the material to be dredged and to evaluate potential alternatives for placement of the dredged material. Physical and chemical characterization of sediments along the centerline of the Facility route conducted to support the Article VII Application and the initial estimates of dredging areas and volumes, provide a basis for developing a sediment sampling and analysis plan to meet regulatory requirements.

The following guidance documents will be used to develop the dredge plan:

a) United States Environmental Protection Agency ("USEPA")/USACE *Ecological Evaluation for Dredged Material Proposed for Ocean Disposal in the Marine Environment;*

b) Regional Implementation Manual New York/New Jersey Harbor *Guidance for Performing Tests on Dredged Material Proposed for Ocean Disposal;*

c) *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual* (Inland Testing Manual) for proposed dredging within Lake Champlain; and

d) New York State Department of Environmental Conservation's (2004) publication *Technical and Operational Guidance Series, In-Water and Riparian Management of Sediment and Dredged Material.*

Sediment testing results will determine the dredged material's suitability for ocean disposal or at various upland locations. Material dredged from the Hudson River will not be returned to the river. These sediments will be disposed of in a state approved waste disposal site, in accordance with New York State Solid Waste Regulations.

Sediment samples will be collected at each dredging location using the vibracoring sampling technique. Cores at each crossing will be collected at equidistant points along the crossing and based on the approved sampling plan.

Sediment cores will be visually analyzed for stratification and the sediment color, consistency, any structures present, and odor(s) will be described and recorded. The variation in sediment grain size within each core will be noted and measured from the top of the core prior to the cores being photographed. NYSDEC will be notified of any sediment cores that show distinct grain size stratification prior to compositing. The Certificate Holder will not composite single or multiple cores if grain size, TOC or likelihood of contamination history indicate that individual horizons within the core may be significantly different in sediment contaminant characteristics. Instead, the horizons will be sampled and analyzed separately.

Representative samples from each core will be taken for the analysis of grain size, total organic carbon ("TOC"), and percent moisture. If there is significant stratification or apparent variation in grain size and other properties at any significant interval in a core as determined in the field, NYSDEC will be notified prior to analysis in order to provide guidance on how to proceed.

The storage and preservation procedures for sediment samples prescribed in NYSDEC's Material Management and Testing Manual will be adhered to unless modified procedures are proposed and approved by NYSDEC prior to the commencement of sediment sampling. The sampling and analysis of sediment samples will also be undertaken in conformance with USEPA and USACE requirements.

Best Management Practices for Conventional Dredging

As part of the planning process for dredging, there will be consultations with NYSDEC and USACE at which time the BMPs will be identified for dredging permits prior to dredging. In addition to the requirements set forth in condition 99 of the Certificate Conditions, the following BMPs for conventional dredging may be required:

a) The dredge bucket shall be operated to control the rate of descent and to maximize the depth of penetration without overfilling the bucket;

b) Consideration shall be given to the placement option when selecting a barge type;

c) On-board inspectors shall be assigned to dredging operations to monitor and document compliance with all dredging requirements;

d) Dredging windows for cable installation shall be location-specific within the Hudson Estuary;

e) In order to minimize resuspension of solids, at least 24 hours of settlement shall be required prior to decanting of dredged materials. Barges may not be moved and dredged materials may not be disturbed during the settlement period. If the barge is moved or dredged materials are disturbed prior to decanting, the settlement period must be restarted;

f) The contractor shall demonstrate to the Aquatic Inspector's satisfaction that the bucket dredge operator has sufficient control over the bucket depth in the water and bucket closure so that the sediment resuspension from bucket contact with the bottom and bucket over-filling is minimized.

9.4 NON-BURIAL METHODS

Along the Facility route, areas where non-burial methods may occur include unavoidable bedrock areas, buried and unburied infrastructure and utility crossings, and in areas of potential highly contaminated sediments. In these areas, the HVDC cables will be laid on the lake bed, canal bed, river bed, or seabed with protective coverings. Concurrently, the hydro-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 the area of limiting surficial geology, an existing utility crossing, or contamination. Proposed areas where the cable will not be buried will be identified in the Plan and Profile drawings included in the EM&CP.

9.4.1 Cable Protection

In non-burial areas, the HVDC cables will be laid on the lake bed, canal bed, river bed, or seabed, and a protective covering will be installed to prevent cable damage. Alternatives are available for protection that would be selected for each area where cable protection is needed. These alternatives include; grout filled mattresses, articulated concrete mats, Uraduct®, and rock. The protective covering will occupy a portion of the natural substrate and at the same time, would become a new substrate on which aquatic life could colonize. Among alternatives available for cable protection, their potential effect on existing substrates and their value as alternative habitat vary substantially and would be dependent in-part on where they are used. Cable protection methods will be identified on a case-by-case basis after the results of a detailed marine route survey. Typical cable protection alternatives are described below.

For utility crossings, the owner of the utility will be contacted to coordinate the crossing and to identify owner requirements. The selection of a method of protection will include consideration of the utility owner's requirements.

In addition, potential habitat value will be considered when selecting cable protection alternatives especially in sensitive habitats. Cable protection methods can provide usable habitat for invertebrates and fish species. The selection of cable protection will be site specific and will avoid and/or minimize potential impacts. When selecting a cable protection method and size for the proposed and existing utility infrastructure, the following will be taken into consideration and made part of the analysis:

a) Local hydrodynamics;

b) Seabed slope; and

c) Ability of the materials to withstand water quality and sediment parameters (i.e., salinity, pH and temperature).

9.4.1.1 Grout Filled Mattresses

A grout filled mattress typically contains a number of pockets that can be filled with concrete grout. Concrete used in grout filled mattresses will be cured to prevent leaching prior to their use. Grout filled mattresses can be placed in layers to provide protection and areal coverage of the waterbody bed depending on site specific conditions, such as the width of the infrastructure corridor to be crossed. Figures 9-1 and 9-2 show grout filled mattresses that have been laid over a pipe that was placed on or just below the waterbody bottom. The grout filled mattress can then be carefully lifted and placed on the lake bed, canal bed, river bed, or seabed to provide direct protection to the cable which has been laid directly on the waterbody bottom.

Proposed areas where grout filled mattresses may be used will be identified in Plan and Profile drawings included in the EM&CP, following a detailed marine route survey.

9.4.1.2 Articulated Concrete Mats

Articulated concrete mats consist of concrete blocks interconnected by polypropylene ropes or steel cable forming a mat of selected sizes (Figure 9-3). The polypropylene ropes or steel cable between concrete blocks allow the articulated concrete mats to flex so that it can conform to the bottom, creating a low profile covering. Where steel cables are used, they will be galvanized or otherwise made impervious to corrosion, rust and degradation. Articulated concrete mats can be placed in layers to achieve greater amounts of protection if required, while maintaining as low of a profile as possible to avoid effects on local hydrodynamics and localized sedimentation. The articulated concrete mats are lifted off barges and lowered into the water and placed directly over the cable using a crane. Positioning is typically monitored by divers.

Proposed areas where articulated concrete mats may be used will be identified in Plan and Profile drawings included in the EM&CP, following a detailed marine route survey.

9.4.1.3 Uraduct®

Another option for cable protection is Uraduct®. Uraduct® is comprised of cylindrical half shells molded from a range of marine grade polyurethanes. The half shells overlap and interlock to form close fitting protection around the cables (Figure 9-4). Uraduct® is a custom made system and is manufactured to suit the type of cable, the level of protection required and location. An advantage of using Uraduct® is that it can be applied concurrently with cable installation. In addition, as it encapsulates the cable, it has a minimal vertical relief and does not cover the waterbody bed. Uraduct® may be used by itself or in conjunction with other protection measures as the site conditions require.

Proposed areas where the Uraduct® may be used will be identified in Plan and Profile drawings included in the EM&CP, following a detailed marine route survey.

9.4.1.4 Rock or Rip-Rap

Rock or rip-rap will be sized to remain in place under current and wave conditions expected at the site. Rock or rip-rap will be lowered from a supply barge using either a closed (clamshell) bucket dredge or an excavator. Rock or rip-rap placement will be monitored by divers to prevent over-or-under-placement of material.

Proposed areas where rocks or rip-rap may be used will be identified in Plan and Profile drawings included in the EM&CP, following a detailed marine route survey.

10.0 TRANSPORTATION AND UTILITY CROSSINGS

During Facility construction, minor and temporary impacts to existing infrastructure are possible where these features will be crossed by the cable route. In areas where the cables cross existing infrastructure such as roads, buried utility lines, or other features, the Certificate Holders will evaluate the impacts associated with each infrastructure crossing to determine whether open trenching or a trenchless method is appropriate. In addition, the Certificate Holders will coordinate with state and local authorities, railroad companies, and utility owners to minimize disruption of existing features to the greatest extent possible. CHPEI will join "Dig Safely New York" and DigNet and will coordinate with them for any underground construction work.

10.1 ROAD AND HIGHWAY CROSSINGS

Existing roadways will be crossed along the overland portions of the Facility, primarily along railroad rights-of-way. This section identifies the typical procedures to handle these crossings.

10.1.1 Preconstruction Planning

Where installation of the proposed cable will occur within a road or highway right-of-way, the Certificate Holders will contact the jurisdictional municipality or regulatory agency to ensure appropriate protection and safety measures are employed. The local jurisdictional entity could be the Town, Village, or County highway departments, the New York State Thruway Authority, or the NYSDOT. In preparing the EM&CP, the Certificate Holders shall consult with each transportation department or agency normally having jurisdiction over any roads, related structures, and rail facilities in the Facility vicinity that will be crossed by the certified facilities, or used for direct access to the ROW.

Where New York State highway right-of-way is to be occupied, all work will be performed in accordance with 17 NYCRR Part 131 of the Highway Law covering Accommodation of Utilities within State Highway right-of-way and the applicable design standards of the American Association of State Highway Transportation Officials ("AASHTO"), the guidance in *Requirements for the Design and Construction of Underground Utility Installations within the State Highway Right-of-Way* (NYSDOT 2007), the *Manual of Uniform Traffic Control Devices* ("MUTCD") (NYSDOT 2008b, USDOT 2009), the *Highway Design Manual* (NYSDOT), the *Policy and Standards for Entrances to State Highways* (NYSDOT), the *Requirements for the Design and Construction of Underground Utility Installations with the State Highway ROW* (NYSDOT 2007), the *Accommodation Plan* (NYSDOT 1995), and the NYSDOT 2008 *Standard Specifications*. Highway work permits will be required for any work in, on, over, or above State highway right-of-way, which includes facilities such as shoulders, guiderails, clear zones, vegetated areas, slopes, and drainage facilities in addition to the paved roadway. The Certificate Holders or their construction contractor on their behalf shall obtain highway work permits and use and occupancy permits from NYSDOT pursuant to 17 NYCRR Part 131, including, if necessary, the exception to the Accommodation Plan for Longitudinal Use of Freeway Right-of-Way by Utilities, for the construction, operation, and maintenance of the Facility in the right-of-way of State highways.

The Certificate Holders will coordinate with DPS and NYSDOT for all work to be performed in the State rights-of-way. Prior to submitting construction plans for any State right-of-way segment, the Certificate Holders will provide to DPS and NYSDOT a preliminary design marked to avoid conflict with potential future transportation projects that NYSDOT may seek to undertake in the future and shall offer to consult with NYSDOT concerning any comments it may offer and will use reasonable efforts to accommodate any NYSDOT concerns.

Prior to the start of in-street work, underground utilities that may be crossed or paralleled by the cable route will be identified and marked in the field. Owners of these other utilities will be notified in accordance with the requirements of 16 NYCRR Part 753.

The Certificate Holders will examine existing conditions and traffic flow and volume patterns to determine the appropriate construction methods for the area. Where in-road work will be extensive enough to require detours or road closings, a Maintenance and Protection of Traffic ("MPT") Plan will be completed in consultation with all affected agencies prior to the start of construction.

Maintenance and protection of traffic, including protection of the public from damage to persons and property within the limits of and for the duration of work within the state right-of-way, will be done in full conformance with the Section 619 – *Maintenance and Protection of Traffic of the NYSDOT Standards Specifications for Construction and Materials* (NYSDOT 2008a), and all addenda thereto. Additionally, all maintenance and protection of traffic activities, materials, and construction details will comply with the *Manual of Uniform Traffic Control Devices* (NYSDOT 2008b, USDOT 2009) and permits issued by NYSDOT. Short term and long term impacts due to construction on the roadways / crossings including the level of service will be evaluated in the EM&CP.

The Certificate Holders will consult periodically with state and municipal highway transportation agencies about traffic conditions near the Facility site and will notify each such transportation agency of the approximate date work will begin in its jurisdiction, using access points that take direct access from highways in that jurisdiction.

10.1.2 Road Crossing Methods

One of two basic road crossing methods will be used during construction: trenched (open cut) or trenchless (boring, or HDD). It is anticipated that the majority of crossings will be completed utilizing trenchless techniques, resulting in minimal disruption of existing traffic patterns. All crossings will be done perpendicular, or as close to perpendicular as feasible, to the roadway.

Typical roadway crossings are shown in Figures 10-1 through 10-4.

10.1.2.1 Trenched or Open Cut

Open cuts will be conducted where HDD is not feasible due to subsurface rock formations, excessive presence of boulders, or insufficient right-of-way to allow jacking, boring, etc.

The following specifications will apply for trenched road crossings:

a) Owners or operators of other underground utilities in the area will be consulted during the EM&CP development and notified no less than thirty (30) days prior to the start of construction. Notice provided after normal business hours or on weekends will not begin the notice period;

b) All existing underground facilities will be marked prior to the initiation of cutting or excavation;

c) Tree limbs, shrubs, cobble stones, or any other natural or man-made features that are at risk of damage will be temporarily moved, protected, or removed and stored. Where landscaping trees are affected, an arborist will be consulted regarding root cutting and pruning;

d) Detours, signage, and public notice will be posted no later than twenty four (24) hours prior to the initiation of construction;

e) Traffic flow will be provided in at least one lane of the road at all times or a detour will be provided. Flaggers or temporary traffic lights will be used where necessary to control traffic flow;

f) Any water control devices (roadside ditches, culverts, etc.) disturbed during excavation or construction will be restored immediately after cable installation;

g) Temporary restoration of the roadway will occur immediately after the cable is installed; and

h) All work within State highway right-of-way will be conducted in accordance with a highway work permit issued by NYSDOT and the requirements of 17 NYCRR Part 131.

10.1.2.2 Trenchless – Horizontal Directional Drilling or Jack and Bore

HDD and J&B and are common techniques used for transmission cable installation projects to avoid and/or minimize environmental impacts. Additionally, trenchless installation is a preferred technology because it minimizes surface disruption, restoration costs (roads, infrastructure), impacts on residents and businesses, and the volume of earth removal and long-term costs of trench settlement. The technology is used in many situations including the following: lake crossings, wetland crossings, canal and watercourse crossings, valley crossings, sensitive wildlife habitat, and road and railway crossings. The HDD and J&B processes are described in detail in Section 8.0.

The following specifications will apply for trenchless crossings of roads:

a) Owners/operators of other underground utilities in the area will be consulted during the EM&CP development and notified no less than thirty (30) days prior to the start of

construction. Notice provided after normal business hours or on weekends will not begin the notice period;

b) All existing underground facilities will be marked prior to the start of drilling or boring;

c) Jacking and receiving pits adjacent to the road shoulder will be clearly identified and barricaded to prevent them from being a hazard to pedestrian or vehicular traffic;

d) HDD or J&B entry and exit points will be fenced and marked if left open overnight; and

e) All work within State highway right-of-way will be conducted in accordance with a highway work permit issued by NYSDOT.

10.1.3 Longitudinal In-Road Construction

The following specifications will apply where the cable will be installed longitudinally within the roadway or its shoulder:

a) Owners/operators of other underground utilities in the area will be consulted during the EM&CP development and notified no less than thirty (30) days prior to the start of construction. Notice provided after normal business hours or on weekends will not begin the notice period;

b) All existing underground facilities will be marked prior to the initiation of cutting or excavation;

c) Tree limbs, shrubs, cobble stones, or any other natural or man-made features that are at risk of damage will be temporarily moved, protected, or removed and stored. Where landscaping trees are affected an arborist will be consulted;

d) Detours, signage, and public notice will be posted no later than twenty four (24) hours prior to the initiation of construction;

e) All areas of open trench unable to be plated will be barricaded and lit with warning lights prior to the end of the construction day;

f) Driveways and drainage ditches will be temporarily restored at the end of each working day;

g) Access to driveways will be maintained to the maximum extent practicable;

h) Temporary patch of asphalt road cuts will begin immediately after backfill;

i) Temporary patch of major road damage (i.e., ruts, potholes, grade loss, etc.) will begin immediately after backfill; and

j) All work within State highway right-of-way will be conducted in accordance with a highway work permit issued by NYSDOT.

10.1.4 Signs

Traffic and construction signage will be provided in accordance with the *NYSDOT's Manual of Uniform Traffic Control Devices* (NYSDOT 2008b) and, within State highway right-of-way, a highway work permit issued by NYSDOT. Placement of signs will be determined in consultation with the applicable jurisdictional agency. At a minimum, signs will be placed at the following distances:

a) Signs announcing construction at one thousand (1,000) and five hundred (500) feet;

b) Signs picturing workers at three hundred (300) feet; and

c) Blast warning signs at one thousand (1,000) feet, if blasting is to take place within fifty (50) feet of the road.

Flaggers will be present at all times when equipment is crossing any road, when equipment is being loaded or unloaded, and where two lane traffic has been reduced to one lane. All flagging operations will comply with 17 NYCRR Part 131.

10.1.5 Repairs and Restoration

Restoration of roadways will be designed in consultation with the appropriate jurisdictional agency. Any restoration on NYSDOT highway rights-of-way shall be in strict compliance with the specifications of a NYSDOT highway work permit. Restoration of any road surface will generally follow the sequence outlined below:

a) Return of road shoulders (maximum fifteen (15) feet) to original grade immediately following backfill;

b) Placement of a temporary road surface will take place immediately after backfill in accordance with state or municipal standards or permit requirements;

c) Permanent repair of asphalt roads as soon as practicable, but in any event within six (6) months of backfill;

d) Permanent repair of other roads damaged during construction will occur during final restoration of that segment of the Facility route;

e) Permanent repair of dirt and gravel roads (ruts, potholes and loss of grade) will occur during final restoration; and

f) Permanent repair of shoulder, guiderail, drainage, clear zone, signs, and other highway and railroad conditions.

10.2 RAILROAD CROSSINGS

Active rail lines will be crossed using trenchless methods, not by open cut trenching. The following measures will be followed for all railroad crossings:

a) The railroad right-of-way will be surveyed for the presence of underground utilities and structures;

b) Owners/operators of other underground utilities in the area will be consulted during the EM&CP development and notified no less than thirty (30) days prior to the start of construction. Notice provided after normal business hours or on weekends will not begin the notice period;

c) NYSDOT will be notified of any crossings of railroad lines;

d) All existing underground facilities will be marked prior to the initiation of cutting or excavation;

e) The Certificate Holders will coordinate all work with the owner/operator of the rail line to ensure the safety and integrity of the HVDC cable and railroad facilities crossed;

f) In the event that the railway is abandoned or the operator has no specifications, the Certificate Holders will refer to and apply construction specifications provided by the American Railroad Engineers Association; and

g) Any temporary or permanent crossing of an intercity rail passenger line or commuter rail service line must be applied for and approved by NYSDOT, pursuant to Section 97 and Section 97-a of the Railroad Law.

10.3 UTILITY CROSSINGS

Additional precautions, as described below, to avoid damage to existing electric, gas, telecommunication, water, wastewater, sewer and stream facilities that could be affected by the siting or construction of the Facility and to ensure the safety of workers. Existing facility owners will be contacted prior to the beginning of any pre-construction activities and throughout the Facility design process, and protection measures and specifications for existing utility facilities will be negotiated with the facility owners and filed with the Commission for approval in EM&CP documents and plans. Additional measures for the protection of utility infrastructure are set out in Certificate Conditions 27 to 29 and must also be complied with.

10.3.1 Overhead Electric Facilities

The Facility will cross many overhead electric facilities along the Facility route. Impacts to these facilities are expected to be minimal given the underground installation of the Facility.

10.3.1.1 Perpendicular Crossings

The following specifications will apply where construction or pre-construction activities are undertaken in an overhead electric line right-of-way:

a) The utility responsible for the operation and maintenance of the overhead electric line will be contacted and consulted throughout the siting and construction process concerning the proposed crossing as described in greater detail in Conditions 27 to 29 of the Certificate;

b) The responsible utility will be consulted concerning "safe minimum clearance" for construction machinery;

c) All guy wires, ground lines, and other surface or subsurface supports or facilities will be located prior to the initiation of construction; and

d) Depending on the length of cable to be installed, the voltage of the electric line to be crossed, and existing weather and topography, the cable and the associated construction equipment may need to be temporarily grounded. This activity will be performed in compliance with the National Electrical Safety Code ("NESC"), as applicable.

10.3.1.2 Overhead Linear Right-of-Way Co-occupation

The following specifications will apply where the cable will parallel an overhead electric line right-of-way:

a) The Certificate Holders will contact the owner of the overhead utility to determine appropriate safety precautions and minimum clearance requirements;

b) If voltages warrant, no ungrounded vehicle will be allowed within two hundred (200) feet of the electric line;

c) All vehicles on the right-of-way will be grounded if necessary by use of grounding strips or chain devices;

d) Vehicles parked overnight on the right-of-way will be grounded to an embedded ground rod by a cable;

e) Fuel trucks will have sufficient ground cables and clamps to complete an electrical bond with every vehicle to be refueled; and

f) The Safety Inspector will monitor construction equipment and warn operators if the safe minimum clearance zone is entered.

10.3.2 Underground Utility Crossings on the Overland Route

The following specifications will apply to construction and pre-construction activities in connection with underground utility crossings on the overland route:

a) The proposed Facility area will be surveyed for the presence of existing underground utilities to be crossed;

b) Owners/operators of other underground utilities in the area will be consulted during EM&CP development and notified no less than thirty (30) days prior to the start of construction;

c) All existing underground facilities will be marked prior to the initiation of cutting or excavation; and

d) Owners of the facilities crossed will be contacted no later than thirty (30) days prior to the initiation of construction and will be given all reasonable opportunity to be present during excavation and construction.

Typical underground utility crossings are shown in Figures 10-5 and 10-6.

10.3.2.1 Underground Linear Right-of Way Co-occupation

The following specifications will apply where the cable will parallel an underground electric line right-of way:

a) In situations where the cable will parallel an underground electric line right-of-way, the Certificate Holders will contact the owner or operator of the underground utility to determine appropriate safety precautions and minimum clearance requirements.

b) Owners/operators of other underground utilities in the area will be consulted during EM&CP development and notified no less than thirty (30) days prior to the start of construction.

10.3.3 Underwater Utility Crossings

The HVDC underwater cable route encounters numerous areas where existing submarine infrastructure (e.g., electric cables, gas pipelines, ferry cables, wastewater outfall pipes and diffusers, etc.) will need to be crossed. Crossings of utilities owned by a third party, such as present and planned cables, pipelines, wastewater outfall pipes and diffusers, and bridges will likely require crossing or co-location agreements, which may be negotiated in the preparation of the EM&CP for that segment of the Facility. Protection at crossings will be subject to these agreements as well. Details of some cable and pipeline positions and depth of burial may be privileged information which will be available in the crossing agreements. Proximity to existing utilities may vary and is dependent on state regulations, waterbody, and owner/operator. Detailed discussions on coordination, design and installation methodologies and safety issues

will be conducted with the owners of these infrastructures. After cable installation, the owners of the utilities will be notified within thirty (30) days of completion of work.

There are several different installation techniques that can be utilized when crossing existing infrastructure based on the type, burial depth, and existing protective coverings of the infrastructure. In many cases, it is anticipated that the underwater cables will be laid over the existing infrastructure with protective coverings (e.g., grout filled mattresses, articulated concrete mats, Uraduct®, or rock). The design of utility crossings will follow industry standards and the infrastructure co-location agreements. Many of the crossing types described below will utilize a protective sleeve applied to the new cable during installation to ensure minimum separation at the crossing point. The sleeve must extend a minimum of approximately fifteen (15) feet from each side of the crossing utility. The installed length will be sixty (60) to seventy five (75) feet to ensure this requirement is met.

10.3.3.1 Bridges

The proposed underwater cable passes under several bridges along the cable route. For each bridge crossing, the Certificate Holders will coordinate with the owner of the bridge regarding clearances, distance from abutments and existing infrastructure, cable burial and installation methods. Horizontal and vertical clearances for cable installation will be provided for final design included in the EM&CP. The Certificate Holders will provide notice to, and coordinate with NYSDOT for any bridge, regardless of ownership, that provides a crossing for, over, or under any street or highway.

10.3.3.2 Crossing Chain Ferry

A "chain-ferry" operates across the underwater cable route within Lake Champlain. The chain ferry utilizes ferry cables laid on the bottom of Lake Champlain. Typical penetration of the ferry cables into the lakebed will be assessed and if necessary, additional protection in the form of deeper HVDC cable burial at the crossing point or the use of an outer protection sleeve against abrasion will be installed. It is likely that the ferry cables will be temporarily removed to facilitate the installation of the underwater cables. The ferry cables will then be replaced over the top of the transmission cables. The ferry operator reports that its chains are replaced every four years; therefore, there may be an opportunity to coordinate the chain installation schedule with the ferry cable replacement schedule. Detailed coordination with the ferry operator will be required regarding cable installation techniques and timing.

10.3.3.3 Crossing of Fiber Optic and Telecommunication Cables

Crossing of a Fiber Optic (FO) or telecommunication cable, where feasible, will be at ninety (90) degrees for approximately one hundred and fifty (150) feet on each side of the cable. Within a distance of three hundred (300) feet of the crossing, the method of cable burial and protection will be selected based on the existing burial depth of the FO or telecommunication cable. The HVDC cables, including the section with sleeve protection, will be buried by water jetting or plowing to the specified depth, or as limited by the actual burial depths of the existing cables.

In some cases, existing telecommunication cables are buried less than three (3) feet; therefore, special measures may be utilized at the crossing site. Potential measures used for crossing shallow buried existing utilities may include the following: the use of protective sleeves on the HVDC cables along with burial until touching the existing cables, increasing the burial depth of the existing cables by water jetting at the crossing point prior to installing the HVDC cables, or cutting and re-splicing the telecommunication cables after installing the HVDC cables.

10.3.3.4 Crossing Over Gas or Oil Pipeline and Power Cables

It is assumed that the pipeline is buried to a depth that leaves the top of the pipeline at seabed level. Crossing of a pipeline will likely be at ninety (90) degrees for approximately three hundred (300) feet on each side of the pipeline at a mutually agreed position.

For deep-buried pipelines or cables, a protective sleeve will be applied to the HVDC cables at each crossing to provide a minimum separation between the HVDC cables and the existing infrastructure. The sleeve will be installed for up to eighty (80) feet to ensure that it will target the crossing point. The HVDC cables, including the portion with sleeve protection, will be buried by water jetting or plowing to the target depth or as limited by the actual burial depths of the existing pipeline or cable.

In instances where the existing pipeline or cable burial is shallow, a minimum separation between the new cable and the other cable or pipeline could be provided by pre-installing a grout filled mattress on top of the infrastructure at each crossing. The HVDC cables and the other cable or pipeline would then be post-lay protected. Exact specifications for each pipeline or cable to be crossed will be detailed in the EM&CP.

10.3.3.5 Crossing Under Gas or Oil Pipeline

Crossing under an existing pipeline may be feasible by HDD. At these types of crossings a HDPE conduit will be used to pull the cable. The HDPE pipe will be accessible above the seabed until the cable has been pulled through. Then the pipe ends could be jetted to the level of the cable at the entry and exit points. The pipe angle will likely be kept low to ease pulling and to avoid potential risk of upward force acting on the existing pipeline.

References - Section 10.0

[NYSDOT] New York State Department of Transportation. Highway Design Manual. Accessed online December 1, 2010 at: https://www.nysdot.gov/divisions/engineering/design/dqab/hdm

[NYSDOT] New York State Department of Transportation. Policy and Standards for Entrances to State Highways in Appendix A of Chapter 5 of the Highway Design Manual. Accessed online December 1, 2010 at: https://www.nysdot.gov/divisions/engineering/design/dqab/hdm

[NYSDOT] New York State Department of Transportation. 1995. Accommodation Plan for Longitudinal Use of Freeway Right-Of-Way by Utilities. Accessed online December 1, 2010 at: https://www.nysdot.gov/divisions/engineering/design/dqab/util-info#accom

[NYSDOT] New York State Department of Transportation. 2007. Requirements for the design and construction of underground utility installations within the state highway right-of-way. Accessed online September 2, 2010 at: https://www.nysdot.gov/divisions/engineering/design/dqab/util-info

[NYSDOT] New York State Department of Transportation. 2008a. Standard Specifications of May 1, 2008 (US Customary). Accessed online September 7, 2010 at: https://www.nysdot.gov/main/business-center/engineering/specifications/2008-standard-specs-us

[NYSDOT] New York State Department of Transportation. 2008b. New York State Supplement to the National Manual on Uniform Traffic Control Devices for Streets and Highways (2003 Edition), Including Revision #1, Effective Date March 19, 2008. Accessed online September 2, 2010 at: https://www.nysdot.gov/divisions/operating/oom/transportation-systems/traffic-operations-section/mutcd

[USDOT] United States Department of Transportation. 2009. Manual on Uniform Traffic Control Devices for Streets and Highways (2009 Edition). Accessed online September 2, 2010 at: http://mutcd.fhwa.dot.gov/pdfs/2009/pdf_index.htm

11.0 GENERAL CLEANUP AND RESTORATION

Prompt cleanup and restoration of all areas disturbed by construction activity is a priority of the construction schedule and sequencing. Timely cleanup and restoration assists in minimizing potential environmental impacts associated with the Facility. Procedures for cleanup and restoration are described in the following sections.

11.1 CLEANUP

During construction, the right-of-way will be kept free of debris and discarded material to the extent possible. As construction continues, each section of the right-of-way will be thoroughly cleaned after construction is completed on that particular section. Vegetation to be cleared will be identified on a site-specific basis on the EM&CP Plan and Profile drawings. Cleared vegetation will be disposed of in accordance with the appropriate disposal techniques described in Section 5.0. All fabricated debris resulting from construction will be disposed of at a State approved solid waste disposal site in compliance with all applicable environmental regulations. Trucks leaving the construction area will be loaded, pruned, and covered in accordance with applicable regulations. Under no circumstances will any fabricated or vegetation debris be burned or buried either on or off the right-of-way.

The Certificate Holders will remove existing debris from the Facility Construction ROW and will keep the permanent ROW free and clear of debris.

11.2 RESTORATION

The final stage of construction will consist of restoring the transmission cable right-of-way and work areas to their original condition and character as much as possible, compatible with the operation and maintenance of the Facility. The following section describes the restoration procedures in upland, non-agricultural areas within the overland route. For procedures in roadways, wetlands, and agricultural lands, refer to Sections 10.1.5, 19.0, and 20.7, respectively.

11.2.1 Non-Agricultural and Non-Urban/Residential Areas

11.2.1.1 Grading

Upon completion of the installation of the overland transmission cable, the surface of the right-of-way disturbed by construction activities will be graded to match the original topographic contours and to be compatible with surrounding drainage patterns, except at those locations where permanent changes in drainage will be required to prevent erosion that could lead to possible exposure of the cable. Where the trench areas have settled below ground level, it may be necessary to import topsoil to return an area to grade. HDD entry pits will be backfilled and the disturbed ground surface will be similarly graded.

11.2.1.2 Lime Application

Lime will be applied to the soil surface where necessary to achieve conditions favorable for seed establishment and development. The local Soil and Water Conservation District will be consulted regarding appropriate lime application rates. Lime will be applied under the direction and supervision of the Environmental Inspector.

11.2.1.3 Fertilizing

In areas where construction has affected the soil nutrient levels, fertilizer will be applied to restore soil productivity. The local Soil and Water Conservation District will be consulted regarding the appropriate formula and application rates for the affected areas. Fertilizer will be applied under the direction and supervision of the Environmental Inspector.

11.2.1.4 Aerating and Raking

Soil compaction in construction areas frequently occurs as a result of the movement of heavy equipment over soil. Soil compaction in the right-of-way is expected to be minimal because most vehicles and equipment will either be mounted on the track, or operating from existing access roads or fill associated with the railroad embankment. However, if compaction occurs, soils will be aerated. Aeration in grassy areas will be accomplished through the use of a mechanical power aerator. Following use of the aerator, the area will be thoroughly raked. If soil is compacted below trees, the area below the tree canopy will be aerated by probing holes in the soil, which then will be backfilled with clean sand.

11.2.1.5 Seeding and Planting

Seeding operations will commence only after an acceptable seedbed has been established, as described above. Seed will be applied by hand, cyclone seeder, drill, or culti-packer-type seeder at a depth of one-quarter (0.25) to one-half (0.5) inch. The seedbed will be firmed following seeding operation with a roller or light drag, except where culti-packer-type seeders or hydro-seeders are used. The entire seeded area will be watered with a fine spray until a uniform moisture depth of one (1) inch has been obtained. Mulching and anchoring of the mulch may be necessary in some areas (Section 20.6.3). On steep slopes, jute net will be used to provide stabilization. Fertilizer will be added at the appropriate rates after seed is applied. Seeding will take place under the supervision of the Environmental Inspector.

The seed mixture and rate of application will depend on the soil type, land use, available moisture, and season at the time of application. The local Soil and Water Conservation District and the landowner/operator will be consulted regarding appropriate seed mixtures and application rates. All seed mixes will be free of invasive species. All seedbag tags will be provided to the Environmental Inspector. Seeded areas will be monitored following restoration until a minimum vegetative cover of eighty (80) percent is achieved.

Where tree or shrub plantings are prescribed on the EM&CP, a post construction survival survey will be preformed one year after the plantings. If any tree or shrub has not survived or is in poor health, the tree/shrub will be replaced.

11.2.2 Restoration – Urban/Residential

Construction in urban or residential areas may require a variety of restoration activities. Above-ground and underground structures (*e.g.*, those related to water and gas services), street pavements, curbs, sidewalks, and other features may require repair or replacement as a result of construction.

Curbs, sidewalks, and streets damaged by construction will be restored to pre-existing condition or better. The Certificate Holders will consult, where applicable, the municipal road or highway department and/or the Regional Office or County Engineer of the NYSDOT in order to identify and incorporate applicable specifications for curb, sidewalk, or street restoration.

Except where replacement would inhibit or impair the safe operation of the cables, shade trees and ornamental shrubs disturbed or damaged by construction will be repaired or replaced, following construction. All vegetation replaced will have a minimum two (2) year survival guarantee. Limbs damaged by construction activities will be pruned to arboricultural specifications. Root loss or damage due to construction or construction-related soil compaction will be addressed by a trained arborist, and any prescribed treatments will be followed.

Groundcover will be restored in areas such as yards and lawns. Restoration work will include the spreading of topsoil, planting of native grass mixtures, and replacement of any damaged extant vegetation, if necessary.

11.2.3 Restoration – Railway Ballast

Upon completion of the installation of the overland transmission cable, the surface of the right-of-way disturbed by construction activities will be graded to match the original topographic contours and to be compatible with surrounding drainage patterns. Soil compaction in construction areas in the right-of-way is expected to be minimal because most vehicles and equipment will be operating from existing access roads or fill associated with the railroad embankment. Backfill or fill will be compacted to match surrounding grade. The ground cover will be returned to pre-existing conditions, by revegetating the ballast or stabilizing with ballast stone. To ensure proper restoration and protection of the railway ballast, CP and CSX will be consulted to ensure restoration meets the engineering requirements of the railways.

12.0 SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

12.1 REGULATORY CONCERNS

The Certificate Holders and its EPC Contractor will comply with all federal, state and local laws, regulations and regulatory agreements pertaining to immediate and follow-up reporting of environmental spills or releases of petroleum products or hazardous substances that occur during the construction phase of the Facility. While it has not been established at this point that the combined capacity of the oil-filled containers and equipment in use will be greater than one thousand three hundred and twenty (1,320) gallons at any one time, due to the potential for a discharge to waters of the United States a detailed SPCC Plan or its equivalent will be developed by the selected EPC Contractor for the Facility.

Federal Authority

If a facility or vessel discharges oil to navigable waters or adjoining shorelines, waters of the contiguous zone, or in connection with activities under the Outer Continental Shelf Lands Act or Deepwater Port Act of 1974, or which may affect natural resources under exclusive United States authority, the owner/operator is required to follow certain federal reporting requirements. These requirements are found in two USEPA regulations – 40 CFR Part 110, Discharge of Oil regulation, and 40 CFR Part 112, Oil Pollution Prevention regulation.

Any person in charge of a vessel or of an onshore or offshore facility is subject to the reporting requirements of the Discharge of Oil regulation if it discharges a harmful quantity of oil to United States navigable waters, adjoining shorelines, or the contiguous zone, or in connection with activities under the Outer Continental Shelf Lands Act or Deepwater Port Act of 1974, or which may affect natural resources under exclusive United States authority.

A harmful quantity is any quantity of discharged oil that violates state water quality standards, causes a film or sheen on the water's surface, or leaves sludge or emulsion beneath the surface. For this reason, the Discharge of Oil regulation is commonly known as the "sheen" rule. Note that a floating sheen alone is not the only quantity that triggers the reporting requirements (e.g., sludge or emulsion deposited below the surface of the water may also be reportable).

Under this regulation, reporting oil discharges does not depend on the specific amount of oil discharged, but instead can be triggered by the presence of a visible sheen created by the discharged oil or the other criteria described above. Any facility owner/operator who is subject to the SPCC rule must comply with the reporting requirements found in §112.4.

A discharge must be reported to the USEPA Regional Administrator ("RA") when there is a discharge of:

a) More than one thousand (1,000) U.S. gallons of oil in a single discharge to navigable waters or adjoining shorelines; or

b) More than forty two (42) U.S. gallons of oil in each of two discharges to navigable waters or adjoining shorelines occurring within any twelve (12) month period.

When determining the applicability of the federal reporting requirement, the gallon amount(s) specified (either one thousand (1,000) or forty two (42)) refers to the amount of oil that actually reaches navigable waters or adjoining shorelines, not the total amount of oil spilled[1].

State Authority

Under the New York State Navigation Law, the person responsible for a discharge of petroleum must report the incident to the NYSDEC within two (2) hours of discovery. The law defines a discharge as "*any intentional or unintentional action or omission resulting in the releasing, spilling, leaking, pumping, pouring, emitting, emptying or dumping of petroleum into the waters of the state or onto lands from which it might flow or drain into said waters, or into waters outside the jurisdiction of the state when damage may result to the lands, waters or natural resources within the jurisdiction of the state.*"

For spills of chemicals other than petroleum, the New York State Hazardous Substance regulations (6 NYCRR Part 595) apply. According to these regulations, a "release" is defined as "any unauthorized pumping, pouring, emitting, emptying, overfilling, spilling, leaking, leaching, or disposing, directly or indirectly, of a hazardous substance or any other substance which results in the formation of a hazardous substance upon release so that the substance or any related constituent thereof, or any degradation product of such a substance or of a related constituent therefore, may enter the environment." Under these regulations, a "spill" is defined as "any escape of a substance from the containers employed in the normal course of storage, transfer, processing, or use."

Given that the Facility involves cable installation for many miles on land with wetlands, streams, and upland areas crossed as well as many more miles of cable installation on the bottom of Lake Champlain and the Hudson, East and Harlem Rivers, the requirements for spill prevention, control and countermeasures are varied. The Certificate Holders are committed to constructing the Facility in an environmentally sensitive manner, and will have contractual specifications for the construction contractor(s) to comply with the necessary federal and state regulations, and in one instance, international standards, associated with spill prevention, control, cleanup and reporting for spills occurring during the construction of the Facility.

12.2 SPILL CONTROL EQUIPMENT

The EPC Contractor will have the appropriate on-site personnel to control the source of the spill, release or leak and contain the spill, release or leak in as small an area as possible. To accomplish this, the EPC Contractor may utilize various types of control and cleanup methods and equipment depending on the spill location, material released and its volume.

[1] *Please see* "A Facility Owner/Operator's Guide to Oil Pollution Prevention," page 6, published by EPA in June 2010. *Available at* www.epa.gov/osweroe1/docs/**oil**/**spcc**/**spcc**bluebroch.pdf

12.2.1 Overland Construction Locations

A detailed SPCC Plan or its equivalent will be developed by the selected EPC Contractor for the overland portion of the Facility. For overland portions of the Facility, the EPC Contractor will immediately mobilize the appropriate on-site personnel to control the source of the leak and contain the spill or release in as small an area as possible. Activities include stopping the leak, deployment of on-site spill supplies, construction of earthen berms, etc.

Appropriate equipment, supplies and materials for containment and cleanup of oil and hazardous substances will be kept at the construction site(s) (i.e., construction site work area with ongoing construction activities and construction staging area) in the event of a spill. These materials include, but are not limited to, the following:

a) Commercially available spill kits for construction equipment;

b) Sorbents for containment and quick pick up of spilled liquids;

c) In-ground or above-ground containment structures such as berms, gutters, dikes, culverts, holding tanks, sumps, and collection systems;

d) Shovels, backhoes, etc., for excavation of contaminated materials;

e) Drums, barrels, temporary storage bags for containment and transportation of contaminated materials;

f) Absorbent pads, oil booms, mats, or equivalent; and

g) Washable, reusable rags for cleaning up small lubricant leaks onto machinery.

Spill control supplies will be clearly marked and readily accessible. Personnel will be instructed on their use prior to the start of construction.

It is the Certificate Holders' responsibility to ensure that spills are properly cleaned up by the EPC Contractor. This will be done by having the EPC Contractor clean up the spill followed by the Environmental Inspector verifying the cleanup has been successfully completed. It is the EPC Contractor's responsibility to properly dispose of spill cleanup wastes including contaminated soil, vegetation or water. In general, the following procedures will be followed:

a) Contaminated soil, vegetation, or water will be cleaned up in accordance with all NYSDEC guidance and regulations that are relevant to the spill material. The types and quantity of spill material as well as the method used for cleanup will be documented in writing by the personnel cleaning up the spill using the forms developed for the Spill/Release Cleanup and Reporting Guidelines.

b) All contaminated soil, vegetation or water will be collected and containerized as required by federal and state regulations and in accordance with the soil management plan

developed for this Facility. Contaminated materials will be collected until no visible or olfactory evidence of material spilled during construction remains;

c) Additional media specific testing of the spill location may be required to document adequate cleanup levels have been attained, based on federal and state regulations;

d) Testing may be required to determine the appropriate method of disposal. Analytical testing will be completed and documented by a qualified person. Based upon the results of the analytical testing, the material may be taken to an approved solid waste landfill or an approved hazardous waste treatment facility. No disposal of materials at the construction site or other work areas will be permitted; and

e) All cleanup and disposal operations will be monitored by the Environmental Inspector. The EPC Contractor will provide the Environmental Inspector with all the documentation associated with Spill/Release Cleanup Reports.

12.2.2 Vessels and Equipment Operating on the Water

Refer to Section 12.9 for further details concerning on-water and underwater spill prevention, control and countermeasures. Under the provisions of Section 312 (f)(3) of the Clean Water Act ("CWA") the Hudson River has been designated a no discharge zone with respect to discharges from marine sanitation devices ("MSD"). Vessels operating on the Hudson River equipped with type I or II MSD's must disable the capability of the MSD to discharge overboard in accordance with Section 33(e) NYS Navigation Law.

Any vessel greater than 79 feet LOA must comply with the requirements of the Vessel General Permit (VGP) and the applicable New York State Water Quality Certification conditions. http://cfpub.epa.gov/npdes/vessels/vgpermit.cfm

12.3 STORAGE AND HANDLING

This section covers storage and handling of fuels, oil, lubricants and other potentially hazardous materials for the overland construction activities. The transportation, handling, and storage of hazardous materials will be conducted in compliance with 49 CFR Parts 100-185 (US DOT Pipeline and Hazardous Materials Safety Administration). Construction materials will be stored in a manner that minimizes exposure to precipitation and runoff, where appropriate, or otherwise to prevent the contamination of stormwater and the environment.

Building component materials that are normally exposed to precipitation while being stored will be placed in upland areas away from all stormwater conveyances and will be stored in a manner that will not concentrate runoff. The EPC Contractor will have only the minimal amount of material at each work site necessary to complete the work at that site.

All construction materials stored onsite will be stored in a neat, orderly manner in appropriate containers with appropriate labels. Products will be kept in their original containers with the original manufacturer's label, unless the containers are not re-sealable and manufacturer's

recommendations for proper use and disposal will be followed. Original labels and Material Safety Data Sheets ("MSDS") will be retained for the period of time that the product is being utilized onsite in accordance with all applicable OSHA regulations (29 CFR 1926.33). Containers will not be stored on the ground, but will be stored in cabinets or on a stable working surface such as a portable trailer bed or other secure decking. Hazardous materials will be kept in restricted access areas and kept separate from other construction activities. Containers will be kept closed unless the material is being transferred. All transfer operations will be monitored and not left unattended.

The EPC Contractor will not store, mix or load chemicals labeled toxic or petroleum products within one hundred (100) feet of a wetland, river, creek, stream, lake, reservoir, spring, well or other ecologically sensitive site or existing recreational area along the Facility route. This applies to storage and does not apply to normal operation or use of equipment in these areas. All employees and/or other handlers of hazardous materials will be properly trained and instructed on the proper reporting and handling requirements.

12.3.1 Equipment Refueling

Field Refueling

a) When refueling land based vehicles, the EPC Contractor personnel or contractors at field locations are to bring vehicles or equipment to a designated access area located a minimum of one hundred (100) feet away from environmentally sensitive areas (such as wetlands, streams or drinking water sources). The contractor will coordinate with the Environmental Inspector to determine the appropriate location for all refueling operations. Paved areas are not preferred. These areas will be properly contained to prevent excess spillage during routine refueling. Spill containment devices and materials will be readily accessible at the refueling site. Any effluent resulting from these sites will be contained, treated or disposed of, as appropriate. The driver is to take all usual and reasonable environmental and safety precautions during refueling, such as connecting a safety grounding strap between the fuel tank and vehicle or equipment being refueled. The driver is also to frequently check for fuel spills, drips, or seeps during the refueling operation.

b) Small equipment such as pumps and generators will be placed in small containment pools or on absorbent blankets/pads, to contain any accidental fuel spills.

c) All refueling trucks will carry spill containment materials and the driver/operator will be trained in their use and responsibility after spills.

d) All fuel trucks, portable drums, and tanks will be inspected daily for leaks or signs of wear.

Grease, Oil and Filter Change

a) When a routine maintenance lubrication or oil change is scheduled on land based vehicles or equipment in the field, EPC Contractor personnel at field locations will bring vehicles or equipment to an access area away from environmentally sensitive areas (such as wetlands, streams or drinking water sources). Paved areas are not preferred. These equipment maintenance areas will be properly contained to prevent spillage during routine or emergency vehicle maintenance. Spill containment devices and materials will be readily accessible on site. Any effluent resulting from these sites will be contained, treated or disposed of, as appropriate. The driver will take all usual and reasonable environmental and safety precautions during routine lubrication and oil/filter changes. The EPC Contractor will wipe up all minor drips or spills of grease and oil at field locations.

Other Field Maintenance Operations

a) When other vehicle or equipment maintenance operations (such as emergency repairs) occur, EPC Contractor personnel at field locations will bring vehicles or equipment to an access area away from environmentally sensitive areas (such as wetlands, streams or drinking water sources) when possible. A paved area such as a parking lot or roadway will be used to minimize the possibility of spill or release to the environment.

b) All usual and reasonable environmental precautions will be taken during repair or maintenance operations. It is sometimes not feasible to move the affected vehicle or equipment from an environmentally sensitive area to a suitable access area, precautions will be employed to prevent oil or hazardous material release to the environment. These precautions include (but are not limited to) deployment of portable basins or similar secondary containment devices, use of ground covers (such as plastic tarpaulins), and precautionary placement of floating booms on nearby surface waterbodies. Any effluent will be contained and treated or properly disposed of.

12.4 SPILL RESPONSE PROCEDURES

An unintentional or accidental spill or release of any oil or chemical in any quantity on land or water must be reported to the "Spill Representative" in accordance with the *Spill/Release Cleanup and Reporting Guidelines*, to be developed prior to commencement of construction. These guidelines address immediate incident activities, reporting instructions, notifications and general cleanup procedures for spills occurring during the construction of the Facility.

On-Site Reporting Requirements

To fulfill release reporting obligations, the Spill Representative needs prompt (within fifteen (15) minutes of the spill or discovery of the spill), accurate and complete information for spills or releases occurring at the site. Therefore, all spills on-site will immediately be reported to the Environmental Inspector, who is responsible for obtaining all relevant spill information needed

to report the spill to the Spill Representative and complete the Environmental Compliance Field Spill Response Form. If the Environmental Inspector cannot be reached within the fifteen (15) minute period, the EPC Contractor will call the Spill Representative and notify the Environmental Inspector as soon as possible.

Off-Site Reporting Requirements

The Spill Representative is responsible for making all contacts to the federal, state, and local agencies relative to a reportable spill. Within two (2) hours of a discharge, the NYSDEC will be notified by telephoning the NYSDEC hotline at 1-800-457-7362. DPS staff will also receive notification of any reportable spills. The Spill Representative will also be responsible for contacting the National Response Center (NRC) at 1-800-424-8802 or 1-202-426-2675.

12.5 EXCAVATION AND DISPOSAL

It is the Certificate Holders' responsibility to ensure that spills that occur during the construction of the Facility are properly cleaned up by its EPC Contractor. This will be done by having the Certificate Holders personnel or its EPC Contractor clean up the spill, or having the EPC Contractor clean up the spill followed by the Certificate Holders personnel or the Environmental Inspector verifying the cleanup. The Certificate Holders will develop a list of approved waste cleanup contractors and approved waste disposal sites along the Facility area and will provide this information to the Environmental Inspector prior to the start of construction. The lists will be maintained in the Facility office for reference.

It is the EPC Contractor's responsibility to properly dispose of spill cleanup wastes including soils. In general, the following procedures will be followed:

a) Contaminated soils and vegetation will be cleaned up in accordance with standard procedures applicable to the spill material. The types and quantity of spill material as well as the method used for cleanup will be documented in writing by the personnel cleaning up the spill using the forms in the Spill/Release Cleanup and Reporting Guidelines developed for the Facility;

b) All contaminated soil will be collected and containerized as required by federal and state regulations. Contaminated materials will be collected until no visible or olfactory evidence of material spilled during construction remains; and

c) Testing may be required to determine the appropriate method of disposal. Analytical testing will be completed and documented by a qualified person. Based upon the results of the analytical testing, the material may be taken to an approved solid waste landfill or an approved hazardous waste treatment facility. There will be no disposal of materials at the substation or converter sites, in the right-of-way or other work areas in the Facility and surrounding areas.

12.5.1 Unanticipated Discoveries of Contaminated Soil and Trench Water

A Soil Management Plan to address soil sampling and handling of contaminated soils and trench water will be developed by the EPC contractor in consultation with DPS and NYSDEC and provided in the EM&CP.

If pre-existing contaminants are found in the soil excavated during construction or in trench water, construction activities will be stopped immediately in that area and the Environmental Inspector will be notified. The Environmental Inspector will report the condition to the Spill Representative, who will notify the NYSDEC and the DPS staff. Appropriate points of contact will be identified in the EM&CP. Consistent with the Soil Management Plan, construction in that immediate area may not be resumed until the contaminants of concern have been properly removed and/or the NYSDEC and DPS have issued an approval to continue construction activities in the area of concern. Any future construction activities at the referenced site where the contamination was located will be conducted in accordance with all conditions issued by the NYSDEC and DPS. A Remediation Plan will be developed for the Facility in consultation with NYSDEC and DPS.

12.6 HAZARDOUS WASTE CONTACT

The EPC Contractor will comply with all required regulations governing the onsite management and off-site disposal of hazardous wastes generated during construction of the Facility. During substation construction and pre-operational cleaning of substation equipment, some solvents and flushing materials may be used as a one-time event. These materials will be collected and disposed of properly. It is not anticipated that any hazardous wastes will be generated during the construction of the transmission facilities. Potential waste hauler/disposal contractors will be required to provide documentation showing that they have all necessary licenses in place prior to being awarded any work.

If hazardous waste is generated, the EPC Contractor will implement all requirements of NYS hazardous waste regulations including:

a) Train and instruct employees and/or other handlers of hazardous waste on the proper reporting, storage, inspection and handling requirements;

b) Separate hazardous waste from solid waste through segregation of storage areas and proper labeling of containers;

c) Use appropriate storage and, when necessary, NYSDOT approved transportation containers, along with secondary containment measures where applicable;

d) Verify that the hazardous waste transporters servicing the Facility have all required licenses, registrations and/or USEPA identification number and that the waste is disposed of at an approved/licensed facility prior to shipping hazardous wastes;

e) Transport all hazardous waste under a cradle-to-grave system of manifests;

f) Follow accurate recordkeeping requirements as to the quantity and nature of hazardous wastes generated onsite, and maintain a file of MSDS for all onsite chemicals; and

g) Prevent storage of hazardous wastes within one hundred (100) feet of a wetland, river, creek, stream, lake, reservoir, spring, well or other ecologically sensitive site or existing recreational area along the proposed rights-of-way.

If the odor, color, sheen, or content of excavated material excavated from the trench or other construction sites appears to be contaminated, the site will be managed in accordance with the Facility Soil Management Plan.

Should a fuel, oil, or chemical spill occur during construction, the spills on-site will immediately be reported to the Environmental Inspector, who is responsible for obtaining all relevant spill information needed to report the spill to the Spill Representative and complete the Environmental Compliance Field Spill Response Form. If the Environmental Inspector cannot be reached within the fifteen (15) minute period, the EPC Contractor will call the Spill Representative and notify the Environmental Inspector as soon as possible. The Spill Representative will notify NYSDEC and NRC, as applicable, within two (2) hours of the release. The EPC Contractor is also responsible for any and all response actions. Any contaminated soil will be removed from the worksite and disposed of in accordance with NYSDEC guidance. Refer to Section 12.4 for the reporting and cleanup procedures for spills.

12.7 NOTIFICATIONS OF HAZARDOUS MATERIAL

The on-site/vessel Safety Inspector will be responsible for contacting the U.S. Coast Guard ("USCG"), NYSDEC, DPS Staff, or other agencies with regard to reportable spills or releases. In the event of a reportable hazardous substance release, the following spill release reporting procedure will be implemented:

a) Notify the site/vessel supervisor/officer in-charge;

b) Notify the owner's health and safety officer;

c) Notify the Certificate Holders;

d) Contact the NRC for reportable spills from vessels or into navigable waters;

e) Contact NYSDEC;

f) Contact local police department having jurisdiction in the spill area;

g) Contact local fire department having jurisdiction in the spill area; and

h) Contact local emergency/ spill response officials having jurisdiction in the spill area.

Any observation of spills, leaking fluids or improperly stored fluids may trigger the issuance of a "stop work" notice by the Safety Inspector or the Environmental Inspector until the situation is resolved. All applicable regulations governing the storage, transport, use, and disposal of fluids, including 49 CFR Parts 100-185, and all reporting requirements for spills which occur during construction will be complied with.

A list of all chemicals used or stored and their appropriate MSDS will be kept on site and on-board each vessel as necessary, and provided to the USCG, fire department and local emergency management officials as necessary. All employees will be trained in the use, storage, handling, spill control, and first aid measures required for these chemicals in accordance with the OSHA and Construction Hazardous Communication Standard ("HAZCOM") (29CFR1926.59).

The on-site/vessel Safety Inspector will ensure that any non-hazardous material discovered during any activity is properly handled. The on-site/vessel Safety Inspector will also ensure that any hazardous materials encountered are handled in accordance with a management and handling plan tailored to such material or that is adequate to protect human health and safety and the environment, until such time as the nature of the material is known.

12.8 HAZARDOUS MATERIAL HANDLING AND WASTE DISPOSAL

Hazardous wastes are those materials that are specifically "listed wastes" per 6 NYCRR Part 371 and/or those that display hazardous wastes characteristics for ignitability, corrosivity, reactivity and/or toxicity. Petroleum products and hazardous waste (collectively "hazardous materials") will be managed in a manner to minimize the potential for threats to human health and the environment. The selected EPC Contractor will develop Hazardous Waste Management Procedures which will detail the management of hazardous waste on site in the event hazardous materials are discovered. The transportation, handling, and storage of hazardous materials will be in conducted in compliance with 49 CFR Parts 100-185 (US DOT Pipeline and Hazardous Materials Safety Administration).

The Safety Inspector will provide all contractors with an approved Hazardous Materials Handling, Storage and Disposal Procedure. Prospective waste hauling/disposal contractors will be required to provide documentation to the Safety Inspector showing that they have all necessary permits/licenses in place prior to being awarded the work.

The following waste handling and waste disposal procedure will be implemented:

a) Hazardous Materials such as oily rags used for equipment maintenance will be stored in appropriate five (5) gallon to fifty five (55) gallon drums;

b) Hazardous Materials will be properly packaged, with a written description and labeled as hazardous;

c) Hazardous Materials will be inspected at least weekly while stored on site;

d) Hazardous Materials will be transported via permitted transporters, hazardous waste manifest and permitted Treat, Store, Dispose, Recycle ("TSDR") facilities; and

e) The environmental health and safety officer will be notified of any Hazardous Materials that are generated and/or discovered.

12.9 ON-WATER AND UNDERWATER SPILL PREVENTION, CONTROL AND COUNTERMEASURES OF PETROLEUM PRODUCTS

It is not anticipated that there will be any on-water or underwater spills of petroleum products during underwater cable installation activities. However, if during the course of construction activities a spill does occur, all work will be stopped and the proper authorities will be notified. The selected EPC Contractor will develop a shipboard Oil Spill Contingency Plan ("OSCP") which will be provided to all staff working aboard ship.

The OSCP will be written in accordance with the requirements of 40 CFR part 110, Discharge of Oil regulation, and 40 CFR Part 112, Oil Pollution Prevention regulation, and to the extent applicable or useful of Regulation 26 of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto.

The purpose of the OSCP is to:

a) provide guidance to the master and officers on board the ship with respect to the steps to be taken when a pollution incident has occurred or is likely to occur;

b) identify any risks of petroleum products during the installation;

c) provide detailed plans for petroleum product spill prevention and minimization of the identified risks;

d) provide contingency procedures and possible countermeasure should spill occur; and

e) specify reporting requirements.

A detailed SPCC Plan or its equivalent will be developed by the selected EPC Contractor for the on-water and underwater portion of the Facility, a component of which will be the OSCP. This document will describe the oil and chemical storage operations during and after cable installation for the cable laying vessel and barge, and provide information on the prevention of spills, containment of spills, cleanup measures, and reporting procedures to be used in the event of a spill. Specifics of the plan will vary between contactors due to differences in technology employed and different vessels used. Spill prevention and response measures will be consistent with the spill prevention and planning requirements of the USEPA and NYSDEC. A copy of the plan will be posted on site at all staging areas and on board all vessels during construction of the Facility.

The SPCC Plan or equivalent and the associated OSCP will contain all information and operational instructions required by the USEPA regulations and the Guidelines issued by the International Maritime Organization ("IMO"). The Appendices of the OSCP will contain names, telephone, and fax numbers of all contacts referenced in the plan, as well as other reference material. The SPCC Plan or its equivalent will be included in the EM&CP.

13.0 COMMUNICATIONS PLAN

Communication between the Certificate Holders and federal and state agencies, local municipalities, emergency response providers and affected landowners will be coordinated on an ongoing basis during construction in order to facilitate a safe and proper Facility installation. General communication procedures are described below.

13.1 AQUATIC SAFETY AND COMMUNICATIONS PLAN

The selected EPC Contractor is responsible for developing an Aquatic Safety and Communications Plan for cable installation to be included as part of the EM&CP. The purpose of the plan is two-fold as it will include information regarding the daily underwater cable operations protocols as well as protocols for coordinating with waterbody regulatory authorities. The final Aquatic Safety and Communications Plan will meet regulatory permit conditions including OSHA 29 CFR 1926.106 working over or near water, as applicable.

Prior to and during cable installation, the EPC Contractor will follow USCG regulations for safely operating vessels and coordinate with USCG Waterways Management and Vessel Traffic Services. The plan will include the following information when coordinating with Waterways Management Office:

a) Start and completion dates for the Certificate Holders underwater cable route;

b) Cable installation work schedule;

c) The names of the work vessels;

d) The VHF radio channel(s) the vessels will be monitoring;

e) Twenty four (24) hour point of contact; and

f) Verification that all personnel have been cleared to work in New York/New Jersey Harbor and surrounding waters.

In addition, the plan will provide information for the local waterway users regarding underwater cable installation activities through USCG "Local Notice to Mariners". The following information will be provided:

a) Start and completion dates for the Certificate Holders underwater cable route;

b) Cable installation work schedule;

c) The names of the work vessels;

d) The VHF radio channel(s) the vessels will be monitoring;

e) Twenty four (24) hour point of contact;

f) Verification that all personnel have been cleared to work in New York/ New Jersey Harbor and surrounding waters; and

g) Chart location of cable installation.

Within the Hudson, Harlem and East Rivers, a USCG project notification form is required. Authorization is granted under the Ports and Waterways Safety Act (33 USC 1225(a)(2)(C). Violations of required safety measures may subject the EPC Contractor to civil penalty proceedings in accordance with 33 CFR 1.07. Within Lake Champlain cable installation activities can be coordinated with USCG Burlington Station.

In addition, the Aquatic Safety and Communications Plan will include information on coordination with New York State Canal Corporation ("NYSCC") as necessary. The EPC Contractor is responsible for knowing and following any applicable substantive requirements of NYSCC regulations.

The selected EPC Contractor will have to notify the DPS staff and the USACE that these notifications have taken place. In addition, there may be additional notification requirements based on waterbody and cable installation location to stakeholders and interested parties (i.e., pilot associations, ferry operators, agencies).

Consultation with agencies regarding cable installation activities will be accomplished through the implementation of regularly scheduled progress meetings. Additional meetings may be scheduled when requested to address special events or other activities.

All agencies having jurisdiction within the construction corridor will be notified of the progress meetings and additional meetings as needed. All cable installation activities will be coordinated with agencies having jurisdiction along the cable route.

The Certificate Holders are committed to provide a safe working environment for the health, safety and welfare of personnel involved in the cable installation. Before working on a vessel, all personnel will have read and signed-off on the General Health and Safety Plan and the Emergency Contingency Plan for the cable installation vessels.

The purpose of the General Health and Safety Plan is to describe the safety management system and the measures in place to ensure the safety of all personnel involved in the underwater cable installation activities. The General Health and Safety Plan contains contact information and procedures to be implemented in-case of emergencies.

A specific Health and Safety Plan ("HASP") will be prepared by the EPC Contractor for each activity by the EPC Contractor and/or subcontractor health and safety manager. This plan will be provided to all personnel prior to their working on underwater cable installation activities. Activity-specific HASPs will contain hazard communication information, hazard identification,

risk assessment and the information necessary to perform the work safely (e.g., MSDS, personal protective equipment to be used).

13.2 OPERATIONAL PHASE COMMUNICATIONS PLAN

The Certificate Holders will communicate regularly with local elected officials, property owners, and harbor operations and marina managers along the route. An annual notice will be mailed to inform them of the presence of the facilities and instruct them how to recognize and react to unusual activity in the area. The mailing will also provide contact information, emergency phone numbers, and safety information, including "Call Before You Dig" requirements.

14.0 OPERATIONS, RIGHT-OF-WAY MANAGEMENT AND MAINTENANCE

14.1 RIGHT-OF-WAY MAINTENANCE

Right-of-way maintenance is necessary to protect the overland cables from being disrupted or broken by tree roots, to maintain the function of permanent stormwater management or access control features, and to replace Facility location and identification markers as necessary. Right-of-way maintenance also serves to identify the area in which the underground cable has been laid and ensure appropriate access to the cable area is maintained in case of emergency. The Right-of-Way Management Plan will be developed in consultation with CP and CSX railroads to ensure conformance with their continual maintenance plans. In addition, any maintenance or operational activities within highway right-of-way or railroad bridges or structures will be performed in accordance with the applicable conditions of highway work permits, use and occupancy permits, leases, and/or other agreements. The Right-of-Way Management Plan will be provided in the EM&CP.

14.2 INSPECTION

After the Facility has been completed, on the ground inspectors will survey the overland right-of-way once a year and look for:

- vegetation on the right-of-way that may be capable of disrupting the cables below,
- line exposures at areas with steep slopes and stream banks,
- degradation of above ground support structures,
- locations requiring Facility marker replacement,
- unauthorized encroachments,
- permanent stormwater features requiring maintenance and
- vandalism.

The Aquatic portion of the Facility will be surveyed at least once every five (5) years and inspections will focus on verifying the depth of cable burial, condition of infrastructure protection measures and identifying areas where protection of the Facility or environment could be compromised.

Additional inspection and maintenance requirements will be developed in the Right-of-Way Management Plan.

14.3 VEGETATION MAINTENANCE

The Certificate Holders are committed to managing vegetation at their facilities in a safe, environmentally responsible and efficient manner in full compliance with all applicable laws and regulations. In this effort, the Certificate Holders are responsible for maintaining their right-of-way free from hazards and encroachments.

Most of the vegetation that will be impacted along the overland portions of the Facility corridor consists of previously disturbed herbaceous and/or shrubby cover within the existing railroad

rights-of-way. During operation of the Facility, vegetation management will be restricted to vegetation clearing on an as-needed basis to conduct repairs or maintenance along the transmission cables and/or selective cutting to prevent the establishment of large trees directly over the cables. Any vegetation management activities currently conducted by the railroads within the right-of-way will continue following the construction and operation of the overland transmission cable. A vegetation management plan for the operational period of the Facility will be developed and supplied in the EM&CP. The goal of the vegetation management plan will be to establish stable low growing vegetation with shallow root systems that will not interfere with the cables and, where the cables will be located within railroad property, will be consistent with the operation and maintenance of the railroads.

To insure the accurate identification of target and non-target vegetation, all vegetation management contractors are required to supply personnel familiar with the vegetation typically found growing on utility sites.

14.3.1 Mechanical Treatment

Vegetation along the right-of-way will primarily be managed by mechanical means. This will include such mechanisms as brush hogging/mowing or hand cutting. However, the use of feller-bunchers or other forestry harvesters is not recommended for vegetation management in visually sensitive areas within the Lakes to Locks Scenic Byway, i.e., State Route 22, right-of-way located within the Adirondack Park.

14.3.1.1 Mowing

Mowing consists of the cutting of vegetation by large rotary or flail mowers. These heavy-duty mowers, usually ranging from three (3) to eight (8) feet wide, are typically mounted on large four-wheel drive rubber tired tractors or tracked vehicles. This is the preferred mechanical technique, especially on sites where hand cutting would be inefficient and expensive.

14.3.1.2 Hand Cutting

Hand cutting consists of the use of chain and brush saws to remove the vegetation. This method allows for more selectivity in target vegetation and is the preferred method when terrain conditions make mowing infeasible. Hand cutting is the preferred method of vegetation maintenance in wetlands and other sensitive areas.

14.3.2 Chemical Treatment

Mechanical controls are the preferred method of vegetation management within the right-of-way. However, mechanical control methods can result in an increase in stem density due to re-sprouting of cut vegetation. Mechanical control methods can also become costly and dangerous in areas of dense target vegetation. In these instances, chemical control or a combination of mechanical and chemical treatment may be more effective than mechanical treatment alone.

Herbicide treatments allow for vegetation management with minimal disturbance to non-target species, habitat structure, and species diversity. In addition, chemical treatment treats the entire target plant, including the below-ground root system, preventing the re-sprouting that can occur following mechanical treatment.

The herbicides and treatment methods will be selected based on site sensitivity, target species composition and density, and treatment methods. Herbicides will not be used in certain areas if site sensitivity, regulations, permit conditions, or target species composition or height recommend otherwise. The most appropriate treatment methods will be chosen to meet the goals, objectives, and obligations of the Certificate Holders.

The following standards will apply for any chemical treatment:

a) A site-specific chemical treatment plan will be developed prior to the application of any herbicides. The plan will include an explanation of why mechanical methods are not adequate and will identify the area(s) to be treated, the herbicide(s) to be used, and the measures to avoid impacts to sensitive areas. The plan will include a monitoring program to determine the effectiveness of the treatment;

b) Herbicides will not be applied in the following sensitive areas;
   - Within one hundred (100) feet of drinking water supplies
   - Residential areas
   - Recreational areas

c) Sensitive areas and associated buffers will be identified in the treatment plan and flagged in the field prior to the application of herbicides;

d) Herbicides will only be applied under the direct supervision of a NYSDEC Certified Pesticide Applicator who either owns or is employed by a business or agency registered with NYSDEC for the purpose of herbicide application. The supervising certified applicator will be familiar with the provisions of the Facility's permits and will be present in the field to ensure compliance with BMPs for targeting species and for proper application of authorized herbicides;

e) Herbicides will not be applied during adverse weather conditions, such as high wind velocity or heavy rains;

f) All herbicides used will have valid registrations with both USEPA and NYSDEC;

g) Application of herbicides will conform to all label instructions and all applicable federal and state laws and regulations; and

h) No equipment wash water or excess herbicide will be allowed to enter surface waters including streams, lakes, ponds, and wetlands. Empty containers will be disposed of in accordance with applicable pesticide regulations.

Typical herbicide treatment methods that may be used include: basal treatments; stem injection; cut and treat methods; and non-stem specific treatment methods. The specific application method will be identified in the treatment plan, which will be provided in the EM&CP.

14.3.2.1 Stem-Specific Treatments

14.3.2.1.1 Basal Treatments

Basal treatments along the right-of-way can be effective where there are low densities of target species and in areas inaccessible to equipment. The herbicides are carried in a backpack tank or a tank on a vehicle and sprayed on the basal area of the vegetation from the roots up the stem at least twelve (12) inches and all around the circumference of the plant. Plants with thicker bark may require a greater amount of herbicide. The particular herbicide to be used in basal treatments will be determined by a NYS Certified Herbicide Applicator.

14.3.2.1.2 Stem Injection

Stem injection selectively treats target plants. It is a mechanical method where either a knife or a hatchet can be used to open the bark and the cambium layer and the wounds are then sprayed with an herbicide. More sophisticated tools include a Hypo-hatched, which chops and injects herbicide at the same time, and various types of drills that can drill into the cambium layer then inject herbicide.

14.3.2.1.3 Cut and Treat Methods

Cut and treat consists of the mechanical cutting of a target species followed by the application of herbicide to the phloem and cambium tissues of the stumps. This treatment method is used to prevent re-sprouts when hand cutting vegetation and to selectively treat target species with minimal impacts to the surrounding vegetation.

14.3.2.2 Non-Stem Specific Herbicide Applications

Non-stem specific herbicide applications are broadcast applications of herbicides either by spraying or depositing pellets. Common herbicides used in this manner are glyphosate spray, 2,4, Dichlorophenoxyacetic acid (2,4, D) and hexazinone pellets. Herbicides are applied with hand-operated pumps or motorized backpack sprayers. The herbicide can be directed to specific target vegetation for spot treatments or broadcast in dense thickets.

14.4 SITE ACCESS

14.4.1 Gates

If the railroad or other landowner requests gates on access roads used by the Facility, permanent gates will be installed to prohibit access by unauthorized vehicles. If requested, the gates will be installed at the end of the construction. See Figures 5-1A and 5-1B.

14.5 PERMANENT STORMWATER FEATURES

Inspection and maintenance frequencies and requirements for permanent stormwater management features will be identified in the Right-of-Way Management Plan, which will be included in the EM&CP.

14.6 FACILITY LOCATION AND IDENTIFICATION MARKERS

Maintenance requirements for Facility location and identification markers will be indentified in the Right-of-Way Management Plan, which will be included in the EM&CP.

14.7 ABOVE-GROUND FACILITIES

Qualified personnel will perform routine inspections and maintenance at all aboveground facilities including the converter station. The converter station will likely be considered "critical infrastructure" and so there will be required security features. Facilities which will be unmanned require, among other potential security measures, intrusion alarms, video cameras both inside the building and overlooking the yard, and cypher locks with Supervisory Control and Data Acquisition (SCADA) interlocks are provided on the doors. Lighting levels at the converter station will be dictated by the State Energy Code and Illuminating Engineers Association (IEA). Existing standards require general lighting levels of 3 foot candles per SF or less for general site security and up to 5 foot candles at specific locations (entry gate, building entry ways and similar location).

Although there are no components of the HVDC transmission cable system that require regular replacement, regular inspections in accordance with the manufacturer's specification of terminations and surge arrestors will be performed during scheduled outages to ensure equipment integrity is maintained. For example, insulators will be inspected and cleaned if there are excess deposits of industrial contaminants and soot. Additionally, metal parts, such as nuts, bolts, cable cleats, and grounding scraps will be inspected for corrosion and tightness. The Certificate Holders also anticipate the establishment of a building inspection and maintenance program to ensure the regular upkeep of the Facility and its grounds. This program would include, but not be limited to, landscape maintenance, vegetative management, and the inspection and repair of stormwater systems.

15.0 PROCEDURES FOR IDENTIFICATION AND PROTECTION OF SENSITIVE RESOURCES

Given the linear nature of transmission line projects it is common for many different types of habitats, land uses and sensitive areas to be encountered. In order to avoid and/or minimize impacts and ensure protection of the various resources that are crossed by the Facility, the Certificate Holders have identified numerous sensitive areas where the Facility will need to adjust standard construction procedures to minimize impact and ensure protection of various resources.

During the Article VII Application, studies and evaluations were conducted to identify areas along the cable route that the Facility will encounter. These evaluations identified a number of sensitive resources that warrant development of special construction procedures to avoid and/or minimize impacts to these resources. These areas include:

a) Threatened and Endangered Wildlife Species and Rare, Threatened and Endangered Plant Species (Section 16.0);

b) Cultural resources (Section 17.0);

c) Waterbodies (Section 18.0);

d) Wetlands and other water resources (Section 19.0);

e) Active agricultural lands (Section 20.0);

f) Invasive species (Section 21.0);

g) Alternate or conflicting land uses (Section 22.0);

h) Steep slopes, highly erodible soils and flood plains (Section 23.0);

i) Visual resources (Section 24.0);

j) Significant noise receptors (Section 25.0); and

k) Water quality.

The following sections describe the procedures for identifying each of the specific sensitive areas and the protection measures to be utilized in development of the EM&CP Plan and Profile drawings and provide guidance on how each of these resources will be addressed in consultation with applicable agencies and the selected EPC Contractor during the EM&CP process.

16.0 THREATENED AND ENDANGERED WILDLIFE SPECIES AND RARE, THREATENED AND ENDANGERED PLANT SPECIES

This section describes the federal and state TE species and their habitats and RTE plants, as well as significant natural communities that occur in terrestrial and/or aquatic habitats within or near the Facility area. This section also describes the methods that will be used to avoid and/or minimize impacts to these resource areas.

Procedures for the identification and protection of TE species and their occupied habitats and RTE plants, as well as significant natural communities are intended to ensure that potential impacts are avoided and/or minimized. Measures employed will include general procedures applicable to all TE species and their occupied habitats and RTE plants, as well as specific measures that will be developed through consultation with agencies including the NYSDEC, New York State Natural Heritage Program ("NYS Natural Heritage Program"), USFWS and National Marine Fisheries Service ("NMFS") if applicable.

Protection measures for all TE species and their occupied habitats and RTE plants include the following:

a) All known TE species occupied habitats and locations where RTE plants have been observed to be present will be clearly marked on the EM&CP Plan and Profile drawings;

b) The EM&CP Plan and Profile drawings will be provided to the NYSDEC, NYS Natural Heritage Program, and DPS Staff for review of mapped occupied habitat areas and locations where RTE plants have been observed to be present;

c) Locations of known TE species or RTE plant occurrences or habitat of TE species will be treated as confidential. The Certificate Holders will label any documents or plans containing information on TE species or RTE plants as "confidential" and will provide appropriate training to employees and contractors as to the confidential nature of this information;

d) As part of environmental training, the Certificate Holders will provide training to contractors and employees regarding known and potential TE species, RTE plants and significant natural communities that may be encountered, and the identification and protection measures that are included in this EM&CP; and

e) The Environmental Inspector will be responsible for ensuring that prescribed protection measures are appropriately utilized during construction.

16.1 OVERLAND ROUTE

The Certificate Holders conducted a preliminary review and identified the TE species, candidate and special concern species and their habitats, as well as RTE plants, with the potential to occur along the overland portions of the cable route as part of the Article VII Application. Primarily overland construction activities will occur along an existing railroad right-of-way.

Karner blue butterfly (*Lycaeides melissa samuelis*) and frosted elfin (*Callophrys irus*)

The cable route crosses areas mapped as Karner blue butterfly and frosted elfin habitat. The following measures will be implemented to protect the butterflies and their habitats, consistent with the Karner Blue Butterfly Impact Avoidance and Minimization Report submitted as part of this proceeding:

a) A qualified biologist will conduct surveys for the presence of Karner blue and frosted elfin butterflies within identified habitat areas for these two species prior to construction, in accordance with the USFWS and NYSDEC guidance document Karner blue butterfly *(Lycaeides melissa samuelis*) *Survey Protocols Within the State of New York* (May 2008);

b) Prior to the start of construction, the boundaries of any identified occupied habitat for Karner blue butterfly and frosted elfin within or immediately adjacent to construction workspaces or access routes will be clearly flagged in the field, and the Certificate Holder will conduct a walk-through as described in the Certificate Conditions to discuss and review measures to avoid and/or minimize impacts;

c) Disturbance or access through any flagged occupied habitat for Karner blue butterfly and frosted elfin will be avoided;

d) Contractors and construction crews will be trained on the locations and identification of the host plant, wild blue lupine (*Lupinus perennis*), for the Karner blue butterfly and frosted elfin, Construction personnel will be trained and instructed to avoid trampling or destruction of wild blue lupine plants;

e) Wild blue lupine is an early successional species that may regenerate following a variety of different environmental disturbances. If any previously unknown or unflagged areas containing wild blue lupine are encountered during preconstruction environmental inspection, construction, or restoration, the Environmental Inspector will delineate the boundary of the habitat with flagging in the field, and will collect Global Positioning System (GPS) data mapping its location;

f) The Certificate Holders will notify the DPS, the NYSDEC and the USFWS as soon as possible (within forty eight (48) hours) if any previously unidentified habitats containing wild blue lupine are discovered during preconstruction environmental inspection, construction, or restoration of the Facility. If additional protective measures are necessary to protect the Karner blue butterfly, frosted elfin or occupied habitat for these species, the Certificate Holders will temporarily cease any vegetation clearing,

construction, ground-disturbing, or vegetation management activities in the area, excepting any activities that may be necessary for immediate stabilization of the work site, until protective measures can be implemented. Work will only resume once NYSDEC and USFWS have been notified and recommended protective measures to avoid and/or minimize impacts to TE species and occupied habitat have been implemented;

g) During operation of the Facility, any vegetation management, emergency repairs, or other operational maintenance activities required within Karner blue butterfly and frosted elfin habitats will be implemented in accordance with the mitigation plan for these species; and

h) No herbicides or pesticides will be used within occupied Karner blue butterfly and frosted elfin habitat, except as approved by the USFWS and NYSDEC.

Indiana Bat (*Myotis sodalis)*

a) The Certificate Holders will identify and avoid and/or minimize impacts to large specimens of shagbark hickory (*Carya ovata*), which could potentially serve as maternity or roost trees.

16.2 UNDERWATER ROUTE

The Certificate Holders conducted a preliminary review and identified the TE, candidate and special concern species and their habitats, with the potential to occur along the underwater portions of the cable route as part of the Article VII Application. Dredge windows shall be established to avoid and/or minimize impacts, if any, on migration, over wintering, and spawning habitats of fish, birds, and other fauna during dredging operations. Dredging windows for cable installation shall be location specific within the Hudson Estuary.

Bald eagle (*Haliaeetus leucocephala*)

The following measures will be implemented to protect the bald eagle and its habitat:

a) Locations of bald eagle nests within one-half (0.5) mile of construction, based on data provided by the NYS Natural Heritage Program, will be identified.

b) If any blasting activities are necessary within one-half (0.5) mile of active bald eagle nests, the Certificate Holders will contact USFWS and NYSDEC for guidance to avoid and/or minimize the potential for noise-related disturbance;

c) If construction will occur within six hundred and sixty (660) feet of an active nest during the nest-building or breeding season (December to August), the Certificate Holders will contact USFWS and NYSDEC for guidance to avoid and/or minimize the potential for noise-related disturbance;

d) Environmental training for contractors and construction crews will include training on the identification of bald eagles and location of nests. Construction personnel will be instructed to report any sightings of potential eagle nests that were not previously identified by the NYS Natural Heritage Program; and

e) If any previously unidentified eagle nests are discovered, the Certificate Holders will report findings to the NYS Natural Heritage Program as soon as possible, and consult with the NYSDEC and USFWS for guidance to avoid and/or minimize the potential for disturbance, if needed.

16.2.1 Aquatic Threatened and Endangered Species

The potential presence of aquatic TE species along the cable route were identified as part of the Article VII Application (see Tables 4.9-1, 4.9-5, 4.9-6 and 4.9-7 of the Article VII Application). Area specific studies of TE species and their occupied habitats may be undertaken, in consultation with DPS, DEC and USFWS, to refine existing information for selected segments of the cable route prior to cable installation.

The overall installation plan will be designed to accommodate location-specific and season-specific restrictions to avoid and/or minimize potential impacts to aquatic life, including occupied habitat for aquatic TE species, designated Exclusion Zones, and SCFWHs.

The primary approach to protecting aquatic TE species will be avoidance and minimization measures. The underwater cable route was sited in moderately-deep to deep water, wherever possible, to avoid effects on the biologically diverse and productive shallow water habitats that are present in the Hudson River Estuary and the southern portion of Lake Champlain. In addition, confining the cable route to relatively deep water contributes to avoiding submerged aquatic vegetation ("SAV"), wetlands, mud flats, shoals, and tributaries.
Another component of the installation plan intended to protect aquatic resources and avoid and/or minimize impacts on aquatic TE species and habitat is to apply seasonal restrictions on work in the aquatic environment. Work windows are addressed in Section 26.0.

The following BMPs will be implemented to protect aquatic TE species and their occupied habitats:

a) The Certificate Holders will work closely with federal and state agencies to establish measures prior to construction commencement in order to avoid and/or minimize impacts to TE fish, marine mammals, and sea turtles along the cable route;

b) All in-water work will be conducted within applicable time windows recommended by NYSDEC, NYS Natural Heritage Program, USFWS, and/or NMFS (if applicable), including location-specific dredging windows in the Hudson River Estuary for the protection of TE fish, sea turtles, and marine mammals species along the cable route;

c) Environmental training for contractors and construction crews will include training on the identification of sea turtles and marine mammals. If any sea turtles or marine mammals

are sighted during underwater construction activities, construction personnel will be instructed to navigate barges and boats to avoid the animal, temporarily halt construction activities if necessary to avoid impacts with sea turtles or marine mammals. Any sightings of sea turtles or marine mammals will be reported to the NYS Natural Heritage Program, NYSDEC, USFWS and NMFS (if applicable) as soon as possible;

d) HDD will be used where the cables enter and exit waterbodies to avoid and/or minimize effects on shoreline and shallow water habitats;

e) Construction modifications to water jetting will occur when crossing sensitive habitats like Significant Coastal Fish and Wildlife Habitats ("SCFWHs") in the Hudson River and in the narrow section of lower Lake Champlain. The primary operational modifications during water jetting are a reduction in water jetting pressure and a reduction in water jetting speed. Proposed areas where construction modifications may occur will be identified in Plan and Profile drawings included in the EM&CP;

f) A closed environmental (clamshell) bucket dredge will be used to minimize sediment suspension at mechanical dredging sites for fine grained unconsolidated (silty) sediments;

g) A silt curtain weighted across the bottom and suspended on floats will be positioned to enclose the work site before commencing mechanical dredging. The curtain will remain in place and functional during all phases of the dredging operations and remain in place for two (2) hours after dredging termination;

h) The Environmental Inspector will have the authority to modify or suspend construction if any TE species are impacted in any way by construction activities;

i) The Certificate Holders will avoid directly transiting twelve (12) of the seventeen (17) designated Significant Coastal Fish and Wildlife Habitats within or in the vicinity of the Facility area, and will route the Facility outside of designated Exclusion Zones within the remaining five (5) Significant Coastal Fish and Wildlife Habitats to the maximum extent possible to avoid and/or minimize impacts to TE species;

j) Commencement of in-river work below the designated Haverstraw Bay Significant Coastal Fish and Wildlife Habitat shall occur during the high, or flood, tide condition in order to avoid and/or minimize impacts of resuspended sediments on the SCFWH of resuspended sediments on the habitat of Haverstraw Bay;

k) Vessels utilized in the installation of the cable will be operated at slower speeds in the New York Harbor region to avoid the potential for collisions with transient TE whale or sea turtle species; and

l) Cable routing and construction windows will ensure that these activities will avoid and/or minimize impacts to shortnose sturgeon or occupied habitats.

16.3 UNANTICIPATED DISCOVERY OF THREATENED AND ENDANGERED SPECIES

In the event that the Certificate Holders unexpectedly encounters any RTE species during the preconstruction, construction, or operation and maintenance phases of the Facility, the following measures will be implemented:

a) The Environmental Inspector will identify the area of the sighting or encounter, flag the boundaries of the newly identified occupied habitat or locations where RTE plants have been observed to be present along the overland portions of the cable route, and record GPS locations of the likely habitat boundary or the sighting location of any in-water TE species;

b) Any unanticipated sightings of TE species or observation of RTE plants will be reported as soon as possible to DPS Staff, NYSDEC, USFWS, or NMFS (if applicable). The Certificate Holders will consult with applicable resource agencies for measures to avoid and/or minimize impacts to TE species and their occupied habitat or RTE plants;

c) If TE species or their occupied habitats or RTE plants are discovered during construction activities, the Certificate Holders will temporarily halt construction activities, excepting any activity required for immediate stabilization of the area, to avoid and/or minimize the impacts to the species or habitat. Construction activities in the area will resume once protective measures, developed in consultation with DPS Staff, NYSDEC,USFWS, or NMFS (if applicable), are implemented;

d) If new TE species occupied habitat is identified or RTE plants are observed and verified, EM&CP Plans will be updated to show the new TE occupied habitat(s) and locations of RTE plants. Areas of TE occupied habitat and locations of RTE plants along the overland route will also be flagged in the field; and

e) Construction personnel will be updated on the locations of any new TE species or occupied habitats or locations of RTE plants that are identified. These areas will be reported to the applicable resource agencies.

16.3.1 Significant Natural Communities

The following measures will be implemented to protect significant natural communities:

a) Significant natural communities will be shown on the EM&CP Plan and Profile drawings;

b) The EM&CP Plan and Profile drawings will be provided to the NYSDEC, NYS Natural Heritage Program, and DPS Staff for review of significant natural community mapping prior to start of construction;

c) Significant natural communities within or adjacent to the construction work space will be clearly flagged in field prior to the start of vegetation clearing or construction activity;

d) Access through or impact to any significant natural communities will be avoided and/or minimized; and

e) If access through a significant natural community is unavoidable, the Certificate Holders will develop additional measures, in consultation with appropriate agencies as applicable, to avoid and/or minimize any potential impacts.

17.0 CULTURAL RESOURCES

Studies previously conducted for the Facility have identified several historic and archaeological resources within the Facility's vicinity. Resources located along or adjacent to the transmission cable alignment include "historic properties" that have been listed in or determined to be eligible for inclusion in the National Register of Historic Places ("National Register"). The National Register Criteria for Evaluation (36 CFR § 60.4) provides that a building, structure, site, district, or individual object may be considered eligible for the National Register if it is significant in American history, architecture, archaeology, engineering, or culture. The quality of significance is present in historic properties that possess integrity of location, design, setting, materials, workmanship, feeling, or association and:

a) That are associated with events that have made a significant contribution to the broad patterns of our history; or

b) That are associated with the lives of persons significant in our past; or

c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant or distinguishable entity whose components may lack individual distinction; or

d) That have yielded or may be likely to yield, information important in prehistory or history.

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

Resources along the transmission cable alignment also include properties listed in or eligible for inclusion in the State Register, established under Section 14.09 of the New York State Parks, Recreation, and Historic Preservation Law. The State Register is maintained by the New York State Office of Parks, Recreation, and Historic Preservation ("OPRHP"), which functions as the State Historic Preservation Office ("NYSHPO"). All historic properties within the State of New York listed in or nominated for inclusion in the National Register are concurrently listed in the State Register.

Other sites reported in the vicinity of the cable 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 archaeological sites recorded during the early 20th century fall into this category, as do many of the shipwrecks reported along waterways that comprise portions of the cable route. 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 may be inaccurately reported. In either case, there is insufficient information currently available regarding these sites to make a recommendation or determination regarding their eligibility.

17.1 CULTURAL RESOURCES MANAGEMENT PLAN

The consultation process defined in 36 CFR Part 800 is the appropriate process to develop the specific control methods and requirements for additional identification and treatment of historic properties. Consistent with other PAs developed for large-scale federal permits or licenses, the Certificate Holders expect that the requirements for completing the identification of historic properties within the Facility's APE and the specific measures for avoiding, minimizing, or mitigating adverse effects to these resources will be included in the PA for this undertaking. In particular, the Certificate Holders shall develop a Cultural Resources Management Plan ("CRMP") in consultation with the NYSHPO and other Consulted Parties to provide for the identification and management of historic properties within the Facility's APE that may be affected by this undertaking. The Certificate Holders will develop the CRMP with the Consulted Parties prior to the commencement of construction activities associated with the Facility. The PA will likely require the Certificate Holders to address the following issues in the CRMP, including (but not limited to):

a) Completion of additional archaeological field reconnaissance studies and monitoring for underground and aboveground Facility portions of the Facility's APE.

   The Phase IA study identified the need for additional subsurface archaeological investigations to:

   i. Confirm the location and nature of previously reported archaeological sites identified during the Phase IA study;

   ii. Identify previously unreported archaeological sites within the Facility's prospective APE;

   iii. Define the boundaries of identified cultural deposits in relation to the Facility's prospective APE;

   iv. Evaluate the eligibility for listing cultural resources in the State and National Registers of Historic Places;

   v. Assess potential Facility effects on identified archaeological resources; and

   vi. Develop any recommendations for site avoidance, additional site evaluations, or measures to minimize or mitigate adverse effects.

   A proposed study plan was distributed as Appendix 1 of the HAA, Inc. August 2010 Phase IA report. The study plan includes details regarding proposed Phase IB Archaeological Field Reconnaissance studies, monitoring, and backhoe testing along

underground and aboveground Facility portions of the cable route. The Certificate Holders anticipate the Phase IB testing, archaeological monitoring, and backhoe testing will be completed in accordance with the specific methods and schedule developed in consultation with the NYSHPO and other Consulted Parties and defined in the CRMP.

b) Completion of additional studies to assess potential Facility effects on shipwrecks and other submerged sites.

Studies have been initiated to identify shipwrecks and other submerged archaeological resources within the Facility's prospective APE. As necessary, the CRMP will define a programmatic approach to completing additional studies required to assess the nature and character of these mapped and reported shipwrecks or other submerged resources with potential cultural significance, including archaeological deposits associated with adjacent terrestrial sites. The Certificate Holders anticipate that the specific methods, schedule, and requirements of these studies will be developed in consultation with the Consulted Parties and defined in the CRMP.

c) Control measures to avoid Facility effects on identified archaeological resources.

The preferred approach is to avoid impacts to archaeological and historic resources, regardless of their National Register status. The CRMP will provide measures and barriers for avoiding impacts to identified resources. Typically, measures and barriers to avoid known archaeological sites include installation of temporary fencing, and site delineation of Facility maps. Specific control measures and barriers will be developed in consultation with the NYSHPO and other Consulted Parties, as appropriate. In addition, cultural resources sensitivity training will be provided to all contractors and others that will be working on the Facility in a capacity that has the potential to cause ground disturbing activities in areas of known historic properties or areas where construction preparation work is being conducted prior to archaeological assessment of the area.

d) The process for conducting additional evaluations to determine their National Register eligibility of archaeological sites that cannot reasonably be avoided by Facility construction activities.

Phase IB field investigations may identify archaeological sites that cannot reasonably be avoided by Facility construction activities. In these instances, the Certificate Holders will undertake Phase II Site Evaluations. Phase II evaluations will collect sufficient site data to allow the NYSHPO to determine the National Register-eligibility of archaeological sites that cannot be avoided by Facility construction activities. Phase II evaluations typically include excavation of test units and additional sampling to (a) refine site boundaries, (b) determine temporal and/or cultural affiliation, (c) identify intra-site artifact/feature patterning, (d) assess site function and context, and (e) evaluate data potential and site integrity. The Certificate Holders anticipate that the specific methods and schedule for completing Phase II site evaluations will be developed in consultation with the NYSHPO and other Consulted Parties and defined in the CRMP.

e) Procedures for determining the appropriate measures to minimize or mitigate adverse effects on historic and heritage properties that cannot reasonably be avoided by Facility construction activities.

If impacts to a historic or heritage property cannot be avoided by Facility construction activities, the CRMP will provide a programmatic approach to determining the appropriate measures to minimize or mitigate adverse Facility effects in consultation with the NYSHPO and other Consulted Parties, as appropriate. Mitigation methods may include a Phase III Data Recovery, Historic American Building Survey/Historic American Engineering Record ("HABS/HAER") recordation, *in-situ* preservation (e.g., site armoring) or other site-specific mitigation measures. The Certificate Holders anticipate that the procedures for identifying the appropriate treatment measures in consultation with the Consulted Parties will be defined in the CRMP.

f) Procedures for the unanticipated discovery of archaeological resources.

The specific procedures for the unanticipated discovery of archaeological resources during Facility construction will be developed in consultation with the Consulted Parties and described in the CRMP. The Certificate Holders anticipate that the procedures defined in the CRMP will, at a minimum, include the immediate cessation of ground-disturbing activities in the vicinity of the discovery site, installation of temporary barriers to prevent unauthorized persons from accessing the site, and additional consultation with the NYSHPO and other Consulted Parties (as appropriate) to determine the appropriate treatment measures.

g) Procedures for the unanticipated discovery of human remains.

The procedures for the treatment and disposition of human remains discovered in association with archaeological testing or any ground-disturbing Facility construction activities are described in Section 17.3, below.

h) Identification and proposed treatment, avoidance, or mitigation of Facility effects on properties of traditional religious or cultural significance.

The CRMP will include provisions for identifying traditional cultural properties in consultation with Indian tribes whose interests may potentially be affected by Facility construction or operation. The procedures for determining the appropriate treatment, avoidance, or mitigation of Facility effects on these resources will be developed in consultation with the affected Indian tribe, the NYSHPO, and the other Consulted Parties, as appropriate.

i) Training

Supervisors responsible for construction activities resulting in ground disturbance will be trained on principles and procedures of the CRMP. The specific training requirements will be developed in consultation with the Consulted Parties and described in the CRMP.

j) CRMP implementation procedures

The CRMP will describe specific implementation procedures, including:

i. Parties responsible for coordinating activities conducted under the CRMP, including coordinating consultation and maintenance of relevant records;

ii. The use of qualified cultural resources professionals (Section 17.2, below);

iii. Staff/EPC Contractor training;

iv. Appropriate standards for cultural resources investigations (Section 17.4, below);

v. Standards and processes for artifact curation and/or repatriation;

vi. Procedures for amendment to the CRMP;

vii. Consultation requirements and contacts;

viii. Scheduling considerations.

17.2 USE OF QUALIFIED CULTURAL RESOURCES PROFESSIONALS

Cultural resources studies associated with the Facility and undertaken pursuant to the CRMP will be directed by qualified cultural resource professionals who meet or exceed the Secretary of the Interior's Professional Qualification Standards (36 CFR Part 61). These standards define minimum education and experience required to perform identification, evaluation, registration, and treatment activities.

17.3 PROCEDURES FOR THE INADVERTENT DISCOVERY OF HUMAN REMAINS

Treatment and disposition of any human remains that may be discovered will be managed in a manner consistent with the Native American Graves Protection and Repatriation Act (NAGPRA);[2] the Council's Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects (February 2007); and the *OPRHP/NYSHPO's Human Remains Discovery Protocol* (NYSOPRHP 2005). If human remains are encountered in the course of construction activities, the Certificate Holders will undertake the following actions in coordination with the NYSHPO bureau of OPRHP, Indian tribes, and other Consulted Parties, as applicable:

a) Any human remains discovered will be treated with the utmost dignity and respect;

b) Work in the general area will stop immediately, and the area will be physically secured and a barrier prohibiting vehicles, equipment, and unauthorized persons from accessing the discovery site will be put in place. The site will be protected from damage and disturbance to the fullest extent possible;

[2] Pursuant to 43 CFR Part 10, NAGPRA is only applicable when the underlying lands are in federal possession or control. However, in all cases, the principles described in NAGPRA's implementing regulations will serve as guidance for the Certificate Holders' actions should the remains or associated artifacts be identified as Native American.

c) Human remains and associated artifacts will be left *in-situ* and not disturbed. No human remains or materials associated with the remains will be collected or removed until appropriate consultation has taken place;

d) The Certificate Holders will contact local law enforcement, the county coroner's office, the NYSHPO, and Indian tribes, as appropriate. Local law enforcement officials and the county coroner's office will examine the remains to determine if the remains are forensic or archaeological;

e) Within twenty-four (24) hours of any such discovery, the Certificate Holders shall notify the DPS Staff and OPRHP Field Services Bureau/NYSHPO. Treatment and disposition of any human remains that may be discovered shall be managed in a manner consistent with the Native American Graves Protection and Repatriation Act ("NAGPRA"); the Council's Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects (February 2007); and OPRHP/NYSHPO's Human Remains Discovery Protocol. All archaeological or remains-related encounters and their handling shall be reported in the status reports summarizing construction activities and reviewed in the site-compliance audit inspections

f) If the remains are determined to be Native American, the remains will be left *in-situ* and protected from disturbance until a plan for their protection or removal can be generated. The Certificate Holders will notify the NYSHPO and Indian tribes within twenty four (24) hours (during normal business hours) or as soon as possible after the discovery has been determined to be archaeological rather than forensic. The Certificate Holders will consult with the NYSHPO and Indian tribes to develop a plan of action, consistent with the guidance provided in the NAGPRA, the Council's 2007 Policy Statement, and the OPRHP/NYSHPO's Human Remains Discovery Protocol. Avoiding further disturbance of the remains is the preferred option;

g) If the human remains are determined to be non-Native American, the remains will be left *in-situ* and protected from disturbance until a plan for their avoidance or removal can be generated. The Certificate Holders will consult with the NYSHPO and other appropriate parties to determine a plan of action; and

h) Work will resume only after the completion of the necessary consultation and treatment.

17.4 STANDARDS FOR CULTURAL RESOURCES INVESTIGATIONS IN NEW YORK STATE

Cultural resource investigations associated with this Facility will be conducted in accordance with The New York Archaeological Council's (1994) *Standards for Cultural Resources Investigations and the Curation of Archaeological Collections in New York State*, adopted by the NYSHPO in 1995. Reports on cultural resources investigations will be prepared pursuant to the New York State Historic Preservation Office Phase I Archaeological Report Format Requirements (OPRHP 2005).

Procedures to identify heritage resource areas and special events that may be impacted by the Facility will be identified in the CRMP within the EM&CP. As part of the CRMP, site-specific mitigation measures will be developed to address any impacts to these areas. Mitigation measures may include, but are not limited to, restrictions on work space or access to sites, scheduling considerations, or work hour reductions.

Reference - Section 17.0

[NYSOPRHP 2005] New York State Office of Parks, Recreation and Historic Preservation. 2005. Historic Preservation Office Phase I Archaeological Report Format Requirements (OPRHP 2005) the Council's Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects (February 2007); and the NYSHPO's Human Remains Discovery Protocol.

18.0 WATERBODY CROSSING PROCEDURES AND PROTECTION MEASURES

18.1 INTRODUCTION

To minimize potential adverse environmental impacts, waterbodies, including any natural or artificial stream, river or drainage, will be crossed as quickly and safely as possible. Adherence to these construction procedures will increase the likelihood that stream flow and water quality will be maintained throughout construction. Most stream crossings will be completed using dry crossing techniques. Dry crossing means that the work area is kept dry either by installing control measures or by avoiding disturbance of the waterbody entirely (i.e., under the waterbody). Turbidity from the construction area will be contained and as a result water quality within the waterbodies will be maintained throughout the installation.

For construction purposes, waterbodies are separated into three main categories depending on the width of the waterbody at the time of the crossing. The categories are defined as follows:

a) Minor Waterbodies – include all waterbodies less than or equal to ten (10) feet wide at the water's edge at the time of construction.

b) Intermediate Waterbodies – include all waterbodies greater than ten (10) wide, but less than 100 feet wide at the water's edge at the time of construction.

c) Major Waterbodies – include crossings of more than one hundred (100 feet) wide at the water's edge at the time of construction.

18.2 MITIGATION MEASURES TO COMPLY WITH STANDARDS AND MINIMIZE IMPACT

Freshwater and saline surface waters are classified by the NYSDEC under regulation 6 NYCRR Part 701 according to their designated best uses. Best uses include drinking water supply, primary and secondary contact recreation, fishing, and fish, shellfish and wildlife propagation. In addition to water classifications New York regulations also identify those waters that have special protection because they support trout and/or trout spawning. New York State Water Quality Standards promulgated under 6 NYCRR Part 703 sets the required water quality criteria that must be met to support each of the best use, such as maximum coliform or minimum dissolved oxygen levels. In addition, the water quality regulations establish narrative standards. The most important of these standards, as it relates to waterbody crossings, are those related to turbidity. Pursuant to 6 NYCRR Part 703 the standard of no visible contrast applies to all waterbodies except those intermittent streams that were not mapped and given a classification.

18.2.1 WATERBODY CONSTRUCTION TIMING WINDOWS

Specific construction timing windows indicate when the cable installation can be performed for each waterbody. These windows are directly related to the waterbody type and stream classification designated for each waterbody. In general, the protection of significant fisheries

(i.e., trout streams) requires that construction only occur during specific dates, while waterbodies not classified as significant fisheries or waterbodies under which the cable is installed using HDD do not always have specific construction windows.

Most designated trout streams along the Facility route will be crossed using the HDD method, which, if performed correctly, will avoid disturbance of these streams. In those instances where the HDD method is used to install the cable to cross a waterbody there will be no time of year restrictions because the method does not require a disturbance to the bed or bank of the stream. If a dry crossing is proposed for any of stream designated as T or TS, the Certificate Holders will adhere to the proposed timing restrictions of October 1 through May 31.

A listing of waterbodies, including associated stream width, NYSDEC classification, proposed crossing method and any potential timing window will be developed during the EM&CP and provided to NYSDEC for review and DPS for approval prior to the start of construction. The Certificate Holders will notify DPS and NYSDEC staff at least five (5) days prior to construction involving stream crossings. Construction windows for underwater cable laying are specified in the Certificate Conditions and the Water Quality Certificate.

18.2.2 WATERBODY DRY CROSSING METHODS

There are three basic waterbody dry crossing methods that will be used for the Facility. Two of the methods involve the excavation of an open trench through the waterbody and the disturbance of the bed and bank of the stream is required. The difference between the crossing methods is the types of controls implemented to maintain water quality during construction. The other method involves installing the transmission line beneath the waterbody without disturbance to bed or bank of the stream. These methods are described in the following section and are as follows:

a) Flume Crossing Method;

b) Dam and Pump Crossing Method; and

c) HDD;

A fourth waterbody crossing method, Open Cut, is described below. The waterbody crossing methods will be chosen based on DPS width classification, NYSDEC stream classification and on conditions present during time of construction. Intermittent streams that are dry at the time of crossing may be crossed by open cut with prior approval from DPS and NYSDEC. Note that the preferred and any alternate crossing methods will be provided to DPS and NYSDEC staff for review and approval prior to the start of construction. Waterbody crossing methods will be identified on a site-specific basis and shown on the EM&CP Plan and Profile drawings. In all cases the transmission line must be installed a minimum of five (5) feet below the bed of the waterbody.

Waterbody crossing method procedures are described below. In addition, illustrations of these crossing methods are provided in Figures 18-1 through 18-3.

18.2.2.1 Flumed Crossing Method

Flumed crossing methods will use a flume pipe to redirect the stream across the work area and allow trenching to be done in drier conditions. Flumed crossings may be installed within minor and intermediate waterbodies during low flow conditions. For waterbodies crossed using the flume method, the cable will be lowered into the trench with the flume pipe(s) in place.

Stream construction preparation begins with the initial installation of the flume pipe(s) in the waterway. The openings to the pipe are then sand bagged (diked) around each end to prevent water from leaking under the pipe into the work area. The upstream dike is constructed first to channel the stream flow through the flume. The downstream dike will then be constructed to isolate the work area.

Once the stream construction preparation phase is complete and the stream is flowing fully within the flume pipe(s), the cable trench will then be excavated in drier conditions across the channel and under the flume. Dewatering of the isolated portion of the stream channel (between the two dams) can be performed to some degree. Under ideal circumstances the soils within this construction area would permit the complete dewatering of the site and a true dry crossing to take place.

Once the trench is complete, the cable will be carried into position and lowered into the trench on one side of the flume pipe. The cable is then threaded under the flume pipe into its final position within the stream channel at the bottom of the trench. Once the cable is installed, the trench will be backfilled immediately. Figure 18-1 shows a typical flumed crossing.

The following BMPs will be implemented for flumed crossings:

a) Once the pipe is installed, the openings to the pipe are then sand bagged (diked) around each end. Sandbags used during construction will be filled with sand free of silt, organics, and other material. Alternatively, steel plates welded to the flume(s) or other barriers can be used to dam the water instead of sand bags;

b) The flume pipe(s) installed across the trench will be sized to accommodate anticipated stream flows;

c) Any dewatering which takes place will be conducted as described in Section 7.7;

d) Trench spoil stockpiles will be placed within the construction right-of-way away from the stream edge to avoid sedimentation, but to preserve endemic soils;

e) The trench will be backfilled immediately following installation of the cable;

f) All flume pipes and dams will be removed as soon as stream bed and bank restoration is complete; and

g) Stream bed and banks for a distance of at least fifty (50) feet from the water's edge will be permanently restored with the exception of the equipment crossing if essential for the remaining construction activities.

18.2.2.2 Dam and Pump Crossing Procedures

Before the initiation of any in-stream activities, all material associated with the dam and pump site set-up must be on-hand. These materials include, but are not limited to the following:

a) Water barriers;

b) Downstream splash plate;

c) Pumps (primary and secondary) and hoses;

d) Fuel for pumps (stored at least one hundred (100) feet from waterbody); and

e) Spill prevention and control materials (including secondary containment for pumps located within one hundred (100) feet of wetland or waterbody).

18.2.2.2.1 Upstream Water Intake or Sump Hole

Once the necessary materials are on-location, site set-up may begin. The first step is to select an appropriate location for the pump intake hose(s) to be positioned. Depending upon the channel characteristics, either a naturally occurring deep spot or channel will be selected as a "sump" or a sump may need to be created to provide sufficient water depth for the screened hose intake(s). If a natural sump is not available for the intake hose, an in-stream sump will be created by excavating within the stream channel and surrounding the excavation using sandbags.

The following BMPs will be implemented at the intake or sump site:

a) All equipment, material, and construction personnel necessary for the crossing will be on-site before set-up begins;

b) Upon completion of the waterbody crossing any sandbags utilized for a sump will be removed and the stream channel restored to preconstruction condition; and

c) The sump will be of sufficient depth to prevent the entrainment of excessive amounts of sediment into the sump intake, hose and pump.

18.2.2.2.2 Pump Set-Up

During the assembly of the upstream and downstream water barriers, the pumping network will be setup to begin the transfer of water around the construction work area.

The pump intake and discharge hoses will be appropriately placed and of sufficient length, based upon site-specific conditions. The intake hose will be screened to prevent the entrainment of

fish. Discharge hoses will be provided with support over the ditch-line as needed to prevent excessive sagging and reduction of pumping capacity.

The number and sizes of pumps to be used at any crossing is dependent upon the volume of water flowing at the time the crossing is made.

BMPs to be implemented during pump set-up include:

a) Pumps will be fueled prior to placing them in position;

b) If it is necessary to refuel during the pump operation, extra care will be taken to avoid spillage and spill control materials will be readily available on site;

c) Secondary containment will be placed under the pumps as an additional precautionary measure to protect against accidental leakage or spill;

d) Fuel for filling the pumps will not be stored within one hundred (100) feet of the waterbody;

e) The intake hose will be screened to prevent the entrainment of fish;

f) The end of the discharge hose will be mounted upon a splash plate or similar device or in a manner that will dissipate the energy of the discharging water and reduce or eliminate streambed scour;

g) If hoses cross the temporary access road, they must be protected from traveling equipment;

h) Pump(s) will be of sufficient capacity to transfer twice the capacity of the entire streamflow around the construction work area; and

i) Reserve or backup pump(s) will be kept on site at all times.

18.2.2.2.3 Water Barrier Installation

Between the pump hose intake or sump hole area and the trench, as well as downstream of the trench, dams of relatively impervious material will be installed. The upstream dam will be completed first. Every reasonable effort will be made to construct the dams as water tight as possible.

The following BMPs will be implemented during water barrier installation:

a) Dams will be constructed of either sandbags, water bladders, steel plates, Porta-Dams or equivalent or “jersey barriers” and plastic sheeting or a combination thereof;

b) The dams will be constructed of sufficient height to allow adequate freeboard under reasonably expected water levels or flows and provide for some impoundment of water;

c) Prior to completion of the dams, the pump(s) must be started in order to provide downstream flow of water around the construction work area; and

d) The rate of pumping will be monitored to minimize draining of the intake sump and the resulting cessation in flow. Alternatively, pumping will be monitored and increased as necessary to prevent overtopping of the dams.

Figure 18-2 shows a typical dam and pump crossing.

18.2.2.3 Horizontal Directional Drilling

HDD will be used for protected stream crossings where practical. The HDD method is described in detail in Section 8.0. To the extent possible, boring entry and exit pits and staging areas will be located outside of waterbodies and wetlands.

18.3.3 OPEN CUT STREAM CROSSING METHOD

In general, the open cut method of construction consists of positioning construction equipment on the banks or in the waterbody itself, digging an open trench in the stream bottom, laying the cable and backfilling without the use of turbidity control measures. The open cut method will be employed only in those circumstances where an intermittent or perennial stream is dry at the time work is proposed and only with prior approval from the NYSDPS and in consultation with NYSDEC. Even after receiving approval from the NYSDPS the Certificate Holder must confirm with the Environmental Inspector that the stream to be crossed does not have any measurable flow at the time work is to commence. If the Environmental Inspector determines there is flow the Certificate Holder must employ a dry crossing method or delay work until there is no flow.

BMPs to be implemented for open cut crossings include the following:

a) All equipment, material, and construction personnel necessary for the crossing will be on-site before trenching begins;

b) Only the construction equipment needed to complete the waterbody crossing will be allowed in the channel;

c) Excavated material from minor and intermediate waterbody crossings, and upland spoil from major waterbody crossings, will be placed at least ten (10) feet from the water's edge;

d) The excavated material will be placed in a stockpile area within the right-of-way protected by erosion control devices to prevent siltation of the adjacent resource area; and

e) In-stream trenching across the stream bottom will be isolated by the installation of trench plugs.

Figure 18-3 shows a typical open cut crossing.

18.3 EQUIPMENT CROSSINGS

Construction equipment crossings will be installed across all waterbodies to gain continuous access along the railroad rights-of-way for construction operations where reasonable alternative access is not available. A listing of all waterbody construction crossings will be included on the EM&CP Plan and Profile drawings and submitted to the NYSDEC for review and to the DPS for approval prior to use. The EM&CP plan should include typical drawings for all construction crossing options. Equipment crossings will be carefully installed to comply with water quality standards by minimizing streambed and streambank disturbance and downstream erosion, scour, or siltation.

The primary objective will be to select the crossing for the particular waterbody that minimizes the amount of disturbance to the bed and bank of the stream and the placement of fill in the waterbody. As a result, the use of a bridge will be the preferred option for equipment crossings. Where a bridge is not feasible or practical the other available crossing methods will be considered. If environmental conditions require a change in the type of crossing for a stream, an EM&CP change notice will be required.

Equipment crossings will be constructed to allow for unrestricted flow and to prevent soil from entering the waterbody. Temporary crossings will be designed and constructed to withstand the two (2) year flood event. Construction equipment must cross waterbodies on bridges consisting of one of the following:

a) Clean rockfill and culverts;

b) Wooden equipment mats and/or culverts; or

c) Flexi-float or portable bridge.

See Figures 18-4 and 18-5 for Equipment Crossing typical details.

The following BMPs will be implemented for construction equipment crossings:

a) Vehicular access shall be prohibited where alternative access can be provided;

b) All crossing structures will be installed in a dry condition;

c) A temporary diversion channel, culvert, or pump-around will be constructed to prevent running water in the work area;

d) Excavated streambed material may be used to embed a culvert provided it matches the streambed materials upstream and downstream of the crossing site and would not be subject to undue erosion during work activities;

e) Measures such as large rocks or rock bags will be used in waterbodies with a sandy bottom to prevent the culverts from shifting or rolling;

f) Devices will also be placed at the outlet to the culverts to prevent scouring of the stream bottom where necessary;

g) Clean rock fill equipment crossings must be maintained periodically to remove soil from the rocks and to replace additional clean rock if needed;

h) After such equipment crossings are established, construction equipment will not be permitted to drive through the waterbody; and

i) Once the equipment crossing is installed, only the equipment necessary to construct the cable crossing will be allowed in the waterbody; and

j) The equipment crossings will be removed, and the original condition re-established once access in the area is no longer needed.

18.4 STREAM PROTECTION MEASURES, CLEANUP AND RESTORATION

Impacts to water quality will be minimized while work is being performed in streams and other bodies of water by implementing the following measures:

a) During construction, vegetated buffers at all waterbody crossings will be maintained. Where the vegetation exists along the railroad rights-of-way, a minimum fifteen (15) foot buffer will be maintained with existing trees and shrubs except for that portion of the bank that has been cleared for the construction path.

b) Where HDD is proposed, all vegetation will be maintained between the HDD entry and exit points;

c) Soil or excavated materials will be set back a sufficient distance from stream banks to prevent their entry into any stream or their causing the bank to collapse, unless either the bank or the excavated materials have been protected adequately, and no other storage area is available;

d) Equipment crossings will be carefully installed to minimize streambank disturbance. Installation of stream crossings, diversions of water during construction, and removal or restoration of crossings will maintain the original stream conditions and characteristics, unless minor manipulations to prevent stream bank erosion (e.g., placements of boulders, root wads, wing deflectors) are requested or approved by the DPS and NYSDEC;

e) Construction equipment and materials, fuels, etc., will not be stored within wetlands or within one hundred (100) feet of any stream or wetland system;

f) Construction equipment will not be refueled within wetlands or within one hundred (100) feet of any stream or wetland system;

g) Equipment will be well maintained and checked daily for leaks;

h) All laydown areas and equipment storage areas will be located a minimum of one hundred (100) feet from wetlands and streams.

i) No permanent structural shoreline protection or stabilization will be used, except where such protection is pre-existing.

j) Isolate in-stream work from the flow of water and prevent discolored (turbid) discharges and sediments from entering the water due to excavation, dewatering and construction activities;

k) Exclude the use of heavy construction equipment below mean high water until the work area is protected by an approved structure and dewatered, except where an emergency response requires immediate action and deviation from this requirement;

l) Stabilize any disturbed banks by grading to an appropriate slope, followed by vegetating or armoring the bank to restore pre-construction conditions, to prevent erosion and sedimentation into the waterbody;

m) Minimize soil disturbance, provide appropriate grading and temporary and permanent revegetation of stockpiles and other disturbed areas to minimize scour, erosion and sedimentation potential;

n) Protect all waters from contamination by deleterious materials such as wet concrete, gasoline, solvents, epoxy resins or other materials used in construction, maintenance and operation of the Facility;

o) Install effective erosion control measures on the downslope of all disturbed areas and maintain them in fully functional condition. These erosion control measures are to be installed before commencing any other activities involving soil disturbance;

p) Ensure complete removal of all dredged and excavated material, debris or excess materials from construction, from the bed and banks of all water areas to an approved upland disposal site where not suitable for backfill or reuse;

q) Ensure that all temporary fill and other materials placed in the waters of the river are completely removed and the original condition re-established, immediately upon completion of construction, unless otherwise directed by the NYSDEC.

Upon completion of backfilling operations, cleanup and restoration of the stream crossing, banks and bank approaches (at least fifty (50) feet adjacent to each bank) will be completed within twenty four (24) hours. If needed, stream banks will be re-established to original grade immediately after stream bank work is completed. The banks will then be permanently stabilized by seeding with native grasses, mulched and, if needed, planted with native shrub seedlings. If additional stabilization is needed jute netting or erosion control blankets will be used (Figure 18-6).

19.0 WETLAND AND OTHER WATER RESOURCES PROTECTION

19.1 INTRODUCTION

The boundaries of any wetlands, streams and other water resources along the Facility route have been identified in the field during development of the Article VII Application and supplemental filings. All delineated wetlands, streams and water resources will be depicted on the EM&CP Plan and Profile drawings and prior to construction all field identified sensitive resources will be flagged to ensure resource protection. Protection measures, as described below, will be implemented to ensure minimization of impacts to wetlands and other water resources resulting from sedimentation, erosion, turbidity, unanticipated spills or leaks of fuel, and/or other toxic materials.

19.2 WETLAND CONSTRUCTION PROCEDURES

Protection measures will be implemented to ensure minimization of impacts to wetlands, waterbodies, and adjacent areas resulting from sedimentation, erosion, turbidity, unanticipated spills or leaks of fuel, or other toxic materials. These protection measures include:

a) The Certificate Holders will minimize work within and across streams, wetlands, or other water resources to the extent possible during preconstruction, construction, operation, and maintenance activities;

b) The Certificate Holders will notify DPS and NYSDEC staff, and if within the Adirondack Park, APA staff, at least five (5) business days prior to construction involving state-regulated wetland;

c) Sediment and erosion control devices will be installed across the right-of-way on any slopes leading into wetlands and along the edge of the construction right-of-way, as necessary, to prevent spoil from flowing off the right-of-way into a wetland. Locations of sediment/erosion control devices will be identified on the EM&CP Plan and Profile drawings;

d) To the extent possible, work which must be in a wetland will be scheduled to be started and completed in the dry season or when the ground is frozen;

e) To expedite revegetation of wetlands, the top one (1) foot of soil will be stripped from over the trench, retained and later replaced. The exception to this requirement includes areas with standing water or saturated soils, areas where no topsoil layer is evident or areas where the topsoil layer exceeds the depth of the trench;

f) Construction vehicles and equipment will be limited to established access roads and construction work spaces depicted on EM&CP Plan and Profile drawings;

g) Construction equipment operating within wetlands will be limited primarily to what is needed to dig the trench, install the cable, backfill, and restore the right-of-way. All other construction equipment will use access roads in upland areas to the extent practicable;

h) To minimize disturbance and compaction in wetlands with saturated soils or standing water, either wide-tracked or balloon-tired equipment operating from timber corduroy or timber mats will be used. Imported rock, stumps, brush, or off-site soil as temporary or permanent fill is prohibited. Following construction, all materials used to stabilize the right-of-way will be removed;

i) Construction materials, including fuels, will not be stored within one hundred (100) feet of any surface water or wetland system, unless no alternative is available. If no alternative is available, the Environmental Inspector will ensure appropriate protection measures for spill prevention and control are implemented;

j) Construction equipment will not be refueled within one hundred (100) feet of any surface water or wetland system;

k) Spill response and mitigation procedures will be implemented in the case of any accidental spills of chemical, fuel, or other toxic materials;

l) Any temporary access routes or parking areas adjacent to wetlands and waterbodies will be graded to direct runoff away from water resources. If needed, at the determination of the Environmental Inspector, additional erosion control measures will be installed adjacent to wetlands and other water resource areas;

m) Spoil and excavated materials will be stored outside of wetlands and wetland adjacent areas. All stockpiled material will be stored at a sufficient distance to prevent sedimentation into any stream, wetland, wetland adjacent area, or other waterbody. If no storage area is available, spoil will be adequately protected and erosion and sedimentation control measures will be installed to prevent materials from entering adjacent areas. All excess material will be disposed of in approved upland locations;

n) Unless work activities will resume within seven (7) days, the Certificate Holders will stabilize disturbed soils as soon as possible and no more than seven (7) days upon temporary or permanent completion of ground-disturbing activities. If soil stabilization measures are not possible within seven (7) days due to snow cover, frozen ground, or other weather conditions, soils will be stabilized as soon as practicable; and

o) The construction right-of-way will be inspected periodically during and after construction until final restoration is complete. Erosion control or restoration features will be repaired as needed in a timely manner until permanent revegetation is successful.

19.2.1 Erosion and Sediment Control

Erosion and sediment control devices will be installed prior to soil disturbance activities as depicted on the EM&CP Plan and Profile drawings or as deemed necessary by the Environmental Inspector to protect the resource areas. The wetland boundaries will be depicted on the EM&CP Plan and Profile drawings and marked in the field prior to the onset of soil disturbing activities to ensure that spoil piles and other disturbed soil areas are confined and erosion and control devices will be employed to avoid sediment flow into wetland areas. In areas of active construction, erosion controls will be inspected on a daily basis by the Environmental Inspector and maintained or replaced as necessary.

Trench dewatering may become necessary during wetland crossing operations. Trench water will be pumped into a filter bag or sediment trap constructed of straw bales and filter fabric or silt fence so that no heavily silt-laden water flows into any wetland. The pump intake hose will not be allowed to be set on the trench bottom throughout dewatering. Care will be taken to ensure that natural drainage is not adversely affected. The basin and all accumulated sediment will be removed following dewatering operations, and the area will be seeded and mulched.

Straw bales, silt fence, or earthen berms will also be installed across the right-of-way at the base of all slopes located adjacent to wetlands or at the edge of the work area until right-of-way revegetation is complete. The construction area will be monitored to ensure that erosion control measures are functioning properly both during and following construction until final restoration is complete.

19.2.2 Clearing

In wetland areas, construction will be performed in a manner that minimizes disturbance to wetland vegetation. The following BMPs will be implemented during the clearing of wetland vegetation:

a) Clearing of existing vegetation in wetlands or in or near waterbodies will be limited to that material necessary to allow completion of construction activities and to allow for reasonable access for long-term maintenance;

b) Brush and trees will be cut at ground level leaving the root systems intact;

c) Tree stumps will only be removed directly over the trench and where necessary for safe access along the right-of-way;

d) If high soil moisture content or standing water exist in a wetland prior to construction, the use of heavy equipment will be limited to the extent practical to prevent rutting and soil profile mixing; and

e) Trees will be felled by hand and cut to lay flat on the ground and left in place unless doing so would prevent safe access to the site.

19.2.3 Access Roads

Construction in wetlands with standing water or saturated soils will be limited to the equipment necessary to clear the right-of-way, install the equipment crossings, dig the trench, install the cable, backfill and restore the right-of-way. All other construction equipment will be track-mounted or will use approved access roads located in upland areas to the maximum extent practicable.

The following BMPs will apply for all access roads in wetlands:

a) Swamp mats or low psi equipment or both will be used in wetland areas, if necessary, to minimize compaction and damage to the soil structure;

b) Rock fill, tree stumps or brush pads will not be used to support equipment in wetlands; and

c) Vehicles and equipment will be clean prior to entering areas near NYSDEC protected waters or wetlands.

If the Construction Inspector or Environmental Inspector determines that conditions are unsuitable for normal construction techniques, wetland access roads will be installed using the following equipment options: 1) swamp mats; 2) geotextile fabric and stone; and 3) bridges and flotation devices. The type of access road to be installed in a particular wetland area will be determined by the Construction Inspector and Environmental Inspector at the time of site preparation based on consideration of the following:

a) Presence and depth of standing water;

b) Moisture content and substrate composition; and

c) Type and size of construction equipment to be used.

All wetland access roads will be temporary and will be designed and installed to provide for complete removal with minimized disturbance to the wetland system. Construction details for each type of wetland access road will be provided in the EM&CP, with typical standards described below.

19.2.3.1 Swamp Mats and Timber Mats

In wetlands with high soil moisture content or standing water, prefabricated swamp mats, timber mats or hard plastic mats may be placed in the wetland to provide vehicular support, stability and safe operation of equipment (Figure 19-1). When swamp or timber mats are used in wetlands, the following standards apply:

a) Sufficient mats will be on site to complete the span of wetland to be crossed;

b) The mats to be used must be sufficiently wide, free from decay and sturdy enough to support the necessary equipment;

c) Previously used mats will be cleaned to prevent introduction of non-native species and other harmful materials to the wetland;

d) The mats will be removed post-construction by lifting along the reverse order of the work route and lifting the mat from the point of final equipment location and moving towards the point of starting equipment location; and

e) Mats will not remain in the wetland for more than four (4) months in the growing season unless specified on the EM&CP Plan and Profile drawings.

19.2.3.2 Geotextile and Stone

In wetland areas where conditions are not suitable or where suitable mats do not exist, a geotextile and stone road may be constructed in wetlands using the following standards:

a) The width of the road will be the minimum needed to safely pass a single vehicle through the wetland;

b) Prior to placing geo-textile fabric along the alignment of the wetland access road, all tree stumps will be cut flush with the ground as much as practicable;

c) A detailed description of the minimum requirements for the geotextile that will prevent tearing during use and removal (technical specifications, thickness, tensile strength, etc.) and specific examples of materials to be used will be included in the EM&CP.

d) A layer of clean crushed stone will be laid on top of the geotextile fabric. The road will be of sufficient depth to hold material in place and support equipment;

e) Geotextile fabric will extend well beyond the edge of stone placement to minimize stone entering the wetland and facilitate removal of the road;

f) Suitable cross drainage will be provided across the road for stream channels and surface flow;

g) All vehicular and construction equipment access will be confined to the road;

h) Upon completion of construction, all stone and filter fabric will be removed from the wetland. Similar to removing stabilized construction entrances at public roadsides, the Contractor will connect an excavator to the far end of the fabric and pull it backwards onto itself, causing the stone to pile up where it can be scooped up and removed with a backhoe or loader. Removal of temporary access roads in this manner will be done in segments;

i) Following removal of the stone and geotextile fabric, the wetland surface will be restored to its original contours and restored in accordance with the direction and guidance of DPS Staff and NYSDEC, and for wetlands within the Adirondack Park, of APA, (which may involve seeding or planting); and

j) Compensatory mitigation such as vegetation plantings or a project to address invasive species in wetlands will be considered in consultation with DPS staff and NYSDEC where gravel/stone in combination with geotextiles remain in place four months or longer.

19.2.3.3 Bridges and Flotation Devices

When the depth of water in a wetland exceeds twelve (12) inches, temporary pontoon or flotation bridges may be used (see Figure 18-5). If temporary bridges are used, the following specifications will apply:

a) For smaller wetlands that can be spanned, banks must be sufficiently stable to support both bridge and equipment;

b) All previously used flotation equipment will be cleaned prior to re-use; and

c) Trees are not to be used as guying anchors for bridge installations.

Where water levels are temporarily high due to recent storm events, the Construction Inspector and the Environmental Inspector may direct that construction be postponed until water levels subside. Weather conditions will be monitored to avoid ditching and pipe placement during inclement weather conditions wherever possible.

19.2.4 Trenching

Typical trench excavation procedures are identified in Section 7.3. BMPs to be implemented during trenching in wetland areas include the following:

a) The mixing of topsoil with subsoil will be minimized by using topsoil segregation construction methods in wetlands (except when standing water or saturated soils are present);

b) Trench plugs will be installed where necessary to ensure that the trench does not act as an underground drainage channel; and

c) Should it become necessary to remove water from the trench, it will be pumped to a stable, vegetated upland area (where practical) and filtered through a filter bag or siltation barrier. Refer to Section 7.7 for details on trench dewatering.

19.2.5 Backfilling

Backfill operations will commence immediately after the cable is installed and will continue until completed. The following standards and procedures will apply when backfilling within wetland areas:

a) Topsoil will be stripped from the trench and subsoil stockpile area (trench plus spoil side method) and placed on one side of the trench. Subsoil will be placed on the other side of the trench. The soils will then be returned to their original horizontal strata in the backfilled trench;

b) Only on-site native material will be used in backfill operations unless the native material does not meet specifications, or ledge rock is encountered in the trench. If imported material is used, it will be approved by DPS Staff and the NYSDEC;

c) Where topsoil has been segregated from the trench spoil, backfill will be done in reverse order with trench spoil returned first; and

d) Excess spoil will be removed off-site.

Refer to Section 7.3.5 for details on backfilling.

19.3 SPRINGS AND WELLS

The Certificate Holders will consult with all appropriate agencies, landowners, and local municipalities to determine the location of any springs or wells along the Facility route. All water wells within two hundred (200) feet of any point of the right-of-way will be identified in the EM&CP Plan and Profile drawings. Refueling and/or storage of toxic materials will not be allowed within two hundred (200) feet of any private water well or four hundred (400) feet of any municipal water well.

19.4 CLEANUP AND RESTORATION

Impacts to wetlands will occur primarily during the construction phase. Although some permanent forested wetland conversions to emergent marsh or scrub shrub wetland will occur in some areas, there will be no permanent filling of wetlands as a result of the cable installation. The Certificate Holders' approach to wetland restoration involves a combination of substrate and hydrology restoration, and vegetation establishment involving natural succession processes as a key component. The Certificate Holders will minimize the short and long-term impacts to all wetland types encountered along the Facility route, to the greatest practicable extent.

Restoration of wetland areas will be expedited by minimizing the duration of work and by restoring the preconstruction topographic and hydrologic conditions as quickly as possible following construction. Removal of stumps in wetlands will be limited to directly over the trench unless personnel safety requires additional stump removal. The stumps that are left in

place may promote natural regeneration within the construction right-of-way depending on the species. Except in standing water, saturated soils, or where ledge is encountered at the surface, the top twelve (12) inches of hydric soil in wetland areas over the trench will be segregated and stockpiled separately from subsoils. Once the trench is backfilled, the topsoil will be replaced over the trench to its original grade. This topsoil material typically contains an extensive propagule bank that aids in the revegetation of disturbed areas with herbaceous and woody vegetation.

The cleanup and final restoration phase is critical for mitigating long-term wetland impacts, and therefore will be closely monitored by the Environmental Inspector. During the initial restoration phase, all construction debris will be removed from the right-of-way. Segregated topsoil will be replaced, and wetland contours and drainage patterns will be restored to approximate original condition by matching that which exists in adjacent undisturbed areas. Restoring the grade, drainage patterns, and topsoil will promote the re-establishment of native hydrophytic vegetation. All materials placed in the wetland to facilitate access and construction will be removed in their entirety unless specified on the EM&CP Plan and Profile drawings.

Cleanup and final grading steps will commence within twenty one (21) working days after the trench is backfilled, weather conditions permitting. Restoration of the wetland (other than the travel way), will be completed within twenty four (24) hours after backfilling is completed. This will be done for a minimum distance of fifty (50) feet from the wetland edge. Restoration of the wetland will include but is not limited to: final grading, seeding with a native wetland seed mix, fertilizing, and mulching. High organic soils (as determined by NYSDEC, DPS, or the Environmental Inspector) will be graded back to original contours and left unmulched and unseeded to facilitate the germination of native seeds and sprouting of rhizomes from the seed bank. Following cleanup, the wetland will be evaluated for possible vegetative plantings. This will be done in consultation with the appropriate agencies.

19.4.1 Post-Construction Restoration Monitoring

The Certificate Holders will establish and implement a program to monitor the success of restoration upon completion of construction and restoration activities. The success of wetland revegetation will be monitored and recorded annually for the first two (2) years (or as required by permit) after construction, or longer, until wetland revegetation is successful. Wetland revegetation will be considered successful when the vegetative cover is at least eighty (80) percent of the type, density, and distribution of the vegetation in adjacent wetland areas that were not disturbed by construction. If revegetation is not successful at the end of two (2) years, the Certificate Holders will develop and implement (in consultation with a professional wetland ecologist) a plan to actively revegetate the wetland with native wetland herbaceous plant species.

20.0 AGRICULTURAL LANDS

20.1 TYPES OF AGRICULTURAL LANDS

There are many types of agricultural land along the overland portions of the Facility. Agricultural land in this area consists of barns and outbuildings, pasture land, crop land, hay fields and access roads across the railroad right-of-way.

The Facility is not anticipated to impact agricultural land uses in the Agricultural Districts, given that installation of the Facility will occur within existing railroad rights-of-way. Potential impacts to agriculture land may occur if agricultural land is used for off-right-of-way access to the Facility or if agriculture lands are used for laydown areas. These areas will be identified during the development of the EM&CP Plan and Profile drawings. If the Facility staff identifies areas that may pose a risk to agriculture lands or operations, an Agricultural Inspector will be employed by the Certificate Holders to oversee the agricultural resources traversed by the Facility. The duties and qualifications of the Agricultural Inspector are described in Section 2.2.

20.2 CLEARING

The Agricultural Inspector and Environmental Inspector will be present for all clearing that takes place on or near agricultural land. Any necessary clearing of shrubs, hedgerows, and other woody vegetation will be performed as described in Section 5.0. Stumps, slash, or chips will not be piled or buried in active agricultural fields or improved pasture. Logs may be piled in areas designated by the landowner. Black cherry trees that must be cleared near any agricultural lands that could potentially be inadvertently consumed by livestock will be identified and removed from the area. Drying black cherry slash is toxic to livestock and will not be stockpiled in areas accessible to livestock. Any black cherry cleared will be removed from the livestock areas and disposed of elsewhere.

20.3 GRADING AND TOPSOIL SEGREGATION

20.3.1 Grading

Mats will be installed where repeated temporary access is necessary across agricultural fields. The mats will be layered where necessary to provide a level access surface. Once access is no longer required across agricultural areas, the mats will be removed and the Agricultural Inspector will use a soil penetrometer to determine if soil compaction has occurred as a result of construction activities. All compacted areas will be remediated as specified in Section 20.5.

Where the installation of mats is not practical, topsoil shall be removed. Any grading necessary for access roads constructed in active agriculture areas will first remove topsoil from the A horizonas described in Section 20.3.2, below. Geotextile fabric with gravel or stone on top will be placed on the B horizon for access roads. The use of topsoil stripping for construction access, as opposed to matting, shall only be allowed with approval from DPS Staff in consultation with Ag & Mkts.

All vehicle traffic and parking will be confined to the access roads and designated work areas to prevent damage to agricultural land. All disturbed areas will be restored following construction.

20.3.2 Topsoil Segregation – Cropland/Pasture/Grazing

Topsoil will be removed down to the B horizon and stockpiled next to the access road or stockpiled nearby. Excavated topsoil will be stockpiled separately from other excavated materials. Topsoil removal up to a depth of 16 inches may be required in specially-designated soils encountered along the route and identified in the EM&CP. The site-specific depth of topsoil to be excavated will be determined and monitored by the Agricultural Inspector during EM&CP development using the County Soil Survey and on-site soil augering, if necessary. During the clearing/construction phase, site-specific depths of topsoil stripping will be monitored by the Agricultural Inspector.

Topsoil stockpiles on agricultural areas left in place prior to October 31 will be seeded with Aroostook Winter Rye or equivalent at an application rate of 3 bushels (168 #) per acre and mulched with straw mulch at a rate of 2 to 3 bales per 1,000 sq. ft. Topsoil stockpiles left in place between October 31 and May 31 will be mulched with straw mulch at a rate of 2 to 3 bales per 1,000 sq. ft. Straw (not hay) mulch will be used to prevent soil loss on stockpiled topsoil from October through May.

20.4 DRAIN LINES

Where future surface and subsurface drainage plans have been identified, the Certificate Holders will provide adequate cover over the cable to allow for installation of major header drains and main drains across the trench without obstruction due to the burial depth of the cables. The Agricultural Inspector will determine the required elevations of the cable for clearance between the bottom of future drainage systems and the top of the cables. These depths will be specified in the EM&CP.

20.5 CLEANUP AND RESTORATION

Once construction activities are completed, gravel will be removed from along the access roads. Where the right-of-way route, work areas, access roads, and/or staging areas disturb agricultural areas during construction, subsoil will be decompacted to a depth of 18 inches with deep tillage by such devices as a deep ripper (subsoiler). Soil compaction results will be no more than 250 pounds per square inch ("PSI") as measured with a soil penetrometer. Following decompaction, all stone and rock material four (4) inches and larger in size will be removed from the surface. The disturbed areas will then be backfilled with topsoil and graded to restore the original soil profile. Finally, deep subsoil shattering will be performed with a subsoiler tool having angled legs. Stone removal will be completed, as necessary, to eliminate any additional rocks and stones brought to the surface as a result of the final subsoil shattering process. The topsoil will then be stabilized by seeding and/or mulching as described in Section 20.6. Subsoil decompaction and topsoil replacement will not be performed between October and May, unless approved on a site-specific basis by DPS and Ag & Mkts in consultation with the Agricultural

Inspector. In the event that subsequent construction or clean-up activities result in additional compaction, additional deep tillage will be performed to alleviate such compaction.

Segments of farm roads utilized for access will be improved as required following consultation with the farm owner and Ag & Mkts prior to use. Such improvements will include the installation of geotextile fabric and crushed stone. Fences, gates, and stonewalls disturbed during construction will be restored to their pre-construction condition, or as otherwise agreed to by the landowner (Section 5.8).

Farm drainage features affected by construction will be rebuilt to like-new condition upon completion of construction, or as otherwise agreed to by the landowner. A detailed drainage line repair procedure will be developed in the EM&CP for the repair of crushed or severed clay tile or plastic drain lines. The procedure will be developed by the Agricultural Inspector in consultation with the local Soil and Water Conservation District and landowner. Drawings showing the generic technique to be implemented for drain line repairs will be provided by the Certificate Holders in the EM&CP. All new plastic drain tubing will meet or exceed the American Association of State Highway and Transportation Officials ("AASHTO") M252 specifications. Functional stone drainage systems severed during cable installation will be repaired during the restoration phase. At the end of all construction, the ROW and respective work areas shall be thoroughly cleared of debris such as nuts, bolts, spikes, wire, pieces of steel, and other assorted items.

20.6 REVEGETATION

20.6.1 Seed Mixtures

After topsoil replacement, seedbed preparation (final tillage, fertilizing, liming) and seeding shall follow NYS Ag & Mkts recommendations as contained in *New York State Farmland: Seeding, Fertilizing and Lime Recommendations for Gas Pipeline Right-of-Way Restoration In Farmlands* (revised 6-15-2005) or as specified by the landowner. Seeding will be monitored for two (2) years after completion at least three (3) times per growing season.

20.6.2 Timing

Seed mixes will be applied during the appropriate season for the crop species selected. If the timing of restoration activities precludes the establishment of the chosen crop species, an annual cover crop to be planted will be chosen in consultation with the landowner or land manager. If restoration takes place outside of the growing season, the disturbed area will be stabilized with mulch.

20.6.3 Mulching

Mulch will consist of clean straw or hay from the affected agricultural property. The mulch will be spread uniformly in a continuous blanket of sufficient thickness to hold the soil in place.

20.7 REMEDIATION AND MONITORING

The Certificate Holders will provide for a monitoring and remediation period of two (2) years after the completion of the initial restoration. The Certificate Holders will employ an Agricultural Inspector on at least a part-time basis through this period. The remediation and monitoring phase will be used to identify any remaining agricultural impacts associated with construction that are in need of mitigation and to implement the follow-up restoration.

Conditions to be monitored include topsoil thickness, relative content of rock and large stones, crop production, drainage and repair of severed fences, etc. Impacts will be identified through on site monitoring of all agricultural areas along the trenched area and through contact with respective farmland operators, Ag & Mkts, and County Soil and Water Conservation Districts.

Topsoil deficiency will be mitigated with topsoil brought in from off-site that is consistent with the quality of topsoil on the affected site. Excessive amounts of rock and oversized stone material will be determined by a visual inspection of the right-of-way and periodic probes of the trench area. Results will be compared to other portions of the same field. All excess rocks and large stones will be removed and disposed of by the Certificate Holders.

On site monitoring will be conducted at least three (3) times during the growing season and include a comparison of growth and yield for crops on and off the Facility Construction Zone. When the subsequent crop productivity within the Facility Construction Zone is less than that of the adjacent unaffected agricultural land, the Agricultural Inspector, in conjunction with the Certificate Holders, Ag & Mkts, as well as other appropriate organizations, will help to determine the appropriate rehabilitation measures for the Certificate Holders to implement. During the various stages of remediation, all affected farm operators will be periodically apprised of the duration by the Agricultural Inspector.

21.0 INVASIVE SPECIES CONTROL PROCEDURES

The Certificate Holders has identified certain invasive species that potentially occur along the Facility route, on the basis of field surveys, published studies and data, and/or consultation with federal and state agencies. Invasive species are typically nonindigenous and include both terrestrial and aquatic species that can spread rapidly in the environment, resulting in the displacement of native species and sometimes causing economic impacts. The movement of vehicles, equipment and personnel, and the transport of materials and/or construction debris to and from areas that are inhabited by invasive species could result in the unintentional spread of these species. Additionally, areas that have been disturbed by human activity may provide opportunity for the colonization and spread of invasive species, which are often more disturbance-tolerant than the native communities. The Certificate Holders have included BMPs to control the transport of invasive species from areas where they may occur along the Facility route. Measures such as training personnel in the identification of invasive species, inspecting and cleaning vessels and equipment, and practices to encourage rapid stabilization, restoration and revegetation of disturbed work areas, have been incorporated to minimize any adverse impacts due to invasive species.

The Certificate Holders are aware that invasive species management is a topic of significant discussions within the State and new guidance and management plans are being developed. In order to provide the most current and site appropriate Invasive Species Management for the construction and operation of the , the Certificate Holders will develop an Invasive Species Management Plan in consultation with NYSDEC, DPS Staff, and APA (for portions of the Facility within the Adirondack Park) for inclusion in the EM&CP. This section describes some of the concerns and measures that will be addressed in the Invasive Species Management Plan for the Facility.

21.1 PLANTS

The presence of some invasive plant species in wetlands crossed by the Facility route was documented during the wetland delineation surveys which took place during October and November 2009 and April through June 2010. The NYSDEC and APA have compiled an Interim Invasive Plant Species (Table 21.1) list that includes:

Table 21.1
NYSDEC Interim Invasive Plant Species

Floating and Submerged Aquatic Plants	
Common Name	**Scientific Name**
Carolina Fanwort	*Cabomba caroliniana*
Rock Snot (diatom)	*Didymosphenia geminata*
Brazilian Elodea	*Egeria densa*
Water Thyme	*Hydrilla verticillata*
European Frog's Bit	*Hydrocharis morus-ranae*
Floating Water Primrose	*Ludwigia peploides*
Parrot-feather	*Myriophyllum aquaticum*
Variable Watermilfoil	*Myriophyllum heterophyllum*
Eurasian Watermilfoil	*Myriophyllum spicatum*

Table 21.1 NYSDEC Interim Invasive Plant Species	
Brittle Naiad	*Najas minorjed*
Starry Stonewort (green alga)	*Nitellopsis obtusa*
Yellow Floating Heart	*Nymphoides peltata*
Water-lettuce	*Pistia stratiotes*
Curly-leaf Pondweed	*Potamogeton crispus*
Water Chestnut	*Trapa natans*
Emergent Wetland and Littoral	
Common Name	**Scientific Name**
Flowering Rush	*Butomus umbellatus*
Bohemian Knotweed	*Fallopia bohemica*
Japanese Knotweed	*Fallopia japonica*
Giant Knotweed	*Fallopia sachalinensis*
Yellow Iris	*Iris pseudacorus*
Purple Loosestrife	*Lythrum salicaria*
Reed Canarygrass	*Phalaris arundinacea*
Common Reed-nonnative variety	*Phragmites australis* var. *australis*
Herbaceous Terrestrial	
Common Name	**Scientific Name**
Garlic Mustard	*Alliaria petiolata*
Wild Chervil	*Anthriscus sylvestris*
Mugwort	*Artemisia vulgaris*
Brown Knapweed	*Centaurea jacea*
Black Knapweed	*Centaurea nigra*
Spotted Knapweed	*Centaurea stoebe* ssp. *micranthos*
Canada Thistle	*Cirsium arvense*
Bull Thistle	*Cirsium vulgare*
Crown Vetch	*Coronilla varia*
Black Swallow-wort	*Cynanchum louiseae (nigrum)*
European Swallow-wort	*Cynanchum rossicum*
Fuller's Teasel	*Dipsacus fullonum*
Cutleaf Teasel	*Dipsacus laciniatus*
Cypress Spurge	*Euphorbia cyparissias*
Giant Hogweed	*Heracleum mantegazzianum*
Japanese Stilt Grass	*Microstegium vimineum*
Wild Parsnip	*Pastinaca sativa*
Cup Plant	*Silphium perfoliatum*
Vines	
Common Name	**Scientific Name**
Porcelain Berry	*Ampelopsis brevipedunculata*
Oriental Bittersweet	*Celastrus orbiculatus*
Japanese Honeysuckle	*Lonicera japonica*
Mile-a-minute Weed	*Persicaria perfoliata*
Kudzu	*Puerariamontana* var. *lobata*
Shrubs and Trees	
Common Name	**Scientific Name**
Norway Maple	*Acer platanoides*
Tree of Heaven	*Ailanthus altissima*

Table 21.1 NYSDEC Interim Invasive Plant Species	
Japanese Barberry	*Berberis thunbergii*
Russian Olive	*Elaegnus angustifolia*
Cherry Eleagnus	*Eleagnus multiflora*
Autumn Olive	*Elaegnus umbellata*
Glossy Buckthorn	*Frangula alnus*
Border Privet	*Ligustrum obtusifolium*
Amur Honeysuckle	*Lonicera maackii*
Shrub Honeysuckles	*Lonicera morrowii/tatarica/x bella*
Bradford Pear	*Pyrus calleryana*
Common Buckthorn	*Rhamnus cathartica*
Black Locust	*Robinia pseudoacacia*
Multiflora Rose	*Rosa multiflora*
False Spiraea	*Sorbaria sorbifolia*

21.1.1 Measures to Prevent or Control the Transport of Invasive Plant Species

On a Facility-wide basis, the Certificate Holders will perform the following measures to prevent or control the transport of invasive plant species:

a) Prior to construction, training will be conducted to educate Facility contractor(s) and subcontractor(s) on identifying invasive plant species and the site-specific protocol for preventing or controlling their transport throughout or off of the Facility site. These protocols include the various cleaning or decontamination methods to be used on the Facility. In addition, the contractors will be instructed to stay within access paths and work areas that are designated on the EM&CP Plan & Profile drawings to minimize ground disturbance;

b) Sediment and erosion control devices will be installed across the construction right-of-way on slopes leading into wetlands and along the edge of the construction right-of-way to prevent spoil from migrating into these areas. This will also help to prevent the dispersion of seeds from invasive plant species into uninfested wetlands during construction;

c) Vehicles, equipment, and materials (including swamp mats) will be inspected for, and cleaned of, any visible soils, vegetation, and debris before bringing them to the Facility area or moving them to the next wetland along the construction right-of-way. As specified under NYSDEC's General Permit for Routine ROW Maintenance Activities, DEC No. 0-0000-01147/00001:

    i. "Equipment used in areas containing invasive plant species will be power-washed and cleaned with clean water (no soaps or chemicals) before leaving the invasive-infested area or Facility ROW for another project, to prevent the spread of seeds, roots or other viable plant parts, and the wash water, including spray, will not be discharged within one hundred (100) feet of any stream, existing or proposed wetland or adjacent area, or stormwater conveyance (ditch, catch basin, etc). If sufficient space is not available or is precluded by terrain to provide a cleaning

station on site, upon approval of the Environmental Monitor, equipment used within an infested area may be power-washed adjacent to the area, provided that the wash water, including spray, does not discharge within one hundred (100) feet of any stream, existing or proposed wetland or adjacent area, or stormwater conveyance (ditch, catch basin, etc).

ii. Loose plant and soil material that has been removed from clothing, boots and equipment, or generated from cleaning operations will be a) rendered incapable of any growth or reproduction, b) disposed of off-site, or (c) handled as per paragraph iii) below. If disposed of off-site, the plant and soil material will be transported in a secure manner. Any off-site disposal must occur at either a landfill-incinerator or a State-approved disposal facility.

iii. If upon completion of work, the area remains infested with invasive plant species, the invasive material cleaned from equipment used within the same construction area may remain within the infested area, provided that no filling of a wetland will occur."

d) Revegetation of wetlands will be expedited by stripping the topsoil from over the trench, except in areas with standing water or heavily inundated soils, or where no topsoil layer is evident or where it exceeds the depth of the trench. Topsoil will then be stockpiled separately from subsoil to insure preservation of the native seed bank;

e) Following cable installation, the trench will be backfilled and the area recontoured to its original grade. Segregated topsoil will be replaced and natural drainage patterns restored to facilitate natural re-establishment of native vegetation;

f) The restored right-of-way will be seeded with an invasive species free seed mix immediately after final regarding to create a rapid cover over the disturbed right-of-way and help to prevent establishment of invasive species which typically colonize disturbed sites;

g) Expediting construction in and around wetlands and limiting the amount of equipment and construction activities within wetlands will reduce the amount and duration of disturbances. In addition, equipment used will be tracked or balloon-tired, often operating on top of timber mats or corduroy. This will minimize the amount of heavily disturbed soils in which invasive species might colonize;

h) To the extent practicable, water for dust control and other uses will come from municipal water supplies or other potable sources. If surface waters are used, equipment will be disinfected afterwards;

i) To the extent practicable, the movement of invasive-plant-infested soils, gravel, rock, and other fill materials to relatively-invasive-plant-free locations will be avoided. Soil, gravel, rock, and other fill material will come from invasive-plant-free sources on and off the site, if such sources are available; and

j) Revegetation of disturbed areas will utilize seed and other plant materials that have been checked and certified as noxious-weed-free.

21.2 INVASIVE INSECT CONTROL

The Asian Longhorned Beetle (*Anoplophora glabripennis*) and the Emerald Ash Borer (*Agrilus planipennis*) are two insects that the NYSDEC has identified as a potential problem to native trees and vegetation. If, during construction, these insects are found, they will be reported to the NYSDEC regional forester. In addition, prior to construction, training will be conducted to teach Facility contractor(s) and subcontractor(s) to identify invasive insect species and the Facility-wide protocol for reporting to the NYSDEC regional forester. Unmerchantable timber will be provided as firewood to interested parties pursuant to the substantive requirements of NYSDEC's firewood restrictions to protect forests from invasive species found in 6 NYCRR Part 192.5.

21.3 AQUATIC INVASIVE SPECIES CONTROL PROCEDURES

An aquatic invasive species is defined in the National Aquatic Nuisance Prevention and Control Act (NANPCA) of 1990 as: A nonindigenous species that threatens the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural, or recreational activities dependent upon such waters. For the purposes of this Facility, the term "aquatic" is intended to include freshwater, marine, estuarine, and wetland species (NYSDEC 2010). During cable installation, the Certificate Holders, will comply with all federal, state and local ordinances for *Invasive Species Best Management Practices*. This includes, but is not limited to, boat decontamination and/or washing and ballast water provisions.

The cable route traverses a range of aquatic environments, including deep and shallow limnetic habitats, freshwater wetlands and riverine habitats, freshwater tidal riverine habitats, estuarine, and marine conditions. Within these environments, a wide range of invasive, non-native plant and animal species proliferate. Within the Lake Champlain basin, twelve (12) invasive mollusks and six (6) invasive crustaceans have been identified, and the Hudson River and Estuary has experienced considerable invasion, with over one hundred (100) non-indigenous species established since colonial times (Mills et. al. 1996).

Cable installation activities will utilize available BMPs to prevent or minimize the spread of invasive plants and animals within Lake Champlain and the Hudson, Harlem and East Rivers. In general, these BMPs entail careful inspection of construction equipment prior to movement of equipment from one water body to another (e.g., trailering of small vessels). Vessel hulls, decks, propellers, lower units on outboard motors, and mooring lines will be washed and inspected carefully to remove aquatic plants, attached mussels and crustaceans, etc., prior to relocation of the vessels/equipment to another portion of the cable route or another waterbody.

On a Facility-wide basis, the Certificate Holders will perform the following measures to prevent or control the transport of aquatic invasive species in accordance with applicable regulations and guidance from NYSDEC and the New York Invasive Species Council:

a) Train and educate Facility contractor(s) and subcontractor(s) to identify aquatic invasive species and site-specific prescriptions for preventing or controlling their transport throughout or off of the Facility site;

b) Require that vessels, equipment, and materials be inspected for, and cleaned of, any visible vegetation, algae, organisms and debris before bringing them to the Facility area;

c) Train Facility contractor(s) and subcontractor(s) on the various cleaning or decontamination methods to be used on a site-by-site basis for the Facility;

d) Require that vessels, equipment, and materials be inspected for, and cleaned of, any visible vegetation, algae, organisms and debris before leaving the waterbody for another; and

e) Where the NYSDEC has identified the presence of Rock Snot or Didymo *(Didymosphenia geminata)*, any footwear used in streams or waterbodies will be soaked in a one (1) percent solution of Virkon® Aquatic for ten (10) minutes before leaving the area adjacent to the affected waterbody.

f) No vessel discharges of ballast water or sanitary waste will be allowed within the Facility area.

21.4 FRESHWATER

The freshwater environments along the cable route include the shallow and deep water habitats within Lake Champlain, fringing lacustrine wetlands within embayments of Lake Champlain, and riverine and wetland habitats in the upper Hudson River. A variety of non-indigenous, invasive species have been documented from Lake Champlain, and the Upper Hudson River; notable species include:

Zebra mussel

The invasive non-native zebra mussel (*Dreissena polymorpha*) arrived in Lake Champlain in the early 1990s and has since colonized the entire basin system. Zebra mussels are filter feeders that consume large quantities of plankton. The result has been increased water clarity and subsequent aquatic plant growth in shallow areas of the lake which has dramatically altered the lake's native benthic community. The zebra mussel has also colonized the tidal freshwater portion of the Hudson River Estuary but is excluded from the lower Estuary and the marine portion of the cable route by the species' intolerance of saline water. Zebra mussels readily attach to hard surfaces by mean of byssal threads, and are transported throughout a waterbody, or from one waterbody to another on vessel hulls, floating docks, pontoon, and other submerged or floating construction equipment.

The Certificate Holders will perform the following measures to prevent or control the transport of zebra mussels:

a) All construction equipment will be carefully inspected and washed-down to remove attached mussels (and other epiphytes) from hulls, decks, and mooring lines.

Spiny Water Flea (*Bythotrephes cederstroemi*)

This invasive zooplankter is widely distributed throughout the Great Lakes and the St. Lawrence Seaway. It has recently been documented in Sacandaga Lake, which connects to Lake Champlain and the Hudson River via the Sacandaga River and Lake Champlain Canal. To date, no spiny water fleas have been collected within Lake Champlain or the upper Hudson River; however, it is anticipated that it will make its way into these waterbodies in the near future. Spiny water fleas are difficult to detect by virtue of their small body size and transparent appearance, and they readily attach to vessel mooring lines and other submerged structures.

The following measures will be performed to prevent or control the transport of spiny water fleas:

a) All construction vessels and equipment (including mooring lines) will be washed and inspected prior to leaving a waterbody for another.

Rusty Crayfish

A variety of crayfish species are present in the Hudson River and Lake Champlain drainages, many of which are non-native to the region. However, the rusty crayfish (*Orconectes rusticus)* has in recent years rapidly expanded within the Hudson drainage and nearby waters, where it has competitively displaced other native and non-indigenous crayfish species.

Although it is unlikely that rusty crayfish would be encountered in the deeper waters where the majority of cable installation activity is likely to take place, the following measures will be employed to prevent transportation of rusty crayfish (or other macrocrustaceans) from one waterbody to another:

a) Equipment used in shallow waters and stream crossings will be inspected for and cleaned of rusty crayfish (or other macrocrustaceans) prior to leaving a waterbody for another.

Eurasian Water-Milfoil

Several species of non-indigenous submerged aquatic plants occur in the Lake Champlain and Hudson River drainages. Of these, the most aggressive invader is Eurasian water-milfoil (*Myriophylum spicatum*). Eurasian water-milfoil is widespread in Lake Champlain, particularly the southern end of the lake, in the Champlain Canal, and also in the Hudson River, where it is abundant in shallow areas throughout the tidal freshwater portion of the estuary and into the brackish estuary as far south at Piermont, New York. Eurasian water-milfoil continues to occupy an extensive range throughout the lake. New infestations of Eurasian water-milfoil are discovered nearly every year. Fragments attached to trailered boats are the likely cause of these overland introductions.

The Certificate Holders will perform the following measures to prevent or control the transport of Eurasian water-milfoil:

a) Existing submerged plant beds will be avoided where possible. For the majority of the cable route in the lake, water depths exceed those that support submerged plant beds; it is only in the narrow southern end of the lake that cable installation activity is likely to occur in proximity to these habitats;

b) Construction in infested areas will take place only during non-germination periods; and

c) Vessel hulls, decks, mooring lines and submerged construction equipment will be carefully inspected and cleaned prior to deployment to another location.

Water Chestnut

Water chestnut, an annual aquatic plant native of Europe, Asia, and Africa, was first documented in Lake Champlain in the early 1940s in shallow bays in the southern end on both the Vermont and New York shores. It is generally assumed that water chestnut seeds entered Lake Champlain on boats traveling through the Champlain Canal from the Mohawk or Hudson River, where it had initially become established in the 1870s. Water chestnut displaces other aquatic plant species, is of little food value to wildlife, and forms dense mats that alter habitat and interfere with recreational activities. Currently, extensive growth of water chestnut in southern Lake Champlain restricts boat traffic and other recreational uses.

Prevention and minimization of the transport of water chestnut from one portion of the cable route to another, especially from the lower end of Lake Champlain to more northern reaches, is similar to that for other aquatic vegetation species. The following measures will be performed to prevent or control the transport of water chestnut:

a) Existing submerged plant beds will be avoided where possible. For the majority of the cable route in the lake, water depths exceed those that support water chestnut beds; it is only in the narrow southern end of the lake that cable installation activity is likely to occur in proximity to these habitats;

b) Construction in infested areas will take place only during non-germination periods; and

c) Vessel hulls, decks, mooring lines and submerged construction equipment will be carefully inspected and cleaned prior to deployment to another location.

Invasive Wetland Plants (e.g., Common Reed, Purple Loosestrife)

In the event that cable installation or activities will entail construction or transport of equipment through freshwater wetlands in the vicinity of Lake Champlain or of the upper Hudson River), care will be taken to avoid the spread of invasive wetland plant species, notably common reed (*Phragmites australis*) and purple loosestrife (*Lythrum salicaria*). In wetland areas, where these invasive species are known to occur, the following measures will be implemented:

a) Construction equipment and field gear (including waders or rubber boots) will be inspected and washed to remove stems, root or rhizome structures and marsh sediments which could contain seeds of these species.

21.5 ESTUARINE

The estuarine environments along the cable route include the shallow and deep water habitats within the lower Hudson, Harlem and East Rivers, and fringing tidal wetlands within the freshwater tidal and brackish portions of the lower Hudson River. A variety of non-indigenous, invasive species have been documented from the lower Hudson River and nearby coastal waters. Notable species include:

Atlantic Rangia

Native to the United States Gulf coast, the Atlantic rangia (*Rangia cuneata*) bivalve was first introduced in the lower Hudson River Estuary in 1988 and is now abundant in the Tappan Zee and Haverstraw Bay. Potential vectors of introduction to East Coast waters include ship ballast water and oyster restoration programs (using Gulf Coast shells or live oysters). The long-term ecological significance of the Atlantic rangia's introduction to the Hudson River is poorly understood; however, the potential effects of a successful benthic suspension feeder on trophic dynamics, native bivalves, and plankton communities in the lower Hudson River may be significant.

Unlike zebra mussels, Atlantic rangia are not able to attach to hard surfaces, and remain partially buried in the substrate. Thus, they are not able to "hitchhike" from one waterbody to another by attaching to vessel hulls or construction equipment. Nonetheless, care will be taken during construction or trenching activities in the lower Hudson to be sure that sediment containing Atlantic rangia is not transported to other coastal waters.

The following measures will be performed to prevent or control the transport of Atlantic rangia:

a) Vessel decks, hulls, and construction equipment will be carefully inspected and washed prior to moving to a new waterbody.

Invasive Estuarine Crustaceans

Three invasive crustaceans may be encountered among rocky shoreline habitats or man-made structures (e.g. bulkheads, cribbing, piers) in the marine portion of the cable route (Hudson River and Harlem/East Rivers). The Asian shore crab (*Hemigrapsus sanguineus*), native to the western Pacific, began to aggressively spread along the United States East coast in the 1990s and is now abundant in many shoreline areas, particularly in the vicinity of jetties or rock revetments as well as in natural rocky intertidal areas. The Asian shore crab is an aggressive omnivore and may out-compete native crustaceans such as blue crabs (*Callinectes sapidus*) and American lobster (*Homarus americanus*) for nursery and foraging habitat. The European green crab (*Carcinus maenus*) is native to the northeast Atlantic and Baltic seas but has colonized coastal areas and estuaries worldwide, mainly via introduction of early life stages present in ballast water and in

association with bivalve shells transported for aquaculture. Green crabs out-compete native crustaceans for food resource and habitat and they are aggressive predators on small bivalves, posing a serious threat to commercial shellfish and aquaculture industries in areas where this species has colonized. Both green crabs and Asian shore crabs are already widely distributed within shallow coastal environments in the northeast and mid-Atlantic United States.

Recently, another invasive crustacean has appeared in the Hudson River Estuary - the Chinese mitten crab (*Eriocheir sinensis*). Native to eastern Asia, the Chinese mitten crab is an important food in its native waters and supports a large aquaculture industry. The Chinese mitten crab is highly prolific and omnivorous, competing aggressively with native macrocrustacean populations where it has become established. Burrowing activity by Chinese mitten crabs resulted in extensive damage to shoreline infrastructure in western European rivers during the latter part of the 20th Century. Currently, the Hudson River population is being monitored. While observation/collections have increased within the past several two to three years, mitten crabs have not yet been implicated in population or ecosystem impacts such as competitive displacement of the native Hudson River blue crab.

Vessel hulls, props, lower units, and any sampling equipment of field gear used in the lower Hudson Estuary or East River portion of the cable route will be inspected to prevent the transport of adult green crabs, Asians shore crabs, or mitten crabs to other coastal waterbodies; however, the early life stages of these crabs are planktonic, and would be difficult, if not impossible to detect if they were to be attached to submerged construction equipment or mooring lines. As such, it will be necessary to wash all equipment with freshwater to remove species at this life stage.

In accordance with BMPs for other invasive species, the following measures will be performed to prevent or control the transport of invasive crustaceans:

a) All vessel hulls, submerged construction equipment, and mooring lines used in the lower Hudson Estuary or East River will be carefully inspected and washed with freshwater prior to moving to a different waterbody.

References - Section 21.0

[NYSDEC] New York State Department of Environmental Conservation. Interim List of Invasive Plant Species in New York State. Accessed online on September 23, 2010 at: http://www.dec.ny.gov/animals/65408.html

[NYSDEC] New York State Department of Environmental Conservation. Interim List of Invasive Plant Species in New York State. Accessed online on September 23, 2010 at: http://www.dec.ny.gov/animals/32861.html

[NYSDEC & APA] Inter-Agency Guidelines for Implementing Best Management Practices for the Control of Terrestrial and Aquatic Invasive Species on Forest Preserve Lands in the Adirondack Park, accessed online on July 25, 2011 at:

http://www.adkinvasives.com/documents/ADKTerrestrialandAquaticGuidelinesv3.25.10-FINAL.pdf

Mills, E.L., M.D. Scheuerll, D.L. Strayer and J.T. Carlton. 1996. Exotic species in the Hudson River Basin: A history of invasions and introductions. *Estuaries* 19:814-823.

22.0 ALTERNATIVE/CONFLICTING LAND USES

Procedures for identification of competing land uses in the Facility area are designed to ensure, when practicable, uninterrupted use by the public. Overland construction activities will primarily occur along an existing railroad right-of-way. The construction schedule will be established to minimize disruption to any identified competing land uses along the right-of-way.

Existing New York State Geographic Information Systems ("NYSGIS") data and local and regional land use maps were used to identify land use categories within six hundred (600) feet of the Facility right-of-way as part of the Article VII Application. This initial work will be re-confirmed as appropriate with special interest given to areas with sensitive land uses including: schools, health care facilities, churches, scenic areas and parks, and residences. Additional inquiry for some of these sensitive land use areas include:

a) Schools

   Schools will be identified from NYSGIS and other existing databases, and local and regional school internet sites. Local and regional school departments may be contacted as necessary.

b) Health Care Facilities

   Hospitals, nursing homes, and urgent care facilities along the Facility route will be identified through NYSGIS databases and internet searches. These facilities will be notified as appropriate.

c) Churches

   In addition to identification of churches along the Facility route, other areas of religious significance (e.g., cemeteries) will be identified.

d) Scenic Areas and Parks

   Scenic areas and parks along the Facility route will be identified and mapped as part of the EM&CP Process. The managing authority for each area will be consulted to determine if there are any potential uses or special events that may need consideration during construction work.

e) Residences

   Residential land owners with property adjacent to the Facility route will be identified. A list of these landowners along the underground and aboveground portions of the Facility will be compiled with contact information, and contacted to discuss the Facility, construction schedule, and any potential concerns.

Special concerns or timing issues will be noted on the construction drawings. Areas of sensitive land use, as described above, located within six hundred (600) feet of the work area will be mapped on the construction drawings. Landowners and others using the facilities described above may experience temporary disturbance and traffic inconvenience associated with construction activities, primarily at locations where the existing rights-of-way cross public roadways that will be used by construction vehicles to access the right-of-way. These effects will be temporary and, in general, most disturbances will last for only a brief period of a few days or a week at any particular location.

To minimize potential construction effects to adjacent landowners, the Certificate Holders will provide timely information to adjacent property owners or tenants regarding the planned construction activities and schedule, and will coordinate with NYSDOT, county officials in Washington, Saratoga, Schenectady, Albany, Greene, Ulster, Rockland, Westchester and New York Counties, and local police departments, as applicable, to develop and implement traffic control measures that ensure safe and adequate traffic operations along roadways used by construction vehicles. Permits for oversize and/or overweight construction or other vehicles that exceed the legal dimensions and weights for vehicles on State highways will be obtained from NYSDOT pursuant to 17 NYCRR Part 154.

23.0 STEEP SLOPES, HIGHLY ERODIBLE SOILS AND FLOOD PLAINS

This section describes how steep slopes, highly erodible soils, and floodplains along or adjacent to the Facility route were identified and the BMPs to be implemented in these sensitive locations.

Steep slopes and potentially highly erodible soils located along the Facility route were identified during a desktop analysis for the Article VII Application and additional field review conducted during development of the EM&CP may also identify areas where soil conditions are more susceptible to erosion. These areas will be identified on the EM&CP Plan and Profile drawings and site specific prescriptions to avoid or minimize impact will be identified.

A one hundred (100) year floodplain is determined based on the area with approximately one (1) percent annual chance of flooding. The Certificate Holders reviewed FEMA Flood Insurance Rate Mapping ("FIRM") along the Facility route and identified one hundred (100) year floodplains in the Article VII Application. Floodplains will be identified on the EM&CP Plan and Profile drawings.

BMPs for addressing erosion and sediment control will be installed prior to and maintained in acceptable condition throughout the duration of any clearing and earthmoving operations. Erosion and sediment control devices will be installed in accordance with general permit conditions and regulatory approvals. Additional mitigation measures for steep slopes, highly erodible soils and floodplains are included here and will be implemented by the Environmental Inspector where necessary to prevent adverse impacts. Temporary measures will be continually monitored and maintained until the permanent ground cover within the affected area is established. At that point, temporary measures will be removed from the site.

23.1 CONSTRUCTION – STEEP SLOPES

Protection measures will be implemented to ensure minimization of impacts to erodible soils on steep slopes during construction, including the following:

a) The Certificate Holders will minimize work on steep slopes to the extent possible during preconstruction, construction, operation and maintenance activities;

b) Steep slopes and highly erodible soils will be delineated in the field prior to the start of construction;

c) The Environmental Inspector will replace flagging, as needed, so that boundaries of steep slopes, highly erodible soils and other sensitive areas are clearly marked in the field;

d) Erosion and sediment controls will be installed, as needed, before any ground disturbing activities occur, and will be maintained throughout the construction period until soils are properly stabilized in accordance with *New York Standards and Specifications for Erosion and Sediment Control, SPDES General Permit* and the facility-specific SWPPP;

e) Extra work spaces and material storage areas will be located off of steep slopes, if possible;

f) Any temporary access routes or parking areas adjacent to steep slopes will be graded to direct runoff away from the exposed soils. The Environmental Inspector will determine if additional erosion control measures such as water bars or temporary open-top box culverts will be necessary based on site-specific conditions;

g) In additional to the stormwater management methods outlined in the SWPPP, in areas of steep slopes stormwater management will be designed to promote sheet flow and prevent stormwater from entering an open trench on a steep slope via berms or other physical means;

h) On steep slopes, construction vehicles and equipment will be limited to established access roads and construction work spaces depicted on EM&CP Plan and Profile drawings;

i) Stormwater infiltrating the ground surface immediately adjacent to the trench line may seep into the trench (higher pressure to lower pressure) carrying soil particles with it. This may increase erosion and cause instability of the trench walls. If this condition is present, temporary trench stabilization will be installed;

j) After installation is completed and the trench is backfilled, the Certificate Holders will immediately prepare the site for restoration;

k) Any stockpiled material or spoil required to be stored on steep slopes will be protected with silt fencing and straw bales, and will be covered or stabilized;

l) Disturbed soils on steep slopes will be stabilized at the end of each work day; and

m) Vegetation clearing on steep slopes will be minimized to the extent possible.

Additional details on stormwater management devices are described in Section 4.0.

23.2 RESTORATION – STEEP SLOPES

Restoration is the primary mitigation measure during unavoidable construction in highly erodible soils, as standard conservation treatment and management may not be adequate to prevent erosion in these locations. Restoration of steep slopes will include the following:

a) All structural controls on steep slopes that have not been permanently stabilized will be inspected once each week or within twenty four (24) hours after a one-half (0.5) inch or larger rain event. Maintenance of structural controls will be in accordance with the sediment and erosion control plan;

b) Gullied, rilled, or rough sites will be smoothed and shaped to permit the use of equipment for plantings. If seed beds cannot be immediately established, mulch will be applied immediately following site preparation;

c) The soil will be pulverized to a minimum depth of four (4) inches and harrowed to a uniformly smooth surface. Lime and fertilizer will be incorporated during seed bed preparation;

d) Grass and legume site preparation will be in accordance with Natural Resources Conservation Service ("NRCS") standard *Establishing Grasses and Legumes on Critical Areas (Specification 342-1), November 2006*;

d) Fertilizer and lime will be applied in accordance with the NRCS standard *Nutrient Management* (Specification 590-1);

e) Seed will be planted on a well prepared firm seedbed. To achieve best results on steep slopes and floodplains, the freshly prepared seed bed will undergo cultipacking before and after planting. If a cultipacker cannot be used at the area, water truck spray will be used to settle a freshly prepared seedbed before planting, followed by harrowing before planting seed. Seed will be covered lightly. Seeds will not be sowed into a wet seed bed;

f) On steep slopes where straw mulch is used at planting sites, the Environmental Inspector will determine if the straw will be anchored by crimping or punching the straw into the soil with hand implements as an alternative to hydromulching or erosion control blankets. On slopes greater than 2:1, where crimped straw mulch is used, a tackifier will be applied to increase stability;

g) If restoration is completed before or after the planting season for permanent cover, a temporary cover will be planted to limit soil erosion until the permanent cover can be established. Temporary cover of winter wheat (ninety (90) pounds per acre broadcast) will be used. Permanent seed will be applied with a no-till drill into the stubble after the crop has been mowed or directly into the soil through the standing crop;

h) Solid sod may be applied at some steep slope locations where establishment of vegetative cover from seed or plantings is impractical. In such cases, solid sod will be placed on a well prepared firm soil base. Areas to be sodded will be watered to wet the soil two to three inches deep on the day of planting, prior to placement of the sod. Special care during water application is paramount to ensure the soil is watered to the proper depth and to prevent erosion or sedimentation. Steps taken will include:

    i. If sod is utilized, sod must be ninety (90) percent pure and free of weeds and weedy grasses.

    ii. Sod must not be allowed to dry out, freeze, or overheat after harvesting and prior to placement.

    iii. Sod must be transferred and placed within twenty four (24) hours of harvesting.

iv. Cut sod must be at least two (2) inches thick, excluding top growth.

v. Sod will be fit closely together.

vi. Joints will be staggered.

vii. Roll or tamp sod after placement to ensure contact of the grass roots with the soil.

viii. On slopes greater than 4:1, secure the sod to the soil with wooden pegs or staples.

ix. Cover the upper edge of the sod area with soil retention blankets. Use wire staples to secure soil retention blankets.

x. Immediately after sod installation, water the sod until moisture penetrates to the soil beneath.

xi. Maintain adequate soil moisture for at least two weeks to insure establishment of the sod.

23.3 POST-PLANTING EROSION CONTROL – STEEP SLOPES

All planted areas except those to be used for hay, grazing, or where solid sod was applied will be mulched with small grain straw or grass mulch as needed until the planting is established. Mulching will be completed in accordance with NRCS *Mulching Practice* Code 484 and the SSESC. Two (2) tons per acre of small grain straw or hay will be applied. Mulch will be applied evenly resulting in ninety (90) percent groundcover. Where erosion hazards are very high (>15 percent slope), rolled erosion control products (fiber mats) and hydroseeding will be used.

23.4 POST-RESTORATION MONITORING – STEEP SLOPES

Successful vegetation restoration is the primary mitigation measure against soil erosion on steep slopes. As a result, the post-restoration monitoring will be more aggressive initially than the monitoring proposed for the remainder of the route.

a) Inspections will be completed monthly from months zero (0) to six (6), every other month from months six (6) to eighteen (18), then semi-annually from months eighteen (18) to thirty (30). Inspections will include assessment for rill formation, loss of mulch, and erosion features; and

b) The status of the vegetation and erosion control features will be documented. If erosion repairs are completed and an area is essentially re-seeded, the monitoring schedule will return to the beginning. If the repairs are minor, supplemental, or not required, the monitoring schedule will revert to the general Facility route schedule following the 30th month.

23.5 CONSTRUCTION – FLOODPLAINS

The following standards will apply when working in floodplains:

a) Work within floodplains will be minimized to the extent possible during preconstruction, construction, operation and maintenance activities;

b) Boundaries of one hundred (100) year floodplains will be highlighted with streams, wetlands, and other water resources on the EM&CP Plan and Profile drawings;

c) The boundaries of floodplains within the construction area and along access routes will be re-flagged prior to the start of work. The Environmental Inspector will replace flagging, as needed, so that boundaries are clearly marked in the field;

d) Temporary access roads will, where possible, be constructed using native soils to minimize imported materials that may require removal when the road is deactivated. Where the addition of imported materials is necessary to provide a stable road base these will be kept to an absolute minimum consistent with the duration of use and loads to be carried;

e) Where construction equipment must cross floodplains with saturated soils, a crossing method will be selected that is appropriate to the site-specific conditions pertaining to soil moisture, vegetative characteristics, and depth of topsoil layer;

f) In floodplains with saturated soils (i.e., water at or near the surface), prefabricated wooden mats or equivalent will be used to provide support for equipment. These will remain in place until the completion of construction in that segment of the Facility route and, if appropriate, restoration. If final restoration will not occur until the next growing season wooden mats or equivalent will be removed until restoration resumes;

g) Unless required for a permanent floodplain crossing, all prefabricated mats will be removed from temporary access ways no later than following final restoration;

h) Low pressure wide tracked equipment may be used in floodplains with saturated soils without support, depending on substrate type and degree of saturation (e.g., water depth) and on the extent of rutting caused by this equipment;

i) In floodplains with non-saturated soils that have a firm substrate, standard construction equipment may be utilized;

j) Where practicable, existing access ways will be used in floodplains;

k) The need for and placement of additional erosion controls in floodplains will be determined on a site-specific basis, based on factors such as weather conditions during all work activities, vegetative cover, hydrologic regime, and the construction sequence. All plans will be represented on the EM&CP Plan and Profile drawings;

l) Such temporary erosion controls in floodplains will be removed in a timely manner after restoration is complete;

m) Disturbed portions of floodplains will be regraded to restore preconstruction contours and normal hydrology;

n) On floodplains, spoil or excavated materials will be stored at least hundred (100) feet from wetlands and streams wherever possible. All excavated materials will be stored at a sufficient distance to prevent sedimentation into any stream, wetland, wetland adjacent area, or other waterbody, or erosion of the stream bank. If no other storage area is available, spoil will be covered and erosion/sedimentation control measures will be installed to prevent materials from eroding and entering into adjacent areas from stormwater or flooding;

o) Excavated material in floodplains that is determined to be excess material will be disposed of in approved upland locations outside of the floodplain; and

p) For construction activities along segments of the route that follow railroad rights-of-way, floodplain areas will be avoided where possible through the use of railroad access. Use of low ground pressure vehicles and minimal use of permanent fill will be given high priority during design of construction access in flood-prone areas.

q) No construction equipment or Facility materials shall be left, parked, staged, or stockpiled within a designated floodplain for longer than twenty-four (24) hours at a maximum.

r) Cut timber and slash will not be stacked or stockpiled piled on floodplains.

23.6 RESTORATION-FLOODPLAINS

All construction in floodplain areas will be restored to pre-facility conditions. Native vegetative cover will be restored to the extent practicable and no fill will be allowed. If fill is necessary, the Environmental Inspector must ensure the material matches the physical characteristics of the original material.

a) There will be no permanent change in topography within any designated floodplain.

b) Upon completion of the construction activities, all disturbed areas will be stabilized in accordance with the most current version of the SSESC.

24.0 VISUAL RESOURCES

This section identifies visual resources within or adjacent to the Facility area and measures to minimize visual impacts on these resources. Visually sensitive resources have been identified in the following sections of the Article VII Application:

a) The *Visual Assessment Report* identifies visual resources within the vicinity of the proposed permanent aboveground facilities located in Yonkers and Astoria, New York.

b) *Exhibit 4, Section 4.2 Land Use* of the Article VII Application identifies visual resources within six hundred (600) feet of the construction corridor.

c) *Exhibit 4, Section 4.10 Historic Resources* of the Article VII Application, identifies historic resources along the construction corridor.

Although permanent visibility and visual impacts of the Facility are not anticipated other than at locations of above-ground facilities including the proposed converter station, substation, Facility marking signs and areas of significant tree removal, there will be temporary visual impacts during construction. The majority of visual impacts will be caused by the large equipment necessary for Facility construction which will be seen along the Facility route for a limited amount of time. Visual impacts due to Facility construction will be unavoidable. There will be numerous types of construction vehicles and ancillary equipment setups that pertain to various construction methodologies (Sections 5.0, 6.0, 7.0 and 8.0, respectively).

Good housekeeping practices and removal of temporary stormwater and erosion controls such as silt fence, straw bales, and mulch, construction debris or blast rock during the various stages of construction will serve as safe operation procedures as well limiting visual impact. Tree protection measures for visually sensitive areas are described in Section 5.7. Restoration of these areas is described in Section 11.2.2.

Converter station site tree protection measures and landscape planting measures will be developed for preserving and restoring screening or other important vegetation including specimen trees, landscape screens, park lands, and other sites.

24.1 OVERLAND CABLE IMPACTS

Primarily overland construction activities will occur along an existing railroad right-of-way. The construction corridors are expected to range between twenty (20) to fifty (50) feet wide. Temporary visual impacts along the overland portions of the Facility route due to construction activities are expected to be of short duration, ranging from a few days to a few weeks in a given area. Due to the variety of subsurface material that could be encountered, it is not possible at this point to specify how long work crews might remain in a particular area.

In certain instances or for portions of the work it will be necessary for vehicles to arrive and depart from work areas via local roadways, thereby increasing visible truck traffic. When

possible, the majority of supplies and equipment for cable laying will be transported along the railroad.

Existing vegetation that serves as a buffer in visually sensitive areas, such as road crossings, scenic areas, and viewpoints, will be maintained where the vegetation will not interfere with the integrity of the cables or safe installation of the Facility. Buffer vegetation in sensitive visual areas that will be retained will be clearly marked on the EM&CP Plan and Profile drawings and marked in the field to avoid unintentional clearing.

Visual impacts associated with clearing are expected to be minor. Most of the vegetation that will be impacted along the overland portions of the Facility route consists of previously disturbed herbaceous and/or shrubby cover within the existing railroad rights-of-way, which for the most part does not provide any visual buffer of the railroad corridor from adjoining properties. Herbaceous vegetation and successional shrubs within the areas impacted by construction are expected to recover quickly following restoration and stabilization of the construction corridor. In some instances additional off-railroad right-of-way property will need to be utilized for temporary construction work space. In very limited areas permanent right-of-way will be required away from the railroad right-of-way. In areas of construction outside of the railroad right-of-way a greater potential exists for removing significant buffer vegetation between sensitive receptors and the railroad. Each of these areas will be evaluated on a case by case basis with the involved landowner and mitigation measures will be taken if appropriate. To minimize impacts to forested communities and the potential for visual impacts, the Certificate Holders will minimize clearing in visually sensitive areas to the minimum necessary to properly install the cables.

Vegetative buffers in visually sensitive areas will be restored, as necessary, except where replacement would inhibit or impair the safe operation of the cables. All vegetation replaced will have a minimum one (1) year survival guarantee. Limbs damaged by construction activities will be pruned to arboricultural specifications.

Temporary erosion controls will be removed once revegetation is established. Revegetation will be monitored until there is a minimum of eighty (80) percent regrowth.

Permanent visual impact at the converter station is expected to be minimal. The converter station will be housed in a commercial building that is similar in visual appearance to the adjacent buildings. Facility outdoor lighting will be designed to avoid, to the extent feasible, off-site lighting impacts. Exterior lighting design will be based on an assessment of lighting illumination levels needed for worker and workplace safety. A lighting plan will be provided as part of the converter station site plan review in the EM&CP documents. Use of task lighting, and full cutoff fixtures with no dropdown optics will be assessed in lighting evaluation and specification plans.

The Facility is proposed to interconnect to an existing substation so there will be no visual impact associated with this facility component.

24.2 ON-WATER AND UNDERWATER CONSTRUCTION

During underwater cable installation there will be increased vessel activity along the affected waterbodies. Cables will be laid by specialized cable laying vessels or a specially outfitted laybarge, depending on navigation constraints along the route. There are no methods to visually mitigate these activities. The increase in temporary construction traffic along the underwater portion of the Facility route is expected to be minimal. The temporary nature of Facility construction vessels may add temporal interest in the river and lake landscapes traversed by the Facility route.

25.0 NOISE IMPACT AND MITIGATION

25.1 NOISE SENSITIVE RECEPTORS

Significant or sensitive noise receptors include, but are not limited to, residences, schools, hospitals and libraries. Sensitive receptors along the Facility route will be identified prior to cable installation construction. Prior to the commencement of construction activities for the Facility, a more detailed survey will be conducted to identify noise sensitive areas in close proximity to the cable route. The receptors will be identified through a review of aerial photography and during the detailed EM&CP walk over and appropriate noise mitigation plans will be developed.

A noise mitigation plan will be developed for the converter station site that will include: hours of construction; materials handling and construction related activities; use of low noise equipment (transformers, fans and etc.); Facility design to avoid community complaints from noise levels or the generation of pure tones.

25.2 REMEDIATION AND CONTROL

25.2.1 Noise Control Measures for Equipment and Linear Construction

Construction work in the vicinity of any single receptor along the Facility route will likely last a few days to a week, as construction activities move along the cable route. Construction will typically include the following activities:

a) Site clearing and preparation;

b) Vegetation removal;

c) Mobilization and equipment delivery;

d) Trenching and cable laying;

e) Cable pulling/splicing;

f) Horizontal boring/jacking (if required);

g) Pile-driving and sheeting/shoring installation;

h) Backfilling and right-of-way restoration;

i) Electrical equipment installation; and

j) Commissioning and start-up.

A variety of construction equipment sources will be associated with each phase. Provided below is a listing of typical ranges of equipment sound levels from the construction equipment associated with each construction phase at a standard distance of fifty (50) feet and a distance of four hundred (400) feet.

Table 25.1
Construction Phase Noise Levels of the Transmission Line

Construction Phase	Construction Equipment Noise Levels (dBA)	
	50 Feet	400 Feet
Site Clearing and Preparation	60 to 90	42 to 72
Trenching	60 to 90	42 to 72
Cable Laying	50 to 90	32 to 72
Backfilling	73 to 84	35 to 66
Cable Pulling/Splicing	50 to 80	32 to 62

Source: Ebasco Environmental –Sound Cable Project (1987).

Site clearing includes the use of industrial mowers and chain saws as needed. Removal of vegetation will not be significant enough to affect noise propagation offsite. As presented above, maximum noise levels associated with the construction equipment are anticipated to not exceed ninety (90) decibels ("dBA") at a distance of fifty (50) feet.

The noise levels presented are those that would be experienced by people outdoors. A building will provide significant attenuation of associated construction noise impacts. For instance, sound levels can be expected to be up to twenty seven (27) dBA lower indoors with windows closed. Even in homes with windows open, indoor sound levels can be reduced by up to seventeen (17) dBA (USEPA 1978).

In addition to these mitigating factors, noise control measures for cable construction include the following:

a) Locating equipment yards and marshalling areas away from noise-sensitive receptors as practical;

b) Installing improved mufflers on heavy construction equipment when used in close proximity to noise sensitive areas;

c) Utilizing low-noise technologies (e.g., vibratory pile drivers) as appropriate;

d) Limiting construction of high noise level activities (e.g., wood chipping, pile driving, rock drilling, blasting, excavation and loading) to non-overnight hours as much as possible when construction is conducted in close proximity to noise-sensitive receptors; and

e) In extreme cases, install temporary sound barriers to reduce noise levels or offer temporary lodging for residents adversely affected.

25.2.2 Noise Control Measures for Point Source Producers

Noise control measures for point sources (e.g., HDD, or other activities that remain in a single location for an extended period of time) including the following:

a) Limiting construction to non-overnight hours as much as possible when construction is conducted in close proximity to noise-sensitive receptors; and

b) Installation of temporary wooden sound barriers to reduce noise levels.

25.3 CONVERTER STATION

Specific noise control measures are not anticipated for the converter station. The proposed converter station building itself is a noise control measure that will act to both reduce noise from sources inside the building, and will act as an effective barrier of facility sources (e.g., cooling fans and transformers) to offsite noise sensitive areas. No other noise control measures are anticipated for operational noise.

26.0 CONSTRUCTION WINDOWS

26.1 OVERLAND CONSTRUCTION

The Certificate Holders have worked closely with federal and state agencies to establish construction windows (i.e., no work windows) to avoid and/or minimize any potential impacts to TE species and their occupied habitats, or RTE plants, sensitive resources, and any identified NYSDEC-protected streams. The following construction windows for work along the overland portion of the Facility are proposed:

a) Work that must occur within any identified NYSDEC-protected streams (Class C/Standard T or higher Class/Standard streams or regulated adjacent area) will be highly restricted to avoid or minimize impacts to stream banks, water quality, and wildlife. More specifically, most designated trout streams are anticipated to be crossed using the HDD method thereby avoiding disturbance of these streams. If a dry crossing is proposed and approved by DPS and NYSDEC for any of these streams, the Certificate Holders will adhere to the proposed timing restrictions of June 15 through September 30 and discuss and develop, as necessary, mitigation measures with the appropriate agencies.

b) The Certificate Holders will avoid construction within or immediately adjacent to occupied Karner blue butterfly and/or frosted elfin habitats during the adult flight periods (approximately May-August) to avoid and/or minimize potential mortality of adults that may be nectaring or traveling between habitat areas. Because adult flight periods may vary from year to year, the Certificate Holders will contact NYSDEC prior to starting construction within any identified habitat areas to confirm that adults have not emerged.

c) The Certificate Holders will avoid construction during scheduled events at cultural resource sites and heritage areas as identified in the EM&CP.

Any potential timing windows will be provided to DPS and NYSDEC staff and other resource agencies for review prior to the start of construction. Details on construction timing and exclusions will be included in the EM&CP.

26.2 UNDERWATER CONSTRUCTION

The Certificate Holders will avoid designated Exclusion Zones and SCFWHs to the maximum extent possible. All in-water work will be conducted within the construction windows specified in the Certificate Conditions and the Water Quality Certificate.