



Application Cover Sheet

Cape Cod Commission
3225 Main Street, PO Box 226
Barnstable, MA 02630
Tel: (508) 362-3828 • Fax: (508) 362-3136

For Commission Use Only

Date Received:

Fee (\$):

Check No:

File No:

A Type of Application (check all that apply)

☒ Development of Regional Impact (DRI)

☐ DRI Scoping

☐ DRI Exemption

☐ Hardship Exemption

☐ Jurisdictional Determination

☐ Request for Joint MEPA/DRI Review

☐ Decision Extension

☐ Decision Modification

B Project Information

Project Name: Algonquin Gas Transmission, LLC - Cape Cod Canal Pipeline Relocation Project

Total Site Acreage: 210.2 acres construction workspace

Project/Property Location: Multiple locations in the Town of Bourne

Zoning: Multiple

Brief Project Description:

Include total square footage of proposed and existing development, gross floor area, number of lots existing or to be created, specific uses, description of existing conditions, as applicable (attach additional sheets if necessary).

The Project will modify existing interstate natural gas transmission facilities to accommodate the planned replacement of the Bourne and Sagamore Bridges by the Cape Cod Bridges Program.

The Project will remove, abandon, and relocate portions of existing natural gas pipelines and associated metering and regulating facilities that currently interact with bridge-supported and bridge-adjacent infrastructure,

while maintaining uninterrupted natural gas delivery to National Grid delivery points serving Cape Cod.

C Owner(s) of Record

List the following information for all involved parcels. Provide copies of each Deed and Purchase and Sale Agreement and/or evidence of leasehold interest, if applicable, for all involved parcels. Proof of ownership/legal rights for Applicant(s) to proceed with the proposed development must be documented prior to the Commission deeming any application complete. List the local, state, or federal agencies from which permits or other actions have been/will be filed (attach additional sheets if necessary).

Map/Parcel Owner's Name Lot & Plan Land Court Certificate of Title # Registry of Deeds Book/Page #

Multiple - See Attachment 13 for proof of ownership/legal rights.

There **ARE/ARE NOT** (circle one) court claims, pending or completed, involving this property (if yes, please attach relevant information).

Is there an existing CCC Decision for the Property? ☐ yes ☒ no (if so, recording information for decision, please attach relevant information).

D Certification

I hereby certify that all information provided on this application sheet and in the required attachments is true and accurate to the best of my knowledge. I agree to notify the Cape Cod Commission of any changes on the information provided in this application, in writing, as soon as is practicable. I understand failure to provide the required information and any fees may result in a procedural denial of my project.

NOTE: For wireless communication facilities, a licensed carrier should be either an applicant or a co-applicant.

APPLICANT Applicant(s) Name: Algonquin Gas Transmission, LLC Attn: Brian Colabella Tel: 267-894-6117 Fax: _____

Address: 890 Winter Street, Suite 300 Waltham, Massachusetts 02451

Signature: Brian Colabella Date: 7/24/2026

CO-APPLICANT Co-Applicant(s) Name: _____ Tel: _____ Fax: _____

Address: _____

Signature: _____ Date: _____

CONTACT Contact: SWCA Environmental Consultants Attn: Richard Paquette Tel: 207-520-4614 Fax: _____

Address: 8 Science Park Road, Scarborough, ME, 04074

Signature: Richard C. Paquette Date: 7/24/2026

PROPERTY OWNER Property Owner: Multiple - See Attachment 13 Evidence of Applicant's Standing for proof of ownership/legal rights Tel: _____ Fax: _____

Address: _____

Signature: _____ Date: _____

BILLABLE ENTITY Name: Algonquin Gas Transmission, LLC Attn: Brian Colabella Tel: 267-894-6117 Fax: _____

Address: 890 Winter Street, Suite 300 Waltham, Massachusetts 02451



Development of Regional Impact Application

Cape Cod Canal Pipeline Relocation Project

Bourne, Massachusetts

JULY 2026

PREPARED FOR

Algonquin Gas Transmission, LLC

PREPARED BY

SWCA Environmental Consultants



ENVIRONMENTAL CONSULTANTS

Sound Science. Creative Solutions.®

8 Science Park Road, 2nd Floor
Scarborough, Maine 04074
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July 24, 2026

Jeff Ribeiro, Regulatory Planner
Cape Cod Commission
3225 Main Street, P.O Box 226
Barnstable, Massachusetts 02630

RE: Cape Cod Commission Development of Regional Impacts Application
Algonquin Gas Transmission, LLC
Cape Cod Canal Pipeline Relocation Project, Bourne, Massachusetts

Dear Jeff Ribeiro and members of the Cape Cod Commission:

SWCA Environmental Consultants, on behalf of Algonquin Gas Transmission, LLC (Algonquin), is submitting this Development of Regional Impact (DRI) application for the Cape Cod Canal Pipeline Relocation Project (Project) in the Town of Bourne, Barnstable County, Massachusetts. The Project is a utility relocation and replacement project required to accommodate the planned replacement of the Bourne and Sagamore Bridges through the Cape Cod Bridges Program. The Project includes modifications to Algonquin's existing interstate natural gas pipeline system to relocate infrastructure that conflicts with the bridge replacement program while maintaining uninterrupted natural gas service to National Grid.

The Project is subject to review by the Federal Energy Regulatory Commission (FERC) under the Natural Gas Act (15 United States Code 717, et seq.). Algonquin initiated FERC review through the pre-filing process under Docket No. PF25-4-000 and subsequently filed its certificate application under Docket No. CP25-552-000. FERC issued an Environmental Assessment for the Project on May 29, 2026. The Project has also undergone review under the Massachusetts Environmental Policy Act (MEPA) as EEA No. 16947. The Secretary of the Executive Office of Energy and Environmental Affairs issued a Certificate on the Final Environmental Impact Report on June 29, 2026 determining that the Project adequately and properly complies with MEPA and its implementing regulations.

This application provides the Commission with a description of the Project, including its purpose and need, alternatives analysis, existing conditions, anticipated impacts, avoidance and minimization measures, mitigation commitments, and consistency with the applicable goals and objectives of the Cape Cod Regional Policy Plan. The DRI fee was calculated in accordance with the FY 2026 Fee Schedule by adding the base fee of \$14,173 to the utility and other linear development fee of \$0.70 per linear foot for 33,422.4 feet of new pipeline, for a total fee of \$37,568.68. Algonquin hand delivered the DRI application fee to the Cape Cod Commission office and submitted the appropriate abutter labels on self-adhesive sheets via FedEx.

Algonquin respectfully requests the Commission's review and approval of the DRI application. If you have any questions or require additional information, please contact me at (207) 520-4614 or richard.paquette@swca.com or Brian Colabella at (267) 894-6117 or brian.colabella@enbridge.com.

A handwritten signature in black ink, reading "Richard C. Paquette". The signature is written in a cursive, flowing style.

Richard Paquette
SWCA Environmental Consultants
Planning Technical Director - Northeast

cc: Algonquin Gas Transmission, LLC: Brian Colabella, Senior Advisor Environment

CAPE COD CANAL PIPELINE RELOCATION PROJECT

DEVELOPMENT OF REGIONAL IMPACT APPLICATION

Prepared for

Cape Cod Commission
3225 Main Street, P.O. Box 226
Barnstable, Massachusetts 02630

Prepared by

SWCA Environmental Consultants
8 Science Park Drive
Scarborough, Maine 04704
www.swca.com

On behalf of

Algonquin Gas Transmission, LLC
890 Winter Street, Suite 300
Waltham, Massachusetts 02451

SWCA Project No. 65956

July 2026

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- Attachment 1 Figures
- Attachment 2 Alignment Sheets, Typical Construction Examples, and HDD Profile
- Attachment 3 Algonquin Erosion and Sedimentation Control Plan and Spill Protection, Control, and Countermeasure Plan
- Attachment 4 Algonquin Best Drilling Practices, Monitoring, and Clean-up of Horizontal Directional Drilling Inadvertent Returns Plan
- Attachment 5 Stormwater Management Reports
- Attachment 6 Traffic Management Plan
- Attachment 7 Algonquin Dust Control Plan
- Attachment 8 Waste Management Plan
- Attachment 9 Nighttime Construction Plan
- Attachment 10 Wetland Protection Act Resource Areas, Buffer Zones, and Isolated Vegetated Wetland Alterations
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Abbreviations

ABC	asphalt, brick, and concrete
ACEC	Area of Critical Environmental Concern
ACM	asbestos-containing material
ADI	Area of Development Impact
Algonquin	Algonquin Gas Transmission, LLC
ATWS	additional temporary workspace
BLSF	Bordering Land Subject to Flooding
BMP	best management practice
BVW	Bordering Vegetated Wetland
CAP	Contributing Area to Ponds
CCBP	Cape Cod Bridges Program
CFR	Code of Federal Regulations
CMP	Conservation and Management Permit
CMR	Code of Massachusetts Regulations
Commission	Cape Cod Commission
CVP	certified vernal pool
DEIR	Draft Environmental Impact Report
DRI	Development of Regional Impact
E&SCP	Erosion and Sedimentation Control Plan
EEA	Executive Office of Energy and Environmental Affairs
EH	Estimated Habitat
ENF	Environmental Notification Form
FEIR	Final Environmental Impact Report
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FERC Plan	FERC's <i>Upland Erosion Control, Revegetation, and Maintenance Plan</i> , May 2013 version
FERC Procedures	FERC's <i>Wetland and Waterbody Construction and Mitigation Procedures</i> , May 2013 version
GIS	geographic information system
HDD	horizontal directional drilling
IBA	Important Bird Area
ILSF	Isolated Land Subject to Flooding
IPMP	Invasive Plant Management Plan
IVW	Isolated Vegetated Wetland
IWPA	Interim Wellhead Protection Area
JBCC	Joint Base Cape Cod
LSCSF	Land Subject to Coastal Storm Flowage

LUO	Land Under the Ocean
M&R	metering and regulating
MassDEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
MassGIS	Massachusetts Bureau of Geographic Information
MDFG	Massachusetts Department of Fish and Game
MEPA	Massachusetts Environmental Policy Act
MESA	Massachusetts Endangered Species Act
MHC	Massachusetts Historical Commission
MP	milepost
NHESP	Natural Heritage and Endangered Species Program
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRHP	National Register of Historic Places
NSF	National Sanitation Foundation
PAR	permanent access road
PH	Priority Habitat
PPWSA	Potential Public Water Supply Area
Project	Cape Cod Canal Pipeline Relocation Project
Route 25	Massachusetts Route 25
Route 28	Massachusetts Route 28
ROW	right-of-way
RPP	<i>Cape Cod Regional Policy Plan 2025</i>
RV	recreational vehicle
SHA	Significant Habitat Area
SPCC	Spill Prevention, Control, and Countermeasure
TAR	temporary access roads
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDOT	U.S. Department of Transportation
WHPA	Wellhead Protection Area
WMA	Wildlife Management Area
WPA	Massachusetts Wetlands Protection Act

1 EXECUTIVE SUMMARY

Algonquin Gas Transmission, LLC (Algonquin), submits this Development of Regional Impact (DRI) application for the Cape Cod Canal Pipeline Relocation Project (Project) in Bourne, Massachusetts. The Project is a utility relocation and replacement project required to accommodate the Cape Cod Bridges Program (CCBP), which will replace the Bourne and Sagamore Bridges. Existing natural gas pipelines and associated metering and regulating (M&R) facilities that currently conflict with the bridge replacement program must be removed, abandoned, or relocated so that the regional transportation improvements can proceed while uninterrupted natural gas service is maintained for Cape Cod customers.

The Project does not increase interstate pipeline capacity or expand natural gas service to Cape Cod. Upon completion, Algonquin's design capacity to transport natural gas to National Grid delivery points will remain unchanged. The Project replaces existing bridge-attached and bridge-adjacent infrastructure with new facilities designed to provide the same service function from locations outside the CCBP construction conflict areas.

The proposed facilities include approximately 6.33 miles of new 16-inch- and 18-inch-diameter pipeline, removal of approximately 2.03 miles of existing pipeline, abandonment in place of approximately 1.44 miles of existing pipeline, relocation of the existing Bourne and Sagamore M&R Stations, construction of new Pave Paws Road and Bourne Rotary M&R Stations, and associated valve sites, launchers, receivers, access roads, and temporary construction support areas. The current design reflects refinements made through federal, state, regional, and local review, including the Federal Energy Regulatory Commission (FERC), Massachusetts Environmental Policy Act (MEPA), wetland, waterways, endangered species, cultural resource, and Cape Cod Commission processes.

The Project has been planned to avoid and minimize environmental and community impacts to the maximum extent practicable. Approximately 90 percent of the G-31 and G-32 pipeline rights-of-way (ROWs) are collocated with existing utility easements, reducing the need for new linear disturbance and limiting habitat fragmentation. The Cape Cod Canal crossing will be installed by horizontal directional drilling (HDD) beneath the canal, avoiding dredging, in-water trenching, fill placement, and direct disturbance to canal sediments, navigation, fisheries, and shellfish habitat. Project refinements have reduced tree clearing from approximately 66.0 acres evaluated in the Draft Environmental Impact Report (DEIR) to approximately 44.8 acres in the current design.

Potential impacts are primarily construction-related and temporary in nature. The "Project area" includes approximately 210.2 acres of construction disturbance and approximately 60.9 acres of permanent operational area. Temporary effects include construction workspace disturbance, vegetation clearing, limited wetland and buffer zone disturbance, temporary traffic and noise effects, and short-term construction activity within mapped Priority Habitat, Estimated Habitat, Wellhead Protection Areas (WHPAs), floodplain areas, open space lands, and portions of the Herring River Watershed Area of Critical Environmental Concern (ACEC). Permanent impacts have been minimized by the use of existing corridors, underground installation, restoration of temporary workspaces, and siting of aboveground facilities to avoid or reduce effects on sensitive resources and nearby communities.

The Project incorporates extensive avoidance, minimization, restoration, and mitigation commitments. These include implementation of erosion and sediment controls; spill prevention, control, and countermeasure (SPCC) procedures; environmental inspection and compliance monitoring; HDD best drilling practices and inadvertent return response procedures; wetland restoration; traffic management; construction noise controls; stormwater management at aboveground facilities; restoration of disturbed workspaces; and ongoing coordination with federal, state, regional, local, and Tribal reviewers.

Rare species and habitat impacts are being addressed through continued coordination with the Massachusetts Natural Heritage and Endangered Species Program (NHESP) and preparation of a Conservation and Management Permit (CMP). Species-specific protection and avoidance measures are expected to include turtle protection measures, rare plant protection and avoidance measures, clam shrimp protection and avoidance measures, invasive plant management, restoration using appropriate native seed mixes, and other permit-required monitoring and reporting. Algonquin has also proposed long-term habitat mitigation through acquisition and permanent protection of approximately 60 acres of undeveloped forestland adjacent to Joint Base Cape Cod (JBCC) and Camp Edwards Wildlife Management Area (WMA), providing regional habitat connectivity and conservation value beyond the immediate Project footprint.

The Project affects several Article 97-protected open space properties, including conservation, water supply, and wildlife management lands. Algonquin has coordinated with the affected landowners and state agencies to define the nature and extent of temporary and permanent interests required for the Project and to support the applicable Article 97 review and approval process. The Project's use of existing utility corridors, temporary restoration commitments, and proposed off-site habitat preservation are intended to minimize and mitigate impacts to protected open space resources.

Overall, the Project supports a critical regional transportation initiative, maintains existing energy reliability for Cape Cod, avoids an increase in pipeline capacity, and incorporates substantial environmental protection and mitigation measures. Based on the alternatives analysis, design refinements, mitigation commitments, and consistency review presented in this application, the Project is consistent with the applicable goals, objectives, and minimum performance standards of the *Cape Cod Regional Policy Plan 2025* (RPP) and represents a practicable, minimized-impact approach to resolving unavoidable conflicts between existing energy infrastructure and the CCBP (Cape Cod Commission 2025a).

Table 1-1. Project at a Glance

Topic	Summary
Project name	Cape Cod Canal Pipeline Relocation Project
Applicant	Algonquin Gas Transmission, LLC
Location	Town of Bourne, Barnstable County, Massachusetts, including areas north and south of the Cape Cod Canal and portions of JBCC.
Primary purpose	Relocate and replace existing natural gas pipeline and M&R infrastructure that conflicts with the CCBP while maintaining uninterrupted service to Cape Cod customers.
Capacity change	No increase in interstate pipeline capacity and no expansion of natural gas service to Cape Cod. The Project maintains the same service function as the existing infrastructure.
New pipeline facilities	Approximately 6.33 miles of new 16-inch- and 18-inch-diameter pipeline.
Existing pipeline removal and abandonment	Approximately 2.03 miles of existing pipeline removed and approximately 1.44 miles abandoned in place.
Aboveground facilities	Relocation of the existing Bourne and Sagamore M&R Stations; construction of new Pave Paws Road and Bourne Rotary M&R Stations; associated valve sites, launchers, receivers, access roads, and temporary construction support areas.
Construction disturbance	Approximately 210.2 acres of construction disturbance.
Permanent operational area	Approximately 60.9 acres of permanent operational area including permanent pipeline ROW, 4 M&R stations, and permanent access roads.
Tree clearing	Tree clearing reduced from approximately 66.0 acres evaluated in the DEIR to approximately 44.8 acres in the current Project design.
Utility corridor collocation	Approximately 90 percent of the G-31 and G-32 pipeline ROWs are collocated with existing utility easements.

Topic	Summary
Cape Cod Canal crossing	The G-31 pipeline crossing will be installed by HDD beneath the canal, avoiding dredging, in-water trenching, fill placement, and direct disturbance to canal sediments.
Key sensitive resources	Mapped Priority Habitat and Estimated Habitat; WHPAs; wetland resource areas and buffer zones; floodplain areas; Article 97-protected open space lands; and portions of the Herring River Watershed ACEC.
Primary avoidance and minimization measures	Use of existing utility corridors; HDD beneath the Cape Cod Canal; refined workspace limits; reduced tree clearing; wetland construction procedures; erosion and sediment controls; spill prevention procedures; and environmental inspection during construction.
Primary mitigation commitments	Wetland restoration; workspace restoration and revegetation; traffic management; construction noise controls; stormwater management at aboveground facilities; species-specific NHESP protection plans; invasive plant management; and monitoring and reporting required by permits.
Rare species mitigation	Continued NHESP coordination and preparation of a CMP, including species-specific avoidance, protection, restoration, and net benefit mitigation measures.
Open space and Article 97 mitigation	Coordination with affected landowners and state agencies regarding Article 97 approvals, combined with use of existing corridors, temporary restoration commitments, and proposed off-site habitat preservation.
Proposed off-site habitat preservation	Acquisition and permanent protection of approximately 60 acres of undeveloped forestland adjacent to JBCC and Camp Edwards WMA.
Primary regulatory reviews	FERC, MEPA, Cape Cod Commission DRI review, Massachusetts Wetlands Protection Act (WPA), Chapter 91, Section 401 Water Quality Certification, Massachusetts Endangered Species Act (MESA), Article 97, U.S. Army Corps of Engineers (USACE), Massachusetts Office of Coastal Zone Management, U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and cultural resource consultation.
Regional benefit	Supports implementation of the CCBP, maintains existing energy reliability for Cape Cod, and resolves conflicts between existing energy infrastructure and planned bridge replacement construction.

1.1 Master RPP Consistency Matrix

The following matrix provides a consolidated summary of the Project's consistency with applicable Cape Cod RPP systems and related Cape Cod RPP Technical Bulletin topics (Cape Cod Commission 2025b). The matrix is intended as a reviewer roadmap and should be read together with the detailed existing conditions, impact assessment, mitigation, and RPP consistency discussions presented in the body of this application.

Table 1-2. Regional Policy Plan Consistency Matrix

RPP System / Technical Bulletin Topic	Applicability	Consistency Summary	Key Avoidance, Minimization, and Mitigation Measures	Primary Supporting Sections
Water Resources	Applicable because the Project occurs within the Cape Cod Sole Source Aquifer, mapped WHPAs, contributing areas to sensitive waters, wetlands, floodplain areas, and the Herring River Watershed ACEC.	The Project has been designed to protect groundwater, surface water, and watershed functions by avoiding Zone I WHPAs, limiting permanent disturbance, using HDD beneath the Cape Cod Canal, and implementing construction-phase controls to prevent sedimentation, spills, and water quality degradation.	Route refinement to avoid Zone I areas; phased and coordinated construction water use; erosion and sediment controls; SPCC procedures; controlled dewatering; HDD best practices and inadvertent return response; stormwater management at aboveground facilities; restoration of temporary workspaces.	Sections 3.3.1.2, 3.3.8, and 5.3.1

RPP System / Technical Bulletin Topic	Applicability	Consistency Summary	Key Avoidance, Minimization, and Mitigation Measures	Primary Supporting Sections
Wetlands Resources	Applicable because the Project includes work within or near coastal and inland wetland resource areas, floodplain resource areas, Isolated Vegetated Wetlands, and wetland buffer zones.	The Project avoids permanent wetland fill to the maximum extent practicable and limits wetland impacts primarily to temporary construction disturbance that will be restored following construction. The Cape Cod Canal crossing avoids direct in-water disturbance through HDD.	HDD beneath the canal; reduced workspace widths at wetland crossings; construction matting where needed; erosion and sediment controls; wetland restoration to preconstruction contours and hydrology; environmental inspection; compliance with FERC wetland procedures and federal and state permit requirements.	Sections 5.3.2 , 5.3.3, and 5.4.2
Wildlife and Plant Habitat	Applicable because the Project overlaps mapped Priority Habitat and Estimated Habitat and includes temporary and permanent disturbance to forested, shrubland, utility corridor, wetland, and open upland habitats.	The Project has minimized habitat impacts through collocation with existing utility corridors, reduction of tree clearing, restoration of temporary workspace, NHESP coordination, and development of species-specific avoidance, protection, restoration, and net benefit mitigation measures.	Approximately 90 percent collocation of G-31 and G-32 ROWs with existing utility easements; reduction of tree clearing from approximately 66.0 acres to approximately 44.8 acres; NHESP CMP process; turtle, rare plant, clam shrimp, and invasive plant management measures; native restoration seed mixes; proposed permanent protection of approximately 60 acres of off-site forestland.	Section 5.3.4
Ocean Resources	Applicable because the Project crosses beneath the Cape Cod Canal, a federal navigation channel and coastal waterway with associated coastal wetland and marine resource areas.	The Project avoids direct impacts to the canal, navigation, fisheries, shellfish habitat, and canal sediments by installing the G-31 pipeline beneath the canal using HDD rather than dredging or open-cut trenching.	HDD beneath the canal; no dredging; no in-water trenching; no fill placement in the canal; HDD monitoring and inadvertent return procedures; coordination with marine resource agencies; protection of public navigation and waterway functions.	Sections 5.3.2 and 5.4.2
Open Space	Applicable because the Project affects Article 97-protected open space, conservation, water supply, and wildlife management lands.	The Project minimizes open space impacts by using existing utility corridors and previously disturbed areas where practicable, restoring temporary workspaces, coordinating Article 97 approvals, and proposing compensatory long-term habitat preservation.	Coordination with affected landowners and state agencies; Article 97 review and approval process; use of existing utility corridors; restoration of temporary workspaces; proposed acquisition and permanent protection of approximately 60 acres of undeveloped forestland adjacent to JBCC and Camp Edwards WMA.	Section 5.3.5
Community Design and Visual Character	Applicable because aboveground facilities, construction workspaces, access roads, and vegetation clearing may temporarily or permanently affect local visual character.	The Project is generally compatible with the existing utility, transportation, military, and developed landscape context. Aboveground facilities have been sited and designed to avoid or reduce visual impacts, and temporary construction disturbance will be restored following construction.	Use of existing infrastructure corridors; siting of facilities away from sensitive residential viewpoints where practicable; preservation of existing vegetation buffers; restoration of disturbed areas; landscape screening and fencing treatments where needed.	Sections 5.4.1 and 5.5

RPP System / Technical Bulletin Topic	Applicability	Consistency Summary	Key Avoidance, Minimization, and Mitigation Measures	Primary Supporting Sections
Coastal Resiliency and Climate Change	Applicable because portions of the Project are near coastal resources, mapped flood hazard areas, and areas considered in regional climate resiliency planning.	The Project has been evaluated in relation to coastal flooding, sea level rise, stormwater, and long-term infrastructure resilience. The canal crossing will be installed below the canal bed, and aboveground facilities will incorporate stormwater management and resiliency considerations.	HDD below the canal; avoidance of permanent fill in flood storage areas; stormwater management at aboveground facilities; restoration of disturbed floodplain areas; evaluation of projected sea level rise and coastal flood risk; continued compliance with permit-required resiliency measures.	Sections 5.4.2 and 5.4.7
Infrastructure and Utilities	Applicable because the Project relocates and replaces existing natural gas infrastructure to accommodate the CCBP.	The Project directly supports regional infrastructure objectives by resolving conflicts between existing energy infrastructure and planned bridge replacement construction while maintaining existing service reliability and avoiding an increase in pipeline capacity.	Relocation of bridge-attached and bridge-adjacent pipeline facilities; removal, abandonment, and replacement of existing facilities; construction of new and relocated M&R stations; continued coordination with Massachusetts Department of Transportation (MassDOT), USACE, Eversource, National Grid, FERC, and other infrastructure stakeholders.	Sections 2.2, 3.2 and 5.4.3
Transportation	Applicable because construction will occur near regional roadways, the Cape Cod Canal transportation network, and CCBP work areas.	Transportation impacts are expected to be temporary and construction-related. The Project supports the long-term regional transportation benefit of allowing the CCBP to proceed while maintaining reliable energy service.	Traffic Management Plan; use of contractor yards near construction areas; traffic controls, signage, and flaggers where needed; coordination with MassDOT, Town of Bourne, JBCC, and other roadway authorities; scheduling to minimize disruptions where practicable.	Sections 3.3.5, 3.3.12, and 5.4.4
Energy	Applicable because the Project involves natural gas transmission infrastructure serving Cape Cod.	The Project maintains existing energy reliability and service continuity for Cape Cod while not increasing interstate pipeline capacity or expanding natural gas service. It replaces infrastructure that must be relocated due to the CCBP.	No increase in transportation capacity; replacement of existing service function; relocation of existing bridge-conflict facilities; compliance with federal pipeline safety requirements; coordination with National Grid and FERC.	Sections 2.2, 3.1, 3.2, 3.3, and 5.4.5
Waste Management	Applicable because construction and demolition activities will generate construction debris, removed pipe, vegetation, and other regulated or recyclable materials.	Construction waste will be managed through approved reuse, recycling, disposal, and demolition procedures in accordance with applicable federal, state, and local requirements.	Waste Management Plan; reuse or recycling of construction materials where practicable; off-site disposal at approved facilities; demolition notification where required; proper handling of removed pipe, construction debris, vegetation, and HDD residuals.	Sections 3.3.9 and 5.4.6

RPP System / Technical Bulletin Topic	Applicability	Consistency Summary	Key Avoidance, Minimization, and Mitigation Measures	Primary Supporting Sections
Cultural Heritage	Applicable because the Project has been reviewed for potential effects on archaeological and historic architectural resources.	The Project has undergone cultural resource review and consultation. Investigations have documented archaeological and historic architectural resources, and consultation has been conducted with the Massachusetts Historical Commission, Tribal representatives, FERC, and other consulting parties.	Section 106 consultation; archaeological surveys; historic architectural survey; Tribal consultation; post-review discovery procedures; avoidance or minimization of effects where practicable; continued compliance with cultural resource commitments.	Sections 2.4.4 and 5.5.1
Economy	Applicable because the Project affects regional infrastructure, construction activity, tax revenues, and the CCBP schedule.	The Project provides regional economic benefit by enabling the CCBP to proceed while maintaining existing energy service. Construction activity is expected to generate short-term local economic benefits, and operation may support continued tax and infrastructure reliability benefits.	Coordination with CCBP schedule; use of local and regional labor and materials where available; maintenance of energy reliability for homes and businesses; avoidance of service disruption that could adversely affect the regional economy.	Section 5.5.2
Housing	Applicable because construction workers, construction traffic, and infrastructure service reliability may relate indirectly to housing and residential community conditions.	The Project is not expected to create long-term housing demand or displace existing housing. Temporary construction workforce needs are expected to be accommodated within existing regional resources, and the Project maintains existing energy service to residential customers.	No residential displacement; coordination with affected landowners; construction access and traffic management near residential areas; restoration of disturbed residential or adjacent lands; maintenance of uninterrupted energy service.	Section 5.5.3

2 INTRODUCTION AND REGULATORY FRAMEWORK

2.1 Application Purpose

Algonquin submits this Development of Regional Impact (DRI) application to the Cape Cod Commission (Commission) for review and approval of the Cape Cod Canal Pipeline Relocation Project (Project), located entirely within the Town of Bourne, Barnstable County, Massachusetts. The Project is subject to DRI review because it exceeds the Commission's thresholds for DRI review as described in Barnstable County Ordinance 90-12, Chapter A, Sections 2 and 3.

The purpose of this application is to demonstrate that the Project has been planned, designed, and refined in a manner that is consistent with the goals, objectives, and minimum performance standards contained in the Cape Cod RPP. The application also demonstrates that the Project has incorporated extensive avoidance, minimization, restoration, and mitigation measures to reduce environmental and community impacts while providing important regional infrastructure benefits.

Importantly, the Project is a relocation and replacement project. Upon completion, Algonquin's existing design capacity to transport natural gas to National Grid delivery points will remain unchanged. The Project does not increase interstate pipeline capacity or expand natural gas service to Cape Cod. Rather, it replaces existing facilities that must be relocated as a result of the bridge replacement program.

2.2 Project Overview

On September 29, 2025, Algonquin filed an application with the FERC in Docket No. CP25-552 seeking authorization under Sections 7(b) and 7(c) of the Natural Gas Act to construct, operate, abandon, and modify certain interstate natural gas facilities as part of the Project. FERC issued its Environmental Assessment for the Project on May 29, 2026.

The Project is a critical infrastructure resiliency initiative that will maintain uninterrupted natural gas service to Cape Cod while accommodating the planned replacement of the Bourne and Sagamore Bridges through the CCBP. The bridges currently support critical natural gas delivery infrastructure serving Cape Cod, and replacement of these structures requires relocation of the existing bridge-mounted facilities. The CCBP is being implemented jointly by the Massachusetts Department of Transportation (MassDOT) and the U.S. Army Corps of Engineers (USACE), which owns and operates the Cape Cod Canal and both bridges.

The Project involves modifications to Algonquin's existing interstate natural gas transmission system within the Town of Bourne, Massachusetts, including:

- Installation of approximately 6.33 miles of new 16-inch- and 18-inch-diameter pipeline.
- Removal of approximately 2.03 miles of existing pipeline.
- Abandonment in place of approximately 1.44 miles of existing pipeline.
- Relocation of the existing Bourne and Sagamore M&R Stations.
- Construction of the new Pave Paws Road and Bourne Rotary M&R Stations.
- Improvements to associated valve sites, launcher and receiver facilities, access roads, and temporary construction support areas.

The existing gas delivery system serving Cape Cod relies on two National Grid high-pressure pipelines attached to the Bourne and Sagamore Bridges. Natural gas is delivered from Algonquin's interstate

transmission system to National Grid at the existing Bourne and Sagamore M&R Stations located north of the Cape Cod Canal. National Grid then transports gas across the Canal through bridge-mounted pipelines to customers throughout Cape Cod. Because these pipelines and associated facilities conflict with future bridge replacement activities, they must be relocated before bridge construction can proceed.

To address this need, Algonquin and MassDOT entered into an agreement under which Algonquin will construct replacement pipeline facilities capable of providing the same level of natural gas service currently available to Cape Cod. The Project will replace existing infrastructure with a modern underground system designed to provide the same operational capacity while improving reliability, maintainability, and long-term resiliency.

A key Project objective is to maintain uninterrupted natural gas service throughout construction and bridge replacement activities. To support the CCBP schedule, portions of the Project must be placed into service before bridge construction begins. Failure to complete the relocation would constrain implementation of the CCBP and jeopardize continued natural gas service to Cape Cod communities.

The Project has undergone extensive refinement through the MEPA process, FERC review, agency coordination, and stakeholder outreach. These refinements reduced overall land alteration resulting in an approximately 18.6-acre reduction in disturbed area and a 21.2-acre reduction in tree clearing, while incorporating enhanced stormwater management and environmental protection measures. The current Project footprint includes approximately 210.2 acres of construction disturbance and approximately 60.9 acres of permanent operational area.

Upon completion, the Project will maintain Algonquin's existing design capacity to deliver natural gas to National Grid and will continue operating at the same maximum allowable operating pressures as the existing system. The Project represents a replacement and relocation of existing facilities and will provide a more resilient long-term energy infrastructure solution while supporting one of the region's most important transportation improvement projects.

2.2.1 PROJECT SCHEDULE

To accommodate the CCBP construction schedule and maintain uninterrupted natural gas service to National Grid's distribution system, portions of the Project must be placed into service before construction of the replacement Sagamore Bridge begins. Project construction is scheduled to commence in January 2027, with primary facilities placed into service during the fourth quarter of 2027 and remaining restoration and facility retirement activities completed in 2028.

2.3 Regulatory Framework

The Project is currently undergoing review by multiple federal, state, regional, and local regulatory agencies (Table 2-1).

At the federal level, FERC serves as the lead federal agency and is responsible for reviewing the Project pursuant to the Natural Gas Act. Additional federal approvals include permits and consultations with the USACE, U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and associated federal agencies.

At the state level, the Project has undergone review under MEPA (EEA No. 16947). Algonquin submitted a Final Environmental Impact Report (FEIR) to the MEPA Office on May 15, 2026 following issuance of the Secretary's Certificate on the DEIR. The FEIR incorporates Project refinements, mitigation commitments, permit status updates, and responses to agency comments received during environmental

review. The Secretary issued a Certificate on the FEIR on June 29, 2026 determining that the Project adequately and properly complies with MEPA and its implementing regulations.

The Project additionally requires approvals under the Massachusetts Wetlands Protection Act (WPA), Chapter 91 Waterways Program, Section 401 Water Quality Certification Program, Massachusetts Endangered Species Act (MESA), and Article 97 disposition process, among other state permitting programs. Regional review is being conducted through this DRI application to the Cape Cod Commission.

The Cape Cod Commission has participated throughout the MEPA process, including review of the Environmental Notification Form (ENF), DEIR, and FEIR. Algonquin respectfully requests that these materials be incorporated into the record of this DRI proceeding as supporting documentation for the Commission's review.

Table 2-1. Permits and Approvals¹

Permit/Approval	Administering Agency	Status	Permit File Numbers
Federal and Tribal			
Natural Gas Act Section 7(c) – Certificate of Public Convenience and Necessity	Federal Energy Regulatory Commission (FERC)	Anticipated September 2026	CP25-552-000
National Environmental Policy Act – Environmental Assessment Review	FERC	Environmental Assessment issued on May 29, 2026	CP25-552-000
Section 404/10 Permit	U.S. Army Corps of Engineers (USACE) New England District	Application submitted October 2025; anticipated permit issuance September 2026	NAE-2024-02916
Section 14/408 Permit	USACE New England District	Application submitted October 2025; anticipated permit issuance September 2026	NAE-2024-02916
Real Estate Outgrant Permit	USACE New England District	Application submitted October 2025; anticipated permit issuance September 2026	
National Pollutant Discharge Elimination System General Permit for Dewatering and Remediation Discharges	U.S. Environmental Protection Agency	To be submitted approximately 60 days prior to hydrostatic test water discharges	
Endangered Species Act Section 7 Clearance	U.S. Fish and Wildlife Service	Initial information requested initiated December 2023; application submitted October 2025; approval issued June 25, 2026	2025-0132897
Endangered Species Act Section 7 Clearance	National Marine Fisheries Service	Submitted December 2025; approval issued July 9, 2026	GARFO-2026-01397
Section 106 Consultation	Massachusetts Historical Commission	Consultation initiated August 2023; consultation complete	

¹ Notwithstanding anything to the contrary set forth in this section, nothing stated herein shall be construed to indicate that any state, regional, or local agency referred to has the power to impose any requirement inconsistent with federal law or to refuse to issue or to unreasonably delay the issuance or processing of any state, regional, or local permit, license, certificate, approval, review, or other requirement, nor shall this document be construed to limit Algonquin's legal rights under the Natural Gas Act (15 United States Code [USC] 717, et seq.), Pipeline Safety Improvement Act (49 USC 60101, et seq.), or U.S. Constitution, including, but not limited to, the Supremacy Clause and the Commerce Clause.

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Permit/Approval	Administering Agency	Status	Permit File Numbers
Section 106 Consultation	Massachusetts Board of Underwater Archaeological Resources	Consultation initiated August 2023; consultation complete	
Section 106 Consultation	Barnstable Historical Commission	Consultation initiated August 2023; consultation complete	
Section 106 Consultation	Mashpee Wampanoag Indian Tribe Tribal Historic Preservation Officer (THPO)	Consultation initiated August 2023; consultation complete	
Section 106 Consultation	Narragansett Indian Tribe THPO	Consultation initiated August 2023; consultation complete	
Section 106 Consultation	Wampanoag Tribe of Gay Head Aquinnah THPO	Consultation initiated August 2023; consultation complete	
Letter of No Objection	U.S. Department of Defense; U.S. Army	Submitted August 2025; anticipated approval June 2026	
State			
Environmental Notification Form (ENF) Certificate	Massachusetts Executive Office of Energy and Environmental Affairs (EEA)	ENF submitted April 30, 2025; Certificate received June 2025	EEA No. 16947
Draft Environmental Impact Report (DEIR) Certificate	EEA	DEIR submitted January 15, 2026; Certificate received March 2026	EEA No. 16947
Final Environmental Impact Report (FEIR) Certificate	EEA	FEIR submitted May 15, 2026; Certificate issued June 29, 2026	EEA No. 16947
Article 97	EEA	Anticipated legislative approval September 2026	
Federal Consistency Determination	Massachusetts Office of Coastal Zone Management	Submitted May 5, 2023; anticipated approval September 2026 with USACE permit	
Chapter 91 License – WW01 – Water-Dependent License	Massachusetts Department of Environmental Protection (MassDEP) – Boston Office	Application submitted July 2, 2026; anticipated approval September 2026	26-WW01-0100-APP
401 Water Quality Certification	MassDEP – Southeast Region	Submitted October 14, 2025; Permit issued July 10, 2026	25-WW10-0033-APP
Massachusetts Endangered Species Act Project Review and Conservation and Management Permit	Massachusetts Natural Heritage and Endangered Species Program	Consultation initiated February 2025; anticipated approval of the Conservation and Management Permit December 2026	
State Highway Access Permits	Massachusetts Department of Transportation (MassDOT) – District 5 Office	Road crossing/occupancy permit application submitted April 30, 2026 Curb cut permit applications submitted May 13, 2026	(MassDOT-Highway Access Permit Application # 5-2026-0466)
Regional			
Development of Regional Impact	Cape Cod Commission	Submitted July 24, 2026; anticipated approval December 2026	
Local			
Order of Conditions under the Massachusetts Wetlands Protection Act	Bourne Conservation Commission	Submitted July 1, 2026; anticipated approval August 2026	NOI-26-17

2.4 Outreach and Prior Public and Agency Input

Since 2023, Algonquin has conducted extensive outreach and coordination with regulatory agencies, municipal officials, Tribal representatives, landowners, community organizations, and other stakeholders to support development of the Project. Input received through these efforts has informed Project design refinements, reductions in temporary workspace, minimization of tree clearing, stormwater management improvements, and environmental protection commitments incorporated into the current Project design.

2.4.1 FERC PUBLIC OUTREACH

The Project entered the FERC pre-filing process in January 2025 (Docket No. PF25-4-000). As part of this process, Algonquin conducted a public open house in Bourne on March 4, 2025, and participated in a FERC public scoping meeting on April 23, 2025, to solicit feedback on Project facilities, environmental impacts, and construction activities. Algonquin subsequently filed its formal certificate application with FERC in September 2025, and FERC issued its Environmental Assessment on May 29, 2026. The 30 day public comment period on the EA ended on June 29, 2026.

2.4.2 AGENCY AND MUNICIPAL COORDINATION

Algonquin has coordinated extensively with federal, state, regional, and local agencies throughout Project development, including FERC, USACE, MassDOT, Massachusetts Department of Environmental Protection (MassDEP), NHESP, the Massachusetts Historical Commission (MHC), the Massachusetts Office of Coastal Zone Management, the Cape Cod Commission, the Town of Bourne, and JBCC. Coordination has focused on Project design, environmental review, utility relocation, construction sequencing, resource protection, and permitting requirements. Particular emphasis has been placed on coordination with MassDOT and USACE to ensure compatibility with the CCBP and maintain uninterrupted natural gas service during bridge replacement activities.

2.4.3 MEPA AND CAPE COD COMMISSION REVIEW

The Project has undergone comprehensive review under MEPA, including preparation of an ENF, DEIR, and FEIR. Comments received from agencies, stakeholders, and the Cape Cod Commission during the MEPA process contributed to Project refinements and mitigation commitments reflected in the current design. Information developed during the MEPA review, including alternatives analyses, technical studies, and responses to comments, supports this DRI application.

2.4.4 TRIBAL AND CULTURAL RESOURCE CONSULTATION

In coordination with FERC and MHC, Algonquin conducted consultation with the Mashpee Wampanoag Tribe, Wampanoag Tribe of Gay Head (Aquinnah), and Narragansett Indian Tribe regarding cultural resources and areas of traditional significance. Tribal representatives participated in archaeological investigations and site visits conducted during 2024 and 2025 and provided input that informed cultural resource studies and Project planning. Additional coordination occurred with state and local historical and archaeological review agencies as part of the Section 106 process.

2.4.5 ONGOING STAKEHOLDER ENGAGEMENT

Algonquin will continue to coordinate with agencies, municipalities, landowners, Tribal representatives, and other stakeholders throughout permitting, construction, restoration, and operation of the Project. Ongoing outreach will focus on construction schedules, traffic management, access coordination,

environmental protection measures, restoration activities, and implementation of permit commitments to ensure timely communication and continued stakeholder involvement throughout Project execution.

2.5 Application Organization

This DRI application has been organized to provide the Cape Cod Commission with a comprehensive evaluation of the Project and its consistency with the 2025 RPP. The application incorporates information developed through the FERC review process, MEPA process, technical resource studies, agency consultation, and ongoing Project design refinements.

The application is structured as follows:

- Section 1 – Executive Summary
- Section 2 – Introduction and Regulatory Framework
- Section 3 – Project Purpose, Need, and Description
- Section 4 – Alternatives Analysis
- Section 5 – Regional Policy Plan Consistency
- Section 6 – Conclusions
- Section 7 – References

Supporting technical reports, environmental studies, permit application materials, agency correspondence, mapping, figures, and other reference documents are provided as attachments. Together, these materials document how the Project has been planned, designed, and refined to avoid, minimize, and mitigate impacts while maintaining critical energy infrastructure necessary to support Cape Cod's communities and the implementation of the CCBP.

3 PROJECT PURPOSE, NEED, AND DESCRIPTION

3.1 Purpose and Need

The purpose of the Project is to remove, abandon, and relocate segments of Algonquin's existing infrastructure to accommodate the requirements of the CCBP and to continue providing uninterrupted natural gas service to National Grid by replacing National Grid's two existing bridge-attached pipelines with new natural gas infrastructure designed to meet the same capacity requirements. The Project is needed because bridge-attached utilities cannot be reinstalled on the replacement Bourne and Sagamore Bridges and must be relocated.

Natural gas supply is currently transported from the Algonquin interstate pipeline system to National Grid delivery points located north of the Cape Cod Canal. National Grid transports gas across the canal through high-pressure pipelines attached to the Bourne and Sagamore Bridges. These bridge-attached pipelines and associated M&R/take station infrastructure must be relocated to avoid conflicts with the CCBP. Following completion, Algonquin's design capacity to transport natural gas to National Grid delivery points will remain unchanged.

3.2 Proposed Facilities

3.2.1 NEW PIPELINES

The following pipeline facilities are proposed to replace National Grid's two existing 10-inch-diameter natural gas pipelines that are currently attached to the Bourne and Sagamore Bridges and supply National Grid's customers located on Cape Cod. The Project facilities described below are designed to maintain safe and reliable service to existing customers. The Project proposes 6.33 miles of new natural gas pipeline installation, with 3.47 miles to be removed or abandoned.

3.2.1.1 *G-31 Pipeline*

Algonquin's G-31 pipeline is proposed to replace National Grid's existing supply of natural gas that currently crosses over the Cape Cod Canal via National Grid's pipelines attached to the Bourne Bridge and Sagamore Bridge. The G-31 pipeline includes the installation of approximately 2.17 miles of 18-inch-diameter pipeline that will transport natural gas from the vicinity of an existing valve site located at the junction of Algonquin's multiple G-system pipelines southeast across the Cape Cod Canal to its terminus at the proposed Pave Paws Road M&R Station (Attachment 1, Figure 3.2-1). The G-31 pipeline crossing of the Cape Cod Canal will be the only crossing of the Canal for the Project and will be installed using HDD technology. See Section 3.3.1.2 for information on the HDD method.

3.2.1.2 *G-32 Pipeline*

Algonquin's G-32 pipeline is proposed to replace National Grid's existing supply of natural gas that currently crosses over the Cape Cod Canal via National Grid's pipeline attached to the Bourne Bridge. The G-32 pipeline includes the installation of approximately 3.07 miles of 16-inch-diameter pipeline. The G-32 pipeline will transport natural gas from the proposed Pave Paws Road M&R Station to the proposed Bourne Rotary M&R Station (Attachment 1, Figure 3.2-1). The G-32 pipeline will not cross the Cape Cod Canal; instead the natural gas will be delivered to the proposed Bourne Rotary M&R Station via an interconnection with the G-31 pipeline at the proposed Pave Paws Road M&R Station.

3.2.2 REMOVED AND RELOCATED PIPELINES

3.2.2.1 *G-24 Pipeline Removal and Relocation*

Approximately 0.49 mile of Algonquin's existing 18-inch-diameter G-24 pipeline will be removed and relocated starting approximately 125 feet east of U.S. Route 6 and ending at the east side of the Sagamore Bridge near the intersection of Hunters Brook Road and Canal Street (see Attachment 1, Figure 3.2-1). With the relocation of Algonquin's existing Sagamore M&R Station, this segment of the existing G-24 pipeline will no longer be required to distribute gas. Algonquin's decision to abandon or remove the applicable segments of the G-24 pipeline is based on existing easements and landowner directives.

The G-24 pipeline will be rerouted approximately 0.20 mile north of the current G-24 pipeline crossing of the Sagamore Bridge to avoid conflict with the workspace required to complete the CCBP. The relocated pipeline segment will be an approximately 0.68-mile-long, 18-inch-diameter pipeline. The portion of the relocated G-24 pipeline that intersects the Sagamore Bridge overpass will be installed using HDD technology to avoid interference with the CCBP. The relocated segment of the G-24 pipeline will connect to the proposed Sagamore M&R Station then proceed south adjacent to the eastern shoulder of Canal Street to tie in to Algonquin's existing G-24 pipeline system. Algonquin will require out grant permission (i.e., long-term easements) on USACE property for the newly located G-24 pipeline (and G-11 pipeline). Algonquin continues to work on finalizing the appropriate agreements.

3.2.2.2 *G-11 Pipeline Removal*

The G-11 Pipeline currently occupies the same ROW as the G-24 Pipeline, and they will also be collocated in the relocated design. Approximately 0.31 mile of Algonquin's existing 8-inch-diameter G-11 pipeline will be removed and relocated starting approximately 125 feet east of U.S. Route 6, similar to the G-24 pipeline relocation. With the relocation of Algonquin's existing Sagamore M&R Station at the end of the G-11 pipeline, this segment of the existing G-11 pipeline will no longer be required to distribute gas. After the relocation, the G-11 will now end at the proposed Sagamore M&R Station, while the G-24 will continue into Canal Street.

The G-11 pipeline will be relocated up to approximately 0.15 mile north of the current G-11 pipeline alignment to avoid conflict with the workspace required to complete the CCBP. The relocated segment of pipeline is an approximately 0.43-mile-long, 8-inch-diameter pipeline. The relocated segment of the G-11 pipeline that intersects the Sagamore Bridge overpass will be installed using HDD (bundled with the G-24 HDD) to avoid conflict with the CCBP. The relocated segment of the G-11 pipeline will terminate at the proposed relocated Sagamore M&R Station (see Attachment 1, Figure 3.2-1). Algonquin will require new permanent easement or out grant permission (i.e., long-term easements) on USACE property for the newly located G-11 pipeline, which will be a joint easement for G-24 and G-11 pipeline. Algonquin's decision to remove the applicable segments of the G-11 pipeline is based on existing easements and landowner directives (see Section 2.9). After the portion of the original G-24 pipeline is abandoned/removed, the ROW will be restored per Algonquin's Erosion and Sedimentation Control Plan (E&SCP).

3.2.2.3 *G-8C and G-8L Pipeline Removal*

Approximately 1.33 miles of Algonquin's existing 8-inch-diameter G-8C pipeline and approximately 1.33 miles of the existing 8-inch-diameter G-8L pipeline will be removed or abandoned in place between Algonquin's existing Bourne M&R Station site and the proposed relocated Bourne M&R Station (Attachment 1, Figure 3.2-1). With the relocation of Algonquin's existing Bourne M&R Station, currently located at the end of the G-8C and G-8L pipelines, these segments of the existing G-8C and G-8L pipelines will no longer be required to transport gas. The portion of the G-8C and G-8L pipelines scheduled for

removal is being done at the request of MassDOT to avoid conflicts with the CCBP. The portion of the pipelines to be abandoned in place is due to adjacent landowners to this stretch of the ROW. Pipeline removal in these locations would required tree cutting and extensive property disturbance.

Algonquin continues to coordinate closely with MassDOT regarding the removal of existing pipeline on MassDOT property within the G-8C/G-8L pipeline easement. Currently, Algonquin understands that MassDOT will require approximately 0.65 mile of each of the existing G-8C and G-8L pipelines to be removed from MassDOT's property to avoid conflict with the CCBP. After the portion of the existing G-8C/G-8L pipelines are removed and the ROW has achieved full restoration, Algonquin will finalize the agreement with MassDOT.

Algonquin has been coordinating with remaining landowners along the G-8C and G-8L pipelines regarding abandoning the pipelines in place. Currently, no landowners have objected to the in-place abandonment of the pipelines and Algonquin anticipates approximately 0.68 mile of each of the G-8C and G-8L pipelines will be abandoned in place. Landowner agreements have been negotiated and are in place for the G-8C and G-8L pipeline abandonment segments.

3.2.3 RELOCATED ABOVEGROUND FACILITIES

Algonquin proposes to remove and relocate the Bourne and Sagamore M&R Stations to avoid conflicts with the CCBP. To maintain uninterrupted gas service to National Grid's Bourne-Cape and Sagamore-Cape systems, Algonquin also plans to construct two new M&R stations: the Pave Paws Road M&R Station and the Bourne Rotary M&R Station.

Currently, Algonquin operates two M&R stations in the Project area: the Bourne M&R Station and Sagamore M&R Station, which both supply natural gas to National Grid. National Grid receives gas at these locations via take stations that feed into its distribution system, including two pipeline headers attached to the Bourne and Sagamore Bridges. At present, Algonquin does not have any M&R stations directly supplying National Grid's Bourne-Cape and Sagamore-Cape systems.

To accommodate the CCBP's utility exclusion zones, Algonquin will remove the existing Bourne and Sagamore M&R Stations and relocate them to new sites outside of the exclusion zones to continue serving National Grid's mainland customers.

Additionally, Algonquin is installing a new natural gas transmission pipeline (G-31) across the Cape Cod Canal, replacing the existing transport provided by National Grid's two high-pressure header pipes. As a result, Algonquin must construct two new M&R stations on Cape Cod to deliver gas into National Grid's system:

- The Pave Paws Road M&R Station will supply the Sagamore Service Area from the G-31 pipeline.
- The Bourne Rotary M&R Station will supply the Bourne Service Area from the G-32 pipeline.

These new stations will be strategically located near National Grid's two service areas to ensure reliable delivery. A discussion on the need for constructing two new M&R stations is provided in Section 3.2.3.

In summary, Algonquin is removing and replacing the two mainland M&R stations to facilitate CCBP construction and maintain service to National Grid's Bourne-Mainland and Sagamore-Mainland areas. Two additional Algonquin M&R stations are required on Cape Cod to deliver gas from the G-31 and G-32 pipelines into National Grid's Sagamore-Cape and Bourne-Cape distribution systems. Refer to Section 4 for additional details on M&R station alternatives.

3.2.3.1 Sagamore M&R Station

Algonquin's existing Sagamore M&R Station is located immediately adjacent to the Sagamore Bridge, currently associated with the existing G-24 and G-11 pipelines, and must be relocated to avoid conflict with the CCBP facilities. Facilities that are reusable from the existing Sagamore M&R Station may be relocated to the proposed location northeast of the Sagamore Bridge between Meetinghouse Lane and Canal Street (Attachment 1, Figure 3.2-1). All other above- and belowground infrastructure at the existing Sagamore M&R Station will be completely removed at the request of the landowner; new and/or revised agreements will be negotiated with the landowner to provide Algonquin with the rights needed for Project. All workspace necessary for the decommissioning and removal of the existing Sagamore M&R Station is shown in the alignment sheets in Attachment 2.

3.2.3.2 Bourne M&R Station

Algonquin's existing Bourne M&R Station is located immediately adjacent to the Bourne Bridge, at the terminus of Algonquin's existing G-8C and G-8L pipelines. This facility must be relocated to avoid conflict with the CCBP. Facilities that are reusable from the existing Bourne M&R Station may be relocated to the proposed location along Algonquin's existing 8-inch-diameter pipelines G-8C and G-8L between Massachusetts Route 25 (Route 25) and Heather Hill Road (Attachment 1, Figure 3.2-1). All other above- and belowground infrastructure at the existing Bourne M&R Station will be completely removed at the request of the landowner; new and/or revised agreements will be negotiated with the landowner to provide Algonquin with the rights needed for the Project. All workspace necessary for the decommissioning and removal of the existing Bourne M&R Station is shown in the alignment sheets in Attachment 2.

3.2.4 NEW ABOVEGROUND FACILITIES

3.2.4.1 Pave Paws Road M&R Station

The proposed Pave Paws Road M&R Station will be installed west of Pave Paws Road at the eastern terminus (milepost [MP] 2.15) of Algonquin's proposed G-31 pipeline and starting point of the proposed G-32 pipeline (Attachment 1, Figure 3.2-1). This M&R Station location was selected to transport natural gas to National Grid's high-pressure gas pipeline in the Sagamore area. Algonquin and National Grid collaborated to identify a location that minimizes impacts to the surrounding community and environment while also interconnecting with National Grid's existing natural gas distribution system.

3.2.4.2 Bourne Rotary M&R Station

The proposed Bourne Rotary M&R Station will be installed approximately 0.20 mile southeast of Massachusetts Route 28 (Route 28), southeast of the Bourne Rotary, at MP 3.07 of Algonquin's proposed G-32 pipeline (Attachment 1, Figure 3.2-1). This M&R Station location was selected to transport natural gas to National Grid's high-pressure gas pipeline in the Bourne area. Algonquin and National Grid collaborated to identify a location that minimizes impacts to the surrounding community and environment while also interconnecting with National Grid's existing natural gas distribution system.

3.2.4.3 Valve Sites

An existing valve site at the G-system interconnection with the proposed G-31 pipeline will be expanded as part of the Project. The valve site will be expanded primarily within areas already disturbed by pipeline construction and will be located primarily within Algonquin's existing permanent ROW. The location of the proposed valve site expansion is shown on alignment sheets provided in Attachment 2.

3.2.4.4 Launcher and Receiver Sites

A pipeline pig is an inline inspection device used to clean or inspect the pipeline. Pig launchers and receivers are aboveground facilities where pipeline pigs are inserted or retrieved from the pipeline. Pig launcher and receiver sites will be located primarily within the existing or proposed permanent ROW. A new launcher and receiver facility is proposed at the start and end of the proposed G-31 and G-32 pipelines. New receiver facilities will also be required at the reconfigured terminus points for the G-11, G-8C, and G-8L pipelines. Locations of proposed launcher and receiver sites are shown on alignment sheets provided in Attachment 2.

3.2.5 ACCESS ROADS

To the extent feasible, existing public and private road crossings along the Project will be used. Existing dirt and gravel access roads within the Project area created and frequently used by other utility companies will be used to the extent practicable. A total of 39 access roads will be used during construction of the Project. See Figure 3.2-2 in Attachment 1 for Project transportation details.

3.2.5.1 Temporary Access Roads

A total of 19 temporary access roads (TARs) will be utilized for the Project. The typical width for TARs during construction will be 25 feet wide. This 25-foot width will allow for equipment travel (approximately 20 feet) and upwards of 5 feet of space to stage equipment and/or materials on the side of the TARs. Any TARs utilized for the Project that will result in temporary land disturbances will follow appropriate mitigation measures implemented in compliance with Algonquin's E&SCP (Attachment 3), as well as the FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan*, May 2013 version (FERC Plan) and *Wetland and Waterbody Construction and Mitigation Procedures*, May 2013 version (FERC Procedures), to prevent and minimize temporary impacts to surrounding areas (FERC 2013a, 2013b).

3.2.5.2 Permanent Access Roads

During construction, 20 PARs will be utilized. The width of the PARs will vary between 15 and 35 feet depending on site conditions and equipment requirements. During operation, PARs will be 20 feet wide. Any improvements made to the PARs (e.g., grading or installing gravel, if necessary) will be maintained by Algonquin's operations personnel to provide continuing access to the ROW and M&R station sites in these locations.

3.2.6 CONTRACTOR WARE YARDS

Seven contractor ware yards have been identified along the proposed G-24, G-31, and G-32 pipelines to accommodate construction. The currently identified contractor ware yards are shown in Attachment 1, Figure 3.2-1. Table 3-1 presents the land requirements for currently identified contractor ware yards proposed for temporary use during construction.

Algonquin evaluated potential contractor yard locations within the Project area, prioritizing previously developed open land and parcels used for commercial or industrial purposes. However, such suitable land in the Project area is extremely limited. Consequently, Algonquin has identified four yards for the G-31 pipeline within existing transmission line corridors in proximity to pipeline construction. This land is open and maintained in a non-forested condition, so tree removal is not anticipated to prepare the yards for use.

Locating the yards within the transmission line corridors enables Algonquin to significantly reduce construction vehicle and equipment traffic on public roads in the Project area. Because these yards are

adjacent to the construction workspace, equipment, vehicles, materials, and workers can safely and efficiently move between the yards and the workspace without traveling on public roads, except for crossing Bournedale Road. Additionally, utilizing these existing corridors positions much of the construction activity away from nearby residential areas, providing both visual and noise buffers.

Despite the availability of certain areas of the electric transmission line corridor for yards, Algonquin does require additional land for contractor yards outside these electric transmission line corridors for the construction of the G-32 pipeline. Due to the limited access points from public roads to the transmission line corridors for construction vehicles, equipment, and workers, Algonquin designed a construction plan that includes two contractor yards at the southern end of the proposed G-32 pipeline, east of the Bourne Rotary. These yards are on undeveloped land with direct access to Route 28 and the Bourne Rotary.

The primary and largest yard, designated G32-1, is a parcel historically used as a racetrack. This site consists of a mix of open, unvegetated land and patches of forest. The second yard, G32-3, is located on open land utilized for training by JBCC, positioned on the eastern edge of the transmission line corridor directly across from G32-1.

Anticipated improvements to contractor ware yards are identified in Table 3-1. Appropriate mitigation measures will be implemented in compliance with Algonquin's E&SCP, as well as the FERC Plan and Procedures, to prevent and minimize temporary impacts to surrounding areas.

Table 3-1. Contractor Ware Yards for the Cape Cod Canal Pipeline Relocation Project

Facility	Yard	Size (acres)	Existing Condition	Anticipated Improvements
G-24 Pipeline	G24-1	0.4	Residential lawn	None
G-31 Pipeline	G31-1	0.8	Existing utility easement	Vegetation clearing and grading
	G31-2	0.4		
	G31-3	6.1		
	G31-4	2.3		
G-32 Pipeline	G32-1	8.7	Open land, historic racetrack, forested land	Vegetation clearing, tree removal, and grading
	G32-3	4.3	Open land, JBCC training area	Vegetation clearing and grading
Total:		23.0		

Note: Totals may not sum exactly due to rounding.

3.3 Construction Methods

This section describes construction methodologies as well as the sequence of activities and addresses construction-related topics such as schedule, construction work hours, environmental compliance, monitoring, and mitigation. Project facilities will be constructed in compliance with applicable federal and state laws and regulations, and the specific requirements of required permits. Refer to Table 2-1 for a full list of regulatory requirements.

3.3.1 PIPELINES

3.3.1.1 General Construction Procedures

The following sections identify the general construction procedures for routine pipeline construction, as well as the specific construction techniques that will be used in environmentally sensitive areas for the Project :

Right-of-Way Survey

Before the start of construction, land surveys will be finalized, the pipeline centerline and construction workspace will be marked, and land or easement acquisitions will be addressed. The construction work area (e.g., construction ROW and additional temporary workspaces [ATWS]) will first be surveyed and staked. Sensitive resources will be located and marked to prevent accidental damage during pipeline construction. Landowners will generally be notified at least 3 to 5 days before the start of construction unless earlier notice is requested in the easement negotiations.

Clearing Operations

Initial clearing operations will include the removal of vegetation within the pipeline ROW and the temporary construction workspace either by mechanical means or hand-cutting. The limits of clearing will be identified and flagged in the field prior to any clearing operations. In wetlands, trees and brush will either be cut with rubber-tired and/or tracked equipment, or hand-cut. Unless grading is required for safety reasons, wetland vegetation will be cut off at ground level, leaving existing root systems intact, and the aboveground vegetation will be removed from the wetlands for chipping or disposal.

In uplands, tree stumps and rootstock will be left in the temporary construction workspace wherever practicable to encourage natural revegetation. Stumps will be removed from the ROW to approved disposal locations or made available to landowners upon request. Timber will be removed from the ROW to approved locations in a manner and quantity that will not adversely impact the establishment or growth of vegetation and will be sold for lumber or pulp. Brush and tree limbs will be chipped and removed from the ROW for approved disposal. Wood chips will be sold as fuel or other marketable products, spread in approved locations and used as mulch, or hauled off-site for disposal.

The cleared width within the ROW and temporary construction workspace will be kept to the minimum that will allow for spoil storage, staging, assembly of materials, and all other activities required to safely construct the Project. Closely following clearing and before grading activities, erosion controls will be installed at the required locations as outlined in Algonquin's E&SCP (see Attachment 3).

Right-of-Way and Temporary Construction Workspace Grading

The entire width of the construction ROW, including the temporary construction workspace, will be rough-graded as necessary to allow for safe passage of equipment and to prepare a work surface for pipeline installation activities. However, as stated above, tree stumps and rootstock in upland areas will be left in the temporary construction workspace wherever possible to encourage natural revegetation, unless grading is required for safety reasons.

Algonquin will attempt to minimize grading through wetlands to the extent practicable, but grading in wetlands may still be required. Prior to grading in wetlands, a topographic survey will be completed of the wetland to ensure the wetland is restored to preconstruction conditions and contours following the completion of the Project. Wetland vegetation will be cut off at ground level, leaving existing root systems intact, unless disturbance of the root zone is required for safety purposes. Typically, the grading of the

ROW will be completed with bulldozers. Excavators will be used in conjunction with bulldozers in areas where deep cuts exist or where boulders and tree stumps require removal.

Topsoil segregation methods will be used in residential areas, unless otherwise approved in writing by the landowner prior to the commencement of grading. An Environmental Inspector will measure depths of topsoil up to 12 inches and document preconstruction topsoil depths where topsoil segregation is performed to ensure that actual topsoil depths are replaced during restoration.

Topsoil will be stripped and stockpiled along the ROW from either the full work area or the ditch plus spoil area in residential areas to the extent practicable. The topsoil will remain segregated to prevent mixing with the subsoil during construction activities. For worker safety and pipeline integrity, topsoil will not be stripped off existing pipeline and electric transmission line corridors where they overlap with construction workspace. There may be some areas where the construction ROW is limited, and topsoil will need to be stockpiled in approved ATWS areas. Topsoil may be replaced, as necessary, should mixing of topsoil with subsoil occur.

The mixing of topsoil with subsoil will be minimized by using topsoil segregation construction methods in wetlands (except when standing water or saturated soils are present). Where applicable, the size, density, and distribution of rock left in construction work areas should be similar to adjacent areas not disturbed by construction, unless otherwise approved in writing by the landowner prior to the commencement of grading. Algonquin will ensure that any imported soils are free of weeds and other environmental contaminants.

Trench Excavation

A trench will be excavated to the proper depth to allow for the burial of the pipe. In general, the trench will be deep enough (approximately 6 feet deep) to provide for 3 feet of cover over the pipelines as required by 49 Code of Federal Regulations (CFR) Part 192 of the U.S. Department of Transportation (USDOT) regulations and Algonquin's specifications. If required by a landowner, the pipeline will be buried at a greater depth to accommodate the landowner's ongoing use of the property. Burial depth can also be increased in certain areas based on consultation with the collocated utility company and type of land use crossed.

During trenching, the excavated material will be placed next to the trench to avoid unnecessary movement of machinery across the terrain. Should it become necessary to remove water from the trench, it will be pumped to a filter fabric bag or siltation device in an off-ROW, stable, vegetated upland area (where practical). In certain cases where side slopes are leveled to make a safe work environment before trench excavation, the amount of cover over the pipe will be increased after the slopes are restored.

Blasting

Based on geologic conditions, Algonquin does not anticipate the need for blasting to construct the Project. If unrippable subsurface rock is encountered, blasting for ditch excavation will be necessary. In these areas, care will be taken to prevent damage to underground structures (e.g., cables, conduits, septic systems, electric transmission tower foundations), groundwater resources (e.g., springs, water wells, other water sources), or aboveground structures (e.g., homes, electric transmission towers). In the event blasting is required, a Blasting Plan will be developed.

Blasting mats or soil cover will be used as necessary to prevent the scattering of loose rock. All blasting will be conducted during daylight hours and will not begin until occupants of nearby buildings, stores, residences, places of business, and farms have been notified. Algonquin's contractor will comply with Algonquin's blasting plan and with all federal, state, and local regulations applying to blasting and blast vibration limits with regard to structures and underground utilities. With these measures, and the

implementation of the measures in Algonquin's E&SCP, impacts associated with blasting will be minimized to the extent practicable.

Stringing

Once the trench is excavated, the next process in constructing a pipeline is stringing the pipe along the trench. Stringing involves initially hauling the pipe by tractor-trailer, generally in 40- or 60-foot lengths, from the pipe storage yards onto the ROW. The pipe will be off-loaded from trucks and placed next to the trench using a sideboom tractor. The pipe joints are lined up end-to-end to allow for welding into continuous lengths known as strings.

Bending

Once the sections of pipe have been placed on the ROW, the pipe is bent as necessary, so the pipe fits the horizontal and vertical contours of the excavated trench. The bending engineer will survey the trench to determine the location and amount of each field bend. This information is marked on each piece of pipe so the bending foreman can make the appropriate pipe bends. Pipe is usually bent with a hydraulic pipe-bending machine. Pipe bends will be relatively long and gradual, which must be considered when the trench is dug.

Welding

All welding is performed in accordance with American Petroleum Institute Standard No. 1104 and Algonquin specifications. The individual joints of pipe are welded together in two steps. The front-end welding crew, or pipe gang, will perform the first step. This crew will clean and align the pipe bevels in preparation for welding and place at least the first two passes in the welding process. The back-end welding crew, or firing line, performs the second step, completing the welds started by the front-end welders. The pipe is welded into long strings to minimize the number of welds that need to be made in the trench (tie-in welds). Gaps in the pipe-welding process are often left by the welding crews at water/wetland crossings, road crossings, and other locations where access across the work area is required or when the pipe will be installed later in the construction process. Automatic welding may be used on some segments.

Nondestructive Weld Inspection

After welding, each weld is inspected to ensure its structural integrity is consistent with 49 CFR Part 192 of the USDOT regulations. Radiographs or ultrasonic images are taken and processed on-site for virtually instantaneous results. Those welds that do not meet the requirements established by the American Petroleum Institute Standard 1104 and Algonquin's specifications are marked for repair or replacement.

Weld Repair

The contractor may establish a weld repair crew, usually one welder and helper working independently, to follow the radiography crew to make any weld repairs that are required. All repaired and replaced welds are inspected to ensure proper repair and integrity.

Coating Inspection and Repair

The pipeline is coated to prevent corrosion. The pipe lengths will be coated (usually with a heat-applied epoxy) at a coating mill prior to being delivered to the Project facilities. The ends of each piece are left bare to allow for welding. Once welds have been inspected and accepted, the weld area is field coated by the coating crew. Because pipeline coatings are electrically insulating, the coating is inspected using equipment that emits an electric charge to ensure there are no locations on the pipeline where there is a defect in the coating.

Lowering-In

After a pipe string has been coated and inspected, the trench is prepared for the installation of the pipeline. The trench is cleared of loose rock and debris. If water exists in the trench, the water is pumped out into a well-vegetated upland area, except in wetland areas where the “push pull” installation may be required. In sandy soils, the trench is shaped to support the pipe. In areas where the trench contains bedrock, a sand bedding is placed on the bottom of the trench, and/or pads made of sandbags and/or clay are placed at regular intervals along the trench bottom to support the pipe. The lowering-in crew places the pipeline in the trench. Lowering-in is usually done with sideboom tractors.

Tie-Ins

Once the sections of pipe are lowered in, the tie-in crew makes the final welds in the trench. Additional excavations as needed, lowering-in, lining up, welding, nondestructive weld inspection, and coating the final welds are accomplished by this crew.

Backfilling

All suitable material excavated during trenching will be replaced in the trench. In areas where excavated material is unsuitable for backfilling, additional select fill may be required. If the soil is rocky, the pipe is padded with relatively rock-free material placed immediately around the pipe. This material may be obtained from commercial borrow areas in the region. Where suitable, the subsoil may be mechanically screened to produce suitable padding material. Padding of the pipe is usually performed with backhoes. If padding is obtained from an off-site source, it is normally placed in the trench by front-end loaders. In no case will topsoil be used as padding material. Once the pipe is padded, the trench is then backfilled with suitable excavated subsoil material.

During backfilling, Algonquin will minimize erosion potential by restoring the natural contour of the ground and surface drainage patterns as close to preconstruction conditions as practicable. The top of the trench may be slightly crowned to compensate for settling except in wetlands, where the crown could introduce hydrology issues, or paved areas, where standard compaction methods will be employed. The topsoil is then spread across the graded construction ROW when applicable. The soil will be inspected for compaction and scarified as necessary.

Cleaning

Once the pipeline’s tie-ins are completed, it is internally cleaned with pipeline pigs. A manifold is installed on one end of the long pipeline section and a pig is propelled by compressed air through the pipeline into an open pig catcher. The purpose is to remove any dirt, water, or debris that was inadvertently collected within the pipeline during installation.

Hydrostatic Testing

After cleaning, the pipeline will be pressure tested in accordance with Algonquin’s and the USDOT’s requirements to ensure its integrity for the intended service and operating pressures. The pipeline is hydrostatically tested with water that will be obtained from municipal water sources, and Algonquin does not anticipate any additives will be required for the water source.

Hydrostatic test water is pumped from a water source into the pipeline, which propels a pig through the pipeline in a manner that fills the pipeline with water. Test pressure is obtained by adding water to the test section with a high-pressure pump. Test water will contact only new pipe along the G-31, G-32, G-24, and G-11 pipelines, and no chemicals will be added to the test water unless otherwise approved by FERC and applicable federal and/or state regulatory agencies. At the completion of the hydrostatic test, the pressure

is removed from the section of pipe and the water is released from the test section by propelling the pig with air, which forces the water from the pipeline. Additional drying pig runs are made, if necessary, to remove any residual water from the pipeline.

The water in the pipe will be pressurized and held for a minimum of 8 hours in accordance with the USDOT Pipeline and Hazardous Materials Safety Administration Office of Pipeline Safety requirements identified in 49 CFR Part 192 prior to being placed in service. Any loss of pressure that cannot be attributed to other factors, such as temperature changes, will be investigated. Leaks detected will be repaired and the segment will be retested.

Upon completion of the test, the water may be pumped to the next segment for testing, where practicable. The test water will be discharged through an energy-dissipation device in compliance with the E&SCP or permit conditions, if applicable (see Attachment 3). The discharge rate will be regulated using valves and energy-dissipation devices to prevent erosion. Algonquin will apply for agency approval for the discharge of hydrostatic test water.

Water required for hydrostatic testing and HDD activities will be obtained from local public water suppliers, including the Buzzards Bay Water District, North Sagamore Water District, and Bourne Water District. Algonquin will coordinate directly with each water district to review anticipated construction water demands and obtain any necessary permits or approvals prior to withdrawing water. If one or more water districts cannot approve or supply the requested water volumes, alternatives will be evaluated, including transporting water to the HDD workspace via water containment trucks from an approved mainland source. The total volume of water required for hydrostatic testing is estimated to be approximately 350,500 gallons (Table 3-2). Construction-related water use will be temporary and will occur incrementally throughout the construction period, consistent with testing and construction sequencing. As hydrostatic testing will be performed separately for individual pipeline segments, water withdrawals will occur in phases based on the contractors testing sequence, rather than as a single withdrawal event, allowing water use to be managed in accordance with each district's available capacity and operational requirements by the applicable water district. Algonquin will obtain the necessary agency approvals for upland discharge of hydrostatic test water, and final discharge locations will be developed in coordination with the construction contractor and consistent with the conditions of the applicable permit approval.

Table 3-2. Water Requirements by Facility

Pipeline Facility	Estimated Water Requirement (gallons)	Applicable Water District for Withdrawal
G-8L and G-8C	300	Buzzards Bay
G-11	6,000 HDD Pre-test 3,500	North Sagamore
G-31	140,400 HDD Pre-test 46,800	Buzzards Bay
G-32	153,500	Bourne

The Project will incorporate water conservation measures, including the reuse and recycling of hydrostatic test water between compatible test segments where practicable and consistent with construction, safety, and water quality requirements. Water used for HDD pre-tests will also be recycled for final hydrostatic testing where feasible, reducing overall demand on local water supplies. Any hydrostatic test water that cannot be reused will be discharged in accordance with applicable regulatory approvals and permit conditions.

Water required for HDD activities will be withdrawn separately on an as-needed basis and stored in frac tanks (portable aboveground water storage tanks) located at the G-31 and G-24/G-11 HDD workspaces. HDD water will be incorporated into drilling mud and recycled during drilling operations to the extent practicable. Upon completion of HDD construction, drilling mud will be removed from the site and transported to an approved disposal facility; therefore, HDD-related water will not be discharged on-site. If one or more water districts are unable to supply the required water volumes, alternative water sources will be evaluated, including transportation of water to the HDD workspace by water trucks from an approved mainland source. Collectively, these measures will minimize temporary demands on local public water supplies and help protect Cape Cod's sole-source aquifer. Once a segment of pipe has been successfully tested and dried, the test cap and manifold will be removed, and the pipe will be connected to the remainder of the pipeline. No desiccant or chemical additives will be used to dry the pipe. Algonquin will implement Section VII of the FERC Procedures regarding hydrostatic testing, as well as any specifications pertaining directly to hydrostatic test water discharge in applicable regulatory approvals.

Restoration and Revegetation

The clean-up crew completes restoration and revegetation of the ROW and temporary construction workspace. In general, every effort will be made, weather and soil conditions permitting, to complete final clean-up (including final grading) and installation of permanent erosion control measures within 20 days after the trench is backfilled. These restoration activities will be completed in residential areas within 10 days of backfilling. In conjunction with backfilling operations, any woody material and construction debris will be removed from the ROW. The ROW will be final graded to prepare for restoration. Permanent slope breakers will be constructed and maintained in accordance with the FERC Plan. Fences and stone walls will be restored or repaired as necessary.

Revegetation will be completed in accordance with federal, state, and local requirements, including regarding seeding mixes, rates, and dates and in accordance with Algonquin's E&SCP. The ROW will be seeded within 6 working days following final grading, weather and soil conditions permitting. Alternative seed mixes may be used that are specifically requested by the landowner or required by agencies.

3.3.1.2 Horizontal Directional Drilling

The Project involves two HDDs, one to install the G-31 beneath the Cape Cod Canal and the second to pass beneath U.S. Route 6 and Canal Street at the Sagamore Bridge. The HDD method involves boring a pilot hole beneath the waterbody to the opposite bank and then enlarging the hole with one or more passes of a reamer until the hole is the necessary diameter. A prefabricated pipe segment is then pulled through the hole to complete the crossing.

A successful drill generally results in no impact to the waterbody bed or banks of the waterbody being crossed. While the HDD method is a proven technology, there are certain impacts that could occur as a result of the drilling, such as an inadvertent release of drilling mud. Drilling mud is most often composed of naturally occurring materials such as bentonite. Inadvertent returns of drilling mud can be caused by pressurization of the drill hole beyond the containment capacity of the overburden soil material. Providing adequate depth of cover for the HDD installation can substantially reduce this potential impact. Returns could occur in the area of the mud pits or along the path of the drill.

Algonquin has developed a Best Drilling Practices, Monitoring, and Clean-up of Horizontal Directional Drilling Inadvertent Returns Plan that is based on its extensive experience with successful HDD projects. The effective construction management contingency procedures outlined in the Plan will minimize construction-period disturbances for nearby land uses and will minimize the already-remote potential for an inadvertent return of drilling fluid.

This plan will be implemented to avoid and minimize potential impacts associated with the HDD activities. See Attachment 4 for additional details.

In order to facilitate the HDD, Algonquin will require two landfall sites: one entry point for the HDD from the north side of the Canal and one exit point for the HDD on the south side of the Canal. The entry point for the HDD will be located within an abandoned gravel and sand pit located adjacent to an existing driveway leading toward a solar facility off Grand Army of the Republic Highway, and the exit point will be located just west of Jarvis Road within Eversource's existing utility ROW to its terminal at the proposed Pave Paws Road M&R Station. The HDD will be approximately 87 feet below the bed of the Cape Cod Canal.

Algonquin will use a construction travel lane from the HDD entry point to the northern bank of the Cape Cod Canal and from the HDD exit point to the southern bank of the Cape Cod Canal for monitoring during HDD activities. The travel lane on each side of the Cape Cod Canal will be 40 feet wide to allow for monitoring the HDD and allow Algonquin the space to respond to an inadvertent return should one occur during the HDD. The travel lane between the Sagamore Bridge HDD entry and exit point will be 10 feet wide. See Attachment 1 (Figures), Attachment 2 (Alignment Sheets), and Attachment 4 (Best Drilling Practices, Monitoring, and Clean-up of Horizontal Directional Drilling Inadvertent Returns Plan).

Algonquin anticipates that when applying the HDD method under the Cape Cod Canal, approximately 460,000 gallons of water will be used, and while applying it under the Sagamore Bridge, approximately 313,000 gallons of water will be used. All additives in the drilling mud will be National Sanitation Foundation (NSF) 60-approved and may include Bara-Kade Plus, Super Gel-X, Max Gel, AMC Gel, and SW-101. NSF approval means that any drilling fluid additives used with the HDD are safe for use in proximity to groundwater and drinking water supplies, including public water supply aquifers.

3.3.1.3 Wetland Construction Methods

Construction activities within the three IVWs occurring in the Project workspace will be performed in accordance with the applicable federal and state requirements, as well as Algonquin's E&SCP (see Attachment 3). Construction within these IVWs will be temporary and conducted in a manner designed to avoid permanent impacts to wetland functions and values, including hydrology, vegetation, and wildlife habitat. Following construction, all wetland areas will be restored to preconstruction contours and conditions to the extent practicable, with revegetation and stabilization measures implemented in accordance with applicable federal and state requirements. The wetland construction methods described below are intended to minimize disturbance during construction and ensure the full recovery of wetland resources following completion of Project activities.

Clearing crews will cut existing wetland vegetation outside of the trench to a height slightly above ground level to facilitate regrowth. No upland woody debris will be disposed of in wetlands. Stumps will only be removed from the ditch line or travel lane as necessary for safe working conditions. Excavated stumps may be turned over in place in the travel lane to stabilize the ROW and promote sprouting and revegetation or will be removed from the wetland and disposed of by chipping or transported to an approved disposal facility.

The amount and type of construction equipment that operates within a wetland will depend on the soil conditions at the time of construction. If the wetland soils are not saturated at the time of construction and can support both tracked and rubber-tired equipment (e.g., excavators, sideboom tractors, welding trucks) with or without supplemental support, the unsaturated trench soils will be excavated and the assembled pipe sections will be lowered into the trench using conventional construction techniques, thereby minimizing the length of time that topsoil is segregated and the trench is open. If necessary, weights or concrete-coated pipe will be used to provide negative buoyancy. If dewatering of the trench is necessary, it will be conducted

in a manner designed to prevent heavily silt-laden water from entering a waterbody or wetland. Topsoil segregation methods and locations are based on wetland saturation conditions. In wetland areas without standing water or saturated soils, up to 1 foot of topsoil will be stripped from the ditch line and stockpiled separately from trench spoil.

Supplemental equipment supports, such as construction mats (heavy timbers bolted or cabled together, or similar materials), provide temporary portable support for heavy construction equipment and will be used in wetlands to support the equipment and minimize soil compaction and/or soil mixing, as necessary. Additionally, construction mats may be deployed when mixing of topsoil with subsoil is beginning to occur or to facilitate equipment passage through a wetland. The decision to use matting is based on field conditions (e.g., soil saturation and potential for significant rutting) at the time of construction as well as the protection of sensitive resources. Environmental Inspectors will monitor site conditions and determine implementation of construction mats based on site conditions.

ATWS may be required in areas adjacent to wetlands to facilitate the pipeline construction. These work areas are in addition to the typical construction ROW and may be used for the assembly and fabrication of the pipe section that will cross the wetland area. The size of ATWS required at wetland crossings is based on the wetland size, water content of wetland soils (or presence of standing water), and other construction constraints. The work area will be limited to the minimum size necessary to safely construct the wetland crossing. Restricting the work area in this manner will minimize wetland impacts associated with pipeline construction.

3.3.1.4 Removal and Abandonment

Segments of Algonquin's existing G-8C and G-8L pipelines will be removed or abandoned, and segments of the G-24 and G-11 pipelines will be removed as part of the Project. Prior to pipe removal or abandonment, Algonquin will attempt to recapture 80 to 90 percent of the gas in the pipeline and any remaining gas in the pipeline that cannot be recaptured will be released to the atmosphere.

For pipe removal and abandonment, similar construction procedures as described in Section 3.3.1.1 will be executed for ROW survey, clearing operations, and ROW and temporary construction workspace grading. For areas of pipe removal, once the workspace is prepared, a trench will be excavated to expose the existing pipeline in Algonquin's easement. During trenching, the excavated material will be placed next to the trench to avoid unnecessary movement of machinery across the terrain. Should it become necessary to remove water from the trench, it will be pumped to a filter fabric bag or siltation device in an off-ROW, stable, vegetated upland area (where practical). In certain cases where side slopes are leveled to make a safe work environment before trench excavation, the amount of cover over the pipe will be increased after the slopes are restored.

Following trench excavation, the pipe to be removed will be taken out of the trench in sections for disposal at an approved facility in accordance with federal and state requirements. Following the removal of the pipe, the trench will be backfilled and restored as outlined in Section 3.3.1.1.

Abandoned pipe will be blown down and purged with nitrogen to clear the line. The abandoned pipe segment will then be cut and capped on each end with one 0.75-inch valve on each cap. Algonquin will then grout the line completely, remove the valves, and install plugs. The trench will be backfilled and the construction ROW will be restored to preconstruction conditions. Algonquin will adhere to the measures described in the FERC Plan and Procedures, its E&SCP, and any applicable federal or state requirements.

3.3.2 ABOVEGROUND FACILITIES

The proposed Project aboveground facilities will be constructed in compliance with the same federal and state legal requirements as the pipeline facilities, including the specific requirements of applicable federal and state permits. The construction and restoration methods and procedures in Algonquin's E&SCP will be followed, as applicable, for the aboveground facilities as well. Aboveground facilities have been sited to avoid cultural and natural resource impacts to the greatest extent practicable.

The general construction procedures for new M&R stations consist of clearing and grading the site, installation of foundations, installation of piping, installation of the structures and machinery, start-up, testing, and final clean-up and stabilization of the site. The general construction procedures described below are applicable to the relocated M&R stations (Sagamore M&R Station and Bourne M&R Station) as well as the new M&R stations (Pave Paws Road M&R Station and Bourne Rotary M&R Station).

Clearing and Grading

At each of the proposed M&R station sites, the amount of clearing of land will be limited to what is needed to construct the M&R station facilities. After the land is cleared, the construction access road to the site will be established. The site will then be graded, as necessary, to stockpile topsoil for use during site restoration and provide level surfaces for the building foundations and structures; the station facilities, which will contain piping, valves and stormwater runoff controls out to the perimeter fencing; and sufficient construction workspace. Installation of various erosion and sedimentation controls will begin before site grading to contain soil and potential runoff from migrating off-site. These will be designed, installed, and maintained in accordance with Algonquin's E&SCP and any stormwater studies and designs (Attachment 5). The permanent site roadways and parking areas will be rough-graded at this time as well. Large rocks displaced during grading or other excavation will be properly disposed of on-site or transported off-site for disposal in an approved area.

Foundations

Once the building sites have been graded, excavation will begin for the installation of building foundations and pipe supports. Once the ground surface area has been prepared, forms and reinforcing bars will be installed and high-strength concrete will be poured to the appropriate design levels. Algonquin has completed geotechnical investigations at the proposed M&R station sites. Blasting, although not anticipated, may be required at specific locations to install foundations and underground piping.

Piping

Installation of piping at the M&R stations will begin at about the same time as the foundation work. Trenches will be dug for the underground portions of the piping. The pipe will be welded, radiographed, coated, and placed in the trench and backfilled. Some portions of the station piping will extend above ground level. Any aboveground piping will be installed on concrete or metal pipe supports and painted. Acoustic insulation may be installed on some of the piping for noise control. Some of the piping, valves, and fittings are typically fabricated off-site at a fabrication shop and then transported to the site. As major parts of the piping are completed, each will be hydrostatically tested to ensure its integrity. Test water may be trucked to the site for the testing or obtained from on-site wells, and will be discharged in accordance with Algonquin's E&SCP or the Massachusetts Stormwater Management Standards at each site, as applicable (see Attachment 5). Dewatering is performed with proper erosion and sedimentation controls as set forth in Algonquin's E&SCP. Electrical conduit and telecommunication systems will be installed during this period.

Structures and Machinery

Once the foundations have been completed and have cured sufficiently, installation of the buildings and machinery for the station may begin. This is a highly coordinated activity as the machinery, buildings, and piping are all installed during the same time period. Various piping and electrical conduit systems are connected once the machinery is set. Electrical wiring is installed for power and instrumentation.

Start-Up and Testing

As the various systems and subsystems are completed, they will be tested and calibrated for proper operation. Use of new, computerized systems will allow much of the testing to proceed before gas is received at the site.

Facility Removal

All above- and belowground infrastructure at the existing Sagamore M&R Station and Bourne M&R Station will be completely removed and disposed of off-site at an approved facility. After removal and full restoration of the M&R stations, Algonquin plans to release the easement rights to the original owner(s) or sell the parcel. Algonquin continues to work on finalizing the appropriate agreements.

In accordance with 310 Code of Massachusetts Regulations (CMR) 7.15, the Project owner or operator will submit a Construction/Demolition Notification Form (BWP AQ 06) to MassDEP through the eDEP system at least 10 working days prior to the start of demolition, along with the required fee.

Final Clean-up and Stabilization

Clean-up and stabilization of the station sites will be an ongoing process throughout construction. Sections of station sites will be final graded, fertilized, seeded, and mulched as work is completed and as provided in Algonquin's E&SCP. Permanent erosion controls will be installed on a similar basis.

3.3.3 CONSTRUCTION EQUIPMENT AND REFUELING

Construction equipment will be well-maintained, checked daily for leaks, properly tuned, and operated on an as-needed basis to minimize combustion emissions from diesel and gasoline engines. Only standard construction equipment will be used in the construction of each M&R station, with no dynamic compaction or pile driving expected. Additionally, construction equipment will not be refueled within any wetland resource area or within 100 feet of any wetland resource area. Algonquin will implement construction practices designed to mitigate potential temporary impacts to groundwater resources as detailed in its E&SCP and SPCC Plan (see Attachment 3) and the FERC Plan and Procedures, as well as the environmental performance standards for the Cape Edwards Training Area and Upper Cape Water Supply Reserve on Massachusetts's National Guard Properties as outlined in the revised *Environmental Performance Standards* (Environmental Management Commission 2026).

3.3.4 DEWATERING

Construction activities that require pumping of groundwater are limited to dewatering of the pipeline trench and should only be necessary in areas where a high water table is encountered, which is anticipated to be limited due to the well-drained soils throughout the Project area. Algonquin has modified its pipeline routing and workspace design to eliminate onshore stream crossings and minimize wetland crossings, thereby minimizing the potential to encounter groundwater during construction. Additionally, phased pipeline construction activities within a particular location are typically completed within several days, and any lowering of localized groundwater from pumping and dewatering is expected to be minor and

temporary. In order to prevent silt-laden waters from flowing into streams and wetlands and to ensure aquifers are recharged, Algonquin proposes to discharge water from dewatering activities into well-vegetated upland areas, or into straw bale structures if vegetation is insufficient to minimize erosion in compliance with applicable federal and state requirements. Implementation of these procedures should minimize groundwater impacts during dewatering operations. Algonquin will conduct construction activities in accordance with its E&SCP to minimize potential impacts to groundwater in the vicinity of the Project.

3.3.5 TRAFFIC MANAGEMENT

The existing transportation system near the Project may be impacted by commuting construction workers and transportation of construction equipment and materials. Temporary increased traffic conditions may occur. To minimize disruption, equipment and materials will be strategically located at contractor ware yards with existing adequate roadway access to the pipeline construction sites. Where access to roadways may impede traffic flow, appropriate traffic control measures will be used. To the extent practicable, construction activities within roadways will be scheduled outside of peak commuting hours and school bus transit times to minimize regional traffic impacts. The Project will ensure continuous, safe accommodations for pedestrian and bicycle traffic at all intersections. Furthermore, HDD or boring techniques will be deployed at critical transportation crossings to mitigate infrastructure disruption. Algonquin will submit a Traffic Management Plan (Attachment 6) to MassDOT, the Town of Bourne, and JBCC to obtain necessary approvals. Since construction will move sequentially along the pipeline routes, traffic flow impacts that do arise will be temporary on any given roadway.

Interstate highways as well as state and county roadways will be used to transport heavy construction equipment to the pipeline ROW. After transport to the Project, this equipment will move along the ROW as construction progresses. Where it is necessary for equipment to cross a road, traffic flow may be temporarily interrupted. Traffic disruptions will be minimized to the extent practicable, and appropriate traffic control measures such as flag persons, signs, barriers, and flashing lights will be used as necessary. Section 5.4.4 discusses mitigation measures to reduce commuting and traffic impacts during the construction phase of the Project.

3.3.6 AIR QUALITY

Construction of the Project will generate temporary air emissions from construction equipment, worker vehicles, material deliveries, fugitive dust, and natural gas blowdown and purge activities associated with installation and removal of pipeline facilities. These impacts will be localized to active construction areas and will occur only during the construction period.

Construction equipment is expected to be the primary source of emissions, while blowdown and purge activities will account for most temporary methane emissions. Air quality analyses completed for the Project used conservative assumptions intended to represent upper-end construction conditions; therefore, actual emissions are expected to be lower than those estimated.

To minimize air quality impacts, Algonquin will implement a variety of construction best management practices (BMPs), including limiting engine idling in accordance with state requirements, using ultra-low sulfur diesel fuel, maintaining construction equipment in good operating condition, and implementing dust suppression measures where needed. Fugitive dust will be controlled through watering of exposed soils and unpaved surfaces, road maintenance, appropriate vehicle speed controls, and other measures identified in the Project's Dust Control Plan and E&SCP (Attachments 7 and 3). To further reduce emissions, blowdown and purge activities will be minimized to the extent practicable and recompression may be used where appropriate.

Construction-related air quality impacts are expected to be temporary, localized, and not significant. The Project is not expected to result in long-term degradation of regional air quality. Following construction, air emissions will be limited to minor operational emissions associated with the replacement facilities, which remain below applicable regulatory thresholds.

3.3.7 NOISE

Construction noise associated with the Project will be temporary and localized, occurring during installation of new pipeline segments, removal or abandonment of existing pipeline facilities, construction of relocated and new M&R stations, access road improvements, and HDD activities. Construction noise sources will include standard heavy equipment such as excavators, loaders, cranes, trucks, generators, compressors, pumps, and HDD-related equipment. Noise levels will vary by activity, equipment type, distance to nearby noise-sensitive areas, intervening terrain or vegetation, and whether equipment operates continuously or intermittently.

The highest temporary construction noise levels are expected during activities that require concentrated equipment use, particularly at M&R station construction areas and HDD entry/exit workspaces. HDD activities may require extended work periods during certain phases to maintain bore integrity and complete pullback operations, which could result in temporary nighttime or longer-duration noise at nearby receptors if such work is required. Pipeline construction along ROWs will generally progress linearly, so noise at any one location will be limited in duration. Construction noise will not represent a permanent change in the acoustic environment and will cease once construction is complete.

Operational noise will be limited primarily to aboveground facilities, including relocated or new M&R stations and associated flow-control equipment. The buried pipeline facilities will not be a meaningful source of operational noise. Operational sound from M&R stations is expected to be continuous but relatively low-level. M&R station equipment has been selected and configured to maintain compliance with applicable noise standards and avoid adverse long-term noise impacts.

Mitigation Measures

Noise mitigation will include a combination of construction-period BMPs and facility design measures:

- Limit construction to approved hours to the extent practicable, with any required extended or nighttime work coordinated with appropriate agencies and affected stakeholders.
- Use properly maintained equipment fitted with manufacturer-recommended mufflers, exhaust silencers, and engine covers.
- Minimize unnecessary idling of construction vehicles and equipment.
- Locate stationary equipment such as generators, compressors, pumps, and light plants as far as practicable from nearby residences and other noise-sensitive receptors.
- Use temporary noise barriers, shielding, or acoustic blankets where practicable for stationary or high-noise activities near sensitive receptors.
- Sequence work to reduce the duration of high-noise activities at any one location, particularly along pipeline ROWs near residences.
- Provide advance public notification for construction activities that may generate noticeable temporary noise, especially HDD, nighttime work, or work near residential areas.
- Establish a complaint response process so noise concerns can be documented, investigated, and addressed during construction.

- Evaluate HDD-specific controls such as equipment layout optimization, shielding of generators/pumps, and use of quieter equipment where feasible.
- Design M&R stations to meet MassDEP noise policy criteria, including equipment selection, enclosure or silencing of noise-generating components, and facility layout that uses distance and orientation to reduce sound at nearby receptors.
- Verify operational noise performance if needed through postconstruction sound monitoring at representative nearby noise-sensitive areas.

With implementation of these measures, construction noise impacts will be temporary, localized, and managed through standard best practices and site-specific controls. Operational noise will be limited to aboveground M&R station facilities and will be addressed through facility design, equipment selection, and compliance with applicable MassDEP sound-level criteria. As a result, the Project is expected to avoid significant long-term noise impacts while minimizing temporary construction-period disturbance to nearby receptors.

3.3.8 EROSION AND SEDIMENT CONTROL

Construction of the Project will involve temporary ground disturbance associated with pipeline installation and removal, HDD entry and exit workspaces, aboveground facility construction, access road construction or improvement, and contractor ware yards. These activities could temporarily expose soils and increase the potential for erosion, sediment transport, and stormwater runoff if not properly controlled. The risk will be greatest in areas with disturbed soils, sloped terrain, wetland and waterbody buffer zones, access roads, stockpile areas, and locations where construction occurs near drainage features or sensitive resource areas.

The Project will implement erosion and sedimentation controls in accordance with Algonquin's E&SCP, applicable permit conditions, and standard pipeline construction BMPs. Controls will be installed before or at the start of land-disturbing activities and maintained throughout construction until disturbed areas are stabilized. The measures are intended to minimize soil exposure, prevent sediment from leaving the workspace, protect wetlands and water resources, and restore disturbed areas promptly following construction.

During operation, erosion and sedimentation risks will be substantially reduced because the pipeline facilities will be buried, disturbed workspaces will be stabilized and revegetated, and permanent aboveground facilities and access roads will include stabilized surfaces and stormwater controls. Long-term erosion controls will focus on maintaining stable vegetation, drainage patterns, access road surfaces, and stormwater management features to prevent sediment transport and protect adjacent resource areas.

3.3.8.1 Construction-Period Practices

The Project will use a combination of structural, procedural, and restoration practices, including:

- Preconstruction installation of perimeter controls, such as compost filter socks, silt fence, straw wattles, or similar sediment barriers along downslope workspace limits and near wetlands, waterbodies, drainageways, and other sensitive resources.
- Clearly defined limits of work to minimize the area of disturbance and prevent unnecessary clearing, grading, or equipment movement outside approved workspaces.
- Stabilized construction entrances and access roads to reduce tracking of sediment onto public roads and adjacent paved surfaces.

- Topsoil segregation and stockpile management, where appropriate, with stockpiles located away from wetlands, waterbodies, drainage features, and steep slopes and protected with sediment controls or temporary stabilization.
- Temporary slope stabilization, including erosion control blankets, mulch, tackifier, seed, or other stabilization measures where disturbed soils could erode before final restoration.
- Temporary stormwater conveyance controls, such as water bars, slope breakers, check dams, diversion berms, and temporary sediment traps where needed to slow runoff and promote sediment capture.
- Wetland and water resource protection measures, including redundant sediment controls where appropriate, restricted equipment access, use of swamp mats or temporary construction mats in wetland areas, and prompt restoration of temporarily disturbed resource areas.
- Dewatering controls, including use of sediment bags, filter structures, straw bale dewatering basins, frac tanks, or other filtration practices before water is discharged to stable upland areas or approved discharge locations.
- HDD-specific controls, including management of drilling fluid, secondary containment around drilling equipment and fluids, monitoring for inadvertent returns, and implementation of HDD response and cleanup procedures if drilling fluid migration occurs.
- Good housekeeping and material management, including proper storage of fuels, lubricants, chemicals, concrete washout materials, and construction debris to prevent releases that could mobilize sediment or contaminants.
- Routine inspection and maintenance, especially before and after storm events, to confirm erosion and sediment controls remain functional and are repaired or replaced as needed.
- Prompt stabilization and revegetation of disturbed areas following construction, using seed mixes, mulch, erosion control blankets, or other stabilization methods appropriate to the site condition and permit requirements.
- Removal of temporary controls only after stabilization, once disturbed areas have achieved sufficient vegetative cover or other approved permanent stabilization.

3.3.8.2 Operation and Maintenance Practices

Following construction, erosion and sedimentation control will transition to long-term stabilization and maintenance. Operational practices will include:

- Maintaining permanent vegetative cover over restored pipeline ROWs and temporarily disturbed workspaces.
- Inspecting restored areas to identify erosion, settlement, rilling, bare soil, or failed stabilization.
- Repairing erosion features promptly and reseeding, mulching, or otherwise stabilizing disturbed areas as needed.
- Maintaining permanent access roads, culverts, drainage swales, stormwater management systems, and stabilized surfaces at M&R stations and valve sites.
- Keeping stormwater controls free of sediment accumulation, debris, and obstructions.
- Maintaining restored wetland and buffer zone areas consistent with applicable permit conditions and approved restoration plans.
- Limiting routine operation and maintenance activities to approved access routes and maintained facility areas to avoid unnecessary disturbance.

- Implementing additional erosion controls during any future maintenance activities that require soil disturbance.

With implementation of the Project-specific E&SCP, construction-phase BMPs, routine inspections, dewatering controls, HDD-specific protections, and prompt stabilization of disturbed areas, the Project will minimize erosion and sedimentation during construction. Long-term operation is not expected to result in significant erosion or sedimentation impacts because disturbed areas will be restored, permanent facilities will be stabilized, and access roads and stormwater controls will be maintained to protect wetlands, water resources, and adjacent upland areas.

The E&SCP complied by Algonquin specific to the Project can be viewed in Attachment 3.

3.3.9 SOLID WASTE MANAGEMENT

Construction of the Project will generate temporary construction-related waste associated with pipeline installation, pipeline removal and abandonment, HDD activities, aboveground facility construction, access road work, contractor ware yards, and restoration. Waste materials may include cleared vegetation, excess soil and rock, trench spoils not suitable for reuse, concrete, asphalt, scrap metal, pipe segments, packaging, spent construction materials, trash, and other construction and demolition debris. The Project may also generate limited quantities of regulated or special waste if contaminated soil, asbestos-containing material (ACM), coating debris, or other suspect materials are encountered during removal or demolition activities.

Construction waste will be managed in accordance with applicable federal, state, and local requirements, MassDEP solid waste regulations, Project permit conditions, Algonquin's Waste Management Plan (Attachment 8), and contractor-specific waste handling procedures. The overall approach will prioritize waste minimization, segregation of waste streams, reuse or recycling where practicable, proper characterization of regulated materials, and disposal only at appropriately permitted facilities.

Key construction waste management practices include:

- Waste minimization and source control. Contractors will minimize excess materials through efficient staging, material ordering, and construction sequencing. Work areas will be maintained in an orderly condition to reduce unnecessary debris generation.
- Segregation of waste streams. Construction debris, recyclable materials, scrap metal, vegetation, excess soil, hazardous or regulated materials, and general trash will be separated to the extent practicable to support proper handling and disposal.
- Reuse of suitable materials. Suitable excavated soils and trench materials will be reused for backfill and restoration where geotechnically appropriate and consistent with environmental requirements. Asphalt, brick, concrete, and metal materials will be recycled where feasible.
- Management of cleared vegetation. Cleared trees, brush, stumps, and other vegetative debris will be chipped, removed, reused, or disposed of in accordance with landowner agreements, municipal requirements, and applicable permit conditions.
- Pipeline removal materials. Removed pipe, valves, appurtenances, coatings, and related materials will be handled to prevent releases of residual material and will be recycled or disposed of at approved facilities based on material condition and characterization.
- Contaminated or suspect materials. If contaminated soil, petroleum impacts, ACM, lead-containing coatings, or other regulated materials are encountered, work will be stopped or controlled in the affected area, the material will be evaluated by qualified personnel, and handling, storage, transport, and disposal will occur in accordance with applicable regulatory requirements.

- HDD waste management. Drilling fluid, drill cuttings, and inadvertent-return cleanup materials will be contained, collected, tested if required, and either reused in the drilling process or transported to an approved disposal or recycling facility. Drilling fluids will not be discharged to wetlands, waterbodies, storm drains, or uncontrolled upland areas.
- Containerized storage and housekeeping. Waste will be placed in appropriate containers, roll-off boxes, tanks, or designated stockpile areas and protected from wind, stormwater runoff, and unauthorized access. Workspaces and contractor ware yards will be inspected regularly and kept free of loose debris.
- Hazardous materials and universal waste. Fuels, lubricants, solvents, batteries, lamps, aerosols, and other regulated materials will be stored and managed in accordance with the Project's spill prevention and waste management procedures. Hazardous waste, if generated, would be labeled, accumulated, transported, and disposed of in accordance with applicable requirements.
- Documentation and disposal tracking. Waste shipments will be documented through manifests, bills of lading, weight tickets, or disposal receipts, as appropriate. Records will identify the waste type, quantity, transporter, and receiving facility.
- Use of approved facilities. All waste requiring off-site disposal will be transported by properly licensed haulers to permitted recycling, treatment, transfer, or disposal facilities authorized to accept the specific waste stream.
- Final cleanup and restoration. Upon completion of construction, temporary waste storage areas, contractor ware yards, and construction workspaces will be cleared of debris, temporary containers will be removed, and disturbed areas will be stabilized and restored in accordance with permit requirements.

During operation, the Project will generate minimal waste. The buried pipelines will not routinely produce solid waste, and waste from aboveground facilities will generally be limited to small quantities associated with periodic inspection, maintenance, vegetation management, equipment repair, replacement of filters or components, and routine facility upkeep. Any operational waste will be collected, characterized as necessary, recycled where practicable, and disposed of at approved facilities. Maintenance activities involving soil disturbance or equipment replacement will follow the same applicable waste management, spill prevention, and material handling procedures used during construction.

With implementation of Algonquin's Waste Management Plan (see Attachment 8), contractor waste controls, material segregation, recycling and reuse practices, proper handling of regulated materials, and disposal at approved facilities, construction-related waste will be managed in a manner that protects public health, prevents releases to the environment, and complies with applicable MassDEP and federal requirements. Long-term operation of the Project will generate only limited waste associated with routine maintenance and is not expected to result in significant solid waste impacts.

3.3.10 SAFETY AND PROTECTION OF EXISTING UTILITIES

Prior to construction, existing utility lines and other sensitive resources identified in easement agreements or by federal and state agencies will be located and marked to prevent accidental damage during pipeline construction. Algonquin's contractors will contact the "One Call" system, or state or local utility operators, to verify and mark all underground utilities crossed by or along the Project workspaces to minimize the potential for damage to other buried facilities in the area. Where there is a question as to the location of utilities such as water, cable, gas, or sewer lines, they will be located by field instrumentation and test pits prior to initiation of trenching.

Algonquin conducts aerial patrols of its pipeline ROW on a weekly basis, which provide a bird's-eye view of the pipeline and surrounding community. During aerial patrols, pilots look for ground changes, construction activities, or other conditions that could affect pipeline integrity. Pedestrian and vehicle patrols of all pipeline facilities are performed annually, along with scheduled preventive maintenance. Any unusual situation or condition is reported and investigated immediately. Algonquin performs annual leak detection surveys of its pipeline facilities. The leak surveys are instrumental in early detection of leaks and can reduce the likelihood for pipeline failure. The Project facilities constructed by Algonquin will be subject to similar field survey procedures.

3.3.11 ENVIRONMENTAL COMPLIANCE

Environmental training will be given to Algonquin's personnel and to contractor personnel whose activities may impact the environment during construction (training protocol and content are outlined in Algonquin's E&SCP). The level of training will be commensurate with the type of duties of the personnel. All construction personnel from the chief inspector, Environmental Inspector, craft inspectors, and contractor job superintendent to loggers, welders, equipment operators, and laborers will be given the appropriate level of environmental training. The training will be given prior to the start of construction and throughout the construction process, as needed. The Project training will cover job-specific permit conditions, company policies, cultural resource procedures, threatened and endangered species restrictions, Algonquin's E&SCP and SPCC Plan (see Attachment 3), the FERC Plan and Procedures (FERC 2013a, 2013b), and any other pertinent information related to the job. In addition to the environmental inspectors, all other construction personnel are expected to play an important role in maintaining strict compliance with all federal and state permit conditions to protect the environment during construction.

3.3.12 CONSTRUCTION HOURS AND SCHEDULE

Algonquin plans to conduct construction activities between 7:00 a.m. and 7:00 p.m., Monday through Saturday, with work on Sundays on an as-needed basis due to permit requirements, "make-up" days caused by inclement weather or other construction delays. Construction delays may result due to several factors including, but not limited to, complications during the HDD process (such as hole collapse, broken tool retrieval, etc.), local or state work-hour restrictions dictating nighttime work, inadvertent release clean up during HDD, and/or military activities on JBCC property that could interrupt construction schedules. Algonquin's Project must be completed before the CCBP is scheduled to start. Construction delays during the execution of Algonquin's Project could impact the CCBP starting as scheduled, therefore any construction delays during Algonquin's Project must be compensated to the extent practicable. Algonquin will have to work continuously (24-hour work) as construction delays arise throughout the Project in order to keep CCBP on MassDOT's schedule. A Nighttime Construction Plan has been developed and is included as Attachment 9.

Although all construction activities may require continuous work (24-hour work), typical construction activities that require continuous work (24-hour work) and may extend beyond normal construction hours and into Sunday, as necessary, include hydrostatic and/or pneumatic pressure testing of HDD sections, pipeline, and facilities; welding activities; x-ray activities, including nondestructive testing of welds; depressurizing of pipelines; painting/coating of piping; dewatering and drying of test sections, conventional bore pits, and trench or bell holes ahead of mainline installation crews; maintaining water pumps through the construction crossing cycle at wetlands, water bodies, and residential construction to ensure public safety; aboveground facilities construction (including but not limited to electrical, welding, earth disturbance, and hydrotesting); trenching activities; drilling operations for pullback; holiday detection (jeeping the pipe); final pipeline tie-in; and commissioning, line purge, and line fill activities. Equipment maintenance and service activities may also occur before and after standard work hours.

4 ALTERNATIVES ANALYSIS

The Project alternatives analysis evaluated a range of feasible options to meet the Project's core purpose: relocating Algonquin's existing natural gas pipeline and M&R facilities out of conflict with the CCBP while maintaining uninterrupted natural gas service to National Grid's Cape Cod distribution system. Because the existing bridge-mounted natural gas pipelines and associated facilities must be removed to accommodate replacement or major rehabilitation of the Bourne and Sagamore Bridges, the analysis focused on identifying off-bridge solutions that maintain equivalent service capacity, avoid conflicts with the bridge replacement program, and minimize environmental and community impacts to the maximum extent practicable.

The alternatives analysis considered no-action alternatives, system alternatives, non-gas phasing alternatives, pipeline route variations, M&R station alternatives, replacement pipeline alternatives, and alternatives for removed, abandoned, and relocated pipeline facilities. Each alternative was reviewed for its ability to satisfy the Project purpose and need, maintain reliability, avoid conflicts with MassDOT and USACE bridge replacement work zones, provide constructability within the required schedule, reduce impacts to wetlands, water resources, Article 97 lands, Priority Habitat, ACECs, public water supply areas, residences, and other sensitive receptors, and maximize collocation with existing utility and transportation corridors.

The no-action alternative was not considered feasible because it would leave existing natural gas facilities in conflict with the planned bridge replacement work and would not provide a means to maintain uninterrupted natural gas service across the Cape Cod Canal. System alternatives and non-gas phasing alternatives were also dismissed because they would not reliably replace the existing bridge-mounted gas transportation function within the schedule required by the CCBP, would not provide equivalent operational reliability, or would not avoid the need to relocate facilities affected by bridge construction.

Pipeline route alternatives were developed to evaluate potential alignments for the G-31, G-32, G-24, G-11, and other affected pipeline facilities. The preferred routes generally emphasize collocation with existing utility corridors, including existing pipeline and electric transmission ROWs, to reduce new disturbance, avoid or minimize residential impacts, limit new permanent easement needs, and reduce conflicts with existing and planned infrastructure. Although some route refinements increased disturbance in previously disturbed utility corridors or mapped Priority Habitat, these refinements reduced other impacts, including forest clearing, wetland impacts, encroachment into public water supply protection areas, proximity to residences, and conflicts with the CCBP and Eversource facilities.

The alternatives analysis also evaluated multiple M&R station sites for the relocated Bourne and Sagamore M&R Stations and new M&R facilities. Preferred M&R station locations were selected based on their ability to connect to existing and proposed pipeline systems, maintain service reliability, avoid bridge replacement work zones, reduce residential proximity, improve constructability, and limit environmental impacts. For example, the Sagamore M&R Station was shifted to a previously developed commercial parcel near Commerce Way and Canal Street, reducing residential proximity and forest clearing while supporting the HDD crossing and connection to the G-24 pipeline. The Bourne M&R Station was relocated away from conservation land and nearby residences to a site within the existing G-8L/G-8C pipeline corridor.

The Cape Cod Canal crossing alternatives focused on identifying a feasible off-bridge crossing that avoids the bridge structures, maintains service capacity, and reduces impacts to canal resources and adjacent land uses. The preferred crossing approach relies on HDD technology to install replacement pipelines beneath the Canal and associated transportation infrastructure, thereby avoiding open-cut disturbance within the Canal, limiting impacts to marine and wetland resources, and maintaining compatibility with the bridge

replacement program. HDD was selected because it offers a technically feasible means to cross the Canal while minimizing direct disturbance to surface water, navigation, and shoreline resources.

Overall, the preferred alternative represents the outcome of an iterative siting and design process that balanced engineering, safety, service reliability, constructability, schedule, environmental protection, and community considerations. The preferred alternative will relocate facilities necessary to accommodate the CCBP, maintain the same natural gas transportation capacity currently provided to National Grid, avoid use of the future bridge structures for gas transmission facilities, reduce conflicts with existing infrastructure, and incorporate avoidance, minimization, and mitigation measures for unavoidable impacts. While some environmental impacts cannot be fully avoided, the selected alternative minimizes impacts to the maximum extent practicable through collocation, HDD construction, reduced residential proximity, avoidance of key sensitive resources where feasible, and implementation of Project-specific mitigation measures. A full alternatives analysis of the Project is in Section 2.0 in the DEIR.

5 REGIONAL POLICY PLAN CONSISTENCY

The Project is a critical public infrastructure and resiliency project that will maintain uninterrupted natural gas service to Cape Cod while enabling implementation of the CCBP. As discussed throughout this DRI application, the Project has been designed to avoid, minimize, and mitigate impacts to natural and community resources while improving the long-term resiliency of critical regional infrastructure.

The Cape Cod Commission's 2025 RPP, adopted through Barnstable County Ordinance 25-13 and effective December 29, 2025, establishes a comprehensive framework for guiding development, infrastructure investment, resource protection, and climate resilience throughout Cape Cod (Cape Cod Commission 2025a). The Project addresses several core RPP objectives, including the following:

- Maintaining and improving critical regional infrastructure and public utilities.
- Supporting climate adaptation and infrastructure resiliency.
- Protecting water resources and public water supplies.
- Minimizing fragmentation of wildlife habitat and open space through use of existing utility corridors.
- Protecting wetlands, coastal resources, and natural systems.
- Maintaining community character and transportation functionality.
- Restoring temporarily disturbed lands following construction.

To determine the Project's consistency with the RPP, Algonquin evaluated Project impacts against the Commission's technical bulletins (Cape Cod Commission 2025b). The technical bulletins address Natural Systems, including Water Resources, Ocean Resources, Wetlands Resources, Wildlife and Plant Habitat, and Open Space; Built Systems, including Community Design, Coastal Resiliency, Capital Facilities and Infrastructure, Transportation, Energy, Waste Management, and Climate Change; and Community Systems, including Cultural Heritage, Economy, and Housing. Discussions of the applicable goals, objectives, and methods identified in the technical bulletins are provided in Section 5.3 for Natural Systems, Section 5.4 for Built Systems, and Section 5.5 for Community Systems.

5.1 Regional Setting

The Project is located entirely within the Town of Bourne, Barnstable County, Massachusetts. The Project area extends from the mainland north of the Cape Cod Canal, across the Canal, and onto Cape Cod, including areas within and adjacent to JBCC. The setting is defined by a varied mix of utility corridors, transportation infrastructure, military lands, conservation and recreation lands, residential neighborhoods, commercial development, and industrial uses. Existing Algonquin interstate natural gas infrastructure is already present across much of the Project area and forms an important part of the existing utility context.

Existing conditions vary substantially along the corridor because the Project traverses the developed and undeveloped landscapes surrounding the Bourne and Sagamore Bridge approaches, the Cape Cod Canal, established roadway corridors, and protected open space. Within this broader setting, the Project area includes areas that are already shaped by transportation and utility infrastructure, as well as natural resource areas that support groundwater recharge, wetlands, wildlife habitat, and recreation.

5.2 RPP Placetype Designation

A central organizing principle of the RPP is the Placetype framework, defined by the Cape Cod Commission, which recognizes that growth, infrastructure development, conservation, and resource protection should be considered within the context of the surrounding landscape. The RPP categorizes land throughout Cape Cod into a series of Placetypes that reflect existing environmental conditions, development patterns, infrastructure, and conservation priorities. These Placetypes provide the basis for evaluating consistency with RPP objectives related to resource protection, habitat conservation, climate resilience, infrastructure development, transportation, and community character.

The Project traverses a variety of developed and undeveloped land uses recognized within the Cape Cod RPP framework, including transportation infrastructure corridors, utility corridors, open space lands, military lands, and developed community areas. Existing conditions vary considerably along the Project area, reflecting the diverse landscape surrounding the Bourne and Sagamore Bridge approaches and the Cape Cod Canal (see Figure 5.2-1 in Attachment 1).

Algonquin relied on available geographic information system (GIS) mapping, the Cape Cod Commission Regional Web Map, publicly available datasets, and the definitions contained within the RPP, to determine that lands within the Project area are predominantly characterized as Natural Areas, with smaller areas of other Placetypes (Cape Cod Commission 2025c). Natural Areas include lands that remain largely undeveloped and contain regionally significant natural resources, including Priority Habitat, Estimated Habitat, wetlands and wetland buffer areas, protected open space, public water supply protection lands, wildlife habitat, and other environmentally sensitive resources. Within these areas, the RPP emphasizes protection of ecological integrity, biodiversity, groundwater resources, open space networks, and climate resilience. The non-Natural Areas Placetypes include previously developed or altered landscapes such as transportation corridors, utility ROWs, roadway infrastructure, developed facilities, and other disturbed lands. Within these areas, the RPP supports infrastructure improvements and redevelopment that maintain public services while minimizing impacts to adjacent natural resources and community character.

A substantial portion of the Project occurs within JBCC, where extensive protected natural resources occur alongside existing utility and transportation infrastructure. To analyze the Project's consistency with RPP objectives in the context of both infrastructure development and natural resource protection, Algonquin has distinguished impacts occurring within JBCC and outside of JBCC, as well as impacts within previously disturbed areas (redevelopment) and undeveloped areas.

Table 5-1 and Table 5-2 summarize the distribution of Placetypes within the Project area and the temporary and permanent impacts associated with each Placetype. The following sections evaluate Project consistency with the applicable RPP goals, objectives, and technical bulletin performance standards and demonstrate how Project design, avoidance measures, mitigation commitments, and restoration activities support the long-term environmental, economic, and community goals of the Cape Cod Commission.

Table 5-1. Total Acreage of Placetypes Present in the Project Area

Placetype	JBCC Redevelopment	JBCC New Development	Non-JBCC Redevelopment	Non-JBCC New Development
Natural Areas	79.7	18.6	61.9	18.4
Non-Natural Areas	0.0	0.0	23.6	8.0
Total	79.7	18.6	85.5	26.4

Note: Totals may not sum exactly due to rounding.

Table 5-2. Placetype Impacts in Project Area

Land	Development	Temporary or Permanent Impacts	Placetype Impacts (acres)	
			Natural Areas	Non–Natural Areas
JBCC	Redevelopment	Permanent	20.4	0.0
JBCC	New development	Permanent	11.9	0.0
JBCC	Redevelopment	Temporary	59.3	0.0
JBCC	New development	Temporary	6.7	0.0
Non-JBCC	Redevelopment	Permanent	12.0	8.2
Non-JBCC	New development	Permanent	4.9	3.6
Non-JBCC	Redevelopment	Temporary	49.9	15.4
Non-JBCC	New development	Temporary	13.5	4.4
Total			178.6	31.6

Note: Totals may not sum exactly due to rounding.

5.3 Natural Systems

The 2025 RPP adopts goals to promote the values and purposes of the Cape Cod Commission Act and to protect Cape Cod’s Natural Systems. An overview of the existing natural resources in the Project area is provided in Table 5-3 below.

Table 5-3. Existing Natural Resource Setting Summary

Resource Category	Key Existing Conditions	Resource Functions
Groundwater	Project area lies within the Cape Cod Sole Source Aquifer and includes public water supply recharge areas and WHPAs..	Primary drinking water source, public supply protection, recharge, and hydrologic support for wetlands, ponds, streams, and other aquatic resources.
Surface waters	Cape Cod Canal is the dominant surface water feature in the Project area; Nightingale Pond also occurs in the Project area.	Navigation, recreation, hydrology, aquatic habitat, stormwater conveyance, and watershed connectivity.
Floodplains	Coastal and inland flood zones occur along the Canal, Nightingale Pond, and low-lying areas; Federal Emergency Management Agency (FEMA) Special Flood Hazard Areas and state-regulated flood plain resources are present.	Floodwater storage, attenuation, conveyance, groundwater recharge, and coastal/inland resilience.
Herring Brook / Herring River Watershed ACEC	Portions of the Project vicinity occur within the Herring Brook / Herring River Watershed ACEC, a designated resource area recognized for significant wetland, water quality, wildlife habitat, fisheries, flood storage, and scenic values.	Provides regional resource-protection context for wetland systems, surface-water quality, floodplain function, wildlife habitat connectivity, and scenic/resource values within the broader Project setting.
Ocean Resources	The Cape Cod Canal is a tidally influenced federal navigation channel connecting Buzzards Bay and Cape Cod Bay, with associated coastal, shellfish, fisheries, and navigation resources.	Supports navigation, marine fisheries and shellfish habitat, tidal exchange, coastal water quality, sediment transport, public access and recreation, and regional coastal resource connectivity.
Wetlands	Coastal and inland wetland systems occur in association with the Canal, Nightingale Pond, and isolated depressions in the Project area.	Water quality protection, flood storage, groundwater recharge, wildlife habitats.

Resource Category	Key Existing Conditions	Resource Functions
Wildlife and plant habitat	Mapped NHESP Priority Habitat and Estimated Habitat occur in the Project area, including Priority Habitat #455 and #601 and Estimated Habitat #400.	Supports rare plants, invertebrates, reptiles, birds, and broader sandplain, shrubland, woodland, and wetland habitat values.
Open space and protected lands	Conservation areas, water supply protection lands, USACE Canal recreation lands, Massachusetts Department of Fish and Game lands including Camp Edwards Wildlife Management Area, Town of Bourne lands, and other Article 97-protected properties occur within or adjacent to the Project area.	Habitat conservation, groundwater protection, passive recreation, and regional open space connectivity.

5.3.1 WATER RESOURCES

5.3.1.1 Existing Conditions

Groundwater

The Project area is located within the Cape Cod Sole Source Aquifer, a federally designated aquifer that serves as the primary drinking water source for Cape Cod communities (Cape Cod Commission 2026). The aquifer is underlain predominantly by permeable glacial sand and gravel deposits, which facilitate groundwater recharge and support public water supply wells, private wells, freshwater wetlands, ponds, streams, and other groundwater-dependent resources (USGS 1980).

Portions of the proposed G-31 pipeline and construction workspace, existing G-8C/G-8L pipelines and workspace, and three contractor ware yards are located within Zone II WHPAs associated with Pump Station 2, Pump Station 3, Pump Station 4, and Well 5, all owned and operated by the Buzzards Bay Water District (Massachusetts Bureau of Geographic Information [MassGIS] 2024, 2025a).

Two public water supply wells associated with the former Sandy's Restaurant in Bourne (Public Water System ID: 4036007) have designated Interim Wellhead Protection Areas (IWPA). These IWPA's overlap with a short segment of the existing G-8C/G-8L pipelines and associated construction workspace for pipeline abandonment and removal (MassGIS 2025a) (See Figure 5.3-1, Sheet 8, in Attachment 1).

The Project area also overlaps with a Cape Cod Commission–designated Contributing Area to Pond (CAP) associated with Nightingale Pond. A CAP is defined as the combined Freshwater Recharge Area and upgradient 300-foot pond buffer, delineated based on groundwater flow and groundwater contours, and represents an area where land uses may adversely affect pond water quality and ecological integrity (Cape Cod Commission 2025b, 2025c).

The Cape Cod Commission also identifies Potential Public Water Supply Areas (PPWSAs) as areas suitable for water supply development.

Figure 5.3-1 in Attachment 1 illustrates the location of PPWSAs, WHPAs, and CAP-designated lands within the Project area.

Surface Waters

The dominant surface water feature within the Project area is the Cape Cod Canal, a federally maintained navigation channel operated by the USACE that connects Cape Cod Bay and Buzzards Bay. The Canal is approximately 755 feet wide at the proposed pipeline crossing location and has a maintained navigation depth of approximately 32 feet at mean high water. As one of the most prominent water resources on Cape

Cod, the Canal serves important navigational, recreational, ecological, and hydrologic functions and is influenced by strong tidal exchanges between Cape Cod Bay and Buzzards Bay.

In addition to the Canal, the Project area contains a variety of freshwater and coastal surface water resources, including Nightingale Pond, Isolated Vegetated Wetlands (IVWs), Bordering Vegetated Wetlands (BVWs), and associated floodplain systems.

Groundwater discharge contributes substantially to the flow, water levels, and overall health of ponds, wetlands, and streams throughout the region. As a result, surface water and groundwater resources are closely interconnected, forming an integrated hydrologic system that supports drinking water supplies, aquatic habitats, and ecological functions.

Figure 5.3-1 in Attachment 1 depicts the surface water resources and associated hydrologic features within and adjacent to the Project area.

Floodplains

Floodplain resources within and adjacent to the Project area include Federal Emergency Management Agency (FEMA)–mapped Special Flood Hazard Areas and state-regulated floodplain resource areas under the WPA, including Land Subject to Coastal Storm Flowage (LSCSF), Bordering Land Subject to Flooding (BLSF), and Isolated Land Subject to Flooding (ILSF). These areas are associated with both coastal and inland hydrologic systems and provide flood storage, conveyance, groundwater recharge, and related ecological functions.

Coastal floodplain resources are concentrated near the Cape Cod Canal in the Project area and adjacent low-lying shoreline areas, where flood hazards are influenced by storm surge, wave action, tidal fluctuations, and severe coastal storm events. This FEMA-mapped coastal floodzone is classified as LSCSF under the Massachusetts WPA.

Inland floodplain resources in the Project area are associated with freshwater wetlands, ponds, and low-lying areas. A FEMA-mapped 100-year flood zone associated with Nightingale Pond is within the Project area. This flood zone is regulated as BLSF under the Massachusetts WPA. Figure 5.3-2 in Attachment 1 depicts these mapped flood hazard and floodplain resource areas.

Herring River Watershed ACEC

A portion of the Project area overlaps within the Herring River Watershed ACEC along the Eversource transmission line corridor south of Bournedale Road. The ACEC designation recognizes significant ecological resources, including wetlands, water quality, wildlife habitat, fisheries resources, flood storage functions, and scenic values. The presence of the ACEC underscores the regional importance of the wetland, water quality, habitat, and floodplain resources located within the broader Project setting.

Figure 5.3-1 depicts the extent of the Herring River Watershed ACEC in relation to the Project area.

Certified and Potential Vernal Pools

Vernal pools are seasonally ponded, typically fishless wetlands that provide important breeding and life-cycle habitat for certain amphibians, fairy shrimp, and other wildlife. Two certified vernal pools (CVPs) occur in proximity to the Project area according to MassGIS mapping (MassGIS 2025b). One CVP is mapped within W3, an IVW located approximately 115 feet north of the proposed G-31 construction ROW near MP 0.7 along the Eversource transmission line corridor south of Bournedale Road. A second CVP, mapped within IVW W10, is located approximately 100 feet south of MP 2.7 of the proposed G-32 pipeline construction workspace on JBCC. See Attachment 1, Figure 5.3-4.

No potential vernal pools were identified within 300 feet of the Project area during desktop review or field investigations.

5.3.1.2 Impact Summary

Cape Cod has a highly sensitive water resource setting that includes sole source aquifers and high-quality drinking water (public water supply protection areas), as well as fresh and marine surface water resources (freshwater wetlands, floodplain resources, and marine waters) and CAP-designated areas (Cape Cod Commission 2023, 2025c; MassGIS 2020, 2025c). Construction activities associated with the Project have the potential to affect water resources, including water use during construction, dewatering events, and impacts to recharge areas of water resources through clearing and grading. Operation of the Project may impact stormwater runoff patterns at the M&R stations and PARs.

Surface water impacts are expected to be minimal and temporary. The Cape Cod Canal will be crossed by HDD, avoiding in-water work, dredging, fill, and direct alteration of the canal bed or banks. Construction-related risks such as erosion, sedimentation, dewatering discharge, stormwater runoff, or an inadvertent drilling-fluid return will be controlled through BMPs, erosion controls, spill prevention, environmental inspection, and the HDD Best Drilling Practices Plan. No permanent adverse impacts to surface waters or water quality are anticipated.

Portions of the G-31 pipeline and G-8C/G-8L pipeline workspace, as well as three contractor ware yards, are located within the Zone II WHPA associated with Pump Station 3, Pump Station 4, and Well 5 operated by the Buzzards Bay Water District. See Table 5-4.

The G-31 pipeline was specifically routed to avoid work within the Zone I WHPAs associated with Pump Station 3, Pump Station 4, and Well 5 public water supply wells on Bournedale Road. As a result, no impacts are anticipated to these public supply wells.

Two IWPA associated with former Sandy's Restaurant wells slightly overlap with the G-8C/G-8L pipeline workspace. The construction workspace will occupy approximately 0.3 acre of the IWPA for these wells during construction. No new facilities are proposed for the G-8C/G-8L pipeline removal and relocation activities, resulting in a temporary impact of 0.3 acre to the Natural Areas Placetype within IWPA. Within Zone II WHPAs, the Project will permanently impact approximately 5.8 acres of Natural Areas Placetype and will temporarily impact approximately 18.9 acres of Natural Areas Placetype.

Table 5-4. Wellhead Protection Areas and Placetypes Crossed by the Project

WHPA Type (Zone I or II WHPA, IWPA)	Associated Well Facility	Operator	Acres Impacted Within Natural Areas	
			Permanent	Temporary
IWPA	Sandy's Restaurant (PWS ID: 4036007)	Sandy's Restaurant	0	0.3
Zone II	Pump Stations 2, 3, & 4/ Well 5 (PWS ID: 4036001)	Buzzards Bay Water District	5.8	18.9
Total			5.8	19.2

Note: Totals may not sum exactly due to rounding.

Approximately 74.2 acres of the Project area overlap with PPWSAs or their 400-foot Zone I radii. Of this total, approximately 22.8 acres are located outside JBCC, including approximately 7.4 acres of permanent impact. Table 5-5 summarizes the Project's overlap with PPWSAs and associated 400-foot Zone I radii. See Figure 5.3-3 in Attachment 1.

Table 5-5. Project Overlap with PPWSAs and 400-foot Zone I Radii

Location	Permanent Overlap (acres)	Temporary Overlap (acres)
Outside of JBCC	7.4	15.4
Within JBCC	19.0	32.4
Total	26.4	47.8

Note: Totals may not sum exactly due to rounding.

Construction Water Use and Groundwater Withdrawal Management

Construction water demand will be temporary and limited to hydrostatic testing and HDD-related activities. Algonquin has designed the Project schedule and construction phases to avoid large water withdrawals from single sources. Construction water use will be phased over the construction period to limit stress on local water sources. Water use and needs will be coordinated directly with applicable local water suppliers, including the Buzzards Bay Water District, North Sagamore Water District, and Bourne Water District. If requested supplies are unavailable from local districts, alternate approved sources, including trucked water from mainland sources, may be used.

Estimated construction water requirements for each facility are summarized in Table 5-6.

Table 5-6. Estimated Construction Water Requirements

Facility	Estimated Water Requirement
G-8L/G-8C	300 gallons
G-11	6,000 gallons plus 3,500 gallons for HDD pre-testing
G-24	55,950 gallons plus 17,100 gallons for HDD pre-testing
G-31	140,400 gallons plus 46,800 gallons for HDD pre-testing
G-32	153,500 gallons

Algonquin will reduce construction water demand by reusing hydrostatic test water between compatible pipeline segments where practicable and by recycling HDD pre-test water for subsequent testing where feasible. Water required for HDD mud mixtures will be stored on-site in frac tanks and recycled during drilling to the extent practicable. Water that cannot be reused will be managed and discharged only in accordance with applicable permits and agency approvals.

Because construction water use will be temporary, phased, coordinated with water suppliers, and reduced through reuse and recycling where practicable, the Project will not measurably affect aquifer capacity, public water supply reliability, or long-term groundwater availability.

Although portions of the Project are located within mapped groundwater protection areas, the Project's use within these areas is limited to utility relocation, temporary workspace, permanent underground pipeline easement, and access infrastructure. The Project will not introduce wastewater disposal, vehicle maintenance, fuel storage, loading docks, fleet storage, or other permanent high-risk land uses within these areas.

Dewatering Management

Temporary dewatering may be required in limited areas during excavation. Any dewatering will be localized, temporary, and limited to active construction work areas. Dewatering discharges will be managed

in accordance with the Project's E&SCP and applicable permit requirements and will include sediment controls, energy dissipation, filtration, or other measures necessary to prevent erosion, sedimentation, or degradation of adjacent groundwater and surface water resources.

Dewatering will not constitute a long-term groundwater withdrawal and will not alter regional groundwater flow patterns or aquifer recharge conditions.

Clearing and Grading

Potential impacts to recharge areas of surface waters are primarily limited to construction-related activities and may include temporary increases in turbidity, sedimentation, and stormwater runoff associated with ground disturbance, excavation, dewatering, and restoration activities. Construction activities adjacent to water resources also have the potential to affect water quality through accidental releases of fuels or other materials. These impacts are expected to be temporary and largely confined to active construction areas. No significant long-term impacts to surface water quality, water quantity, or marine resource functions are anticipated following completion of construction and site restoration.

Potential effects on freshwater resources are primarily associated with temporary construction activities, including excavation, grading, temporary workspace, access road use, dewatering, equipment operation, hydrostatic testing, and work within or near regulated wetland and floodplain resource areas. Potential construction-period impact mechanisms include:

- temporary changes to soil stability and runoff patterns during active construction;
- temporary erosion and sedimentation potential from soil disturbance;
- temporary dewatering discharges associated with trench excavation;
- accidental spill risk from construction equipment or material handling;
- potential drilling-fluid inadvertent returns associated with HDD activities near sensitive resource areas;
- temporary water withdrawals and discharges associated with hydrostatic testing.

Permanent Stormwater Impacts

The Project has been designed to minimize land alteration and limit the conversion of pervious surfaces to impervious materials to the maximum extent practicable. Permanent Project features have been sited primarily within existing utility corridors, roadways, existing access areas, and previously disturbed settings. Temporary construction workspaces, including ATWS, will be restored following construction and will not result in permanent land conversion.

Where permanent access is required, Algonquin will use existing roads where practicable or design access roads with gravel or other pervious surfaces to maintain infiltration and minimize stormwater runoff. Stormwater management features will be incorporated where necessary to maintain existing drainage patterns, protect downgradient resources, and manage runoff from new impervious surfaces.

Algonquin has prepared stormwater drainage studies for the M&R stations that describe the proposed stormwater controls for areas of new impervious surface. The stormwater systems are designed to manage runoff from permanent facility areas and protect downgradient groundwater and surface water resources. See Attachment 5.

The Project will result in approximately 7.2 acres of new permanent asphalt impervious surface associated with the construction and operation of the M&R stations. The Project will create approximately 7.2 acres of permanent asphalt surface associated with the M&R stations and 1.8 acres of gravel surface associated

with permanent access roads. Most access road improvements will occur along existing utility corridors. Permanent surface impacts are limited in extent relative to the overall Project area and are required to support the long-term operation and maintenance of the Project. The majority of the proposed PARs are existing access roads that need only minor improvements, including gravel to fill potholes or road leveling. In most cases for the project construction, Algonquin is not creating new impervious surfaces on these existing roads.

These impacts are limited in extent relative to the overall Project area and are associated with the permanent utility infrastructure required for Project operation and maintenance. Table 5-7 shows the breakdown of impacts due to the proposed impervious surfaces. These areas are limited in scale relative to the overall Project area and are associated with necessary permanent utility infrastructure.

Table 5-7. New Impervious Acreage and Type

Surface Type	New Surface Area (acres)
M&R station impervious surface	5.3
Permanent access road surface (gravel)	1.8
Total:	7.2

5.3.1.3 Avoidance, Minimization and Mitigation Summary

Protection of water resources groundwater was a primary consideration throughout Project planning, routing, design, permitting, and construction planning. The Project incorporates a comprehensive set of avoidance, minimization, and mitigation measures intended to avoid impacts to sensitive water resources where practicable and minimize unavoidable construction-related effects.

The Project's overall water resource protection strategy focuses on 1) avoiding sensitive resources through route selection and facility siting, 2) minimizing the extent and duration of disturbance through construction methodologies such as HDD and BMPs, 3) restoring temporarily disturbed areas following construction, and 4) implementation of proper stormwater facility design at permanent aboveground facilities.

Resource Avoidance Through Route Selection and Facility Siting

Project facilities were sited to maximize the use of existing utility corridors, transportation corridors, roadways, and previously disturbed areas. This approach minimizes the need for new disturbance within wetlands, floodplains, groundwater protection areas, and other sensitive environmental resources. The Project has been designed to avoid Zone I WHPAs associated with public water supply wells to the maximum extent practicable and to minimize permanent impacts within Zone II WHPAs and Potential Public Water Supply Areas. Pipeline alignments, M&R station locations, access roads, contractor yards, and temporary workspaces were refined to avoid and minimize impacts to public water supply resources, freshwater wetlands, floodplain resource areas, and marine resources to the maximum extent practicable while maintaining the operational requirements of the Project.

Horizontal Directional Drilling

The Project incorporates HDD at the Cape Cod Canal crossing instead of conventional open-cut construction methods. HDD allows installation of the pipeline beneath sensitive fresh and marine resources without dredging, trenching, or direct disturbance of wetlands, surface waters, marine habitat, navigation

channels, shoreline resources, or Land Under the Ocean (LUO). As a result, direct impacts to these resources are substantially avoided.

All HDD activities will be conducted in accordance with Algonquin's Best Drilling Practices, Monitoring, and Clean-Up of Horizontal Directional Drilling Inadvertent Returns Plan (see Attachment 4). HDD monitoring procedures include drilling-fluid tracking, environmental inspection, inadvertent return monitoring, containment measures, reporting requirements, and response procedures designed to protect groundwater, wetlands, freshwater resources, and marine waters. Drilling fluids will be recycled and reused to the maximum extent practicable. Residual drilling fluids will be collected and transported off-site for disposal at approved facilities. HDD fluids will not be intentionally discharged to wetlands, groundwater, surface waters, or marine resource areas.

Best Management Practices

Construction activities within or adjacent to surface water resources will be conducted in accordance with applicable federal, state, and local permit requirements, including the FERC Procedures, the Project's E&SCP, and environmental inspection requirements. The following BMPs have been incorporated throughout the Project.

- Reducing work areas within and adjacent to sensitive resource areas where practicable
- Using temporary construction mats where appropriate
- Maintaining hydrology and natural drainage patterns
- Installing erosion and sedimentation controls prior to construction, including
 - silt fence and compost filter tubes;
 - sediment barriers and sediment traps;
 - stabilized construction entrances;
 - temporary drainage and diversion controls;
 - temporary and permanent soil stabilization measures;
 - prompt revegetation of disturbed areas;
 - routine inspection and maintenance of erosion controls; and
 - corrective actions where necessary.
- Minimizing the duration of temporary disturbance
- Restoring disturbed areas following construction
- Dewatering may include sediment controls, filtration systems, energy dissipation measures, or other water-quality protection measures as necessary
- Maintaining controls until disturbed areas achieve final stabilization

Construction activities will be also conducted in accordance with the Project's SPCC Plan and associated environmental compliance procedures (see Attachment 3).

- Fueling, equipment maintenance, material storage, and contractor operations will follow established spill-prevention requirements. Spill response materials will be maintained at active construction areas, and construction personnel will receive appropriate training regarding spill response and environmental protection requirements.
- Any accidental release of fuel, lubricant, hydraulic fluid, drilling fluid, or other regulated material will be immediately contained, reported, and remediated in accordance with applicable permit requirements and regulatory standards.

Restoration and Revegetation

Following construction, temporary workspaces, wetlands, buffers, floodplain areas, access areas, and other disturbed resource areas will be restored and revegetated.

Restoration measures include:

- removal of temporary construction materials;
- regrading disturbed areas to preconstruction contours where practicable;
- soil stabilization and decompaction where necessary;
- restoration of drainage patterns;
- revegetation using approved seed mixes and restoration methods; and
- monitoring and corrective action as required by permits and environmental commitments.

Restoration activities are intended to reestablish preconstruction hydrologic conditions, maintain groundwater recharge functions, preserve flood storage capacity, stabilize soils, and support recovery of wetland and habitat functions.

Stormwater Management

Permanent facilities have been designed to minimize impervious surface and maintain natural drainage patterns to the maximum extent practicable. Stormwater management systems are incorporated into the designs of relocated M&R stations in accordance with Massachusetts Stormwater Management Standards. Stormwater controls are intended to:

- manage runoff from new impervious surfaces;
- provide water quality treatment;
- promote groundwater recharge where appropriate;
- reduce erosion potential;
- maintain existing drainage patterns; and
- protect downgradient groundwater and surface water resources.

Where appropriate, stormwater systems serving areas with elevated contaminant exposure potential will include means to isolate or contain runoff in the event of a spill. Attachment 5 provides stormwater management reports for each of the four M&R stations proposed by the Project.

Summary

Through route selection, facility siting, HDD installation, erosion and sedimentation controls, spill prevention procedures, groundwater protection measures, stormwater management systems, dewatering controls, construction water management, environmental compliance monitoring, and postconstruction restoration, the Project avoids and minimizes impacts to water resources to the maximum extent practicable. Temporary impacts will be restored following construction, and no significant long-term adverse impacts to groundwater or surface waters are anticipated.

5.3.1.4 Consistency with RPP Goals and Objectives

Objective WR1 – Protect and preserve groundwater quality

The Project consists of the relocation of existing natural gas infrastructure and does not include residential, commercial, industrial, or wastewater-generating land uses. The Project will not generate sanitary wastewater, or permanent groundwater discharges. Therefore, the Project will not introduce a new long-term source of groundwater contamination or nitrogen loading.

Although portions of the Project occur within Zone II WHPAs and Potential Public Water Supply Areas, impacts within these areas are primarily associated with utility relocation, temporary construction workspace, and limited permanent utility infrastructure. The Project avoids Zone I WHPAs to the maximum extent practicable and minimizes permanent land disturbance within groundwater protection areas. As described in Section 5.3.1.3, the Project incorporates comprehensive groundwater protection measures including stormwater management, spill prevention procedures, construction-phase BMPs, and restoration commitments. Implementation of these measures limit potential adverse impacts to current resources, and placement of future wells.

These measures align with the methods outlined in the Water Resources Technical Bulletin to protect groundwater quality. Therefore, the Project is consistent with Objective WR1.

Objective WR2 – Protect, preserve and restore freshwater resources

Project planning prioritized the use of existing utility corridors, roadway corridors, and previously disturbed areas to reduce the need for new disturbance within or adjacent to natural areas including recharge areas for freshwater resources and CAP-designated areas. Where impacts could not be avoided, construction activities were designed to minimize the extent and duration of disturbance while maintaining the operational requirements of the Project. Impacts under the purview of WR2 are all considered temporary and minor.

As described in Section 5.3.1.3, the Project incorporates a comprehensive suite of protection measures, including resource area avoidance, erosion and sedimentation controls, dewatering management, HDD procedures, environmental monitoring, and postconstruction restoration. Algonquin will implement the SPCC Plan to avoid contamination of freshwater resources and CAP-designated areas.

These measures align with the methods outlined in the Water Resources Technical Bulletin to protect freshwater resources, including CAP-designated areas. Therefore, the Project is consistent with Objective WR2.

Objective WR3 – Protect, preserve and restore marine water resources

The Project's interaction with marine resources is limited to the crossing of the Cape Cod Canal by the G-31 pipeline. Because the pipeline will be installed beneath the Canal, no permanent impacts to marine habitat, navigation, fisheries resources, coastal resource areas, or water quality are anticipated. The Project will not generate sanitary wastewater, process wastewater, or routine groundwater discharges. Therefore, the Project will not introduce a new long-term source of groundwater contamination or nitrogen loading to marine water resources.

As described in Section 5.3.1.3, the Project incorporates HDD installation, drilling-fluid management procedures, spill prevention measures, environmental monitoring, and other resource protection commitments designed to minimize temporary construction-related impacts.

These measures align with the methods outlined in the Water Resources Technical Bulletin to protect marine water resources. Therefore, the Project is consistent with Objective WR3.

Objective WR4 – Manage and treat stormwater to protect and preserve water quality

Permanent Project facilities have been sited to be located within existing utility corridors, roadways, or previously disturbed areas, minimizing new land disturbance and reducing the need for extensive stormwater infrastructure. Temporary construction workspaces will be restored following construction and will not result in permanent land conversion. Permanent infrastructure is limited to the four M&R Stations, valve sites, pig launchers and receivers, and PARs.

Where permanent access is required, Algonquin will utilize existing roads where practicable or construct gravel access roads and other pervious surfaces to promote infiltration and reduce runoff. Algonquin has prepared project-specific stormwater management reports for each M&R station. The reports evaluate runoff from new impervious surfaces and identify stormwater control measures designed to manage peak flows, reduce erosion potential, and protect water quality. The stormwater systems have been designed in compliance with the Massachusetts Stormwater Handbook to maintain existing drainage characteristics and protect downgradient resources through a combination of vegetated conveyance systems, stormwater controls, and erosion protection measures. Low Impact Development (LID) techniques were incorporated as much as practicable. These reports are included in the Project's Stormwater Management Report (see Attachment 5).

The Project minimizes the creation of new impervious surfaces, incorporates project-specific stormwater management systems for permanent facilities, and utilizes erosion, sedimentation, and drainage controls that protect groundwater, wetlands, and other downgradient water resources. The Project has been designed to maintain existing drainage patterns to the maximum extent practicable while preventing degradation of water quality during both construction and operation. Following construction, disturbed areas will be stabilized and revegetated, allowing infiltration and recharge functions to be restored while minimizing long-term stormwater runoff.

Through site design, stormwater controls, erosion prevention measures, and postconstruction restoration, the Project will protect water quality and maintain existing hydrologic conditions to the maximum extent practicable. These measures align with the methods outlined in the Water Resources Technical Bulletin to manage and treat stormwater. Therefore, the Project is consistent with Objective WR4.

Objective WR5 – Manage groundwater withdrawals and discharges to maintain hydrologic balance and protect surface and groundwater resources

Water use associated with the Project is limited to hydrostatic testing and HDD activities during construction. Water will be obtained from municipal water systems operated by the Buzzards Bay Water District, North Sagamore Water District, and Bourne Water District, or from approved off-Cape sources if local supplies are unavailable. Water withdrawals will occur incrementally and in coordination with local water suppliers based on construction sequencing rather than as a single withdrawal event. As a result, the

Project will not create a concentrated demand that could adversely affect aquifer levels, public water supply reliability, nearby wetlands, or groundwater-supported surface waters.

The Project further minimizes water demand through reuse and recycling measures. Hydrostatic test water will be reused between compatible pipeline segments where practicable, HDD pre-test water will be reused for hydrostatic testing, and water used to prepare drilling mud will be stored in frac tanks on-site and recycled throughout HDD operations. These measures substantially reduce the volume of new water required during construction and minimize the need for additional withdrawals from public water supplies.

Any water that cannot be reused will be managed in accordance with all applicable permits and agency approvals. Hydrostatic test water will be discharged only to approved upland locations using methods designed to prevent erosion, sediment transport, and adverse impacts to groundwater and surface water resources. HDD drilling fluids will be recycled to the maximum extent practicable and transported off-site for proper disposal following completion of drilling activities. HDD fluids will not be intentionally discharged to wetlands, surface waters, or groundwater resources.

Operation of the Project facilities will not require water; therefore, groundwater withdrawals will be limited to the construction phase of the Project. Because Project water use is temporary, phased, and will be coordinated with municipal water suppliers, and supported by water reuse and recycling measures, the Project is not anticipated to measurably alter groundwater levels, affect wetland hydrology, reduce public water supply availability, or disrupt local hydrologic balance. These measures are consistent with the Water Resources Technical Bulletin's guidance for managing groundwater withdrawals and discharges. Therefore, the Project is consistent with Objective WR5.

5.3.2 OCEAN RESOURCES

5.3.2.1 Existing Conditions

The Cape Cod Canal is the primary ocean and coastal resource within the Project area. Constructed and maintained by the USACE, the Canal is a federally designated navigation channel connecting Cape Cod Bay and Buzzards Bay and serves important navigational, recreational, ecological, and hydrologic functions. The Canal supports active vessel traffic and provides a significant marine corridor between Massachusetts Bay and Buzzards Bay.

The Canal is a tidally influenced marine system characterized by strong currents, periodic tidal exchange, and coastal processes that influence surrounding shoreline habitats and adjacent coastal resources. State regulated coastal wetland resource areas associated with the Canal include LUO, LCS, Coastal Bank, and LSCSF as defined under the WPA.

The Massachusetts Division of Marine Fisheries has identified portions of the Canal as containing habitat suitable for shellfish resources, including blue mussel (*Mytilus edulis*). Although shellfish habitat occurs within the Canal, shellfish harvesting within the Canal is restricted by local regulations. The Canal and adjacent shoreline habitats also provide habitat for marine fish, estuarine species, migratory fish, coastal birds, and other wildlife associated with coastal environments.

Coastal flood hazard areas occur adjacent to portions of the Canal and are associated with storm surge, tidal flooding, and coastal storm events. In addition, portions of the Project area occur within or adjacent to coastal resource management jurisdictions and ACECs, including the Herring River Watershed ACEC. These coastal resources contribute to the ecological integrity, resiliency, and environmental value of the Upper Cape region.

Figure 5.3-4, Sheets 1, 3, and 4 in Attachment 1 depicts the Cape Cod Canal and associated coastal resource areas occurring within and adjacent to the Project area.

5.3.2.2 *Impact Summary*

The Project's only interaction with ocean resources is the G-31 pipeline crossing beneath the Cape Cod Canal, which will be installed using HDD. This construction method allows the pipeline to be placed beneath the Canal bed and banks without dredging, trenching, fill placement, or other in-water work, thereby avoiding direct impacts to Canal sediments, navigation, fisheries, shellfish habitat, and other ocean resources. The only potential construction-related pathway for interaction with the Canal is an inadvertent release of drilling fluid.

5.3.2.3 *Avoidance, Minimization and Mitigation Summary*

Protection of ocean resources was a key consideration throughout Project planning, design, and permitting. The Project incorporates avoidance, minimization, and mitigation measures specifically intended to protect the Cape Cod Canal, maintain marine habitat functions, preserve water quality, and avoid disruption of navigation and recreational uses.

The primary avoidance measure is the use of HDD to install the G-31 pipeline beneath the Cape Cod Canal; additionally, no temporary or permanent marine infrastructure will be located within the Canal. Therefore, no long-term changes to marine habitat, water circulation, or navigation are anticipated to occur.

To minimize potential construction-related impacts, the HDD crossing has been designed with sufficient depth below the Canal bed to reduce the potential for inadvertent drilling fluid returns. Construction of the crossing will be completed in accordance with Algonquin's Best Drilling Practices, Monitoring, and Clean-Up of Horizontal Directional Drilling Inadvertent Returns Plan, which establishes procedures for monitoring HDD operations, identifying potential drilling fluid releases, implementing containment measures, and conducting reporting and cleanup activities should an inadvertent return occur (see Attachment 4).

Additional minimization measures include implementation of spill prevention and response procedures, proper handling and storage of fuels and hazardous materials, environmental inspection and monitoring during construction, and adherence to all applicable federal, state, and local permit requirements. Construction activities will be managed to maintain existing navigation, boating, fishing, and recreational uses of the Canal throughout the construction period to the extent practicable.

Consultation with federal and state resource agencies further supports the conclusion that marine resource impacts will be minimal due to implementation of the HDD installation method. NMFS determined that the Project does not require Essential Fish Habitat consultation, reflecting the avoidance of impacts to federally managed marine species and habitats. Similarly, the Massachusetts Division of Marine Fisheries determined that no time-of-year restrictions or additional seasonal construction measures are necessary to protect marine resources.

Through the use of HDD technology, implementation of HDD monitoring and contingency procedures, adherence to environmental protection requirements, and ongoing construction oversight, the Project avoids direct impacts to ocean resources and minimizes the potential for temporary construction-related effects. Consequently, no compensatory mitigation is required, and no significant adverse impacts to ocean resources is anticipated.

5.3.2.4 Consistency with RPP Goals and Objectives

Objective OR1 – Locate Development Away from Sensitive Resource Areas and Habitats

As described in Section 3, Algonquin’s proposed Project includes installing a new pipeline beneath the Cape Cod Canal to maintain natural gas delivery to National Grid. Even though a crossing of the Cape Cod Canal is still required, Algonquin is able to avoid habitat for rare marine species and their habitat through implementation of the HDD. By installing the pipeline below the bed and banks of the Cape Cod Canal and avoiding interaction with sensitive marine environments, the Project is located away from important ocean resource areas and habitats while meeting the Project purpose and need.

The implementation of HDD as an avoidance measure aligns with the methods outlined in the Ocean Resources Technical Bulletin to locate development away from sensitive resource areas and habitats. Therefore, the Project is consistent with Objective OR1. Additionally, the HDD and Project workspace occurs outside of the mapped Cape Cod Ocean Management Plan Exclusion Area (see Figure 5.3-5 in Attachment 1).

Objective OR2 – Preserve and Protect Ocean Habitat and the Species It Supports

Through implementation of the HDD beneath the Cape Cod Canal, the Project does not require dredging, in-water excavation, shoreline modification, or other activities that would alter marine habitat, affect benthic resources, interfere with fish passage, or impact whales or rare marine species. Consultation with federal and state resource agencies further supports the conclusion that marine resource impacts are not likely to be impacted due to implementation of the HDD installation method. NMFS determined that the Project does not require Essential Fish Habitat consultation, reflecting the avoidance of impacts to federally managed marine species and habitats, and sent confirmation of their findings on February 24 and June 5, 2026. Similarly, the Massachusetts Division of Marine Fisheries determined that no time-of-year restrictions or additional seasonal construction measures are necessary to protect marine resources. A final determination letter was sent to Algonquin on July 9, 2026 (ECO: GARFO-2026-01397).

As a result, marine habitat conditions within the Canal are expected to remain unchanged following construction. The implementation of HDD as an avoidance measure aligns with the methods outlined in the Ocean Resources Technical Bulletin to preserve and protect ocean habitat and species. Therefore, the Project is consistent with Objective OR2.

Objective OR3 – Protect Significant Human Use Areas and Vistas.

The crossing will be installed entirely underground, with no visible infrastructure located within the Canal corridor following construction. The Project will not impede navigation, restrict public access, or permanently affect recreational activities such as boating, fishing, bicycling, sightseeing, or tourism. Any temporary construction-related disruptions will be limited in duration and extent and will not alter the long-term character, visual quality, or public use of the Cape Cod Canal corridor. Consequently, the Project preserves the Canal's recreational, scenic, and navigational value while supporting a critical regional infrastructure improvement project.

The Project aligns with the methods outlined in the Ocean Resources Technical Bulletin to maintain the recreational, navigational, and scenic functions of the Cape Cod Canal, one of the region's most significant public resource areas. Therefore, the Project is consistent with Objective OR3.

5.3.3 WETLANDS RESOURCES

5.3.3.1 *Existing Conditions*

Wetland resources are scattered throughout the Project area and include coastal and inland wetland systems associated with the Cape Cod Canal, Nightingale Pond, and freshwater depressions within existing utility corridors (MassGIS 2017). Wetlands and other jurisdictional resource areas within and adjacent to the Project area are regulated under the WPA and 310 CMR 10.00. See Figure 5.3-4 in Attachment 1.

Coastal Wetland Resources

The Cape Cod Canal represents the dominant coastal wetland resource within the Project area. The Canal supports multiple wetland resource areas protected under the WPA, including LUO, LCS, Coastal Bank, and LSCSF.

LUO occurs throughout the Canal crossing area and consists of subtidal marine habitat extending beneath the navigational channel. Geotechnical investigations indicate that Canal sediments consist primarily of sand, gravel, and silt deposits overlying bedrock (GeoEngineers 2024a, 2024b).

LCS has been mapped within portions of the Canal by the Massachusetts Division of Marine Fisheries (MassGIS 2011). Although areas of suitable habitat for blue mussel (*Mytilus edulis*) occur within the Canal, shellfish harvesting is prohibited throughout the Canal by the Town of Bourne.

Coastal Banks occur along portions of the Canal shoreline and provide important storm damage prevention functions by protecting adjacent upland areas from wave action and coastal flooding.

LSCSF is present along low-lying areas adjacent to the Canal and generally corresponds to FEMA-mapped coastal flood hazard areas influenced by tidal flooding and coastal storm surge.

Inland Wetland Resources

Inland wetland resources in the Project area are associated with Nightingale Pond, IVWs, and BVWs. These resources provide flood storage, groundwater recharge, water quality protection, and wildlife habitat.

The inland wetland and floodplain resource areas identified in the Project area include BLSF, ILSF, IVWs, and regulated 100-foot Buffer Zones associated with the Inland Bank and BVW resource areas.

BLSF occurs in association with Nightingale Pond, where FEMA flood hazard mapping identifies flood-prone areas extending beyond the pond shoreline (FEMA 2024). The Nightingale Pond floodplain is mapped as Zone A (FEMA 2024). The surrounding landscape consists primarily of pitch pine-oak woodland communities typical of the Upper Cape region.

ILSF has been identified in association with one IVW (Wetland W5) located within an inactive sand and gravel quarry. This ILSF/IVW functions as an isolated flood storage area with no permanent surface water outlet.

The two other IVWs within the Project area are associated with low-lying depressional areas and utility corridor edges. IVWs consist of freshwater wetlands that are not directly connected to surface waters. These wetlands generally provide localized stormwater storage, groundwater recharge, sediment retention, nutrient uptake, and wildlife habitat functions.

Regulated 100-foot Buffer Zones in the Project area occur adjacent to two BVWs, Nightingale Pond, and the coastal banks of the Canal. These buffer zones consist of a mixture of maintained roadway shoulders,

utility corridors, landscaped areas, pitch pine–oak woodland, and other upland habitats that provide ecological transition zones between wetlands and developed areas.

5.3.3.2 Impact Summary

Bordering Land Subject to Flooding (BLSF)

Approximately 52 square feet of BLSF associated with Nightingale Pond will be temporarily disturbed during removal of the existing G-8L and G-8C pipelines. Impacts are limited to temporary construction disturbance for pipeline removal, backfilling, and restoration. No permanent fill, grading, impervious surface, or loss of flood storage is proposed. The area will be restored to preconstruction contours and stabilized following construction.

Isolated Land Subject to Flooding (ILSF)

The Project will temporarily affect Wetland W5, the only wetland that meets the WPA criteria for ILSF. Approximately 42,709 square feet of Wetland W5 will be temporarily disturbed to support construction of the G-31 pipeline HDD crossing beneath the Cape Cod Canal. Temporary impacts include HDD support workspace, staging activities, and construction matting. No permanent fill, grading, vegetation conversion, or loss of flood storage is proposed. The wetland will be restored to preconstruction contours and allowed to revegetate naturally following construction.

Bordering Vegetated Wetland (BVW) Buffer Zone

No direct impacts to BVWs are proposed. However, approximately 34,034 square feet of temporary disturbance and 4,095 square feet of temporary forest cover disturbance will occur within the 100-foot Buffer Zone of Wetland W14 during relocation of the Sagamore M&R Station, removal of existing facilities, and relocation of the G-24 and G-11 pipelines. Permanent impacts are limited to previously disturbed upland portions of the station site and easement area. Postconstruction stormwater controls will improve existing drainage conditions and protect adjacent wetland resources.

Inland Bank Buffer Zone

Approximately 41,389 square feet of temporary disturbance, including 5,197 square feet of temporary forest cover disturbance, will occur within the 100-foot Buffer Zone of Inland Bank associated with Nightingale Pond during removal of the G-8C and G-8L pipelines. No direct Inland Bank impacts are proposed, and disturbed areas will be restored and stabilized following construction.

Isolated Vegetated Wetlands (IVWs)

The Project will result in temporary disturbance of approximately 16,602 square feet of three IVWs (Wetlands W2, W5, and W12). Wetland W2 will be affected by the proposed G-31 pipeline trench excavation, Wetland W5 by temporary construction workspace associated with the G-31 HDD workspace, and Wetland W12 by temporary workspace needed for removal of the existing G-8C and G-8L pipelines. Disturbance activities may include temporary vegetation clearing, equipment access, installation of construction matting where necessary, soil disturbance from trenching, and restoration of preconstruction contours following completion of work. No permanent wetland fill, conversion, or loss is proposed. Attachment 10 of this DRI includes a summary table of all WPA resource area, buffer zone, and IVW alterations. This table also includes references to the WPA resource area locations shown on Figure 5.3-4 in Attachment 1.

5.3.3.3 Avoidance, Minimization and Mitigation Summary

Protection of wetlands and WPA-regulated areas was a primary consideration throughout Project planning, routing, design, permitting, and construction planning. Consistent with the Project's overall environmental strategy, Algonquin applied a hierarchy of avoidance, minimization, and mitigation measures intended to avoid wetland impacts where practicable, minimize unavoidable disturbance, preserve wetland hydrology and ecological functions, and restore temporarily disturbed resource areas following construction. All avoidance measures identified in Sections 5.3.1.3 and 5.3.2.3 also avoid and minimize impacts to wetland resources. Additional wetland-specific BMPs are described below.

Wetland Construction Procedures

Construction within or adjacent to wetlands will be conducted in accordance with applicable federal, state, and local permit requirements, including the FERC Procedures, the Project E&SCP, and permit-specific environmental commitments.

Wetland protection measures include:

- reducing workspace widths within wetlands where practicable;
- limiting vegetation clearing and grading to the minimum area necessary for safe construction;
- utilizing temporary timber matting where necessary to minimize rutting, soil disturbance, and compaction;
- maintaining existing wetland hydrology and drainage patterns;
- segregating and replacing soils where appropriate;
- minimizing the duration of construction activities within wetlands; and
- removing temporary materials following construction.

These measures are intended to preserve wetland hydrology, reduce disturbance to wetland vegetation and soils, and support recovery of wetland functions following construction.

Through route selection, collocation within existing infrastructure corridors, use of trenchless construction methods, implementation of wetland-specific construction procedures, erosion and sedimentation controls, dewatering management, stormwater controls, spill prevention measures, and postconstruction restoration, the Project has been designed to avoid and minimize impacts to wetlands and associated buffer areas to the maximum extent practicable. Temporary disturbances will be restored following construction, and no significant long-term adverse impacts to wetland resource areas, wetland hydrology, flood storage functions, or associated ecological resources are anticipated.

5.3.3.4 Consistency with RPP Goals and Objectives

Objective WET1 – Protect Wetlands and their buffers from vegetation and grade changes

The Project will not result in the permanent filling or loss of wetlands requiring replication. Operation impacts are limited primarily to underground utility infrastructure located within existing utility corridors, while the majority of wetland impacts are temporary and associated with construction activities. Following construction, temporarily disturbed wetlands and buffer areas will be restored to preconstruction conditions to the maximum extent practicable.

As described in Sections 5.3.1.3, 5.3.2.3, and 5.3.3.3, the Project incorporates a comprehensive suite of wetland protection measures, including route selection and facility siting to avoid sensitive resources, reduced work areas in wetland crossings, use of trenchless construction methods where appropriate, erosion and sedimentation controls, environmental monitoring, and restoration of temporarily disturbed resource areas.

The Project aligns with the methods outlined in the Wetlands Resources Technical Bulletin to protect wetlands and their buffers from vegetation and grade changes. Therefore, the Project is consistent with Objective WET1.

Objective WET2 – Protect Wetlands from changes in hydrology, including those associated with stormwater discharges

New impervious surfaces associated with relocated M&R stations and PARs represent a small portion of the overall Project area and will be managed through project-specific stormwater systems designed to maintain pre-development hydrologic conditions and protect adjacent water resources. Stormwater management measures are documented in the Project Stormwater Management Reports and supporting drainage studies.

As described in Section 5.3.1.3, the Project incorporates comprehensive measures to protect wetland hydrology and recharge areas during construction and operation, including erosion and sedimentation controls, dewatering management procedures, spill prevention measures, HDD monitoring protocols, stormwater management systems, and restoration commitments.

The Project will obtain permits for activities within wetland resources and buffer zones including an Order of Conditions from the Town of Bourne Conservation Commission, a Clean Water Act Section 404/10 permit from the USACE, and a Clean Water Act Section 401 Water Quality Certificate from MassDEP.

The Project is consistent with the methods outlined in the Wetlands Resource Technical Bulletin because it has been designed to maintain existing wetland hydrology and avoid long-term changes to drainage patterns, groundwater recharge, flood storage capacity, and surface water flow within wetland resource areas. Therefore, the Project is consistent with Objective WET2.

Objective WET3 – Promote the restoration of degraded Wetland resource areas

The Project does not include a wetland restoration component intended to restore previously degraded wetland resource areas and therefore Objective WET3 is not directly applicable. Although the Project is not a wetland restoration project, its restoration commitments ensure that temporary construction-related disturbances do not result in long-term degradation of wetland resources.

5.3.4 WILDLIFE AND PLANT HABITAT

5.3.4.1 Existing Conditions (Natural Resources Inventory)

Consistent with the requirements of the Cape Cod Commission's Wildlife and Plant Habitat Technical Bulletin (Cape Cod Commission 2025b), a Natural Resources Inventory (NRI) is provided here to describe the existing ecological resources within and adjacent to the Project Area. This NRI provides the foundation for evaluating potential effects on wildlife and plant habitat. The inventory characterizes the location, extent, and ecological significance of natural communities, wetlands, protected resource areas, rare species

habitat, vernal pool resources, open space connections, and other environmental features that contribute to regional biodiversity. The NRI is intended to inform project planning and design by identifying sensitive resources, supporting impact assessment, and demonstrating how the Project has been designed to avoid, minimize, and mitigate effects on wildlife and plant habitat in accordance with the RPP objectives and the Wildlife and Plant Habitat Technical Bulletin (Cape Cod Commission 2025a, 2025b).

The NRI incorporates field investigations, GIS mapping, rare species and natural community data, wetland resource delineations, and agency coordination to evaluate existing habitat conditions within the Project area and to identify opportunities to avoid or minimize impacts to sensitive environmental resources.

Overview

The Project area generally consists of low, gently sloping terrain characteristic of southeastern Massachusetts and Cape Cod. Elevations range from approximately 10 feet to 210 feet above mean sea level. Higher elevations occur predominantly north of the Cape Cod Canal, while lower elevations occur near the Canal and coastal areas. Surficial geologic materials consist primarily of glacially deposited sand and gravel associated with outwash plains and moraine formations. These unconsolidated deposits form the basis for the region's groundwater resources and contribute to highly permeable soil conditions throughout much of the Project area.

Portions of underlying soils within the Project area workspace are classified as prime farmland or farmland of statewide importance (Natural Resources Conservation Service 2025). However, there are no current working agricultural lands or agricultural land use within the Project area. The Project area contains a diverse mosaic of natural and managed habitats characteristic of the Upper Cape region, including pitch pine–oak forests, shrublands, utility ROWs, freshwater wetlands, coastal wetlands, transportation corridors, and maintained open lands. Habitat conditions vary across the Project area as a result of existing development, transportation infrastructure, military training activities at JBCC, utility corridors, and adjacent conservation lands.

The Project area is located within the Cape Cod Coastal Lowland and Islands Ecoregion, a landscape characterized by glacially derived sandy soils, acidic groundwater, maritime climatic influences, and vegetation communities adapted to nutrient-poor conditions. This ecoregion supports a variety of coastal plain and sandplain habitats that provide important ecological functions and habitat for numerous wildlife species, including several state-listed rare species.

Large portions of the Project area consist of pitch pine–oak woodland and scrub-shrub habitats that are common throughout Cape Cod and are recognized for their importance to rare plants, invertebrates, reptiles, and other wildlife. Existing utility corridors create open-canopy habitat conditions that support early successional vegetation communities, while wetlands, ponds, and riparian areas provide additional habitat diversity and wildlife movement corridors.

The Project area supports habitat for a variety of wildlife species typical of southeastern Massachusetts, including resident and migratory birds, amphibians, reptiles, small mammals, pollinators, and other invertebrates. Wetlands, ponds, and adjacent upland habitats contribute to regional habitat connectivity and provide breeding, foraging, sheltering, and dispersal functions for wildlife populations.

Rare Species Habitat

Portions of the Project area are located within habitats protected under the MESA. The NHESP has mapped both Priority Habitat and Estimated Habitat within the Project area, reflecting the presence of known rare species occurrences and potential habitat for state-listed species (Figure 5.3-6 in Attachment 1).

Approximately 116.0 acres of mapped Priority Habitat and approximately 83.8 acres of mapped Estimated Habitat occur within the Project area. NHESP has identified the following mapped habitat areas within the Project vicinity:

- Priority Habitat #455
- Priority Habitat #601
- Estimated Habitat #400

These habitat areas occur primarily within JBCC, utility corridors, pitch pine–oak woodlands, shrublands, and associated wetland systems (MassGIS 2021a, 2021b).

NHESP correspondence identified habitat for multiple state-listed species within the Project area, including rare plants, invertebrates, reptiles, and birds. Subsequent field investigations and habitat assessments documented habitat characteristics suitable for many of these species and confirmed the ecological significance of the Project area's sandplain grassland, shrubland, woodland, and wetland communities.

Vegetation Communities

Vegetation communities within the Project area reflect the region's sandy, well-drained soils and history of natural disturbance, land management, and utility corridor maintenance. Dominant upland communities include pitch pine–oak woodlands, scrub-shrub habitats, and managed grasslands within existing utility ROWs. Common shrub species include highbush blueberry, inkberry (*Ilex glabra*), sheep laurel, and coastal sweet pepperbush (*Clethra alnifolia*).

Open habitats within the Project area are largely associated with existing maintained utility ROWs. These maintained corridors predominantly support Sandplain grassland and Sandplain heathland, generally characterized by a dense shrub layer dominated by black huckleberry (*Gaylussacia baccata*), lowbush blueberry (*Vaccinium angustifolium*), sweet fern (*Comptonia peregrina*), sheep laurel, and scrub oak (*Quercus* spp.), with an understory of native grasses, sedges, ferns, and mosses adapted to dry, nutrient-poor sandy soils.

Forested habitats within the Project area are dominated by pitch pine–oak woodland communities with varying proportions of pitch pine (*Pinus rigida*), northern red oak (*Quercus rubra*), black oak (*Quercus velutina*), scarlet oak (*Quercus coccinea*), white oak (*Quercus alba*), eastern white pine (*Pinus strobus*), red maple (*Acer rubrum*), and black cherry (*Prunus serotina*). The understory was typically dominated by black huckleberry (*Gaylussacia baccata*) and hillside blueberry (*Vaccinium pallidum*), with a sparse herbaceous layer adapted to dry, acidic sandy soils. These habitats occur throughout portions of Bourne, JBCC, utility corridors, and conservation lands and provide important wildlife habitat, ecological connectivity, and ecosystem functions.

Wetland communities within the Project area include emergent marsh, scrub-shrub wetland, and forested wetland habitats dominated by species such as red maple, cattail (*Typha latifolia*), common woolgrass (*Scirpus cyperinus*), and other hydrophytic vegetation. These wetlands provide important ecological functions including groundwater recharge, flood storage, water quality protection, and wildlife habitat.

Habitat Connectivity and Regional Significance

The Project area forms part of a larger network of undeveloped and semi-natural habitats extending across northern Bourne and JBCC. These habitats contribute to regional ecological connectivity by linking protected open space, wetlands, coastal resources, and upland ecological communities. Utility corridors and managed open areas also provide habitat for early successional species and create movement pathways through otherwise forested landscapes.

Collectively, the upland, wetland, and rare species habitats present within the Project area represent an important component of the ecological resources identified by the Cape Cod Commission for the Upper Cape region and contribute to the biodiversity, habitat connectivity, and ecological resilience of the Cape Cod landscape.

5.3.4.2 Impact Summary

Construction and operation of the Project will result in temporary and permanent impacts to wildlife and plant habitats, including forested habitat, Significant Natural Communities, NHESP-designated Priority Habitat and Estimated Habitat, and portions of the Herring River Watershed ACEC. The Project has been designed to maximize use of existing utility corridors, transportation corridors, and other previously disturbed areas, thereby minimizing impacts to intact natural habitats. Nevertheless, construction and operation of the Project will result in unavoidable temporary and permanent habitat loss and alteration. As further detailed in Section 5.3.4.4, Project construction-related impacts within NHESP Priority Habitat and Estimated Habitat occur within areas categorized as Natural Areas under the Cape Cod Commission Placetype framework. Overall, impacts to both Priority Habitat and Estimated Habitat are concentrated within the Natural Areas Placetype and are predominantly associated with temporary disturbance for construction-related activities. Permanent impacts are associated with both redevelopment and new development categories and are limited to the footprint of required Project utility infrastructure.

Forest Resources

Project construction will temporarily impact forest habitat through vegetation clearing, workspace preparation, trench excavation, and restoration activities. Approximately 24.4 acres of tree clearing will occur within temporary construction workspaces, including portions of the Pitch Pine–Scrub Oak Woodland and Black Oak–Scarlet Oak Woodland Significant Natural Communities identified within the Project area.

Permanent impacts to forest habitat are associated with maintained pipeline ROWs, access roads, and aboveground facilities that require ongoing vegetation management for safe operation and inspection. Approximately 13.0 acres of forest will be permanently converted to maintained herbaceous or scrub-shrub vegetation within permanent ROWs, while an additional 7.4 acres will be converted to aboveground facilities and access roads. Permanent forest conversion will reduce canopy cover, remove mature trees, and maintain portions of the Project area in an early successional condition.

Forest impacts occur primarily within areas classified as Natural Areas Placetypes, particularly within JBCC lands where the Project traverses extensive undeveloped forest habitat. Forest resource impacts by development type and placetype are summarized in Table 5-8.

Temporary forest impacts will be restored following construction in accordance with applicable federal, state, and local permit requirements. Disturbed areas will be monitored for revegetation success for a minimum of two growing seasons.

Significant Natural Communities

Temporary construction activities will affect portions of two regionally Significant Natural Communities: Pitch Pine–Scrub Oak Woodland and Black Oak–Scarlet Oak Woodland. These impacts are primarily associated with temporary workspace clearing and use during construction. Restoration of temporarily disturbed areas will promote reestablishment of native vegetation over time, although recovery of mature forest characteristics will occur over a longer period.

Priority Habitat and Estimated Habitat

The Project will result in temporary and permanent impacts within NHESP-designated Priority Habitat and Estimated Habitat. These areas support habitat for several state-listed species, including eastern box turtle (*Terrapene carolina carolina*), eastern hognose snake (*Heterodon platirhinos*), Agassiz's clam shrimp (*Eulimnadia agassizii*), American clam shrimp (*Limnadia lenticularis*), purple tiger beetle (*Cicindela purpurea*), and 11 state-listed butterfly and moth species.

Temporary impacts are primarily associated with construction workspaces, contractor yards, and access roads, while permanent impacts are associated with maintained ROWs, access roads, and aboveground facilities. Through ongoing coordination with NHESP and the JBCC Natural Resources Land Management Program, potential impacts to rare species and habitats have been evaluated and incorporated into Project planning. Anticipated impacts to Priority Habitat and Estimated Habitat are summarized in Table 5-9 and Table 5-10, respectively.

Areas disturbed during construction within NHESP-designated habitats will be restored following construction in accordance with permit requirements and measures established through the MESA CMP.

Herring River Watershed ACEC

Portions of the Project are located within the Herring River Watershed ACEC, which was designated for its significant wetlands, groundwater resources, wildlife habitat, flood storage capacity, and watershed functions. Construction activities within the ACEC are concentrated within an existing utility corridor, maintained access roads, and previously disturbed areas, including an inactive sand and gravel quarry.

Although temporary and permanent disturbance will occur within ACEC boundaries, the Project has been designed to avoid and minimize impacts to the hydrologic and ecological functions that the ACEC designation is intended to protect. The Project is not expected to result in long-term degradation of ACEC resources or functions. Disturbance within the ACEC, categorized by placetype, is summarized in Table 5-11.

Overall Habitat Impact Summary

Although the Project will result in unavoidable temporary and permanent impacts to wildlife and plant habitats, most impacts occur within existing disturbed corridors, managed landscapes, and previously altered areas. Permanent habitat conversion has been minimized through route selection, facility siting, and Project design refinements completed during MEPA, NHESP, and agency review. Temporary disturbance areas will be restored following construction, and long-term mitigation measures will be implemented through permit-required restoration plans, habitat management commitments, and the MESA CMP. This combination of avoidance, minimization, restoration, and compensatory mitigation is intended to reduce habitat impacts while maintaining safe and reliable operation of the Project.

Table 5-8. Summary of Forest Resource Impacts

Land	Development	Temporary or Permanent Impacts	Natural Areas Placetype	Non-Natural Areas Placetype
JBCC	Redevelopment	Permanent	0.0	0.0
JBCC	New Development	Permanent	12.0	0.0
JBCC	Redevelopment	Temporary	0.0	0.0
JBCC	New Development	Temporary	6.7	0.0
Non-JBCC	Redevelopment	Permanent	0.0	0.0

Land	Development	Temporary or Permanent Impacts	Natural Areas Placetype	Non-Natural Areas Placetype
Non-JBCC	New Development	Permanent	4.9	3.6
Non-JBCC	Redevelopment	Temporary	0.0	0.0
Non-JBCC	New Development	Temporary	13.2	4.4
Total			36.8	8.0

Note: Totals may not sum exactly due to rounding.

Table 5-9. Anticipated Impacts to Priority Habitat

Asset	Temporary Impacts (acres)	Permanent Impacts (acres)
M&R stations	0.0	2.9
Pipeline ROWs	0.0	24.8
Access roads	4.3	15.3
Contractor ware yards	17.0	0.0
ATWS	51.7	0.0
Total	73.0	43.0

Note: Totals may not sum exactly due to rounding.

Table 5-10. Anticipated Impacts to Estimated Habitat

Asset	Temporary Impacts (acres)	Permanent Impacts (acres)
M&R stations	0.0	2.9
Pipeline ROWs	0.0	18.2
Access roads	3.7	11.3
Contractor ware yards	9.8	0.0
ATWS	37.8	0.0
Total	51.3	32.5

Note: Totals may not sum exactly due to rounding.

Table 5-11. Anticipated Impacts to the Herring River Watershed ACEC

Asset	Natural Areas (acres)		Non-Natural Areas (acres)	
	Temporary Impacts	Permanent Impacts	Temporary Impacts	Permanent Impacts
Access roads	0.9	0.8	0.0	0.3
Pipeline	0.0	1.6	0.0	0.8
Workspace	5.4	0.0	0.8	0.0
Totals	6.3	2.4	0.8	1.1

Note: Totals may not sum exactly due to rounding.

5.3.4.3 *Avoidance, Minimization and Mitigation Summary*

Algonquin applied a hierarchy of avoidance, minimization, restoration, and compensatory mitigation measures throughout Project planning, design, permitting, construction planning, and operations. These measures were developed through environmental review, agency consultation, and ongoing coordination with NHESP and JBCC resource managers to avoid and minimize impacts to wildlife habitat, rare species habitat, Significant Natural Communities, and other sensitive ecological resources within the Project area. Key measures are summarized below.

Avoidance

Avoidance of wildlife and plant habitat impacts was a primary consideration during Project routing, facility siting, and design. The Project was designed to maximize the use of existing utility corridors, transportation corridors, access roads, and other previously disturbed areas, thereby minimizing encroachment into undisturbed natural habitats.

Through Project refinements completed during MEPA and NHESP review, Algonquin reduced impacts to forested habitat, rare species habitat, Significant Natural Communities, and other ecologically important resources. These refinements reduced projected tree clearing from the approximately 66.0 acres evaluated during DEIR review to approximately 44.8 acres. Most vegetation disturbance will occur within existing corridors that are already subject to routine management and maintenance activities.

Additional avoidance measures incorporated into the Project include strategic facility siting and the use of trenchless construction methods, such as HDD, where practicable to avoid direct impacts to aquatic habitats, wetlands, and other environmentally sensitive resources.

Minimization

Where impacts could not be fully avoided, Algonquin incorporated numerous measures to minimize direct and indirect effects on wildlife and plant habitat during construction and operation.

General habitat protection measures include:

- Reduced construction workspaces in environmentally sensitive areas where feasible;
- Compliance with seasonal vegetation clearing restrictions to avoid impacts to migratory birds and protected bat species;
- Implementation of erosion, sedimentation, and water-quality controls to protect terrestrial and aquatic habitats;
- Environmental inspection and compliance monitoring throughout construction;
- Clearly identified no-disturbance areas around sensitive resources;
- Temporary exclusion fencing and protective barriers where appropriate; and
- Environmental awareness training for contractors and construction personnel.

In addition, Algonquin is finalizing species-specific protection measures in consultation with NHESP that will be incorporated into the Project's MESA CMP. These measures are anticipated to include:

- Turtle Protection Plan;
- Rare Plant Protection and Avoidance Plan;
- Clam Shrimp Protection and Avoidance Plan;

- Species-specific construction monitoring and environmental inspection; and
- Adaptive management measures developed in consultation with NHESP.

These measures are intended to minimize potential impacts to state-listed species and habitats within Priority Habitat and Estimated Habitat.

Restoration

Temporary construction workspaces and other temporarily disturbed areas will be restored following construction in accordance with applicable federal, state, and local permit requirements.

Restoration activities will include grading, stabilization, revegetation, and long-term monitoring to promote successful reestablishment of native plant communities. Native seed mixes appropriate to Barnstable County habitats will be used throughout the Project area. Within NHESP-designated habitats and other sensitive ecological areas, specialized seed mixes approved by NHESP and JBCC resource managers will be utilized where required.

Restoration efforts will be supported through long-term vegetation management commitments, invasive species control measures, revegetation monitoring, and adaptive management practices intended to maintain habitat quality and promote native species establishment.

Compensatory Mitigation

Permanent impacts to wildlife and plant habitat will be addressed through compensatory mitigation measures developed in coordination with NHESP and documented in the Project's MESA CMP.

As part of this effort, Algonquin is working to permanently protect approximately 60 acres of Priority Habitat adjacent to the JBCC/Camp Edwards WMA. Approximately 53 acres of this conservation land will satisfy MESA mitigation requirements (see Figure 5.3-7, Sheet 4, in Attachment 1), while an additional 7 acres will be preserved to satisfy Article 97 requirements.

In addition to land protection, the Project will provide a financial contribution to The Nature Conservancy's Eastern Box Turtle Mitigation Fund to offset Project-related impacts to eastern box turtle habitat.

Collectively, these compensatory mitigation measures are intended to provide a long-term net conservation benefit for affected state-listed species and habitats consistent with MESA requirements. The final mitigation package and associated commitments will be documented in the approved CMP.

Summary

Collectively, the Project's avoidance, minimization, restoration, and compensatory mitigation measures substantially reduce ecological impacts and are intended to protect and enhance wildlife habitat, rare species habitat, and other sensitive natural resources. Final mitigation commitments will be documented through the MESA CMP and other applicable permit conditions and will guide construction, restoration, and long-term habitat stewardship activities associated with the Project.

5.3.4.4 Consistency with RPP Goals and Objectives

Algonquin evaluated Project impacts in accordance with the Cape Cod Commission Wildlife and Plant Habitat Technical Bulletin. The Project overlaps several Significant Habitat Areas (SHAs) identified in the Cape Cod Commission Regional Mapper (Cape Cod Commission 2025b, 2025c). SHAs represent a composite of ecological resources that support wildlife and plant habitat, including ACECs, BioMap Core

Habitat, BioMap Critical Natural Landscape, Important Bird Areas (IBAs), NHESP Priority Habitat, NHESP Estimated Habitat, and other protected habitat resources.

Table 5-12 summarizes Project overlap with SHA designations and categorizes impacts based on natural resource mapping, development classification, disturbance type, and permanence.

Table 5-12. Significant Habitat Areas Project Overlap (acres)

Area	Natural Areas (acres)				Non-Natural Areas (acres)			
	Redevelopment Overlap		New Development Overlap		Redevelopment Overlap		New Development Overlap	
	Permanent Impacts	Temporary Impacts	Permanent Impacts	Temporary Impacts	Permanent Impacts	Temporary Impacts	Permanent Impacts	Temporary Impacts
ACEC JBCC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ACEC Non-JBCC	2.4	5.3	<0.1	1.0	1.1	0.8	<0.1	<0.1
Audubon IBAs JBCC	19.7	59.0	11.5	6.7	0.0	0.0	0.0	0.0
Audubon IBAs Non-JBCC	0.0	0.0	0.0	0.0	0.004	0.0	0.0	0.0
BioMap Core Habitat JBCC	20.3	59.3	11.9	6.7	0.0	0.0	0.0	0.0
BioMap Core Habitat Non-JBCC	9.5	27.7	3.7	7.5	0.0	0.0	0.0	0.0
BioMap Critical Natural Landscape JBCC	9.9	28.1	6.6	3.6	0.0	0.0	0.0	0.0
BioMap Critical Natural Landscape Non-JBCC	4.8	14.0	1.0	3.0	0.0	0.0	0.0	0.0
District of Critical Planning Concern JBCC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
District of Critical Planning Concern Non-JBCC	10.4	40.6	1.1	6.2	3.9	10.5	3.6	3.7
NHESP EH JBCC	18.8	54.1	10.3	6.6	0.0	0.0	0.0	0.0
NHESP EH Non-JBCC	0.6	1.8	3.6	6.2	0.0	0.0	0.0	0.0
NHESP PH JBCC	20.3	59.3	11.9	6.7	0.0	0.0	0.0	0.0
NHESP PH Non-JBCC	8.0	25.0	3.6	6.5	0.0	0.0	0.0	0.0
<i>Individual Areas Totaled</i>	<i>124.7</i>	<i>374.2</i>	<i>65.3</i>	<i>60.7</i>	<i>5.0</i>	<i>11.3</i>	<i>3.6</i>	<i>3.7</i>
All SHA JBCC (Dissolved)	20.4	59.3	11.9	6.7	0.0	0.0	0.0	0.0
All SHA Non-JBCC (Dissolved)	11.6	42.7	4.7	12.6	3.9	10.5	3.6	3.7

Note: EH = Estimated Habitat; PH = Priority Habitat. Totals may not sum exactly due to rounding.

As shown in Table 5-12, the majority of SHA overlap occurs within JBCC lands and other Natural Areas placetypes. Most impacts within SHAs are temporary and associated with construction workspaces, access roads, and pipeline installation activities. Permanent impacts have been minimized through route refinement, facility siting, and collocation within existing utility and transportation corridors.

Protection of wildlife and plant habitat was a primary consideration during Project planning, environmental review, and agency consultation. Algonquin developed the Project using a hierarchy of avoidance, minimization, restoration, and compensatory mitigation measures intended to reduce habitat fragmentation, protect state-listed species, restore temporary disturbances, and provide long-term conservation benefits. Key commitments include:

- Collocating facilities within existing utility and transportation corridors to minimize habitat fragmentation;
- Reducing projected tree clearing from approximately 66.0 acres to approximately 44.8 acres;
- Using HDD and other design measures to avoid sensitive resource areas where practicable;
- Implementing species-specific protection measures through the MESA CMP;
- Restoring temporary construction workspaces with native vegetation;
- Implementing invasive species prevention and management measures; and
- Providing long-term compensatory mitigation, including permanent land conservation adjacent to JBCC and contributions to species-specific conservation programs.

These measures form the basis for the Project's consistency with the Wildlife and Plant Habitat goals and objectives of the RPP.

Objective WPH1 – Maintain existing plant and wildlife populations and biodiversity.

The Project will result in temporary and permanent impacts to wildlife habitat, including forested habitat, Significant Natural Communities, NHESP Priority Habitat, and NHESP Estimated Habitat. However, Project refinements completed during MEPA and NHESP review reduced projected tree clearing from approximately 66.0 acres to approximately 44.8 acres, substantially reducing habitat disturbance and fragmentation compared to earlier Project configurations.

The Project maximizes the use of existing utility corridors, transportation corridors, and previously disturbed areas, thereby concentrating impacts within areas that are already managed or fragmented. Temporary disturbances will be restored following construction, and permanent habitat conversion has been minimized through route selection, facility siting, and construction planning.

Algonquin is coordinating with NHESP regarding a CMP that includes species-specific protection measures for state-listed species, construction monitoring, habitat management commitments, and compensatory mitigation requirements. Additional long-term mitigation measures include permanent conservation of approximately 60 acres adjacent to JBCC and contributions to species-specific conservation programs.

The Project is consistent with Objective WPH1 because it minimizes habitat loss and fragmentation, protects rare species habitat, restores temporary disturbances, and provides long-term conservation benefits that support biodiversity and wildlife populations.

Objective WPH2 – Restore degraded habitats through use of native plant communities.

Although the Project is not principally intended to restore previously degraded habitats, it incorporates extensive restoration measures designed to return temporarily disturbed areas to stable, functioning habitat conditions following construction.

Temporary construction workspaces will be regraded, stabilized, and revegetated using native seed mixes appropriate to Barnstable County habitats. Within Priority Habitat and other environmentally sensitive areas, restoration will utilize specialized seed mixes approved by NHESP and JBCC natural resource managers. Restoration activities will also include removal of temporary construction materials, restoration of wetland and upland hydrology, and monitoring of revegetation success.

The Project also includes habitat enhancement and invasive species management commitments. Algonquin will implement an NHESP-approved IPMP to prevent the introduction and spread of invasive species during construction and operation, improve habitat quality, and support the establishment and persistence of native plant communities. Restoration work within JBCC will be coordinated with JBCC environmental staff to ensure compatibility with ongoing habitat management and ecological restoration objectives.

The Project is consistent with Objective WPH2 because it restores temporarily disturbed areas using native vegetation and implements long-term management measures that support recovery and persistence of native plant communities.

Objective WPH3 – Protect and preserve Rare Species habitat, Vernal Pools, 350-foot buffers to Vernal Pools.

No Certified Vernal Pools (CVPs) or potential vernal pools occur within the Project area. Two NHESP-mapped CVPs occur within the 350-foot buffer area defined by the Wildlife and Plant Habitat Technical Bulletin; however, the Project does not include permanent development within these buffer areas. Temporary construction-related disturbances within the buffer will be restored following construction.

Portions of the Project occur within NHESP-designated Priority Habitat and Estimated Habitat and are subject to review under MESA. Through the CMP process, Algonquin is developing species-specific protection measures for state-listed species and habitat resources. These measures include rare plant protection procedures, turtle protection measures, clam shrimp protection measures, biological monitoring, environmental inspection, and restoration requirements.

The Project incorporates additional protection measures including seasonal clearing restrictions, reduced workspaces in environmentally sensitive areas, construction monitoring, and restoration of temporary disturbances using native vegetation communities.

The Project is consistent with Objective WPH3 because it avoids permanent impacts to vernal pools and their buffers, minimizes impacts to rare species habitat, and incorporates comprehensive protection, restoration, and mitigation measures developed in coordination with NHESP.

Objective WPH4 – Manage Invasive Species.

Algonquin is preparing an Invasive Plant Management Plan as part of the CMP process to provide a framework for invasive species prevention, monitoring, treatment, and long-term management. During construction, Algonquin will implement a variety of invasive species prevention measures consistent with its E&SCP, including:

- minimizing the duration and extent of exposed soils;
- stabilizing disturbed areas as quickly as practicable following construction;
- retaining and replacing existing topsoil where feasible to preserve native seed banks and reduce opportunities for invasive species establishment;
- cleaning construction equipment when moving between infested and non-infested areas to reduce the transport of invasive plant material and seeds;
- implementing erosion and sediment controls that prevent the movement of invasive species propagules with sediment;
- using clean, weed-free mulch and other revegetation materials; and
- restoring disturbed areas with NHESP-approved native seed mixes and vegetation appropriate to Barnstable County and JBCC habitat management objectives.

Following construction, disturbed areas and maintained ROWs will be monitored to assess revegetation success and identify invasive species populations. Where invasive species are identified, management actions may include mechanical removal, targeted herbicide treatment, or other control measures consistent with the approved IPMP and applicable permit requirements. These measures will be implemented with particular attention to rare species habitat, wetlands, and conservation lands to ensure that invasive species do not displace native vegetation communities or degrade habitat quality.

In addition to preventing new infestations, the Project provides an opportunity to improve habitat quality in portions of the Project area through active invasive species management and restoration with native plant communities. Restoration of temporary construction workspaces using native vegetation will support recovery of ecological functions, enhance habitat resiliency, and reduce the likelihood of long-term invasive species establishment.

The Project aligns with the methods outlined in the Wildlife and Plant Habitat Resources Technical Bulletin because it incorporates invasive species prevention, monitoring, control, and restoration measures designed to minimize the introduction and spread of invasive species during construction and operation. The Project's approach emphasizes avoidance of invasive species establishment, restoration with native vegetation, and long-term management of invasive populations within disturbed areas and maintained ROWs. The Project is consistent with Objective WPH4.

Objective WPH5 – Promote best management practices to protect wildlife and plant habitat from the adverse impacts of development.

The Project incorporates best management practices throughout planning, construction, restoration, and long-term operation. During Project design, Algonquin prioritized collocation within existing utility and transportation corridors, reduced projected tree clearing through route refinements, and incorporated HDD where practicable to avoid sensitive habitat areas.

During construction, the Project will implement environmental inspection and compliance monitoring, reduced workspaces in environmentally sensitive areas, construction timing restrictions, erosion and sediment controls, species-specific protection measures, exclusion fencing, and other resource protection measures developed through agency consultation.

Long-term habitat management commitments include restoration of temporary construction areas, invasive species management, habitat enhancement opportunities within maintained ROWs, permanent conservation

of approximately 60 acres adjacent to JBCC, and implementation of all protection, management, and mitigation measures required through the CMP.

The Project is consistent with Objective WPH5 because it employs a comprehensive hierarchy of avoidance, minimization, restoration, and mitigation measures that protect wildlife habitat, rare species habitat, and native plant communities throughout the life of the Project.

5.3.5 OPEN SPACE

5.3.5.1 Existing Conditions

Open space and protected lands are a prominent feature of the Project area and contribute significantly to the ecological, recreational, and water resource values of the Upper Cape region. These lands include conservation areas, water supply protection lands, WMAs, recreational corridors, and military lands that collectively support habitat conservation, groundwater protection, passive recreation, and regional open space connectivity.

Much of the Project area traverses undeveloped forested lands characterized by pitch pine-oak woodland communities typical of Upper Cape Cod. These lands provide important wildlife habitat, groundwater recharge areas, and ecological connections between larger conservation areas.

The largest protected open space resource in the Project area is the JBCC, including the Camp Edwards WMA, which contains extensive undeveloped forestland used for military training, habitat conservation, groundwater protection, and ecological research. Additional open space resources include conservation lands owned by the Town of Bourne, lands managed by the Massachusetts Department of Fish and Game (MDFG), properties protected for drinking water supply purposes by the Buzzards Bay Water District, and conservation lands owned by regional and municipal conservation entities.

Recreational Resources

The Cape Cod Canal is one of the region's most significant open space and recreational resources. The USACE maintains service roads on both sides of the Canal that are utilized for walking, bicycling, fishing, sightseeing, and access to Canal recreation areas. These facilities provide an important public recreational resource and regional transportation corridor for non-motorized users.

Bourne Scenic Park, located adjacent to the Cape Cod Canal, is a campground and outdoor recreation facility operated by the Bourne Recreation Authority. The park provides camping, recreational access, and visitor services within the Canal corridor and serves as an important recreational resource for the Town of Bourne.

Article 97 Protected Lands

Several Article 97-protected properties occur within or adjacent to the Project area (Figure 5.3-7 in Attachment 1). These lands are protected for conservation, recreation, water supply, habitat protection, or open space purposes and include:

Sacrifice Rock Woods Conservation Area

Sacrifice Rock Woods is an approximately 83-acre conservation property owned by the Bourne Conservation Commission. The parcel contains a network of recreational trails and is dominated by pitch pine-oak woodland habitat. Existing electric transmission corridors traverse portions of the property and create areas of maintained open vegetation within an otherwise forested landscape.

Buzzards Bay Water District Lands

The Buzzards Bay Water District owns and manages protected open space lands surrounding public water supply facilities, including Well No. 5 and Pump Stations No. 3 and No. 4. These lands provide groundwater recharge and drinking water protection functions and are characterized primarily by pitch pine–oak woodland. Existing utility corridors and water supply infrastructure occur within portions of the property.

Cape Cod Land Bank Property

This undeveloped parcel is owned and managed for land conservation and habitat protection purposes. The property consists primarily of forested uplands and contributes to the regional open space network and wildlife habitat corridor system.

Nightingale Pond Conservation Area

The Nightingale Pond Conservation Area is a Town of Bourne–owned conservation property consisting of forested uplands associated with Nightingale Pond and adjacent natural resources. The property provides natural resource protection, habitat functions, and passive recreation opportunities.

Massachusetts Department of Fish and Game Lands

The MDFG owns several protected parcels within the Project area. These properties are predominantly undeveloped and consist of forested upland habitat intersected by existing utility corridors. The lands contribute to wildlife habitat conservation and regional open space connectivity.

Camp Edwards Wildlife Management Area

Camp Edwards forms part of the larger JBCC reservation and encompasses extensive undeveloped forestland that supports military training, habitat conservation, groundwater protection, and ecological research. The Project area within Camp Edwards consists primarily of pitch pine–oak woodland interspersed with existing utility corridors, access roads, and electrical infrastructure. Much of the surrounding property is designated Priority Habitat and Estimated Habitat by the NHESP.

These protected properties collectively support passive recreation, habitat conservation, groundwater protection, and regional open space connectivity. Existing utility corridors, access roads, and other infrastructure occur within portions of several of these properties.

5.3.5.2 Impact Summary

Open Space Impact Overview

The Project will result in temporary and permanent impacts to protected open space resources, Article 97 lands, and recreational facilities located along the Project area. Consistent with the Open Space Technical Bulletin (Cape Cod Commission 2025b), open space impacts include effects on lands that provide natural resource, conservation, recreational, cultural, and water resource functions.

Most Project impacts occur within existing utility corridors, transportation corridors, access roads, and previously disturbed areas that already traverse protected open space lands.

Article 97 and Protected Open Space Lands

Algonquin evaluated impacts to portions of the Sacrifice Rock Woods Conservation Area, Buzzards Bay Water District lands, Cape Cod Land Bank property, Nightingale Pond Conservation Area, MDFG lands, Camp Edwards WMA, and other protected open space resources crossed by the Project.

Approximately 38.2 acres of Article 97 land will be subject to permanent easements associated with the operation and maintenance of Project facilities, including pipeline ROWs, access roads, and aboveground facilities. Additional areas of protected open space will be temporarily disturbed during construction.

Temporary impacts include vegetation clearing, establishment of construction workspaces, access road improvements, and short-term construction activities. Permanent impacts are primarily associated with maintenance of the pipeline ROW and access roads necessary to ensure safe operation and inspection of Project facilities, and the Pave Paws Road M&R Station.

Recreational Resources

Construction activities may result in temporary restrictions on public access within localized portions of the Cape Cod Canal recreation corridor and other recreational resources located adjacent to construction activities. Temporary impacts may include short-term access limitations, localized construction activity adjacent to recreational facilities, and temporary use of portions of recreational properties for construction support.

The Project will utilize a limited portion of Bourne Scenic Park as temporary construction workspace associated with removal of the existing Bourne M&R Station. Following construction, temporary work areas will be restored and returned to their previous recreational use.

The Canal service roads and associated recreational facilities will remain available for public use except where temporary restrictions are necessary to maintain public safety during active construction activities.

Open Space Connectivity and Conservation Functions

Although the Project traverses a substantial amount of protected open space, most impacts occur within existing utility and transportation corridors that already influence the surrounding landscape. Consequently, the Project is not expected to create substantial new fragmentation of open space resources or interrupt regional habitat and open space connections.

Permanent impacts are limited relative to the total acreage of protected lands crossed by the Project and will largely occur within previously disturbed utility corridors and maintained ROWs.

Table 5-13 summarizes open space impacts by Placetype and development classification.

Table 5-13. Placetype Impacts in Open Space

Land	Development	Temporary or Permanent	Natural Areas (acres)	Non-Natural Areas (acres)
JBCC	Redevelopment	Permanent	20.4	0.0
JBCC	New Development	Permanent	11.9	0.0
JBCC	Redevelopment	Temporary	59.0	0.0
JBCC	New Development	Temporary	6.7	0.0
Non-JBCC	Redevelopment	Permanent	6.7	0.0

Land	Development	Temporary or Permanent	Natural Areas (acres)	Non-Natural Areas (acres)
Non-JBCC	New Development	Permanent	0.9	0.0
Non-JBCC	Redevelopment	Temporary	26.2	0.0
Non-JBCC	New Development	Temporary	3.5	0.0
Total			135.3	0.0

Note: Totals may not sum exactly due to rounding.

Overall Impact Summary

Open space impacts associated with the Project consist primarily of temporary construction-related disturbance, permanent easements within existing utility corridors located on protected lands, and the Pave Paws Road M&R Station. While unavoidable impacts to Article 97 lands and other open space resources will occur, the Project has been designed to minimize fragmentation, maintain recreational access wherever practicable, and preserve the long-term conservation and open space functions of affected properties.

5.3.5.3 Avoidance, Minimization and Mitigation Summary

Avoidance

Avoidance of open space impacts was a primary consideration throughout Project planning and design. Route selection prioritized the use of existing utility corridors, transportation corridors, access roads, and previously disturbed areas to reduce impacts to protected open space lands and avoid the creation of new utility corridors through undeveloped conservation land.

Additional avoidance measures include:

- Collocation of Project facilities within existing utility and transportation corridors wherever practicable;
- Utilization of existing access routes and disturbed areas where feasible;
- Avoidance of Zone I Water Supply Protection Areas; and
- Project refinements that reduced proposed tree clearing, temporary workspace requirements, and overall land disturbance.

Minimization

Where impacts could not be avoided, Algonquin incorporated measures to minimize effects on open space resources, recreational facilities, and conservation lands.

Key minimization measures include:

- Reduction and consolidation of temporary construction workspaces, contractor yards, and access requirements;
- Reduction of temporary tree clearing through route refinements and workspace modifications;
- Limitation of permanent ROW widths in sensitive locations to the minimum width necessary for safe operation;
- Reduction of permanent corridor widths to approximately 50 feet in portions of certain Article 97 properties; and

- Use of temporary easements and revocable permits where feasible to reduce long-term land-use impacts.

Restoration

Following construction, all temporary work areas located within open space, conservation, and recreational lands will be restored to preconstruction conditions to the extent practicable.

Restoration activities will include:

- Removal of temporary construction materials and facilities;
- Regrading and stabilization of disturbed areas;
- Revegetation with appropriate vegetation communities;
- Restoration of temporarily disturbed recreational areas; and
- Monitoring and follow-up restoration measures as required by permits and agency commitments.

Compensatory Mitigation

The Project includes mitigation measures to address unavoidable impacts to open space and Article 97 lands. Algonquin is coordinating with EEA, affected municipalities, and Article 97 landowners to comply with the Open Space Act (M.G.L. c. 3, s.5A) and the EEA Article 97 Land Disposition Policy, including requirements related to permanent easements, replacement land, or other compensatory measures, as determined through the regulatory review process.

In addition, Algonquin is pursuing permanent protection of approximately 60 acres of undeveloped forest land adjacent to JBCC and the Camp Edwards WMA. Permanent protection of this property will expand protected open space, enhance habitat connectivity, support groundwater and natural resource protection, and provide long-term conservation benefits extending beyond the Project area.

Overall Mitigation Summary

Collectively, the Project's avoidance, minimization, restoration, and compensatory mitigation measures are intended to maintain the long-term recreational, conservation, ecological, and open space functions of affected properties while allowing construction and operation of critical energy infrastructure within existing transportation and utility corridors.

5.3.5.4 Consistency with RPP Goals and Objectives

This section discusses how Algonquin has taken action to conserve, preserve, or enhance a network of open space that contributes to the region's natural and community resources and systems.

Objective OS1 – Protect and preserve natural, cultural, agricultural, and recreational resources.

The Project was designed to avoid and minimize impacts to natural, cultural, agricultural, and recreational resources through route refinement, collocation within existing infrastructure corridors, and implementation of project-specific avoidance and mitigation measures. As discussed in the Natural Systems section, Algonquin incorporated extensive avoidance, minimization, restoration, and compensatory mitigation measures to reduce impacts to wildlife habitat, wetlands, groundwater resources, and other ecological resources. Cultural resources were evaluated throughout the Project area and the Project is not anticipated

to adversely affect known archaeological or historic resources (see Section 5.5.1). The Project will not impact agricultural lands or agricultural resources with open space value.

One of the most significant recreational and open space resources in the Project area is the Cape Cod Canal corridor. The USACE maintains service roads on both sides of the Canal that support walking, bicycling, fishing, sightseeing, and access to Canal recreation areas. These facilities function as a regionally important recreational corridor and provide one of the most heavily used public open space resources on Cape Cod.

Protection of the Canal recreation corridor was a key consideration during Project design. The Project will utilize HDD beneath the Canal, avoiding direct impacts to the Canal itself and substantially reducing impacts to Canal recreation facilities and public access areas. A limited area of temporary construction workspace is proposed near the Sagamore Bridge and overlaps a portion of the Canal service road. Construction in this area may result in temporary access restrictions or temporary modifications to public use during active construction. However, these impacts will be localized, temporary in nature, and coordinated with the USACE to maintain public safety and recreational access to the extent practicable. Upon completion of construction, the affected area will be restored and the Canal service road will be returned to preconstruction conditions.

As a result, the Project avoids direct impacts to the majority of the Canal recreation corridor and maintains the long-term recreational and open space functions of one of the region's most significant recreational resources. Unavoidable open space impacts are therefore concentrated primarily within existing utility corridors located on Article 97-protected lands and other conservation properties. These impacts occur largely within previously disturbed or actively managed utility corridors and are subject to restoration, mitigation, and regulatory review requirements. In addition, Algonquin is coordinating with EEA, municipalities, and affected landowners regarding Article 97 compliance, replacement land requirements, and long-term conservation measures. The Project also includes permanent protection of approximately 60 acres of land adjacent to JBCC and Camp Edwards WMA, as well as additional replacement land near the proposed Bourne M&R Station.

The avoidance, minimization, restoration, and mitigation measures described in Section 5.3.5.3 align with the methods outlined in the Open Space Technical Bulletin, including corridor collocation, reduced impacts to protected lands, avoidance of major recreational resources through HDD, restoration of temporary disturbances, and compliance with the Open Space Act and EEA Article 97 Land Disposition Policy.

The Project is consistent with Objective OS1 because it protects and preserves natural, cultural, agricultural, and recreational resources through route selection, HDD avoidance of the Cape Cod Canal recreation corridor, restoration of temporary disturbances, and long-term conservation and open space mitigation commitments. In addition to avoidance of the Canal through HDD, temporary impacts to recreational resources, including the Canal service road near the Sagamore Bridge and a portion of Bourne Scenic Park, will be restored following construction and returned to their previous recreational use.

Objective OS2 – Maintain or increase the connectivity of Open Space.

One of the objectives of the Project design was to minimize fragmentation of undeveloped lands. To achieve this objective, the Project was routed within or adjacent to existing utility corridors, transportation corridors, access roads, and previously disturbed areas to the maximum extent practicable. By collocating facilities within existing linear infrastructure corridors, the Project avoids creating substantial new clearings through contiguous protected open space and minimizes fragmentation of forested landscapes.

The majority of permanent impacts occur within existing utility corridors that already influence the surrounding landscape. As a result, the Project does not introduce new barriers that would substantially interrupt regional open space connections, wildlife movement patterns, or ecological linkages between protected lands. Large blocks of contiguous forest and upland habitat will remain connected following construction, particularly within and adjacent to JBCC and Camp Edwards WMA, where extensive undeveloped lands will continue to support habitat connectivity and open space functions.

Permanent impacts associated with the Pave Paws Road M&R Station and a short segment of new G-32 pipeline ROW southeast of the Bourne Switchyard will result in localized conversion of forested habitat to maintained utility facilities and ROW. However, these impacts occur adjacent to existing transmission corridors and previously disturbed areas and therefore do not create meaningful new fragmentation of the surrounding open space network. Similarly, operation and maintenance of the Project will occur primarily within existing managed corridors, limiting long-term effects on the connectivity of protected lands.

The Project also maintains recreational connectivity within the Cape Cod Canal corridor. The Canal service roads provide an important regional recreational and non-motorized transportation corridor connecting recreational destinations along the Canal. The use of HDD beneath the Canal avoids direct impacts to most of this recreational corridor and preserves its long-term connectivity and public use. Although temporary construction workspace is proposed near the Sagamore Bridge and overlaps a portion of the Canal service road, impacts will be localized and temporary, and the affected areas will be restored following construction.

The avoidance, minimization, restoration, and mitigation measures described in Section 5.3.5.3 further support maintenance of open space connectivity through corridor collocation, restoration of temporary disturbances, reduced workspace widths, and protection of adjacent conservation lands. Collectively, these measures ensure that open space resources continue to function as an interconnected network supporting habitat conservation, recreation, groundwater protection, and ecological resilience.

The Project is consistent with Objective OS2 because it maintains regional open space connectivity, minimizes fragmentation through collocation within existing utility and transportation corridors, preserves recreational connections along the Cape Cod Canal corridor, and restores temporary disturbances following construction.

Objective OS3 – Provide protected Open Space appropriate to context.

The Open Space Technical Bulletin evaluates permanent impacts to open space resources through an Area of Development Impact (ADI) analysis. The ADI methodology assesses permanent Project impacts within each applicable Placetype and establishes mitigation requirements based on the ecological value and context of the affected open space resource.

The Project overlaps protected open space resources within both Natural Areas and non-Natural Areas Placetypes. Most permanent impacts occur within existing utility corridors, access roads, and previously disturbed areas located within protected open space lands, thereby avoiding the creation of new corridors through intact conservation lands. Although these impacts affect open space resources, they are concentrated within existing infrastructure corridors and do not substantially alter the overall open space character, ecological value, or conservation function of the surrounding landscape.

Table 5-14 summarizes the Project's permanent ADI and associated open space mitigation requirements under the Open Space Technical Bulletin.

Table 5-14. Area of Development Impact for Project (permanent)

Placetype	JBCC Developed	JBCC Undeveloped	Non-JBCC Developed	Non-JBCC Undeveloped	ADI Ratio	Mitigation Target
Natural Areas	20.3	11.9	12.0	4.9	3:1	50.7
Non-Natural Areas	0.0	0.0	8.1	3.6	1:1	11.8
Total Acreage	20.3	11.9	20.1	8.5		62.5

Note: ADI ratios are assigned in accordance with the Cape Cod Commission Open Space Technical Bulletin and are based on Placetype designation. Excluding JBCC lands, Natural Areas are subject to a 3:1 mitigation ratio and non-Natural Areas Placetypes affected are subject to a 1:1 mitigation ratio.

As shown in Table 5-14, excluding JBCC lands, the Project includes approximately 16.9 acres of ADI within Natural Areas Placetypes and 11.8 acres of ADI within non-Natural Areas Placetypes. Application of the applicable mitigation ratios results in an Open Space mitigation target of approximately 50.7 acres within Natural Areas and 11.8 acres within non-Natural Areas Placetypes, for a combined mitigation objective of approximately 62.5 acres.

To satisfy this mitigation objective, Algonquin is pursuing permanent protection of approximately 60 acres of undeveloped forest land adjacent to JBCC and the Camp Edwards Wildlife Management Area. Protection of this property will expand the region's protected open space network, strengthen habitat connectivity, preserve groundwater recharge areas, and support long-term conservation objectives associated with Camp Edwards and surrounding conservation lands. Because the parcel is adjacent to existing protected land, its preservation will contribute to maintaining a large contiguous block of protected open space within the Upper Cape region.

Following enactment of Article 97 legislation by the General Court, Algonquin will also transfer approximately 2.8 acres of replacement conservation land to the Town of Bourne. Algonquin has acquired this parcel and intends to subdivide a portion for conveyance to the Town as replacement conservation land. The parcel consists of wooded, undeveloped land located in a predominantly rural setting and will provide long-term open space, habitat protection, groundwater recharge, and conservation benefits consistent with the purposes of the affected Article 97 lands.

Together, the approximately 60-acre conservation parcel adjacent to JBCC and the 2.8-acre Article 97 replacement parcel provide approximately 62.8 acres of permanently protected open space, which closely corresponds to the 62.5-acre mitigation target identified through the ADI analysis.

Collectively, transfer of 2.8 acres of replacement land to the Town of Bourne, and protection of approximately 60 acres adjacent to JBCC will provide more than 62 acres of permanently protected open space. These measures offset unavoidable Project impacts while advancing regional conservation, habitat connectivity, groundwater protection, recreation, and open space preservation objectives.

The Project is consistent with Objective OS3 because it incorporates a comprehensive open space mitigation strategy that includes the proposed transfer of 2.8 acres of Article 97 replacement land to the Town of Bourne and protection of approximately 60 acres adjacent to JBCC. Together, these permanently protected lands offset unavoidable impacts to open space resources, enhance regional habitat connectivity, and are consistent with the mitigation framework established in the Open Space Technical Bulletin.

5.4 Built Systems

The goals within the RPP associated with built systems are identified below, along with a brief description of the Project's consistency with those goals.

5.4.1 COMMUNITY DESIGN

5.4.1.1 *Existing Conditions*

The Project area encompasses a range of community settings within the Town of Bourne and JBCC, including transportation corridors, utility ROWs, residential neighborhoods, commercial areas, military facilities, conservation lands, and public open space. Community character within the Project area is shaped by the presence of longstanding infrastructure, including highways, utility corridors, electrical transmission facilities, and existing natural gas pipeline systems, many of which have been present in the landscape for decades.

Much of the Project area follows existing utility and transportation corridors, including areas characterized by maintained ROWs, roadway infrastructure, and associated utility facilities. These developed corridors are interspersed with forested lands, conservation areas, water supply protection lands, and recreational resources, creating a landscape that reflects both developed and natural character.

Residential neighborhoods near the Project area are generally concentrated along local roads and developed portions of Bourne, while commercial development occurs primarily along major transportation routes and village centers. Community character in these developed areas is influenced by a mix of residential uses, commercial establishments, transportation infrastructure, and public facilities.

Within JBCC, community character differs substantially and is defined primarily by military operations, extensive forested landscapes, utility infrastructure, and restricted-access lands. The military reservation contains large tracts of undeveloped land that contribute to the region's open space network and provide a visual buffer from surrounding development.

The Project area also includes visually significant resources associated with the Cape Cod Canal, conservation lands, and public recreation areas. Existing vegetation, forest cover, and landscape buffers contribute to the visual character of these areas by screening infrastructure and maintaining the natural appearance of the surrounding landscape.

Community character within the Project area reflects a combination of transportation infrastructure, military facilities, utility corridors, residential neighborhoods, commercial development, and conservation lands. Existing natural gas infrastructure has been present within many portions of the Project area for decades and is generally collocated with existing infrastructure corridors.

5.4.1.2 *Impact Summary*

Construction activities will result in temporary visual impacts associated with construction equipment, materials staging, soil disturbance, vegetation clearing, and temporary workspaces. These effects will be most noticeable within active construction areas and along portions of the pipeline corridor where vegetation clearing is required. Because these activities are temporary and construction will progress through the corridor, visual impacts are expected to be short-term in nature.

Following construction, visual changes will primarily be limited to areas of maintained utility ROW and aboveground facilities. Most pipeline segments will remain underground and will not be visible once construction is complete. Potential long-term visual impacts are most relevant at the proposed Sagamore M&R Station on Canal Street. This facility will introduce aboveground utility infrastructure into an area that may be visible from nearby roadways, residences, or adjacent land uses.

5.4.1.3 *Avoidance, Minimization, and Mitigation Summary*

To protect and enhance the unique character of the region's built environment based on the local context. The Project has been designed to minimize effects on community character by utilizing existing utility and transportation corridors wherever practicable and by collocating new facilities with existing infrastructure. Approximately 90 percent of the proposed G-31 and G-32 pipelines will be located within or immediately adjacent to existing utility easements, thereby reducing the introduction of new visual elements into previously undeveloped areas.

5.4.1.4 *Consistency with RPP Goals and Objectives*

Objective CD1 – Promote context-sensitive building and site design.

New buildings are limited to the four new M&R stations. Three of the stations are located in areas that are anticipated to be largely visually shielded from nearby residences and public areas. The Sagamore M&R Station is the most visible station, and therefore Algonquin has developed a landscape screening plan for the station (see Attachment 11).

Through limited visual impacts and implementation of screening, the Project aligns with the methods outlined in the Community Design Technical Bulletin. Therefore, the Project is consistent with Objective CD1.

Objective CD2 – Minimize the amount of newly disturbed land and impervious surfaces.

The Project has been designed to minimize land alteration and limit the conversion of pervious surfaces to impervious materials to the maximum extent practicable. Permanent Project features, including pipelines, M&R stations, and access roads, have been sited primarily within existing utility corridors, roadways, or previously disturbed areas to avoid creating new developed footprints. Temporary construction workspaces, including ATWS, will be fully restored following construction and will not result in permanent land conversion. Where permanent access is required, Algonquin will use existing roads where practicable or design access roads with gravel or other pervious surfaces to maintain infiltration and minimize stormwater runoff. The Project proposes 7.2 acres of new impervious surface.

For areas where permanent impacts remain, Algonquin will implement mitigation measures to offset those impacts. These measures include minimizing the size of permanent easements and operational areas, stabilizing disturbed soils, restoring vegetation using native or appropriate seed mixes, and implementing long-term erosion and sedimentation controls consistent with Algonquin's E&SCP and applicable federal and state requirements. Stormwater management features will be incorporated where necessary to maintain existing drainage patterns and protect downgradient resources. Through these design and mitigation measures, permanent land alteration and impervious surface impacts are minimized and appropriately mitigated, consistent with MEPA and Association to Preserve Cape Cod guidance.

Through design review and siting, as well as adherence to Massachusetts stormwater standards, the Project aligns with the methods outlined in the Community Design Technical Bulletin. Therefore, the Project is consistent with Objective CD2.

Objective CD3 – Avoid adverse visual impacts from infrastructure to scenic resources.

Visual impacts from scenic resources were reviewed and it was determined that Project facilities will not be visible, or visually striking, from any scenic resources. Further, with implementation of the Project's avoidance, minimization, restoration, and visual screening measures, long-term impacts to community character are expected to be limited. The Project is expected to remain consistent with the existing character of the surrounding community while minimizing effects on scenic, residential, recreational, and commercial resources.

Because the Project is largely collocated within existing utility and transportation corridors, restores disturbed areas following construction, and incorporates visual screening for the Sagamore M&R Station, the Project aligns with the methods outlined in the Community Design Technical Bulletin. Therefore, the Project is consistent with Objective CD3.

5.4.2 COASTAL RESILIENCY

5.4.2.1 Existing Conditions

The Project area includes coastal, floodplain, wetland, and shoreline resources that contribute to the resilience of the Cape Cod Canal corridor and surrounding environment. Together, these features provide important flood storage, storm damage prevention, erosion control, groundwater recharge, and water quality functions. Portions of the Project area occur within FEMA-mapped 100-year flood hazard areas (Zones AE and A) and within coastal resource areas associated with the Cape Cod Canal.

Climate change is expected to increase stress on these resources through rising sea levels, more frequent coastal storm events, greater precipitation intensity, and changing groundwater conditions. Increased storm intensity may result in more frequent flooding, higher stormwater runoff volumes, increased erosion potential, and greater pressure on infrastructure located within coastal and flood-prone environments. Floodplain and wetland resources within the Project area provide additional climate resilience benefits by storing floodwaters, supporting groundwater recharge, maintaining hydrologic connectivity, and reducing downstream flooding.

Consistent with these projected climate conditions, the Project evaluated future precipitation scenarios as part of the stormwater design for permanent aboveground facilities. Hydrologic analyses incorporated climate-adjusted rainfall conditions, including a projected 2070 storm event, to evaluate future performance of stormwater management systems and support the long-term resilience of Project infrastructure. Proposed stormwater systems incorporate infiltration practices, controlled overflow structures, groundwater recharge, and erosion protection measures designed to manage runoff and maintain functionality under future climate conditions.

5.4.2.2 Impact Summary

The Project area includes coastal and flood-prone resources associated with the Cape Cod Canal, adjacent shoreline areas, coastal wetland resource areas, and mapped floodplain areas. These resources are vulnerable to climate-related hazards, including sea level rise, coastal storm surge, increased precipitation, localized flooding, erosion, and changing groundwater conditions. Climate projections indicate that more frequent and intense storm events may increase flooding risks, particularly within existing floodplain areas.

Temporary construction activities within coastal resources are primarily associated with the temporary workspace at the Sagamore Bridge needed to remove the existing G-24 and G-11 pipelines and existing

cathodic protection as well as the removal of the G-11 pipelines adjacent to Nightingale Pond. These activities may require vegetation removal, equipment access, grading, excavation, and installation of erosion and sediment controls. These activities have the potential to temporarily affect drainage patterns or increase erosion and sedimentation if not properly managed. However, impacts will be short-term, confined to the construction period and defined workspace, and controlled through implementation of approved erosion and sediment control measures, restoration of disturbed areas, and adherence to Project-specific construction BMPs.

The Project will not result in permanent impacts to flood storage, flood conveyance, or coastal resiliency resources. The G-31 pipeline will be installed beneath the Cape Cod Canal via HDD, avoiding direct impacts to the Canal, associated coastal flood zones, and shoreline resources. Similarly, removal of existing pipelines within the 100-year floodplain associated with Nightingale Pond will not alter flood storage capacity, change drainage patterns, or increase the frequency or extent of flooding. Although temporary workspace is required within portions of the Coastal Bank and buffer near the Sagamore Bridge, no permanent impacts to the Coastal Bank resource area are proposed, and the Coastal Bank's form, stability, and storm damage prevention functions will be maintained. The Project is not expected to increase vulnerability to coastal storm damage, flooding, erosion, or other climate-related hazards, and will maintain the long-term resiliency and function of coastal and flood-prone resources within the Project area.

5.4.2.3 Avoidance, Minimization, and Mitigation Summary

The Project has been designed and will be constructed to avoid, minimize, and mitigate potential impacts to coastal resiliency resources, including coastal flood zones, floodplain areas, coastal wetland resources, and shoreline features associated with the Cape Cod Canal. Through route selection, engineering design, and construction planning, Algonquin prioritized techniques that avoid permanent impacts to coastal and flood-prone areas while maintaining existing flood storage, drainage patterns, and shoreline stability.

The most significant coastal resiliency avoidance measure is the use of HDD beneath the Cape Cod Canal, which eliminates direct impacts to the Canal, associated coastal flood zones, shoreline resources, and coastal wetland areas. The Project also avoids permanent fill within floodplains and flood-prone areas and does not alter existing coastal landforms, flood conveyance pathways, or flood storage capacity. In addition, removal of existing pipeline facilities within the floodplain associated with Nightingale Pond will not result in changes to flood elevations, flood storage, or the extent and frequency of flooding.

Construction activities within flood-prone areas will be limited to the minimum area necessary to safely complete the work. Temporary disturbances associated with vegetation clearing, equipment access, grading, dewatering, and workspace establishment will be controlled through implementation of erosion and sedimentation controls, stormwater management BMPs, and construction sequencing measures designed to maintain existing drainage patterns and prevent sediment transport to adjacent wetlands and coastal resources. Work areas will be stabilized during construction and restored promptly following completion of activities.

Following construction, all temporarily disturbed areas will be restored to preconstruction grades and contours to maintain existing drainage characteristics and floodplain functions. Disturbed vegetation will be reestablished in accordance with approved restoration plans, and temporary erosion and sediment controls will remain in place until vegetation is successfully established. Because the Project does not introduce permanent fill, reduce flood storage capacity, alter flood conveyance, or permanently impact Coastal Bank or other coastal landforms, no compensatory mitigation is required. As a result, the Project will not increase vulnerability to flooding, erosion, storm damage, or other climate-related hazards and will maintain the long-term resiliency and function of coastal resources within the Project area.

5.4.2.4 Consistency with RPP Goals and Objectives

Objective CR1 – Minimize development and risk within areas vulnerable to flooding.

The Project has been designed to minimize development within areas vulnerable to flooding and avoid increases in flood risk through careful siting, engineering design, and construction methods. Although limited portions of the Project are located within FEMA-mapped 100-year flood hazard areas (Zones AE and A), the Project will not introduce substantial new aboveground development within these flood-prone areas, reduce flood storage capacity, impede flood flows, or alter existing drainage patterns.

The G-31 pipeline will be installed beneath the Cape Cod Canal using HDD, avoiding direct impacts to coastal flood zones, coastal banks, and associated floodplain resources. Similarly, removal of existing pipeline facilities within the floodplain associated with Nightingale Pond will not alter flood elevations, flood storage, flood conveyance, or the frequency and extent of flooding.

All new and relocated M&R stations are located outside mapped floodplain areas and have been designed to withstand extreme weather conditions, including flooding events. Temporary construction within flood-prone areas will be managed through implementation of erosion and sediment controls, stormwater management measures, and restoration of disturbed areas in accordance with the Project's E&SCP. Disturbed vegetation within temporary workspaces will be revegetated following construction to restore infiltration capacity, stabilize soils, and maintain natural floodplain functions.

As a result, the Project will not increase exposure to flood hazards or exacerbate flooding conditions and will improve the long-term resiliency and reliability of regional energy infrastructure. Therefore, the Project is consistent with Objective CR1 because it minimizes development and risk within areas vulnerable to flooding while maintaining existing floodplain functions and supporting climate resilience.

Objective CR2 – Plan for erosion.

The Project has been designed to avoid and minimize erosion risks associated with Coastal Banks and other coastal resiliency resources through careful siting, use of trenchless construction methods, temporary construction controls, and restoration of disturbed areas. Coastal Banks within the Project area are significant for storm damage prevention because they buffer adjacent upland areas from coastal storm flows and flooding.

The Project intersects Coastal Bank in two locations along the Cape Cod Canal: 1) where the G-31 pipeline will be installed beneath the Canal via HDD, and 2) near the Sagamore Bridge where temporary access is required to remove an existing cathodic protection anode bed at the direction of the USACE. The G-31 pipeline HDD crossing avoids direct disturbance to the Canal shoreline and Coastal Bank, thereby minimizing the potential for erosion, instability, and impacts to storm damage prevention functions.

Consistent with the DRI objective to limit development within 150 feet of a Coastal Bank, the Project proposes no new permanent aboveground development on the coastal bank and within the 150-foot Coastal Bank buffer. See Table 5-15 for the impacts within the 150-foot buffer to Coastal Bank. No work will alter the Coastal Bank's form, stability, or storm damage prevention function, and no permanent impacts to Coastal Bank are proposed. Figure 5.3-4, Sheets 1, 3, and 4 in Attachment 1 show the Coastal Bank within the Project area.

Construction work within the Coastal Bank buffer has been minimized through workspace limitations, erosion and sediment controls, construction BMPs, and prompt restoration and revegetation of disturbed

areas. Environmental inspectors will monitor construction activities to ensure implementation of BMPs and protection of adjacent coastal resources. Temporary work areas will be stabilized and revegetated to maintain shoreline stability, infiltration capacity, and resistance to erosion. Following construction, all temporary work areas will be restored to preconstruction conditions to maintain shoreline stability, infiltration capacity, and the Coastal Bank's ability to buffer adjacent uplands from storm events and erosion.

Because the Project avoids permanent aboveground development within the Coastal Bank buffer, minimizes temporary disturbance, and restores affected areas following construction, it will not increase erosion hazards or diminish the storm damage prevention functions of Coastal Bank. Therefore, the Project is consistent with Objective CR2.

Table 5-15. Total Acreage of Impacts to 150-foot Buffer to Coastal Bank

Location	Status	Impact	Natural Areas (acres)	Non-Natural Areas (acres)
Non-JBCC	Redevelopment	Permanent	<0.1	<0.1
Non-JBCC	Redevelopment	Temporary	2.9	0.7
Non-JBCC	New development	Permanent	<0.1	0.0
Non-JBCC	New development	Temporary	0.6	<0.1
Total			3.6	0.7

Objective CR3 – Restore coastal resource areas to promote their natural beneficial functions.

The Project will restore all temporarily disturbed areas within the Coastal Bank and its 150-foot Buffer Zone following construction. Temporary disturbance associated with removal of the existing cathodic protection anode bed near the Sagamore Bridge will be restored to preconstruction contours and revegetated, preserving the Coastal Bank's storm damage prevention function and ability to buffer adjacent upland areas from coastal flooding. Although limited temporary work will occur within the Coastal Bank buffer, no permanent development is proposed and no long-term impacts to coastal resource area functions are anticipated.

The Project avoids impacts to Coastal Bank through the use of HDD beneath the Cape Cod Canal and does not alter coastal landforms, shoreline processes, or sediment transport functions.

Because the Project restores all temporary disturbances, preserves the function of coastal resource areas, and incorporates design features into the M&R stations that enhance long-term resilience to climate-related hazards, it is consistent with Objective CR3.

5.4.3 CAPITAL FACILITIES AND INFRASTRUCTURE

The Project is fundamentally an infrastructure resiliency and reliability project designed to maintain uninterrupted natural gas service to Cape Cod while accommodating implementation of the CCBP.

5.4.3.1 Existing Conditions

The Project area contains substantial existing utility infrastructure including interstate natural gas transmission pipelines, electric transmission and distribution systems, public water systems,

telecommunications facilities, transportation corridors, and municipal infrastructure. Existing Algonquin facilities include the G-8C, G-8L, G-11, and G-24 pipelines, and the Bourne and Sagamore M&R stations.

5.4.3.2 Impact Summary

The Project will result in both temporary construction-period impacts and limited permanent infrastructure changes associated with relocating existing natural gas facilities out of conflict with the CCBP. Construction impacts will include temporary land disturbance, vegetation clearing, equipment activity, traffic management, noise, air emissions, stormwater runoff potential, and work within or near wetlands, flood-prone areas, open space, and utility corridors. These impacts will be localized and managed through construction sequencing, erosion and sediment controls, stormwater controls, dewatering practices, traffic management, construction noise controls, waste management procedures, and restoration of temporarily disturbed areas.

Permanent impacts will be limited primarily to buried replacement pipelines, relocated and new M&R stations, access roads, maintained ROWs, and stormwater management features. Aboveground facilities will introduce discrete permanent infrastructure, but these facilities were sited to support system reliability, avoid conflicts with future bridge construction, reduce proximity to residences where practicable, use previously disturbed or infrastructure-adjacent locations, and minimize environmental impacts.

5.4.3.3 Avoidance, Minimization, and Mitigation Summary

The Project minimizes impacts to capital facilities and infrastructure by relocating existing natural gas facilities to avoid conflicts with the CCBP while maintaining reliable uninterrupted gas service. Use of HDD beneath the Cape Cod Canal avoids in-water and open-cut construction, protecting canal operations, navigation, and existing infrastructure. The preferred alternative also maximizes collocation with existing pipeline, electric transmission, and transportation corridors, reducing the need for new utility corridors and limiting disturbance to developed areas.

Additional minimization measures include limiting the size of aboveground facilities, workspaces, and access roads; avoiding bridge construction work zones; and restoring temporarily disturbed areas following construction. Construction will be conducted within defined limits of work and supported by erosion and sediment controls, dewatering management, spill prevention measures, traffic controls, and environmental compliance monitoring.

Although the Project will result in temporary construction impacts and limited permanent land use changes, those impacts have been minimized through use of existing utility corridors, trenchless construction methods, and restoration commitments. Overall, the Project enhances the reliability and resiliency of critical regional energy infrastructure while limiting new disturbance and supporting the long-term reliable natural gas service.

5.4.3.4 Consistency with RPP Goals and Objectives

Objective CAP1 – Ensure capital facilities and infrastructure promote efficiency, sustainability, and resiliency.

A principal objective throughout Project development was to maximize use of existing infrastructure corridors and avoid creation of new utility corridors wherever practicable. To achieve this objective, Algonquin undertook extensive coordination with Eversource to locate substantial portions of the Project within or adjacent to existing electric transmission line ROWs. Use of these existing utility corridors significantly reduces impacts to undeveloped lands, minimizes fragmentation of natural resources, and

avoids the need to establish new linear infrastructure corridors through protected open space, forested habitat, and conservation lands.

The collocation strategy required substantial engineering and operational coordination due to the presence of existing high-voltage electric transmission infrastructure, transmission support structures, maintenance access requirements, utility separation standards, electromagnetic compatibility considerations, safety clearances, construction access constraints, and long-term operational requirements of both utility systems. Project design was refined through ongoing coordination with Eversource to ensure that natural gas facilities could be safely installed, operated, maintained, and accessed without adversely affecting electric transmission system reliability or future maintenance requirements.

As a result of this coordination, the Project is able to utilize existing utility corridors for approximately 90 percent of the G-31 and G-32 pipeline alignments, substantially reducing the extent of new disturbance that would otherwise be required to construct replacement energy infrastructure. This approach also minimizes impacts to residential neighborhoods, transportation infrastructure, open space resources, wildlife habitat, and conservation lands compared to development of a new independent corridor.

Permanent Project features, including pipelines, M&R stations, and access roads, have been sited primarily within existing utility corridors, roadways, or previously disturbed areas to avoid creating new developed footprints.

The entire G-31 pipeline has been designed to be located within or immediately adjacent to Eversource's overhead transmission line easement to minimize impacts (2.17 miles; 100 percent collocation). The G-32 pipeline originates at the proposed Pave Paws Road M&R Station and proceeds west approximately 0.30 mile within and adjacent to the Eversource easement until turning south and proceeding approximately 2.15 miles within and immediately adjacent to the Eversource overhead transmission line easement. From there, the G-32 pipeline pivots west, departing from the Eversource easement until terminating at the proposed Bourne Rotary M&R Station. A total of approximately 2.45 miles of the G-32 pipeline (approximately 80 percent) is located within or immediately adjacent to the Eversource overhead transmission line easement.

Algonquin's existing G-24 and G-11 pipelines at the Sagamore Bridge crossing cannot remain operational within Algonquin's existing pipeline ROW due to interference with the CCBP. The removal of these pipelines will occur within Algonquin's existing easement and partially on lands of the USACE, with the construction workspace and ATWS adjacent to the existing pipeline easements. Algonquin has proposed to relocate the G-24 and G-11 pipelines as close to the Algonquin existing easement as practicable while accommodating the CCBP.

Construction activities will result in temporary interactions with existing infrastructure systems, including electric transmission facilities, water supply infrastructure, transportation facilities, and other aboveground and underground utilities. Potential impacts are primarily temporary and consist of utility crossings, construction access, temporary disruptions associated with construction activities, and short-term modifications required to safely work around existing infrastructure.

The greatest concentration of utility coordination occurs within existing Eversource transmission corridors, where construction activities must be sequenced and managed to maintain continuous operation of the electric transmission network while allowing installation of the relocated natural gas facilities. Similar coordination has been undertaken with water districts, transportation agencies, JBCC, the USACE, and other utility owners to avoid service interruptions and maintain infrastructure functionality throughout construction.

Infrastructure impact avoidance and minimization were key considerations throughout route selection and facility design. Measures incorporated into the Project include:

- Extensive collocation of facilities within existing Eversource transmission corridors and other utility ROWs.
- Use of existing access roads and previously disturbed areas wherever practicable.
- Coordination with utility owners to identify and avoid conflicts with existing infrastructure.
- Development of utility crossing plans and construction sequencing requirements.
- Use of trenchless construction methods, including HDD beneath the Cape Cod Canal and other constrained locations.
- Design refinements that reduced overall land alteration and utility conflicts compared to earlier Project configurations.

Temporary disturbances associated with utility crossings, access roads, staging areas, and construction workspaces will be restored following construction. Areas not required for long-term operation will be stabilized, revegetated, and restored to preconstruction conditions to the maximum extent practicable. Coordination with Eversource and other utility owners will continue throughout construction and restoration to ensure protection of utility infrastructure and maintenance of existing operational requirements.

The Project is consistent with CAP1 because it will provide a resilient natural gas delivery system capable of supporting Cape Cod's energy needs while maintaining compatibility with the CCBP.

Objective CAP2 – Enhance the coordinated provision of services and facilities that respond to the needs of the region.

The Project does not create new utility service or expand existing service capacity. Instead, it relocates existing natural gas infrastructure to maintain reliable service and avoid future conflicts with planned bridge replacement projects. While the Project supports the continued provision of critical regional energy infrastructure, it does not represent a new or expanded service as contemplated under this objective.

5.4.4 TRANSPORTATION

5.4.4.1 Existing Conditions

Major transportation infrastructure includes the Bourne Bridge, Sagamore Bridge, U.S. Route 6, Massachusetts Route 3, Route 25, Route 28, local roadways, military access routes, and the Cape Cod Canal navigation corridor. Transportation infrastructure associated with the CCBP is a defining feature of the regional setting and drives the need for utility relocations throughout the Project area.

5.4.4.2 Impact Summary

The Project will not result in permanent adverse impacts to transportation facilities, roadway operations, parking resources, bicycle accommodations, pedestrian access, or transit services. The Project is a utility relocation project designed to support the CCBP and does not create new traffic demand, increase parking requirements, generate new vehicle trips, or alter long-term travel patterns. Following construction, transportation facilities will continue to operate under existing conditions and no reductions in roadway capacity or access are anticipated.

Temporary transportation impacts may occur during construction and will be limited to active work areas. Potential construction-related impacts include short-term lane or shoulder closures, temporary traffic control measures, construction vehicle movements, equipment and material deliveries, and localized access

restrictions near work zones. Transportation impacts may occur during pipeline installation, HDD operations, aboveground facility construction, access road improvements, and associated support activities. These impacts will be temporary in nature and managed through implementation of the Project Traffic Management Plan (see Attachment 6), coordination with applicable agencies, and deployment of appropriate traffic control measures to maintain public safety and transportation system functionality during construction.

Project design incorporates several measures to avoid or minimize disruptions to transportation facilities. Many crossings of transportation infrastructure have been specifically designed to avoid surface disturbance and maintain existing operations. For example, the G-31 pipeline will be installed beneath the Cape Cod Canal using HDD, avoiding impacts to roadway networks, canal-related transportation facilities, and navigation infrastructure. Similarly, HDD will be used to install the relocated G-11/G-24 pipelines beneath Route 3/Route 6 approaching the Sagamore Bridge, avoiding disruptions to roadways and a park and ride lot. These trenchless construction methods eliminate the need for surface excavation at key transportation crossings and substantially reduce potential construction-related transportation impacts.

The Project has been coordinated with MassDOT, the CCBP, the USACE, and the Town of Bourne to ensure compatibility with planned transportation improvements and minimize potential conflicts with future bridge replacement activities. Through ongoing coordination, facility siting and construction methods were selected to maintain transportation access and support implementation of the CCBP.

For consistency with the RPP Transportation Technical Bulletin, Table 5-16 summarizes transportation-related impacts by placetype. The majority of impacts occur within existing transportation and utility corridors and reflect temporary or permanent utility-related work associated with the Project rather than the creation of new transportation facilities or transportation demand.

Table 5-16. Transportation-Related Impacts by Placetype

Land	Development	Temporary or Permanent	Natural Areas (acres)	Non-Natural Areas (acres)
JBCC	Redevelopment	Permanent	10.7	0.0
JBCC	New development	Permanent	0.2	0.0
JBCC	Redevelopment	Temporary	0.7	0.0
JBCC	New development	Temporary	0.3	0.0
<i>JBCC Subtotal</i>			<i>11.9</i>	<i>0.0</i>
Non-JBCC	Redevelopment	Permanent	5.5	3.0
Non-JBCC	New development	Permanent	0.4	0.6
Non-JBCC	Redevelopment	Temporary	3.5	0.6
Non-JBCC	New development	Temporary	2.7	0.3
<i>Non-JBCC Subtotal</i>			<i>12.1</i>	<i>4.5</i>
Total			24.0	4.5

Note: Totals may not sum exactly due to rounding.

5.4.4.3 Avoidance, Minimization, and Mitigation Summary

The Project avoids long-term transportation impacts by relocating existing bridge-mounted natural gas facilities to a buried pipeline system located outside future bridge construction areas. The Project also minimizes transportation impacts through the use of HDD beneath the Cape Cod Canal, major

transportation facilities, and other sensitive locations, thereby avoiding roadway closures and surface disturbances where practicable.

Transportation impacts during construction will be minimized through implementation of the Traffic Management Plan (see Attachment 6), construction sequencing, designated haul routes, and ongoing coordination with MassDOT, the CCBP, the Town of Bourne, USACE, emergency responders, railroad operators, and other affected stakeholders. Construction activities will maintain emergency access and local access to the extent practicable and will minimize the duration and extent of lane or shoulder closures.

Mitigation measures include temporary traffic controls, signage, flaggers or police details where required, coordination with affected property owners and agencies, and restoration of disturbed pavement, shoulders, and access routes following construction. Because the Project does not permanently alter transportation facilities or generate new traffic demand, no long-term transportation impacts are anticipated.

The Project has been coordinated with MassDOT, the CCBP, and the Town of Bourne throughout project development to reduce transportation impacts and avoid conflicts with other planned transportation improvements, including bridge replacement activities.

5.4.4.4 Consistency with RPP Goals and Objectives

Objective TR1 – Improve safety and eliminate hazards for all users of Cape Cod's transportation system

The Project has been designed to maintain safe transportation operations during both construction and long-term operation. The Project does not introduce new transportation facilities, increase traffic volumes, or alter roadway configurations that could create new safety hazards for motorists, pedestrians, bicyclists, or transit users. Because the Project is primarily a utility relocation project, transportation-related impacts are limited to temporary construction activities and are not expected to affect long-term transportation safety. Project planning and design have been coordinated with MassDOT, the USACE, the Town of Bourne, and to ensure compatibility with planned transportation improvements and maintain safe transportation operations throughout Project implementation.

Temporary construction activities may require short-term lane or shoulder closures, traffic control measures, construction vehicle movements, and localized access restrictions near active work areas. These activities will be managed in accordance with the Project Traffic Management Plan and applicable agency requirements to maintain safe travel conditions and minimize disruptions to the transportation network. Construction work zones will be clearly delineated, and appropriate traffic control measures will be implemented to protect roadway users and construction personnel.

The Project also incorporates construction methods specifically intended to avoid transportation hazards and disruptions. HDD will be used beneath the Cape Cod Canal and the MassDOT Park-and-Ride facility, eliminating the need for roadway excavation and avoiding impacts to roadway operations, parking facilities, and associated transportation infrastructure. By maintaining existing transportation operations and implementing appropriate traffic management measures during construction, the Project is consistent with Objective TR1.

Objective TR2 – Provide and promote healthy transportation options and appropriate connections for all users

The Project maintains existing transportation connections and does not permanently affect existing pedestrian, bicycle, transit, or vehicular transportation facilities and will maintain connectivity among

transportation networks serving the Project area. Existing transportation connections will remain available during Project operation, and any temporary disruptions during construction will be managed through traffic control measures and maintenance of safe access routes where practicable.

Several Project elements have been specifically designed to avoid impacts to transportation facilities and user access. HDD installation beneath the Cape Cod Canal and the Sagamore Bridge approach area avoids surface disruption of transportation infrastructure and allows existing transportation facilities and services to continue operating without long-term interruption. The Project's utility relocation activities support implementation of the CCBP, an important regional transportation improvement initiative intended to enhance long-term mobility and connectivity across the Cape Cod Canal corridor. Through preservation of existing transportation facilities and coordination with planned transportation improvements, the Project is consistent with Objective TR2

Objective TR3 – Implement and promote vehicle trip reduction strategies

The Project will not generate new permanent vehicle trips, increase parking demand, induce new development, or create new long-term transportation demand. As a utility relocation project, the Project does not include residential, commercial, retail, office, or institutional uses that would generate recurring employee, customer, or visitor trips. Consequently, the Project will not contribute to increased traffic volumes or demand for transportation infrastructure following construction.

Construction activities will generate temporary vehicle trips associated with construction personnel, equipment, and material deliveries; however, these trips are temporary, limited to the construction period, and managed through construction planning and traffic management measures. Because the Project does not create ongoing transportation demand and facilitates implementation of a major regional transportation improvement project, it is consistent with Objective TR3.

Objective TR4 – Provide and promote an efficient and reliable transportation system by reducing congestion

The Project will not result in long-term increases in traffic volumes, roadway congestion, or travel delays. Because the Project does not create new trip-generating land uses or increase transportation demand during operations, it will not affect the operating capacity or efficiency of the regional transportation network following construction. Existing roadway, transit, bicycle, and pedestrian facilities will continue to operate under existing conditions once construction is complete.

Temporary traffic impacts may occur during construction due to lane or shoulder closures, traffic control measures, and construction vehicle movements. These impacts will be temporary and managed through implementation of Traffic Management Plans, coordination with transportation agencies, and construction sequencing designed to minimize disruptions to roadway operations. In addition, the use of HDD at key transportation crossings avoids roadway excavation and substantially reduces the potential for traffic disruption and congestion relative to conventional open-cut construction methods.

The Project also supports regional transportation efficiency by facilitating implementation of the CCBP. Relocation of existing utility infrastructure is necessary to avoid conflicts with future bridge replacement activities. Accordingly, the Project is consistent with Objective TR4.

5.4.5 ENERGY

5.4.5.1 Existing Conditions

Existing energy infrastructure within the Project area includes interstate natural gas transmission facilities owned and operated by Algonquin and associated National Grid delivery facilities serving Cape Cod. These facilities currently provide natural gas service to residential, commercial, institutional, and industrial customers throughout Cape Cod. Electrical transmission and distribution in the Project area is provided by Eversource Energy.

5.4.5.2 Impact Summary

The Project will maintain regional energy reliability by continuing to provide reliable and uninterrupted service to National Grid's Cape Cod distribution system. Importantly, the Project does not expand capacity.

Although the Project does not include renewable energy production, its construction directly addresses the needs of the CCBP. The Project will improve long-term operational reliability and system resilience for Cape Cod's energy infrastructure through 2029 and beyond.

5.4.5.3 Avoidance, Minimization, and Mitigation Summary

To minimize regional disruption, the Project is strictly designed as a replacement and reconfiguration of existing infrastructure rather than a system expansion. Because the existing pipelines cannot be installed on the new bridge structures, the Project reestablishes delivery functionality through alternative, location-specific configurations and replacement delivery points. These updates are scoped to maintain existing transportation capacity.

Mitigation efforts are further integrated through a highly coordinated construction schedule. The Project schedule ensures continuous, uninterrupted gas service to National Grid's customers throughout Cape Cod while existing pipelines are decommissioned. This relocation preserves operational reliability and long-term resilience of the region's energy delivery system.

5.4.5.4 Consistency with RPP Goals and Objectives

Objective EN1 – Support renewable energy development that is context-sensitive.

The Project does not propose renewable energy generation or associated infrastructure and therefore does not directly advance renewable energy development. However, the Project supports regional energy reliability by relocating existing natural gas facilities necessary to maintain uninterrupted service to Cape Cod. The Project does not increase system capacity or expand service, but rather preserves existing energy infrastructure while accommodating the CCBP.

Objective EN2 – Increase resiliency of energy generation and delivery.

The Project is consistent with Objective EN2 because it enhances the reliability and resiliency of Cape Cod's existing energy delivery system. Natural gas service to Cape Cod currently relies on facilities attached to the Bourne and Sagamore Bridges. Because these bridges will be replaced as part of the CCBP,

relocation of the existing infrastructure is necessary to maintain uninterrupted service to homes, businesses, institutions, and public facilities throughout the region.

The Project replaces existing natural gas transmission infrastructure with a more resilient configuration that avoids future conflicts with bridge replacement and long-term bridge operations. The Project does not increase natural gas transportation capacity, expand service territory, or induce additional demand. Rather, it preserves existing service by replacing infrastructure that will be displaced by the bridge replacement program.

Construction has been planned to maintain continuous natural gas service. In addition, the Project includes reconfiguration of pipeline and delivery facilities, including new delivery points where necessary to replace existing infrastructure and maintain system operability. These changes are solely intended to preserve existing service and improve system reliability; they do not represent a system expansion.

Overall, the Project strengthens the long-term resiliency of Cape Cod's energy delivery network by maintaining critical energy infrastructure and ensuring continued reliable natural gas service to the region.

Objective EN3 – Promote energy efficiency and conservation measures by minimizing energy consumption through planning and design.

This objective does not apply to the Project as there are no buildings proposed with the scope of work.

5.4.6 WASTE MANAGEMENT

The goal of this section is to promote a sustainable solid waste management system for the region that prioritizes reuse and diversion and protects public health, safety, and the environment.

5.4.6.1 Existing Conditions

Existing waste management infrastructure in the Project area consists primarily of regional municipal solid waste, construction and demolition debris, recycling, transfer, and disposal facilities that serve Bourne, Barnstable County, and the broader southeastern Massachusetts/Cape Cod region. The Project area itself is not characterized by major solid waste disposal infrastructure, but construction activities will rely on existing permitted off-site facilities and licensed haulers for the management of construction debris, excess materials, recyclable materials, and any regulated waste streams generated during construction.

5.4.6.2 Impact Summary

Construction of the Project will generate temporary construction and demolition waste, including removed pipeline materials, M&R station components, vegetation debris, asphalt, brick, concrete rubble, drilling materials, packaging materials, and general construction waste. Existing pipeline segments and M&R facilities scheduled for removal will be dismantled and managed in accordance with applicable federal, state, and local regulations.

Waste generated during construction will be segregated, recycled, reused, or disposed of at approved facilities, as appropriate. The Project will not require expansion of local waste management infrastructure and will not result in substantial long-term waste generation following construction. Restoration of temporary work areas will further minimize long-term waste-related impacts.

5.4.6.3 Avoidance, Minimization, and Mitigation Summary

Waste management activities will be implemented in accordance with the Project Waste Management Plan (see Attachment 8) and applicable Massachusetts solid waste regulations. The Project will minimize waste generation through material reuse, recycling, and beneficial reuse whenever practicable.

Construction contractors will be required to:

- Segregate recyclable and non-recyclable waste streams.
- Recycle or reuse suitable construction and demolition materials to the maximum extent practicable.
- Transport wastes in accordance with applicable regulations to approved recycling, treatment, or disposal facilities.
- Maintain documentation of waste generation, recycling, reuse, and disposal activities.
- Manage waste materials to prevent releases to the environment and protect public health and safety.

Materials that cannot be reused or recycled will be disposed of at appropriately permitted facilities in accordance with state and federal requirements. Waste handling, storage, transportation, and disposal activities will comply with Massachusetts waste ban regulations and applicable requirements of 310 CMR 19.000 and 310 CMR 30.000.

Demolition and Material Management

Following commissioning of the replacement facilities, existing M&R stations and associated infrastructure will be decommissioned and removed. Demolition activities will be sequenced to ensure facilities are safely isolated prior to removal. The process will generally include: 1) confirmation that the station has been taken out of service and depressurized; 2) removal of aboveground piping, buildings, regulators, electrical equipment, fencing, and other appurtenances; 3) removal of belowground infrastructure, including piping, conduits, concrete foundations, grounding systems, and associated facilities; 4) backfilling and regrading of excavated areas as necessary; and 5) restoration of the site to existing grade in accordance with Project restoration requirements.

Construction and demolition waste generated during facility removal may include metals, concrete, asphalt, brick, uncontaminated soil and rock, wood, electrical equipment, piping, vegetation debris, drilling materials, and general construction debris. Algonquin will prioritize reuse, recycling, beneficial reuse, sale, or donation of materials whenever practicable before disposal is considered.

To ensure compliance with applicable waste management requirements, contractors will be required to implement the following measures:

- Properly store waste materials on-site in accordance with federal, state, and local regulations and Algonquin policies.
- Identify and utilize approved recycling, treatment, and disposal facilities.
- Segregate waste streams from the point of generation through handling, storage, and transport.
- Characterize and profile waste materials, as necessary, to ensure acceptance at appropriate permitted facilities.
- Transport waste materials to approved recycling, treatment, or disposal facilities.
- Maintain records documenting waste generation, recycling, reuse, and disposal activities.
- Utilize clean imported fill, where necessary, for site restoration and grading.

- Ensure waste storage areas and containers are properly maintained and cleaned.

Algonquin will review and approve all receiving facilities to confirm compliance with applicable federal and state requirements, including Massachusetts solid and hazardous waste regulations (310 CMR 19.000 and 310 CMR 30.000). Non-hazardous waste that cannot be recycled or reused will be disposed of at approved Subtitle D landfills, while hazardous waste will be managed at appropriately licensed treatment, storage, and disposal facilities. Additional information is provided in the Waste Management Plan (see Attachment 8) and summarized in Table 5-17.

Asphalt, Brick, and Concrete (ABC) Rubble

ABC rubble generated during demolition activities will be segregated from other waste streams and managed in accordance with applicable MassDEP regulations. Materials will be evaluated for recycling and beneficial reuse opportunities to maximize diversion from disposal facilities. Where on-site processing is proposed, required notifications will be provided to MassDEP and the local board of health, and processing activities will be conducted using appropriate BMPs to control dust, runoff, and other potential environmental impacts.

ABC rubble suitable for recycling will be transported to approved recycling facilities. Any contaminated, painted, coated, or otherwise non-conforming materials will be managed in accordance with applicable regulatory requirements. Documentation of recycling, reuse, transport, and disposal activities will be maintained as part of the Project record.

Asbestos-Containing Material

Prior to demolition or pipeline removal activities, Algonquin will retain a certified asbestos inspector to conduct surveys for ACM, as required. If ACM is identified, removal and disposal will be performed by licensed asbestos abatement contractors in accordance with Massachusetts asbestos regulations, including applicable MassDEP notification requirements.

Any ACM encountered during construction will be properly characterized, removed, transported, and disposed of at approved facilities to protect workers, the public, and the environment. Required notifications, survey reports, disposal documentation, and regulatory approvals will be maintained as part of the Project record.

Table 5-17. Construction and Demolition Material Plan

Material Type	Estimated Quantity (if available)	Reuse/Recycling Method	Disposal Facility Type
Metal	TBD	Recycle	Scrap metal recycler
Concrete/ABC Rubble	TBD	Recycle/Beneficial Reuse	Approved recycling facility
Wood	TBD	Reuse/Recycle where practicable	Recycling or disposal facility
ACM (if encountered)	Unknown	Not applicable	Licensed ACM disposal facility

5.4.6.4 Consistency with RPP Goals and Objectives

Objective WM1 – To Reduce waste and waste disposal by promoting waste diversion, reuse, beneficial reuse, deconstruction and other Zero Waste initiatives.

The Project is consistent with Objective WM1 because it incorporates waste reduction, reuse, recycling, and beneficial reuse measures into construction and demolition activities. In accordance with the Project Waste Management Plan (see Attachment 8) and Section 5.4.6.3, construction and demolition materials will be evaluated for reuse or recycling before disposal. Materials such as metal, asphalt, concrete, brick, uncontaminated soil, and other recyclable materials will be segregated and directed to approved recycling or beneficial reuse facilities where practicable.

The Project will implement a comprehensive construction and demolition waste management program that includes waste segregation, documentation of recycling and disposal activities, use of approved facilities, and compliance with Massachusetts waste ban regulations. Existing facilities scheduled for removal will be deconstructed in a manner that maximizes material recovery and minimizes disposal volumes.

Because the Project involves relocation of existing infrastructure rather than construction of new development intended to generate ongoing waste streams, long-term solid waste generation will be negligible. Through implementation of the Waste Management Plan and material recovery practices, the Project supports the intent of Objective WM1 by minimizing waste disposal and promoting sustainable management of construction and demolition materials.

Objective WM2 – Support an integrated solid waste management system.

The Project is not a waste management, recycling, transfer, treatment, or disposal facility. However, all construction and demolition waste generated by the Project will be managed through existing licensed waste management, recycling, and disposal facilities in accordance with applicable regulatory requirements.

5.4.7 CLIMATE CHANGE

5.4.7.1 Existing Conditions

Existing climate conditions affecting the Project area include projected increases in precipitation intensity, flooding frequency, heat events, and sea level rise. These regional climate considerations influence resource management, infrastructure planning, and resiliency evaluations throughout Cape Cod and are reflected in regional planning initiatives and environmental review programs.

5.4.7.2 Impact Summary

The Project will result in temporary climate-related impacts associated with construction activities, including greenhouse gas emissions from construction equipment, vehicles, HDD operations, and material transport, as well as carbon impacts associated with vegetation clearing and soil disturbance. Algonquin evaluated these impacts through a quantitative carbon analysis of forest clearing and disturbed soils and identified measures to reduce and mitigate carbon losses.

The Project does not increase natural gas transportation capacity, expand service territory, or induce additional energy demand. Operational emissions will be limited to routine operation and maintenance of

replacement facilities. As a result, the Project is best characterized as a utility relocation and resiliency project rather than a capacity-expansion project.

The Project also evaluated potential climate-related risks, including increased precipitation, flooding, sea level rise, coastal storms, and localized heat effects. Permanent aboveground facilities have been designed with stormwater management measures capable of accommodating future precipitation conditions, while facility siting and design have considered long-term climate resilience.

A primary long-term benefit of the Project is the relocation of existing bridge-mounted natural gas infrastructure to an underground configuration, including installation beneath the Cape Cod Canal using HDD. This approach improves the resilience of Cape Cod's energy delivery system to future flooding, sea level rise, and coastal storm events.

5.4.7.3 Avoidance, Minimization, and Mitigation Summary

The Project incorporates measures to avoid, minimize, and mitigate both carbon impacts and climate-related risks. Avoidance is achieved through the relocation of bridge-mounted infrastructure to buried facilities and the use of HDD beneath the Cape Cod Canal, eliminating the need for open-cut construction and reducing exposure to coastal hazards.

Construction-related emissions will be minimized through equipment maintenance, anti-idling practices, efficient construction sequencing, and management of vehicle and material transport. The Project also minimizes climate impacts by collocating facilities within existing utility and transportation corridors where practicable, reducing the need for new disturbance and limiting tree clearing.

Consistent with recommendations identified during environmental review, Algonquin has sought to minimize forest clearing through route selection and design refinements and will restore temporary work areas following construction. Disturbed areas will be revegetated in accordance with the E&SCP, and forest mitigation measures, including permanent protection of privately owned forestland, will help offset the loss of forest resources and support long-term carbon sequestration.

Permanent stormwater management infrastructure has been designed to accommodate future precipitation conditions while maintaining groundwater recharge and protecting water quality within the Cape Cod Sole Source Aquifer. Collectively, these measures reduce temporary construction-related climate impacts while improving the long-term resiliency of critical regional energy infrastructure.

5.4.7.4 Consistency with RPP Goals and Objectives

Objective CC1 – Promote low- or no-carbon transportation alternatives.

The Project will not generate long-term commuter traffic, parking demand, or transportation-related emissions. Transportation impacts will be limited primarily to temporary construction-related vehicle and equipment activity. To reduce emissions during construction, contractors will implement anti-idling measures consistent with 310 CMR 7.11(1), maintain equipment in proper operating condition, and minimize unnecessary vehicle trips and equipment operation where practicable.

Objective CC2 – Promote low or no-carbon technologies for building energy use, including appliances, lighting, and heating, ventilation, and cooling (HVAC) systems.

Not Applicable. The Project does not include habitable buildings or structures requiring building heating, cooling, lighting, or other energy-consuming building systems.

Objective CC3 – Promote carbon sequestration and other emissions removal practices as appropriate to context.

The Project is consistent with Objective CC3 through measures that avoid unnecessary forest clearing, restore disturbed areas, and support long-term carbon sequestration. Project siting and design prioritized use of existing utility corridors and previously disturbed areas, reducing the amount of new clearing required for construction.

Approximately 44.8 acres of forestland will be temporarily or permanently disturbed during construction. Following construction, approximately temporary impacted areas acres will be restored and allowed to revert to forest conditions, permanent easements will remain as maintained scrub-shrub utility corridor and approximately 7.2 acres will be converted to paved or gravel surfaces. See Figure 5.4-1 in Attachment 1. Disturbed work areas will be regraded, stabilized, and revegetated in accordance with the E&SCP (see Attachment 3).

In addition to restoration, Algonquin proposes to offset permanent forest loss through the acquisition and permanent protection of privately owned forestland. As documented in the Quantitative Carbon Analysis (Attachment 12), younger regenerating forests generally exhibit higher carbon sequestration rates than mature forests. Over a 50-year analysis period, the Project is expected to result in a net positive change in long-term carbon sequestration due to forest regeneration within restored areas.

The Project also supports embodied carbon reduction through reuse and recycling of construction materials and, where practicable, reuse of equipment and facilities from the existing Bourne and Sagamore M&R Stations. Additional information is provided in Section 5.4.6 and Attachment 8 (Waste Management Plan).

Objective CC4 – Promote low- or no-carbon energy generation as appropriate to context.

Not Applicable. The Project does not include renewable or low-carbon energy generation facilities. The Project's purpose is to relocate existing natural gas infrastructure to accommodate the CCBP while maintaining safe and reliable energy service to Cape Cod.

Objective CC5 – Promote strategies to address climate change induced impacts such as wildfire and extreme temperatures and changes in precipitation.

The Project incorporates measures to increase resilience to climate-related hazards, including changing precipitation patterns, flooding, coastal storms, and wildfire risk. Permanent access roads associated with the Project will be maintained to support operation and maintenance activities and may also function as localized firebreaks within utility corridors.

Stormwater management systems at aboveground facilities have been designed to accommodate both current and projected future precipitation conditions. Drainage analyses (see Attachment 5) evaluated stormwater controls using National Oceanic and Atmospheric Administration (NOAA) Atlas 14 precipitation data (NOAA 2025) and incorporated consideration of projected future rainfall intensities. Stormwater infrastructure is being refined to accommodate projected 2070 storm conditions (EEA 2023) while maintaining compliance with the Massachusetts Stormwater Management Standards, including requirements for groundwater recharge, water quality treatment, and peak flow attenuation.

By relocating existing bridge-mounted infrastructure, incorporating climate-resilient stormwater design, minimizing unnecessary disturbance, and maintaining reliable energy service during future climate conditions, the Project advances the intent of Objective CC5 and improves the long-term resilience of critical regional infrastructure.

5.5 Community Systems

5.5.1 CULTURAL HERITAGE

5.5.1.1 *Existing Conditions*

Existing cultural resources in the Project area include aboveground historical structures and belowground archaeological resources (Table 5-18). The historic architectural survey included an overview and identification survey to identify properties listed in or eligible for listing in the National Register of Historic Places (NRHP). The Public Archaeology Laboratory, Inc., reviewed existing cultural resource information, including NRHP listings, MHC inventory records, prior survey reports, local histories, and historic maps, and conducted fieldwork under Massachusetts State Archaeologist's Permit #4307.

Table 5-18. Existing Cultural Resources

Resource Area	Existing Conditions Findings	Status / Context
Historic architectural resources	Twenty-seven historic architectural properties were recorded within the Project study area, including 23 individual properties and four historic districts.	Twenty-one properties were recommended not eligible for NRHP listing; one JBCC property required no further evaluation because no contributing aboveground resources were identified in the study area.
Preliminarily eligible historic properties	Grazing Fields Farm, Bourne Scenic Park, North Sagamore Area, Cape Cod Canal, and Bourne Fire Tower.	Preliminarily evaluated as eligible for the NRHP.
Archaeological resources	The Public Archaeology Laboratory, Inc., surveyed high- and moderate-sensitivity areas and excavated 3,107 test pits during the intensive archaeological survey.	Sixteen pre-Contact archaeological sites were identified; no site was considered eligible for the NRHP.

5.5.1.2 *Impact Summary*

The Project occurs within a region that contains significant historic, cultural, and archaeological resources associated with the Cape Cod Canal, the Bourne and Sagamore Bridges, and the broader cultural landscape of Bourne. Algonquin completed consultation under Section 106 of the National Historic Preservation Act with MHC, the Massachusetts Board of Underwater Archaeological Resources, the Barnstable Historical Commission, and affiliated Tribal Historic Preservation Offices, including the Mashpee Wampanoag Tribe, the Wampanoag Tribe of Gay Head (Aquinnah), and the Narragansett Indian Tribe. To evaluate impacts to cultural and historical resources under Section 106, Algonquin conducted surveys within the area of

potential affect (APE). The APE was supplied to both FERC and the SHPO and includes the Project area in addition to areas beyond the Project footprint to evaluate both direct impacts and indirect impacts.

For the proposed aboveground facilities, the APE established for the historic architectural properties survey extends 0.25 mile from the Project construction limits. It extends beyond the 0.25-mile area in some locations to include the boundaries of known or potential historic districts and the full extent of properties for which only a portion are within the 0.25-mile area. For the proposed pipeline, the APE defined for the historic architectural properties survey is a linear area encompassing a minimum of 150 feet from either side of the pipeline centerline (300 feet total) and the property limits of associated existing M&R stations. It extends beyond a 300-foot corridor in some locations to include the boundaries of known or potential historic districts and the full extent of properties for which only a portion are within 150 feet of the Project. This APE encompasses the Project construction limits and was deemed sufficient by FERC and SHPO to address any potential effects from takings, vibration, noise, and tree clearing.

Algonquin conducted the intensive archaeological survey within the Project APE for the pipeline (300 foot corridor). Nine archaeological resources were identified in the G-31 pipeline study area: one pre-contact site and eight pre-contact find spots. Four archaeological resources were identified in the G-32 pipeline study area: one pre-contact site and three pre-contact find spots. One archaeological resource, a find spot, was identified in the G-24/G-11 pipelines study area. Three archaeological resources were identified in the G-8L/G-8C pipelines study area: one pre-contact find spot and one site with pre- and post-contact components. None of the identified archaeological sites were recommended as eligible for listing on the NRHP. One previously identified NRHP-eligible site was avoided as the proposed workspace was removed from Project plans.

A total of 27 historic architectural properties, consisting of 23 individual properties and four historic districts, were recorded within the APE. Of these, 21 properties were recommended as not eligible for NRHP listing due to a lack of integrity, significance, or architectural merit. One property, JBCC (MHC No. BOU.B), requires no further evaluation because no contributing aboveground resources were identified within the Project study area. The remaining five properties (Grazing Fields Farm, Bourne Scenic Park (MHC No. BOU.AQ), North Sagamore Area (MHC No. BOU.O), the Cape Cod Canal (MHC No. BOU.AF), and the Bourne Fire Tower) were preliminarily evaluated as eligible for the NRHP.

5.5.1.3 Avoidance, Minimization, and Mitigation Summary

Project impacts to archeological resources and historic architectural properties have been minimized through extensive field surveys, use of existing utility and transportation corridors, use of trenchless construction techniques, and design refinements. All identified and known archeological sites identified during the survey were avoided through design refinements. Four of the five properties identified, and all known historic architectural properties, are beyond the impact area for the Project. Impacts to the remaining one historic property within the Project area, the Cape Cod Canal, are avoided through use of trenchless construction. The HDD crossing beneath the Cape Cod Canal avoids direct disturbance to the Canal bed and associated archaeological resources while eliminating the need for dredging or in-water excavation. The Project also incorporates procedures governing the post-review discovery of historic properties and human remains during construction.

5.5.1.4 Consistency with RPP Goals and Objectives

Objective CH1 – Protect and preserve forms, layouts, scale, massing, and key character defining features of historic resources, including traditional development patterns of villages and neighborhoods.

Historic resources and cultural landscapes were identified within the Project area in accordance with Section 106 regulations, as overseen by the MHC. Through the avoidance strategies listed in Section 5.5.1.3, the Project aligns with the Cultural Heritage Technical Bulletin and will avoid direct impacts to historic resources and cultural landscapes. Therefore, the Project is consistent with Objective CH1 because it is sited to avoid cultural resources, and avoids impacts to the Cape Cod Canal through the implementation of the HDD.

Objective CH2 – Protect and preserve archaeological resources and assets from alteration or relocation.

Based on completed consultation and the selected construction methods, no significant long-term adverse impacts to historic or cultural resources are anticipated. Avoidance and minimization measures for archaeological resources include:

- Completion of Section 106 consultation and coordination with state and Tribal historic preservation authorities.
- Extensive archaeological field surveys with the Project's APE effects.
- Use of HDD beneath the Cape Cod Canal to avoid direct disturbance of sensitive cultural resources.
- Collocation within existing disturbed corridors to reduce the potential for effects on previously undisturbed archaeological resources.
- Implementation of inadvertent discovery procedures for archaeological resources and human remains.

Through the avoidance strategies listed here and in Section 5.5.1.3, the Project aligns with the Cultural Heritage Technical Bulletin and will avoid direct impacts to historic resources and cultural landscapes. Therefore, the Project is consistent with Objective CH2.

Objective CH3 – Preserve and enhance public access and rights to and along the shore.

The Project has limited impacts to coastal and shoreline resources to the crossing of the Cape Cod Canal. The only recreational trails and access to the Canal within the Project area are the USACE service roads on both sides of the Canal, which are utilized for walking, bicycling, fishing, sightseeing, and access to Canal recreation areas. These facilities provide an important public recreational resource and access to the Canal for non-motorized users. Impacts to these roads and trails and to public access to the shore will be avoided through the implementation of the HDD; therefore, the Project aligns with the Cultural Heritage Technical Bulletin and is consistent with Objective CH3.

Objective CH4 – Protect and preserve traditional agricultural and maritime development and uses.

The Project will have no impact on agricultural or maritime development and, through the cultural and historic review, Algonquin confirmed that no traditional agricultural or maritime uses of the Canal will be impacted. The Project overall will have limited impacts to coastal and shoreline resources, and is consistent with Object CH4 because implementation of the HDD avoids any potential impacts to traditional development and uses of the Canal.

5.5.2 ECONOMY

5.5.2.1 Existing Conditions

The Project area supports a mix of residential, commercial, industrial, military, tourism, transportation, and utility-related economic activities. The Cape Cod Canal and bridge transportation network represent regionally important infrastructure supporting both the local and regional economy.

5.5.2.2 Impact Summary

The Project replaces existing infrastructure that would otherwise conflict with bridge replacement activities and ensures continued operation of energy infrastructure necessary to support the regional economy. The Project will provide important economic benefits by supporting the CCBP and maintaining uninterrupted natural gas service to Cape Cod residents, businesses, institutions, and public facilities.

In addition to providing reliable natural gas supply, the Project will create temporary construction jobs throughout its development period. Many of these positions may be filled by local workers, resulting in direct economic benefits for individuals and the communities in which they live. Non-local laborers may also contribute to a modest increase in the overall population within the Project area; however, existing infrastructure and housing availability are expected to adequately support these workers.

The Project is anticipated to generate both short-term and long-term positive cumulative economic impacts locally and statewide. Temporary influx of laborers during construction will provide short-term economic value by their reliance on local stores and businesses regardless of season. Long-term, annual tax revenues will increase as a result of Project operations.

The workforce required to construct the Project will be temporary; no workers will be needed during the daily operations of the Project facilities after construction is complete. Although the number of employees required to operate this development is less than 10, making Objective EC2 not applicable overall, Algonquin provides a response to Objective EC2 in terms of consistency within the construction phase.

5.5.2.3 Avoidance, Minimization, and Mitigation Summary

The Project is anticipated to generate both short-term and long-term positive cumulative economic impacts locally and statewide. Revenues from construction employment, as well as local expenditures by both the construction companies (for construction materials) and non-local construction workers (for temporary housing, food, and entertainment), will benefit the local economy. The increased property tax base during Project operation will be beneficial in the long term. Construction of the Project will result in increased state and local sales tax revenues associated with the purchase of construction materials, as well as goods and services by the construction workforce. Local communities will benefit from ad valorem taxes paid annually by Algonquin over the life of the Project. Algonquin estimates that the total Project construction (and inspection) cost will be approximately \$135 million and the total cost of construction materials will

be approximately \$27.5 million. During construction of the Project facilities, Algonquin estimates the average peak workforce will generate and support an estimated 130 total (direct, indirect, and induced) jobs in Massachusetts during 2027 and 2028.

5.5.2.4 Consistency with RPP Goals and Objectives

Objective EC1 – Support traditional and emerging businesses and industries.

This Project is a replacement of natural gas utility infrastructure to accommodate the CCBP. No expansion or increased capacity is proposed. The existing facilities do not require any staff to be assigned to operate the facilities on a daily basis. This remains true after the completion of the Project. Therefore, operation of the Project will not result in a change of development type or impact other business types and Objective EC1 is not applicable.

Objective EC2 – Support local workforce, economic activity, and entrepreneurship.

The Project is anticipated to generate both short-term and long-term positive cumulative economic impacts locally and statewide. Construction of the Project will result in increased state and local sales tax revenues associated with the purchase of construction materials for the Project and with goods and services by the construction workforce. Local communities will benefit from ad valorem taxes paid annually by Algonquin over the life of the Project. Algonquin estimates that the total Project construction (and inspection) cost will be approximately \$135 million and the total cost of construction materials will be approximately \$27.5 million.

During construction of the Project facilities, the average peak workforce is estimated to be approximately 190 workers between 2027 and 2029. Algonquin estimates that local workers will account for approximately 30 percent of construction jobs for each phase, and the remaining 70 percent of the construction workforce will consist of non-local workers. Workers are defined here as surveyors, welders, equipment operators, and general laborers, and local workers are defined here as those who normally reside within daily commuting distance of the work sites. Algonquin does not anticipate the need to hire additional permanent operations staff to be assigned specifically to the Project.

5.5.3 HOUSING

5.5.3.1 Existing Conditions

Residential development occurs throughout portions of Bourne adjacent to the Project area, particularly near transportation corridors and established neighborhoods. Housing resources within Bourne contribute to the broader residential character of communities located near portions of the proposed facility relocations.

5.5.3.2 Impact Summary

The Project does not create, remove, or alter housing units within Barnstable County or the Town of Bourne. No residential properties are displaced, and no permanent conversion of residential land uses is proposed.

5.5.3.3 *Avoidance, Minimization and Mitigation Summary*

During construction, non-local workers are most likely to use available temporary housing such as area campgrounds and recreational vehicle (RV) parks or hotels/motels in Barnstable County and possibly adjacent towns or counties that are within a reasonable daily commuting distance of the Project area. Non-local workers are also likely to use Airbnb services for short-term housing rentals, or they may provide their own housing units (e.g., travel trailers or RV campers). The anticipated migration of non-local workers to Barnstable County represents less than 0.5 percent of the total temporary housing in Barnstable County, and therefore the temporary demand for these housing facilities is unlikely to displace permanent residents or adversely affect housing prices.

5.5.3.4 *Consistency with RPP Goals and Objectives*

The RPP Housing goal is to promote an adequate supply of ownership and rental housing that is safe, healthy, and attainable for people with different income levels and diverse needs. The Housing objectives are to promote increased housing diversity and choice, increase year-round housing supply, protect and improve existing housing stock, and increase affordable and attainable housing.

Because the Project is a natural gas pipeline relocation and replacement project, the Housing goal and objectives are not directly applicable. The Project will not create new housing demand, remove existing housing, displace residents, or affect the availability or affordability of ownership or rental housing. However, by maintaining reliable natural gas service to Cape Cod while accommodating replacement of the Bourne and Sagamore Bridges, the Project will continue to support existing residential communities and public services.

Accordingly, the HOU objectives are not applicable to the Project, and no adverse housing-related impacts are anticipated.

6 CONCLUSIONS

6.1 Project Benefits

The Project is a critical infrastructure project that will enable implementation of the CCBP while maintaining uninterrupted natural gas service to Cape Cod residents, businesses, institutions, public facilities, and critical infrastructure. The Project relocates existing bridge-mounted natural gas facilities that conflict with planned bridge replacement activities and replaces them with a more resilient underground system designed to maintain the reliability and long-term operation of the region's energy delivery network.

While the Project will result in temporary construction-related impacts to natural resources, transportation facilities, open space, and community resources, these impacts have been avoided and minimized to the maximum extent practicable through route selection, extensive use of existing utility corridors, HDD, restoration of temporary work areas, and implementation of comprehensive environmental protection measures.

The Project provides substantial long-term public benefits by supporting a major regional transportation improvement initiative, improving the resiliency of critical energy infrastructure, reducing reliance on aging bridge-dependent utility facilities, and maintaining reliable energy service for Cape Cod. The Project also incorporates climate adaptation, stormwater management, habitat restoration, forestland protection, and other mitigation measures that help maintain the long-term environmental, community, and infrastructure functions of the Project area.

Overall, the Project represents a significant regional benefit by balancing critical infrastructure needs with environmental stewardship, climate resilience, and protection of Cape Cod's natural and community resources.

6.2 Summary of Mitigation Commitments

The Project applies a mitigation hierarchy of avoidance, minimization, restoration, and compensation. Avoidance is achieved through route selection, use of existing utility corridors, HDD beneath the Cape Cod Canal, avoidance of extensive roadway-based construction, reduced contractor workspace, and facility siting refinements. Minimization is achieved through erosion and sedimentation controls, spill prevention, environmental inspection, reduced wetland workspace, temporary construction matting, traffic management, public outreach, utility coordination, and construction sequencing. Restoration will be implemented for temporary disturbances to wetlands, floodplains, open space, residential areas, road shoulders, access routes, habitat, and construction workspaces. Compensatory mitigation will be provided where required through NHESP, Article 97, wetlands, and Cape Cod Commission review processes. Table 6-1 provides a summary of key mitigation commitments.

Table 6-1. Summary of Mitigation Commitments

Resource Area	Primary Commitments
Water Resources and Stormwater	HDD beneath the Canal; WHPA-aware routing and siting; erosion and sediment controls; SPCC procedures; controlled dewatering; phased water withdrawals; hydrostatic test water reuse where practicable; stormwater controls at M&R stations; restoration of drainage and recharge functions.
Wetlands, Coastal Resources, and Floodplains	Avoid in-water Canal work; reduce wetland workspace; use timber mats; maintain flood storage; restore contours, hydrology, and vegetation; comply with wetlands, Water Quality Certification, and utility Limited Project requirements; monitor restoration as required.

Resource Area	Primary Commitments
Wildlife, Habitat, and Rare Species	Reduce tree clearing and habitat impacts; use existing corridors; implement NHESP-approved protection plans; manage invasive plants; restore temporary habitat disturbance; protect approximately 60 acres near JBCC; contribute to Eastern Box Turtle mitigation.
Open Space and Article 97 Lands	Use existing corridors and access routes; restore temporary disturbances; coordinate with EEA and landowners; provide Article 97 mitigation and compensation for permanent encumbrances where required.
Cultural Resources	Continue MHC and Tribal consultation; use HDD and existing corridors to avoid resources; implement inadvertent discovery procedures; restore temporary disturbances affecting historic settings.
Transportation and Community	Implement Traffic Management Plans; maintain residential, business, public facility, and emergency access; provide notifications; restore road shoulders, lawns, landscaping, and access routes.
Energy Infrastructure and Climate Resilience	Relocate existing bridge-mounted natural gas infrastructure to a resilient underground system; protect existing utility services through coordination and construction planning; incorporate climate-resilient stormwater management measures; facilitate implementation of the CCBP; restore temporary disturbances; and provide forestland protection measures that support long-term carbon sequestration and climate resilience.

6.3 Summary of RPP Consistency

The Project is consistent with the goals, objectives, and performance standards of the Cape Cod Regional Policy Plan and associated Technical Bulletins (Cape Cod Commission 2025a, 2025b). By supporting implementation of the CCBP, the Project enables a critical regional transportation initiative while maintaining reliable natural gas service to Cape Cod and enhancing the resiliency of essential energy infrastructure.

The Project incorporates extensive avoidance and minimization measures, including use of existing utility corridors, horizontal directional drilling beneath the Cape Cod Canal and other sensitive resources, reduced in-street construction, and comprehensive environmental protection controls. Temporary construction impacts will be restored following completion of the work, and compensatory mitigation will be provided where required.

Overall, the Project provides substantial regional benefits by improving the long-term reliability and resilience of critical infrastructure; supporting regional transportation objectives; and protecting the environmental, natural resource, and community values that are central to the character and sustainability of Cape Cod.

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