Dunkirk Natural Gas Pipeline Project

Case 14-T-0360

Environmental Management and Construction Plan

Prepared by

Dunkirk Gas Corporation

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TABLE OF CONTENTS

Section **Page**

I. GENERAL DESCRIPTION OF THE PROJECT 1

1. Introduction 1
1.1 Project Description 1
1.2 Project Schedule 3

II. GENERAL PLANNING OBJECTIVES AND PROCEDURES 5

2. Supervision and Inspection 6
3. Procedures for the Identification and Protection of Sensitive Resources 8
3.1 Rare and Endangered Species and Their Habitats 8
3.2 Cultural Resources 8
3.3 Streams, Wetlands and Other Water Resources 9
3.3.1 Streams and Watercourses 9
3.3.2 Wetlands 9
3.4 Active Agricultural Lands 10
3.5 Alternative/Conflicting Land Uses 11
3.6 Steep Slopes, Highly Erodible Soils and Floodplains 11
3.7 Timber Resources, Commercial Sugarbushes, and Unique/Old Growth Forests 12
3.8 Officially Designated Visual Resources 12
4. Land Requirements 13
4.1 Permanent ROW 13
4.2 Temporary ROW 14
4.3 Extra Work Space 14
4.4 Associated/Appurtenant Facilities 14
4.5 Compressor Stations 15
4.6 Temporary Storage, Fabrication, and Other Construction Related Sites 15
5. Site Preparation 16
5.1 Staking and Right-of-Way Delineation 16
6. Vegetation Clearing in Upland Areas 17
6.1 Equipment 17
6.2 Clearing Methods and Procedures in Upland Areas 17
6.3 Log Disposal 19
6.4 Slash and Stump Disposal 19
6.5 Trimming and Pruning Branches 20
6.6 Vegetation Buffer Areas 20
6.7 Walls and Fences 21
6.7.1 Stone Walls 21
6.7.2 Fences 21
7. Grading in Upland Locations 22
7.1 Techniques and Equipment 22
7.2 Topsoil Stripping and Segregation 22
7.2.1 No Striping 23
7.2.2 Ditchline 23

7.2.3 Ditch and Spoil 23
7.2.4 Full Width Stripping 23
7.3 Access Roads and the Construction Paths 24
7.3.1 Construction Paths 24
7.3.2 Off-ROW Access Roads 24
8. Erosion and Sedimentation Control 26
8.1 Measures and Devices 26
8.1.1 Straw or Hay Bale Dikes and Silt Fence 27
8.1.2 Water Diversion Devices 27
8.1.3 Waterbars 28
8.1.4 Temporary Swales and Earth Dikes 28
8.1.5 Side Ditches 29
8.1.6 French Drains 29
8.1.7 Temporary Culverts 29
8.1.8 Sediment Retention and Filtration Devices 30
8.1.9 Catchment Basins 30
8.1.10 Mulch and Other Soil Stabilizers 30
8.1.11 Drivable Berms 30
8.1.12 In Street Devices 30
8.2 Fugitive Dust 31
9. Trenching 31
9.1 Trenching Equipment 31
9.2 Ditch Width and Cover Requirements 31
9.3 Length and Open Trench 32
9.4 Temporary Ditch Plugs 32
9.5 Blasting 33
9.5.1 Pre-Installation Studies 33
9.5.2 Monitoring and Inspection 34
9.5.3 Time Constraints and Notification 34
10. Pipelaying 34
10.1 Pipeline Stringing 35
10.2 Fabrication 35
10.3 Trench De-Watering 36
10.4 Lowering In 36
10.5 Trench Breakers 36
10.6 Padding 36
10.7 Backfilling 36
11. Waterbody Crossings 37
11.1 Spill Prevention 44
11.2 Buffer Areas 44
11.3 Installation 45
11.3.1 Equipment Crossings 45
11.3.2 Concrete Coating 46
11.4 Dry Crossing Methods 46
11.4.1 Trenching 46
11.4.2 Lowering In/Pipe Placement 47

11.4.3 Trench Backfill 47
11.4.4 Clean-up and Restoration 47
11.5 Dry Stream Crossing Techniques 48
11.5.1 Boring and Pipe Push 48
11.5.2 Directional Drilling 48
11.5.3 Other Dry Crossing Methods 49
a. Flume Method 49
b. Dam and Pump Around Method 50
12. Wetland Crossings 51
12.1 Wetlands Identification and Crossing 51
12.2 Timing and Scheduling Constraints 56
12.3 Clearing Methods 56
12.4 Construction Path and Access Road Construction 56
12.4.1 No Road or Pathway 57
12.4.2 Bridges and Flotation Devices 57
12.4.3 Timber Mats 57
12.4.4 Log Rip Rap (corduroy) Roads 58
12.4.5 Filter Fabric and Stone Roads 58
12.5 Grading 59
12.6 Trenching 59
12.6.1 Standard Trenching 59
12.6.2 Trenching Off Timber Mats 59
12.6.3 One Pass In-Line Trenching 60
12.6.4 Modified One Pass In-Line Method 60
12.7 Directional Drill, Conventional Bore or Guided Bore 60
12.8 Spoil Placement and Control 61
12.8.1 Topsoil Stripping 61
12.9 Ditch Plugs in Wetlands 61
12.10 Pipe Fabrication and Use 61
12.10.1 Concrete-Coated Pipe 61
12.10.2 Fabrication 62
12.11 Trench Dewatering 62
12.12 Backfill 62
12.13 Clean-up and Restoration 63
12.13.1 Restoration 63
12.13.2 Clean-up 63
13. Agricultural Lands 63
13.1 Clearing 64
13.2 Grading and Topsoil Segregation 65
13.2.1 Grading 65
13.2.2 Topsoil Segregation 65
a. Cropland 65
b. Pasture/Grazing 66
13.3 Drain Lines 66
13.4 Trenching 66
13.5 Backfilling and Grading 67

13.6 Clean-up and Restoration 67
13.7 Revegetation 68
13.7.1 Seed Mixtures 68
13.7.2 Timing 68
13.7.3 Mulching 68
13.7.4 Temporary Diversion Berms 68
13.8 Remediation and Monitoring 68
14. Invasive Species Control 69
15. Testing 70
16. General Clean-Up and Restoration 71
16.1 Objectives 71
16.2 Clean-up 71
16.3 Restoration 72
16.3.1 Wooded and Non-Agricultural Uplands 72
a. Grading 72
b. Lime Application 73
c. Fertilizing 73
d. Discing and Raking 74
e. Seeding and Planting 74
16.3.2 Restoration - Urban/Residential 75
17. Noise Impact and Mitigation 75
17.1 Noise Sensitive Receptors 76
17.2 Remediation and Control 76
17.2.1 Noise Control Measures for Equipment and Linear Construction 76
17.2.2 Noise Control Measures for Point Source Producers 77
17.3 Compressor Stations 77
18. Transportation and Utility Crossings 77
18.1 Objectives 77
18.2 Road and Highway Crossings 78
18.2.1 Permitting 78
18.2.2 Preconstruction Planning 78
18.2.3 Road Crossing Methods 79
a. Trenched or Open Cut: 79
b. Trenchless - Bore or Directional Drill: 80
c. Longitudinal In-Road Construction 80
18.2.4 Signs 81
18.2.5 Repairs and Restoration 81
18.3 Railroad Crossings 82
18.4 Utility Crossings 82
18.4.1 Overhead Electric Facilities 82
a. Perpendicular Crossings 82
b. Linear ROW Co-occupation 83
c. Underground Utility Crossings 84
19. Hazardous Materials/Spill Containment and Control 85
19.1 Regulatory Concerns 85
19.2 Spill Control Equipment 86

19.2.1 Upland 86
19.3 Storage and Handling 87
19.3.1 Storage 87
19.3.2 Equipment Refueling 87
19.4 Spill Response Procedures 88
19.5 Excavation and Disposal 88
19.6 Hazardous Waste Contact 89
20. Pipeline Operation, ROW Management and Maintenance 89
20.1 ROW Maintenance 89
20.2 Inspection 90
20.3 Vegetation Management 90
20.3.1 Mechanical Treatment 90
20.3.2 Chemical Treatment 91
21. Communications and Compliance 91
21.1 Communication with Staff and the Commission 91
21.1.1 Pre-filing Contact 91
21.1.2 Post-filing Contact 91
21.2 Compliance with Commission Orders and Certificates 91

LIST OF TABLES

Table No. **Page**

Table 1. Access Roads 25
Table 2. Waterbodies Crossed within Project ROW 39
Table 3. Wetland Crossings within Project ROW 52
Table 4. Roadways Crossed Construction Methods 79

APPENDICES

Appendix A EM&CP Plan and Profile Drawings
Appendix B Stormwater Management Calculations for the Proposed Meter Station and Access Road
Appendix C Invasive Species Control Plan
Appendix D Inadvertent Return Contingency Plan
Appendix E Hydrostatic Testing Plan
Appendix F Unanticipated Discovery of Cultural Resources or Human Remains Plan
Appendix G Landowner Easement Status
Appendix H HDD Drilling Profiles
Appendix I Gas Pipeline Construction Sequence when Paralleling or Crossing High Voltage Electric Transmission Lines

I. GENERAL DESCRIPTION OF THE PROJECT

1. Introduction

On August 13, 2014, Dunkirk Gas Corporation filed an application to the Secretary to the New York State Public Service Commission (Commission) seeking a Certificate of Environmental Compatibility and Public Need (Certificate) pursuant to Article VII of the Public Service Law (PSL) for the construction of the Dunkirk Natural Gas Pipeline Project (Project). The Project involves the construction of a new approximately 11.3-mile, 16-inch diameter buried pipeline and associated facilities to transport natural gas from the Tennessee Gas Transmission Mainline Pipeline in the southern portion of the Town of Pomfret, Chautauqua County, through the Town of Dunkirk, Chautauqua County to the Dunkirk Generating Station in the City of Dunkirk, Chautauqua County.

This Environmental Management and Construction Plan (EM&CP) is being submitted by Dunkirk Gas Corporation and reflects the environmental protection measures to be implemented during the construction of the Project. This EM&CP has been prepared in accordance with the "General Guidelines for Environmental Management and Construction Plans" (Guidelines).

Dunkirk Gas Corporation has coordinated with the New York State Department of Agriculture and Markets (NYSDA&M) for agricultural protection measures and with the New York State Department of Environmental Conservation (NYSDEC) and Department of Public Service (DPS) Staff concerning protection measures related to clearing, stream and wetland crossings, and water quality certification. According to the Guidelines, the Project EM&CP must provide details of anticipated construction methods, impact protection and mitigation measures, division of responsibilities for environmental supervision, compliance monitoring, and control, and Dunkirk Gas Corporation's goals of right-of-way (ROW) management for the certified facility.

1.1 Project Description

The Project involves the construction of a new approximately 11.3-mile, 16-inch diameter buried pipeline and associated facilities to transport natural gas from the Tennessee Gas Transmission Mainline Pipeline in the southern portion of the Town of Pomfret, Chautauqua County, through the Town of Dunkirk, Chautauqua County to the Dunkirk Generating Station in the City of Dunkirk, Chautauqua County.

Dunkirk Gas Corporation has developed and designed the natural gas pipeline route to reduce environmental impacts to the maximum extent possible. The proposed natural gas pipeline will be installed within a newly acquired permanent ROW up to 50 feet wide for which Dunkirk Gas Corporation will obtain by appropriated agreements and/or easements for.

The Project ROW is illustrated on the EM&CP Plan and Profile Drawings (Appendix A).

The proposed pipeline will be 16-inch diameter coated steel with a Maximum Allowable Operating Pressure (MAOP) of 760 pounds per square inch (psi), and will connect to the Tennessee Gas Transmission Mainline Pipeline via a new tap to be installed by the operator of that Federal Energy Regulatory Commission (FERC) regulated pipeline. The pipeline will be built in accordance with U.S. Department of Transportation (USDOT) Safety Standards as set forth in Title 49, Part 192 (Part 192) of the Code of Federal Regulations (CFR) and 16 NYCRR Chapter III, Gas Utility Regulations and Section 255.

The Project will include the construction of the following associated aboveground facilities: a metering station, a regulating station and two mainline isolation valves. The proposed regulating station will be located within the existing, industrialized property of the Dunkirk Generating Station, which is owned by Dunkirk Power, LLC an affiliate of Dunkirk Gas Corporation. The proposed metering station will be adjacent to the existing 26-inch Tennessee Gas Transmission Mainline Pipeline in the Town of Pomfret. Two mainline valves will be installed along the proposed pipeline to be able to shut down flow for maintenance and in emergency situations. Pig launching/receiving stations will be collocated with the regulating and metering stations. The locations of the associated facilitates are depicted on the EM&CP Plan and Profile Drawings (Appendix A).

Temporary access roads will provide access to the cleared ROW from local, state and public roadways during construction of the proposed pipeline. To the extent feasible, existing public and private road crossings along the proposed pipeline route will be used as the primary means of accessing the ROW; however, some temporary access roads will be located on private property, once permission is obtained from the appropriate landowners, in order to access the proposed pipeline ROW. The locations of the construction access roads are illustrated in the EM&CP Plan and Profile Drawings (Appendix A).

Along the pipeline route, additional temporary work spaces (ATWS) and staging areas will be necessary to construct the pipeline in a safe and environmentally responsible manner. The ATWS will typically be required when any of the following conditions are encountered:

- Utility crossovers and existing pipeline crossovers;
- Wetland crossings;
- River/stream crossings including ATWS required for the horizontal directional drills (HDD);
- Extra depth trench required;
- Road crossings;
- Parking areas; and
- Other site-specific constraints.

The ATWS and staging areas will be located along the ROW in upland, non-agricultural, non-forested lands. The location of the ATWS and staging areas are depicted on the EM&CP Plan and Profile Drawings (Appendix A).

1.2 Project Schedule

The construction schedule for the gas transmission facility will be planned to minimize area disruption within the constraints imposed by laws and regulations, while ensuring that Dunkirk Gas Corporation will be able to deliver natural gas to Dunkirk Power LLC on or around April 1, 2015 and avoid construction during the winter of 2015-2016. The construction of the gas transmission facility will be conducted in one phase, then sequentially, in spreads by small crews of workers. Initially, construction will involve clearing and disposal of cleared material, and will immediately thereafter involve pipeline construction activities (trenching through restoration). Pipeline construction activities may be awarded in three contracts, one for 16-inch pipeline, one for the construction of the meter and regulator stations and one with Tennessee Gas Transmission for the pipeline tap. Restoration will begin approximately two to three weeks following trenching. Full restoration of the right-of-way and disturbed areas, such as construction laydown areas, may require additional time after the installation activities in a given area or spread. Such work including final site stabilization and reseeding may be performed, during the growing season of the year following installation and thereafter as may be necessary to complete the restoration program.

It is anticipated that initial construction activities (initiating with stakeout and mobilization of clearing crews), will occur immediately following receipt of final approval of the EM&CP and required notifications. Clearing, construction, and restoration are anticipated to occur between April and December 2015. Total construction duration in 2015 is estimated at 32 weeks. It is anticipated that some restoration activities may occur in 2016. A summary of activities and approximate construction durations is as follows:

Summary of Activity	**Projected Date**
Issue bid RFP for pipeline construction	Early November 2014
Pre-bid meeting for clearing and pipeline construction	Late November 2014
Award contract for clearing and pipeline construction	Early March 2015
Mobilization/Clearing & Grading activities	Early April 2015
Pipeline construction start	Early May 2015
HDD work complete	Early July 2015
Facilities construction start….	Early July 2015
Pipeline construction and testing end (restoration continues)	Early December 2015
Facilities construction complete	Early December 2015

While a summarized schedule is provided here for information purposes, it is anticipated that the Contractor(s) awarded the Project will prepare a detailed schedule. An updated schedule will be provided to DPS Staff upon contract award and prior to project construction commencement, and notice shall be in compliance with Orders of the Certificate.

II. GENERAL PLANNING OBJECTIVES AND PROCEDURES

This EM&CP includes a final design plan that conforms with applicable federal, state and local requirements including, but not limited to, applicable regulations, including those promulgated by the Commission, NYSDEC, the New York State Office of Parks, Recreation & Historic Preservation (OPRHP), NYSDA&M, the Occupational Safety and Health Administration (OSHA), the New York State Department of Labor, and chemical and waste-storage use and handling regulations.

This EM&CP, and its associated appendices and Plan and Profile Drawings have been prepared in accordance with the terms of the "General Guidelines for Environmental Management and Construction Plans". In preparing this EM&CP, Dunkirk Gas Corporation has also reviewed the "Environmental Management and Construction Standards and Practices for Underground Transmission and Distribution Facilities in New York State" (EM&CS&P) issued by the Commission in and the "Advanced Planning for Siting Article VII Gas Transmission Facilities" companion document to the EM&CS&P handbook and incorporated the applicable standards. In addition, the applicable standards and specifications regarding soil erosion and sedimentation control were are incorporated by reference from the August 2005 document "New York State Standards and Specifications for Erosion and Sediment Control" (NYSDEC Bluebook).

The Dunkirk Natural Gas Pipeline Project's EM&CP are a guide to protection of these resources and the minimization of potential adverse impacts. Through advance planning of the pipeline construction work, the application of appropriate construction techniques that consider natural and cultural resource protection with prompt action taken when problems arise, the resources would be protected and the potentially adverse impacts minimized. The following are objectives considered:

a. Delineate and limit vegetation clearing in accordance with safe construction practices in order to conserve forest resources, minimize disruption of soils, and to minimize adverse visual and ecological impacts of cutting through wooded areas. Delineate and minimize disturbance to wetlands, stream corridors, steep slopes and other sensitive areas. Minimize impacts by maintaining vegetative buffer strips between disturbed and adjacent areas where feasible.
b. Confine construction activities to the ROW and vehicular use to designated access roads, construction paths, ATWS and pipe yard areas. A sediment control system will be installed and maintained to contain soil. Exposed disturbed areas adjacent to a

conveyance that provides rapid offsite discharge of sediment, such shall be maintained to prevent soil loss until it can be stabilized. Stabilized construction entrances will be maintained to control vehicle tracking material off site.

c. Schedule construction for time periods when sensitive resources or land uses are least susceptible to damage or disruption.
d. Select construction and pipe-laying equipment that minimizes damage and disruption of soils during wet periods or in areas with high ground-water tables, and in general, use the smallest-sized equipment needed to complete the job in an efficient and safe manner.
e. Minimize construction disturbances to sensitive resources by limiting equipment movement activities in or near sensitive areas during construction and maintenance of the facility.
f. Minimize topsoil loss and general soil erosion by limiting ROW grading and other soil-scarifying activities, and promptly stabilizing disturbed soils.
g. Minimize traffic disruption on public roads during pipeline construction by providing adequate traffic controls.
h. Provide for pipeline ROW maintenance that includes vegetation treatment, maintenance of erosion control devices and landowner improvements as detailed in individual easement agreements.

To accomplish these objectives, Dunkirk Gas Corporation will maintain contact with property owners and appropriate public agencies for the incorporation of concerns into construction and maintenance practices.

2. Supervision and Inspection

Dunkirk Gas Corporation will use at least one Environmental Inspector (EI) during Project construction. The EI(s) will monitor construction activities to ensure compliance with the specifications of the BMPs, applicable federal, regional, state, and local environmental permits, site-specific construction, and restoration plans or other mitigation measures, and landowner agreements. The EI(s) shall have sufficient knowledge and experience to manage the environmental compliance procedures described in the EM&CP. The EI(s) will be equipped with sufficient documentation, transportation and communication equipment to effectively monitor construction of the Project. The name and the qualifications of the EI(s) will be provided to DPS Staff prior to the start of construction for review and DPS Staff acceptance.

EI(s) would perform duties specified in this EM&CP. At a minimum, the EI(s) shall be responsible for the following:

a. Ensuring compliance with the requirements of the Certificate, this EM&CP, and any additional mitigation measures proposed by Dunkirk Gas Corporation.
b. Authority to "Stop-work". This entitles the EIs to stop activities that violate Certificate conditions, other federal, state, local or landowner requirements and to order appropriate corrective action.
c. Identifying, documenting, and overseeing corrective actions, as necessary to bring an activity back into compliance.
d. Verifying that the ROW limits and access roads are marked prior to clearing.
e. Installation of signs and flagging marking boundaries of sensitive resource areas, waterbodies, wetlands, or other areas where special requirements will be in effect.
f. Locating driveable berms, and water bars to ensure that they will not direct water into sensitive environmental resources such as wetlands or waterbodies.
g. Verification of trench dewatering activities to ensure that they do not result in the deposition of sand, silt, and/or sediment near the point of discharge into a wetland or waterbody. If this occurs, the EI(s) will stop the activity and the design and/or location of the discharge will be changed.
h. Ensuring that subsoil and topsoil are tested in agricultural and residential areas to measure compaction and to determine the need for corrective action.
i. Advising the Chief Inspector when site conditions make it advisable to restrict construction activities in areas of sensitive environmental resources.
j. Ensuring restoration of pre-construction contours and topsoil.
k. Determining the need of erosion controls other than those required by the Certificate and the EM&CP and ensuring that these control are properly installed to prevent sediment flow into wetlands, waterbodies, roads, or other sensitive environmental resources.
l. Inspecting and ensuring the maintenance of all temporary erosion controls at least: a) On a daily basis in areas of active construction; b) On a weekly basis in areas with no construction; and c) Within 24 hours of each 0.5" of rainfall.
m. Ensuring the repair of all ineffective temporary erosion control devices within 24 hours of identification.
n. Keeping records of compliance with the environmental conditions of the Certificate, the EM&CP, other federal, state, or local agency requirements, and other measures as proposed by Dunkirk Gas Corporation.

o. Identifying areas that will be given special attention to ensure stabilization and restoration after the construction phase.
p. Determining the placement locations of permanent trench breakers and spaced accordingly prior to backfilling.

3. Procedures for the Identification and Protection of Sensitive Resources

3.1 Rare and Endangered Species and Their Habitats

Dunkirk Gas Corporation completed consultations with the NYSDEC, the Natural Heritage Program and the U.S. Fish and Wildlife Service (USFWS) to determine whether rare, threatened and endangered (RTE) species were potentially in the Project area. RTE species surveys were conducted by Dunkirk Gas Corporation from June to July 2014. The completed consultations coupled with field study findings demonstrated that no RTE species or habitat for state or federally listed species exists within the Project area.

Prior to construction, Dunkirk Gas Corporation will instruct the EI(s) and construction crews on protective measure to minimize impact on these resources in the event they are encountered during construction. Work will be halted if previously unidentified RTE species are encountered during construction. DPS Staff and NYSDEC's Natural Heritage Program will be contacted, should such an event occur.

3.2 Cultural Resources

Dunkirk Gas Corporation consulted with the OPRHP to determine the locations of any cultural resources that may be affected by the proposed project. Based on these initial consultations, Dunkirk Gas Corporation conducted Phase 1A/1B archaeological surveys in June and August 2014 and a Phase IA/IB Report was submitted to OPRHP on September 23, 2014. The survey identified one newly recorded archaeological site and three isolated finds. While the newly recorded archaeological site was recommended as potentially eligible for the National Register of Historic Places (NRHP), the Project design was altered to avoid impacting this site or a 50-foot buffer around the site. As such, the report recommended that no further study was necessary. Copies of further correspondence with OPRHP regarding this Project will be provided to DPS Staff upon their receipt.

During construction, if archaeological materials are encountered, Dunkirk Gas Corporation will implement the measures described in the Plan for the Unanticipated Discovery of Cultural Resources or Human Remains, provided as Appendix F of this EM&CP.

3.3 Streams, Wetlands and Other Water Resources

Dunkirk Gas Corporation conducted consultations with and reviewed available mapping resources from the NYSDEC, the U.S. Army Corps of Engineers (USACE), the USFWS, and the U.S. Environmental Protection Agency (USEPA) to determine the nature and class of state and federal protected streams and wetlands, navigable waterways, or other waterbodies crossed by the proposed project.

In addition, Dunkirk Gas Corporation consulted with agencies, landowners and other local municipalities to determine the location of any springs or wells along the project route. This information has been utilized in conjunction with other sections of this EM&CP for Project planning and construction. Refueling and/or storage of hazardous materials will not be allowed within 200 feet of any private water well. There are no municipal water wells along the Project route.

3.3.1 Streams and Watercourses

All streams, rivers, unnamed tributaries and drainages within the ROW for the Dunkirk Natural Gas Pipeline Project were identified during field surveys conducted for the preparation of the Article VII Application. These watercourses are identified on the EM&CP Plan and Profile Drawings (Appendix A) and methods for crossing each watercourse are identified in Table 2 in Section 11.

3.3.2 Wetlands

Wetland delineations were conducted using the Federal Routine Determination Method presented in the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2)* (USACE, 2012), including clarifications and interpretations provided in the March 6, 1992 guidance memorandum (Williams, 1992), and the USACE and USEPA guidance on jurisdictional forms (USEPA and USACE, 2007 and USACE, 2008). In addition, NYSDEC requires the use of the *New York State Freshwater Delineation Manual*

(Browne et al., 1995). Therefore the methods in the State manual were also implemented. A survey corridor surrounding the proposed limits of disturbance for the Project was surveyed to identify wetlands located within the Project's ROW as well as adjacent areas that will be disturbed during construction so erosion and sediment controls maybe prescribed to protect the resources. The survey corridor consisted of a buffered area of the proposed limits of disturbance which generally was a 200-foot wide corridor centered on the pipeline centerline and a 25-50-foot buffer around access roads and other facilities. The Project ROW does not cross any NYSDEC mapped wetlands; however the ROW traverses six wetlands that may be over 12.4 acres in size including their area outside of the survey corridor for the Project making these wetlands subject to jurisdiction under Article 24 Freshwater Wetlands Act. Wetland boundary delineations along the Project ROW are depicted on the EM&CP Plan and Profile drawings (Appendix A) and methods for crossing each wetland are identified in Table 3 in Section 12.

Wetland cover types were assigned to each delineated wetland according to *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979). Using this hierarchical wetland classification system, three primary cover types were identified for vegetated wetlands in the Project area: palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO) wetlands. Some wetlands contained mixed cover types of PEM, PFO, and PSS. Furthermore, these cover types were identified into their ecological community according to *Ecological Communities of New York State, Second Edition* (Edinger et al., 2014).

A Wetland Delineation Report was prepared and submitted to the USACE, Buffalo District along with a Preliminary Jurisdictional Determination Request. Copies of each report were also provided to DPS Staff and NYSDEC. Unavoidable wetland impacts will be identified and a Joint Application for Permit will be prepared and submitted to the USACE. Construction in any wetland areas will not proceed until the USACE has confirmed that the activities are covered under a Nationwide Permit is issued.

3.4 Active Agricultural Lands

Dunkirk Gas Corporation conducted consultations with and reviewed available mapping resources from the NYSDA&M, the U.S.D.A. Natural Resource Conservation Service (NRCS), the Agricultural Cooperative Extension Service (ACES) and municipal agencies, to determine the location of agricultural districts and sensitive or specialized farmlands that may be affected by the Project.

The proposed pipeline route has been designed and sited to avoid and/or minimize impacts to agricultural lands, including vineyards, within the designated Agricultural District. The Applicant has extensively consulted with the respective landowners as well as NYSDA&M representatives to develop the proposed route. Because the pipeline will be located entirely underground after construction and the area will be restored in accordance with the standards and practices outlined in the NYSDA&M "Pipeline Right-of-way Construction Projects Agricultural Mitigation through the Stages of Project Planning, Construction/Restoration and Follow-up Monitoring" manual, it is anticipated that the Project will have minimal long-term adverse impacts to agricultural lands and vineyards. To further minimize impacts to agricultural fields, with the exception of vineyards, no permanent clearing will be required. When crossing vineyards, the area of permanent clearing within the 50-foot permanent right-of-way will be limited to 30 feet required for pipeline maintenance, reliability and safety due to the semi-permanent nature of vineyard installation.

3.5 Alternative/Conflicting Land Uses

Dunkirk Gas Corporation has consulted with regional, county and town planning board resources to identify existing and proposed land uses within the Project area. The Project was sited and designed to minimize impacts to sensitive land uses (hospitals, schools, churches, scenic areas, parks, and residences). Once constructed the proposed pipeline will be located entirely underground, and the lands will be restored to preexisting conditions. The only aboveground facilities, the regulating station, metering station and two mainline valves, will have a small footprint and will not retract from the existing land uses.

3.6 Steep Slopes, Highly Erodible Soils and Floodplains

Dunkirk Gas Corporation has conducted review of all relevant map resources of the United States Geological Survey (USGS), New York State Department of Transportation (NYSDOT), NRCS (for highly erodible soils) and the Federal Emergency Management Agency (FEMA) for floodways and floodplains.

Construction measures specific to steep slopes will be applied on slopes in excess of 25%. Erosion control will be address in subsequent sections of this document (See Section 8).

All disturbed areas within floodplains will be restored after construction and the proposed pipeline will be located entirely underground. Accordingly, the operation of the proposed

pipeline and associated facilities will not increase the potential for erosion or property damage caused by flooding. All Project construction activities will utilize the appropriate stormwater and erosion control measures, and all disturbed areas will be returned to previous conditions (See Section 8). Because there will be no permanent material change in topography within the designated floodplains following construction of the proposed pipeline, construction and operation of the proposed pipeline and associated facilities is not expected to have any permanent impacts on the floodplains or other upstream and downstream properties. Aboveground facilities within areas designated as floodways or "100-year floodplains" have been avoided by pipeline routing.

3.7 Timber Resources, Commercial Sugarbushes, and Unique/Old Growth Forests

Dunkirk Gas Corporation has consulted with available resources from the NYSDEC, the Nature Conservancy, Natural Heritage Foundation, NYSDA&M and local assessors to identify designated Forest Tax Act parcels along the route, trees listed on the New York State *Big Tree Register*, active logging and Christmas tree operations, and commercial sugarbushes.

The Dunkirk Natural Gas Pipeline will not impact old growth stands, Big Trees, nursery, commercial timber stands and/or sugarbush operations.

3.8 Officially Designated Visual Resources

Dunkirk Gas Corporation reviewed available mapping resource to identify officially designated visual resources in the vicinity of the Project route including the following resources:

a. Scenic Areas of Statewide Significance (in coastal areas), designated by the Secretary of State pursuant to Article 42 of the Executive Law;
b. Adirondack Park Scenic Vistas, designated by the Adirondack Park Agency (APA) pursuant to Article 27 of the Executive Law;
c. Scenic Roads, designated by NYSDEC or NYSDOT pursuant to Article 49 of the Environmental Conservation Law (ECL);
d. Scenic Districts designated by NYSDEC pursuant to Article 49 of the ECL;
e. State and National Wild and Scenic River Areas administered respectively by either the NYSDEC or APA pursuant to Article 15 of the ECL and by the Department of Interior, pursuant to 16 U.S.C. Section 1271; and

f. Areas of Exceptional Scenic Beauty acquired pursuant to the 1986 Environmental Quality Bond Act and administered by NYSDEC.

The Project is not located in the area of any resources identified above and therefore will not impact any of those resources, with the exception of scenic roads. Based on review of the NYSDOT Scenic Byways inventory, Lake Shore Drive/NY Route 5 which runs parallel to Lake Erie Shore is part of the Seaway Trail which is also designated a National Scenic Byway. The proposed pipeline will cross under Lake Shore Drive/NY Route 5 via HDD or bore which will minimize potential impacts to this scenic roadway.

In addition to the above identified visual resources, the Dunkirk Natural Gas Pipeline Project will not have a visual impact on locally important sensitive sites such as parks recreation areas, scenic views, and residential areas.

4. Land Requirements

In selecting a pipeline route for the Project, wherever practicable, Dunkirk Gas Corporation has:

a. avoided unique or sensitive resources; i.e., Class I and II wetlands, RTE species and habitats, scenic vistas, historic sites, fishery streams, rivers, old growth timber, high yield crop lands, etc.;
b. avoided severe topography;
c. routed along the edge of adjoining land uses; for example, follow the edge of an existing electric transmission line corridor; and
d. considered using existing ROWs and use forest and farm roads where practical.

4.1 Permanent ROW

The permanent ROW is that portion of the ROW to be permanently maintained following initial construction. Dunkirk Gas Corporation will acquire by easement or purchase a permanent ROW of 50 feet for the 16-inch outside diameter pipe. Dunkirk Gas Corporation has evaluated the permanent ROW for adjacent buildings, sensitive resources, engineering or other constraints that may pose limitations and as a result, in certain areas the permanent cleared ROW will be narrower. To minimize permanent impacts to vineyards and wetlands while still maintaining a cleared area for pipeline maintenance, reliability, and safety, the area of permanent clearing within the 50-foot permanent ROW will be limited to 30 feet. Further, in agricultural fields and

pastures, there will no permanent clearing within the 50-foot permanent ROW. The permanent ROW is depicted on the EM&CP Plan and Profile Drawings (Appendix A).

4.2 Temporary ROW

Adjacent to the permanent ROW, Dunkirk Gas Corporation will acquire additional land to facilitate pipeline construction and vehicle access. Width of the temporary construction ROW will generally range between 25 and 35 feet. The temporary construction ROW is depicted on the EM&CP Plan and Profile Drawings (Appendix A).

4.3 Extra Work Space

Dunkirk Gas Corporation has identified, ATWS and staging areas needed to accommodate construction in a safe and environmentally responsible manner. The ATWS will typically be required when any of the following conditions are encountered:

- Utility crossovers and existing pipeline crossovers;
- Wetland crossings;
- River/stream crossings including ATWS required for the HDDs;
- Extra depth trench required;
- Road crossings;
- Parking areas; and
- Other site-specific constraints.

To the maximum extent possible, the ATWS will be located along the ROW in upland, non-agricultural, non-forested lands. The specific locations and dimensions of ATWS and staging areas needed are depicted on the EM&CP Plan and Profile Drawings (Appendix A). Any ATWS needed during construction, which are not identified on the EM&CP Plan and Profile Drawings, will require a minor change submittal.

4.4 Associated/Appurtenant Facilities

Between the collection and delivery points, Dunkirk Gas Corporation will require the following appurtenant facilities:

a. metering and regulator stations;
b. yard and station piping;
c. cathodic protection equipment;
d. buildings;
e. cleaning, cooling and dehydrating equipment and;
f. valves and fittings.

Dunkirk Gas Corporation has considered the potential impact of the associated and appurtenant facilities in the planning stage of the Project and sited them to minimize potential impacts, where practicable. The locations of the associated and appurtenant facilities are identified on the EM&CP Plan and Profile Drawings (Appendix A).

4.5 Compressor Stations

The Dunkirk Natural Gas Pipeline Project will not require a compressor station.

4.6 Temporary Storage, Fabrication, and Other Construction Related Sites

During construction, temporary sites may be needed for the following:

a. pipe storage;
b. fabrication (concrete coating, pipe bending, valves, etc.);
c. equipment storage;
d. administration and parking; and,
e. temporary stump, rock and wood storage.

Dunkirk Gas Corporation has identified three potential pipe yards. All three pipe yards are located on Dunkirk Power LLC, an affiliate of Dunkirk Gas Corporation, property. The pipe yards are located in upland, non-agricultural areas. The potential pipe yards are identified on the EM&CP Plan and Profile Drawings (Appendix A).

Pipe yard A is located at the site of an old Borrow Pit. It is located approximately 1 mile west of the Project corridor on Van Buren Road in the Town of Pomfret. Wetland and watercourse features will not be impacted at this location. Topsoil will be stripped and stockpiled. The stockpiles will be seeded and stabilized during the site usage. A base of stone and/or mats will

be applied to the surface of the subsoil prior to utilization of the site. The nearest residential home to this site is approximately 850 feet away.

Pipe yard B is located on gated property owned by Dunkirk Power LLC and utilized for coal ash storage. It is located approximately 1 mile west of the Project corridor on Van Buren Road in the Town of Pomfret. Wetland and watercourse features will not be impacted at this location. Topsoil will be stripped and stockpiled. The stockpiles will be seeded and stabilized during the site usage. A base of stone and/or mats will be applied to the surface of the subsoil prior to utilization of the site. It is located approximately 1 mile west of the project corridor on Van Buren Road. The nearest residential home to this site is approximately 1600 feet away.

Pipe yard C is located within the Dunkirk Power LLC Dunkirk Generating Station property in the City of Dunkirk. It is located in the contractor parking lot adjacent to the pipeline corridor. It is a disturbed site with a stone surface. The nearest residential home is over 850' from the proposed pipe yard.

5. Site Preparation

5.1 Staking and Right-of-Way Delineation

To identify the nature and impacts of site preparation activities (i.e., staking, ROW delineation, vegetation clearing and grading) in order to minimize the adverse environmental impacts associated with these activities to the extent practicable.

When staking out or delineating the ROW for construction the following steps will be taken:

a. Pipeline centerline, ROW edges, clearing limits, and temporary work space boundaries will be surveyed and marked with stakes and colored flagging.
b. In wooded areas, any clearing needed to facilitate surveying will be minimized as much as possible. During preliminary routing, prior to certification, no trees over 6 inches diameter breast high (dbh) will be cut during survey operations.
c. Flagging may be placed on trees or wooden stakes as needed to effectively mark the ROW, and trees selected for protection will be marked.
d. Stakes and flagging will be spaced at appropriate intervals to ensure that no unauthorized clearing and grading occurs outside of approved ROW boundaries. Flagging and/or staking will be checked before construction to ensure proper alignment.

e. In populated areas, temporary construction fencing may be used to delineate the ROW. Fencing left in place during construction may also help restrict unauthorized access to the ROW.

6. Vegetation Clearing in Upland Areas

Where the pipeline traverses wooded terrain, vegetation will be cleared to allow for grading and pipe installation. Clearing operations will be guided by the following environmental objectives:

a. avoid and protect old growth, specimen and landscape trees;
b. minimize disturbance by restricting clearing to those areas necessary for construction and using equipment appropriate to site and timber conditions;
c. utilize timber resources; and,
d. minimize impacts associated with forest disturbance and debris disposal.

6.1 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.

6.2 Clearing Methods and Procedures in Upland Areas

During clearing operations, crews, along with Dunkirk Gas Corporation personnel, will scout the terrain ahead for unexpected conditions, check ROW boundaries and review property-specific conditions or restrictions noted on drawings and line lists. Stumps will be cut as low to the ground as possible. Trees will be felled into the ROW to avoid off ROW damage, using some or all of the various methods and equipment as described below:

Bulldozers – Bulldozers equipped with forestry brush rakes are primarily used to concentrate slash into piles for subsequent disposal. Bulldozers equipped with hydraulic clams can be used to either concentrate brush or logs on or along the ROW for proper disposal.

Bladed Mowers – Bladed mowers (i.e., "brush hogs", hydro axes or chain thrashers) may be used on stands of smaller timber and brush. They will not be used where the timber may be utilized or stacked.

Skidders and Forwarders – Skidders are specifically designed to move and concentrate larger diameter timber and are used in conjunction with chainsaws or mechanized shears and saws. Forwarders carry logs from landings, or other concentration points, to salvage yards or other work areas.

Excavators with Grapple Arms – Excavators with grapple arms concentrate timber along the ROW. Excavators are more flexible than skidders:

a. they can be used on wide or narrow ROWs;
b. due to their ability to lift and move individual stems, they can facilitate the construction of log roads across wetlands or seasonally wet areas during clearing;
c. excavators with grapples have a greater range of motion than skidders. Less vehicular movement helps to minimize rutting in wet areas; and,
d. they are better suited for directional felling of trees.

Mechanized Shears and Saws - Mechanical shears and saws may be used on trees that will be utilized for construction, salvaged for sale, made available as sawlogs or firewood, or stacked for the landowner. This equipment will not be used to clear stream buffers, its size and bulk tend to damage adjacent vegetation. Once felled, trees will be limbed using chainsaws, sorted and/or stacked by skidders, grapple equipped excavators, or forwarders.

Chainsaws - Chainsaws may be used on trees of any size, particularly on larger timber where restricted access limits the use of mechanized shears and saws, (i.e., wetlands, stream buffers, and steep terrain).

6.3 Log Disposal

Trees are a valuable natural resource. Logs greater than 6 inches in diameter may be useful as firewood or for pipeline construction as log rip-rap (corduroy) to support construction equipment in wet areas. Logs greater than 10 inches in diameter may be merchantable. Depending on species, size, volume, terrain, and local markets, timber resources will be utilized as follows.

Construction Use - Logs, having been purchased by Dunkirk Gas Corporation from the landowner, may be utilized as needed during construction for wetland access (corduroy), cribbing, retaining walls, or other uses. Following use, broken and mud-covered logs unsuitable for firewood, saw logs or chipping, will either be transported off ROW to approved disposal sites or, with landowner approval, stacked on the ROW.

Log Piles - Logs not needed for construction will be stacked along the ROW or in approved push-out areas adjacent to the ROW, or, with landowner approval, removed off ROW to an approved disposal area. Logs stacked along the ROW will be cut into tree lengths, unless otherwise specified by the owner. Log piles will not be placed in wetlands, streams, floodplains, floodways or visually sensitive sites. Efforts will be made, in consultation with landowners, to locate them in accessible areas for salvage.

Sale - When market and site factors permit, merchantable logs may be sold to a third party. Dunkirk Gas Corporation will set salvage conditions and procedures to minimize damage to the ROW and will hold third parties accountable for such damage. Where appropriate and practical, and with the agreement of the landowners, unsold logs may be hauled to accessible locations for salvage by the general public.

Chipping - When the log disposition options detailed above are not appropriate, logs may be chipped. Resulting wood chips will be: 1) mixed into soil during grading or buried; 2) piled in environmentally appropriate, accessible locations at the edge of the ROW for later use; and/or 3) hauled off ROW to approved disposal sites or for other uses. Wood chips will be spread no more than 3 inches thick with fertilizer spread over the chips to minimize soil nitrogen depletion due to cellulose decomposition.

6.4 Slash and Stump Disposal

Slash and stumps will be disposed of in the following manner.

Stacking and Scattering - Slash and stumps may be stockpiled along the edge of the ROW or in approved push-out areas, with landowner approval, where they will provide wildlife habitat and decay naturally overtime. Stack size will be limited to a maximum size of 6 feet high, 12 feet wide and 100 feet long. Piles will be separated by a minimum of 20 feet for access and fire break. Where appropriate, slash may be scattered along the ROW edge or push-out areas.

Chipping - Slash may be chipped to reduce debris volumes.

Burning - To minimize adverse impact to air quality, slash will be burned only in remote locations where other disposal options are not practical. Dunkirk Gas Corporation will comply with all applicable state and local laws. Manmade non-organic materials (i.e., oil, tires, garbage) will not be burned.

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

6.5 Trimming and Pruning Branches

Obstructive and broken branches overhanging the ROW and ATWS will be pruned properly. The branch collar on all branches whether living or dead will not be damaged. Trimming and pruning will be done in accordance with the NYSDEC Bluebook.

6.6 Vegetation Buffer Areas

A vegetation buffer area is a portion of the ROW at a sensitive resource such as a stream crossing or visual intrusion mitigation where a minimum of construction disturbance and vegetation clearing is permitted. In order to prevent soil erosion along streams, vegetation (ground cover, shrubs, and tree stumps) will be left in place within a 15- foot strip on each bank until the time of crossing. Tree cutting will be limited to the use of chain saws. Where vegetation grubbing and initial grading is necessary for equipment crossing along the travel-way, erosion and sediment control structures will be installed, as detailed in Section 8 of this EM&CP.

Existing vegetation buffers will be maintained at selected road and stream crossings and other visually sensitive locations, where possible, especially at directional drilling or boring sites where complete ROW grading is not needed, and residential areas.

Buffer areas will be clearly marked on detailed construction drawings and marked in the field to avoid accidental clearing. Additionally, Dunkirk Gas Corporation's EI(s) or Construction Supervisor will notify clearing and other crews of buffer areas that will be encountered that day.

6.7 Walls and Fences

The proposed ROW may cross stone walls and fences serving as property boundaries, livestock control, and other purposes. Unless otherwise directed by the landowner, walls or fences will be restored or replaced during restoration.

6.7.1 Stone Walls

When stone walls are encountered during the construction the following will apply:

a. Improved stone walls will be photographed before 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 accord with landowner and permitting conditions; and,
e. At landowner direction, walls of lesser quality (loose piles for field separation or all-terrain vehicle control, for example) or fencing may be substituted for the original stone wall.

6.7.2 Fences

Fences (wood, wire, mesh, etc.) will be dismantled and stored for re-use where practical; new fencing material will be used if the original is damaged. During construction, temporary fencing and/or gates will be installed to control livestock, in consultation with the landowner or farm operator. Fencing will be repaired or replaced to original standards or better in consultation with the landowner.

7. Grading in Upland Locations

Following vegetation clearing operations, the ROW may be graded where needed to create a workable and safe surface for construction activities and equipment movement. Environmental objectives during grading include: conserving natural resources; (e.g., agricultural or residential topsoil); minimizing soil erosion and stream sedimentation; and confining construction disturbance to the approved ROW limits.

7.1 Techniques and Equipment

Bulldozers, excavators, loaders and graders will be the prime equipment used for grading the ROW. The degree of grading will vary from minor--on level ground for small diameter lines, to major--on steep terrain for large diameter pipe. In severe cross slope situations, the ROW may be benched into tiers or two-toned. This technique can extend ROW length and width.

All erosion control and sedimentation control devices will be installed prior to the initiation of the grading activities as described in Section 8. Grading activities will be confined within approved ROW boundaries. During construction, at locations where special grading procedures require ATWS, Dunkirk Gas Corporation will obtain the necessary landowner and agency approvals for temporary ROW prior to initiating work.

7.2 Topsoil Stripping and Segregation

Dunkirk Gas Corporation has identified, in cooperation with the NYSDA&M, all active agricultural land, vineyards and pasture land within the Project corridor. On all active agricultural land, vineyards and pasture land topsoil will be segregated (by stripping or double ditching) for later replacement during restoration. This measure will diminish topsoil/subsoil mixing and minimize topsoil compaction, thus assisting full restoration of agricultural productivity. In wetlands, segregation of the organic layer over the trench will take place primarily during ditching operations, see Section 12. Dunkirk Gas Corporation will comply with the standards and practices outlined in the NYSDA&M "Pipeline Right-of-way Construction Projects Agricultural Mitigation through the Stages of Project Planning, Construction/ Restoration and Follow-up Monitoring" manual.

Topsoil will be stripped to a maximum depth of 12 inches unless site specific conditions warrant additional depth. Temporary ROW will be required in some cases, particularly for full-width stripping. The following subsections address locations and the manner of topsoil protection.

7.2.1 No Striping

Topsoil will not be stripped in woodlands, abandoned or marginal nonfarm uplands, or commercial and industrial areas. These areas are unlikely to be used for future crop production. Where topsoil is present in these areas, any resulting compaction or soil-mixing may not warrant the extra expense of segregation. However, to promote restoration on difficult sites (steep terrain, sideslopes and infertile soils), Dunkirk Gas Corporation may elect to strip topsoil to get adequate vegetative cover during restoration.

7.2.2 Ditchline

Primarily undertaken in wetlands, residential laws, pasture and cropland where warranted. Topsoil will be stripped over the ditchline and placed on the spoil side of the ROW on top of native topsoil, offset enough to allow ditch spoil placement next to the trench. On narrow ROW, topsoil from the ditchline may be placed on the working side, next to the trench. This maximizes the area for ditch spoil storage on the spoil side of the ROW.

7.2.3 Ditch and Spoil

For use in non-prime agricultural land or other locations that would benefit from topsoil segregation, such as residential lawns where high quality turf cover must be restored. Topsoil will be stripped over both ditch and spoil areas and stored on top of native topsoil, uphill of the ditch where possible. Ditch spoil will be placed between the stored topsoil and ditch on top of subsoil. Care will be taken to prevent mixing of topsoil and ditch spoil.

7.2.4 Full Width Stripping

In active agricultural land, vineyards, residential lawns, and pasture topsoil will be stripped across the permanent and temporary ROW. It will be stored on top of native topsoil on either side of the ROW, depending on slope, dimensions, and positioning. It will be carefully segregated from exposed spoil and subsoil.

7.3 Access Roads and the Construction Paths

To construct construction paths of sufficient size and in sufficient numbers to safely and efficiently move personnel and equipment to, from, and along the pipeline ROW, while minimizing impacts to resources.

7.3.1 Construction Paths

The construction path (travelway) is a linear section of the ROW, parallel to the trench where equipment and vehicles will travel the length of the project or portions of it. The construction path width along the Dunkirk Gas Corporation pipeline ROW will generally be 20 feet. All vehicles will travel within the 20 foot construction path.

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 ROW for use as work area and travelway. Where slopes are steep (generally 15 percent or over), or when unstable soil conditions are encountered, Dunkirk Gas Corporation will modify the construction path to make it stable enough for safe use. Dunkirk Gas Corporation will consider and apply the following modifications, as appropriate:

a. rough grading to smooth the working surface or improve drainage;
b. stripping and storing topsoil;
c. placing logs (corduroy), or crushed stone on the construction path;
d. placing geotextile fabric covered by clean fill with no shot rock over crushed stone, logs or soil in the path;
e. using wooden or metal construction mats; or
f. employing pontoon bridges in areas of standing water.

7.3.2 Off-ROW Access Roads

To facilitate delivery of materials and equipment along the ROW, particularly where site conditions interrupt a continuous travel way, off ROW access roads will be utilized. These roads divert vehicles around obstructions or provide access to the ROW from public roads. Wherever practical, existing private roads, driveways, farm lanes, etc. will be used, with landowner and DPS Staff approval. As necessary, these access roads will be improved to adequate construction standards, and restored to pre-construction conditions or better. Dunkirk Gas Corporation has

identified access road that are generally 25 feet in width. Access roads are depicted on the EM&CP Plan and Profile Drawings (Appendix A). Generally, Dunkirk Gas Corporation will not retain the usage of permanent access roads for general pipeline and ROW maintenance.

Where temporary work roads or haul roads cross stream channels, adequate waterway openings shall be constructed using spans, wooden mat bridges, flat railcars, culverts, washed rock backfill, or other acceptable, clean methods that will minimize to the extent practicable the amount of turbidity and sediment downstream.

All environmental requirements pertaining to the Project apply to off ROW access roads as well. In the event Dunkirk Gas Corporation finds it necessary to construct new off ROW access, plans will be submitted for DPS Staff approval prior to construction of the new ROW access roads. Table 1 identifies the access roads for the Dunkirk Natural Gas Pipeline Project.

Table 1. Access Roads

Access Road Number		Township	Road Intersecting	Road Length (feet)	Road Width (feet)	Existing/ New Road	Permanent/ Temporary
AR-1	Plant Property	C. Dunkirk	Eastside of Point Drive N.	276	25	Existing	Temporary
AR-2	Plant Property	C. Dunkirk	Northside of Lake Shore Drive West	317	25	Existing	Temporary
AR-3	Buchanan	C. Dunkirk	Westside of W. 5th Street	362	25	New	Permanent
AR-4	Fred	T. Dunkirk	Eastside of Temple Road	50	25	Existing	Temporary
AR-5	Fred	T. Dunkirk	Westside of Temple Road	600	12	Existing	Temporary
AR-6	Bender	T. Dunkirk	Westside of Willow Road	50	25	Existing	Temporary
AR-7	Lisa	T. Pomfret	Northside of Wilbur Road	1015	25	Existing	Temporary
AR-8	Grant	T. Pomfret	Southside of Van Buren Road	1455	25	New	Permanent*
AR-9	National Grid	T. Pomfret	Northside of Berry Road	516	25	Existing	Temporary
AR-10	National Grid	T. Pomfret	Northside of W. Main Street (SR 20)	336	25	Existing	Temporary
AR-11	Lewandowski	T. Pomfret	Northside of Chautauqua Road	632	12	Existing	Temporary
AR-12	Hill	T. Pomfret	Southside of	25	25	Existing	Temporary

Table 1. Access Roads							
Access Road Number		**Township**	**Road Intersecting**	**Road Length (feet)**	**Road Width (feet)**	**Existing/ New Road**	**Permanent/ Temporary**
			Chautauqua Road				
AR-13	Metzler/Jusko	T. Pomfret	Westside of Fredonia-Stockton Road	2965	25	Existing	Temporary
AR-14	Lauzon	T. Pomfret	East of Cummings Road	890	20	New	Permanent
Notes:	* Landowner has requested that the access road to remain in place after construction is complete and will be responsible for obtaining necessary permits.						

8. Erosion and Sedimentation Control

Dunkirk Gas Corporation has identified measures to effectively control soil erosion and sedimentation and protect resources during pipeline construction and operation. The measures and their locations are depicted on the EM&CP Plan and Profile Drawings (Appendix A).

8.1 Measures and Devices

Dunkirk Gas Corporation will apply erosion and sedimentation control measures and devices as needed during all phases of construction. Erosion control devices will be placed at all stream crossings, upland/wetland boundaries immediately after initial ground disturbance. This is usually between the clearing and grading activities. Erosion control devices will be installed prior to the initiation of any grading activity at these locations. During clearing activities, erosion control efforts will focus upon stream equipment crossings and steep slopes where stumps have been grubbed or soil has been disturbed. During grading activities, erosion control measures will be employed to control runoff. All erosion and sediment control devices utilized will be in accordance with the NYSDEC Bluebook.

In locations where construction adjoins an existing ROW, road crossings, etc., erosion control measures will conform to the existing drainage pattern and runoff structures. At the end of each work day, all erosion control devices will be inspected in each work area and repaired (if necessary) to ensure proper functioning. Techniques appropriate to address site conditions will be used as detailed below.

8.1.1 Straw or Hay Bale Dikes and Silt Fence

Used separately or together, straw or hay bales and silt fence erosion control devices slow surface runoff and-trap sediment. Bales will be buried or "keyed-in" at least 4 inches in the ground and any adjoining ditch banks. Bales will be placed so that bindings or wrappings are horizontal to the ground and all bales will be placed on the contour with the cut edge of the bale adhering to the ground. The first stake will be angled toward the previously laid bale and the second stake will be driven vertically through the bale into the ground. According to the NYSDEC Bluebook, straw or hay bale dikes are applicable where erosion would occur in the form of sheet erosion and there is no concentration of water in a channel or other drainage way above the barrier.

Straw or hay bales are a natural material and are subject to decay and loss over time. Straw or hay bales will be inspected and maintained on a regular basis until they are no longer needed. Bales found to be damaged or clogged will be replaced immediately with fresh bales or other devices. Following construction, straw or hay bales will be removed or broken up and dispersed during clean-up and/or restoration.

Silt fence comes with or without pre-attached wooden stakes. The up-slope side of the fence will be "keyed" into to the ground by burial in a narrow cut at least 6 inches deep with at least 16 inches of filter fabric aboveground. The flap and leading edge will be buried up slope to prohibit water movement underneath the fence. Whenever possible the ends of the fence will be angled up slope and tied into a stable area to inhibit silt flowing around the fence and where the ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. Fence posts will be at least 36 inches long and with a minimum cross sectional area of 3 square inches. Fence posts can only be a maximum of 10 feet apart. All silt fence will be removed from the ROW following successful restoration and/or stabilization of the permanent ROW.

8.1.2 Water Diversion Devices

Where appropriate, water diversion devices will be used to control surface runoff on the ROW and adjacent work areas, as discussed below. These measures may extend slightly off ROW by no more than 5 feet. This will prevent water returning to the disturbed construction area. The outlet for each diversion must convey runoff to a point where the outfall will not cause damage

to undisturbed areas. Where these devices are extended off ROW, they are subject to applicable survey requirements.

8.1.3 Waterbars

Waterbars will be used on sloped ROW to intercept and divert surface run-off from the work area to a stabilized location. The spacing of waterbars shall be as follows:

Slope %	Spacing (feet)
<5	125
5 - 10	100
10 - 20	75
20 – 35	50
> 35	25

The design height of waterbars will be a minimum of 18 inches measured from channel bottom to ridge top with side slopes 2:1 or flatter and a base width of the ridge a minimum of 6 feet. Once diverted, water must be conveyed to a stable system (i.e. vegetated swale or storm sewer system). Waterbars will have stable outlets, either natural or constructed.

Where sufficient vegetation is not present, straw or hay bales and/or silt fence will be installed at the down-slope outfall to prevent erosion and sedimentation into adjacent, off ROW property. Waterbars must be checked and maintained regularly and at a minimum before and after each major rain event.

8.1.4 Temporary Swales and Earth Dikes

Temporary swales and earth dikes are designed to divert larger amounts of runoff than waterbars, discussed above. Swales and dikes will have an outlet that functions to minimize erosion and dissipates runoff velocity prior to discharge off the site to the extent practical. In addition, the sediment laden water intercepted will be diverted to a sediment trapping device, thereby reducing the potential for erosion and off site sedimentation. Their size, angle, and spacing will depend on the soil type, slope, and other terrain features. They will be used primarily along and at the top of stream banks, at the base of slopes, on steep slopes in excess of 25%, and wherever conditions warrant a greater measure of runoff control.

Temporary swale and earth dike stabilization will be completed within 7 days of installation in accordance with the appropriate standard and specifications for seed and straw or hay mulch or straw or hay mulch only if not in seeding season.

Temporary swales and earth dikes are to remain in place until the disturbed areas are permanently stabilized.

8.1.5 Side Ditches

In areas of severe grade and unstable soils, side ditches adjacent to the ROW may be constructed to channel excess runoff not handled by other drainage structures. On long, steep slopes, periodic breaks and escapes will be constructed to slow runoff velocity and minimize channel erosion; spacing will vary according to site conditions and as recommended. Side ditches will be maintained regularly to prevent blockage and slumping, particularly after major storm events. Rock or jute-net liner will be considered on steep slopes or severe terrain and in sandy or silty soils to stabilize the ditch.

8.1.6 French Drains

A French drain is a stone-filled trench, with or without drain tile. It is 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. Construction is similar to that of diversion ditches except that geotextile fabric lines the trench which is then filled with cobble or stone, size 6 inches or larger, is used to fill the ditch. During construction, if it is necessary to cross the french drain with construction equipment; the crossing will be covered with filter fabric and clean fill to prevent clogging with dirt from tires and treads.

8.1.7 Temporary Culverts

Temporary culverts will be installed to channel water runoff from farm ditches and road swales across the ROW, work area or construction path. Temporary culverts will be installed just below grade at each end, with headwalls, except where used only to equalize drainage in flat areas, such as wetlands. Where the outfall must be above grade, large stone will be placed around the downstream pipe outlet to minimize scouring and erosion. Culverts will be sized by calculating flows from the contributing watershed. In some situations, with landowner and agency approval, temporary culverts may be upgraded to permanent installations.

8.1.8 Sediment Retention and Filtration Devices

These structures and devices will be installed to filter sediment-laden water from trench dewatering, stream crossing, and other activities. Once filtered and/or settled, clear water will be pumped or allowed to flow onto a vegetated area. Retention structures and ponds will be constructed using straw bales, filter fabric, or other materials. Filter bags will be bought commercially. Trapped sediment will be graded into the ROW without being washed into the adjacent stream, wetland, or other sensitive resource.

8.1.9 Catchment Basins

Temporary catchment basins will be installed where needed to control heavy runoff near public roads, access roads, streams, adjacent land uses, and at construction and equipment sites. Trapped sediment will be disposed of or graded into the ROW. Permanent catchment basins may be installed where needed, to solve a permanent storm runoff problem.

8.1.10 Mulch and Other Soil Stabilizers

Straw or hay mulch, jute netting, hydromulch, or an erosion control blanket will be used to temporarily hold unstable soil on steep slopes. These methods are covered more thoroughly in Section 14.

8.1.11 Drivable Berms

Similar in construction to waterbars, these berms can be used in the travel lane to distinguish the upland/wetland boundary, thus eliminating the need for moving straw or hay bales or silt fence each work day. This berm will be maintained throughout the construction process. This berm will also tie in to existing erosion control structures such as silt fence or staked straw or hay bales. At all equipment crossings spanning waterbodies, only silt fence or staked hay bales will be permitted.

8.1.12 In Street Devices

While working in urban/residential areas, i.e., installing pipe longitudinally in a road or shoulder, it will often be necessary to protect storm and/ or sewer drain openings. This can be done by

several methods including placing straw or haybales around the perimeter of the opening, completely covering the opening temporarily during trenching and backfilling activities, or installing a geotextile fabric silt sack under the grate of the drain opening to prevent silt and sediment from entering the basin.

8.2 Fugitive Dust

Soil erosion from aeolian forces (wind) is another type of erosion that must be mitigated. Measures can range from cultural practices (controlling vehicle speed) to mechanical means such as water application or the use of dust pallatives. This is especially important in residential areas and on unpaved access roads where heavy construction traffic is present. Covering (tarping), mulching, temporarily seeding spoil piles that will be exposed for extended periods of time, and using spray adhesives on dry soils can also reduce fugitive dust emissions.

9. Trenching

To maintain a safe and stable trench, minimize erosion, and provide suitable access across the trench where needed.

9.1 Trenching Equipment

Trenching will be performed by rubber-tired or tracked backhoe, excavator, or other type of ditching machine. The type and size of the equipment depends upon such criteria as pipe diameter, trench size, soil conditions, and topography.

9.2 Ditch Width and Cover Requirements

Trench width at the bottom will be sufficient to ensure safe installation of the pipe and allow for padding and backfill to appropriate specifications. The trench wall will be tapered outward at an angle appropriate to soil type, moisture, and trench depth, in conformance with OSHA requirements (29 CFR 1910 et al.). In sandy or heavily saturated soils that may be subject to collapse, bank shoring will be employed as needed to prevent slumping and protect personnel.

Trench depth will be adequate to ensure cover in conformance with Gas Safety Regulations (16 NYCRR Part 255.327). Typically the pipeline will have a minimum cover of 36 inches. In active agricultural land, the top of the pipeline will be buried a minimum of 48 inches below the

ground surface. In certain locations, such as the New York State Thruway (I-90) crossing, protected or steep stream crossings, large wetlands, rails and other roadways, or other special resources in the ROW, Dunkirk Gas Corporation will install the pipeline using HDD or jack and boring construction methods to minimize disturbance and the pipeline will have a minimum cover of 60 inches.

9.3 Length and Open Trench

To minimize the potential for erosion and slumping of the open trench, impacts on cattle, wildlife and land use, Dunkirk Gas Corporation will make reasonable efforts to limit both distance and duration between ditching and pipe-laying to minimize the potential for erosion and slumping of the open trench as well as minimize impacts to land uses and wildlife. General construction practices will restrict open trench limits to approximately 1,500 feet at the end of a working day. These open trench limits do not apply to small sections located at tie-in locations within the pipeline corridor. The trench at the tie-in locations will not remain for longer than five days. However, site-specific conditions may warrant leaving the trench open for greater distances as long as equipment, wildlife and livestock fencing and crossings are in place, and provided that all necessary in-trench erosion control devices have been installed and maintained (See Section 9.4). Dunkirk Gas Corporation will complete all backfill of the trench within 5 days of being opened.

In more severe terrain, with greater chances for erosion and runoff, the amount of open trench needs to be limited so that ditch plugs are not overwhelmed by large volumes of water channeled down the trench. To alleviate water build up behind temporary ditch plugs, an associated waterbar will be built in conjunction with the plug. This associated waterbar will be designed to exit off the soil side of the ROW through the spoil pile wherever possible. This will eliminate ditch water being carried across the disturbed soil on the travel lane. The final determination in those instances will be made by the on-site EI(s).

9.4 Temporary Ditch Plugs

Temporary ditch plugs will be placed in the excavated trench to impede the flow of water down the trench. Hard plugs (unexcavated earth segments of the ditch line) will be maintained adjacent to streams and wetlands to protect those resources until pipe-laying activities occur. Soft plugs (replacing trench spoil, fill, sandbags) will be spaced in the trench in sloping areas to

reduce erosion and trench slumping. Hay or straw bales will not be used as material for temporary ditch plugs.

After pipe-laying, permanent foam or sandbag trench breakers will be installed and spaced properly before backfilling. At the request of landowners or at the discretion of the EI(s) or Construction Supervisor, hard plugs may be left in place until pipelaying commences to accommodate equipment crossings. Hard plugs should be a minimum of 50 feet in length for areas where tie-ins will occur. For animal and vehicle crossings, a 25 to 30 foot plug should suffice.

9.5 Blasting

In locations where shallow bedrock cannot be excavated explosives may be used to break the rock into removable pieces. As an alternative to blasting when viable, Dunkirk Gas Corporation will first consider removing rock with hoe rams or other similar non-explosive means. In these areas, care will be taken to prevent damage to underground structures (e.g., cables, conduits, septic systems, and foundations, etc.), aboveground structures (e.g., homes, buildings, and utility structures, etc.), or water sources. In the event blasting is determined to be required, Dunkirk Gas Corporation will retain a Blasting Contractor who will prepare a site-specific blasting plan for review and approval by DPS Staff prior to commencement of any blasting activities. At a minimum, blasting activities will conform to all applicable local and federal laws and the following regulations:

a. 27 CRF 55, (OSHA);
b. 29 CFR 1910.109, 1926.900 and 1926.914; and
c. The U.S. Bureau of Mines Guidelines.

In addition to statutory compliance, the following general practices will be followed.

9.5.1 Pre-Installation Studies

Pre-installation surveys will be conducted to determine those areas likely to require blasting. In these areas, the distance to sensitive receptors (e.g., residences, historic structures, wells/springs, utilities, livestock areas, underground storage) will be determined. Resources at risk (within 500 feet) will receive pre-blast baseline tests (e.g., water well location, quality and flow, structural and wall conditions including foundation condition, wall cracks).

9.5.2 Monitoring and Inspection

Blasting supervisors (shooters) will be licensed by New York State. A copy of the shooter's license(s) will be supplied to DPS Staff before blasting operations begin. Dunkirk Gas Corporation will employ an independent blasting consultant to monitor compliance with regulations, perform seismograph data collection and water well testing and investigate damage claims. The consultant will have the authority to halt blasting operations when standards are not met.

9.5.3 Time Constraints and Notification

a. Explosive use will be limited to the hours of 9:00 a.m. to dark on non- holiday weekdays, unless otherwise approved by Staff;
b. To control flyrock or other airborne debris, rubber tire or woven steel blasting mats will be uses, unless otherwise approved by Staff;
c. DPS Staff and local and state public safety officials will be notified at least 48 hours before blasting is initiated on a project, and each morning with planned blasting locations; and
d. Inhabitants of occupied structures and farm operators within ¼ mile of centerline will be notified at least 48 hours before blasting in that area.

10. Pipelaying

Pipelaying activities include pipe stringing (layout), fabrication, trench dewatering, pipe-padding, pipe-lowering-in, installation of permanent trench breakers, and trench backfilling. The environmental objectives are to minimize the adverse impacts of trench dewatering, stormwater runoff, and soil erosion by the installation of permanent trench breakers on slopes, stream banks, and wetland edges along with the timely backfill of the open trench, the installation of permanent erosion controls and re-establishment of vegetation cover. In addition, extra precautions will be taken when pipelaying activities occur in the vicinity of overhead electric facilities (See Section 18.4.1).

10.1 Pipeline Stringing

Stringing is the operation by which pipe sections are transported by tractor- trailers, front-end loaders, and side booms along the ROW and placed adjacent to the trench in preparation for fabrication and lowering-in. During wet weather, operations will be suspended in areas with unstable soil conditions to prevent potential rutting, erosion, and other site hazards. Rutting will be defined as the mixing of the topsoil horizon with those horizons below by unsupported construction traffic. Any erosion control devices that are moved or damaged by construction equipment will be replaced or repaired by the end of the work day. Pipe will not be placed on the ground without the sufficient support of sandbags, wood timbers or any non-abrasive surface. Coated pipe must be elevated on wooden skids or other non-abrasive supports to prevent scratches and dents to the pipe or coating.

In all instances, steel pipe of any diameter should be considered dangerous due to its propensity to roll; precautions will be taken to guard against pipe movement and rolling. Proper ROW width and grading will provide sufficient room on the travel side to remove pipe sections from trucks and place them adjacent to the ditch. Stringing is usually accomplished by side-boom tractors. Caution will be taken when pipe is being strung beneath high voltage electric lines (See Section 18.5.1).

10.2 Fabrication

Pipe fabrication includes the bending, welding, coating, and testing of pipe or conduit. Erosion and sediment control devices will be maintained during these activities. Where concrete-coated pipe is needed for wetland and stream crossings, the best practice is for pipe to be pre-coated in an off ROW fabrication yard. If it should become necessary for pre-coating to be done in the field, no field coating activities will be conducted in wetlands or within 100 feet of any waterbody or wetland.

When pipe is to be installed across wetlands, saturated soils or across streams, Dunkirk Gas Corporation will use concrete coated pipe, saddle weights or other devices, may be required to counteract the buoyancy of a gas filled pipe (See Safety Regulations, Part 255).

10.3 Trench De-Watering

During construction, it may be necessary to pump water from the trench to expose the bottom or allow crews to work. Such de-watering can result in soil erosion, sedimentation in wetlands or other adjacent sensitive resource, or degradation of water quality as sediment-laden water flows into an adjacent waterbody or wetland. Trench water will be pumped out into a well-vegetated upland area and/or into an approved filter bag located on a level surface adjacent to a gently sloping, well-vegetated area.

10.4 Lowering In

Fabricated pipe will be lowered into the trench on to ‘‘foam’’ or sandbag "pillows", or appropriate padding material, where necessary, to protect the pipe from the trench walls or bottom. At this stage, before padding and to impede water flow in the trench, permanent trench breakers will be installed on slopes as specified. "Lowering in" will be accomplished with sufficient equipment to minimize undue stress on the pipe or any welded sections.

10.5 Trench Breakers

Trench breakers may be constructed of sandbags or foam. Impervious materials may be used to retain water in the wetlands. Trench breakers will be installed at all wetland edges. The location of these impervious trench breakers will be determined in the field by Dunkirk Gas Corporations EI(s) and DPS Staff and identified in the construction documents. Trench breakers will also be installed at the top of bank of each waterbody crossing.

10.6 Padding

To protect the pipe from loose stones or surrounding bedrock, the pipe may be padded with imported or screened on-site material. Padding, when needed, will be placed around the entire pipe. Where the pipeline trench traverses stony soil or areas of shot rock, pipe coated with concrete or rock jacket may be used in lieu of granular padding.

10.7 Backfilling

After padding, the trench will be backfilled with on-site trench spoil. No stones larger than 12 inches will be part of the backfill material; larger stones (natural boulders or shot rock) will be

hauled off ROW to an approved disposal site or windrowed on the ROW with landowner approval.

In areas where concrete coated pipe has been installed, stones larger than 12 inches may be part of backfill materials. In active agricultural land, more stringent backfill and restoration practices will be utilized (See Section 13).

Backfill will either be compacted to match surrounding grade or a crown will be left over the ditch line to accommodate settling. Crowned ditches will be inspected periodically throughout the year and necessary measures will be taken to restore grade and stabilize the ROW. Backfill will be completed to within 2 days of lowering-in.

11. Waterbody Crossings

Dunkirk Gas Corporation has proposed a variety of waterbody crossings to minimize adverse impacts on streams and water resources to the maximum extant practicable. Table 2 identifies all waterbodies impacted by the facility as defined by size, NYSDEC classification, and standard and identifies the recommended method for crossing. Detailed crossing drawings are provided in the EM&CP Plan and Profile Drawings (Appendix A). For those streams where HDD crossings are proposed, an Inadvertent Return Contingency Plan is provided in Appendix D of this EM&CP.

It should be noted that a stream's size as determined above may be different at the time of crossing due to "in field" conditions. DPS Staff will be provided with a weekly waterbody-crossing schedule once the Project is in construction. In the event that a crossing date is changed, DPS Staff will have at least 48 hour notice to that effect.

NYSDEC has stream classifications and standards that are based on water quality and the best stream use. The primary NYSDEC classification of streams within the Project area are Class B, C, and D streams. The complete list of classifications includes:

a. Class AA and A: Suitable for drinking water;
b. Class B: Primary contact recreation and any other usage except drinking or food preparation;
c. Class C: Waters best used for fishing, fish propagation, primary and secondary contact recreation; and

d. Class D: Waters best used for fishing although conditions are not as favorable as those of Class C.

The details of stream classifications as related to the NYSDEC can be found in 6 NYCRR Section 701.19 (Environmental Conservation Regulations).

Due to fishery or spawning issues, streams classified "C" or better may have a seasonal window where in-stream construction is prohibited or special constraints apply, as specified above. In-stream disturbance will be completed within 24 hours for all waterbodies.

NYSDEC crossing “windows” for stream crossing require that crossings in coldwater and trout in-stream construction be completed between June 1st and September 15th. The NYSDEC crossing window for cool water and warm water in-stream construction is between June 1st and November 30th.

Table 2. Waterbodies Crossed within Project ROW

Station	Stream Field Designation	Waterbody Name	NYSDEC Stream Classification	Flow Status	Bank Width (feet)	Length within Construction ROW (feet)	Length within Permanent ROW (feet)	Recommended Pipeline Crossing Method	Recommended Access Road Crossing Method
42+75	SB12	Crooked Brook and tribs 839-13	C	Perennial	20	60.4	50.2	Flumed Stream Crossing	Wood Mat Bridge
57+50	SB13	Crooked Brook 839-13	C	Perennial	15	106.9	43.3	Flumed Stream Crossing	Wood Mat Bridge
109+00	SC1	Canadaway Creek Lower and tribs 839-18	B	Perennial, Low-Moderate Flow	4-6	66.3	33.8	Flumed Stream Crossing	Wood Mat Bridge
119+25	SA1	Canadaway Creek Lower 839-15	B(TS)	Perennial, Moderate Flow	100	-	-	HDD	HDD
207+75	SA2	Tributary to Lake Erie 839-26	B	Perennial, Low to Moderate Flow	0.5-10	50	30	HDD	HDD/Access Road
197+50	SA3	Tributary to Lake Erie 839-26	B	Perennial, Low Flow	4-6	64.3	43.3	HDD	HDD/Access Road
229+25	SB1	Trib to Lake Erie 839-27	C	Perennial, Moderate Flow	2-6	-	-	HDD	HDD
281+50	SC3		Unclassified	Perennial, Moderate Flow	6	75	-	Flumed Stream Crossing	Wood Mat Bridge

Table 2. Waterbodies Crossed within Project ROW

Station	Stream Field Designation	Waterbody Name	NYSDEC Stream Classification	Flow Status	Bank Width (feet)	Length within Construction ROW (feet)	Length within Permanent ROW (feet)	Recommended Pipeline Crossing Method	Recommended Access Road Crossing Method
291+50	SC101		-	Intermittent	3	-	-	Dam and Pump Around Stream Crossing	Temporary Access Bridge
333+75	SA4	Potential feeder to Trib of Lake Erie 839-28	Unclassified	Intermittent	1-4	76.2	79.3	Flumed Stream Crossing	Wood Mat Bridge
336+00	SA5	Potential feeder to Trib of Lake Erie 839-28	Unclassified	Perennial, Moderate	6-25	96.8	37.3	Flumed Stream Crossing	Wood Mat Bridge
343+00	SA6	Potential feeder to Trib of Lake Erie 839-28	Unclassified	Intermittent, Low	1-4	60.3	50.1	Dam and Pump Around Stream Crossing	Temporary Access Bridge
363+50	SB5	Trib to Lake Erie 839-28	C	Perennial, Step pools	5	60.1	48.7	Dam and Pump Around Stream Crossing	Temporary Access Bridge
375+00	SB2		Unclassified	Intermittent, Riffle/pool	3	104.8	40.5	Dam and Pump Around Stream Crossing	Temporary Access Bridge

Table 2. Waterbodies Crossed within Project ROW

Station	Stream Field Designation	Waterbody Name	NYSDEC Stream Classification	Flow Status	Bank Width (feet)	Length within Construction ROW (feet)	Length within Permanent ROW (feet)	Recommended Pipeline Crossing Method	Recommended Access Road Crossing Method
401+75	SB3	Little Canadaway Creek 839-29	C	Perennial, Riffle/pool	30	-	32.2	HDD	HDD
402+25	SB4	Tributary to Little Canadaway 839-29	C	Intermittent	3-4	-	79	HDD	HDD
407+00	SB10	Potential feeder for trib to Little Canadaway 839-29	Unclassified	Intermittent	0.5	-	-	Avoidance	Avoidance
426+50	SB8	Potential feeder for trib to Little Canadaway 839-29	Unclassified	Perennial, Low	20	75.9	40.5	Flumed Stream Crossing	Wood Mat Bridge
431+25	SB7	Potential feeder for trib to Little Canadaway 839-29	Unclassified	Intermittent, Low flow	6	44.2	13.9	Avoidance	Avoidance
441+00	SB6		Unclassified	Ephemeral, Riffle/pool	3-4	30	29.6	Dam and Pump Around Stream Crossing	Temporary Access Bridge

Table 2. Waterbodies Crossed within Project ROW

Station	Stream Field Designation	Waterbody Name	NYSDEC Stream Classification	Flow Status	Bank Width (feet)	Length within Construction ROW (feet)	Length within Permanent ROW (feet)	Recommended Pipeline Crossing Method	Recommended Access Road Crossing Method
449+75	SA7	Potential feeder to Trib of Little Canadaway 839-29	Unclassified	Perennial, Low flow	4	96.1	60	Dam and Pump Around Stream Crossing	Temporary Access Bridge
451+50	SA8	Potential feeder to Trib of Little Canadaway 839-30	Unclassified	Perennial, Low to medium flow	35	157.5	127.6	Dam and Pump Around Stream Crossing	Temporary Access Bridge
454+90	SA9	Trib of Little Canadaway 839-29	C	Perennial, Steady flow	8	62.2	52.2	Flumed Stream Crossing	Wood Mat Bridge
464+00	SA10		Unclassified	Perennial, Moderate flow	4-8	62	51.8	Flumed Stream Crossing	Wood Mat Bridge
506+00	SC9		Unclassified	Perennial	2-4	115.3	59.4	Flume Stream Crossing	Wood Mat Bridge
512+50	SC10		Unclassified	Intermittent, Low flow	2-4	79	33.8	Dam and Pump Around Stream Crossing	Temporary Access Bridge
530+00	SC11		Unclassified	Perennial, Low flow	4	69.6	58	Dam and Pump Around Stream Crossing	Temporary Access Bridge
537+40	SA13		Unclassified	Intermittent, No flow	1-4	65.3	54.1	Dam and Pump Around Stream Crossing	Temporary Access Bridge

Table 2. Waterbodies Crossed within Project ROW									
Station	**Stream Field Designation**	**Waterbody Name**	**NYSDEC Stream Classification**	**Flow Status**	**Bank Width (feet)**	**Length within Construction ROW (feet)**	**Length within Permanent ROW (feet)**	**Recommended Pipeline Crossing Method**	**Recommended Access Road Crossing Method**
543+00	SC8		Unclassified	Perennial, Moderate	1	67.7	31.2	Flumed Stream Crossing	Wood Mat Bridge
553+50	SC7	Tributary to Bear Lake 800.7-65	A	Intermittent	3-8	62.7	-	Flumed Stream Crossing	Wood Mat Bridge

11.1 Spill Prevention

Where wetlands and/or waterbodies are crossed or are present within 100 feet of the ROW, a SPCC Plan will be prepared to ensure that:

a. All employees and/or other handlers of hazardous materials are properly trained and know the proper reporting requirements.
b. All equipment is in good operating condition and is inspected on a regular basis.
c. All equipment is refueled at least 100 feet from a waterbody or wetland boundary and in an upland area. Where there is no reasonable alternative, refueling may occur within these setbacks, but only after notification is made to the EI(s) and proper precautions are taken to prevent spills.
d. Hazardous materials will not be stored within 100 feet of a wetland or waterbody. This applies to storage and does not apply to normal operation or use of equipment in these areas.
e. All equipment operating within 100 feet of a wetland or waterbody will have sufficient spill containment equipment on board to provide for prompt clean-up in the event of a release.
f. Pumps used for trench dewatering, dam and pump crossings, or hydrostatic testing operating within 100 feet of a wetland or waterbody are placed in proper sized and constructed secondary containment structures during their use.
g. Concrete coating activities are not performed within 100 feet of a wetland or waterbody boundary.
h. Construction equipment is parked at least 100 feet from wetlands and/or waterbodies at the end of the working day. Where there is no reasonable alternative, refueling may occur within these setbacks, but only after notification is made to the EI(s) and proper precautions are taken to prevent spills.

11.2 Buffer Areas

As described in Section 6.6, a vegetation buffer area will be maintained at all stream crossings. Vegetation in the buffer area will include small trees (generally up to 20 feet in height), stumps, shrubs, and herbaceous plants. Large trees (over 20 feet in height) will be removed during initial clearing operations. The vegetation buffer area will be 15 feet in length and extend the entire width of the ROW, except for that portion of the bank that has been cleared for the construction

path. Where HDD or conventional boring is proposed, all vegetation will be maintained within this buffer strip except for the construction path.

11.3 Installation

Unless specifically requested in this EM&CP, all in-stream work, except that required to install or remove the equipment crossing, will be completed within 24 hours from the start of trenching. For those streams where additional time to complete the crossing is anticipated, Dunkirk Gas Corporation will identify those areas prior to the initiation of construction.

11.3.1 Equipment Crossings

After determining width, depth, flow, and stream class, Dunkirk Gas Corporation will indicate the appropriate method to cross the waterbody. Where a waterbody cannot accommodate a temporary equipment crossing, the pipeline construction will be moved around the stream via an alternate access route. All equipment must use the equipment crossing with the exception of clearing equipment which may make one pass (meaning one pass through of the stream with equipment) with EI(s) approval through only minor waterbodies to clear that vegetation necessary to safely install the crossing.

Equipment crossings will be constructed so as to allow for unrestricted flow and to prevent soil from entering the waterbody. Crossings will also be designed and constructed to withstand and pass the highest flow anticipated while the bridge is to be in service and maintained daily, if necessary, to prevent any accumulated soil from entering the waterbody.

The following are examples of acceptable equipment crossings:

a. Timber mat with or without culverts;
b. Railroad cars;
c. Flexi-float or portable bridges; and
d. Clean rock fill and culverts (soil will not be used for fill).

Where the width of the stream to be spanned is greater than the length of the timber mats used, in-stream abutments may be used.

11.3.2 Concrete Coating

Where pipe is installed across medium or large streams, a heavy concrete coating (3-4 inches thick) will be applied to the pipe for a distance equal to or exceeding the length of open trench at the crossing width indicated in the Table 2 above. Concrete coating protects the pipe in the trench from rock or other obstructions and adds weight to the pipeline. Any concrete coating will be performed a minimum of 100 feet from waterbodies. All field-applied concrete will be cured a minimum of 7 days before installation to prevent concrete leachate from entering the stream.

11.4 Dry Crossing Methods

All waterbody crossings shall be installed by one of the following dry-ditch methods outlined below, or by HDD if feasible. Open-cut crossings or wet crossings will only be allowed if requested prior to the start of construction and approved by DPS Staff. Table 2 identifies the crossing methods for each stream within the Project ROW.

11.4.1 Trenching

a. Prior to the initiation of trenching for the pipeline stream crossing, the following sequence of events will generally be followed:
b. Any sediment-laden water pooled in upland trench sections behind ditch plugs will be pumped and filtered through filter bags or basins at least 100 feet from stream banks.
c. A spoil sediment barrier retention basin or silt fence will be installed at least 10 feet back from each bank.
d. All equipment, material and construction personnel necessary for the pipeline crossing will be on-site before trenching begins.

Once trenching begins, the following guidelines will apply:

a. For minor to intermediate size waterbodies, trenching will be done with two excavators starting "bucket-to-bucket" mid-stream and working back towards the stream banks. If only one excavator is used, trenching will be done in a manner that minimizes in-stream disturbance to the extent practicable. All trench spoil will be placed at least 10 feet from the water's edge and behind a suitable erosion control device.
b. For major waterbodies, trenching may be done by clamshell or dragline excavation,

c. If necessary, sheet piling will be installed to retain trench wall integrity in streams with unstable bottoms.
d. The trench will be deep enough to provide a minimum of 5 feet of cover over the pipeline. If subsurface bedrock, or other stream features preclude obtaining this depth of cover, Dunkirk Gas Corporation will notify DPS Staff as soon as possible, providing a plan for modifying the stream crossing method.

11.4.2 Lowering In/Pipe Placement

Lowering in, or the placement of the pipe in the trench, will take place as soon as practicable after trenching is complete. The installation of large diameter, concrete-coated pipe may require the use of compressed air floats to move the welded sections of pipe into place before setting. Floats will be removed immediately after pipeline installation.

11.4.3 Trench Backfill

Backfill operations within streambeds will commence immediately after pipe lowering-in operations have been completed and will continue until completed. Backfill material will consist of imported clean stone or approved excavated streambed material. The upper one foot area of the trench will be filled with stone large enough to prevent streambed scouring during high water flow conditions.

11.4.4 Clean-up and Restoration

Upon completion of backfilling operations, clean-up and restoration of the stream crossing, banks and bank approaches (at least 50 feet adjacent to each bank) will be completed within 24 hours and accomplished sequentially as follows:

a. Remove all in-stream structures (i.e., dams, flumes, sediment bathers, etc.);
b. Return streambed and lower banks to the original grade unless otherwise authorized;
c. Final grade adjacent banks and slopes and remove any retention or settling basins on the banks; and
d. Permanently stabilize banks with seed, mulch and/or other appropriate erosion control devices (See Section 8).

As the Project nears completion, final restoration of equipment crossing access on adjacent upland staging areas will be accomplished in the following sequence:

a. Removal of any equipment access crossing material including approach abutments, head boards, stone or dirt, flumes, culverts, timber mats or other related structures;
b. Final grade stream banks and adjacent ROW where stream access crossing was removed;
c. Install appropriate erosion control devices (permanent rip-rap, jute mesh, rock or earth berms); and,
d. Seed and mulch disturbed areas.

11.5 Dry Stream Crossing Techniques

11.5.1 Boring and Pipe Push

Conventional or slip bores may be used to minimize or avoid impacts on sensitive resources or areas of difficult topography. The following apply when using this method:

a. The jacking (push) and receiving pit will be at least 20 feet from the water's edge.
b. Any accumulated water in the pits will be filtered treated to remove silt and sediment before it is returned into any watercourse.
c. Within the stream channel, the pipe will be installed with a minimum of 5 feet of cover.

11.5.2 Directional Drilling

Directional drilling is the pulling of the welded pipe sections beneath the ground through an enclosed trench guided by remote-controlled drill heads. Setbacks from the stream bank will be dependent upon the length of the crossing. Within the stream channel, a minimum 5-foot depth of cover will be maintained unless site conditions dictate otherwise. The following guidelines will apply when using this method.

a. Where noise may be an issue, noise measurements will be taken to assess impacts of drilling equipment on nearby sensitive receptors (See Section 17). Measures to reduce noise impacts will be taken prior to the initiation of drilling.
b. Drilling mud and related recycling and mixing equipment will be positioned and bermed in such a manner as to prevent spills in streams or other waters.
b. All used or excess drilling mud will be disposed of at a Commission or NYSDEC

approved disposal site.

c. DPS Staff will be informed immediately of any spill or "inadvertent returns" of drilling mud into the waters being crossed.
d. A contingency plan will be completed and filed with the Commission for approval that details what procedures would be followed should an HDD fail and procedures for mitigation of inadvertent returns. The Project's Inadvertent Return Contingency Plan is provided as Appendix D to this EM&CP.

11.5.3 Other Dry Crossing Methods

The primary objective of these methods is to isolate in-stream work and spoil areas from stream flow by damming and diversion techniques. Stream flow is interrupted up-stream and pumped or otherwise moved around the work area. Prior to construction, a re-assessment will be performed to ensure that the proposed crossing method is still applicable, given on-site stream flow conditions.

a. Flume Method

Flumed crossings may be installed in minor and intermediate waterbodies during low flow conditions. Pipes will be sized to handle expected flows and be long enough to cross the entire work zone, including the travel lane and the swing radius of the bucket on the excavator. When using this method, the following specifications will apply.

a. Once the flume pipe is installed, headwalls or dams will be constructed up and down stream to channel water into the flume pipe. Where necessary, to ensure a water-tight barrier, a metal flange or other appropriate material will be attached to the upstream end of the flume. This flange will be buried into the substrate and secured with sandbags. This will be accomplished prior to any other in stream activity.
b. Flume(s) will be adequately sized to accommodate the flow at the time of crossing and installed to prevent bank erosion and streambed scour.
c. Water will be pumped from the area between the dams, and filtered in an appropriate filtration or settling device prior to the initiation of trenching.
d. Once the trench is excavated across the stream channel and under the flumes, the pipe will be installed and backfilled immediately (See Section 10.6.3). The flume pipes will not be removed during trenching, pipelaying, backfilling, or initial restoration efforts.

e. All flume pipes and dams will be removed as soon as stream bed and bank restoration is complete.
f. Streambeds and banks for a distance of at least 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. The "drag section" to be installed will be sufficient in length so that tie-ins can be made outside of this restored 50 foot area.

b. Dam and Pump Around Method

This method may be used on minor and intermediate waterbodies. The following specifications will apply to this method. The dam and pump method may be used for crossings where it is determined by Dunkirk Gas Corporation and in consultation with DPS Staff that pumps can adequately transfer stream flow volumes around the work area. Implementation of the dam and pump crossing method will meet the following criteria:

a. Pumps and hoses will be set-up as appropriate to address on-site conditions.
b. Pumps will have twice the capacity (cubic feet per second) of the measured stream flow. A spare pump and extra hose will be kept on-site at all times. Depending on stream flow, it may be necessary to excavate a sump hole in the stream bed to move water to the pump head.
c. The up-stream dam will be composed of sandbags, metal plating or a combination of both. A down-stream dam will be installed, if necessary, to keep the work-zone streambed dry.
d. The hose will have sufficient slack so that it can be moved to facilitate pipeline installation during lowering-in.
e. Backfill operations will commence immediately after lowering-in and be accomplished per section 11.4.3.
f. Stream banks and approaches will be restored per section 11.3.4.
g. Use of sufficient pumps, and on-site back up pumps, to maintain adequate downstream flows.
h. Construct dams with materials that prevent sediment and other pollutants from entering the waterbody.
i. Screen pump intakes.
j. Prevent streambed scour at pump discharge.
k. Monitor both the darn and the pumps to ensure the proper operation throughout the crossing.

l. Properly constructed and sized secondary containment for the pumps if within the 100 feet setback requirements for wetlands and waterbodies.
m. Installation of an oil absorbent boom across the stream prior to in-stream activity.

12. Wetland Crossings

As identified in Section 3.3.2, all wetlands are federally regulated by the USACE pursuant to Sections 401 and 404 of the Federal Clean Water Act. In addition, NYSDEC regulates all wetlands over 12.4 acres. The issuance of Section 401 Water Quality Certification is delegated to the Commission on Article VII Projects. Dunkirk Gas Corporation will acquire a USACE Section 404 permit for any action in or through a wetland under a "nationwide" permit. Relevant NYSDEC comments in the Article VII case will be incorporated in the Project's Certification.

12.1 Wetlands Identification and Crossing

The on-site wetland surveys were performed along the Project survey corridor prior to the Application filing, from May 2014 to August 2014 to identify and locate wetland areas. The Dunkirk Natural Gas Pipeline Project route has been modified and designed to minimize adverse impacts on wetland areas to the maximum extent practicable. Table 3 lists the wetlands delineated within the Project ROW, wetland type, approximate wetland impact, and the recommended crossing method. Wetlands in the Project survey corridor were flagged and staked during delineations and will be flagged and staked prior to the initiation of construction.

Table 3. Wetland Crossings within Project ROW								
Stationing	**Wetland Field Designation**	**Area Delineated [1] (acres)**	**Field Designated Covertype [1] (Cowardin et al. 1979)**	**Area with Construction ROW (acres)**	**Area within Permanent Maintained ROW (acres)**	**Area of Permanent Conversion of Forested Wetland (acres)**	**Area of Permanent Conversion of Scrub-Shrub Wetland (acres)**	**Recommended Crossing Method**
363+25	W-501	0.07	PEM	0.059	0.049	-	-	Open Cut/Access Road
149+20	WA-02*	7.89	PEM	0.820	0.275	-	-	HDD/Access Road
			PSS	0.538	0.219	-	0.219	
			PFO	1.430	0.573	0.573	-	
164+50	WA-03	1.22	PEM	0.356	-	-	-	Open Cut/Access Road
200+50	WA-04*	5.36	PFO	1.487	0.893	0.893	-	HDD/Access Road
335+00	WA-05	0.19	PFO	0.050	0.021	0.021	-	Open Cut/Access Road
352+60	WA-06	1.14	PSS	0.228	0.137	-	0.137	Open Cut/Access Road
448+00	WA-07	0.23	PEM	0.057	0.031	-	-	Open Cut/Access Road
459+40	WA-08	0.14	PFO	0.071	0.038	0.038	-	Open Cut/Access Road
474+50	WA-09	0.94	PFO	0.348	0.152	0.152	-	Open Cut/Access Road
483+80	WA-10	0.53	PFO	0.088	0.034	0.034	-	Open Cut/Access Road
495+00	WA-11	1.2	PFO	0.529	0.212	0.212	-	Open Cut/Access Road
222+50	WB-01	1.16	PEM	0.427	-	-	-	Open Cut/Access

Table 3. Wetland Crossings within Project ROW								
Stationing	**Wetland Field Designation**	**Area Delineated [1] (acres)**	**Field Designated Covertype [1] (Cowardin et al. 1979)**	**Area with Construction ROW (acres)**	**Area within Permanent Maintained ROW (acres)**	**Area of Permanent Conversion of Forested Wetland (acres)**	**Area of Permanent Conversion of Scrub-Shrub Wetland (acres)**	**Recommended Crossing Method**
								Road
226+00	WB-02	0.51	PEM	0.292	-	-	-	Open Cut/Access Road
242+00	WB-03	2.73	PSS	0.980	0.175	-	0.175	Open Cut/Access Road
372+00	WB-05	1.45	PSS	0.099	0.046	-	0.046	Open Cut/Access Road
			PFO	0.495	0.265	0.265	-	
431+50	WB-06	0.71	PFO	0.151	0.084	0.084	0	Open Cut/Access Road
426+80	WB-07	0.16	PEM	0.105	0.022	0.022	-	Open Cut/Access Road
406+50	WB-08	0.79	PSS	0.039	0.004	-	0.004	Open Cut/Access Road
573+00	WB-09	1.16	PEM	0.227	-	-	-	Open Cut/Access Road
			PSS	0.153	0.064	-	0.064	
567+50	WB-10	1.15	PEM	0.018	-	-	-	Open Cut/Access Road
			PSS	0.101	0.050	-	0.050	
271+00	WB-102	2.62	PSS	1.085	0.435	-	0.435	Open Cut/Access Road
346+60	WB-103	0.01	PFO	0.005	0.003	0.003	-	-
31+00	WB-11	0.61	PEM	0.135	0.094	-	-	Open Cut/Access Road
			PSS	0.018	-	-	-	
36+50	WB-12	0.58	PEM	0.080	0.051	-	-	Open Cut/Access Road
			PSS	0.029	0.012	-	0.012	
42+40	WB-13	0.46	PFO	0.062	0.032	0.032	-	Open Cut/Access

Table 3. Wetland Crossings within Project ROW								
Stationing	**Wetland Field Designation**	**Area Delineated [1] (acres)**	**Field Designated Covertype [1] (Cowardin et al. 1979)**	**Area with Construction ROW (acres)**	**Area within Permanent Maintained ROW (acres)**	**Area of Permanent Conversion of Forested Wetland (acres)**	**Area of Permanent Conversion of Scrub-Shrub Wetland (acres)**	**Recommended Crossing Method**
								Road
55+00	WB-15*	5.15	PEM	0.933	0.448	-	-	HDD/Access Road
			PSS	0.151	0.062	-	0.062	
			PFO	0.792	0.318	0.318	-	
74+00	WB-16*	6.26	PSS	2.557	0.808	-	0.808	HDD/Access Road
416+50	WB-19	0.68	PEM	0.305	0.097	-	-	Open Cut/Access Road
85+40	WC-01, WC-02, WB-17	2.65	PEM	0.012	0.006	-	-	Open Cut/Access Road
			PSS	0.012	0.004	-	0.004	
90+70	WC-03	0.06	PEM	0.025	0.012	-	-	Open Cut/Access Road
109+00	WC-04	0.12	PEM	0.013	-	-	-	Open Cut/Access Road
			PSS	0.010	0.006	-	0.006	
259+00	WC-05	0.06	PEM	0.008	-	-	-	Access Road
280+80	WC-08	0.79	PEM	0.020	-	-	-	Open Cut/Access Road
217+44	WC-103	0.31	PEM	0.043	-	-	-	-
294+00	WC-11	0.09	PFO	0.786	0.321	0.321	-	Open Cut/Access Road
308+00	WC-12	0.87	PSS	0.338	0.102	-	0.102	Open Cut/Access Road
553+50	WC-13	0.45	PEM	0.093	-	-	-	Open Cut/Access Road

Table 3. Wetland Crossings within Project ROW								
Stationing	**Wetland Field Designation**	**Area Delineated [1] (acres)**	**Field Designated Covertype [1] (Cowardin et al. 1979)**	**Area with Construction ROW (acres)**	**Area within Permanent Maintained ROW (acres)**	**Area of Permanent Conversion of Forested Wetland (acres)**	**Area of Permanent Conversion of Scrub-Shrub Wetland (acres)**	**Recommended Crossing Method**
548+40	WC-14	1.36	PEM	0.226	0.115	-	-	Open Cut/Access Road
			PFO	0.006	0.003	0.003	-	
499+70	WC-15	0.98	PFO	0.371	0.136	0.136	-	Open Cut/Access Road
506+00	WC-16	0.45	PFO	0.047	0.014	0.014	-	Open Cut/Access Road
512+60	WC-17	0.92	PFO	0.271	0.106	0.106	-	Open Cut/Access Road
522+70	WC-18	0.31	PFO	0.108	0.057	0.057	-	Open Cut/Access Road
Notes:	[1] As Identified in the Wetland Delineation Report prepared for the Dunkirk Natural Gas Pipeline Project, prepared by TRC in September 2014. *Wetlands that are potentially jurisdictional under Article 24.							

12.2 Timing and Scheduling Constraints

The USACE, NYSDEC, USFWS or the Commission may require construction to occur during specific site conditions or seasonal periods. This may be done to protect a particular species or habitat. At this time Dunkirk Gas Corporation has not identified any permit conditions or constraints required by other agencies. However, if such conditions be applied Dunkirk Gas Corporation will inform DPS Staff. For these areas, DPS Staff will be notified 48 hours prior to the initiation of construction.

12.3 Clearing Methods

Any clearing proposed in wooded wetlands must be consistent with permit requirements from the appropriate jurisdictional agencies. If high soil moisture content or standing water exist in a wetland prior to clearing, mats will be used under heavy equipment to prevent rutting and soil profile mixing. Trees will be felled by hand and either used on-site, stored on the ROW outside of wetland boundaries or moved off ROW.

In wooded wetlands, when soil conditions permit, trees maybe felled via mechanical clearing methods described in Section 5. When conditions warrant, the following specialized equipment may be used to further reduce adverse impacts:

a. swamp-tracked excavators with hydraulic shears or grapples;
b. forwarders; and
c. swamp tracked bulldozers.

During clearing and disposal operations, precautions shall be taken to avoid soil profile mixing or rutting.

12.4 Construction Path and Access Road Construction

Dunkirk Gas Corporation will consider the following in determining the method of equipment access in wetlands:

a. moisture content and substrate composition;
b. pipeline diameter and class; and
c. the type and size of construction equipment to be used.

All access roads will be considered temporary and as such, designed for installation and removal. The primary methods of wetland crossings are described below.

12.4.1 No Road or Pathway

No road or pathway is built to facilitate construction or vehicular access through a wetland. Specialized machinery or trenching methods obviate the need for surface improvements.

12.4.2 Bridges and Flotation Devices

When the depth of water in a wetland exceeds 12 inches, temporary pontoon or floatation bridges may be used. If bridging is used, the following specifications will apply:

a. On 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.
c. Trees will not be used for guying bridges if practicable, if trees are used, protective measures (pipe slings or skid ropes) will be used to prevent damage to trunks.

12.4.3 Timber Mats

In wetlands with high soil moisture content or standing water, pre-fabricated wooden mats may be placed on the wetland surface to provide support and stability. When timber mats are used in wetlands the following standards apply:

a. Sufficient mats will be on-site to sufficiently span the 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 to the wetland.
d. Mats will be installed perpendicular to the trenchline to provide adequate weight distribution for the construction equipment.
e. Once construction and restoration is complete, all mats will be removed from the wetland.

12.4.4 Log Rip Rap (corduroy) Roads

Where native woody material is available, logs may be placed in wetlands to support construction equipment. When constructing corduroy roads, the following construction standards will apply:

a. Logs used will be at least 4 inches or greater (small end diameter) and 12 feet long and placed perpendicular to direction of travel.
b. Flume pipes will be installed where necessary to maintain cross drainage.
c. Access will be restricted to vehicles essential for construction and the roads inspected and repaired on a regular basis.
d. An attempt will be made to use no more than 2 layers or timber rip-rap for the construction of the travel lane.
e. Brush, stumps, rock, soil from outside of the wetland will not be used to stabilize the construction ROW.
f. Once construction and restoration is complete, all log rip rap or corduroy materials will be taken off ROW to and approved disposal or storage site. Retention of the road in the wetland must be authorized by the appropriate state and federal agencies.

12.4.5 Filter Fabric and Stone Roads

In instances where suitable woody materials or mats are unavailable, a fabric and fill roadway may be installed using the standards listed below:

a. Prior to placing geotextile material in the wetland, all tree stumps will be cut flush with the ground as much as practicable. If stumps are to be removed then two to three feet of stem will be left to facilitate grubbing operations. In most instances, only the stumps over the ditchline will be removed unless otherwise specifically approved.
b. The road will be built to the minimum width necessary for the safe and efficient construction of the pipeline.
c. A stone or base will be laid on top of the filter fabric. The road will be of sufficient depth to hold material in place and support equipment.
d. Suitable cross drainage will be provided across the road for stream channels and surface flow.
e. All vehicular and construction equipment access will be confined to the road.
f. Upon completion of construction, all stone and filter fabric will be removed from the

wetland unless otherwise approved for retention.

12.5 Grading

Grubbing and grading activities will be limited to directly over the trenchline and travel path. Tree stumps will be left in place except over the trenchline. Tree stumps and minor grading activities may be allowed if in consultation with DPS Staff, that tree stumps and/or severe terrain pose a safety related issue. Only then can tree stumps and root systems be removed from the working side of the ROW outside of the trenchline. Grading is permitted on the approaches to wetlands, however, placing upland soil into wetlands is strictly prohibited. No grading will be permitted in those wetlands that are flooded or saturated.

12.6 Trenching

When excavating trenches in wetlands, the following methods may be used.

12.6.1 Standard Trenching

Depending upon the characteristics of the wetland and the physical parameters of the pipeline to be installed, trenching is accomplished in more or less the standard manner used in other upland areas. Wide or flotation track excavators will be used to excavate the trench by straddling the centerline of the trench. Storing topsoil and subsoil can be on the same side or opposite sides of the trench. If topsoil and subsoil are placed adjacent to another, sufficient space will be allowed between the two types of soil to prevent mixing.

In instances where there is insufficient work room to store spoil on the far side of the ROW, spoil may be temporarily stored on the travel lane. Any spoil placed in the travel lane will be allowed to dry before equipment can travel. When the pipe is installed, the spoil is placed back into the trench.

12.6.2 Trenching Off Timber Mats

When timber mats are used, the mats are moved forward and the excavator trenches behind itself. Excavation is done in one pass and backfill accomplished in a subsequent pass (See Section 12.6.3). According to Section 12.6.3, timber mats may span the wetland allowing the

excavator to trench off the timber mats. All mats used must be retrieved following construction and restoration.

12.6.3 One Pass In-Line Trenching

In wetlands with standing water, a "swamp hoe", excavators designed to operate and float on wetlands, will excavate the trench in a single pass. No additional support for the machine should be necessary. Topsoil and subsoil are usually placed on opposite sides of the trench. After the pipe has been installed, backfill is done in the reverse manner of excavation with the excavator first pulling subsoil back into the trench followed by topsoil. Dunkirk Gas Corporation will ensure that the excavator has sufficient fuel to finish the excavation in one pass. Refueling restrictions in wetlands may require the machine to be walked out for refueling,

12.6.4 Modified One Pass In-Line Method

This method utilizes the same trenching technique discussed above, except that the pipeline installation operation occurs concurrently with trenching. This method is used in severely unstable soils where the integrity of trench walls is hard to maintain.

Pre-welded sections of pipe are prepared prior to start of trenching. A "pull head" is welded to the end of the pipe string and a cable is then attached to the pull head strung across the wetland. Then cable is threaded between the tracks of the excavator, and attached to bulldozer(s) or other pulling device. Prior to excavation the cable is slackened, moved to one side and a short section of trench is excavated. Next the cable is then tightened and the concrete coated pipe is immediately pulled into the trench. This process is repeated until the wetland is crossed.

12.7 Directional Drill, Conventional Bore or Guided Bore

A conventional bore or guided bore or directional drill may be employed to avoid disturbance of wetlands.

12.8 Spoil Placement and Control

12.8.1 Topsoil Stripping

In order to prevent the mixing of organic material and subsoil, topsoil will be stripped and stockpiled separate from subsoil. It may be necessary to install silt fence or other siltation control barriers to ensure separation and prevent topsoil loss.

In areas with surface water, gaps may have to be left in spoil piles to allow for surface drainage. In areas of high flow and unstable soils, temporary culverts may have to be installed in spoil piles to allow for cross drainage.

In wetlands with saturated soils or standing water, topsoil stockpiling may not be possible. In these instances, topsoil and trench spoil have to be controlled to prevent movement off-site. Silt fence or other sediment retention devices may be necessary to prevent soil movement. In severe cases, additional temporary workspace may have to be used to accommodate soil movement.

12.9 Ditch Plugs in Wetlands

In wetlands crossed by mainline trenching, soft plugs will be installed at the wetland edge and maintained until lowering operations commence. For wetlands crossed by tie-in construction, a hard plug will be maintained at the wetland edge until tie-in operations are commenced. Earth filled sand bags trench breakers will be installed at wetland boundaries to prevent soil erosion into the wetlands.

12.10 Pipe Fabrication and Use

12.10.1 Concrete-Coated Pipe

In wetlands where the trench consistently fills with water, Dunkirk Gas Corporation will use heavy concrete coating for a distance equal to, or greater than, the length of the water-filled trench. The concrete coated pipe will reduce the amount of trench dewatering necessary for pipe installation. Once sufficient trench depth has been achieved, the pipe can then be dragged or lowered-in without having to dewater the trench to inspect it for depth of cover or obstructions.

Also, concrete-coated pipe will preclude the use clamp-on or saddle weights or other weighting devices. When possible, the pipe used will be "factory coated". If the coating must be done in the field, it will not be done within 100 feet of any wetland or 100-foot adjacent buffer zone.

12.10.2 Fabrication

Stringing, welding and other pipeline fabrication activities will take place outside wetland boundaries and buffer zones to the maximum extent practicable. When sections of pipe are ready for installation, only then will they be carried out to or pulled into the trench.

12.11 Trench Dewatering

Trench dewatering may be necessary to ensure sufficient depth of cover, to visually inspect the trench bottom for obstructions and allow crews to safely and efficiently construct the pipeline. If trench dewatering is necessary:

a. Water will be pumped into filter bags, sediment retention ponds, or other devices in to well vegetated upland area so it can be filtered. Refer to Sections 8.1.8 and 10.3 for details. Dewatering will occur in a manner that does not result in heavily silt-laden water flowing in to a wetland.
b. Under no circumstances will trench water be pumped or otherwise directed into a classified wetland unless free of suspended solids.

12.12 Backfill

Backfill operations will commence immediately after lowering-in operations and will continue until completed. When backfilling the trench the following will apply:

a. 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. Imported material may be brought in to protect the pipe and achieve depth of cover requirements. Use of imported backfill must be approved by the appropriate agencies.
b. Where topsoil has been segregated from trench spoil, backfill will be done in reverse order with trench spoil returned first.
c. Excess spoil will be removed off-site. Under no circumstances will excess spoil be spread along the ROW or stockpiled in a manner that permanently changes the soil

profile or wetland hydrology.

d. For those areas where conditions and topography warrant and Dunkirk Gas Corporation identifies prior to the start of trenching, trench breakers made of sandbags or other impervious materials shall be installed at the upland/ wetland boundaries.

12.13 Clean-up and Restoration

Upon completion of backfilling, restoration and clean-up will begin in compliance with any specific permit requirements.

12.13.1 Restoration

a. Immediately after backfill, wetlands will be restored to their original contour and relief. Surface and subsurface drainage patterns shall be restored to pre- construction conditions.
b. Restoration of the wetland banks other than the travel way, will be completed within 24 hours after the wetland profile has been restored. This will be done for a minimum distance of 50 ft. from the wetland edge. Restoration of the wetland banks will include but is not limited to: final grading, seeding, liming, fertilizing, mulching.
c. A waterbar, drivable berm, or silt fence will be installed at the upland/wetland boundary upon the restoration.

12.13.2 Clean-up

a. All materials placed in the wetland to facilitate travel and construction must be removed unless otherwise authorized for retention.
b. All manmade objects (i.e., excess pipe, skids etc.) particularly prefabricated wooden mats, will be removed from the wetland and disposed of at an approved storage or disposal site.
c. Following clean-up, the wetland and its banks will be evaluated for possible vegetative plantings. This will be done in consultation with the appropriate agencies.

13. Agricultural Lands

The NYSDA&M has divided agricultural lands into three basic types:

Pasture/Grazing:

1. Unimproved grazing areas (bushy or wooded land used by livestock).
2. Permanent open pasture (land devoted only to pasture use, not suited to tillage or rotation).
3. Improved pasture (including tillable rotation pasture/hayland).
4. Livestock fence lines.

Cropland:

1. Hayland
2. Rotation cropland.
3. Long-term cropland. Such lands will be identified through consultation with the offices of the Consolidated Farm Service Agency and the County Soil and Water Conservation District.

Unique Agricultural Lands:

1. Specialty cropland (vegetables, berries, Christmas trees, Nursery).
2. Orchards.
3. Vineyard.
4. Maple sugarbush.
5. Organic muckland.
6. Permanent irrigation systems.

Dunkirk Gas Corporation has, to the extent practicable, minimized impacts to vineyards and has consulted with NYSDA&M representative's to develop the proposed route. When crossing vineyards, the area of permanent clearing within the 50-foot permanent ROW will be limited to 30 feet required for pipeline maintenance, reliability and safety due to the semi-permanent nature of vineyard installation.

13.1 Clearing

Farmlands often have shrubs, hedgerows and other woody vegetation that may require clearing. In those instances, normal clearing procedures will be followed. Logs, stumps, brush, or chips will not be piled or buried in active agricultural fields or improved pasture in any manner that would interfere with the intended land use unless landowner permission is acquired. Black cherry trees (*Prunus serotina*) are toxic to livestock if cut while in foliage and ingested. All felled trees of this species will be removed from areas accessible to livestock.

13.2 Grading and Topsoil Segregation

13.2.1 Grading

Grading operations in agricultural lands will vary with soil type, land use and topography. Construction practices in agricultural lands are designed with the goal of protecting farm soils from adverse impacts (soil mixing, compaction, erosion). The primary means to achieve these goals is topsoil segregation.

The various topsoil segregation techniques described in Section 6.3 of this document will be applied. Topsoil stripping and methods will be determined in consultation with the landowner/tenant farmer, NYSDA&M and DPS Staff, and are designated on the EM&CP Plan and Profile Drawings (Appendix A).

13.2.2 Topsoil Segregation

a. Cropland

The decision to strip topsoil on the ROW will be made in consultation with DPS Staff, the landowner or tenant farmer and NYSDA&M personnel. Factors to consider include: "current use, best use, fertility, tillability, soil profile characteristics, fragility, subsurface drainage and existing water control systems. Based upon the above information, a determination will be made as to whether "ditchline", "ditch and spoil" or "full width" stripping will be done. If topsoil stripping is to be done, the following will 'apply.

a. Stripping will be done prior to grading.
b. Stripping will be done generally to a maximum depth of 12 inches or to the horizon change depending on-site specific conditions.
c. On side slopes, stripped soil will be placed on the uphill side to minimize mixing with subsoil.
d. Breaks shall be provided in topsoil to prevent ponding and provide for livestock and equipment access.
e. If topsoil must remain stockpiled over winter it will be seeded, mulched or otherwise protected from erosion no later than October 1. Erosion control techniques will be employed where necessary to prevent the loss of topsoil from rain or runoff.

b. Pasture/Grazing

In improved pasture Dunkirk Gas Corporation will pay special attention to livestock access to fields cut off by grading and topsoil storage. Dunkirk Gas Corporation will strip topsoil on unimproved pasture.

13.3 Drain Lines

a. Dunkirk Gas Corporation will consult with the farm owner/operator and the NRCS or Soil & Water Conservation District to determine if plans or recommendations exist for the installation of future drainage. If so, the Project will be designed to accommodate future drainage installation.
b. Whenever possible or practical, drain lines will be denoted on Project plans where they cross the ROW.
c. Attempt to mark exposed or damaged lines after grading or topsoil stripping has occurred.

13.4 Trenching

Trenching operations will proceed in much the same manner as in other upland areas except in instances where topsoil stripping has occurred.

a. In areas that have been stripped, trench spoil and sub-soil will be segregated from the topsoil piles to prevent mixing.
b. In croplands, pipe will be buried with a minimum depth of cover to the top of the pipe of 4 feet. 40 inches of cover maybe acceptable in special circumstances with prior approval.
c. In areas of shallow bedrock and thin soils, subsoil will be stripped down to bedrock and stockpiled separately for replacement.
d. At landowner request, soft or hard plugs will be constructed to provide access across the trench for livestock and equipment. Temporary fencing may be necessary adjacent to these access ways, to control livestock movement.
e. Drain tiles uncovered and/or broken by trenching will be marked by stakes on or near the edge of the trench for future permanent repair. If necessary to maintain field drainage, temporary crossovers will be installed.

13.5 Backfilling and Grading

The objective of backfilling and grading operations in agricultural lands is to ensure that once stringing, fabrication and pipelaying operations are completed, topsoil and subsoil are uniformly returned so as to restore the soil profile. When backfilling and grading in agricultural lands the following standards will apply:

a. Permanent repair and replacement of drain tiles damaged or moved during construction will occur
b. Six to 12 inches of sand padding or suitable subsoil material will be used to pad the pipeline. Under no circumstances is native topsoil to be used as padding.
c. Subsoil will be returned to the trench.
d. Shot rock and rock backfill will be kept out of the top two feet of backfill material. Excess subsoil can be graded over the exposed subsoil prior to topsoil replacement.
e. In-trench drain line installation will be constructed according to regulations.

13.6 Clean-up and Restoration

After backfilling is complete and the rough grading of the ROW has been done, final grading is initiated to return the ROW to its original contour. Dunkirk Gas Corporation will consult with the farm owner/operator, NYSDA&M and DPS Staff to determine if suitable weather and soil moisture content conditions exist to allow for final restoration activities on pre- determined active agricultural lands. If on-site conditions permit clean-up and final restoration the following conditions will apply:

a. If subsoil decompaction has been called for, it will be done at this time, as will rock picking (stones 4 inches or larger). Stockpiled topsoil will be used after that until the trench has been restored to pre-construction grade.
b. If topsoil has been lost, replacement topsoil will be imported and used if necessary.
c. In some areas a crown of soil may be left over the trench to allow for soil subsidence.
d. Where necessary the ROW will be deep chiseled and stones larger than 4 inches picked from its surface.

13.7 Revegetation

13.7.1 Seed Mixtures

Seed mixtures for use on agricultural lands will be determined in consultation with the landowner/operator, Dunkirk Gas Corporation, the NRCS and other interested parties. Lime and fertilizer rates will be chosen in the same manner.

13.7.2 Timing

If the timing of construction precludes the reestablishment of crops for a given year an annual cover crop will be planted to protect the disturbed area, with landowner/operator approval. Plantings will be done in the appropriate season for the particular seed mixture proposed.

13.7.3 Mulching

If mulching is necessary, only straw or hay mulch will be used over seed beds.

13.7.4 Temporary Diversion Berms

On steep active agricultural slopes temporary diversion berms, dirt or straw bales may be used to control erosion. If dirt is used, it will be made with topsoil and on a scaled-down version than the typical diversion berm. The dirt diversion berm will be no higher than 6 to 8 inches so that it can easily be worked by the farmer during planting time. If straw bales are used, the area under the bales will need to be reseeded with the appropriate seed mix upon removal.

13.8 Remediation and Monitoring

Dunkirk Gas Corporation's EI(s) will have the experience of an agricultural specialist and will apply that knowledge toward the portion of the pipeline that crosses unique agricultural resources and/or require special construction techniques. The EI(s) will have expertise in amelioration and remediation of construction impacts on agricultural lands and will be on-site throughout all phases of construction. Following pipeline construction and restoration:

a. All affected agricultural lands will be monitored for signs of construction related damage or alteration of productive agricultural resources during the first 2 years after the line is in

service. During this time particular attention will be paid to changes in soil moisture content due to construction related impacts on surface and subsurface drainage.

b. Where a crown has been left over the trench, if subsidence has not occurred one year following restoration, this crown may have to be regraded.
c. Properties crossed will be evaluated for the need for parallel drain tiles or other water control devices after restoration and revegetation.
d. Any proposed measures will be reviewed by the EI(s).

14. Invasive Species Control

According to the NYSDEC, invasive species are non-native species that can cause harm to the environment or to human health. The NYSDEC has created an "Interim Invasive Species Plant List" which is intended to be an advisory list of species to consider for invasive species management. Invasive species surveys of the Project ROW were conducted for the Project during May, June and July 2014 using this Interim Invasive Species Plant List as a guide. Field staff identified areas where invasive species were prevalent to plan for management of those species during construction. During field surveys, the following invasive species were found in dense concentrated stands: black locust (*Robinia pseudoacacia*), glossy buckthorn (*Frangula alnus Mill.*), Japanese knotweed (*Fallopia japonica*), purple loosestrife (*Lythrum salicaria*), and common reed (*Phragmites australis*).

Several other invasive species were observed in low densities or as individual plants throughout the entire pipeline route and are not a risk for further invasion or infestation in other parts of the pipeline route. These species include multiflora rose (*Rosa multiflora*), garlic mustard *(Alliaria petiolata*), mugwort (*Artemisa vulgaris*), Canada thistle (*Cirsium arvense*), honeysuckle, and Japense barberry (*Berberis thunbergii*). Reed canary grass (*Phalaris arundinacea*) was also commonly observed throughout the pipeline route. Because reed canary grass is often planted and used in agriculture in the region and would be impossible to control, with it being cultivated and widespread adjacent to the pipeline ROW, it will not be controlled or managed for during construction.

A detailed Invasive Species Control Plan is provided as Appendix C to the EM&CP.

15. Testing

Hydrostatic testing can result in soil erosion, as well as adverse water quality, ecological, and noise impacts. The environmental objective is to minimize these potential impacts. When planning and carrying out hydrostatic testing the following will be done:

a. Before choosing a source for test water, an assessment will be performed on the effect of the test on the natural water body.
b. DPS Staff and the NYSDEC Regional Water Engineer will be notified 48 hours prior to a discharge of hydrostatic test water. In addition, all owners of property to which hydrostatic test water will be discharged will be notified within the same time period.
c. Hydrostatic test water discharge will be continually monitored. A positive means of controlling the rate of discharge and, if necessary, terminating the discharge will be provided.
d. No corrosion/scale inhibitors or biocidal type compounds will be discharged in any hydrostatic test water.
e. Noise impacts during pumping or discharge will be minimized for noise-sensitive receptors (See Section 17) and land uses. Noise producing activities will be scheduled to avoid late night/early morning hours. Where noise impacts are expected to be significant, public safety officials will be notified at least 24 hours prior to such discharges, and efforts will be made to inform the local public of the nature of this noise.
f. If requested, hydrostatic test water will be tested for harmful contaminants, and Dunkirk Gas Corporation will cooperate with jurisdictional agencies to develop a plan for environmentally sound use and discharge of waters.
g. Test water will be discharged within the same immediate drainage or watershed from which it was drawn to help check the spread of exotic pest species, such as Zebra Mussels (*Dreissena polymorpha*).
h. Hydrostatic test water will not be discharged to any waterbody or wetland. All discharges will be located in a well-vegetated upland area to prevent the entry of silt and suspended solids into any sensitive environmental resource. Discharged test water will be directed into a retention/filtering structure of sufficient size and constructed to adequately handle the volumes anticipated in the discharge.
i. All necessary precautions will be taken to preclude the contamination of any waterbodies or wetlands by suspended solids, sediment, fuels, solvents, lubricants, epoxy coatings, paints, concrete leachate, or other environmentally deleterious materials associated with the Project work.

A Project-specific Hydrostatic Testing Plan is provided as Appendix E to this EM&CP.

16. General Clean-Up and Restoration

16.1 Objectives

To effect the removal and proper disposal of all construction waste and debris resultant from pipeline construction and restore the ROW to a condition that will promote long term stability.

16.2 Clean-up

At the conclusion of construction, all manmade and natural debris not specifically approved to remain on the ROW will be removed and properly disposed of. This debris includes but is not limited to:

a. spent welding rods;
b. skids;
c. straps;
d. nylon pipe ropes;
e. plastic pipe end-covers;
f. short cut sections of pipe and any "pups";
g. plastic backing from shrink wraps;
h. blasting materials; and
i. any other man made materials used during construction.

All this debris will be collected, and, if not slated for further use, disposed of at an authorized waste disposal area. Under no circumstances will any of this material be buried on or off ROW.

Clean-up will be done in a methodical manner. In remote areas, crews will work from the interior towards any roads. Unless being done concurrently with final restoration, all erosion devices will be replaced and/or repaired before clean-up crews leave an area.

Clean-up activities will include the removal of any natural materials disturbed or moved during the course of construction. This includes, but is not limited to:

a. rocks or stones from excavation or demolished stone walls;
b. slash, stumps or other woody debris;
c. excess subsoil or surface soil; and,
d. drilling mud or tailings.

All materials designated for removal will be disposed of at waste disposal or storage sites approved by either NYSDEC or the Commission.

Clean-up and restoration will be done in a timely and effective manner to prevent the deterioration of erosion control devices and the eventual destabilization of the ROW. The specific work necessary will depend on the land uses, terrain, natural resources and other Project specific factors.

16.3 Restoration

Restoration is the final stage of pipeline construction. Restoration activities may vary with the specific area to be restored.

16.3.1 Wooded and Non-Agricultural Uplands

Once clean-up activities have been finished, areas not covered by site-specific clauses or conditions will be graded, limed, fertilized, disced and seeded. The local NRCS office or Cooperative Extension office has been consulted for guidance as to the appropriate rates per acre for lime and fertilizer, as well as the pounds per acre and make up of seed mixtures applied. Project specific seed mixes are identified on the EM&CP Plan and Profile Drawings (Appendix A).

Additional specifics on these operations are provided below. Lime, fertilizer, seed and mulch application will be made within six days of the completion of grading at a given location on the ROW.

a. Grading

Where pipeline construction has changed grade and contour along the ROW, the area will be restored to original grade. Ruts and rills will be filled during grading. Only when changes in grade are desired and requested by the landowner to improve the area or are necessary for the

safe and efficient maintenance and operation of the facility, will exceptions be made. Where the trench has settled below ground level, it may be necessary to import topsoil to return an area to grade, especially in crop fields.

All permanent drainage and erosion control measures will be installed on the ROW. These devices are detailed in Section 8. Where needed for on-going drainage and erosion control, permanent devices will replace temporary devices installed during construction. Changes in surface and subsurface hydrology resulting from construction will be addressed at this time also.

b. Lime Application

Lime will be applied to the soil surface where necessary to achieve conditions favorable for seed establishment and development. The local NRCS county office will be consulted regarding appropriate lime application rates. General guidelines for lime rates are provided in the EM&CP Plan and Profile Drawings (Appendix A).

After measurements are taken, lime will be added to the soil to bring the area pH to a minimum level of 6.5. The rule of thumb for sites with a pH of 6.0 or lower is to apply lime at a rate of 2 tons/acre. Lime will be either drilled into the soil or broadcast over the affected area and disced in at least 4 to 6 inches below the surface.

c. Fertilizing

In areas where construction has affected the soil nutrient levels (particularly in instances of topsoil stripping), fertilizer will be applied to restore soil productivity. As with liming, the local NRCS will be consulted about the appropriate formula and application rates for the affected areas. General guidelines for fertilizer rates are provided in the EM&CP Plan and Profile Drawings (Appendix A). Testing will be conducted to determine the existing post-construction levels of nitrogen, phosphorus and potassium (N.P.K.).

In areas exhibiting nutrient deficiencies, fertilizer will be added to bring nutrient levels up to normal. A general rule of thumb is to use a mixture of "10:6:4"; that is ten parts nitrogen, to six part phosphorus and four parts potassium. This mixture should be applied at a rate of 600 lbs./acre. If higher N.P.K. ratios are used in the fertilizer, the application rate can be decreased resulting in fewer trips over the ground. Fertilizer will be either drilled into the soil or broadcast

over the ROW and disced into it at least 4 inches below the surface (application rates for agricultural lands will be covered in later sections).

d. Discing and Raking

These operations will be needed on all sites that have undergone heavy soil compaction as a result of construction in order to prepare an adequate seed bed. Discs and rakes are used to break up clods and scarify the soil, particularly on-sites with a heavy clay or shale content. It may be possible to avoid raking if discing operations are thorough enough to accomplish both soil loosening and scarification.

e. Seeding and Planting

Once an acceptable seedbed is established, seeding operations can commence. Seed rates and mixtures vary with the land use encountered and type of cover desired. In forested areas and non-agricultural uplands the primary objective of seeding operations is to establish a plant community that can rapidly and permanently stabilize disturbed areas.

The seed mixture and rate of application on any site depends on the soil type, land use, available moisture and the season of application. In developing seeding plans the local NRCS will be consulted on the applicability of mixtures and rates. The general seed mixtures used throughout the state are identified on the EM&CP Plan and Profile Drawings (Appendix A). Seed will be applied by drill, cyclone seeder, mechanical hydroseeder or similar application methods.

Seeding operations will be performed between May 1 and June 1 and August 20 through September 15. Seeding done outside these windows will only be done on the advice of a restoration expert. Seeding can be done over snow if construction runs late into the year. Seed sown over snow may germinate the following spring.

The ROW will have 90 percent permanent ground cover restored to the original conditions one growing season (one year) following construction. Seeded areas will be evaluated and reseeded as necessary to achieve 90% cover at the first optimum time; or by the following growing season.

On flat areas, mulch (i.e., hay, straw, burlap, chips, etc.) can be applied to aid temporary and permanent restoration and soil stabilization. All mulch will be mechanically crimped to reduce

aeolian losses. On steeper slopes, mulch, jute net or excelsior will be used to provide temporary soil and site stabilization. In all cases these materials are placed to minimize soil erosion on disturbed sites by disrupting rainfall impact and slowing surface flow.

Straw or hay mulch will be applied at the rate of 1.5 to 2.0 tons/acre.

On slopes of 30% or more, stream banks and high wind areas, mulch will be tied own and pegged with twine. Burlap, jute net or similar erosion control fabrics will be installed cross slope on short hills and stream banks. On long steep grades or in runoff ditches, erosion control fabrics will be installed running up and down slope with the edges of adjacent sheets overlapped and secured with pegs or stapled to the ground as per the manufacturer specifications. Metal staples will not be used in pastured areas.

16.3.2 Restoration - Urban/Residential

Construction of the Dunkirk Natural Gas Pipeline Project will be conducted primarily in rural areas. Curbs and streets damaged by construction will be restored to a condition as good if not better" than that prior to construction. Dunkirk Gas Corporation will consult, where applicable, the municipal Road or Highway Department; Regional Office or County Engineer of the NYSDOT. Dunkirk Gas Corporation has incorporate applicable specifications for curb, sidewalk or street restoration in the Project design.

Shade trees and ornamental shrubs disturbed or damaged by construction will be replaced or repaired following construction by an arboriculturist, except in instances where replacement would inhibit or impair safe operation of the pipeline. All vegetation replaced will have a minimum one year guarantee. Limbs damaged by construction activities will be pruned to arboricultural specifications. Root loss or damage due to construction or related soil compaction will be addressed by a trained arboriculturist and any prescribed treatments followed.

17. Noise Impact and Mitigation

Pipeline construction involves many activities that can produce large, localized increases in the noise levels. Noise generated by general ROW clearing and construction is transitory in nature. Noise impacts of directional drilling or pumping operations are stationary and of longer duration.

Noise control methods or remediation will vary with the source of the noise and the nature and proximity of sensitive receptors.

17.1 Noise Sensitive Receptors

The proposed pipeline will be located in a variety of settings, including generally rural areas (southern portion of the route) and urbanized areas with major highways (e.g., New York State Thruway). In general, there are few noise sensitive areas, specifically residences, located in close proximity to the pipeline ROW. A few noise sensitive areas are located within about 100 feet, but there are large areas with no noise sensitive areas within at least 500 feet of the pipeline route.

17.2 Remediation and Control

There are several methods of reducing or controlling construction related increases in noise levels. Their applicability and effectiveness will vary with the size of the equipment used, the topography crossed and the nature of the receptor.

17.2.1 Noise Control Measures for Equipment and Linear Construction

a. Equipment yards and marshalling areas will be located away from noise sensitive receptors.
b. Install improved or "Hospital" grade mufflers on all heavy equipment used in noise sensitive areas (particularly on cranes, sidebooms and bulldozers which may idle for extended periods).
c. High noise producing activities, identified below are restricted to the hours between 8:30 a.m. and sunset within 500 feet of any noise sensitive receptor. These activities include:
    a) rock drilling for blasting operations;
    b) use of pneumatic hammers for ditching in bedrock areas and warning beepers;
    c) blasting operations, pile driving, the installation of sheet piles, sheeting or shoring;
    d) clearing operations, wood chipping machinery;
    e) conventional bore and directional drilling operations;
    f) the operation of valves and aboveground piping, and other appurtenant facilities.
d. No heavy equipment operation within 300 feet of a noise sensitive receptor before 7:30 a.m. on weekdays, 9:00 a.m. on weekends.
e. In extreme cases, temporary sound barriers may have to be erected to reduce, deflect or

control noise from construction activities.

f. In extreme cases, individuals may have to be temporarily housed in off-site locations until construction is finished, at Dunkirk Gas Corporation's expense.

Due to the Project's lack of noise sensitive areas, Dunkirk Gas Corporation does not anticipate employing any of the above noise control measures. However, if, noise control measures are determined to be needed during construction, Dunkirk Gas Corporation will employ the appropriate measures as necessary.

17.2.2 Noise Control Measures for Point Source Producers

Large scale pumping or directional drilling operations where equipment will probably remain in operation for extended periods can be a major intrusion on nearby receptors. Detailed sound measurements will be taken prior to the initiation of drilling operations by a licensed acoustic engineer. A remediation plan will be developed included mitigation measures such as:

a. Construction of full or partial sound enclosures;
b. Restricted drilling hours;
c. Extensive additional muffling of cranes and other pipe moving equipment; and,
d. Temporary relocation of nearby residents or occupants.

17.3 Compressor Stations

The Dunkirk Natural Gas Pipeline Project does not include the construction or operation of a compressor station.

18. Transportation and Utility Crossings

18.1 Objectives

Pipeline construction may have adverse impacts on roads, highways, canals, railroads and other existing utilities. The objective of this section is to encourage and facilitate cooperative construction and maintenance practices and schedules between pipeline builders and those responsible for the other infrastructure. The Project must not become a hazard to vehicular, pedestrian or rail traffic.

Dunkirk Gas Corporation will use the following standards and practices for planning, construction and maintenance.

18.2 Road and Highway Crossings

18.2.1 Permitting

Where a road or highway ROW will be occupied by a proposed pipeline, Dunkirk Gas Corporation has contacted the jurisdictional municipality or regulatory agency. Dunkirk Gas Corporation has conducted consultations with the NYSDOT, the New York State Thruway Authority, the Chautauqua County Division of Transportation, the City of Dunkirk, the Town of Dunkirk and the Town of Pomfret. For the crossing of New York State Route 5, Dunkirk Gas Corporation will refer to Part 131 of the Highway Law covering "Accommodation of Utilities Within State Highway ROW" where the New York State highway ROW is occupied.

Dunkirk Gas Corporation will obtain highway work permits from the jurisdictional highway agencies as opposed to requesting under Article VII, Section 126(1)(f) of the PSL and 16 NYCRR Part 85-1.2 (c)(1- 3) of the regulations. Copies of all roadway crossing permits will be provided to the Commission and DPS Staff upon receipt and prior to construction.

18.2.2 Preconstruction Planning

Before any in-street work can take place, other underground utilities that will be crossed or paralleled by the proposed pipeline will be identified and marked in the field. Owners of utilities will be notified in accordance with the requirements of 16 NYCRR Part 753 prior to construction so that all underground utilities are located and clearly marked prior to new construction.

In addition, Dunkirk Gas Corporation will examine existing conditions and traffic flow and volume patterns to determine the best construction methods for the area. All necessary materials (i.e., steel plating, cold patch, repaving equipment, etc.) will be on hand prior to the initiation of any in-road construction. Where in-road work will be extensive enough to require detours or road closings, planning will be done well in advance of construction and in consultation with all affected agencies.

18.2.3 Road Crossing Methods

One of two basic road crossing methods will be used for underground gas line construction: trenched ("open cut") or trenchless ("boring", or "directional drilling"). All crossings will be done perpendicular (or as close to perpendicular as feasible) to the roadway. Table 4 identifies the road crossings along the Project route and the proposed crossing method.

Table 4. Roadways Crossed Construction Methods

Road Name	Jurisdiction	Crossing Method
City of Dunkirk		
Point Drive North	Local	Drill or Bore
West Lake Road (State Route 5)	NYSDOT	Drill or Bore
Town of Dunkirk		
Temple Road	Local	Drill or Bore
Willow Road	Local	Open Cut or Bore
Chestnut Road	Local	Open Cut or Bore
Town of Pomfret		
Van Buren Road (County Touring Route 78)	County	Drill or Bore
New York State Thruway/I-90	NYS Thruway Authority	Drill or Bore
Berry Road (County Touring Route 74)	County	Drill or Bore
West Main Road (US Route 20)	NYSDOT	Drill or Bore
Webster Road	Local	Drill or Bore
Chautauqua Road	Local	Drill or Bore
Fredonia Stockton Road (County Touring Route 73)	County	Drill or Bore
Cummings Road	Local	Drill or Bore

a. Trenched or Open Cut:

a. Owners/operators of other underground utilities in the area will be notified no less than 48 hours prior to the start of construction.
b. All existing underground facilities will be marked prior to the initiation of cutting or excavation.
c. All materials needed to complete the installation shall be on-site prior to starting cutting or excavation.
d. Tree limbs, shrubs, cobble stones or any other natural or man-made features that are at

risk of damage will be temporarily moved, tied back or removed and stored.

e. Detours, signage and public notice shall be done no later than 24 hours prior to the initiation of construction.
f. Traffic flow 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.
g. Any water control devices (roadside ditches, culverts, etc.) disturbed during excavation or construction will be restored immediately after pipeline installation.
h. Temporary restoration of the roadway will occur immediately after the pipe is installed.

b. Trenchless - Bore or Directional Drill:

Conventional boring and directional drilling operations install the pipe beneath the road without having to disturb the road surface. Traffic flow and patterns can be maintained throughout pipeline installation. Construction will proceed as follows:

a. Owners/operators of other underground utilities in the area will be notified no less than 48 hours prior to the start of construction.
b. All existing underground facilities will be marked prior to the initiation of drilling or boring.
c. All materials needed to complete the installation will be on-site prior to the start drilling or boring.
d. Jacking and receiving pits adjacent to the road shoulder will be clearly identified and barricaded to prevent them being a hazard to pedestrian or vehicular traffic.
e. Bore or drill pits will be fenced and marked if left open overnight.

c. Longitudinal In-Road Construction

In some instances a pipeline may be routed longitudinally in or adjacent to a road surface. Instead of a single crossing the pipeline will be installed in the roadbed or its shoulder. Construction will proceed as follows:

a. Owners/operators of other underground utilities in the area will be notified no less than 48 hours prior to the start of construction.
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, tied back or removed and stored.

d. Detours, signage and public notice will be done no later than 24 hours prior to the initiation of construction.
e. Dunkirk Gas Corporation will reduce the amount of open trench at the end of the work day to the minimum practicable.
f. 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.
g. Driveways and drainage ditches will be temporarily restored at the end of each working day.
h. Access to driveways will be maintained to the maximum extent practicable.
i. Temporary patch of asphalt road cuts will begin immediately after backfill.
j. Temporary patch of major road damage (i.e., ruts, potholes, grade loss, etc.) will begin immediately after backfill.

18.2.4 Signs

All signs utilized will comply with the NYSDOT's Manual of Uniform Traffic Control Devices (Manual No. 7155). Placement of signs will be determined in consultation with the jurisdictional agency. At a minimum, signs will be placed at the following distances:

a. Signs announcing construction at 1,000 and 500 feet.
b. Signs picturing workers at 300 feet.
c. Blast warning signs at 1,000 feet, if blasting is to take place within 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 shall comply with NYSDOT 17 NYCRR 131.

18.2.5 Repairs and Restoration

Restoration of any road surface will follow the sequence outlined below.

a. Return of road shoulders (maximum 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 6 months of backfill.
d. Permanent repair of other road damage during final restoration of the project.
e. Permanent repair of dirt and gravel roads (ruts, potholes and loss of grade) during final restoration.

18.3 Railroad Crossings

The Dunkirk Natural Gas Pipeline Project will cross and parallel railroad corridors owned by CSX Transportation, Incorporated and Norfolk Southern Railway Company.

a. Dunkirk Gas Corporation has contacted the owner/operator of the railroad property and explained fully the nature and extent of the proposed Project.
b. The rail lines will be crossed by conventional bore.
c. Dunkirk Gas Corporation will coordinate all work with the owner/operator of the rail line to ensure the safety and integrity of the pipeline and railroad facilities crossed.
d. Depth of cover requirements outlined in the Gas Safety Regulations (16 NYCRR Part 255.327) will be complied with.

18.4 Utility Crossings

Dunkirk Gas Corporation will take special precautions, as detailed below, where the pipeline will cross or parallel existing utilities to prevent damage to either facility and to ensure the safety of workers.

18.4.1 Overhead Electric Facilities

In addition to the general specifications identified below, a Project-specific Gas Pipeline Construction Sequence when Paralleling or Crossing High Voltage Electric Transmission Lines is provided in Appendix I to this EM&CP.

a. Perpendicular Crossings

When crossing an existing overhead electric line ROW the following specifications will apply:

a. The utility responsible for the up-keep and maintenance of the overhead electric line will

be contacted and consulted concerning the proposed crossing.

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

b. Linear ROW Co-occupation

In instances where pipeline construction will parallel existing overhead electric facilities, Dunkirk Gas Corporation will refer to Title 16 NYCRR Sections 255.45 (f) and (g). In addition, the following specifications will apply.

a. An "Electric Safety Inspector" (ESI) will be hired by, or services contracted for by Dunkirk Gas Corporation. The ESI will be in the chain of command for the Project and will have "stop work authority".
b. The ESI will:
    1) Supervise grounding equipment and materials.
    2) Provide safety training of all individuals expected to work in or visit the Project area adjacent to electric lines.
    3) Ensure compliance with minimum clearance requirements for machinery and personnel.
    4) Require all works and others on-site to wear insulated boots, gloves and other protective equipment where circumstances warrant.
c. The inducted voltage from the pipe to ground will be measured and recorded for all welded pipe strings each day prior to the commencement of construction.
d. If the induced voltage exceeds 15 volts AC, additional ground rods will be added until the voltage is reduced below this level.
e. Ground rods will be attached and connected in the following manner:
    1) Connect grounding clamp to pipe.
    2) Connect grounding cable to imbedded grounding rod.
    3) Connect grounding cable to pipe grounding clamp.

f. Ground rods will be removed in the following manner:
   1) Disconnect ground cable from clamp.
   2) Disconnect ground cable from rod.
   3) Remove grounding clamp from pipe.
g. If the ESI believes that pipe is apt to be charged due to proximity of overhead electric lines, the ESI will require the grounding (primarily through use of grounding straps) of each piece of equipment handling pipe at that time.
h. Pipe joints will be stacked in groups of ten or less. Each stack will be grounded with a ½" diameter ground rod driven to a depth of at least 4 feet and at a distance of at least 4 feet from the stack.
i. Each pipe in the stack will be daisy-chained to ensure that the entire stack is grounded.
j. Stringing is permitted but each individual piece of pipe must be grounded.
k. As pipe strings are welded an additional ground rod will be placed every 1,000 feet.
l. If voltages warrant, no underground vehicle will be allowed within 200 feet of the electric line.
m. All vehicles on the ROW will be grounded by use of grounding strips or chain devices.
n. Vehicles parked overnight on the ROW will be grounded to an embedded ground rod by a cable.
o. Fuel trucks will have sufficient ground cables and clamps to complete an electric bond with every vehicle to be refueled.
p. "Spotters" will monitor construction equipment and warn operators if the safe minimum clearance zone is entered.

c. Underground Utility Crossings

When building an underground pipeline in close proximity to other underground utilities, Dunkirk Gas Corporation will refer to Title 16 NYCRR Section 255.3-25. In addition, the following specifications will apply:

a. The proposed project area will be surveyed for the presence of existing underground utilities to be crossed or paralleled.
b. Owners of these other utilities will be notified in accordance with the requirements of 16 NYCRR Part 753 so that their facilities will be clearly marked prior to construction.
c. Owners of the facilities crossed will be contacted no later than 48 hours prior to the initiation of construction and will be given all reasonable opportunity to be present during excavation and construction.

19. Hazardous Materials/Spill Containment and Control

The loss or spillage of hazardous materials used during the construction of gas lines will be minimized by planning and acting in accordance with the following spill control measures.

19.1 Regulatory Concerns

In addition to any prohibitions or specifications contained in Certificate, the approved EM&CP or other Commission approved document, the actions of Dunkirk Gas Corporation are covered by the sections of the Clean Water Act (33 USC 11251). Section 311 of the Act identifies 300 substances identified as hazardous if spilled or accidentally discharged and specifies what quantities constitute a "spill". Spills will be reported to the National Response Center (NRC).

At the state level, NYSDEC has stricter laws and regulations covering the handling and loss of fuels and other hazardous materials. Article 27 of the ECL covers the handling and disposal of waste and refuse; Article 33 of the ECL deals with the use, storage and handling of herbicides; and Article 17 covers water pollution control and the bulk storage of petroleum.

NYSDEC regulations (6 NYCRR Article 597) lists those substances and chemicals other than petroleum and petroleum based products that are regulated. It also lists what volume of these substances constitutes a reportable spill.

Article 12 of the New York State Navigation Law, Section 175, covers spills of petroleum products. According to this document "all spills of petroleum based products, either upland or water borne, must be reported." The primary substances of concern during construction are motor fuels, lubricating oils and hydraulic fluids.

If Dunkirk Gas Corporation is unsure as to the severity of a spill or actions to take they will call the appropriate spill response numbers.

NYSDEC
Spills Unit Chemical and Petroleum
24 Hour Helpline (1-888-457-351)

Central Office
50 Wolf Road
Albany, NY 12233-1750

NYSDEC Region 9
600 Delaware Ave
Buffalo, NY 14202
Telephone: (716) 851-7000
(Alleghany, Cattaraugus, Chautauqua, Erie, Niagara, Wyoming)

State of New York
Department of Public Service
3 Empire State Plaza
Albany, NY 12223
Telephone: (518) 474-5368 (normal business hours)

19.2 Spill Control Equipment

Dunkirk Gas Corporation will have equipment on-site adequate to control spills of hazardous materials which will be used in construction of the facility.

19.2.1 Upland

a. Sorbents, including pillows, wipe sheets and sawdust for containment and pick up of spilled liquids.
b. Commercially available spill kits (or any functional equivalent), self- contained and prepackaged with a sufficient amount and variety of materials to handle spills of varying size.
c. In-ground or above-ground containment structures such as berms, gutters, dikes, culverts and holding tanks and sumps and collection systems.
d. Shovels or small backhoes for the excavation of contaminated soils or materials.
e. Drums, barrels and temporary storage bags for the clean-up and transport of contaminated materials.
f. Absorbent pads for placement under static machinery, cranes, booms, etc. large enough to handle a complete loss of engine oil or hydraulic fluid.
g. Small sorbent kits for all vehicles and machinery.

19.3 Storage and Handling

19.3.1 Storage

For the storage of fuels and other hazardous materials, Dunkirk Gas Corporation will apply the following standards:

a. The material safety data sheets (MSDS) for all chemicals used in construction will be available for inspection.
b. In addition, Dunkirk Gas Corporation will comply with all applicable state, local and federal regulations covering the transport, storage and handling of hazardous materials.
c. Fuels and other controlled materials will be stored in designated equipment or marshalling yards. All such areas will be at a minimum, 100 feet from any waterbody, watercourse, wetland or known spring or well.
d. All above ground tanks will be equipped with secondary containment devices (e.g., berms or other appropriate retention materials). Hazardous materials will be kept in restricted access areas and kept separate from other construction activities.
e. All yards and storage areas shall be equipped with sufficient supplies of spill control and absorbent materials for the volumes present.
f. Spill control supplies will be clearly marked, readily accessible and personnel will be instructed on their use prior to the initiation of construction.

19.3.2 Equipment Refueling

When refueling equipment during construction (either in yards or along the ROW) Dunkirk Gas Corporation will apply the following standards:

a. Equipment refueled in yards shall be refueled in a clearly marked and designated refueling area.
b. This refueling area shall be surrounded on at least 2 sides by a combination of dikes, berms, or retaining walls sufficiently impervious to contain spilled oil, fuels or lubricants.
c. Care will be exercised at all times to prevent "overfilling".
d. When refueling on the ROW all fuel trucks, portable drums and tanks will be inspected daily for leaks or signs of wear.

e. All refueling trucks will carry spill containment materials and the driver/operator will be trained in their use and responsible for their employ after spills.
f. No refueling will be done within 100 feet of any waterbody or wetland. No refueling will occur within 200 feet of any private water well or 400 feet from any municipal water well.
g. Fill pumps will be set on metal catch pans of sufficient volume to hold any leaks of lubricants or fuels. A containment area constructed of thick sheet plastic, bermed with sandbags may also be used.

19.4 Spill Response Procedures

In the event of a spill Dunkirk Gas Corporation will do the following:

a. Develop a list of approved waste clean-up contractors in the project area and provide this information to the EI(s) prior to the initiation of construction. The same will be done for approved waste disposal sites in the project area. Both lists will be maintained in the project office for reference.
b. All company personnel on hand who have been trained and equipped for spill emergency response will immediately take steps to contain any spills at the source.
c. The EI(s) will be notified immediately, and will coordinate spill containment and clean-up measures.
d. The EI(s) will determine if a spill is reportable. If so, the inspector will report the spill to the NYSDEC, DPS (see numbers listed above) and if necessary the NRC (National Response Center 1-800 424-8802).
e. If a spill has taken place in a waterbody, sampling will begin immediately to determine the nature and effect of the spill.

19.5 Excavation and Disposal

a. Small spills (dependent upon the nature of the substance spills on land) - May be handled by construction crews if sufficient materials and equipment are on hand to excavate and containerize spilled materials and contaminated soils and absorbent material in an appropriate manner.
b. Large spills - If the EI(s) believes that a spill cannot be adequately excavated and properly disposed of by construction crews, a licensed waste specialist will be called in. The EI(s) will coordinate all activities and ensure that all containerized wastes are

properly labeled for shipment to licensed facilities able to accept said materials.

19.6 Hazardous Waste Contact

Contact with contaminated soils or other hazardous waste may occur during the course of trenching or other excavation for a gas line. If this occurs, the following will apply.

a. If the odor, color, sheen or content of excavated material leads construction personnel to believe that the material being excavated from the trench or other appurtenant construction sites is contaminated, work will be halted immediately.
b. Dunkirk Gas Corporation will then contact the NYSDEC's "Environmental Quality Programs" or Oil or Chemical Spill 24 hour Hotline.
c. Until the arrival of state personnel, any and all actions necessary will be taken to prevent contaminated soil or materials from traveling off-site, contacting waterbodies of any kind or furthering contamination in any manner.

20. Pipeline Operation, ROW Management and Maintenance

Measures will be taken to ensure the safe and environmentally compatible maintenance and operation of completed pipeline facilities.

20.1 ROW Maintenance

After completion of restoration and pressurization of the facility, the construction of the Project can be considered complete. Any further work on the facility will be considered as part of facility Operation and Maintenance Plan or ROW management.

For ease of inspection, pipeline safety and access, most of the pipeline ROW will be maintained in desirable land uses and vegetative cover, often low grass or shrub cover. The primary objectives of ROW maintenance are:

a. The maintenance of drainage on and across the ROW;
b. The maintenance of erosion control devices;
c. The maintenance of all permanent access roads and installed gates and fences; and
d. The establishment and maintenance of grass or low shrub vegetative cover on the ROW as a protection against soil erosion.

20.2 Inspection

All ROWs will be inspected at least once a year to determine:

a. The condition of all permanent erosion control devices installed during construction;
b. The stability of pipeline cover and adjacent revegetated ROW areas;
c. The condition of installed access roads and associated access control installations and associated drainage devices; and
d. Review of adjacent land use and its compatibility with ROW management objectives for the facility.

Any observed problems with any of the above features will be immediately corrected.

20.3 Vegetation Management

The maintenance of a mature and stable vegetative community on the pipeline ROW is integral to the safety and integrity of the facility. The following specifications will apply to vegetation management activities on the ROW.

a. A minimum of 90% permeant ground cover will be established and maintained on the permanent and temporary ROW, one year after permanent restoration.
b. The growth and propagation of all woody species on the permanent ROW will be controlled by mechanical, vegetative, chemical or biological means. Trees retained as aesthetic or buffer zones will not be cleared during maintenance activities.
c. Adjacent landowners will be informed of all scheduled ROW maintenance prior to the commencement of activities. Dunkirk Gas Corporation will coordinate vegetative maintenance activities with affected landowners whenever practical.

Appropriate buffers will be maintained at all streams and wetlands.

20.3.1 Mechanical Treatment

a. Mechanical maintenance (mowing, hand cutting, etc.) shall be scheduled so as to facilitate visual inspection of the ROW and enable the access for maintenance and emergency equipment.

b. The methods and techniques for mechanical removal of woody vegetation used will be the same as those in Section 5 of this document.
c. Dunkirk Gas Corporation will inform any 3rd party contractors involved in vegetative maintenance activities of any plantings, visual screens or other woody vegetation slated for retention prior to the initiation of activities.

20.3.2 Chemical Treatment

Dunkirk Gas Corporation or contractors in their employ will comply with the applicable provisions of Articles 15, 71 and 33 of the ECL governing the application, use and control of herbicides. Herbicides use will be limited to valve site locations and the Tennessee Gas Transmission Mainline Pipeline Tap site up to 3' outside of the fence line and in all areas inside the fence. However, the designs for these locations will incorporate a stone surface on top of a geotextile fabric which will allow water to permeate and suppress vegetation growth therefore, application of an herbicide will be minimal. Widespread use of herbicides are not a proposed method to control vegetation within the pipeline ROW at this time. If herbicides are later determined to be a necessary method to control vegetation during operation, all applicable state and federal regulations will be followed including all guidance from the Commission.

21. Communications and Compliance

21.1 Communication with Staff and the Commission

21.1.1 Pre-filing Contact

Dunkirk Gas Corporation has sought DPS Staff input on various aspect of proposed construction of the Project prior to the filing of its Article VII Application and this EM&CP.

21.1.2 Post-filing Contact

Dunkirk Gas Corporation will continue to maintain communication with the DPS Staff through review of the Article VII Application and this EM&CP.

21.2 Compliance with Commission Orders and Certificates

Dunkirk Gas Corporation, as certificate holder, is fully expected to comply with the terms and conditions included in Commission issued Certificates containing Ordering Clauses, stipulations or other conditions. DPS Staff will monitor construction to help ensure compliance with Commission Orders.