Appendix E

Applicant's Environmental Report



Subsequent Operating License Renewal Stage

Nine Mile Point Nuclear Station Unit 1

February 2026

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Attachment C Historic and Cultural Resources Consultation Letters

Attachment D Other Consultation Letters

Abbreviations, Acronyms, and Symbols

§	Section
°C	degrees Celsius
°F	degrees Fahrenheit
ΔT	temperature difference
AADT	average annual daily traffic
AC&H	Archaeological, Cultural, and Historical
ACM	asbestos-containing material
AD	Anno Domini
ALARA	as low as reasonably achievable
APE	area of potential effects
AQCR	air quality control region
BC	Before Christ
bgs	below ground surface
BMP	best management practices
BOD_5	biochemical oxygen demand
BTA	best technology available
BWR	boiling water reactor
CAA	Clean Air Act
CCRS	closed-cycle recirculating system
CDF	Core Damage Frequency
CDP	census designated place
CEG	Constellation Energy Generation, LLC
CFR	Code of Federal Regulations
CLCPA	Climate Leadership and Community Protection Act
cm/s	centimeter per second
CO	carbon monoxide
CO_2	carbon dioxide
CRIS	Cultural Resource Information System
CST	condensate storage tank
CWA	Clean Water Act
CWIS	cooling water intake structure

CWS	circulating water system
CZMA	Coastal Zone Management Act
dBA	decibel
DBA	design basis accident
DKey	Determination Key
DMR	discharge monitoring report
DOE	U.S. Department of Energy
DPS	distinct population segment
DSM	demand-side management
EFH	essential fish habitat
EIC	Energy Information Center
EPA	U.S. Environmental Protection Agency
EPU	extended power uprate
ER	environmental report
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FES	Final Environmental Statement
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FPPA	Farmland Protection Policy Act
fps	feet per second
gal	gallon
GEIS	Generic Environmental Impact Statement for License Renewal of Nuclear Plants
GHG	greenhouse gas
Ginna	R.E. Ginna Nuclear Power Plant
GIS	Geographic Information System
GLAA	Great Lakes Action Agenda
GLFC	Great Lakes Fishery Commission
gpm	gallons per minute
gpm_a	average gallons per minute
GWL	global warming level
GWP	Global Warming Potentials

HAB	harmful algal bloom
HAPC	habitat area of particular concern
HFC	hydrofluorocarbon
hp	horsepower
IPA	integrated plant assessment
ISFSI	Independent Spent Fuel Storage Installation
JAF	James A. FitzPatrick Nuclear Power Plant
kg	kilogram
KROC	Rochester
KSYR	Syracuse
kV	kilovolt
kWe	kilowatt electric
lbs	pounds
LLD	lower limit of detection
LLRW	low-level radioactive waste
LQG	large quantity generator
LR	License Renewal
LRA	license renewal application
m^3	cubic meter
MBTA	Migratory Bird Treaty Act
MCL	maximum contaminant limit
MDA	minimum detectable activity
MDCT	mechanical draft cooling tower
MGD	millions of gallons per day
mg/L	milligrams per liter
MGM	millions of gallons per month
MGY	millions of gallons per year
mm	millimeter
mph	miles per hour
mrem	millirem
MSL	mean sea level
MT	metric ton

MW	megawatt
MWe	megawatts electric
MWh	megawatt hours
NAAQS	national ambient air quality standards
NCA	National Climate Assessment
NCEI	National Centers for Environmental Information
NEI	Nuclear Energy Institute
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NHPA	National Historic Preservation Act of 1966
NLC	Nuclear Learning Center
NMFS	National Marine Fisheries Service
NMPNS LLC	Nine Mile Point Nuclear Station, LLC
NMP1	Nine Mile Point Unit 1
NMP2	Nine Mile Point Unit 2
NMPNS	Nine Mile Point Nuclear Station
NMS	National Marine Sanctuary
NOAA	National Oceanic and Atmospheric Administration
NOV	Notice of Violation
NRC	U.S. Nuclear Regulatory Commission
NREL	National Renewable Energy Laboratory
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
NWS	National Weather Service
NY 104	New York State Route 104
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOS	New York State Department of State
NYSDOT	New York State Department of Transportation
NYSERDA	New York State Energy Research and Development Authority
NYS ORES	New York State Office of Renewable Energy Siting and Electric Transmission
OCSD	Oswego City School District

OCWA	Onondaga County Water Authority
ODCM	Offsite Dose Calculation Manual
OFG	off gas
OL	operating license
OSHA	U.S. Occupational Safety and Health Administration
PA	protected area
PCB	polychlorinated biphenyl
pCi/L	picocuries per liter
PFC	perfluorocarbon
pH	potential of hydrogen
PILOT	payments in lieu of tax
PPE	personal protective equipment
PRA	probabilistic risk assessment
PVC	polyvinyl chloride
RAI	request for additional information
RCRA	Resource Conservation and Recovery Act
rem	roentgen equivalent man
REMP	Radiological Environmental Monitoring Program
RGPP	Radiological Groundwater Protection Program
ROW	right-of-way
RSSB	radwaste solidification and storage building
SAMA	severe accident mitigation alternatives
SEIS	supplemental environmental impact statement
SF_6	sulfur hexafluoride
SHPO	state historic preservation officer
SLR	subsequent license renewal
SLRA	subsequent license renewal application
SMITTR	surveillance, monitoring, inspections, testing, trending, and recordkeeping
SMR	small modular reactor
SNF	spent nuclear fuel
SPCC	Spill Prevention, Control, and Countermeasure
SPDES	State Pollutant Discharge Elimination System

SPEO	subsequent period of extended operation
SSA	sole source aquifer
SSC	structures, systems, and components
SSP	Shared Socioeconomic Pathways
SU	standard units
SUNY	State University of New York
SWPPP	Storm Water Pollution Prevention Plan
SWS	service water system
T&ES	threatened and endangered species
TEDE	total effective dose equivalent
THPO	tribal historic preservation officer
TSS	total suspended solids
UFSAR	Updated Final Safety Analysis Report
U.S.	United States
USACE	U.S. Army Corps of Engineers
USAR	Updated Safety Analysis Report
USCB	U.S. Census Bureau
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WHC	Wildlife Habitat Council
WWTP	wastewater treatment plant

1.0 INTRODUCTION

1.1 Purpose of and Need for Action

The United States (U.S.) Nuclear Regulatory Commission (NRC) licenses the operation of domestic nuclear power plants in accordance with the Atomic Energy Act of 1954 (AEA), as amended, and NRC implementing regulations. Nine Mile Point Nuclear Station, LLC (NMP LLC) owns, and Constellation Energy Generation, LLC (CEG) operates, Nine Mile Point Nuclear Station (NMPNS) Unit 1 (NMP1) and Unit 2 (NMP2) pursuant to NRC operating licenses (OLs) DPR-63 and NPF-69, respectively. NMPNS is located in the Town of Scriba, in northern New York. The current NMP1 OL expires at midnight on August 22, 2029, and the current NMP2 OL expires at midnight on October 31, 2046. (NRC 2006a; NRC 2006b) Based upon the expiration date, this environmental report (ER) has been prepared solely for NMP1 OL DPR-63.

CEG has prepared this ER in conjunction with its application to NRC for a subsequent renewal of NMP1 OL DPR-63, as provided by the following NRC regulations:

- Title 10, Energy, Code of Federal Regulations (CFR), Part 54, Requirements for Renewal of Operating Licenses for Nuclear Power Plants, Section 54.23, Contents of Application—Environmental Information [10 CFR 54.23], and
- Title 10, Energy, CFR, Part 51, Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions, Section 51.53, Postconstruction Environmental Reports, Subsection 51.53(c), Operating License Renewal Stage [10 CFR 51.53(c)].

The NRC has defined the purpose and need for the proposed action, renewal of OLs for nuclear power plants such as NMPNS, as follows (NRC 2024a):

> *The purpose and need for the proposed action (issuance of a renewed license) is to provide an option that allows for baseload power generation capability beyond the term of the current nuclear power plant operating license to meet future system generating needs. Such needs may be determined by other energy-planning decisionmakers, such as State, utility, and, where authorized, Federal agencies (other than the NRC). Except to the extent that findings in the safety review required by the AEA or the NEPA [National Environmental Policy Act] environmental review that could lead the NRC to reject a license renewal application, the NRC does not have a role in the energy-planning decisions about whether a particular nuclear power plant should continue to operate.*

The renewed OL allows an additional 20 years of operation for NMP1 beyond its current licensed operating periods. The subsequent renewed license for NMP1 expires at midnight on August 22, 2049. (NRC 2006b)

CEG has prepared Table 1.1-1 to verify conformance with regulatory requirements. Table 1.1-1 indicates the sections in the NMP1 Subsequent License Renewal (SLR) ER that respond to each requirement of 10 CFR 51.

Table 1.1-1 Environmental Report Compliance with License Renewal Environmental Regulatory Requirements (Sheet 1 of 4)

Description	Requirement	ER Section(s) or Chapter(s)
Environmental Report-General Requirements [10 CFR 51.45]		
Description of the proposed action	10 CFR 51.45(b)	Section 2.1
Statement of the purposes of the proposed action	10 CFR 51.45(b)	Section 1.1
Description of the environment affected	10 CFR 51.45(b)	Chapter 3
Impact of the proposed action on the environment	10 CFR 51.45(b)(1)	Chapter 4
Adverse environmental effects which cannot be avoided should the proposal be implemented	10 CFR 51.45(b)(2)	Section 6.3
Alternatives to the proposed action	10 CFR 51.45(b)(3)	Section 2.6 Chapter 7 Chapter 8
Relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity	10 CFR 51.45(b)(4)	Section 6.5
Irreversible and irretrievable commitments of resources involved in the proposed action should it be implemented	10 CFR 51.45(b)(5)	Section 6.4
Analysis that considers and balances the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and alternatives available for reducing or avoiding adverse environmental effects	10 CFR 51.45(c)	Section 2.6 Chapter 4 Chapter 7 Chapter 8
Federal permits, licenses, approvals, and other entitlements which must be obtained in connection with the proposed action and description of the status of compliance with these requirements	10 CFR 51.45(d)	Section 9.1
Status of compliance with applicable environmental quality standards and requirements which have been imposed by federal, state, regional, local agencies having responsibility for environmental protection, including, but not limited to, applicable zoning and land-use regulations, and thermal and other water pollution limitations or requirements	10 CFR 51.45(d)	Section 9.2 Section 9.4 Section 9.4.25

Table 1.1-1 Environmental Report Compliance with License Renewal Environmental Regulatory Requirements (Sheet 2 of 4)

Description	Requirement	ER Section(s) or Chapter(s)
Alternatives in the report including a discussion of whether the alternatives comply with such applicable environmental quality standards and requirements	10 CFR 51.45(d)	Chapter 7
Information submitted pursuant to 10 CFR 51.45(b) through (d) and confined to information supporting the proposed action but also including adverse information	10 CFR 51.45(e)	Section 6.3
Operating License Renewal Stage [10 CFR 51.53(c)]		
Description of the proposed action, including the applicant's plans to modify the facility or its administrative control procedures as described in accordance with Section (§) 54.21. The report must describe in detail, the modifications directly affecting the environment or plant effluents, and planned refurbishment activities	10 CFR 51.53(c)(2)	Section 2.1 Section 2.3 Section 2.4 Section 3.1 Chapter 4
Analyses of the environmental impacts of the proposed action, including the impacts of refurbishment activities, if any, associated with license renewal and the impacts of operation during the renewal term, for applicable Category 2 issues	10 CFR 51.53(c)(3)(ii)	Chapter 4
Surface Water Resources		
Surface water use conflicts (plants with cooling ponds or cooling towers using makeup water from a river)	10 CFR 51.53(c)(3)(ii)(A)	Section 4.0.2
Groundwater Resources		
Groundwater use conflicts (plants with closed-cycle cooling systems that withdraw makeup water from a river)	10 CFR 51.53(c)(3)(ii)(A)	Section 4.0.2
Groundwater use conflicts (plants that withdraw more than 100 gallons per minute [gpm])	10 CFR 51.53(c)(3)(ii)(C)	Section 4.0.2
Groundwater quality degradation (plants with cooling ponds)	10 CFR 51.53(c)(3)(ii)(D)	Section 4.0.2
Radionuclides released to groundwater	10 CFR 51.53(c)(3)(ii)(P)	Section 4.1.1

Table 1.1-1 Environmental Report Compliance with License Renewal Environmental Regulatory Requirements (Sheet 3 of 4)

Description	Requirement	ER Section(s)
Aquatic Resources		
Impingement and entrainment of aquatic organisms (plants with once-through cooling systems or cooling ponds)	10 CFR 51.53(c)(3)(ii)(B)	Section 4.2.2
Effects of thermal effluents on aquatic organisms (plants with once-through cooling systems or cooling ponds)	10 CFR 51.53(c)(3)(ii)(B)	Section 4.2.3
Water use conflicts with aquatic resources (plants with cooling ponds or cooling towers using makeup water from a river)	10 CFR 51.53(c)(3)(ii)(A)	Section 4.0.2
Terrestrial Resources		
Water use conflicts with terrestrial resources (plants with cooling ponds or cooling towers using makeup water from a river)	10 CFR 51.53(c)(3)(ii)(A)	Section 4.0.2
Effects on terrestrial resources (non-cooling system impacts)	10 CFR 51.53(c)(3)(ii)(E)	Section 4.2.1
Special Status Species and Habitats		
Federally protected ecological resources under the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, and the National Marine Sanctuaries Act	10 CFR 51.53(c)(3)(ii)(E)	Section 4.2.4 Section 4.2.5 Section 4.2.6 Section 4.2.7
Historic and Cultural Resources		
Historic and cultural resources	10 CFR 51.53(c)(3)(ii)(K)	Section 4.3
Human Health		
Microbiological hazards to the public	10 CFR 51.53(c)(3)(ii)(G)	Section 4.4.1
Electric shock hazards	10 CFR 51.53(c)(3)(ii)(H)	Section 4.4.2
Environmental Justice		
Impacts on minority populations, low-income populations, and Indian Tribes	10 CFR 51.53(c)(3)(ii)(N)	Section 4.5
Climate Change		
Applicants shall include an assessment of the effects of observed and projected changes in climate on environmental resource areas that are affected by license renewal	10 CFR 51.53(c)(3)(ii)(Q)	Section 4.6

Table 1.1-1 Environmental Report Compliance with License Renewal Environmental Regulatory Requirements (Sheet 4 of 4)

Description	Requirement	ER Section(s)
Cumulative Effects		
Cumulative effects	10 CFR 51.53(c)(3)(ii)(O)	Section 4.7
Postulated Accidents		
Severe accident mitigation alternatives (SAMA)	10 CFR 51.53(c)(3)(ii)(L)	Section 3.10.4.3 Chapter 5
All Plants		
Consideration of alternatives for reducing adverse impacts for all Category 2 license renewal issues	10 CFR 51.53(c)(3)(iii)	Section 7.3
New and significant information regarding the environmental impacts of license renewal of which the applicant is aware	10 CFR 51.53(c)(3)(iv)	Chapter 5

1.2 Environmental Report Scope and Methodology

NRC regulations for domestic licensing of nuclear power plants require reviews of environmental impacts from renewing an OL. NRC regulation 10 CFR 51.53(c) requires that an applicant for license renewal submit with its application as a separate document entitled, "Applicant's Environmental Report—Operating License Renewal Stage." In determining what information to include in the NMP1 SLR applicant's ER, CEG has relied on NRC regulations and the following supporting documents that provide additional insight into the regulatory requirements:

- *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS), Revision 2 (NRC 2024a), as well as referenced information specific to postulated accidents (NRC 1996) and referenced information specific to transportation (NRC 1999)
- *Regulatory Guide 4.2, Supplement 1, Revision 2, Preparation of Environmental Reports for Nuclear Power Plant License Renewal Applications* (NRC 2024b).

1.3 Licensee and Ownership

CEG, NMP1's operator and indirect owner, is the nation's largest producer of carbon-free energy with a generation fleet of nuclear, hydro, wind, and solar powering more than 16 million homes and businesses, providing 10 percent of all clean power on the grid in the United States. CEG's generation fleet is helping to accelerate the nation's transition to clean energy. (CEG 2024a) CEG is headquartered in Baltimore, Maryland (CEG 2024b). CEG is the licensed operator of NMP1 and also possesses indirect ownership. NMP1 is directly owned by NMPNS LLC, which is a wholly owned subsidiary of CEG.

2.0 PROPOSED ACTION AND DESCRIPTION OF ALTERNATIVES

In accordance with 10 CFR 51.53(c)(2), a license renewal applicant's ER must contain a description of the proposed action, including the applicant's plans to modify the facility or its administrative control procedures as described in accordance with § 54.21 of this chapter. This SLR ER must describe in detail the affected environment around the station, the modifications directly affecting the environment or station effluents, and planned refurbishment activities. In addition, the applicant shall discuss in this report the environmental impacts of alternatives and any other matters described in § 51.45. The ER is not required to include discussion of need for power or the economic costs and economic benefits of the proposed action or of alternatives to the proposed action except insofar as such costs and benefits are either essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation. The ER need not discuss other issues not related to the environmental effects of the proposed action and the alternatives. As stated in § 51.23, no discussion of the environmental impacts of the continued storage of spent fuel is required in this report.

2.1 The Proposed Action

The proposed action covers renewing the NMP1 OL for an additional 20-year period from August 22, 2029, to August 22, 2049, preserving the option for CEG to continue operating NMP1 and provide reliable baseload power for the subsequent period of extended operation (SPEO).

CEG does not anticipate any license-renewal-related refurbishment for NMP1 as a result of the technical and aging management program information to be submitted in accordance with the NRC license renewal process. The relationship of refurbishment to license renewal is described in Section 2.3.

Changes to surveillance, monitoring, inspections, testing, trending, and recordkeeping (SMITTR) are expected to be implemented as a result of the 10 CFR Part 54 aging management review for NMP1. Potential SMITTR activities are described in Section 2.3. There are no plans associated with SLR to modify the facility or its administrative controls other than the procedures necessary to implement the aging management programs described in the integrated plant assessment (IPA).

2.2 General Station Information

A license renewal applicant's ER must contain a description of the proposed action, including the applicant's plans to modify the facility or its administrative control procedures. This report must describe in detail the affected environment around the station and the modifications directly affecting the environment or station effluents. [10 CFR 51.53(c)(2)]

NMP1 is located along the southeastern shore of Lake Ontario. Located approximately 300 feet due east is NMP2. The James A. FitzPatrick Nuclear Power Plant (JAF) is located to the east. NMPNS is in Oswego County, approximately 5 miles north-northeast of the nearest boundary of the city of Oswego. (CEG 2023a)

The major interconnected structures associated with NMP1 are the reactor building, which encloses the reactor vessel and other associated primary containment system structures, refueling and reactor servicing equipment, and fresh and spent fuel storage facilities; the turbine building, which houses the turbine generator, feedwater heaters, and main condensers; the radioactive waste building; the waste storage building; the screen house and pumphouse; the off gas (OFG) building; and the administration building. NMP1 uses once-through cooling from Lake Ontario. (NRC 2006a)

Exclusion distances for the site are approximately 1 mile to the east, 1 mile to the southwest, and over 1 mile to the southern site boundary. Station buildings are situated in the western quadrant of a 200-acre cleared area centrally located along the lakeshore. Site property consists of partially wooded land formerly used almost exclusively for residential and recreational purposes. (CEG 2023a)

2.2.1 Reactor and Containment Systems

NMP1 is a boiling water reactor (BWR) designed by the General Electric Company (GE). GE was engaged to design, fabricate and deliver the nuclear steam supply system, turbine generator, and other major elements and systems. GE also furnished the complete core design and nuclear fuel supply for the initial core. Global Nuclear Fuel is currently furnishing the replacement cores. (CEG 2023a)

NMP1 has a power rating of 1,850 megawatts thermal and a maximum net electrical output of 615 megawatts electric (MWe) (CEG 2023a).

NMP1 fuel is slightly enriched to a maximum nominal 5.0 weight percent Uranium-235 and is licensed for an average burnup for the peak rod to 62,000 megawatt days per metric ton uranium.

The pressure suppression containment system houses the reactor vessel, reactor coolant recirculation loops, and their branch connections. The drywell is a steel pressure vessel with a 70-foot diameter spherical lower portion and a 33-foot diameter cylindrical upper portion. The cylindrical section has a bolted cover. The pressure suppression chamber is a steel pressure vessel in the shape of a torus, below and encircling the drywell. (CEG 2023a)

The reactor building completely encloses the pressure suppression system. This structure provides secondary containment when the pressure suppression system is in service, and primary containment, during refueling, maintenance, or testing, when the pressure suppression system is open or not required. The major safety function of the secondary containment is to minimize ground-level release of airborne radioactive materials by providing controlled, elevated

release of the building atmosphere through a filter system under accident conditions. (CEG 2023a)

Normal refueling conditions are based on refueling the reactor every 24 months (CEG 2023a). After refueling, the spent fuel bundles are stored in spent fuel storage pool racks. The spent fuel bundles are expected to remain at NMPNS until the NRC/U.S. Department of Energy (DOE) resolves issues related to the receipt of spent fuel for long-term disposal. Spent fuel from the spent fuel pool is currently placed into dry cask storage at the NMPNS Independent Spent Fuel Storage Installation (ISFSI) (CEG 2023a).

Expansion of the NMPNS ISFSI pad was completed in late 2025 to provide additional cask storage. The expansion is near the current NMPNS ISFSI pad, which is southwest of NMP1.

2.2.2 Maintenance, Inspection, and Refueling Activities

Various programs and activities at the site maintain, inspect, test, and monitor the performance of station equipment and are detailed throughout the Updated Final Safety Analysis Report (UFSAR). Maintenance of station safety-related structures, systems, and components (SSCs) is performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances (for example, skills normally possessed by qualified maintenance personnel may not require detailed step-by-step delineation in a written procedure) which conform to applicable codes, standards, specifications, criteria, etc. When appropriate sections of related vendor manuals, instructions, or approved drawings with acceptable tolerances do not provide adequate guidance to assure the required quality of work, an approved written maintenance procedure is provided.

Maintenance procedures are sufficiently detailed that qualified workers can perform the required functions without direct supervision. Written procedures, however, cannot address all contingencies, and therefore contain a degree of flexibility appropriate to the activities for which each is applicable.

Routine maintenance performed on plant systems and components is necessary for safe and reliable operation of a nuclear power plant. Some of the maintenance activities conducted at NMP1 include inspection, testing, and surveillance to maintain the current licensing basis of the station and to ensure compliance with environmental and public safety requirements. Certain activities can be performed while the reactor is operating. Others require that the station be shut down. Outages are scheduled for refueling and for certain types of repairs or maintenance, such as replacement of a major component.

Scheduled refueling outages commonly have a duration of an average of 20 to 30 days, depending on the workload. An additional 1,000 to 1,250 workers are onsite during a typical refueling outage. For NMP1, one refueling outage is scheduled every 24 months.

2.2.3 Cooling and Auxiliary Water Systems

Water is taken directly from Lake Ontario through an intake structure and pumped through an underground conduit system for use in the station. It is then discharged back to the lake. Systems which use lake water are as follows: (CEG 2023a)

1. Condenser cooling through the circulating water system (CWS) for condensing expended steam from the turbines
2. Service water system (SWS) for cooling reactor auxiliary systems and components and other equipment throughout the station
3. Fire water supply system
4. Emergency SWS
5. Emergency diesel generator cooling water system
6. Containment spray raw water system (In the event of a total loss of the core spray primary water source, containment spray raw water intertie to the containment spray and core spray systems can supply lake water to flood the containment.)

Under design station conditions, water is pumped from Lake Ontario at a rate of approximately 354 million gallons per day (MGD) for cooling NMP1. After circulation through the station's cooling water system, heated cooling water is discharged to the lake. The average difference between the discharge water temperature and the intake water temperature in 2023 was 30 degrees Fahrenheit (°F), with a maximum recorded temperature of 108°F in July 2023. Pursuant to the NMPNS State Pollutant Discharge Elimination System (SPDES) permit, the overall water temperature is limited to a 35°F difference from the intake to when it is returned to the lake, and at no times should the discharge water temperature exceed 115°F. The current NMPNS SPDES permit is provided in Attachment A of this ER.

Figure 2.2-1 shows the system pathway described in the following subsections.

2.2.3.1 Intake Tunnel and Screenhouse

Water is admitted to the intake tunnel through a bellmouth-shaped inlet. The inlet is surmounted by a hexagonally shaped guard structure of concrete, the top of which is about 6 feet above the lake bottom and 14 feet below the lowest anticipated lake level. The design provides for water to be drawn equally from all directions with a minimum of disturbance and with no vortex at the lake surface, and guards against the entrance of unmanageable flotsam. (CEG 2023a)

The water drops through a vertical concrete-lined shaft to a concrete-lined tunnel in the rock, through which it flows to the foot of a concrete-lined vertical shaft under the forebay in the screenhouse. The foot of this shaft contains a sand trap to catch and store lake-bottom sand which may wash over the sills of the inlet structure. The top of the shaft has a bell-mouthed discharge. Figure 2.2-2 and Figure 2.2-3 show the intake tunnel plan and profile. (CEG 2023a)

The screenhouse substructure comprises channels for the flow of raw lake water, gates and stop logs for control of the flow, racks, and screens for cleaning the water and pumps. The forebay and the secondary forebay are connected by three parallel cooling water channels, in each of which are located trash racks, rack rakes and traveling screens to remove trash, aquatic plants, and impinged/entrained fish from the water. Above each of the three cool water channels are the screen wash pumps. Adjacent to the secondary forebay are inlet chambers for the two circulating water pumps which provide water to the main condensers. A lateral branch leads off to the east from the secondary forebay. Three chambers off this branch supply water to each of two service water pumps with strainers and a pair of fire pumps. (CEG 2023a)

There are special conditions in the NMPNS SPDES permit for the zebra mussel control program. As part of the requirements for the program, chemical additions must maintain a maximum concentration of 20 part per billion Alkylamine or 35 part per billion whole product and may only be applied for a maximum of 48 hours, twice per year. Records of chemical addition and effluent concentration are maintained.

2.2.3.2 Discharge Tunnel

Water is returned to the lake at a point about one-tenth of a mile offshore through a bell-mouthed outlet surmounted by a hexagonal-shaped discharge structure of concrete. The top of this structure is about 4 feet above lake bottom and 8 1/2 feet below the lowest anticipated lake level. The geometry of the structure closely resembles the inlet structure, although reduced in size. The six exit ports are 3 feet high by 7 1/3 feet wide. The discharge tunnel from the screenhouse is identical in cross-section with the intake tunnel. The vertical shaft connecting the discharge tunnel with the discharge channel under the screenhouse also has a sand trap at the foot. Water is discharged directly to the vertical discharge shaft. A submerged diffuser in the vertical shaft ensures a good dilution before discharge to the lake. Figure 2.2-2 and Figure 2.2-3 show the discharge tunnel plan and profile. (CEG 2023a)

2.2.3.3 Service Water System

The purpose of the SWS is to provide approximately 28 MGD of strained lake water for the reactor building closed loop cooling water and turbine building closed loop cooling water systems, the steam jet air ejector precooler, ejector vent cooler, the building local air coolers and other building services. Service water also is supplied to the screenwash pumps, the radwaste solidification and storage building (RSSB), and the makeup demineralizer. The system is to be available to cool the reactor building cooling water system under all conditions of operation. (CEG 2023a)

Lake water from the intake tunnel passes through trash racks and traveling screens in the screen and pump house and floods the service water pump well. Two full-capacity (20,000 gpm) vertical sleeve bearing pumps take suction from the well. Each pump is provided with a 0.03-inch mesh automatic self-cleaning strainer. The pump discharges are passed through the self-cleaning strainers and blocking valves and then into two separate headers which deliver water to cooling loads within the station. In the event of a loss of both normal and reserve

alternating current power, a diesel generator is expected to supply power to a pair of 3,600-gpm emergency pumps in the screenhouse that take their suction from the circulating water intake. (CEG 2023a)

2.2.3.4 Makeup Water System

The makeup demineralizer system is a truck-mounted portable system that is normally parked in the turbine building. It normally receives its supply water from the SWS. Backup water from the Oswego water system is available. The system was designed to deliver batches of demineralized water to fill the demineralized water makeup tank, the condensate storage tanks (CSTs), and other reservoirs (e.g., the waste surge tank) as necessary. (CEG 2023a)

Operation of the portable makeup system is on demand at routine infrequent intervals to replenish demineralized water in storage tanks. With the system inoperable or when the portable demineralizer skid is not available, NMPNS can continue operation with makeup water from the CSTs, which have a combined capacity of 400,000 gallons. Additional makeup water is available from the demineralized makeup water storage tank which has a 40,000-gallon capacity. As an option, Operators may take a supply of water from city water for processing, depending on the station operating conditions. City water is an equivalent or better source for makeup than lake water in terms of contaminants, and delivery capacity is within or exceeds the requirements for supply to the demineralized water system. (CEG 2023a)

2.2.3.5 Circulating Water System

Two 125,000-gpm vertical, mixed flow, circulating water pumps located in the screenhouse deliver approximately 326 MGD of strained water from Lake Ontario to the condenser. Each pump discharges in a separate line to one side of the condenser divided water box. Fish screens are installed in each circulating water inlet pipe at the entrance to the water box. These fish screens are in the open position during operation. They are closed just before the circulating water pumps are removed from service to prevent debris from backwashing from the condenser water boxes into the inlet tunnel. This debris collects on the closed fish screen and is sluiced into the circulating water discharge tunnel. After leaving the condenser, the circulating water is discharged back into Lake Ontario. (CEG 2023a)

2.2.3.6 Potable and Sanitary Water

Water is supplied from the municipal water supply for potable and sanitary use. The onsite wastewater treatment plant (WWTP), which is also referred to in the UFSAR as the sewage treatment facility and the sewage treatment plant, has a maximum design flow of 120,000 gallons per day (gpd). Solids are sent as solid waste off site and treated liquid effluent, along with other NMP1 wastewater is returned to Lake Ontario.

Wastewater flows by gravity from NMP1 facilities to the existing NMP1 WWTP building and associated preliminary treatment facilities. After preliminary treatment, the flow is pumped to the extended aeration units in the WWTP. Flow through the remainder of the station is by gravity.

Discharge from the station is through a 12-inch outfall sewer to a drainage ditch leading to Lake Ontario. (CEG 2023a)

2.2.3.7 Fire Water System

Three chambers off a screenhouse branch supply water to a pair of fire pumps used at NMP1 (CEG 2023a). In addition to providing water for the fire protection system, an alternate source of water to the makeup tanks is also available from the electric and diesel fire pumps (CEG 2023a). Additionally, an intertie exists between the diesel fire pump and the emergency service water line so that the diesel fire pump is capable of handling the additional emergency service water requirements (CEG 2023a).

2.2.4 Power Transmission System

NMP1 has one transmission line that connects the turbine building to the NMP1 345 kilovolt (kV) switchyard where electricity is fed into the regional power distribution system. The 345kV transmission line is 326-feet long and is above ground in a paved area within the NMPNS site boundary. There is also a spare transmission line from the spare power transformer that is not in use. The spare transmission line is connected directly to the transmission line from the main power transformer but not connected to the spare transformer. These segments are shown in Figure 2.2-4 and Figure 2.2-5.

NMP1 has two 115kV transmission lines that feed the turbine building from the grid through the NMP1 115kV switchyard during outages. The two lines are 500 feet and 550 feet in length and are above ground in a paved area within the NMPNS site boundary.

The in-scope transmission lines are within the NMPNS site boundary and maintained by CEG.

2.2.5 Radioactive Waste Management System

NMP1 uses liquid, gaseous, and solid radioactive waste management systems to collect and process the wastes that are the by-products of operations before they are released to the environment. The waste disposal systems for NMP1 meet the design objectives of 10 CFR 20 and 10 CFR 50, Appendix I. (CEG 2023a)

The cold storage building (also known as the Sea Van storage building), stores NMP1 low-level radioactive waste (LLRW) with no contamination on the outside of the containers and the NMP2 radwaste building stores NMP1 liners in the vault. NMP1 RSSB stores NMP1 waste that is less than 80 millirem (mrem), as well as NMP1 containers with metal components, electrical components, and oily and wet material. The NMPNS ISFSI stores spent fuel bundles in dry cask storage.

2.2.5.1 Liquid Waste Management Systems

Liquid radioactive wastes include all liquids collected in equipment and floor drains in areas of NMPNS that are at risk for radioactive contamination. Shower wastes, laboratory wastes, and decontamination area wastes are also handled by the liquid waste system. (CEG 2023a)

The liquid waste system is designed to handle four types of liquid waste: high-conductivity waste, low-conductivity waste, chemical waste, and miscellaneous waste (CEG 2023a). Activity discharged to the environment is kept to a practical minimum by the treatment and recycling of wastes prior to discharge. This is accomplished by filtration, and by the concentration of radiological waste and conversion of the resulting concentrate into solid waste. Protection against accidental discharge is accomplished by procedural control, by providing double waste discharge line valves, blanked off lines and locked valves, waste discharge line valve leak off indication and suitable monitors and alarms of abnormal conditions. (CEG 2023a)

High-conductivity liquid wastes are collected in the floor drain sumps located within the drywell, the reactor building, the turbine building, the RSSB, the OFG building, and the waste disposal building. The wastes in these floor drain sumps are pumped into the floor drain collector, waste neutralizer tank, or utility collector tank (during power operation and/or when drywell is inerted, the drywell discharge is routed to the waste collector system), which are located in the waste disposal building. After sufficient waste is collected in the floor drain collector, the waste is pumped to one of two floor drain sample tanks and is available for processing. (CEG 2023a)

High conductivity/low purity aqueous radwaste from the floor drain system is also processed through a series of water treatment modules which include charcoal filtration, small particulate filtration, and demineralization, and, depending on water quality, may include reverse osmosis or ultrafiltration, deionization, oxidizing agents, and/or ultraviolet radiation prior to demineralization. Liquid wastes processed in this manner meet the chemistry criteria for recycling to the station. This water may be directed to the low conductivity/high purity reclamation system (waste collector system) or to the waste sample tanks for chemistry sampling prior to batch transfer to the CSTs. If the modular processed effluent water quality is unsatisfactory, a conductivity cell directs the water back to the floor drain system. Under certain conditions, the liquid waste can be pumped into the circulating water discharge tunnel at a flow rate which assures that concentrations in the effluent are within NMPNS limits. (CEG 2023a)

Low-conductivity liquid wastes which usually come from piping and equipment drains are collected in equipment drain sumps or equipment drain tanks located in the drywell, the reactor building, the turbine building, and the waste disposal building. These liquids are pumped to the waste collector tank which is located in the waste disposal building. The liquid wastes in either the waste collector tank or the waste surge tank are pumped through a high-efficiency precoat type filter and a mixed-bed waste demineralizer to either one of two waste sample tanks. Low-conductivity/high-purity aqueous radwaste from the equipment drain/waste collector system may also be processed through the series of water treatment modules that were described above pertaining to high conductivity/low purity liquids. Liquid wastes processed in this manner meet the chemistry criteria for recycling to the station and may be directed to the waste sample tanks.

The liquid is normally pumped to the CST in the turbine building. Under certain conditions, this liquid can be pumped into the discharge tunnel, after careful analysis, to assure that concentrations in the effluent are within station limits. (CEG 2023a)

Chemical waste originates at the chemical addition tank, in the laboratory sinks, and equipment decontamination drains. The wastes are then neutralized and processed with other high-conductivity waste. (CEG 2023a)

Liquid waste from the shower facility, personnel decontamination, or any other radioactive liquid waste which might contain detergents, is collected in the waste neutralizer tank, floor drain collector tank, or utility collector tank in the waste disposal building. The waste is then processed with other high-conductivity waste. (CEG 2023a)

CEG does not anticipate an increase in liquid waste releases during the SPEO.

2.2.5.2 Gaseous Waste Management Systems

Gaseous radioactive wastes include airborne particulates as well as gases vented from process equipment. Sources of gaseous waste activity are the OFG system effluent, steam-packing exhauster system effluent, and building ventilation exhausts. (CEG 2023a)

The gaseous waste system is composed of eight major parts:

1. OFG system
2. Steam-packing exhauster system
3. Turbine building ventilation system
4. Reactor building ventilation system
5. Waste building ventilation system
6. Stack
7. OFG building ventilation system
8. RSSB ventilation system (CEG 2023a).

Non-condensable radioactive process OFG is continuously removed from the main condenser by the condenser air removal and OFG system. The gases to be evacuated by the OFG system are mainly concentrated in the condenser, but steam, air, and other gases evacuated by the steam-packing exhauster are also discharged to the OFG system. (CEG 2023a)

Two full-capacity steam packing exhausters pull a slight vacuum at the turbine shaft packing, thereby preventing the escape of steam to the atmosphere and the collection of water in the turbine oil (CEG 2023a).

The gases are collected in a recombiner to remove the hydrogen and oxygen by a controlled manner to form water. Following this process, the non-condensable OFG enters coolers and

chillers to remove moisture prior to entering charcoal filter columns. After leaving the charcoal columns, the OFG enters one of two OFG vacuum pumps that establish vacuum for operation of the OFG system during startup and hold the vacuum during operation. The OFG vacuum pumps force the gas through moisture separators. At the outlet of the OFG moisture separator, the OFG is passed first through a wire mesh matting, where droplets of water are separated before the OFG finally enters the stack. (CEG 2023a)

Particulate airborne activity exhausted by building ventilation systems can be monitored by a constant air monitor. In areas where significant quantities of airborne particulates can be generated, such as the radiochemical laboratory hoods, filters are installed in the exhaust duct to remove these particulates. Because the many tanks and equipment in the waste building can be a source of airborne particulate activity, this entire building exhaust is filtered before discharge to the stack. (CEG 2023a)

The stack monitoring system is provided to continuously measure the gaseous activity discharged from the stack. This system also incorporates a composite collection of particulate and halogen activity. These filter samples are removed periodically, and the particulate and halogen activity determined in the station laboratory. (CEG 2023a)

CEG does not anticipate an increase in gaseous waste during the SPEO.

2.2.5.3 Solid Waste Management Systems

Solid wastes include filter sludge, spent resin, spent condensate filter media, condensate filter backwash sludge, radioactive tools and equipment, and miscellaneous trash from station operations, laboratory, maintenance, and cleanup operations. The solid waste handling system is capable of collecting, processing, and temporarily storing these various wastes. Solid waste is stored in the waste handling facility for decay and accumulation of enough waste for shipment to a processor or authorized burial site. (CEG 2023a)

The solid waste system is designed to handle spent resins, filter sludge, and concentrated waste, as well as to provide for collection and shipment of low-level solids. Wastes may be processed or solidified onsite or transferred to a vendor for processing and disposal. (CEG 2023a)

Concentrated liquid waste and low-level solid wastes are transferred to approved containers and then either placed in storage for future shipment, shipped offsite for disposal, or shipped to a vendor for further processing and disposal (CEG 2023a).

Filter sludges are normally stored in tanks in the buildings where the filters are located. After accumulation, these sludges are transferred as a liquid slurry to the waste building for processing. Fine iron resulting from the addition of polyelectrolytes to condensate filtration system backwash waste settles on the bottom of the converted concentrated waste tank #13. The remaining wastewater is then decanted and processed by the liquid waste handling system.

The sludge is held in the tank until it is transferred by the sludge pump to a disposal liner for disposal. (CEG 2023a)

Spent resins from all demineralizers in the Station, when discarded, are stored in the spent resin storage tank in the waste disposal building. The filter sludge can be processed by routing it through the phase separator system or processing it directly to an approved container. The material is then dewatered or solidified with an approved media, and the container is either placed in storage for future shipment, shipped offsite for disposal, or shipped to a vendor for further processing and disposal. Spent resins are pumped to an approved container in the truck bay where the container is dewatered. The container is then sealed and either placed in storage for future shipment, shipped offsite for disposal, or shipped to a vendor for further processing and disposal. (CEG 2023a)

Solid materials such as spent fuel assemblies, spent control blades, poison curtains, in-core chambers, and other equipment originating from the reactor primary system are stored in the spent fuel storage pool until offsite storage or disposal is necessary. Spent fuel assemblies are also stored at the onsite NMPNS ISFSI in dry cask storage. (CEG 2023a)

As discussed in Section 2.2.1, expansion of the NMPNS ISFSI pad was completed in late 2025 to provide additional cask storage.

Mixed waste is radioactive waste that contains or consists of waste constituents that the U.S. Environmental Protection Agency (EPA) lists as hazardous waste. Therefore, any mixed waste is under the regulatory requirements of the NRC and the EPA. Every effort is made to minimize or eliminate mixed waste generation at NMP1. NMPNS maintains low-level mixed waste (LLMW) storage units for the accumulation and temporary storage of LLMW onsite.

CEG does not anticipate changing NMPNS's waste transportation vendor and are currently permitted to ship LLRW to Texas, Utah, and Tennessee. CEG does not anticipate an increase in solid waste during the SPEO.

2.2.6 Nonradioactive Waste Management System

The Resource Conservation and Recovery Act (RCRA) governs the disposal of solid waste. The New York State Department of Environmental Conservation (NYSDEC) is authorized by the EPA to implement the RCRA in New York. NMPNS is classified by the EPA and the NYSDEC as a large quantity generator (LQG) of hazardous waste. According to the EPA, a facility is considered an LQG if it generates 1,000 kilograms (kg) or more of non-acute hazardous waste or more than 1 kg of acutely hazardous waste per calendar month.

The principal nonradioactive effluent from NMP1 consists of chemical and biocide wastes, lubrication oil waste, resin regeneration waste, spent filters, and sanitary waste. The chemistry laboratory may generate small quantities of expired chemicals. Other wastes could include laboratory packs and mercury switches. Spent batteries and discarded fluorescent lights are shipped offsite for recycling. Sanitary waste is sent to the onsite WWTP. The treated sanitary

wastewater is discharged to Lake Ontario. Dried sewage residue from the WWTP is sent offsite to a permitted landfill for disposal. (NRC 2006a)

NMP1 does not conduct any onsite treatment of hazardous or universal waste. CEG maintains procedures that provide direction for managing hazardous wastes, universal wastes, and solid wastes, and includes a waste minimization program.

CEG uses appropriated permitted vendors to manage and dispose of hazardous, non-hazardous, and recyclable waste. CEG does not anticipate any increase in hazardous waste generation during the SPEO. Table 2.2-1 provides the hazardous, non-hazardous, and recyclable quantities from 2019–2023 for NMPNS.

Table 2.2-1 Hazardous, Nonhazardous, and Recycling Quantities from 2019–2023

Year	Hazardous (pounds)	Recycling (pounds)	Non-Hazardous (pounds)
2019	5,594	541,534	637,566
2020	1,620	1,110,837[(a)]	2,396,929[(b)]
2021	4,748	221,946	1,092,596
2022	11,804	213,646	1,503,802
2023	48,874[(c)]	245,556	1,026,919

(a) The increased weight for recycling in 2020 was due to the recycle of ABB Transformer, as well as transformer oil and wastewater from the disposal and cleaning of said transformer.

(b) For 2020 non-hazardous waste, WWTP sludge was disposed of and Unit 2 cooling tower wastewater was removed during that year's outage.

(c) A sodium hypochlorite spill in March 2023 (as discussed in Section 9.3) contributed to the higher hazardous waste numbers in 2023.

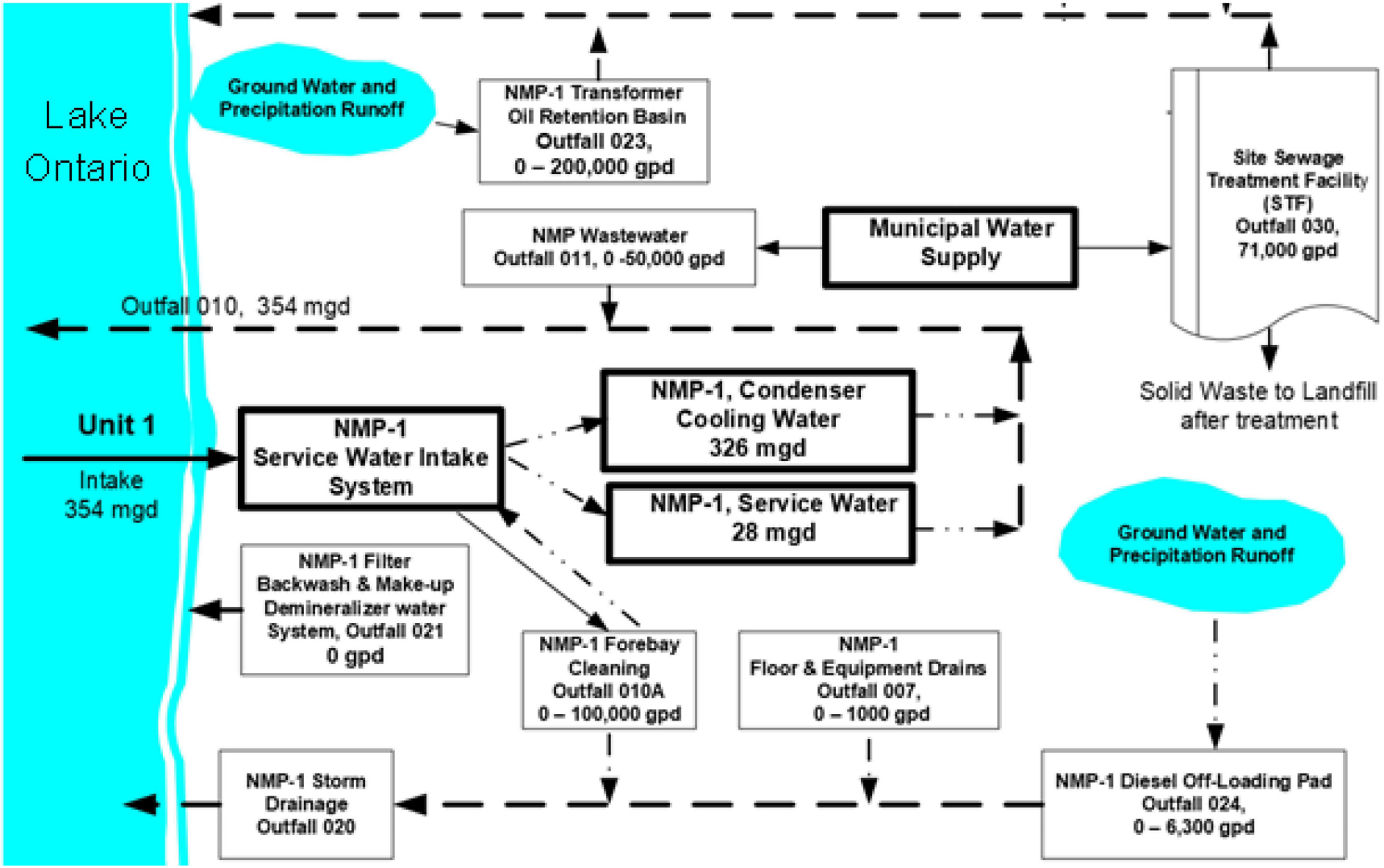


Figure 2.2-1 Water Balance Flow Diagram

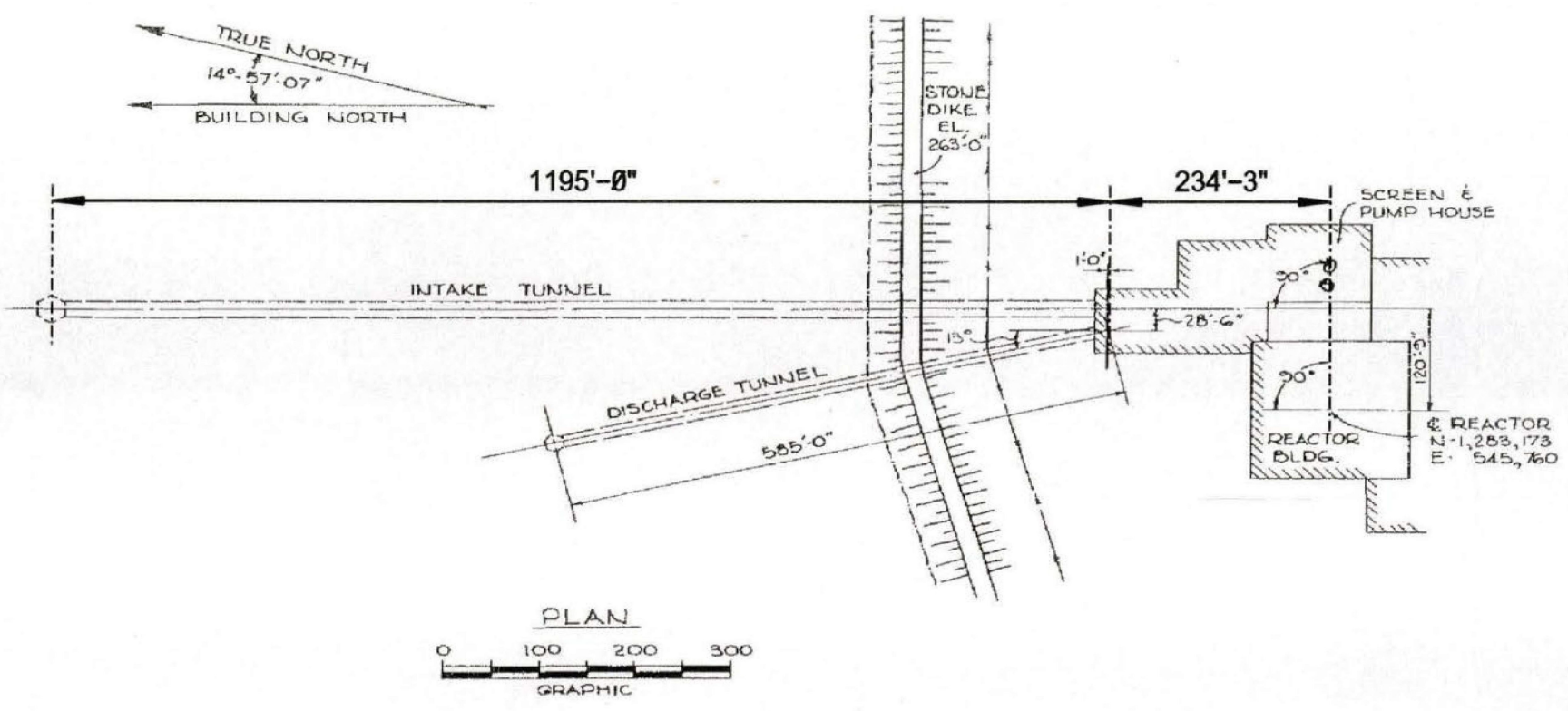


Figure 2.2-2 Intake and Discharge Tunnel Plan

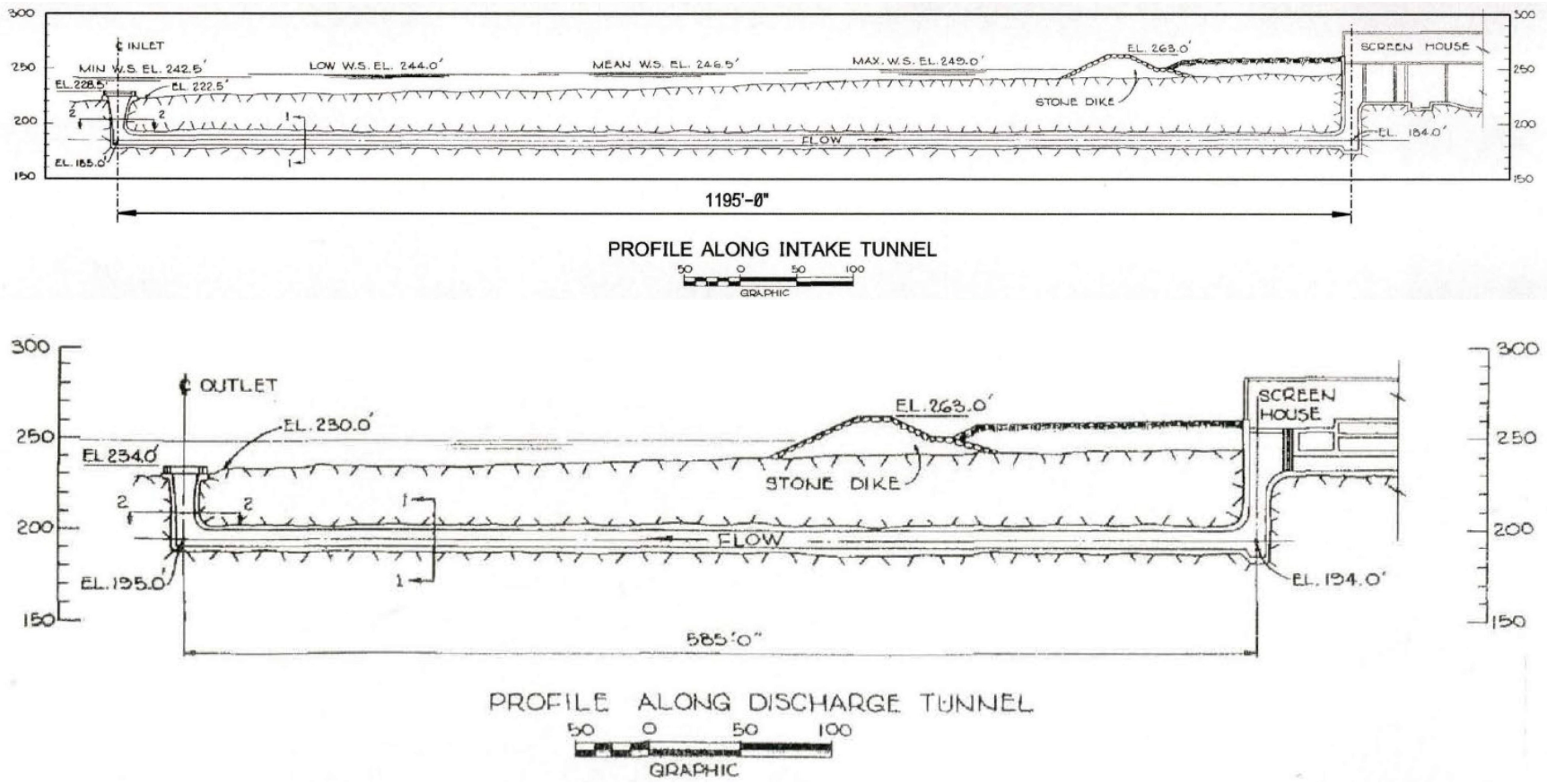


Figure 2.2-3 Intake and Discharge Tunnel Profile

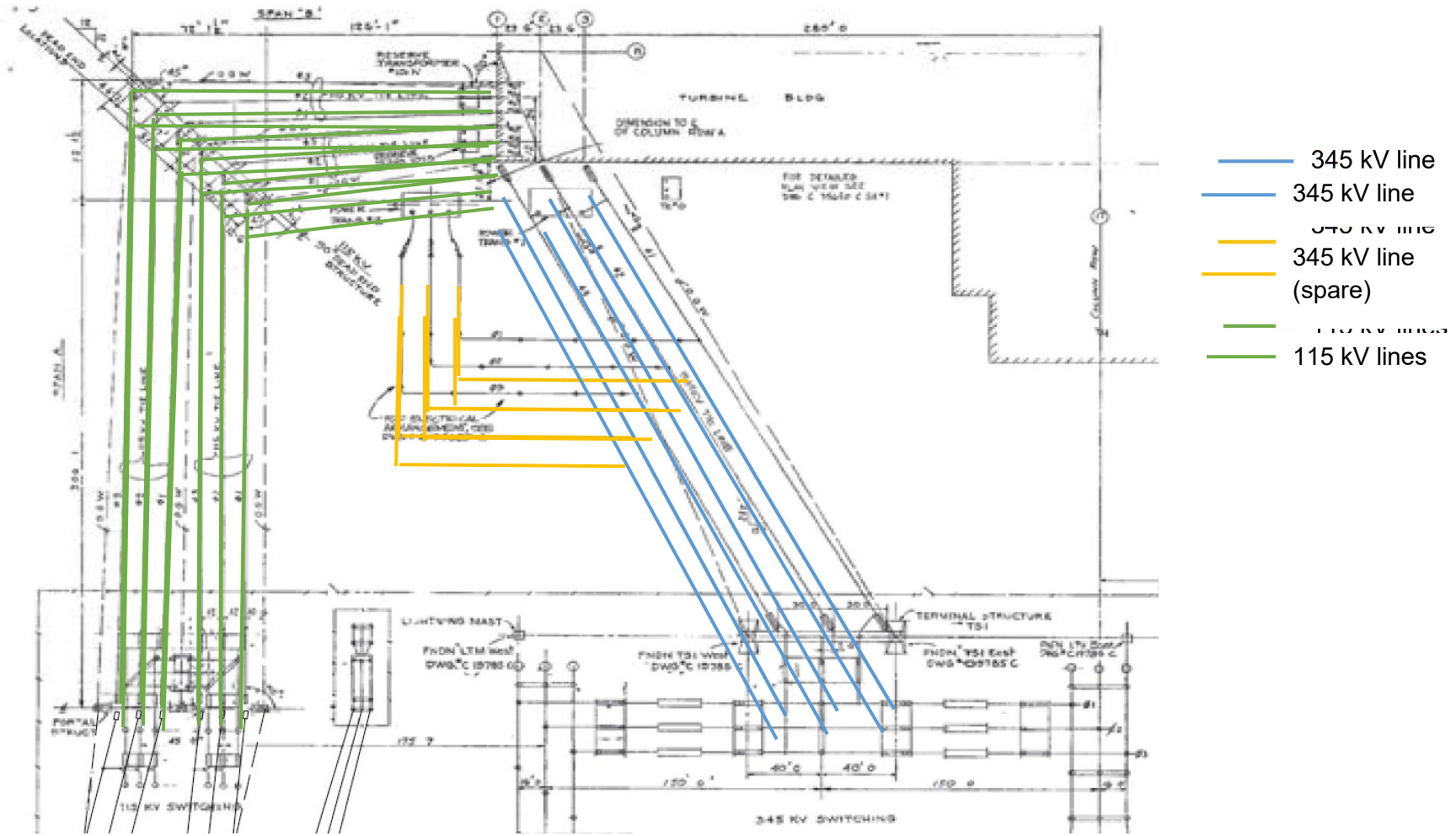


Figure 2.2-4 Transmission Line Diagram

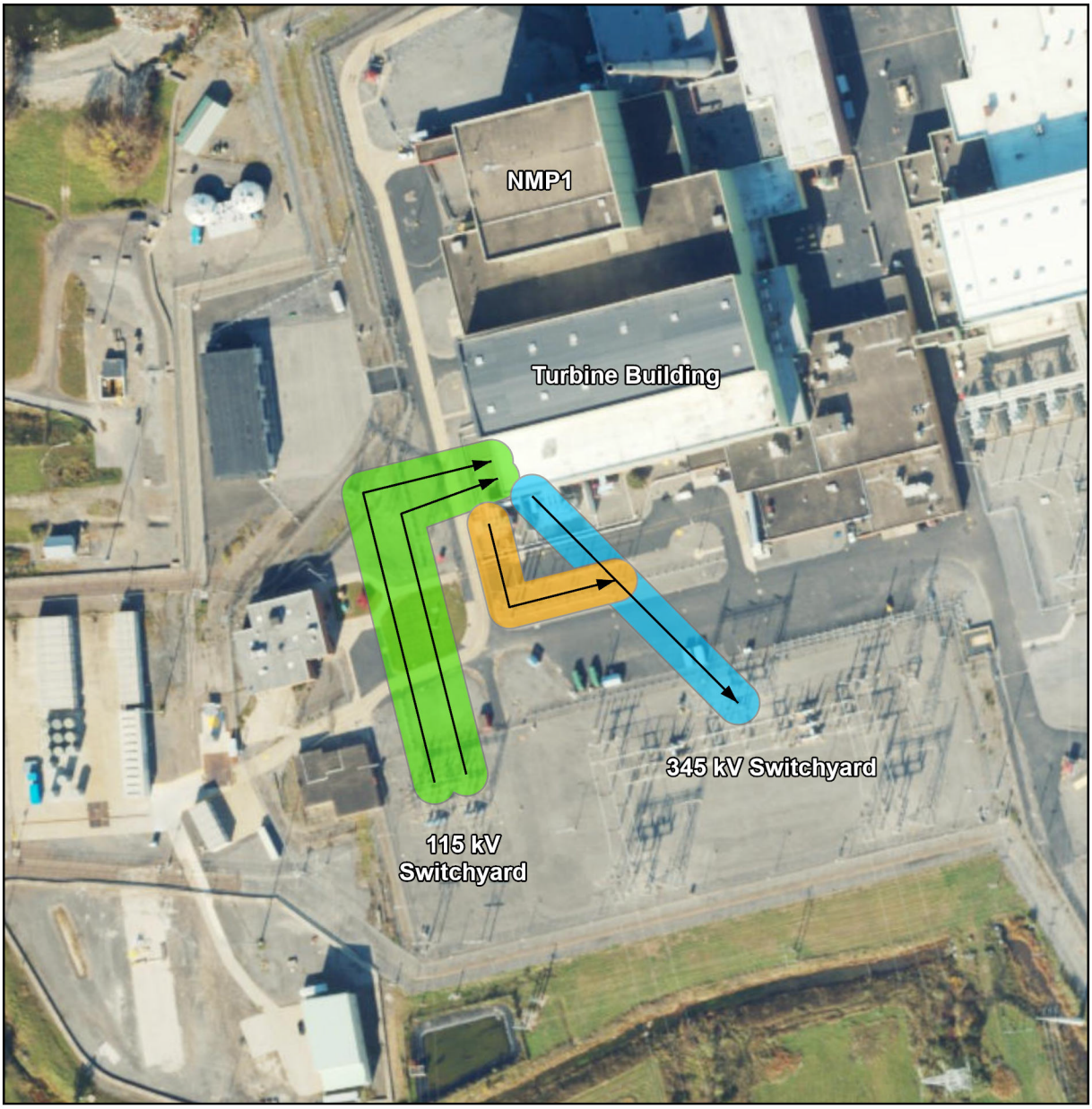


Figure 2.2-5 In-Scope Transmission Lines

2.3 Refurbishment Activities

In accordance with 10 CFR 51.53(c)(2), a license renewal applicant's ER must contain a description of the applicant's plan to modify the facility, or its administrative control procedures as described in accordance with § 54.21. If SLR-related refurbishment is planned at a facility, the applicant's ER is to include analysis for environmental impacts of the proposed refurbishment activity [10 CFR 51.53(c)(3)(ii)].

The incremental aging management activities implemented to allow operation of a nuclear power plant beyond the current license term are assumed to fall under one of two broad categories: (1) SMITTR actions, most of which are repeated at regular intervals, and (2) major refurbishment actions, which usually occur infrequently and possibly only once in the life of the plant for any given item. (NRC 2024a)

The NRC requirements for the renewal of OLs for nuclear power plants include preparation of an IPA [10 CFR 54.21]. The IPA must identify SSCs subject to an aging management review. The objective of the IPA is to demonstrate that the effects of aging are adequately managed so that the intended function(s) are maintained consistent with the current licensing basis for the period of extended operation. An example of an SSC subject to aging is the reactor vessel.

The NMP1 IPA, which CEG conducted under 10 CFR Part 54 and is described in the body of the Subsequent License Renewal Application (SLRA), has identified no SLR-related refurbishment or replacement actions needed to maintain the functionality of SSCs, consistent with the current licensing basis, during the SPEO.

2.4 Programs and Activities for Managing the Effects of Aging

In accordance with 10 CFR 51.53(c)(2), a license renewal applicant's ER must contain a description of the applicant's plans to modify the facility, or its administrative control procedures as described in accordance with § 54.21. This report must describe in detail the modifications directly affecting the environment or station effluents.

The programs for managing the effects of aging on certain structures and components within the scope of SLR at NMP1 are described in the body of the SLRA (see Appendix B of the NMP1 SLRA). The evaluation of structures and components required by 10 CFR 54.21 identified the activities necessary to manage the effects of aging on structures and components during the SPEO.

2.5 Employment

The non-outage workforce at NMPNS consists of approximately 1,143 employees, including 928 permanent full-time employees and 215 supplemental staff who support station operations for both NMP1 and NMP2. Approximately 69 percent of the permanent employees reside in Oswego County, with approximately 21 percent residing in Onondaga County and the remaining

10 percent residing in various other locations. Table 2.5-1 summarizes the residential distribution of permanent employees for NMPNS. There are no plans to add additional permanent employees to support station operations or SMITTR activities, and as noted in Section 2.3, no SLR-related refurbishment activities have been identified.

Refueling and maintenance outages for NMP1 occur on a 24-month cycle and generally last approximately 20 to 30 days. During these outages, there are typically an additional 1,000 to 1,250 temporary contract employees onsite.

Table 2.5-1 NMPNS Permanent, Full-Time Employee Residence Information, April 2024 (Sheet 1 of 4)

State	County	City/Town	Permanent Full-Time Employees
Florida (2)	Flagler (1)	Palm Coast	1
	Highlands (1)	Sebring	1
Georgia (3)	Barrow (1)	Winder	1
	DeKalb (1)	Stone Mountain	1
	Floyd (1)	Rome	1
Hawaii (1)	Honolulu (1)	Kaneohe	1
Mississippi (1)	DeSoto (1)	Olive Branch	1
New York (915)	Cayuga (23)	Auburn	6
		Cato	3
		Cayuga	1
		Fair Haven	1
		Martville	1
		Sterling	11
	Clinton (1)	Plattsburgh	1
	Dutchess (1)	Poughkeepsie	1
	Erie (3)	Buffalo	1
		Depew	1
		Lancaster	1
	Jefferson (7)	Adams	3
		Adams Center	1
		Brownville	1
		Lorraine	1
		Mannsville	1
	Madison (1)	Canastota	1

Table 2.5-1 NMPNS Permanent, Full-Time Employee Residence Information, April 2024 (Sheet 2 of 4)

State	County	City/Town	Permanent Full-Time Employees
New York (915)	Monroe (7)	Fairport	1
		Pittsford	1
		Rochester	3
		Webster	2
	Niagara (1)	North Tonawanda	1
	Oneida (13)	Blossvale	2
		Camden	8
		Taberg	1
		Vernon	1
		Westdale	1
	Onondaga (198)	Baldwinsville	66
		Brewerton	9
		Bridgeport	1
		Camillus	4
		Cicero	12
		Clay	14
		East Syracuse	4
		Jamesville	2
		Jordan	2
		LaFayette	1
		Liverpool	50
		Manlius	2
		Marcellus	1
		Minoa	1
		North Syracuse	5

Table 2.5-1 NMPNS Permanent, Full-Time Employee Residence Information, April 2024 (Sheet 3 of 4)

State	County	City/Town	Permanent Full-Time Employees
New York (915)	Onondaga (198)	Skaneateles	3
		Solvay	1
		Syracuse	20
	Oswego (642)	Altmar	5
		Bernhards Bay	2
		Central Square	20
		Cleveland	1
		Fulton	85
		Hannibal	9
		Hastings	4
		Lycoming	1
		Mexico	55
		Minetto	4
		New Haven	3
		Oswego	371
		Parish	14
		Pennellville	7
		Phoenix	17
		Pulaski	26
		Richland	2
		Sandy Creek	5
		Scriba	1
		West Monroe	6
		Williamstown	4

Table 2.5-1 NMPNS Permanent, Full-Time Employee Residence Information, April 2024 (Sheet 4 of 4)

State	County	City/Town	Permanent Full-Time Employees
New York (915)	Putnam (1)	Patterson	1
	Saint Lawrence (1)	De Peyster	1
	Saratoga (1)	Clifton Park	1
	Seneca (1)	Seneca Falls	1
	Steuben (1)	Wayland	1
	Tompkins (2)	Ithaca	2
	Warren (2)	Queensbury	1
		Warrensburg	1
	Wayne (6)	North Rose	1
		Ontario	2
		Red Creek	1
		Wolcott	2
	Westchester (2)	White Plains	2
	Wyoming (1)	Attica	1
Pennsylvania (2)	Chester (1)	Downingtown	1
	North Hampton (1)	Danielsville	1
Texas (2)	Harris (1)	Houston	1
	Parker (1)	Millsap	1
Virginia (2)	Alexandria (city)	Alexandria	1
	Portsmouth (city)	Portsmouth	1
		Total	**928**

(USCB 2023a; DOT 2022)

Note: NMPNS employee place of residence information is for permanent full-time staffing and does not include a breakdown for non-outage supplemental staff or temporary refueling outage workers. Supplemental staff settlement patterns are assumed to generally follow the county settlement patterns indicated by the permanent NMPNS staff.

2.6 Alternatives to the Proposed Action

As described in Section 2.1, the proposed action is for the NRC to renew the NMP1 OL for an additional 20 years. Because the NRC decision is to renew or not renew the existing NMP1 OL, the only fundamental alternative to the proposed action is the no-action alternative, which is the NRC's decision not to renew the NMP1 OL. NMPNS is one of three operating nuclear power stations in New York, and NMP1 is one of four operating nuclear units in the state. (NNY 2022) NMP1 provides an essential portion of long-term baseload capacity in New York. It is reasonable to assume that the decision not to renew the NMP1 OL involves replacement of its 615 MWe (net) generation. CEG has considered a range of replacement power alternatives from which to select the alternatives to be further analyzed for replacement of NMP1's baseload power generation.

2.6.1 Alternatives Evaluation Process

CEG developed the following set of evaluation criteria to review NMP1 replacement alternatives:

- Alternatives evaluated in the ER need to be capable of providing 615 MWe net
- Alternatives evaluated in this ER need to provide adequate levels of baseload generation for reliable electricity availability to maintain power grid supply and reliability
- Alternatives considered must be fully operational by August 22, 2029, when NMP1's OL expires, considering development of the technology, permitting, construction of the facilities, and connection to the grid
- Alternatives must be electricity-generating sources that are technically feasible and commercially viable.

2.6.2 Alternative Energy Sources

CEG considered the full range of alternatives considered in the GEIS with the criteria above. The following generation sources were selected as reasonable replacement alternatives based on the capability to provide reliable baseload power. Wind and solar installations are expected to require firming battery storage through co-located battery banks to ensure a stable and reliable energy supply.

Small Modular Reactor Alternative

- A small modular reactor (SMR) plant located at the previously proposed Unit 3 location onsite

Renewables Combination Alternative

- Onsite solar-wind installation with co-located battery banks
- Onshore wind installations located offsite with co-located battery banks
- Solar installations located offsite with co-located battery banks

Onshore Wind Alternative

- Onshore wind installations located onsite and offsite with co-located battery banks

A detailed discussion of the reasonable replacement alternatives is presented in Section 7.2.1.

CEG determined the following generating alternatives were not considered reasonable replacements in comparison to renewal of the NMP1 OL. Wind and solar are included in the list as unreasonable as discrete alternatives but are components of the combination alternatives identified above:

- Purchased Power
- Station reactivation or extended service life
- Conservation and energy efficiency measures
- Wind
- Solar
- Geothermal
- Hydropower
- Biomass
- Fuel cells
- Ocean wave and current energy
- Oil-fired plants
- Coal-fired plants
- Natural gas-fired plants.

The alternatives not selected as reliable baseload generation for replacing the NMP1 generation are presented in Section 7.2.2. Alternatives for reducing adverse environmental impacts are addressed in Section 7.3.

2.6.3 Alternatives for Reducing Adverse Impacts

No additional alternatives were considered by CEG to reduce impacts because, as determined in Chapter 4, the continued operation of NMP1 does not result in significant adverse effects to the environment.

3.0 AFFECTED ENVIRONMENT

NMP1 is located in Oswego County, New York, on the shores of Lake Ontario. Approximately 300 feet due east, on western portions of the Nine Mile Point promontory, is NMP2. JAF is located to the east. (CEG 2022a; CEG 2023a) The NMPNS site is approximately 846 acres.

3.1 Location and Features

NMP1 is located within the municipal boundaries of the Town of Scriba and is approximately 6.8 miles northeast of the City of Oswego and 35 miles north-northwest of Syracuse, New York. Figure 3.1-1 depicts the site boundary, exclusion area boundary, facility structures, adjacent NMP2 facilities, and Lake Ontario as they relate to NMP1. Topographic features adjacent to NMP1 and within the NMPNS site boundary are shown in Figure 3.1-2.

3.1.1 Vicinity and Region

The vicinity of NMP1 is defined as the area within a 6-mile radius of the Unit 1 reactor containment building center point, established at 43° 31' 17.63" north latitude and 76° 24' 37.87" west longitude. As shown in Figure 3.1-3, along with Lake Ontario, the vicinity includes Oswego County, the towns of Scriba and New Haven, and a portion of the City of Oswego. For many miles west, east, and south, the land is characterized by rolling terrain rising gently up from the lake. (CEG 2023a) Oswego County is part of the Syracuse Metropolitan Statistical Area, as defined by the U.S. Census Bureau (USCB) (USCB 2020a). As shown in Table 3.9-2, Oswego County's 2022 population count was 118,287, an increase from 117,525 in 2020.

Table 3.9-1 provides a list of communities located within a 50-mile radius of NMP1. The City of Oswego is the largest city in Oswego County and also the nearest city to NMP1. In 2022, the City of Oswego had a population count of 17,092, a slight increase from 16,921 in 2020.

The region of NMP1 is defined as the area within a 50-mile radius of the Unit 1 reactor containment building center point. As shown in Figure 3.1-4 and described in Table 3.9-2, the NMP1 region encompasses all or portions of 10 New York counties and one Canadian province. The highest population by county or province in the region is the Canadian Province of Ontario, which had a population count of 15,145,006 in 2022. As of 2022, Syracuse, New York, was the only city within the 50-mile region with a population of over 50,000 persons. Along with Syracuse, there are two New York communities in the region with a population of over 25,000: the City of Auburn and Rome City (see Table 3.9-1).

As shown in Figure 3.1-3 and Figure 3.1-4, Lake Ontario is the predominant physical feature in the region. Aside from the adjacent JAF, the two closest industrial sites within the NMP1 vicinity are Novelis Corporation, a manufacturer of aluminum sheet and plating, and Sithe Energies USA Independence Generation Plant, an electrical generation facility. Both facilities are within 3 miles of the station to the southwest. Two natural gas pipelines lie within the station vicinity,

one supplying the Independence Plant and the other supplying Indeck Energy, which lies farther to the southwest. Both pipelines are within 5 miles of the station and are located within north–south and east–west transmission line corridors. (CEG 2023a)

As discussed in Section 3.9.5, New York State Route 104 (NY 104) provides commuter access to the station from the south and traverses the area west toward Rochester, New York. East of the site, NY 104 travels in a winding pattern and intersects with other routes toward Syracuse, New York, outside of which it merges with Interstate 81. Commuters from the southeast exit onto County Road 29 and travel north before turning west onto Lake Road. The closest access to Amtrak passenger rail service is in Syracuse (Amtrak 2024).

The Oswego River passes within roughly 7 miles of NMPNS at its nearest point and serves as a major route for waterborne commerce on Lake Ontario. The Port of Oswego, a deepwater port located at the mouth of the Oswego River in Oswego, New York, is the closest port to NMP1 and handles approximately 1 million tons of cargo on an annual basis. The nearest commercial shipping lane passes no closer than 7 miles to the intake for NMP2. Because the site is on a navigable portion of Lake Ontario, the station is accessible by barge for construction and supply purposes. (CEG 2022a; POA 2024) The closest rail line is the Oswego–Mexico branch of Conrail, located approximately 1.5 miles from NMPNS. A rail spur that previously ran to the site is no longer in use. There are no airfields within 10 miles of the station. The closest full-service airport is Oswego County Airport, located approximately 11.8 miles south of NMP1. (AirNav 2024)

3.1.2 Station Features

The NMPNS site occupies approximately 846 acres bordering Lake Ontario. Outside of the station, the site and its environs consist primarily of a southern portion of Lake Ontario, forest, pastureland, developed land, and woody wetlands. Land use is further described in Section 3.2.

CEG owns all of the property in the exclusion area, with the exception of land related to the transmission lines, which is owned by National Grid. Distances from the station to the exclusion area boundary are measured from the centerline of the Unit 2 reactor and approximately 1 mile to the east, 0.87 miles to the southwest, and over 1.3 miles to the southern site boundary (Figure 3.1-1). Lake Road, which provides access from Lakeview Road and County Road 29 to Units 1 and 2 and to the JAF, is privately owned between Lakeview Road and County Road 29, and public use is not permitted. Under emergency conditions, the appropriate authority is contacted in the event that it becomes necessary to control traffic on Lake Road. When requested, the Consolidated Railroad Corporation controls railroad traffic through the exclusion area. There are no state or other roads, shipping lanes, or rail lines crossing the restricted area. (CEG 2022a) The property ownership and ownership of the mineral rights provide CEG the authority to determine all activities, including exclusion and removal of personnel and property from the exclusion area. The nearest residence is 1.1 miles east-southeast from the NMP2 reactor building centerline (CEG 2024c).

Site boundaries and the former country road that traverses the site are posted as private property. The area immediately around the station buildings is fenced, with building access controlled by station security personnel, known as the restricted area or protected area (PA). (CEG 2023a)

3.1.3 Federal, Native American, State, and Local Lands

There is a large variety of state and local parks and wildlife management areas located in the NMP1 6-mile vicinity (Figure 3.1-5) and 50-mile region (Figure 3.1-6). As summarized in Table 3.1-1 and discussed in Section 3.9.6, there are six public use lands within the 6-mile vicinity of NMP1, including the Fort Ontario State Historic Site. Within the NMP1 50-mile region, there are four federal and state parks, notably Tug Hill State Forest as the largest in the NMP1 region and Deer Creek Marsh Wildlife Management Areas as the closest to NMP1 (USDA 2024a). There are three federal public use lands within the region: Women's Rights National Historical Park, Harriet Tubman National Historical Park, and Montezuma National Wildlife Refuge. No public use lands fall within the site boundary.

There are eight federally recognized American Indian tribes in New York. As depicted in Figure 3.1-6, two of these tribes have reservations or lands located in the 50-mile region, the Oneida Indian Nation, and the Onondaga Nation, and one tribe, the Cayuga Nation, has a tribal data statistical area located in the region. The Seneca-Cayuga Nation has no lands in the region but maintains a vested historical interest in the area. (FEMA 2024; USCB 2023a; USDA 2024a)

There are four military installations in the region: Fort Drum, Hancock Field Air National Guard Base, Syracuse Marine Corps Reserve Center, and Defense Fuel Support Point Verona. Fort Drum, located 45.6 miles northeast of the site in Jefferson County, encompasses roughly 168 square miles and employs more than 18,700 personnel (USA 2024; USDA 2024a)

3.1.4 Federal and Non-Federal Project Activities

The County of Oswego Industrial Development Agency has received nearly $2.8 million in grant money from the New York State Department of Transportation Passenger and Freight Rail Assistance Program to make rail improvements onsite at the Novelis aluminum plant in Scriba, including track updates and reactivations as well as replacing two high-emission railcar movers and reactivating a section of dormant track so workers can move railcars more efficiently. The project is expected to create four new jobs and support the retention of the 1,200-plus manufacturing jobs at the Oswego area plant. (OCNN 2024) Additionally, construction has begun on infrastructure projects totaling approximately $5 million in Oswego County. Neither of the projects is within the NMP1 vicinity. (NYS 2025)

Table 3.1-1 Federal, State, and Local Lands Totally or Partially Within 6 Miles of NMP1

Name	Type	Management	Distance (Miles)	Direction	County(ies)
County Park	Local	County of Oswego	4.5	SW	Oswego
Independence Park	Local	County of Oswego	1.9	SW	Oswego
Scriba Town Park	Local	Town Of Scriba	5.1	South	Oswego
Sunset Bay Park	Local	Town Of Scriba	1.2	East	Oswego
Ontario Bible Conference Camp [(a)]	Local	Lake View Park Association	0.8	SW	Oswego
Fort Ontario State Historic Site	State	NYS Office of Parks, Recreation and Historic Preservation	6.0	SW	Oswego

(NMPNS 2004; TOS 2022; USDA 2024a)

a. Privately owned land with public accessibility.

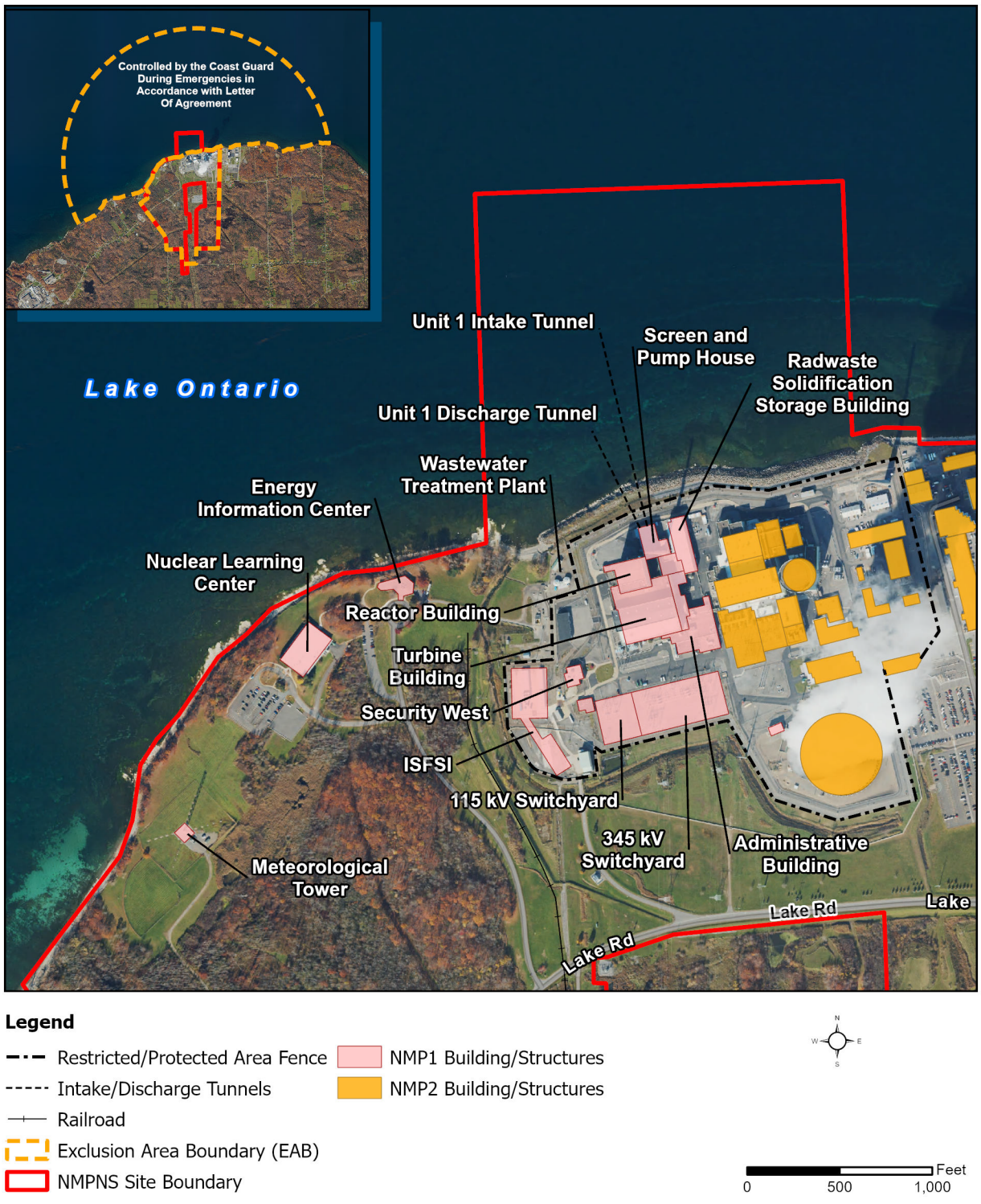


Figure 3.1-1 NMPNS Site Layout

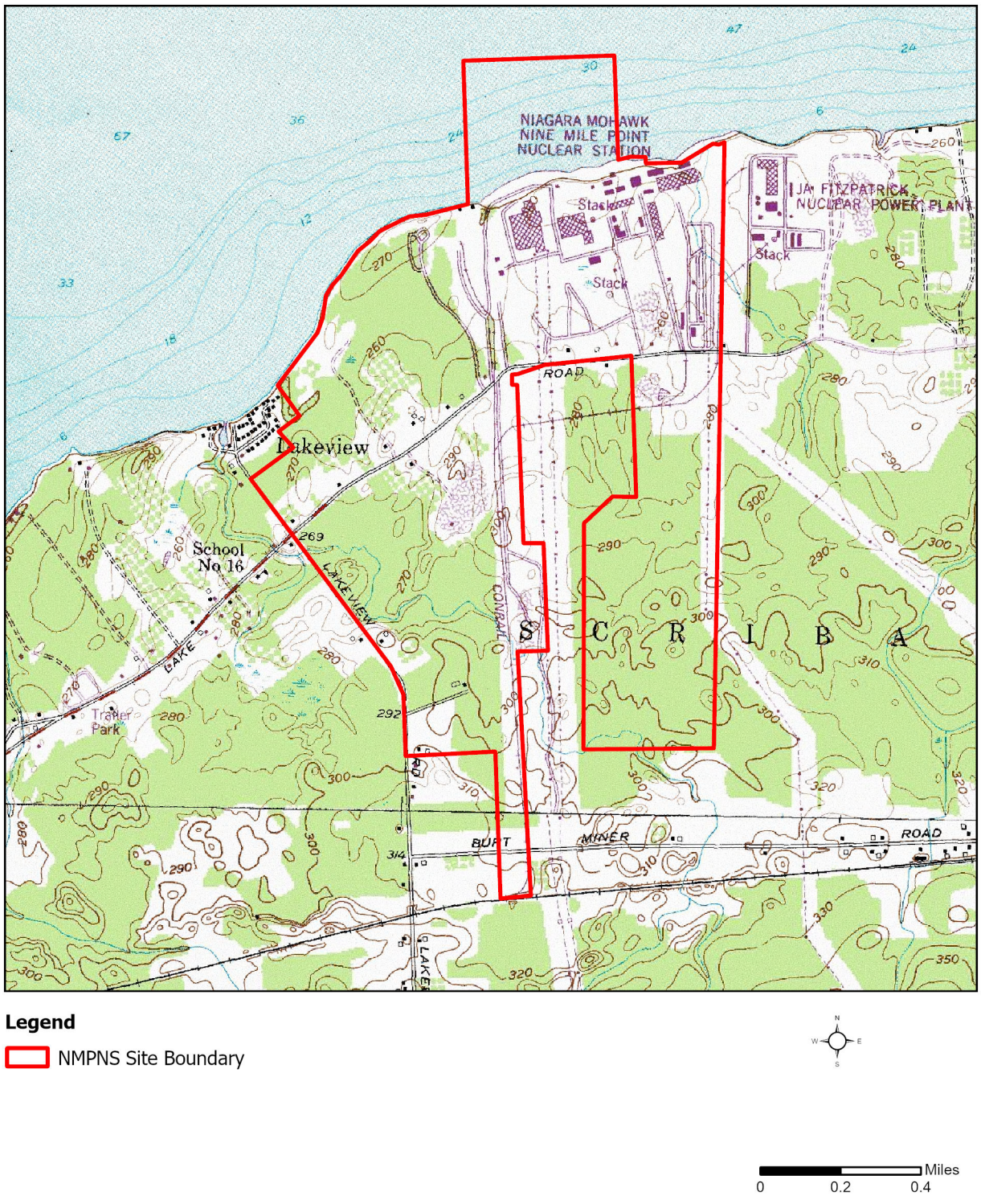


Figure 3.1-2 NMPNS Site Area and Topography

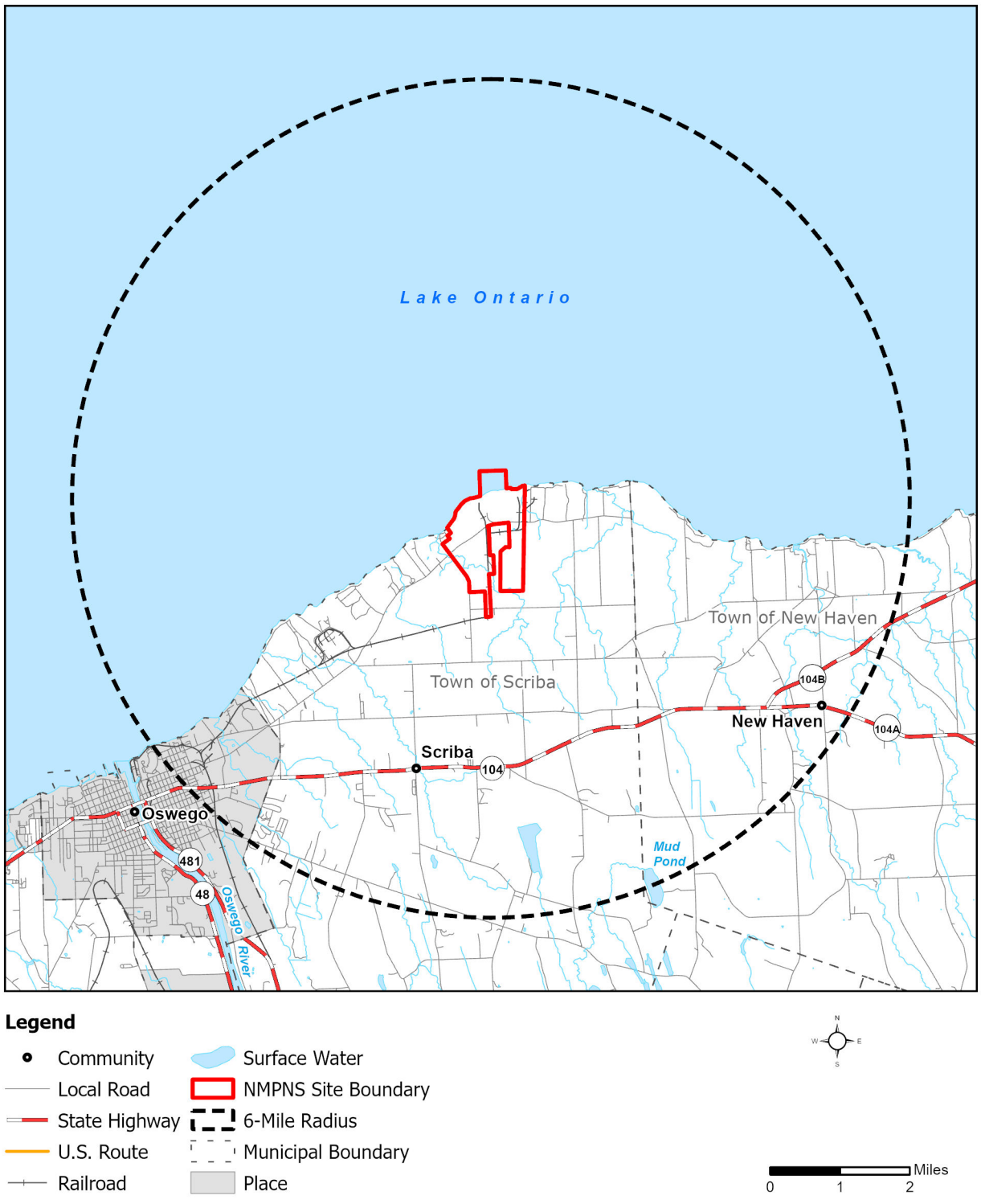


Figure 3.1-3 NMP1 and 6-Mile Radius



Figure 3.1-4 NMP1 and 50-Mile Radius



Figure 3.1-5 Federal, State, and Local Lands Within a 6-Mile Radius of NMP1

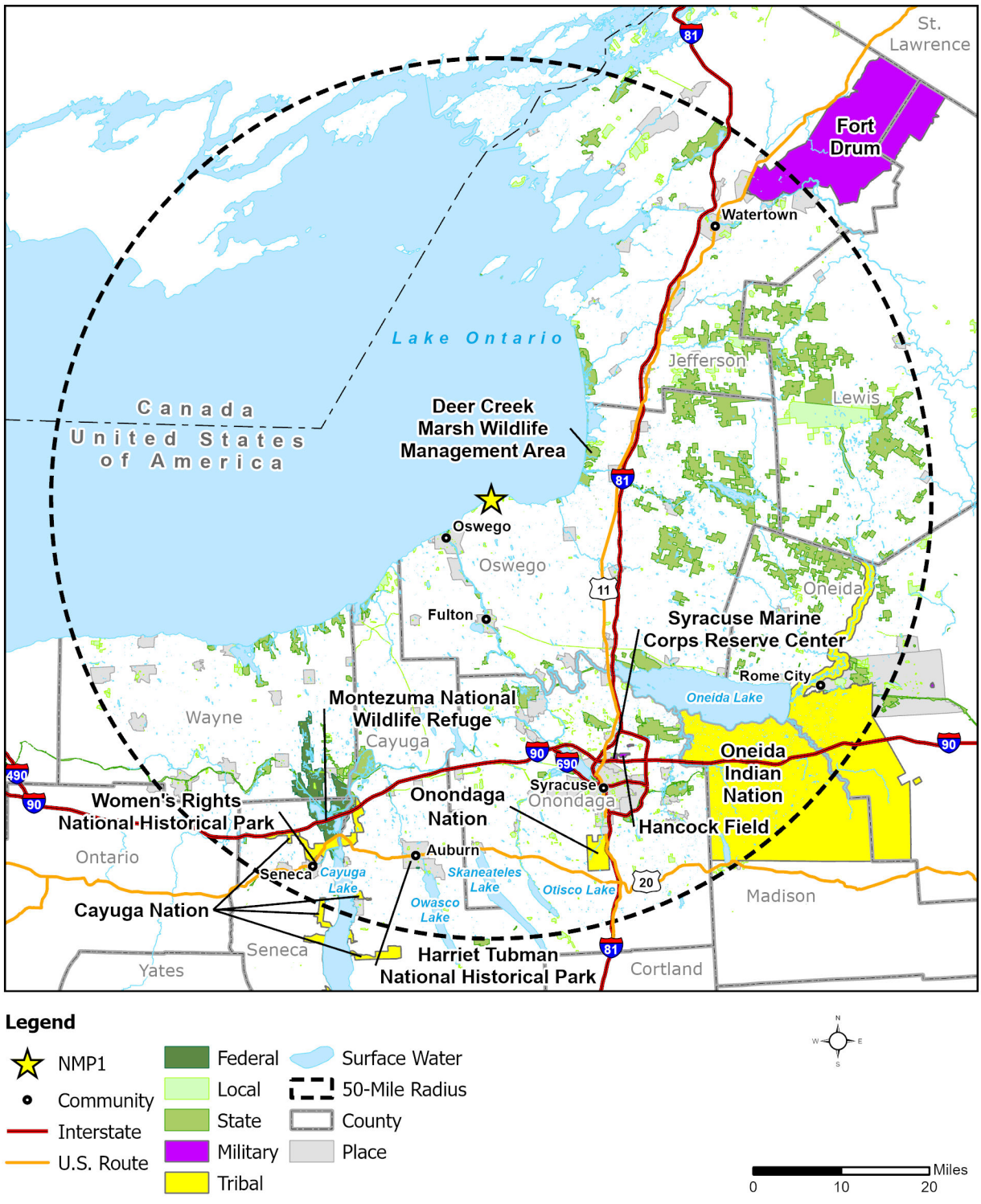


Figure 3.1-6 Federal, State, and Local Lands Within a 50-Mile Radius of NMP1

3.2 Land Use and Visual Resources

Land use descriptions focus on Oswego and Onondaga Counties, New York, because, as described in Section 2.5, approximately 90 percent of NMPNS permanent workforce reside in these counties.

3.2.1 Onsite Land Use

As described in Section 3.1, NMP1 is on the southeastern shore of Lake Ontario in the Town of Scriba in Oswego County, New York. The site is in a rural area approximately 6.8 miles northeast of the City of Oswego and 35 miles north-northwest of Syracuse.

NMP1 is within the larger NMPNS site, which covers approximately 846 acres and has over 1 mile of shoreline on Lake Ontario. Approximately 188 acres of the NMPNS site are used for power generation and support facilities. The remaining acreage is generally characterized as undeveloped, apart from the Energy Information Center (EIC) and adjacent picnic area, the Nuclear Learning Center (NLC) (training facility), and a firing range for security personnel training. (NRC 2006a) NMPNS does not have any lease agreements, public access agreements, or natural areas established within the site boundary. National Grid owns the transmission lines that extend south of Lake Road within the NMPNS site and associated corridors and easements to access those lines. NMPNS maintains easement agreements with National Grid for access, construction, operation, maintenance, and renovation of those lines. (NRC 2006a)

As shown in Table 3.2-1 and illustrated in Figure 3.2-1, deciduous forest is the largest land use/land cover category within the NMPNS site boundary, covering approximately 37.20 percent of the site. Developed (open space/low/medium/high intensity) categories collectively are the next largest land use/land cover categories, accounting for approximately 24.83 percent of the site, followed by pasture/hay and woody wetlands categories, with 12.36 and 11.47 percent, respectively. The remaining seven land use/land cover categories account for approximately 14.14 percent of the site. (MRLC 2021)

NMP1 is located in the Town of Scriba in Oswego County, New York. There are currently no zoning regulations in place to mandate and regulate acceptable land use practices in the Town of Scriba. Therefore, NMPNS is not currently subject to zoning or land use regulations. (TOS 2022)

Section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA) (16 USC 1456[c][3][A]) requires that applicants for federal licenses that conduct any activity in a coastal zone provide a certification that the proposed activity complies with the enforceable policies of the state's coastal zone program. The State of New York's CZMA (Section 923.48) establishes the state's coastal management program. New York State's coastal management program includes four distinct regions: Long Island, New York City, the Hudson River Valley, and the Great Lakes-St. Lawrence River region. The NMPNS site is within the State of New York's Great Lakes-St.

Lawrence River region, which includes coastal portions of 10 counties along Lake Ontario and the eastern shores of Lake Erie. (NYSDOS 2023) As discussed in Section 9.4.11, subsequent renewal of the NMP1 OL is consistent with New York State's coastal management program.

3.2.2 Offsite Land Use

As described in Section 3.9.1 and listed in Table 3.9-2, Oswego County has seen an increase in total population between 2020 and 2022 while Onondaga County has seen a decrease in total population for the same period. These counties are expected to experience little to no growth in population through 2049.

As described in Section 3.1, the NMP1 vicinity (6-mile radius) is a mixture of towns, residential development, and agricultural lands with forested and natural areas interspersed. The land use/land cover categories located within the vicinity of NMP1 are depicted in Figure 3.2-2. Lake Ontario is the predominant natural feature in the vicinity, and as noted in Table 3.2-2, approximately 61.1 percent of the area is open water. The largest land use/land cover categories are deciduous forest and pasture/hay, which represent 19.0 and 6.2 percent, respectively, followed by woody wetlands at 4.5 percent. The remaining 11 land use/land cover categories account for approximately 9.2 percent of the vicinity. (MRLC 2021)

Oswego County occupies approximately 609,052 acres of land, of which 85,696 acres (approximately 14.1 percent) are proportioned to farmland. The 2022 Census of Agriculture reports that the county had a total of 592 farms with an average farm size of 145 acres. Approximately 481 farms produce crops, with the primary crops reported as forage (18,460 acres), soybeans (2,435 acres), corn for grain (4,733 acres), corn for silage or greenchop (4,531 acres), orchards (536 acres), and potatoes (4 acres). Livestock is also an important product in the county, with livestock commodities such as cattle and calves (179 farms), layers (131 farms), hogs and pigs (32 farms), sheep and lambs (20 farms), and broilers and other meat-type chickens (13 farms). Other agricultural uses of farmland within the county include woodlands (416 farms; 27,706 acres), pastureland (343 farms; 9,968 acres), and permanent pasture and rangeland (295 farms; 6,362 acres). (USDA 2022)

Onondaga County occupies approximately 498,168 acres of land, of which 164,239 acres (approximately 33.0 percent) are proportioned to farmland. The 2022 Census of Agriculture reports that the county had a total of 572 farms with an average farm size of 287 acres. Approximately 499 farms produce crops, with the primary crops reported as forage (35,965 acres), corn for silage or greenchop (20,571 acres), corn for grain (19,608 acres), soybeans (15,407 acres), wheat for grain (5,139 acres), oats for grain (2,128 acres), orchards (1,430 acres), and potatoes (17 acres). Livestock is also an important product in the county, with livestock commodities such as cattle and calves (158 farms), layers (81 farms), sheep and lambs (26 farms), hogs and pigs (25 farms), and broilers and other meat-type chickens (4 farms). Other agricultural uses of farmland within the county include woodlands (570 farms; 37,588 acres), pastureland (537 farms; 25,498 acres), and permanent pasture and rangeland (479 farms; 18,109 acres). (USDA 2022)

Article IX of the New York State Constitution requires the state legislature to enact a "Statute of Local Governments" in order to grant certain powers to local governments. The granted powers include:

- the power to adopt ordinances, resolutions, rules, and regulations;
- acquire real and personal property;
- acquire, establish, and maintain recreational facilities;
- fix, levy, and collect charges and fees; and
- in the case of a city, town, or village, to adopt zoning regulations and conduct comprehensive planning.

This section of the New York State Constitution, generally referred to as the Home Rule Provision, contains two sections: Section 1 is the Bill of Rights for local governments, and Section 2 provides for the general powers of local governments. Under the County Law, counties have certain powers with respect to planning but no powers to adopt zoning or subdivision regulations. However, in those counties that have adopted charters, the county may have powers related to subdivisions that are not otherwise provided in state law. Land use regulations, including but not limited to zoning, subdivision regulations, site plan review, and historic preservation, are all derived from the police power, which is an inherent power of New York State and is delegated to municipalities under the home rule provisions of the New York Constitution. (AS 2024)

The 2022 Town of Scriba Site Plan Review Ordinance Revision serves as the chief planning tool to guide and manage growth, development, and the built and natural environment of Scriba. A primary focus of the plan is to regulate the arrangement, layout, and design of certain proposed uses of parcels of land within the Town of Scriba in furtherance of its intention to establish a plan for the orderly development of the town in accordance with the 2000 Town of Scriba Comprehensive Plan. The plan provides policy guidance for addressing future issues including, but not limited to, housing, land use, urban design and community appearance, transportation, economic development, utilities, and natural resources. This plan is implemented through the site plan regulations as well as through decisions made by the Town of Scriba Planning Board. (TOS 2022)

The Oswego Department of Community Development, Tourism, and Planning includes the Office of Planning and Community Development, which coordinates activities in land use and zoning, comprehensive planning, environmental management, mapping, and community development. This office offers support to municipalities through education, technical assistance, and project review. The primary purpose of the 2008 Oswego County Comprehensive Plan is to serve as a guide to county decision makers as they work to accommodate the physical growth and development of Oswego County. The Oswego County Comprehensive Plan addresses nine subject areas based on New York State legislation defining a comprehensive plan. Sections of the plan include:

- Natural Resources and Environment;
- Historic Resources;
- Transportation;
- Infrastructure;
- Housing;
- Community Facilities;
- Parks, Recreation, and Open Space;
- Economic Development; and
- Land Use and Community Design.

The plan is intended to be helpful to local towns, villages, and cities as they plan for their communities' futures; to state agencies as they plan facilities within the county; and to other public entities, private businesses, not-for-profit agencies, and citizens as they plan for their futures. (OSCNY 2008)

The Onondaga County Department of Planning provides a variety of planning services for Onondaga County, the City of Syracuse, and the 19 towns and 15 villages in Onondaga County. The mission of the Onondaga County Department of Planning is aligned with the initiatives of the County Executive to address issues surrounding poverty, infrastructure, and economic development. The primary purposes of the Onondaga County Comprehensive Plan, adopted by the Onondaga County Department of Planning in 2023, are to define a vision and goals for community success that include the shared needs, goals, and challenges of each municipality and to facilitate a pathway to implement positive growth and change. The Onondaga County Comprehensive Plan addresses five subject areas as defined by the Planning Team. Sections of the plan include Strong Centers, Housing and Neighborhoods, Community Mobility, Greenways and Blueways, and Agriculture. The plan is intended to synthesize the important planning and development drivers affecting communities; build relationships, capacity, and awareness across all sectors; inform policymaking and bridge local needs with state and federal resources; provide for and help prioritize public investments that transcend municipal boundaries; and provide guidance and resources and identify training necessary to support the collective vision in the Onondaga County Comprehensive Plan. (OCNY 2023)

3.2.3 Visual Resources

As discussed in Section 3.1, NMP1 is located on the southeastern shore of Lake Ontario in the Town of Scriba in Oswego County, New York. Figure 3.1-1 shows the NMPNS site layout and site boundary in association with Lake Ontario. The surrounding area is a mixture of rural residential towns and small communities, agricultural land, deciduous forest, and lakeshore frontage. The nearest residence is 1.1 miles east-southeast from the NMP2 reactor building centerline (CEG 2024c).

Prominent visual features at NMPNS include the exhaust stacks, auxiliary buildings, reactor buildings, turbine buildings, and transmission lines connecting to the Nine Mile Point substations. The Unit 2 cooling tower is the tallest and most visible feature at the site, with a height of approximately 541 feet, followed by the Units 2 and 1 exhaust stacks (429 and 350 feet, respectively). NMP1 and NMP2 and their supporting structures can be seen from the immediate surrounding area, including from County Road 1, by recreational users on Lake Ontario and from NY 104 at night due to the outside lighting used on the cooling tower and the meteorological towers. The cooling tower vapor plume is also visible from the Town of Scriba and NY 104. Onsite, the ground surface is generally flat and slopes gently to the north toward Lake Ontario. The cooling tower aircraft warning lights are currently non-functioning and are expected to be replaced with a new lighting system in 2026. As described in Section 2.3, there are no plans for refurbishment activities or projects expected to create new visual impacts during the proposed SPEO.

Table 3.2-1 Land Use/Land Cover, NMPNS Site

Category	Acres[(a)]	Percent
Open Water	77	9.18
Developed, Open Space	40	4.69
Developed, Low Intensity	29	3.45
Developed, Medium Intensity	32	3.82
Developed, High Intensity	109	12.87
Barren Land (Rock/Sand/Clay)	1	0.11
Deciduous Forest	314	37.20
Evergreen Forest	5	0.61
Mixed Forest	12	1.37
Shrub/Scrub	12	1.48
Grassland/Herbaceous	5	0.55
Pasture/Hay	104	12.36
Woody Wetlands	97	11.47
Emergent Herbaceous Wetlands	7	0.84
Total	844	100.0

(MRLC 2021)

a. The acreages presented in this table are based on the Multi-Resolution Land Characteristics Consortium land use/land cover data. These data are presented in a raster (pixel-based) format, and because of their square geography, they do not exactly match the NMPNS site. This geographic variation creates a difference between total acreages reported in Table 3.2-1 compared to the NMPNS site acreage reported throughout the ER. Additionally, the site boundary used to calculate the land use/land cover acreages is a general representation of the NMPNS site area and therefore may contribute to deltas in the total acreage reported.

Table 3.2-2 Land Use/Land Cover, 6-Mile Radius of NMP1

Category	Acres	Percent
Open Water	44,191	61.1
Developed, Open Space	1,622	2.2
Developed, Low Intensity	1,081	1.5
Developed, Medium Intensity	558	0.8
Developed, High Intensity	418	0.6
Barren Land (Rock/Sand/Clay)	54	0.1
Deciduous Forest	13,764	19.0
Evergreen Forest	606	0.8
Mixed Forest	1,055	1.5
Shrub/Scrub	614	0.8
Grassland/Herbaceous	83	0.1
Pasture/Hay	4,512	6.2
Cultivated Crops	373	0.5
Woody Wetlands	3,289	4.5
Emergent Herbaceous Wetlands	161	0.2
Total	72,379	100.0

(MRLC 2021)

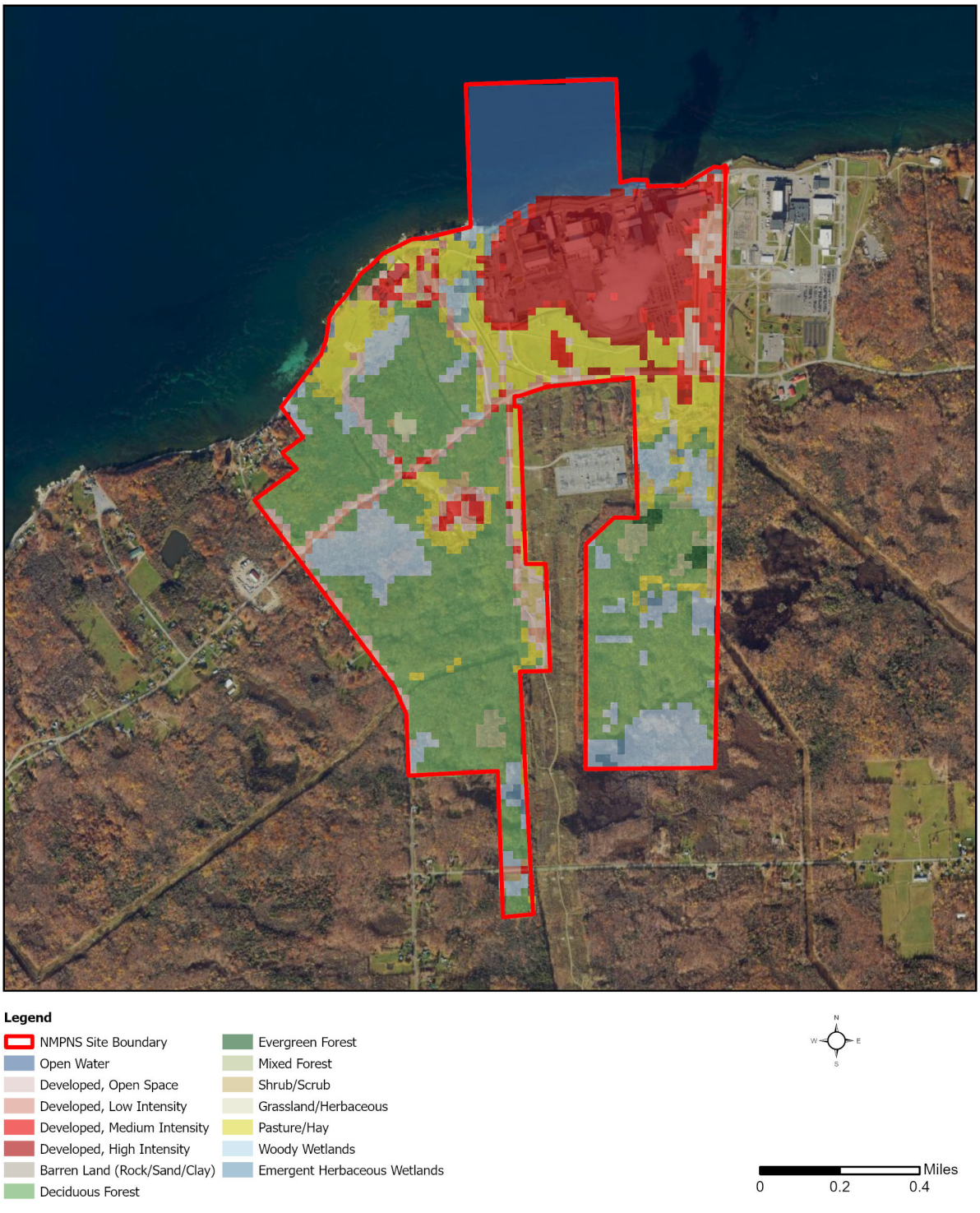


Figure 3.2-1 Land Use/Land Cover, NMPNS Site

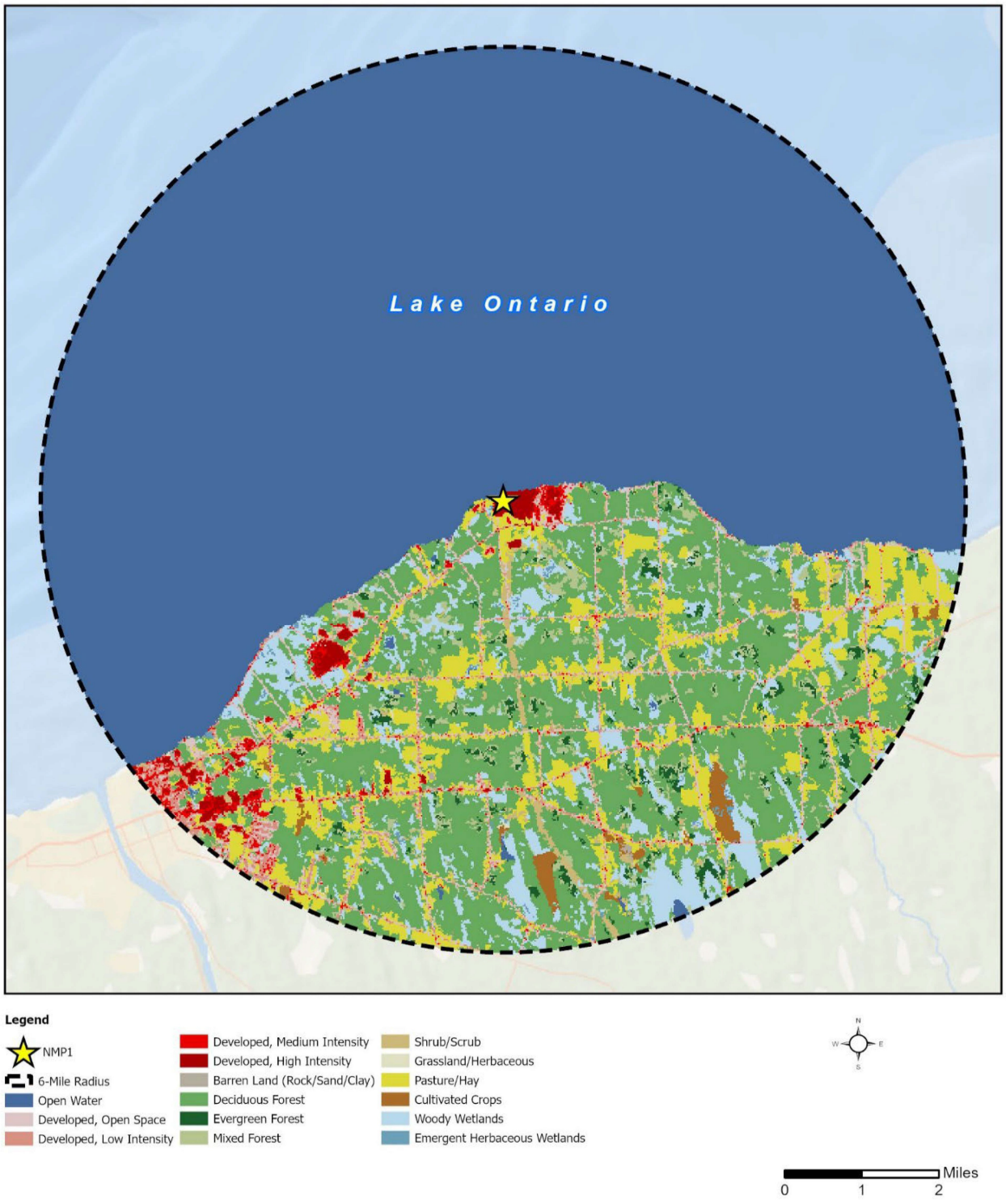


Figure 3.2-2 Land Use/Land Cover, 6-Mile Radius of NMP1

3.3 Meteorology and Air Quality

A high-level overview of the station's layout, including the location of the meteorological tower, is provided in Figure 3.1-1 of the ER.

Climatological data presented in this section represent a range of meteorological conditions considered typical for the NMP1 region. The Syracuse (KSYR) and Rochester (KROC) weather stations are the closest first-order National Weather Service (NWS) data collection stations to NMPNS with a significant period of meteorological data and similar climatological conditions. Data from the KSYR station have been used in previous NMPNS licensing environmental reviews, and the KROC location provides climatologic conditions for areas near the shores of Lake Ontario; thus, these locations are being used to describe the representative climatic conditions (NMPNS 2004).

3.3.1 General Climate

The KSYR station is located approximately 32 miles south-southeast of NMP1 at the Syracuse Hancock International Airport in Syracuse, New York (AirNav 2024; NCEI 2024a). Syracuse is situated at the approximate geographic center of the state, in an area characterized by gently rolling terrain that stretches west of the city and northward to the eastern end of Lake Ontario. Lake Oneida is approximately 8 miles to the northeast. An area of hills rising to 1,500 feet lies approximately 5 miles south of the city. The climate is primarily continental in character, with changes in the weather primarily originating from storm systems that traverse the interior of the United States through the St. Lawrence Valley. Precipitation is generally evenly distributed throughout the year, with the area averaging approximately 3 inches per month. Winters are usually cold and are sometimes severe, with daytime high temperatures averaging in the low 30s°F and nightly lows in the teens, and temperatures below -25°F have been recorded. The first average freeze occurs in the fall around October 16, with the last occurrence in the spring around April 28. Winter precipitation is significantly influenced by Lake Ontario and the "lake-effect" process. The lake is quite deep and never freezes, allowing for cold air masses passing over the relatively warmer water body to become quickly saturated and produce cloudiness and snow squalls, which are common winter weather features. The Syracuse area averages over 100 inches of snowfall per year and often experiences wind velocities that are high enough to cause blowing and drifting. Unlike the winter months, the warmer months receive ample sunshine and experience temperatures that rise rapidly during the daytime and fall just as rapidly to cool and comfortable levels after sunset. There are about 30 days per year with thunderstorms, most of which occur during the warmer months. The area generally experiences sufficient precipitation most years to support agriculture and water demands. (NCDC 2022)

The KROC station is located approximately 69 miles west-southwest of NMP1 at the Frederick Douglass Greater Rochester International Airport in Rochester, New York (AirNav 2024; NCEI 2024a). Rochester, and the greater Genesee River Valley, experiences a humid, continental-type climate that is strongly modified by the proximity of the Great Lakes. As in Syracuse, precipitation in the area is generally evenly distributed throughout the year, though it

comes more frequently during the winter months. Winters are generally cloudy, cold, and snowy, with variability that includes frequent thaws and rain. About half the annual snowfall comes from the "lake-effect" process. Snowfall generated by this process is localized as snowbands, with the exact location determined by the wind direction. Northwest winds have a longer overwater distance over Lake Ontario, allowing for areas east of Rochester to receive the most snow, while areas south of the city receive relatively less. Total seasonal snowfalls range from 70 to 120 inches, depending on the proximity to the lake. Approximately 50 inches of total annual snowfall are the result of general snows, while the rest is due to lake effects. The Rochester area is also subject to occasional larger-scale winter storms, though the worst effects are usually to the east. Lake Ontario also has a moderating effect on winter temperatures, modifying extreme cold air and limiting the occurrence of sub-zero night-time temperatures to about six nights a year. Spring comes slowly to the region, with last frost usually occurring by April 30 near Lake Ontario and as late as mid-May south of the New York State Thruway (I-90), south of Rochester. Spring months are the driest months statistically due in part to the stabilizing effects of the Great Lakes, and there is a marked increase in sunshine. Summers are generally sunny and warm, with average regional temperatures in a range of 70–72°F. The weather is generally pleasant, though periods of warm and muggy weather do occur, and the area experiences approximately nine days of temperatures in the 90°F range per year. Rainfall during the summer months occurs every third or fourth day and is primarily in the form of showers and thunderstorms, though severe weather is not common. The growing season is relatively long for the latitude, averaging approximately 180 days and characterized by ample spring moisture and abundant summer sunshine. Fall weather is also pleasant but brief. Mild and dry conditions predominate through the months of September and much of October, with colder air masses crossing the Great Lakes with increasing frequency by late October. The first frost occurs near the lake by late October, and the first seasonal lake-effect snows occur by mid-November. (NCDC 2022)

NMP1 is located in north-central New York on the southeastern shores of Lake Ontario. The area topography is characterized by gently rolling terrain that rises gradually from the shoreline until it meets the Tug Hill Plateau, approximately 25 miles east of the NMPNS site and the Onondaga Hills located approximately 40 miles to the south. Lake Ontario along with the surrounding topographic features have a noticeable influence on the climate of the north-central New York region. The region generally experiences a humid continental climate with frequent changes in air masses during all seasons. Dry, cold air masses originating from the northern interior of the continent dominate winter months, while moist air masses from the south and southwest prevail from late spring through early fall. The influence of Lake Ontario on the weather is most apparent during the spring through late summer, in the form of onshore breezes near the lake shore, and during the fall and winter, when lake-induced snowfalls occur. Throughout the year, the lake modifies temperature extremes near the shore compared to continental locations. Storms affecting the region generally track eastward through the St. Lawrence Valley and occasionally northward along the Atlantic Coast. These storm tracks and the influence of the Great Lakes produce the characteristically cloudy climate of the region from

late fall through spring. (CEG 2022a) Detailed meteorological information for the NMPNS site is presented in Section 3.3.2.

3.3.2 Meteorology

Section 2.3.3.2 of the Unit 2 Updated Safety Analysis Report (USAR), Rev. 25, describes the NMPNS meteorological monitoring program and data monitoring system (CEG 2022a). The primary meteorological tower location can be seen in Figure 3.1-1. Since 2022, CEG has approved and is currently in the process of upgrading the NMPNS meteorological monitoring system, including all instruments, data loggers, and connections to station infrastructure. Both design changes and installation are scheduled to be completed in 2026.

For the proposed SPEO, CEG completed a review of the most recent meteorological information available from public sources and from NMPNS monitoring to provide updated meteorological information. The most recent 5 years of hourly meteorological data for NMPNS were collected from January 2019 through December 2023. A summary of CEG's evaluation is provided below.

3.3.2.1 Wind Direction and Speed

Representative regional wind conditions are available for the KSYR and KROC stations. Mean wind speed, prevailing wind direction, and maximum 3-second wind speed for both locations are summarized in Table 3.3-1. (NCDC 2022) The 46-year period of record for KSYR indicates the annual prevailing wind direction (i.e., the direction from which the wind blows most often) is from 260 degrees (i.e., west). Monthly prevailing winds are also from the west from the middle of fall through the first of spring (October through March) and during the summer (June through August). Monthly prevailing winds from mid-to-late spring (April and May) are out of the west-northwest and out of the east at the beginning of fall (September). The mean wind speed over a 39-year period of record is 8.3 miles per hour (mph). A maximum 3-second wind speed of 77 mph was recorded at KSYR in September 1998. (NCDC 2022)

The KROC data for the 48-year period of record indicate that, as at KSYR, the annual prevailing wind direction is also from 260 degrees, or west. Monthly prevailing wind patterns are also out of the west from the end of fall through the winter and spring (November through May) but from the southwest during the summer and into mid-fall (June through October). As listed in Table 3.3-1, the mean speed over a 39-year period of record is 8.9 mph. A maximum 3-second wind speed was recorded in September 1998 at 89 mph. (NCDC 2022)

Mean monthly wind speeds at the NMPNS site are provided in Table 3.3-2, based on 5 years of measurements from the onsite meteorological system. As provided in Table 3.3-2 and Figure 3.3-1, the monitoring data indicate the annual prevailing wind at NMPNS is from 140 degrees (i.e., from the southeast). Monthly prevailing winds are also out of the southeast during the winter and into the first part of spring (December through March) before becoming primarily out of the west-southwest during the spring months of April and May. During the summer months of June and July, prevailing winds are out of the west and then become out of the south-southeast

toward the end of summer and into the fall (August and September). The remainder of fall experiences prevailing winds from the south. NMPNS annual and seasonal wind rose diagrams for the 5-year period are provided in Figure 3.3-1, Figure 3.3-2, Figure 3.3-3, Figure 3.3-4, and Figure 3.3-5.

3.3.2.2 Temperature

Representative regional temperature averages are available for the KSYR and KROC stations. Monthly and annual daily mean temperature data and temperature extremes for both locations are summarized in Table 3.3-3. (NCDC 2022)

The local climate data for the KSYR area indicate that the mean daily maximum temperature is highest during July (81.9°F) and decreases to a season low in January (31.7°F). The area experiences normal temperatures above 90°F approximately 10.3 days per year from spring into fall (April through September). The highest temperature of record at the KSYR station (101°F) occurred in July 2012. The mean daily minimum temperature is above 50°F from June through September and is at its lowest in January, when the mean daily minimum decreases to 16.0°F. The Syracuse area normally experiences temperatures below freezing for 132.4 days per year, from middle of fall through spring (September through May). (NCDC 2022)

The local climate data for the KROC area indicate the mean daily maximum temperature is highest during July (81.9°F) and decreases to a season low in January (32°F). The area experiences normal temperatures above 90°F approximately 8.3 days per year from late spring into fall (May through September). The highest temperature of record at the KROC station (100°F) occurred in June 1953. The mean daily minimum temperature is above 50°F from June through September and is at its lowest in February, when the mean daily minimum decreases to 17.6°F. The Rochester area normally experiences temperatures below freezing (32°F) for 128.7 days per year, from the fall through spring (September through May). (NCDC 2022)

Average temperatures at the NMPNS site for the 5-year period of record range from 27.2°F in January to 71.7°F in July, with extremes of -12°F low and 91°F high. Similar to Syracuse and Rochester, mean daily maximum temperatures are highest in June, July, and August. The lowest minimum recorded temperatures for NMPNS occur in February. Monthly annual mean daily temperature data and extremes for NMPNS are summarized in Table 3.3-4.

3.3.2.3 Precipitation

3.3.2.3.1 Rainfall

Representative regional precipitation data are available for the KSYR and KROC stations. Normal, minimum, maximum, and maximum 24-hour inches of precipitation for both locations are summarized in Table 3.3-5. (NCDC 2022) The precipitation records of normal rainfall totals for the Syracuse (KSYR) area indicate that rainfall of 0.01 inches or more occurs on average 173.7 days per year, with 10.7 or more days per month receiving at least some precipitation. Annual average precipitation at the KSYR station is 39.88 inches per year. Recorded precipitation ranges from 2.46 inches in February to 3.89 inches in October. Seasonally, the

winter months have the lowest amount of annual precipitation (approximately 20.9 percent), while the summer months have the highest (approximately 27.9 percent). Spring and fall have similar amounts of precipitation, at approximately 24.9 and 26.3 percent, respectively. KSYR received a record minimum monthly total 0.21 inches in October 1963. The maximum 24-hour precipitation total recorded, 4.54 inches, occurred in August 2010. (NCDC 2022)

The precipitation records of normal rainfall totals for the Rochester (KROC) area indicate that precipitation of 0.01 inches or more occurs on average 168.2 days per year, with 10.3 days or more per month receiving at least some precipitation. Annual average precipitation at the KROC station is 35.09 inches per year. Recorded precipitation ranges and patterns at the KROC station are similar to those seen at the KSYR station, with precipitation amounts ranging from 2.13 inches in February to 3.56 inches in July, and the highest seasonal precipitation amounts occurring during the summer months (accounting for approximately 29.2 percent of annual precipitation), while winter experiences the lowest amounts (approximately 20.9 percent), and spring and fall receive similar amounts (23.8 and 26.1 percent, respectively). The record minimum monthly total recorded at KROC, 0.22 inches, occurred in June 1963. The maximum 24-hour precipitation total recorded, 3.85 inches, occurred in May 1974. (NCDC 2022)

The NMPNS site receives an annual average of 31.88 inches of rainfall per year, which is less than the annual amounts recorded at KSYR and KROC reference locations. Monthly and annual precipitation data and extremes for NMPNS are summarized in Table 3.3-6. The precipitation pattern for the 5-year period of record is similar to the those in the KSYR and KROC locations in that average precipitation amounts are the lowest during the winter months but different in that the NMPNS site receives the highest amounts of precipitation in the fall, while the reference locations receive their highest amounts in the summer.

3.3.2.3.2 Snow and Glaze

NMPNS does not record snowfall at the site. Therefore, recorded data for KSYR and KROC were used as representative snowfall data.

The Syracuse (KSYR) area normally receives 127.8 inches of snow per year, with approximately 34.1 days per year receiving at least 1 inch or more of snowfall. Based on a 72-year period of record, the largest snowfall in a 24-hour period, 35.6 inches, occurred in March 1993. Since 1994, annual snowfall has ranged from 62.2 inches during the 1994–1995 winter season to 191.9 inches during the 2000–2001 winter season. (NCDC 2022)

The Rochester (KROC) area normally receives 102.0 inches of snow per year, with approximately 29.2 days per year receiving at least 1 inch or more of snowfall. Based on an 82-year period of record, the largest snowfall in a 24-hour period, 23.3 inches, occurred in March 1999. Since 1994, annual snowfalls have ranged from 56.2 inches during the 1994–1995 winter season to 135.2 inches during the 2002–2003 winter season. (NCDC 2022)

3.3.2.3.3 Fog

The closest available fog data for the NMP1 region are from the KSYR station. The local climatological data for KSYR indicate that the area averages 8.3 days per year of heavy fog, with the highest seasonal frequencies occurring during the fall and winter months. The Rochester location (KROC) area averages 11.9 days per year of heavy fog with roughly the same seasonal frequencies as Syracuse. The NWS defines heavy fog as fog that reduces visibility to 0.25 miles or less. (NCDC 2022) Fog at the NMPNS site is not recorded.

3.3.2.4 Severe Weather

3.3.2.4.1 Thunderstorms

For the Syracuse and Rochester areas, thunderstorms are most frequent during the summer months, with the greatest occurrence during July. The mean number of days with thunderstorms in each month for the KSYR and KROC stations are provided in Table 3.3-7. (NCDC 2022)

The NWS Storm Prediction Center defines a severe thunderstorm as producing one or more of the following: (1) wind gusts of 58 mph or greater, (2) hail of 1 inch in diameter or larger, and/or (3) a tornado (NWS 2022). Based on the National Centers for Environmental Information (NCEI) records, Oswego County recorded 451 significant thunderstorm (including hailstorm) events since 1960, with most of the events occurring in May, June, July, and August. (NCEI 2024b)

3.3.2.4.2 Tornadoes

Storm intensity values are defined using the Fujita scale, which was revised in 2007. The intensity values for all storms occurring after this revision use the enhanced Fujita scale (NOAA 2020). Based on the NCEI records, nine tornadoes have been recorded in Oswego County since 1960. The record shows the storm intensities were primarily F0, EF0, and F1. A tornado with an F3 magnitude was recorded on May 2, 1983. (NCEI 2024b)

3.3.2.4.3 Hurricanes

The NCEI does not have any record of a hurricane or tropical storm in Oswego County (NCEI 2024b). Based on the National Oceanic and Atmospheric Administration's (NOAA's) Historical Tracks-Geographic Information System (GIS) map viewer, there has been only one storm recorded to have been categorized as a hurricane within 100 miles of NMP1. The storm entered the 100-mile radius as a Category 1 hurricane on October 14, 1893, before being downgraded to an extratropical cyclone that same day. Six other storms were either tropical storms or extratropical systems by the time they entered the 100-mile radius, of which only three have occurred since 1979, and none of these systems traversed within 50 miles of NMP1. (NOAA 2024a)

3.3.3 Air Quality

3.3.3.1 Clean Air Act Nonattainment Maintenance Areas

The Clean Air Act (CAA) was established in 1970 [42 USC § 7401 et seq.] to reduce air pollution nationwide. The EPA has developed primary and secondary national ambient air quality standards (NAAQS) under the provisions of the CAA. The EPA classifies air quality within an air quality control region (AQCR) according to whether the region meets or exceeds federal primary and secondary NAAQS. An AQCR or a portion of an AQCR may be classified as being in attainment or non-attainment, or it may be unclassified for each of the six criteria pollutants: carbon monoxide (CO), lead, nitrogen dioxide, particulate matter ($PM_{2.5}$, fine particulates, and PM_{10}, coarse particulates), ozone, and sulfur dioxide.

Emissions from non-radiological air pollution sources, including the criteria pollutants, are controlled through compliance with federal, state, and local regulations. Nonattainment areas are areas where the ambient levels of criteria air pollutants in the air violate the criteria set forth in federal, state, and local regulations. Attainment areas are areas that meet the criteria or cannot be classified (depending on the pollutant and other factors). A maintenance area is an area that formerly violated the attainment criteria but currently meets the attainment criteria. (EPA 2024a)

Four intrastate AQCRs fall within 62 miles of NMP1. These AQCRs include the Central New York Intrastate AQCR (40 CFR 81.127), the Genesee-Finger Lakes Intrastate AQCR (40 CFR 81.128), the Southern Tier East Intrastate AQCR (40 CFR 81.130), and the Southern Tier West Intrastate AQCR (40 CFR 81.131). Both the Southern Tier East Intrastate AQCR and the Southern Tier West Intrastate AQCR are on the outer boundary of the 62-mile radius from NMP1. NMP1 is on the western side of the Central New York Intrastate AQCR.

There are no Class I Federal areas, in which visibility is an important value, as designated in 40 CFR, Part 81, Subpart D, within New York.

As of April 30, 2024, none of the counties in the 62-mile area are nonattainment areas for any criteria pollutant. The closest nonattainment area is St. Lawrence County, approximately 66 miles from NMP1. As illustrated in Figure 3.3-6, the closest maintenance area is in Onondaga County, New York, which is a maintenance area for CO (1971). None of the other counties within the 62-mile area are maintenance areas.

3.3.3.2 Air Emissions

NMP1 has two 2,600-kilowatt electric (kWe) (3,500 horsepower [hp]) diesel generators, a diesel fire pump, a telephone building generator, and a Joint Information Center generator. The NMP1 emission units are reciprocating internal combustion engines (RICE). NMP1 is not connected to a cooling tower. Under the air pollution rules and regulations of 6 New York Codes, Rules and Regulations (NYCRR), Part 201-3.2, Exempt Activities, emergency power generation units, installed for use when the usual source of power is temporarily unavailable, are exempt when each unit is operated for less than 500 hours per year. Under 40 CFR 63.6640, operations are

limited to 100 hours per year. As such, NMP1 does not have emission units that require an air permit from New York State.

Table 3.3-8 lists the runtimes for the NMP1 emission units for the past 5 years. Compliance is demonstrated by providing runtimes to the NYSDEC. Because there are no requirements for providing annual emissions from the site, annual emissions are not available.

On occasion, such as during an outage, additional emission units are used. When there is a need for a temporary emissions source, the station notifies the NYSDEC. Table 3.3-9 lists three such occasions with the units and runtimes listed.

As presented in Chapter 9, there have been no notices of violation (NOVs) or non-compliances associated with NMP1 air emissions (runtimes) over the 5 years of 2020 through 2024.

As presented in Section 2.3, no license-renewal-related refurbishment or other license-renewal-related construction activities have been identified. In addition, CEG's review did not identify any future upgrade or replacement activities necessary for station operations (e.g., diesel generators, diesel pumps) expected to affect NMP1's current air emissions program. Therefore, no increase or decrease in air emissions is expected over the proposed SPEO.

Field tests concerning ozone and nitrogen oxides emissions generated by NMP1 in-scope transmission lines have not been conducted. As stated in the GEIS, studies have shown that the amount of ozone generated by even the largest industry transmission lines in operation (765 kV) would be insignificant (NRC 2024a). As presented in Section 2.2.4, the in-scope transmission lines at NMP1 are 345 kV and 115 kV. Therefore, the amount of ozone generated from in-scope transmission lines is anticipated to be minimal.

Table 3.3-1 Regional Wind Conditions

Syracuse, New York (KSYR)														
	Period of Record (years)	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**ANN**
Mean Speed (mph)	39	9.6	9.6	9.6	9.2	7.8	7.3	6.8	6.3	6.8	7.7	9.0	9.4	8.3
Prevailing Direction (degrees from)	46	260	280	280	290	290	280	260	260	90	260	260	260	260
Max 3-Second Speed (mph)	29	64	64	64	59	63	65	66	56	77	55	69	62	77
Max Speed Year of Occurrence		2019	2006	2017	2007	2010	2021	1999	2001	1998	2020	2005	2021	Sept. 1998
Rochester, New York (KROC)														
	Period of Record (years)	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**ANN**
Mean Speed (mph)	39	10.5	10.3	10.2	10.0	8.7	8.1	7.4	7.0	7.3	8.4	9.4	9.9	8.9
Prevailing Direction (degrees from)	48	260	260	260	260	260	230	230	230	220	220	260	260	260
Max 3-Second Speed (mph)	26	75	77	81	66	63	58	64	59	89	62	66	69	89
Max Speed Year of Occurrence		2008	2006	2017	2018	1998	2015	2005	2010	1998	2017	2003	2022	Sept. 1998

(NCDC 2022)

Table 3.3-2 NMPNS Site Wind Conditions (2019–2023)

	Period of Record (years)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
Mean Speed (mph)	5	10.7	10.8	11.1	10.0	7.2	6.5	6.2	6.8	7.0	8.0	11.2	11.0	8.9
Prevailing Direction (degrees)	5	140	140	140	250	250	260	270	160	160	170	170	130	140

Note: Wind speed and direction recordings were taken at a height of 9 feet (30 meters).

Table 3.3-3 Regional Temperatures

Syracuse, New York (KSYR)														
	Period of Record (years)	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**ANN**
Mean Daily Maximum (°F)	101	31.7	32.5	42.3	55.5	68.4	76.6	81.9	80.0	72.1	60.8	47.8	36.2	57.2
Highest Daily Maximum (°F)	72	70	75	87	92	96	98	101	101	97	88	81	72	101
Year of Occurrence		2008	2018	1986	1990	1977	1953	2012	2002	1953	2019	1950	2001	July 2012
Mean Daily Minimum (°F)	101	16.0	16.5	25.3	35.9	46.7	55.6	61.2	59.7	51.9	42	32.9	22.3	38.8
Lowest Daily Minimum (°F)	72	-26	-26	-16	9	25	35	45	40	28	19	-1	-22	-26
Year of Occurrence		1966	1979	1950	2016	1966	1966	1976	1965	1991	1976	2018	1980	Feb. 1979
Rochester, New York (KROC)														
	Period of Record (years)	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**ANN**
Mean Daily Maximum (°F)	97	32.0	32.6	42.1	55.0	67.9	76.7	81.9	79.8	72.1	61.0	47.7	36.3	57.1
Highest Daily Maximum (°F)	82	74	73	84	93	94	100	98	99	99	91	81	72	100
Year of Occurrence		1950	1997	1945	1990	1987	1953	2011	1948	1953	1951	1950	1982	June 1953
Mean Daily Minimum (°F)	97	17.8	17.6	25.8	36.0	46.9	55.8	61.2	59.7	52.2	42.5	33.1	23.4	39.3
Lowest Daily Minimum (°F)	82	-17	-19	-9	13	26	35	42	36	28	20	4	-16	-19
Year of Occurrence		1994	1979	2014	1982	1979	1949	1963	1965	1947	1972	2018	1942	Feb. 1979

(NCDC 2022)

Table 3.3-4 NMPNS Site Temperatures (2019–2023)

	Period of Record (years)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
Monthly Average (°F) (1)	5	27.2	28.3	36.5	44.8	53.9	65.0	71.7	71.1	64.0	54.7	42.1	35.3	49.5
Highest Daily Maximum (°F)	5	63	64	70	79	84	90	91	90	84	84	76	65	91
Year of Occurrence		2020	2023	2021	2022	2021	2020	2022	2022	2019 & 2023	2019	2020	2021	2022
Lowest Daily Minimum (°F)	5	-5	-12	11	25	32	32	54	41	43	33	2	-2	-12
Year of Occurrence		2022	2023	2021	2023	2020	2023	2019	2019	2020	2020	2022	2021	2023

1. Calculated average of all temperature measurements for each month and of all measurements for the period of January 2019 to December 2023.

Table 3.3-5 Regional Precipitation (Sheet 1 of 2)

Syracuse, New York (KSYR)														
	Period of Record (years)	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**ANN**
Normal Monthly Precipitation (inches)	30	2.58	2.46	3.04	3.48	3.42	3.56	3.86	3.70	3.38	3.89	3.23	3.28	39.88
Maximum Monthly Precipitation (inches)	72	5.77	5.38	6.84	8.53	7.82	12.3	10.12	8.41	8.81	8.29	6.79	7.57	12.3
Year of Occurrence		1978	1951	1955	2011	2004	1972	2006	1956	1975	1955	1972	2012	June 1972
Maximum 24-Hr. Precipitation (inches)	72	2.49	2.08	1.77	2.85	3.13	3.88	4.29	4.54	4.14	3.60	2.63	2.18	4.54
Year of Occurrence		2008	2016	1993	1976	1969	1972	2006	2010	1975	1955	2022	1952	Aug. 2010
Minimum Monthly Precipitation (inches)	72	1.02	0.63	1.01	0.84	0.59	1.10	0.90	1.02	0.75	0.21	0.89	1.40	0.21
Year of Occurrence		1970	1987	1981	2010	2005	1962	1969	1999	1964	1963	2015	1999	Oct. 1963

Table 3.3-5 Regional Precipitation (Sheet 2 of 2)

Rochester, New York (KROC)														
	Period of Record (years)	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**ANN**
Normal Monthly Precipitation (inches)	30	2.55	2.13	2.49	2.99	2.86	3.37	3.56	3.31	3.18	3.22	2.76	2.67	35.09
Maximum Monthly Precipitation (inches)	82	5.79	5.07	5.42	5.81	6.62	7.11	9.70	6.00	6.30	7.85	6.99	5.05	9.70
Year of Occurrence		1978	1950	1942	2011	1974	1998	1947	1984	1977	1955	1985	1944	July 1947
Maximum 24-Hr. Precipitation (inches)	82	2.24	2.43	2.21	2.22	3.85	2.86	3.33	3.03	3.54	3.13	3.13	1.6	3.85
Year of Occurrence		1998	1950	1942	1991	1974	1950	2006	2005	1979	1995	1945	1978	May 1974
Minimum Monthly Precipitation (inches)	82	0.72	0.66	0.47	1.18	0.24	0.22	0.61	0.76	0.28	0.23	0.44	0.62	0.22
Year of Occurrence		1988	1987	1958	1995	2007	1963	1994	1951	1960	1963	1976	1958	June 1963

(NCDC 2022)

Table 3.3-6 NMPNS Site Precipitation Records (2019–2023)

	Period of Record (years)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
Monthly Precipitation (inches)	5	2.20	1.34	2.03	2.90	2.92	2.32	2.70	2.54	2.35	4.06	3.35	3.18	31.88
Maximum Monthly Precipitation (inches)	5	3.03	1.90	2.43	3.23	5.42	3.91	4.05	2.99	3.06	5.86	6.22	4.37	6.22
Year of Occurrence		2023	2022	2020	2023	2019	2019	2019	2019	2022	2019	2021	2023	2021
Minimum Monthly Precipitation (inches)	5	0.39	0.69	1.81	2.17	1.46	0.87	1.63	2.22	0.60	0.65	1.29	2.32	0.39
Year of Occurrence		2022	2021	2021	2021	2023	2020	2020	2023	2023	2022	2019	2022	2022

Table 3.3-7 Regional Thunderstorms

Syracuse, New York (KSYR)														
	Period of Record (years)	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**ANN**
Mean Days with Thunderstorms	77	0.2	0.2	0.7	1.6	3.4	5.1	6.3	5.3	2.5	1.0	0.4	0.2	26.9
Rochester, New York (KROC)														
	Period of Record (years)	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**ANN**
Mean Days with Thunderstorms	75	0.1	0.1	0.8	1.9	3.5	5.2	6.0	5.7	2.8	1.0	0.4	0.2	27.7

(NCDC 2022)

Table 3.3-8 NMP1 Emission Unit Runtimes (Hours)

Emission Unit	kWe/hp	2019	2020	2021	2022	2023
Emergency Diesel 102	2,600 kWe (3,500 hp)	50.1	28.8	47.2	32.3	23.9
Emergency Diesel 103	2,600 kWe (3,500 hp)	28.1	54.4	32.5	34.2	42.9
Diesel Fire Pump		22.6	24.2	28.1	18.3	24.7
Warehouse Generator		1.2	0.6	5	1.6	1.1
Telephone Building Generator		1.1	0.8	8	1.5	1
Joint Information Center Generator		25.4	23.3	25.2	30.3	26.5

Table 3.3-9 NMP1 Temporary Emission Unit Runtimes (Days)

Temporary Emission Units	kWe/hp	2019	2020	2021	2022	2023
Air Compressor	617 hp					7 days
Generator	2,882 hp			7 days		

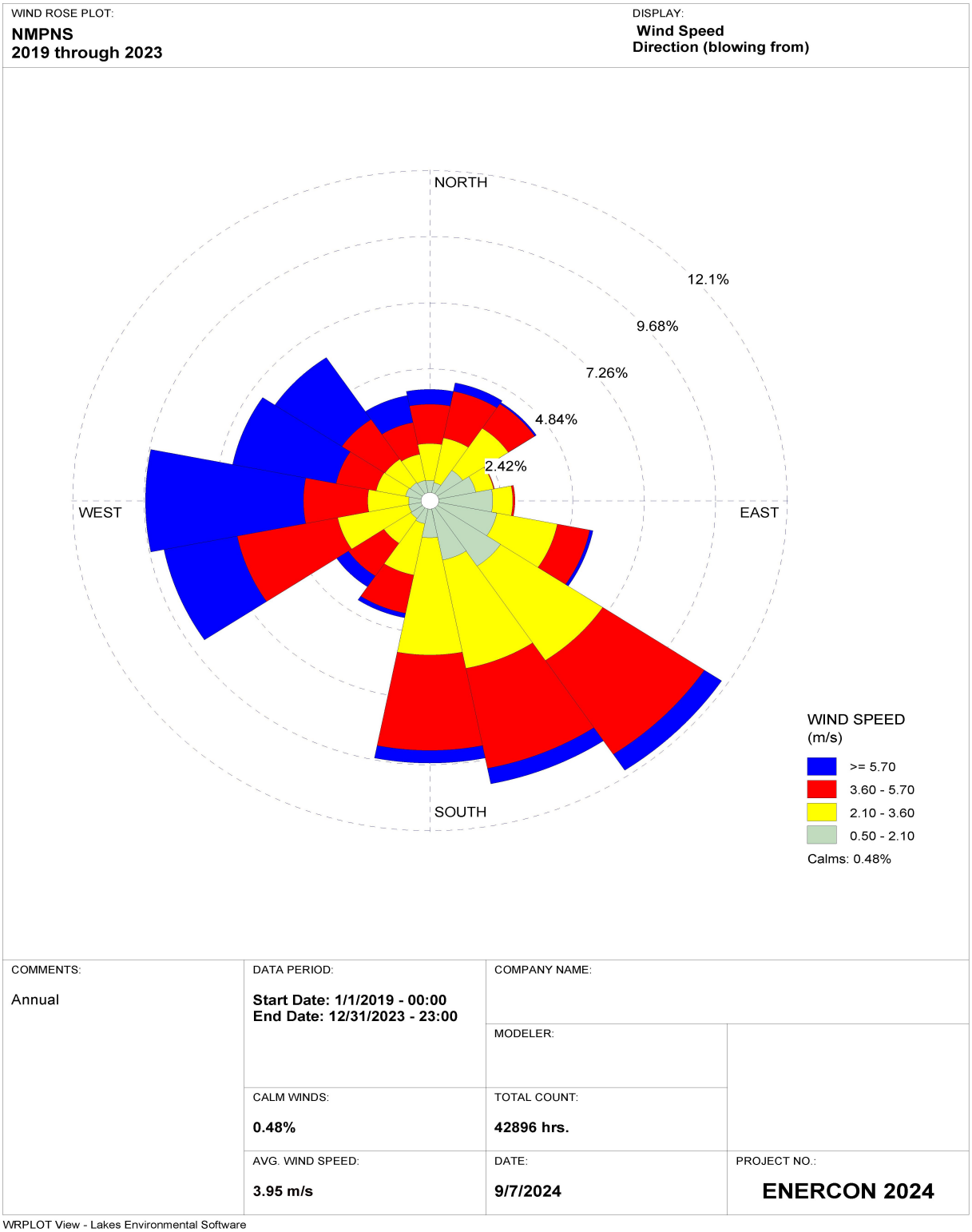


Figure 3.3-1 NMPNS Prevailing Wind Rose

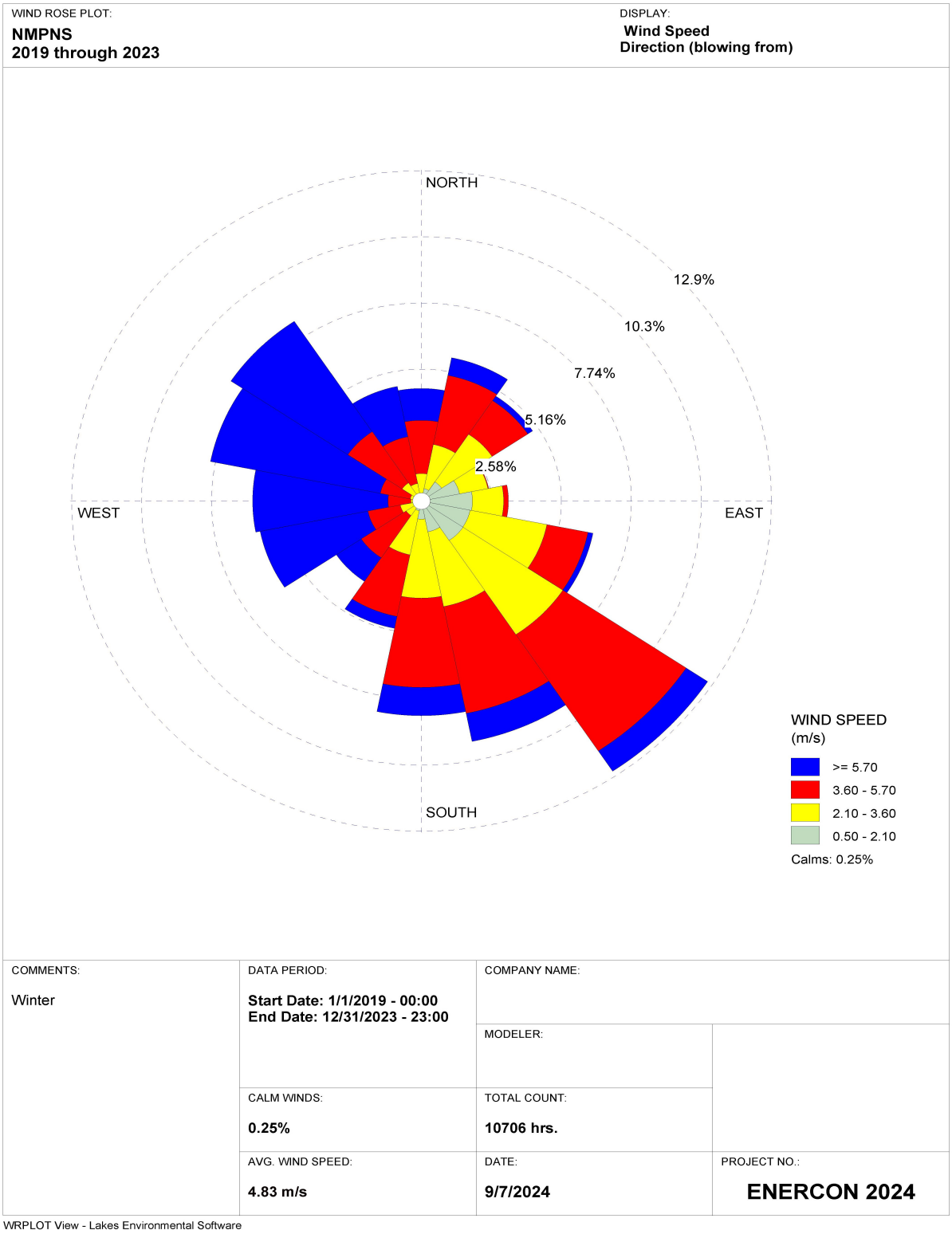


Figure 3.3-2 NMPNS Winter Wind Rose

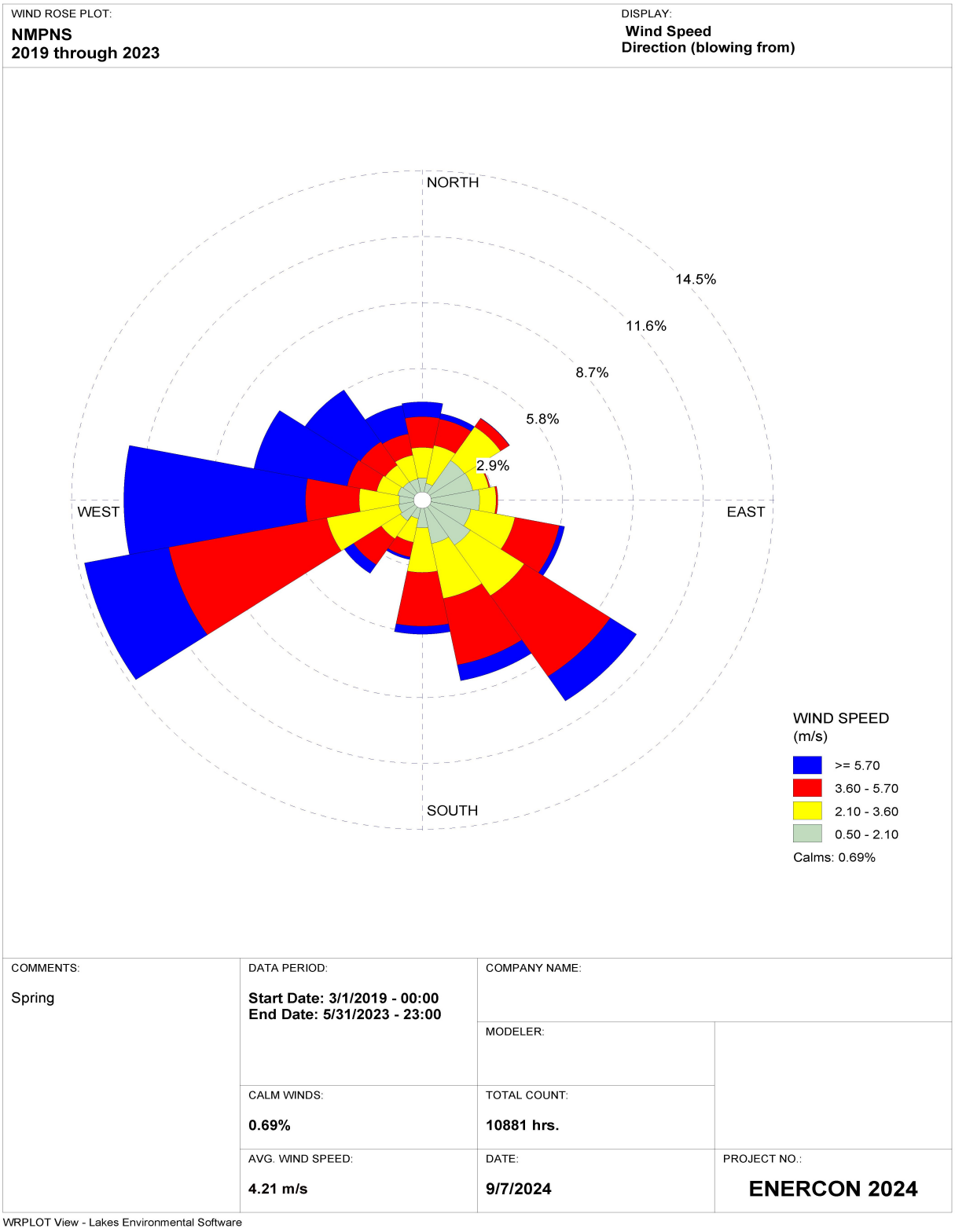


Figure 3.3-3 NMPNS Spring Wind Rose

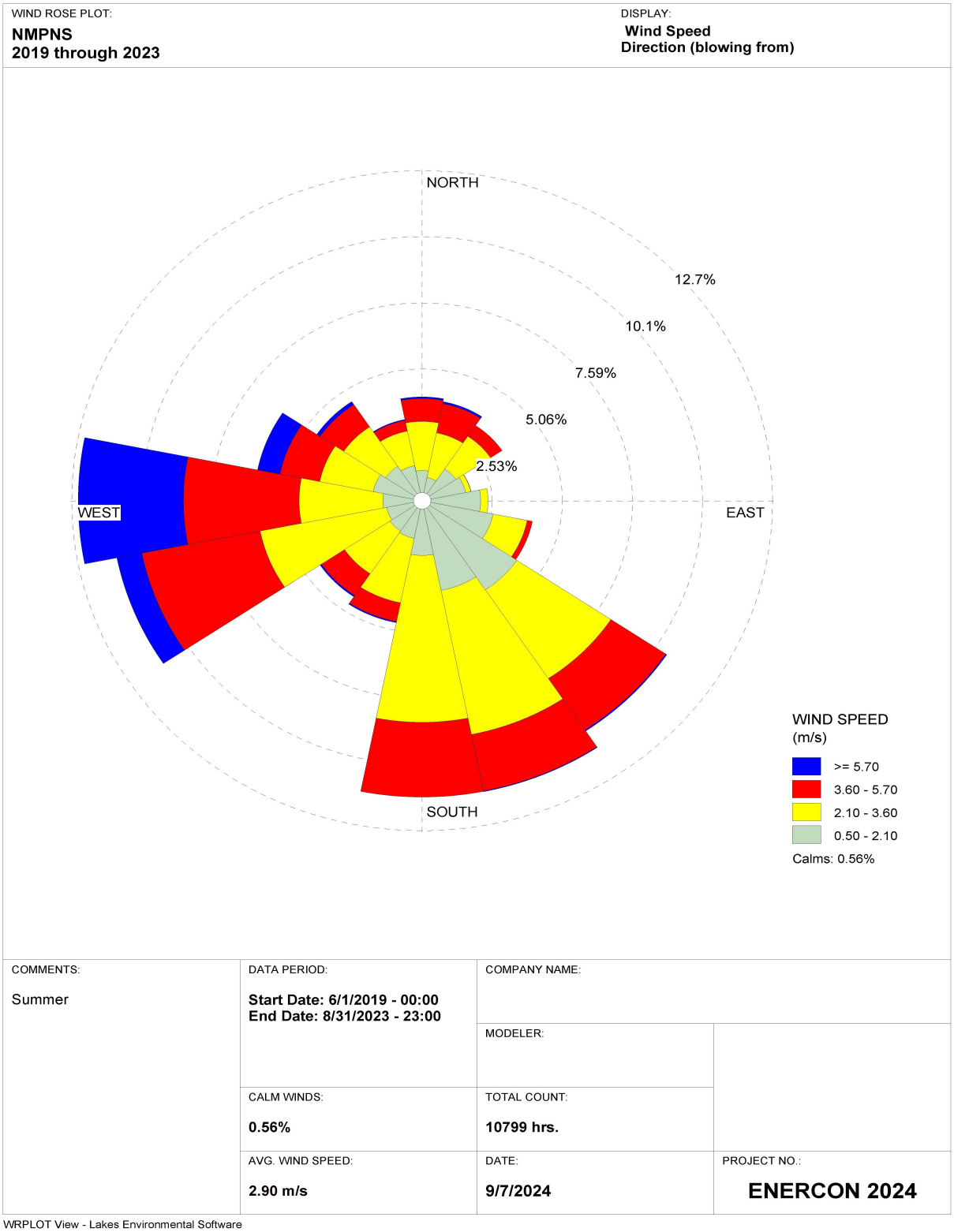


Figure 3.3-4 NMPNS Summer Wind Rose

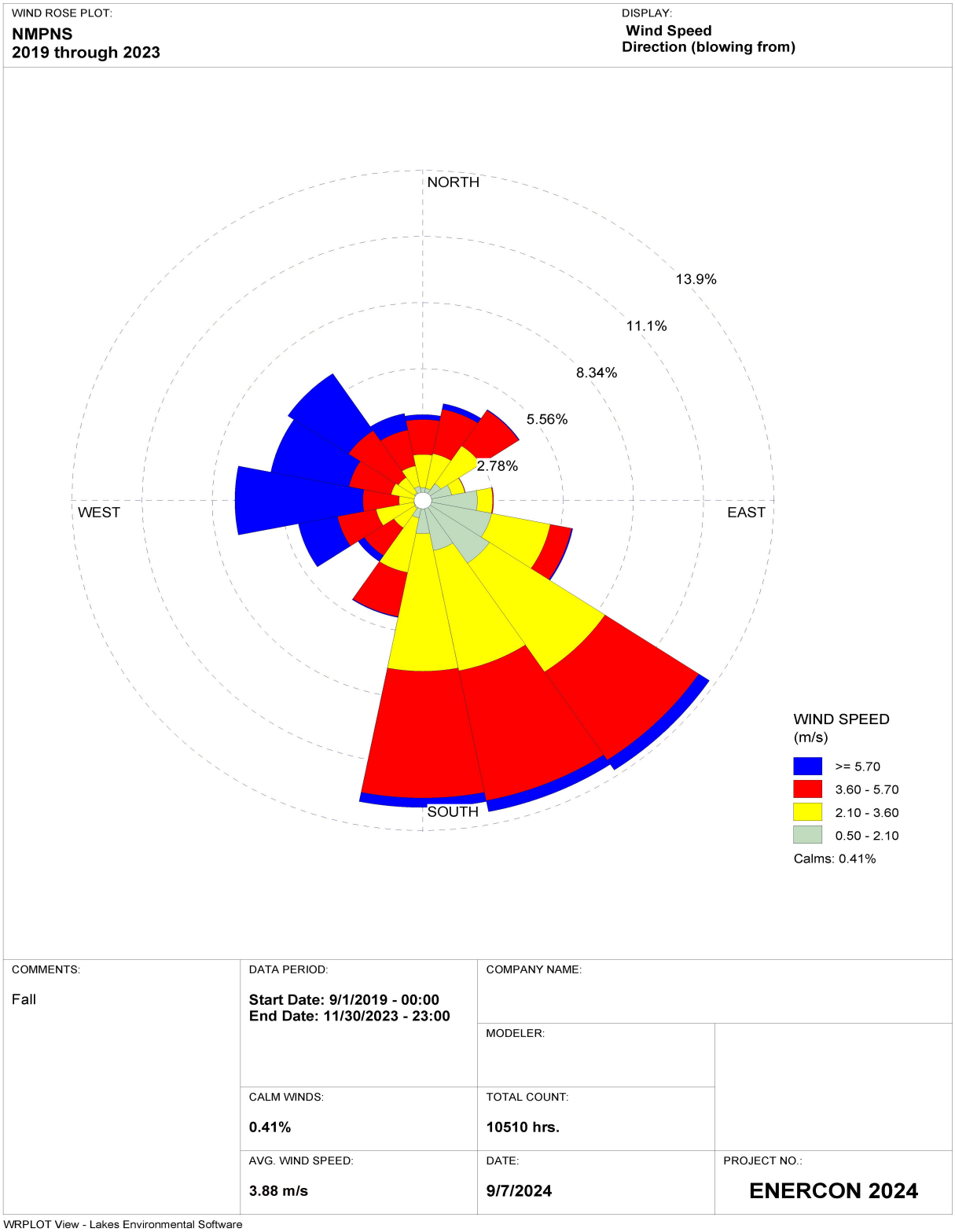


Figure 3.3-5 NMPNS Fall Wind Rose

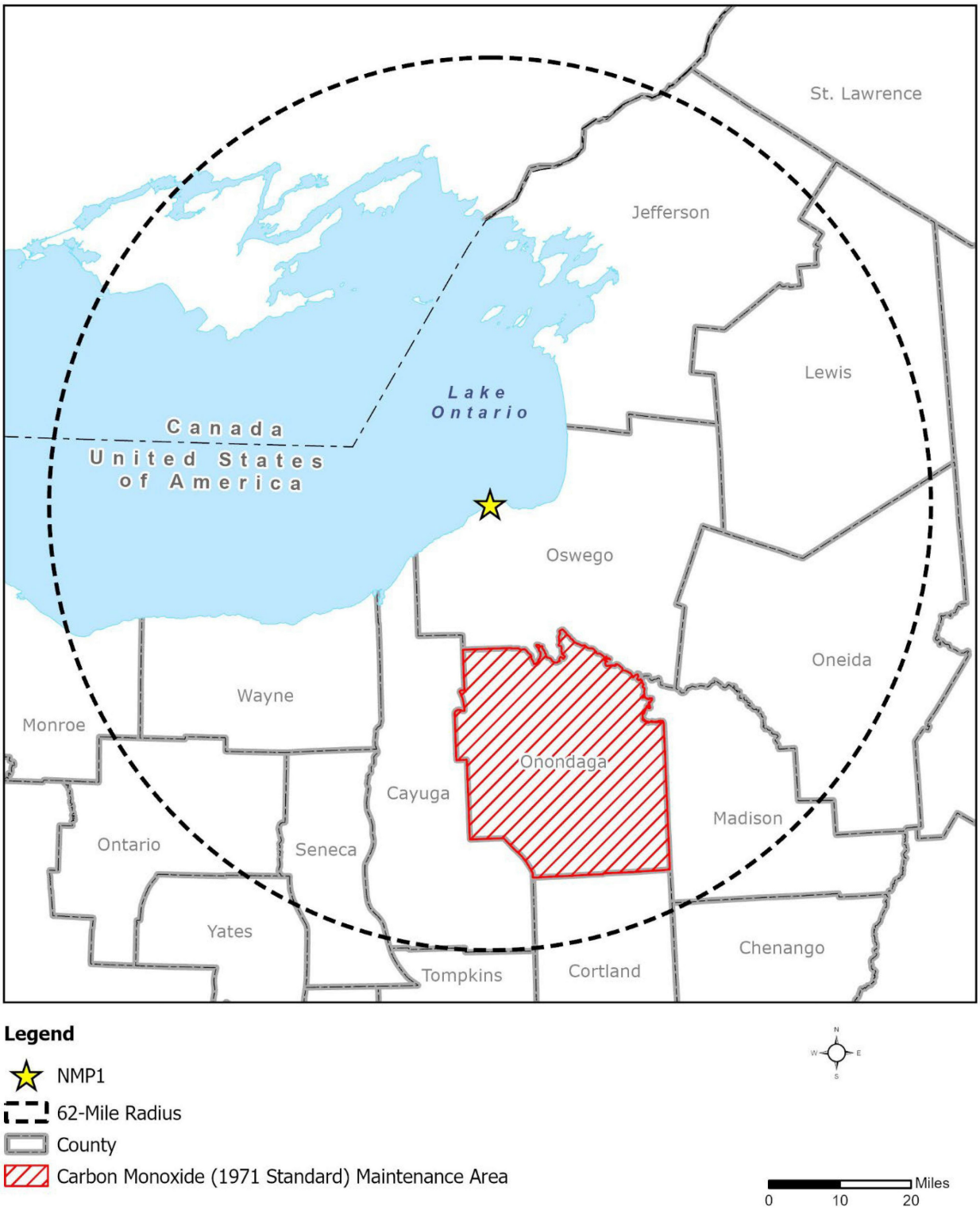


Figure 3.3-6 Nonattainment and Maintenance Areas

3.4 Noise

The primary noise source on the NMPNS site is the Unit 2 cooling tower, which is not associated with Unit 1 operations. The Unit 2 cooling tower is located 3,500 feet from the Ontario Bible Camp and 600 feet from the nearest site boundary. Except for the Unit 2 cooling tower, all other significant noise-producing equipment at NMPNS is located inside buildings (NRC 2006a). The Unit 1 diesel generator is also located inside a building; it is typically only in service for maintenance testing, but it is intended for use in the event of an offsite power loss. It is located 3,000 feet from the Ontario Bible Camp and 800 feet from the nearest site boundary.

Intermittent noise produced at NMP1 includes noise from loudspeakers, commuting workers, and the firing range. The use of loudspeakers is minimal throughout the day, but the loudspeakers can be used at any time of the day or night. The message over the loudspeakers is short in duration and typically repeated. Commuting to and from NMPNS typically occurs from 5:00 a.m. to 8:00 a.m. and from 2:30 p.m. to 6:30 p.m. The firing range is located 2,500 feet from the Ontario Bible Camp, 2,100 feet from the nearest residence, and 400 feet from the nearest site boundary. The firing range is used approximately 4 months of the year, 10 hours per day. The firing range is used by both NMPNS and JAF. Although there is a rail spur on the NMPNS site, there is no active rail service to the site.

Primary offsite noise-generating sources near NMPNS include the JAF, located 3,000 feet from NMP1; the Sithe Independence Station, located 2.5 miles from NMP1; and the Novelis Aluminum Mill, located 3 miles from NMP1.

The nearest residence to NMPNS is approximately 1.1 miles from the NMP2 reactor building centerline (CEG 2024c). The Town of Scriba designated the majority of the land within a 1-mile radius of NMPNS as either Industrial (including NMPNS and JAF) or as a Valued Natural Resource, limiting the potential for future residential growth in the area (NMPNS 2004).

CEG has a fleetwide procedure to provide personnel with regulatory requirements related to the Noise Control Act of 1972 (42 USC 4901), the Quiet Communities Act (42 USC 4913), and the noise control regulations set by the EPA (40 CFR 201-211). If a noise complaint is received, it is expected to be documented in accordance with CEG corrective action program procedures. There have been no noise complaints at NMPNS in 2020 through 2024. CEG also has a fleetwide hearing-conservation procedure to ensure protection of employees from the adverse effects of excessive noise in compliance with 29 CFR 1910.95.

Activities at NMP1 follow applicable federal, state, and local guidelines and regulations on noise. The State of New York has noise regulations for motor vehicle noise emissions (6 NYCRR 450) and calibration requirements for sound level measurement systems (6 NYCRR 451).

A noise survey was conducted in October and November 2007 at NMPNS to establish baseline ambient environmental community noise levels. Environmental sound levels were measured

continuously at six locations (one location near NMPNS Units 1 and 2 and five offsite locations near residences) over 12 days during leaf-off seasonal conditions, during which noise emissions are expected to be highest due to lack of tree leaf noise reduction. The sound levels in the five offsite locations were generally lower than in the onsite location, which had an average A-weighted sound level of approximately 60 decibels (dBA). The maximum sustained noise level occurred around midnight on November 7, 2007, for about 4 hours. This date and time correspond to sustained area westerly wind at a speed of 17 mph with gusts to 25 mph. Minimum noise levels occurred during quiescent calm conditions. The 24-hour daily sound levels ranged from 57 dBA to 65 dBA. A leaf-on noise survey was conducted in June 13 through June 25, 2008. There was an overall reduction in ambient sound levels compared to the leaf-off survey. The leaf-on 24-hour daily sound levels ranged from 55 dBA to 62 dBA. There were no local or county noise ordinances for the NMPNS area. (UNS 2009) There have been no additional noise studies at NMPNS.

Noise levels at NMPNS are expected to remain the same as under current operating conditions during the proposed SPEO.

3.5 Geologic Environment

3.5.1 Regional Geology

The NMPNS is located within the Central Lowlands Physiographic Province (Figure 3.5-1). The Central Lowlands province is the largest of the physiographic provinces in the continuous United States, spanning 941,500 square kilometers (585,000 square miles). Many of the features of the Central Lowlands extend into Canada. The Central Lowlands were subject to repeated Pleistocene glaciations and can be divided into regions based on glacial features, including the Great Lakes, Small Lakes, Driftless Area, Till Plains, Dissected Till Plains, and Osage Plains. (NPS 2024)

The NMPNS is located within the Ontario Lowlands region of the Central Lowlands Province. The Ontario Lowlands section is generally characterized by gently rolling topography and the presence of drumlins. However, the topography of the NMPNS is flat overall, sloping gently toward Lake Ontario, and does not reflect the topography typical of the Ontario Lowlands. Topography in the site and region consists of flat terrain with gently rolling elevations ranging from 245 feet mean sea level (MSL) to nearly 500 feet MSL (UNS 2009). The regional geology is composed of glacially deposited overburden (unconsolidated) sediments of variable thickness overlying bedrock. Geologic structure in the region is simple, involving only very mild local deformation and regional dip at a fraction of a degree to the south-southwest (Muller 1986).

The overburden consists of stratified silt, sand, and gravel deposited as glacial till during the Pleistocene. The glacial deposits range in thickness from a few feet to hundreds of feet. Ice recession after the glacial maximum 20,000 years ago resulted in the formation of drumlins and areas of kame and kettle topography. (Muller 1986) Post-glacial weathering and stream erosion have modified the terrain only slightly (CEG 2022a).

Unconsolidated sediments in the region are underlain by bedrock of Ordovician age belonging to the Lorraine Group, including the Oswego Sandstone, Pulaski Formation, and Whetstone Gulf Formation. The boundaries between units are often gradational, and the units are generally lithologically similar (UNS 2009). The transitions observed within the Lorraine Group reflect deposition within a period of marine regression.

The Oswego Sandstone is a massive sandstone, 50–80 feet thick, with minor black shale and siltstone beds that contain sedimentary structures indicative of a coastal depositional environment. The Oswego Sandstone formed when a layer of sand was deposited as sediment and filled an ancient oceanic basin to sea level from east to west (Isachsen et al. 1991). Near-vertical fractures present within the Oswego Sandstone are part of regional jointing patterns that strike north-northwest.

The Oswego Sandstone is underlain by the Pulaski Formation. The Pulaski Formation generally consists of interbedded sandstone, siltstone, and shale that were deposited in a shelf environment (UNS 2009; Isachsen et al. 1991). The relative amount of siltstone and shale increases in the lower portions of the Pulaski Formation (UNS 2009).

The Pulaski Formation is underlain by the Whetstone Gulf Formation. The Whetstone Gulf Formation is approximately 770 feet thick and generally consists of shale, siltstone, and sandstone that formed in moderately deep water (Isachsen et al. 1991). The top of the Whetstone Gulf Formation is lithologically very similar to the lower Pulaski Formation (UNS 2009).

The lower Precambrian basement rock consists of igneous and metamorphic rock that ranges in age from 560 million to 4.5 billion years old. To the north and east of NMPNS, the Paleozoic sedimentary rock thins to 0 feet, exposing the Precambrian basement in Canada and in the Adirondack Mountains. To the south, those formations thicken and interfinger with other Paleozoic formations, forming the roots of the Appalachian Plateau and the Appalachian Mountains, where up to 9,000 feet of this rock overlie the Precambrian basement. (UNS 2009)

3.5.2 Site Geology

The geologic layers of interest in the NMPNS area are listed in descending order:

- Unconsolidated overburden sediments consisting of silt, sand, and gravel
- Oswego Sandstone
- Pulaski Formation
- Whetstone Gulf Formation.

A geologic bedrock map of the NMPNS site is depicted in Figure 3.5-2.

The native surficial materials and glacial overburden are composed of till, including clay, silt, fine sands, and fine gravel. The thickness of the overburden material ranges from approximately 5.5 to 21 feet at NMPNS. During construction of NMPNS, overburden material was excavated to the

top of bedrock and replaced with engineered fill. As such, native soils are not expected to be encountered in developed sections of the site. When the overburden was removed, the exposed rock surface was similar to that examined in nearby outcrops. Ripple marks, joints, and glacial striae were evident. No evidence of movement along the joints was found. (CEG 2023a)

The unconsolidated surficial materials and glacial overburden at the site bear directly on the Oswego Sandstone. The Oswego Sandstone consists of hard, fresh to slightly weathered, non-fossiliferous, greenish-gray, fine- to medium-grained, massive to distinctly bedded or cross-bedded sandstone. Thin, dark gray siltstone and shale beds were minor, and siltstone clasts are common. The sandstone is typically composed of subangular to subrounded quartz grains, sometimes with well-rounded lithic fragments, feldspar crystals, and a clay matrix. (UNS 2009) The Oswego Sandstone is encountered between 15 and 100 feet below ground surface (bgs) and is approximately 85 feet thick at NMPNS (UNS 2009). During station construction, several deep sumps were excavated into the Oswego Sandstone, and many of the building foundations are seated directly on the bedrock surface.

The Pulaski Formation at the site is informally subdivided into Units A, B, and C at NMPNS. All three units consist of interbedded sandstone, siltstone, and shale. Unit A is approximately 40 feet thick and generally consists of greywacke interbedded with sandstone, shale, and siltstone beds. Unit B is approximately 15 to 20 feet thick and consists of a 3- to 4-foot-thick layer of fossiliferous sandstone that overlies sandstone that is interbedded with siltstone, shale, and some greywacke. Unit C is approximately 40 feet thick and consists of siltstone and shale with finely interbedded sandstone. Natural gas may be present within the lower units of the Pulaski Formation. The presence of natural gas is not considered significant to the foundation because it was encountered at depths greater than 60 feet (UNS 2009).

The Whetstone Gulf Formation is approximately 770 feet thick at the site and generally consists of well-bedded dark gray shale, siltstone, and light gray sandstone. The Whetstone Gulf Formation is informally subdivided into Units A and B at NMPNS. The upper unit (Unit A) consists of dark gray siltstone and shale with occasional light gray sandstone beds. The lower unit (Unit B) consists of siltstone and shale interbedded with sandstone. Sandstone interbeds are more common in Unit B. The top of the Whetstone Gulf Formation is lithologically very similar to the Pulaski Formation Unit C. (UNS 2009)

Numerous sand and gravel mines, topsoil borrow pits, and oil and gas wells are located in Oswego County; however, there are no active oil and gas wells, mines, or pits located adjacent to the NMPNS. The closest oil and gas well to NMPNS is located over 6 miles to the northeast, and the closest mine or pit to NMPNS is over two miles to the south. (NYSDEC 2024a; NYSDEC 2024b)

No geologic hazards have been identified at the site. There are no areas of landsliding, subsidence, uplift, or collapse at the site. Cavernous or karst terranes are not present in the site area because the bedrock is siliceous and not prone to dissolution. (CEG 2022a)

Geologic cross-sections at the NMPNS are included in Figure 3.5-3a, Figure 3.5-3b, and Figure 3.5-3c. The relative depths of the buildings, site features, bedrock aquifers, aquitards, and monitoring wells are depicted on Figure 3.5-3b and Figure 3.5-3c.

3.5.3 Soils

Almost all soils formed before the Pleistocene in New York were carried away by the glacial ice (Isachsen et al. 1991). As such, the surficial materials at the NMPNS site consist mostly of unconsolidated glacial till with very minor amounts of man-made fill, topsoil, and lake sediments (UNS 2009).

Soil units that occur within the NMPNS property boundary are described in detail in Table 3.5-1 and summarized below: (USDA 2024b)

- Beaches
- Cut and fill land
- Gravel pits
- Humaquepts and Fibrists, ponded
- Ira gravelly fine sandy loam, 0 to 3 percent slopes
- Ira gravelly fine sandy loam, 3 to 8 percent slopes
- Ira gravelly fine sandy loam, 8 to 15 percent slopes
- Ira-Sodus gravelly fine sandy loams, rolling
- Ira and Sodus very stony soils, moderately steep
- Lamson very fine sandy loam
- Palms muck
- Raynham silt loam, 0 to 6 percent slopes
- Scriba gravelly fine sandy loam, 0 to 8 percent slopes
- Scriba very stony soils, gently sloping
- Sodus gravelly fine sandy loam, 3 to 8 percent slopes
- Sun loam.

A map showing soil distribution within the NMPNS boundary is shown in Figure 3.5-4.

The natural grade level at NMPNS ranges in elevation from 246 to 276 feet MSL. As discussed in Section 3.5.2, the glacial till was removed to the bedrock surface within most of the developed portion of the site during station construction activities and replaced with a coarse engineered fill to bring the site grade to a nominal elevation of approximately 260 feet. The engineered fill is described as well-graded sandy gravel or gravelly sand with few or no fines and having a relatively high permeability. The fill material is generally similar to the till regarding gradation and density, except for the immediate surface veneer, which contains crushed stone, rubble, and soil. Major structures are founded on the Oswego Sandstone to eliminate potential problems with soil consolidation and differential settlement (CEG 2023a).

Most of the native soil outside of the developed portion of the site consists of soils formed in glacial till deposits mainly derived from sandstone. They are mainly well drained to somewhat poorly drained and are dominantly moderately coarse textured. Most have a strongly expressed fragipan. Slopes are nearly level to moderately steep and can be stony. (USDA 1981)

There are wetlands near and on parts of the site. The wetlands generally result from disruption of drainage caused by topography shaped by glacial deposits and generally consist of shallow ponds, shrub swamps, wood swamps, and intermittently wet bottomland-like forests. Many are wet for only a limited period each year. (UNS 2009) Wetlands are described further in Section 3.7.1.2.1.

The Lake Ontario shoreline forms the northern boundary of the site. The shoreline generally consists of a low slope with narrow beaches at its base. The beaches consist of exposed bedrock with no surficial material other than isolated areas of coarse gravel and cobbles. Where present, the slope to the beach has an elevation varying from about 248 feet to 255 feet MSL along and adjacent to the NMPNS site's shoreline. The exposed slope face consists of almost entirely dense glacial till. (UNS 2009)

3.5.3.1 Erosion

The NMPNS site, in the immediate vicinity of the station, is graded to carry onsite runoff to Lake Ontario. Stormwater runoff discharges into Lake Ontario via the stormwater system described in Section 3.6.1.2.2.

Exterior barriers (flood control berms) located on all three land sides of the immediate station area divert offsite surface water flow from the watershed adjacent to the station from reaching the station site. The flood control berms also prevent onsite runoff from leaving the site in most directions. In general, there is a very low potential for generation of sediment from erosion of areas immediately surrounding the facility due to the flat topography of the site; the large, roofed structures; and relatively large, paved areas.

NMPNS maintains and implements a best management practices (BMP) plan that identifies potential sources of erosion and practices to prevent stormwater runoff. During construction activities, NMPNS implements programs consistent with the requirements of the NYSDEC General Permit for Stormwater Discharges Associated with Industrial Activities from Construction Activities to control erosion and sediment losses and to manage runoff to reduce sediment loading. Onsite disturbances to areas outside of the PA are managed in accordance with Section 402 of the Clean Water Act (CWA) and SPDES Permit No. NY0001015, which is described further in Section 3.6.1.2.1. Appropriate sections of the General Permit for Storm Water Discharges from Construction Activities (General Permit GP-0-10-001) are also implemented as required. These regulations have established a permitting program to reduce erosion and sediment loading to water bodies during construction, control the impact of stormwater runoff on the water quality of receiving waters, control the volume and peak rate runoff during and after construction, and provide guidance for implementing maintenance measures for stormwater controls during and after construction. These regulations require

environmental staff to prepare and submit required documentation for construction activities that disturb 1 or more acres of land. Additionally, guidance provided in NYSDEC Article 24 wetlands regulations (construction activities within 100 feet of a wetland requires a permit) is evaluated and implemented whenever construction activities may disturb such an area.

The shoreline that extends from NMPNS eastward to the JAF is protected by a 1,000-foot-long rock dike that protects the NMPNS from lake wave action or possible ice accumulation. The rock dike is 2 feet higher than yard grade and is constructed of rock from the construction excavation. Large rocks face the lake side of the dike and have proven effective in wave damping and as a barrier to floating ice. (CEG 2023a) The rock dike also protects the reactor building from possible inundations, ice accumulation, and lake wave action (CEG 2023a). Structure monitoring program inspections of the rock dike are conducted to verify it has not substantially degraded from its original construction and that it continues to exceed regulatory performance criteria.

The shoreline on the NMPNS site to the east of the rock dike has a limited amount of vegetation on the slope, and the steepness indicates that the slope is in a state of ongoing gradual erosion. The erosion is primarily caused by wave action on the beach and is not expected to adversely impact station operations. (UNS 2009)

3.5.3.2 Prime Farmland Soils

The U.S. Department of Agriculture Natural Resources Conservation Service maps show that approximately 66 percent of the site is considered prime farmland, prime farmland if drained, or farmland of statewide importance. As shown in Figure 3.5-4, most structures within the site were constructed on Scriba gravelly fine sandy loam, which is considered to be farmland of statewide importance (USDA 2024b). Although areas of the property are designated as prime farmland, the site is not subject to the Farmland Protection Policy Act (FPPA) because the act does not include federal permitting or licensing for activities on private or nonfederal lands. Soil units designated as prime farmland are identified in Table 3.5-1.

3.5.4 Seismic History

The site is within the Eastern Stable Platform Tectonic Province. The location is considered to be relatively tectonically stable and is free of major tectonic structures (USAR page 2.5-45). The rock at the site has been observed to be sound with no discontinuities, folds, or faults, and no active faults exist within 200 miles of the site (CEG 2023a; USGS 2024a). Regional tectonic features, including a description of structure and seismic history prior to station construction, are described in the Unit 2 USAR, Section 2.5 (CEG 2022a). Seismic history of the region since station construction is available using the United States Geological Survey (USGS) Search Earthquake Catalog (USGS 2025).

The 2023 update of the national seismic hazard model shows that NMPNS is in a region with a 2 percent in 50 years (once in 2,500 years) probability of exceeding a peak ground acceleration between 0.1 and 0.12 g (Petersen et al. 2023).

Table 3.5-1 Onsite Soil Unit Descriptions (Sheet 1 of 10)

Map Unit Symbol[(a)]	Soil Unit Name	Description	Farmland Designation
BC	Beaches	The Beaches component makes up 0.45 percent of the map unit. The frost-free period is 120 to 190 days. Non-irrigated land capability classification is 7s. The soil does not meet hydric criteria. The erosion potential is not rated. No additional information is available regarding slopes, landforms, parent material, water movement, available water depth, flooding, ponding, and depth to the water table.	Not prime farmland
CFL	Cut and fill land	The Cut and Fill Land component makes up 4.06 percent of the map unit. Slopes are 0 to 15 percent. The drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low to high. Available water to a depth of about 4.4 inches is low. The soil is not prone to flooding or ponding. The frost-free period is 120 to 190 days. Depth to the water table is more than 80 inches. Non-irrigated land capability classification is 7s. The soil does not meet hydric criteria. The erosion potential is moderate.	Not prime farmland
GP	Gravel pits	The Gravel Pits component makes up 0.53 percent of the map unit. The frost-free period is 120 to 190 days. The erosion potential is not rated. No additional information is available regarding slopes, landforms, parent material, water movement, available water depth, flooding, ponding, depth to the water table, irrigated land capability, and hydric criteria.	Not prime farmland

Table 3.5-1 Onsite Soil Unit Descriptions (Sheet 2 of 10)

Map Unit Symbol[(a)]	Soil Unit Name	Description	Farmland Designation
HW	Humaquepts and Fibrists, ponded	The Ponded Humaquepts and Fibrists component makes up 0.69 percent of the map unit. In the Ponded Humaquepts component, slopes are 0 to 1 percent. The Ponded Humaquepts component is found on marshes and swamps. Depth to a restrictive layer is more than 80 inches. The drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low to moderately high. Available water to a depth of about 7.2 inches is moderate. The soil is not prone to flooding and is frequently ponded. The frost-free period is 120 to 190 days. Depth to the water table is about 0 inches. Non-irrigated land capability classification is 8w. The soil meets hydric criteria. The erosion potential is slight. In the Ponded Fibrists component, slopes are 0 to 1 percent. This component is found on marshes and swamps. The parent material consists of organic material. Depth to a restrictive layer is more than 80 inches. The drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low to high. Available water to a depth of about 20.9 inches is very high. The soil is not prone to flooding and is frequently ponded. The frost-free period is 120 to 190 days. Depth to the water table is about 0 inches. Non-irrigated land capability classification is 8w. The soil meets hydric criteria. The erosion potential is slight.	Not prime farmland

Table 3.5-1 Onsite Soil Unit Descriptions (Sheet 3 of 10)

Map Unit Symbol[(a)]	Soil Unit Name	Description	Farmland Designation
IrA	Ira gravelly fine sandy loam, 0 to 3 percent slopes	The Ira component makes up 3.26 percent of the map unit. Slopes are 0 to 3 percent. This component is found on till plains and drumlins. The parent material consists of loamy till derived mainly from sandstone with varying amounts of limestone and shale. Depth to a restrictive layer is 16 to 22 inches to fragipan. The drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low to moderately high. Available water to a depth of about 2.3 inches is very low. The soil is not prone to flooding or ponding. The frost-free period is 120 to 190 days. Depth to the water table is about 15 to 21 inches. Non-irrigated land capability classification is 2w. The soil does not meet hydric criteria. The erosion potential is slight.	Farmland of statewide importance
IrB	Ira gravelly fine sandy loam, 3 to 8 percent slopes	The Ira component makes up 17.32 percent of the map unit. Slopes are 3 to 8 percent. This component is found on till plains and drumlins. The parent material consists of loamy till derived mainly from sandstone with varying amounts of limestone and shale. Depth to a restrictive layer is 16 to 22 inches to fragipan. The drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low to moderately high. Available water to a depth of about 2.3 inches is very low. The soil is not prone to flooding or ponding. The frost-free period is 120 to 190 days. Depth to the water table is about 15 to 21 inches. Non-irrigated land capability classification is 2w. The soil does not meet hydric criteria. The erosion potential is slight.	Farmland of statewide importance

Table 3.5-1 Onsite Soil Unit Descriptions (Sheet 4 of 10)

Map Unit Symbol[(a)]	Soil Unit Name	Description	Farmland Designation
IrC	Ira gravelly fine sandy loam, 8 to 15 percent slopes	The Ira component makes up 0.9 percent of the map unit. Slopes are 8 to 15 percent. This component is found on till plains and drumlins. The parent material consists of loamy till derived mainly from sandstone with varying amounts of limestone and shale. Depth to a restrictive layer is 16 to 22 inches to fragipan. The drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low to moderately high. Available water to a depth of about 2.3 inches is very low. The soil is not prone to flooding or ponding. The frost-free period is 120 to 190 days. Depth to the water table is about 15 to 21 inches. Non-irrigated land capability classification is 2w. The soil does not meet hydric criteria. The erosion potential is slight.	Farmland of statewide importance

Table 3.5-1 Onsite Soil Unit Descriptions (Sheet 5 of 10)

Map Unit Symbol[(a)]	Soil Unit Name	Description	Farmland Designation
IsC	Ira-Sodus gravelly fine sandy loams, rolling	The Ira-Sodus component makes up 3.81 percent of the map unit. In the Ira component, slopes are 8 to 15 percent. This component is found on till plains and drumlins. The parent material consists of loamy till derived mainly from sandstone with varying amounts of limestone and shale. Depth to a restrictive layer is 16 to 22 inches to fragipan. The drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low to moderately high. Available water to a depth of about 2.3 inches is very low. The soil is not prone to flooding or ponding. The frost-free period is 120 to 190 days. Depth to the water table is about 15 to 21 inches. Non-irrigated land capability classification is 3e. The soil does not meet hydric criteria. The erosion potential is slight. In the Sodus component, slopes are 8 to 15 percent. This component is found on till plains and drumlins. The parent material consists of loamy till derived mainly from sandstone with varying amounts of limestone, shale, and crystalline rock. Depth to a restrictive layer is 15 to 24 inches to fragipan. The drainage class is well drained. Water movement in the most restrictive layer is moderately low to moderately high. Available water to a depth of about 2.7 inches is very low. The soil is not prone to flooding or ponding. The frost-free period is 120 to 190 days. Depth to the water table is more than 80 inches. Non-irrigated land capability classification is 3e. The soil does not meet hydric criteria. The erosion potential is slight.	Farmland of statewide importance

Table 3.5-1 Onsite Soil Unit Descriptions (Sheet 6 of 10)

Map Unit Symbol[(a)]	Soil Unit Name	Description	Farmland Designation
IUD	Ira and Sodus very stony soils, moderately steep	The Ira component makes up 16 percent of the map unit. In the Ira component, slopes are 15 to 25 percent. This component is found on till plains and drumlins. The parent material consists of loamy till derived mainly from sandstone with varying amounts of limestone and shale. Depth to a restrictive layer is 16 to 22 inches to fragipan. The drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low to moderately high. Available water to a depth of about 2.3 inches is very low. The soil is not prone to flooding or ponding. The frost-free period is 120 to 190 days. Depth to the water table is about 15 to 21 inches. Non-irrigated land capability classification is 3e. The soil does not meet hydric criteria. The erosion potential is moderate. In the Sodus component, slopes are 15 to 25 percent. This component is found on till plains and drumlins. The parent material consists of loamy till derived mainly from sandstone with varying amounts of limestone, shale, and crystalline rock. Depth to a restrictive layer is 15 to 24 inches to fragipan. The drainage class is well drained. Water movement in the most restrictive layer is moderately low to moderately high. Available water to a depth of about 2.7 inches is very low. The soil is not prone to flooding or ponding. The frost-free period is 120 to 190 days. Depth to the water table is more than 80 inches. Non-irrigated land capability classification is 3e. The soil does not meet hydric criteria. The erosion potential is moderate.	Not prime farmland

Table 3.5-1 Onsite Soil Unit Descriptions (Sheet 7 of 10)

Map Unit Symbol[(a)]	Soil Unit Name	Description	Farmland Designation
Lf	Lamson very fine sandy loam	The Lamson component makes up 0.5 percent of the map unit. Slopes are 0 to 3 percent. This component is found on depressions. The parent material consists of deltaic or glaciolacustrine deposits with a high content of fine and very fine sand. Depth to a restrictive layer is more than 80 inches. The drainage class is poorly drained. Water movement in the most restrictive layer is moderately high to high. Available water to a depth of about 8.2 inches is moderate. The soil is not prone to flooding, and the soil occasionally ponds. The frost-free period is 120 to 190 days. Depth to the water table is about 0 to 6 inches. Non-irrigated land capability classification is 4w. The soil meets hydric criteria. The erosion potential is slight.	Farmland of statewide importance
Pa	Palms muck	The Palms muck component makes up 0.21 percent of the map unit. Slopes are 0 to 2 percent. The parent material consists of organic material over loamy glacial drift. Depth to a restrictive layer is more than 80 inches. The drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high to high. Available water to a depth of about 15.6 inches is very high. The soil is not prone to flooding but ponds frequently. The frost-free period is 120 to 190 days. Depth to the water table is zero inches. Non-irrigated land capability classification is 5w. The soil meets hydric criteria. The erosion potential is slight.	Not prime farmland

Table 3.5-1 Onsite Soil Unit Descriptions (Sheet 8 of 10)

Map Unit Symbol[(a)]	Soil Unit Name	Description	Farmland Designation
RaB	Raynham silt loam, 0 to 6 percent slopes	The Raynham component makes up 2.2 percent of the map unit. Slopes are 0 to 6 percent. This component is found on lake plains. The parent material consists of glaciolacustrine, eolian, or old alluvial deposits, composed mainly of silt and very fine sand. Depth to a restrictive layer is more than 80 inches. The drainage class is poorly drained. Water movement in the most restrictive layer is moderately low to moderately high. Available water to a depth of about 11.8 inches is high. The soil is not prone to flooding or ponding. The frost-free period is 120 to 190 days. Depth to the water table is about 6 to 12 inches. Non-irrigated land capability classification is 4w. The soil meets hydric criteria. The erosion potential is slight.	Prime farmland if drained
ScB	Scriba gravelly fine sandy loam, 0 to 8 percent slopes	The Scriba component makes up 33.01 percent of the map unit. Slopes are 0 to 8 percent. This component is found on till plains and drumlins. The parent material consists of loamy till dominated by sandstone with lesser amounts of limestone and shale. Depth to a restrictive layer is 12 to 15 inches to fragipan. The drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low to moderately high. Available water to a depth of about 1 inch is high. The soil is not prone to flooding or ponding. The frost-free period is 120 to 190 days. Depth to the water table is about 6 to 14 inches. Non-irrigated land capability classification is 3w. The soil does not meet hydric criteria. The erosion potential is slight.	Farmland of statewide importance

Table 3.5-1 Onsite Soil Unit Descriptions (Sheet 9 of 10)

Map Unit Symbol[(a)]	Soil Unit Name	Description	Farmland Designation
SDB	Scriba very stony soils, gently sloping	The Scriba component makes up 12.05 percent of the map unit. Slopes are 3 to 8 percent. This component is found on till plains and drumlins. The parent material consists of loamy till dominated by sandstone with lesser amounts of limestone and shale. Depth to a restrictive layer is 12 to 15 inches to fragipan. The drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low to moderately high. Available water to a depth of about 1 inch is high. The soil is not prone to flooding or ponding. The frost-free period is 120 to 190 days. Depth to the water table is about 6 to 14 inches. Non-irrigated land capability classification is 6s. The soil does not meet hydric criteria. The erosion potential is slight.	Not prime farmland
SgB	Sodus gravelly fine sandy loam, 3 to 8 percent slopes	The Sodus component makes up 2.67 percent of the map unit. Slopes are 0 to 8 percent. This component is found on till plains and drumlins. The parent material consists of loamy till derived mainly from sandstone with varying amounts of limestone, shale, and crystalline rock. Depth to a restrictive layer is 15 to 24 inches to fragipan. The drainage class is well drained. Water movement in the most restrictive layer is moderately low to moderately high. Available water to a depth of about 2.7 inch is very low. The soil is not prone to flooding or ponding. The frost-free period is 120 to 190 days. Depth to the water table is more than 80 inches. Non-irrigated land capability classification is 2e. The soil does not meet hydric criteria. The erosion potential is slight.	All areas are prime farmland

Table 3.5-1 Onsite Soil Unit Descriptions (Sheet 10 of 10)

Map Unit Symbol[(a)]	Soil Unit Name	Description	Farmland Designation
Su	Sun loam	The Sun loam component makes up 2.33 percent of the map unit. Slopes are 0 to 3 percent. This component is found on depressions. The parent material consists of loamy till derived primarily from limestone and sandstone with a component of schist, shale, or granitic rocks in some areas. Depth to a restrictive layer is more than 80 inches. The drainage class is poorly drained. Water movement in the most restrictive layer is moderately low to moderately high. Available water to a depth of about 6 inches is moderate. The soil is not prone to flooding or ponding. The frost-free period is 120 to 190 days. Depth to the water table is about 0 to 6 inches. Non-irrigated land capability classification is 4w. The soil meets hydric criteria. The erosion potential is slight.	Farmland of statewide importance

(USDA 2024b)

a. See Figure 3.5-4 for map unit symbols.

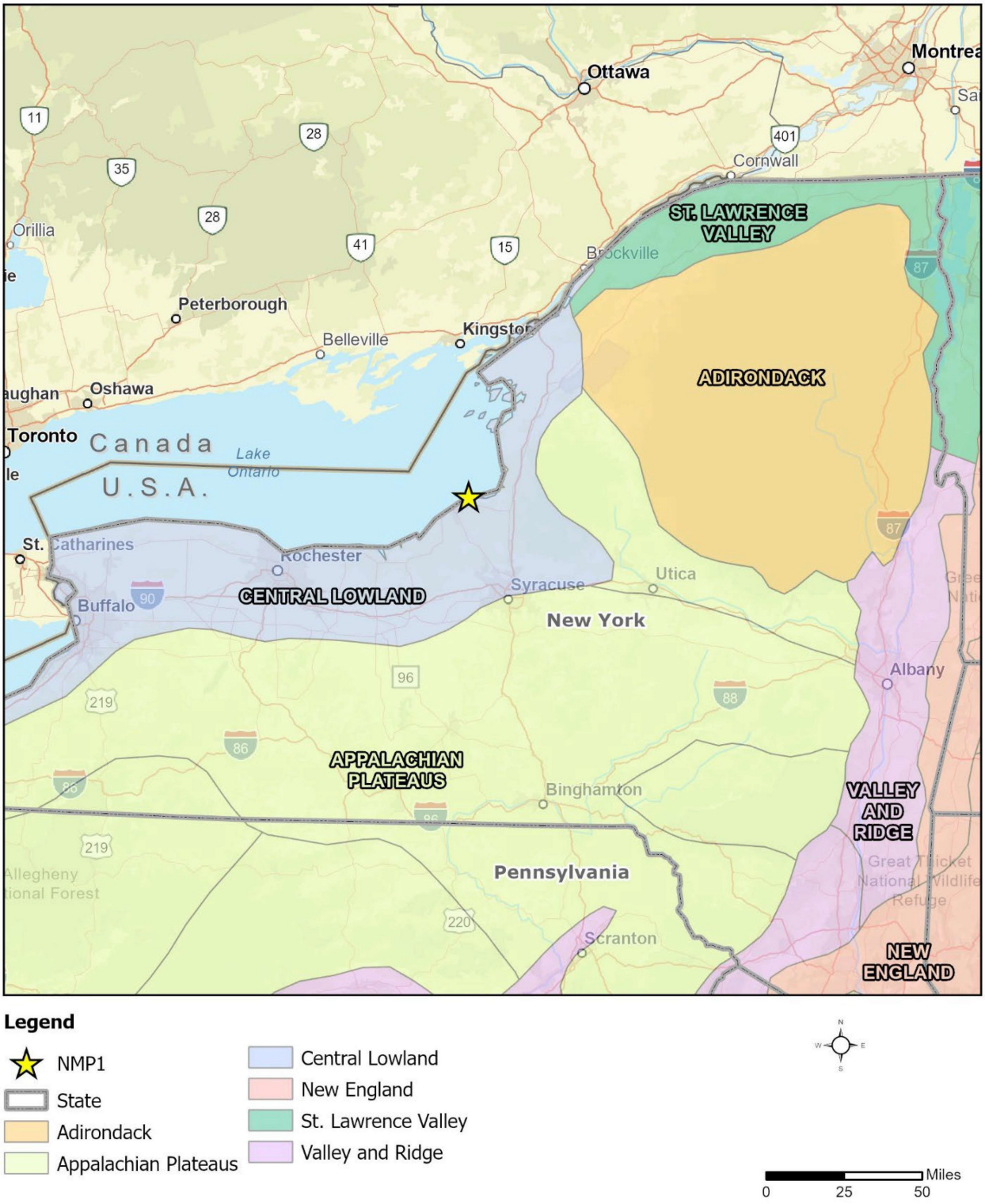


Figure 3.5-1 Physiographic Provinces Associated with NMPNS

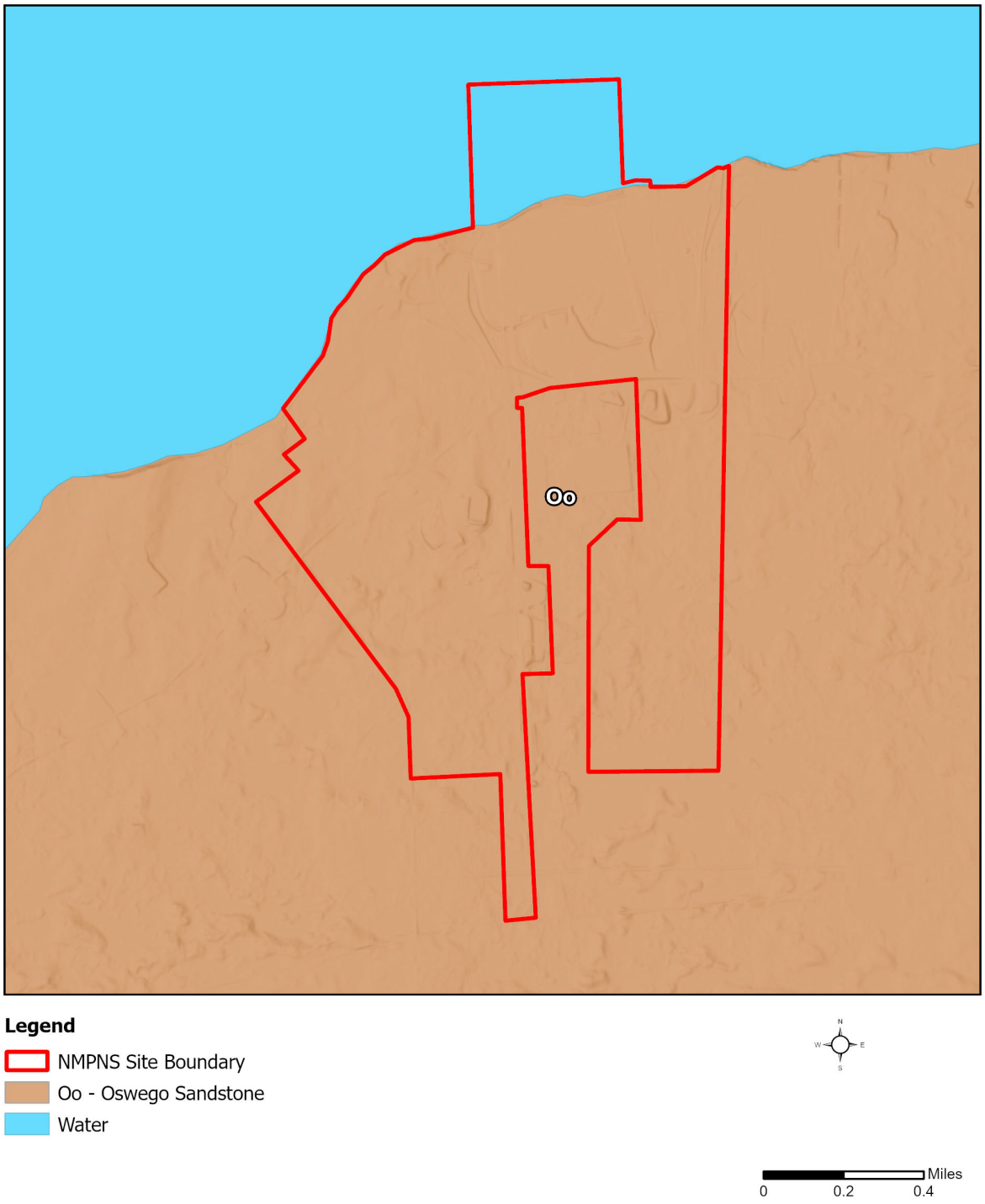


Figure 3.5-2 Bedrock Geology Map, NMPNS Property

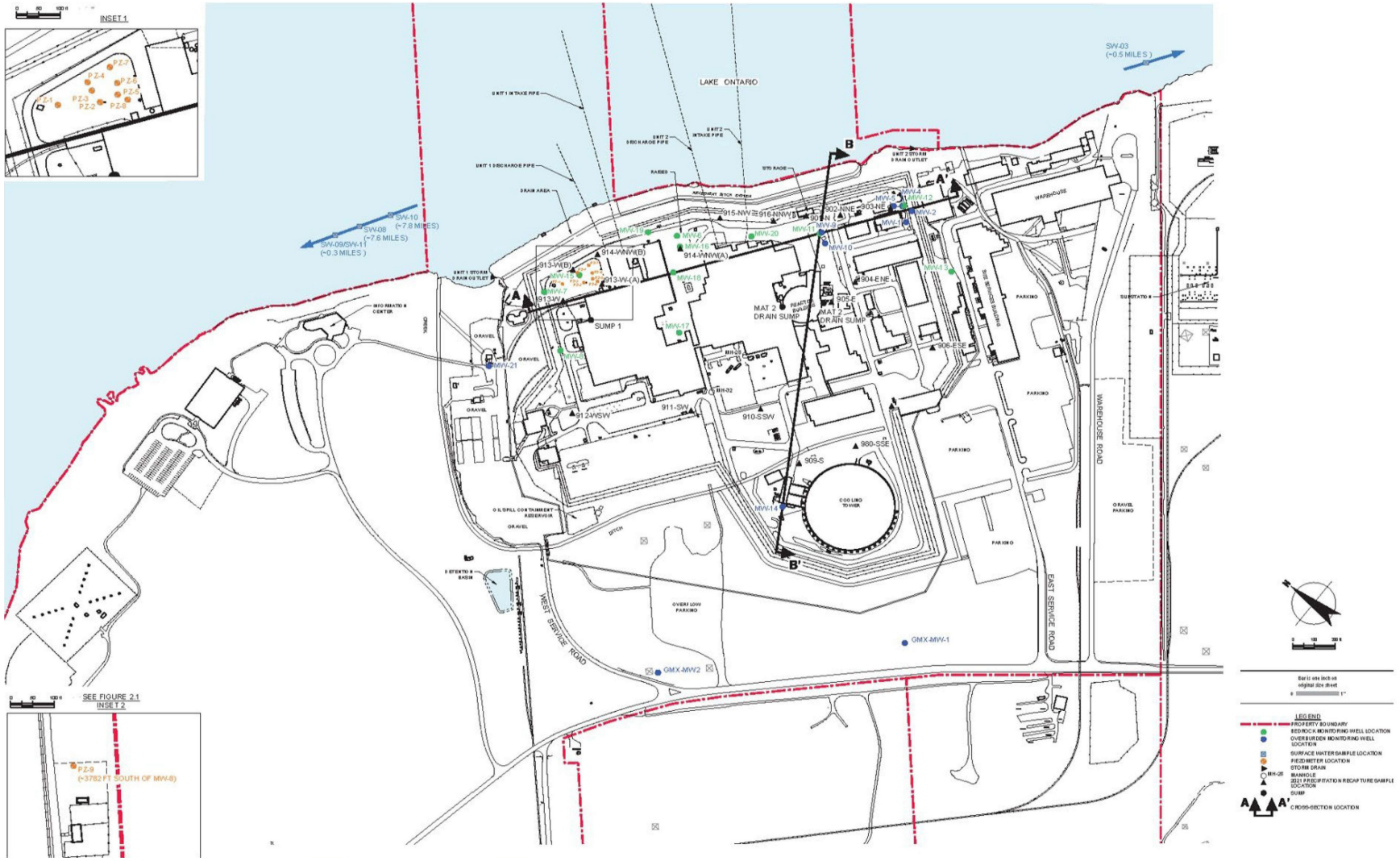


Figure 3.5-3a Geologic Cross-Section Locations on NMPNS

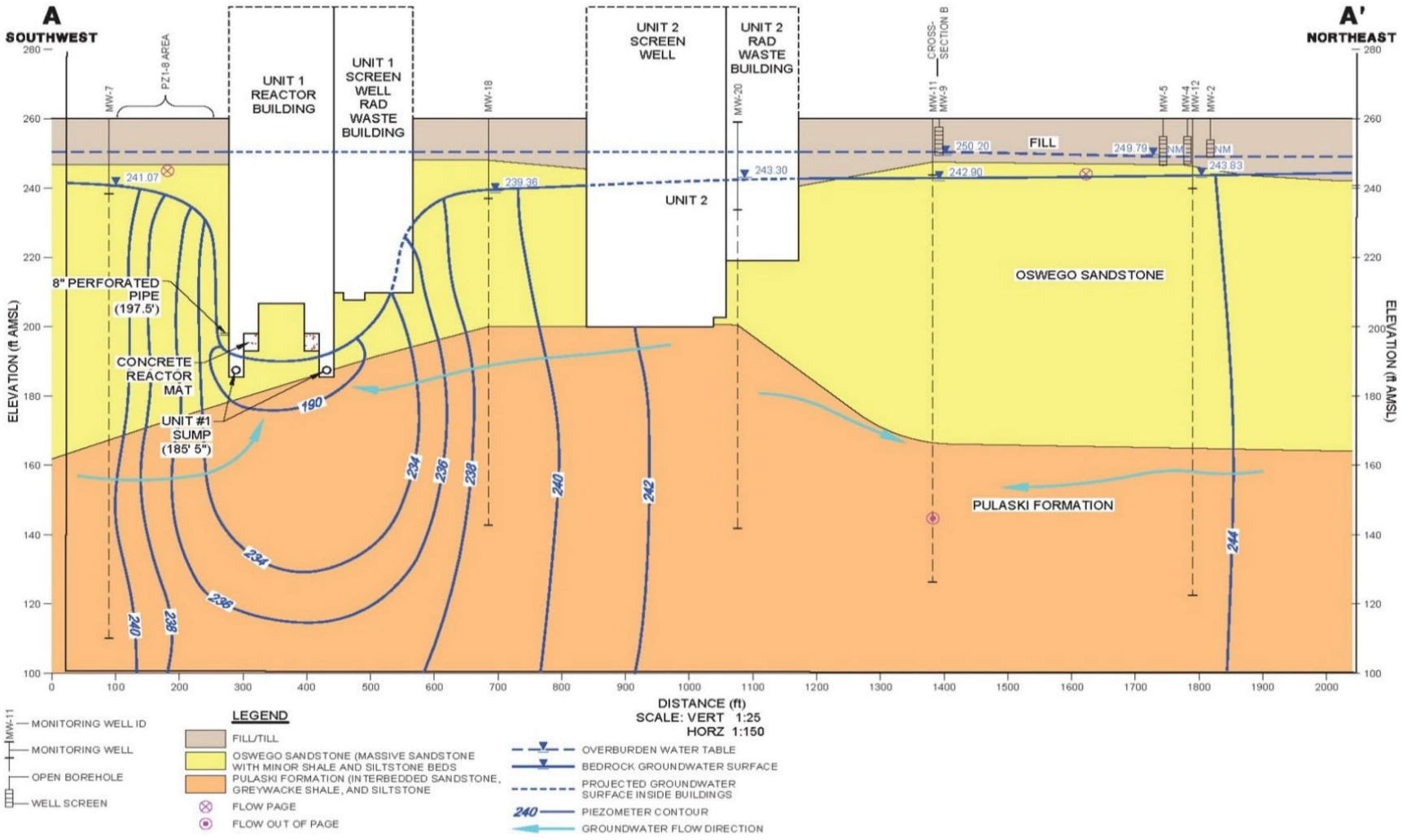


Figure 3.5-3b Cross-Section A-A'

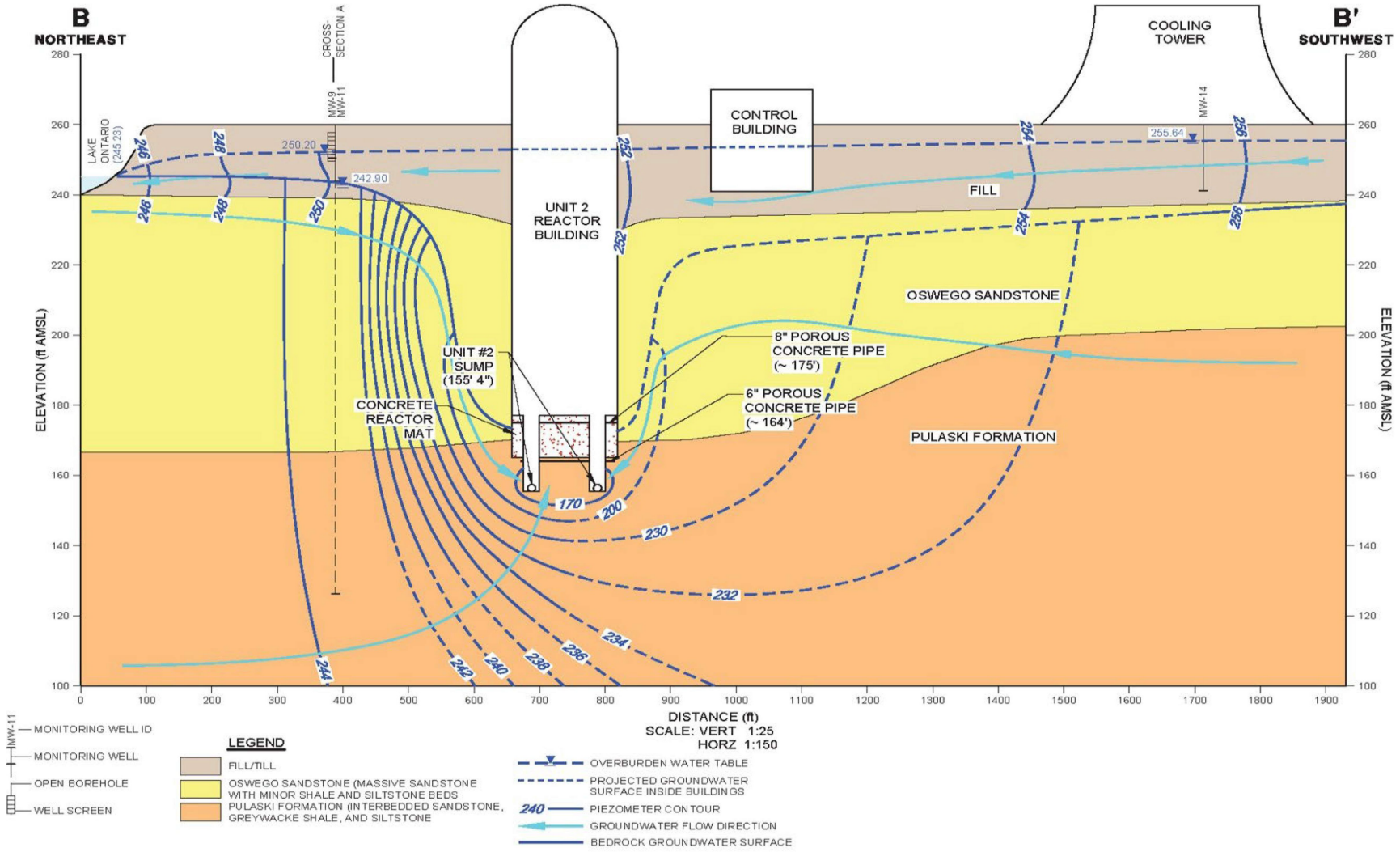


Figure 3.5-3c Cross-Section B-B'

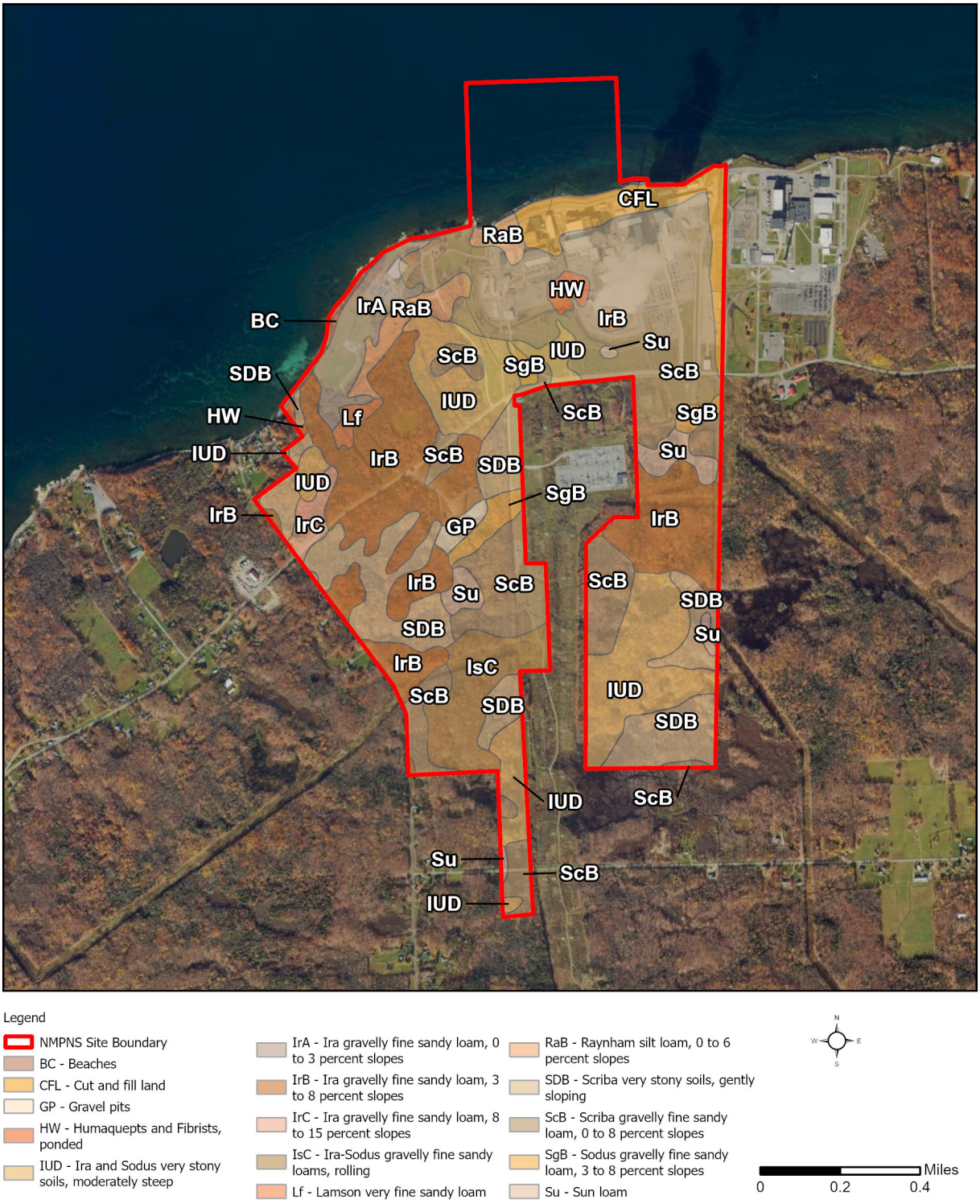


Figure 3.5-4 Distribution of Soil Units, NMPNS Property

3.6 Water Resources

3.6.1 Surface Water Resources

The NMPNS is located on the southeastern shore of Lake Ontario in Oswego County, New York. Lake Ontario is an international body of water forming part of the border between the United States and Canada. Surface water resources located on or adjacent to NMPNS include Lake Ontario to the north and three unnamed streams that flow through the site. (UNS 2009) Hydrologic features within 6 miles of NMPNS are depicted in Figure 3.6-1.

Approximately 80 percent of the water flowing into Lake Ontario comes from Lake Erie through the Niagara River near Buffalo, New York. The remaining water flow comes from Lake Ontario basin tributaries and precipitation. (NRC 2006a)

Water flows from Lake Ontario into the St. Lawrence River and passes through the hydropower project near Cornwall, Ontario, and Massena, New York. The International Joint Commission approved this project in 1952. The International Joint Commission updated the Lake Ontario-St. Lawrence River flow regulation plan on December 8, 2016, referred to as "Plan 2014." This plan was agreed to by the United States and Canada to improve environmental performance while maintaining most of the benefits provided to other interests by the previous Plan 1958-D, which was in use since 1963. Plan 2014 specifies weekly outflows based on the water level of Lake Ontario, the water supplies to the lake, and conditions upstream and downstream on the river. Generally, higher levels and greater water supplies result in higher outflows, and vice versa. The plan has several flow limitations to protect various interests in the St. Lawrence River that may be affected by extreme flows or levels. These limits maintain adequate flows for hydropower production, minimum depths for municipal water intakes and navigation, and protection against flooding. (IJC 2024)

Lake Ontario circulation is influenced by the prevailing west-northwest winds and the eastward flow of water from the Niagara River, resulting in a counterclockwise flow. The currents in the nearshore at NMPNS tend to flow alongshore in both directions. Local circulation at NMPNS near the intake and discharge is strongly influenced by the shallow depth (less than 33 feet) and proximity to shore. (UNS 2009)

Nine Mile Point, on which the NMPNS is located, is a slight promontory on the southeastern shore of the lake. The offshore slope at the station site is steep (5-percent to 10-percent grade) at the beach, flattening to a 2-percent to 3-percent grade at the 15-foot depth contour, then increasing to a 4-percent slope lakeward. (NMPNS 2004) Surface water flows regionally toward the lake with some minor seasonal drainage across the northern part of the site from northeast to southwest. The NMPNS site also contains two small man-made ponds. (UNS 2009) Stormwater runoff and the ponds are described in Section 3.6.1.2.2.

Water use associated with the operation of NMPNS consists of fresh water withdrawn from Lake Ontario, which is used primarily for cooling and for the main condensers, auxiliary systems, and

reactor shutdown heat removal, as well as municipal water, which is used for drinking water, makeup for demineralized water, and other miscellaneous purposes. Cooling water systems include a CWS and an SWS. The CWS circulates cool water through the main condensers to condense steam after it passes through the turbine. The SWS circulates cooling water through heat exchangers that serve various station plant components. Both the CWS and the SWS for NMP1 are once-through systems. (NMPNS 2004) Units 1 and 2 have separate intake and discharge structures located offshore in Lake Ontario. Onshore, each unit has a separate screen well and pumphouse structure. Water use at NMP1 is described further in Section 3.6.3.1.

3.6.1.1 Potential for Flooding

Flood hazards for New York are identified by the Federal Emergency Management Agency (FEMA). As shown in Figure 3.6-2, NMP1 is not located within a flood zone. Areas along the Lake Ontario shoreline are mapped as coastal areas with a 1 percent or greater chance of flooding and an additional hazard associated with storm waves (Zone VE), and areas near Outfall 020 shown in Figure 3.6-3, are mapped within a 1 percent chance or greater of shallow flooding (Zone AO). There is no history of flooding at NMPNS. There are no plans to develop in FEMA-designated floodplains. NMPNS is not subject to any floodplain regulations.

The major feature at the shoreline of NMPNS in the 100-year floodplain is the revetment ditch system built to protect the station from flooding and to protect the shoreline from erosion (UNS 2009). Exterior berms located on the three land sides of the immediate station area divert offsite surface water flow from reaching the station. Surface water flow inside the flood control berms and directly adjacent to station facilities are generally controlled by two outlets: a site drainage channel that discharges to Lake Ontario and overland flow to the north next to the station structures. Flood design considerations and flood control at NMPNS are described in Sections II and III of the Unit 1 UFSAR and Section 2.4 of the Unit 2 USAR (CEG 2023a; CEG 2022a).

The NOAA monitors water levels in Lake Ontario. Historical monthly maximum water levels in Lake Ontario were recorded in Oswego, New York (Station 9052030), in 1933 through 2024. A summary of these maximum monthly water levels is provided in Table 3.6-1 in the International Great Lakes Datum 1985. The maximum lake level was approximately 249.5 feet International Great Lakes Datum 1985 in June 1952, which is approximately 250.23 feet U.S. Lake Survey Datum of 1935. (NOAA 2024b)

3.6.1.2 Surface Water Discharges

3.6.1.2.1 SPDES-Permitted Outfalls

Cooling water and industrial process wastewater are discharged to Lake Ontario via outfalls in accordance with the NMPNS SPDES Permit No. NY0001015 issued by the NYSDEC. Discharges from NMPNS are authorized under the permit that went into effect on December 1, 2014, and expired on November 30, 2019. An SPDES permit renewal application was submitted to NYSDEC on March 8, 2019, and the NYSDEC granted an administrative extension on April 5,

2019, in accordance with the State Administrative Procedures Act. The SPDES permit authorizes discharges from outfalls associated with Unit 1 and Unit. 2. The SPDES outfalls associated with NMP1 operations include five external outfalls (010, 020, 021, 023, and 030) and four internal outfalls (011, 010A, 007B, and 024). External Outfall 030 is associated with operation of both units at NMPNS. Permit limits associated with these outfalls are listed in Table 3.6-2. As listed in this table, permit action levels apply to some metals and whole effluent toxicity testing parameters. Additional monitoring is required for Type I action level exceedances. If levels higher than the action levels are confirmed, the permit may be reopened by the NYSDEC for consideration of revised action levels or effluent limits. External SPDES outfall locations associated with NMP1 are depicted on Figure 3.6-3.

In accordance with the Environmental Benefit Permit Strategy, the NYSDEC issued a request for information dated January 9, 2024. CEG submitted a response to the request for information in May 2024, which included references to applicable information that was previously submitted to the NYSDEC and a summary of the references. The response also included requests for SPDES permit modifications, but the requested permit modifications applied to SPDES outfalls associated with NMP2 only. (CEG 2024d) While the NYSDEC completes its review of the permit renewal application and the information provided in response to its request for information, discharges from NMPNS are subject to the administratively extended SPDES permit requirements.

To control biofouling of cooling system components, such as condenser tubes, water treatment chemicals are used at NMPNS, which are listed in CEG's response to the NYSDEC's 2024 SPDES permit request for information (CEG 2024d).

3.6.1.2.2 Stormwater Runoff

The ground surface at NMPNS is generally flat and slopes gently to the north toward Lake Ontario with elevations ranging from 246 feet MSL National Geodetic Vertical Datum of 1929 at the shoreline to approximately 276 feet MSL near the southern end of the developed portion of the site (NMPNS 2004). Stormwater runoff from NMPNS discharges into Lake Ontario via a stormwater system and the NMP1 stormwater ditch. Numerous catch basins and associated underground piping are used in the areas surrounding the station to collect and convey stormwater to permitted outfall locations. Snowmelt and stormwater runoff from impervious surfaces are ultimately discharged to Lake Ontario.

The NMPNS is graded to carry the probable maximum precipitation runoff overland to the lake without using the storm sewer system. Exterior barriers around the station buildings divert surface flows from the drainage basin encompassing the site. (CEG 2022a) The flood control berms (Section 3.6.1.1) also prevent onsite runoff from leaving the site in most directions. The water elevations inside the flood control berms and directly adjacent to station facilities are controlled by culverts under the railroad tracks and the access road southwest of the Unit 1 switchyard and overland flow to the north next to the structures. (CEG 2022a)

The NMPNS site drainage system is a large man-made drainage ditch that surrounds the site on all sides except the north, which is delineated by Lake Ontario. The primary purpose of the ditch is to gravity drain any low areas on the site of groundwater and precipitation. The southwestern segment of the site drainage ditch flows west to the western segment, which then flows north. The Unit 1 segments empty into Lake Ontario. The southeastern segment of the site drainage ditch generally flows eastward to the eastern segment, which flows north. The Unit 2 segments also empty into Lake Ontario. The drainage ditch can prevent or assist in reducing the amount of oil that could possibly reach Lake Ontario by providing absorption of oil in the gravel/soil surface of the ditch, which is expected to be cleaned up in the event of a spill. The ditch is sufficiently long that significant absorption and significant delay in oil transport occur. Even considering frequency of precipitation, the probability of small releases reaching Lake Ontario is very low. Additionally, as described in the NMPNS Spill Prevention, Control, and Countermeasure (SPCC) plan, absorbent materials can be deployed in the event of a large spill.

The NMP1 storm sewer system is located on the northern, eastern, southern, and western sides of the facility. Drainage is through gravity flow to Lake Ontario. Inputs to the NMP1 storm sewer system include roadway drains; roof drains; Unit 1 underground perimeter drain system, administration building addition perimeter drain system, and Unit 1 radwaste building perimeter drain system (described further in Section 3.6.3.2 and depicted in Figure 3.6-6); Unit 1 makeup demineralizer system backwash; drainage from the 115-kV and 345-kV switchyard oil separators; and several Unit 2 turbine building roof drains.

The switchyard, located approximately 400 feet south of the southwestern corner of the NMP1 turbine building, is covered with crushed stone and has a spill control drainage system that drains to an oil spill retention basin just south of the switchyard. The oil spill retention basin has a containment capacity of approximately 213,942 gallons. Discharge of accumulated water is approved and permitted only if oil and grease analytical results are less than 15 milligrams per liter (mg/L) (SPDES Permit No. NY0001015 Outfall 023).

As described in Section 3.6.1.1, a revetment ditch runs from the NMP2 cooling tower area westward and then northward to Lake Ontario. The revetment ditch receives site stormwater runoff and monitored discharges from the wastewater treatment facility and the oil retention pond. (UNS 2009)

3.6.1.2.3 Sanitary Wastewaters

Sanitary wastewater is treated at the onsite WWTP, which is also referred to in the UFSAR as the sewage treatment facility and the sewage treatment plant. The WWTP is approximately 300 feet northwest of the NMP1 turbine building and due west of the northern end of the NMP1 reactor building. The WWTP is outside the floodplain for an NMP2 10,000-year flood event. (CEG 2023a)

The WWTP provides secondary treatment and disinfection. Sanitary wastewater flows by gravity from NMP1 facilities, the EIC, the NLC, and Unit 2 to the WWTP building and associated preliminary treatment facilities. (CEG 2023a)

Raw sewage passes through a comminutor to shred large solids. After preliminary treatment, sewage is pumped to treatment facilities, where a flow distribution structure splits flow to two aeration units. Flow through the remainder of the WWTP is by gravity. Scum is removed from the surface of the final settling tanks by a rotary wiper arm, after which it is flushed to a scum well, from which it is air lifted to the aerated sludge holding tanks. Sludge withdrawn from the settling tanks is returned to the aeration tanks. Return sludge air lifts are used to return sludge to the head of the aeration tank. Excess sludge solids are wasted from the settling tanks and air lifted to aerated sludge holding tanks to be concentrated prior to sludge dewatering. (CEG 2023a)

The concentrated sludge can be dried by mechanical means or pumped by portable pumps to a sludge drying bed. Sludge is allowed to dewater by means of evaporation and drainage via an underground drainage system. The water that drains from the sludge via an underground system is collected in a sump and is periodically pumped back to the influent side of the WWTP. The sludge-drying bed structure is located northwest of the WWTP. The structure is covered by a roof and has an 18-inch curbing surrounding it. (CEG 2023a)

Chlorination is used to disinfect the effluent. Final effluent is dechlorinated to reduce total residual chlorine below permit levels. Dechlorination chemical is added based on total effluent flow rate after the chlorine contact chamber and prior to the V-notch weir and effluent sample point, SPDES Outfall 030. Discharge from the WWTP is through a 12-inch outfall sewer to a drainage ditch leading to Lake Ontario. (CEG 2023a)

3.6.1.2.4 Dredging

There is no active dredging in Lake Ontario or along the shoreline. The NYSDEC issued Permit ID 7-3556-00013/00034 (effective June 18, 2015, and expired on June 17, 2025) authorizing the facility to undertake maintenance and rehabilitation of two stormwater outfalls associated with the NMPNS. The maintenance activities involve relocation of rock riprap from the mouth of the outfall pipes and any rock or debris within the existing outfalls. The permit includes erosion and sedimentation control measures to prevent potential silt and sediment from entering the water body and precautions to preclude contamination of any wetland or waterway by any environmentally deleterious materials. Rocks and debris removed are expected to be moved to an upland site more than 100 feet from any regulated wetland or water body. The excavation and fill in navigable waters activities authorized under Environmental Compliance Law Article 15, Title 5, are covered under Great Lakes Erosion Control Permit GP-0-20-004. Per the NYSDEC, coverage under Permit No. GP-0-20-004 expired May 7, 2025, and projects with coverage under this permit are authorized under Permit No. GP-0-25-010 (Great Lakes Erosion Control General Permit) to continue the activity until December 31, 2025. (NYSDEC 2025). CEG has requested that the activities that were previously covered under Permit No. GP-0-20-004 be incorporated into the SPDES permit renewal as discussed under Section 3.6.1.2.1. CEG plans to ensure that any of these activities are not to be performed after December 31, 2025, until the renewed permit is issued.

3.6.1.2.5 Compliance History

As presented in Chapter 9, no NOVs associated with NMP1 wastewater discharges to receiving surface waters were issued over the period of 2020 through 2024. An SPDES permit non-compliance issue occurred in December 2023 because the third-party laboratory did not analyze a sample collected related to WWTP effluent (Outfall 030) for biochemical oxygen demand (BOD_5) within the method holding time. Station personnel notified the NYSDEC of the non-compliance issue. A Report of Noncompliance Event form (per 6 NYCRR Part 750-2.7) was completed and submitted electronically with the December 2023 discharge monitoring report (DMR), and further action was not required. A pipe in the NMP1 fire protection system containing raw lake water ruptured below ground. The water carried sediment to a nearby storm drain, which discharged to SPDES Outfall 020. The event lasted about 40 minutes. The rupture was discovered on June 18, 2025, and an oral notification to the NYSDEC was made on June 25, 2025. A sample was collected from the outfall and analyzed for total suspended solids (TSS), which were detected at 82 mg/L, above the daily maximum permit limit of 50 mg/L. The fire protection system and piping were repaired, and a sample from Outfall 020 was collected and analyzed for TSS to confirm compliance with permit limits. A Report of Noncompliance Event form was completed and submitted electronically with the DMR for the second quarter.

3.6.1.2.6 Water Temperatures Reporting

Lake Ontario is a large, temperate lake that exhibits a seasonally dependent pattern of thermal stratification, which alters circulation patterns. Changes in stratification result from atmospheric head exchange and wind-induced mixing. In spring months, the shallow nearshore waters warm more quickly than the deep offshore waters, setting up isotherms roughly parallel to shore. As the lake temperature continues to warm, vertical stratification develops from the combined effects of the lake warming and advection of the warmer, nearshore waters. Most of the lake is vertically stratified during the summer, with the warm surface waters averaging nearly 70°F and cool deeper waters ranging between 38.8°F and 39.2°F. Mixing of these strata begins as the thermocline breaks down during September due to surface water cooling and continues until water temperatures are the same throughout the water column. (UNS 2009) When the lake surface cools to below 39°F, isotherms tend to be parallel to shore. During the winter months, nearshore areas of the lake freeze, and deep offshore waters remain open. (UNS 2009)

In 2010, CEG completed near-field and far-field thermal modeling studies in accordance with SPDES Permit No. NY0001015. The model addressed contributions from NMPNS Units 1 and 2 and the adjacent JAF, which is a single-unit plant equipped with once-through cooling. The model was completed with several goals, including to update available information on thermal discharges to be evaluated with respect to 6 NYCRR Part 704 and the CWA, to perform a thermal impact analysis associated with the extended power uprate (EPU) for Unit 2, and to provide information to support an SPDES permit provision to waive the maximum discharge temperature limit for NMP1 cooling water discharges (Outfall 010) under certain limited and defined conditions related to elevated ambient lake temperatures.

The near-field CORMIX plume model was used to determine initial mixing zones in the immediate vicinity of the NMPNS discharges and initial temperatures for the far-field model. Model verification was demonstrated by comparing model predicted temperature, current velocities at depths, and horizontal surface plume size against the observations at stationary measuring stations and thermal plume measurements surveyed in October 21–25, 2007.

After confidence in the model was established, model simulations were performed for summer and winter critical conditions under typical and maximum conditions for Unit 1. During typical operating scenarios, summer flow was 416.2 MGD, and winter flow was 390.2 MGD with a temperature difference (ΔT) between the intake and discharge of 32°F during both seasons. During maximum operating scenarios, summer and winter flows were 417.6 MGD with a ΔT of 35°F. When the cooling water intake temperature is less than 42°F, NMPNS recirculates heated discharge water back into the intake screenhouse to prevent frazil ice formation and to optimize condenser efficiency. Under winter operating conditions (i.e., recirculation), NMP1 discharge flow may decrease to 390.2 MGD or less. The temperature of water discharged into Lake Ontario, however, typically remains at the same ΔT of 32°F.

The model indicates that, during summer conditions, onshore winds pile the plume up against the shoreline, causing a larger plume size. Offshore winds during the same period disperse the plume in the offshore direction, resulting in a relatively smaller plume size. In winter months, the plume area–wind relationship remains the same as during the summer, but the thermal plume size is reduced significantly.

Statistical analysis on the positions of thermal plume during summer critical simulations indicates that 90 percent of the time, the plume is expected to remain within about 5,000 feet of the station. However, less frequently, the plume may travel as much as 9,000 feet from the station. The results also predict that, while most of the time the thermal plume of $\Delta T \geq 3°F$ is a few hundred acres in size or less, under extreme wind conditions, the plume may cover up to approximately 1,400 acres at an instantaneous moment during summer and up to 800 acres in winter. The model was also used for a dilution evaluation simulating a continuous release of a passive conservative tracer from the NMP1 discharge (Outfall 010). Model dilution factors are time dependent due to changes in winds; however, the results indicate that, on average, a 1:5 dilution rate for Outfall 010 is achieved at about 1,000 feet in the alongshore direction and at about 700 feet in the offshore direction.

Per the SPDES permit, discharge temperatures must be logged hourly by computer and analyzed to verify compliance during normal operating conditions. During unusual operating conditions or in situations when the hourly data is near the outfall limitation, data is to be reviewed and used to demonstrate compliance. The intake temperature is considered the temperature after intake waters have been tempered. The ΔT may be exceeded during periods when station safety is at issue, during periods when the CWS is experiencing an emergency situation outside the normal operating envelope, or during routine maintenance of the system. In the event of such an emergency, corrective actions are required to bring the temperature parameter within the permit limit as soon as possible. Actions should be taken to avoid

temperature parameter exceedances from June through September. The water temperature at the surface of Lake Ontario shall not be raised more than 3°F except in a 300-acre mixing zone from the point of discharge.

If the facility experiences inlet icing conditions during the winter, the ΔT may be exceeded by 35 percent, or 12.25°F, for no more than 1 hour during each reverse flow or return to normal flow operation. The facility may exceed the 35 percent criteria for 15 minutes when the facility returns to normal flow configuration. Operation outside of temperature permit limits must be documented in the DMR. The permit limits cannot be exceeded for more than 5 percent of the operating time during the operating year.

The ΔT at Outfall 010 increased to between 35.1°F and 35.5°F during certain times of the day between November 2, 2019, and November 11, 2019, and again between October 20, 2021, and November 1, 2021. As noted in the DMR for November 2019, the ΔT exceedance was caused by a sea lamprey intrusion. As noted in the October 2021 DMR, the ΔT exceedance was due to maintenance activities.

As summarized in Table 3.6-2, the SPDES permit requires monitoring and reporting discharge and intake temperatures. Average monthly discharge and intake temperatures for 2020 through 2024 are provided in Figure 3.6-4 and Figure 3.6-5, respectively. No SPDES NOVs or permit exceedances were reported in 2020 through July 2025.

3.6.2 Groundwater Resources

3.6.2.1 Groundwater Aquifers

Two primary aquifer systems may be used as groundwater sources near NMPNS: the unconfined aquifer, which is composed of unconsolidated fill, glacial till, and the upper fractured portion of the Oswego Sandstone, and bedrock aquifers within the lower Oswego Sandstone, Pulaski Formation, and Whetstone Formation.

The unconfined aquifer at the station comprises both native soils and engineered fill. Native soils are composed of glacial till, including clay, silt, fine sands, and fine gravel. During construction of the station, overburden material was excavated to the top of bedrock and replaced with engineered fill. As such, native soils are not expected to be encountered in developed sections of the station property. The thickness of the unconsolidated deposits ranges from approximately 5.5 to 21 feet at the station. The unconsolidated aquifer is recharged by rain and surface water infiltration and seepage.

The unconsolidated deposits are connected to the Oswego Sandstone through a weathered fractured zone at the top of the formation. The number of fractures decreases with depth in the sandstone, becoming relatively impermeable below approximately 20 feet. The average gradient is approximately 0.7 percent to the north-northwest. (CEG 2022a) The deep or foundation structures within the PA are constructed within the Oswego Sandstone. Both the Unit 1 perimeter drain system and the Unit 2 dewatering system, described further in Section 3.6.3.2,

are constructed within the Oswego Sandstone. The drain systems have a significant impact on their local hydrogeology, as described in Section 3.6.2.3.

Three confined aquifers are defined within the bedrock underlying the station. The three confined bedrock aquifers are characterized by artesian pressure and are recharged by upgradient outcrops and fractures. (CEG 2022a)

- The uppermost and most permeable of the confined bedrock aquifers is in the Pulaski Unit A, which consists of a dark gray graywacke interbedded with light gray sandstone and few beds of dark gray shale and siltstone (CEG 2022a).
- Another confined aquifer is in Pulaski Unit B, which consists of interbedded light gray sandstone, black siltstone, and shale. The lowermost unit of the Pulaski Formation (Unit C) consists of dark gray to black siltstone and shale interbedded with light gray sandstone. (CEG 2022a)
- The Pulaski Formation is underlain by a confined aquifer within the Whetstone Gulf Formation. The Whetstone Gulf Formation may be subdivided into two units. The uppermost unit consists of shale with occasional sandstone beds. The lowermost unit consists of shale with interbedded sandstone. (CEG 2022a)

3.6.2.2 Hydraulic Properties

Several tests have been performed on glacial till and bedrock to measure the hydraulic conductivities and porosities of these deposits. Although the heterogeneity of the till makes it difficult to assign a representative hydraulic conductivity, measured values range from 6×10^{-4} centimeters per second (cm/s) to 3×10^{-3} cm/s. Most tests performed in the till indicated the lower values. Surface percolation tests indicated an average vertical hydraulic conductivity of 1×10^{-5} cm/s in the till. (CEG 2022a)

The hydraulic conductivity of the bedrock underlying the Oswego Sandstone was measured through a series of packer tests, which indicated that the most permeable zones were in the transition zone, Pulaski Unit B, and the Whetstone Gulf Formation Unit A. The Pulaski Formation Unit A has moderate hydraulic conductivity with calculations using measured flow into construction excavations, indicating average hydraulic conductivity on the order of 1×10^{-5} to 2×10^{-4} cm/s. (CEG 2022a)

The porosity of the till is low, on the order of 5 to 15 percent. The heterogeneity of the till precludes assigning a representative value. Primary porosity values range from 5.6 to 2.2 percent for the Oswego Sandstone. The transition zone has a slightly higher porosity (6 percent), and Unit C of the Pulaski Formation has the lowest average calculated porosity of 3 percent. No calculations were made for the Whetstone Gulf Formation. Secondary (fractures) porosities for rocks at the NMPNS site have not been measured. (CEG 2022a)

Within the unconsolidated and Upper Oswego Sandstone aquifer, the station-wide average calculated horizontal hydraulic gradient is approximately 0.0068 feet per foot using May 2021 groundwater elevations. The reported hydraulic conductivity of the unconfined aquifer ranges

from 10^{-4} to 10^{-5} cm/s. Assuming an average effective porosity of 0.1, the average groundwater velocity in the upper sand and gravel aquifer is approximately 10 feet per year.

Within the bedrock aquifer (the Lower Oswego Sandstone and Pulaski Formation Unit A), the average calculated horizontal hydraulic gradient is approximately 0.074 feet per foot using May 2021 groundwater elevations. The reported hydraulic conductivity of the Lower Oswego Sandstone ranges from 10^{-6} to 8 x 10^{-4} cm/s and from 10^{-6} to 10^{-4} cm/s in the Pulaski Formation Unit A. The reported average effective porosity of the Lower Oswego Sandstone ranges from 2.2 to 5.6 percent and from 2.2 to 7.6 percent in the Pulaski Formation Unit A. Using an average hydraulic conductivity of 10^{-5} cm/s, assuming an average effective porosity of 5 percent and an approximate hydraulic gradient of 0.074 feet per foot, the average groundwater velocity in the bedrock aquifer is approximately 15 feet per year.

Two monitoring wells (MW-9 and MW-11) were used to determine a relative vertical hydraulic gradient between the unconfined and bedrock aquifers. Due to the open borehole construction of the bedrock monitoring well MW-11, which is summarized in Table 3.6-3, a specific numeric value for vertical hydraulic gradient cannot be calculated. Nevertheless, hydraulic head values from the January 2021 sampling event were used for these wells: a value of 250.07 feet MSL North American Vertical Datum of 1988 (NAVD88) was used for MW-9, and a value of 243.6 feet MSL NAVD88 was used for MW-11. Based on these hydraulic head values, the vertical gradient is downward. The downward gradient is expected due to the dewatering of the bedrock aquifer at the Unit 1 and Unit 2 reactor buildings from the Unit 2 dewatering system.

3.6.2.3 Potentiometric Surfaces

In general, the regional groundwater piezometric surface in the Pleistocene deposits and lower Paleozoic formations slope northward toward Lake Ontario. Groundwater recharge areas and topography may affect localized groundwater movement and may vary, to some extent, the direction of aquifer flow. (CEG 2022a) Lake level elevations generally follow a cyclical pattern, varying only a few meters during the year, reaching their highest levels in May, June, and July. Lake levels are also controlled by a system of locks on the St. Lawrence River. Consequently, only slight variations in regional groundwater levels occur. (CEG 2022a)

Operation of the Unit 1 perimeter drain system and the Unit 2 dewatering system (depicted in Figure 3.6-6 and described in Section 3.6.3.2) create localized depressions in the bedrock aquifer around the Unit 1 and Unit 2 reactor buildings and direct groundwater flow toward the reactor buildings. In the shallow aquifer, the dewatering systems' operations have less impact. The foundations or basements associated with various station buildings, such as the reactor and turbine buildings, extend to depths below the water table and are set into the top of the Oswego Sandstone. These basements are barriers to groundwater flow in the unconfined aquifer.

The potentiometric surface of the unconfined aquifer using groundwater level elevations measured in May 2021 is provided in Figure 3.6-8. Groundwater flow is from southwest to northeast toward Lake Ontario, and the groundwater gradient is relatively flat. There is a minor

component of flow from the southwest toward the Unit 2 reactor building, related to the operation of the Unit 2 dewatering system. This system dewaters the underlying bedrock aquifer to maintain groundwater elevation of approximately 164 feet MSL NAVD88, resulting in dewatering of the shallow aquifer near the Unit 2 reactor building. The potentiometric surface of the bedrock aquifer using groundwater level elevations measured in May 2021 is provided in Figure 3.6-9. Groundwater flow is from southwest to northeast toward Lake Ontario with significant drawdown as groundwater flows from the southwest toward the Unit 1 and Unit 2 dewatering systems.

3.6.2.4 Groundwater Protection Program

In May 2006, the Nuclear Energy Institute (NEI) implemented the Groundwater Protection Initiative (GPI), an industry-wide voluntary effort to enhance nuclear power plant operators' management of groundwater protection (NEI 2007). Industry implementation of the GPI identifies actions to improve licensee management and response to instances when the inadvertent release of radioactive substances may result in detectable levels of plant-related materials in subsurface soils and water, and it describes communication of those instances to external stakeholders. Aspects addressed by the initiative include site hydrology and geology, site risk assessment, onsite groundwater monitoring, and remediation. In August 2007, the NEI published updated guidance on implementing the GPI as NEI 07-07, Industry Ground Water Protection Initiative – Final Guidance Document (NEI 2007). This guidance was further updated in February 2019. The purpose of NEI 07-07 is to improve the management of situations involving inadvertent radiological releases that reach groundwater and to improve communications with external stakeholders to enhance trust and confidence on the part of local communities, states, the NRC, and the public in the nuclear industry's commitment to a high standard of public radiation safety and protection of the environment. This initiative was developed to ensure timely and effective management of situations involving inadvertent releases of licensed material to groundwater. (NEI 2019)

Since the initiation of Exelon's Radiological Groundwater Protection Program (RGPP) in 2015, routine monthly, quarterly, and annual monitoring rounds have been completed at the station. In 2020, CEG modified the corporate RGPP to better align the groundwater monitoring programs at CEG plants and stations with the objectives of NEI 07-07. The 2020 RGPP includes modified sample location designations, defined below. The NMPNS RGPP includes 22 monitoring locations (12 background, 1 mid-field, 1 perimeter, and 8 source). Additional onsite groundwater monitoring locations are not sampled as part of the RGPP (idle). A description of the type of wells making up the RGPP is provided below:

- Background: Hydrogeologically upgradient groundwater monitoring wells at a distance from potential sources of licensed material. Groundwater at these wells is presumed to represent background concentrations for radionuclides, unaffected by station releases, emissions, spills, or unusual natural exposure
- Source: Wells installed close to higher-risk systems or components.
- Mid-Field: Wells installed between source wells and the downgradient perimeter of the station's high-risk systems or components

- Perimeter: Groundwater wells installed along the downgradient and cross-gradient perimeter of areas with high-risk systems or components
- Idle/standby: Groundwater monitoring wells that are not being sampled but are available for future use.

Monitoring well construction information is provided in Table 3.6-3, and RGPP location designations, associated groundwater monitoring wells, and sampling frequency are provided in Table 3.6-4. Onsite well locations are provided in Figure 3.6-7. Tritium monitoring results are reported in annual radioactive effluent release reports. Groundwater quality data are described in Section 3.6.4.2, and a summary of historical radiological releases at NMPNS is provided in Section 3.6.4.2.1.

3.6.2.5 Sole Source Aquifers

A sole source aquifer (SSA), as defined by the EPA, is an aquifer that supplies at least 50 percent of the drinking water consumed by the area overlying the aquifer, and there is no reasonably available drinking water source should the aquifer become contaminated. The SSA program was created by Congress as part of the Safe Drinking Water Act and allows for the protection of these resources. (EPA 2024b) All proposed projects receiving federal funds are subject to review to ensure they do not endanger the water source.

The NMPNS site is in EPA Region 2, which has oversight responsibility for the public water supply in New Jersey, New York, Puerto Rico, the U.S. Virgin Islands, and eight tribal nations (EPA 2024c). Ten aquifers are designated as SSAs in EPA Region 2. The nearest SSA to NMPNS, the Northern Tug Hill Glacial Aquifer, is located approximately 18 miles northeast of NMPNS; therefore, the NMPNS site is not situated over a designated SSA. (EPA 2024b)

3.6.3 Water Use

3.6.3.1 Surface Water Use

There are no water supplies at the NMPNS site that depend on streams (CEG 2022a). The NMPNS holds a Great Lakes Water Withdrawal Registration issued by the NYSDEC, allowing withdrawal of water from Lake Ontario (UNS 2009). The current water withdrawal permit (NYSDEC No. 7-3556-00013/00033) was effective on January 13, 2020, and expires on January 12, 2030. The permit authorizes withdrawal of up to 489,600,000 gpd (489.6 MGD, or 340,000 gpm) of water from Lake Ontario for both units at NMPNS. A summary of annual surface water withdrawals from NMP1 in 2020 through 2024 is provided in Table 3.6-5a. In 2020 through 2023, the average annual surface water withdrawals ranged from 348.21 MGD to 393.49 MGD. A summary of monthly surface water withdrawals for NMP1 in 2020 through 2024 is provided in Table 3.6-5b.

NMP1 and NMP2 have separate intake and discharge structures located offshore in Lake Ontario. Onshore, each unit has a separate screen well and pumphouse structure. (CEG 2024d) The NMP1 intake and discharge tunnels are concrete-lined bores through solid rock. The intake

tunnel is about two-tenths of a mile offshore, and the discharge tunnel is about one-tenth of a mile offshore. (CEG 2023a)

Water enters the NMP1 intake tunnel through a bellmouth-shaped inlet. The inlet is surmounted by a hexagonally shaped concrete guard structure, the top of which is about 6 feet above the lake bottom and 14 feet below the lowest anticipated lake level. (CEG 2023a) Surface water withdrawals from Lake Ontario are used as cooling water for the NMP1 CWS and SWS. Cooling water circulates through the main condenser after it passes through the turbine. The SWS circulates cooling water through heat exchangers that service various station components. The Unit 1 CWS and SWS are once-through systems. (CEG 2024d)

Water is discharged to Lake Ontario through a vertical shaft connecting the discharge channel under the screenhouse to the discharge tunnel. Water is discharged directly to the vertical discharge shaft. A submerged diffuser in the vertical shaft ensures good dilution before discharge to the lake. (CEG 2023a) The NMP1 discharge tunnel is 10 feet in diameter (UNS 2009).

Potable water is provided to the station by Scriba Water District, which is supplied from the City of Oswego. In addition to meeting domestic water needs, the municipal water supply is directed to the station water treatment facility, which provides demineralized water to select station systems. Remaining station operations requiring water are supported by surface water from Lake Ontario. The nearest potable water intake in the lake is at Oswego, approximately 8 miles west of the site (CEG 2022a). The City of Oswego Water Department water supply comes from Lake Ontario. The water treatment facility has a capacity greater than 16 MGD. (CO 2024)

The JAF is located east of NMP2 and recirculates an average of 370,200 gpm. The only major public water supplies within a 30-mile radius of NMPNS that draw water from Lake Ontario are the City of Oswego, the Oswego County Water Department, and the Onondaga County Water Authority (OCWA), which pumps water through an intake shared with the City of Oswego. (CEG 2022a; OCWA 2025)

In 2015, total surface water withdrawals in Oswego County were reported as 1,089.82 MGD, of which 1,046.10 MGD was used for power generation. In Cayuga County, there were no surface water withdrawals for power generation; the largest use of surface water was public supply at 4.28 MGD. In Jefferson County, surface water withdrawals of 7.65 MGD were reported for power generation. (USGS 2018) A summary of surface water use in Oswego, Cayuga, and Jefferson Counties is presented in Table 3.6-6.

3.6.3.2 Groundwater Use

Groundwater is not used for station operations, and there are no production wells onsite. No provisions have been made for future onsite use. (CEG 2022a) No recovery/extraction wells, dewatering wells (other than the Unit 2 dewatering system, described below), or injection wells are in use at the NMPNS site, and there are no plans to install such wells during the proposed SPEO.

As described in Section 3.6.2.3, there is a Unit 1 perimeter drain system and a Unit 2 dewatering system. The two systems are depicted in Figure 3.6-6. Both systems impact water levels in the bedrock aquifer (Figure 3.6-9). The zone of capture spans at least 700 feet on the southwest-northeast direction and at least 1,500 feet in the northwest-southeast direction. In the shallow aquifer, the systems' operations have less impact, resulting in dewatering near the Unit 2 reactor building (Figure 3.6-8).

The Unit 1 reactor building perimeter drain system includes a subsurface building perimeter drain and a sump on the southwestern corner of the Unit 1 reactor building installed to a depth of 186.5 feet MSL. The drain is an 8-inch perforated pipe, the top of which is at an elevation of 198 feet MSL. The Unit 1 system was designed to maintain a bedrock aquifer groundwater elevation of approximately 193 to 197.5 feet MSL near the Unit 1 reactor building.

Perimeter drain systems were installed around additional Unit 1 structures. A perimeter drain on the southern and western sides of the Unit 1 turbine and administration buildings leads to the Unit 1 reactor building sump. A separate drainage system was installed on the southern and eastern sides of the administration building addition with a sump on the southeastern corner of the administration building addition. Another perimeter drain system is located around the Unit 1 radwaste building with a sump on the southwestern corner of the radwaste building. Pumps within the three sumps (reactor building, administration building addition, and radwaste building) are triggered to turn on when water levels reach a certain point, then the groundwater collected in the sumps is discharged to stormwater manholes leading to Lake Ontario via the Unit 1 storm drain outlet (SPDES Outfall 020).

Flow from the Unit 1 reactor building perimeter drain system varies. Groundwater pumped from the Unit 1 perimeter drain system sump flows northwest out of the Unit 1 reactor building to the storm drain system and through the Unit 1 storm drain outfall, which is described in Section 3.6.1.2.2.

The Unit 2 reactor building dewatering system, or mat drain system, consists of two sumps, both installed to an invert depth elevation of 155.75 feet MSL, and two ring-shaped perforated pipes. The lower 6-inch perforated pipe is installed within 9.75 inches of porous concrete at approximately 164 feet MSL, and the upper 8-inch perforated drainage pipe is installed within 2 feet of porous concrete at approximately 175 feet MSL. The Unit 2 mat drain system is designed to maintain a bedrock aquifer groundwater elevation of 164 feet MSL, keeping groundwater below the elevation of the reactor building mat. Flow from the Unit 2 system ranges from 30,000 to 150,000 gpd depending on the season. The Unit 2 dewatering system also underlies the two underground auxiliary bays with perforated pipes collecting groundwater and draining it to the two sumps. The sumps discharge to the Unit 2 storm drain system and then to Lake Ontario via the Unit 2 storm drain outlet. Submersible pumps are in each of the sumps to maintain a cone of depression. The cone of depression is at equilibrium with the surrounding groundwater system. The submersible pumps draw groundwater at an estimated average combined rate of 200 gpm to maintain the cone of depression. (NRC 2006a)

The unconfined aquifer is generally of sufficient yield capacity for domestic use only. Maximum yield rates have been estimated at 5 to 8 gpm in the unconsolidated deposits and up to 10 gpm in the bedrock. (CEG 2022a) Most wells installed in bedrock formations in the NMPNS region yield sufficient quantities for domestic use only. Few of the bedrock formation in the NMPNS region have regularly yielded 100 gpm or more to an individual well. (CEG 2022a)

A well inventory search of the NYSDEC Water Well GIS database was conducted. A map of three registered wells within 2 miles of NMP1 is provided in Figure 3.6-10, and a list of registered wells is provided in Table 3.6-8. The nearest offsite well is about 1 mile from NMP1, which is beyond the zone of capture of the Unit 1 perimeter drain system and Unit 2 dewatering system.

Neither Oswego County nor the State of New York requires submission of private well records or permits for wells producing less than 40 gpm (CEG 2022a). Oswego County does not regulate or list private potable wells; therefore, the NYSDEC information may not include all wells within Oswego County. A groundwater well census was conducted in 1972, and 102 wells were identified within 2 miles of the station, 70 of which were in use at that time. The average pumping rate of the wells in use was 650 gpd (0.45 gpm). The nearest domestic well was 1 mile from the NMPNS site. (CEG 2022a) Locations of residential potable wells are not available; however, the Town of Scriba zoned lands within 1 mile of the station for industrial and natural uses, limiting the potential for installation of potable wells near the station. Further, the water main that services the station with municipal water, owned and operated by the station, also services offsite locations, including residences, at least one commercial business, and the JAF.

Several communities obtain surface water supplies distributed by the City of Oswego and the OCWA through an 8-foot-diameter tunnel and an intake structure located 6,250 feet offshore in Lake Ontario approximately 8 miles west of NMPNS (CEG 2022a).

In 2015, groundwater withdrawals in Oswego County were reported as 6.6 MGD, none of which was used for power generation. The largest groundwater use in the county was domestic self-supplied water at 2.84 MGD. No groundwater use for power generation was reported in Cayuga or Jefferson Counties. The largest groundwater withdrawal use in Cayuga County was domestic self-supplied water at 1.29 MGD and in Jefferson County was public supply at 2.33 MGD. (USGS 2018) A summary of groundwater use in Oswego, Cayuga, and Jefferson Counties is presented in Table 3.6-7.

3.6.4 Water Quality

3.6.4.1 Surface Water Quality

Section 401 of the CWA requires that any applicant for a federal license or permit to conduct any activity that may result in any discharge into navigable waters must provide the federal licensing or permitting agency with a certification from the state or appropriate water pollution control agency in which the discharge originates or is expected to originate. CEG plans to submit a CWA Section 401 Water Quality Certification (WQC) request to the NYSDEC for the

proposed SPEO in accordance with the CWA, the State Uniform Procedures Act, Article 70 of the Environmental Conservation Law, and its implementing regulations 6 NYCRR Part 62.

Section 305(b) of the CWA requires each state to report to the EPA every 2 years on the condition of its surface waters, and Section 303(d) requires each state to report on its impaired water bodies. A water body is considered impaired when an applicable water quality standard is not being attained. Impaired waters require a total maximum daily load and are listed in states' integrated water quality assessment reports as Category 5. (EPA 2023) A review of the NYSDEC Environmental Resource Mapper and final 2020/2022 303(d) list of impaired waters identified the Lake Ontario shoreline (portion 9) as the only impaired water within 6 miles of NMPNS. The Lake Ontario shoreline is listed as impaired by the following pollutants: dioxin, Mirex, and polychlorinated biphenyls (PCBs). (NYSDEC 2024c; NYSDEC 2022)

Because Lake Ontario is the farthest downstream of the Great Lakes, it is impacted by human activities occurring throughout the Lake Superior, Michigan, Huron, and Erie basins (NMPNS 2004). Water quality of Lake Ontario is directly influenced by the quantity and quality of freshwater inflow (UNS 2009). Based on the assessments of nine State of the Great Lakes indicators, the overall status of the Lake Ontario basin ecosystem is fair, and the trend is unchanging to improving. Lake Ontario continues to be a good source of high-quality drinking water. Toxic chemicals monitored in Lake Ontario are assessed as fair, and long-term trends indicate that concentrations are declining, including declines in contaminant concentrations in fish filets. Over the past 10 years, the percentage of days during the swimming season that Lake Ontario monitored beaches are open and safe for swimming has increased. (EPA and Canada 2022)

Per the NMP1 Annual Radiological Environmental Monitoring Program (REMP), surface water samples are collected from the NMP1 inlet; the Oswego Steam Station inlet, which is a control location; and from Oswego city water, which is an optional sample location. Quarterly composite samples are collected for tritium analysis, and monthly composite samples are collected for gamma isotopic analysis. In 2020 through 2024, tritium and gamma isotopes were not detected in the surface water samples collected. (EGC 2021a; CEG 2022b; CEG 2023b; CEG 2024c; CEG 2025a)

3.6.4.2 Groundwater Quality

The general quality of groundwater in the bedrock in central New York is often poor. Each of the bedrock units is composed of a distinctive group of minerals with varying degrees of solubility. The Paleozoic shales contain excessive amounts of highly soluble salt and gypsum. Water flowing through these units has dissolved much of the salt and gypsum, causing high contents of sulfate, chloride, and total dissolved solids in the local water. (CEG 2022a)

Tritium results from samples collected as part of the NMPNS RGPP, described in Section 3.6.2.4, are reported in ARERRs. As summarized in Table 3.6-4, tritium samples are collected quarterly from the 8 source wells, semiannually from the 1 mid-field well, and annually from the 13 background and perimeter wells. In 2020 and 2021, tritium was detected at a maximum

concentration of 242 picocuries per liter (pCi/L) in piezometer PZ-7 (EGC 2021b; CEG 2022c). In 2022, the maximum detected tritium concentration was 264 pCi/L in well MW-16 (CEG 2023c). In 2023, tritium was detected in one well just above the minimum detectable activity (MDA) of 200 pCi/L (CEG 2024c). In 2024, tritium was detected at a maximum concentration of 224 pCi/L in monitoring well MW-9 (CEG 2025a). These tritium detections are far below the EPA drinking water maximum contaminant limit (MCL) of 20,000 pCi/L.

As summarized in Table 3.6-4, the NMPNS RGPP includes additional radionuclides analyses at frequencies depending on the well designations:

- Sr-89/90 analysis is conducted annually from the eight source wells. In 2021 through 2024, Sr-89/90 was not detected above the lower limits of detection (LLDs). (CEG 2025a)
- Gamma analysis is conducted every 2 years in all 22 RGPP wells. Gamma radionuclides were not detected at concentrations exceeding their respective LLDs in 2020, 2022, and 2024. (CEG 2025a)
- Gross alpha analysis is conducted every 2 years in the eight source wells. An alert level was established as three times the ongoing average gross alpha concentration for each RGPP monitoring well in which gross alpha has been detected. Gross alpha results did not exceed the alert levels in the samples collected in 2020, 2022, and 2024. A sample was collected from the well with the highest average dissolved gross alpha concentration, MW-5, in 2022 for select transuranics, which were not detected. (CEG 2025a)
- Hard-to-detect radionuclides Fe-55 and Ni-63 are analyzed every 5 years in the eight source wells. These analytes were not detected above the minimum detectable concentrations in samples collected from the eight source wells in 2021.

Groundwater monitoring is not required for the NMP1 REMP in the Offsite Dose Calculation Manual (ODCM). Groundwater monitoring at NMPNS is conducted under the NEI 07-07 GPI program, or RGPP, as described above and in Section 3.6.2.4. (CEG 2024c)

The Unit 1 perimeter drain system is monitored per the ODCM related to testing of the nearby Unit 1 emergency condenser. Following testing of the Unit 1 emergency condenser, tritiated groundwater is typically detected in the immediate area of the vent stack release point, which flows to the Unit 1 perimeter drain system. A composite sample is collected at the Unit 1 outfall following actuation of the Unit 1 emergency condenser. Conversely, the Unit 2 dewatering system is considered a clean system and is not required to be monitored per the ODCM.

Industrial practices at NMPNS that involve the use of chemicals are those activities typically associated with painting, cleaning of parts and equipment, refueling of onsite vehicles and generators, fuel oil and gasoline storage, and the storage and use of water treatment additives. The use and storage of chemicals at NMPNS are controlled in accordance with CEG procedures and the NMPNS site-specific SPCC plan. In addition, as presented in Section 2.2.6,

nonradioactive waste is managed in accordance with internal waste management procedures, which include preparedness and prevention control measures.

3.6.4.2.1 History of Radioactive Releases

Low-level radioactive gases, liquids, and solids are routine byproducts of nuclear power plant operation. Radioactive waste management systems, commonly called radwaste systems, collect, process, and either recycle or dispose of these radioactive materials. The design and operation of the radwaste systems are regulated by the NRC. As part of normal operation of a plant, radioactive material must sometimes be discharged to the environment. Such discharges are also regulated by the NRC, and submittal of annual reports to the NRC detailing the amounts and compositions of radwaste discharged intentionally or accidentally from their facilities is required. The EPA has a separate regulation that limits the radioactivity of drinking water. This regulation sets a maximum allowed concentration for each radionuclide in drinking water, including an MCL of 20,000 pCi/L for tritium, a radioactive form of hydrogen produced by power plants.

There were no abnormal liquid radiological releases reported from NMP1 in 2020 through 2024 (EGC 2021b; CEG 2022c; CEG 2023c; CEG 2024e; CEG 2025b). Data obtained from the NMPNS RGPP and REMP are summarized in Section 3.6.4.2.

3.6.4.2.2 History of Nonradioactive Releases

The following reportable spills applicable to federal, state, or local regulations at NMPNS in 2020 through 2024 are listed as follows.

On January 17, 2021, there was a sodium bisulfite leak from a Unit 2 tank wall. The tank was located within the acid storage tank room. The leak was contained within a berm. The release was reported to NYSDEC per internal procedures and in accordance with NYCRR Part 597. The spill was cleaned, and the tank was patched and later replaced. Because the release was contained within an indoor bermed area and cleaned, there were no impacts on groundwater. The NYSDEC identified this release as Spill No. 2008813. The spill is listed as closed. (NYSDEC 2024d)

On March 12, 2023, there was a sodium hypochlorite leak from a Unit 1 tank due to a degraded gasket. The leak was contained within an indoor berm and cleaned up. The gasket was replaced with one that was more compatible with sodium hypochlorite. The release was reported to NYSDEC per internal procedures and in accordance with NYCRR Part 597. Since the release was contained within an indoor bermed area and cleaned, there were no impacts on groundwater. The NYSDEC identified this release as Spill No. 2209849. The spill is listed as closed. (NYSDEC 2024d)

On April 30, 2025, a release of approximately 200 gallons was discovered from the Unit 1 sodium bisulfite bulk tank within the secondary containment berm. The spill was reported to the NYSDEC per internal procedures and in accordance with NYCRR Part 597. Because the release was contained within the secondary containment berm, there were no impacts on soil,

surface water, or groundwater. The spill was cleaned up and the tank was taken out of service for repairs.

Table 3.6-1 Lake Ontario Maximum Monthly Water Levels, 1935–2023

Month	2023 Monthly Maximum Elevation (IGLD)	Monthly Maximum Elevation 1935–2023 (IGLD)	Year of Maximum Monthly Elevation
January	245.40	247.79	1946
February	245.72	247.49	1952
March	246.31	247.85	1946
April	246.89	248.60	1952
May	247.47	249.11	2019
June	247.06	249.48	1952
July	246.80	249.09	2019
August	246.63	248.48	2019
September	246.24	247.88	1947
October	245.48	247.65	1952
November	244.78	247.55	1945
December	244.79	248.09	1943

(NOAA 2024b)

IGLD = International Great Lakes Datum

Table 3.6-2 SPDES Water Quality Monitoring Program (Sheet 1 of 4)

Outfall	Description	Parameter	Permit Requirement	Frequency
010	Unit 1 non-contact cooling water, Outfalls 010A and 011, seal water system, and stormwater runoff	pH	6.0–9.0 SU	Monthly grab
		Flow	Daily maximum 417.6 MGD	Continuous calculated
		Discharge Temperature	Daily maximum 115°F	Continuously recorded
		ΔT	Daily maximum 35°F	Continuously recorded
		Net rate of addition of heat	Daily maximum 4,405 MBTU/hr	Hourly calculated
		Total residual oxidant	Daily maximum 0.1 mg/L	Batch grab
		Total suspended solids (TSS)	Montor and report daily maximum and average in mg/L	Grab daily during forebay cleaning
		Copper, total	Daily maximum 0.053 mg/L	Monthly grab
		Zinc, total	Type I monitoring action level 0.05 mg/L	Quarterly grab
011	Unit 1 demineralized water from steam generation, 1 batch per year and <1 day per batch	pH	6.0–9.0 SU	One grab per batch release
		Flow	Monitor and report daily maximum and monthly average in MGD	Calculate per batch
		Oil and grease	Daily maximum 15 mg/L	Quarterly grab
		Oil and grease	Daily maximum 15 mg/L	Grab batch before discharge
		TSS	Daily maximum 50 mg/L, monthly average 30 mg/L	Quarterly grab

Table 3.6-2 SPDES Water Quality Monitoring Program (Sheet 2 of 4)

Outfall	Description	Parameter	Permit Requirement	Frequency
011		TSS	Daily maximum 50 mg/L, monthly average 30 mg/L	Grab batch before discharge
010A	Unit 1 forebay cleaning	pH	6.0–9.0 SU	Grab daily during discharge
		Flow	Monitor and report daily maximum and monthly average in MGD	Calculate daily during discharge
		Oil and grease	Daily maximum 15 mg/L	Grab daily during discharge
		TSS	Daily maximum 100 mg/L, monthly average 50 mg/L	Grab daily during discharge
020	Internal outfalls 07B, 10A, 24, and Unit 1 perimeter drain and stormwater	pH	6.0–9.0 SU	Monthly grab
		Flow	Monitor and report in gpd	Calculate monthly
		Oil and grease	Daily maximum 15 mg/L	Grab quarterly or calculate from sub-streams
		TSS	Daily maximum 50 mg/L	
		Copper, total	Type I monitoring action level 0.03 mg/L	
		Zinc, total	Type I monitoring action level 0.15 mg/L	
07B	Unit 1 administration building sump floor and equipment drains	pH	6.0–9.0 SU	Monthly grab
		Flow	Monitor and report daily maximum in gpd	Estimate monthly
		Oil and grease	Daily maximum 15 mg/L	Monthly grab
		TSS	Daily maximum 50 mg/L, monthly average 30 mg/L	Monthly grab
		Aluminum, total	Daily maximum 4.0 mg/L	Monthly grab
		Iron, total	Daily maximum 4.0 mg/L	Monthly grab
		Copper, total	Type I monitoring action level 0.1 mg/L	Quarterly grab

Table 3.6-2 SPDES Water Quality Monitoring Program (Sheet 3 of 4)

Outfall	Description	Parameter	Permit Requirement	Frequency
07B		Nickel, total	Type I monitoring action level 0.1 mg/L	Quarterly grab
		Zinc, total	Type I monitoring action level 0.8 mg/L	Quarterly grab
024	Stormwater from diesel offloading pad	pH	6.0–9.0 SU	Grab per discharge
		Flow	Monitor and report daily maximum in gpd	Estimate per discharge
		Oil and grease	Daily maximum 15 mg/L	Grab per discharge
		TSS	Daily maximum 50 mg/L	Grab per discharge
021	Filter backwash and demineralization makeup water, one batch per year for one day	pH	6.0–9.0 SU	Grab per batch discharge
		Flow	Monitor and report daily maximum and monthly average in gpd	Calculate per batch
		Oil and grease	Daily maximum 15 mg/L	Grab per batch discharge
		TSS	Daily maximum 50 mg/L, monthly average 30 mg/L	Grab per batch discharge
023	Unit 1 oil spill retention basin, batch discharge 6–12 times per year <1 day per batch	pH	6.0–9.0 SU	Grab per discharge
		Flow	Monitor and report daily maximum in gpd	Estimate per discharge
		Oil and grease	Daily maximum 15 mg/L	Grab per discharge
		Zinc, total	Type I monitoring action level 0.05 mg/L	Grab per discharge
030	Sanitary wastewater and Outfall 026 as an alternate route	pH	6.0–9.0 SU	Grab 2/month
		Dissolved oxygen	Minimum 4.0 mg/L	Grab 2/month
		Flow	Monitor and report daily maximum, monthly average 120,000 gpd	Metered monthly average, 2/month

Table 3.6-2 SPDES Water Quality Monitoring Program (Sheet 4 of 4)

Outfall	Description	Parameter	Permit Requirement	Frequency
030		BOD_5	Daily maximum 45 mg/L, monthly average 25 mg/L	Grab 2/month
		Suspended solids	Daily maximum 45 mg/L, monthly average 25 mg/L	Grab 2/month
		Settleable solids	Daily maximum 0.1 mg/L	Grab 2/month
		Nitrogen, ammonia (as N)	Monitor and report daily maximum and monthly average in mg/L, pounds (lbs)/day	Grab 2/month
		Fecal coliform	30-Day geometric mean 200 counts per 100 milliliters	Grab 2/month
		Total residual chlorine	Daily maximum 0.1 mg/L	Grab 2/month

SU: Standard units
ΔT: Difference between intake and discharge temperatures
pH: potential of hydrogen
MBTU: Million British thermal units
BOD_5: Biochemical oxygen demand

Table 3.6-3 NMPNS Groundwater Well Details (Sheet 1 of 2)

Well	Well Diameter (inches)	Total Depth (feet bgs)	Elevation (feet MSL)			Well Construction Material
			Top of Casing	Top of Screen	Bottom of Screen	
GMX-MW-1	2	15.5	303.07	293.07	288.07	PVC
GMX-MW-2	Abandoned					
MW-1	2	10	259.3	254.3	249.3	PVC
MW-2	2	11	259.9	253.9	248.9	PVC
MW-4	2	13	258.8	253.8	245.8	PVC
MW-5	2	13.5	259.1	254.1	245.6	PVC
MW-6	4	150.5	259.2	238.6	109.6	Bedrock – open hole
MW-7	4	150.5	259.8	238.2	110.2	Bedrock – open hole
MW-8	4	160.2	259.4	238.2	99.5	Bedrock – open hole
MW-9	2	10.4	259.2	256.8	248.8	PVC
MW-10	2	10	258.6	256.6	248.6	PVC
MW-11	4	134	259.7	243.6	126.2	Bedrock – open hole
MW-12	4	138.9	258.4	238.9	120.9	Bedrock – open hole
MW-13	4	124.3	258.2	243.4	135.1	Bedrock – open hole
MW-14	2	19.45	259.8	--	--	PVC
MW-15	4	119	260.1	228.1	142.6	Bedrock – open hole
MW-16	4	119	259.7	236.9	142.1	Bedrock – open hole
MW-17	4	119	259.1	228.6	141.8	Bedrock – open hole
MW-18	4	119	259	236	141.7	Bedrock – open hole
MW-19	4	119	259.4	236.1	141.7	Bedrock – open hole
MW-20	4	119	259.1	233.7	141.9	Bedrock – open hole

Table 3.6-3 NMPNS Groundwater Well Details (Sheet 2 of 2)

Well	Well Diameter (inches)	Total Depth (feet bgs)	Elevation (feet MSL)			Well Construction Material
			Top of Casing	Top of Screen	Bottom of Screen	
MW-21	2	5.5	251	247.5	245.5	PVC
MW-B119	--	--	295.84	--	--	--
PZ-1	1	19.45	260.43	245.43	240.43	PVC
PZ-2	1	16.4	260.23	248.83	243.83	PVC
PZ-3	1	16.4	260.25	248.05	243.05	PVC
PZ-4	1	15.72	260.27	248.97	243.97	PVC
PZ-5	1	16.38	260.39	248.39	243.39	PVC
PZ-6	1	15.76	260.15	249.05	244.05	PVC
PZ-7	1	15.21	259.75	249.05	244.05	PVC
PZ-8	1	15.91	259.9	248.5	243.5	PVC
PZ-9	1	14.52	293.64	283.64	278.64	PVC

bgs – Below ground surface
PVC – Polyvinyl chloride
Dashes indicate information not available.
Elevations of the top and bottom of well filter packs are not available.

Table 3.6-4 NMPNS RGPP Sampling Summary

Designation	Groundwater Monitoring Locations	Sampling Frequency	Analytes
Background	GMX-MW-1 MW-1 MW-6 MW-7 MW-10 MW-11 MW-12 MW-13 MW-14 MW-16 MW-19 MW-20	Annually	Tritium
		Every 2 Years	Gamma
Source	MW-5 MW-8 MW-9 MW-15 MW-17 MW-18 PZ-7 PZ-8	Quarterly	Tritium
		Every 2 Years	Gamma
		Every 2 Years	Gross Alpha
		Every 5 Years	Fe-55, Ni-63
		Annually	Sr-89, Sr-90
Perimeter	MW-21	Annually	Tritium
		Every 2 Years	Gamma
Mid-field	PZ-1	Semiannually	Tritium
		Every 2 Years	Gamma
Idle	MW-B119 MW-2 MW-4 PZ-2 PZ-3 PZ-4 PZ-5 PZ-6 PZ-9	Not Sampled	Not Sampled

Table 3.6-5a NMP1 Yearly Surface Water Withdrawal Summary

Year		2020	2021	2022	2023	2024	2020–2024
Monthly Maximum	MGM	12,467.09	12,231.29	12,703.25	12,506.40	12,380.40	12,703.25
	gpm_a	279,280.65	273,998.39	284,570.97	280,161.29	277,338.71	284,570.97
Monthly Average	MGM	11,720.59	11,163.35	11,968.62	10,591.36	11,690.11	11,426.81
	gpm_a	266,885.81	254,877.27	273,313.48	241,941.55	266,124.18	266,124.18
Monthly Minimum	MGM	11,064.31	7,583.76	10,823.04	4,951.87	10,684.38	4,951.87
	gpm_a	266,885.81	254,877.27	242,451.61	241,941.55	251,637.10	241,941.55
Yearly Total	MGY	140,647.03	133,960.25	143,623.44	127,096.27	140,281.36	137,121.67
	MGD	384.28	367.01	393.49	348.21	383.28	375.26

MGM – Millions of gallons per month
gpm_a – Average gallons per minute for the month
MGY – Millions of gallons per year
MGD – Millions of gallons per day

Table 3.6-5b NMP1 Monthly Surface Water Withdrawal Summary (Sheet 1 of 2)

Month	Intake (MGM)	Average Withdrawal Rate (gpm_a)
January 2020	11,526.98	258,220.97
February 2020	11,064.31	264,950.00
March 2020	11,363.98	254,569.35
April 2020	11,490.12	265,975.00
May 2020	11,900.81	266,595.16
June 2020	11,648.09	269,631.67
July 2020	12,467.09	279,280.65
August 2020	11,745.36	263,112.90
September 2020	11,927.52	276,100.00
October 2020	11,982.89	268,433.87
November 2020	11,593.30	268,363.33
December 2020	11,936.59	267,396.77
January 2021	11,953.94	267,785.48
February 2021	10,782.50	267,423.21
March 2021	8,318.38	186,343.55
April 2021	7,583.76	175,550.00
May 2021	11,994.55	268,695.16
June 2021	11,585.81	268,190.00
July 2021	12,100.32	271,064.52
August 2021	12,231.29	273,998.39
September 2021	11,760.84	272,241.67
October 2021	12,135.82	271,859.68
November 2021	11,583.79	268,143.33
December 2021	11,929.25	267,232.26
January 2022	12,701.23	284,525.81
February 2022	11,417.54	283,173.21
March 2022	12,703.25	284,570.97
April 2022	11,850.98	274,328.33
May 2022	12,309.19	275,743.55
June 2022	11,646.94	269,605.00
July 2022	12,369.53	277,095.16
August 2022	12,508.49	280,208.06
September 2022	11,802.96	273,216.67
October 2022	10,823.04	242,451.61
November 2022	11,553.62	267,445.00
December 2022	11,936.66	267,398.39
January 2023	11,853.14	265,527.42
February 2023	10,849.68	269,089.29

Table 3.6-5b NMP1 Monthly Surface Water Withdrawal Summary (Sheet 2 of 2)

Month	Intake (MGM)	Average Withdrawal Rate (gpm_a)
March 2023	4,951.87	110,929.03
April 2023	5,314.61	123,023.33
May 2023	11,524.03	258,154.84
June 2023	11,599.27	268,501.67
July 2023	11,534.11	258,380.65
August 2023	12,506.40	280,161.29
September 2023	11,868.77	274,740.00
October 2023	11,562.12	259,008.06
November 2023	11,552.69	267,423.33
December 2023	11,979.58	268,359.68
January 2024	11,944.37	267,570.97
February 2024	10,684.38	255,852.08
March 2024	11,852.21	265,506.45
April 2024	11,522.74	266,730.00
May 2024	12,012.12	269,088.71
June 2024	11,602.87	268,585.00
July 2024	11,233.08	251,637.10
August 2024	12,380.40	277,338.71
September 2024	11,327.33	262,206.67
October 2024	12,341.45	276,466.13
November 2024	11,722.75	271,360.00
December 2024	11,657.66	261,148.39

MGM – Millions of gallons per month
gpm_a – Average gallons per minute for the month

Table 3.6-6 Surface Water Usage Summary in MGD, 2015

Category	Oswego County	Cayuga County	Jefferson County
Public Supply	32.37	4.28	6.96
Domestic, Self-Supplied	0.00	0.00	0.00
Industrial, Self-Supplied	2.55	0.00	0.81
Irrigation	0.60	0.33	0.48
Livestock	0.05	0.48	0.37
Aquaculture	7.64	0.00	0.01
Mining	0.51	0.22	0.34
Power Generation (Thermoelectric)	1,046.10	0.00	7.65
Total	1,089.82	5.31	16.62

(USGS 2018)

Table 3.6-7 Groundwater Usage Summary in MGD, 2015

Category	Oswego County	Cayuga County	Jefferson County
Public Supply	2.50	1.15	2.33
Domestic, Self-Supplied	2.84	1.29	2.23
Industrial, Self-Supplied	0.01	0.01	0.12
Irrigation	0.06	0.04	0.06
Livestock	0.10	0.88	0.70
Aquaculture	0.95	0.00	0.00
Mining	0.14	0.04	0.00
Power Generation (Thermoelectric)	0.00	0.00	0.00
Total	6.60	3.41	5.44

(USGS 2018)

Table 3.6-8 Offsite Registered Water Wells Within 2 Miles of NMP1

Well ID	Owner	Distance from NMP1 (miles)	Depth (feet bgs)	Use	Discharge Rate (gpm)
OW00898	Resident	1.52	40	Domestic	4
OW01097	Entergy Nuclear Northeast	1.03	202	Domestic	0.5
CY01572	Resident	1.70	30	Domestic	20

(NYSDEC 2024e)
bgs = Below ground surface
gpm = Gallons per minute
Well OW01097 was cemented between 165 and 202 feet bgs.

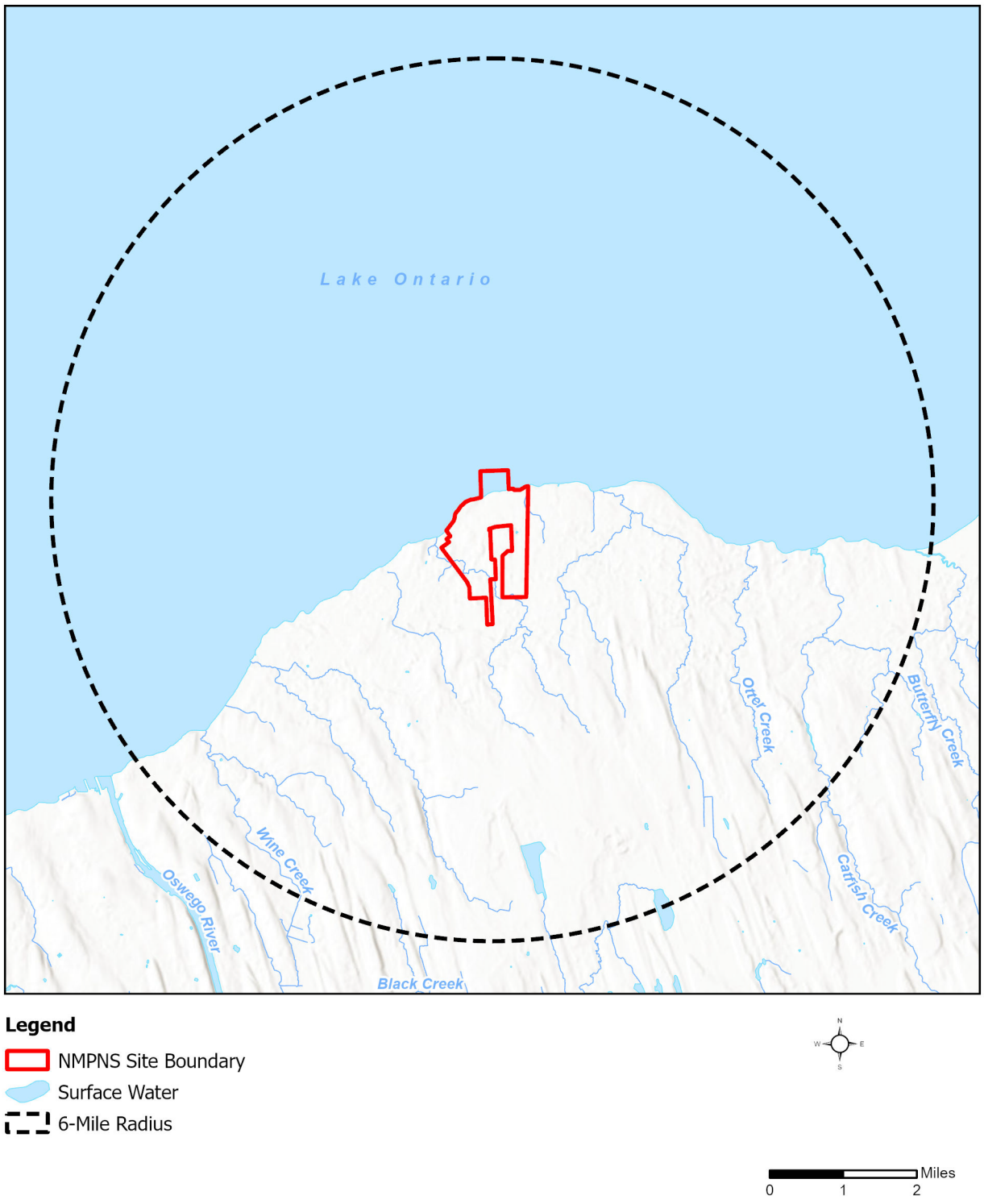


Figure 3.6-1 Vicinity Hydrological Features

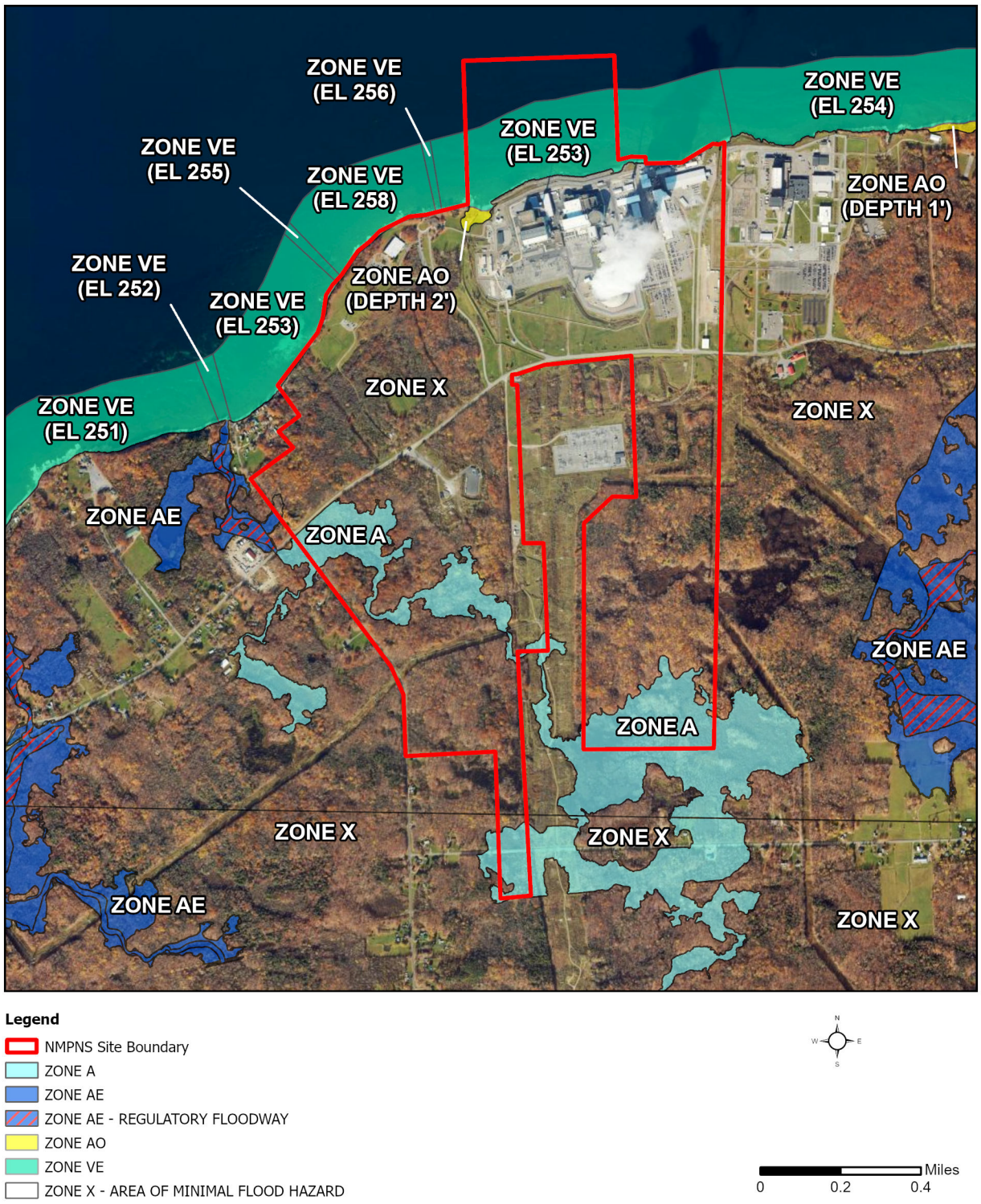


Figure 3.6-2 FEMA Floodplain Zones at NMPNS

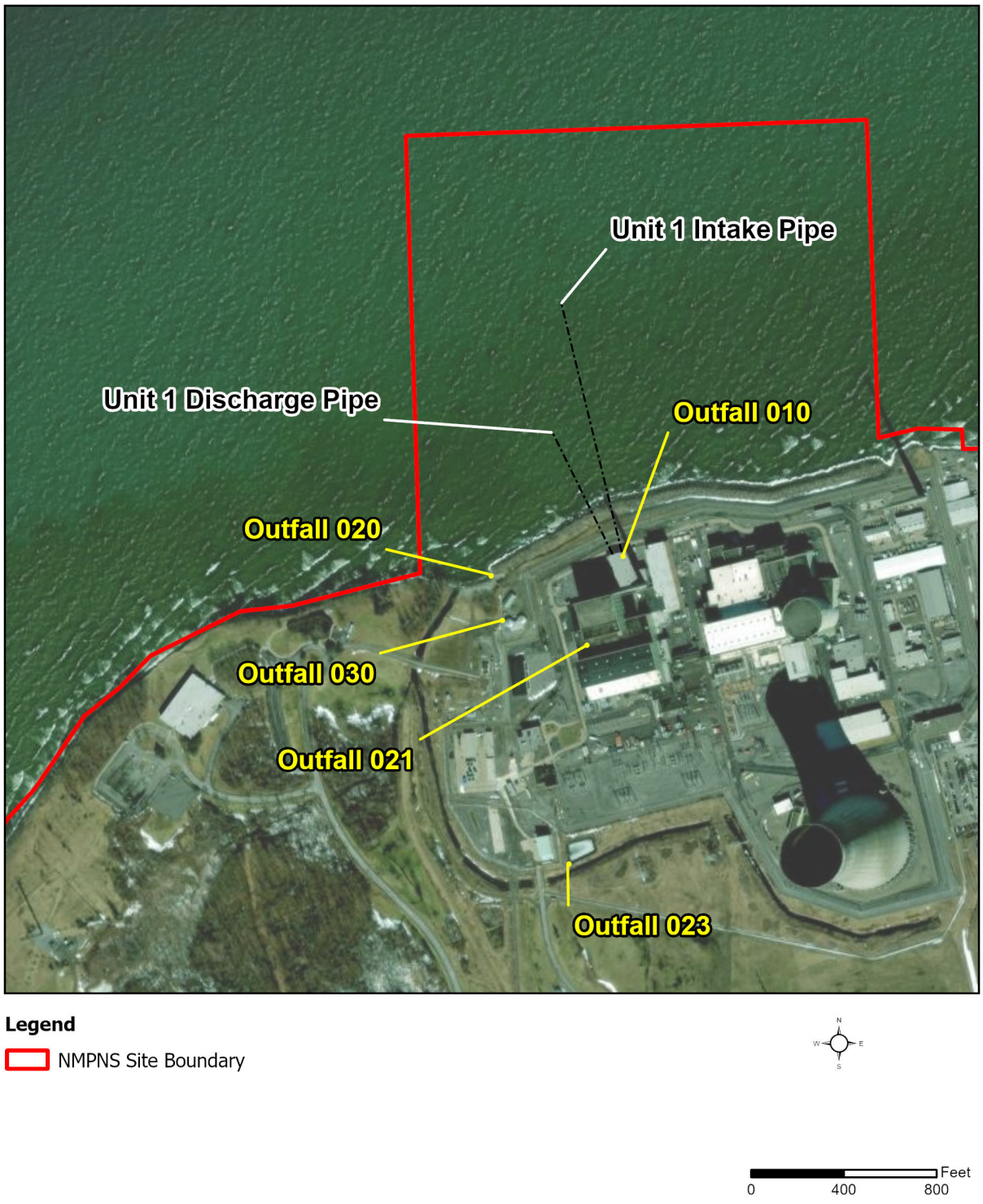


Figure 3.6-3 External SPDES Outfalls Associated with NMP1

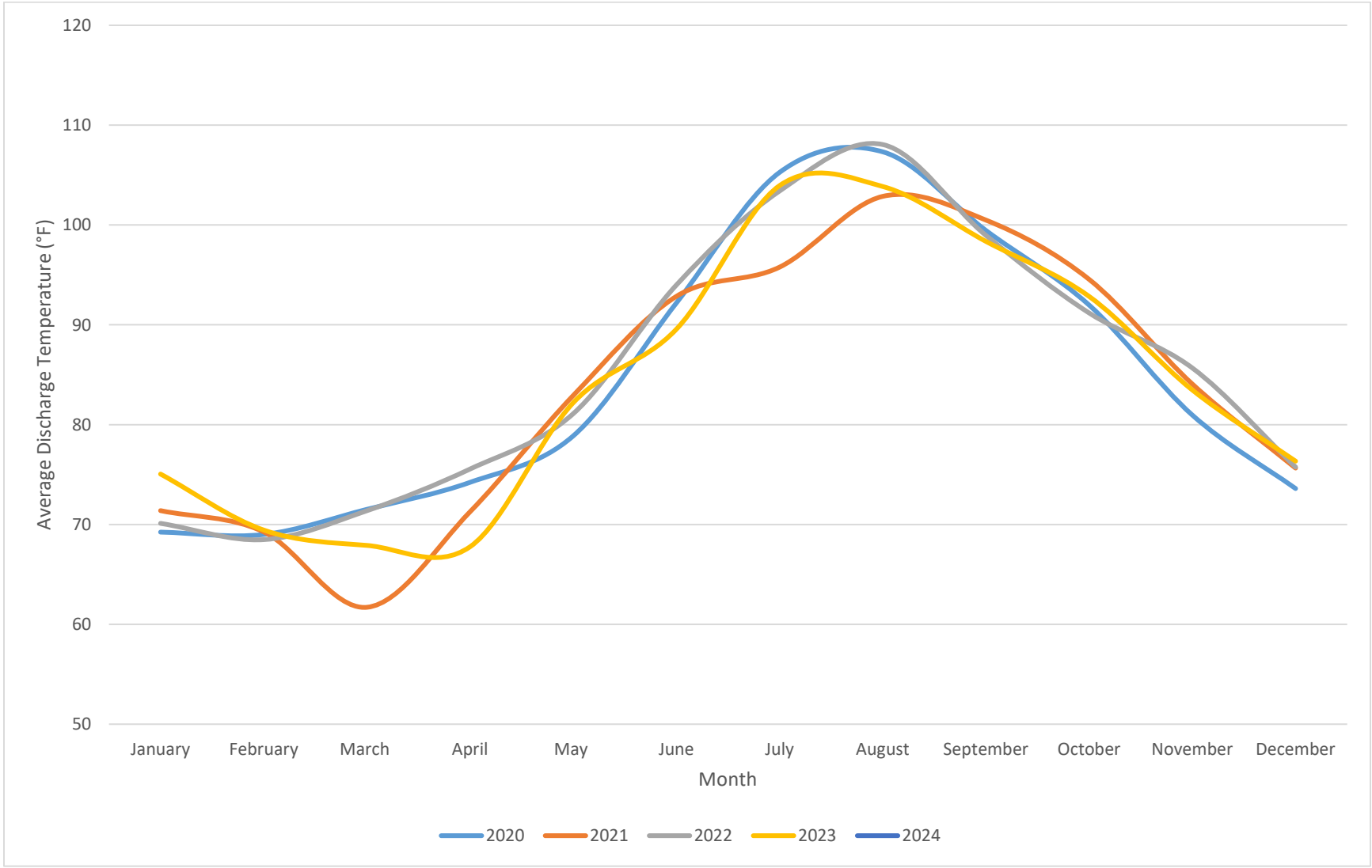


Figure 3.6-4 Average Monthly Discharge Temperatures, 2020–2024

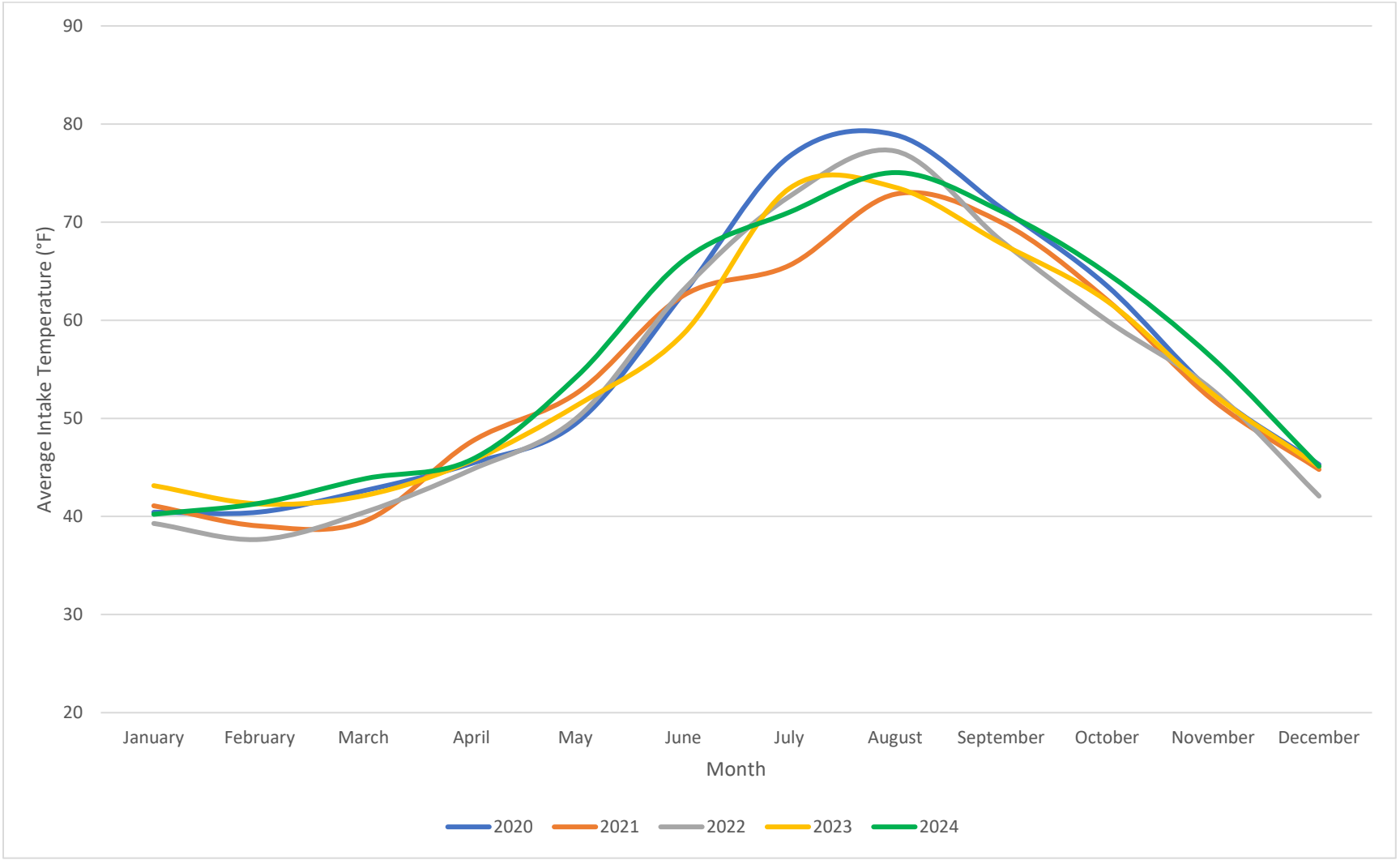


Figure 3.6-5 Average Monthly Intake Temperatures, 2020–2024



Figure 3.6-6 NMPNS Dewatering Systems



Figure 3.6-7 NMPNS Onsite Wells

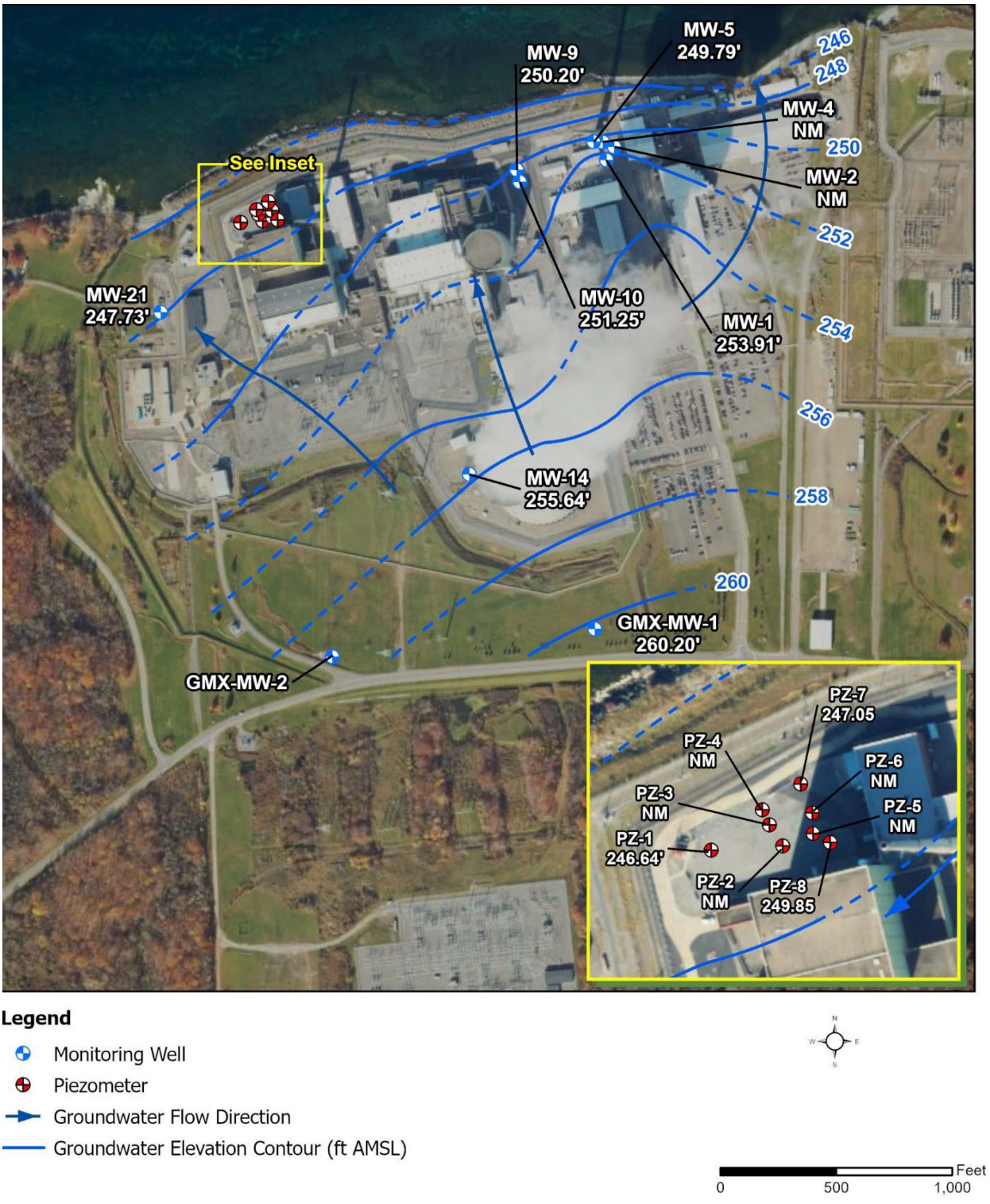


Figure 3.6-8 NMPNS Overburden Potentiometric Surface Map, May 2021



Figure 3.6-9 NMPNS Bedrock Potentiometric Surface Map, May 2021

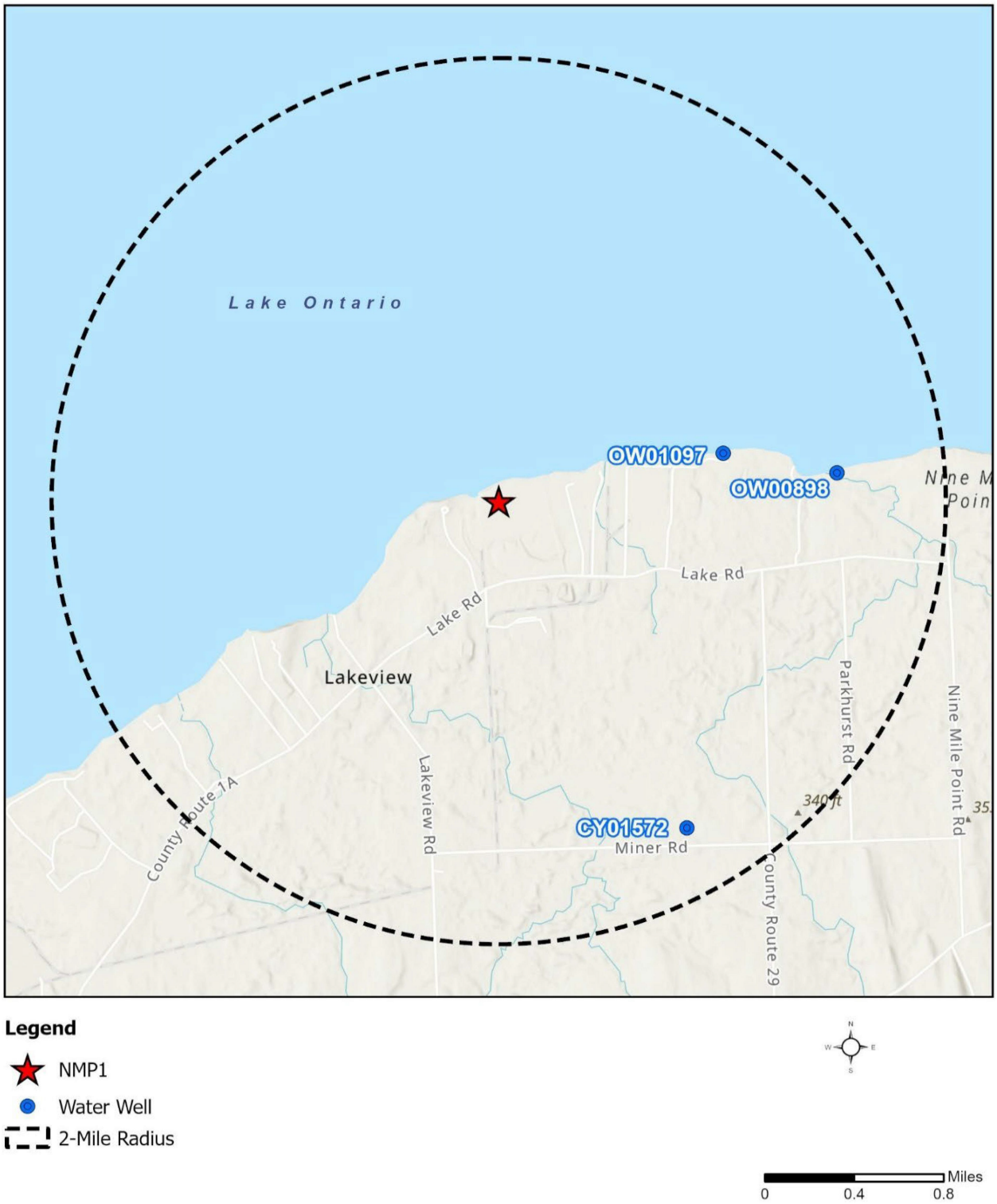


Figure 3.6-10 Offsite Registered Water Wells Within a 2-Mile Radius of NMP1

3.7 Ecological Resources

This section describes ecological resources, including the surrounding aquatic and terrestrial landscapes at the NMPNS site. It identifies federally and state-protected species occurring in the 6-mile vicinity of the NMP1 site and their jurisdictions. It also describes NMPNS procedures and protocols related to ecological resources.

3.7.1 Terrestrial Resources

This section identifies terrestrial ecological resources and describes species composition and other structural and functional attributes of terrestrial biotic assemblages that could be affected by the continued operation and maintenance of the facilities.

3.7.1.1 Terrestrial Ecoregions

NMPNS lies within the Eastern Great Lakes Lowlands EPA Level III ecoregion. This ecoregion is enveloped by the Mixed Wood Plains (EPA Level II) and Eastern Temperate Forests (EPA Level I) ecoregions, respectively. (EPA 2006)

The Eastern Great Lakes Lowlands EPA Level III ecoregion surrounds the highland ecoregions of northern New York State. Valleys and lowlands are underlain by interbedded limestone, shale, and sandstone rocks that are more erodible than the more resistant rocks composing the adjacent mountainous areas. The topography and soils of the lowlands have also been shaped by glacial lakes and episodic glacial flooding. Limestone-derived soils are fine-textured, deep, and productive. As a result, much of the region was cleared for agriculture or urban development and less native forest remains than in surrounding ecoregions such as the Northeastern Highlands or the Northern Allegheny Plateau. Most agricultural activity is devoted to dairy operations, although orchards, vineyards, and vegetable farming are important locally, particularly near the Great Lakes. (Bryce et al. 2010)

3.7.1.2 Site and Vicinity – Terrestrial Resources

The NMPNS site is located on the southeastern shore of Lake Ontario in the Town of Scriba, Oswego County, New York. The site is located approximately 36 miles northwest of Syracuse, the largest city within 50 miles. The site consists of approximately 846 acres, including over a mile of shoreline on Lake Ontario. According to Multi-Resolution Land Characteristics Consortium land use/land cover data, approximately 209 acres of the site are developed (Table 3.2-1). Developed areas include those used for power generation and support facilities, including several waste disposal facilities; the former EIC that was open to the public prior to September 11, 2001; the NLC; and a firing range for security personnel training. The remaining acreage of the NMPNS site is generally undeveloped.

Natural areas at the NMPNS site consist of forest, wetlands, and grassland habitats, as well as a 500-foot transmission right-of-way (ROW). Most of the transmission lines on the property connect from NMPNS through the Scriba Substation, south of the station, and are then routed southward along the ROW. Station communities within the transmission line corridor are

maintained by National Grid in accordance with a transmission ROW management program approved by the New York State Public Service Commission. Other features at the NMPNS site include parking areas, mowed lawns, and mowed or paved vehicle access routes.

Community types on the NMPNS site consist predominantly of forest, along with grassland, riparian, shoreline, and wetland habitats. These terrestrial communities have been impacted in the past by land-clearing activities associated with agricultural use such as cropland, pasture, and orchards; thus, much of the area is in varying stages of succession, reverting from the previous agricultural uses to old field communities and second-growth hardwood forest. (NMPNS 2004)

Forested areas north of Lake Road are characterized as early second-growth forest with evidence of former agricultural use. Dominant canopy species recorded in this area include white ash (*Fraxinus americana*), apple (*Malus sp.*), quaking aspen (*Populus tremuloides*), and hawthorn (*Crataegus sp.*). Dominant shrub stratum species include silky dogwood (*Cornus amomum*), arrowwood (*Viburnum dentatum*), hawthorn, juneberry (*Amelanchier sp.*), and grape (*Vitus sp.*). The canopy in the forested areas on the site south of Lake Road is characterized as mixed hardwood forest dominated by sugar maple (*Acer saccharum*). Other components of the overstory include quaking aspen, white ash, yellow birch (*Betula alleghaniensis*), American beech (*Fagus grandifolia*), and gray birch (*Betula populifolia*). Mature black cherry (*Prunus serotina*) and eastern hemlock (*Tsuga canadensis*) are also present. (NMPNS 2004) Common herb stratum species that occur at NMPNS include Kentucky bluegrass (*Poa pratensis*), spotted knapweed (*Centaurea stoebe*), tall goldenrod (*Solidago altissima*), reed canary grass (*Phalaris arundinacea*), common timothy (*Phleum pratense*), common reed (*Phragmites australis*), wild carrot (*Daucus carota*), and garlic mustard (*Alliaria petiolata*).

Common terrestrial wildlife species that occur throughout the NMPNS site include mammals such as coyote (*Canis latrans*), raccoon (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*), and eastern cottontail (*Sylvilagus floridanus*). Reptiles and amphibian species observed at NMPNS include wood frog (*Lithobates sylvaticus*), leopard frog (*Lithobates pipiens*), bull frog (*Lithobates catesbeianus*), northern water snake (*Nerodia sipedon*), garter snake (*Thamnophis sirtalis sirtalis*), painted turtle (*Chrysemys picta*), and snapping turtle (*Chelydra serpentina*). Common avian species observed onsite include yellow warbler (*Setophaga petechia*), indigo bunting (*Passerina cyanea*), red-tailed hawk (*Buteo jamaicensis*), chickadee (*Poecile atricapillus*), killdeer (*Charadrius vociferus*), mallard duck (*Anas platyrhynchos*), wood duck (*Aix sponsa*), and Canada goose (*Branta canadensis*). The NMPNS site is part of the Atlantic Flyway; bird numbers and species increase with the influx of spring and fall migrants. During the winter, large numbers of waterfowl congregate along the Lake Ontario shoreline. (NMPNS 2004) A comprehensive list of terrestrial wildlife and vegetation that occur in the vicinity of NMPNS can be found in Table 3.7-1.

3.7.1.2.1 Wetlands

Wetlands are defined as areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a

prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (USACE 1999). The U.S. Fish and Wildlife Service (USFWS) maintains the National Wetlands Inventory (NWI), which integrates digital map data along with other resource information to produce current information on the status, extent, characteristics, and functions of wetland, riparian, and deepwater habitats in the United States.

There have been two recent surveys conducted at the NMPNS site that included wetlands delineations: a natural resources investigation that was conducted in 2015 and a wetlands delineation survey that was conducted in 2023. Additional details on these surveys are described in Section 3.7.1.3.

Based on a review of USFWS NWI maps of the site, there are approximately 46,845 acres of wetlands within a 6-mile radius of NMPNS, presented in Figure 3.7-1, composed of the following types:

- Freshwater emergent wetland covering approximately 113 acres (0.24 percent of total wetland habitat)
- Freshwater forested/shrub wetland covering approximately 2,418 acres (5.16 percent of total wetland habitat)
- Freshwater pond covering approximately 90 acres (0.19 percent of total wetland habitat)
- Riverine wetland covering approximately 136 acres (0.29 percent of total wetland habitat)
- Lake wetland covering approximately 44,088 acres (94.12 percent of total wetland habitat).

Based on the NWI data, a total of 165.5 acres of wetlands, ponds, and riverine waters are mapped on the NMPNS site, presented in Figure 3.7-2, composed of the following types:

- Freshwater emergent wetland covering approximately 0.5 acre (less than 1 percent of total wetland habitat)
- Freshwater forested/shrub wetland covering approximately 78 acres (47 percent of total wetland habitat)
- Freshwater pond covering approximately 3 acres (2 percent of total wetland habitat)
- Riverine wetland covering approximately 4 acres (2 percent of total wetland habitat)
- Lake wetland covering approximately 80 acres (48 percent of total wetland habitat).

3.7.1.2.2 State-listed Terrestrial Species

A total of 56 state-listed species as defined in New York Code Part 182.5 Endangered species, threatened species, and species of special concern (6 NYCRR 182.5) have been documented as occurring in Oswego County within the last 30 years, including 37 terrestrial animal species and 16 terrestrial vegetation species (TRW 2021; NYSDEC 2024f). Table 3.7-2 includes a list of all state-protected species in Oswego County.

There have been no threatened and endangered species (T&ES) surveys conducted at NMPNS, nor have there been any state-listed species recorded at the site in the last 5 years.

3.7.1.2.3 Migratory Avian Species

In total, 25 migratory avian species potentially occur within the 6-mile vicinity of NMPNS. These include: American golden-plover (*Pluvialis dominica*), bald eagle (*Haliaeetus leucocephalus*), belted kingfisher (*Megaceryle alcyon*), black-billed cuckoo (*Coccyzus erythropthalmus*), blue-winged warbler (*Vermivora cyanoptera*), bobolink (*Dolichonyx oryzivorus*), Canada warbler (*Cardellina canadensis*), Cerulean warbler (*Setophaga cerulea*), chimney swift (*Chaetura pelagica*), eastern meadowlark (*Sturnella magna*), eastern whip-poor-will (*Antrostomus vociferus*), evening grosbeak (*Coccothraustes vespertinus*), golden eagle (*Aquila chrysaetos*), golden-winged warbler (*Vermivora chrysoptera*), lesser yellowlegs (*Tringa flavipes*), long-eared owl (*Asio otus*), pectoral sandpiper (*Calidris melanotos*), prairie warbler (*Setophaga discolor*), red-headed woodpecker (*Melanerpes erythrocephalus*), rose-breasted grosbeak (*Pheucticus ludovicianus*), ruddy turnstone (*Arenaria interpres morinella*), semipalmated sandpiper (*Calidris pusilla*), short-billed dowitcher (*Limnodromus griseus*), upland sandpiper (*Bartramia longicauda*), and wood thrush (*Hylocichla mustelina*). With the exception of American golden-plover, lesser yellowlegs, pectoral sandpiper, ruddy turnstone, semipalmated sandpiper, and short-billed dowitcher, the remaining 19 avian species breed within the 6-mile vicinity of NMPNS. (USFWS 2024a) Table 3.7-3 includes a list of the Migratory Bird Treaty Act (MBTA) species that occur in Oswego County, New York.

NMPNS follows an avian and wildlife management procedure. More information on this procedure can be found in Section 3.7.1.4.4 of this report. NMPNS is not in possession of any avian-related permits.

3.7.1.2.4 Terrestrial Invasive Species

A total of 19 invasive terrestrial species have been documented within the 6-mile vicinity of NMP1, including three invasive insects – hemlock woolly adelgid (*Adelges tsugae*), emerald ash borer (*Agrilus planipennis*), and lily leaf beetle (*Lilioceris lilii*) – and 16 invasive plants – goutweed (*Aegopodium podagraria*), tree-of-heaven (*Ailanthus altissima*), Japanese barberry (*Berberis thunbergii*), hairy willow-herb (*Epilobium hirsutum*), giant hogweed (*Heracleum mantegazzianum*), yellow iris (*Iris pseudacorus*), Japanese honeysuckle (*Lonicera japonica*), ragged robin (*Lychnis flos-cuculi*), purple loosestrife (*Lythrum salicaria*), reed canary grass (*Phalaris arundinacea*), common reed (*Phragmites australis*), Japanese knotweed (*Fallopia japonica*), knotweed (*Reynoutria spp.*), multiflora rose (*Rosa multiflora*), climbing nightshade (*Solanum dulcamara*), and pale swallowwort (*Vincetoxicum rossicum*). (NYNHP 2024a) Table 3.7-4 includes invasive species, both terrestrial and aquatic, that occur at NMPNS.

NMPNS currently monitors common reed in preparation for actively managing the invasive species onsite. Additional information for this monitoring program is described in Section 3.7.1.3.3 of this report.

3.7.1.2.5 Places of Ecological Interest

As presented in Section 3.1 and Figure 3.1-5, there are six locally or state-managed lands located within the 6-mile vicinity of NMP1, including County Park, Independence Park, Scriba Town Park, Sunset Bay Park, Ontario Bible Conference Camp, and Fort Ontario State Historic Site. There are no federal places of ecological interest within the 6-mile vicinity of NMP1.

There are no designated critical terrestrial habitats for Endangered Species Act (ESA) listed species in the 6-mile vicinity of NMP1 (USFWS 2024a). However, three areas designated as significant natural communities by the NYSDEC are located within the 6-mile vicinity of NMP1 – Butterfly Swamp, Lily Marsh, and Clark Corners Fen (NYSDEC 2024c).

Butterfly Swamp is located approximately 5 miles east of the NMPNS site. Butterly Swamp is a shrub swamp and is classified as a high-quality occurrence of uncommon community type by the NYSDEC. (NYSDEC 2024c) In general, shrub swamps are very common and quite variable. They may be co-dominated by a mixture of species or be a near-monoculture of a single dominant shrub species. Characteristic shrubs include meadowsweet (*Spiraea alba var. latifolia*), steeplebush (*Spiraea tomentosa*), gray dogwood (*Cornus racemosa*), swamp azalea (*Rhododendron viscosum*), highbush blueberry (*Vaccinium corymbosum*), maleberry (*Lyonia ligustrina*), smooth alder (*Alnus serrulata*), spicebush (*Lindera benzoin*), willows (*Salix bebbiana, S. discolor, S. lucida, S. petiolaris*), wild raisin (*Viburnum nudum var. cassinoides*), and arrowwood (*Viburnum dentatum var. lucidum*). (NYNHP 2024a)

Lily Marsh is located approximately 5 miles southeast of the NMPNS site. Lily Marsh is a black spruce-tamarack bog and is classified as a high-quality occurrence of uncommon community type by the NYSDEC. (NYSDEC 2024c) Black spruce-tamarack bogs are conifer dominated, peatland swamp forests dominated by black spruce and/or tamarack. Typically, the dominant species have greater than 50 percent combined cover in the canopy, sub-canopy, and tall shrub layers. (NYNHP 2024b)

Clark Corners Fen is located approximately 5 miles south of the NMPNS site. Clark Corners Fen is a rich shrub fen and is classified as a rare community type by the NYSDEC. Rich shrub fens are strongly minerotrophic peatlands in which the substrate is a woody peat, which may or may not be underlain by marl or limestone bedrock. Rich fens are fed by waters that have high concentrations of minerals and high pH values, generally from 6.0 to 7.8. The dominant species in rich shrub fens are shrubs, which form a canopy and overtop most herbs. Some rich shrub fens are dominated by low shrubs (under 4 feet tall) that collectively have 80 to 90 percent cover in the community. Other rich shrub fens are dominated by taller shrubs (over 4 feet) that collectively have 50 to 70 percent cover in the community with low shrubs and graminoids locally dominant in openings. The rich shrub fen community is somewhat broadly defined to include both the low shrub and taller shrub examples as well as regional variants distinguished by variations in their flora such as the lack of shrubby cinquefoil (*Dasiphora fruticosa ssp. floribunda*) in northern examples. In rich shrub fens, peat mosses (*Sphagnum spp.*) are either absent or a minor component, with only the most minerotrophic species present. Other mosses may be common in rich shrub fens. (NYNHP 2024c)

3.7.1.3 Studies and Monitoring – Terrestrial Resources

CEG is committed to operating its businesses in a sustainable manner, which includes the preservation and protection of flora and fauna, wildlife diversity, and habitat. Further, NMPNS maintains a Wildlife Habitat Council (WHC) Certification with a status of Certified Gold through 2026. As part of the WHC Certification, NMPNS conducts monitoring studies, conservation efforts, and management strategies to conserve and protect the natural environment. (WHC 2024)

3.7.1.3.1 Avian and Bat Monitoring

Avian and bat monitoring is conducted at NMPNS as part of the WHC Conservation Certification. Monitoring efforts include those for wood duck, eastern bluebird (*Sialia sialis*), bald eagle, and great blue heron (*Ardea herodias*), as well as various bat species.

Wood Duck Monitoring Program

The purpose of the wood duck monitoring program at NMPNS is to provide quality nesting opportunities for wood duck by mitigating threats, to create a positive conservation impact on the species, to provide educational opportunities to employees and community members, and to connect other habitats within the Atlantic Flyway migratory corridor.

Six wood duck nest boxes have been constructed and placed onsite at NMPNS near wetlands where the species has been previously observed. On installation day, box locations were marked, and coordinates along with orientation and area description were added to monitoring sheets. In spring 2016, an initial walkdown was performed in the vicinity of the installed nest boxes to check the area for signs of potential usage of the structures by the target species. Several pairs of wood ducks were observed in the wetland areas adjacent to the box locations. After the nesting season, the boxes were checked for signs of usage by wood ducks. Although feathers were observed at one location, it could not be determined if they were those of the target species.

Walkdowns of the boxes and surrounding areas are currently performed on a quarterly basis. The presence and absence of wood ducks, evidence of box usage, box damage, and general area conditions are documented during the walkdowns. Typically, one to four individuals spend two or more mid-day hours conducting walkdowns. Since 2017, a borescope has been utilized to make box inspections less intrusive. Further, walkdowns are limited during the breeding and nesting seasons to reduce disturbances to the species in the area. Consideration is being given to utilizing a game camera for remote observation, especially during challenging winter conditions.

The wood duck monitoring for 2016 through 2023 yielded no activity in the nest boxes. An individual male wood duck was observed to the west of the transmission road in the heron rookery area. No other individuals or nest activity was noted during that time.

Eastern Bluebird Monitoring Program

The purpose of the eastern bluebird monitoring program at NMPNS is to enhance bluebird habitat by providing housing and roosting for the species and to provide bird conservation education opportunities to employees and community members.

NMPNS is part of the summer breeding ground for eastern bluebirds. Bluebird houses and a roost box have been placed adjacent to wetlands and open fields that provide foraging opportunities for the target species.

After installation of the bluebird houses, the location features – including coordinates, orientation, and general area conditions – were recorded, in addition to evidence of target species activity, to establish data on the presence of the species in the area.

Quarterly monitoring was performed for the first several years of the program, checking for sightings of bluebirds, nests, eggs, and other evidence of bluebird activity. Beginning in 2023, data collection was increased to weekly monitoring from June through September, followed by nest cleanouts in October. Observations and photo documentation are made from a distance for at least 5 minutes at each location to verify nest box usage and any presence of young.

According to monitoring data, there has been limited use of the nest boxes by bluebirds. The presence of bluebirds has been overshadowed by the common house sparrow, barn swallows, and European starlings. Active use of the nest boxes by these species has been observed to occur up through early September.

Bald Eagle Nest Monitoring Program

The purpose of the bald eagle nest monitoring program is to provide information to assist the NYSDEC regarding: the state's obligations for monitoring pursuant to the USFWS delisting, periodic status assessment, management activities, and environmental reviews of proposed projects.

Baseline data were collected in 2023 prior to implementing the bald eagle nest monitoring program as a project for WHC certification consideration. One nest was recorded onsite that has been monitored by NMPNS since 2014. According to NMPNS observation data, the nest has produced at least 11 chicks.

Monitoring procedures include observing the nest for activity using binoculars and a camera with a telephoto lens. At least one visit is made between March 1 and June 1 annually to cover the time when the adults are most likely to be sitting on the nest incubating eggs, tending to chicks, and/or when the chicks are large enough to be seen in the nest.

Nest sites on Transmission Road appear to have ceased after 2021. The presence of eagle adults and juveniles has been continuous at nesting sites on Transmission Road; however, some of the nests have become dilapidated due to weather events. At the lake shore, eagle

adults and juveniles maintain presence in large trees, though no nests have been identified to date at this location. An injured eagle was discovered in June 2022 near the lake shore, and proper authorities were contacted to rescue and transport the eagle to a licensed rehabilitator. In 2023, monitoring observations revealed roosting and foraging activity on Transmission Road by at least two adults and two juveniles near previous nest sites. Adults are most often observed along the shoreline during early morning and late afternoon.

The bald eagle nest monitoring data aid NYSDEC with their obligations to the USFWS. The bald eagle was removed from protection under the Federal ESA in 2007; however, requirements for post-delisting monitoring are in effect until 2027.

Great Blue Heron Rookery Monitoring Program

The purpose of the great blue heron rookery monitoring program is to support the continued productivity of the species and to help enable a healthy ecosystem. The presence of the rookery at the NMPNS site provides high-quality habitat for nesting and breeding as well as foraging opportunities for the species.

The great blue heron rookery at NMPNS consists of several dozen dead trees approximately 100 yards west of Transmission Road within the wetland formed by the west branch of the minor tributary. A handful of previously constructed nests occupy the largest and most stable of the dead trees within the wetland.

The rookery is monitored annually during the summer months from a distance using binoculars and zoom lenses. The observation date, weather, number of nests, and number of adults and chicks are recorded.

Results from 2021 monitoring indicated approximately 60 percent usage of nesting sites within the rookery. Five active nests produced nine juvenile great blue herons. Monitoring did not occur in 2022. Indications from monitoring beginning in the summer of 2023 revealed former nest sites had become damaged by weather over the course of the 2022 winter season. Two nest sites remained, and no adults or juveniles were identified during the breeding season at these two nest sites. Adults are still often observed in the wetland east of the rookery and at the shoreline of Lake Ontario.

Bat Monitoring Program

The purpose of the bat monitoring program at NMPNS is to preserve, create, and enhance bat habitat; protect and monitor bat colonies; and facilitate conservation education. Bat species included in this monitoring program include big brown bat (*Eptesicus fuscus*), tricolored bat (*Perimyotis subflavus*), Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), and little brown bat (*Myotis lucifugus*).

Two roosting boxes were installed within 300 yards of open water and within 50 yards of small tributary streams. The roosting boxes mimic natural tree formations that many bat species utilize

for shelter when roosting. Most of the species of bat found in New York do not migrate and hibernate in colonies in caves and man-made structures that provide ample protection and warmth. Tree-dwelling species of bat tend to be migratory and do not hibernate in caves and, therefore, may stop over during the yearly migration back to the forested regions in northern New York where these species are most abundant. The predominant species of bat at NMPNS are the little brown bat and the big brown bat.

Bat boxes have been monitored quarterly since 2021. Monitoring consists of bat box inspections for the presence and absence of bats, as well as observations of the presence and absence of guano beneath the bat boxes. Currently, there has been no evidence of use of the structures by bats, and baseline data previously collected via acoustic monitoring to establish presence in the area have produced few results.

Acoustic bat surveys were conducted at NMPNS in 2024 to document bat species at the site. Monitoring was performed at the hazardous waste building, bat box area, and the tree cover area between the EIC and WWTP. An Echometer Touch 2 acoustic monitoring device from Wildlife Acoustics was used, and 15- to 20-minute static monitoring was conducted to ensure ambient noises did not affect monitoring. No bats were identified as part of the acoustic monitoring effort.

3.7.1.3.2 Reptile and Amphibian Monitoring

Reptile and amphibian monitoring is conducted at NMPNS as part of the WHC Conservation Certification. The purpose of the reptile and amphibian monitoring program at NMPNS is to manage, protect, and enhance existing reptile and amphibian habitats and create educational opportunities for employees and the community.

Target reptile species monitored in the program are snake species, including the common garter snake (*Thamnophis sirtalis*), eastern hognose (*Heterodon platirhinos*), eastern milk snake (*Lampropeltis triangulum*), eastern ribbon snake (*Thamnophis sauritus*), northern brown snake (*Storeria dekayi*), northern water snake (*Nerodia sipedon*), and smooth green snake (*Opheodrys vernalis*), as well as turtle species, including the bog turtle (*Glyptemys muhlenbergii*), common map turtle (*Graptemys geographica*), common musk turtle (*Sternotherus odoratus*), common snapping turtle (*Chelydra serpentina*), painted turtle (*Chrysemys picta*), and spotted turtle (*Clemmys guttata*). Target amphibian species in the monitoring program include the gray treefrog (*Dryophytes versicolor*), northern spring peeper (*Pseudacris crucifer*), western chorus frog (*Pseudacris triseriata*), American bullfrog (*Lithobates catesbeianus*), northern green frog (*Rana clamitans melanota*), wood frog (*Lithobates sylvaticus*), northern leopard frog (*Lithobates pipiens*), and pickerel frog (*Lithobates palustris*).

The NMPNS site consists of wetlands, forests, meadows, and shoreline that are ideal for many different species of snakes found in New York. Strategic placement of brush piles and basking logs provides cover and nesting habitat in areas used by snakes and turtles for breeding and overwintering. These brush piles and basking logs also provide refuge for amphibian species. Movement between these habitats is essentially free from human interaction except in the small

area that is developed for station operations. Despite the development, there is snake, turtle, and amphibian activity in these areas, with adequate sources of food, shelter, and water to support populations.

Utilizing a NYSDEC identification guide, field trips are taken to surrounding wetland areas onsite, and walkdowns are conducted that involve watching and listening for the presence of snakes, turtles, frogs, toads, salamanders, and newts.

Since 2021, monitoring data have shown a variety of species of reptiles on the property. At least 10 individual painted turtles have been observed within the wetlands, and at least four individual common snapping turtles have been observed in various places on the property. In addition, there has been indication of active breeding of common snapping turtles as documented by the observation of turtle nests at various locations around the property. Garter snakes and northern water snakes have also been documented and are more prevalent in the wetland areas. Milk snakes have been observed closer to developed areas of the property, including the PA. Evidence of shedding has also been noted on Transmission Road.

Amphibian monitoring data collected since 2021 have indicated a healthy population of frogs and toads in the wetland areas of the NMPNS property. There is evidence of species living within the wetlands through audible indications of frog species; however, speciation could not be visibly discerned as there is difficulty in accessing the wetlands. Many of the visual observations documented in the fields and grasslands surrounding wetlands were of northern leopard frogs.

3.7.1.3.3 Phragmites Monitoring

The purpose of the phragmites monitoring program is for evaluation purposes with the potential to actively manage the invasive species.

In 2023, NMPNS recorded baseline data following a site-wide investigation of the prevalence of phragmites (i.e., common reed). Using overhead mapping tools, a rough estimate was made of the impacted areas to be monitored. Monitoring occurs quarterly from April through October when phragmites is in its active growth stages. Observations are made on the property adjacent to, and in the line of site from, accessible roadways using cameras and binoculars.

Results of the monitoring indicated that there is predominant growth of phragmites within the wetlands on the NMPNS site that is encroaching on and outcompeting native flora. Currently, there are no plans or procedures in place to manage phragmites. If it is determined that phragmites is to be actively managed onsite, these small encroachment areas are expected to be maintained via mowing.

3.7.1.3.4 Wetlands Delineations

2006 Wetlands Surveys

In a letter dated June 26, 2007, NMPNS submitted a Joint Permit Application to the U.S. Army Corps of Engineers (USACE) for proposed work that included the installation of a temporary

unpaved access way to two locations within forested wetlands, the advancement of up to four geotechnical soil/rock borings at each location, and the installation of up to two monitoring wells. As part of the Joint Permit Application, a characterization of wetland resources was included based on May and December 2006 wetlands surveys.

Areas surveyed were identified based on the general locations of potential sub-surface investigations. During the December survey, wetland boundaries were flagged, and locations were recorded using a GPS unit. Wetland boundaries during the December survey were determined based on hydrology and vegetation with no examination of soils to determine the approximate acreage of wetland relative to non-wetland areas. During the May survey, wetland boundaries immediately adjacent to the proposed subsurface investigation access way were investigated in greater detail, including analysis of shallow soil conditions and the presence of hydric soil indicators in accordance with the methods detailed in the USACE 1987 Wetland Delineation Manual.

Within the surveyed area, there are extensive forested, seasonally saturated mineral soil wetlands. Two types of forested wetlands were observed to occur in the area at the time of the survey. One type was predominately young growth dominated by white ash (*Fraxinus americana*) less than 60 years in age. The other type of forested land was older and more diverse in composition and was dominated by maple (*Acer spp.*), poplar (*Populus spp.*), and ash (*Fraxinus spp.*) with a reduced understory, due to a full canopy. Speckled alder (*Alnus rugosa*) and red osier dogwood (*Cornus stolonifera*) were the dominant shrubs encountered in these surrounding areas, though no shrub-dominant wetlands were observed to occur.

Evidence of wetland hydrology included surface soil saturation, surficial flow patterns, and drift lines. These hydrologic conditions appear to result from poor drainage and surface seepage, probably resulting from impervious subsurface conditions. Rock outcrops were frequently encountered, and previous subsurface work in the general area indicates shallow (5–20 feet) bedrock.

It was determined at the time of the survey that the wetlands delineated within the survey area were jurisdictional under the USACE. No NYSDEC state-mapped wetlands or NWI wetlands were present.

2023 Wetlands Delineation

In October 2023, a wetlands delineation was conducted on a 1-acre portion of the proposed ISFSI Phase 3 site at NMPNS. The wetlands delineation was conducted following the methods outlined in the 1987 USACE Wetlands Delineation Manual and the USACE Regional Supplement.

Available background information were reviewed prior to the field survey. The NYSDEC freshwater wetlands data showed no mapped freshwater wetlands on the site at the time of the survey. A NWI wetland was mapped on the northern end of the site at the time of the survey.

The NWI mapped wetland was identified as a palustrine, forested, scrub-shrub, broad-leaved deciduous, seasonally flooded/saturated wetland (PFO/SS1E). No hydric soils or mapped surface waters were present in the survey area at the time of the survey.

At the time of the survey, one palustrine emergent wetland (0.28 acres) was present in the central portion of the site. It was determined that the wetland is regulated by the USACE; thus, a permit from the USACE and a Section 401 Water Quality Certification from the NYSDEC are required if impacts on the wetland were to occur.

3.7.1.3.5 Annual Radiological Environmental Monitoring Program

The Annual Radiological Environmental Operating Report is published in accordance with the ODCM. The ODCM requires that the results from the annual REMP be provided to the NRC by May 15 of each year. (CEG 2024c)

The REMP is a comprehensive surveillance program, which is implemented to assess the impact of site operations on the environment and compliance with 10 CFR 20, 40 CFR 190, and 10 CFR 72. Samples are collected from the aquatic and terrestrial pathways applicable to the site. The aquatic pathways include Lake Ontario fish, surface water, and lakeshore sediment. The terrestrial pathways include airborne particulate and radioiodine, milk, food products, and direct radiation. (CEG 2024c)

The analytical results from the REMP for 2018 through 2024 demonstrate that routine operation at NMP1 has had no significant or measurable radiological impact on the environment. The program continues to demonstrate that the dose to a member of the public as a result of the operation of NMP1 remains significantly below the federal dose limits specified in 10 CFR 20, 40 CFR 190, and 10 CFR 72. (EGC 2019; EGC 2020; EGC 2021a; CEG 2022b; CEG 2023b; CEG 2024c; CEG 2025a)

3.7.1.4 Procedures and Protocols – Terrestrial Resources

3.7.1.4.1 Wildlife and Habitat Management Programs

Deer Management Program

The purpose of the Deer Management Program at NMPNS is to reduce car–deer accidents, reduce competition for resources, and reduce the potential for disease due to overpopulation. The program aims to promote the heritage of white-tail deer hunting and help balance the deer population within the NMPNS site.

In order to participate in the Deer Management Program, hunters must be full-time NMPNS employees and comply with the following: abide by NYSDEC big game regulations; abide by CEG policies, procedures, and practices; sign a waiver and release of liability each year of participation; complete and pass the bow and tree stand proficiency/safety course; provide a copy of the current year NYSDEC big game hunting license and appropriate bow hunting license; and have a signed copy of the NMPNS hunting program rules in their possession at all

times when hunting on NMPNS property. These requirements ensure deer are harvested following good practices and regulations set by the State of New York.

NMPNS has pre-hung tree stands around the property in locations where deer have been observed moving on a regular basis. Several stands are located within the forested area located south of Lake Road. The remaining tree stands are located on the easterly edge of the owner-controlled area. Tree stands must be used, and hunters must use only vertical bows, as well as pass a tree stand proficiency and safety course and practical exam to show proficiency with using equipment.

Since initiation of the program in 2020, NMPNS hunters have harvested 26 deer from NMPNS property. NMPNS continues to monitor the harvest of deer onsite and look to provide observational data during the offseason for herd health. The program has shown success with reducing the number of vehicle–deer collisions onsite.

Shoreline Cleanup Program

The NMPNS shoreline cleanup program was initiated in 2021 and includes approximately 225 acres of shoreline and wetlands onsite. The purpose of the shoreline cleanup program is to improve habitat quality through cleanup efforts involving trash removal on and near the lake shore. Shoreline cleanups occur once per year, typically in the summer between August and September.

Debris information is noted on data cards by the volunteers, and a summary card is returned to the American Littoral Society as well as to Ocean Conservancy, where it is analyzed and used to evaluate existing pollution abatement programs and to develop new national and international policies to control debris in order to protect the health and safety of humans and marine life. The event raises the public's consciousness of the state of shorelines and generates important data that show trends in pollution.*Pollinator Garden/Honeybee Hive Program*

The purpose of the NMPNS pollinator garden program is to increase the quality of pollinator habitat and provide educational opportunities to employees and the community. Gardens and hives have been strategically planted with northeastern U.S. plant seeds. A variety of plant colors, heights, and bloom times were selected to provide nectar and pollen sources and larval host plants for food and shelter for a more diverse population of pollinators. Typical plant species added to the gardens include beebalm (*Monarda fistulosa*), foxglove (*Digitalis purpurea*), Jacob's ladder (*Polemonium reptans*), hummingbird mint (*Agastache cana*), butterfly weed (*Asclepias tuberosa*), New England aster (*Symphyotrichum novae-angliae*), and various other asters (*Aster sp.*) and coneflowers (*Echinacea sp.*).

The pollinator gardens and hives were originally constructed adjacent to wetlands near existing reeds and wetland plants to provide water and shelter. In fall 2023, the pollinator gardens were moved to a drier area located east of forested land and adjacent to unmanaged grassland containing native milkweed. The hives were also relocated in proximity to the pollinator gardens

within the Transmission Road ROW. A small stream is located within 100 yards east of the new location.

A number of other pollinator species have been observed utilizing the newly located pollinator gardens, including Monarch butterflies (*Danaus plexippus*), honeybees (*Apis sp.*), bumblebees (*Bombus sp.*), red admiral butterflies (*Vanessa atalanta*), painted lady butterflies (*Vanessa cardui*), viceroy butterflies (*Limenitis archippus*), fritillary butterflies (*Dione vanillae*), little wood satyr butterflies (*Megisto cymela*), and swallowtail butterflies (*Papilio sp.*).

3.7.1.4.2 Biodiversity Policy

The purpose of the Biodiversity Policy is to seek and actively promote and protect habitats and the biodiversity the habitats support by: promoting and implementing natural resource conservation strategies and complying with all applicable laws and regulations, enhancing the ability of assets to provide habitats and contribute to biodiversity, continuously adapting strategies and plans to address natural and man-made impacts on biodiversity and habitats, promoting a culture that empowers employees to explore innovative ways to improve biodiversity, and engaging local communities, stakeholders, and other interested parties to address opportunities for protecting and enhancing natural resources.

3.7.1.4.3 Environmental Review Procedure

The purpose of the Environmental Review Procedure is to provide a process for screening proposed activities to determine if an activity may require further evaluation for environmental impacts and risk. Activities include, but are not limited to, engineering configuration changes, maintenance activities, operational changes, procedural changes, and other site activities.

3.7.1.4.4 Avian and Wildlife Management Procedure

The purpose of the Avian and Wildlife Management Procedure is to provide guidance on how to properly respond when encountering or potentially disturbing injured or healthy wildlife. This procedure is required to maintain compliance with federal and state bird protection laws including, but not limited to, the MBTA, the Bald and Golden Eagle Protection Act, and the ESA.

There have been three avian-related incidents at NMPNS within the last 5 years. A summary of each event is provided below.

In March 2022, a northern saw-whet owl (*Aegolius acadicus*) was discovered at the entrance of the NLC. Upon inspection, it appeared that the owl had flown into the entrance door and was stunned and/or injured. Following the Avian and Wildlife Management Procedure, NMPNS contacted a local raptor rehabilitation group, and the owl was taken offsite.

In March 2023, a stunned ruffed grouse (*Bonasa umbellus*) was discovered in the lower parking lot south of the NMPNS security building. Upon inspection, the ruffed grouse appeared to have been struck by an unidentified hawk, as numerous down feathers were present at the site. Following the Avian and Wildlife Management Procedure, a local wildlife rehabilitation group

was contacted. When the rehabilitation group arrived onsite, the ruffed grouse was no longer stunned. After careful inspection, it was determined by the rehabilitation group that the ruffed grouse was healthy and actively laying eggs. For the well-being of the clutch, the ruffed grouse was released, and no further action was required.

On May 30, 2023, two deceased hummingbirds were discovered near the ISFSI pad. NMPNS environmental specialists responded following the Avian and Wildlife Management Procedure and contacted the NYSDEC. Section 3.7.1.6.1 describes this communication with the NYSDEC.

3.7.1.4.5 Pesticide Management Procedure

Pesticides are regulated under the statutory framework of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), which ensures that the application of pesticides does not pose unreasonable risks to human health and the environment. The purpose of the Pesticides Management Procedure is to address FIFRA and New York SPDES permit requirements pertinent to pesticides and to provide a cohesive framework for complying with applicable pesticide regulations.

In accordance with New York State Pesticide Reporting Law (6 NYCRR Part 325.25), NMPNS submits an annual applicator/technician report to the NYSDEC.

3.7.1.4.6 Transmission ROW Vegetation Management Program

National Grid is responsible for transmission ROW vegetation management at NMPNS. National Grid follows a state-approved Transmission ROW Management Program. The goals of this program are to manage the ROW in a manner that ensures the integrity of the transmission facility; manage the ROW vegetation in the most cost-effective manner commensurate with other ROW management goals; manage the ROW vegetation in a manner that continues to encourage the development of a rich, diverse blend of stable herbaceous and compatible shrub communities and maximize the benefits of the total ecosystem in resisting tree invasion; maintain the environmental quality of sensitive resources and areas of the ROW; and manage the ROW in harmony with compatible multiple use practices, including agricultural, recreational, industrial, residential, and wildlife uses. (NGUSA 2021)

3.7.1.5 Permits and Regulatory Controls – Terrestrial Resources

3.7.1.5.1 NYSDEC Nuisance Beaver Permit

NMPNS has had ongoing issues with beaver and beaver dam development onsite. A Nuisance Beaver Permit (No. 2025-1812) authorized by the NYSDEC Division of Fish and Wildlife, Bureau of Wildlife, has been obtained by NMPNS for removal of the beaver and dam. The current permit was issued on February 11, 2025, with an expiration date of January 15, 2026, and is renewed annually as needed. The permit authorizes lethal removal of beavers and the breaching or removal of beaver dams no more than two years old. The permit is applicable to regulated freshwater wetlands, including the wetland adjacent area, and to protected navigable waterways throughout New York.

3.7.1.5.2 NYSDEC Pesticide Agency Registration

NMPNS is in possession of a Pesticide Agency Registration (No. 79634) authorized by the NYSDEC Division of Materials Management, Bureau of Pest Management. The registration was issued on July 13, 2023, with an expiration date of July 31, 2026. The registration certifies that NMPNS licensed applicators are registered with the NYSDEC as a Pesticide Agency pursuant to the provisions of the Environmental Conservation Law and the rules and regulations promulgated thereunder.

3.7.1.6 Communications with Federal and State Agencies – Terrestrial Resources

3.7.1.6.1 Avian and Wildlife Incidents

As described in Section 3.7.1.4.4, the NYSDEC was contacted regarding an avian incident that involved the discovery of two deceased migratory hummingbirds. The discovery occurred on May 30, 2023, and per the Avian and Wildlife Management Procedure, the NYSDEC Region 7 Wildlife Division was immediately contacted for guidance on the incident. The NYSDEC representative gave verbal advice that local scientific foundations with license to possess birds on the MBTA may be interested but that the resources were likely unavailable at the time, and they were unlikely to be able to respond in a timely manner. Thus, the specimens were unlikely to be viable for study. As a result, the NYSDEC representative advised that the carcasses be left in situ and that no further actions be taken.

No other communications with federal or state agencies regarding avian and wildlife incidents have occurred at NMPNS.

3.7.1.6.2 Coastal Zone Management Act Determination

At the time of the previous NMPNS Units 1 and 2 license renewal application (LRA) filed in 2006, the New York State Department of State (NYSDOS) acknowledged the receipt of the Federal Consistency Assessment Form and consistency certification and supporting information related to the CZMA. In a letter dated July 18, 2006 (No. F-2004-0194), the NYSDOS determined that the NMPNS meets the general consistency concurrence criteria and that further review and an individual consistency certification are not required. Concurrent with this application, CEG will submit a CZMA determination request to the NYSDOS for the proposed SPEO in accordance with the federal CZMA, implementing regulations in 15 CFR Part 930 and the New York Coastal Management Program.

3.7.2 Aquatic Resources

This section describes the aquatic environment and biota near the NMPNS site, as well as other areas potentially affected by NMPNS's continued operation. It includes a description of the aquatic ecosystems at or near the site, critical habitats or other areas carrying special designations, and related procedures and protocols.

3.7.2.1 Marine Ecoregions

NMPNS is not near oceanic, estuarine, or gulf waters and is not situated within any marine ecoregions as defined by the EPA.

3.7.2.2 Site and Vicinity – Aquatic Resources

3.7.2.2.1 Lake Ontario

Lake Ontario, situated within the State of New York and Province of Ontario, Canada, comprises a surface area of 7,340 square miles and volume of 393 cubic miles. At its greatest extent, Lake Ontario is 193 miles long and 53 miles wide. Water enters Lake Ontario primarily from Lake Erie via the Niagara River and drains into the St. Lawrence Seaway northeast of the NMPNS. The water retention time of Lake Ontario is approximately 6 years.

The bathymetry of Lake Ontario has a mean depth of 283 feet and a maximum depth of 802 feet with depths near NMPNS ranging from 40 to 100 feet. Lake bottom bathymetry indicates that the NMPNS site is located adjacent to the Rochester Basin. The bathymetry of the Rochester Basin shows a series of distinct ridges running northeast to southwest. There is a resemblance between the shape of the ridges and the topography of onshore drumlin fields to the north of the lake. In the shallow inshore areas, the combination of wind and wave energy prevents the deposition of silt and mud except in sheltered areas. The shoreline of Lake Ontario near NMPNS is composed of low bluffs with a slip face of sand or cobbles with larger stones deposited at the bottom of the slope. The shoreline within the NMPNS site has been protected by large riprap stones and an interlocking concrete tri-bar system to prevent erosion.

Water circulation in Lake Ontario is primarily controlled by wind patterns and thermal stratification. Stronger currents are generally present in winter because of stronger winds, resulting in mean current speeds of 2.8 cm/s. In summer, current velocities and directions vary with depth because of the presence of thermal stratification, resulting in a mean velocity of 1 cm/s. Annual circulation patterns in Lake Ontario consist of a large cyclonic gyre in the eastern and central portions of the lake and a smaller anticyclonic gyre in the western part of the lake. Along the shoreline in the vicinity of NMPNS, surface currents generally move from west to east.

The general climate of Lake Ontario is characterized as humid and temperate. Seasonal weather patterns include mild and humid summers influenced by air masses from the Gulf of Mexico and cold and dry winters influenced by both Arctic and Pacific air masses. In winter, decreased water temperatures result in the formation of ice in near-shore areas of Lake Ontario, but the offshore areas generally remain open water. Cold air moving across the relatively warmer open lake water results in heavy snowfalls, particularly on the lee side of the lake.

Seasonal fluctuations in water levels in Lake Ontario occur as a result of increased runoff from snowmelt and rain in the spring and increased evaporation with higher air temperatures during the summer. Lake Ontario also experiences short-term changes to water levels associated with seiches caused by certain sustained wind patterns and barometric pressure. Seiches are particularly significant in coastal areas of Lake Ontario, where they can result in upwelling

events when cold bottom water is transported into the warmer surface waters near shore. Such events may cause extreme changes in water temperature and dissolved oxygen in a short period of time, resulting in temporary changes in the local fish community and fish mortality.

NMPNS operates Unit 1 with a once-through circulating cooling water system. The system draws fresh water from Lake Ontario through a velocity cap equipped with bar racks located approximately 850 feet from the shoreline. After travelling through the velocity cap and a 1,100-foot-long intake pipe to the screenhouse, the flow is split between three 11.2-foot-wide channels. Water in each channel passes through a trash rack and travelling water screen before the entire flow is recombined in a forebay containing two circulating water pumps, two service water pumps, and two fire pumps. Stop logs are equipped on either end of the three identical channels to provide the ability to isolate an individual channel. Once in the station, water circulates through the station's condenser to provide cooling and is then discharged back to Lake Ontario.

Lake Ontario water currents near the NMPNS cooling water intake structures (CWIS) are generally wind driven, with a mean velocity of 0.1 feet per second (fps). The hydraulic conditions of the NMPNS CWIS in Lake Ontario were calculated for Unit 1. The average horizontal velocity at the intake cap was 2.2 fps, and inside the intake pipe the velocity was 8.9 fps. Velocity calculations at the screen bay were estimated at 0.8 fps based on a water elevation of 243 feet (minimum controlled lake level), and the approach velocity at the traveling screens was 0.9 fps. To prevent icing in the winter, warm water is recirculated to the screenhouse, resulting in an estimated 50-percent reduction in flows at maximum recirculation.

3.7.2.2.2 Aquatic Resource Communities

Fish Community

Currently, the Lake Ontario fish community is in a dynamic state, affected by trophic changes triggered by invasive species, as well as by manipulation by agency stocking programs. An imbalance of predators and prey has resulted, with the important forage species alewife (*Alosa pseudoharengus*) and rainbow smelt (*Osmerus mordax*) at low population levels. These lake-wide fluctuations in fish populations are reflected in the entrainment and impingement monitoring results from NMPNS, as described in Section 3.7.2.3.

The fish community at NMPNS is typical of nearshore and offshore communities of Lake Ontario. A total of 63 species of fish have been collected during impingement, entrainment, and various nearshore sampling programs near NMPNS since 1973. Common fish species found near NMPNS include alewife, smallmouth bass (*Micropterus dolomieu*), round goby (*Neogobius melanostomus*), spottail shiner (*Notropis hudsonius*), yellow perch (*Perca flavescens*), walleye (*Sander vitreus*), brown trout (*Salmo trutta*), white sucker (*Catostomus commersonii*), longnose gar (*Lepisosteus osseus*), white perch (*Morone americana*), and rock bass (*Ambloplites rupestris*). There have been no known fish kills at NMPNS in the last 5 years. A comprehensive list of fish species found at NMPNS is included in Table 3.7-5.

Planktonic Community

The phytoplankton communities have historically been diverse, while actual abundance of phytoplankton species has varied seasonally. Historical phosphorus loadings from sewage treatment discharges and urban and agricultural runoff contributed to significant eutrophication and accompanying algal community growth in Lake Ontario during the 1960s and 1970s. The increased phytoplanktonic and zooplanktonic productivity contributed to increased turbidity within Lake Ontario during that period. Nutrient loading reductions that were a result of federal legislation, the Great Lakes Water Quality Agreement, and the CWA have allowed Lake Ontario's plankton to evolve back into a more balanced, oligotrophic community. (NRC 2006a)

Net productivity (photosynthesis) has declined by 18 percent, and late-summer zooplankton production has been reduced by 50 percent, indicating a return to more oligotrophic conditions since the 1970s. Shifts in the phytoplankton community structure also indicate improvement in Lake Ontario's trophic status and have closely resembled the changes in the available nutrients. However, recently invading zebra mussels (*Dreissena polymorpha*) and quagga mussels (*Dreissena bugensis*) have caused a redistribution of a large portion of Lake Ontario's available planktonic nutrients from the water column to the benthic environment and have contributed to the measurable decrease in turbidity throughout the lake. (NMPNS 2004)

On July 23, 2024, a large, localized harmful algal bloom (HAB) was reported by the public approximately 2.5 miles east of NMPNS along the Lake Ontario shoreline. The HAB was confirmed by the NYSDEC. A HAB is characterized as "large, localized" when the bloom affects many properties within an entire cove, along a large segment of the shoreline, or in a specific region of the water body. (NYSDEC 2024g) The HAB was not located on NMPNS property, and the closest public beach on Lake Ontario is Dowie Dale Beach, located approximately 6.5 miles east of NMPNS and 4 miles east of the documented HAB (NYSDOH 2024). Thus, mitigation measures were inapplicable to NMPNS.

Benthic Community

The introduced zebra mussel and quagga mussel have amplified the effects of the reduced nutrient levels by filtering and clarifying the water column throughout Lake Ontario. Quagga mussels are capable of colonizing deep waters (beyond 10- to 15-foot depths) and are the dominant mussel in some areas of Lake Ontario. Zebra mussels widely colonize shallower waters. The collective ability of these two invasive species to filter large quantities of water, sometimes exceeding two liters per day per individual mussel, with as many as 400,000 mussels per square meter, continue to adversely impact the availability of nutrients to pelagic organisms. While zebra and quagga mussel populations have caused a relocation of nutrients to the benthic zone of the lake, depriving planktonic populations of these nutrients, the non-bivalve benthic invertebrate populations have benefited. This sequestering of available nutrients from the water column and from the lower food chain organisms has led to expected population shifts among the various biota levels. (NRC 2006a)

The reduction in available nutrients, combined with the increased penetration of light and extended seasonal warm water periods, has resulted in the return and increased growth of submerged aquatic vegetation, primarily filamentous *Cladophora spp*., in the nearshore areas. The plant provides protection and nursery areas for a number of invertebrate and fish species. However, it is also capable of becoming a nuisance by forming large floating mats when it is separated from the benthic substrate by turbulent currents and wave action. The mats occasionally wash ashore and decay, causing odor and aesthetic problems. Additionally, the increasing clarity of Lake Ontario water may cause some light-sensitive fish species, such as walleye, to relocate into deeper waters. (NRC 2006a)

Aquatic Invasive Species

A total of nine invasive aquatic species are known to occur within the 6-mile vicinity of NMP1. These include six aquatic animal species and three aquatic plant species. Invasive aquatic animal species include quagga mussel, zebra mussel, bloody-red shrimp (*Hemimysis anomala*), round goby, common carp (*Cyprinus carpio*), and sea lamprey (*Petromyzon marinus*). Invasive aquatic plant species include European frog-bit (*Hydrocharis morsus-ranae*), yellow iris (*Iris pseudacorus*), and water chestnut (*Trapa natans*). (NYNHP 2024d; USGS 2024b) Table 3.7-4 includes all invasive species, both aquatic and terrestrial, that occur within the 6-mile vicinity of NMP1.

NMPNS participates in a zebra mussel control program as part of the SPDES Permit (No. NY0001015). Treatment for zebra mussels includes forebay cleaning on intake structures every other year and the use of Nalco EVAC semiannually (spring and fall).

3.7.2.2.3 State-listed Aquatic Species

A total of three state-listed species as defined in New York Code Part 182.5 Endangered species, threatened species, and species of special concern (6 NYCRR 182.5) have been documented as occurring in Oswego County within the last 30 years. These species include lake sturgeon (*Acipenser fulvescens*), minute duckweed (*Lemna perpusilla*), and spotted pondweed (*Potamogeton pulcher*). (TRW 2021; NYSDEC 2024f) Table 3.7-2 includes a list of all state-protected species in Oswego County.

There have been no T&ES surveys conducted at NMPNS, nor have there been any state-listed species recorded at the site in the last 5 years.

3.7.2.3 Studies and Monitoring – Aquatic Resources

3.7.2.3.1 Historical Impingement and Entrainment Studies

Impingement sampling at NMP1 has been conducted since 1972 in accordance with permit requirements. Historically, impingement at Unit 1 was dominated by one or more of three species: alewife, rainbow smelt (*Osmerus mordax*), and threespine stickleback (*Gasterosteus aculeatus*). During the 1972 to 1997 period, alewife dominated the impingement catch in most years. Rainbow smelt were the most abundant in 3 years (1979, 1982, and 1989). In 1978 and

1997, threespine stickleback dominated the impingement catch. The highest impingement rates in most years coincided with the period when alewife and rainbow smelt move inshore to spawn. The number of fish estimated impinged on an annual basis varied greatly due to a variety of factors, including local abundance, weather-related factors (wind speed and direction), and station operation/outages. The highest impingement recorded at the NMPNS was in 1973 when a total of over five million organisms were collected, with alewife constituting over 97 percent of the catch. The lowest recorded impingement occurred in 1988 with 3,679 organisms collected; alewife composed the majority of the catch.

Historically, alewife has accounted for a majority of the total annual impingement. However, during the 1997 survey, threespine stickleback accounted for 91.6 percent of the total impingement, and alewife accounted for only 7.2 percent. The Great Lakes Fishery Commission (GLFC) outlined the decline of the forage fish stocks in Lake Ontario, primarily alewife and rainbow smelt. They reported that biomass of alewife and rainbow smelt had been reduced to one-half of that recorded in the early 1980s. The GLFC attributed these declines to reduced abundance of zooplankton due to the proliferation of the introduced non-native zebra mussels and quagga mussels and the increased abundance of predators such as Chinook salmon (*Onchorhynchus tshawytscha*) and other salmonid species that have been stocked and managed for the recreational fishery industry. The decline of alewife numbers in impingement collections after 1985 appears to reflect reduced lake-wide abundance of this species. Given the extensive changes that have been experienced by the aquatic food chain with the accidental introductions of non-native species (e.g., quagga and zebra mussels, bloody-red shrimp, round goby) subsequent to the last NMPNS impingement survey in 1997, additional impingement sampling was conducted during 2006–2007 to supplement and update the historical data.

Previous entrainment studies were conducted at NMPNS in April through August of 1997. A total of 3,069 individuals were collected during the 1997 entrainment sampling. Alewife (96 percent), tessellated darter (*Etheostoma olmstedi*) (2.1 percent), and threespine stickleback (1.2 percent) accounted for 99 percent of the total catch. Of the 3,069 organisms collected, 2,084 were collected at night, and 985 were collected during the day. The highest egg/larval densities occurred during July (1,094 alewife per 1,000 cubic meters [m^3]) and August (450 alewife per 1,000 m^3). Ichthyoplankton sample densities were extrapolated using the intake cooling water volumes recorded during each sampling period; based on this extrapolation procedure, an estimated 86,756,458 organisms were entrained during the 1997 sampling program. Considering the limited extent of previous entrainment studies at NMPNS, additional ichthyoplankton sampling at the Unit 1 CWIS and nearshore in the lake was proposed for the 2006–2007 studies. Additional information on the 2006–2007 studies is included in Section 3.7.2.3.2 below.

3.7.2.3.2 2006–2007 Impingement Study

Impingement sampling was conducted at the Unit 1 CWIS screens in April 2006 through December 2007. Samples of impinged fish and shellfish were collected for one 24-hour period each week whenever the circulating cooling water pumps were operating. Impinged fish and

shellfish were collected from the screenwash trough downstream of the traveling screens servicing Unit 1 at NMPNS. The 4-foot by 4-foot collection basket was constructed of 0.75-inch diamond steel mesh with a 0.13-inch nylon mesh liner net. The sample collection basket conformed to the screenwash sluiceway so that all organisms and debris washed from the screens were collected.

A pre-wash was conducted to remove all organisms and debris from the traveling screens and sluiceway prior to initiating impingement sampling events. Water quality parameters (temperature, dissolved oxygen, pH, and specific conductance) were recorded at the beginning of each sample period and at the time of each collection. After the pre-wash was completed, the collection basket was lowered into place using a chain fall, and the 24-hour impingement sampling period began. Traveling screens were operated continuously during the entire sampling period. Periodic inspections of the collection basket were made to assure that debris loading did not exceed the collection capacity of the basket. At the completion of the 24-hour sampling period, the sluiceway was cleared of fish and invertebrates, and the collection basket was then removed.

Fish and invertebrates collected during each 24-hour monitoring period were identified to the lowest possible taxonomic level and enumerated. Specimens determined to have been dead prior to being impinged were identified and enumerated but not processed further. Opaque white gill filaments and significant decomposition were used as indicators of death prior to impingement. For each 24-hour sampling period, all specimens collected were measured (total length in millimeters [mm]) up to a maximum of 30 randomly selected specimens per species. Specimens collected in excess of the 30 individuals measured were included in the species total count.

During 9 months of impingement sampling in 2006, 27 fish species were collected, and 24 species were collected during the full 12-month sampling program of 2007. The total number of fish and shellfish (crayfish) collected during 2006 was 5,408 and during 2007 was 4,097. For comparison of equivalent time periods, the number of organisms collected from April through December in 2007 was 3,662, approximately 68 percent of the impingement collections over the same period in 2006.

Five species accounted for over 90 percent of the impinged fish collected during 2006, with alewife (50 percent) and round goby (22 percent) composing 72 percent of the fish collected. Three other species among the five most abundant were threespine stickleback, stonecat (*Noturus flavus*), and smallmouth bass, which accounted for 18 percent of the total collection. During 2007, alewife (21 percent) and round goby (54 percent) again accounted for approximately 75 percent of the fish collected but in reverse order compared to 2006. Another 14 percent of the total catch in 2007 was composed of rainbow smelt, spottail shiner, slimy sculpin (*Cottus cognatus*), threespine stickleback, and bluegill (*Lepomis macrochirus*). Sampling in 2006 did not begin until April; however, sampling in 2007 began in January. The majority of fish collected during January–March 2007 were spottail shiner, round goby, and rainbow smelt

(71 percent). The 13 most abundant species impinged from April through December were the same in both years, accounting for 99 percent of the collection in 2006 and 98 percent in 2007.

3.7.2.3.3 2006 Fish Community Gill Net Survey

Gill net surveys for juvenile and adult fish in the NMPNS area were conducted in conjunction with impingement sampling in April through November 2006. The nearshore juvenile and adult fish community was assessed using three experimental gill nets set offshore in proximity of the existing intake structure and three nets set inshore approximately 400 feet south of the offshore nets at a water depth of 10–15 feet. Thirty-two sampling events were conducted nearshore, and 19 sampling events were conducted offshore; offshore gill net surveys were not initiated until July 2006. Each experimental gill net measured 8 feet deep by 125 feet long and was composed of five 8-foot by 25-foot panels of different mesh size ranging from 0.5-inch to 2.5-inch square mesh in 0.5-inch increments.

The gill nets were set a day prior to the 24-hour impingement collection so as not to affect fish abundance during the impingement monitoring event. At the offshore location, two nets were set perpendicular to the shoreline, one east of the intake and one west of the intake, with the smaller mesh set closest to shore. The third net was set parallel to the shore offshore of the two angled nets and the intake structure. The smallest mesh size was set alternating east and west between sample weeks (i.e., one week the net was set with the small mesh at the eastern end, the next week it was set at the west end). Nearshore nets were set in the same configuration as the offshore nets. The relative position of the small and large mesh panels of the nets set parallel to shore was recorded for each event. Each net was labeled describing its orientation (i.e., east net, west net, or north net [parallel–lakeward]) so that direction of capture of specimens could be assessed once the nets were out of the water.

The fish from each experimental panel were identified and enumerated by species. To the extent possible, fish caught in the net were identified as to the direction they were swimming when they encountered the net. Up to 30 randomly selected individuals of each species were identified and measured for total length. All other fish were included in the total count by species.

Because of the inherent sampling biases, gill nets clearly sampled a different segment of the aquatic community than was vulnerable to the offshore NMPNS intake structure and impingement; gill nets sampled few fish less than 90 mm, which composed a significant portion of the impingement sample.

Twenty-three species were collected in the nearshore gill nets, and 16 species were collected offshore, compared to 27 species collected over the same time period from the NMPNS Unit 1 cooling water screens. The five most abundant species nearshore (alewife, smallmouth bass, round goby, spottail shiner, and yellow perch) accounted for 80 percent of the catch. The five most abundant species offshore (smallmouth bass, round goby, walleye, white sucker, and spottail shiner) accounted for 85 percent of the catch. Nine of the 10 most abundant species were the same at both gill netting locations. Alewife, the most abundant species nearshore, was

the ninth in rank offshore, which reflects that the offshore gill net surveys were not initiated until July 2006, when alewife had moved to deeper areas of the lake farther offshore after the spawning season.

Six of the 10 most abundant species collected (alewife, round goby, smallmouth bass, spottail shiner, rock bass, and yellow perch) during impingement sampling in 2006 were among the 10 most common species collected in either or both of the gill net sampling locations.

Significant differences were apparent from comparison of the relative abundance of species collected over similar sampling periods (July–November) from impingement and offshore gill nets. While round goby accounted for 62 percent of impinged fish during this period, they made up only 13 percent of the offshore gill net collections in the vicinity of the intake structure. In contrast, smallmouth bass accounted for 54 percent of the fish collected by offshore gill nets but only 1 percent of the impinged fish. Alewife composed 8 percent of the impingement collections but only 1.5 percent of the fish collected by offshore gill nets. Threespine stickleback and stonecat were more abundant in impingement than offshore gill nets, and rock bass were more abundant in the gill nets.

While alewife accounted for 51 percent of the impingement collections between April and November, it accounted for only 26 percent of the nearshore gill net catch for the same period. Smallmouth bass accounted for 22 percent of the gill net catches near shore but only 3 percent of the impingement collections. Threespine stickleback, stonecat, rainbow smelt, slimy sculpin, and trout perch (*Percopsis omiscomaycus*) – which were also among the 10 most abundant impinged species – were either not collected in the nearshore gill nets or accounted for less than 1 percent of the catch.

Although these data indicate that gill nets capture a different size class of fish, the studies do indicate that the design of the existing submerged offshore intake structure is effective in limiting the vulnerability of some species that are abundant in the vicinity of the intake structure. For example, although smallmouth bass are abundant in the vicinity of the intake structure based on the gill net data, relatively few smallmouth bass are impinged at NMPNS.

3.7.2.3.4 2006–2007 Entrainment Study

Cooling Water System Entrainment Sampling

Entrainment samples were collected on a weekly basis. Entrainment sampling was initiated approximately 1 hour after dusk and continued until approximately 1 hour prior to dawn. Daylight sampling was conducted on 1 day during each month from April through August 2006 and 2 days per month (alternating weeks) from April through August 2007. During each day or night event, 5 samples were collected, with an interval of approximately 1 hour between samples. Each 1-hour (51 m^3) sample was a composite of three 20-minute segments (17 m^3 each), sampled at near bottom, mid-depth, and near surface. The total volume reported on the flow meter for each 1-hour sample was recorded on the field data forms.

At the end of each 1-hour sample, the plankton net was thoroughly washed down using filtered water, and the contents of the cod-end bucket were transferred to a labeled bottle and preserved with 10 percent formalin containing Rose Bengal stain. The sample label included a unique sample identification number, date, time, location, collector's initials, and number of bottles in the sample. Preserved samples were recorded in a sampling log for tracking and control purposes.

All samples were transferred under chain of custody to a biological laboratory for processing. The contents in each sample jar were placed in a standard 500-micrometer mesh sieve to wash the formalin from the organisms and detritus. Small portions of the sample were placed in a sorting dish with water (approximately 25 milliliters total volume) and viewed under dissecting scopes. Fish larvae, fish eggs, and mysid shrimp were removed from each portion of the sample with forceps and placed into small vials containing five percent formalin. All sample information, including sample site, sample collection date and time, sample identification number, and the number of individuals for each phenotypic group, was recorded on a laboratory sorting sheet.

The fish eggs and larvae and shrimp were identified with the aid of a stereomicroscope. Key characteristics were examined and compared to published taxonomic keys and descriptions.

Organisms were identified to the lowest practicable taxonomic level, enumerated, and assigned a life stage (i.e., fertilized egg, yolk-sac larva, post-yolk sac larva, juvenile, or adult). For each sample, 25 fish larvae were measured to the nearest 0.1 mm using an ocular micrometer. If more than 25 larvae of a given species were collected in a sample, 25 randomly selected specimens per life stage were measured. Occasional measurements of fish eggs were done to aid in the identification process.

Nearshore Ichthyoplankton Sampling

Ichthyoplankton abundance was monitored in the nearshore waters of Lake Ontario inshore of the CWIS for NMPNS. The sampling location had water depths of approximately 3–4 meters and was located northeast of the Unit 1 intake screenhouse, approximately 200 feet offshore for boating and navigational safety and security purposes.

Each sampling event was conducted concurrent with the entrainment sampling at the intake screenhouse. A sampling event consisted of five 51 m^3 depth-composited samples collected at approximately 1-hour intervals. During each event, three 17 m^3 samples (approximately 20 minutes each) were collected sequentially from near bottom, mid-depth, and near surface and subsequently composited. Each of the three designated depths was sampled by raising and lowering the intake portion of the 4-inch flexible hose. Each depth was marked on a retrieval line and remained constant throughout the sampling program.

At the end of each 1-hour sample, the plankton net was thoroughly washed down using filtered water, and the contents of the cod-end bucket were transferred to a labeled bottle and preserved with 10 percent formalin containing Rose Bengal stain. The sample label included a

unique sample identification number, date, time, location, collector's initials, and number of bottles in the sample. Preserved samples were recorded in a sampling log and transferred to a biological laboratory for sorting and identification.

Results

Apart from a few brook stickleback (*Culaea inconstans*) larvae, all fish taxa found in entrainment and nearshore samples were also collected as juveniles or adults during the impingement sampling program. A group of 5 taxa (bloody-red shrimp [*Hemimysis anomala*], opossum shrimp [*Mysis relicta*], alewife eggs, alewife post-yolk sac larvae, and round goby) accounted for over 90 percent of the organisms collected in nearshore ichthyoplankton and entrainment samples during the 2006 and 2007 programs, although the relative abundance varies between the two sampling locations and years. The recently introduced bloody-red shrimp accounted for more than 50 percent of the organisms collected at both sampling locations during 2006. This species made up 46 percent of the collections of entrained organisms at the intake in 2007 but only 2 percent of the organisms in collections from the nearshore area. The difference between years may to some extent be affected by the fact that sampling was terminated at the end of the primary ichthyoplankton entrainment period in August 2007 but terminated in October during 2006. The highest abundance of bloody-red shrimp at both locations occurred during October in 2006.

The density of organisms was generally higher for night samples compared to day samples. This was particularly evident during periods when alewife and mysids were abundant. This pattern is consistent with the life history characteristics of these taxa. Mysids are known to concentrate in deeper water in response to light during the day and move up in the water column at night to actively feed. This diel migration pattern appears to increase their exposure to the intake structure and the nearshore sampling apparatus during the night.

Statistical comparison of paired densities for day and night samples by taxon-life stage was performed using the Wilcoxon Signed-Rank test, which is the nonparametric analog to the paired t-test. The null hypothesis is that there is no difference between night and day entrainment, versus the alternative hypothesis that night entrainment is greater than day. With the exception of alewife eggs, the densities in night samples were significantly greater ($p < 0.05$) than day samples for the most abundant taxa-life stages, including alewife post-yolk sac larvae, round goby juveniles, bloody-red shrimp, and mysids not identified with certainty to species due to damage to key taxonomic features. In addition, the test for alewife juveniles and *Mysis relicta* were slightly non-significant, with $p = 0.06$.

Given these significant differences between day and night densities and because day samples were not collected on all sampling dates, separate estimates of entrainment were calculated for day and night. Thus, while each night sampling date represents a temporal stratum of approximately 1 week in duration, day sampling dates represent longer temporal strata: approximately 2 weeks for 2007 and 4 weeks for 2006.

Densities of fish and mysids in paired entrainment and nearshore samples were compared using the Wilcoxon Signed-Rank test. Day and night pairs were compared separately given the differences discussed above. Densities of alewife eggs were significantly ($p = 0.01$) higher inshore than in entrainment at night. No significant difference was observed for day samples that had higher densities than at night. Round goby post-yolk sac larvae and juveniles, unidentified mysids, *Mysis relicta*, and unidentified, damaged post-yolk sac larvae were collected in significantly higher densities in night entrainment samples than nearshore samples. Unidentified, damaged post-yolk sac larvae were also collected in significantly higher densities in day entrainment samples than nearshore samples. Thirty-one other taxa-life stages demonstrated no significant differences between sampling stations.

Most of the entrained fish larvae were between 4 and 20 mm in total length. During 2006, entrained alewife were relatively evenly distributed between 4 and 20 mm; in 2007, entrained alewife were predominantly between 4- and 10-mm. Round goby ranged from 4 to 20 mm in 2006 and 4 to 44 mm in 2007. Round goby was most abundant between 6 and 10 mm in both years. The few rainbow smelt collected during entrainment in 2006 were distributed mostly between 14 and 36 mm; two smelt juveniles were collected between 46- and 54-mm. Alewife collected during nearshore sampling ranged from 2 to 24 mm. Alewife were most abundant in the 4- to 10-mm range in both years. All round goby collected in the nearshore samples were 6 to 10 mm; the relatively few common carp collected were 4 to 8 mm.

3.7.2.3.5 2008 Thermal Discharge Plume Characterization Study

During the period October 19–26, 2007, Ocean Surveys, Inc., conducted a detailed field investigation of the combined thermal discharge plume of NMPNS Units 1 and 2 on Lake Ontario in Oswego, New York. This work was performed under contract to CEG. The data collected for this project supported numerical modeling efforts as part the environmental evaluation for a proposed EPU of NMP2 and to respond to NYSDEC requests to evaluate the effects of a possible future increase in ambient lake water temperature.

The field investigation included two primary tasks: unattended in situ data collection of lake currents and water temperature as well as repeated thermal plume mapping. For the in-situ data collection, an array of 10 thermistor moorings was deployed to capture the temporal temperature field at the site. Nine moorings were positioned in the vicinity of the NMPNS Unit 1 and Unit 2 discharges. The remaining mooring was placed 3.2 statute miles to the west of the Unit 1 discharge (well outside the influence of the plume) to record background ambient lake temperature and serve as a control station. In addition to the thermistor moorings, two current profiling stations were deployed to monitor lake currents in the vicinity of the NMPNS discharges throughout the investigation. For the thermal plume mapping, the aerial extent of the combined thermal plume was mapped with vessel-mounted temperature sensors between the hours of 10 a.m. and 2 p.m. (local time) for 3 consecutive days. Vertical profiles of temperature and conductivity were collected within the plume during each mapping to document the vertical structure of the plume.

The general trends in the moored thermistor data indicated that the plume is primarily a surface phenomenon that dissipates with distance from the discharge. General trends observed from the in situ data collection included decreasing mean temperature with increasing distance from the Unit 1 discharge, a decrease in the magnitude of high frequency temperature fluctuations with increasing distance from the Unit 1 discharge, decreasing temperature with depth, and relatively constant bottom temperature close to values observed near the bottom at the control station.

Although the mean temperatures follow the expected general trends, the overall range of surface temperatures and the temporal variation in the temperature profiles of individual stations demonstrate the dynamic nature of the plume. As the plume moved over and away from some of the thermistor moorings, surface temperatures ranged from as high as 7.5 degrees Celsius (°C) (13.5°F) above background to near background values. Full-range oscillations were typically short-term. However, some stations showed periods of hours in which the entire profile was at or near background levels.

Results of the three thermal plume mappings showed that the expression of the combined thermal plume of NMPNS Units 1 and 2 appears to be exclusively influenced by the discharge at Unit 1. The thermal effluent of Unit 2 is weak at best and was not distinctly visible in any of the three plume mappings performed during the survey. Plume areas (out to the 2°C (3.6°F) above background limit) ranged from 104 to 242 acres, which is well within the range reported in the 25 surveys of Unit 1 conducted in the 1970s.

Though a portion of the thermal discharge plume from the neighboring JAF discharge diffuser was observed during Mappings 2 and 3, it did not appear to directly interact with the NMPNS plume.

3.7.2.3.6 2009 Near-field and Far-field Thermal Monitoring Studies

A three-dimensional state-of-the-art far-field hydrodynamic and hydrothermal model (ECOM) of the portion of Lake Ontario near NMPNS was developed. The near-field (CORMIX) plume model was used to determine initial mixing zones in the immediate vicinity of the discharges and initial temperatures for the far-field model. An efficient and computationally time-effective orthogonal, curvilinear grid was designed to provide accurate simulations of the lake physics and temperature distribution in three dimensions. The model verification was demonstrated by comparing the model-predicted temperature, current velocities at depths, and horizontal surface plume size against the observations at all stationary measuring stations and thermal plume measurements surveyed during October 21 through 25, 2007.

The calibrated ECOM model reproduced the overall circulation and mixing characteristics of the portion of Lake Ontario in the vicinity of NMPNS, based on the reasonable agreement between observed and computed temporal, horizontal and vertical distributions of temperatures and plume sizes to provide a reasonable predictive tool for analyzing the thermal discharges from NMPNS.

After confidence in the model was established, model simulations were performed for summer and winter critical conditions under four station operating scenarios. The station operating scenarios considered in the analysis include current typical conditions using actual station operation data, current maximum conditions, and EPU maximum and EPU bounding power uprate conditions. Model simulations were performed under these scenarios to assess surface plume sizes (ΔT 3°F). An analysis of the model-computed thermal plume area with excess temperatures of 3°F or higher indicates that the plume size was quite variable in time and correlated with the wind conditions. The model, consistent with the October 2007 data, indicates that during summer conditions, onshore winds pile the plume up against the shoreline, causing a larger plume size. Offshore winds during the same time period disperse the plume in the offshore direction, resulting in a relatively smaller plume size. In winter months, the plume area–wind relationship remains the same as during the summer, but the size of thermal plumes is reduced significantly.

Statistical analysis on the positions of thermal plume during summer critical simulations indicates that 90 percent of the time the plume is expected to remain within about 5,000 feet of the station. However, less frequently the plume may travel as much as 9,000 feet from the station. The results also predict that while most of the time the thermal plume is expected to be a few hundred acres in size or less, under extreme wind conditions, the plume may cover up to approximately 1,400 acres at an instantaneous moment under proposed EPU bounding conditions during summer and up to 800 acres during winter.

A series of Global Warming Scenarios were conducted to estimate the changes in the size of the thermal areas due to anticipated climate changes in the future. For these Global Warming Scenarios, increases in air temperatures of 2°F, 4°F, and 6°F and corresponding ambient lake water temperature increases were considered. The model results indicate that, during the extreme summer month, the size of the thermal areas is expected to decrease due to enhanced diffusivity in the elevated ambient lake water temperatures. However, in the winter critical month, the size of the thermal areas is expected to increase due to variations in the density of water that occurs between 32°F and 39.2°F.

The model was also used for a dilution evaluation simulating a continuous release of a passive conservative tracer (to mimic the discharge of a conservative parameter) from the NMPNS Unit 1 discharge (Outfall 010). While modeled dilution factors are time dependent, due to changes in winds, the results indicate that, on average, a 1:5 dilution rate for Outfall 010 is achieved at about 1,000 feet in the alongshore direction and at about 700 feet in the offshore direction. Monthly average dilution rates in varying directions located 200 to 700 feet from the discharge ranged from 4.6 to 5.2.

3.7.2.3.7 2018 Closed-cycle Recirculating System Design and Construction Technology Review

NMPNS retained AECOM Conshohocken to perform a design and construction review of a closed-cycle recirculating system (CCRS) retrofit for Unit 1 in response to a request by the NYSDEC. The review was prepared to help facilitate the NYSDEC best technology available

(BTA) decision for NMP1. AECOM Conshohocken developed a proposed conceptual design considering technical feasibility, total cost, constructability, operability, risks, nuclear safety, impact on station performance, environmental impact, and other effects of a CCRS retrofit at NMP1.

During the initial screening of the conceptual closed-cycle cooling system retrofit at NMP1, the potential cooling tower capabilities were evaluated and compared to the existing condenser and SWS design requirements. A fatal flaw was identified that eliminated the retrofit of the existing cooling system. Due to ambient temperature conditions and expected cooling tower performance, the cold-water temperatures provided by the cooling towers were found to exceed the allowable temperature of the safety-related SWS during the hotter periods of the year. Additionally, since the cooling system at NMP1 was designed for cooler water supplied from Lake Ontario than can be produced with mechanical draft cooling towers (MDCTs), the existing condensers are smaller than those that are typically installed with a closed-cycle cooling system. Based on the safety-related SWS requirements and the existing condenser sizing, a retrofit of the cooling water system with cooling towers was not considered to be available for NMP1.

Therefore, a rebuild of the cooling system is required to add in closed-cycle cooling at NMP1. The rebuild of the cooling system with an all-wet CCRS with an MDCT was therefore considered only for the condenser CWS at NMP1, excluding the safety-related SWS.

However, based on a review of the likely installation considerations, the addition of closed-cycle cooling is unavailable at NMP1 for the following reasons:

- Retrofit of the entire cooling water system is not available due to safety considerations;
- The cooling towers are expected to be extremely difficult to rebuild and are in a problematic location;
- The station is expected to be unable to function as designed after the rebuild;
- The existing condenser is not designed for closed-cycle cooling;
- Condenser backpressure may result in periodic station de-rates;
- There is a significant reduction in power generation (energy penalty) when adding in closed-cycle cooling;
- The construction outage may be as long as 13 months, depending on what is encountered during construction;
- Based on the existing NRC license, there are approximately 3 years and 1 month of operation of the closed-cycle cooling; and
- The present net worth of the station may be less than the cost of the rebuild.

Based on an assessment of site-specific installation considerations, existing condenser design limitations, issues of possible steam turbine last stage blade vibration due to higher condenser pressures, constructability issues, nuclear safety-related issues, costs, and schedule for implementation, a CCRS retrofit is unavailable at NMP1.

3.7.2.4 Procedures and Protocols – Aquatic Resources

3.7.2.4.1 Aquatic Conservation Initiatives

There are several aquatic conservation initiatives that occur near the NMPNS site. Though NMPNS is not directly associated with these projects, the results of each project could have an influence on the aquatic resources in Lake Ontario near the site. The following planned and/or ongoing projects occur within the 6-mile vicinity of NMP1.

Great Lakes Native Fish Conservation and Restoration Project

Researchers from State University of New York at Oswego (SUNY Oswego) and State University of New York at Cortland (SUNY Cortland) work with the USGS and other entities on a conservation and restoration project focused on native fish species in the Great Lakes. The project is funded by the EPA Great Lakes Restoration Initiative and comes from USGS to SUNY via a Cooperative Ecosystem Studies Unit partnership and is eligible to be extended on an annual basis through 5 years. It fosters collaboration with the NYSDEC, the GLFC, the EPA, and the St. Regis Mohawk Tribe. The project seeks to restore native fish populations by studying remediation actions to overcome impediments including habitat destruction, overfishing, and interactions with invasive species that have drastically reduced population sizes and, in some cases, resulted in the extinction of native prey fish species. Most of the work takes place at the USGS Great Lakes Science Center's Tunison Lake Ontario Biological Station-Cortland, near SUNY Cortland, and offers an opportunity for the institutions, faculty, and students to partner on research. The project involves developing and testing technologies to improve the outcomes of rearing native fish in hatcheries and introducing them into natural environments. (SUNY Oswego 2023)

Kasoag Lake Conservation Association Invasive Species Management

Fanwort is an aquatic invasive species and has been found in Kasoag Lake in Williamstown, New York. Controlling this aggressive invader before it spreads to other water bodies is of extreme importance. As such, the Oswego County Soil and Water Conservation District worked with the Kasoag Lake Conservation Association to implement aquatic herbicide control. The Soil and Water Conservation District hired a licensed applicator through a bid process to treat approximately 24 acres of fanwort. The application proved to be very successful: a follow-up inspection revealed no fanwort plants in the treatment areas. Funding for this project was provided by the Finger Lakes – Lake Ontario Watershed Protection Alliance. (OCSWCD 2019)

NYSDEC Lake Ontario Resiliency and Economic Development Initiative – Camp Hollis Shoreline Project

Under the NYSDEC Lake Ontario Resiliency and Economic Development Initiative, the Camp Hollis Shoreline Project aims to protect Camp Hollis from future flooding and high-water events. Located in the Town of Oswego, Camp Hollis is a summer camp for children, providing recreational opportunities to more than 2,000 at-risk youth per year, as well as the location for

private events. This climate resiliency project aims to stabilize nearly 450 feet of Lake Ontario shoreline and prevent further erosion and encroachment of the bluff toward the camp's facilities, helping to ensure the historic camp remains open for campers and visitors. (NYSDEC 2024h)

NYSDEC Great Lakes Action Agenda

The NYSDEC Great Lakes Action Agenda (GLAA) is a strategic, ecosystem-based action plan to guide restoration and conservation and to foster sustainable, resilient communities in New York's Great Lakes region. It is a plan to conserve, restore, protect, and enhance New York's Great Lakes lands and waters, and it implements shared goals to improve water quality and ecosystem health through ecosystem-based management. Ecosystem-based management is a systems approach that balances the needs of people, nature, and the economy through science-informed decision making. (NYSDEC 2024i)

Four work groups work to implement GLAA goals and achieve sustainable outcomes at the watershed scale. Work group meetings are held twice a year and are open to everyone, including environmental and community-based organizations, academic institutions, state and federal agencies, Indigenous Nations, local government, and private citizens. These work groups aim to foster communication and collaboration among partners within each of the four sub-basins and across the state's Great Lakes watershed; implement and evaluate projects and programs to achieve GLAA goals; connect stakeholders to resources, technical assistance, expertise, and information; and share updates, track progress, and evaluate success. (NYSDEC 2024i)

Lamar Fish Health Center Great Lakes Restoration Initiative

Recent introductions and isolations of new fish viruses are true threats, both economically to the U.S. aquaculture and to the native species. The Lamar Fish Health Center has an EPA-funded Great Lakes Restoration Initiative project to increase surveillance in Lake Erie and Lake Ontario for new and emerging fish diseases, in order to help the USFWS protect the Lakes' valuable recreational fisheries. Biologists conduct focused surveys and determine direct impacts on lake trout and lake sturgeon as well as indirect impacts across the entire Great Lakes ecosystem. This project also informs management of invasive species that may serve as pathogen hosts or the pathogens themselves to native fisheries. This work is conducted under cooperation with the Lower Great Lakes Fish and Wildlife Conservation Office, the Lamar Tech Center at the Northeast Fishery Center, NYSDEC, Pennsylvania Fish and Boat Commission, USGS, and other internal and external partners. (USFWS 2024b)

USFWS Atlantic Salmon Habitat Assessments in Lake Ontario Tributaries – Salmon River

Efforts by federal and state agencies to stock landlocked Atlantic salmon and reduce sea lamprey predation have led to increased numbers of Atlantic salmon caught by anglers. Following this success, agencies now seek to examine restoration opportunities within Lake

Ontario tributaries. In collaboration with NYSDEC and the USFWS Lake Champlain Fish and Wildlife Conservation Office, spatially continuous surveys are conducted in Lake Ontario tributaries known to have landlocked Atlantic salmon, from the current physical barriers limiting fish passage to the river mouths, to assess spawning and nursery habitat currently available to salmonids. Gathering these data provides managers with baseline estimates of river characteristics for each river and can be used to develop a Habitat Suitability Index, estimate carrying capacity for each life stage of salmon within the targeted rivers and identify critical nursery habitat. This can help improve life-cycle models, set appropriate restoration targets, and inform future management decisions. (GLRI 2024)

3.7.2.4.2 Oil Spill Prevention Control and Countermeasure Plan

The EPA promulgated regulation 40 CFR 112, Oil Pollution Prevention, to prevent the discharge of oil in harmful quantities into or upon navigable water of the United States or adjoining shorelines. The regulations covered under Part 112 require an SPCC Plan to be prepared for facilities that have a total aboveground storage or use capacity greater than 1,320 gallons and/or underground storage capacity greater than 42,000 gallons and, due to the facility's proximity to water, pose a reasonable risk of discharge to navigable waters. Due to storage volume and proximity to water, NMPNS is subject to Part 112.

The SPCC Plan has been prepared in conformance with the requirements listed in Part 112 and follows the sequence specified in the rule. The SPCC Plan has the full approval of management at a level with authority to commit necessary resources to be implemented. The facility fully conforms to the requirements of Part 112, including all required capital improvements and necessary procedures for inspections and testing.

3.7.2.4.3 Stormwater Control Plan – Drainage Ditch Restoration

The Stormwater Control Plan includes descriptions of controls that are implemented to prevent pollution and excess runoff from stormwater. The procedures are applicable to cleaning of sediment in the existing storm drain system. The Stormwater Control Plan is prepared in compliance with NYSDEC General Permit for Stormwater Discharge from Construction Activity (GP-0-10-001). Stormwater control measures include surface water controls such as turbidity curtains, rock dams, silt fences, flow monitoring, and dewatering pumps as well as sediment removal sequences. The Stormwater Control Plan is evaluated and modified as proposed pollution prevention practices are fine-tuned and new practices are introduced.

3.7.2.4.4 Dredging Procedure

The purpose of the Dredging Procedure is to delineate regulatory requirements for the permitting and management of dredging operations before any dredging operations take place. CEG expects dredging permits to be required from the USACE, local agency, and/or the state regulatory agency. Further, dredging can impact T&ES such as freshwater mussels and are evaluated as part of the permitting and dredging process.

3.7.2.4.5 Best Management Practices Plan for Industrial Activities

The CWA stipulates that stormwater discharges associated with industrial activities from a point source must be covered by an NPDES permit. The NYSDEC has the authority to issue water discharge permits under the state program. The NYSDEC has issued SPDES Permit No. NY0001015 to NMPNS to control stormwater discharges from the site. One condition of the SPDES permit is that a BMP plan must be completed, implemented, and maintained by the facility onsite. This BMP plan is required to satisfy the SPDES permit requirements aimed at preventing releases of significant amounts of pollutants to waters of the state from station site runoff, spillage and leaks, sludge or water disposal, and stormwater discharges including, but not limited to, drainage from raw material storage.

3.7.2.5 Permits and Regulatory Controls – Aquatic Resources

3.7.2.5.1 NYSDEC Excavation & Fill in Navigable Waters Permit

The Excavation & Fill in Navigable Waters permit (No. 7-3556-0013/0034) authorizes NMPNS to undertake maintenance and rehabilitation of two existing stormwater outfalls associated with NMPNS on Lake Ontario. The maintenance activities involve the relocation of rock riprap from the mouth of the outfall pipes and any rock or debris within the existing outfalls. Work is performed in accordance with submitted plans and the special conditions listed in the permit.

3.7.2.5.2 NYSDEC SPDES Discharge Permit

The NYSDEC issued SPDES Permit No. NY0001015 authorizing NMPNS to discharge in accordance with effluent limitations, monitoring and reporting requirements, other provisions and conditions set forth in the permit, and 6 NYCRR Part 750-1.2(a) and 750-2. Additional information on the SPDES permit is described in Section 3.6.1.2.1.

3.7.2.6 Communications with Federal and State Agencies – Aquatic Resources

There have been no recent communications with federal or state agencies regarding aquatic resources at the NMPNS site or within the 6-mile vicinity of NMP1.

3.7.3 Federally Protected Ecological Resources

This section discusses federally protected ecological resources occurring within the 6-mile vicinity of NMP1.

3.7.3.1 Federally Listed Species and Critical Habitat

The ESA provides protection for imperiled species and their habitats. The USFWS and the National Marine Fisheries Service (NMFS) are responsible for the administration and enforcement of the ESA. The ESA prohibits the "take" of federally listed T&ES. "Take" is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, relocating, or collecting of any federally listed threatened or endangered species or attempting to engage in any such conduct. Significant habitat modification or degradation that results in

death or injury to federally protected species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering is also prohibited.

3.7.3.1.1 Endangered Species Act: Action Area

"Action areas" are areas affected directly or indirectly by the federal action and not merely the immediate area involved in the action, as described in 50 CFR 402.02. The action area bounds the analysis of federally listed species and critical habitats because only federally listed species and critical habitats that occur within the action area may be affected by the federal action. For the purposes of assessing the potential impacts of the license renewal on federally listed species, the action area is defined below and illustrated in Figure 3.7-3.

Terrestrial Region

The terrestrial region of the action area consists of the majority of the NMPNS site. As shown in Table 3.2-1 and illustrated in Figure 3.2-1, the site consists of deciduous forest, which is the largest terrestrial land use/land cover category, accounting for approximately 37 percent of the site. This is followed by developed areas, at approximately 25 percent; pasture/hay, at approximately 12 percent; and woody wetlands, at approximately 12 percent. The remaining six terrestrial land use/land cover categories account for approximately 5 percent of the site.

The remainder of the NMPNS site consists of open water and is included in the aquatic action area as described below.

Aquatic Region

The aquatic region encompasses the region of Lake Ontario that experiences heightened temperatures from the NMPNS thermal plume as well as the CWIS hydraulic zone of influence. The area affected by the plume varies depending on season, wind conditions, and other variables.

The predicted plumes for various operating and riverine conditions were modeled in a study conducted for the NMPNS site. The largest mixing zones were associated with the winter and summer extreme condition scenarios. The thermal plume occurrence frequencies for both summer and winter conditions were combined to generate a composite area of both extremes. This composite thermal plume area (ΔT 3°F) reflects effects of relatively strong offshore winds during summer and relatively strong onshore winds during winter. The composite thermal plume area under current summer and winter maximum conditions were predicted to extend to less than 1,000 feet offshore, 5,000 feet to the west, and 10,000 feet to the east alongshore from the station and is expected to encompass up to 439 acres of Lake Ontario.

The NMP1 CWIS has a single offshore intake with a velocity cap to withdraw cooling water located approximately 850 feet from the existing shoreline. The location of the CWIS hydraulic zone of influence is completely within the composite thermal plume area, as described above.

Thus, for the purposes of the ESA analysis, the aquatic region of the action area includes the 439-acre area of Lake Ontario as demarcated by the modeled composite thermal plume area.

3.7.3.1.2 Endangered Species Act: Federally Listed Species and Critical Habitats under USFWS Jurisdiction

The USFWS maintains lists of species protected under the ESA. According to the USFWS, a total of four species currently listed under the ESA are known to occur within the 6-mile radius of NMPNS in Oswego County and are under USFWS jurisdiction: northern long-eared bat (*Myotis septentrionalis*), piping plover (*Charadrius melodus*), bog turtle (*Glyptemys muhlenbergii*), and bog buck moth (*Hemileuca maia menyanthevora* [=H. iroquois]). Also included in the USFWS species list is the tricolored bat (Perimyotis subflavus), which is a proposed endangered species, and the monarch butterfly (*Danaus plexippus*), which is a federal candidate for listing. There is no final critical habitat present for any of these species within the 6-mile vicinity of NMPNS. (USFWS 2024a) A list of federally listed and candidate species is provided in Table 3.7-6.

Northern long-eared bat (Myotis septentrionalis)

The northern long-eared bat is listed as an endangered species under the ESA. The northern long-eared bat's fur color can be medium to dark brown on the back and tawny to pale brown on the underside. As its name suggests, this bat is distinguished by its long ears, particularly as compared to other bats in its genus *Myotis*. The body weight of an adult bat averages 5 to 8 grams (0.2 to 0.3 ounces), with females tending to be slightly larger than males. (USFWS 2024c)

Northern long-eared bats spend winter hibernating in caves and mines, called hibernacula. They use areas in various sized caves or mines with constant temperatures, high humidity, and no air currents. Within hibernacula, surveyors find them hibernating most often in small crevices or cracks, often with only the nose and ears visible. During the summer and portions of the fall and spring, northern long-eared bats may be found roosting singly or in colonies underneath bark, in cavities or crevices of both live trees and snags, or in dead trees. Males and non-reproductive females may also roost in cooler places, such as caves and mines. Northern long-eared bats seem to be flexible in selecting roosts, choosing roost trees based on suitability to retain bark or provide cavities or crevices. The species has also been found, although less commonly, roosting in structures, such as barns and sheds. Northern long-eared bats use forested areas not only for roosting but also for foraging and commuting between summer and winter habitats. (USFWS 2024c)

Although there are many threats to the species, the predominant threat by far is white-nose syndrome. White-nose syndrome was the main reason for listing the species as threatened under the ESA in 2015. Since symptoms were first observed in New York in 2006, white-nose syndrome has spread rapidly throughout the species' range in the United States. Numbers of northern long-eared bats, gathered from hibernacula counts, have declined by 97 to 100 percent across the species' range. (USFWS 2024c)

The range of the northern long-eared bat spans 37 states across much of the central and eastern continental U.S., including New York. According to the USFWS, the current known range of the northern long-eared bat overlaps with the NMPNS action area. (USFWS 2024c) As described in Section 3.7.1.3.1, no northern long-eared bats have been identified as part of the 2024 acoustic monitoring efforts conducted at NMPNS.

Tricolored bat (Perimyotis subflavus)

The tricolored bat is listed as a proposed endangered species under the ESA. The species is distinguished by its unique tricolored fur that appears dark at the base, lighter in the middle, and dark at the tip. Tricolored bats often appear yellowish, varying from pale yellow to nearly orange, but may also appear silvery-gray, chocolate brown, or black. Newly flying young are much darker and grayer than adults. (USFWS 2024d)

During the spring, summer, and fall, tricolored bats primarily roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees. In the southern and northern portions of the range, tricolored bats also roost in Spanish moss (*Tillandsia usneoides*) and *Usnea trichodea* lichen, respectively. In addition, tricolored bats have been observed roosting during summer among pine needles; within artificial roosts such as barns; beneath porch roofs, bridges, and concrete bunkers; and rarely within caves. Female tricolored bats exhibit high site fidelity, returning year after year to the same summer roosting locations. Female tricolored bats form maternity colonies and switch roost trees regularly. Males roost singly. During the winter, tricolored bats hibernate in caves and mines, although in the Southern United States, where caves are sparse, tricolored bats often roost in road-associated culverts and trees and remain active and feed throughout winter. Tricolored bats exhibit high site fidelity, with many individuals returning year after year to the same hibernaculum. (USFWS 2024d)

White-nose syndrome has led to 90- to 100-percent declines in tricolored bat winter colony abundance at sites impacted by the disease. Since white-nose syndrome was first observed in New York in 2006, it has spread rapidly across most of the tricolored bat range. (USFWS 2024d)

The range of the tricolored bat spans 39 states across much of the central and eastern continental U.S., including New York. According to the USFWS, the current known range of the tricolored bat does not overlap with the NMPNS action area. (USFWS 2024d) Further, no tricolored bats have been identified as part of the 2024 acoustic monitoring efforts conducted at NMPNS, as described in Section 3.7.1.3.1 of this report.

Piping plover (Charadrius melodus)

The Great Lakes watershed distinct population segment (DPS) of piping plover is listed as an endangered species under the ESA. Piping plovers are small birds approximately 7 inches long with a wingspan of 15 inches. Piping plovers are sandy grayish-brown in color and have white underparts. Adult breeding plumage includes a single black breast band, which is often incomplete, and a black bar across the forehead. During the late summer or early fall, the black

bands fade to gray, leg color fades from orange to pale yellow, and the orange-and-black bill turns to mostly black. Juveniles, from July through September, look similar to non-breeding adults. Most adults begin a molt into breeding plumage before initiating the northward migration and complete the molt before arriving at breeding sites. (USFWS 2024e)

Wintering piping plovers use a variety of habitats and move among these habitats in response to local weather and tidal conditions. Coastal habitats include sand spits, small islands, tidal flats, shoals, and sandbars with inlets. Primary foraging habitats include sandy mud flats, ephemeral pools, and seasonally emergent seagrass beds with abundant invertebrates. In the Northern Great Plains, piping plovers nest on the unvegetated shorelines of alkaline lakes, reservoirs, or river sandbars. (USFWS 2024e)

The greatest threats to piping plovers are destruction and modification of reservoirs, channelization of rivers, and modification of river flows. Agricultural development, insecticide use, increases in invasive species, and intraspecific aggression that results from increasing densities in populations also have negative impacts on piping plovers. (USFWS 2024e)

The range of the Great Lakes watershed DPS of piping plover spans eight states, including New York. According to the USFWS, the current known range of the Great Lakes watershed DPS of piping plover does not overlap with the NMPNS action area. (USFWS 2024f)

Bog turtle (Glyptemys muhlenbergii)

The Northern DPS of bog turtle is listed as a threatened species under the ESA. Bog turtles are mostly dark brown and have a prominent orangey-yellow blotch behind and above each tympanum. This is generally seen as their identifying feature, but they also have flecks of orange or yellow on the head, neck, and limbs. Both the carapace and plastron are dark brown or black, but the plastron can have orangey-yellow blotches toward the tail end of it. When they are very young, bog turtles have scute annuli on the carapace. These growth rings become harder to see as the turtle ages and can get worn over time due to their burrowing in gritty mud in a wetland. (USFWS 2024g)

Bog turtles are a semi-aquatic species that occupy shallow wetland habitats. The wetlands they occupy tend to be open-canopy herbaceous sedge bogs, fens, or wet meadows. Their preferred wetlands comprise microhabitats that bog turtles rely on for many parts of their life-cycle activities, such as foraging, nesting, basking, hibernating, and sheltering. These microhabitats are characterized by soft, muddy bottoms; interspersed wet and dry pockets; vegetation dominated by low-growing grasses and sedges; and a low volume of standing or slow-moving water, which often forms a network of shallow pools and rivulets. Bog turtles prefer areas with ample sunlight, high humidity in the near-ground microclimate, and perennial saturation of portions of the ground in which to bury themselves to remain cool during hot summer months. Bog turtles generally retreat into more densely vegetated areas, under the roots of trees or shrubs, rock walls, or even muskrat burrows to hibernate from mid-September through mid-April. (USFWS 2024g)

Land-use changes, including residential and commercial development, have caused degradation and fragmentation of bog turtle wetland habitat. Natural succession of vegetation has also reduced the availability of the species' habitat. When low-growing wetland plants are overgrown by shrubby plants, they eventually become forested wetlands. Mature trees shade out the wetland plants the bog turtle depends upon. Like many other native turtle species, bog turtles are also at risk from collection and illegal trade. (USFWS 2024g)

The range of the Northern DPS of bog turtle includes Connecticut, Delaware, Maryland, Massachusetts, New Jersey, New York, and Pennsylvania. The current known range of the Northern DPS of bog turtle does not overlap with the NMPNS action area. (USFWS 2024g)

Bog buck moth (Hemileuca maia menyanthevora [=H. iroquois])

Bog buck moth is listed as an endangered species under the ESA. Adult bog buck moths are large, black moths with translucent wings containing white bands and eyespots. Males have red tufts on the apical segments of the abdomen and bipectinate antennae, while females have simple antennae and lack the red tuft. Wingspan has been reported to be 6.5 cm, and males have forewings of 26–32 mm in length, while females have 32–36-mm-long forewings. Larvae are dark, with rusty-orange, branched spines dorsally and a reddish-brown head capsule and prolegs. The spines are urticating and can cause welts if handled. Bog buck moth larvae have reduced yellow markings on the body compared to other species and lack a yellow spiracular stripe ascribed to others in the *Hemileuca maia* complex. (NYNHP 2020)

The bog buck moth is restricted to open, calcareous, low shrub fens containing large amounts of buckbean (*Menyanthes trifoliata*). The sites in New York are considered medium fens. Medium fens are fed by waters that are moderately mineralized, with pH values generally ranging from 4.5 to 6.5. The buckbean is intolerant of shade and is not found under shrubs. In addition to requiring buckbean and supplemental host plants for larval feeding, the species also requires plants with sturdy upright stems for oviposition. (USFWS 2021)

The primary factors currently influencing bog buck moth population health are inherent factors (e.g., narrow habitat niche) and several external factors resulting in loss or alteration of habitat or directly influencing demographic rates. (USFWS 2021)

Bog buck moths are known to occur in six fens in New York, two fens in Ottawa, Ontario, and two fens in Wisconsin. The current known range of the bog buck moth overlaps with the NMPNS action area. (NYNHP 2020)

Monarch butterfly (Danaus plexippus)

In December 2024, the USFWS announced a proposal to list the monarch butterfly as a threatened species under the ESA. Adult monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. The black border has a double row of white spots, present on the upper side of the wings. Adult monarchs feed on the nectar of many flowers during breeding and migration, but they can only lay eggs on

milkweed plants. For overwintering monarchs, habitat with a specific microclimate is needed for protection from the elements as well as moderate temperatures to avoid freezing. Monarch butterflies require healthy and abundant milkweed plants for laying eggs on and as a food source for larvae or caterpillars. By consuming milkweed plants, monarchs obtain toxins, called cardenolides, that provide a defense against predators. Additionally, nectar from flowers is needed for adults throughout the breeding season, migration, and overwintering. (USFWS 2024h)

Monarchs are threatened by deforestation of wintering forests in Mexico, disruptions to their migration caused by climate change, and the loss of native plants (including milkweed species but also all nectar-producing native plants) along their migratory corridors. The increasing frequency and severity of extreme weather events linked to accelerating rapid climate change is likely also contributing to reduced numbers. (WWF 2022)

Monarchs are native to North and South America but have since spread to many other locations where milkweed and suitable temperatures exist. According to the USFWS, the current known range of the monarch butterfly extends across the contiguous United States and overlaps with the action area. (USFWS 2024h)

3.7.3.1.3 Endangered Species Act: Federally Listed Species and Critical Habitats under NMFS Jurisdiction

The NMFS maintains lists of species protected under the ESA. According to the NMFS, no federally listed species under NMFS jurisdiction occur in the NMPNS action area; therefore, no critical habitat is present in the NMPNS action area. (NOAA 2024c)

3.7.3.2 Essential Fish Habitat

Essential fish habitat (EFH) is defined under the Magnuson-Stevens Fishery Conservation and Management Act and refers to waters and substrate necessary for fish to spawn, breed, feed, or grow to maturity. The NOAA is responsible for identifying and describing EFH for sharks, tuna, and other highly migratory species that cross regional boundaries. The NOAA only provides EFH for federally managed fish and invertebrates.

A review of the NOAA EFH was conducted to determine the location of EFH in the NMPNS action area. No EFH is present in the NMPNS action area. (NOAA 2024d)

3.7.3.3 Sanctuary Resources

For the purposes of this assessment, the affected areas are those as defined under the action area for both terrestrial and aquatic resources in Section 3.7.3.1.1. National marine sanctuaries (NMS) are federally designated areas within U.S. waters that protect areas of the marine environment with special conservation, recreational, ecological, historical, cultural, archaeological, scientific, educational, or aesthetic qualities. The term "marine resources" broadly defines the living marine resources (plants and animals), the water and currents, and the ocean floor and shoreline in a sanctuary. It also includes the historical and cultural

resources in a sanctuary, from shipwrecks and lighthouses to archaeological sites and the cultural history of native communities. Sanctuaries are established to protect areas that encompass unique or significant natural and cultural features. The National Marine Sanctuary System consists of 15 marine PAs that encompass more than 620,000 square miles of marine and Great Lakes waters from Washington State to the Florida Keys and from Lake Huron to American Samoa. The Office of National Marine Sanctuaries, part of the NOAA, manages a national system of 17 underwater PAs. (NOAA 2024e)

Lake Ontario NMS overlaps with the NMPNS action area. Lake Ontario NMS was designated in summer 2024 and is America's sixteenth NMS and the third in the Great Lakes. The area encompasses 1,722 square miles of eastern Lake Ontario waters and bottomlands adjacent to Jefferson, Oswego, Cayuga, and Wayne counties in the State of New York. Lake Ontario NMS celebrates the region's maritime cultural history and provides new opportunities for research, education, recreation, and maritime-heritage-related tourism in local coastal communities. The sanctuary includes a diversity of nationally significant underwater assets, including archaeological sites, shipwrecks, and submerged aircrafts. Many of the shipwrecks in the sanctuary were discovered by recreational scuba divers and shipwreck explorers and embody more than two centuries of the nation's modern history. Through co-management with the State of New York, the NOAA works to ensure that future generations can learn about and explore these underwater resources. (NOAA 2024f)

3.7.3.4 Studies and Monitoring – Federally Protected Ecological Resources

There have been no recent studies or monitoring specific to federally protected ecological resources, including T&ES, conducted at NMPNS. Information on terrestrial and aquatic resource studies and monitoring is included in Section 3.7.1.3 and Section 3.7.2.3 of this report, respectively.

3.7.3.5 Procedures and Protocols

Procedures and protocols for terrestrial and aquatic resources are described in Section 3.7.1.4 and Section 3.7.2.4, respectively. There are no additional procedures or protocols specifically related to federally protected ecological resources.

3.7.3.6 Permits and Regulatory Controls – Federally Protected Ecological Resources

Permits and regulatory controls for terrestrial and aquatic resources are described in Section 3.7.1.5 and Section 3.7.2.5, respectively. There are no additional permits or regulatory controls specifically related to federally protected ecological resources.

3.7.3.7 Communications with Federal and State Agencies – Federally Protected Ecological Resources

Communications with federal and state agencies regarding terrestrial and aquatic resources are described in Section 3.7.1.6 and Section 3.7.2.6 of this report, respectively. There have been no

recent communications with federal or state agencies regarding federally protected ecological resources at the NMPNS site or within the 6-mile vicinity of NMP1.

Table 3.7-1 Common Terrestrial Species Occurring in the 6-Mile Vicinity of NMP1 (Sheet 1 of 3)

Common Name	Scientific Name
Birds	
Wood duck	*Aix sponsa*
Great blue heron	*Ardea herodias*
Cedar waxwing	*Bombycilla cedrorum*
Canada goose	*Branta canadensis*
Red tailed hawk	*Buteo jamaicensis*
Killdeer	*Charadrius vociferus*
Gray catbird	*Dumetella carolinensis*
Bald eagle	*Haliaeetus leucocephalus*
Caspian tern	*Hydroprogne caspia*
Turkey	*Meleagris gallopavo*
Indigo bunting	*Passerina cyanea*
Chickadee	*Poecile atricapillus*
Yellow warbler	*Setophaga petechia*
Goldfinch	*Spinus tristis*
Eastern kingbird	*Tyrannus tyrannus*
Mammals	
Coyote	*Canis latrans*
Beaver	*Castor canadensis*
Fisher	*Pekania pennanti*
White tailed deer	*Odocoileus virginianus*
Muskrat	*Ondatra zibethicus*
Raccoon	*Procyon lotor*
Gray squirrel	*Sciurus carolinensis*
Red squirrel	*Tamiasciurus hudsonicus*
Eastern cottontail	*Sylvilagus floridanus*
Eastern chipmunk	*Tamias striatus*
Reptiles and Amphibians	
Snapping turtle	*Chelydra serpentina*
Painted turtle	*Chrysemys picta*
Eastern milk snake	*Lampropeltis triangulum*
Bull frog	*Lithobates catesbeianus*
Leopard frog	*Lithobates pipiens*

Table 3.7-1 Common Terrestrial Species Occurring in the 6-Mile Vicinity of NMP1 (Sheet 2 of 3)

Common Name	Scientific Name
Northern water snake	*Nerodia sipedon*
Northern green frog	*Rana clamitans*
Garter snake	*Thamnophis sirtalis*
Vegetation	
Sugar maple	*Acer saccharum*
Northern water plantain	*Alisma triviale*
Garlic mustard	*Alliaria petiolata*
Juneberry	*Amelanchier spp.*
Yellow birch	*Betula alleghaniensis*
Gray birch	*Betula populifolia*
Spotted knapweed	*Centaurea stoebe*
Buttonbush	*Cephalanthus occidentalis*
Silky dogwood	*Cornus amomum*
Hawthorn	*Crataegus spp.*
Wild carrot	*Daucus carota*
American beech	*Fagus grandifolia*
White ash	*Fraxinus americana*
Green ash	*Fraxinus pennsylvanica*
Hedge bedstraw	*Galium mollugo*
Blue flag iris	*Iris versicolor*
Moneywort	*Lysimachia nummularia*
Apple	*Malus spp.*
Common wild bergamot	*Monarda fistulosa*
Reed canary grass	*Phalaris arundinacea*
Common timothy	*Phleum pratense*
Common reed	*Phragmites spp.*
Kentucky bluegrass	*Poa pratensis*
Quaking aspen	*Populus tremuloides*
Black cherry	*Prunus serotina*
Soft stemmed bulrush	*Schoenoplectus tabernaemontani*
Crown vetch	*Securigera varia*
Tall goldenrod	*Solidago altissima*
Giant bur-reed	*Sparganium eurycarpum*

Table 3.7-1 Common Terrestrial Species Occurring in the 6-Mile Vicinity of NMP1 (Sheet 3 of 3)

Common Name	Scientific Name
Calico aster	*Symphyotrichum lateriflorum*
Alsike aster	*Trifolium hybridum*
Eastern hemlock	*Tsuga canadensis*
Cattail	*Typha spp.*
Arrowwood	*Viburnum dentatum*
Grape	*Vitus spp.*

Table 3.7-2 State-Protected Species in Oswego County (Sheet 1 of 2)

Common Name	Scientific Name	Protected Status
Terrestrial		
Animals		
Cooper's Hawk	*Accipiter cooperii*	SC
Northern Goshawk	*Accipiter gentilis*	SC
Sharp-shinned Hawk	*Accipiter striatus*	SC
Blue-spotted Salamander	*Ambystoma laterale*	SC
Henslow's Sparrow	*Ammodramus henslowii*	ST
Grasshopper Sparrow	*Ammodramus savannarum*	SC
Eastern whip-poor-will	*Antrostomus vociferus*	SC
Spiny Softshell	*Apalone spinifera*	SC
Upland Sandpiper	*Bartramia longicauda*	ST
American Bittern	*Botaurus lentiginosus*	SC
Red-shouldered Hawk	*Buteo lineatus*	SC
Piping Plover	*Charadrius melodus*	SE
Black Tern	*Chlidonias niger*	SE
Common Nighthawk	*Chordeiles minor*	SC
Northern Harrier	*Circus hudsonius*	ST
Sedge Wren	*Cistothorus platensis*	ST
Spotted Turtle	*Clemmys guttata*	SC
Horned Lark	*Eremophila alpestris*	SC
Peregrine Falcon	*Falco peregrinus*	SE
Common Loon	*Gavia immer*	SC
Wood Turtle	*Glyptemys insculpta*	SC
Bog Turtle	*Glyptemys muhlenbergii*	SE
Bald Eagle	*Haliaeetus leucocephalus*	ST
Bog Buck Moth	*Hemileuca maia menyanthevora*	SE
Least Bittern	*Ixobrychus exilis*	ST
Loggerhead Shrike	*Lanius ludovicianus*	SE
Red-headed Woodpecker	*Melanerpes erythrocephalus*	SC
Indiana Bat	*Myotis sodalis*	SE
Osprey	*Pandion haliaetus*	SC
Pied-billed Grebe	*Podilymbus podiceps*	ST
Vesper Sparrow	*Pooecetes gramineus*	SC
King Rail	*Rallus elegans*	ST
Cerulean Warbler	*Setophaga cerulea*	SC

Table 3.7-2 State-Protected Species in Oswego County (Sheet 2 of 2)

Common Name	Scientific Name	Protected Status
Common Tern	*Sterna hirundo*	ST
Eastern Box Turtle	*Terrapene carolina*	SC
Mossy Valvata	*Valvata sincera*	SC
Golden-winged Warbler	*Vermivora chrysoptera*	SC
Vegetation		
Dragon's Mouth Orchid	*Arethusa bulbosa*	ST
Fork-tipped Three-awn	*Aristida basiramea*	ST
Creeping Sedge	*Carex chordorrhiza*	ST
Houghton's Sedge	*Carex houghtoniana*	ST
Livid Sedge	*Carex livida*	ST
Sparse-flowered Sedge	*Carex tenuiflora*	SE
Canada Bluets	*Houstonia canadensis*	ST
Lily-leaved Twayblade	*Liparis liliifolia*	SE
Bristly Smartweed	*Persicaria setacea*	SE
Bird's Eye Primrose	*Primula mistassinica*	ST
Great Lakes Sand Cherry	*Prunus pumila var. pumila*	SE
Sand Dune Willow	*Salix cordata*	ST
Yellow Mountain Saxifrage	*Saxifraga aizoides*	ST
Slender Bulrush	*Schoenoplectus heterochaetus*	SE
Northern Bog Aster	*Symphyotrichum boreale*	ST
Slender Yellow-eyed Grass	*Xyris torta*	ST
Aquatic		
Animals		
Lake sturgeon	*Acipenser fulvescens*	ST
Vegetation		
Minute Duckweed	*Lemna perpusilla*	ST
Spotted Pondweed	*Potamogeton pulcher*	ST

(NYSDEC 2024f)

SC – special concern
ST – state-listed threatened
SE – state-listed endangered

Table 3.7-3 MBTA Species Occurring in the 6-Mile Vicinity of NMP1

Common Name	Scientific Name
Eastern Whip-poor-will	*Antrostomus vociferus*
Golden Eagle	*Aquila chrysaetos*
Ruddy Turnstone	*Arenaria interpres morinella*
Long-eared Owl	*Asio otus*
Upland Sandpiper	*Bartramia longicauda*
Pectoral Sandpiper	*Calidris melanotos*
Semipalmated Sandpiper	*Calidris pusilla*
Canada Warbler	*Cardellina canadensis*
Chimney Swift	*Chaetura pelagica*
Evening Grosbeak	*Coccothraustes vespertinus*
Black-billed Cuckoo	*Coccyzus erythropthalmus*
Bobolink	*Dolichonyx oryzivorus*
Bald Eagle	*Haliaeetus leucocephalus*
Wood Thrush	*Hylocichla mustelina*
Short-billed Dowitcher	*Limnodromus griseus*
Belted Kingfisher	*Megaceryle alcyon*
Red-headed Woodpecker	*Melanerpes erythrocephalus*
Rose-breasted Grosbeak	*Pheucticus ludovicianus*
American Golden-plover	*Pluvialis dominica*
Cerulean Warbler	*Setophaga cerulea*
Prairie Warbler	*Setophaga discolor*
Eastern Meadowlark	*Sturnella magna*
Lesser Yellowlegs	*Tringa flavipes*
Golden-winged Warbler	*Vermivora chrysoptera*
Blue-winged Warbler	*Vermivora cyanoptera*

(USFWS 2024a)

Table 3.7-4 Invasive Species Occurring in the 6-Mile Vicinity of NMP1

Common Name	Scientific Name
Terrestrial Invasive Species	
Hemlock woolly adelgid	*Adelges tsugae*
Goutweed	*Aegopodium podagraria*
Emerald ash borer	*Agrilus planipennis*
Tree-of-heaven	*Ailanthus altissima*
Japanese barberry	*Berberis thunbergii*
Hairy willow-herb	*Epilobium hirsutum*
Giant hogweed	*Heracleum mantegazzianum*
Yellow iris	*Iris pseudacorus*
Lily leaf beetle	*Lilioceris lilii*
Japanese honeysuckle	*Lonicera japonica*
Ragged robin	*Lychnis flos-cuculi*
Purple loosestrife	*Lythrum salicaria*
Reed canary grass	*Phalaris arundinacea*
Common reed	*Phragmites australis*
Japanese knotweed	*Fallopia japonica*
Knotweed	*Reynoutria spp.*
Multiflora rose	*Rosa multiflora*
Climbing nightshade	*Solanum dulcamara*
Pale swallowwort	*Vincetoxicum rossicum*
Aquatic Invasive Species	
Common carp	*Cyprinus carpio*
Quagga mussel	*Dreissena bugensis*
Zebra mussel	*Dreissena polymorpha*
Bloody-red shrimp	*Hemimysis anomala*
European frog-bit	*Hydrocharis morsus-ranae*
Yellow iris	*Iris pseudacorus*
Round goby	*Neogobius melanostomus*
Sea lamprey	*Petromyzon marinus*
Water chestnut	*Trapa natans*

(NYNHP 2024d; USGS 2024b)

Table 3.7-5 Aquatic Species Occurring in the 6-Mile Vicinity of NMP1 (Sheet 1 of 3)

Common Name	Scientific Name
Fish	
Alewife	*Alosa pseudoharengus*
Rock bass	*Ambloplites rupestris*
Bowfin	*Amia calva*
American eel	*Anguilla rostrata*
Pirate perch	*Aphredoderus sayanus*
Freshwater drum	*Aplodinotus grunniens*
Goldfish	*Carassius auratus*
White sucker	*Catostomus commersoni*
Cisco	*Coregonus artedii*
Mottled sculpin	*Cottus bairdi*
Slimy sculpin	*Cottus cognatus*
Unidentified sculpin	*Cottus spp.*
Lake chub	*Couesius plumbeus*
Brook stickleback	*Culaea inconstans*
Common carp	*Cyprinus carpio*
Gizzard shad	*Dorosoma cepedianum*
Northern pike	*Esox lucius*
Fantail darter	*Etheostoma flabellare*
Johnny darter	*Etheostoma nigrum*
Tessellated darter	*Etheostoma olmstedi*
Threespine stickleback	*Gasterosteus aculeatus*
Black bullhead	*Ictalurus melas*
Brown bullhead	*Ictalurus nebulosus*
Channel catfish	*Ictalurus punctatus*
Brook silverside	*Labidesthes sicculus*
Longnose gar	*Lepisosteus osseus*
Bluegill	*Lepomis macrochirus*
Pumpkinseed	*Lepomis gibbosus*
Burbot	*Lota lota*
Common shiner	*Luxilus cornutus*
Smallmouth bass	*Micropterus dolomieui*

Table 3.7-5 Aquatic Species Occurring in the 6-Mile Vicinity of NMP1 (Sheet 2 of 3)

Common Name	Scientific Name
Largemouth bass	*Micropterus salmoides*
White perch	*Morone americana*
White bass	*Morone chrysops*
River redhorse	*Moxostoma carinatum*
Shorthead redhorse	*Moxostoma macrolepidotum*
Round goby	*Neogobius melanostomus*
Golden shiner	*Notemigonus crysoleucas*
Emerald shiner	*Notropis atherinoides*
Pug-nose minnow	*Notropis emiliae*
Spottail shiner	*Notropis hudsonius*
Redfin shiner	*Notropis umbratilis*
Stonecat	*Noturus flavus*
Coho salmon	*Oncorhynchus kisutch*
Rainbow trout	*Oncorhynchus mykiss*
Chinook salmon	*Oncorhynchus tshawytscha*
Rainbow smelt	*Osmerus mordax*
Yellow perch	*Perca flavescens*
Logperch	*Percina caprodes*
Trout perch	*Percopsis omiscomaycus*
Sea lamprey	*Petromyzon marinus*
Bluntnose minnow	*Pimephales notatus*
Fathead minnow	*Pimephales promelas*
Black crappie	*Pomoxis nigromaculatus*
Blacknose dace	*Rhinichthys atratulus*
Longnose dace	*Rhinichthys cataractae*
Atlantic salmon	*Salmo salar*
Brown trout	*Salmo trutta*
Brook trout	*Salvelinus fontinalis*
Lake trout	*Salvelinus namaycush*
Splake	*Salvelinus namaycush x fontinalis*
Creek chub	*Semotilus atromaculatus*

Table 3.7-5 Aquatic Species Occurring in the 6-Mile Vicinity of NMP1 (Sheet 3 of 3)

Common Name	Scientific Name
Pearl dace	*Semotilus margarita*
Walleye	*Stizostedion vitreum*
Central mudminnow	*Umbra limi*
Amphibians	
Mudpuppy	*Necturus maculosus*
Invertebrates	
Bloody-red shrimp	*Hemimysis anomala*
Opossum shrimp	*Mysis diluviana*
Crayfish	*Cambarus spp.*

Table 3.7-6 Federally Protected Species Occurring in the 6-Mile Radius of NMP1

Common Name	Scientific Name	ESA Protected Status	Range Overlaps Action Area
Piping Plover[1]	*Charadrius melodus*	E	No
Monarch Butterfly	*Danaus plexippus*	PT	Yes
Bog Turtle	*Glyptemys muhlenbergii*	T	No
Bog Buck Moth	*Hemileuca maia menyanthevora (=H. iroquois)*	E	Yes
Northern Long-eared Bat	*Myotis septentrionalis*	E	Yes
Tricolored Bat	*Perimyotis subflavus*	PE	No

(USFWS 2024a)
E – endangered
PE – proposed endangered
PT – proposed threatened
T – threatened
1 – Great Lakes Watershed DPS

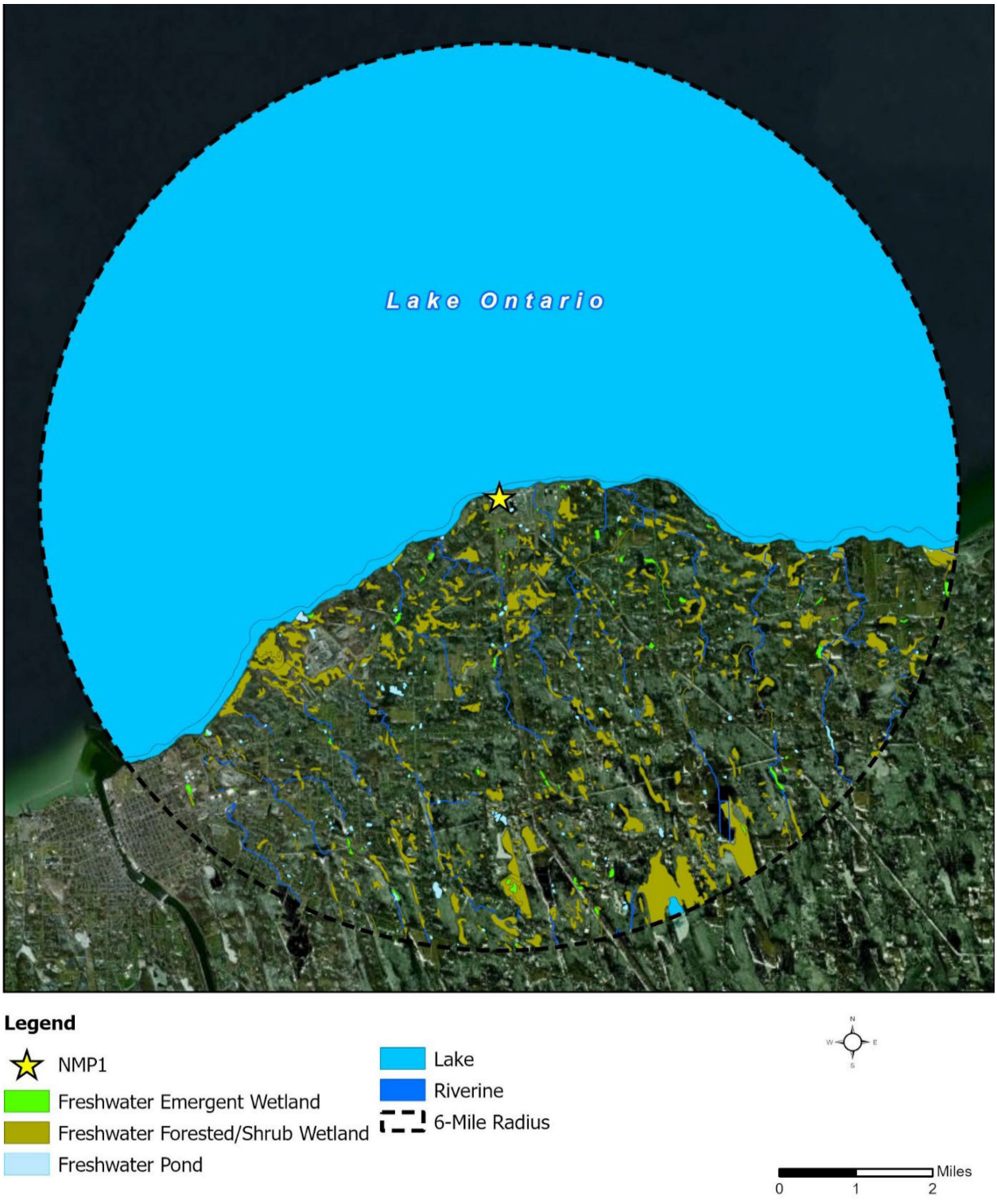


Figure 3.7-1 NWI Wetlands Within the 6-mile Vicinity of NMP1

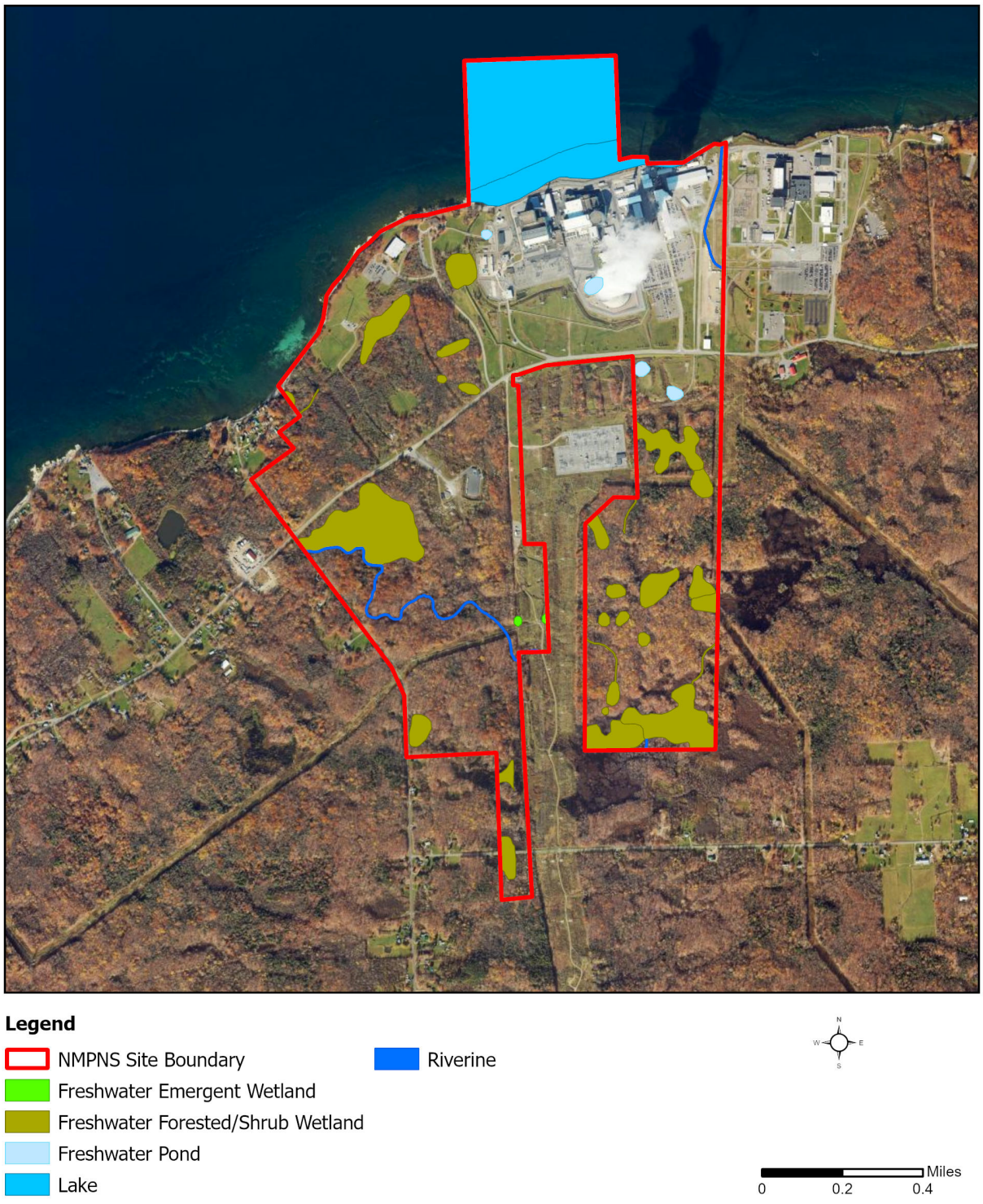


Figure 3.7-2 NWI Wetlands Within the NMPNS Site

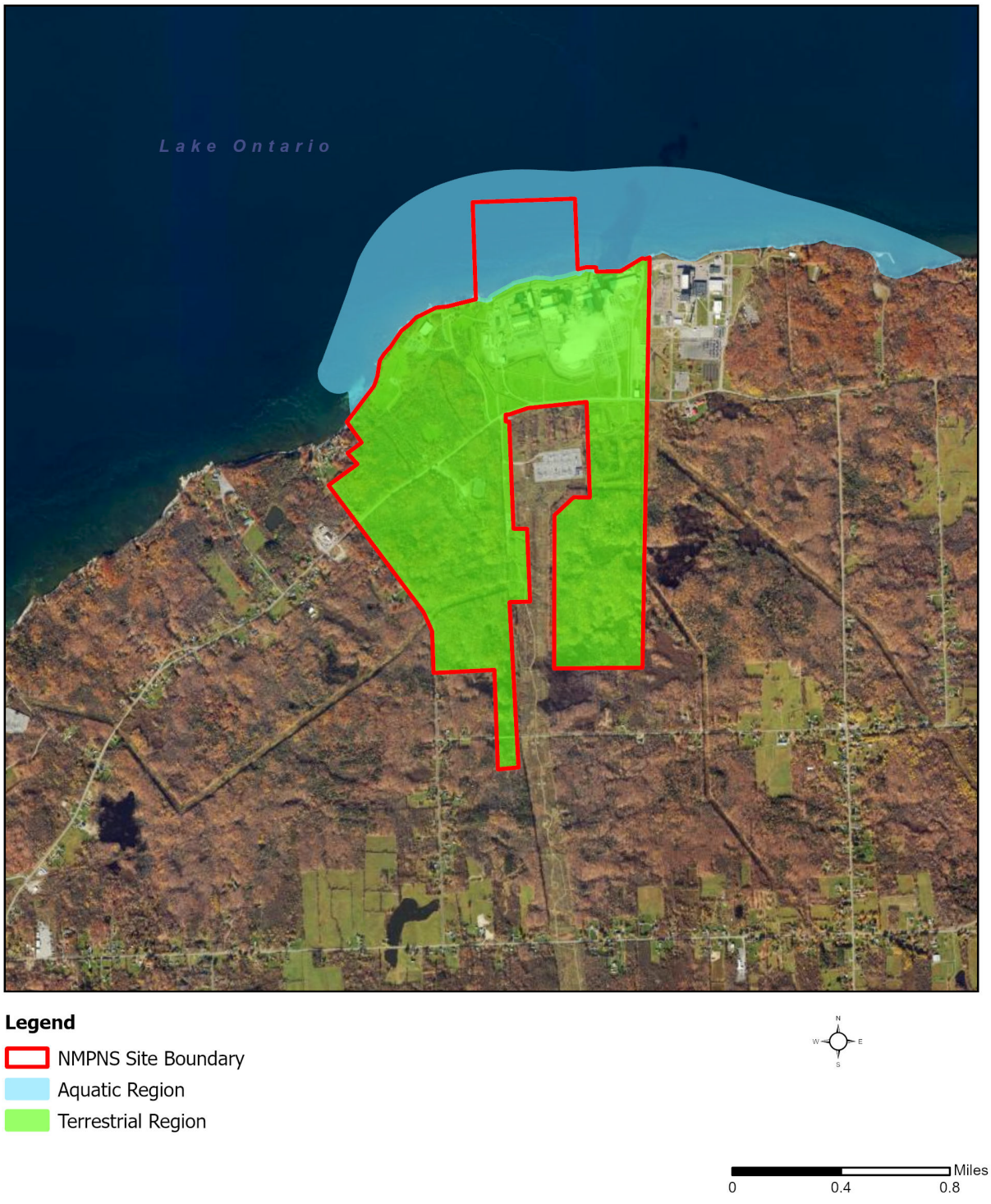


Figure 3.7-3 NMPNS ESA Action Area

3.8 Historic and Cultural Resources

Cultural resources include prehistoric-era and historic-era archaeological sites and objects, architectural properties and districts, and traditional cultural properties, which are defined as significant objects or places important to Native American tribes for maintaining their culture (USDOI 1998). Of particular concern are those cultural resources that may be considered eligible for listing on the National Register of Historic Places (NRHP). Any cultural resources listed on or eligible for the NRHP are considered historic properties under the National Historic Preservation Act (NHPA) of 1966 [Public Law 89-675].

Prior to taking any action to implement an undertaking, Section 106 of the NHPA requires the NRC as a federal agency to do the following:

- Take into account the effects of an undertaking (including issuance of a license) on historic properties, including any district, site, building, structure, or object included in or eligible for inclusion in the NRHP

- Afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertaking.

This ER identifies known archaeological sites and properties listed on the NRHP within a 6-mile radius of NMP1. For the purpose of the SLR, the aboveground area of potential effects (APE) is defined as the NMPNS property and a 6-mile radius of NMP1. The aboveground APE considers the visual integrity of historical properties in relation to continued NMP1 operation. The archaeological APE is considered bounded by the approximately 846-acre NMPNS site, where ground disturbance, though unanticipated during the license renewal period of extended operation, might compromise the physical integrity of archaeological data.

No ground disturbance associated with NMP1 is considered within the scope of the 10 CFR 51 evaluation. As such, the SLR consists of an administrative action relative to historic and cultural resources. Although construction of the existing NMPNS site facilities may have impacted archaeological resources that may have been located within their respective footprints, much of the surrounding area remains largely undisturbed. There have been four previous cultural resources surveys within portions of the NMPNS property (Table 3.8-1).

Background research was performed, including a review of the New York State Office of Parks, Recreation, and Historic Preservation's Cultural Resource Information System (CRIS) database. The literature review of previously recorded cultural sites and surveys included the area within a 6-mile radius of NMP1. The purpose of the literature review was to help develop an understanding of the local context by conducting an inventory of all previously and newly recorded archaeological sites on the NMPNS site and within a 6-mile radius of NMP1, regardless of NRHP status.

The results of the literature review found four previous cultural resource investigations had been conducted within NMP1. Two new investigations, an archaeological reconnaissance survey and an architectural history survey were conducted in 2025. Information for all six of the known cultural resource investigations is listed in Table 3.8-1. The archaeological reconnaissance survey revisited eight previously identified archaeological sites and recorded six new sites, in total identifying 14 archaeological sites within the NMP1 boundary (Table 3.8-2). The architectural history survey recorded and evaluated 47 aboveground resources within NMP1, in addition to evaluating NMP1 as a historic district. The architectural history report recommended all 48 new aboveground resources as not eligible for the NRHP, while the archaeological reconnaissance did not evaluate the newly recorded resources. In total, 62 new cultural resources were identified within NMP1, none of which are NRHP-listed or determined eligible for listing on the NRHP. Within the NMP1 site and within 6 miles of NMP1 there are a total of 236 cultural resources that have been identified. Of these 236 cultural resources, one resource, the Fort Ontario Historic District, is listed on the NRHP (70000426). An additional 40 resources are listed as NRHP eligible, 43 resources are undetermined, and 152 resources are not eligible for the NRHP (Table 3.8-3 and Table 3.8-4).

3.8.1 Land Use History

The land use history for the NMPNS site and the surrounding region was developed as part of the literature review of the 6-mile vicinity of the NMP1 property and is summarized here. Section 3.2 provides a more detailed discussion of historical land use. Before construction, the NMPNS site was predominantly shoreline, forest, wetlands, and agricultural land (Figure 3.8-3). The current land use is described in Section 3.2. The land use categories are summarized in Figure 3.2-2. Open water is the largest of the land use categories, followed by woody wetlands.

Early maps provide information on how the area was used in the past. Stone's 1867 Oswego County, New York, Map shown in Figure 3.8-1 depicts the area surrounding the NMPNS site in Scriba Township with New Haven Township to the east and Oswego to the west on Lake Ontario. The Oswego and Rome Railroad is depicted cutting through the southern portion of NMPNS site, connecting Oswego with Pulaski, which allowed transportation options for Scriba, New Haven, and Mexico farmers and merchants. Additional roads through the NMPNS site connect the population of surrounding smaller communities as well. (Stone 1867) The 1900 USGS map (Figure 3.8-2) shows settlement and infrastructure development at the turn of the twentieth century in the area surrounding the NMPNS site, with houses clustered along the roads, and the New York Central and Hudson River Railroad in the southern portion of the NMPNS property.

The composite USGS West of Texas, New York (1955) and Oswego East, New York (1954) 7.5-minute quadrangle map (Figure 3.8-3) shows the 6-mile vicinity as a mosaic of woodlands, open land, and wetlands on the southern shore of Lake Ontario, with most settlement depicted along the major roads. The Camp Oswego Military Reservation is depicted in the eastern portion of the current station site. The community of Lakeview is depicted on the lake shore immediately west of the NMPNS site, and several homes and farmsteads are depicted along

Lake Road within the NMPNS site. Later composite USGS maps show the NMPNS site after construction and land clearing for the station site and the powerline corridors, which extend to the south, along with a rail spur connecting the station site with the railroad, listed as Conrail. Other industrial development is evident in the vicinity as well, such as the adjacent JAF to the east and the aluminum mill to the west on Lake Road (Figure 3.8-4).

Photographs taken prior to, during, and after the construction of the NMPNS facilities are useful in showing the environmental context during that time period. As the earlier USGS maps indicate, at the time of construction, the NMPNS site area consisted of relatively undeveloped wetlands, the open area of the Camp Oswego Military Reserve, forest, remnants of small communities, and agricultural fields. At the construction site, the trees and brush were removed, and the area was mechanically leveled (Figure 3.8-5 and Figure 3.8-6). Construction included excavation for the NMP1 facility components (Figure 3.8-7, Figure 3.8-8, Figure 3.8-9, Figure 3.8-10, Figure 3.8-11, Figure 3.8-12, and Figure 3.8-13). Final construction of the NMP1 facility included multiple buildings, structures, and parking lots (Figure 3.8-14, Figure 3.8-15, Figure 3.8-16, Figure 3.8-17, Figure 3.8-18, Figure 3.8-19, and Figure 3.8-20).

Archaeological records suggest that the NMPNS site and the surrounding area likely were not occupied by Native American populations during the Paleoindian Period (prior to 8,000 before Christ [BC]), the Archaic Period (ca. 8000 BC to 1000 BC), and the Woodland Period (ca. 1000 BC to 1600 Anno Domini [AD]). Prehistoric sites in Oswego County are generally concentrated along the Oswego River, Oneida Lake, and the Salmon River. Post-contact sites from the settlement period of the mid-nineteenth to mid-twentieth centuries have been documented along transportation corridors within and adjacent to the NMPNS site.

3.8.2 Cultural History

3.8.2.1 Paleoindian Period (Prior to 8000 BC)

The Paleoindian Period is the earliest substantiated cultural adaptation in New York. Due to lower global temperatures, more water was trapped in glaciers, resulting in a larger area of the continental shelf being exposed. Paleoindian peoples tended to live in small bands that traveled seasonally within set territories for food sources, which included hunting megafauna and other extinct species. Many of these bands likely lived along large rivers for access to higher-resource areas. These same resource areas commonly have lithic resources suitable for tool manufacture. The material culture is characterized by large, fluted points such as Clovis and keeled unifacial tools, gravers, and blades manufactured from a variety of cherts and jaspers. Subsistence of Paleoindian peoples focused on large and small game, fishing, and foraging. A more diversified view of the Paleoindian economy is becoming accepted as a result of recent research, in contrast to the previous view emphasizing a heavy reliance on the exploitation of megafauna. Paleoindian sites are primarily located where large streams entered major rivers. (Ritchie 1997) New York's first recorded Paleoindian site, the Potts site, is located in Oswego County southeast of Scriba overlooking the swampy valley of Sixmile Creek, a tributary of the Oswego River (Ritchie 1997).

3.8.2.2 Archaic (8000 BC to 1000 BC)

The Archaic Period is marked by changes in subsistence and settlement patterns likely associated with rising sea levels related to glacial melt. This period is divided into the Early, Middle, and Late Archaic and is characterized by the exploitation of a larger variety of plant and animal resources, with an overall greater diversity in material culture. The Early Archaic Period is assumed to include a less mobile and more localized lifestyle than in the preceding Paleoindian Period. Projectile points no longer exemplified the intricate work characteristic of Paleoindian tools. Early Archaic tools – such as spear points, knives, drills, scrapers, and gravers – were still used, but these varied in size and shape and were often fashioned with side or corner notches to allow for hafting. Markers of the Early Archaic include Kirk, Big Sandy, Palmer, and Thebes points and an increase in sites in the uplands. (Ritchie 1997)

By the Middle Archaic, the "tool kit" is inferred to have expanded to include atlatls with notched and stemmed points for hunting as well as mortars and pestles for food processing. Bifurcated points tend to be a noted marker of the end of the Early Archaic. Stone axes became common for obtaining wood for structures and fire, suggesting a greater level of sedentism, or what some researchers refer to as central-based wandering. The occurrence of steatite and soapstone bowls and early pottery also suggests longer term occupations and more intense resource exploitation. There are indications of population increase as well as territoriality. (Ritchie 1997)

The Late Archaic had important innovations, such as tribal societies, clay pottery vessels, shell rings, and three-quarter grooved axes. Copper, exotic cherts, and marine shell are indicative of an emerging interaction sphere related to trade. Woodworking, textile weaving, and hide-working tools are indicative of larger base camp settlements where both ceremonial and domestic activities could have developed. Overall, the exploitation strategy during the Archaic Period appears to have been a mostly mobile population conducting hunting and foraging activities around a seasonal movement strategy based on major river systems, exploiting resources such as mussels, hickory nuts, fish, and avian species. (Ritchie 1997)

3.8.2.3 Woodland (1000 BC to AD 1600)

The Woodland Period is characterized by increasing horticultural expertise, widespread adoption of ceramic technology, and increasing sedentism and social complexity when compared to the previous Archaic Period. The main markers of the Early Woodland are ceramics production and the introduction of cultigens to the former Archaic subsistence patterns as many of the former tool types remained within the material culture. The habitation sites in riverine settings allow the exploitation of the seeds, nuts, fish, turtles, and amphibian resources of those environments. The overall subsistence is still based on hunting and gathering in this Early Woodland Period, but the main marker of the Middle Woodland is the increase in exploitation of aquatic resources. Over time, cucurbits – including squash, pumpkins, and gourds – appear in the region. (Ritchie 1997)

The Middle Woodland (100 BC–AD 800) diet continued to include aquatic and game resources but began to include more plants. There is a heavy reliance on deer hunting, but aquatic

resources supplement the diet along with the gathering of wild cucurbits, seeds, and nuts. Smaller projectile points (resulting from the conversion from atlatls and darts to the bow and arrow) and celts appear. There appeared to be a pattern where small villages were occupied on a year-round basis, with smaller outlying sites representing seasonally occupied special-purpose camps. The accumulation of middens at occupation sites is indicative of the continuous occupations of camp locals for many seasons, if not generations (Ritchie 1997).

By the Late Woodland (AD 800–1600), agriculture appears to have increased in importance, particularly corn, beans, and squash. However, foraging and hunting contributed the bulk of the diet. Sites from this time period are generally located in the floodplains and terraces of large rivers where the soil allows for the cultivation of crops. Owasso occupations are present in the region from AD 800 to AD 1300, followed by the Iroquois from AD 1000 to AD 1600. At the time of European contact, the Onondaga Nation occupied the southeastern shore area of Lake Ontario. There are few Late Woodland sites on the shores of Lake Ontario. Instead, sites from this period in Oswego County are generally concentrated along the Oswego River, Oneida Lake, and the Salmon River. (Ritchie 1997)

3.8.2.4 Settlement to Oswego County

The displacement of Native American groups began during the Late Woodland Period as population pressure, disease, and other factors effectively removed the former populations to the east. The Onondaga Nation traditionally utilized the area. Treaties between the U.S. government and Native Americans in the late eighteenth and early nineteenth centuries set the stage for Euro-American settlement of the region. In 1788, the state purchased large tracts from the Onondaga, Cayuga, and Oneida Nations. The tracts were divided into parcels. Merchant George Scriba purchased over 0.2 million hectares (0.5 million acres) in 1790. Scriba soon divided the land into parcels for sale to settlers who began arriving to the area as early as 1798. The Scriba Township, named for the first landowner, was formed in 1811 from a portion of Oneida County. Initial subsistence farming efforts were only marginally successful due to soil infertility. Early transportation routes included the Oswego Canal in 1828 and the first planked road in 1848. Railroad development began in 1865 with the Rome, Watertown, & Ogensburgh Railroad which later became known as the Oswego & Rome Railroad. The rail station at Lycoming allowed for rail shipments, which further increased settlement and agricultural development of the immediate region of NMP1.

Daniel Dubois, a farmer and cooper, built the Lakeview Hotel on Lake Ontario in the mid-1800s. The hotel founded the community of Lakeview west of the northwestern corner of the NMP1 site, and the hotel remained until the early twentieth century when it was consumed by fire. The timber industry and agriculture were the foundation of the early settlement-era economy of the region. Timber harvest ends when the forest is cut, and agricultural endeavors had only limited success; even the railroad succumbed to economic hardships. However, in the early twentieth century, the muck farming system became successful due to many prominent regional wetlands. Crops such as lettuce, onions, carrots, celery, and potatoes thrived in the drained wetlands fertile humic soils. The crops were shipped to New York City and Syracuse

via rail. The demand for these table crops inspired the development of special lettuce crates at Oswego crate manufacturers as well as the development of new strains of lettuce for the regional fields.

Agriculture continued to be the primary economic activity of rural Oswego County in the early twentieth century. Nevertheless, the population did not grow because younger residents sought opportunities elsewhere. Most residents were farmers, and many were employed in the transportation industry by the railroad, as truckdrivers, or as road workers. By 1958, the local school had closed. After a period of research and development, Niagara Mohawk announced its plan to build a nuclear power station at Nine Mile Point in 1963. A construction permit for NMP1 was authorized on April 12, 1965, with a provisional OL issued on August 22, 1969. Unit 1 entered commercial service on December 1, 1969, with Unit 2 beginning commercial service on March 11, 1988.

3.8.3 Onsite Cultural Resources

Onsite cultural resources are those located within the 846-acre NMPNS site. That property includes the archaeological APE, which is also the onsite portion of the aboveground APE. Eight previously recorded archeological sites recorded in 2008 within the NMPNS site have been determined not to be eligible for the NRHP. Six newly recorded archaeological sites within the NMPNS site were recorded in 2025 but not evaluated for the NRHP.

No NRHP-listed cultural resources have been confirmed within the NMPNS site (Figure 3.8-4). No structures within the NMPNS site have been documented through the Historic American Buildings Survey or Historic American Engineering Record programs. As there are no planned ground disturbance or refurbishment activities during the SPEO, there is no potential to adversely affect onsite cultural resources. Because NMPNS began operation in 1969, multiple structures within the NMPNS boundary are 50 years old (or older) or will reach that point during the SPEO. In order to record and assess these structures for NRHP eligibility, an architectural history survey of NMPNS was completed in 2025. The architectural history survey report recorded and evaluated the NRHP eligibility of 47 resources within NMPNS. All 47 resources surveyed were recommended not eligible for NRHP inclusion. The report also evaluated the NRHP eligibility of NMPNS as a historic district and recommended NMPNS as not eligible for NRHP inclusion.

3.8.4 Offsite Cultural Resources

Offsite cultural resources are those outside the 846-acre NMPNS site boundary. There are 174 offsite resources within 6 miles of NMP1. Lists of the 138 aboveground resources, 35 archaeological resources, and one shipwreck within a 6-mile radius of NMP1 are presented in Table 3.8-3 and Table 3.8-4. There is one NRHP property, the Fort Ontario Historic District (70000426), within 6 miles of NMP1. There are 40 resources, including one historic district, listed as eligible for the NRHP; 96 resources are listed as not eligible, and 37 resources are listed as undetermined. Due to distance, topography, and vegetation, it is unlikely that the

NMPNS site is within the viewshed of the Fort Ontario Historic District or the 36 NRHP-eligible resources.

There are no planned offsite ground disturbance activities during the SPEO, and as such no offsite impacts on the archaeological resources are expected. As there are no planned refurbishment activities during the SPEO, visual or noise-related impacts on the Fort Ontario Historic District and the 40 NRHP-eligible resources are expected to be minimal due to distance, topographic variability, and vegetation.

3.8.5 Cultural Resource Surveys

There are no cultural surveys listed on the CRIS database performed prior to the construction of NMP1. There are four cultural resource projects within or crossing the NMPNS site listed on CRIS. The four cultural resources surveys listed on CRIS that have been previously conducted within the NMPNS site are listed in Table 3.8-1. An archaeological reconnaissance survey and an architectural history survey were both conducted in 2025 in support of this environmental report. These reports are also listed in Table 3.8-1, with the 14 archaeological sites revisited or identified by the archaeological reconnaissance survey listed in Table 3.8-2.

Hartgen Archaeological Associates, Inc., conducted a desktop review, the "Phase 1A Literature Review and Sensitivity Assessment Proposed Water District Improvements Town of Scriba, Oswego County, New York" in 2002. The desktop review action did not reveal any cultural resources within the NMPNS site.Hartgen Archaeological Associates, Inc., conducted a cultural survey, the "Phase IB Archaeological Field Renaissance Scriba East-South Water District Extension No.1 Town of Scriba, Oswego County, New York" in 2004. The field survey did not reveal any cultural resources in the NMPNS site.Christina Davis Consultants, Inc. (Davis), conducted a cultural survey, the "Phase 1 Archaeological Survey Nine Mile Point Nuclear Station (NMP) Proposed Unit 3 (Unit 3) Community of Lakeview, Scriba Township, Oswego County, New York" in 2008. The survey resulted in the recording of eight mid-1800s to mid-1900s archaeological sites that were initially listed as NMP1, NMP2, NMP3, NMP4, NMP5, NMP6, NMP7, and NMP8 (Table 3.8-1). Sites NMP1, NMP4, NMP7, and NMP8 were not recommended for further archaeological work, while sites NMP2, NMP3, NMP5, and NMP6 were recommended for avoidance or Phase II testing.GIA Consultants, Inc., completed the "Phase II National Register Site Evaluations, Nine Mile Point Nuclear Station Proposed Unit 3 (NMP Unit 3) Oswego County, New York" project in 2010 to test some of the sites recorded previously by Davis in 2008. GIA Consultants, Inc., tested NMP1, NMP2, NMP3, NMP5, and NMP6. The results of the testing were that all five sites were determined not to be eligible for the NRHP.Previous surveys and testing efforts within the NMP1 site boundary resulted in the recording of eight post-contact nineteenth- to twentieth-century occupation sites, which were then all determined not to be eligible for the NRHP. These eight sites were revisited in 2025 by an archaeological reconnaissance survey, and six new sites were identified. No NRHP eligibility was recommended for these sites, and further study was recommended prior to any undertaking with the potential to affect the newly recorded sites. A concurrent architectural history survey

recorded 48 total aboveground resources (including NMPNS as a historic district) and recommended these resources as not eligible for the NRHP.

3.8.6 Procedures and Integrated Cultural Resources Management Plans

As discussed in Section 3.8, no ground-disturbing refurbishment or construction of license-renewal-related facilities are planned at the NMPNS site during the SPEO. CEG has administrative procedures to protect previously unknown historic or cultural resources that may be discovered on the site. CEG is not aware of any historic or archaeological resources that have been affected by CEG operations, as no previously recorded cultural resources that have not been determined ineligible for the NRHP are located within the NMPNS site. CEG has three procedures in place that aim to identify, protect, and minimize the potential of impacts on cultural resources within the NMPNS site: Environment Evaluations, Managing Environmental Issues and Commitments, and Environmental Commitment List. The procedures define Archaeological, Cultural, and Historical (AC&H) resources and are designed to protect against the impacts on properties, sites, and unanticipated discoveries of AC&H. Environmental procedures specify that, before conducting ground-disturbing activities, the Site Excavation Coordinator or Contracted Competent Person must coordinate with environmental personnel regarding cultural, historical, or paleontological resources. This coordination includes reviewing previous cultural resource surveys prior to excavation for new construction in order to ensure the excavation does not disturb identified resources. Environmental procedures also outline the proper steps for the excavation supervisor to stop work, notify environmental personnel, and restrict access to the area in the event of an unanticipated discovery of cultural resources. Environmental procedures specify that work can resume after environmental personnel complete an assessment and necessary work to mitigate effects on cultural, historical, or paleontological resources.

Additionally, the parameters of the SPDES General Permit for Stormwater Discharges from Construction Activity (Permit No. GP-0-25-001) specify that, if construction activities have the potential to affect cultural resources, the owner or operator must document satisfactory compliance with Section 106 of the NHPA or consultation with state agencies resulting in a determination that the planned work does not impact or adversely impact any cultural resources. As referenced in Section 3.5.3.1, environmental personnel plan to prepare and submit the required documentation for planned activities disturbing 1 or more acres of land.

Human remains and funerary objects are specifically protected under New York law, which stipulates that in any case where human remains are found, all activity must immediately cease until the proper reporting and investigatory procedures have been completed. Although CEG does not currently have a specific inadvertent discovery plan for the discovery of human remains onsite, CEG expects to follow the requirements of the New York State Unmarked Burial Site Protection Act by engaging the site security team and local law enforcement.

3.8.7 State and Tribal Consultations

To provide early consultation for the Section 106 process, CEG contacted the New York State Office of Parks, Recreation, and Historic Preservation for informal consultation concerning the NMP1 SPEO and potential effects on cultural resources within the NMPNS site and on historic properties within a 6-mile radius of NMP1. A response was received October 27, 2025, which stated that it is the opinion of the SHPO that, as there are no planned land use changes within the NMP1 site, no cultural resources are to be affected by the proposed undertaking. Native American groups recognized as potential stakeholders were also consulted by CEG with the opportunity for comment. Consultation correspondence is included in Attachment C.

Table 3.8-1 Previous Cultural Resources Surveys Within the NMP1 Site (Sheet 1 of 2)

Survey Company and Author	Report Date	Description	Findings
Hartgen Archeological Associates, Inc.	2002	Phase IA Literature Review and Sensitivity Assessment Proposed Water District Improvements Town of Scriba, Oswego County, New York	No sites within the NMP1 property
Hartgen Archeological Associates, Inc.	2004	Phase IB Archeological Field Reconnaissance Scriba East-South Water District Extension No.1 Town of Scriba, Oswego County, New York	No sites within the NMP1 property
Christine Davis Consultants, Inc. Christine E. Davis and Curtis L. Biondich	2008	Phase I Archaeological Survey Nine Mile Point Nuclear Station (NMP) Proposed Unit 3 (Unit 3) Community of Lakeview, Scriba Township, Oswego County, New York	Eight sites within the NMP1 property A07519.000108 (NMP Site 1), A07519.000109 (NMP Site 2), Phase II A07519.000110 (NMP Site 3), Phase II A07519.000111 (NMP Site 4), A07519.000112 (NMP Site 5), Phase II A07519.000113 (NMP Site 6), Phase II A07519.000114 (NMP Site 7), A07519.000115 (NMP Site 8)

Table 3.8-1 Previous Cultural Resources Surveys Within the NMP1 Site (Sheet 2 of 2)

Survey Company and Author	Report Date	Description	Findings
GIA Consultants, Inc.; Barbara A. Munford and Gerry A. Scharfenberger	2010	Phase II National Register Site Evaluations Nine Mile Point Nuclear Station Proposed Unit 3 (NMP Unit 3) Oswego County, New York	Testing of five sites within the NMP1 property A07519.000108 (NMP Site 1), Not eligible A07519.000109 (NMP Site 2), Not eligible A07519.000110 (NMP Site 3), Not eligible A07519.000112 (NMP Site 5), Not eligible A07519.000113 (NMP Site 6), Not eligible
SEARCH, LLC: Bill Werner and Matthew Victor Weiss	2025	Archaeological Reconnaissance Survey of Nine Mile Point Nuclear Station, Oswego County, New York	Six new archaeological sites identified within NMPNS
SEARCH, LLC: Angelique Theriot and Allen Kent	2025	Archaeological History Survey of Nine Mile Point Nuclear Station, Scribe, Oswego County, New York	47 aboveground resources within NMPNS, and new NMPNS district recorded and evaluated for NRHP eligibility recommendations

Table 3.8-2 Archaeological Sites Within NMP1 Site Boundary (Sheet 1 of 2)

Site ID# (Field/Temp #)	County	Quadrangle	Type	NRHP Status
7519.000108 NYSM NA (NMP 1)	Oswego	West of Texas	Stone foundation and mid-19th to early 20th century buried artifacts; Phase I and Phase II total N=2,056	Not Eligible
7519.000109 NYSM NA (NMP 2)	Oswego	West of Texas	A mid-19th century to early 20th century occupation site with buried artifacts; Phase I and Phase II total N=1,182	Not Eligible
7519.000110 NYSM NA (NMP 3)	Oswego	West of Texas	A mid-19th century to early-20th century occupation site with buried artifacts; Phase I and Phase II total N=625	Not Eligible
7519.000111 NYSM NA (NMP 4)	Oswego	West of Texas	A mid-19th century to early 20th century occupation site with two stone features and no additional artifacts	Not Eligible
7519.000112 NYSM NA (NMP 5)	Oswego	West of Texas	A mid-19th century to early 20th century occupation site with buried artifacts; Phase I and Phase II total N=1,620	Not Eligible
7519.000113 NYSM NA (NMP 6)	Oswego	West of Texas	A mid to 19th century early 20th century occupation site with buried artifacts N=1,210	Not Eligible
7519.000114 NYSM NA (NMP 7)	Oswego	West of Texas	Mid-19th century to mid-20th century foundation and well	Not Eligible
7519.000115 NYSM NA (NMP 8)	Oswego	West of Texas	Mid-19th century to early 20th century well and surface refuse scatter	Not Eligible
(NMP 9)	Oswego	West of Texas	Historical house and outbuilding foundation remains with groundwater well	Undetermined
(NMP 10)	Oswego	West of Texas	Historical house and outbuilding foundation remains	Undetermined
(NMP 11)	Oswego	West of Texas	Historical house and outbuilding foundation remains. Mid-to-late 20th century debris scatter	Undetermined

Table 3.8-2 Archaeological Sites Within NMP1 Site Boundary (Sheet 2 of 2)

Site ID# (Field/Temp #)	County	Quadrangle	Type	NRHP Status
(NMP 12)	Oswego	West of Texas	Historical structural debris	Undetermined
(NMP 13)	Oswego	West of Texas	Historical structural debris	Undetermined
(NMP 14)	Oswego	West of Texas	Historical stone bridge and/or dam	Undetermined

Table 3.8-3 Aboveground Resources Within the 6-Mile Radius of NMP1 (Sheet 1 of 6)

Site ID	Historical Name	County	Historical Use	NRHP Status
70000426 7540.00081	Fort Ontario State Historic Site	Oswego	Military Fort	Listed
7510.000028	70 Soper Mills Rd	Oswego	Not stated	Not Eligible
7510.000029	26 Soper Mills Rd	Oswego	Not stated	Not Eligible
7510.000030	16 Soper Mills Rd	Oswego	Not stated	Not Eligible
7510.000031	New Haven Elementary School – 4320 Route 104	Oswego	School	Not Eligible
7519.000009	4518 County Route 4	Oswego	Residence	Not Eligible
7519.000021	533 Middle Rd	Oswego	Not stated	Not Eligible
7519.000022	530 Middle Rd	Oswego	Not stated	Not Eligible
7519.000023	534 Middle Rd	Oswego	Not stated	Not Eligible
7519.000024	544 Middle Rd	Oswego	Not stated	Not Eligible
7519.000025	543 Middle Rd	Oswego	Not stated	Not Eligible
7519.000026	545 Middle Rd	Oswego	Not stated	Not Eligible
7519.000027	547 Middle Rd	Oswego	Not stated	Not Eligible
7519.000028	551 Middle Rd	Oswego	Not stated	Not Eligible
7519.000029	567 Middle Rd	Oswego	Not stated	Not Eligible
7519.000030	573 Middle Rd	Oswego	Not stated	Not Eligible
7519.000031	580 Middle Rd	Oswego	Not stated	Not Eligible
7519.000032	581 Middle Rd	Oswego	Not stated	Not Eligible
7519.000033	595 Middle Rd	Oswego	Not stated	Not Eligible
7519.000034	616 Middle Rd	Oswego	Not stated	Not Eligible
7519.000035	658 Middle Rd	Oswego	Not stated	Not Eligible
7519.000036	671 Middle Rd	Oswego	Not stated	Not Eligible

Table 3.8-3 Aboveground Resources Within the 6-Mile Radius of NMP1 (Sheet 2 of 6)

Site ID	Historical Name	County	Historical Use	NRHP Status
7519.000037	672 Middle Rd	Oswego	Not stated	Not Eligible
7519.000038	681 Middle Rd	Oswego	Not stated	Not Eligible
7519.000039	682 Middle Rd	Oswego	Not stated	Not Eligible
7519.000040	703 Middle Rd	Oswego	Not stated	Not Eligible
7519.000041	704 Middle Rd	Oswego	Not stated	Not Eligible
7519.000042	713 Middle Rd	Oswego	Not stated	Not Eligible
7519.000043	719 Middle Rd	Oswego	Not stated	Not Eligible
7519.000044	739 Middle Rd	Oswego	Not stated	Not Eligible
7519.000045	741 Middle Rd	Oswego	Not stated	Not Eligible
7519.000046	749 Middle Rd	Oswego	Not stated	Not Eligible
7519.000047	758 Middle Rd	Oswego	Not stated	Not Eligible
7519.000055	4876 Route 104	Oswego	Not stated	Undetermined
7519.000057	5258 Route 104	Oswego	Residence	Not Eligible
7519.000058	5366 Route 104	Oswego	Not stated	Undetermined
7519.000059	5372 Route 104	Oswego	Not stated	Undetermined
7519.000060	5418 Route 104	Oswego	Not stated	Undetermined
7519.000067	4839 Route 104	Oswego	Not stated	Undetermined
7519.000068	4875 Route 104	Oswego	Not stated	Undetermined
7519.000069	4913 Route 104	Oswego	Not stated	Undetermined
7519.000070	4937 Route 104	Oswego	Not stated	Undetermined
7519.000074	The Price is Right Store – 5219 Route 104	Oswego	Store	Not Eligible
7519.000075	5259 Route 104	Oswego	Residence	Not Eligible
7519.000076	5359 Route 104	Oswego	Not stated	Not Eligible
7519.000077	5373 Route 104	Oswego	Not stated	Undetermined

Table 3.8-3 Aboveground Resources Within the 6-Mile Radius of NMP1 (Sheet 3 of 6)

Site ID	Historical Name	County	Historical Use	NRHP Status
7519.000078	5417 Route 104	Oswego	Not stated	Undetermined
7519.000095	Aladdin-Sunshine Kit House – 5898 Route 104	Oswego	Residence	Eligible
7519.000096	Welch-Robinson House 5740A Route 104	Oswego	Residence	Eligible
7519.000098	William Burt II House – 5603 Route 104	Oswego	Residence	Eligible
7519.000099	Scriba Rebekah Hall – 5515 Route 104	Oswego	Residence	Eligible
7519.000100	5509 Route 104	Oswego	Residence	Not Eligible
7519.000101	James Church House – 5471 Route 104	Oswego	Residence	Eligible
7519.000102	William E. Blossom House – 5470 Route 104	Oswego	Residence	Eligible
7540.000283	BIN 1-03660-0 – NY 104	Oswego	Bridge	Not Eligible
7540.000307	BIN 2209410 – East Albany St	Oswego	Bridge	Not Eligible
7540.000308	194 East Albany St	Oswego	Not stated	Not Eligible
7540.000309	188 East Albany St	Oswego	Not stated	Not Eligible
7540.000310	187 East Albany St	Oswego	Not stated	Not Eligible
7540.000311	186 East Albany St	Oswego	Not stated	Not Eligible
7540.000312	178 East 13th Street	Oswego	Not stated	Not Eligible
7540.000313	183 East Thirteenth St	Oswego	Not stated	Not Eligible
7540.000320	59 Mitchell St	Oswego	Not stated	Not Eligible
7540.000321	15 East Van Buren St	Oswego	Not stated	Not Eligible
7540.000323	5 Mitchell St	Oswego	Not stated	Not Eligible
7540.000324	143 East Seneca St	Oswego	Not stated	Not Eligible
7540.000328	37 Mercer St	Oswego	Not stated	Not Eligible
7540.000329	18 Minerva St	Oswego	Not stated	Not Eligible

Table 3.8-3 Aboveground Resources Within the 6-Mile Radius of NMP1 (Sheet 4 of 6)

Site ID	Historical Name	County	Historical Use	NRHP Status
7540.000330	49 East Ninth St	Oswego	Not stated	Not Eligible
7540.000331	19 East Van Buren St	Oswego	Not stated	Not Eligible
7540.000332	21 East Van Buren St	Oswego	Not stated	Not Eligible
7540.000335	174 East Eleventh St	Oswego	Not stated	Not Eligible
7540.000338	3 Mitchell St	Oswego	Residence	Not Eligible
7540.000339	53 Mercer St	Oswego	Residence	Not Eligible
7540.00034	90 Helen St	Oswego	Residence	Not Eligible
7540.000341	23 East Van Buren St	Oswego	Residence	Not Eligible
7540.000346	75 Mercer St	Oswego	Not stated	Not Eligible
7540.000376	226 East Bridge St	Oswego	Not stated	Not Eligible
7540.000381	145 East Seneca St	Oswego	Not stated	Not Eligible
7540.000458	10 Merrick St	Oswego	Not stated	Eligible
7540.000543	101 East Schuyler St	Oswego	Not stated	Eligible
7540.000544	172 Conway Terrace	Oswego	Not stated	Eligible
7540.000545	174 Conway Terrace	Oswego	Not stated	Eligible
7540.000546	176 Conway Terrace	Oswego	Not stated	Eligible
7540.000547	178 Conway Terrace	Oswego	Not stated	Eligible
7540.000548	180 Conway Terrace	Oswego	Not stated	Eligible
7540.000549	182 Conway Terrace	Oswego	Not stated	Eligible
7540.000550	183 Conway Terrace	Oswego	Not stated	Eligible
7540.000551	184 Conway Terrace	Oswego	Not stated	Eligible
7540.000552	185 Conway Terrace	Oswego	Not stated	Eligible
7540.000553	186 Conway Terrace	Oswego	Not stated	Eligible
7540.000554	187 Conway Terrace	Oswego	Not stated	Eligible
7540.000555	188 Conway Terrace	Oswego	Not stated	Eligible

Table 3.8-3 Aboveground Resources Within the 6-Mile Radius of NMP1 (Sheet 5 of 6)

Site ID	Historical Name	County	Historical Use	NRHP Status
7540.000556	189 Conway Terrace	Oswego	Not stated	Eligible
7540.000557	190 Conway Terrace	Oswego	Not stated	Eligible
7540.000558	191 Conway Terrace	Oswego	Not stated	Eligible
7540.000559	192 Conway Terrace	Oswego	Not stated	Eligible
7540.000560	193 Conway Terrace	Oswego	Not stated	Eligible
7540.000561	195 Conway Terrace	Oswego	Not stated	Eligible
7540.000562	197 Conway Terrace	Oswego	Not stated	Eligible
7540.000563	199 Conway Terrace	Oswego	Not stated	Eligible
7540.000564	201 Conway Terrace	Oswego	Not stated	Eligible
7540.000566	148 East Oneida St	Oswego	Not stated	Not Eligible
7540.000575	Fitzhugh Park Elementary School – 195 East Bridge St	Oswego	School	Not Eligible
7540.000662	276 Route 104	Oswego	Not stated	Not Eligible
7540.000675	City of Oswego East Side Wastewater Treatment Plant 71 Mercer St	Oswego	Infrastructure	Not Eligible
7540.000694	136 Midland St	Oswego	Not stated	Not Eligible
7540.000726	Shore Road Bulkhead	Oswego	Infrastructure	Undetermined
7540.000727	Stormwater Outfall Pipe	Oswego	Infrastructure	Undetermined
7540.000728	340 Route 104	Oswego	Not stated	Not Eligible
7519.000126	5947 Route 104	Oswego	Residence	Not Eligible
7519.000127	5859 Route 104	Oswego	Residence	Not Eligible
7519.000128	5870 NY Route 104	Oswego	Residence	Not Eligible
7540.000755	Conway Terrace Neighborhood	Oswego	District	Eligible
7540.000763	85 E 11th St	Oswego	Not stated	Not Eligible
7540.000766	366 Mitchell St	Oswego	Not stated	Not Eligible

Table 3.8-3 Aboveground Resources Within the 6-Mile Radius of NMP1 (Sheet 6 of 6)

Site ID	Historical Name	County	Historical Use	NRHP Status
7540.000769	249a Mitchell St	Oswego	Not stated	Not Eligible
7510.000033	276 County Route 1	Oswego	Not stated	Undetermined
7510.000034	4531 Route 104	Oswego	Residence	Not Eligible
7540.000799	Fitzhugh Park 151 East Tenth St	Oswego	Recreational/ Park	Undetermined
7540.000808	276 State Route 104	Oswego	Residence	Not Eligible
7519.000129	Novelis, Inc. Aluminum Mill – Alcan Road	Oswego	Industrial	Not Eligible
7540.000815	131 E Eleventh St	Oswego	Residence	Not Eligible
7540.000818	104 E 10th St	Oswego	Residence	Not Eligible
7540.00082	102 E Tenth St	Oswego	Residence	Not Eligible
7540.000823	177 East 11th St	Oswego	Not stated	Not Eligible
7540.000825	U.S. Border Patrol Schuyler St	Oswego	Government	Undetermined
7540.000827	179 East 11th St	Oswego	Not stated	Not Eligible
7519.000133	Evergreen Motel – 5047–5051 Route 104	Oswego	Recreation/ Tourism	Not Eligible
7519.000134	4618 Hall Road	Oswego	Residence	Eligible
7519.000135	South Rural Fredricksburg Cemetery – Fredricksburg Fare	Oswego	Cemetery	Eligible
7519.000136	288 Klocks Corners Rd	Oswego	Residence	Not Eligible
7519.000137	Hillside Cemetery – 350 Klocks Corners Road	Oswego	Cemetery	Eligible
7510.000038	4269 NY Route 104	Oswego	Residence	Eligible
7510.000039	The First Congregational Church of New Haven 4266 NY Route 104	Oswego	Church	Eligible
7540.000834	28 E Tenth and 1/2 St	Oswego	Not stated	Not Eligible
7540.000835	6 Minerva Street	Oswego	Not stated	Not Eligible
7540.000837	106 E Tenth Street	Oswego	Not stated	Not Eligible

Table 3.8-4 Archaeological and Underwater Sites Within a 6-Mile Radius of NMP1 (Sheet 1 of 2)

Site ID#	County	Quadrangle	Type	NRHP Status
7540.000812	NA	NA	Two masted schooner which may be the Maggie Hunt	Undetermined
7510.00001 NYSM NA	Oswego	New Haven	Barn foundation and mid-19th to mid-20th century artifacts	Undetermined
7510.00025 NYSM 11397	Oswego	New Haven	Mid-19th century buried artifacts N=51	Undetermined
7510.00026 NYSM 11396	Oswego	New Haven	Mid-19th century buried artifacts N=66	Undetermined
7510.00027 NYSM 11391	Oswego	New Haven	Mid-19th century buried artifacts N=32	Undetermined
7519.000007 NYSM NA	Oswego	Oswego East	An undefined post contact period foundation	Not Eligible
7519.000081 NYSM 11400	Oswego	Oswego East	Mid to 19th century buried artifacts N=125	Undetermined
7519.000082 NYSM 11399	Oswego	Oswego East	Three mid-19th to mid-20th century features and HCM N=60	Undetermined
7519.000083 NYSM 11398	Oswego	New Haven	Mid-19th to mid-20th century foundation and HCM N=69	Not Eligible
7519.000084 NYSM 11395	Oswego	New Haven	Mid-19th century buried artifacts N=26	Undetermined
7519.000085 NYSM 11394	Oswego	Oswego East	Mid-19th to mid-20th century foundation and HCM N=94	Not Eligible
7519.000086 NYSM 11393	Oswego	Oswego East	Mid-19th century buried artifacts N=57	Undetermined
7519.000087 NYSM 11392	Oswego	Oswego East	19th century buried artifacts N=66	Not Eligible
7519.000091 NYSM NA	Oswego	Oswego	Late-19th to mid-20th century artifact scatter	Undetermined
7519.000092 NYSM NA	Oswego	Oswego	Late-19th to mid-20th century foundation and HCM scatter	Undetermined
7519.000093 NYSM NA	Oswego	Oswego	Mid-19th to mid-20th century foundation and HCM scatter	Not Eligible
7519.000103 NYSM NA	Oswego	Oswego East	A mid-19th century buried artifacts site N=34	Not Eligible
7519.000104 NYSM 11603	Oswego	Oswego East	Early to mid-19th century artifact sheet scatter N=252	Undetermined
7519.000105 NYSM 11604	Oswego	Oswego East	Late 19th century foundation, well and buried artifacts N=2	Undetermined
7519.000106N YSM 11605	Oswego	Oswego East	Mid-19th century foundation with buried artifacts N=113	Undetermined

Table 3.8-4 Archaeological and Underwater Sites Within a 6-Mile Radius of NMP1 (Sheet 2 of 2)

Site ID#	County	Quadrangle	Type	NRHP Status
7519.000107 NYSM 11606	Oswego	Oswego East	Mid-19th century to early 20th century buried HCM N=<850	Undetermined
7519.000117 NYSM NA	Oswego	Oswego East	Mid-19th century to early 20th century buried HCM N=103	Undetermined
7519.000118 NYSM 11957	Oswego	Oswego East	Mid-19th century to early 20th century buried HCM N=103	Eligible
7519.000119 NYSM 11958	Oswego	Oswego East	Mid-19th century to early 20th century buried HCM N=1,164	Not Eligible
7519.000120 NYSM 11959	Oswego	Oswego East	Mid-19th to early 20th century store site with buried HCM N=<4,400	Eligible
7519.000121 NYSM 11961	Oswego	Oswego East	Mid-19th century to early 20th century buried HCM N=2,338	Eligible
7519.000122 NYSM 11962	Oswego	Oswego East	Mid-19th century to early 20th century house site with buried HCM N=1,211	Not Eligible
7519.000123 NYSM NA	Oswego	Oswego East	Mid-19th century to early 20th century house site with buried HCM N=45	Not Eligible
7519.000124 NYSM NA	Oswego	Oswego East	The proposed Montcalm Landing site from literature review (no site form)	Undetermined
7519.000125 NYSM NA	Oswego	Oswego East	The proposed Montcalm Landing site from literature review (no site form)	Undetermined
7540.000292 NYSM NA	Oswego	Oswego East	Late 19th century to early 20th century house site with buried cultural material	Undetermined
7540.000295 NYSM NA	Oswego	Oswego East	Late 19th century to early 20th century buried artifacts	Undetermined
7540.000296 NYSM NA	Oswego	Oswego East	Late 19th century to mid-20th century artifacts	Undetermined
7540.000565 NYSM NA	Oswego	Oswego East	Late 19th century to early 20th century foundation and buried artifacts	Eligible
7540.000579 NYSM 21134	Oswego	Oswego East	Late 19th century to early 20th century foundation and buried artifacts	Eligible
7540.000702 NYSM NA	Oswego	Oswego East	The proposed L'Anse aux Cabanes site from literature review (no site form)	Undetermined

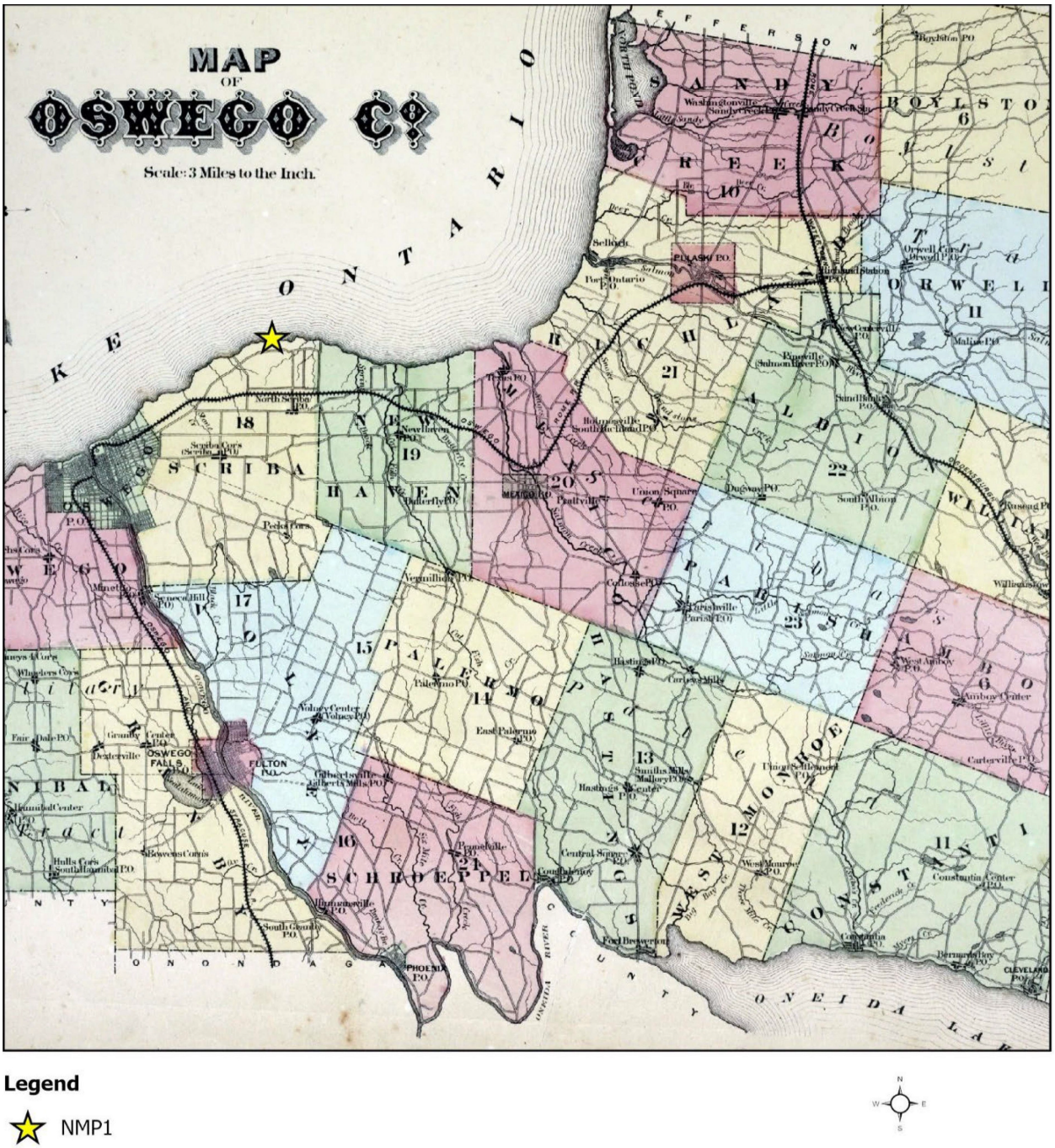


Figure 3.8-1 C. K. Stone's 1867 Map of Oswego County, New York

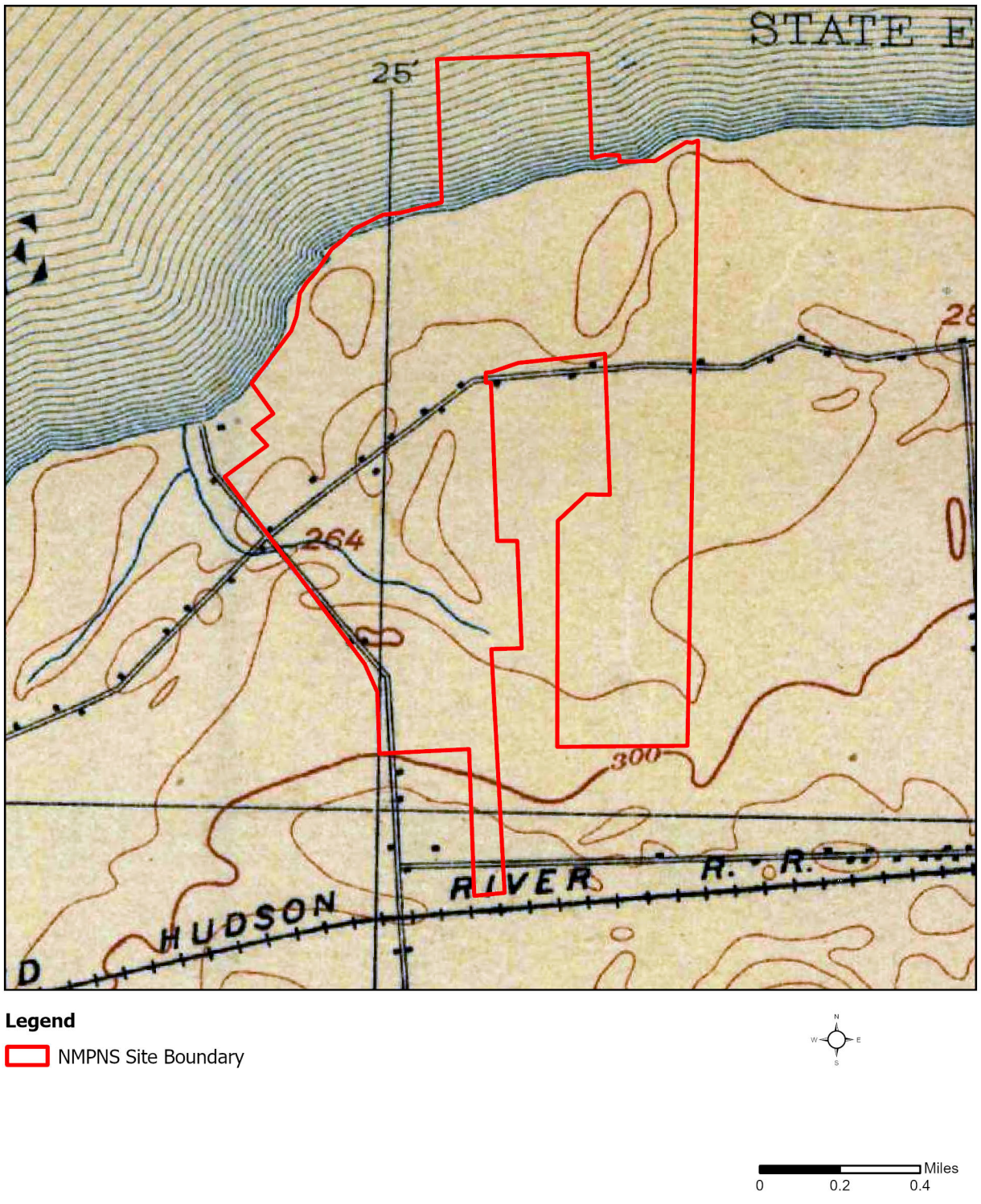


Figure 3.8-2 NMP1 Property on 1900 Map

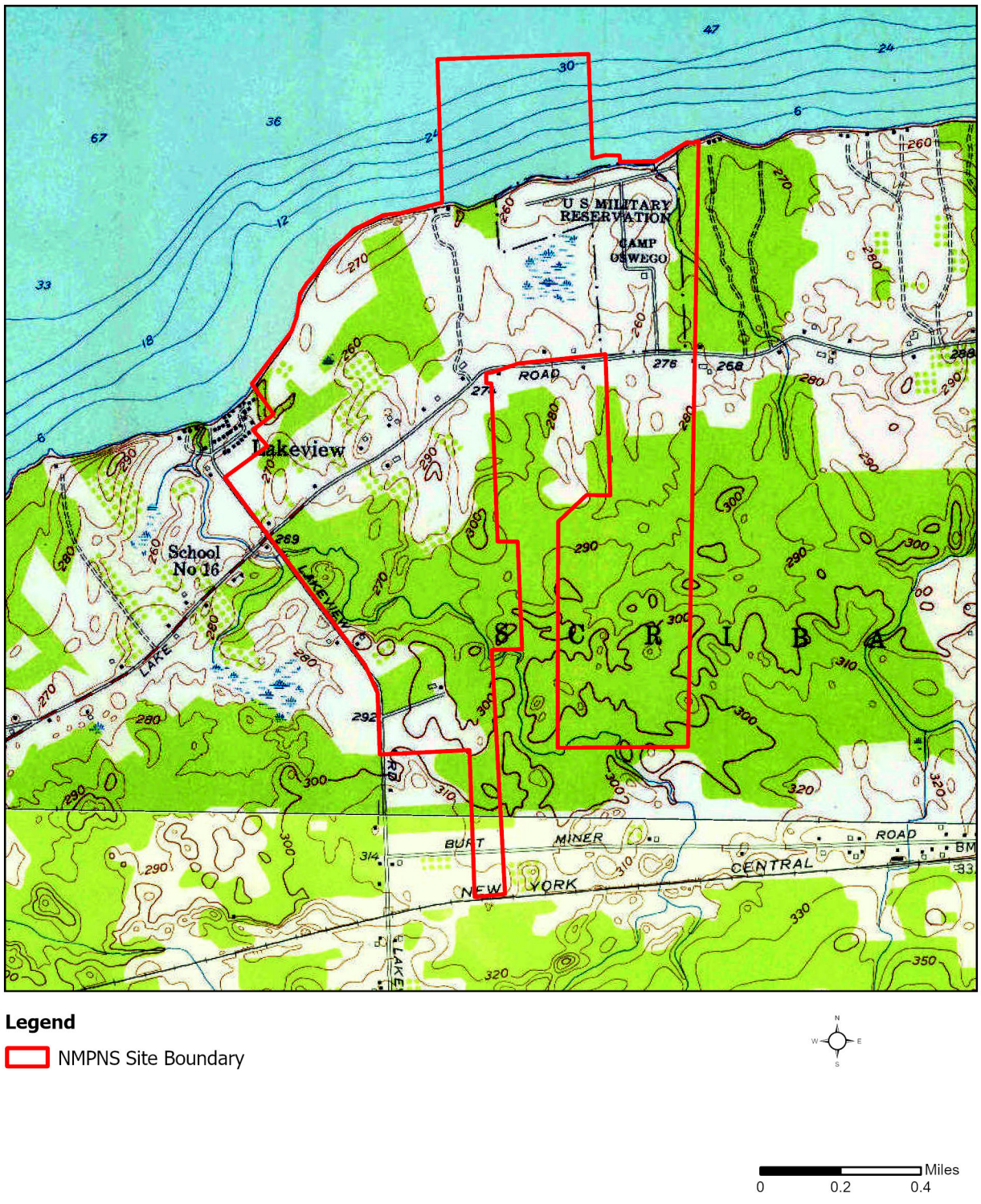


Figure 3.8-3 1955 Topographic Map of NMPNS

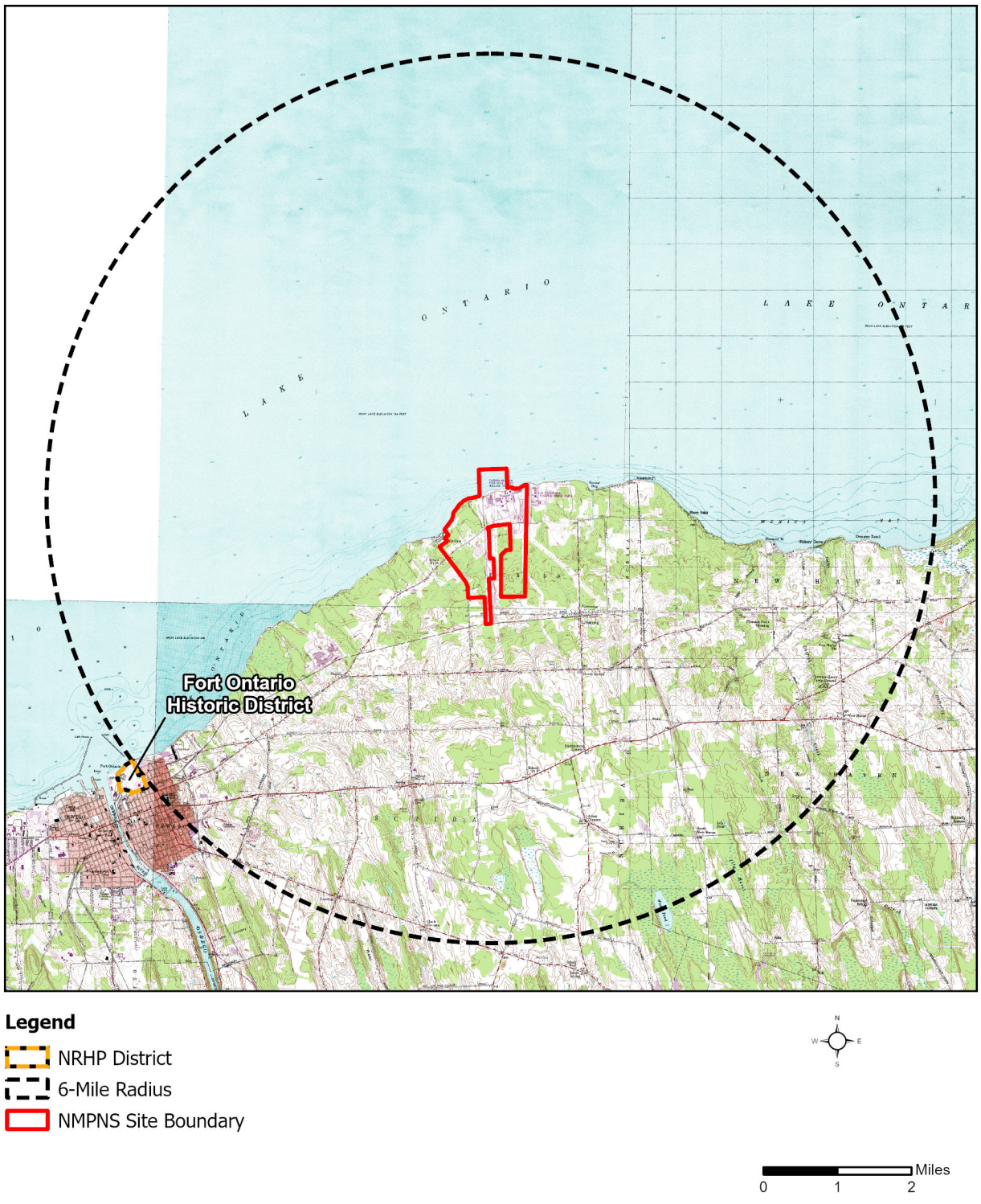


Figure 3.8-4 NRHP Properties Within the 6-Mile Radius of NMP1



Figure 3.8-5 General Overview of Construction Site, Facing West, No Date



Figure 3.8-6 Jobsite from Weather Tower During Earth Excavation, July 27, 1964, Facing East

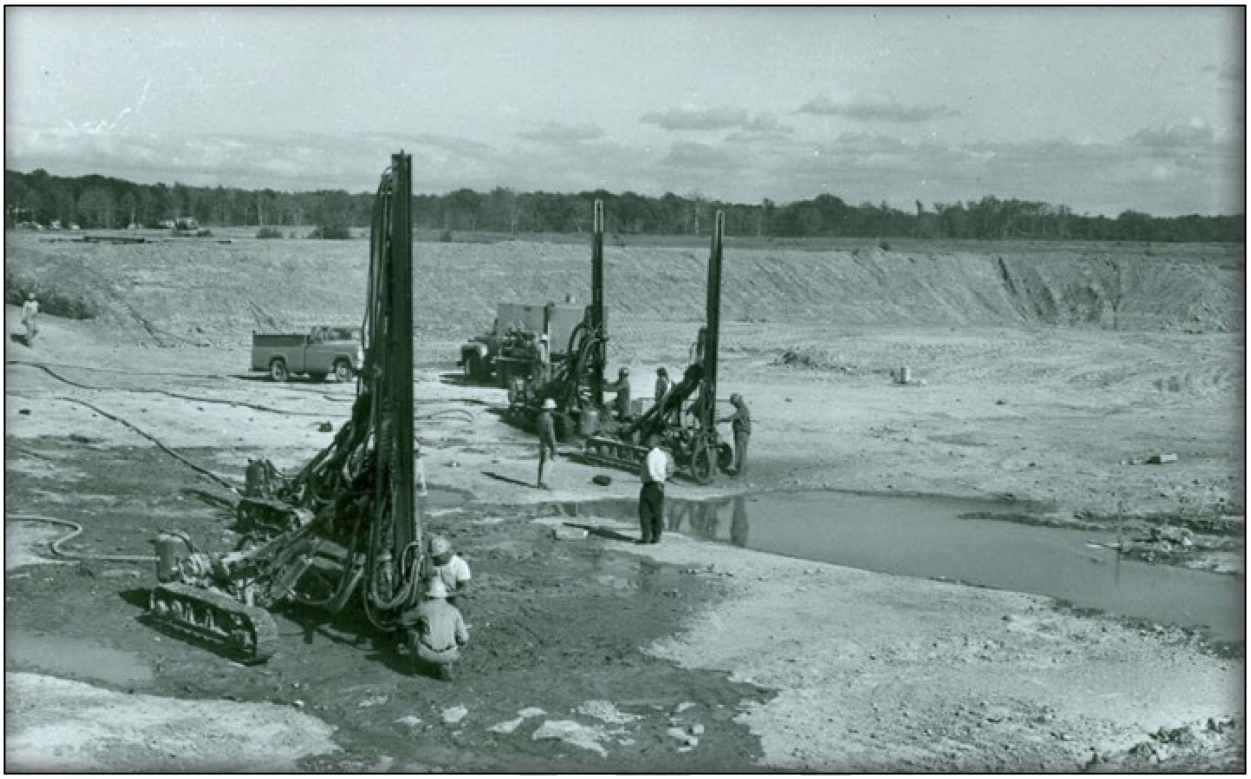


Figure 3.8-7 Drills Within the Screen House Area Excavation, August 6, 1964, Facing South



Figure 3.8-8 General Overview of Construction Site, Facing South, August 6, 1964



Figure 3.8-9 General Overview of Rock Excavation in the Area of the Screen and Pump House, Facing North-Northwest, August 27, 1964

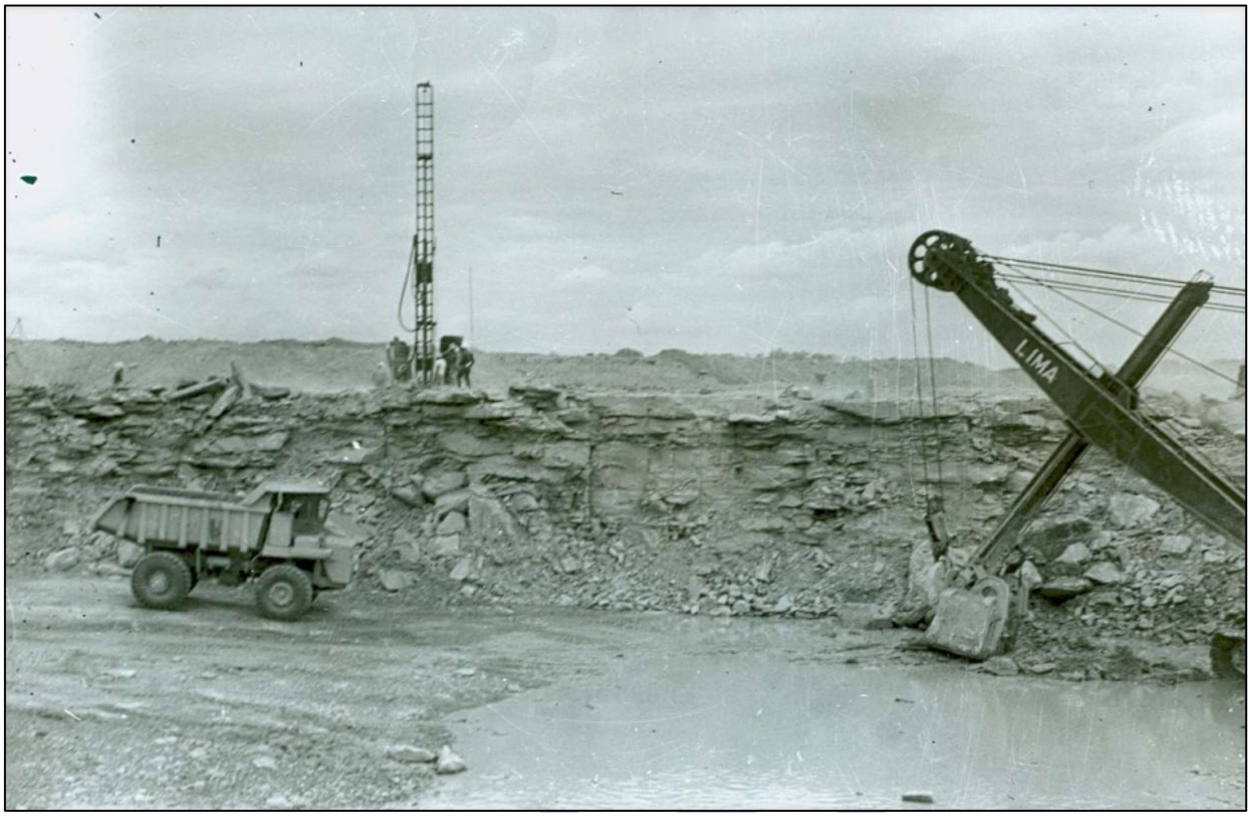


Figure 3.8-10 General Overview of the Southeast Wall of Rock Excavation for the Reactor Building Before Blast for Waste Disposal Building, September 11, 1964



Figure 3.8-11 General Overview of the West and North Walls of Rock Excavation for the Reactor Building, September 29, 1964



Figure 3.8-12 General Overview of the Construction Site, Facing South, No Date



Figure 3.8-13 General Overview of the Construction Site, Facing West, No Date



Figure 3.8-14 General Overview of the Job Site Progress, Facing West, August 25, 1965

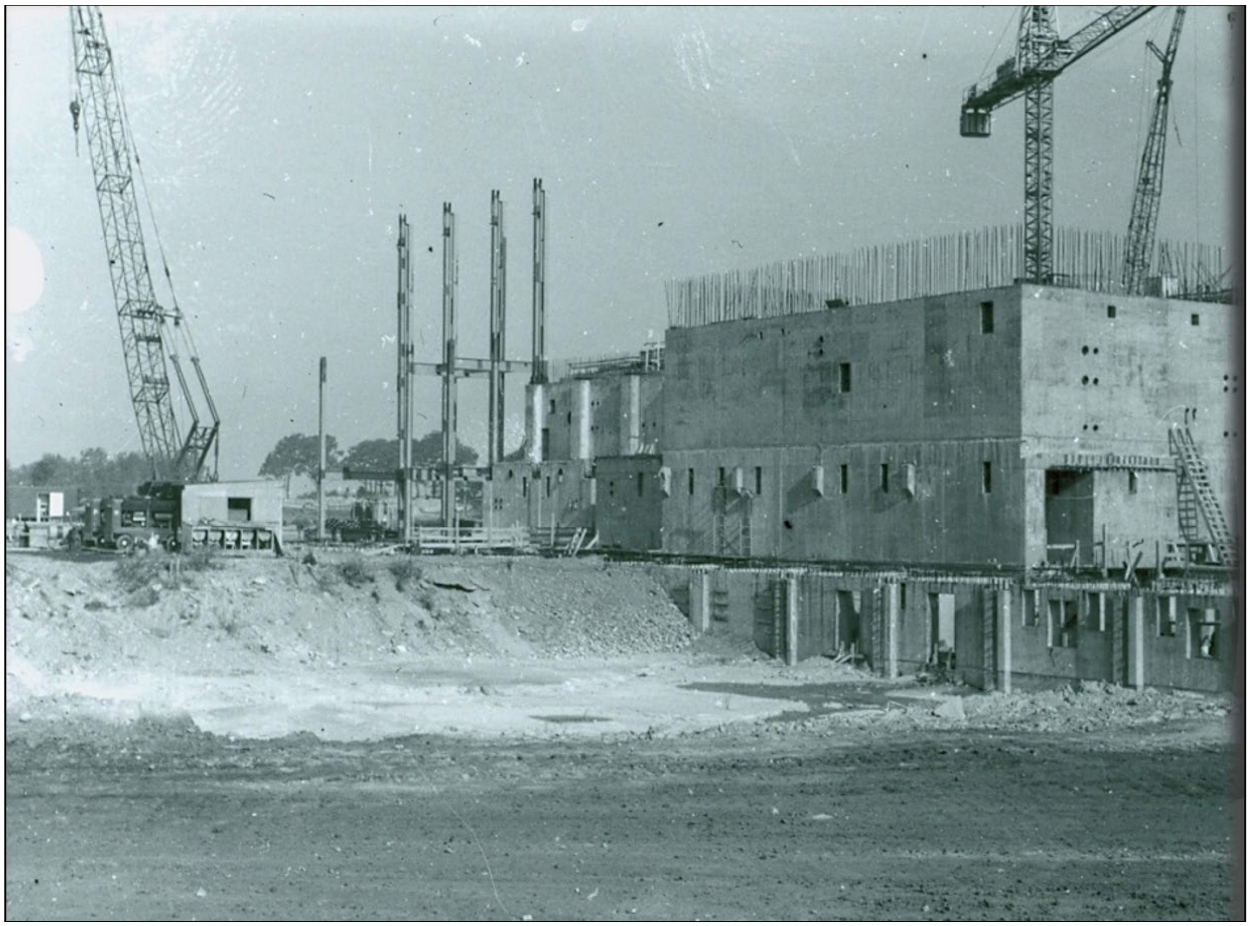


Figure 3.8-15 First Structural Steel Erection, July 11, 1966



Figure 3.8-16 General Overview of Stack Pour at 361-Foot Elevation, Looking North, August 15, 1967

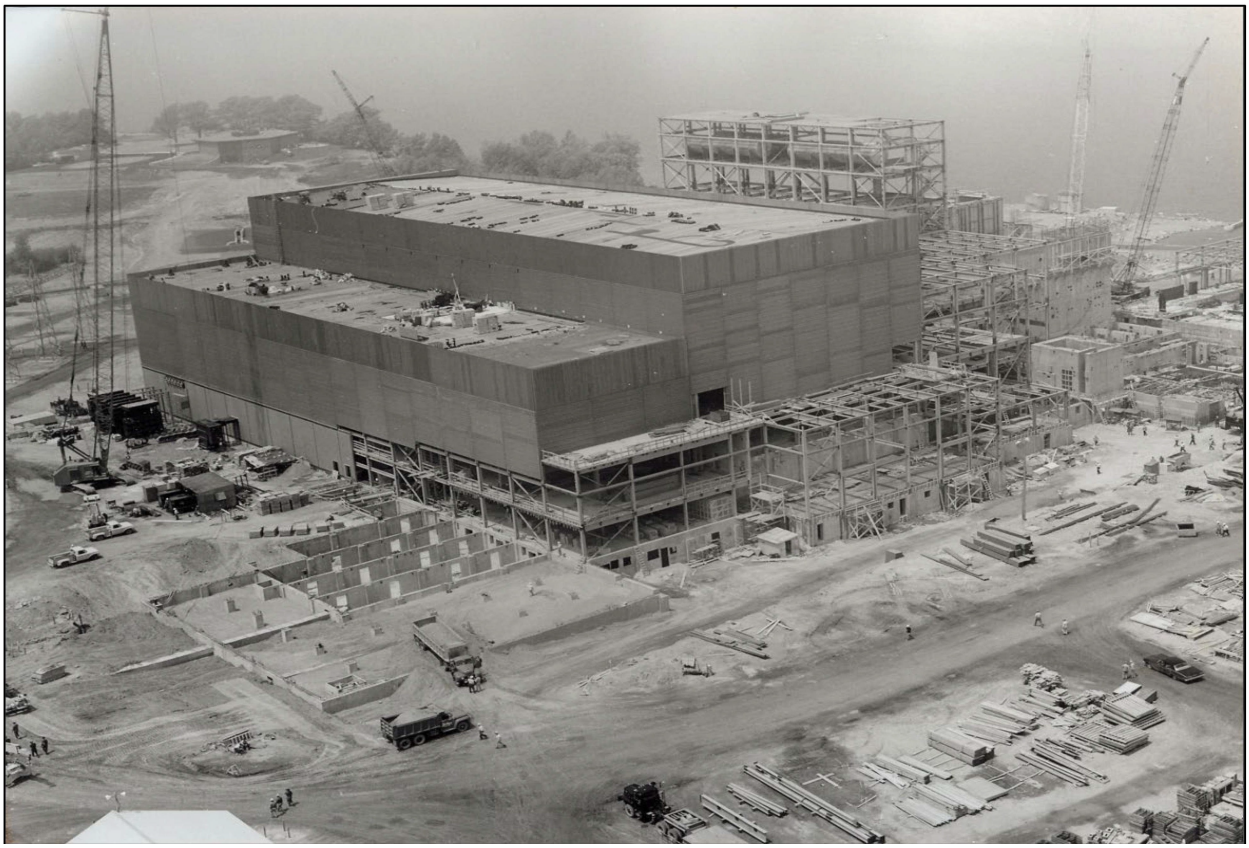


Figure 3.8-17 General Overview of Construction Progress, Facing Northwest, Dated 1967

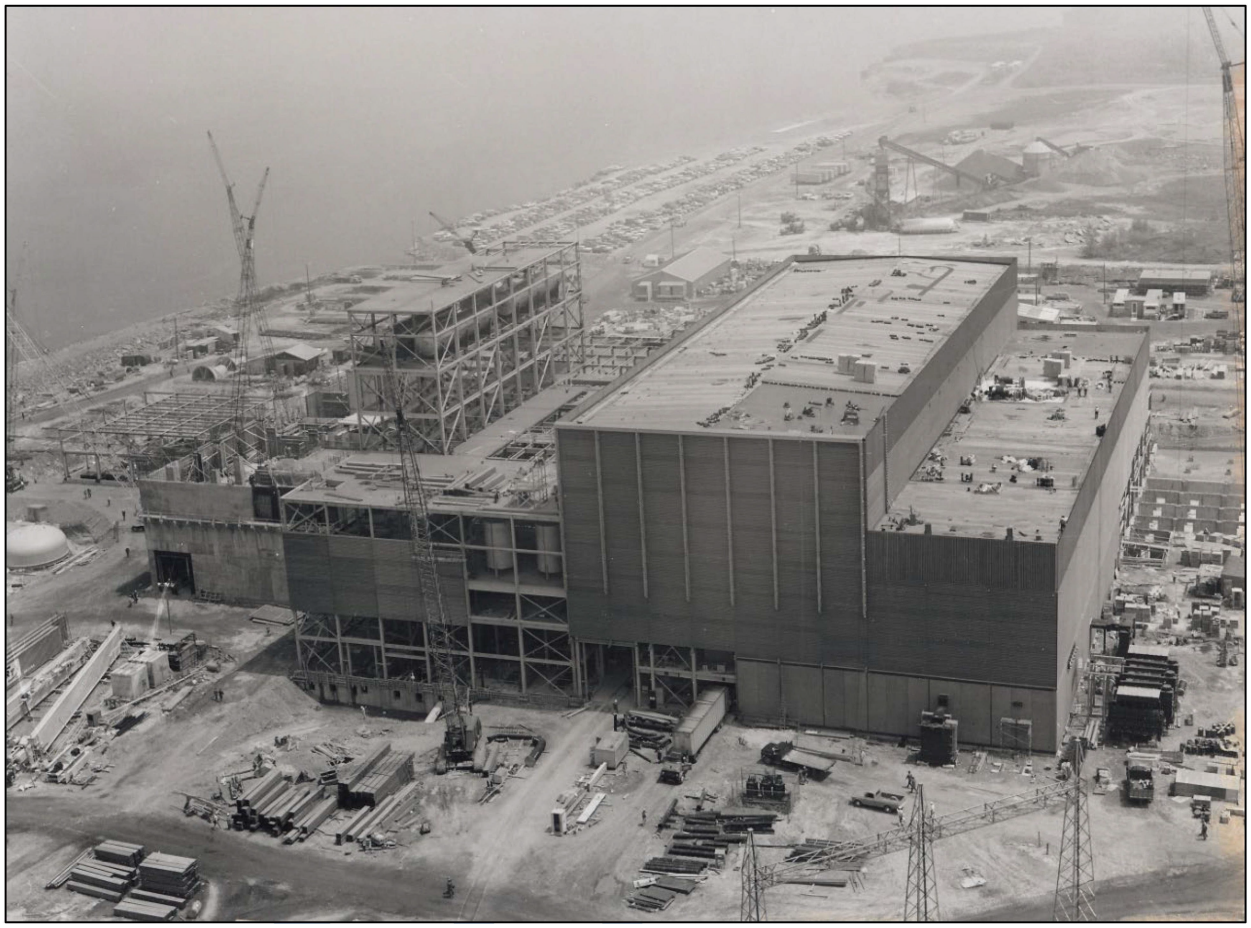


Figure 3.8-18 General Overview of Construction Progress, Facing Northeast, No Date



Figure 3.8-19 General Overview of NMP1 After the Completion of Construction, Facing East-Northeast, No Date



Figure 3.8-20 General Overview of NMP1 after the Completion of Construction, Facing South-Southwest, No Date

3.9 Socioeconomics

Socioeconomic descriptions are focused on Oswego and Onondaga Counties because approximately 90 percent of the NMPNS workforce resides in these counties and because NMPNS pays taxes to Oswego County. The remaining workforce is dispersed throughout the region (see Table 2.5-1).

NMPNS Units 1 and 2 refueling and maintenance outages are on a staggered 24-month cycle; therefore, the site itself executes an outage once every 12 months. These outages last 20 to 30 days. As presented in Section 2.5, during an outage there are typically an additional 1,000 to 1,250 contract employees onsite. As shown in Figure 3.1-4, there are several nearby New York communities within the 50-mile radius of NMP1, including Syracuse, Watertown, Auburn, and Rome City, with numerous motel, campground, and food service conveniences available for contract workers, who provide temporary support during site outages. Several privately owned RV parks in the NMP1 vicinity offer RV camping with water, sewer, and electric hookups (RVL 2024). Transportation corridors such as NY 104 and local roadways provide commuter access to NMP1.

3.9.1 Regional Population

The GEIS presents a population characterization method based on two factors: "sparseness" and "proximity" (NRC 1996). Sparseness measures population density and city size within 20 miles of a site and categorizes the demographic information as follows.

Demographic Categories Based on Sparseness

	Category
Most sparse	1. Less than 40 persons per square mile and no community with 25,000 or more persons within 20 miles.
↓	2. 40 to 60 persons per square mile and no community with 25,000 or more persons within 20 miles.
↓	3. 60 to 120 persons per square mile or less than 60 persons per square mile with at least one community with 25,000 or more persons within 20 miles.
Least sparse	4. Greater than or equal to 120 persons per square mile within 20 miles.

(NRC 1996)

"Proximity" measures population density and city size within 50 miles and categorizes the demographic information as follows:

Demographic Categories Based on Proximity

		Category
Not close proximity	1.	No city with 100,000 or more persons and less than 50 persons per square mile within 50 miles.
↓	2.	No city with 100,000 or more persons and between 50 and 190 persons per square mile within 50 miles.
	3.	One or more cities with 100,000 or more persons and less than 190 persons per square mile within 50 miles.
Close proximity	4.	Greater than or equal to 190 persons per square mile within 50 miles.

(NRC 1996)

The GEIS then uses the following matrix to rank the population in the region of the station as low, medium, or high:

GEIS Sparseness and Proximity Matrix

		Proximity			
		1	**2**	**3**	**4**
Sparseness	**1**	1.1	1.2	1.3	1.4
	2	2.1	2.2	2.3	2.4
	3	3.1	3.2	3.3	3.4
	4	4.1	4.2	4.3	4.4

Key

Low Population Area

Medium Population Area

High Population Area

(NRC 1996)

The 2020 census population and TIGER/Line data from the USCB were used to determine demographic characteristics in the vicinity of the site (USCB 2022a). The data were processed at the state, county, and census block levels using ArcGIS (USCB 2020b). Census data include people living in group quarters, such as institutionalized and non-institutionalized populations. Examples of institutionalized populations living in group quarters are correctional institutions (i.e., prisons, jails, and detention centers), nursing homes, mental (psychiatric) hospitals,

hospitals, or wards for the chronically ill, and juvenile institutions. Examples of non-institutionalized populations living in group quarters are group homes, college dormitories, military quarters, soup kitchens, shelters for abused women (shelters against domestic violence or family crisis centers), and shelters for children who are runaways, neglected, or without conventional housing. (USCB 2020c)

The 2020 census data indicate that approximately 95,857 people live within a 20-mile radius of the NMPNS site, which equates to a population density of approximately 76.3 persons per square mile. Based on the GEIS sparseness index, the site is classified as Category 3 with at least 60–120 persons per square mile within 20 miles. The 2020 census data indicate that approximately 904,529 people live within a 50-mile radius of the site, which equates to a population density of 115.2 persons per square mile. (USCB 2020b) Based on the GEIS proximity index, the site is classified as Category 3, one or more cities with 100,000 or more persons and less than 190 persons per square mile within 50 miles.

As illustrated in the GEIS sparseness and proximity matrix, the combination of "sparseness" Category 3 and "proximity" Category 3 results in the conclusion that NMPNS is located in a "Medium" population area.

The area within a 50-mile radius of NMP1 totally or partially includes 10 counties within the State of New York (Table 3.9-2) as well as a small portion of Ontario, Canada. According to the 2020 census information, the permanent population (not including transient populations) of all 10 counties was 1,351,288 (Table 3.9-2). The 2020 Canadian Census reported the permanent population (not including transient populations) of Ontario was 14,761,811. By 2049, the end of the proposed NMPNS SPEO, the permanent population (not including transient populations) of the entire 10 counties is projected to be approximately 1,356,280. For Ontario, by the end of the proposed NMPNS SPEO (2049), the permanent population (not including transient populations) is projected to be approximately 20,872,004. Based on 2015–2040 population projections, an annual growth rate of approximately 0.01 percent is anticipated for the permanent population in the 10 counties wholly or partially within a 50-mile radius. (CPAD 2020; SC 2024; USCB 2020b; USCB 2022b)

As shown in Table 3.9-2, the total population (including transient populations) of the 10 counties, which are totally or partially included within a 50-mile radius, is projected to be approximately 1,384,710 in 2049. The total population (including transient populations) of Ontario, which is partially included within a 50-mile radius, is projected to be 21,238,365 in 2049. The total population (including transient populations) within a 50-mile radius is projected to be 925,713 in 2049. (CPAD 2020; DC 2019; GO 2019; LI 2019; SC 2020; SC 2024; ST 2024; USCB 2020b; USCB 2022b; UNWTO 2021; TA 2024)

The latest permanent population projections for New York were obtained from the Cornell Program on Applied Demographics (CPAD 2020). The latest permanent population projections for Ontario, Canada, were obtained from Statistics Canada (SC 2024). County-level permanent population values for the counties within a 50-mile radius are shown in Table 3.9-2. Transient

data for the State of New York were obtained from the 2019 Longwood International Travel USA Visitor Profile in the United States (LI 2019). Transient data for Ontario, Canada, were obtained from the Destination Canada 2019 Tourism Fact Sheet, the Government of Ontario, and Statistics Canada (DC 2019; GO 2019; ST 2024).

NMP1 is located in Oswego County, New York. As shown in Table 3.9-2, the population of Oswego County as reported in the 2020 census was 117,525. Based on New York's population projection data, Oswego County's permanent population is projected to be 118,287 by 2049. Estimated projected populations and average annual growth rates for Onondaga County, Oswego County, and Ontario, Canada, are shown in Table 3.9-3. (CPAD 2020; LI 2019; USCB 2020b)

Cities, villages, and census designated places (CDPs) with centers falling within a 50-mile radius of NMP1 are listed in Table 3.9-1. The communities of New Haven and Scriba are County Subdivisions and are subsequently not included in this analysis. As shown in Figure 3.1-3, there are no cities located within the 6-mile vicinity of NMP1. The nearest city, village, or CDP to NMP1 is the City of Oswego, located approximately 6.8 miles southwest of the station, with an estimated 2022 population count of 17,092.

As shown in Table 3.9-1, the largest community in Oswego County is the City of Oswego. Three cities (Syracuse, Rome City, and Auburn) within a 50-mile radius have populations greater than 25,000 as of 2022 (Table 3.9-1). Syracuse (estimated 2022 population 146,134) is the only community within a 50-mile radius of NMP1 that has a population greater than 100,000.

3.9.2 Employment and Income

Onondaga and Oswego are the counties most influenced by NMP1 operation. Additionally, NMP1 is one of CEG's assets on which property taxes are paid to Oswego County. As presented in Section 3.9.1, the populations of Oswego County and Onondaga County are expected to decrease through 2049 (the SPEO).

The estimated employed population in Onondaga County in 2023 was 234,438 persons. The leading reported occupational sector was educational services and healthcare and social assistance, with approximately 34.0 percent, or 79,703 persons, employed. This was followed by professional, scientific, and management and administrative and waste management services, with 11.2 percent, or 26,250 persons, employed and by retail trade, with 10.5 percent, or 24,534 persons, employed. (USCB 2023b) The Onondaga County website reports that the top employers in the county include the Upstate University Health System, Syracuse University, and St. Joseph's Hospital Health Center (OSCNY 2024a). The median earnings for workers was $45,731. In 2023, per-capita personal income was $42,950. (USCB 2023b) The annual average unemployment rate in Onondaga County has largely declined over the past decade, from 5.6 percent in 2014 to 3.7 percent in 2019. It spiked briefly to 7.9 in 2020 during the COVID-19 pandemic then declined again to 3.5 percent in 2024. (BLS 2025)

Oswego County's estimated employed population as of 2023 was 53,217. Educational services and healthcare and social assistance led the reported occupational sectors with 23.6 percent, or 12,569 persons, employed. Manufacturing followed with 6,066 (11.4 percent), then retail trade with 5.787 (10.9 percent) persons employed. Oswego County's median earnings per worker in 2023 was $41,759, with a per-capita personal income of $35,467. (USCB 2023b) Key public and private employers in Oswego County are CEG, Oswego Health, Novelis Corporation, and SUNY Oswego (OOC 2023). Like Onondaga County, Oswego County's unemployment rate largely declined over the last decade, from 8.1 percent in 2014 to 5.1 percent in 2019. It spiked briefly to 8.5 percent in 2020 during the COVID-19 pandemic then declined again to 4.1 percent in 2024. (BLS 2025)

3.9.3 Housing and Community Services

3.9.3.1 Housing

Between 2020 and 2022, Onondaga County saw a decrease in population, whereas Oswego County saw a small increase. Table 3.9-2 includes a summary of the counties' population growth trends anticipated for the SPEO.

As presented in Table 3.9-4, total housing units increased by 4.2 percent, while vacant housing unit availability decreased between 2013 and 2023 in Onondaga County. In 2023, Onondaga County's available rental housing was an estimated 3.9 percent, and its available homeowner housing was an estimated 0.5 percent. Table 3.9-4 also shows that Onondaga County experienced an increase in median housing values during the same time span, 52.9 percent, to a median value of $202,400. Between 2013 and 2023, median monthly rent grew by 46.2 percent in Onondaga County, to $1,095. (USCB 2023c)

In Oswego County, total housing units increased by 3.0 percent from 2013 to 2023. Available rental and homeowner housing, however, decreased by 1.5 and 3.7 percent, respectively (see Table 3.9-4). Median housing values in Oswego County increased by 65.0 percent between 2013 and 2023 to $153,000. Median rents increased by 33.3 percent to $957 per month. (USCB 2023c)

3.9.3.2 Public Water Systems

The OCWA supplies water across several counties in the Central New York area. Onondaga County sources surface water from Lake Ontario, Otisco Lake, and Skaneateles Lake (water purchased from the City of Syracuse). The water supply to the City of Manlius is supplemented with well water. Conversely, Oswego County's water is sourced from Lake Ontario. The OCWA reports that, across all counties served in 2022, 49.9 percent of its water supply came from Lake Ontario, 47.2 percent came from Otisco Lake, and 2.9 percent from Skaneateles Lake. Each lake has a water treatment plant. (OCWA 2023)

The OCWA has ongoing watershed protection programs in place, carried out in cooperation with state and Onondaga County departments of health. Additionally, OCWA's ample access to

water is expected to meet both current and future needs. For example, while 17.05 MGD of water originated from Otisco Lake in 2022, the lake itself can safely yield 25 MGD of water. Additionally, Lake Ontario is a part of the Great Lakes system, which contains 20 percent of the world's fresh water. Nevertheless, the OCWA promotes several best practices for water conservation within the communities it serves, such as efficient lawn watering and fixing leaks. (OCWA 2023)

3.9.3.3 Education

Onondaga County has 23 public school districts, the largest of which is Syracuse City School District with 18,072 students. Based on the 2023–2024 school year, there were 121 total schools in the county with 66,027 total students among the districts. In the 2023–2024 school year, there were 10 school districts with 38 schools and 18,136 students in Oswego County. (NCES 2025)

3.9.4 Local Government Revenues

CEG pays annual property taxes to Oswego County on behalf of NMPNS as well as to Oswego City School District (OCSD), Fulton City School District, Mexico Central School District (CSD), the Town of Volney, and the Town of Scriba. CEG paid about $30.5 million in property taxes for 2023 on behalf of NMPNS. The discussion of taxes focuses on all of NMPNS, because at this time, it is not possible to make a distinction between taxes paid on behalf of NMPNS and those paid on behalf of NMP1 only.

Table 3.9-5a includes a breakdown of NMPNS's tax payments to various local jurisdictions. Table 3.9-5b presents a further breakdown of the revenues of the two jurisdictions receiving the largest amount of funds on behalf of NMPNS – Oswego County and OCSD – and the percent of total property tax revenues that those funds represent for years 2020–2024 (note that OCSD financial data for years 2020 and 2021 were not available). Oswego County's total property tax revenues for 2023, the latest year for which an annual financial report is available, were about $66 million (OSCNY 2024b). That same year, tax payments made by NMPNS and retained by Oswego County in 2024 were about $8.4 million, which accounted for 12.7 percent of Oswego County's property tax revenues that year. As reflected in Table 3.9-5b, Oswego County's property tax revenues remained stable from 2020 through 2024. In 2024, Oswego County's largest expenditures included economic assistance and opportunity, general government support, public safety, and transportation (OSCNY 2024b).

Oswego County retains a portion of the NMPNS tax payments, while the remaining monies are dispersed to various local entities. OCSD is the largest recipient of NMPNS's tax payments, receiving approximately $20.9 million in 2023. This amount represents approximately 40.2 percent of OCSD's total revenues. After Oswego County and OCSD, the next largest amount of property tax monies paid on behalf of NMPNS was dispersed to the Town of Scriba, which received approximately $1.2 million in 2023. The remaining amounts were dispersed to Fulton City School District, Mexico City School District, and the Town of Volney, each receiving approximately $15,981, $1,082, and $7,879, in 2023, respectively. Table 3.9-5a includes a

breakdown of the amount of NMPNS tax payments distributed to local jurisdictions by Oswego County for 2020–2024.

In June 2020, NMPNS entered into an agreement with the County of Oswego Industrial Development Agency for a set of payments in lieu of tax (PILOT), setting PILOTs for Oswego County, OCSD, and the Town of Scriba. This agreement, which expires December 31, 2025, replaces the 2017 agreement and covers a 5-year term beginning with tax year 2020–2021. The first payments were due in January 2021. According to the agreement, special district taxes may also be levied in addition to the PILOTs. CEG is not aware of any future changes in state or local tax laws, rates, or assessed property value or any other adjustments that could result in notable future increases or decreases in property taxes.

Pursuant to New York State Executive Law, Article 2-B, Sections 21, and 29-c, nuclear facilities licensed in the State of New York are liable for an annual fee to support state and local governmental responsibilities under accepted radiological emergency preparedness plans. This fee, $1 million annually per reactor, is paid to the New York State Disaster Preparedness Commission by CEG on behalf of NMP1. (NYSS 2014) Additionally, NMP1 provides $50,000 annually to Oswego County to support offsite emergency response efforts.

NMPNS raises funds for a variety of local charities annually, largely via charitable sports tournaments. The NMPNS chapter of North American Young Generation in Nuclear holds an annual charity golf tournament, which raised over $65,000 in 2023. In 2023, NMPNS and JAF together held a charity cornhole tournament that raised $35,000. Additionally, NMPNS conducts numerous charitable drives throughout the year, including back-to-school supply drives, eyeglasses collections, winter clothing collection, food drives, etc. These activities are not tracked on a dollar basis.

3.9.5 Transportation

The primary road network in the area is shown in Figure 3.1-3 and Figure 3.1-4. Access to and egress from the site by road is limited by Lake Ontario, which encloses NMP1 to the north and west. NY 104 provides commuter access to the station from the south. Commuters from the southeast exit onto County Road 29 and travel north before turning west onto Lake Road.

The New York State Department of Transportation (NYSDOT) calculates average annual daily traffic (AADT) volumes for state roads. On County Road 29 east of the station, the most recent AADT count was 1,587 in 2019. Lake Road west of the station had a 2019 AADT count of 2,206. (NYSDOT 2019)

3.9.6 Recreational Facilities

Oswego County features over 40,000 acres of public land and dozens of wetlands (OSCNY 2024c). A list of federal, state, and local lands that fall within the NMP1 vicinity are listed in Table 3.1-1. Except where noted below, usage data were not available for these facilities.

Fort Ontario State Historic Site, located approximately 6 miles southwest of NMP1, offers visitors the opportunity to explore Fort Ontario. The site saw several historical battles and housed Jewish refugees during World War II; it features barracks, guardhouses, and various exhibits. (NYSPRHP 2024)

The 6-mile vicinity of NMP1 also features several parks and attractions under private or nonprofit ownership. The Lakeview Park Association, Inc., is a local nonprofit that owns and operates a camping retreat facility in the NMP1 vicinity. The association hosts Ontario Bible Camp, a religious nonprofit that hosts a yearly camp for children. (OBC 2024; LVPA 2024) The Ontario Speedway is a privately owned speedway also located within the 6-mile vicinity of NMP1. It hosts weekly automobile races and larger events throughout the year. Events at the speedway typically attract between 2,000 and 5,000 attendees. (OS 2024) The Richard A. Noyes Bird Sanctuary is a 90-acre bird sanctuary owned and operated by the Onondaga Audubon, the national Audubon chapter for Central New York. Its mission is to encourage the conservation of birds and other wildlife native to Central and Northern New York. Noyes Sanctuary offers birdwatching and related activities throughout the year and is open to the public. (OA 2024)

NMPNS hosts visitors on a limited basis. The NMPNS chapter of North American Young Generation in Nuclear provides tours for students from the Rensselaer Polytechnic Institute approximately once per year. Similarly, the NMPNS chapter of Women in Nuclear hosts students from the State University of New York College of Environmental Science and Forestry Energy Club annually. In 2023, the total number of visitors from these groups was 27.

Table 3.9-1 Cities, Villages, and CDPs Totally or Partially Within a 50-Mile Radius of NMP1 (Sheet 1 of 7)

City/Village/CDP	Place Type	County	2020 Census Population Counts [a]	2022 Census Population Estimates [b]	Distance to NMP1 (miles) [c][d]	Direction [c][d]
Adams	Village	Jefferson	1,633	1,923	27.7	NE
Adams Center	CDP	Jefferson	1,492	1,022	30.9	NE
Altmar	CDP	Oswego	357	310	20.5	East
Auburn	City	Cayuga	26,866	26,674	41.5	SSW
Baldwinsville	Village	Onondaga	7,898	7,746	25.4	South
Belleville	CDP	Jefferson	233	289	23.2	NE
Black River	Village	Jefferson	1,232	1,660	45.8	NE
Brewerton	CDP	Onondaga	3,907	4,717	23.8	SE
Bridgeport	CDP	Onondaga	1,389	1,551	33.4	SE
Brownville	Village	Jefferson	930	586	39.7	NNE
Calcium	CDP	Jefferson	3,573	3,622	44.6	NE
Camden	Village	Oneida	2,196	2,578	35.7	ESE
Camillus	Village	Onondaga	1,222	1,316	33.7	South
Canastota	Village	Madison	4,556	4,550	45.1	SE
Cape Vincent	Village	Jefferson	699	572	42.0	North
Cato	Village	Cayuga	517	403	25.7	SSW

Table 3.9-1 Cities, Villages, and CDPs Totally or Partially Within a 50-Mile Radius of NMP1 (Sheet 2 of 7)

City/Village/CDP	Place Type	County	2020 Census Population Counts [a]	2022 Census Population Estimates [b]	Distance to NMP1 (miles) [c][d]	Direction [c][d]
Cayuga	Village	Cayuga	472	387	44.5	SSW
Cazenovia	Village	Madison	2,767	2,765	49.6	SE
Central Square	Village	Oswego	1,862	2,079	21.0	SE
Chaumont	CDP	Jefferson	615	686	40.2	NNE
Chittenango	Village	Madison	4,896	4,884	42.8	SE
Cleveland	Village	Oswego	732	849	32.9	SE
Clyde	Village	Wayne	2,171	1,955	38.0	SW
Constableville	Village	Lewis	293	307	49.4	East
Constantia	CDP	Oswego	1,109	1,577	28.0	SE
Copenhagen	Village	Lewis	631	723	44.9	NE
De Witt CDP	CDP	Onondaga	11,247	11,261	37.0	SSE
Depauville	CDP	Jefferson	488	388	45.9	NNE
Dexter	Village	Jefferson	1,004	763	38.2	NNE
Durhamville	CDP	Oneida	527	761	46.4	SE
East Syracuse	Village	Onondaga	3,078	3,065	35.7	SSE
Elbridge	Village	Onondaga	921	1,384	33.7	South

Table 3.9-1 Cities, Villages, and CDPs Totally or Partially Within a 50-Mile Radius of NMP1 (Sheet 3 of 7)

City/Village/CDP	Place Type	County	2020 Census Population Counts [a]	2022 Census Population Estimates [b]	Distance to NMP1 (miles) [c][d]	Direction [c][d]
Ellisburg	Village	Jefferson	186	188	20.1	NE
Evans Mills	Village	Jefferson	678	503	49.4	NE
Fair Haven	Village	Cayuga	760	1,151	20.4	SW
Fairmount	CDP	Onondaga	10,248	9,978	33.9	SSE
Fayetteville	Village	Onondaga	4,225	4,248	39.6	SSE
Felts Mills	CDP	Jefferson	473	430	47.4	NE
Fort Drum CDP	CDP	Jefferson	15,896	16,298	45.6	NE
Fulton	City	Oswego	11,389	11,381	13.7	South
Galeville	CDP	Onondaga	4,482	4,591	32.1	SSE
Glen Park	Village	Jefferson	452	661	39.9	NE
Great Bend	CDP	Jefferson	807	1,208	49.5	NE
Hannibal	Village	Oswego	535	708	16.2	SSW
Henderson	CDP	Jefferson	233	238	25.2	NNE
Jordan	Village	Onondaga	1,192	1,480	31.6	South
La Fargeville	CDP	Jefferson	537	530	49.9	NNE
Lacona	Village	Oswego	657	782	19.1	ENE

Table 3.9-1 Cities, Villages, and CDPs Totally or Partially Within a 50-Mile Radius of NMP1 (Sheet 4 of 7)

City/Village/CDP	Place Type	County	2020 Census Population Counts [a]	2022 Census Population Estimates [b]	Distance to NMP1 (miles) [c][d]	Direction [c][d]
Lake Delta CDP	CDP	Oneida	2,757	2,929	48.9	ESE
Lakeland	CDP	Onondaga	2,556	2,513	31.0	SSE
Liverpool	Village	Onondaga	2,242	2,331	30.3	SSE
Lorraine	CDP	Jefferson	139	114	28.2	NE
Lowville	Village	Lewis	3,272	3,534	49.5	ENE
Lyncourt CDP	CDP	Onondaga	4,376	3,917	32.8	SSE
Lyons	CDP	Wayne	3,989	3,594	43.0	SW
Manlius	Village	Onondaga	4,662	4,675	42.0	SSE
Mannsville	Village	Jefferson	297	328	21.9	NE
Marcellus	Village	Onondaga	1,745	2,048	37.3	South
Marion	CDP	Wayne	1,432	1,219	47.1	WSW
Mattydale	CDP	Onondaga	6,296	5,825	32.2	SSE
Melrose Park	CDP	Cayuga	2,141	1,997	42.8	South
Meridian	Village	Cayuga	287	206	25.4	SSW
Mexico	Village	Oswego	1,531	1,925	10.1	ESE
Minetto	CDP	Oswego	1,262	1,430	9.2	SSW
Minoa	Village	Onondaga	3,657	3,652	37.0	SSE

Table 3.9-1 Cities, Villages, and CDPs Totally or Partially Within a 50-Mile Radius of NMP1 (Sheet 5 of 7)

City/Village/CDP	Place Type	County	2020 Census Population Counts [a]	2022 Census Population Estimates [b]	Distance to NMP1 (miles) [c][d]	Direction [c][d]
Nedrow	CDP	Onondaga	2,095	2,251	40.1	SSE
Newark	Village	Wayne	9,017	9,076	47.6	SW
North Bay CDP	CDP	Oneida	374	153	38.4	ESE
North Rose	CDP	Wayne	571	588	33.6	SW
North Syracuse	Village	Onondaga	6,739	6,669	30.2	SSE
Oneida	City	Madison	10,329	10,326	48.4	SE
Oneida Castle	Village	Oneida	586	699	49.5	SE
Ontario	CDP	Wayne	2,215	2,122	48.6	WSW
Oswego	City	Oswego	16,921	17,092	6.8	SW
Pamelia Center	CDP	Jefferson	471	770	43.9	NE
Parish	Village	Oswego	471	555	16.4	ESE
Phoenix	Village	Oswego	2,226	2,440	20.8	SSE
Pierrepont Manor	CDP	Jefferson	212	369	23.0	NE
Port Byron	Village	Cayuga	1,101	1,049	35.3	SSW
Port Gibson	CDP	Ontario	405	576	50.0	SW
Pulaski	Village	Oswego	2,186	2,090	14.5	ENE

Table 3.9-1 Cities, Villages, and CDPs Totally or Partially Within a 50-Mile Radius of NMP1 (Sheet 6 of 7)

City/Village/CDP	Place Type	County	2020 Census Population Counts [a]	2022 Census Population Estimates [b]	Distance to NMP1 (miles) [c][d]	Direction [c][d]
Pultneyville	CDP	Wayne	817	678	42.5	WSW
Radisson CDP	CDP	Onondaga	7,038	7,235	22.6	SSE
Red Creek	Village	Wayne	495	746	24.6	SW
Rodman	CDP	Jefferson	152	193	32.7	NE
Rome City	City	Oneida	32,127	32,031	43.0	ESE
Sackets Harbor	Village	Jefferson	1,351	1,531	32.7	NNE
Sand Ridge CDP	CDP	Oswego	992	1,111	19.3	SSE
Sandy Creek	Village	Oswego	646	567	18.3	ENE
Savannah	CDP	Wayne	487	401	36.0	SSW
Seneca Falls	CDP	Seneca	6,809	6,895	46.5	SSW
Seneca Knolls CDP	CDP	Onondaga	1,992	2,085	27.7	SSE
Skaneateles	Village	Onondaga	2,533	2,539	39.7	South
Sodus	Village	Wayne	1,667	1,917	38.2	WSW
Sodus Point	Village	Wayne	822	1,096	33.8	WSW
Solvay	Village	Onondaga	6,645	6,607	33.6	SSE
SUNY Oswego CDP	CDP	Oswego	3,451	3,338	7.6	WSW
Sylvan Beach	Village	Oneida	890	856	40.9	SE

Table 3.9-1 Cities, Villages, and CDPs Totally or Partially Within a 50-Mile Radius of NMP1 (Sheet 7 of 7)

City/Village/CDP	Place Type	County	2020 Census Population Counts [a]	2022 Census Population Estimates [b]	Distance to NMP1 (miles) [c][d]	Direction [c][d]
Syracuse	City	Onondaga	148,620	146,134	35.3	SSE
Three Mile Bay	CDP	Jefferson	187	63	40.1	NNE
Union Springs	Village	Cayuga	1,075	1,280	49.2	SSW
Verona	CDP	Oneida	828	1,363	49.9	ESE
Village Green CDP	CDP	Onondaga	3,834	3,747	26.4	South
Wampsville	Village	Madison	573	590	47.0	SE
Waterloo	Village	Seneca	4,810	4,587	48.3	SSW
Watertown	City	Jefferson	24,685	24,859	40.0	NE
Weedsport	Village	Cayuga	1,788	1,858	33.5	SSW
West Carthage	Village	Jefferson	1,780	1,632	50.0	NE
Westvale	CDP	Onondaga	5,090	4,933	34.1	SSE
Williamson	CDP	Wayne	2,418	2,560	44.1	WSW
Wolcott	CDP	Wayne	1,556	1,322	29.1	SW

a. (USCB 2020b)
b. (USCB 2022b)
c. (DOT 2023)
d. (USCB 2022a)
Distances reported were measured from the NMPNS center point to the city center
CDP = census designated place

Table 3.9-2 County Populations Totally or Partially Within a 50-Mile Radius of NMP1

County	2020 Population (a)(c)	2022 Population (b)(c)	2049 Projected Permanent Population (d)(e)	2049 Projected Total Population (f)(g)(h)(i)(j)(k)
Ontario, Canada	14,761,811	15,145,006	20,872,004	21,238,365
New York (10 Counties)				
Cayuga	76,248	74,998	76,248	77,846
Jefferson	116,721	116,637	118,427	120,910
Lewis	26,582	26,699	26,699	27,259
Madison	68,016	67,097	68,016	69,442
Oneida	232,125	228,846	232,125	236,991
Onondaga	476,516	468,249	476,516	486,504
Ontario	112,458	112,707	114,865	117,273
Oswego	117,525	118,287	118,287	120,766
Seneca	33,814	32,882	33,814	34,523
Wayne	91,283	91,125	91,283	93,196
Total	1,351,288	1,337,527	1,356,280	1,384,710

a. (USCB 2020b)
b. (USCB 2022b)
c. (SC 2020)
d. (SC 2024)
e. (CPAD 2020)
f. (DC 2019)
g. (GO 2019)
h. (LI 2019)
i. (ST 2024)
j. (UNWTO 2021)
k. (TA 2024)

Table 3.9-3 Estimated County Growth Rates

			2020	2022	2030	2040	2049
New York	Onondaga County	Population	476,516	476,516	476,516	476,516	476,516
		Average Annual Growth %	N/A	0.00	0.00	0.00	0.00
	Oswego County	Population	117,525	118,287	118,287	118,287	118,287
		Average Annual Growth %	N/A	0.32	0.00	0.00	0.00

(CPAD 2020; USCB 2020b; USCB 2022b)

Note: Projected population values are based on the population projection growth trend for the years reported by the State of Cornell University Program on Applied Demographics. The projected population of Onondaga County is in decline, so the 2020 values were used. The projected population of Oswego County is in decline, so the 2022 values were used.

			2020	2022	2030	2040	2049
Ontario	Ontario	Population	14,761,811	15,145,006	16,972,100	19,083,300	20,872,004
		Average Annual Growth %	N/A	1.29	1.43	1.18	1.00

(SC 2020; SC 2024)
Projected population values are based on the population projection growth trend for the years reported by the Ontario, Canada, Revenue and Fiscal Affairs Office.

Table 3.9-4 Housing Statistics for Onondaga and Oswego Counties

Name	2013	2023	2013 to 2023 Change (%)
Onondaga County			
Total Housing Units	203,694	212,317	4.2
Occupied Units	184,316	198,669	7.8
Vacant Units	19,378	13,618	-29.7
Homeowner Vacancy (percent)	2.2	0.5	-1.7
Rental Vacancy (percent)	5.6	3.9	-1.7
Median House Value ($)	132,400	202,400	52.9
Median Rent ($/month)	749	1,095	46.2
Oswego County			
Total Housing Units	53,445	55,054	3.0
Occupied Units	45,327	48,010	5.9
Vacant Units	8,118	7,044	-13.2
Homeowner Vacancy (percent)	3.8	0.1	-3.7
Rental Vacancy (percent)	6.5	5.0	-1.5
Median House Value ($)	92,700	153,500	65.0
Median Rent ($/month)	718	957	33.3

(USCB 2013; USCB 2023c)

Table 3.9-5a NMPNS Annual Tax Payment Totals and Distribution

Year	Oswego County	Oswego City School District[a]	Fulton City School District	Mexico City Central School District	Town of Volney	Town of Scriba	Total NMPNS Property Tax Payment
2020	$7,175,543	$18,577,929	$16,854	$1,087	$8,197	$1,130,972	$26,910,582
2021	$8,293,599	$20,721,250	$15,435	$1,067	$8,155	$1,200,583	$30,240,089
2022	$8,422,367	$20,892,500	$15,899	$1,023	$7,263	$1,220,569	$30,559,621
2023	$8,387,500	$20,892,500	$15,981	$1,082	$7,879	$1,220,563	$30,525,505
2024	$8,387,500	$20,892,500	$17,674	$1,066	$8,253	$1,228,857	$30,535,850

a. School district years are fiscal years.

Table 3.9-5b NMPNS Property Tax Payments and County Revenues, FY 2020–2024[(a)]

Oswego County			
Year	**Amount of Property Tax Payment Paid to Oswego County**	**Total Oswego County Property Tax Revenues**	**NMPNS % of Total County Revenues**
2020	$7,175,543	$68,846,983	10.4%
2021	$8,293,599	$67,193,855	12.3%
2022	$8,422,367	$67,037,756	12.6%
2023	$8,387,500	$66,052,697	12.7%
2024	$8,387,500	NYA	NYA
Oswego City School District			
Year	**Amount of Property Tax Payment Paid to OCSD**	**Total OCSD Revenues**	**NMPNS % of Total OCSD Revenues**
2020	$18,577,929	NA	NA
2021	$20,721,929	NA	NA
2022	$20,892,500	$51,974,809	40.2%
2023	$20,892,500	$51,983,865	40.2%
2024	$20,892,500	$52,421,915	39.9%

(OCSD 2023; OCSD 2024; OSCNY 2021; OSCNY 2023; OSCNY 2024b)

a. Numbers rounded to nearest thousand

NA = not applicable

NYA = not yet available

Table 3.9-6 NMP1 Emergency Preparedness Payments, 2020–2024

Recipients	2020	2021	2022	2023	2024
New York State Disaster Preparedness Commission	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000
Oswego County	$150,000	$150,000	$150,000	$150,000	$150,000
Total	$1,150,000	$1,150,000	$1,150,000	$1,150,000	$1,150,000

3.10 Human Health

This section describes site conditions likely to contribute to the occurrence of pathogenic thermophilic microbiological organisms, methodology and procedures designed to meet the regulatory requirements and standards for limiting potential induced current hazards arising from energized in-scope transmission lines, a description of the station's radiological health environment and preventative measures necessary to reduce potential exposure levels to station workers and visitors during station operations, and results of postulated accidents assessments, including station and risk assessment improvements important to human health.

3.10.1 Microbiological Hazards

In the GEIS, the NRC considered health impacts from disease-causing microorganisms, also known as etiological agents, to both the public and station workers. Etiological agents of particular concern for public and occupational health include enteric pathogens (bacteria that typically exist in the intestines of animals and humans [e.g., *Pseudomonas aeruginosa*]), thermophilic fungi, bacteria (e.g., *Legionell*a spp. and *Vibrio* spp.), free-living amebae (e.g., *Naegleria fowleri* and *Acanthamoeba* spp.), as well as organisms that produce toxins that affect human health (e.g., dinoflagellates [*Karenia brevis*] and blue-green algae). Etiological agents associated with nuclear power stations may be present in elevated numbers in unheated and heated water systems as well as in cooling systems, receiving and source water bodies, and site sewage treatment facilities. (NRC 2024a)

The main public health focus is the enhancement of thermophilic microorganisms from nuclear power plant thermal discharges to publicly accessible surface waters. The public can be exposed to thermophilic microorganisms during swimming, boating, or other recreational uses of fresh water. If a nuclear plant's thermal effluent enhances the growth of thermophilic microorganisms in waters open for recreational use, recreational users could experience an elevated risk of exposure when using waters near the plant's discharge. Thermophilic microorganisms have an optimum growth at temperatures of 122°F or more, a maximum temperature tolerance of up to 158°F, and a minimum tolerance of about 68°F, although there is some ambiguity in optimal growth temperatures, defining a range for thermophiles of 104–122°F. (NRC 2024a)

Legionella occurs naturally in freshwater environments, such as lakes and streams, but generally is not present in sufficient numbers to cause disease. It can become a health concern when it grows and spreads in human-made building water systems, such as cooling towers. *Legionella* optimally grows in stagnant surface waters with biofilms or slimes that range in temperature from 77°F to 113°F. *Legionella* is transmitted via inhalation of aerosolized water containing the bacteria. Less commonly, *Legionella* can also be transmitted via aspiration of drinking water. (CDC 2024a; CDC 2024b) The higher risk of *Legionella* exposure is presented by indoor or confined spaces. NMP1 has a once-through cooling system and does not utilize a cooling tower as does NMP2. CEG maintains procedures for cooling tower monitoring and maintenance and for industrial hygiene sampling for NMP2. These NMP2-specific procedures

include information on required personal protective equipment (PPE) when employees are working on/near cooling towers, as well as *Legionella* sampling requirements.

Naegleria fowleri infection in humans is known as primary amebic meningoencephalitis. Primary amebic meningoencephalitis is a rare disease. *N. fowleri* is naturally found in warm freshwater environments such as lakes and rivers, naturally hot (geothermal) water such as hot springs, warm water discharge from industrial or power plants, geothermal well water, poorly maintained or minimally chlorinated swimming pools, water heaters, and soil, where it lives by feeding on bacteria and other microbes in the environment. Infections occur when *N. fowleri* penetrates the nasal tissue and migrates to the brain. Sampling of lakes in the southern tier of the United States, where *N. fowleri* is more likely to be found, indicates that *N. fowleri* is commonly present during the summer. Attempts have been made to determine what concentration of *N. fowleri* in the environment poses an unacceptable risk. However, no method currently exists that accurately and reproducibly measures the numbers of amebae in the water. (CDC 2022; CDC 2024c; CDC 2024d; NPS 2023)

Enteric pathogens have infection routes of contact with infected persons or contaminated water, food, soil, or other contaminated material. The exposure route of concern is contact with contaminated water containing a population of microorganisms sufficient for human infection. The pathogens can grow at a range of temperatures but, as human pathogens, have an optimal growth temperature around the human body temperature. (NRC 2024a)

Cyanobacteria, commonly known as blue-green algae, are single-celled bacterial organisms classified as phytoplankton and can cause HABs. Dinoflagellates, another type of phytoplankton, specifically cause the recurring Red Tide blooms. These microorganisms thrive in slow-moving, warm, and nutrient-rich waters, leading to blooms that concentrate toxins. Their toxins pose no threat in low amounts, but during blooms, toxin concentrations can become hazardous. Exposure to these toxins can occur through skin contact, ingestion, or inhalation, posing health risks to humans. (NRC 2024a; WHOI 2024) As mentioned in Section 3.7.2.2.2, in July 2024 a HAB was reported by the public approximately 2.5 miles east of NMPNS along the Lake Ontario shoreline. No additional information about this HAB was provided by the NYSDEC, including whether the cause was known. CEG has not observed HABs in Lake Ontario along the NMPNS shoreline. The New York Department of Health has not notified CEG of any HABs.

The NMP1 cooling water system is described in Section 2.2.3. The system discharges to Lake Ontario under SPDES Permit No. NY0001015. CEG has established a security zone on the water of Lake Ontario for the purpose of excluding watercraft on the waters that abut NMP1. The boundaries of the security zone have been established by the U.S. Coast Guard and are marked by a system of buoys. The establishment of this security zone complies with the requirements of the NRC and 33 CFR 165.911(a)(1).

The SPDES permit (Attachment A) sets limitations and monitoring requirements for the outfalls at NMP1. The daily maximum discharge temperature limit stated in the SPDES permit is 115°F.

The permit also requires that the surface water temperature at the discharge point must not exceed the surface water temperature at the intake point by more than 35°F.

As presented in Section 3.6.1.2.6 and Table 3.6-2, NMP1 discharge temperatures are monitored continuously, and a daily average and daily maximum are reported for Outfall 010, which discharges non-contact cooling water and other effluents.

In 2020 through 2023, the average monthly discharge temperature reached or exceeded the optimal temperature for thermophile growth (104°F) during the following summer months: July 2020 and 2023 and August 2020, 2022, and 2023. The peak monthly average discharge temperature was 108°F in August 2022, when the intake temperature was 77°F. Once the discharge mixes with the cooler, higher-volume waters of Lake Ontario, the result is expected to be less than the temperature for optimum thermophile growth.

The Centers for Disease Control's National Outbreak Reporting System collects data from state, local, and territorial public health agencies concerning multiple types of disease outbreaks. No cases of waterborne illness outbreaks in untreated recreational water in 2019 through 2022 were reported in the State of New York. (CDC 2023)

To control biofouling within the cooling system components, such as condenser tubes and cooling towers, biocides (sodium hypochlorite) are added to the system, intermittently and in low concentrations.

CEG has a comprehensive health and safety program that includes procedures for cooling tower maintenance and operation, inspection, testing and monitoring, and industrial hygiene sampling.

3.10.2 Electric Shock Hazards

The electric field created by high-voltage lines can extend from the energized conductors on the lines to other conducting objects, such as the ground, vegetation, buildings, vehicles, and persons if appropriate clearances are not maintained, posing a shock hazard for the public and workers. To minimize the shock that could be experienced by someone touching an object that is capacitively charged, the clearance between the power lines and the object must limit the induced current to a low-enough electrical charge. The National Electrical Safety Code (NESC) contains the basic provisions considered necessary for the safety of workers and the public.

As shown in Figure 2.2-5, the in-scope transmission lines at NMP1 are located between the turbine building and onsite switchyards. These lines are within NMPNS's exclusion zone (Figure 3.1-1).

These lines are within areas that meet the NESC definition of an electrical supply station, which includes generating stations inclusive of auxiliaries and equipment required for operation of the generating station and substations. The NESC provisions applicable to electrical supply stations are in Part 1 of the NESC, titled "Safety Rules for the Installation and Maintenance of Electric

Supply Stations and Equipment." The NESC clearance standards and the 5-milliampere threshold for induced shock discussed in the GEIS Section 3.1.6 are in NESC Part 2, Safety Rules for the Installation and Maintenance of Overhead Electric Supply and Communication Lines. (NRC 2024a)

Work on the in-scope transmission lines and switchyards is conducted under an electrical safety procedure that requires work to be completed by qualified employees trained to recognize and avoid hazards. Aspects of electrical safety – including determining clearances, minimum approach distances, transmission line inspections, proper PPE, equipment grounding, and electrical shock response – are outlined in CEG procedure.

Work at NMP1 is governed by a comprehensive industrial safety program, which includes additional topic- and task-specific procedures. These topics include, but are not limited to, occupational noise exposure, respiratory protection, working over or near water, fall protection, and hazardous waste operations.

CEG uses and follows the U.S. Occupational Safety and Health Administration (OSHA) standards for electric power generation, transmission, and distribution set in 29 CFR 1910.269.

3.10.3 Radiological Hazards

As required by NRC regulations in 10 CFR 20.1101, Radiation Protection Programs, CEG designed a radiation protection program to protect onsite personnel (including employees and contractor employees, visitors, and offsite members of the public) from radiation and radioactive material at NMP1.

NRC regulations require that gaseous and liquid radioactive releases from nuclear power plants meet radiation dose-based limits specified in 10 CFR Part 20, Standards for Protection Against Radiation, and the as low as reasonably achievable (ALARA) criteria in 10 CFR Part 50, Appendix I, Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion 'As Low as is Reasonably Achievable' for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents. Through these release limits, the NRC places regulatory limits on the radiation dose that members of the public can receive from a nuclear power plant's radioactive effluent.

NMP1 uses its ODCM, which specifies the methods and parameters to calculate doses resulting from liquid and gaseous radioactive effluents. These methods ensure that radioactive material discharges from NMP1 meet NRC and EPA regulatory dose standards. NMP1's annual radioactive effluent release reports contain a detailed presentation of the releases from NMP1 and the resultant calculated doses. NMP1 operations in 2020 through 2024 were well within federally required limits, and there were no abnormal liquid or gaseous releases. (EGC 2021b; CEG 2022c; CEG 2023c; CEG 2024e; CEG 2025b) There are no proposed substantive changes or upgrades to NMP1's Radiation Protection Program being considered in the current license term or the proposed SPEO.

During 2024, there were no regulatory effluent limit exceedances, and the resultant calculated dose to a member of the public for 2024 due to the uranium fuel cycle was well below the regulatory limit of 15 mrem/year. (CEG 2025b)

NMP1's REMP provides additional assurance that there are no significant dose or radiological environmental impacts due to operations of the station. The REMP measures the aquatic, terrestrial, and atmospheric environment for ambient radiation and radioactivity. Monitoring is conducted by sampling the following: radioiodine and airborne particulates, direct radiation, surface water, groundwater, drinking water, shoreline sediment, milk, fish, and food products. (CEG 2025c)

The REMP results for 2023 and 2024 are presented in Table 3.10-1. In assessing all the data gathered for 2023 and 2024 and comparing these results with preoperational data, CEG concluded that the operation of NMP1 had no adverse radiological impact on the environment. (CEG 2024c; CEG 2025c)

Occupational exposure at nuclear power plants is monitored by the NRC. The 3-year (2021–2023) average occupational dose per individual (total effective dose equivalent [TEDE]) was 0.123 roentgen equivalent man (rem) for NMP1 and 0.129 rem for BWRs. (NRC 2025a) The annual TEDE limit is 5 rem (10 CFR 20.1201[a][1]).

NMP1 had a 3-year (2021–2023) TEDE collective dose per reactor year of approximately 86.344 person-rem. In comparison, the average annual collective dose per reactor year for BWRs was 108.222 person-rem. (NRC 2025a)

3.10.4 Postulated Accidents

In the GEIS, the NRC considered health effects from postulated accidents associated with continued operations under the license renewal term including design basis accidents (DBAs) and severe accidents (e.g., those with reactor core damage). The impacts take into consideration the low probability of an accident occurring. DBAs would have a small impact, as these are the accidents for which the plant is designed to mitigate without core damage. Severe accidents would likely have larger consequences than DBAs, but the probability-weighted consequences (i.e., the probability of occurrence of the accident multiplied by the consequence if the accident occurred) would be SMALL for all plants as determined in the 1996 GEIS. (NRC 1996)

3.10.4.1 Design-basis Accidents

For DBAs, due to the requirements for NMP1 to maintain its licensing basis and implement aging management programs during the license renewal term, the health effects from DBAs during a license renewal term are not expected to differ significantly from those calculated assessments conducted as part of the initial plant licensing process. Constellation did not identify any changes to the NMP1 design basis expected to impact the analysis of DBAs for the SPEO.

3.10.4.2 Severe Accidents

In assessing the health effects of postulated accidents, the key figures of merit considered typically include the core damage frequency (CDF) and the Large Early Release Frequency (LERF). Table 3.10-2 provides a summary of the contributors to the NMP1 CDF and LERF that were used in the severe accident mitigation alternatives (SAMA) analysis for the original 40-to-60-year license renewal application (NRC 2006a) and the current values from the Probabilistic Risk Assessment Model of Record.

In the original SAMA analysis, high winds, tornado missiles, and "other" external events hazards were not directly included in the CDF and LERF values used in the analysis quantifications. As stated in NUREG-1437 Supplement 24 (NRC 2006a), because NMP1 included contributions from seismic and fire in its base case evaluation, and due to the efforts made during the IPEEE process to address seismic issues, the treatment of external events was acceptable (i.e. using the fire and seismic contributions to represent the impacts of external hazards in the SAMA analysis). In the current NMP1 model of record, the NMP1 External Hazards Assessment screened the "other hazards" from the probabilistic risk assessment (PRA) using a screening process consistent with the ASME/ANS PRA Standard.

It should be noted that NMP1 has not performed any power uprates since the submittal of its initial license renewal application and CEG does not have any plans to perform any power uprates for NMP1 during the subsequent license renewal period.

The notable plant changes that have reduced the NMP1 CDF since the SAMA analysis are summarized below:

- Implementation of FLEX portable equipment used to mitigate Beyond Design Basis External Events (BDBEE) (NRC Order Number EA-12-049)
- Installed permanent batteries to support Electromagnetic Relief Valve operation
- Procedure changes were made to allow anticipatory venting to allow RPV injection from low pressure sources and to limit suppression pool temperature rise
- Implemented the Hard-pipe Containment Vent System (HCVS). NRC Orders EA-12-050 and EA-13-109. HCVS is intended for use during accident conditions when primary containment pressure approaches the primary containment pressure limit (PCPL), or significant amounts of hydrogen have been generated inside the containment.
- Other Risk-Beneficial Changes
    - Permanently installed a hard piped spool piece between the firewater and Feedwater systems which increased the capability and reliability of the use of Firewater for alternate RPV makeup.

The current PRA, which includes both design basis and beyond design basis accidents, estimates CDF and LERF values that are below the NRC safety goals of 1.0E-04/year and 1.0E-05/year, respectively. In addition, the current total CDF for NMP1 of 3.52E-05/year is less

than the mean boiling water reactor "All Hazards" CDF of 5.4E-5/year from the 1996 License Renewal GEIS, as documented in Table E.3-7 of Appendix E to NUREG 1437 Revision 2. (NRC 2024a)

Based on the information presented above, the risks associated with operation of NMP1 have been determined to be within acceptable limits and continued operation of the plant is justified.

3.10.4.3 Severe Accident Mitigation Alternatives Analysis

NMP1 performed a SAMA analysis for the initial license renewal that the commission approved in a SEIS. (NRC 2006a) NMP1 is not required to perform a new SAMA analysis. New information regarding postulated accidents and SAMAs was reviewed for potential significance.

Table 3.10-1 REMP Sample Results

Media	Parameter	2023 Results	2024 Results
Shoreline Sediment (pCi/kg-dry)	Cs-134 Cs-137	None detected	None detected
Fish (pCi/kg-wet)	Gamma-emitting nuclides	None detected	None detected
Surface Water (pCi/liter)	H-3	None detected	None detected
	Gamma-emitting nuclides	None detected	None detected
Air Particulates (pCi/m^3)	Gross Beta	Mean: 17.7 E-3 Control: 17.9 E-3	Mean: 2.02 E-2 Control: 2.03 E-3
	I-131	None detected	None detected
	Cs-134 Cs-137	None detected	None detected
Milk (pCi/liter)	I-131	None detected	None detected
	Cs-134 Cs-137	None detected	None detected
Food Products (pCi/kg-wet)	I-131	None detected	None detected
	Cs-134 Cs-137	None detected	None detected

(CEG 2024c; CEG 2025c)

Table 3.10-2 NMP1 CDF and LERF from the Current Model of Record and the Original SAMA Analysis

Hazard	NMP1 SAMA CDF[1]	Current CDF	NMP1 SAMA LERF	Current LERF
Internal Events (the SAMA CDF does not include Internal Flooding because it was screened out of the PRA)	1.30E-05	1.22E-06	1.36E-06	1.31E-07
Internal Fire	1.30E-05	2.58E-05	1.32E-07	2.08E-06
Seismic	1.30E-06	1.60E-06	7.04E-07	7.00E-07
High Winds	1.6E-06 (Not directly included in SAMA CDF)	5.00E-06	8.0E-07 (Not directly included in SAMA LERF)	5.00E-07
Tornado Missiles		1.60E-06		1.60E-07
Other Hazards	< 1.0E-06 (Not directly included in SAMA CDF)	Screened out of PRA model	Screened out of PRA model	Screened out of PRA model
Total	**2.73E-05**	**3.52E-05**	**2.20E-06**	**3.57E-06**

1. The values listed for the SAMA analysis are taken from NUREG-1437, Supplement 24, Table G-1 and Section G.2.2 (NRC 2006a), which in turn were compiled from information in the NMP Units 1 and 2 LRA ER (CEG 2004a) and the responses to RAIs (CEG 2004b; CEG 2005). In the responses to the RAIs, it is noted that the frequencies provided do not exactly match those in the ER due to differences in the grouping of data relating to issues such as rounding.

RAI – request for additional information

3.11 Environmental Justice

Current NRC regulations at 10 CFR §§ 51.53(c)(3)(ii) and (iii) require applicant ERs for the operating license renewal stage to analyze potential impacts and consider alternatives for all "Category 2" issues identified in 10 CFR Part 51, Subpart A, Appendix B. That appendix includes the "Category 2" issue of "Environmental Justice—Impacts on minority populations, low-income populations, and Indian Tribes" (EJ). The regulations at 10 CFR § 51.53(c)(3)(ii)(N) also prescribe specific information that must be provided. However, the NRC has initiated a rulemaking to repeal these requirements because EJ analyses are not mandated by statute. In the interim, the Commission has directed the NRC staff to refrain from expressly addressing EJ in its environmental reviews. Given these circumstances, CEG requests an exemption, pursuant to 10 CFR § 51.6, from the requirements in 10 CFR §§ 51.53(c)(3)(ii), 51.53(c)(3)(ii)(N), 51.53(c)(3)(iii), and 10 CFR Part 51, Subpart A, Appendix B to address EJ in this ER.

Background

The NRC's EJ policy and associated rules are based on its voluntary commitment to implement Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (59 Fed. Reg. 7629 (Feb. 11, 1994). Earlier this year, Executive Order 14173, "Ending Illegal Discrimination and Restoring Merit-Based Opportunity" revoked EO 12898. Thereafter, in order to comply with EO 14173 and related executive orders, the Commission directed the NRC staff to (1) withdraw its EJ Policy Statement; (2) take a comprehensive review of the NRC's environmental regulations, guidance, and training material to remove references to EJ and plan for rulemaking to remove EJ references from the NRC's regulations; and (3) refrain from expressly addressing EJ in its environmental reviews, while still ensuring that those reviews continue to comply fully with the National Environmental Policy Act. Staff Requirements—COMSECY-25-0007—Withdrawing the Environmental Justice Policy Statement and Environmental Justice Strategy (NRC 2025b). Consistent with the Commission's direction, the NRC staff subsequently withdrew the Commission's EJ Policy Statement (90 Fed. Reg. 17,887).

Currently, NRC regulations at 10 CFR §§ 51.95(c) and 10 CFR Part 51, Subpart A, Appendix B, still call for the agency's license renewal SEIS to include EJ analyses. However, 10 CFR § 51.6 provides that "[t]he Commission may, upon application of any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and are otherwise in the public interest." In SEISs that have been completed since the NRC withdrew its EJ Policy Statement, the NRC staff has, upon its own initiative, determined that an exemption from the requirement for the NRC to address EJ in its SEIS meets these criteria. *See, e.g.*, Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS), Supplement 15, Second Renewal Regarding Subsequent License Renewal of Virgil C. Summer Nuclear Station, Unit 1 Final Report § 3.12 (NRC 2025c); [GEIS] Supplement 17, Second Renewal, Regarding Subsequent License Renewal for Dresden Nuclear Power Station, Units 2 and 3 Final Report § 3.12 (NRC 2025d); GEIS, Supplement 10,

Second Renewal, Regarding Subsequent License Renewal for Peach Bottom Atomic Power Station Units 2 and 3, Supplement 1 § 1.4 (NRC 2025e).

The Exemption is Authorized by Law and Otherwise in the Public Interest

No statute or other applicable law requires NRC license renewal ERs to include EJ analyses. And, in view of EO 14173, the NRC's withdrawal of its EJ Policy Statement, and the Commission's direction in SRM-COMSECY-25-0007, the NRC staff would refrain from reviewing any EJ information that CEG might provide in this ER. For those reasons, and for the other reasons identified in the SEISs referenced above (incorporated by reference here), an exemption from the requirements in 10 CFR §§ 51.53(c)(3)(ii), 51.53(c)(3)(ii)(N), 51.53(c)(3)(iii), and 10 CFR Part 51, Subpart A, Appendix B to include EJ analyses in this ER is authorized by law and otherwise in the public interest.

3.12 Waste Management

In addressing the station's radioactive and nonradioactive waste management systems and programs, the NRC Regulatory Guide 4.2, Supplement 1, Revision 2, specifies that the information being requested in this section can be incorporated by reference to Section 2.2 of the ER (NRC 2024b). Therefore, CEG is providing the information below to address NMP1's radioactive and nonradioactive waste management systems and program.

3.12.1 Radioactive Waste Management

Section 2.2.5 includes a discussion of NMP1's liquid, gaseous, and solid radwaste systems. The section provides a description of the radwaste systems, including management of low-level mixed waste, radwaste storage, spent fuel storage, and permitted facilities currently utilized for offsite processing and disposal of radioactive wastes.

3.12.2 Nonradioactive Waste Management

Section 2.2.6 includes a discussion of NMP1's Resource Conservation and Recovery Act (RCRA) nonradioactive waste management program, types of waste generated, waste minimization practices, and permitted facilities currently utilized for disposition of wastes.

3.12.3 Onsite Waste Disposal Facilities

NMP1 does not have any onsite waste disposal facilities.

3.13 Greenhouse Gas Emissions and Climate Change

The following section discusses greenhouse gas (GHG) emissions, climate change observations, and climate change projections for NMPNS's geographic region. Climate change impacts are discussed in Section 4.6.

3.13.1 Greenhouse Gas Emissions

Earth's climate is sensitive to changes in atmospheric GHG levels. These gases regulate energy absorption and heat retention in the atmosphere, and higher GHG concentrations typically lead to warmer surface temperatures. These GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide, water vapor, and fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Operations at nuclear power plants release GHGs from stationary combustion sources (e.g., diesel generators, pumps, diesel engines, boilers), refrigeration systems, electrical transmission and distribution systems, and mobile combustion sources (worker and delivery vehicles).

The operation of NMP1 results in direct and indirect GHG emissions. Direct emissions from station operations include GHGs (CO_2, SF_6, HFC/PFC refrigerants) and emissions from site equipment, such as emergency diesel generators and diesel fire pumps, as detailed in Table 3.3-8. Indirect emissions include air emissions from worker commutes.

CEG used EPA guidance, along with station-specific information, to estimate direct emissions, which are presented in Table 3.13-1. All values used for calculations were converted to CO_2 equivalent in metric tons (MT) using emissions factors provided by the EPA and AR4 Global Warming Potentials (GWP). Table 3.13-2 lists the GWP used for the GHG calculations. NMPNS's employee motor vehicle emissions were calculated to be 1.14 MT (EPA 2024d; DOT 2024). NMP1 uses SF_6 in four 115-kV breakers containing 64 lbs of SF_6 each, two 345-kV breakers containing 1,140 lbs of SF_6, two 345-kV breakers containing 93 lbs of SF_6 and in condenser tubes onsite. The breakers have alarms, which allow for the identification of problems including SF_6 losses. Reasonable alternatives to NMPNS include SMR, wind, and solar, which are expected to have similar GHG emissions.

As stated in Section 2.3, no SPEO-related refurbishment activities were identified expected to influence emissions from the station.

Emissions from the State of New York were 37,715,304 MT in 2021 (NRC 2024a). A comprehensive review of online resources did not yield any relevant or reliable information on GHG emissions at the county level in New York. As such, the EPA's Facility Level Information on Greenhouse Gases Tool, containing the annual GHG reporting inventory, was used as the primary data source. Annual emission data for Onondaga and Oswego Counties are listed in Table 3.13-3.

As discussed in Section 2.5, the non-outage workforce at NMPNS is 1,143 employees. Based on a U.S. average commuting distance of 15.4 miles round trip, U.S. average fuel economy of 26.2 miles per gallon (gal), and EPA emission factors, the average annual CO_2 equivalent emission from the commuting workforce is 1,560.6 MT. (DOT 2024; EPA 2024e).

3.13.2 Climate Change

The U.S. Global Change Research Program issued the Fifth National Climate Assessment (NCA), which contains summaries of climate indicators and climate model simulations of future conditions. The Fifth NCA uses global warming level (GWL), which is the average global temperature change in °C relative to preindustrial temperatures, to project climate change scenarios. Global temperature projections are presented as the year in which the 20-year global average temperature exceeds that of the preindustrial period by 2°C (3.6°F) or more. Projections of global average surface temperature primarily depend on two factors: estimated future emissions and sensitivity of the climate system. In a very high scenario, the world is likely to exceed a GWL of 2°C (3.6°F) between 2033 and 2054, depending on the climate sensitivity to GHG emissions. By contrast, in a low scenario, the world is unlikely to cross this threshold. (USGCRP 2023)

3.13.2.1 Climate Change Observations

Climatic changes are occurring on a timescale of decades, rather than over millions of years as seen with prehistoric climates. Observed changes include increased surface water temperatures, decreased global glacier ice, increased sea levels, and changes in extreme weather events. Observed changes in climate and associated impacts have not been uniform across the United States. Globally, between 1901 and 2016, the average temperature increased by 1.0°C (1.8°F), and precipitation increased by an average of 0.1 inch per decade. (NRC 2024a)

Shared Socioeconomic Pathways (SSPs) provide a detailed assessment of potential emissions pathways, serving as the basis for certain climate model scenarios. The SSP scenarios are labeled SSP1-1.9 to SSP5-8.5, where the numbers (1–5) represent socioeconomic trends, increasing in intensity, and the decimal values (1.9–8.5) indicate the level of emissions intensity, reflecting varying assumptions about population growth and emission rates. The Fifth NCA presents four scenarios representing low, intermediate, high, and very high emission rates. Lower SSP values represent lower population growth and lower emission rates. (EPA 2017) Based on the Fifth NCA, a GWL of 2°C (3.6°F) is projected between 2042 for the very high scenario (SSP5-8.5) and 2053 for the intermediate scenario (SSP2-4.5). (USGCRP 2023) These years correspond to the SPEO.

NMPNS is located in the northeastern portion of the United States. The Fifth NCA illustrates that present-day temperatures in the New York area are approximately 1–2.5°F higher than temperatures from 1901 through 1960. The number of days with night-time minimums over 70°F has increased by five, and extreme heat days (over 95°F) have decreased by five (USGCRP 2023).

New York State has experienced steady warming since 1900, with an average temperature increase of 0.25°F per decade. However, the rate of warming has accelerated since 1970, with the statewide annual average temperature rising by 0.6°F per decade. Winter temperatures have shown an even more pronounced increase, warming at a rate of 1.1°F per decade. This

accelerated warming trend is a notable shift in New York's climate, with annual average temperatures now higher in all regions of the state. (NYSDEC 2021)

Annual precipitation for New York has increased 17 percent since the first half of the twentieth century (1901–2016). The shift toward winter rain and away from snow is expected to continue throughout the eastern and central United States. In the longer term, lake-effect snows are likely to decrease as temperatures continue to rise, with the precipitation then falling as rain. Most regions of the state have experienced an increase in average annual precipitation over the past century. In addition to increased mean annual precipitation across New York State, both year-to-year variability and multiyear variability of precipitation have become more pronounced. (NYSDEC 2021)

Precipitation trends in the Northeast exhibit seasonal increases, accompanied by a 60-percent rise in extreme precipitation events. Although drought frequency has declined since 1901, the decrease is not as substantial as anticipated, considering the region's elevated precipitation levels. (USGCRP 2023)

Available water temperature data for the NMP1 intake water were available for 2014 through 2024. Figure 3.13-1, Figure 3.13-2, Figure 3.13-3, Figure 3.13-4, and Figure 3.13-5 plot the monthly average temperature and quarterly time series of the intake in °F. The spike in the March 2023 temperature is due to a plant outage when the CWS was removed from service, causing the flow to stop. The water temperature increased closer to ambient air temperatures while there was no water flow, causing the spike. In this case, analyzing data to pinpoint trends specifically caused by climate change is complicated by the relatively short time frame of available records. Trends can be influenced by a range of factors, including droughts, meteorological variability, climate patterns such as El Niño and La Niña, and fluctuations in solar activity. (NOAA 2024g; NASA 2013)

Using shorter time periods increases the likelihood that meteorological anomalies reduce the stability of any calculated benchmark. As a general rule, when determining how the climate has changed at a specific location, at least 30 years of data should be used (CD 2024).

3.13.2.2 Projections

As presented in Section 1.1, the proposed SPEO ends on August 22, 2049. By 2050, temperatures in the Northeast are expected to increase approximately 3°F to 5°F from preindustrial levels using a GWL of 2°C (3.6°F) for all scenarios except the low scenario (SSP1-2.6). For northwestern New York, average temperatures are modeled to increase at least 4°F by 2050. The number of days with a maximum temperature over 95°F is estimated to increase by up to 5 days per year, and nights of minimum temperatures less than 32°F are expected to decrease by 25 nights per year. (USGCRP 2023)

Average temperatures are projected to rise 4.1°F to 6.1°F by 2080. The number of days above 90°F is expected to increase, while the number of extreme cold days with maximum temperatures below freezing is expected to decrease. Precipitation increases are expected by

the late twenty-first century, with most of the increases occurring during the winter. Extreme precipitation events are expected to continue to increase by 20 to 40 percent by the end of the century. Evidence exists indicating an increase in lake-effect snow since 1950. With warmer winters and decreasing lake ice, models suggest that an increase in lake-effect snow is likely. (NYSDEC 2021)

Table 3.13-1 NMP1 Direct Emissions

Direct Emissions (MT)	2024	2023	2022	2021	2020	2019
Fossil Fuels	535.15	652.67	609.75	478.06	658.3	549.06
SF_6	0	0	0	0	0	0
CO_2	0	6.47	0	4.63	1.68	6.35
HFC/PFC Refrigerants	151.27	71.56	161.13	94.3	158.62	43.05
ODC Refrigerants	0	277.52	437.22	1,480.66	0.87	14.28
Total	686.42	1,008.22	1,208.1	2,057.65	819.47	612.7

ODC = ozone-depleting chemicals

Table 3.13-2 Global Warming Potentials

Emission Type	GWP
kg CO_2 Fossil Fuel	1
g CO_2e (CH_4) Fossil Fuel	28
g CO_2e (N_2O) Fossil Fuel	265
CO_2 Generator Purge\CO_2 Gas Usage (lbs)	1
R-11	77
Halon 1301 (lbs)	7140
R-407a	2107
R12 (lbs)	1100
R404a (lbs)	3922
R134a (lbs)	1430
R22 (lbs)	1810
R407c (lbs)	1774
R-410a	2088
R438a (lbs)	2264

(CARB 2024)
N_2O: nitrous oxide

Table 3.13-3 County Emissions

County Level GHG Emissions (MT)		2018	2019	2020	2021	2022
Onondaga County	Power Plants	78,894	27,225	51,137	72,454	79,064
	Waste	172,535	164,039	163,864	168,903	179,773
	Other	491306	483,073	464377	468896	459790
	Total	742,735	674,337	679,378	710,253	718,627
Oswego County	Power Plants	2,124,760	1,994,546	1,673,560	1,437,339	1,522,704
	Waste	50,646	48,549	70,514	72,781	193,475
	Other	311,112	347,716	199,457	187,856	75,411
	Total	2,486,518	2,390,811	1,943,531	1,697,976	1,791,590

(EPA 2024d)

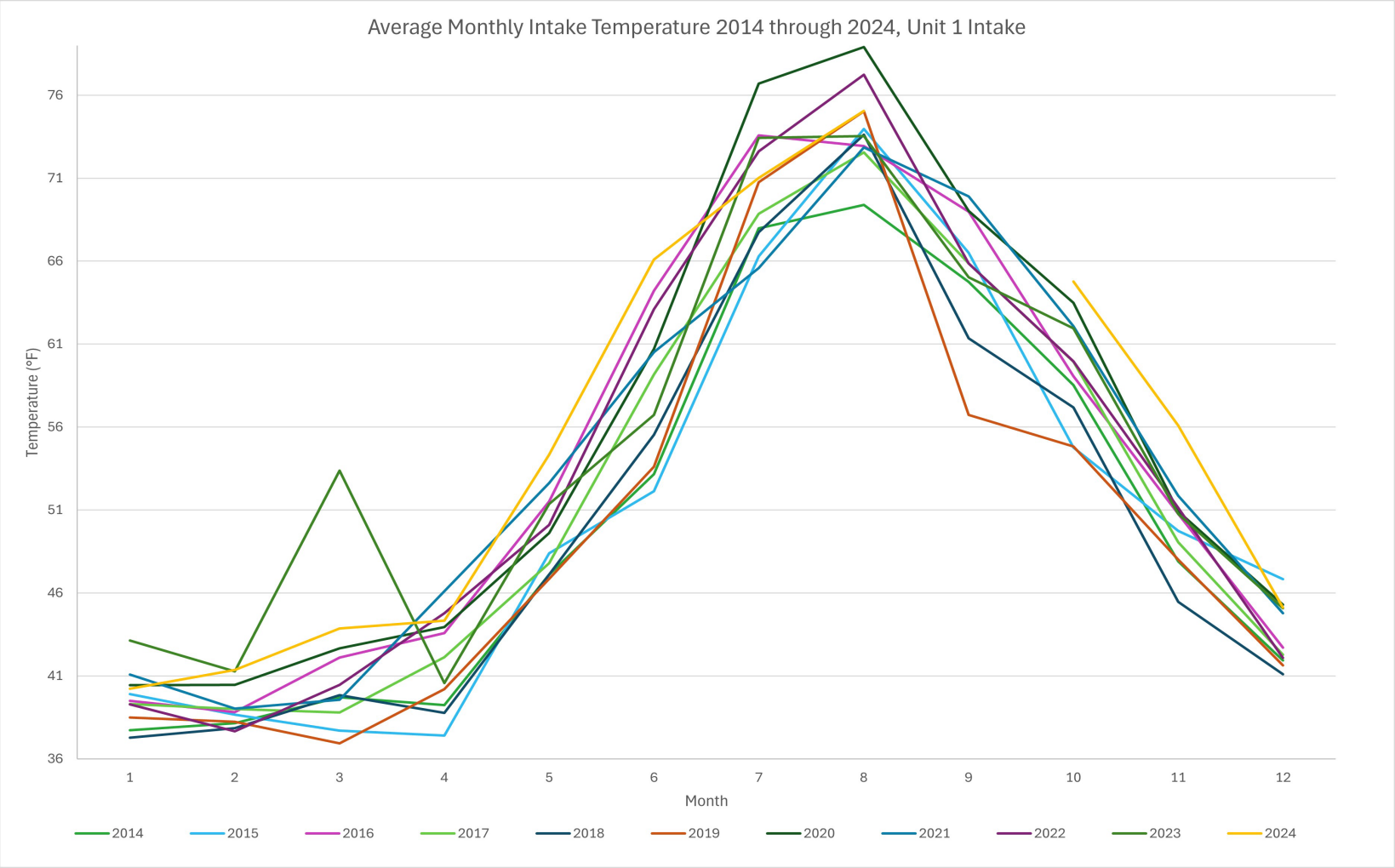


Figure 3.13-1 Average Monthly Intake Temperature, 2014–2024 (January–December)

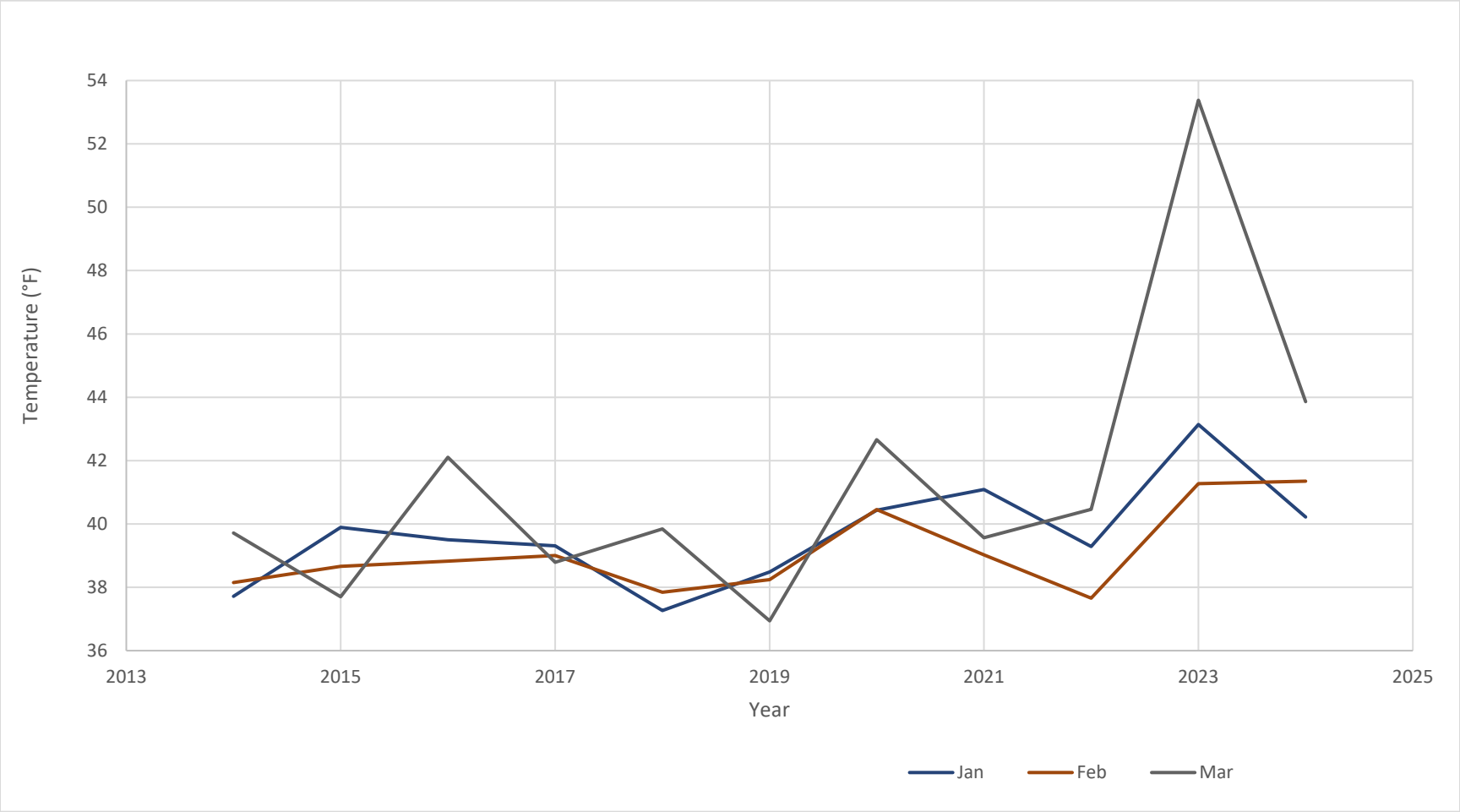


Figure 3.13-2 Average Monthly Intake Temperature, 2014–2024 (January–March)

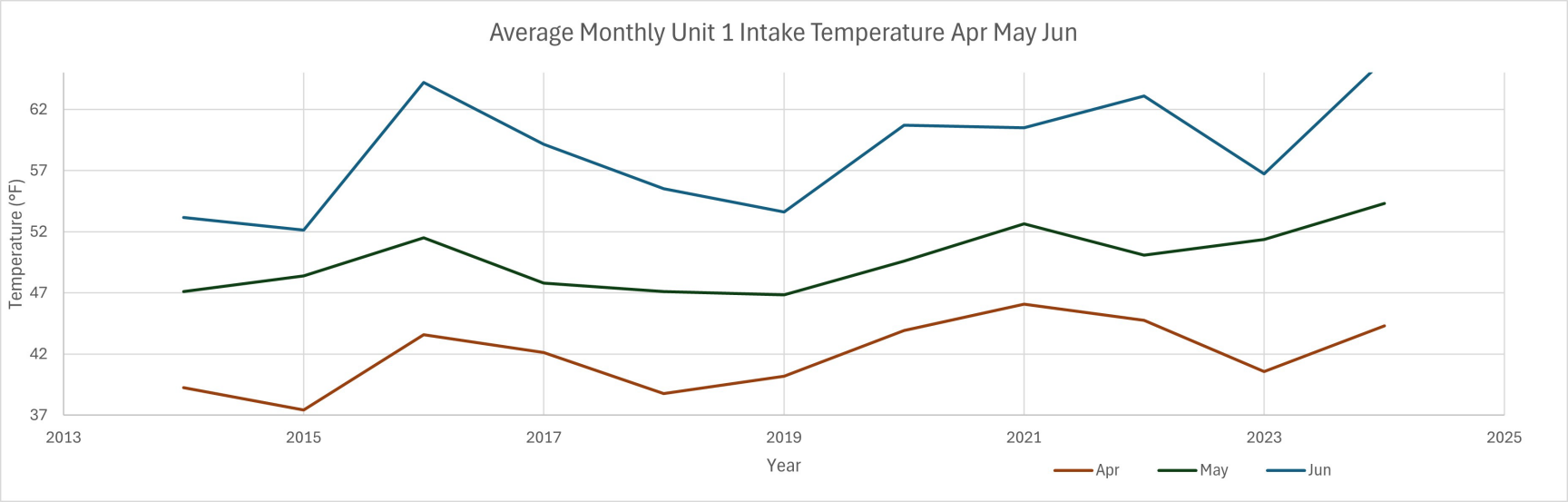


Figure 3.13-3 Average Monthly Intake Temperature, 2014–2024 (April–June)

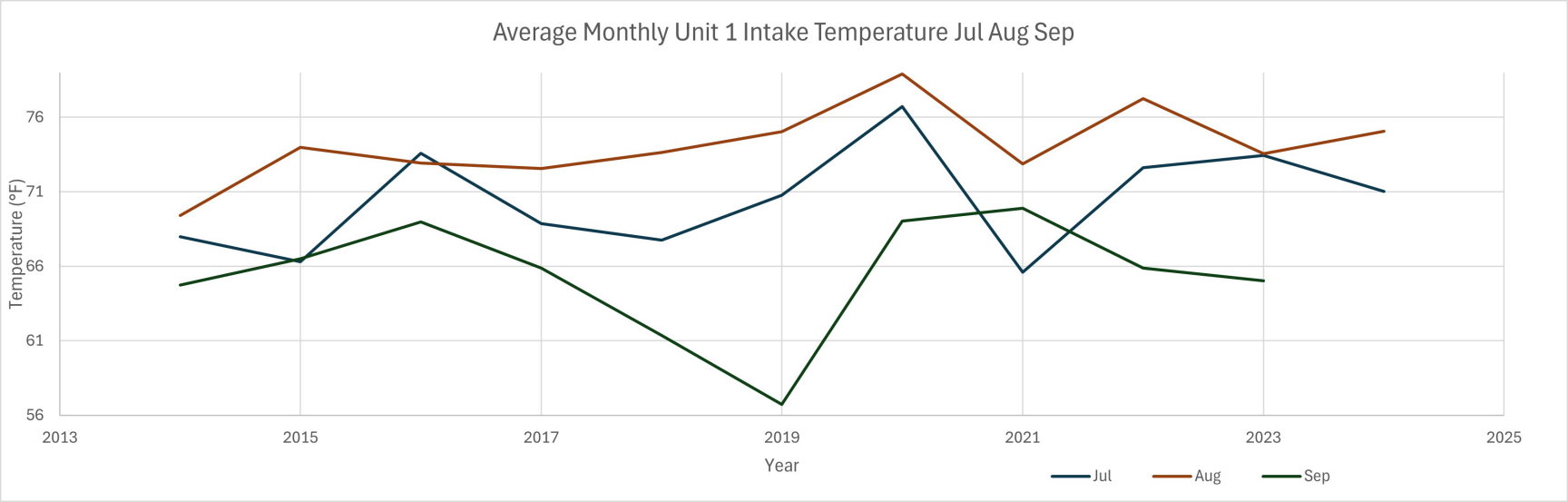


Figure 3.13-4 Average Monthly Intake Temperature, 2014–2024 (July–September)

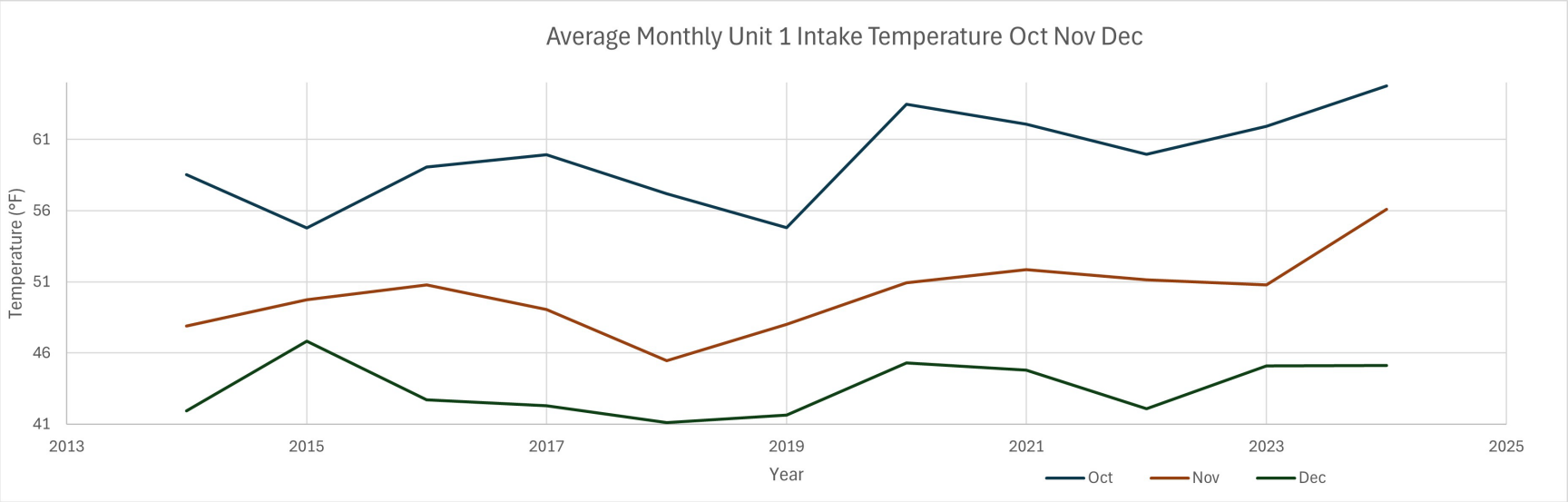


Figure 3.13-5 Average Monthly Intake Temperature, 2014–2024 (October–December)

4.0 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND MITIGATING ACTIONS

The NRC has identified and analyzed 80 environmental issues that it considers to be associated with nuclear power plant license renewal and has designated these issues as Category 1 (59 issues), Category 2 (20 issues), or uncategorized (1 issue) (NRC 2024a). Regarding the uncategorized issue, Electromagnetic Fields, as noted in 10 CFR Part 51, Subpart A, Appendix B, Table B-1, Footnote 6, applicants for license renewal are not required to submit information on this issue, and this issue is not addressed further.

4.0.1 Category 1 License Renewal Issues

The NRC designated an issue as Category 1 if all of the following criteria were met:

- The environmental impacts associated with the issue have been determined to apply either to all plants or, for some issues, to plants having a specific type of cooling system or other specified plant site characteristic;
- A single significance level (i.e., SMALL, MODERATE, or LARGE) has been assigned to the impacts (except for offsite radiological impacts of spent nuclear fuel (SNF) and high-level waste disposal and offsite radiological impacts [collective impacts from other than the disposal of spent fuel and high-level waste]); and
- Mitigation of adverse impacts associated with the issue has been considered in the analysis and it has been determined that additional plant-specific mitigation measures are not likely to be sufficiently beneficial to warrant implementation.

NRC rules do not require analyses of Category 1 issues, and an applicant may reference the GEIS findings for these issues, absent new and significant information. CEG conducted a new and significant information review for the applicable Category 1 issues, as discussed in Section 5.1.

4.0.2 Category 2 License Renewal Issues

The environmental issues that could not be assigned a single significance level were designated to be Category 2 issues requiring plant-specific analyses in the ER. The analyses for Category 2 issues are to address the impacts of refurbishment activities, if any, associated with license renewal and impacts of operation during the renewal term [10 CFR 51.53(c)(3)(ii)(A-Q)]. Because NMP1 has a once-through cooling system and does not have a cooling pond, Category 2 issues addressing impacts of closed-cycle cooling or cooling ponds are not applicable. In addition, NMP1 does not pump groundwater at a rate more than 100 gpm. Thus, CEG did not conduct an analysis for the following Category 2 issues, and these issues do not have a subsection in Chapter 4.

- Surface Water Use Conflicts (Plants with Cooling Ponds or Cooling Towers Using Makeup Water from a River)
- Groundwater Use Conflicts (Plants that Withdraw More than 100 gpm)
- Groundwater Use Conflicts (Plants with Closed-Cycle Cooling Systems that Withdraw Makeup Water from a River)
- Groundwater Quality Degradation (Plants with Cooling Ponds)
- Water Use Conflicts with Terrestrial Resources (Plants with Cooling Ponds or Cooling Towers Using Makeup Water from a River)
- Water Use Conflicts with Aquatic Resources (Plants with Cooling Ponds or Cooling Towers Using Makeup Water from a River).

Table 4.0-1 lists the Category 2 issues applicable to NMP1 and the ER section where the site-specific analysis is presented. The table also provides the citations for each issue's requirement for the analysis in the ER and the GEIS section where the NRC assessed the issue. The site-specific analyses follow Regulatory Guide 4.2, Supplement 1, Revision 2 (NRC 2024b). The analyses consider information provided in the GEIS and 10 CFR Part 51, Subpart A, Appendix B, as well as current site-specific information. The analyses also provide a summary conclusion of the environmental impacts and identify, as applicable, either ongoing or additional planned mitigation measures to reduce adverse impacts. Except for federal T&ES, designated critical habitats, EFHs, and historic and cultural resources, CEG has identified the significance of the impacts associated with each issue as SMALL, MODERATE, or LARGE, consistent with the criteria that the NRC established in 10 CFR Part 51, Appendix B, Table B-1, Footnote 3. CEG has identified the significance of the impacts associated with listed and proposed federal T&ES, designated critical habitats, EFHs, and historic and cultural resources in accordance with Regulatory Guide 4.2, Supplement 1, Revision 2. The analyses also identify, as applicable, either ongoing or additional planned mitigation measures to reduce adverse impacts. In accordance with NEPA practices, CEG considered ongoing and potential additional mitigation in proportion to the significance of the impact to be addressed (i.e., impacts that are SMALL receive less mitigation consideration than impacts that are LARGE).

Table 4.0-1 Applicable Category 2 Issues (Sheet 1 of 2)

Issue	ER Section	Finding	Requirement	Background
Groundwater Resources				
Radionuclides Released to Groundwater	4.1.1	10 CFR Part 51, Subpart A, Appendix B, Table B-1	10 CFR 51.53(c)(3)(ii)(P)	GEIS Section 4.5.1.2.7
Terrestrial Resources				
Non-Cooling System Impacts on Terrestrial Resources	4.2.1	10 CFR Part 51, Subpart A, Appendix B, Table B-1	10 CFR 51.53(c)(3)(ii)(E)	GEIS Section 4.6.1.1.1
Aquatic Resources				
Impingement Mortality and Entrainment of Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds)	4.2.2	10 CFR Part 51, Subpart A, Appendix B, Table B-1	10 CFR 51.53(c)(3)(ii)(B)	GEIS Section 4.6.1.2.1
Effects of Thermal Effluents on Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds)	4.2.3	10 CFR Part 51, Subpart A, Appendix B, Table B-1	10 CFR 51.53(c)(3)(ii)(B)	GEIS Section 4.6.1.2.4
Federally Protected Ecological Resources				
Endangered Species Act: Federally Listed Species and Critical Habitats under U.S. Fish and Wildlife Jurisdiction	4.2.4	10 CFR Part 51, Subpart A, Appendix B, Table B-1	10 CFR 51.53(c)(3)(ii)(E)	GEIS Section 4.6.1.3.1
Endangered Species Act: Federally Listed Species and Critical Habitats under National Marine Fisheries Service Jurisdiction	4.2.5	10 CFR Part 51, Subpart A, Appendix B, Table B-1	10 CFR 51.53(c)(3)(ii)(E)	GEIS Section 4.6.1.3.2
Magnuson-Stevens Act: Essential Fish Habitat	4.2.6	10 CFR Part 51, Subpart A, Appendix B, Table B-1	10 CFR 51.53(c)(3)(ii)(E)	GEIS Section 4.6.1.3.3

Table 4.0-1 Applicable Category 2 Issues (Sheet 2 of 2)

Issues	ER Section	Findings	Requirement	Background
National Marine Sanctuaries Act: Sanctuary Resources	4.2.7	10 CFR Part 51, Subpart A, Appendix B, Table B-1	10 CFR 51.53(c)(3)(ii)(E)	GEIS Section 4.6.1.3.4
Historic and Cultural Resources				
Historic and Cultural Resources	4.3	10 CFR Part 51, Subpart A, Appendix B, Table B-1	10 CFR 51.53(c)(3)(ii)(K)	GEIS Section 4.7
Human Health				
Microbiological Hazards to the Public	4.4.1	Findings from 10 CFR Part 51, Subpart A, Appendix B, Table B-1	10 CFR 51.53(c)(3)(ii)(G)	GEIS Section 4.9.1.1.3
Electric Shock Hazards	4.4.2	10 CFR Part 51, Subpart A, Appendix B, Table B-1	10 CFR 51.53(c)(3)(ii)(H)	GEIS Sections 4.9.1.1.5
Environmental Justice				
Minority Populations, Low-Income Populations, and Indian Tribes	4.5	10 CFR Part 51, Subpart A, Appendix B, Table B-1	10 CFR 51.53(c)(3)(ii)(N)	GEIS Section 4.10
Greenhouse Gas Emissions and Climate Change				
Climate Change	4.6	Findings from 10 CFR Part 51, Subpart A, Appendix B, Table B-1	10 CFR 51.53(c)(3)(ii)(Q)	GEIS Section 4.12
Cumulative Effects				
Cumulative Effects	4.7	10 CFR Part 51, Subpart A, Appendix B, Table B-1	10 CFR 51.53(c)(3)(ii)(O)	GEIS Section 4.13

4.1 Water Resources

4.1.1 Radionuclides Released to Groundwater

As described in Section 3.6.2.4 and Section 3.6.4.2, tritium data collected as part of the NMPNS RGPP are reported in ARERRs. The RGPP is described in Section 3.6.2.4 and summarized in Table 3.6-4. Groundwater quality data collected as part of the NMPNS RGPP are summarized in Section 3.6.4.2. Monitoring well construction information is provided in Table 3.6-3.

A potential release of radionuclides to groundwater is likely to migrate from the station property to Lake Ontario. Potential exposure could occur if the groundwater discharge was sufficient to increase tritium levels in Lake Ontario to detectable levels above background. Per the NMP1 REMP, surface water samples are collected from the NMP1 inlet, the Oswego Steam Station inlet, which is a control location, and from Oswego city water, which is an optional sample location. Quarterly composite samples are collected for tritium analysis, and monthly composite samples are collected for gamma isotopic analysis. In 2020 through 2024, tritium and gamma isotopes were not detected in the surface water samples collected. (EGC 2021a; CEG 2022b; CEG 2023b; CEG 2024c; CEG 2025a)

SSCs at the station are within buildings or secondary containment structures, and potential pathways to the environment require leakage through building foundations or walls. Such a release is expected to be captured by the Unit 1 perimeter drain system and be detected at the Unit 1 stormwater outfall per the ODCM. Based on the locations of SSCs and an understanding that SSCs are within buildings or secondary containment structures that are founded in bedrock, a release from these systems are not expected to cause direct or immediate impacts on the shallow aquifer. If a release to the shallow aquifer were to occur, based on the shallow aquifer groundwater flow, the impacted groundwater flow direction is north-northeast toward Lake Ontario. Although there are no shallow monitoring wells between the southern portion of NMP1 and Lake Ontario, the vertical downward gradient and the established network of bedrock aquifer monitoring wells allow sentinel monitoring of tritium impacts in this area.

As described in Section 3.6.4.2.1, there were no abnormal liquid releases reported in 2020–2024 from NMP1. In 2020 and 2021, tritium was detected in onsite RGPP monitoring locations at a maximum concentration of 242 pCi/L in piezometer PZ-7 (EGC 2021b; CEG 2022c). In 2022, the maximum detected tritium concentration was 264 pCi/L in well MW-16 (CEG 2023c). In 2023, tritium was detected in one well just above the MDA of 200 pCi/L (CEG 2024c). In 2024, tritium was detected at a maximum concentration of 224 pCi/L in monitoring well MW-9 (CEG 2025a). These tritium detections are far below the EPA drinking water MCL of 20,000 pCi/L.

As described in Section 3.6.4.2, other radionuclides sampled as part of the NMPNS RGPP, including Sr-89/90, gamma isotopes, Fe-55, and Ni-63, were not detected in samples collected in 2020 through 2024. Gross alpha was not detected above alert levels in 2020, 2022, and

2024. Further, a sample collected in 2022 from well MW-5 was analyzed for select transuranics, which were not detected. (CEG 2025a)

Potable water at the station is supplied by Scriba Water District; therefore, there is no risk of exposure associated with groundwater ingestion at the station. As described in Section 3.6.2.3, the direction of groundwater flow in both the unconfined and bedrock aquifers is toward Lake Ontario. As described in Section 3.6.3.2, the nearest groundwater supply well is approximately 1 mile from NMPNS. Based on the RGPP sampling results described above, the groundwater gradients within the unconfined and bedrock aquifers, and the location of the nearest groundwater supply well, there are no radionuclides in groundwater above MCLs that could migrate offsite.

CEG continues to sample groundwater in accordance with station procedures and the NMPNS RGPP to promptly identify impacts on groundwater from potential radiological releases. Analytical results for samples collected in 2020–2024 show tritium detections below 300 pCi/L, far below the EPA MCL of 20,000 pCi/L. CEG concludes that the impact of radiological releases to groundwater at NMP1 is SMALL and is expected to remain SMALL during the SPEO.

4.2 Ecological Resources

4.2.1 Non-Cooling System Impacts on Terrestrial Resources

Terrestrial resources are described in Section 3.7.1. No SPEO-related ground-disturbing activities or changes in operational practices have been identified that involve disturbing terrestrial habitat. Planned and ongoing federal and non-federal related project activities at NMP1, as described in Section 3.1.4, occur on existing developed areas of the site. Further, ongoing station operational and maintenance activities during the proposed SPEO (e.g., repair of existing buildings, roadways, parking lots, piping, fencing, and security-related structures) are likely to be confined to previously disturbed areas of the site and are expected to have minimal impact on terrestrial resources.

CEG maintains regulatory programs that further serve to minimize impacts on terrestrial resources at NMP1. These are related to programs, plans, procedures, and permits, such as the following:

- Wildlife and habitat management programs
- A biodiversity policy
- An environmental review procedure
- An avian and wildlife management procedure
- A pesticide management procedure
- NYSDEC Pesticide Agency Registration
- Transmission ROW Vegetation Management Plan (maintained by National Grid)

- An SPCC plan
- A stormwater control plan
- A dredging procedure
- A BMP plan
- NYSDEC CWA Section 401 Water Quality Permit
- NYSDEC Excavation and Fill in Navigable Waters Permit
- NYSDEC SPDES Discharge Permit.

Elevated noise associated with the planned and ongoing construction activities at NMPNS occur on existing developed areas of the site. Wildlife that occurs in these developed areas has already adapted to the conditions of the station site and is tolerant of disturbance. As such, elevated vibration and/or noise levels that are of particular concern, including disruption of wildlife behavioral patterns, are not anticipated.

In summary, adequate management programs and regulatory controls are in place to ensure that important plant and animal habitats are protected during the proposed SPEO. Therefore, non-cooling system impacts on terrestrial resources during the SPEO are expected to be SMALL.

4.2.2 Impingement Mortality and Entrainment of Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds)

In a letter dated April 13, 2018, CEG provided a Closed Cycle Cooling Feasibility Analysis (described in Section 3.7.2.3.7) to help facilitate NYSDEC's CWA Section 316(b) BTA decision for impingement mortality and entrainment of aquatic organisms at NMP1. Currently, the NYSDEC has not made a BTA determination for NMP1.

Impingement and entrainment studies are described in Section 3.7.2.3 of this report. As discussed in Section 3.7.2.2.1, NMP1 operates with a once-through cooling system that draws freshwater through a velocity cap equipped with bar racks located approximately 850 feet from the Lake Ontario shoreline. The average horizontal velocity at the intake cap is 2.2 fps and inside the intake pipe the velocity is 8.9 fps. Velocity calculations at the screen bay are estimated at 0.8 fps, and the approach velocity at the traveling screens is 0.9 fps.

Historically, impingement collections at NMPNS have been predominantly one or more of three common forage species in Lake Ontario: alewife, rainbow smelt, and threespine stickleback. Impingement was monitored over 26 years between 1973 and 2007; alewife was the most abundant species impinged in 19 of those years. Rainbow smelt was the most abundant species in 1979, 1982, and 1989; threespine stickleback was the most abundant species in 1978 and 1997. Round goby, first collected in 2006, was the most abundant species in 2007. The highest number of species was collected in 1974 (48) and the fewest in 1988 (16).

The estimated number of fish impinged on an annual basis varies greatly in response to several factors, including shifts in local abundance of various species, storm- and wind-related weather factors, and station operation/outages. The estimate of the number of fish impinged annually has varied from a high of 5.1 million in 1973 to 3,679 during 1988, when NMPNS was offline all year with occasional operation of the circulating water pumps. The next highest estimates of impingement occurred in 1976 (3.4 million), 1974 (2.1 million), and 1985 (1.5 million). The estimates for 2006 and 2007 were the third- and fourth-lowest of the 26 years sampled. During 19 of the 26 years sampled, the estimate of impingement at NMP1 did not exceed 300,000 fish; the long-term annual average for this period was 657,309 fish.

Entrainment abundance studies have been conducted at NMPNS in 1977–1978, 1997, and 2006–2007. Alewife was the most abundant species entrained during each of these studies. The periods of occurrence of alewife eggs and larvae were similar among these studies.

Entrainment sampling during 1977 and 1978 consisted of collections twice per month from April through October; two samples were collected during the day on each sampling date from the intake forebay at NMP1. Two 0.5-meter diameter, 571-micrometer mesh plankton nets were lowered simultaneously into the center forebay and set at depths of 2 and 8 feet. Sampling of ichthyoplankton in Lake Ontario near NMPNS was also conducted using similar towed plankton nets.

Few fish eggs and larvae were collected in entrainment samples at NMPNS compared to the variety of species observed in Lake Ontario samples. Low numbers of eggs were collected in entrainment samples from May through July, with only alewife and unidentified eggs represented. Larvae were entrained from May through October, but samples contained only five taxa: alewife, burbot, rainbow smelt, yellow perch, and Morone spp. Eggs and larvae were generally observed in entrainment samples during the same time period that they were present in the lake. The density and number of species observed in the entrainment samples were generally lower than observed in lake samples.

Compared with the variety of fish egg and larval species observed in 1978 Lake Ontario samples, few were collected in entrainment samples taken at NMPNS. Low numbers of eggs were collected in entrainment samples from late June through early August, and only alewife and unidentified eggs were represented. Larvae were entrained from May through August, but samples contained only four taxa: alewife, rainbow smelt, yellow perch, and tessellated darter.

During 1977, densities of alewife eggs generally exceeded 100/100 m^3 for a period of 5 weeks between mid-June and mid-July, with a peak of approximately 3,400/100 m^3. In 1997, peak density of alewife eggs was approximately 75/100 m^3 and exceeded 200/100 m^3 during only one sampling week. The elevated densities of alewife eggs lasted 2–3 weeks during 2006 and 2007, with peaks of approximately 270/100 m^3 and 110/100 m^3, respectively.

Similar to 2006–2007, the abundance of alewife post-yolk sac larvae and juveniles in 1997 was higher in night samples than day samples. During the 1997 studies, alewife eggs were also

most abundant at night; however, the abundance of alewife eggs did not exhibit a significant diel distribution. Yolk sac larval abundance was relatively low in 1997 and similar between day and night samples.

As summarized in the 2006 supplemental environmental impact statement (SEIS), the primary factor influencing impingement and entrainment rates at NMPNS is abundance of species in the water near the intake. In comparison with the standing stock of lake fish species, the impingement and entrainment losses incurred at NMPNS were concluded to be very small and not likely to adversely affect the fish community in the lake. (NRC 2006a)

There have been no changes to operations that affect the intake velocity of the CWIS; therefore, the historical impingement and entrainment studies remain valid. Based on previous impingement and entrainment characterization studies and historical patterns, impacts related to impingement mortality and entrainment of aquatic organisms at NMP1 are minimal. Further, NMP1 maintains permits and regulatory controls, including those associated with SPDES Permit No. NY0001015, to further reduce impingement mortality and entrainment of aquatic organisms. Therefore, impingement mortality and entrainment of aquatic organisms during the proposed SPEO are expected to be SMALL.

4.2.3 Effects of Thermal Effluents on Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds)

Currently, the NYSDEC has not made a determination under CWA Section 316(a) that thermal effluent limits are sufficiently stringent to assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in Lake Ontario.

The nature of the discharge plume and its potential impact on the aquatic community were studied during the first 5 fully operational years of NMP1 (1970 to 1975) and included 25 plume measurement surveys. The configuration of the thermal plume from NMP1 has been found to vary with wind-induced currents, wave action, and upwelling. However, no relationship between the size and the extent of the plume and either wind speed or station heat load has been demonstrated, reflecting the stochastic nature of the plume as influenced by lake hydrodynamics. In 25 surveys, the size of the plume, defined as the area or volume within the 2°C (3.6°F) above ambient isotherm, has varied between 34 and 370 surface acres and between 54 and 1,229 acre-feet. A frequency analysis identified the median plume size as approximately 120 surface acres. The plume exceeded 160 acres 30 percent of the time. The 160-surface-acre-plume extends approximately 1,875 feet on each side of the discharge point along the shore and a maximum distance of nearly 2,400 feet offshore. As is typical of heated discharges, the warmer water in the plume is buoyant. The 160-surface-acre plume had a volume of 350 acre-feet and a calculated depth from the surface of 2.19 feet. (NMPNS 2004; NRC 2006a)

A 2008 thermal discharge plume characterization study, as described in Section 3.7.2.3.5 of this report, concluded that thermal plume areas ranged from 104 to 242 acres, which is well within

the range reported in the 25 surveys of NMP1 conducted in the 1970s. A composite of summer and winter extreme conditions described in the 2009 near-field and far-field thermal monitoring studies, as described in Section 3.7.2.3.6, indicated that the 10 percent thermal plume occurrence areas (i.e., the area bounding the plume 90 percent of the time) are expected to be a total area of 369 acres for current typical conditions (typical ΔT that occurs during normal station operation at 100 percent power) and 439 acres for current maximum conditions (maximum ΔT that occurs under current normal station operation).

The current SPDES permit (No. NY0001015) allows a maximum daily discharge temperature of 115°F from NMP1. The maximum ΔT is 35°F. The maximum daily flow is 417.6 MGD. The areal extent of the permitted mixing zone is 300 surface acres in Lake Ontario from the point of discharge. Outside of this mixing zone, a temperature increase of no more than 3°F may occur. As described in Section 3.6.1.2.6, there are additional thermal limits if the facility experiences inlet icing conditions, which must be documented in the DMR. The compliance history of NMP1 demonstrates that the plant routinely and consistently meets the thermal limits in the SPDES permit, and the current permit renewal application does not request changes to these thermal limits. Further, there have been no fish kill incidents related to thermal discharges during NMP1 operation. (NRC 2006a)

In parallel with the physical plume studies, extensive biological studies were conducted near NMP1. Surveys included phytoplankton, zooplankton, ichthyoplankton, benthos, and fish. These studies were conducted during early spring through December and sampled various depths and locations near NMP1 during 1969–1974. With the approval of the EPA, Region 2, emphasis was placed on several Representative Important Species (RIS), including macroalgae (*Cladophora sp.*), macroinvertebrates (*Gammarus sp.*), and fish (alewife, coho salmon, brown trout, rainbow smelt, threespine stickleback, smallmouth bass, and yellow perch). The results of these studies demonstrated that no aspect of the biotic community was influenced or impacted by the heated discharge of NMP1. (NMPNS 2004; NRC 2006a)

Based on the information provided, the effects of thermal effluents on aquatic organisms during the SPEO are expected to be SMALL.

4.2.4 Endangered Species Act: Federally Listed Species and Critical Habitats under U.S. Fish and Wildlife Jurisdiction

As discussed in Section 3.7.3.1.2, six species are known to occur within 6 miles of NMP1 and are listed, or proposed to be listed, under the ESA. Three of these species' ranges also overlap with the NMPNS action area (as defined in Section 3.7.3.1.1) and come under the jurisdiction of the USFWS: northern long-eared bat, bog buck moth, and monarch butterfly. No final critical habitat has been designated for any of these species (USFWS 2024a). The potential impacts on northern long-eared bat, bog buck moth, and monarch butterfly related to the continued operation of NMP1 during the proposed SPEO are discussed below.

4.2.4.1 Northern Long-eared Bat

The northern long-eared bat is listed as an endangered species under the ESA. Northern long-eared bats have not been recorded as occurring at NMP1 or at any of the installed bat boxes at the NMPNS site. Further, there have been no bat incidents, such as mortality or injury from collisions with station structures and vehicles, that have occurred at NMPNS. However, given the general habitat requirements of this species, it can be conservatively assumed that suitable habitat to varying degrees is present within the forested areas of the site as well as man-made structures at the site.

Potential impacts on the northern long-eared bat from the operations of NMP1 are discussed below:

- *Mortality or injury from collisions with station structures:* Bat collisions with plant structures at nuclear power plants are not well documented but are likely to be rare. There have been two documented bat incidents at NMPNS site since 2013: one in July 2024 and another in February 2025. Neither incident involved injury to the bat, including those associated with collisions with station structures. Further, both incidents were resolved with no impacts on the animal
- *Loss, degradation, or disturbance of habitat:* Planned and ongoing federal and non-federal related project activities at NMP1 occur on existing developed areas of the site. No construction, land clearing, or other ground-disturbing activities are planned for the proposed SPEO. Station operations are located in disturbed areas, and no tree clearing is proposed during the SPEO; therefore, no impact to the northern long-eared bat is expected
- *Behavioral changes from refurbishment and/or construction activities:* No construction, ground-disturbing, or license-related refurbishment activities have been identified or proposed at NMP1 during the SPEO. Bat species, if present on the NMP1 site, likely already acclimated to the noise, vibration, and general human disturbances associated with site maintenance, infrastructure repairs, and other site activities. Moreover, the undisturbed, forested areas surrounding the structures likely provide more suitable habitat; therefore, it is unlikely for northern long-eared bats to establish a colony in the man-made structures at NMP1. As such, behavioral changes from refurbishment and/or construction activities to northern long-eared bats during the SPEO are unlikely.

As described in Sections 3.7.1.4 and 3.7.2.4, NMPNS uses administrative controls and regulatory programs to ensure that habitats and wildlife are protected from changes in station operations or prior to activities that break ground. The administrative controls involve screening proposed activities, including engineering configuration changes, maintenance activities, operational changes, procedural changes, and other site activities, to evaluate environmental impacts and risk. Existing permits and regulations also ensure that habitats and wildlife are protected. These are related to programs such as stormwater management for controlling the runoff of pollution sources such as sediment, metals, or chemicals; spill prevention with BMPs

and structural controls to minimize the potential for a chemical release to the environment; and herbicide management to ensure that their use does not adversely affect the environment.

CEG plans to comply with regulatory requirements associated with federally listed species for the life of the facility and to consult with the USFWS as necessary to ensure compliance with the ESA regarding the northern long-eared bat. As such, the continued operation of NMP1 for the proposed SPEO MAY AFFECT BUT IS NOT LIKELY TO ADVERSELY AFFECT the northern long-eared bat (USFWS 2024d).

4.2.4.2 Bog Buck Moth

Bog buck moth is listed as an endangered species under the ESA. As mentioned in Section 3.7.3.1.2 of this report, the bog buck moth requires large amounts of buckbean as host plants for its larvae. Suitable habitat for buckbean, and subsequently the bog buck moth, is likely present in the open, undeveloped riparian and wetland portions of the NMPNS site that are not maintained by mowing. However, neither the bog buck moth nor its host plant buckbean has been documented at the NMPNS site.

Station operations are located in previously disturbed areas, and no vegetation clearing is proposed during the SPEO with potential to impact habitat for the bog buck moth. Potential ground-disturbing activities associated with general operations and maintenance are expected to undergo environmental compliance reviews that include an evaluation of potential impacts on protected species. Existing regulatory programs the site is subject to, including management of herbicide applications, ensure that habitat is protected. NMPNS continues to actively restore pollinator habitats onsite to attract pollinator species and allow native pollinators to create additional habitat over time. This restoration effort could potentially enhance and expand habitat for vulnerable species such as the bog buck moth. As such, the continued operation of NMP1 during the proposed SPEO is expected to have NO EFFECT on the bog buck moth.

4.2.4.3 Monarch Butterfly

In December 2024, USFWS announced a proposal to list the monarch butterfly as a threatened species under the ESA. Suitable habitat for the monarch butterfly is likely present in undeveloped portions of the NMPNS site that are not maintained by mowing. NMPNS does not have specific requirements to track or maintain monarch habitat at the site. Station operations are located in previously disturbed areas, and no vegetation clearing is proposed during the SPEO with potential to impact habitat for the monarch butterfly. In fact, NMPNS maintains a pollinator garden program that aids to increase the quality of habitat for the monarch butterfly, as described in Section 3.7.1.4.1 of this report. Potential ground-disturbing activities associated with general operations and maintenance are expected to undergo environmental compliance reviews that include an evaluation of potential impacts on protected species prior to the activity. Existing regulatory programs the site is subject to, including management of herbicide applications, ensure that terrestrial habitat is protected. As such, the continued operation of NMP1 during the SPEO is expected to have NO EFFECT on the monarch butterfly.

4.2.5 Endangered Species Act: Federally Listed Species and Critical Habitats under National Marine Fisheries Service Jurisdiction

As discussed in Section 3.7.3.1.3, no federally listed species or critical habitats under NMFS jurisdiction occur in the NMPNS action area. Therefore, this issue is not relevant to the continued operation of NMP1 during the SPEO.

4.2.6 Magnuson-Stevens Act: Essential Fish Habitat

As described in Section 3.7.3.2 of this report, no EFH occurs in the NMPNS action area, and no EFH areas are protected from fishing. As habitat areas of particular concern (HAPCs) are derived from EFH, there were also no HAPCs located within the action area. Therefore, this issue is not relevant to the continued operation of NMP1 during the SPEO.

4.2.7 National Marine Sanctuaries Act: Sanctuary Resources

As described in Section 3.7.3.3, the Lake Ontario NMS that was designated in summer 2024 overlaps with the NMPNS action area. CEG is not proposing any changes to the NMP1 once-through CWS, nor are there any construction or refurbishment activities planned at NMP1 expected to change the current environmental baseline with respect to any proposed Lake Ontario NMS resources. Additionally, permitted discharges are not prohibited by the Sanctuary designation. As there are no proposed changes to the existing baseline during the SPEO, and NMP1's once-through cooling water discharges are permitted under the SPDES permit (No. NY0001015), and because CEG plans to submit a CWA Section 401 WQC to the NYSDEC for the proposed SPEO as described in Section 3.6.4.1, CEG expects NO EFFECT on Lake Ontario NMS resources.

4.3 Historic and Cultural Resources

4.3.1 Refurbishment Activities

As presented in Section 2.3, no refurbishment or replacement actions are planned for the proposed SPEO. There are no ground-disturbing activities identified during the SPEO. Therefore, there is expected to be no SPEO-related refurbishment impacts on historic and cultural resources, and no further analysis is required.

4.3.2 Operational Activities

As presented in Section 3.8.5 and summarized in Table 3.8-1, there have been six previous cultural resources surveys within the NMPNS property. As presented in Section 3.8.3, there are 14 archaeological sites and 48 aboveground resources located within the NMPNS site. There are no cultural resources that are NRHP-listed or any cultural resources that have been recommended or determined eligible for listing on the NRHP.

As presented in Section 3.8.6, no SPEO-related ground-disturbing activities have been identified. CEG does not have a cultural resource management plan. CEG has administrative procedures to protect previously unknown historic or cultural resources that may be discovered on the site. CEG is not aware of any historic or archaeological resources that have been affected by CEG operations, as no cultural resources within the NMPNS site have been determined eligible for the NRHP. CEG has three procedures in place that aim to identify, protect, and minimize the potential of impact on cultural resources within the NMPNS site. The procedures define AC&H resources and are designed to protect against impacts on properties, sites, and unanticipated discoveries of AC&H. When ground disturbance may occur in areas that are undisturbed by previous construction, environmental personnel are to be contacted to arrange for a survey to determine impacts. CEG uses a stop work process, and there are additional steps required if an unanticipated discovery of AC&H is encountered during any ground-disturbing activities.

As identified by the literature review described in Section 3.8, the area within a 6-mile radius of NMP1 is archaeologically sensitive. The CRIS database lists 35 archaeological sites, one shipwreck, and two cemeteries within 6 miles of NMP1. There is one NRHP-listed Historic District and no NRHP-listed archaeological sites within 6 miles of NMP1. Adverse impacts, however, occur to sites as a result of ground-disturbing activities. CEG has no plans to conduct ground-disturbing activities outside of the property boundary under a renewed license; therefore, no adverse effects on these archaeological sites or cemeteries are expected to occur.

As presented above, no SPEO-related ground-disturbing refurbishment or construction activities have been identified. No offsite NRHP-listed historic properties are expected to be adversely impacted as a result of continued operations of NMP1, and there are no plans to alter operations, expand existing facilities, or disturb additional land for the purpose of SPEO. In addition, administrative procedural controls are in place for protection of the inadvertent discovery of human remains during any future ground-disturbing activities at the station. NO ADVERSE EFFECT is expected on historic or cultural resources that are either eligible or not eligible for the NRHP during the proposed SPEO.

4.4 Human Health

4.4.1 Microbiological Hazards to the Public

Section 3.10.1 describes the discharge conditions of NMP1 and discusses thermophilic microorganisms (e.g., *Legionella species, Naegleria fowleri*).

The continuation of NMP1's thermal discharge during a 20-year extension of its license is not expected to increase the public health risk posed by the thermophilic microorganisms. The public health risk posed by the thermophilic microorganisms is expected to remain SMALL based on the following points, which are supported by the discussion in Section 3.10.1:

- The very low incidence of human infections from recreational use of untreated waters

- The discharge temperatures to Lake Ontario are generally below those that are most conducive to the growth of thermophilic microorganisms, and as the discharge mixes with the Lake Ontario water, the temperature decreases to ambient levels by the exit from the established SPDES mixing zone
- A biocide additive is added into the NMP1 cooling water system as necessary to maintain an effective concentration that controls microbial and algal growth within the system, while ensuring compliance with SPDES permit discharge limits for residual biocide levels
- The higher risk of *Legionella* exposure is presented by indoor or confined spaces
- The discharge structure is not accessible to the public.

Regulatory Guide 4.2, Supplement 1, Revision 2 indicates that the license renewal applicant should consult with the state public health department – in this case, the NYS Department of Health – Center for Environmental Health, Division of Environmental Health Protection, regarding concerns about the potential for waterborne disease outbreaks associated with the plant's thermal discharge to publicly accessible waters (NRC 2024b). Correspondence is included in Attachment D.

4.4.2 Electric Shock Hazards

As discussed in Section 3.10.2, the in-scope transmission lines at NMP1 are located onsite within the owner-controlled area of NMPNS and do not present an electric shock risk to the public. Further, as shown in Figure 2.2-5, the in-scope overhead line spans are within the PA. Work on or near the lines on the NMPNS site is governed by electrical safety administrative procedures, which have as references for their provisions the NESC, OSHA standards, and other applicable industry standards. The site procedure includes topics such as protective equipment, arc flash protection, minimum approach distances for workers to ensure appropriate clearances are maintained, grounding operations, and energized overheard power lines.

The in-scope transmission lines are within the areas that meet the NESC definition of an electrical supply station, which includes generating stations inclusive of auxiliaries and equipment required for operation of the generating station and substations.

The NESC provisions applicable to electrical supply stations are in Part 1 of the NESC, titled Safety Rules for the Installation and Maintenance of Electric Supply Stations and Equipment. The NESC clearance standards and the 5-milliampere threshold for induced shock discussed in GEIS Sections 3.9.2.4.1 and 4.9.1.1.5 are in NESC Part 2, Safety Rules for the Installation and Maintenance of Overhead Electric Supply and Communication Lines. (NRC 2024a)

Given the information provided above, CEG finds that the human health impact from electric shock hazards for the SPEO and the impacts for this issue with respect to an SPEO for NMP1 are, as analyzed here, SMALL.

4.5 Environmental Justice

Section 3.11 provides a discussion for the withdrawal of the EJ analysis.

4.6 Climate Change

The NRC considers climate change impacts in two main ways. First, they assess the effects of GHG emissions, which contribute to climate change. The NRC assessed the potential impact of GHG emissions from plant operations on climate change during LR and SPEOs and determined it to be SMALL for all plants. Second, they evaluate how continued operations may gradually impact environmental resources that are already vulnerable to climate change (NRC 2024a). The NRC's Regulatory Guide 4.2, Supplement 1, Revision 2 states: "The climate change impact analysis should focus on the climate change impacts on those resource areas where there are incremental impacts from continued nuclear power plant operations and any refurbishment activities during the license renewal term." (NRC 2024a)

Climate change impacts, when combined with the potential impacts of an operating nuclear reactor, could result in an incremental new, additive, or increased physical effect or impact on an environmental resource or environmental condition beyond what is already occurring (NRC 2024b). For NMP1, two environmental resource areas, air and surface water resources, may experience incremental impacts of both climate change and the continued operation of the plant, beyond baseline conditions. Other environmental resource areas are not expected to experience combined impacts of continued station operations and climate change. The effects of climate change on NMP1's SSCs are considered in separate and distinct processes outside of an SLR ER.

4.6.1 Air Quality

Climate change can impact air quality because air pollutant concentrations are sensitive to changes in meteorological conditions such as wind, temperature, humidity, and precipitation. Ozone levels have been found to be particularly sensitive to climate change influences. Sunshine, high temperatures, and air stagnation are favorable meteorological conditions leading to higher levels of ozone. Although surface temperatures are expected to increase, ozone levels may not, as ozone formation is also dependent on the relative concentration of precursors available. The combination of higher temperatures, stagnant air masses, sunlight, and emissions of precursors may make it difficult to meet ozone NAAQS. Regardless, states must continue to comply with the CAA and ensure that air quality standards are met. (NRC 2015)

As mentioned in Section 3.13.2.2, New York is projected to experience an increase in days with temperatures above 95°F, potentially leading to higher ozone levels. However, NMP1 does not contribute to this issue, as it does not emit CO_2 or other GHGs, including ozone precursors, as a function of power generation. Therefore, there is no potential cumulative impact on air quality from the station's operations and the predicted temperature increases. The continued operation of NMP1 avoids thousands of tons of potential GHG and criteria pollutant emissions as

compared to a fossil-fuel-fired alternative. Section 2.2 presents the proposed operation of NMP1 during the SPEO as an unaltered continuation of operations under the current license term. Consequently, no additional impacts on air or surface water resources are anticipated. Continued operation is expected to contribute only a negligible amount of criteria air pollutants and GHGs from insignificant sources.

4.6.2 Surface Water Resources

Climate change affects surface water resources through two primary mechanisms: increased air temperatures lead to elevated surface water temperatures, and decreased precipitation reduces water availability, exacerbating resource competition. Higher surface water temperatures can affect water quality, which could impact aquatic ecosystems. (NRC 2024b)

As described in Section 3.13.2.1 and Section 3.13.2.2, New York has experienced rising temperatures and precipitation over the past century, and projections indicate that this trend is expected to continue. Climate models project that precipitation is to continue to increase in New York, reducing the likelihood of water resource competition. As presented in Section 3.6.1, water use associated with the operation of NMP1 consists of fresh water withdrawn from Lake Ontario, which is used primarily for cooling water systems, including the CWS and SWS. The CWS circulates cool water through the main condensers to condense steam after it passes through the turbine. The SWS circulates cooling water through heat exchangers that serve various station components. Per the SPDES permit, the water temperature at the surface of Lake Ontario shall not be raised more than 3°F except in a 300-acre mixing zone from the point of discharge. If the station experiences inlet icing conditions during the winter, the ΔT may be exceeded by 35 percent, or 12.25°F, for no more than 1 hour during each reverse flow or return to normal flow operation. The station may exceed the 35 percent criteria for 15 minutes when the facility returns to normal flow configuration.

Lake Ontario is a large, temperate lake that exhibits a seasonally dependent pattern of thermal stratification, which alters circulation patterns. Changes in stratification result from atmospheric head exchange and wind-induced mixing. In the spring, shallow lake waters warm faster than deep waters, forming temperature layers parallel to shore. By summer, the lake stratifies with warm surface waters (around 70°F) and cooler deep waters (38.8°F–39.2°F). As surface waters cool in September, the layers mix until the water temperature is uniform. In winter, nearshore areas freeze, while offshore waters remain open. Once surface temperatures drop below 39°F, temperature layers again form parallel to shore.

As presented in Section 2.2, NMP1 operation during the proposed SPEO is to be a continuation of operations under the current license term. Therefore, there are no new means of affecting water temperatures. Continued compliance with the SPDES permit limits mitigate NMP1's impact on water temperature and water quality.

4.7 Cumulative Effects

Cumulative effects of continued operations and refurbishment associated with SLR depends on regional resource characteristics, the resource-specific effects of license renewal, and the cumulative significance of other factors affecting the resource. Cumulative effects analysis involves determining if there is an overlapping or compounding of the anticipated effects of the continued operation of NMP1 during the SPEO with past, present, and reasonably foreseeable actions, regardless of which agency (federal or non-federal) or person undertakes such actions.

CEG considered potential cumulative effects during the proposed SPEO in its environmental analysis associated with the resources discussed in the following sections. For the purposes of this analysis, past actions are those related to the resources at the time of station licensing and construction, present actions are those related to the resources at the time of current operation of the power station, and future actions are considered to be those that are reasonably foreseeable through the end of station operation, which includes the 20-year SPEO. The environmental effects from past and present actions are accounted for in baseline assessments presented in discussions of the affected environment in Chapter 3. Reasonably foreseeable actions include current and ongoing activities: those that are approved and funded for implementation or that generally have a high probability of being implemented (NRC 2024b). The geographic area for which past, present, and future actions are considered is dependent on the type of action considered and is described below for each impact area.

The effects of the proposed action are combined with other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such other actions. It is possible that an impact that may be SMALL by itself could result in a MODERATE or LARGE impact when considered in combination with the effects of other actions on the affected resource. Likewise, if a resource is regionally declining or imperiled, even a SMALL individual impact could be important if it contributes to or accelerates the overall resource decline.

As discussed in Section 2.3, no SPEO-related refurbishment activities have been identified.

NMP2's OL expires on October 31, 2046. NMP2 is expected to continue operations in accordance with its license during the proposed NMP1 SPEO. The onsite ISFSI serves both NMP1 and NMP2, and an expansion project for ISFSI capacity was completed in 2025. As indicated in Section 2.3, no major changes to NMPNS operations or other plans for future expansion of station infrastructure during the proposed SPEO are expected.

Through a DOE-supported project, CEG installed a low-temperature electrolysis system at NMPNS to produce hydrogen to support cooling. The system includes an electrolyzer, hydrogen storage, and compressors. Hydrogen production began in 2023. (DOE 2022a) CEG received a grant from the New York State Energy Research and Development Authority (NYSERDA) to demonstrate hydrogen fuel cell technology at NMPNS.

The JAF is adjacent to the NMPNS site. Its OL expires on October 17, 2034. The plant is expected to continue operating in accordance with its OL during the NMP1 SPEO. The R.E. Ginna Nuclear Power Plant (Ginna) is located approximately 48 miles from the facility. Other than NMP2, Ginna, and the JAF, there are no other operating power reactors, sites undergoing decommissioning, or major nuclear fuel facilities licensed by the NRC within the 50-mile region of NMP1 (NRC 2024d).

As described in Section 3.1.4, the County of Oswego Industrial Development Agency is making rail improvements and rail reactivations at the Novelis aluminum plant, approximately 3 miles from NMPNS.

The potential for cumulative effects during NMP1's SPEO is discussed in Section 4.7 by resource area.

4.7.1 Land Use and Visual Resources

4.7.1.1 Land Use

Reactor operations have a SMALL impact on the land use (NRC 2024a). As stated in Section 3.2.1, currently there are no zoning or land development regulations for the Town of Scriba, and NMPNS is not subject to zoning or land use regulations. As such, there are no land use changes based on zoning. The installed hydrogen production system and the recently completed ISFSI expansion are within previously disturbed areas already considered to be developed. The types of improvements at the Novelis aluminum plant are not expected to change land use. Because there are no land use changes expected for the NMPNS and other projects, there is no contribution to the cumulative effects on land use.

4.7.1.2 Visual Resources

The NMP1 vicinity is described in Section 3.1. NMPNS is situated on the shore of Lake Ontario in Oswego County. The land is characterized by rolling terrain rising gently up from the lake. As noted above, the JAF is east, adjacent to NMPNS. The area surrounding NMPNS and the JAF is a mixture of rural residential towns and small communities, agricultural land, deciduous forest, and lakeshore. Section 3.2.3 describes limited viewing of the station except from the immediate area and from Lake Ontario. The continued operation of NMPNS is not expected to change the visual aesthetics. Because the view of NMPNS is already limited and there are no expected changes that could alter NMPNS's viewshed, NMPNS is expected to continue to have a SMALL contribution to the cumulative effects on visual resources. Other projects at NMPNS are not expected to change the station's appearance from offsite locations. Furthermore, the anticipated rail improvements and rail reactivations at the Novelis aluminum plant are not anticipated to change the visual aesthetics of the vicinity. As such, there is no expected contribution to cumulative visual impacts beyond that which is already occurring.

4.7.2 Air Quality and Noise

4.7.2.1 Air Quality

Section 3.3.3 discusses regional air quality and NMP1 air emission sources in detail. None of the counties in the 62-mile radius of NMP1 are designated as nonattainment areas. Onondaga County is designated as a maintenance area for CO (1971). NMP1 air pollutant emissions are minimal and stem from intermittent use and maintenance and testing of diesel engines and generators. As a nuclear plant, the neighboring JAF's ancillary equipment generally emits low amounts of criteria air pollutants and volatile organic compounds; therefore, the impact on potential ambient air quality is minimal (NRC 2024a). The JAF's air emissions are also regulated by the State of New York (Entergy 2006). As such, the cumulative effect on air quality is mitigated by compliance with air quality permits and regulations.

4.7.2.2 Noise

The land use, discussed above in Section 4.7.1.2, surrounding the industrial facilities is a mixture of rural residential towns and small communities, agricultural land, deciduous forest, and lakeshore. As discussed in Section 3.4, the nearest residence to NMP1 is 1.1 miles from the NMP2 reactor building and are unlikely to be affected by noise from NMP1. The rail renovation is not expected to be a source of noise sufficient to add cumulative noise impacts. Noise from the JAF has not been considered a problem due to the plant's distance from local communities (Entergy 2006). Noise from the existing hydrogen production facility is expected to occur onsite near the shoreline on the eastern side of the Unit 2 area. As such, noise is expected to be attenuated by structures on the NMPNS and JAF sites.

4.7.3 Geology and Soils

Effects on geology and soils could result from ground-disturbing activities. As discussed in Section 3.5.3.1, NMPNS maintains and implements a BMP plan that identifies potential sources of pollution, such as erosion, reasonably expected to affect the quality of stormwater and identifies practices to prevent stormwater runoff. Land-disturbing activities on the nuclear sites during the SPEO are governed by programs consistent with the requirements of the "NYSDEC General Permit for Stormwater Discharges Associated with Industrial Activities from Construction Activities" to control erosion and sediment losses and to manage runoff to reduce sediment loading. As such, the cumulative effect on geology and soil is mitigated by compliance with BMPs and clean water permits and regulations.

4.7.4 Water Resources

Surface water and groundwater resources at NMPNS and the surrounding area are described in Section 3.6. Impacts of radionuclides from NMPNS on groundwater resources are analyzed in Section 4.1.

4.7.4.1 Surface Water

As stated in Section 3.6.3.1, there is no water demand at the NMPNS site that depends on streams. The volume of water withdrawn from Lake Ontario by NMP1 due to operations ranged from 348.21 MGD to 393.49 MGD. NMPNS is authorized by permit to withdraw up to 489.6 MGD for both units. The JAF is located east of NMP2 and recirculates an average of 370,200 gpm. The only major public water supplies within a 30-mile radius of NMPNS that withdraw water from the lake are the City of Oswego, the Oswego County Water Department, and the OCWA, which pumps water through an intake shared with the City of Oswego. In 2015, total surface water withdrawals in Oswego County were reported as 1,089.82 MGD, of which 1,046.10 MGD were used for power generation. Surface water usage for existing and future facilities that use in excess of 100,000 gpd are expected to be processed under a NYSDEC surface water withdrawal permit (NY Consolidated Law, Environmental Conservation Section 15-1501); thus, water use effects are considered by NYSDEC prior to issuance of a permit. As such, a mechanism exists by which surface water conflicts are continually mitigated. Because NMPNS and other facilities are expected to continue their compliance with NYSDEC surface water withdrawal permits, NMPNS expects to have only a SMALL contribution to surface water use cumulative impact. Therefore, the surface water resources cumulative effects are SMALL.

As discussed in Section 3.6.4.1, the Lake Ontario shoreline is the only impaired water identified within 6 miles of NMPNS. Because NMPNS seeks to be in compliance with its SPDES permit and to rapidly resolve NOVs, it does not contribute to surface water impairments. Therefore, the cumulative impact on surface water quality is expected to be SMALL.

Given NMPNS compliance with its surface water withdrawal permit and its SPDES permit, NMPNS is expected to make only a SMALL contribution to the surface water use and quality cumulative impact.

4.7.4.2 Groundwater

As discussed in Section 3.6.3.2, NMPNS does not withdraw groundwater for station operations. There are three registered water supply wells located within a 2-mile radius of NMP1. As stated in Section 4.1.1, CEG monitors groundwater at the site and has determined that there are no radionuclides in groundwater that could migrate offsite above MCLs. CEG continues to sample groundwater in accordance with station procedures and the NMPNS RGPP to promptly identify any impacts on groundwater from radiological releases. Gamma radionuclides and strontium were not detected above their respective LLDs in the 2023 groundwater samples collected at NMPNS. In 2023, tritium was detected in one groundwater sample at NMPNS just above the MDA of 200 pCi/L, and tritium was detected at the JAF at a maximum of 355 pCi/L. (CEG 2024c) As such, groundwater impacts from NMPNS are expected to make only a SMALL contribution to the groundwater quality cumulative impact, and the cumulative effects on groundwater quality from NMPNS are expected to be SMALL.

4.7.5 Ecological Resources

Effects of NMPNS operations on ecological resources are presented in Section 4.2.

4.7.5.1 Terrestrial

The effects on terrestrial species during the proposed SPEO are described as SMALL in Section 4.2.1 (Non-Cooling System Effects) and range from may affect but is not likely to adversely affect the northern long-eared bat to no effect on the bog buck moth and the monarch butterfly in Section 4.2.4 (Endangered Species Act: Federally Listed Species and Critical Habitats under U.S. Fish and Wildlife Jurisdiction). The continued operation of NMPNS is governed by regulations, NMPNS procedures and plans. CEG has administrative controls in place at NMPNS to ensure that habitats and wildlife are protected from changes in station operations or prior to ground-disturbing activities, and to minimize effects through implementation of BMPs, permit modifications, or acquisition of new permits as needed. The JAF, which is also operated by CEG, is expected to comply with fleet environmental review and pesticide management procedures to ensure that operations or construction activities are reviewed, and the effects minimized through implementation of BMPs, and the acquisition of permits as needed.

Proper implementation of environmental procedures and BMPs are expected to minimize or mitigate potential effects on terrestrial resources during the SPEO. Successful application of the regulations, procedures, plans, and administrative controls are expected to identify and avoid important terrestrial habitats. In addition, the application of BMPs to minimize the area affected; to control fugitive dust, runoff, and erosion from project sites; to reduce the spread of invasive nonnative plant species; and to reduce disturbance of wildlife in adjacent habitats could greatly reduce the effects of continued operations.

Regulatory programs that the site is currently subject to, such as stormwater management, spill prevention, dredging, and herbicide usage, further serve to minimize effects on terrestrial resources. With continued application of these programs and procedures, the land-based effects are expected to be confined to the NMPNS site and to have minimal contribution to cumulative effects.

As discussed in Section 3.7.1.2.2, there have not been any state-listed terrestrial species recorded at the site in the last 5 years. As discussed in Section 3.7.3.1.2, no critical habitat for the federally listed terrestrial species has been found in the 6-mile vicinity. In Section 4.2.4, effects on federally listed T&ES are described as ranging from no effect to may affect but are not likely to adversely affect.

The effects on state-listed T&ES not included in the federally listed T&ES are mitigated by the permits listed in Section 3.7.1.5.

Adherence to regulatory and permit requirements to avoid take of protected species and CEG administrative controls, such as those regarding response to avian collisions with transmission lines, are expected to minimize or avoid impacts on these species.

As discussed in Section 4.2.1, maintenance activities necessary to support the SPEO are likely to be limited to previously disturbed areas onsite during the proposed SPEO rather than within other habitat on the site. Other existing and planned facilities are expected to comply with environmental regulations and listed species protections.

Therefore, cumulative effects on protected species are expected to be SMALL. Overall, the cumulative effects on terrestrial ecological resources are expected to be SMALL.

4.7.5.2 Aquatic

Aquatic resource effects during the proposed SPEO were concluded to be SMALL in Sections 4.2.2 (Impingement Mortality and Entrainment of Aquatic Organisms [Plants with Once-Through Cooling Systems or Cooling Ponds]) and 4.2.3 (Effects of Thermal Effluents on Aquatic Organisms [Plants with Once-Through Cooling Systems or Cooling Ponds]), not applicable in Section 4.2.5 (Endangered Species Act: Federally Listed Species and Critical Habitats under National Marine Fisheries Service Jurisdiction), and not applicable in Section 4.2.6 (Magnuson-Stevens Act: Essential Fish Habitat). As presented in Section 4.2.4, there are no endangered aquatic species under the jurisdiction of the USFWS. As discussed in Section 3.7.2.2.3, there have not been any state-listed aquatic species recorded at the site in the last 5 years. The aquatic ecological communities could be impacted through surface water discharges that are governed by NMPNS's SPDES permit. In addition, aquatic ecological communities could be impacted by impingement and entrainment of species in the NMP1 intake. As stated in Section 4.2.2, impacts related to impingement mortality and entrainment of aquatic organisms at NMP1 are minimal. Further, NMP1 maintains permits and regulatory controls, including those associated with the SPDES permit, to further reduce impingement mortality and entrainment of aquatic organisms. As stated in Section 3.7.3.2, no EFH is located within the NMPNS's action area. Continued compliance with SPDES permit conditions during the proposed SPEO ensures that NMPNS's direct and indirect effects to aquatic ecological communities are minimized.

Other existing and planned facilities are expected to comply with environmental regulations and listed species protections. Therefore, cumulative effects on protected species are expected to be minimized.

4.7.6 Historic and Archeological Resources

As presented in Section 2.3, there are no planned refurbishment activities or other construction activities. Therefore, no SPEO-related refurbishment impacts on historic and cultural resources are expected, and no further analysis is required.

As presented in Section 4.3.2, CEG has administrative procedures in place to identify, minimize impacts on, and manage cultural resources in the event of ground-disturbing activities. Details

of the administrative procedures are included in Section 3.8.5. CEG has administrative procedures to protect previously known and unknown historic or cultural resources that may be discovered on the site. Therefore, no adverse effects are expected on these sites during the SPEO.

Further, no impacts on historic or cultural resources that are eligible or not eligible for the NRHP are expected during the SPEO. Therefore, NMP1 is not anticipated to contribute cumulative effects to historic and cultural resources.

4.7.7 Socioeconomic

As discussed in Section 2.5, the proposed SPEO does not include plans to add permanent workers; therefore, the SMALL adverse effects that are the result of workers' impact on community services, education, and infrastructure including transportation are not expected to change. As stated in Section 3.9.3, annual property tax payments on behalf of NMPNS are expected to be similar to the current tax payments. The economic contributions of the station's workers expected to remain the same. Thus, significant beneficial socioeconomic effects are expected to continue and be cumulative with other existing and future economic contributions during the proposed SPEO.

4.7.8 Human Health

Radiological dose limits for protection of the public and workers have been developed by the EPA and the NRC to address the cumulative effects of acute and long-term exposure to radiation and radioactive material. These dose limits are codified in 10 CFR 20 and 40 CFR 190. For this analysis, the region of influence is the surrounding 50-mile region.

As presented in Section 3.10.3, CEG prepares AREORs and ARERRs. The reports for 2020–2024 indicate that doses to members of the public were in accordance with NRC and EPA radiation protection standards. Because no changes to the operation of NMP1 are expected, operating NMP1 for an additional 20-year period are not expected to cause an increase in annual radioactive effluent releases.

As stated in Section 4.7, other than the JAF and Ginna, there are no operating power reactors, sites undergoing decommissioning, or major nuclear fuel facilities licensed by the NRC within the NMP1 region. Further, EPA regulations in 40 CFR Part 190 limit the annual cumulative radiation dose to members of the public from all sources in the nuclear fuel cycle, including nuclear power plants, fuel fabrication facilities, waste disposal facilities, and transportation of fuel and waste. CEG has a single REMP to assess the impact of all three reactors on the environment and compliance with 10 CFR 20, 40 CFR 190, and 10 CFR 72. The results from the 2024 REMP sampling demonstrate that the routine operation at the JAF and NMPNS had no significant or measurable radiological impact on the environment. The program continues to demonstrate that the dose to a member of the public as a result of the operation of all sites remains significantly below the federally required dose limits specified in 10 CFR 20, 40 CFR

190, and 10 CFR 72. (CEG 2024c) Therefore, cumulative human radiological health effects are expected to be within regulatory standards and SMALL.

As for non-radiological human health effects, as pointed out in Section 4.4.1, the public health risk posed by the thermophilic microorganisms are expected to remain SMALL because the incidence rate of human infections is very low, discharge temperatures to Lake Ontario are generally lower than temperatures conducive to the growth of thermophilic microorganisms, biocide is injected into the cooling water system, and the discharge canal that conveys the heated cooling water from the station to Lake Ontario is not accessible to the public. CEG has a comprehensive health and safety program with procedures that implement industrial hygiene practices, including PPE as appropriate for hazards to minimize the potential for station worker exposure. Therefore, cumulative human non-radiological health effects are not expected.

4.7.9 Waste Management

CEG has comprehensive regulatory controls in place for management of radiological waste and uses licensed treatment and disposal facilities. These fleetwide waste management programs also apply to the JAF and Ginna. These controls allow the effects to remain SMALL during the proposed SPEO. The NRC oversees the licensing of radiological waste treatment and disposal facilities. There are four facilities providing LLRW disposal services in the United States (NRC 2024e).

As described in Section 2.2.6, CEG has programs in place to manage its hazardous and nonhazardous waste streams. NMPNS uses appropriately permitted vendors for the management and disposal of waste. These fleetwide waste management programs also apply to the JAF and Ginna. CEG does not anticipate increases to hazardous waste generation during the renewal period. Continuation of existing systems and procedures to ensure proper storage and disposal of nonradioactive waste during the SPEO allow the effects to be SMALL. Other commercial operations within the 50 miles of NMP1 are also required to comply with appropriate federal and state requirements for waste management.

Thus, the cumulative radiological and non-radiological waste management impact are expected to be SMALL during the SPEO.

5.0 ASSESSMENT OF NEW AND SIGNIFICANT INFORMATION

While NRC regulations do not require a license renewal applicant's ER to contain analyses of the impacts of those Category 1 environmental issues that have been generically resolved [10 CFR 51.53(c)(3)(i)], the regulations do require that an applicant identify any new and significant information of which the applicant is aware [10 CFR 51.53(c)(3)(iv)].

5.1 ER New and Significant Information

The NRC defines and provides guidance on new and significant information in Regulatory Guide 4.2, Supplement 1, Revision 2 (NRC 2024b). In this guidance, new and significant information is defined as follows:

> (1) Information that identifies a significant environmental impact issues that was not considered or addressed in the GEIS and, consequently, not codified in Table B-1, "Summary of Findings on NEPA Issues for License Renewal of Nuclear Plants," in Appendix B, "Environmental Effect of Renewing the Operating License of a Nuclear Power Plant," to Subpart A, "National Environmental Policy Act - Regulations Implementing Section 102(2)," of 10 CFR Part 51, or
>
> (2) Information not considered in the assessment of impacts evaluated in the GEIS, Revision 2, leading to a seriously different picture of the environmental consequences of the action than previously considered, such as an environmental impact finding different from that codified in Table B-1
>
> (3) Further, any new activity or aspect associated with the nuclear power plant that can act upon the environment in a manner or an intensity not previously recognized or quantified.

Based on available guidance and the definitions of SMALL, MODERATE, and LARGE impacts provided by NRC in 10 CFR Part 51, Appendix B, Table B-1, Footnote 3, CEG expects any new information regarding Category 1 issues with MODERATE or LARGE impacts to be significant.

5.1.1 New and Significant Information Review Process

The new and significant information assessment described below meets or addresses regulatory guidance provided above.

Ongoing environmental planning, assessment, routine monitoring, and compliance activities, in addition to ER-specific reviews, contribute to the new and significant review process during the preparation of the SLR ER. CEG and NMPNS operations support staff has collective knowledge of the NMPNS site, licensing and permitting, environmental and regulatory issues, the NEPA

process, and other nuclear industry activities which could potentially provide new and significant information.

CEG's new and significant information review included establishment of applicable and non-applicable Category 1 issues through:

- Review of the GEIS, Revision 2 for its Category 1 discussions,
- Identification and review of past or potential modifications to NMP1, including environmental impacts, and
- Identification and assessment of equipment and operations with the potential to result in changes in emissions, releases, discharge points, land use, noise levels, etc.

CEG applied an investigative process for purposely seeking new information related to the Category 1 environmental issues through:

- Environmental review discussions with CEG and NMP1 subject matter experts on the Category 1 issues as they relate to the station;
- Review of permits and reference materials related to environmental resources at the station, the environmental resource areas related to Category 1 issues, and information collected for regulatory compliance status;
- Review of recent publicly available information, or information held by CEG, particularly data or reports from the past five years, related to each resource area and each applicable Category 1 impact issue, as summarized in the appropriate section of the license renewal ER in Chapter 3, Affected Environment;
- Review of environmental monitoring and reporting required by regulations related to the NMPNS site and NMP1 operations;
- Review of CEG environmental programs and procedures related to the NMPNS site and operations;
- Review of correspondence and permitting documentation related to oversight of NMPNS facilities and NMP1 operations by state and federal regulatory agencies (activities that bring issues to the station's attention), to identify site-specific environmental concerns pertinent to specific resource areas;
- Review of postulated accident-related new information, including the probability weighted consequences of atmospheric releases, fallout onto open bodies of water, and releases to groundwater from severe accidents, for potential significance;
- Review of any new industry potentially cost beneficial SAMAs not previously evaluated in the GEIS, Revision 2 for significance or cost benefit;
- Review of other plants' previous initial and subsequent LRAs for issues relevant to this NMP1 SLR application; and
- Oral and written communication and consultation with various federal, state, and local agencies and applicable Native American tribes regarding the proposed SLR.

In addition, CEG actively seeks out information concerning new and emerging environmental issues and related concerns on an ongoing basis through:

- Review of nuclear industry publications, operational experience, and participation in nuclear industry organizations;
- Routine communication with other CEG business units;
- Consultation with state and federal resource agencies with regulatory authority over environmental regulation; and
- Development and periodic review of regulatory guidance procedures that address ongoing and emergent issues.

Information resulting from the information-seeking process was assessed to determine if it is new and/or significant, applying the following considerations:

- Was the information included in or available for the GEIS analysis of the Category 1 issue?
- Does the information identify an environmental issue not generically considered in the GEIS, and consequently, not codified in 10 CFR 51 Appendix B Table B-1?
- Does the information present a seriously different picture of the environmental consequences of the action than previously considered, leading to an impact finding different from that included in the GEIS or codified in regulation?
- Does the information involve a new activity or aspect associated with the nuclear power plant that can act upon the environment in a manner or an intensity (MODERATE or LARGE) and/or scope (context) not previously recognized?

5.1.2 CEG's New and Significant Information Review Results

As a result of this review, CEG is aware of no new and significant information regarding the environmental impacts of the subsequent license renewal associated with NMP1. The findings in NUREG-1437, Revision 2 and 10 CFR Part 51, Subpart A, Appendix B, Table B-1 for the applicable Category 1 issues are therefore incorporated by reference.

6.0 SUMMARY OF LICENSE RENEWAL IMPACTS AND MITIGATING ACTIONS

6.1 License Renewal Impacts

As described in Section 4.0, the NRC has identified 80 environmental issues that it considers to be associated with nuclear power plant license renewal. Chapter 4 incorporates by reference NRC findings for the Category 1 issues that apply to NMP1, all of which have SMALL environmental impacts. In addition, Chapter 4 presents site-specific analysis of the 14 applicable Category 2 issues. Table 6.1-1 summarizes the environmental impact analyses for the 14 Category 2 issues applicable to NMP1.

CEG has reviewed the environmental impacts of renewing the NMP1 OL. CEG has concluded that further mitigation measures are not warranted beyond those listed in Table 6.1-1 to avoid, reduce the severity of, or eliminate adverse impacts. This ER documents the basis for CEG's conclusion.

Table 6.1-1 Environmental Impacts Related to SLR at NMP1 (Sheet 1 of 9)

Resources Issue	ER Section	Environmental Impact
Groundwater Resources		
Radionuclides Released to Groundwater	4.1.1	SMALL impact. CEG concludes that the impacts of radionuclides released to groundwater at NMP1 are SMALL. Although tritium has been detected in some onsite groundwater monitoring wells, concentrations are far below the MCL of 20,000 pCi/L. Other radionuclides, including Sr-89/90, gamma isotopes, Fe-55, and Ni-63, were not detected in samples collected in 2020 through 2024. Gross alpha was not detected above alert levels in 2020 and 2022. The station is supplied by municipal water; therefore, there is no risk of exposure associated with groundwater ingestion at the station. Continued groundwater monitoring in accordance with internal procedures ensure SMALL impact during the SPEO.

Table 6.1-1 Environmental Impacts Related to SLR at NMP1 (Sheet 2 of 9)

Resources Issue	ER Section	Environmental Impact
Terrestrial Resources		
Non-Cooling System Impacts on Terrestrial Resources	4.2.1	SMALL impact. No ground-disturbing activities that have the potential to increase noise levels at the NMPNS site are planned during the proposed SPEO. As such, elevated vibration and/or noise levels that could be of particular concern, including disruption of wildlife behavioral patterns, is not expected. Adequate management programs and regulatory controls are in place to ensure that important plant and animal habitats are protected during the SPEO.
Aquatic Resources		
Impingement Mortality and Entrainment of Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds)	4.2.2	SMALL impact. Lake Ontario continues to support a healthy and abundant fish community near the NMP1 CWIS. In comparison with the standing stock of lake fish species, the impingement and entrainment losses incurred at NMPNS was concluded to be very small and not likely to adversely affect the fish community in the lake. Further, CEG maintains permits and regulatory controls, including those associated with the SPDES permit, to further reduce impingement mortality and entrainment of aquatic organisms.

Table 6.1-1 Environmental Impacts Related to SLR at NMP1 (Sheet 3 of 9)

Resources Issue	ER Section	Environmental Impact
Aquatic Resources Continued		
Effects of Thermal Effluents on Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds)	4.2.3	SMALL impact. The current SPDES permit allows a maximum daily discharge temperature of 115°F from NMP1. The permit limit maximum ΔT is 35°F, maximum daily flow is 417.6 MGD, and areal extent of the mixing zone is 300 surface acres in Lake Ontario from the point of discharge. Outside of this mixing zone, a temperature increase of no more than 3°F may occur. The compliance history of NMP1 demonstrates that the plant routinely and consistently meets the thermal limitations in the SPDES permit. Further, there have been no fish kill incidents related to thermal discharges during NMP1 operation. The results of several biological studies on phytoplankton, zooplankton, ichthyoplankton, benthos, and fish have demonstrated that no aspect of the biotic community is influenced or impacted by the heated discharge of NMP1. Thus, thermal impacts are limited in their extent and do not threaten the continued existence of a balanced and indigenous community of fish in the lake.

Table 6.1-1 Environmental Impacts Related to SLR at NMP1 (Sheet 4 of 9)

Resources Issue	ER Section	Environmental Impact
Federally Protected Ecological Resources		
Endangered Species Act: Federally Listed Species and Critical Habitats under U.S. Fish and Wildlife Jurisdiction	4.2.4	NO EFFECT or MAY AFFECT BUT IS NOT LIKELY TO ADVERSELY EFFECT. No critical habitat has been designated for the northern long-eared bat, bog buck moth, or monarch butterfly on the NMPNS stie. NMPNS uses administrative controls and regulatory programs to ensure habitats and wildlife are protected from changes in station operations or prior to activities that break ground. No construction, land clearing, or ground-disturbing activities are planned during the SPEO. CEG plans to comply with regulatory requirements associated with federally listed species for the life of the facility and to consult with the USFWS as necessary to ensure compliance with the ESA regarding the northern long-eared bat, bog buck moth, and monarch butterfly. As such, the continued operation of NMP1 during the proposed SPEO is expected to have NO EFFECT on the bog buck moth and monarch butterfly. With ongoing conservation efforts, and compliance with permit conditions and existing regulatory programs, the continued operation of NMP1 during the SPEO MAY AFFECT BUT IS NOT LIKELY TO ADVERSELY AFFECT the northern long-eared bat.

Table 6.1-1 Environmental Impacts Related to SLR at NMP1 (Sheet 5 of 9)

Resources Issue	ER Section	Environmental Impact
Federally Protected Ecological Resources Continued		
Endangered Species Act: Federally Listed Species and Critical Habitats under National Marine Fisheries Service Jurisdiction	4.2.5	No federally listed species or critical habitat under NMFS jurisdiction occur in the NMPNS action area.
Magnuson-Stevens Act: Essential Fish Habitat	4.2.6	No EFH occurs in the action area of NMPNS, nor are any EFH areas protected from fishing. As HAPCs are derived from EFH, there were also no HAPCs located within the NMPNS action area.
National Marine Sanctuaries Act: Sanctuary Resources	4.2.7	NO EFFECT. Lake Ontario NMS, designated in the summer of 2024, overlaps with the NMPNS action area. However, CEG is not proposing any changes to the NMP1 once-through CWS or construction activities expected to change to the current environmental baseline with respect to proposed Lake Ontario NMS resources. Additionally, permitted discharges are not prohibited by the Sanctuary designation. As there are no proposed changes to the existing baseline under the SLR action, NO EFFECT on Lake Ontario NMS resources is expected during the SPEO.

Table 6.1-1 Environmental Impacts Related to SLR at NMP1 (Sheet 6 of 9)

Resources Issue	ER Section	Environmental Impact
Historic and Cultural Resources		
Historic and Cultural Resources	4.3	NO ADVERSE EFFECT. No SPEO-related ground-disturbing refurbishment or construction activities are planned. No offsite NRHP-listed historic properties could be adversely impacted as a result of continued operations of NMP1, and there are no plans to alter operations, expand existing facilities, or disturb additional land during the SPEO. In addition, administrative procedural controls are in place to protect inadvertently discovered human remains during potential future ground-disturbing activities at the plant.
Human Health		
Microbiological Hazards to the Public	4.4.1	SMALL impact. CEG concludes that the microbiological hazards to the public attributable to continued operation of the NMP1's cooling water system are expected to be SMALL because (1) incidences of human infections from recreational use of untreated waters are very low, (2) the discharge temperatures to Lake Ontario are generally expected to be below those that are most conducive to the growth of thermophilic microorganisms, (3) a biocide is added into the NMP1 cooling water system as necessary to control microbial and algal growth within the system, while ensuring compliance with SPDES permit discharge limits for residual biocide levels, (4) the higher risk of *Legionella* exposure is presented by indoor or confined spaces, and (5) the discharge structure is not accessible to the public.

Table 6.1-1 Environmental Impacts Related to SLR at NMP1 (Sheet 7 of 9)

Resources Issue	ER Section	Environmental Impact
Human Health Continued		
Electric Shock Hazards	4.4.2	SMALL impact. In-scope transmission lines at NMP1 are located onsite within the owner-controlled area of NMPNS and do not present an electric shock risk to the public. Work on or near the lines on the NMPNS site is governed by electrical safety administrative procedures that reference NESC, OSHA, and other applicable industry standards. Site procedures include topics such as protective equipment, arc flash protection, minimum approach distances for workers to ensure appropriate clearances are maintained, grounding operations, and energized overheard power lines.

Table 6.1.1 Environmental Impacts Related to SLR at NMP1 (Sheet 8 of 9)

Resources Issue	ER Section	Environmental Impact
Greenhouse Gas Emissions and Climate Change		
Climate Change	4.6	Although New York is projected to experience an increase in days with temperatures above 95°F, potentially leading to higher ozone levels, NMP1 operations do not contribute to this issue, as they do not emit ozone precursors. Therefore, there is no potential cumulative impact on air quality from the station's operations and the predicted temperature increases. The continued operation of NMP1 is expected to avoid thousands of tons of potential GHG and criteria pollutant emissions as compared to a fossil fuel-fired alternative. With the unaltered continuation of operations as under the current license term, no additional impacts on air or surface water resources are expected. Continued operation is expected to contribute only a negligible amount of criteria air pollutants and GHG from insignificant sources. Per the SPDES permit, the water temperature at the surface of Lake Ontario shall not be raised more than 3°F except in a 300-acre mixing zone from the point of discharge. The proposed SPEO is a continuation of operations under the current license term. Therefore, there are no new means of affecting water temperatures. Continued compliance with the SPDES permit limits is expected to mitigate NMP1's impact to water temperature and water quality.

Table 6.1-1 Environmental Impacts Related to SLR at NMP1 (Sheet 9 of 9)

Resources Issue	ER Section	Environmental Impact
Cumulative Effects		
Cumulative Effects	4.7	SMALL adverse to SMALL beneficial impacts. Impacts are expected to be SMALL for land use, visual resources, air quality, noise, geology and soils, surface water, groundwater, terrestrial and aquatic ecological resources, human health, climate change, and waste management. No impact to historic and cultural resources is expected, and the impact ranges from SMALL adverse to SMALL beneficial for socioeconomics.

6.2 Mitigation

6.2.1 Requirements [10 CFR 51.45(c) and 10 CFR 51.53(c)(3)(iii)]

The environmental report must include an analysis that considers and balances . . . alternatives available for reducing or avoiding adverse environmental effects. [10 CFR 51.45(c)]

The report must contain a consideration of alternatives for reducing adverse impacts . . . for all Category 2 license renewal issues . . . . [10 CFR 51.53(c)(3)(iii)]

This section contains a summary of any mitigation measures considered for implementation.

6.2.2 CEG Response

NRC Regulatory Guide 4.2, Supplement 1, Revision 2, specifies that the applicant should identify any ongoing mitigation and address the potential need for additional mitigation. Applicants are only required to consider mitigation alternatives in proportion to the significance of the impact. (NRC 2024b) As discussed in Section 6.1, impacts associated with the proposed NMP1 SPEO do not require the implementation of additional mitigation measures. The permits and programs presented in Chapter 9 (i.e., SPDES permit, stormwater program, SPCC plan, hazardous waste management program, cultural resource procedures, and environmental review programs) that currently mitigate the operational environmental impacts of NMP1 are adequate. Therefore, additional mitigation measures are not sufficiently beneficial as to be warranted.

6.3 Unavoidable Adverse Impacts

6.3.1 Requirement [10 CFR 51.45(b)(2)]

The environmental report shall . . . discuss . . . any adverse environmental effects which cannot be avoided should the proposal be implemented . . . [10 CFR 51.45(b)(2)]

This section contains a summary of any adverse environmental effects that cannot be avoided should the OL be renewed.

6.3.2 CEG Response

An environmental review conducted at the license renewal stage differs from the review conducted in support of a construction permit because the facility is in existence at the license renewal stage and has already operated for years. As a result, adverse impacts associated with the initial construction have been avoided, mitigated, or already occurred.

As discussed in Chapter 4, CEG does not expect the continued operations of NMP1 to adversely affect the environment. CEG is not planning SPEO-related refurbishment due to the technical and aging management program information in accordance with 10 CFR 54. Therefore, the environmental impacts to be evaluated are those associated with continued operation during the SPEO.

CEG identified the following site-specific unavoidable adverse impacts associated with NMP1's SPEO:

- The majority of the land use at NMP1 is expected to continue to be designated as industrial until the station is shut down and decommissioned (decommissioning can take up to 60 years after the permanent shutdown of NMP1). Uranium mining associated with the nuclear fuel cycle also has offsite land-use implications
- As discussed in Section 3.6.1.2, normal station operations result in industrial wastewater discharges containing small amounts of water treatment chemical additives via the permitted outfalls at or below NYSDEC-approved concentrations. Compliance with the SPDES permit ensures that impacts remain SMALL
- As discussed in Section 3.6.3.1, NMP1's operation results in minimal consumptive water use from Lake Ontario. Compliance with the NYSDEC surface water withdrawal permit ensures that impacts remain SMALL
- NMP1's operation results in impingement and entrainment of fish from Lake Ontario. As discussed in Section 4.2.2, the primary factor influencing impingement and entrainment rates at NMPNS is abundance of species in the water near the intake. In comparison with the standing stock of lake fish species, the impingement and entrainment losses incurred at NMPNS is concluded to be SMALL and not likely to adversely affect the fish community in the lake
- NMP1 also generates SNF and waste material, including LLRW, hazardous waste, and nonhazardous waste. Specific station design features in conjunction with a waste minimization program, employee safety training programs and work procedures, and strict adherence to applicable regulations for storage, treatment, transportation, and ultimate disposal of this waste ensure that the impacts remain SMALL
- NMP1's operation causes a very small increase in radioactivity in air and water emissions. The resulting incremental radiation dose to the local population is typically less than the magnitude of the fluctuations that occur with natural background radiation. Doses to the public from NMP1's gaseous releases are expected to be well within the limits of 10 CFR Part 20 and 10 CFR Part 50, Appendix I. NMP1 also creates a very low probability of accidental radiation exposure to inhabitants of the area.

6.4 Irreversible or Irretrievable Resource Commitments

6.4.1 Requirement [10 CFR 51.45(b)(5)]

The environmental report shall . . . discuss . . . any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. [10 CFR 51.45(b)(5)]

This section contains a summary of irreversible and irretrievable commitments of resources expected to be consumed in conjunction with continued nuclear power plant operations and SPEO-related refurbishment activities and additional waste materials generated. The following section briefly describes the magnitude and significance of the resource commitments.

6.4.2 CEG Response

The term "irreversible" applies to the commitment of environmental resources (e.g., permanent use of land) that cannot by practical means be reversed to restore the environmental resources to their former state. In contrast, the term "irretrievable" applies to the commitment of material resources (e.g., irradiated steel, petroleum) that, once used, cannot by practical means be recycled or restored for other uses.

The continued operation of NMP1 for the proposed SPEO are expected to result in irreversible and irretrievable resource commitments, including the following:

- Uranium in the nuclear fuel consumed in the reactor that becomes high-level radioactive waste if the used fuel is not recycled through reprocessing
- Land required for permanent storage or disposal of SNF, LLRW generated from station operations, and sanitary waste generated from normal industrial operations
- Elemental materials that become radioactive
- Materials used for the normal industrial operations of NMP1 that cannot be recovered or recycled, or that are consumed or reduced to unrecoverable forms.

As discussed in Section 2.3, no SPEO-related refurbishment activities are planned that could irreversibly or irretrievably commit significant environmental components of land, water, and air.

If NMP1 ceases operations on or before the expiration of the current OLs, the likely power generation alternatives are expected to require a commitment of resources for construction of the replacement station, as well as for fuel to run the station.

6.5 Short-Term Use Versus Long-Term Productivity of the Environment

6.5.1 Requirement [10 CFR 51.45(b)(4)]

The environmental report shall . . . discuss . . . the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity . . . [10 CFR 51.45(b)(4)]

This section summarizes the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity.

6.5.2 CEG Response

The current balance between short-term use and long-term productivity of the environment at the site has remained relatively constant since NMP1 began operations. The Final Environmental Statement (FES) for NMP1 evaluated the relationship between the short-term uses of the environment and the maintenance and enhancement of the long-term productivity associated with the construction and operation of NMP1. The proposed SPEO is not expected to alter the short-term uses of the environment from the uses previously evaluated in the NMP1 FES. The proposed SPEO is expected to postpone the availability of the site resources (land, air, water) for other uses.

Denial of the application to renew the station's OLs is expected to lead to the shutdown of the station and alter the balance in a manner that depends on the subsequent uses of the site. For example, the environmental consequences of turning the site area occupied by NMP1 into a park or an industrial facility after decommissioning are quite different. Extending NMP1 operations is not expected to alter, but only postpone, the potential long-term uses of the site that are currently possible.

In summary, no SPEO-related refurbishment activities have been identified that are expected to alter the evaluation of the NMP1 FES for the relationship between local short-term uses of man's environment and the maintenance and enhancement of the long-term productivity of these resources.

7.0 ALTERNATIVES TO THE PROPOSED ACTION

The environmental report shall … discuss … alternatives to the proposed action … [10 CFR 51.45(b)(3)]

The applicant shall discuss in this report the environmental impacts of alternatives and any other matters … The report is not required to include discussion of need for power or economic costs and benefits of … alternatives to the proposed action except insofar as such costs and benefits are either essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation … [10 CFR 51.53(c)(2)]

A reasonable alternative must be commercially viable on a utility scale and operational prior to the expiration of the reactor's operating license or expected to become commercially viable on a utility scale and operational prior to the expiration of the reactor's operating license … The amount of replacement power generated must equal the baseload capacity previously supplied by the nuclear plant and reliably operate at or near the nuclear plant's demonstrated capacity factor. (NRC 2024a)

The purpose and need for the proposed action (issuance of a renewed license) is to provide an option that allows for baseload power generation capacity beyond the term of the current nuclear power plant's OL to meet future system generating needs (NRC 2024a). Therefore, an alternative to the proposed action is likewise expected to be capable of meeting this purpose and need. This chapter explores the potential alternatives, and environmental impacts are detailed for those selected as meeting this purpose and need.

7.1 No Action Alternative

As described in Section 2.1, the proposed action is to renew the OL for NMP1 for an additional 20-year period. The only other alternative under consideration is the no-action alternative, which is the decision not to renew the NMP1 OL. If the station's OL is not renewed, the 615 MWe (net generation) of baseload power is not expected to be available for distribution within the National Grid regional transmission network, which is supplied in part by CEG, during the proposed SPEO of 2029–2049. Therefore, on its own, the no-action alternative creates a need for replacement energy.

In accordance with 10 CFR 51.53(c)(2), this ER discusses a no-action alternative to the proposed OL renewal and a range of alternatives for replacement baseload power sources. A reasonable alternative as described by the NRC must be, or be expected to become, commercially viable on a utility scale and operational prior to the expiration of the reactor's OL (NRC 2024a). The replacement power alternative must also provide adequate baseload power capacity, as was previously supplied by the nuclear power station.

The replacement power sources being considered under the no-action alternative are presented in Section 7.2. Section 7.2.2 identifies the no-action alternative power sources evaluated that were not considered reasonable power sources for the replacement of NMP1 generation.

7.1.1 Decommissioning Impacts

The NRC's definition of decommissioning, as stated in 10 CFR 20.1003, is the safe removal of a nuclear facility from service and the reduction of residual radioactivity to a level that permits the following:

- Release of the property for unrestricted use and termination of the license; or
- Release of the property under restricted conditions and termination of the license.

The NRC-evaluated decommissioning options include the following:

- Immediate dismantling soon after the facility closes
- Safe storage and monitoring of the facility for a period that allows the radioactivity to decay, followed by dismantling and additional decontamination
- Permanent entombment on the site in structurally sound material, such as concrete, that is maintained and monitored.

All the decommissioning options must be completed within a 60-year period following permanent cessation of operations.

Under the no-action alternative, CEG could continue operating NMP1 until expiration of the existing OL. Upon expiration of the OL, CEG is expected to initiate decommissioning procedures in accordance with NRC requirements. The NRC evaluated decommissioning environmental impacts in 2002 in the Decommissioning GEIS, NUREG-0586, Supplement 1. The NRC used the 2002 analysis to inform the LR GEIS analysis of decommissioning. CEG considers the Decommissioning GEIS as representing the actions it is anticipated to perform for the NMP1 decommissioning. Therefore, CEG relies on the NRC's conclusions regarding the environmental impacts of decommissioning NMP1.

Decommissioning and its associated impacts are not considered evaluation criteria used to proceed with the proposed action or select the no-action alternative. NMP1 is expected to be decommissioned in the future, regardless of the NRC decision on the SPEO. The SPEO postpones decommissioning for an additional 20 years.

The primary criteria used to evaluate the proposed action and the no-action alternative are the power options available for the replacement of NMP1 generation. CEG concludes that the decommissioning impacts under the no-action alternative are not anticipated to be substantially

different from those identified in the Decommissioning GEIS. Decommissioning impacts are expected to be SMALL and could overlap with the operation of an NMP1 replacement.

7.2 Alternatives Considered

In accordance with 10 CFR 51.53(c)(2), CEG considered a range of alternatives to replace generation if the NMP1 OL is not renewed. CEG considered each of the replacement alternatives identified in the NRC GEIS for license renewal (NRC 2024a). These alternatives were evaluated based on their ability to provide reliable baseload power and to be operational prior to the expiration of the current OL. This section describes the criteria used to select alternatives to the proposed action.

7.2.1 Energy Alternatives Considered Reasonable

A reasonable alternative as described by the NRC must be technically feasible and commercially viable on a utility scale and operational prior to the expiration of a reactor's OL or expected to become commercially viable on a utility scale and operational prior to the expiration of the reactor's OL. The replacement power alternative generation must also provide approximately 615 MWe net baseload power previously supplied by the nuclear power plant. The alternatives analysis identified the following power sources as meeting the NRC criteria for reasonableness in the replacement of NMP1 generation during the proposed SPEO term. These energy alternatives are listed below and further discussed in Section 7.2.3. Wind and solar installations are expected to require firming battery storage through co-located battery banks to ensure a stable and reliable energy supply.

- Small Modular Reactor Alternative:
    - SMR plant located onsite at the formerly proposed Unit 3 location.
- Renewables Combination Alternative:
    - Onsite solar-wind installation with co-located battery banks
    - Onshore wind installations located offsite with co-located battery banks
    - Offsite solar installations with co-located battery banks.
- Onshore Wind Alternative:
    - Onshore wind installations located onsite and offsite with co-located battery banks.

7.2.2 Energy Alternatives Not Considered Reasonable

The full range of energy alternatives as described in the GEIS includes power alternatives that require development of new generation and power alternatives that do not require other new generation, such as purchased power (NRC 2024a). CEG considered all the alternatives described in the GEIS for replacement of NMP1's generation. This section addresses the energy alternatives that were not considered reasonable for additional evaluation.

7.2.2.1 Plant Reactivation or Extended Service Life

The co-located NMP2 has an OL with an expiration date of October 31, 2046, and is therefore not available for replacement of NMP1. CEG has two additional nuclear power plants (JAF and Ginna) located in New York State that support the various regional electric grid networks. The nuclear unit at JAF is currently operating under an OL that extends beyond NMP1's OL expiration date and is not anticipated to be available to replace NMP1's generation. The OL for Ginna expires one month later than NMP1, and extended life service could potentially provide replacement power for NMP1. However, CEG has stated its intent to submit an SLR application to continue operation of Ginna; therefore, Ginna is not expected to be available for replacement of NMP1's generation. Outside of New York State, CEG owns two active nuclear power plants (with a total of four reactors) in Pennsylvania, which are the next closest CEG-owned nuclear power plants to NMPNS. Both plants (Limerick and Peach Bottom) are under OLs with expiration dates extending past the expiration date of NMP1's OL and are not available as reasonable replacement alternatives.

CEG also owns natural gas-fired and oil-fired generating units operating in Pennsylvania (CEG 2024f). However, New York State's Climate Leadership and Community Protection Act (CLCPA), signed into law in 2019, sets ambitious renewable energy targets. By 2030, at least 70 percent of the state's electricity must come from renewable sources, and by 2040 the goal is to achieve zero GHG emissions from the statewide electrical demand system. This legislation also aims to reduce economy-wide GHG emissions by 40 percent by 2030 and 85 percent by 2050, compared to 1990 levels. As defined in CLCPA: "'statewide greenhouse gas emissions' means the total annual emissions of greenhouses gases produced in the state from anthropogenic sources and greenhouse gases produced outside of the state that are associated with the generation of electricity imported into the state." (NYS 2019) As CLCPA requirements apply to electricity generated outside of New York State, extended life service of CEG-owned natural gas-fired and oil-fired generating units is not a considered a reasonable alternative.

7.2.2.2 Conservation and Energy Efficiency Measures (Demand-Side Management)

Demand-side management (DSM) includes demand response that shifts electricity from a peak-use period to times of lower demand, and energy efficiency or conservation programs that reduce the amount of electricity required for existing activities and processes. Reliance on DSM is uncertain because it depends on voluntary participation rather than mandatory energy efficiency from compliance with codes and standards (e.g., building codes and appliance energy-use ratings).

A discrete DSM alternative is expected to be required to reduce the baseload demand by 615 megawatts (MW) to be considered a reasonable alternative. As CEG supplies the energy generated by NMP1 to National Grid for distribution in upstate New York, CEG is not able to directly implement conservation and efficiency measures to reduce the baseload demand as they do not supply directly to the consumer. (NG 2024) As such, DSM programs cannot be considered a reasonable replacement alternative for NMP1's generation.

7.2.2.3 Purchased Power

Fully replacing the energy generation and capacity provided by NMP1 with purchased power is anticipated to introduce greater uncertainties in energy reliability that are not within CEG's control. Purchased power is expected to be subject to competing power demand to secure firm power contracts, which adds to energy reliability concerns.

Potential environmental impacts associated with purchased power could be substantial and could exceed the impacts associated with the continued operation of NMP1. Potential environmental impacts are anticipated to include those associated with the source of the generation and the transmission of the power into the regional grid. The use of fossil fuels for electricity generation results in air emissions, water use and quality impacts, and land-use impacts due to the physical footprint of power plants. As discussed in Section 7.2.2.1, New York State's CLCPA regulations extend beyond state borders, applying to both in-state energy production and imported electricity from neighboring states. This means that electricity generated from non-renewable sources outside of New York State is not expected to meet the state's legislative requirements.

The development footprint required for renewable energy generation has the potential to convert natural habitats to industrial sites. The conversion of forest, and even agricultural lands, to an industrial site can result in impacts to habitat that may adversely affect terrestrial ecological resources. Additional transmission capacity may be required to distribute electricity from renewable generation, and this may result in impacts to communities and land within and adjacent to the corridor. These impacts could include the loss of sensitive habitat, viewshed impairment, or the degradation of wetlands.

Purchased power is not considered a viable option due to uncertainties surrounding large-scale power purchases, potential environmental impacts of developing new renewable generation facilities and transmission infrastructure, and CLCPA requirements.

7.2.2.4 Offshore Wind

There is technical potential for offshore wind development along the Atlantic coast of New York and on Lake Ontario. Realizing this potential is anticipated to require careful consideration of several factors. The suitability for offshore wind farms depends on bathymetry, transportation (shipping lanes), fishing rights, wildlife habitats, and other environmental concerns (NYSERDA 2024a). Additionally, offshore wind turbines are larger than their onshore counterparts, increasing the potential for aesthetic impacts. To mitigate these effects, the wind turbines are expected to be positioned at greater distances offshore.

To replace NMP1's generation of 615 MWe with offshore wind power is expected to require approximately 1,420 MWe based on the estimated offshore wind generation capacity of 43.3 percent (DOE 2022b).

Offshore wind farms require no land use but are anticipated to occupy a maritime area. In assessing the potential for offshore wind in the contiguous United States, the National Renewable Energy Laboratory (NREL) assumed a capacity density of approximately 62 acres per 1 MW. (NREL 2024a). While some activities, such as certain fishing practices, are anticipated to be restricted within the wind farm boundaries, others are expected to still be permitted. The construction and operation of a large-scale offshore wind facility could have environmental impacts ranging from moderate to large.

After completing its feasibility study on Great Lakes wind energy potential in 2022, the NYSERDA concluded that harnessing wind energy from the Great Lakes is not a crucial or cost-effective way to meet New York State's Climate Act goals, which aim for 70 percent renewable energy by 2030. (NYSERDA 2022)

Several factors led to this conclusion:

- Limited Infrastructure: The lack of an existing supply chain and inadequate port facilities pose significant challenges
- Environmental Concerns: Potential visual impacts, wildlife impacts, and potential disruptions to commercial and recreational fishing, shipping, and navigation also weighed heavily in the decision.

The feasibility study, conducted in partnership with the NREL, thoroughly explored the possibilities of wind energy on Lake Ontario and Lake Erie. However, the results indicated that pursuing Great Lakes wind energy is not expected to provide a unique or substantial contribution to achieving New York State's ambitious renewable energy targets. (NYSERDA 2022)

New York State has awarded two major contracts for offshore wind development off the Atlantic coast. The Empire Wind Project and the Sunrise Wind Project contracts were initiated through a bidding process that began in 2018. According to NYSERDA, these projects are expected to commence operations in 2026–2027. (NYSERDA 2024b) These offshore wind projects are expected to take approximately 8–9 years to complete, from bidding to operational launch.

Given the uncertainties associated with offshore wind development (siting, permitting, and environmental concerns), the 8- to 9-year development timeline for offshore wind projects, and the impending expiration of NMP1's OL in 2029, pursuing new offshore wind initiatives to replace NMP1's generation is not considered to be a reasonable alternative to continued operation of NMP1.

7.2.2.5 Solar

New York State has relatively low solar energy potential compared to other regions in the United States, as illustrated by the NREL's solar irradiance map of the U.S., which indicates lower solar irradiance levels across the majority of the state. (NREL 2018a)

Meeting NMP1's generation solely through solar energy is anticipated to require multiple large-scale solar installations, amplifying environmental concerns and potential impacts. Using a capacity factor of 25 percent, replacing the 615 MWe generated by NMP1 with solar power is expected to require generation of approximately 2,460 MWe. (EIA 2023a)

Due to the amount of solar generation required to replace NMP1's generation and the lower efficiencies in producing electricity from solar power versus nuclear power, the acreage required for siting the required solar installations is larger or similarly sized to the SMR alternative also being evaluated, highlighting the spatial implications of transitioning to solar energy on a scale sufficient to offset NMP1's generation.

Siting requires careful consideration of terrestrial ecology, wildlife habitat, and other environmental concerns. The Solar Energy Industries Association estimates a utility-scale solar power plant may require approximately 5–7 acres per MW generated. (SEIA 2024) Using an average of 6 acres per MW, approximately 14,760 acres is expected to be required to replace NMP1's generation with solar generation.

Solar generation is intermittent by nature, typically cycles significantly over a 24-hour period, is not dispatchable, and low-capacity factors can be experienced for several days at a time due to cloud cover. For solar power to be viable as a discrete source of energy that is reliably available for the regional grid, capacity significantly greater than NMP1's generation, and large amounts of battery storage, are expected to be required. Installation of batteries to compensate for the intermittent nature of solar further increases acreage requirements. Multiple installations are expected to be needed to secure the required acreage, potentially impacting local land use. Depending on the location of the solar facilities, the land-use disturbances could result in MODERATE to LARGE impacts on wildlife habitats, vegetation, land use, and aesthetics.

A solar alternative using distributed solar involving solar panels installed on residential and commercial buildings avoids the potential land-use impacts. The NREL developed estimates for the potential generating capacity of solar panels that could be installed on residential and commercial properties in each state. The NREL's estimate for rooftop generating capacity available in New York State is approximately 54,680,070 megawatt hours (MWh) (NREL 2020). To fully replace NMP1's generation with distributed solar on rooftops is expected to require approximately 40 percent of the available residential and commercial rooftop space available in New York State. Moreover, the NREL cautions that its estimation for installation on residential and commercial properties could be overstating the available rooftop space. (NREL 2020)

Due to the uncertainties in rooftop potential and availability, the intermittent nature of solar, and the lack of solar potential in New York State, discrete solar is not a reasonable replacement for NMP1's generation.

7.2.2.6 Hydropower

The DOE's Oak Ridge National Laboratory conducted a study to assess the potential for energy generation of non-powered dams across the United States. The non-powered dams in New York State do not provide the scale of power generation needed to replace NMP1's generation, as the study assessed the potential in-state capacity as only 295 MW. (DOE 2012)

Constructing a new dam and hydropower facility requires careful consideration of several critical factors. A large area needs to be flooded to create a reservoir for water storage, which could have far-reaching implications. The development of the facility involves complex siting considerations and could have moderate to large environmental impacts to land use, water resources, socioeconomics, terrestrial and aquatic ecology, and cultural resources for a single location. Due to the limited potential for large-scale hydroelectric power generation at existing New York State dams and significant environmental constraints associated with developing new hydropower facilities, replacing NMP1's generation requires exploring alternative energy sources at multiple locations outside of New York State. These considerations and potential impacts make hydropower an unreasonable replacement for NMP1's generation.

7.2.2.7 Geothermal

In 2018, the NREL graded the geothermal resources of the United States. The majority of New York State is graded as having the least or second least potential for geothermal energy, with a small area of moderate potential. The remaining portions of the state were not assessed, as these regions have temperatures less than 150°C (302°F) at 10 kilometers (6.2 miles) depth, making them unsuitable for geothermal energy generation. (NREL 2018b) Considering the lack of available resources in the area, geothermal energy is not considered a reasonable replacement for NMP1's generation.

7.2.2.8 Biomass

Biomass-fired generation includes using fuel sources such as wood waste, municipal waste, manure, certain crops, and other types of waste residues, to generate electricity. Using biomass-fired generation for baseload power is dependent upon the geographic distribution, quantity, constancy of supply, and energy content of biomass resources available. Biomass, which is primarily from waste and landfill gas, accounted for approximately 1,880,000 MWh of renewable energy generation in New York State in 2022. (EIA 2023b)

As biomass plants tend to be much smaller than nuclear or fossil fuel-fired plants, replacing NMP1's generation requires construction of multiple biomass plants located near reliable fuel sources in order to continuously produce enough biomass to fuel the plants. An average-sized biomass plant produces around 50 MWe, with the largest plants producing 100–140 MWe (BM 2024).

Biomass plants require storage facilities for fuel and for waste ash/residue remaining after combustion of the wood, crop, or agriculture wastes. Wood waste plants require a large land area for storage and processing, and like coal-fired generation, produce ash that must be

disposed of in a manner that does not adversely impact the environment. The environmental impacts associated with constructing a wood waste plant could be MODERATE to LARGE, with the impact intensity level dependent on the siting and proximity to a source of wood waste.

Using municipal solid waste for energy production is also dependent on proximity to large population centers that generate large amounts of waste. Air emissions are also an issue with biomass plants, as the combustion of the fuel results in air emissions that must be controlled to meet air quality regulations. Construction is expected to require the installation of a maximum achievable control technology to comply with the CAA.

The construction and operation of biomass plants of the size necessary to function as an alternative to NMP1 is expected to result in MODERATE to LARGE environmental impacts to land use, water quality, ecological resources, and air quality. Therefore, biomass plants are not considered to be a superior alternative to the continued operation of NMP1.

7.2.2.9 Fuel Cells

Current fuel cell installations for large-scale stationary power are of significantly smaller capacity than what is needed as a reasonable replacement of NMP1's generation. Many fuel cell systems are installed for individual customers. Larger applications generally produce from hundreds of kWs to tens of MWs of power (ANL 2022). As of 2022, the United States had 550 MW of stationary fuel cell generation (PNNL 2022). Use of fuel cells as a utility-scale generation alternative is not presently competitive with other alternatives. Additionally, developments in fuel cell technology are currently too uncertain to consider fuel cells a viable alternative. Therefore, fuel cells are not considered a reasonable alternative to NMP1's generation.

7.2.2.10 Fossil-Fuel Fired

Fossil fuel-fired plants encompass natural gas, oil, and coal-fired facilities. As stated in the GEIS, the burning of fossil fuels is a major source of criteria pollutants and GHGs, primarily CO_2, as well as other hazardous air pollutants, making it undesirable for utilities looking to reduce air pollutants and comply with clean energy regulations. As discussed in Section 7.2.2.1, New York State's CLCPA, signed into law in 2019, sets ambitious renewable energy targets, with which development of new fossil-fuel fired generation does not align. Additionally, in 2021, the NYSDEC denied permit applications for two proposed natural gas-fired power plants, finding that both would be inconsistent with the State's ambitious climate law. (S&P Global 2021) Consequently, permitting and construction of a natural gas-fired, oil-fired, or coal-fired plant in New York State is not considered a reasonable alternative.

7.2.2.11 Ocean Wave and Current Energy

The Federal Energy Regulatory Commission has licensing authority over hydrokinetic energy projects deployed in the United States. Hydrokinetic technology is in the early stages of commercial application and projects have low generation capacities. There are only three licensed ocean wave projects currently in the U.S., with the largest having a capacity of only 20,000 kW (FERC 2023). Given that hydrokinetic technology is in the early stages of

commercial application and projects have low generation capacities, ocean wave and current energy is not considered a reasonable alternative to NMP1's generation.

7.2.3 Environmental Impacts of Alternatives

7.2.3.1 Small Modular Reactor Alternative

SMR designs vary greatly in many ways, including in generating units per plant, cooling technologies, and reactor output capacity. Each design has specific siting and operating parameters that are considered in assessing the environmental impacts of construction and operation of the SMR. This alternative does not specify an SMR technology; however, it does use averages from multiple technology types in some cases, to best summarize the information available. As the SMR plant is hypothetically sited at NMPNS, CEG assumes no additional transmission corridors are needed to support the SMR plant. CEG assumes the SMR has a water-cooled system with MDCTs, due to the site's proximity to Lake Ontario.

7.2.3.1.1 Land Use

Site acreage requirements for an SMR plant include land for the reactors, plant infrastructure (e.g., cooling towers, switchyards), setbacks, buffer/site safety areas, and access areas. The land area required for SMR plants differs depending on the specific design type, reactor technology, and cooling system used. Since SMR technologies are still evolving, a standardized average land requirement has not been established. For this scenario, a range of land requirements across multiple SMR designs, collected by the International Atomic Energy Agency, was used to calculate an average of 36 MWe per acre (IAEA 2020). Using this average, an SMR replacement for NMP1's generation is expected to require approximately 24 acres when using a capacity factor of 93 percent. This amount does not include land requirements for support infrastructure (e.g., switchyards or cooling towers) and construction staging areas. Due to siting at NMPNS, no additional offsite transmission lines are expected to be constructed. Previously, construction of a third nuclear unit was proposed for NMPNS, to be located west of Unit 1. The acreage requirement for the new unit was estimated to be approximately 301 acres. (UNS 2009) As such, there is adequate available acreage on the NMPNS site suitable for SMR development.

As discussed in Section 3.2.1, there are currently no zoning regulations in place to mandate and regulate acceptable land use practices in the Town of Scriba. Therefore, NMPNS is not currently subject to zoning or land use regulations.

Siting the SMR plant at NMPNS is expected to reduce the amount of land use conversion, as the site is already used for energy generation. Siting the SMR within the portions of the NMPNS site that are previously disturbed is expected to reduce changes in land cover and potential environmental impacts. Beyond the currently disturbed areas, the SMR plant is expected to require additional land, which uses available space but alters the existing land cover. Table 3.2-1 presents the onsite land cover categories, which are: open water, developed land, barren land, deciduous forest, evergreen forest, mixed forest, shrub/scrub, grassland/herbaceous,

pasture/hay, woody wetlands, and emergent herbaceous wetlands. For these reasons, the land use impacts for the SMR plant are expected to be SMALL for construction and operations.

7.2.3.1.2 Visual Resources

Visual impacts from the SMR plant are expected to be mitigated by siting adjacent to the existing NMP1 infrastructure. Typical containment structures for SMR units are not as tall as, or similarly as tall as, conventional nuclear containment structures. Based on data from various SMR designs, the average height of the containment structure is approximately 100 feet. (IAEA 2020; IAEA 2024; Matzie 2015; SMR RF 2023) The MDCTs are expected to be the tallest portion of the SMR plant. MDCTs vary in height but have a lower profile compared to existing station infrastructure and are not expected to impact the distance at which NMPNS is visible. The visual resources impact for the SMR plant and MDCTs are expected to be like that of the existing generating infrastructure at NMPNS and the impact is expected to be SMALL.

7.2.3.1.3 Air Quality

Construction of an SMR plant could have temporary and minor effects on local ambient air quality due to fugitive dust and fine particulate matter that are expected to be generated during earthmoving, material handling, wind erosion, and other construction activities. Vehicles and equipment used for hauling, excavation, and earthmoving are expected to generate pollutants, but regular servicing and adherence to federal, state, and local emission standards are expected to minimize impacts. Additionally, BMPs are expected to be implemented to further reduce emissions and ensure compliance with regulatory requirements. Emissions from construction activities are expected to be temporary and intermittent for the duration of construction and with the implementation of mitigation measures the impacts are expected to be SMALL.

Air quality impacts during operation are expected to result from periodic testing and infrequent use of standby equipment, as well as from miscellaneous minor air emission sources. GHG emissions associated with nuclear power are within the same order of magnitude as renewable energy sources. Nuclear power generation produces minimal GHG emissions, as outlined in Table 3.13-2 of the GEIS. In comparison, a new nuclear alternative would emit significantly lower emissions than fossil fuel-fired plants. CO_2 emissions from fossil fuel-fired plants are presented in Table D.4-3 of the GEIS. (NRC 2024a)

Air emissions and atmospheric effects from drift and plumes are associated with MDCTs. According to the NRC, nuclear power plants using wet cooling towers with salt or freshwater sources would have SMALL air quality impacts, provided they adhere to state-issued air permits (NRC 2024a). These MDCTs can release visible plumes, cause ground-level fogging, and emit small amounts of TSS into the air.

The overall air quality impacts of this alternative operated in compliance with all applicable air permits expected to be SMALL.

7.2.3.1.4 Noise

Sources of noise during construction are expected to include clearing, earthmoving, foundation preparation, pile driving (if needed), concrete mixing and pouring, steel erection, and various stages of facility equipment fabrication, assembly, and installation. Additionally, diesel- and gasoline-powered vehicles and equipment are expected to be used onsite. Projected noise levels from construction activities could have the potential to exceed the range of acceptable day/night average sound levels set by the U.S. Department of Housing and Urban development; however, these noise levels are expected to be intermittent and temporary.

Noise sources associated with operations and infrastructure are expected to include pumps, cooling towers, transformers, switchyard equipment, and loudspeakers. Aside from the MDCTs, the operating SMR plant is expected to have noise levels and sources not unlike those of NMP1 and attenuate over the distance to the site boundary. Many of these noise sources are infrequent or confined indoors. Noise from MDCTs is generally from motors, fans, and cascading water. Given sound attenuation, noise impacts to sensitive receptors are not expected, meaning construction- and operations-related noise impacts are expected to be SMALL.

7.2.3.1.5 Geology and Soils

Construction-related impacts to geology are expected to be minimal as excavation associated with SMR plant construction is not expected to damage geologic formations onsite. In addition, materials, such as stone and gravel, used in the construction of the SMR plant and associated infrastructure are expected to be obtained from local or regional sources. Therefore, construction-related impacts to geology are expected to be SMALL.

Construction-related impacts to soil plan to occur during land clearing, filling, and construction of the SMR plant. The exposure of soil during these activities is expected to increase the risk of erosion from precipitation and high wind events. Soils excavated and removed during clearing and construction are expected to be stockpiled onsite for use as backfill. Through compliance with permit conditions, adherence to stormwater regulations, application of erosion control measures, and use of BMPs, construction-related impacts on soils are expected to be SMALL.

Operations-related impacts on geology and soils from the SMR plant are expected to be minimized by adherence to the industrial site Storm Water Pollution Prevention Plan (SWPPP) and are expected to be SMALL.

7.2.3.1.6 Hydrology (Surface Water and Groundwater)

Surface Water

Construction of the SMR plant could result in modifications to surface water drainage features. Impacts from any required drainage alterations are expected to be minimized by the implementation of BMPs identified in the project's construction stormwater permit and erosion control and stormwater management plan. Adherence to stormwater controls is expected to

minimize sediment release and provide protection to nearby waterbodies from accidental releases of oils or other materials. Through compliance with permit conditions and implementation of BMPs, surface water impacts from SMR plant construction are expected to be SMALL.

Operations-related surface water use is primarily for cooling water makeup. Light water reactor technology supported by closed-cycle cooling is expected to result in water consumption due to evaporation and drift. The NRC provides water withdrawal and consumptive use factors for light water reactors with cooling towers in GEIS Table D.4-2 (NRC 2024a), as follows:

- Withdrawal: 800 to 2,600 gal/MWh
- Consumptive Use: 581 to 845 gal/MWh

Applying these factors to an SMR plant sized to replace NMP1's generation is expected to result in a withdrawal of approximately 4,600–15,100 MGY and consumptive use of approximately 3,400–4,900 MGY.

A new SPDES permit is required for the SMR plant discharge of cooling water, process wastewater, and sanitary wastewater. Adherence to the SPDES permit minimizes these potential impacts to surface water quality. Operations-related surface water use and quality impacts are expected to be SMALL.

Groundwater

Water needs for construction of an SMR plant are expected to be similar to typical uses for large industrial projects. These uses include dust abatement, concrete mixing, and potable water needs. Dewatering is expected to be conducted in compliance with applicable regulations and permits.

As discussed in Section 3.6.3.1, potable water for domestic use and operation of the station water treatment facility at NMPNS is provided by the Scriba Water District, which is supplied from the City of Oswego. As use of groundwater is expected to be minimal or not required during construction due to this supply, construction-related impacts to groundwater are expected to be SMALL.

SMR plant operations require water for drinking, sanitary purposes, and potentially for some processes. The required water is expected to be supplied by the Scriba Water District.

Waste management and spill mitigation procedures minimize the spread of contaminants through soil into groundwater. Therefore, operations-related impacts on groundwater use and quality are expected to be SMALL.

7.2.3.1.7 Ecological Resources (Terrestrial and Aquatic)

Terrestrial

Construction of the SMR plant is expected to occur on the NMPNS site, with previously disturbed areas prioritized for use. Terrestrial ecology impacts from development of the SMR plant primarily result from land clearing, noise, and emissions during construction activities.

The clearing of vegetation and tree removal could displace wildlife that occupies the site, and these species could disperse to nearby habitats. Based on implementation of construction BMPs for erosion and dust control, ground disturbance, noise abatement, proper equipment maintenance, adherence to tree removal requirements for protected species, and adherence to applicable permit conditions, the overall impact of construction-related activities on terrestrial ecological resources are expected to be SMALL.

Operational impacts on terrestrial resources are expected to be similar to those resulting from the operation of NMP1. With the impacts to terrestrial ecology being nearly all attributable to land clearing and habitat removal during construction, the impacts attributable to operations are expected to be SMALL.

Aquatic

The SMR plant's construction is expected to employ BMPs to minimize aquatic resource impacts, specifically those associated with surface water discharges and shoreline modifications required for intake and discharge structure construction, or during alteration of existing intake/discharge infrastructure.

Construction of the intake and discharge structures requires a CWA Section 404 permit from the USACE, and from any other applicable state agencies. Permit conditions address measures to reduce impacts to water quality. Implementation of the SWPPP and BMPs in the construction stormwater permit also reduce the potential for spills and releases associated with construction. Therefore, construction-related impacts on aquatic ecological resources are expected to be SMALL. Operations-related impacts, including impingement and entrainment, are expected to be similar to those of NMP1 and are expected to be SMALL.

Special-Status Species

Special-status species including federally- and state-listed species and species protected under the MBTA identified for the NMPNS area are discussed in Section 3.7. From county-level species lists, numerous protected species could potentially be present at the NMPNS site. There have been no T&ES surveys conducted at NMPNS, nor have there been any state-listed species recorded at the site in the last 5 years.

Construction activities for the SMR plant are expected to be confined to the NMPNS site. CEG plans to take appropriate mitigation measures prior to clearing and tree removal and comply with any mitigation measures in any CWA 404 permits required to minimize potential impacts to

special-status species and obtain incidental take permits as needed. The operating SMR plant is expected to likely have similar operational noise and emissions to NMP1. Therefore, construction and operation-related impacts MAY AFFECT, but are NOT LIKELY to ADVERSELY AFFECT federally listed species and could have SMALL impacts to other special-status species.

7.2.3.1.8 Historical and Cultural

As discussed in Section 3.8.3, a review of the associated databases revealed no NRHP-eligible resources on the NMPNS site. CEG's site-planning process for the siting of the SMR plant seeks to avoid or mitigate potential impacts to cultural resources, if discovered. As discussed in Section 3.8.6, CEG has procedures in place that outline the stop work process and additional steps required if unanticipated historic or cultural resources are discovered during any ground-disturbing activities. Implementation of avoidance and protective measures is expected to minimize impacts to any identified archaeological and historic sites. Construction and operation of the SMR plant is expected to have NO ADVERSE EFFECT on historic and cultural sites.

7.2.3.1.9 Socioeconomics

Socioeconomic Issues Other Than Transportation

The construction of an SMR plant is expected to have socioeconomic impacts similar to those of other large industrial projects, providing both short-term and long-term economic benefits to the host county and surrounding region. These benefits come primarily from worker wages and tax payments. Construction is expected to have beneficial economic impacts in the area by creating direct and indirect jobs and incomes, increasing purchases of goods and services, and generating tax revenues. The additional workforce could result in pressure on local temporary housing, community services, and infrastructure.

For an SMR plant slightly larger in size to one required to replace NMP1 generation, the peak construction workforce is estimated to be approximately 3,300 and construction is estimated to take approximately 72 months (NRC 2019).

As shown in Table 3.9-1, as of 2022, there was a housing unit rental vacancy of 2.3 percent in Onondaga County and of 4.0 percent in Oswego County. This housing inventory does not account for temporary housing, such as hotels/motels and recreational vehicle parks. As shown in Table 3.11-1, as of 2022, there were three cities with a population of approximately 25,000 or more within 50 miles of NMP1. There was one city (Syracuse, New York) with a population over 100,000. While the housing unit vacancy rate is low, the proximity to urban areas offers more temporary housing opportunities. Adverse impacts to housing could be SMALL to MODERATE due to a lack of available nearby housing.

The adverse impacts to community services and infrastructure could be mitigated through tax revenues and are expected to likely be SMALL. Overall construction of the SMR plant is expected to have a SMALL to MODERATE beneficial impact on the surrounding communities.

Research from 2023 indicates a staff-to-capacity ratio of 0.70 for SMR plant operation, aligning with International Atomic Energy Agency's recommended range of 0.63–0.81 staff/MWe for SMRs with capacities between 200 and 300 MWe (Egieya 2023; IAEA 2001). Using a ratio of 0.70 results in a range of 140-210 employees for SMRs between 200 and 300 MWe. For an SMR plant with capacity to replace the NMP1's generation, approximately twice this staffing estimate is expected. As such, the adverse socioeconomic impacts from use of infrastructure and the demand for community services from the workforce increase are expected to be SMALL. Due to worker wages and the impact of property taxes that CEG plans to pay for the operation of the SMR plant and based on the percentage of Oswego County and the OCSD revenues represented by CEG's property tax payments (Table 3.9-2a), beneficial socioeconomic impacts are expected to be LARGE.

Transportation

The temporary construction workforce at its peak is likely to be noticeable and could cause congestion on roadways near the NMPNS site. To reduce congestion, staggered work shifts and roadway improvements could be implemented. The construction workforce for an SMR plant is expected to be smaller than a conventional nuclear power plant and the operations workforce is expected to be similar or smaller. The transportation impacts are expected to be mitigated as necessary, SMALL to MODERATE for construction, and SMALL for operations.

7.2.3.1.10 Human Health

Impacts on human health from construction of an SMR plant are expected to be similar to those associated with a typical large industrial facility construction project. Compliance with OSHA worker protection rules prevents safety-related accidents. The radiological human health impact on construction staff working in proximity to NMP1 and NMP2 are expected to be SMALL due to compliance with NRC regulations and adherence to ALARA principles. The SMR plant is expected to operate within NRC effluent and dose regulations and adhere to ALARA principles. Therefore, the human health impacts of the SMR alternative are expected to be SMALL for construction and operations.

7.2.3.1.11 Waste Management

Solid, liquid, and gaseous waste generated during construction of the SMR plant are expected to be managed according to state regulations and disposed of at permitted offsite treatment or disposal facilities. Therefore, construction-related waste impacts are expected to be SMALL.

The operation of the SMR plant is expected to result in the production of nonhazardous, hazardous, and radioactive waste, including SNF. Nonhazardous and hazardous waste are expected to be managed in compliance with state regulations and disposed of in permitted offsite treatment and disposal facilities. CEG plans to implement recycling and waste minimization programs that aim to reduce waste volumes generated. The nonradiological waste impacts from operations are expected to be SMALL, given CEG's demonstrated compliance with regulations, use of permitted facilities, and implementation of effective practices for waste minimization. Radiological waste is expected to be managed onsite, transported, and disposed

of in licensed facilities in accordance with NRC, U.S. Department of Transportation, and state regulations. SNF is expected to be managed onsite in accordance with NRC regulations. Therefore, waste-related impacts from operating the SMR plant are expected to be SMALL.

7.2.3.2 Renewables Combination Alternative

The renewables combination alternative is composed of the following components, which all include firming battery storage through co-located battery banks:

- Onsite solar-wind installation
- Offsite solar installations
- Offsite onshore wind installations

Solar generation has a much lower capacity factor to account for nighttime and daytime hours with varying solar irradiation. Each installed solar MW is expected to yield approximately 2,190 MWh of generation annually, using a 25 percent capacity factor (EIA 2023a). Each of the solar installations is expected to be supported with onsite lithium-ion battery storage.

An onshore wind capacity factor of 38.2 percent is consistent with averages from the past decade, reflecting the steady improvement in fleet-wide performance, which has grown from under 27 percent in 1999 to 36 percent in 2022 (NREL 2024b). The land-based wind speed at 100 meters is estimated to be 6-9 meters per second for the majority of New York State, with smaller areas of 9–11 meters per second (NREL 2013). CEG assumes that the wind installations are to be offsite, within New York State, and ideally within National Grid service territory.

7.2.3.2.1 Land Use

As discussed in Section 7.2.2.5, solar facilities require large areas of land to generate electricity. Replacement of 20 percent of NMP1's generation with solar power may require approximately 492 MW of solar based on a 25 percent capacity factor. This generation capacity may require approximately 2,950 acres of land for onsite and offsite facilities using factor of 6 acres per MW (SEIA 2024). The onsite solar acreage is expected to be located on the approximately 301 acres previously investigated for the possible development of a third nuclear unit at NMPNS. The onsite solar-wind installation is expected to likely require land-cover conversion, as only a small portion of the potential alternative siting areas on the NMPNS site has been previously disturbed. There is the potential for the offsite solar installations, estimated to be four 125-MW installations, to also require land-use conversion.

Onshore wind energy generation requires large land areas to accommodate turbine spacing, power infrastructure, and transmission links. Within a wind farm, DOE (2015) categorizes land disturbance into two types:

- Permanent Disturbance: Approximately 0.74 acres per MW for turbine bases and associated power infrastructure.
- Temporary Disturbance: Around 2.47 acres per MW for construction staging and support areas (including the 0.74 acres for permanent structures).

The onsite and offsite wind component, which could replace approximately 80 percent of NMP1's generation, is expected to require approximately 109,800 acres for wind farm boundaries, approximately 3,180 acres disturbed for construction, and approximately 953 acres occupied by structures. The offsite wind component is estimated to require four 300-MW wind installations, and the onsite wind component is estimated to require one 300-MW wind installation. Although wind turbines can share land with compatible uses, establishing them typically involves some land-use conversion to accommodate the permanent infrastructure.

CEG assumes 25 miles of new 345-kV transmission lines in a 150-foot-wide ROW transmission corridor is required to support each offsite solar and wind installation. The estimated acreage requirement for transmission lines is approximately 455 acres per installation, totaling approximately 3,636 acres for all eight offsite installations. The new transmission corridors likely require land-use conversion.

The impact of individual sites is expected to likely not be significant due to the careful evaluation of potential sites by CEG and adherence to existing land-use plans and zoning ordinances. However, the total acreage needed to support the offsite installations, and the acreage required for supporting transmission infrastructure could impact many landowners, including adjacent residences. Overall, the solar and wind power combination alternative is expected to have a MODERATE land-use impact.

7.2.3.2.2 Visual Resources

The onsite solar panels are expected to be visible from Lakeview Road to the west, from Lake Road, which bisects the NMPNS property, and from Lake Ontario to the north. The offsite solar panels could be visible to the public from other offsite locations, depending on placement, buffer areas, and screening. The solar installations are expected to be sited to comply with land zoning regulations and any required buffer or screening requirements.

The turbines of each wind installation are expected to be visible from all directions and could have a large impact on the viewshed, depending on the site selected. In addition, the rotating turbine blades cast moving shadows on the ground and on structures, causing the phenomenon of shadow flicker. Shadow flicker is considered a nuisance rather than a human health hazard. The potential impact of shadow flicker can be mitigated by setback distances from structures,

vegetative buffers, or the curtailment of the turbine during times of their highest impact. (DOE 2015)

Site selection for offsite installations seek to minimize visual impacts and avoid affecting scenic areas, such as congressionally designated areas for the protection of unique natural, cultural, and recreational values (e.g., national scenic and historic trails, national historic landmarks, recreation areas, preserves, and monuments). Avoiding impacts on the most scenic viewsheds reduces the most significant visual impacts, allowing the impacts to be noticeable but not destabilizing.

The turbines are expected to be marked and lighted according to Federal Aviation Administration (FAA) guidelines, which call for painting the turbines and towers white or light gray, making them highly visible to aircraft pilots. Aviation red flashing, strobe, or pulsed obstruction lights are expected to be mounted atop select turbines and at the end of each turbine string, or within and around the perimeter, such that the gap between lights is no greater than 0.5 miles, allowing the entire facility to be perceived as a single unit by pilots flying at night. The specific location of aviation lighting and the operation of the lighting system is to be determined in consultation with the FAA. (FAA 2020)

The transmission lines for the solar and wind installations are not expected to appear any different than existing transmission lines.

The New York State Office of Renewable Energy Siting and Electric Transmission (NYS ORES) requires all renewable energy projects 25 MW or greater to obtain a siting permit for new construction or expansion (NYSDPS 2024). Procedural and substantive requirements for permit applications to NYS ORES are defined in 19 NYCRR 900 et seq. As established in 19 NYCRR 900-2.9, the permit application requires a visual impact assessment to determine the extent and assess the significance of facility visibility, including the visibility of facility components, appearance, and operational characteristics. Additionally, a visual impacts minimization and mitigation plan is required and must include proposed minimization and mitigation alternatives based on an assessment of mitigation strategies, including screening (landscaping), architectural design, visual offsets, relocation or rearranging facility components, reduction of facility component profiles, alternative technologies, facility color and design, lighting options for work areas and safety requirements, and lighting options for FAA aviation hazard lighting. A lighting plan is required to reduce light pollution. Light levels are expected to be limited to the maximum total outdoor lighting output based on the lowest allowable OSHA limits, placed at the lowest practical height, and directed to the ground and/or work areas to avoid being cast skyward or over long distances.

Overall, the visual impacts from the construction and operation of the solar and wind installations are expected to range from SMALL to MODERATE.

7.2.3.2.3 Air Quality

Construction activities associated with the solar and wind installations and transmission lines generate fugitive dust. Mitigation occurs via wetting of cleared areas and dirt roads to minimize fugitive dust. Construction equipment and vehicles also create exhaust emissions. These emissions are expected to be temporary; mitigation, such as curtailing the idling of vehicles, is expected to be used to minimize short-term air quality impacts. Construction emissions associated with this alternative are expected to be SMALL. The solar and wind components of this alternative do not release air emissions during operations; therefore, the operations air quality impacts are expected to be SMALL.

7.2.3.2.4 Noise

Construction of each solar and wind installation likewise has noise impacts similar to those described in Section 7.2.3.1.4, but with a shorter duration. However, given the acreage of the solar installations and the potential need for land clearing and the number of turbines needed, noise impacts could range from SMALL to MODERATE but are expected to be temporary during construction of each installation.

No noise impacts are expected to occur from operation of the solar installations. Wind turbines emit sound during operation. Turbine sound is typically one of the greatest nuisance impacts from wind power. The DOE addressed this concern with a review of the available data and research on impacts to human health. The DOE concluded that, as of 2013, global peer-reviewed scientific data and independent studies consistently found that sound from wind plants has no direct impact on physical human health. (DOE 2015)

As previously mentioned, a NYS ORES siting permit is required for construction of renewable energy facilities greater than 25 MW. The permit application requires study of potential noise impacts of construction and operation of the facility for compliance with applicable regulatory standards. Facilities need to meet the requirements of 19 NYCRR § 900-2.8, which are intended to protect neighboring residences and other sensitive receptors, and which describes the noise and vibration requirements for wind and solar facilities and applicable noise limits. Potential sources of sound could include step-up transformers in the collection substation; heating, ventilation, and air-conditioning equipment; backup generators; electrical inverters; transformers within the photovoltaic solar panel arrays; tracking motors; battery energy storage system; and associated ancillary equipment. (EDF 2023)

Overall, construction-related noise impacts associated with this alternative are dependent on the site selected and the proximity to residents and other sensitive receptors and are expected to range from SMALL to MODERATE. Operations-related noise impacts are expected to be SMALL.

7.2.3.2.5 Geology and Soils

Impacts to geology and soils resulting from construction of the solar and wind installations and supporting transmission lines are expected to primarily be to soils from clearing and grubbing. These temporary soil impacts are expected to be minimized by BMPs. Geological impacts are expected to be minor, as any gravel or stone used in the construction is planned to be sourced from local businesses that sell materials from local quarries. During operations, the solar and wind installations are required to have an SPDES stormwater permit and comply with any applicable NYSDEC regulations to control stormwater runoff.

Application for a siting permit through the NYS ORES requires assessment of geology and soil conditions and resources that may be impacted by, or create potential issues for, facility construction or operation. As per 19 NYCRR 900-2.11, this should include a study of the geology, seismology, and soils impacts of the facility consisting of the identification and mapping of existing conditions, an impact analysis, and proposed impact avoidance and mitigation measures.

The impacts to geology and soils due to the construction and operation of the solar and wind installations are expected to be SMALL.

7.2.3.2.6 Hydrology (Surface Water and Groundwater)

Construction of solar and wind installations and their supporting transmission lines require water for dust suppression, equipment washing, and sanitary systems. The solar and wind installations do not have process-water needs for operation, but water is required periodically for washing the solar panels. The water demand could be met by using trucked-in water, onsite/nearby surface water, or groundwater resources. CEG plans to use the most practical supply and comply with any required water withdrawal permits and applicable regulations. Surface water quality impacts could result from erosion and runoff associated with the construction of the solar and wind installations. These temporary soil impacts are expected to be minimized by BMPs and compliance with stormwater permits and applicable regulations. Groundwater is expected to be protected by using stormwater controls and spill prevention measures.

Application for a siting permit through the NYS ORES includes assessment of potential impacts to surface water and groundwater. Regulation 19 NYCRR 900-2.14(a) describes requirements relating to groundwater, which include, but are not limited to, a survey of active groundwater wells within 1,000 feet of the facility site, and an analysis and evaluation of potential impacts (during normal and drought conditions) from the construction and/or operation of the facility on drinking water supplies (private and public), and groundwater quality and quantity in the facility area. Regulation 19 NYCRR 900.2-14(b) describes requirements relating to surface water, which include, but are not limited to, surface water delineation surveys, a description of surface water bodies including characteristics, such as flow and presence of invasive species, and identification of any downstream surface water drinking-water supply intakes within 1 mile. Also

required are preparation of an SWPPP, description of spill prevention and control measures, and a water quality certification in accordance with Section 401 of the CWA.

Once in operation, CEG plans to operate the installations in compliance with stormwater regulations. The use and water quality impacts for both surface water and groundwater resources associated with the construction and operation of the solar and wind installations are expected to be SMALL.

7.2.3.2.7 Ecological Resources (Terrestrial and Aquatic)

Terrestrial

Terrestrial ecology impacts from construction of an onsite solar-wind installation require land clearing and are similar to that of the SMR plant discussed in Section 7.2.3.1.7. The total offsite land requirement for the proposed energy infrastructure is approximately 8,700 acres, encompassing offsite solar installations, offsite wind installations (including disturbed areas and permanent infrastructure), and new transmission lines.

CEG plans to follow USFWS guidance for land-based wind energy development and eagle conservation (USFWS 2012; USFWS 2013). Therefore, terrestrial ecology impacts associated with the solar and wind installations are expected to be MODERATE to LARGE, given the comparatively large land use requirement.

No operational impacts to terrestrial ecological resources are expected to occur from the solar component of this alternative. The operation of the wind turbines could affect avian and bat species. Following USFWS guidance for siting minimizes impacts. Compliance with incidental take permits minimizes impacts to special-status species. Mortality rates for birds at land-based wind plants average between three and five birds per MW per year. No plant has reported an average greater than 14 birds per MW per year, with common songbirds accounting for approximately 60 percent of all bird-collision mortalities. The mortality levels for the 61 gigawatts of wind capacity installed in 2013 at the time of the DOE's study constitute a small percentage, typically less than 0.02 percent, of the total populations of those songbird species. Using an annual average of five bird deaths per MW, operation of the onsite and offsite wind installations is expected to result in an estimated 6,400 bird deaths per year of operation. (DOE 2015)

Application for a siting permit through the NYS ORES requires assessment of potential impacts to terrestrial ecology as described in 10 NYCRR 900-2.12. This includes identification of the type of plant communities present at the facility site and mapping of the vegetation area to be disturbed. Also required is a list of species of mammals, birds, amphibians, terrestrial invertebrates, and reptiles that are likely to occur based on ecological communities present at, and bird and bat migration routes through, the facility, supplemented as necessary by site surveys, site observations, and publicly available sources and analysis of the impact of the construction and operation of the facility and interconnections on wildlife, wildlife habitats, and wildlife travel corridors.

Overall, the ecological impacts to terrestrial species from construction and operation of this alternative are expected to be MODERATE to LARGE, primarily due to the acreage disturbed and permanent terrestrial habitat removal.

Aquatic

Only SMALL impacts to aquatic resources are likely to occur due to the construction and operation of the solar and wind components due to the expected compliance with required SPDES stormwater construction permits and the use of BMPs to control erosion and runoff.

Application for a siting permit through the NYS ORES requires assessment of potential impacts to aquatic ecology resources, as described in 19 NYCRR 900-2.14(e). This includes analysis of the impact of the construction and operation of the facility on biological aquatic resources, including species listed as endangered, threatened, or species of special concern listed in 6 NYCRR Part 182, and including the potential for introducing and/or spreading invasive species listed in 6 NYCRR Part 575. As well as identification and evaluation of reasonable avoidance measures and, where impacts are unavoidable, mitigation measures regarding impacts on such biological aquatic resources, including species and invasive species impacts, are expected to be addressed pursuant to the invasive species control and management plan, which is to be prepared pursuant to section 900-10.2(f)(4) of this Part (if any) and assure compliance with applicable water quality standards (6 NYCRR Part 703).

As such, the ecological impacts to aquatic resources from the construction and operation of this alternative are expected to be SMALL.

Special-Status Species

As previously stated, CEG plans to follow USFWS guidance for land-based wind energy development and eagle conservation (USFWS 2012; USFWS 2013). The guidance focuses on species of concern and addresses loss, degradation, and fragmentation of habitat.

Application for a siting permit through the NYS ORES requires assessment of potential impacts to NYS T&ES (19 NYCRR 900-2.13). Preparation of a wildlife site characterization report as described in 19 NYCRR 900-1.3(g) is required. In the case that the NYS ORES determines that there is confirmed or presumed occupied habitat of a T&ES at the site, identification and evaluation of avoidance and minimization measures must be incorporated into the facility design and any unavoidable potential impacts must be included in the application.

The range of the endangered northern long-eared bats contains the entirety of the State of New York. During the summer and portions of the fall and spring, northern long-eared bats may be found roosting singly or in colonies underneath bark and/or in cavities or in crevices of both live trees and snags, or dead trees. The northern long-eared bats spend winter months in caves and mines hibernating. (USFWS 2024c)

Projects that result in a change in land use, such as construction of solar and wind facilities, are subject to increased restrictions and permitting requirements due to potential disturbance of roosting and feeding areas. Projects located in occupied habitat areas must comply with additional protective measures. All projects resulting in land use changes are required to contact the regional NYSDEC Office of Environmental Permits for project-specific review and guidance. Potential restrictions on such projects could include, but are not limited to, avoiding clearing when bats are active, leaving uncut all known roost trees and any trees within 150 feet of a summer occurrence or 0.25 miles of a hibernaculum, minimizing tree clearing, cutting trees during hibernation season, and immediate cessation of cutting activities if any bat is observed flying from a cut tree. (NYSDEC 2023a)

Given avoidance, minimization, mitigation measures, and compliance with applicable permits, each solar and wind installation MAY AFFECT, but is NOT LIKELY to ADVERSELY AFFECT federally listed and/or special-status species.

7.2.3.2.8 Historical and Cultural

Impacts from construction of a solar-wind installation onsite require land clearing and are similar to that of the onsite SMR plant discussed in Section 7.2.3.1.8. Development of offsite solar and wind installations and supporting transmission lines could impact cultural resources, depending on the siting location.

The application for the NYS ORES siting permit includes study of the APE as described in 19 NYCRR 900-2.10. Archaeological and architectural surveys are required to identify any potential historic properties (i.e., archaeological sites or historic properties eligible for or listed in the State Register or NRHP) in the APE and determine if there is any potential for adverse effects from construction or operation of the facility.

Construction and operation of this proposed combination alternative could potentially affect historic and cultural resources, with possible impacts ranging from NO EFFECT to ADVERSE EFFECT, depending on site characteristics.

7.2.3.2.9 Socioeconomics

Socioeconomic Issues Other Than Transportation

The construction and operation of the solar and wind components and supporting transmission lines of this alternative is expected to create fewer construction jobs than the construction of an SMR plant. Any boost to local economies is likely to be short, and socioeconomic impacts are expected to be SMALL.

Application for a siting permit through the NYS ORES requires assessment of potential socioeconomic effects as described in 19 NYCRR 900-2.19. The assessment includes estimates of the construction workforce/payroll, number of jobs and payroll during a typical year once the facility is in operation, expenditures likely to be made in host municipalities, and estimates of taxes to be paid to the host municipalities.

Using projections of construction and operations staffing needs collected from previous approved NYS ORES applications, the following estimates were compiled:

Projected Staffing Levels in *Approved* NYS ORES Applications		
Type of Energy Generation	Construction	Operations
Solar	160–467	1.5–4.5
Wind	81–205	8

The approved NYS ORES applications available for review proposed power generation of 90–270 MW. Replacing NMP1's generation with solar and wind installations likely requires longer construction timelines rather than a significantly larger workforce. The number of workers required to maintain each solar and wind installation is expected to be small. The potential exists for operations staff to work at more than one installation depending on installation size.

If CEG leased the property for the offsite solar and wind installations, lease payments are expected to be made to the property owners. The solar installations and the property occupied by the wind turbines could be taxed at a higher rate than agricultural land, providing a tax benefit. The beneficial impact is expected to be dependent on the tax base of the host county, but the impact is expected to likely be SMALL. Overall, the operations-related socioeconomic impacts are expected to be SMALL.

Transportation

The construction workforce and quantity of equipment transported to each solar and wind installation are expected to be less than that of an SMR plant. Traffic impacts associated with the operation of each solar and wind installation are not expected to be noticeable due to the small number of employees required for operation. Therefore, transportation impacts for construction and operations under the solar and wind combination alternative are expected to be SMALL.

7.2.3.2.10 Human Health

During construction of the solar and wind installations, worker safety is to be addressed by following the OSHA worker-protection standards. The radiological human health impact on construction workers due to working in proximity to an operating NMP1 and NMP2 is expected to be SMALL due to compliance with NRC regulations and adherence to ALARA principles. Therefore, construction-related impacts on human health under the solar and wind combination alternative is expected to be SMALL. As mentioned in Section 7.2.3.2.4, regarding wind turbine noise, the DOE concluded that sound from wind turbines has no direct impact on physical human health. Human health impacts during operations for the solar and wind installations are expected to be SMALL.

7.2.3.2.11 Waste Management

Construction of the solar and wind installations is expected to create land-clearing waste, which is planned to be disposed of onsite or shipped to an offsite construction debris landfill. The construction of the solar and wind installations is expected to create sanitary and industrial waste in quantities smaller than or similar to an SMR plant. This waste is expected to be shipped to a licensed offsite recycling, treatment, or disposal facility. Therefore, waste management impacts from the construction of the solar and wind installations are expected to be SMALL. The operation of each solar and wind installation is expected to generate very minimal waste from daily operations. The battery storage system at each solar installation has to be replaced after several years of operation; however, many of the components are recyclable, minimizing waste generation. Solar developers are currently assuming lifespans for solar panels to be 30 years or more (LBNL 2020). Wind turbine manufacturers are generally indicating that current designs have a 30-year lifespan (LBNL 2019). Waste and end-of-life equipment/components are expected to be shipped to a licensed offsite recycling, treatment, or disposal facility. Therefore, waste management impacts from daily operations of the solar and wind installations are expected to be SMALL.

7.2.3.3 Onshore Wind Alternative

7.2.3.3.1 Land Use

As previously discussed in this chapter, wind facilities require large areas of land to generate electricity. Wind energy generation requires significant land areas to accommodate turbine spacing, power infrastructure, and transmission links. As previously mentioned, within a wind farm, the DOE categorizes land disturbance into two types:

- Permanent Disturbance: Approximately 0.74 acres per MW for turbine bases and associated power infrastructure

- Temporary Disturbance: Around 2.47 acres per MW for construction staging and support areas (including the 0.74 acres for permanent structures).

The onsite and offsite wind facilities, to replace the entirety of NMP1's generation, are expected to require generation of approximately 1,610 MWs, utilizing a capacity factor of 38.2 percent. Approximately 3,980 acres of land are expected to be disturbed during construction of six 300-MW facilities, including approximately 1,190 acres permanently occupied by structures. As previously mentioned, CEG assumes 25 miles of new 245-kV transmission lines in a 150-foot-wide ROW transmission corridor are expected to be required to support each offsite wind installation. Approximately 2,730 acres are expected to be required for these new ROW transmission corridors.

The impact of individual sites is expected to likely not be significant due to the careful evaluation of potential sites by CEG and adherence to existing land-use plans and zoning ordinances. However, the total acreage needed to support the offsite installations, and the acreage required for supporting transmission infrastructure could impact many landowners, including adjacent

residences. Overall, the onshore wind alternative is expected to have a MODERATE land-use impact.

7.2.3.3.2 Visual Resources

Potential impacts to visual resources from the onshore wind alternative are expected to be similar to those discussed in Section 7.2.3.2.2. Turbines are likely visible from all directions, and rotating turbine blades cause shadow flicker.

Site selection for offsite installations aim to avoid scenic areas, which help to mitigate impacts on the most scenic viewsheds, and reduce the most significant visual impacts, allowing the impacts to be noticeable but not destabilizing. The turbines are expected to be marked and lighted according to FAA guidelines.

Previously mentioned NYS ORES permit requirements apply, which includes a visual impact assessment to determine the extent and significance of facility visibility, including the visibility of facility components, appearance, and operational characteristics. Both a visual impacts minimization and mitigation plan and a lighting plan are required. Further discussion of these requirements is presented in Section 7.2.3.2.2.

Overall, the visual impacts from the construction and operation of the wind installations are expected to range from SMALL to MODERATE.

7.2.3.3.3 Air Quality

As mentioned in Section 7.2.3.2.3, construction activities associated with the wind installations and transmission lines generate fugitive dust and exhaust emissions from construction equipment. Mitigation measures are expected to be implemented to minimize these short-term air quality impacts. Construction emissions associated with this alternative are expected to be SMALL. This alternative is not expected to release air emissions during operations; therefore, the operations air quality impacts are expected to be SMALL.

7.2.3.3.4 Noise

Construction of each wind installation likewise has noise impacts similar to those described in Section 7.2.3.2.4, but with a shorter duration. Due to the potential need for land clearing and the number of turbines needed, noise impacts could range from SMALL to MODERATE but are expected to be temporary during construction of each installation.

As discussed in greater detail in Section 7.2.3.2.4, a NYS ORES siting permit is required for siting of the wind installations. The permit application requires study of potential noise impacts of construction and operation of the facilities for compliance with applicable regulatory standards.

Overall, construction-related noise impacts associated with this alternative are dependent on the site selected, the proximity to residents and other sensitive receptors, and are expected to

range from SMALL to MODERATE. Operations-related noise impacts are expected to be SMALL.

7.2.3.3.5 Geology and Soils

Potential impacts to geology and soils resulting from construction of the wind installations and supporting transmission lines are expected to be largely similar to those described in Section 7.2.3.2.5.

The construction and operation of wind installations are expected to have minimal geological and soil impacts. Temporary soil effects from clearing and grubbing are expected to be mitigated through BMPs. Geological impacts are expected to be negligible since materials are planned to be locally sourced. During operation, wind installations must comply with applicable NYSDEC regulations and obtain an SPDES stormwater permit to control stormwater runoff. As required by NYS ORES, a geological and soil assessment is expected to be performed to ensure identification, mapping, and mitigation of potential issues.

Overall, the geological and soil impacts of wind installation construction and operations are SMALL.

7.2.3.3.6 Hydrology (Surface Water and Groundwater)

The construction of wind installations require water for dust suppression, equipment washing, and sanitary systems. During operation, water could be needed periodically for maintenance tasks. To minimize environmental impacts, the most practical water supply option could be selected, and CEG plans to comply with all required water withdrawal permits and regulations.

Surface water quality could be affected by erosion and runoff during construction, but impacts are expected to be minimized through BMPs and compliance with stormwater permits and regulations. Groundwater is expected to be protected through stormwater controls and spill prevention measures.

As part of the siting permit application, NYS ORES requires assessment of potential impacts to surface water and groundwater. Details on these requirements are provided in Section 7.2.3.2.6.

Once in operation, CEG plans to operate the wind installations in compliance with stormwater regulations. The use and water quality impacts for both surface water and groundwater resources associated with the construction and operation of the wind installations are expected to be SMALL.

7.2.3.3.7 Ecological Resources (Terrestrial and Aquatic)

Terrestrial

The construction of wind installations could require land clearing, potentially impacting terrestrial ecology. To minimize impacts, the project is expected to follow USFWS guidance for land-based wind energy development and eagle conservation.

Operational impacts could affect avian and bat species, but compliance with incidental take permits and USFWS guidance is expected to mitigate these effects.

Estimated annual bird deaths from wind turbine operations could be significant, averaging five bird deaths per MW for a total of approximately 8,050 birds.

As part of the NYS ORES siting permit application, potential impacts to terrestrial ecology are expected to be assessed, including identification of plant communities, mapping disturbed vegetation areas, listing species likely to occur at the facility site, and analyzing impacts on wildlife, habitats, and travel corridors. Details on these requirements are provided in 10 NYCRR 900-2.12.

Overall, the terrestrial ecological impacts from construction and operation of wind generation could be MODERATE to LARGE, primarily due to land disturbance and habitat removal.

Aquatic

The construction and operation of wind installations are expected to likely have only SMALL impacts on aquatic resources, due to compliance with required SPDES stormwater construction permits and the use of BMPs to control erosion and runoff.

As part of the NYS ORES siting permit application, potential impacts to aquatic ecology resources are expected to be assessed, including analysis of impacts on endangered, threatened, or special-status species, evaluation of measures to avoid or mitigate impacts, and consideration of invasive species introduction or spread. Details on these requirements are provided in 19 NYCRR 900-2.14(e).

To minimize impacts, wind installations are expected to incorporate reasonable avoidance measures and mitigation measures, including compliance with applicable water quality standards and implementation of an invasive species control and management plan.

Overall, the ecological impacts to aquatic resources from construction and operation of wind facilities are expected to be SMALL.

Special-Status Species

The construction and operation of wind installations are expected to follow USFWS guidance for land-based wind energy development and eagle conservation, focusing on minimizing impacts to species of concern and habitat loss.

As part of the NYS ORES siting permit application, potential impacts to New York State T&ES are expected to be assessed, including preparation of a wildlife site characterization report. Special consideration could be given to the northern long-eared bat, a federally listed species found across New York State. Details on measures to minimize impacts to T&ES in the NYS ORES siting permit applications, including the northern long-eared bat, are provided in Section 7.2.3.2.7.

With avoidance, minimization, and mitigation measures in place, construction, and operation of wind installations MAY AFFECT, but is NOT LIKELY to ADVERSELY AFFECT federally listed and/or special-status species.

7.2.3.3.8 Historic and Cultural

Impacts from construction of the wind installations onsite are expected to require land clearing and be similar to that of the onsite SMR plant discussed in Section 7.2.3.1.8. Development of offsite wind installations and supporting transmission lines could impact cultural resources, depending on the siting location.

As part of the NYS ORES siting permit application, archaeological and architectural surveys are expected to identify potential historic properties within the APE, assessing potential adverse effects from construction and operation. Details on the cultural resource assessment process can be found in 19 NYCRR 900-2.10.

The construction and operation of wind installations could potentially affect historic and cultural resources, with possible impacts ranging from NO EFFECT to ADVERSE EFFECT, dependent upon site characteristics.

7.2.3.3.9 Socioeconomics

Socioeconomic Issues Other Than Transportation

The construction of wind installations and supporting transmission lines are expected to create fewer construction jobs compared to an SMR plant, which is discussed in Section 7.2.3.1.9, with a short-term boost to local economies.

As part of the NYS ORES siting permit application, potential socioeconomic effects are expected to be assessed, including construction workforce, operational jobs, local expenditures, and tax payments. Details on socioeconomic assessment requirements are provided in 19 NYCRR 900-2.19.

Projected staffing levels for each wind installation indicate a construction workforce of 81-205 and 8 operational staff. Lease payments to property owners and potential tax benefits to host counties could provide some economic benefits, although the impact is expected to likely be SMALL.

The construction and operation of wind installations are expected to have SMALL socioeconomic impacts.

Transportation

The construction workforce and quantity of equipment transported to each wind installation are expected to be less than that of an SMR plant. Traffic impacts associated with the operation of each wind installation are not expected to be noticeable due to the small number of employees required for operation. Therefore, transportation impacts for construction and operations under the onshore wind alternative are expected to be SMALL.

7.2.3.3.10 Human Health

As previously discussed in Section 7.2.3.2.10, the construction and operation of wind installations prioritizes worker safety by adhering to OSHA worker-protection standards. Radiological human health impacts on construction workers due to working next to operating NMP1 and NMP2 are expected to be SMALL, due to compliance with NRC regulations and adherence to ALARA principles. As such, construction-related impacts on human health are expected to be SMALL.

As mentioned in Section 7.2.3.2.4, the DOE has found no direct link between wind turbine noise and adverse physical human health effects during operations.

Overall, human health impacts from both the construction and operation of wind installations are expected to be SMALL.

7.2.3.3.11 Waste Management

Construction activities for wind installations produce waste, consisting primarily of land-clearing debris and relatively small amounts of sanitary and industrial waste. Waste management impacts from construction are expected to be SMALL.

Operation of wind installations are expected to generate very minimal daily waste, with periodic replacement of battery storage systems, largely offset by recyclable components. Wind turbines have estimated lifespans of 30 years, and end-of-life equipment/components are expected to be sent to licensed offsite recycling, treatment, or disposal facilities. Waste management impacts from daily operations of wind installations are expected to be SMALL.

Overall, waste management impacts from both construction and operation of the wind installations are expected to be SMALL.

7.3 Alternatives for Reducing Adverse Impacts

7.3.1 Alternatives Considered

As noted in 10 CFR 51.53(c)(3)(iii), "The report must contain a consideration of alternatives for reducing adverse impacts, as required by 51.45(c), for all Category 2 license renewal issues in Appendix B to Subpart A of this part." A review of the environmental impacts associated with the Category 2 issues in Chapter 4 identified no significant adverse effects that require consideration of additional alternatives. Therefore, CEG concludes that the impacts associated with renewal of the NMP1 OL do not require consideration of alternatives for reducing adverse impacts as specified in NRC Regulatory Guide 4.2, Revision 2 (NRC 2024b).

7.3.2 Environmental Impacts of Alternatives for Reducing Adverse Impacts

CEG did not consider other additional alternatives to reduce impacts because as determined in Chapter 4, the continued operation of NMP1 does not result in significant adverse effects to the environment.

8.0 COMPARISON OF THE ENVIRONMENTAL IMPACT OF LICENSE RENEWAL WITH THE ALTERNATIVES

To the extent practicable, the environmental impacts of the proposal and the alternatives should be presented in comparative form . . . . [10 CFR 51.45(b)(3)]

The proposed action is renewal of the NMP1 OL, which preserves the option to continue to operate NMP1 to provide reliable baseload power and meet future generating demand throughout the proposed 20-year SPEO. Chapter 4 provides analyses of the environmental impacts for the proposed action. The proposed action is compared to the no-action alternative, which includes both the termination of operations and decommissioning of NMP1 and reasonably foreseeable replacement of its baseload generating capacity. Site-specific impacts of SLR on termination of operations and decommissioning are analyzed by the NRC in the GEIS on decommissioning, NUREG-0586, Supplement 1 (NRC 2002; NRC 2024a). Chapter 7 describes the energy alternative component of the no-action alternative and analyzes its impacts.

Table 8.0-1 summarizes key characteristics and Table 8.0-2 summarizes the environmental impacts of the proposed action and the alternatives deemed reasonable for comparison purposes. Table 8.0-2 provides a more detailed comparison. The environmental impacts compared in Tables 8.0-1 and 8.0-2 are those that apply to the proposed action or issues that the GEIS identified as major considerations in an alternatives analysis.

The alternatives reviewed in Chapter 7 entail impacts greater than or equal to the proposed action of renewing the NMP1 OL. The continued operation of NMP1 is expected to create less environmental impact than the construction and operation of a new alternative generating capacity. In addition, the continued operation of NMP1 is expected to have a superior positive economic impact on Oswego County through tax revenues paid by CEG on behalf of NMPNS. Continued employment of station workers could provide ongoing economic benefits to the surrounding communities.

Table 8.0-1 Alternative Features Comparison Summary

Key Feature	SMR	Solar / Wind	Wind
Summary of Alternative	Configuration of SMR modules to yield 615 MWe (Section 7.2.3.1)	Solar: one 125 MW installation (onsite); four 125 MW installations (offsite) Wind: one 300 MW; onsite); four 300 MW installations (offsite) (Section 7.2.3.2)	Six 300 MW installations (onsite and offsite) (Section 7.2.3.3.1)
Location	NMP1 site (Section 7.2.3.1)	Onsite at NMP1; offsite, within New York State, ideally within National Grid service territory (Section 7.2.3.2)	Onsite at NMP1; offsite, within New York State, ideally within National Grid service territory (Section 7.2.3.3.1)
Cooling System	Water-cooled SMR with MDCTs (Section. 7.2.3.1)	Solar/wind: No cooling system required (Section 7.2.3.2.6)	No cooling system required (Section 7.2.3.3.6)
Land Requirements	Approximately 24 acres (Section 7.2.3.1.1)	Solar: Approx. 2,950 acres (onsite and offsite) Wind: Approx. 3,180 acres (disturbed for construction); Approx. 953 acres (permanent structures) (Section 7.2.3.2.1)	Approx. 3,980 acres (disturbed for construction); Approx. 1,190 (permanent structures) (Section 7.2.3.3.1)
Workforce	Peak construction workforce of 3,300 and construction duration of approx. 72 months; Approx. 280-420-person operations workforce, estimated. (Section 7.2.3.1.9)	Solar: 160-467-person construction workforce, estimated. Approx. 1-4-person operations workforce Wind: 81-205-person construction workforce, estimated. 8-person operations workforce. (Section 7.2.3.2.9)	Wind: 81-205-person construction workforce, estimated. 8-person operations workforce. (Section 7.2.3.3.9)

Table 8.0-2 Environmental Impacts Comparison Summary (Sheet 1 of 3)

Impact Area[(a)]	Proposed Action	Termination of Operations and Decommissioning	No-Action Alternative		
			SMR	Solar / Wind	Wind
Land Use	SMALL	SMALL	SMALL	MODERATE	MODERATE
Visual Resources	SMALL	SMALL	SMALL	SMALL to MODERATE	SMALL to MODERATE
Air Quality	SMALL	SMALL	SMALL	SMALL	SMALL
Noise	SMALL	SMALL	SMALL	SMALL to MODERATE (construction) SMALL (operations)	SMALL to MODERATE (construction) SMALL (operations)
Geology and Soils	SMALL	SMALL	SMALL	SMALL	SMALL
Surface Water	SMALL	SMALL	SMALL	SMALL	SMALL
Groundwater	SMALL	SMALL	SMALL	SMALL	SMALL
Terrestrial	SMALL	SMALL	SMALL	MODERATE to LARGE	MODERATE to LARGE

Table 8.0-2 Environmental Impacts Comparison Summary (Sheet 2 of 3)

Impact Area[a]	Proposed Action	Termination of Operations and Decommissioning	No-Action Alternative		
			SMR	Solar / Wind	Wind
Aquatic	SMALL	SMALL	SMALL	SMALL	SMALL
Special Status Species	NO EFFECT (Bog buck moth and Monarch butterfly) MAY AFFECT, NOT LIKELY to ADVERSELY AFFECT (Northern long-eared bat)	(b)	MAY AFFECT, NOT LIKELY to ADVERSELY AFFECT (federally listed) SMALL (other special-status species)	MAY AFFECT, NOT LIKELY to ADVERSELY AFFECT (federally listed)	MAY AFFECT, NOT LIKELY to ADVERSELY AFFECT (federally listed)
Historic and Cultural	NO ADVERSE EFFECT	NO ADVERSE EFFECT	NO ADVERSE EFFECT	NO EFFECT to ADVERSE EFFECT	NO EFFECT to ADVERSE EFFECT
Socioeconomics	SMALL	LARGE (termination) SMALL (decommissioning)	SMALL to MODERATE (construction, adverse) SMALL to MODERATE (construction, beneficial) SMALL (operations, adverse) LARGE (operations, beneficial)	SMALL	SMALL

Table 8.0-2 Environmental Impacts Comparison Summary (Sheet 3 of 3)

Impact Area[a]	Proposed Action	Termination of Operations and Decommissioning	No-Action Alternative		
			SMR	Solar / Wind	Wind
Transportation	SMALL	SMALL	SMALL to MODERATE (construction) SMALL (operations)	SMALL	SMALL
Human Health	SMALL	SMALL	SMALL	SMALL	SMALL
Waste Management	SMALL	SMALL	SMALL	SMALL	SMALL

a. As defined in 10 CFR Part 51, Subpart A, Appendix B, Table B-1, Footnote 3:
SMALL: Environmental effects are not detectable or are so minor that they neither destabilize nor noticeably alter any important attribute of the resource.
MODERATE: Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.
LARGE: Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

b. NUREG-0586, Supplement 1, the decommissioning GEIS, identifies this resource area as requiring a site-specific analysis based on site conditions at the time of decommissioning, as well as the proposed decommissioning method and activities (NRC 2002). Decommissioning NMP1, at a minimum, is expected to occur after the expiration of the current license term. The magnitude of impacts could vary widely based on site-specific conditions at the time and analysis of special-status species and/or their habitat(s), a consideration of their presence or their habitats' presence, and an environmental justice analysis of the potential for disproportionately high and adverse impacts from the impacts of decommissioning being experienced by minority or low-income populations as determined by the most recent USCB decennial census data when the alternative is implemented. Thus, CEG cannot reasonably forecast a level of impact for this resource area.

9.0 STATUS OF COMPLIANCE

The environmental report shall list all federal, permits, licenses, approvals, and other entitlements which must be obtained in connection with the proposed action and shall describe the status of compliance with these requirements. The environmental report shall also include a discussion of the status of compliance with applicable environmental quality standards and requirements including, but not limited to, applicable zoning and land-use regulations, and thermal and other water pollution limitations or requirements which have been imposed by federal, state, regional, and local agencies having responsibility for environmental protection. [10 CFR 51.45(d)]

9.1 NMP1 Authorizations

Table 9.1-1 summarizes the authorizations held by NMP1 for current station operations. Authorizations in this context include any permits, licenses, approvals, or other entitlements that are to continue to be in place, as appropriate, throughout the SPEO, given their respective renewal schedules. Table 9.1-2 lists additional environmental authorizations and consultations related to license renewal of NMP1.

Table 9.1-1 Environmental Authorizations for Current NMP1 Operations (Sheet 1 of 3)

Agency	Authority/Reg#	Requirement	Facility/Permit Number	Exp Date	Authorized Activity
DOT	49 CFR Part 107, Subpart G	Hazardous materials certificate of registration	Reg No. 052225550199HJ HM Company ID: 57046	6/30/2028 (renewed every 3 years)	Hazardous materials shipments
NYSDEC	6 NYCRR Part 621	Section 401 Water Quality Certification	Permit ID: 7-3556-00013/00026	8/22/2029	Discharge into waters of the U.S.
NYSDEC	33 USC § 1251 NY ECL § 17.08	SPDES	SPDES No. NY0001015 DEC ID: 7-3556-00013	11/30/2019 (administrative extension as per NYS Admin Pro Act § 401.2)	Discharge of wastewater to Lake Ontario
NYSDEC	Section 404 - CWA - 33 USC § 1344	Excavation & Fill in Navigable Waters	Permit ID. 7-3556-00013/00034	Request submitted to NYSDEC to incorporate maintenance activities into the SPDES permit listed above.	Maintenance of two existing stormwater outfalls
	Article 15, Title 5 (6 NYCRR Part 608)	Use and Protection of Waters			
	Section 401 - CWA - 33 USC § 1251	Section 401 Water Quality Certification	Permit ID. 7-3556-00013/00035		
NYSDEC	Article 15, Title 15 (6 NYCRR Part 608)	Water Supply - Water Withdrawal Non-public	DEC ID: 7-3556-00013/00033 WWA # 11,749	1/12/2030	Water withdrawal permit, Source of Water Supply - Lake Ontario

Table 9.1-1 Environmental Authorizations for Current NMP1 Operations (Sheet 2 of 3)

Agency	Authority/Reg#	Requirement	Facility/Permit Number	Exp Date	Authorized Activity
NYSDOS - Division of Coastal Resources	16 USC 1451 et seq.	Coastal Zone Management Act	File No. F-2004-0194 DEC ID: NY-0001015	Not Applicable	Federal Consistency Certification
NYSDEC	6 NYCRR Part 370-374	Hazardous Waste Management	Site ID: NYD000730432	Renewed Annually	Low-Level Mixed Waste Storage and Disposal
NYSDEC	6 NYCRR Part 613	Petroleum Bulk Storage Certificates	PBS Number: 7-429880	11/7/2026	Bulk Petroleum Storage
NYSDEC	6 NYCRR 325	Pesticide Agency Registration	Reg No. 79634	7/31/2026	Application of approved pesticides
State of Tennessee Department of Environment and Conservation, Division of Radiological Health	1980 Act No. 429	Tennessee Disposal Permit	Permit No. T-NY002-L24	12/31/2026 Request submitted to NYSDEC to incorporate maintenance activities into the SPDES Permit listed above.	Shipment of LLRW to TN disposal facility

Table 9.1-1 Environmental Authorizations for Current NMP1 Operations (Sheet 3 of 3)

Agency	Authority/Reg#	Requirement	Facility/Permit Number	Exp Date	Authorized Activity
Texas Department of State Health Services	25 TAC §289.257	Texas Disposal Permit	Registration No. W0022	7/31/2032	Shipment of LLRW to TX disposal facility
State of Utah Division of Waste Management and Radiation Control	R313-26 and R313-19-100 of the Utah Administrative Code	Utah Disposal Permit	Permit No. 1410008662	1/23/2027	Shipment of LLRW to UT disposal facility

Table 9.1-2 Environmental Consultations for NMP1 Subsequent License Renewal (Sheet 1 of 2)

Agency	Authority	Requirement	Remarks
NRC	Atomic Energy Act [42 USC 2011 et seq.]	License renewal	Applicant for federal license must submit an ER in support of a license renewal application
NYS Department of Environmental Conservation	Clean Water Act Section 401 [33 USC 1341]	Certification of water quality standards	Requires federal agency issuing a license to ensure that a water quality certification or waiver is issued by the appropriate state agency
USFWS	Endangered Species Act, Section 7 [16 USC 1536]	Consultation	Requires federal agency issuing a license to consult with the USFWS, regarding Federally protected species.
NOAA Fisheries Service	Endangered Species Act, Section 7 [16 USC 1536]	Consultation	Requires federal agency issuing a license to consult with the NOAA, regarding Federally protected species.
NOAA Fisheries Service	Magnuson-Stevens Fishery Conservation And Management Act, 16 USC. § 1801 et seq.]	Consultation	Requires federal agency issuing a license to consult with the NOAA, regarding Federally protected species.
NYS Department of Environmental Conservation	Endangered Species Act, Section 7 [16 USC 1536]	Consultation	Applicant may consult with state agency to support a timely and thorough review of potential impacts to T&ES and important habitats.
NYS Department of Health - Division of Environmental Health Protection	10 CFR 51, Subpart A; Regulatory Guide 4.2, Supplement 1, Revision 2	Consultation	Applicant should consult the state agency responsible for environmental health regarding the potential existence and concentration of microorganisms in the receiving waters for station cooling water discharge.

Table 9.1-2 Environmental Consultations for NMP1 Subsequent License Renewal (Sheet 2 of 2)

Agency	Authority	Requirement	Remarks
NYS Parks, Recreations & Historic Preservation - State Historic Preservation Office	10 CFR 51, Subpart A; Regulatory Guide 4.2, Revision 2, Supplement 1,	Consultation	Requires agency issuing a license to consider cultural impacts and consult with state historic preservation officer (SHPO) and/or tribal historic preservation officer (THPO).
NYSDOS - Office of Planning and Development	Coastal Zone Management Act, 15 CFR Part 930 Section 307	Consultation	Applicant may consult with state agency to support a timely and thorough review of potential impacts to coastal zones.
Cayuga Nation	National Historic Preservation Act, Section 106	Consultation	Requires federal agency issuing a license to consider cultural impacts and consult with THPO.
Onondaga Nation	National Historic Preservation Act, Section 106	Consultation	Requires federal agency issuing a license to consider cultural impacts and consult with THPO.
Seneca Cayuga Nation	National Historic Preservation Act, Section 106	Consultation	Requires federal agency issuing a license to consider cultural impacts and consult with THPO.
Oneida Indian Nation	National Historic Preservation Act, Section 106	Consultation	Requires federal agency issuing a license to consider cultural impacts and consult with THPO.

9.2 Status of Compliance

As shown above in Table 9.1-1, NMP1 has secured the relevant environmental authorizations for operations. NMP1 has no outstanding noncompliance issues, permit violations, courtesy reports, or corrective actions. NMP1 has programs and procedures to maintain compliance with permits, regulations, and authorizations.

9.3 Notices of Violation, Spills and Permit Exceedances

Following a review of records NMP1's 2020-2024 compliance history showed the following:

Notices of Violation

There were no NOVs issued to NMP1 in 2020–2024.

Spills

On March 12, 2023, NMPNS personnel discovered a leak of sodium hypochlorite from a flange gasket on the outlet piping of Tank 74.3-100. The spill was determined to be reportable per 6 NYCRR Part 597 because it was estimated to exceed the 100-pound reporting threshold. NYSDEC was notified of the spill within the 2-hour notification requirement window. Approximately 2,000 gallons of fluid were released from the tank; however, this fluid was contained by the protective berm surrounding the tank. The spill case initiated by the NYSDEC notification, Spill Number 2209849, was closed on March 13, 2023. (NYSDEC 2023b) A defective gasket was identified as being composed of an unsuitable material, which was also found to be responsible for the spill in 2019. To address this issue, the material specifications were updated to exclude this material. All faulty gaskets were subsequently replaced with new ones fabricated from a more suitable material. (NYSDEC 2023b)

On April 30, 2025, a release of approximately 200 gallons was discovered from the Unit 1 sodium bisulfite bulk tank within the secondary containment berm. The spill was reported to the NYSDEC per internal procedures and in accordance with NYCRR Part 597. Because the release was contained within the secondary containment berm, there were no impacts to soil, surface water, or groundwater. The spill was cleaned up and the tank was taken out of service for repairs.

On June 18, 2025, it was discovered that a pipe in the NMP1 fire protection system containing raw lake water ruptured below ground. The water carried sediment to a nearby storm drain, which discharged to SPDES Outfall 020. The event lasted about 40 minutes. An oral notification to the NYSDEC was made on June 25, 2025. A sample was collected from the outfall and analyzed for TSS, which were detected at 82 mg/L, above the daily maximum permit limit of 50 mg/L. The fire protection system and piping were repaired, and a sample from Outfall 020 was collected and analyzed for TSS to confirm compliance with permit limits. A Report of

Noncompliance Event form was completed and submitted electronically with the DMR for the second quarter.

SPDES Permit Exceedance

As described in Section 3.6.1.2.5, in December 2023, NMPNS was subject to SPDES noncompliance due to an error by third-party laboratory, which failed to analyze a permit-required monthly sample for BOD_5 from Outfall 030 within the method holding time. In accordance with 6 NYCRR Part 750-2.7, a report of noncompliance event was completed and submitted to the NYSDEC with the December 2023 DMR. In response to this event, NMPNS accelerated the transition to a new laboratory vendor. A contract with a new laboratory vendor was established by 2024, and NMPNS now exclusively uses this vendor for SPDES analysis.

9.4 Federal, State, and Local Regulatory Standards: Discussion of Compliance

NMPNS has established control measures in place to ensure compliance with the authorizations listed in Table 9.1-1, including monitoring, reporting, and operating within specified limits. NMPNS environmental compliance coordinators are responsible for monitoring and ensuring the site complies with its environmental permits and applicable regulations. Monitoring and sampling results associated with the environmental programs are submitted to appropriate agencies, as specified in the permit requirements and/or governing regulations.

This section contains information regarding environmental programs identified in the GEIS that may or may not be applicable to the site and the current status of compliance with each program.

9.4.1 Atomic Energy Act

As discussed in Section 2.2.5, NMP1 uses liquid, gaseous, and solid radioactive waste management systems to collect and process wastes that are the by-products of operations before they are released to the environment. As a generator of LLRW and SNF, NMP1 is subject to and complies with the provisions and requirements of the Low-Level Radioactive Waste Policy Amendments Act of 1985 and the Nuclear Waste Policy Act of 1982, as subsequently amended.

9.4.2 Clean Air Act

9.4.2.1 Air Permit

NMPNS's air emission sources are presented in Table 3.3-8 and 3.3-9, which include their run times or days operated. The State of New York does not require an air permit for a temporary emission source operated less than 90 days and then removed or a stationary internal combustion engine that operates only when the usual supply of power is unavailable and

operates for no more than 500 hours per year (6 NYCRR Part 201-1.11 and -3.2). NMP1 is in compliance with the exemptions from permitting for its air emission sources.

9.4.2.2 Chemical Accident Prevention Provisions [40 CFR Part 68]

NMP1 is not subject to the risk management plan requirements described in 40 CFR Part 68, Chemical Accident Prevention Provisions, as the amount of regulated chemicals onsite does not exceed the threshold quantities specified in 40 CFR 68.130.

9.4.2.3 Stratospheric Ozone [40 CFR Part 82]

Under Title VI of the CAA, the EPA is responsible for several programs that protect the stratospheric ozone layer. Regulations promulgated by the EPA to protect the ozone layer are contained in 40 CFR Part 82. Refrigeration appliances and motor vehicle air conditioners are regulated under Sections 608 and 609 of the CAA, respectively. Several service practices, refrigerant reclamation, technician certification, and other requirements are covered under these programs. NMP1 is in compliance with Sections 608 and 609 of the CAA as amended in 1990 and has implemented the corresponding regulations. The program to manage stationary refrigeration appliances at NMP1 is described in a procedure governing the use, maintenance, service, repair and disposal of appliances and industrial process refrigeration and fire suppression systems containing ozone depleting substances.

9.4.3 Clean Water Act

9.4.3.1 Water Quality Section 401 Certification

Federal CWA Section 401 requires applicants for a federal license involved in an activity that might result in a discharge into navigable waters provide the licensing agency with either a waiver from the state or a certification from the state that the discharge complies with applicable water quality standards. NMPNS holds a Section 401 Water Quality Certification from the NYSDEC under Permit ID 7-3556-00013/00026. This permit became effective on June 21, 2006, and expires for NMP1 on August 22, 2029. CEG plans to submit a CWA Section 401 WQC request to the NYSDEC for the proposed SPEO in accordance with the CWA, the State Uniform Procedures Act, Article 70 of the Environmental Conservation Law, and its implementing regulations 6 NYCRR Part 62.

9.4.3.2 SPDES Permit [NY Environmental Conservation Law § 17.08]

CEG was issued SPDES Permit No. NY0001015 by the NYSDEC, which went into effect in 2014. This permit has been issued an administrative extension in accordance with the State Administrative Procedures Act [NYS Admin Pro Act § 401.2], due to the submittal of a sufficient SPDES permit renewal application by CEG in a timely manner. Therefore, the current permit remains in effect. The initial application was received by the NYSDEC in March 2019 and supplemental information requested by the NYSDEC was submitted in May 2024.

As discussed in Section 3.6.1.2.1, cooling water, and industrial process wastewater from NMP1 are discharged to Lake Ontario via five external outfalls (010, 020, 021, 023, and 030), and four

internal outfalls (011, 010A, 007B, and 024). External Outfall 030 is associated with the operation of both units at NMPNS. Permit limits associated with these outfalls are listed in Table 3.6-2 and outfall locations are mapped in Figure 3.6-3. A copy of SPDES Permit No. NY0001015 is provided in Attachment A.

9.4.3.3 Industrial Stormwater Discharge

NMP1's industrial stormwater discharges are covered in an individual SPDES permit (No. NY0001015) rather than a State Multi-Sector General Permit.

9.4.3.4 Sanitary Wastewaters

As described in Section 3.6.1.2.3, all nonradioactive sanitary wastewater is collected and processed through the onsite WWTP. Sanitary wastewater flows by gravity from NMP1 facilities, the EIC, the NLC, and NMP2 facilities to the WWTP. The treated effluent is released through a 12-inch outfall sewer (Outfall 30) to a drainage ditch leading to Lake Ontario. Any excess sludge is pumped to sludge drying beds, or dried by mechanical means, prior to offsite disposal. (CEG 2023a) Effluent from the WWTP is monitored as Outfall 030 under SPDES Permit No. NY0001015 (Appendix B).

9.4.3.5 Spill Prevention, Control, and Countermeasures

The EPA's Oil Pollution Prevention Rule became effective on January 10, 1974, and was published under the authority of Section 311(j)(1)(C) of the Federal Water Pollution Control Act. The regulation has been published in 40 CFR Part 112, and facilities subject to the rule must prepare and implement an SPCC plan to prevent any discharge of oil into or upon navigable waters of the U.S. or adjoining shorelines.

NMPNS is subject to this rule and has a written SPCC plan that identifies and describes the procedures, materials, equipment, and facilities that are used to minimize the frequency and severity of oil spills to meet the requirements of this rule.

9.4.3.6 Reportable Spills [40 CFR Part 110]

NMP1 is subject to the reporting provisions of 40 CFR Part 110 as it relates to the discharge of oil in such quantities as may be harmful pursuant to Section 311(b)(4) of the Federal Water Pollution Control Act. Any discharges of oil in such quantities that may be harmful to public health, welfare, or the environment must be reported to the EPA's National Response Center.

A review of records in 2020 through 2024 revealed a total of two spills, which are discussed in Section 9.3. The spills were not oils spills and were not reportable under 40 CFR Part 110.

9.4.3.7 Facility Response Plan

Facilities with the potential to cause substantial harm to the environment due to an oil spill are required by 40 CFR 112.20 to develop and submit a Facility Response Plan to the EPA. Pursuant to 40 CFR 112.20(e), a Certification of Applicability of Substantial Harm Criteria was completed to assess NMP1's potential impact. Based on the certification responses, it was

determined that NMP1 does not meet the criteria for a "substantial harm facility." As a result, no Facility Response Plan is required for NMP1.

9.4.3.8 Section 404 Permit

As per Section 404 of the CWA (33 USC. § 1344), CEG received Permit No. 7-3556-00013/00034 from the NYSDEC, which falls under 6 NYCRR Part 608. This permit authorizes maintenance and rehabilitation of two existing stormwater outfalls at NMPNS. Permitted maintenance activity includes relocation of rock rip rap/debris within the outfalls. Additional information about this permit and its coverage under NYSDEC General Permit No. GP-0-25-010 is provided in Section 3.6.1.2.4. The facility has requested that these activities be incorporated into the active SPDES permit revision. No activities previously authorized under this permit are currently planned and will not be implemented until a permit has been obtained.

9.4.4 Safe Drinking Water Act

As outlined in Section 3.6.3.1, the station receives potable water from the Scriba Water District, which in turn is supplied by the City of Oswego. Since NMPNS does not own or operate a public water system, but rather receives water from an external supplier, additional permitting for operation is not required.

9.4.5 Endangered Species Act

Sections 4.2.6 and 4.2.7 assessed potential impacts on ESA species. Three species have ranges that overlap with the NMPNS. CEG does not hold incidental take permits for these species. Further, the impact assessment determined that continued operations may affect, but are not likely to adversely affect, the northern long-eared bat, while the bog buck moth, and the monarch butterfly are to likely experience no effect. NMP1 is in compliance with the ESA.

Section 7 of the ESA requires Federal agencies to ensure that their actions are not likely to jeopardize the continued existence of species that are listed, or proposed for listing, as endangered, or threatened. Depending on the action involved, the ESA requires consultation with the USFWS and with the NMFS if marine or anadromous species could be affected. CEG has invited comment from the USFWS (Attachment B).

9.4.6 Migratory Bird Treaty Act

The MBTA makes it unlawful to pursue, hunt, take, capture, kill, or sell listed birds and grants protection to any bird parts, including feathers, eggs, and nests. Table 3.7-3 includes a list of the MBTA species that occur within the 6-mile vicinity of NMP1. NMPNS does not possess any migratory bird permits listed under 50 CFR Part 13 Subpart B. As described in section 3.7.1.2.3, NMPNS follows an Avian and Wildlife Management Procedure.

9.4.7 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act prohibits the take, transport, sale, barter, trade, import or export, and possession of eagles, making it illegal for anyone to collect eagles, eagle parts, nests, or eggs without a USFWS permit. As mentioned in Section 3.7.1.3.1, bald eagles are known to occur at and near NMPNS. Monitoring of the onsite bald eagle nest has been ongoing since 2014. NMPNS participates in a bald eagle nest monitoring program, which provides information to the NYSDEC to aid in the State's monitoring obligations to the USFWS. Monitoring includes using binoculars and a camera with a telephoto lens to observe the known onsite nest for activity between March 1 and June 1 annually.

As discussed in Section 3.7.1.2.5, as part of their WHC Certification, NMPNS conducts monitoring studies, implements conservation efforts, and employs management strategies to conserve and protect the natural environment. This monitoring began prior to the start of the bald eagle nest monitoring program, but also includes monitoring of these nests.

9.4.8 Magnuson-Stevens Fishery Conservation and Management Act

As discussed in Section 3.7.3.2, no EFH is present in the NMPNS action area, therefore, there are no Magnuson-Stevens Fishery Conservation and Management Act restrictions applicable to NMP1 operations.

9.4.9 Marine Mammal Protection Act

The Marine Mammal Protection Act prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. Lake Ontario is a freshwater lake and NMPNS is situated inland, away from oceanic, estuarine, or gulf waters. As such, there are currently no Marine Mammal Protection Act permitting requirements associated with NMP1 operations.

9.4.10 National Marine Sanctuary Act

National marine sanctuaries are federally designated areas within U.S. waters that protect areas of the marine environment with special conservation, recreational, ecological, historical, cultural, archaeological, scientific, educational, or aesthetic qualities. As discussed in Section 3.7.3.3, the Lake Ontario NMS overlaps with the NMPNS action area. Lake Ontario NMS celebrates the region's maritime cultural history protecting a diversity of nationally significant underwater assets, including archaeological sites, shipwrecks, and submerged aircraft. There are currently no National Marine Sanctuary Act permitting requirements applicable to NMPNS as NMPNS does not conduct any of the prohibited or otherwise regulated activities outlined in 15 CFR Part 922.223.

9.4.11 Coastal Zone Management Act

The Federal CZMA [16 USC 1451 et seq.] imposes requirements on an applicant for a Federal license to conduct an activity that could affect a state's coastal zone. The act requires the applicant to certify to the licensing agency that the proposed activity is expected to be consistent with the state's federally approved coastal zone management program [16 USC 1456(c)(3)(A)]. NOAA has promulgated implementing regulations indicating that the requirements are applicable to renewal of federal licenses for activities not previously reviewed by the state [15 CFR 930.51(b)(1)]. The regulation requires the license applicant to provide its certification to the federal licensing agency and a copy to the applicable state agency [15 CFR 930.57(a)].

NMPNS obtained Federal Consistency certification concurrence from the NYSDOS's Division of Coastal Resources, filed under #F-2004-0194, for the current license term. Concurrent with this application, CEG will submit a CZMA determination request to the NYSDOS for the proposed SPEO. The proposed activity complies with the enforceable policies of New York State approved management program and will be conducted in a manner consistent with such program.

9.4.12 Wild and Scenic Rivers Act

Section 7(a) of the Wild and Scenic Rivers Act requires Federal agencies to determine whether the operation of the project under a new license could invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the designated river corridor. No water bodies at or adjacent to NMPNS have been designated as a wild and scenic river. (NWSRS 2024)

9.4.13 National Historic Preservation Act

As discussed in Section 3.8.3, there are no NRHP-listed or eligible resources or structures documented through the Historic American Buildings Survey and Historic American Engineering Record programs within the NMPNS site.

As described in Section 3.8.6, CEG has administrative procedures to protect previously unknown historic or cultural resources that may be discovered on the site. These procedures aim to identify, protect, and minimize the potential impact to cultural resources within the NMPNS site. These procedures safeguard properties, sites, and AC&H resources from potential impacts. The procedures define AC&H resources and outline precautions for excavations and ground disturbances in sensitive areas. They also specify steps to take if such resources are unexpectedly discovered during ground-disturbing activities, including the stop-work process and additional required measures.

Section 106 of the NHPA requires Federal agencies having the authority to license any undertaking, prior to issuing the license, to consider the effect of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation an opportunity to

comment on the undertaking. Council regulations provide for establishing an agreement with any SHPO to substitute State review for council review [36 CFR 800.7].

Although not required of an applicant by Federal law or NRC regulation, but to provide early consultation for the Section 106 process, CEG contacted New York SHPO for informal consultation concerning the NMP1 SPEO and potential effects on cultural resources and historic properties within a 6-mile radius of NMP1.

Tribal organizations recognized as potential stakeholders were also contacted by CEG and provided the opportunity for comment. CEG correspondence regarding historic and cultural resources consultations is included in Attachment C.

9.4.14 Resource Conservation and Recovery Act

9.4.14.1 Nonradioactive Waste

As a generator of hazardous and nonhazardous wastes, NMPNS is subject to and complies with RCRA and NYSDEC hazardous waste management regulations under 6 NYCRR Parts 370-376. NMPNS is classified as a LQG of hazardous waste. As a generator of hazardous waste, NMPNS also maintains a hazardous waste generator identification number, NYD000730432. Additional information on hazardous and nonhazardous waste management is presented in Section 2.2.6. NMP1 implements its nonradioactive waste management program through procedures designed for compliance with RCRA and New York solid and hazardous waste regulations. NMP1 was inspected for RCRA compliance by EPA in August 2023 and no issues or findings were identified.

9.4.14.2 Reportable Spills of Hazardous Waste [40 CFR Part 262]

NMPNS is subject to the reporting provisions of 40 CFR Part 262.251-265, which state that an LQG must maintain and operate its facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water that could threaten human health or the environment. As per 40 CFR Part 262.260, as an LQG, NMPNS is required to have a contingency plan for the facility and provide a copy of the plan to local emergency responders, (i.e., police departments, fire departments, hospitals, and state and local emergency response teams that may be called upon to provide emergency services).

Review of NMPNS records for 2020 through 2024 showed two spill incidents, which are described in ER Section 9.3. During the spill incidents, the fluid was contained within a protective berm, and there were no releases outside the facility boundary or to soil, surface water, storm drains or the like. The spills were not reportable under 40 CFR Part 262.

9.4.14.3 Mixed Waste

Radioactive materials are regulated by the NRC under the AEA, and hazardous wastes are regulated by the EPA under the RCRA of 1976. Management of radioactive waste at NMPNS is

discussed in Section 2.5. Waste streams managed by CEG are in compliance with applicable regulatory standards and have not resulted in any NOVs between 2020 and 2024. NMP1 expects to continue to store and dispose of mixed waste in accordance with NRC, EPA, and State regulations and dispose of wastes in appropriately licensed and permitted treatment and disposal facilities during the proposed SPEO.

9.4.14.4 Underground and Aboveground Storage Tanks [6 NYCRR 596 & 6 NYCRR 613]

In 2016, the NYSDEC determined that NMPNS was no longer regulated under 6 NYCRR Parts 596, 598, and 599, due to the revised chemical bulk storage regulations and the exemption for facilities regulated under the Atomic Energy Act, specified in 6 NYCRR 596.1b(4)(ix). This legislation is applicable to chemical bulk storage in both underground and above-ground storage tanks.

However, under 6 NYCRR Part 613, NMPNS is required to obtain a petroleum bulk storage certificate from the NYSDEC for underground and aboveground storage tanks. NMPNS currently holds a petroleum bulk storage certificate under PBS No. 7-429880, which was issued on October 19, 2021, and expires on November 7, 2026.

9.4.15 Pollution Prevention Act

Hazardous waste generators must certify compliance with waste minimization requirements in RCRA Section 1003(b) when preparing a hazardous waste manifest. LQGs must certify that they have a program in place to reduce the volume and toxicity of the hazardous waste they generate. CEG conforms with this requirement, as a waste minimization plan is in place at NMPNS that provides guidance on nonhazardous and residual waste minimization.

9.4.16 Federal Insecticide, Fungicide and Rodenticide Act

The FIFRA, 7 USC Chapter 6 § 136, requires that pesticides distributed or sold in the U.S. must be registered (licensed) by the EPA. NMPNS holds a pesticide agency registration (Registration # 79634) from the NYSDEC Division of Materials Management, Bureau of Pest Management as required under 6 NYCRR Part 325. Additionally, NMPNS submits an applicator/technician pesticide annual report, which includes a list of commercial applicators/technicians at NMPNS. CEG maintains a pesticide management procedure with the purpose of addressing FIFRA and New York State SPDES requirements pertinent to pesticides regulations.

9.4.17 Toxic Substances Control Act

The Toxic Substance Control Act of 1976 regulates PCBs [40 CFR Part 761] and asbestos-containing materials (ACMs) [40 CFR 763]. NMPNS does not have any PCBs onsite, as all transformers containing PCBs at the station have been replaced with transformers that use non-PCB transformer oil.

ACMs exist at NMPNS and are handled under an asbestos management procedure, which delineates regulatory requirements set in the CAA (Title 42, 7401 et seq.), National Emissions Standards for Hazardous Air Pollutants (40 CFR 61, Subpart M), and OSHA regulations found in 29 CFR 1910.1001 and 29 CFR 1926.1101, as per 40 CFR 763.

Additionally, NMPNS submits a notification of demolition and renovation for the removal of ACMs to the EPA Division of Enforcement and Compliance Assurance at the start of each calendar year for the planned removal of ACMs during preventative maintenance, repair of equipment, or as required to mitigate hazards from friable ACMs in the workplace, as required in 40 CFR 61.145(b). As outlined in the CEG asbestos management procedure, ACM waste at NMPNS is properly labelled, stored in appropriate containers, and shipped for disposal to a permitted/licensed disposal facility as soon as practical.

9.4.18 Hazardous Materials Transportation Act

As NMPNS ships hazardous materials that are regulated by the U.S. Department of Transportation, it is subject to and complies with the applicable requirements of the Hazardous Materials Transportation Act described in 49 CFR, including the requirement to possess a current hazardous materials certificate of registration. As shown in Table 9.1-1, CEG maintains a hazardous materials certificate of registration (Registration No. 051022550113EG), which is renewed every 3 years.

9.4.19 Emergency Planning and Community Right-to-Know Act

NMPNS is subject to and complies with Sections 311 and 312 of the Emergency Planning and Community Right-to-Know Act [40 CFR Part 370], which requires submission of an emergency hazardous chemical inventory report (Tier II) to the local emergency planning commission, the State emergency response commission, and the local fire department. NMPNS has not been subject to Emergency Planning and Community Right-to-Know Act Section 313 reporting requirements for reporting toxic chemical releases over established thresholds.

Due to the adjoining locations of NMPNS and the JAF, their Tier II Emergency Hazardous Chemical Inventories are submitted to the EPA together under a single cover letter; however, NMPNS and the JAF maintain distinct chemical inventories and operate independently.

9.4.20 Comprehensive Environmental Response, Compensation, and Liability Act

NMPNS is subject to the hazardous substance release and reporting provisions of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as subsequently amended. Any release of reportable quantities of listed hazardous substances to the environment requires notifying the EPA's National Response Center and contacting the NYSDEC spill hotline [NYCRR Part 597.4], as appropriate, with subsequent written follow-up.

Review of NMPNS records for 2020 through 2024 showed two spill incidents, which are described in ER Section 9.3. During the spill incidents, the fluid was contained within a protective berm, and there were no releases outside the facility boundary or to soil, surface water, storm drains or the like. The spills were not reportable under Comprehensive Environmental Response, Compensation, and Liability Act of 1980.

9.4.21 Farmland Protection Policy Act

The FPPA only applies to Federal programs. The term "Federal program" under this act does not include Federal permitting or licensing for activities on private or non-Federal lands. Because the SLR is considered a federal licensing activity and NMPNS is located on non-federal lands, the FPPA is not applicable.

9.4.22 Federal Aviation Act

Coordination with the FAA is required to ensure the highest structures associated with a project do not impair the safety of aviation. Submission of a letter of notification (with accompanying maps and project descriptions) to the FAA results in a written response from the FAA certifying that no hazard exists or providing recommended project changes and/or the installation of warning devices, such as lighting.

As presented in Section 3.2.3, the NMP2 cooling tower is the tallest structure at the site with a height of approximately 541 feet. No SPEO-related construction activities have been identified that meet the notification criteria; therefore, no new notifications to the FAA are required.

9.4.23 Occupational Safety and Health Act

OSHA governs the occupational health and safety of the construction workers and operations staff. As discussed in Section 3.10.2, CEG complies with the OSHA standards for electric power generation, transmission, and distribution set in 29 CFR 1910.269, which are incorporated in NMPNS's occupational health and safety practices and procedures.

9.4.24 State Water Use Program

NMPNS holds a water withdrawal permit (Permit ID 7-3556-00013/00033) from the NYSDEC, in accordance with Article 15, Title 15 of New York's Environmental Conservation Law. This permit is valid until January 12, 2030, and allows NMPNS to withdraw up to 489,600,000 gallons per day of surface water from Lake Ontario. NMPNS prepares annual water withdrawal reports, which are submitted to the NYSDEC Division of Water, as specified by the permit conditions. As noted in Section 3.6.3.2, groundwater is not used for station operations, and there are no production wells onsite.

9.4.25 County Zoning Requirements

As stated in Section 3.2.1, NMPNS is located in the Town of Scriba in Oswego County, New York. There are currently no zoning regulations in place to mandate and regulate acceptable land use practices in the Town of Scriba. Therefore, NMPNS is not currently subject to zoning or land use regulations.

9.5 Environmental Reviews

CEG has procedural controls in place to ensure all environmentally sensitive areas at NMPNS are adequately protected during site operation and project planning. These controls, which encompass nonradiological environmental resources areas, such as land use, air quality, surface and groundwater, ecology, cultural resources, waste management, and pollution prevention, consist of the following:

- Appropriate local, State and/or Federal permits are obtained or modified, as necessary
- BMPs, including for stormwater, are implemented to protect wetlands and sensitive ecosystems
- Appropriate agencies are consulted on matters involving federally and state-listed threatened, endangered, and protected species; BMPs are implemented to minimize impacts to these species
- Appropriate agencies are consulted on matters involving cultural resources and to ensure BMPs are implemented to minimize impacts to them.

9.6 Alternatives

The discussion of alternatives in the environmental report shall include a discussion of whether alternatives will comply with applicable environmental quality standards and requirements [10 CFR 51.45(d)].

The new nuclear, solar, and wind components of the possible alternatives are discussed in Chapter 7 and could be constructed and operated to comply with all applicable environmental quality standards and requirements. While alternative generation is expected to be developed and operated compliant with standards and requirements, additional environmental impacts associated with siting, construction, and operation are expected to be realized. Continued compliant operation of NMP1 is not expected to result in these additional impacts.

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Attachment A: SPDES Permit

New York State Department of Environmental Conservation
Division of Environmental Permits
NYSDEC HEADQUARTERS
625 BROADWAY
ALBANY, NY 12233
(518) 402-9167

SPDES PERMIT RENEWAL

6/23/2014

NINE MILE POINT NUCLEAR STATION LLC
PO BOX 63
LYCOMING NY 13093

Permittee Name: NINE MILE POINT NUCLEAR STATION LLC
Facility Name: NINE MILE PT NUCLEAR STATION LLC
Ind. Code: 4911 County: OSWEGO
DEC ID: 7-3556-00013/00001 SPDES No.: NY0001015
Permit Effective Date: 12/1/2014
Permit Expiration Date: 11/30/2019

Dear Permittee,

The State Pollutant Elimination System (SPDES) permit renewal for the facility referenced above is approved with the new effective and expiration dates. This letter together with the previous valid permit for this facility effective on 12/01/2009 and any subsequent modifications constitute authorization to discharge wastewater in accordance with all terms, conditions and limitations specified in the previously issued permit(s).

As a reminder, SPDES permits are renewed at a central location in Albany in order to make the process more efficient. All other concerns with your permit, including applications for permit modification or transfer to a new owner, a name change, and other questions, should be directed to:

Regional Permit Administrator
NYSDEC REGION 7 HEADQUARTERS
615 ERIE BOULEVARD WEST
SYRACUSE, NY 13204-2400
(315) 426-7438

If you have already filed an application for modification of your permit, it will be processed separately by that office.

If you have questions concerning this permit renewal, please contact LINDY SUE CZUBERNAT at (518) 402-9167.

Sincerely,

Stuart M. Fox

Stuart M. Fox
Deputy Chief Permit Administrator

cc:
RPA
BWC
RWE
File
BWP
EPA

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

State Pollutant Discharge Elimination System (SPDES)
DISCHARGE PERMIT

First3.99

Industrial Code:	4911	SPDES Number:	NY-000 1015
Discharge Class (CL):	03	DEC Number:	7-3556-00013/00001
Toxic Class (TX):	T	Effective Date (EDP):	12/01/09
Major Drainage Basin:	03	Expiration Date (ExDP):	11/30/14
Sub Drainage Basin:	03	Modification Dates:(EDPM)	
Water Index Number:	Lake Ontario		
Compact Area:	IEC		

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the Clean Water Act, as amended, (33 U.S.C. §1251 et.seq.)(hereinafter referred to as "the Act").

PERMITTEE NAME AND ADDRESS

Name: **Nine Mile Point Nuclear Station, LLC** Attention: **Principal Engineer, Environmental**

Street: **348 Lake Road**

City: **Oswego** State: **NY** Zip Code: **13093**

is authorized to discharge from the facility described below:

FACILITY NAME AND ADDRESS

Name: **Nine Mile Point Nuclear Station**

Location (C,T,V): **Scriba (T)** County: **Oswego**

Facility Address: **348 Lake Road**

City: **Lycomig** State: **NY** Zip Code: **13093**

NYTM -E: NYTM - N:

From Outfall No.: **010** at Latitude: **43 ° 31 ′ 17 ″** & Longitude: **76 ° 24 ′ 39 ″**

into receiving waters known as: **Lake Ontario** Class: **A**

and; (list other Outfalls, Receiving Waters & Water Classifications)

See Next Page

in accordance with: effluent limitations; monitoring and reporting requirements; other provisions and conditions set forth in this permit; and 6 NYCRR Part 750-1.2(a) and 750-2.

DISCHARGE MONITORING REPORT (DMR) MAILING ADDRESS

Mailing Name: **Nine Mile Point Nuclear Station, LLC**

Street: **348 Lake Road**

City: **Lycoming** State: **NY** Zip Code: **13093**

Responsible Official or Agent: **Terry Syrell, Licensing Director** Phone: **(315) 349-1364**

This permit and the authorization to discharge shall expire on midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed, or extended pursuant to law. To be authorized to discharge beyond the expiration date, the permittee shall apply for permit renewal not less than 180 days prior to the expiration date shown above.

DISTRIBUTION:

CO BWP - Permit Coordinator
RWE, Region 7
RPA
EPA Region II - Michelle Josilo
Oswego County Department of Health

Permit Administrator: William R. Adriance	
Address: 625 Broadway, 4th Floor Albany, NY 12233	
Signature: William R. Adriance	Date: 9/29/09

List of all Outfalls, Receiving Waters and Water Classifications

Outfalls *		Outfall designation in NY2C **	Latitude °,',,"	Longitude °,',,"	Receiving Water and Classification (Note: Direct outfalls are lined up on the left and internal outfalls are lineup on the right)	Nine Mile Unit #	Permit Page # for Effluent Limits
Direct	Internal						
010			43-31-17	76-24-39	Lake Ontario (A)	1	4, 15
	011		43-31-17	76-24-39	Lake Ontario (A) via Outfall 010		5
	10A	010A	43-31-17	76-24-39	Lake Ontario (A) via Outfall 010 or 020		5
020			43-31-17	76-24-39	Lake Ontario (A)		6
	10A	010A	43-31-17	76-24-39	Lake Ontario (A) via Outfalls 020 or 010		5
	07(B)	007(B)	43-31-17	76-24-39	Lake Ontario (A) via Outfall 020		7
	024		43-31-17	76-24-39	Lake Ontario (A) via Outfall 020		8
021			43-31-17	76-24-39	Lake Ontario (A)		8
023			43-31-17	76-24-39	Ditch (U1SW), then to Lake Ontario (D/A)		9
025			43-31-17	76-24-39	Ditch (U1SW), then to Lake Ontario (D/A)	2	9
030			43-31-17	76-24-39	Ditch (U1SW), then to Lake Ontario (D/A)	1 & 2	10
	026		43-13-17	76-24-39	Lake Ontario (A) via Outfalls 040 or 030		12
040			43-31-17	76-24-39	Lake Ontario (A)	2	11, 15
	01A	001A	43-31-17	76-24-39	Lake Ontario (A) via Outfall 040		12
	026		43-31-17	76-24-39	Lake Ontario (A) via Outfalls 040 or 030		12
	40A	040A	43-31-17	76-24-39	Lake Ontario (A) via Outfall 040		13
	40B	040B	43-31-17	76-24-39	Lake Ontario (A) via Outfalls 040 or 001		5
	041		43-31-17	76-24-39	Lake Ontario (A) via Outfall 040		13
001			43-31-25	76-24-20	Lake Ontario (A)		14, 15
	07(A, C-G)	007(A, C-G)	43-31-17	76-24-39	Lake Ontario (A) via Outfall 001		7
	01A	001A	43-31-17	76-24-39	Lake Ontario (A) via Outfall 001		12
	40B	040B	43-31-17	76-24-39	Lake Ontario (A) via Outfalls 001or 040		5
002			43-31-25	76-24-16	Lake Ontario (A)		14
008			43-31-17	76-24-39	Lake Ontario (A)		6

Notes: * SPDES outfall numbers are assigned for three spaces in the EPA Permit Compliance System (PCS). Outfalls with four numbers in the NY2C application have been changed to three number in order to be compatible with the EPA PCS program.
** This column identifies outfall with four spaces as listed in the NY2C application.

PERMIT LIMITS, LEVELS AND MONITORING DEFINITIONS

OUTFALL	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
	This cell describes the type of wastewater authorized for discharge. Examples include process or sanitary wastewater, storm water, non-contact cooling water.	This cell lists classified waters of the state to which the listed outfall discharges.	The date this page starts in effect. (e.g. EDP or EDPM)	The date this page is no longer in effect. (e.g. ExDP)

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQ.	SAMPLE TYPE
e.g. pH, TRC, Temperature, D.O.	The minimum level that must be maintained at all instants in time.	The maximum level that may not be exceeded at any instant in time.	SU, °F, mg/l, etc.		

PARA-METER	EFFLUENT LIMIT	PRACTICAL QUANTITATION LIMIT (PQL)	ACTION LEVEL	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE
	Limit types are defined below in Note 1. The effluent limit is developed based on the more stringent of technology-based standards, required under the Clean Water Act, or New York State water quality standards. The limit has been derived based on existing assumptions and rules. These assumptions include receiving water hardness, pH and temperature; rates of this and other discharges to the receiving stream; etc. If assumptions or rules change the limit may, after due process and modification of this permit, change.	For the purposes of compliance assessment, the analytical method specified in the permit shall be used to monitor the amount of the pollutant in the outfall to this level, provided that the laboratory analyst has complied with the specified quality assurance/quality control procedures in the relevant method. Monitoring results that are lower than this level must be reported, but shall not be used to determine compliance with the calculated limit. This PQL can be neither lowered nor raised without a modification of this permit.	Type I or Type II Action Levels are monitoring requirements, as defined below in Note 2, that trigger additional monitoring and permit review when exceeded.	This can include units of flow, pH, mass, Temperature, concentration. Examples include µg/l, lbs/d, etc.	Examples include Daily, 3/week, weekly, 2/month, monthly, quarterly, 2/yr and yearly.	Examples include grab, 24 hour composite and 3 grab samples collected over a 6 hour period.

Note 1: DAILY DISCHARGE: The discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for the purposes of sampling. For pollutants expressed in units of mass, the 'daily discharge' is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the 'daily discharge' is calculated as the average measurement of the pollutant over the day.

DAILY MAX: The highest allowable daily discharge. DAILY MIN: The lowest allowable daily discharge.

MONTHLY AVG (daily avg): The highest allowable average of daily discharges over a calendar month, calculated as the sum of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

RANGE: The minimum and maximum instantaneous measurements for the reporting period must remain between the two values shown.

7 DAY ARITHMETIC MEAN (7 day average): The highest allowable average of daily discharges over a calendar week.

12 MRA (twelve month rolling avg): The average of the most recent twelve month's monthly averages.

30 DAY GEOMETRIC MEAN (30 d geo mean): The highest allowable geometric mean of daily discharges over a calendar month, calculated as the antilog of : the sum of the log of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

7 DAY GEOMETRIC MEAN (7 d geo mean): The highest allowable geometric mean of daily discharges over a calendar week.

Note 2: ACTION LEVELS: Routine Action Level monitoring results, if not provided for on the Discharge Monitoring Report (DMR) form, shall be appended to the DMR for the period during which the sampling was conducted. If the additional monitoring requirement is triggered as noted below, the permittee shall undertake a short-term, high-intensity monitoring program for the parameter(s). Samples identical to those required for routine monitoring purposes shall be taken on each of at least three consecutive operating and discharging days and analyzed. Results shall be expressed in terms of both concentration and mass, and shall be submitted no later than the end of the third month following the month when the additional monitoring requirement was triggered. Results may be appended to the DMR or transmitted under separate cover to the same address. If levels higher than the Action Levels are confirmed, the permit may be reopened by the Department for consideration of revised Action Levels or effluent limits. The permittee is not authorized to discharge any of the listed parameters at levels which may cause or contribute to a violation of water quality standards. TYPE I : The additional monitoring requirement is triggered upon receipt by the permittee of any monitoring results in excess of the stated Action Level. TYPE II: The additional monitoring requirement is triggered upon receipt by the permittee of any monitoring results that show the stated action level exceeded for four of six consecutive samples, or for two of six consecutive samples by 20 % or more, or for any one sample by 50 % or more.

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL No.	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
010	Unit #1 - Non-contact cooling water (417.6 MGD), IMP 010A (forebay cleaning, 100,000 gpd), Outfall 011 (Unit #1 wastewater), seal water system (25 gpm), and stormwater runoff [FN 1, 28]	Lake Ontario	EDP	11/30/14

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Monthly	Grab	

PARAMETER	EFFLUENT LIMIT		MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Daily Avg.	Daily Max.	TYPE I	TYPE II				
Flow	NA	417.6			MGD	Continuous	Calculated	2, 3, 4
Discharge Temperature	NA	115			° F	Continuous	Recorder	5
Temperature Difference (Δ T) (Discharge temp. - Intake temp.)	NA	35			° F	Continuous	Recorder	5, 6
Net Rate of Addition of Heat	NA	4,405			MBTU/hr	Hourly	Calculated	6
Total Residual Oxidant	NA	0.1			mg/l	Batch	Grab	16, 19
Solids, Total Suspended	Monitor	Monitor			mg/l	Daily during forebay cleaning	Grab	
Copper, Total	NA	0.053			mg/l	Monthly	Grab	7
Zinc, Total			0.05		mg/l	Quarterly	Grab	
WET - Acute Invertebrate			0.69		TUa	Quarterly	see footnote	24
WET - Acute Vertebrate			0.69		TUa	Quarterly	see footnote	24
WET - Chronic Invertebrate			4.6		TUc	Quarterly	see footnote	24
WET - Chronic Vertebrate			4.6		TUc	Quarterly	see footnote	24

Footnotes: See Pages 16 - 18 of this permit.

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL No.	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
011	Unit 1 - Demineralized water for steam generation. Batch discharge: 0 - 1 batch per year and < 1 day per batch	Lake Ontario via Outfall 010	EDP	11/30/14

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Once per batch	Grab	8

PARAMETER	ENFORCEABLE LIMIT		MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.	TYPE I	TYPE II				
Flow	Monitor	Monitor			MGD	Batch	Calculated	
Oil & Grease	NA	15			mg/l	Quarterly	Grab	9
Oil & Grease	NA	15			mg/l	Batch before discharge	Grab	9
Suspended, Total Suspended	30	50			mg/l	Quarterly	Grab	9
Suspended, Total Suspended	30	50			mg/l	Batch before discharge	Grab	9

OUTFALL No.	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
10A	Unit #1 Forebay cleaning	Lake Ontario via Outfall 020 (primary) or Outfall 010 (alternate)	EDP	11/30/14
40B	Unit #2 Forebay cleaning	Lake Ontario via Outfall 040 (primary) or Outfall 001 (alternate)	EDP	11/30/14

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Daily During Discharge	Grab	

PARAMETER	ENFORCEABLE LIMIT		MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.	TYPE I	TYPE II				
Flow	Monitor	Monitor			MGD	Daily During Discharge	Calculated	
Oil & Grease	NA	15			mg/l	Daily During Discharge	Grab	
Solids, Total Suspended	50	100			mg/l	Daily During Discharge	Grab	

Footnote: See Page 16 of this permit.

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
020	Outfall 07B (floor & equipment drains, 1,000 gpd - routine), Outfall 10A NMP-1 forebay cleaning (100,000 gpd; 14 batch /year; 1 day/batch), Outfall 024 NMP-1 (Diesel off loading pad), condensate water NMP-1, stormwater and perimeter water [FN 1]	Lake Ontario	EDP	11/30/14

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Monthly	Grab	

PARAMETER	EFFLUENT LIMIT		MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.	TYPE I	TYPE II				
Flow	Monitor	Monitor			GPD	Monthly	Calculated	9
Oil & Grease	NA	15			mg/l	Quarterly	Grab or calculated from sub-streams	
Solids, Total Suspended	NA	50			mg/l	Quarterly	Grab or calculated from sub-streams	
Copper, Total			0.03		mg/l	Quarterly	Grab or calculated from sub-streams	
Zinc, Total			0.15		mg/l	Quarterly	Grab or calculated from sub-streams	

OUTFALL No.	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
008	Screen well fish diversion system (See Footnote 11)	Lake Ontario	EDP	11/30/14
No monitoring required. The permittee should address means to minimize pollutants discharging to Lake Ontario in the Best Management Plan (BMP).				

Footnote: See Page 16 of this permit.

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL NUMBER	WASTEWATER TYPE		RECEIVING WATER	EFFECTIVE	EXPIRING
07A	Floor and Equipment Drains from	manhole #110 in the Unit 2 Chiller building, 1000 gpd	Lake Ontario via Outfall 001	EDP	11/30/14
07B		unit 1 administration building sump 1; 1000 gpd **(See Footnote 12)**	Lake Ontario via Outfall 020	EDP	11/30/14
07C		unit 2 service water pump 2DFM - sump 2B; 1600 gpd	Lake Ontario via Outfall 001	EDP	11/30/14
07D		unit 2 service water pump 2DFM - sump 2A; 1600 gpd	Lake Ontario via Outfall 001	EDP	11/30/14
07E		unit 2 control building 2DFM - sump 4; 460 gpd	Lake Ontario via Outfall 001	EDP	11/30/14
07F		manhole # 103 screenhouse west, no regular flow	Lake Ontario via Outfall 001	EDP	11/30/14
07G		manhole # 207 screenhouse north; no regular flow	Lake Ontario via Outfall 001	EDP	11/30/14

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Monthly	Grab	

PARAMETER	EFFLUENT LIMIT		MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.	TYPE I	TYPE II				
Flow	NA	Monitor			GPD	Monthly	Estimated	
Oil & Grease	NA	15			mg/l	Monthly	Grab	
Solids, Total Suspended	30	50			mg/l	Monthly	Grab	
Aluminum, Total	NA	4.0			mg/l	Monthly	Grab	
Iron, Total	NA	4.0			mg/l	Monthly	Grab	
Copper, Total			0.1		mg/l	Quarterly	Grab	
Nickel, Total			0.1		mg/l	Quarterly	Grab	
Zinc, Total			0.8		mg/l	Quarterly	Grab	

Footnote: See Page 16 of this permit.

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
024	Stormwater from NMP - 1 diesel off-loading pad. Batch discharge with four batches per year	Lake Ontario via Outfall 020	EDP	11/30/14

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Each discharge	Grab	

PARAMETER	EFFLUENT LIMIT		PQL	MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.	Daily Max.	TYPE I	TYPE II				
Flow	NA	Monitor				GPD	Each discharge	Estimate	
Oil & Grease	NA	15				mg/l	Each discharge	Grab	
Solids, Total Suspended	NA	50				mg/l	Each discharge	Grab	

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
021	Filter backwash and demineralizer make-up water; Batch discharge - max. one batch per year for one day.	Lake Ontario	EDP	11/30/14

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Batch Each Discharge	Grab	

PARAMETER	EFFLUENT LIMIT		PQL	MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.	Daily Max.	TYPE I	TYPE II				
Flow	Monitor	Monitor				GPD	Batch	Calculated	
Oil & Grease	NA	15				mg/l	Batch Each discharge	Grab	
Solids, Total Suspended	30	50				mg/l	Batch Each Discharge	Grab	

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL No.	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
023	Unit 1 - Oil spill retention basin (Basin capacity 0.214 MG); Batch discharge 6 - 12 times per year; Duration per batch < 1 day; Each batch discharges 66,000 gpd - 214,000 gpd) [FN 1]	To Ditch (U1SW), then to Lake Ontario	EDP	11/30/14

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Each Discharge	Grab	13

PARAMETER	ENFORCEABLE LIMIT		MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.	TYPE I	TYPE II				
Flow	NA	Monitor			GPD	Each Discharge	Estimate	
Oil & grease	NA	15			mg/l	Each Discharge	Grab	
Zinc, Total			0.05		mg/l	Each Discharge	Grab	

OUTFALL No.	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
025	Unit #2 Cooling tower emergency overflow from cooling tower basin; Batch Discharge; < one discharge per year and < one day per batch.	To Ditch (U1SW), then to Lake Ontario	EDP	11/30/14

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Each Discharge	Grab	

PARAMETER	ENFORCEABLE LIMIT		MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.	TYPE I	TYPE II				
Flow	NA	Monitor			GPD	Each Discharge	Estimate	
Copper, Total	NA	1.0			mg/l	Each Discharge	Grab	25
Zinc, Total	NA	0.163			mg/l	Each Discharge	Grab	25
Discharge Temperature	NA	Monitor			°F (°C)	Each Discharge	Grab	25
Intake - Discharge Temperature Difference	NA	Monitor			°F (°C)	Each Discharge	Grab	25
Free Available Chlorine	NA	0.19			mg/l	Each Discharge	Grab	16,25
Total Residual Oxidant	NA	0.19			mg/l	Each Discharge	Grab	16,25

Footnotes: See Pages 16 - 18 of this permit.

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL No.	LIMITATIONS APPLY:	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
030	[X] All Year [ ] Seasonal from _____ to _____	Sanitary wastewater and Outfall 026 as alternate route [FN 1]	Lake Ontario	EDP	11/30/14

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	2 / month	Grab	
Dissolved Oxygen	4.0	NA	mg/l	2 / month	Grab	

PARAMETER	EFFLUENT LIMIT					MONITORING REQUIREMENTS				FN
	Type	Limit	Units	Limit	Units	Sample Frequency	Sample Type	Location Inf.	Location Eff.	
Flow	Monthly average	120,000	GPD			2/Month	Metered		X	14
Flow	Daily Max.	Monitor	GPD			2/Month			X	14
BOD_5	Monthly average	25	mg/l	NA	lbs/d	2/Month	Grab		X	
BOD_5	Daily Max.	45	mg/l	NA	lbs/d	2/Month	Grab		X	
Solids, Suspended	Monthly average	25	mg/l	NA	lbs/d	2/Month	Grab		X	
Solids, Suspended	Daily Max.	45	mg/l	NA	lbs/d	2/Month	Grab		X	
Solids, Settleable	Daily Max.	0.1	ml/l			2/Month	Grab		X	
Nitrogen, Ammonia (as N)	Daily Max.	Monitor	mg/l	NA	lbs/d	2/Month	Grab		X	
Nitrogen, Ammonia (as N)	Monthly Average	Monitor	mg/l	NA	lbs/d	2/Month	Grab		X	
Effluent Disinfection required: [X] All Year [ ] Seasonal from _____ to _____										
Coliform, Fecal	30 day geometric mean	200	No./ 100 ml			2/Month	Grab		X	15
Chlorine, Total Residual	Daily Max.	0.1	mg/l			2/Month	Grab		X	15

Footnotes: See Page 17 of this permit.

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
040	Unit 2 - Noncontact cooling water (72 mgd); Outfall 40B (Forebay cleaning; 100,000 gpd); Outfall 041 (NMP-2 wastewater from demineralized water, reverse osmosis, electrodeionization filtration and treated radioactive wastewater; 50,000 gpd); Outfall 01A (Decay heat cooling tower; 120 gpm); Outfall 026 (Unit 2 - process wastewater from generation of demineralized water, 41,000 gpd) and Outfall 040A (CWS sumps; 21,000 gpd) [FN 1]	Lake Ontario	EDP	11/30/14

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	2/Week	Grab	26

PARAMETER	EFFLUENT LIMIT		PQL	MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.		TYPE I	TYPE II				
Flow	Monitor	72.0				MGD	Continuous	Metered	17
Discharge Temperature	NA	110 (43.3)				°F (°C)	Continuous	Metered	5
Temperature Difference (ΔT) (Discharge temp. - Intake temp.)	NA	30 (16.7)				°F (°C)	Continuous	Metered	5
Net Rate of Addition of Heat	NA	470				MBTU/hr	Daily	Calculated	
Solids, Total Suspended	Monitor	Monitor				mg/l	Daily during forebay cleaning	Grab	
Free Available Chlorine	0.2	0.27				mg/l	Once per each treatment	Grab	16, 18
Total Residual Oxidant	NA	0.2				mg/l	Once per each treatment	Grab	16
Copper, Total	NA	0.25				mg/l	Monthly	Grab	22
Phosphorus (as P)	NA	0.5				mg/l	Monthly	Grab	
Iron, Total	NA	1.0				mg/l	Monthly	Grab	
Mercury, Total	NA	50	0.5			ng/l	Monthly	Grab	23
Zinc, Total				0.3		mg/l	Quarterly	Grab	
WET - Acute Invertebrate				8.1		TUa	Quarterly	see footnote	24
WET - Acute Vertebrate				8.1		TUa	Quarterly	see footnote	24
WET - Chronic Invertebrate				54		TUc	Quarterly	see footnote	24
WET - Chronic Vertebrate				54		TUc	Quarterly	see footnote	24
The 126 priority pollutants (Appendix A of 40 CFR 423) contained in chemicals added to cooling tower maintenance, except as noted at this Outfall.		No detectable amount				mg/l or µg/l as appropriate	Annual	Grab	

Footnotes: See Pages 16 - 18 of this permit.

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL No.	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
01A	Decay heat cooling water blowdown (120 gpm)	Lake Ontario via Outfall 040 (primary pathway) or Outfall 001	EDP	11/30/14

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Monthly	Grab	

PARAMETER	ENFORCEABLE LIMIT		MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.	TYPE I	TYPE II				
Flow	NA	Monitor			GDP	Monthly	Calculated	
Temperature	NA	90			mg/l	Monthly	Grab	20
Total Residual Chlorine	NA	0.2			mg/l	Monthly	Grab	16

OUTFALL No.	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
026	Unit 2 Resin regeneration, demineralizer test water and reverse osmosis wastewater. Batch discharge : 12 - 24 batch per year. Duration per batch = 1 day [FN 1]	Lake Ontario via Outfall 040 (primary) or Outfall 30 (alternate)	EDP	11/30/14

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Once / Batch discharge	Grab	

PARAMETER	ENFORCEABLE LIMIT		MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.	TYPE I	TYPE II				
Flow	NA	Monitor			GPD	Batch	Calculated	

Footnote: See Page 17 of this permit.

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL No.	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
40A	Unit 2 - Recirculated cooling tower effluent through area sumps; 11000 gpd. Multiple discharged per day; 5- 20 min.. each discharge.	Lake Ontario via Outfall 040	EDP	11/30/14

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Monthly	Grab	

PARAMETER	ENFORCEABLE LIMIT		MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.	TYPE I	TYPE II				
Flow	NA	Monitor			GPD	Monthly	Calculated	21
Oil & Grease	NA	15			mg/l	Monthly	Grab	

OUTFALL No.	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
041	Unit 2 wastewater (demineralization water, reverse osmosis, electrodeionization filtration, and treated radioactive wastewater); Batch discharge: 0 - 30 batch per year and less than one day per batch; 0.046 MGD per batch	Lake Ontario via Outfall 040	EDP	11/30/14

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Once per Batch	Grab	8

PARAMETER	ENFORCEABLE LIMIT		MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.	TYPE I	TYPE II				
Flow	Monitor	Monitor			MGD	Monthly	Calculated	1
Oil & Grease	NA	15			mg/l	Quarterly	Grab	9
Oil & Grease	NA	15			mg/l	Batch	Grab	9
Solids, Suspended	30	50			mg/l	Quarterly	Grab	9
Solids, Suspended	30	50			mg/l	Batch	Grab	9
Conductivity	Monitor	Monitor			µmho/cm	Batch	Grab	9

Footnotes: See Pages 16 and 17 of this permit.

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL No.	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
001	Contact cooling water (decay heat cooling tower blowdown, 120 gpm = 172,800 gpd; i.e. 01A); Unit 2 - forebay cleaning (40B; 100,000 gpd); floor & equipment drains [Outfall 07 (A, C-G); 5000 gpd]; alternate forebay cleaning (120,000 gpd,Outfall 01A) [Total flow = ~ 397,800 gpd] [FN 1]	Lake Ontario	EDP	11/30/14

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Quarterly	Grab	27

PARAMETER	ENFORCEABLE LIMIT		MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.	TYPE I	TYPE II				
Flow	NA	Monitor			GPD	Quarterly	Estimated or calculated from sub-streams	
Oil & Grease	NA	15			mg/l	Quarterly	Grab or calculated from sub-streams	
Solids, Suspended	NA	50			mg/l	Quarterly	Grab or calculated from sub-streams	
Copper, Total			0.05		mg/l	Quarterly	Grab or calculated from sub-streams	
Zinc, Total			0.15		mg/l	Quarterly	Grab or calculated from sub-streams	

OUTFALL No.	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
002	Stormwater runoff only	Lake Ontario	EDP	11/30/14
No monitoring required				

Footnote: See Pages 16 and 18 of this permit.

PERMIT LIMITS, LEVELS AND MONITORING

Zebra Mussel Control Program

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
010	See Page 4 of this permit	Lake Ontario	EDP	11/30/14
040	See Page 11 of this permit	Lake Ontario	EDP	11/30/14
001	Equipment Sump Storm Drain	Lake Ontario	EDP	11/30/14

PARAMETER	EFFLUENT LIMIT		MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.	TYPE I	TYPE II				
EVAC at Outfall 010	NA	2.0 **			mg/l	Duration of chemical application and discharge	Multiple Grab *	
EVAC at Outfall 040	NA	1.0 **			mg/l	Duration of chemical application and discharge	Multiple Grab *	
EVAC at Outfall 001	NA	0.1 **			mg/l	One Treatment	Grab	***

Notes: * For purpose of this authorization, multiple grab is defined as individual grab samples collected on intervals not to exceed eight hours.
** Calculated based on samples obtained before discharge.
*** Pathway from incidental leakage of lake water (Outfall 040) during EVAC application.

Special Conditions for Zebra Mussel Control Program:

The Nalco EVAC (name change from Calgon) program for zebra mussel control, application submitted by letter application dated May 29, 1998 to Paul Kolakowski and Joanne March is approved with the following conditions:

1. The concentrations at the mixing zone shall not exceed 20 µg/l (ppb) of Alkylamine or 35 µg/l (ppb) of whole product for Calgon EVAC, these limitations will be achieved by limiting whole product concentrations.

2. Each individual zebra mussel control treatment is limited to a maximum of 48 hours duration.

3. Treatment for Zebra Mussel control treatment is limited to a maximum two treatments annually per plant. Treatment s shall be separated by at least 45 days.

4. Records of product dosage concentration, effluent flow and effluent concentration of product during addition and discharge must be maintained. The flow shall be measured at the frequency specified for flow elsewhere in this permit or at the frequency of the parameter specified above, whichever is more frequent.

5. The Regional Water Engineer shall be notified not less than 48 hours before initiation of a zebra mussel control program.

6. Reports describing the results of the effectiveness of the Zebra Mussel control program and the effluent analyses for Calgon EVAC shall be submitted to the Regional Water Engineer, NYDEC, in an annual report to be submitted by March 1st.

7. This permit modification is issued based on the best environmental and aquatic toxicity information available at this time.

FOOTNOTES

1. Consistent with New York's Multi-Sector General Permit for Industrial Stormwater (GP-0-06-002), the permitted outfalls (001, 002, 030, 023 and 020) with this footnote may include: Discharges from fire fighting activities; Potable water sources including waterline flushings; Uncontaminated air conditioning or compressor condensate; and other uncontaminated condensate such as condensate from the surface of pressurized gas cylinders stored outfside; and Landscape watering provided that all pesticides (note that the use of pesticide and fungicide products should follow GP-0-06-002) and fertilizers have been applied in accordance with manufacturer's instructions. These Outfalls may also include treated potable or lake water (treated through demineralization, reverse osmosis or other similar method.

   For Outfalls 040, 010 and 026 with this footnote may include all discharges listed above excluding discharges from landscape watering.

2. The use of sand separators at the Unit 1 Seal Water System and associated wastewaters are approved for discharge.

3. Calculated flows are based on the "Adam Strainer" pressure reading, which is indicative of lake level. Weekend/holiday calculated flows are based on the "Adams Strainer" pressure reading from the previous surveillance. Calculated flows for Monday through Friday are based on the respective lake level for the calculation date.

4. Changes in Service Water System flowrates should be made in a manner that minimizes the rapid discharge of deposited sediments during periods of normal operation above 5% power load.

5. Computer data, logged at least hourly, maybe utilized for this parameter in order to verify compliance during normal operation conditions. During unusual operating conditions or in situations where the hourly data is near the outfall limitation, chart recorder data will be reviewed and utilized to demonstrate compliance.

6. The intake temperature for this designated outfall shall be considered that temperature existing after intake waters have been tempered. The Intake - Discharge Temperature Difference limit may be exceeded during periods when plant safety is at issue, during periods when the circulating water system (CWS) is experiencing an emergency situation that is outside the normal operating envelop or during routine maintenance of the system, such as, but not limited to, the following situations: debris blockage of a CWS component , an emergency steam release, pump breakdown, etc. In the event of such an emergency/breakdown, the permittee shall take corrective action to bring the temperature parameter within the permit limit as soon as possible. The permittee, whenever possible, should take action to avoid temperature parameter exceedance from June through September.

   In the event that the facility is experiencing inlet icing conditions during the winter season, the Intake - Discharge Temperature Difference limit (Δ T) may be exceeded by 35%, or 12.25 ° F, for no more than one hour during each reverse flow or return to normal flow operation. The facility may exceed the 35% criteria for a period of fifteen (15) minutes when the facility returns to normal flow configuration. This momentary increase during return to normal flow configuration is acceptable.

   The permittee shall indicate in the Discharge Monitoring Report the reason for operating outside of the permit limit, and the dates and times of the associated event. In no case shall the permit limitation be exceed for more than 5% of the operating time during the operating year.

7. Copper - The permittee shall use Standard Method 313B (Digestion followed by Direct Current Plasma) with 8 ug/l or EPA Method 220.2 (Digestion followed by FGAA) with PQL = 4 ug/l or Method 200.7 (Digestion followed by Inductively Coupled Plasma) with PQL = 20 ug/l. It is recommended that clean technology EPA Method be used.

8. pH range of 4.0 to 9.0 is allowable for wastewater having a conductivity of less than 10 µmho/cm.

9. High purity wastewater discharges that have a conductivity of 10 µmho/cm or less are permitted for an oil and grease and total suspended solids measurement frequency of once per calendar quarter.

10. Permit outfalls with this designation include the discharge of uncontaminated precipitation storm water and/or groundwater from containment systems and other similar structures to the surrounding grounds including storned areas. Contaminated water from said structures will be managed per NMPNS spill procedures, the Spill Prevention Report (SPR), the Spill Prevention, Control and Countermeasure (SPCC) plan, and stormwater pollution prevention plans (SWPPPs).

11. During tempering of service waters with cooling water, a portion of the tempering waters will be discharged via this outfall. Furthermore. During drainage of the cooling tower system, a portion of these drainage waters will also be discharged via this outfall.

12. Discharge from the two switch yard oil separators will be sampled before combination with waste stream 020.

13. The use of barley straw for pH control in the Unit 1 Oil Retention Basin is acceptable.

14. Emergency discharge of fire foam from Units 1 and 2 may be routed to this treatment plant for treatment.

15. Monitoring of these parameters is only required during the period when disinfection is required.

16. Outfall 010 - The current Total Residual Oxidant limit of 0.2 mg/l as daily maximum remains in effect until EPD + 1 year.

    Outfall 030 - The current Total Residual Chlorine limit of 0.5 mg/l as daily maximum remains in effect until EDP + 1 year.

    Outfall 040 - The current Free Available Chlorine limit of 0.2 mg/l as daily average and 0.5 mg/l as daily maximum and total residual oxidant of 0.2 mg/l as daily maximum remain in effect until EDP + 1 year.

17. There shall be no discharge of heat from the main condensers except heat may be discharged in blowdown from recirculated cooling water systems provided the temperature at which the blowdown is discharged does not exceed at any time the lowest temperature of recirculated cooling water prior to the addition of the markup water. Outfall 040 includes cooling tower blowdown as well as service water flow.

18. The Free Available Chlorine samples shall be obtained prior to combination with Service Water.

19. Total Residual Oxidant applies only to treatments of Service Water System.

20. In no case shall the temperature limit be exceeded more than 5% of the time during the operating year.

21. Outfall 40A has two contributing sources, each originating from an individual sump located in the Circulating Water Pump pits.

22. The total copper samples should be obtained from the Cooling Water System (CWS) blowdown line or the cooling tower basin. The total copper concentration for Outfall 040 will be based on a calculated value taking into consideration the flow from the service water system. The equation and parameters for performing this calculation are as follows:

    Total Copper Concentration at Outfall 040 =

$$\frac{[CWS]cu \times CWS\ Blowdown\ Flow + [TF]cu \times Tempering\ Flow}{Total\ Flow\ for\ Outfall\ 040}$$

    [CWS]cu = Copper concentration of Circulating Water System (CWS) Blowdown,

    Total Flow for Outfall 040 = CWS Blowdown Flow and Tempering Flow (i.e. Service Water Discharge Flow),

    [TF]cu = Copper concentration of Tempering Flow [TF], and

    Tempering Flow = The amount of service water (discharge effluent) used to temper the service water influent during winter months.

23. EPA Method 1631 shall be used for analyzing Mercury. From EDP to EDP + 1 year, the permittee may have an interim mercury limit of 70 ng/l. The permittee shall comply with the final mercury limitation of 50 ng/l starting from "EDP + 1 year" and after.

24. Whole Effluent Toxicity (WET) Testing:

    Testing Requirements - WET testing shall consist of/ **Chronic only**. WET testing shall be performed in accordance with 40 CFR Part 136 and TOGS 1.3.2 unless prior written approval has been obtained from the Department. The test species shall be *Ceriodaphnia dubia* (water flea - invertebrate) and *Pimephales promelas* (fathead minnow - vertebrate). Receiving water collected upstream from the discharge should be used for dilution. All tests conducted should be static-renewal (two 24 hr composite samples with one renewal for Acute tests and three 24 hr composite samples with two renewals for Chronic tests). The appropriate dilution series bracketing the IWC and including one exposure group of 100% effluent should be used to generate a definitive test endpoint, otherwise an immediate rerun of the test is required. WET testing shall be coordinated with the monitoring of chemical and physical parameters limited by this permit so that the resulting analyses are also representative of the

sample used for WET testing. The ratio of critical receiving water flow to discharge flow (i.e. dilution ratio) is 4.6 :1 for chronic at Outfall 010 and 54:1 For chronic at Outfall 040. Discharges which are disinfected using chlorine should be dechlorinated prior to WET testing or samples shall be taken immediately prior to the chlorination system.

Monitoring Period - WET testing shall be performed at the specified sample frequency for a period of one full year beginning at EDP+ 3 Months.

Reporting - Toxicity Units shall be calculated and reported on the DMR as follows: TUa = (100)/(48 hr LC50) or (100)/(48 hr EC50) (note that Acute data is generated by both Acute and Chronic testing) and TUc = (100)/(NOEC) when Chronic testing has been performed or TUc = (TUa) x (10) when only Acute testing has been performed and is used to predict Chronic test results, where the 48 hr LC50 or 48 hr EC50 and NOEC are expressed in % effluent. This must be done for both species and using the Most Sensitive Endpoint (MSE) or the lowest NOEC and corresponding highest TUc. Report a TUa of 0.3 if there is no statistically significant toxicity in 100% effluent as compared to control.

The complete test report including all corresponding results, statistical analyses, reference toxicity data, daily average flow at the time of sampling and other appropriate supporting documentation, shall be submitted within 60 days following the end of each test period to the Toxicity Testing Unit. A summary page of the test results for the invertebrate and vertebrate species indicating TUa, 48 hr LC50 or 48 hr EC50 for Acute tests and/or TUc, NOEC, IC25, and most sensitive endpoints for Chronic tests, should also be included at the beginning of the test report.

WET Testing Action Level Exceedances - If an action level is exceeded then the Department may require the permittee to conduct additional WET testing including Acute and/or Chronic tests. Additionally, the permittee may be required to perform a Toxicity Reduction Evaluation (TRE) in accordance with Department guidance. If such additional testing or performance of a TRE is necessary, the permittee shall be notified in writing by the Regional Water Engineer. The written notification shall include the reason(s) why such testing or a TRE is required.

25. During periods of discharge from Outfall 025, representative samples can be collected from the cooling tower basin for parameter monitoring within 8 hours of the initiating discharge.

26. At Outfall 040, the pemittee may take pH samples at the cooling tower basin for compliance purposes.

27. At Outfall 001, pH sampling and reporting is waived during November to March due to unsafe sampling conditions. In case, there are unsafe sampling conditions existed outside of November to March, the permittee may adjust the sampling dates and report on the DMR forms.

28. Based on report: Near-Field and Far-Field Modeling Studies For the Nine Mile Point Unit 1 and 2 (Hydro Qual, Inc. January 2009)

ADDITIONAL REQUIREMENTS

I. The following requirements are applicable to Units #1 and #2

1. According to 40CFR423, neither free available chlorine nor total residual chlorine may be discharge from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time. The term average concentration as it relates to chlorine discharge means the average of analysis made over a single period of chlorine release which does not exceed two hours.

2. There shall be no discharge of "PCBs" from this facility.

3. In regard to general conditions 750.2.8 (e) Residual Management, Items (3) and (4) shall be reported semi-annually to NYSDEC offices in Cortland and Albany.

4. Radioactivity: Concentrations of Radioactivity in effluent are subject to the requirements of the U.S. Nuclear Regulatory Commission License conditions.

5. NMPNS shall notify the Department within one week from the time of submission to the Nuclear Regulatory Commission of any requested changes to the Environmental Protection Plan requirements which could in any way affect the requirements of this permit.
6. NMPNS shall also submit concurrently to the Department any water-related report on the environment it submits to any federal, state or local agency.

7. The permittee shall provide access to the site at any time to representatives of DEC to assess the environmental impact of its operation of the facility and to review any sampling program methodology, and the gathering and reporting of any data.

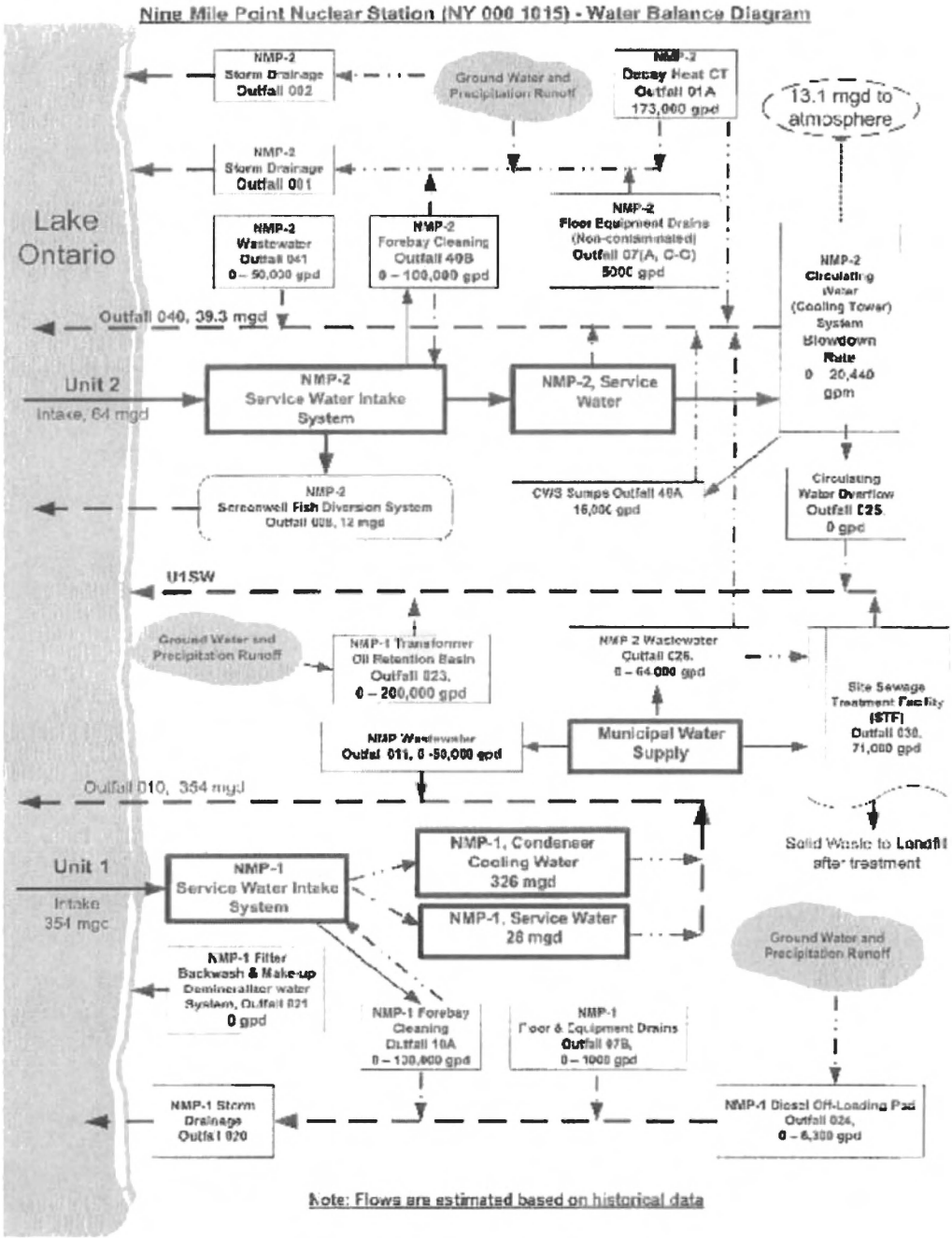
8. The water temperature at the surface of Lake Ontario shall not be raised more than three Fahrenheit degrees over the temperature that existed before the addition of heat of artificial origin except in a mixing zone consisting of an area of 300 acres from the point of discharge, this temperature may be exceed.

II. The following requirements are applicable to Unit #2

No discharge from this facility shall cause violation of the New York State Department of Health regulations contained in 10 NYCRR Part 170 at the source of intake of any water supply used for drinking, culinary or food processing purposes.

MONITORING LOCATIONS

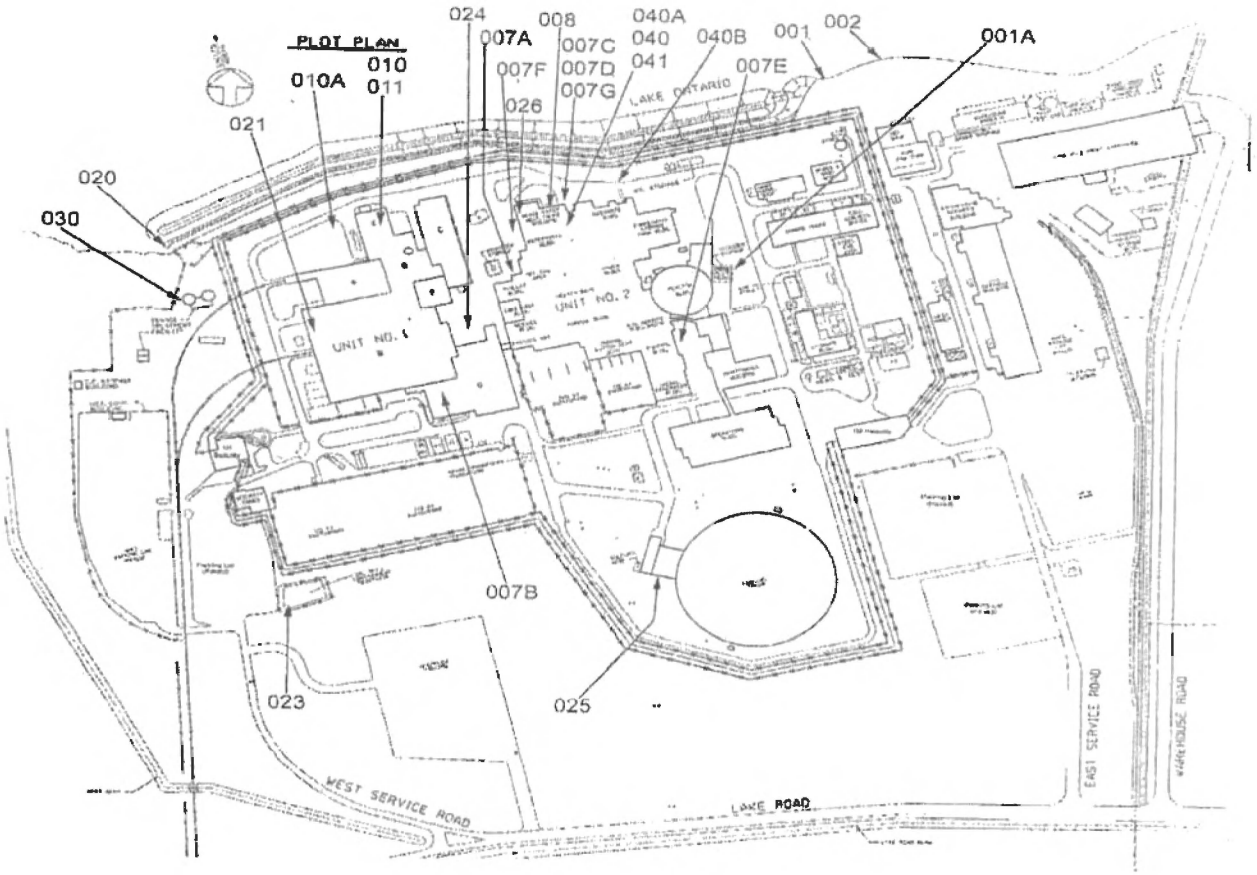
The permittee **shall take** samples **and measurements, to** comply **with the monitoring** requirements specified **in this** permit, **at the** location(s) specified **below:**

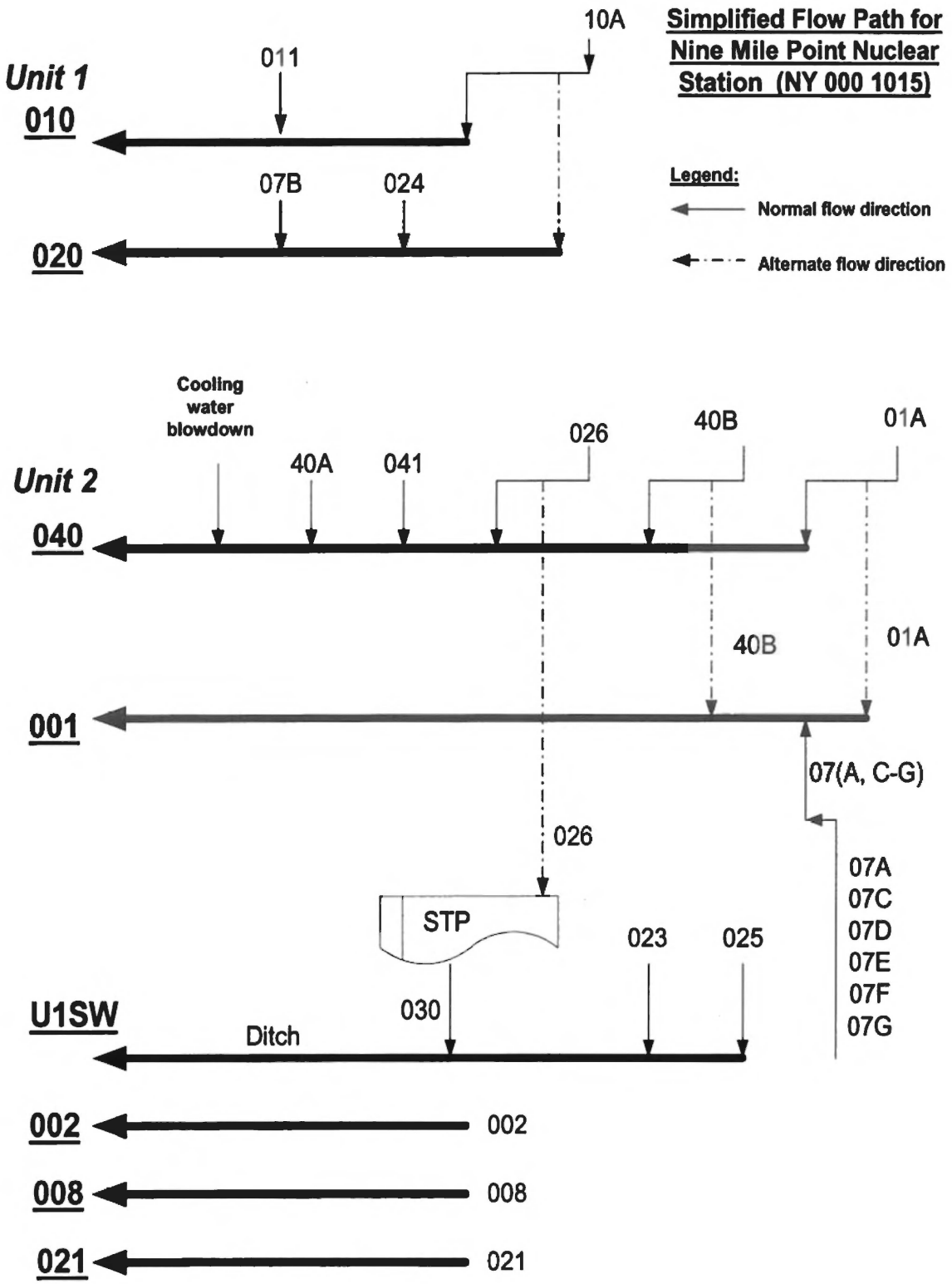


Outfall Location Map

Attachment 1a

Map of Facility and Discharge Locations




Simplified Flow Path for Nine Mile Point Nuclear Station (NY 000 1015)
Legend:
Normal flow direction
Alternate flow direction
Unit 1
010
011
10A
07B
024
020
Unit 2
040
Cooling water blowdown
40A
041
026
40B
01A
001
07(A, C-G)
07A
07C
07D
07E
07F
07G
STP
023
025
U1SW
030
Ditch
002
002
008
008
021
021

BIOLOGICAL MONITORING REQUIREMENTS

All submissions under this section should provide :
Two (2) copies to the Steam Electric Unit Leader;
One (1) copy of the cover letter to the Division of Water
State Pollution Discharge Elimination System (SPDES)
Compliance Information Section; and
One (1) copy of the cover letter to the Regional Water Engineer;
unless otherwise noted.

Impingement and Entrainment Characterization Study

1. By EDP + 6 Month, a final report for the 2006-2007 Impingement and Entrainment Study conducted at Nine Mile Point Unit 1 shall be submitted to the offices listed above for Department review and approval. The report shall contain an estimate of the abundance of fish impinged and entrained at current operating conditions, and at full flow calculation baseline conditions over the one year study period. Each flow scenario shall provide an estimate, in tabular form, of the total numbers of organisms impinged and entrained each month. Biota shall be identified to species, or lowest practical taxon, and each taxonomic group entrained shall also be subdivided by life stage.

Design and Construction Technology Plan

2. By EDP + 6 months, the permittee must submit an approvable *Design and Construction Technology* ***Plan*** that includes:

   a. Tables showing the average monthly and annual cooling water use and net generation of the facility in MWhr (megawatt hours) measured over the last 5 years.

   b. An estimate of the abundance of fish impinged and entrained at current operating conditions, and at full flow calculation baseline conditions over the one year study period.

   c. An analysis of all feasible technologies and/or operational measures capable of being installed and implemented at Nine Mile Point Unit 1 to minimize impingement and entrainment of fish, including the use of closed cycle cooling. For each alternative, the following information shall be included:
      i. A detailed description of the alternative (including preliminary drawings and site maps, if appropriate);
      ii. A discussion of the engineering feasibility of the alternative;
      iii. An assessment of the mitigative benefits in reducing entrainment abundance for all life stages of fish through utilization of the alternative;
      iv. A breakdown of all applicable costs including costs associated with capital improvements, operation and maintenance, and construction downtime;
      v. An estimate of the time required to implement the alternative; and
      vi. An evaluation of any adverse environmental impacts to aquatic biota, habitat, or water quality that may result from construction, installation, and use of the alternative.

Proposed Suite of Technologies or Operational Measures

3. Within 1 month of the Department's approval of the *Design and Construction Technology Plan*, the permittee must submit, for Department review and consideration, a ***Proposed Suite*** *of Technologies* ***or Operational*** *Measures* that meets the requirements of 6 NYCRR Part 704.5 and adheres to the following requirements:

   a. The reductions in entrainment resulting from existing and proposed technologies and/or operational measures can be no less stringent, and if possible, should be substantially better than 60 percent from the full-flow calculation baseline;

   b. The reductions in impingement mortality resulting from existing and proposed technologies and/or operational measures can be no less stringent, and if possible, should be substantially better than 80 percent from the full-flow calculation baseline

NOTE: Based on this and other relevant information, the Department will select technologies and/or operational measures that meet the requirements of 6 NYCRR Part 704.5 and will modify this SPDES permit to require the use of these selected technologies and/or operational measures.

Technology Installation and Operation Plan

4. Within 3 months of the effective date of the permit modification requiring technologies and/or operational measures to meet requirements of 6 NYCRR Part 704.5, the permittee must submit an approvable *Technology Installation and Operation Plan*. This plan must include:

   a. a schedule for installing and implementing the technologies and/or operational measures selected to meet requirements of 6 NYCRR Part 704.5; and

   b. the methodology for assessing the efficacy of these technologies and operational measures.

   Upon receipt of Department approval, the permittee must implement the *Technology Installation and Operation Plan* in accordance with the approved schedule. The *Technology Installation and Operation Plan* and approved schedule will become an enforceable condition of this SPDES permit.

Verification Monitoring Plan

5. Within 3 months of Department approval of the *Technology Installation and Operation Plan*, the permittee must submit an approvable *Verification Monitoring Plan*. This plan must include details of procedures to confirm that the necessary reductions in impingement and entrainment required by this permit are being achieved, including the following:

   a. A five year averaging period which shall include, at a minimum, two years of biological monitoring to verify the full-scale performance of selected BTA measures for entrainment reduction.

   b. A description of the frequency and duration of monitoring, the parameters to be monitored, and the basis for determining the parameters and the frequency and duration for monitoring.

   c. A schedule of implementation.

   d. A draft proposed Standard Operation Procedure (SOP) that describes the sampling protocols for these monitoring studies.

   The plan and SOP must be updated as required by the Department. Upon receipt of Department approval the permittee must complete the *Verification Monitoring Plan* in accordance with the approved schedule. The *Verification Monitoring Plan* and approved schedule will become an enforceable condition of this SPDES permit.

6. Within 6 months of completion of the studies required in the approved *Verification Monitoring Plan,* the permittee must submit an approvable report to the Steam Electric Unit Leader that demonstrates compliance with 6 NYCRR Part 704.5.

Additional Reporting Requirements

7. The permittee must maintain records of all data, reports and analysis pertaining to compliance with 6NYCRR Part 704 and Section 316(b) CWA for a period no less than 10 years from EDP.

8. The permittee must submit status reports at EDP + 2.5 years and EDP + 4.5 years. At a minimum, these status reports must include a description of the operational status of the facility during the preceding two years and compliance with Biological Requirements 1 through 5 of this permit.

General Requirement

9. Modification of the facility cooling water intake must not occur without prior Department approval. The permittee must submit written notification, including detailed descriptions and plans, to the NYS DEC Steam Electric Unit; the Director of the Bureau of Water Compliance Program; and both the Regional Permit Administrator and the Regional Water Engineer, Region 2, at least 60 days prior to any proposed change which would result in the alteration of the permitted operation, location, design, construction or capacity of the cooling water intake structure. The permittee must submit with the written notification a demonstration that the change reflects the best technology available for minimizing adverse environmental impacts pursuant to 6 NYCRR §704.5 and Section 316(b) of the Clean Water Act. As determined by NYS DEC, a permit modification application in accordance with 6 NYCRR Part 621 may be required.

10. **Thermal Discharge Study**

The permittee submitted a Thermal Modeling Study work plan dated 4 April 2008 to the Department consistent with the Thermal Discharge Study requirement that the Department handed out during the meeting of September 20, 2007. The Thermal Modeling Study work plan was designed to describe all applicable criteria contained in 6 NYCRR Part 704 and evaluate compliance with those criteria for determining (and verifying) the size of the mixing zone and the mapping of the facility's thermal plume during summer, winter or other critical climatological conditions. The Thermal Modeling Study work plan includes study protocols, a schedule for conducting the studies and the submission of an approvable Thermal Study Report. The Department approved the Thermal Modeling Study work plan on 22 April 2008. The permittee is required to submit an approvable final thermal modeling study report to the Department within six months of the Effective Date of this Permit (EDP) [EDP + 6 months].

Potential Increase in Ambient Temperature /Global Warming

There is a potential of increasing lake ambient temperatures due to global warming. This could be more visible during warm months (July, August and some part of September). In view of this, the permittee shall expand the thermal study to cover the potential high lake temperatures and present the model findings to address requirements stipulated in 6 NYCRR Part 704 and CWA Sec. 316(a).

The permittee should analyze the ambient data for trends and to ascertain if the receiving waters are becoming warmer than the preceding years or if global warming is taking place in the ambient waters. The permittee should provide technical information to the maximum extent to justify warming trends, if any. To account for future increases in ambient temperatures due to global warming, the permittee shall perform three (3) additional modeling projection runs in increments of 2 degrees Fahrenheit starting with the baseline worst-case scenario. Results must be included as part of the final Thermal Discharge Study Report required above. The baseline worst-case scenario may include but is not limited to: the critical ambient temperature, climatological, seasonal conditions and etc. All runs shall be made under maximum thermal discharge loading condition. The impact assessment shall be made for change in the spatial extent of the mixing zone, and etc.

SPECIAL CONDITIONS - INDUSTRY BEST MANAGEMENT PRACTICES

1. General - The permittee shall develop, maintain, and implement a Best Management Practices (BMP) plan to prevent releases of significant amounts of pollutants to the waters of the State through plant site runoff; spillage and leaks; sludge or waste disposal; and stormwater discharges including, but not limited to, drainage from raw material storage.

   The BMP plan shall be documented in narrative form and shall include the 13 minimum BMPs and any necessary plot plans, drawings, or maps. Other documents already prepared for the facility such as a Safety Manual or a Spill Prevention, Control and Countermeasure (SPCC) plan may be used as part of the plan and may be incorporated by reference. A copy of the current BMP plan shall be submitted to the Department as required in item (2.) below and a copy must be maintained at the facility and shall be available to authorized Department representatives upon request.

2. Compliance Deadlines - If a plan exists, a letter indicating that all requirements addressed in this section have been complied with or an amendment to the approved BMP to comply with all requirements in this Special Conditions must be submitted within 6 months of EDP to the Regional Water Engineer. The BMP plan shall be implemented within 6 months of submission, unless a different time frame is approved by the Department. The BMP plan shall be reviewed annually and shall be modified whenever: (a) changes at the facility materially increase the potential for releases of pollutants, (b) actual releases indicate the plan is inadequate, or (c) a letter from the Department identifies inadequacies in the plan. The permittee shall certify in writing, as an attachment to the December Discharge Monitoring Report (DMR), that the annual review has been completed. All BMP plan revisions (with the exception of SWPPPs - see item (4.B.) below) must be submitted to the Regional Water Engineer within 30 days. Note that the permittee is not required to obtain Department approval of the BMP plan (or of any SWPPPs) unless notified otherwise. Subsequent modifications to or renewal of this permit does not reset or revise these deadlines unless a new deadline is set explicitly by such permit modification or renewal.

3. Facility Review - The permittee shall review all facility components or systems (including but not limited to material storage areas; in-plant transfer, process, and material handling areas; loading and unloading operations; storm water, erosion, and sediment control measures; process emergency control systems; and sludge and waste disposal areas) where materials and pollutants are used, manufactured, stored or handled to evaluate the potential for the release of pollutants to the waters of the State. In performing such an evaluation, the permittee shall consider such factors as the probability of equipment failure or improper operation, cross-contamination of storm water by process materials, settlement of facility air emissions, the effects of natural phenomena such as freezing temperatures and precipitation, fires, and the facility's history of spills and leaks. The relative toxicity of the pollutant shall be considered in determining the significance of potential releases.

   The review shall address all substances present at the facility that are identified in Tables 6-10 of SPDES application Form NY-2C (available at *http://www.dec.state.ny.us/website/dcs/permits/olpermits/form2c.pdf*) and that are required to be monitored for by the SPDES permit.

4. A. 13 Minimum BMPs - Whenever the potential for a release of pollutants to State waters is determined to be present, the permittee shall identify BMPs that have been established to prevent or minimize such potential releases. Where BMPs are inadequate or absent, appropriate BMPs shall be established. In selecting appropriate BMPs, the permittee shall consider good industry practices and, where appropriate, structural measures such as secondary containment and erosion/sediment control devices and practices. USEPA guidance for development of stormwater elements of the BMP is available in the September 1992 manual *Storm Water Management for Industrial Activities,* EPA 832-R-92-006 (available from NTIS, 703-487-4650, order # PB 92235969). As a minimum, the plan shall include the following BMPs:

   1. BMP Pollution Prevention Team
   2. Reporting of BMP Incidents
   3. Risk Identification & Assessment
   4. Employee Training
   5. Inspections and Records
   6. Security
   7. Preventive Maintenance
   8. Good Housekeeping
   9. Materials/Waste Handling, Storage,& Compatibility
   10. Spill Prevention & Response
   11. Erosion & Sediment Control
   12. Management of Runoff
   13. Street Sweeping

   Note that for some facilities, especially those with few employees, some of the above BMPs may not be applicable. It is

acceptable in these cases to indicate "Not Applicable" for the portion(s) of the BMP Plan that do not apply to your facility, along with an explanation.

B. **Stormwater Pollution Prevention Plans (SWPPPs) Required for Discharges of Stormwater From Construction Activity to Surface Waters** - As part of BMP #11, a SWPPP shall be developed prior to the initiation of any site disturbance of one acre or more of uncontaminated area. Uncontaminated area means soils or groundwater which are free of contamination by any toxic or non-conventional pollutants identified in Tables 6-10 of SPDES application Form NY-2C. Disturbance of any size contaminated area(s) and the resulting discharge of contaminated stormwater is not authorized by this permit unless the discharge is under State or Federal oversight as part of a remedial program or after review by the Regional Water Engineer; nor is such discharge authorized by any SPDES general permit for stormwater discharges. SWPPPs are not required for discharges of stormwater from construction activity to groundwaters.

The SWPPP shall conform to the *New York Standards and Specifications for Erosion and Sediment Control* and *New York State Stormwater Management Design Manual,* unless a variance has been obtained from the Regional Water Engineer, and to any local requirements. The permittee shall submit a copy of the SWPPP and any amendments thereto to the local governing body and any other authorized agency having jurisdiction or regulatory control over the construction activity **at least 30 days prior to soil disturbance**. The SWPPP shall also be submitted to the Regional Water Engineer if contamination, as defined above, is involved and the permittee must obtain a determination of any SPDES permit modifications and/or additional treatment which may be required prior to soil disturbance. Otherwise, the SWPPP shall be submitted to the Department only upon request. When a SWPPP is required, a properly completed *Notice of Intent* (NOI) form shall be submitted (available at *www.dec.state.ny.us/website/dow/toolbox/swforms.html*) prior to soil disturbance. Note that submission of a NOI is required for informational purposes; the permittee is not eligible for and will not obtain coverage under any SPDES general permit for stormwater discharges, nor are any additional permit fees incurred. SWPPPs must be developed and submitted for subsequent site disturbances in accordance with the above requirements. The permittee is responsible for ensuring that the provisions of each SWPPP is properly implemented.

MERCURY MINIMIZATION PROGRAM REQUIREMENTS - Outfall 040
INDUSTRIAL FACILITIES

1. **General** - The permittee shall develop, implement, and maintain a Mercury Minimization Program (MMP) for Outfall 040. The MMP is required because the 50 ng/L permit limit exceeds the state-wide calculated water quality based effluent limit (WQBEL) of 0.70 nanograms/liter (ng/L) for Total Mercury. The goal of the MMP will be to reduce mercury effluent levels in pursuit of the calculated WQBEL.

2. **MMP Elements** - The MMP shall be documented in narrative form and shall include any necessary drawings or maps. Other related documents already prepared for the facility may be used as part of the MMP and may be incorporated by reference. As a minimum, the MMP shall include an on-going program consisting of: periodic monitoring; an acceptable control strategy which will become enforceable under this permit; and, submission of annual status reports.

A. Monitoring - The permittee shall conduct periodic monitoring designed to quantify and, over time, track the reduction of mercury. All permit-related wastewater and stormwater mercury monitoring shall be performed using EPA Method 1631 and shall be coordinated so that the results can be compared. All samples should be grabs and use of EPA Method 1669 during sample collection is recommended. Monitoring of raw materials, equipment, treatment residuals, and other non-wastewater/non-stormwater substances may be performed using methods other than EPA Method 1631 if appropriate. Minimum required monitoring shall be in accordance with the minimum frequency specified on the mercury permit limits page at each of the following locations: outfalls, wastewater treatment plant influents and effluents, key locations in the wastewater and/or stormwater collection systems, and known or potential mercury sources, including raw materials. Additional monitoring must be completed as may be required elsewhere in this permit or upon Department request.

B. Control Strategy - An acceptable control strategy is required for reducing mercury discharges via cost-effective measures, which may include, but is not limited to, more stringent control of tributary waste streams, remediation, and/or installation of new or improved treatment facilities. Required monitoring shall also be used, and supplemented if appropriate, to determine the most effective way to operate the wastewater treatment system(s) to ensure effective removal of mercury while maintaining compliance with other permit requirements.

C. Annual Status Report - An annual status report shall be submitted to the Regional Water Engineer and to the Bureau of Water Permits summarizing: (a)all MMP monitoring results for the previous year; (b) a list of known and potential mercury sources; (c) all action undertaken pursuant to the strategy during the previous year, (d) actions planned for the upcoming year, and (e) progress toward the goal. The first annual report is due EDP + 1 year and follow-up reports are due annually thereafter. Note that the complete MMP documentation need not be submitted to the Department unless otherwise requested.

3. **MMP Modification** - The MMP shall be modified whenever: (a)changes at the facility or within the collection system increase the potential for mercury discharges; (b) actual discharges exceed 50 ng/L; (c) a letter from the Department identifies inadequacies in the MMP; or (d) pursuant to a permit modification.

WATER TREATMENT CHEMICAL (WTC) REQUIREMENTS (9/99) H:\WMP 1 & 2 SPDES permit 8-6-09.wpd

New or increased use of a WTC requires prior DEC review and authorization. At a minimum, the permittee must notify the DEC in writing of its intent to change WTC use by submitting a completed WTCFX Form for each WTC. The DEC will review that submittal and determineif a SPDES permit modification is necessary or whether WTC review and authorization may proceed outside of the formal permit administrativeprocess. **The majority of WTC authorizations do not require formal SPDES permit modification.** WTCs which are used in closed systems and cannot be discharged or those which are discharged to municipal STP do not require DEC review. WTC use and discharge questions **or requests for forms** should be directed to the DEC staff person who developed your SPDES permit. If you are not sure who that is, contact the DEC staff person who last inspected your facility.

Examples of WTCs include, biocides, coagulants, conditioners, corrosion inhibitors, defoamers, flocculants, scale inhibitors, sequestrants, and settling aids. DEC staff may also direct you to use a WTCFX Form for review and authorization of substances other than WTCs, e.g. process chemicals.

The permittee must demonstrate that the use and discharge of any WTCs containing **phosphorus**, tributary to the Great Lakes Basin or other ponded waters, is necessary and that no acceptable alternatives exist. Please note that in some cases your permit may require modification to regulate phosphorus.

Generic WTC Usage Requirements

1. WTC use shall not exceed the rate reported by the permittee or authorized below, whichever is less.

2. The discharge shall not cause or contribute to a violation of water quality or an exceedance of ambient water quality criteria.

3. **The permittee must maintain a logbook** of all WTC use, noting for each WTC the date, time, exact location, and amount of each dosage, and, the name of the individual applying or measuring the chemical. The logbook must also document that adequate process controls are in place to ensure that excessive levels of WTCs are not used and subsequently discharged through outfalls. The permittee shall retain the logbook data for a period of at least 5 years. This period may be extended by request of the DEC.

4. The **permittee shall provide an annual report**, attached to the December DMR, containing the following information for each outfall: the current list of WTCs authorized for use and discharge by the DEC, for each WTC the amount in pounds used during the year, identification of authorized WTCs the permittee no longer uses, and any other pertinent information.

List of WTCs Authorized for Use and Discharge*

Affected Outfall(s)	Dosage (lbs/day) Avg	Max	WTC Manufacturer and Product Name	WTC Function
010	636.5	1018	Nalco Company - Nalco 73551	Deposit Penetrant
	787	787	Nalco Company - STABREX ST170	Microorganism control chemical at Unit 1 condenser cooling water
	2,346	4,083	Nalco Company - EVAC	Mollusicide at Unit 1 condenser cooling water
	32	64	Slack Company - Sodium Hypochlorite	Chlorination
	13.1	26.2	Nalco Company - Acti-Broom 1338	Biodispersant at Unit 1 condenser
023		20.2	GE Betz -Sulfuric acid (or reagent grade)	pH control at Unit 1 oil spill retention basin
040	2,583	3,363	Nalco Company - EVAC	Mollusicide (Zebra Mussel) at Unit 2 cooling tower blowdown and service water

Affected Outfall(s)	Dosage (lbs/day) Avg	Max	WTC Manufacturer and Product Name	WTC Function
	557	1,980	GE Infrastructure, Water & Process Technology - POWERLINE 3450	Water based deposit control agent at Unit 2 circulating water service (CWS)
	2,000 (Slug feed)	3,000 (Slug feed)	Betz Dearborn - Inhibitor AZ8104	Copper inhibitor at Unit 2 CWS
	3336 (Slug feed)	5,004 (Slug feed)	Nalco Company - CUPROSTAT PF	Copper inhibitor at Unit 2 CWS
040	396	1,170	GE Betz - DepsiTrol BL 5323	Water based corrosion inhibitor/deposit control agent at CWS (covered by permit limit of 2 mg/l as P)
	10,169	11,379	Slack Chemical - Sulfuric acid	pH control at Unit 2 CWS
	2,192	3,288	PVS Company - Sodium Hypochlorite	Chlorination at Unit 2 CWS
	339	630	Slack Chemical Company - Super Chlor (Sodium Hypochlorite Solution)	Biocide (chlorination of service water system to produce hypobromite) - used 2 hours/day, 7 daus/week per 40CFR423
	148	274	Great Lake Chemical Corporation; Distributed by Slack Chemical Company - SLACKBROM-40	
	295	566	Sulco Chemicals Ltd.; Distributed by Slack Chemical Company - Sodium Bisulfite Solution	Water treatment (reduce hypobromite and hypochlorite to its salts prior to discharge to outfall)

• - Authorized WTCs must either be listed above or identified in a letter sent to the permittee by the DEC subsequent to issuance of this permit page. In cases where a WTC is listed above and in a letter from the DEC, the more recent document will control.

SCHEDULE OF COMPLIANCE

a) The permittee shall comply with the following schedule:

Action Code	Outfall Number(s)	Compliance Action	Due Date
	010, 040 and 001	Water treatment chemical (WTC) - EVAC is listed in the existing SPDES permit. The permittee shall submit a completed WTC request form for EVAC. Pay special attention to the following items. - EVAC (Nalco) for Outfall 010, 040 and 001 - Item 9a to 9d (WTC composition) and item 12 (toxicity information for acceptable aquatic species) of the WTC form.	EDP + 3 Months
	010, 040 and 025	Total Residual Oxidant (Outfalls 010 and 040) , and Free Available Chlorine (Outfall 040): See Page 17 of this permit. The permittee shall submit an engineering plans by EDP + 6 months with the compliance date to achieve the final limits at these Outfalls by EDP + 1 year.	EDP + 6 Months
	030	Total Residual chlorine (Outfall 030): See Page 17 of this permit. The permittee shall submit an approvable engineering report by EDP + 6 months for a design to achieve the final TRC limit at this Outfall by EDP + 1 year.	EDP + 6 Months
		Best Management Practices (BMP) Plan - The permittee shall submit an approvable BMP according to the requirements outlined in Page 25 of this permit.	EDP + 6 Months
		Mercury Minimization Program (MMP) - The permittee shall submit annual status report with first annual report due by "EDP + 1 year"	EDP + 1 Year

The above compliance actions are one time requirements. The permittee shall comply with the above compliance actions to the Department's satisfaction once. When this permit is administratively renewed by NYSDEC letter entitled "SPDES NOTICE/RENEWAL APPLICATION/PERMIT," the permittee is not required to repeat the submission(s) noted above. The above due dates are independent from the effective date of the permit stated in the letter of "SPDES NOTICE/RENEWAL APPLICATION/PERMIT."

b) The permittee shall submit a written notice of compliance or non-compliance with each of the above schedule dates no later than 14 days following each elapsed date, unless conditions require more immediate notice as prescribed in 6 NYCRR Part 750-1.2(a) and 750-2. All such compliance or non-compliance notification shall be sent to the locations listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS. Each notice of non-compliance shall include the following information:

1. A short description of the non-compliance;
2. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirements without further delay and to limit environmental impact associated with the non-compliance;
3. A description or any factors which tend to explain or mitigate the non-compliance; and
4. An estimate of the date the permittee will comply with the elapsed schedule requirement and an assessment of the probability that the permittee will meet the next scheduled requirement on time.

c) The permittee shall submit copies of any document required by the above schedule of compliance to NYSDEC Regional Water Engineer at the location listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS and to the Bureau of Water Permits, 625 Broadway, Albany, N.Y. 12233-3505, unless otherwise specified in this permit or in writing by the Department.

SCHEDULE OF COMPLIANCE

a) The permittee shall comply with the following schedule:

Action Code	Outfall Number(s)	Compliance Action	Due Date
		BIOLOGICAL MONITORING REQUIREMENTS (Refer to Pages 23 - 25 of this permit)	
		B1. Submit an approvable *Impingement and Entrainment Characterization Study*	EDP + 6 Months
		B2. Submit an approvable *Design and Construction Technology Plan (DCTP)*	EDP + 6 Months
		B3. Submit an approvable *proposed suite of Technologies or Operational Measures*	DEC approval of DCTP + 1 Months
		B4. Submit an approvable*Technology Installation and Operation Plan (TIOP)*	EDP + 3 Months
		B5. Submit an approvable *Verification Monitoring Plan (VMP)*	DEC approval of TIOP + 3 Months
		B6. Submit an approvable report that demonstrates compliance with 6 NYCRR Part 704.5	Completion of VMP + 6 Months
		B8. Submit two Status Reports according to Biological Monitoring Requirement 8, Page 23 of this permit.	EDP + 2.5 Years & EDP + 4.5 Years
		B10. Submit an approvable final Thermal Modeling Study Report	EDP + 6 Months

The above compliance actions are one time requirements. The permittee shall comply with the above compliance actions to the Department's satisfaction once. When this permit is administratively renewed by NYSDEC letter entitled "SPDES NOTICE/RENEWAL APPLICATION/PERMIT," the permittee is not required to repeat the submission(s) noted above. The above due dates are independent from the effective date of the permit stated in the letter of "SPDES NOTICE/RENEWAL APPLICATION/PERMIT."

b) The permittee shall submit a written notice of compliance or non-compliance with each of the above schedule dates no later than 14 days following each elapsed date, unless conditions require more immediate notice as prescribed in 6 NYCRR Part 750-1.2(a) and 750-2. All such compliance or non-compliance notification shall be sent to the locations listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS. Each notice of non-compliance shall include the following information:

1. A short description of the non-compliance;

2. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirements without further delay and to limit environmental impact associated with the non-compliance;
3. A description or any factors which tend to explain or mitigate the non-compliance; and
4. An estimate of the date the permittee will comply with the elapsed schedule requirement and an assessment of the probability that the permittee will meet the next scheduled requirement on time.

c) The permittee shall submit copies of any document required by the above schedule of compliance to NYSDEC Regional Water Engineer at the location listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS and to the Bureau of Water Permits, 625 Broadway, Albany, N.Y. 12233-3505, unless otherwise specified in this permit or in writing by the Department.

DISCHARGE NOTIFICATION REQUIREMENTS

(a) Except as provided in (c) of these Discharge Notification Act requirements, the permittee shall install and maintain identification signs at all outfalls to surface waters listed in this permit. Such signs shall be installed within 90 days of the Effective Date of this Modification.

(b) Subsequent modifications to or renewal of this permit does not reset or revise the deadline set forth in (a) above, unless a new deadline is set explicitly by such permit modification or renewal.

(c) The Discharge Notification Requirements described herein do not apply to outfalls from which the discharge is composed exclusively of storm water, or discharges to ground water.

(d) The sign(s) shall be conspicuous, legible and in as close proximity to the point of discharge as is reasonably possible while ensuring the maximum visibility from the surface water and shore. The signs shall be installed in such a manner to pose minimal hazard to navigation, bathing or other water related activities. If the public has access to the water from the land in the vicinity of the outfall, an identical sign shall be posted to be visible from the direction approaching the surface water.

The signs shall have minimum dimensions of eighteen inches by twenty four inches (18" x 24") and shall have white letters on a green background and contain the following information:

N.Y.S. PERMITTED DISCHARGE POINT

SPDES PERMIT No.: NY_____

OUTFALL No. :____

For information about this permitted discharge contact:

Permittee Name: _____

Permittee Contact: _____

Permittee Phone: ( ) - ### - ####

OR:

NYSDEC Division of Water Regional Office Address :

NYSDEC Division of Water Regional Phone: ( ) - ### -####

(e) For each discharge required to have a sign in accordance with a), the permittee shall, concurrent with the installation of the sign, provide a repository of copies of the Discharge Monitoring Reports (DMRs), as required by the **RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS** page of this permit. This repository shall be open to the public, at a minimum, during normal daytime business hours. The repository may be at the business office repository of the permittee or at an off-premises location of its choice (such location shall be the village, town, city or county clerk's office, the local library or other location as approved by the Department). In accordance with the **RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS** page of your permit, each DMR shall be maintained on record for a period of five years.

(f) The permittee shall periodically inspect the outfall identification signs in order to ensure that they are maintained, are still visible and contain information that is current and factually correct.

RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS

a) The permittee shall also refer to 6 NYCRR Part 750-1.2(a) and 750-2 for additional information concerning monitoring and reporting requirements and conditions.

b) The monitoring information required by this permit shall be summarized, signed and retained for a period of three years from the date of the sampling for subsequent inspection by the Department or its designated agent. Also, monitoring information required by this permit shall be summarized and reported by submitting;

[X] (if box is checked) completed and signed Discharge Monitoring Report (DMR) forms for each 1 month reporting period to the locations specified below. Blank forms are available at the Department's Albany office listed below. The first reporting period begins on the effective date of this permit and the reports will be due no later than the 28th day of the month following the end of each reporting period.

[ ] (if box is checked) an annual report to the Regional Water Engineer at the address specified below. The annual report is due by February 1 and must summarize information for January to December of the previous year in a format acceptable to the Department.

[ ] (if box is checked) a monthly "Wastewater Facility Operation Report..." (form 92-15-7) to the:
[ ] Regional Water Engineer and/or [ ] County Health Department or Environmental Control Agency specified below

Send the DMRs with **original signatures** to:

Department of Environmental Conservation
Division of Water
Bureau of Water Compliance Programs
625 Broadway
Albany, New York 12233-3506

Phone: (518) 402-8177

Send a **copy** of each DMR page to:

Department of Environmental Conservation
Regional Water Engineer, Region 7
615 Erie Boulevard - West
Syracuse, New York 13204-2400

Phone: 315-426-7500

Send an **additional copy** of each DMR page to:

Oswego County Department of Health
70 Bunner Street
Oswego, New York 13126

c) Noncompliance with the provisions of this permit shall be reported to the Department as prescribed in 6 NYCRR Part 750-1.2(a) and 750-2.

d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

e) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculations and recording of the data on the Discharge Monitoring Reports.

f) Calculation for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.

g) Unless otherwise specified, all information recorded on the Discharge Monitoring Report shall be based upon measurements and sampling carried out during the most recently completed reporting period.

h) Any laboratory test or sample analysis required by this permit for which the State Commissioner of Health issues certificates of approval pursuant to section five hundred two of the Public Health Law shall be conducted by a laboratory which has been issued a certificate of approval. Inquiries regarding laboratory certification should be sent to the Environmental Laboratory Accreditation Program, New York State Health Department Center for Laboratories and Research, Division of Environmental Sciences, The Nelson A. Rockefeller Empire State Plaza, Albany, New York 12201.

Attachment B: Threatened and Endangered Species Consultation Letters

Constellation

200 Energy Way
Kennett Square, PA 19348
www.constellation.com

RS-25-060

April 1, 2025

Christine Vaccaro
ESA Section 7 Branch Chief
National Oceanic and Atmospheric Administration (NOAA)
Fisheries - Habitat and Ecosystem Services
Protected Resources Greater Atlantic Region
Greater Atlantic Regional Fisheries Office
NOAA Fisheries Service
Regional Directorate Office
55 Great Republic Drive
Gloucester MA 01930

Subject: Constellation Energy Generation - Nine Mile Point Nuclear Station Unit 1 Subsequent License Renewal Request for Listed Species and Sensitive Habitats Review

Dear ESA Branch Chief Vaccaro:

Constellation Energy Generation, LLC (CEG) is preparing an application to the U.S. Nuclear Regulatory Commission (NRC) for the subsequent license renewal of the Nine Mile Point Nuclear Station (NMPNS) Unit 1 (NMP1) Operating License (DPR-63), which expires in August 2029. A renewed license would allow NMP1 to operate for an additional 20 years until August 2049.

As part of the license renewal process, the NRC requires that the subsequent license renewal application include an environmental report (ER) that assesses the impacts from continued operation and any refurbishment to be undertaken to enable the operation of the unit. The ER addresses the potential impact on air quality, water resources, terrestrial and aquatic ecology resources, historic and cultural resources, socioeconomics, and human health. As such, the NRC may request an informal or formal consultation with your agency.

This letter seeks input from the NOAA, Fisheries - Habitat and Ecosystem Services, regarding the effects that subsequent license renewal activities may have on listed species (or candidates proposed for listing) critical habitat and essential fish habitat within NMPNS's environs.

In the town of Scriba, Oswego County, New York, NMP1 is located along the shores of Lake Ontario. The larger NMPNS site, which encompasses NMP1, is situated on approximately 846 acres, of which approximately 188 acres of the site are used for power generation. The vicinity (6-mile radius) surrounding NMP1 is a mixture of towns, residential development, and agricultural lands with forested and natural areas interspersed. Figures depicting the NMPNS site and the vicinity within a 6-mile radius of NMP1 are enclosed (Figures 1 and 2, respectively).

There are no designated critical habitats for essential fish habitat under NOAA in the NMPNS action area or terrestrial habitats for ESA listed species in the 6-mile vicinity of NMPNS. However, three areas designated as significant natural communities by the New York State Department of Environmental Conservation (NYSDEC) are located within the 6-mile vicinity:

Butterfly Swamp, Lily Marsh, and Clark Corners Fen. These areas are also presented on Figure 2.

During the subsequent license renewal term, CEG proposes to continue operating the NMP1 facility as currently operated. Any planned ground-disturbing activities, such as maintenance or construction necessary to support operations, will be in previously disturbed and developed areas. There have been no changes to onsite land uses, and there are no plans by CEG to change land uses within the site boundary. Therefore, CEG does not anticipate continued operation to adversely affect sensitive species or essential habitats.

As previously stated, this letter seeks your input on the proposed continued operation of NMP1 regarding sensitive species and important habitats within the environs of NMPNS. Please provide additional information for CEG's consideration in the preparation of the ER and any records or comments to confirm CEG's conclusion that the NMP1 subsequent license renewal would not adversely affect sensitive species or essential habitats.

CEG plans to include a copy of this letter and your response in the final ER, which will be submitted to the NRC as part of the NMP1 subsequent license renewal application. Therefore, a response by May 30, 2025 is requested.

We welcome your input to this project and thank you in advance for your attention to this data request. If there are any questions or requests for additional information necessary to support the consultation process, please contact Ms. Kristin Meek, NMP1 License Renewal Environmental Lead, at 779-231-5709 or Kristin.meek@constellation.com.

Respectfully,

Wilson, Christopher D

Digitally signed by Wilson, Christopher D
Date: 2025.04.01 09:25:30 -04'00'

Christopher D. Wilson, Director
Constellation Energy Generation, LLC

Enclosures:
Figure 1 - NMPNS Site
Figure 2 - NMP1 6-Mile Vicinity

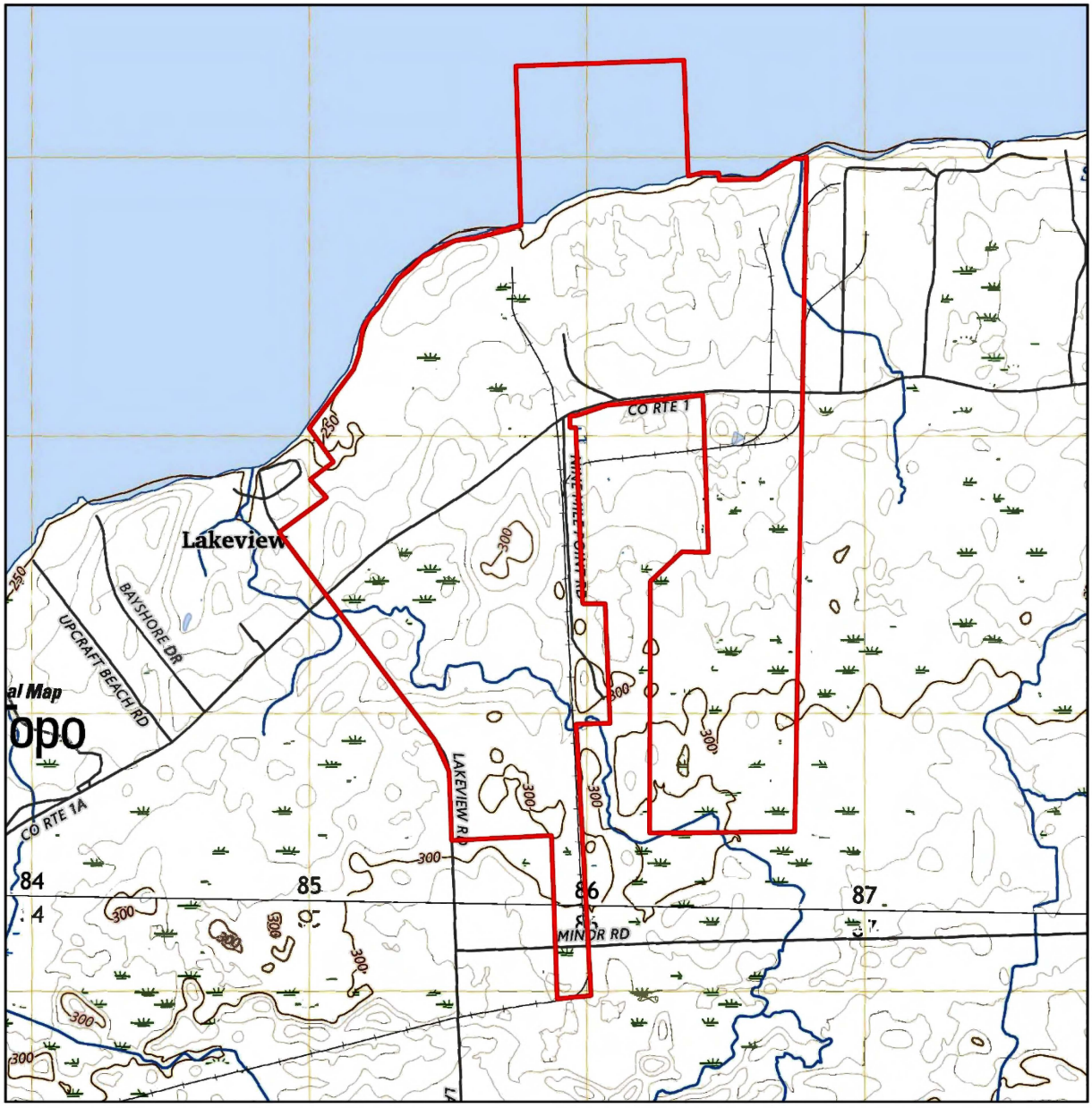


Figure 1 - NMPNS Site



Figure 2 – NMP1 6-Mile Vicinity

Constellation

200 Energy Way
Kennett Square, PA 19348
www.constellation.com

RS-25-061

April 1, 2025

Karen Greene
EFH Regional Coordinator
National Oceanic and Atmospheric Administration (NOAA)
Fisheries - Habitat and Ecosystem Services
Greater Atlantic Regional Fisheries Office
NOAA Fisheries Service
Regional Directorate Office
55 Great Republic Drive
Gloucester MA 01930

Subject: Constellation Energy Generation - Nine Mile Point Nuclear Station Unit 1 Subsequent License Renewal Request for Listed Species and Sensitive Habitats Review

Dear Regional Coordinator Greene:

Constellation Energy Generation, LLC (CEG) is preparing an application to the U.S. Nuclear Regulatory Commission (NRC) for the subsequent license renewal of the Nine Mile Point Nuclear Station (NMPNS) Unit 1 (NMP1) Operating License (DPR-63), which expires in August 2029. A renewed license would allow NMP1 to operate for an additional 20 years until August 2049.

As part of the license renewal process, the NRC requires that the subsequent license renewal application include an environmental report (ER) that assesses the impacts from continued operation and any refurbishment to be undertaken to enable the operation of the unit. The ER addresses the potential impact on air quality, water resources, terrestrial and aquatic ecology resources, historic and cultural resources, socioeconomics, and human health. As such, the NRC may request an informal or formal consultation with your agency.

This letter seeks input from the NOAA, Fisheries-Habitat and Ecosystem Services, regarding the effects that subsequent license renewal activities may have on listed species (or candidates proposed for listing) critical habitat and essential fish habitat within NMPNS's environs.

In the town of Scriba, Oswego County, New York, NMP1 is located along the shores of Lake Ontario. The larger NMPNS site, which encompasses NMP1, is situated on approximately 846 acres, of which approximately 188 acres are used for power generation. The vicinity (6-mile radius) surrounding NMP1 is a mixture of towns, residential development, and agricultural lands with forested and natural areas interspersed. Figures depicting the NMPNS site and the vicinity within a 6-mile radius of NMP1 are enclosed (Figures 1 and 2, respectively).

There are no designated critical habitats for essential fish habitat under NOAA in the NMPNS action area or terrestrial habitats for Endangered Species Act (ESA) listed species in the 6-mile vicinity of NMPNS. However, three areas designated as significant natural communities by the New York State Department of Environmental Conservation (NYSDEC) are located within the 6-

mile vicinity: Butterfly Swamp, Lily Marsh, and Clark Corners Fen. These areas are also presented on Figure 2.

During the subsequent license renewal term, CEG proposes to continue operating the NMP1 facility as currently operated. Any planned ground-disturbing activities, such as maintenance or construction necessary to support operations, will be in previously disturbed and developed areas. There have been no changes to onsite land uses, and there are no plans by CEG to change land uses within the site boundary. Therefore, CEG does not anticipate continued operation to adversely affect sensitive species or essential habitats.

As previously stated, this letter seeks your input on the proposed continued operation of NMP1 regarding sensitive species and important habitats within the environs of NMPNS. Please provide additional information for CEG's consideration in the preparation of the ER and any records or comments to confirm CEG's conclusion that the NMP1 subsequent license renewal would not adversely affect sensitive species or essential habitats.

CEG plans to include a copy of this letter and your response in the final ER, which will be submitted to the NRC as part of the NMP1 subsequent license renewal application. Therefore, a response by May 30, 2025 is requested.

We welcome your input to this project and thank you in advance for your attention to this data request. If there are any questions or requests for additional information necessary to support the consultation process, please contact Ms. Kristin Meek, NMP1 License Renewal Environmental Lead, at 779-231-5709 or Kristin.meek@constellation.com.

Respectfully,

Wilson, Christopher D

Digitally signed by Wilson, Christopher D
Date: 2025.04.01 09:26:43 -04'00'

Christopher D. Wilson, Director
Constellation Energy Generation, LLC

Enclosures:
Figure 1 - NMPNS Site
Figure 2 – NMP1 6-Mile Vicinity

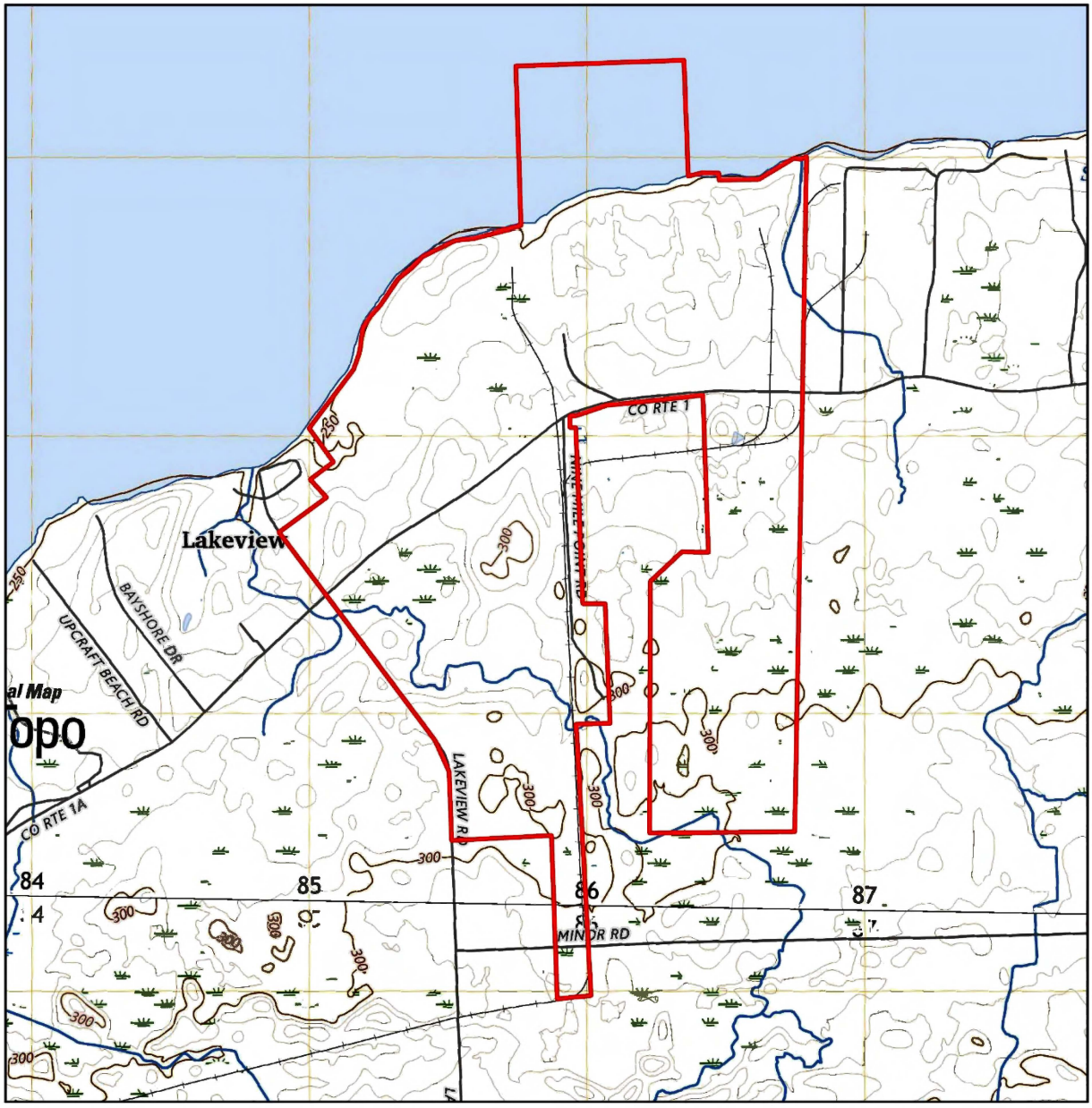


Figure 1 - NMPNS Site



Figure 2 – NMP1 6-Mile Vicinity

Constellation

200 Energy Way
Kennett Square, PA 19348
www.constellation.com

RS-25-063

April 1, 2025

U.S. Fish and Wildlife Service
Attn: Office Director
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385

Subject: Constellation Energy Generation - Nine Mile Point Nuclear Station Unit 1 Subsequent License Renewal Request for Listed Species and Sensitive Habitats Review

Dear Office Director:

Constellation Energy Generation, LLC (CEG) is preparing an application to the U.S. Nuclear Regulatory Commission (NRC) for the subsequent license renewal of the Nine Mile Point Nuclear Station (NMPNS) Unit 1 (NMP1) Operating License (DPR-63), which expires in August 2029. A renewed license would allow NMP1 to operate for an additional 20 years until August 2049.

As part of the license renewal process, the NRC requires that the subsequent license renewal application include an environmental report (ER) that assesses the impacts from continued operation and any refurbishment to be undertaken to enable the operation of the unit. The ER addresses the potential to impact species listed (or candidates proposed for listing) as threatened or endangered in accordance with the Endangered Species Act (ESA), and important plant and animal habitats, including critical habitats as defined by the ESA and essential fish habitat as identified under the Magnuson-Stevens Fishery Conservation and Management Act. In addition, the NRC may request an informal or formal consultation with your agency.

This letter seeks input from the U.S. Fish and Wildlife Service (USFWS) regarding the effects that subsequent license renewal activities may have on listed species (or candidates proposed for listing) or important plant and animal habitats within NMPNS's environs.

In the town of Scriba, Oswego County, New York, NMP1 is located along the shores of Lake Ontario. The larger NMPNS site, which encompasses NMP1, is situated on approximately 846 acres, of which approximately 188 acres are used for power generation. The vicinity (6-mile radius) surrounding NMP1 is a mixture of towns, residential development, and agricultural lands with forested and natural areas interspersed. Figures depicting the NMPNS site and the vicinity within a 6-mile radius NMP1 are enclosed (Figures 1 and 2, respectively). Also enclosed are lists of species potentially occurring within NMPNS's vicinity that are protected under New York State law and ESA (Tables 1 and 2). In addition, Within the 6-mile vicinity there are three areas designated as significant natural communities by the New York State Department of Environmental Conservation (NYSDEC): Butterfly Swamp, Lily Marsh, and Clark Corners Fen. These areas are also presented on Figure 2.

During the subsequent license renewal term, CEG proposes to continue operating the NMP1 facility as currently operated. Any planned ground-disturbing activities, such as maintenance or construction necessary to support operations, will be in previously disturbed and developed areas. There have been no changes to onsite land uses, and there are no plans by CEG to change land uses within the site boundary. Therefore, CEG does not anticipate continued operation to adversely affect sensitive species or essential habitats.

As previously stated, this letter seeks your input on the proposed continued operation of NMP1 regarding sensitive species and important habitats within the environs of NMPNS. Please provide additional information for CEG's consideration in the preparation of the ER and any records or comments to confirm CEG's conclusion that the NMP1 license renewal would not adversely affect sensitive species or essential habitats.

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We welcome your input to this project and thank you in advance for your attention to this data request. If there are any questions or requests for additional information necessary to support the consultation process, please contact Ms. Kristin Meek, NMP1 License Renewal Environmental Lead, at 779-231-5709 or Kristin.meek@constellation.com.

Respectfully,

Wilson, Christopher D

Digitally signed by Wilson, Christopher D
Date: 2025.04.01 10:09:21 -04'00'

Christopher D. Wilson, Director
Constellation Energy Generation, LLC

Enclosures:
Figure 1 - NMPNS Site
Figure 2 - NMP1 6-Mile Vicinity
Table 1 - State-Protected Species in Oswego County
Table 2 - Federally Protected Species Occurring in the 6-Mile Radius of the NMPNS Site

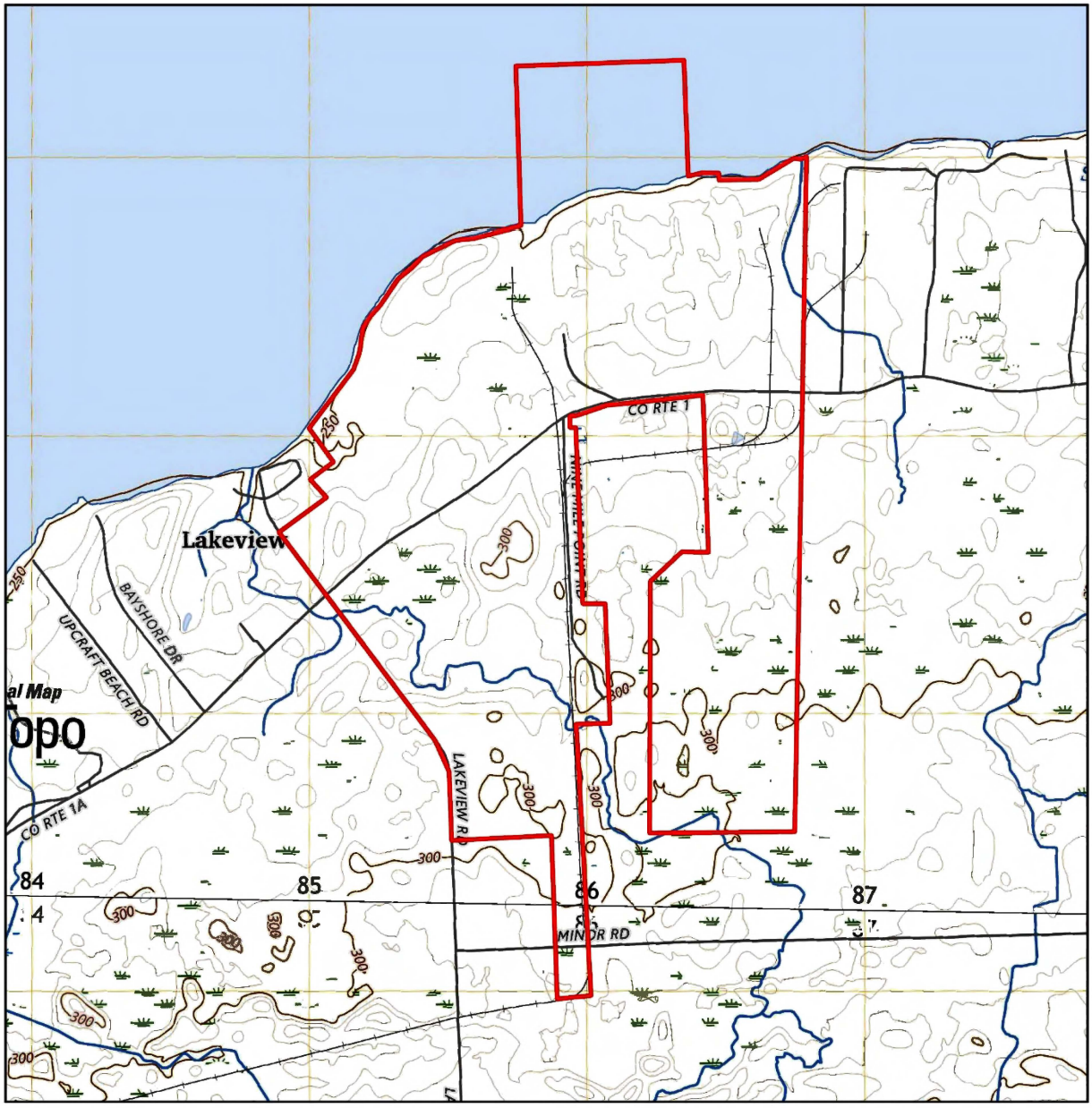


Figure 1 - NMPNS Site



Figure 2 – NMP1 6-Mile Vicinity

Table 1 - State-Protected Species in Oswego County (Sheet 1 of 2)

Common Name	Scientific Name	Protected Status
TERRESTRIAL		
Animals		
Cooper's Hawk	*Accipiter cooperii*	SC
Northern Goshawk	*Accipiter gentilis*	SC
Sharp-shinned Hawk	*Accipiter striatus*	SC
Blue-spotted Salamander	*Ambystoma laterale*	SC
Henslow's Sparrow	*Ammodramus henslowii*	ST
Grasshopper Sparrow	*Ammodramus savannarum*	SC
Whip-poor-will	*Antrostomus vociferus*	SC
Spiny Softshell	*Apalone spinifera*	SC
Upland Sandpiper	*Bartramia longicauda*	ST
American Bittern	*Botaurus lentiginosus*	SC
Red-shouldered Hawk	*Buteo lineatus*	SC
Piping Plover	*Charadrius melodus*	SE
Black Tern	*Chlidonias niger*	SE
Common Nighthawk	*Chordeiles minor*	SC
Northern Harrier	*Circus hudsonius*	ST
Sedge Wren	*Cistothorus platensis*	ST
Spotted Turtle	*Clemmys guttata*	SC
Horned Lark	*Eremophila alpestris*	SC
Peregrine Falcon	*Falco peregrinus*	SE
Common Loon	*Gavia immer*	SC
Wood Turtle	*Glyptemys insculpta*	SC
Bog Turtle	*Glyptemys muhlenbergii*	SE
Bald Eagle	*Haliaeetus leucocephalus*	ST
Bog Buck Moth	*Hemileuca maia menyanthevora*	SE
Least Bittern	*Ixobrychus exilis*	ST
Loggerhead Shrike	*Lanius ludovicianus*	SE
Red-headed Woodpecker	*Melanerpes erythrocephalus*	SC
Indiana Bat	*Myotis sodalis*	SE
Osprey	*Pandion haliaetus*	SC
Pied-billed Grebe	*Podilymbus podiceps*	ST
Vesper Sparrow	*Pooecetes gramineus*	SC
King Rail	*Rallus elegans*	ST
Cerulean Warbler	*Setophaga cerulea*	SC
Common Tern	*Sterna hirundo*	ST

Table 1 - State-Protected Species in Oswego County (Sheet 2 of 2)

Common Name	Scientific Name	Protected Status
Eastern Box Turtle	*Terrapene carolina*	SC
Mossy Valvata	*Valvata sincera*	SC
Golden-winged Warbler	*Vermivora chrysoptera*	SC
Vegetation		
Dragon's Mouth Orchid	*Arethusa bulbosa*	ST
Fork-tipped Three-awn	*Aristida basiramea*	ST
Creeping Sedge	*Carex chordorrhiza*	ST
Houghton's Sedge	*Carex houghtoniana*	ST
Livid Sedge	*Carex livida*	ST
Sparse-flowered Sedge	*Carex tenuiflora*	SE
Canada Bluets	*Houstonia canadensis*	ST
Lily-leaved Twayblade	*Liparis liliifolia*	SE
Bristly Smartweed	*Persicaria setacea*	SE
Bird's Eye Primrose	*Primula mistassinica*	ST
Great Lakes Sand Cherry	*Prunus pumila var. pumila*	SE
Sand Dune Willow	*Salix cordata*	ST
Yellow Mountain Saxifrage	*Saxifraga aizoides*	ST
Slender Bulrush	*Schoenoplectus heterochaetus*	SE
Northern Bog Aster	*Symphyotrichum boreale*	ST
Slender Yellow-eyed Grass	*Xyris torta*	ST
AQUATIC		
Animals		
Lake sturgeon	*Acipenser fulvescens*	ST
Vegetation		
Minute Duckweed	*Lemna perpusilla*	ST
Spotted Pondweed	*Potamogeton pulcher*	ST

Table Source:
NYSDEC (New York State Department of Environmental Conservation). 2024. New York Nature Explorer. Retrieved from <https://extapps.dec.ny.gov/natureexplorer/app/location/county> (accessed April 17, 2024).

Acronyms:
SC – Special Concern
ST – State-threatened
SE – State-endangered

Table 2 - Federally Protected Species Occurring in the 6-Mile Radius of NMPNS Site

Common Name	Scientific Name	ESA Protected Status	Range Overlaps Action Area
Piping Plover[1]	*Charadrius melodus*	E	No
Monarch Butterfly	*Danaus plexippus*	C	Yes
Bog Turtle	*Glyptemys muhlenbergii*	T	No
Bog Buck Moth	*Hemileuca maia menyanthevora (=H. iroquois)*	E	Yes
Northern Long-eared Bat	*Myotis septentrionalis*	E	Yes
Tricolored Bat	*Perimyotis subflavus*	PE	No

Table Source:
USFWS. 2024. IPaC Resource List. Retrieved from <https://ipac.ecosphere.fws.gov/location/B5GEX362OFBIRD36FRFRRV5KAI/resources> (accessed August 27, 2024).

Acronyms:
E – endangered
C – candidate
PE – proposed endangered
T – threatened

Superscripts:
1 – Great Lakes Watershed DPS

Constellation

200 Energy Way
Kennett Square, PA 19348
www.constellation.com

RS-25-064

April 1, 2025

Katie Stone Petronis
Deputy Commissioner
Natural Resources
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233-1010

Subject: Constellation Energy Generation - Nine Mile Point Nuclear Station Unit 1 Subsequent License Renewal Request for Listed Species and Sensitive Habitats Review

Dear Deputy Commissioner Petronis:

Constellation Energy Generation, LLC (CEG) is preparing an application to the U.S. Nuclear Regulatory Commission (NRC) for the subsequent license renewal of the Nine Mile Point Nuclear Station (NMPNS) Unit 1 (NMP1) Operating License (DPR-63), which expires in August 2029. A renewed license would allow NMP1 to operate for an additional 20 years until August 2049.

As part of the license renewal process, the NRC requires that the subsequent license renewal application include an environmental report (ER) that assesses the impacts from continued operation and any refurbishment to be undertaken to enable the operation of the unit. The ER addresses the potential to impact species listed (or candidates proposed for listing) as threatened or endangered in accordance with the Endangered Species Act (ESA), and important plant and animal habitats, including critical habitats as defined by the ESA and essential fish habitat as identified under the Magnuson-Stevens Fishery Conservation and Management Act. In addition, the NRC may request an informal or formal consultation with your agency.

This letter seeks input from the New York State Department of Conservation, Natural Resources, regarding the effects that subsequent license renewal activities may have on listed species (or candidates proposed for listing) or important plant and animal habitats within NMPNS's environs.

In the town of Scriba, Oswego County, New York, NMP1 is located along the shores of Lake Ontario. The larger NMPNS site, which encompasses NMP1, is situated on approximately 846 acres, of which, approximately 188 acres are used for power generation. The vicinity (6-mile radius) surrounding NMP1 is a mixture of towns, residential development, and agricultural lands with forested and natural areas interspersed. Figures depicting the NMPNS site and the vicinity within a 6-mile radius of NMP1 are enclosed (Figures 1 and 2, respectively). Within the 6-mile vicinity there are three areas designated as significant natural communities by the New York State Department of Environmental Conservation (NYSDEC): Butterfly Swamp, Lily Marsh, and Clark Corners Fen. These areas are also presented on Figure 2. Also enclosed is a list of species potentially occurring within the vicinity of NMP1 that are protected under New York State law (Table 1).

During the subsequent license renewal term, CEG proposes to continue operating the NMP1 facility as currently operated. Any planned ground-disturbing activities, such as maintenance or construction necessary to support operations, will be in previously disturbed and developed areas. There have been no changes to onsite land uses, and there are no plans by CEG to change land uses within the site boundary. Therefore, CEG does not anticipate continued operation to adversely affect sensitive species or essential habitats.

As previously stated, this letter seeks your input on the proposed continued operation of NMP1 regarding sensitive species and important habitats within the environs of NMPNS. Please provide additional information for CEG's consideration in the preparation of the ER and any records or comments to confirm CEG's conclusion that the NMP1 subsequent license renewal would not adversely affect sensitive species or essential habitats.

CEG plans to include a copy of this letter and your response in the final ER, which will be submitted to the NRC as part of the NMP1 subsequent license renewal application. Therefore, a response by May 30, 2025 is requested.

We welcome your input to this project and thank you in advance for your attention to this data request. If there are any questions or requests for any additional information necessary to support the consultation process, please contact Ms. Kristin Meek, NMP1 License Renewal Environmental Lead, at 779-231-5709 or Kristin.meek@constellation.com.

Respectfully,

Wilson, Christopher D

Digitally signed by Wilson, Christopher D
Date: 2025.04.01 09:34:31 -04'00'

Christopher D. Wilson, Director
Constellation Energy Generation, LLC

Enclosures:
Figure 1 - NMPNS Site
Figure 2 - NMP1 6-Mile Vicinity
Table 1 - State-Protected Species in Oswego County

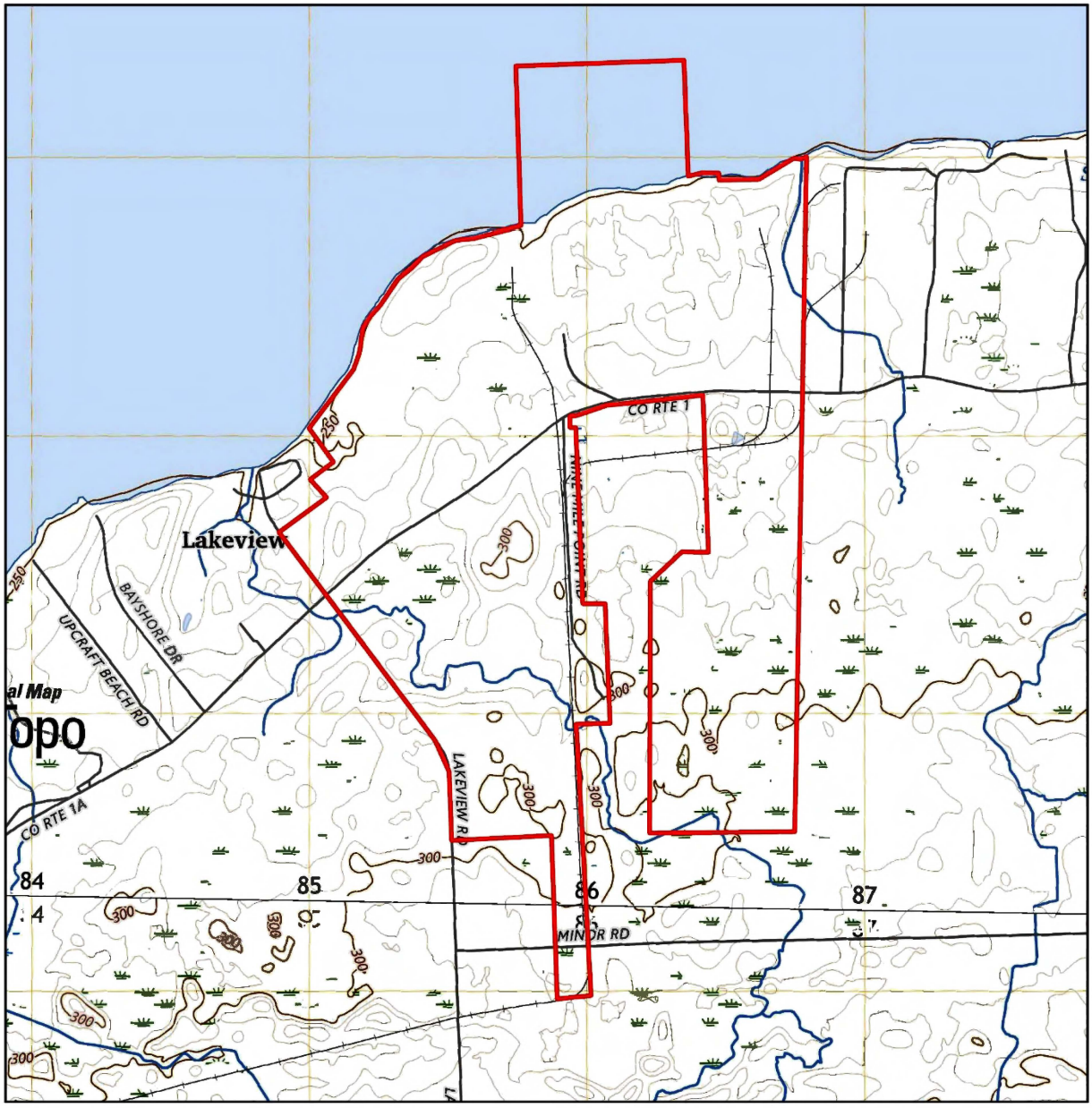


Figure 1 - NMPNS Site

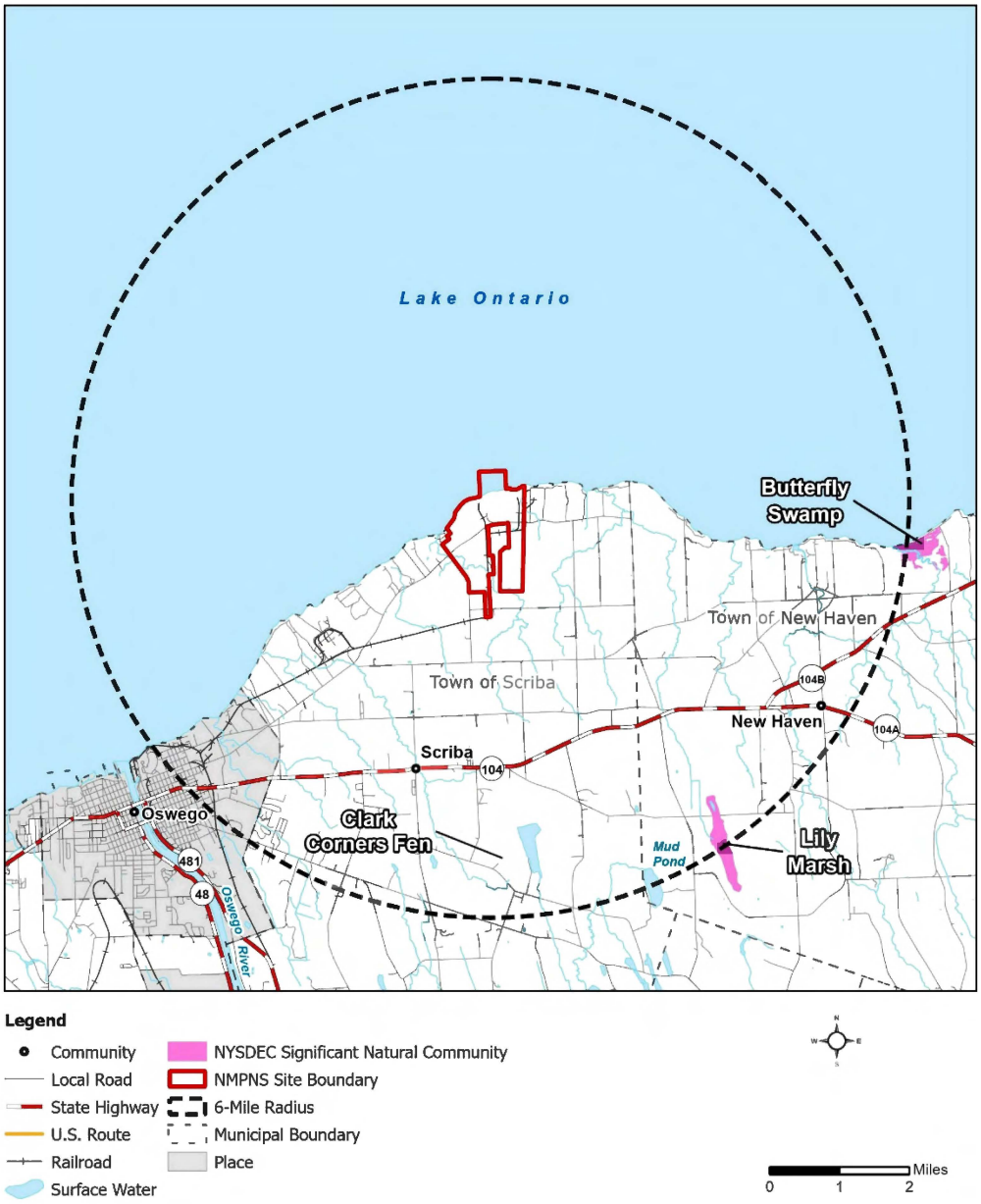


Figure 2 – NMP1 6-Mile Vicinity

Table 1 State-Protected Species in Oswego County (Sheet 1 of 2)

Common Name	Scientific Name	Protected Status
TERRESTRIAL		
Animals		
Cooper's Hawk	*Accipiter cooperii*	SC
Northern Goshawk	*Accipiter gentilis*	SC
Sharp-shinned Hawk	*Accipiter striatus*	SC
Blue-spotted Salamander	*Ambystoma laterale*	SC
Henslow's Sparrow	*Ammodramus henslowii*	ST
Grasshopper Sparrow	*Ammodramus savannarum*	SC
Whip-poor-will	*Antrostomus vociferus*	SC
Spiny Softshell	*Apalone spinifera*	SC
Upland Sandpiper	*Bartramia longicauda*	ST
American Bittern	*Botaurus lentiginosus*	SC
Red-shouldered Hawk	*Buteo lineatus*	SC
Piping Plover	*Charadrius melodus*	SE
Black Tern	*Chlidonias niger*	SE
Common Nighthawk	*Chordeiles minor*	SC
Northern Harrier	*Circus hudsonius*	ST
Sedge Wren	*Cistothorus platensis*	ST
Spotted Turtle	*Clemmys guttata*	SC
Horned Lark	*Eremophila alpestris*	SC
Peregrine Falcon	*Falco peregrinus*	SE
Common Loon	*Gavia immer*	SC
Wood Turtle	*Glyptemys insculpta*	SC
Bog Turtle	*Glyptemys muhlenbergii*	SE
Bald Eagle	*Haliaeetus leucocephalus*	ST
Bog Buck Moth	*Hemileuca maia menyanthevora*	SE
Least Bittern	*Ixobrychus exilis*	ST
Loggerhead Shrike	*Lanius ludovicianus*	SE
Red-headed Woodpecker	*Melanerpes erythrocephalus*	SC
Indiana Bat	*Myotis sodalis*	SE
Osprey	*Pandion haliaetus*	SC
Pied-billed Grebe	*Podilymbus podiceps*	ST
Vesper Sparrow	*Pooecetes gramineus*	SC
King Rail	*Rallus elegans*	ST
Cerulean Warbler	*Setophaga cerulea*	SC

Table 1 State-Protected Species in Oswego County (Sheet 2 of 2)

Common Name	Scientific Name	Protected Status
Common Tern	*Sterna hirundo*	ST
Eastern Box Turtle	*Terrapene carolina*	SC
Mossy Valvata	*Valvata sincera*	SC
Golden-winged Warbler	*Vermivora chrysoptera*	SC
Vegetation		
Dragon's Mouth Orchid	*Arethusa bulbosa*	ST
Fork-tipped Three-awn	*Aristida basiramea*	ST
Creeping Sedge	*Carex chordorrhiza*	ST
Houghton's Sedge	*Carex houghtoniana*	ST
Livid Sedge	*Carex livida*	ST
Sparse-flowered Sedge	*Carex tenuiflora*	SE
Canada Bluets	*Houstonia canadensis*	ST
Lily-leaved Twayblade	*Liparis liliifolia*	SE
Bristly Smartweed	*Persicaria setacea*	SE
Bird's Eye Primrose	*Primula mistassinica*	ST
Great Lakes Sand Cherry	*Prunus pumila var. pumila*	SE
Sand Dune Willow	*Salix cordata*	ST
Yellow Mountain Saxifrage	*Saxifraga aizoides*	ST
Slender Bulrush	*Schoenoplectus heterochaetus*	SE
Northern Bog Aster	*Symphyotrichum boreale*	ST
Slender Yellow-eyed Grass	*Xyris torta*	ST
AQUATIC		
Animals		
Lake sturgeon	*Acipenser fulvescens*	ST
Vegetation		
Minute Duckweed	*Lemna perpusilla*	ST
Spotted Pondweed	*Potamogeton pulcher*	ST

Table Source:
NYSDEC (New York State Department of Environmental Conservation). 2024. New York Nature Explorer. Retrieved from <https://extapps.dec.ny.gov/natureexplorer/app/location/county> (accessed April 17, 2024).

Acronyms:
SC – Special Concern
ST – State-threatened
SE – State-endangered

Attachment C: Historic and Cultural Resources Consultation Letters

New York State
Parks, Recreation and
Historic Preservation

KATHY HOCHUL
Governor

KATHY MOSER
Acting Commissioner

October 27, 2025

Justin Sabino
SEARCH
13 Dubois Street
Kingston, NY 12401

Re: NRC
Nine Mile Point Nuclear Station Unit 1 --- Subsequent License Renewal
Town of Scriba, Oswego County
25PR09756

Dear Justin Sabino:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the *Request for Historic and Cultural Resources Review Letter* (April 1, 2025) in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources.

Based upon this review, the SHPO understands that there are no planned land use changes within the Nine Mile Point Nuclear Station Unit 1 site. Therefore, it is the opinion of the SHPO that no historic properties, including archaeological and/or historic resources, will be affected by this undertaking.

If you have any questions, I can be reached at nancy.herter@parks.ny.gov.

Sincerely,

Nancy Herter

Nancy Herter
Director, Technical Preservation Services Bureau

Constellation

200 Energy Way
Kennett Square, PA 19348
www.constellation.com

RS-25-058

April 1, 2025

Daniel Mackay
Deputy Commissioner
New York State
Parks, Recreation & Historic Preservation
State Historic Preservation Office
OPRHP, PO Box 189
Waterford, NY 12188

Subject: Constellation Energy Generation – Nine Mile Point Nuclear Station Unit 1 Subsequent License Renewal Request for Historic and Cultural Resources Review

Dear Deputy Commissioner Mackay:

Constellation Energy Generation, LLC (CEG) is preparing an application to the U.S. Nuclear Regulatory Commission (NRC) for the subsequent license renewal of the Nine Mile Point Nuclear Station (NMPNS) Unit 1 (NMP1) Operating License (DPR-63), which expires on August 2029. A renewed license would allow NMP1 to operate for an additional 20 years until August 2049.

As part of the license renewal process, the NRC requires that the subsequent license renewal application include an environmental report (ER) that assesses the impacts from continued operation and any refurbishment to be undertaken to enable the operation of the unit. The ER addresses the potential impact on air quality, water resources, terrestrial and aquatic ecology resources, historic and cultural resources, socioeconomics, human health, and tribal cultural properties on or near NMPNS. The NRC may request a consultation in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 CFR 470), and the federal Advisory Council on Historic Preservation regulations (36 CFR 800) with your agency.

This letter seeks input from the New York State Historic Preservation Office regarding potential effects that subsequent license renewal activities may have on historic cultural resources, including tribal cultural properties.

In the town of Scriba, Oswego County, New York, NMP1 is located along the shores of Lake Ontario. The larger NMPNS site, which encompasses NMP1, is situated on approximately 846 acres, of which approximately 188 acres are used for power generation. The vicinity (6-mile radius) surrounding NMPN1 is a mixture of towns, residential development, and agricultural lands with forested and natural areas interspersed. Tables 1 through 3 provide archaeological sites within the site boundary as well as archaeological and underwater sites aboveground resources within the vicinity (6-mile radius) of NMP1. Also enclosed are figures depicting the NMPNS site and the vicinity within a 6-mile radius of NMP1 (Figures 1 and 2, respectively).

During the subsequent license renewal term, CEG proposes to continue operating NMP1 as currently operated. Any planned ground-disturbing activities, such as maintenance or

construction necessary to support operations, will be in previously disturbed and developed areas. There have been no changes to onsite land uses, and there are no plans by CEG to change land uses within the site boundary. Therefore, CEG does not anticipate continued operation to adversely affect the environment or any tribal cultural properties or resources.

The Construction Permit for NMP1 was issued by the Atomic Energy Commission in April 1965. Therefore, there are station structures that are greater than 50 years old which places them within the 50-year threshold for potential inclusion in the National Register of Historic Places and to have achieved historic significance during the subsequent license renewal period. CEG does not plan to perform any activities which would cause adverse effects on these structures as part of the continued operations of the facility.

In summary, this letter seeks your input on the proposed continued operation of NMP1 regarding cultural and tribal resources within the environs of the plant and surrounding area. Please provide additional information for CEG's consideration in the preparation of the ER and any records or comments to confirm CEG's conclusion that the NMP1 subsequent license renewal would not adversely affect any tribal cultural properties.

CEG plans to include a copy of this letter and your response in the final ER, which will be submitted to the NRC as part of the NMP1 subsequent license renewal application. Therefore, a response by May 30, 2025 is requested.

We welcome your input to this project and thank you in advance for your attention to this data request. If there are any questions or requests for additional information necessary to support the consultation process, please contact Ms. Kristin Meek, NMP1 License Renewal Environmental Lead, at 779-231-5709 or Kristin.meek@constellation.com.

Respectfully,

Wilson, Christopher D Digitally signed by Wilson, Christopher D
Date: 2025.04.01 09:37:23 -04'00'

Christopher D. Wilson, Director
Constellation Energy Generation, LLC

Enclosures:
Figure 1 - NMPNS Site
Figure 2 - NMP1 6-Mile Vicinity
Table 1 - Archaeological Sites within the NMP1 (NMPNS) Site Boundary
Table 2 - Archaeological and Underwater Sites within the 6-Mile Radius of NMP1
Table 3 - Aboveground Resources within the 6-Mile Radius of NMP1

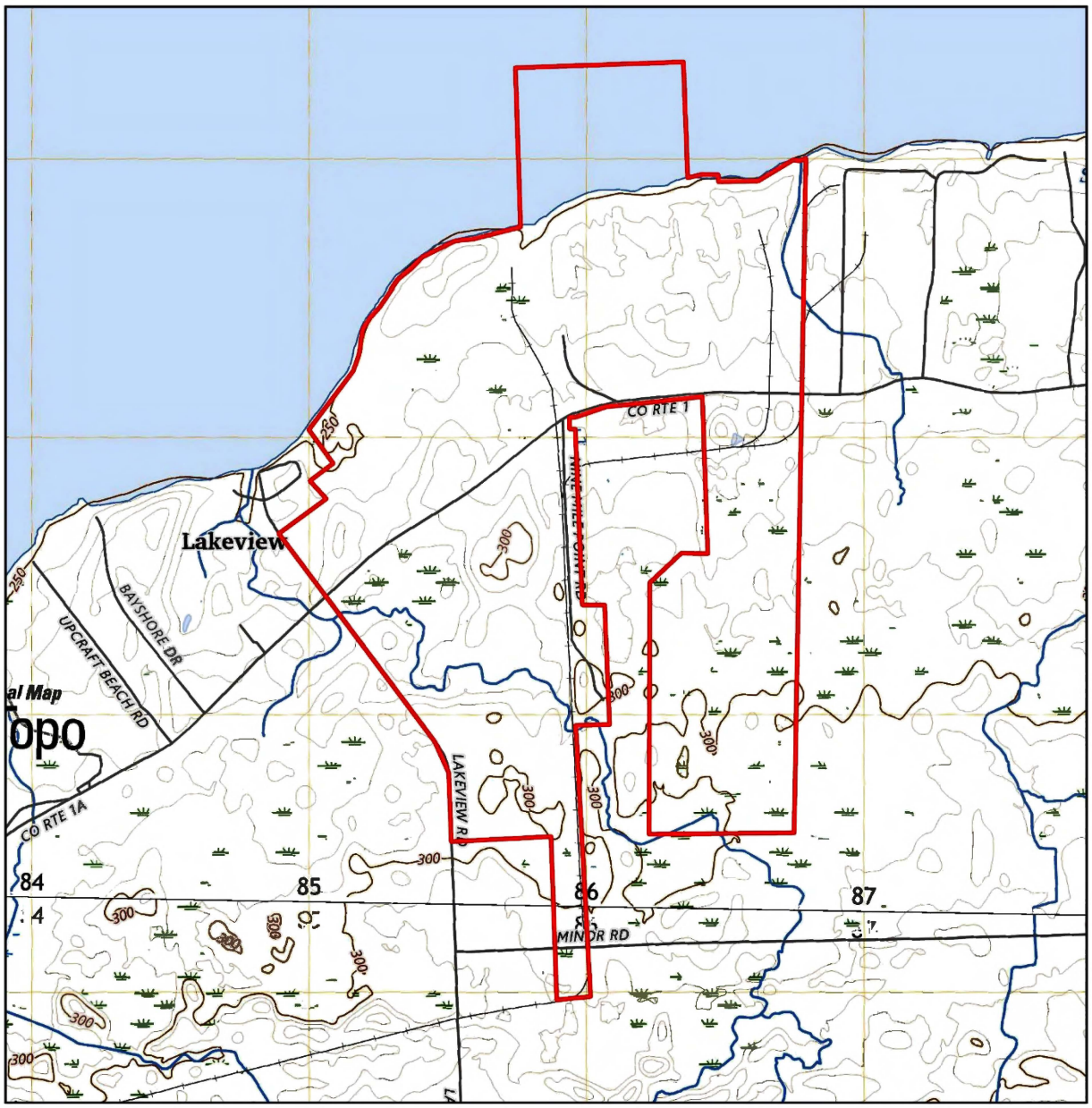


Figure 1 - NMPNS Site



Figure 2 – NMP1 6-Mile Vicinity

Table 1 - Archaeological Sites within the NMP1 (NMPNS) Site Boundary

Site ID#	County	Quadrangle	Type	NRHP Status
7519.000108 NYSM NA	Oswego	West of Texas	Stone foundation and mid-19th to early 20th century buried artifacts; Phase I and Phase II total N=2,056	Not Eligible
7519.000109 NYSM NA	Oswego	West of Texas	A mid-19th century to early 20th century occupation site with buried artifact; Phase I and Phase II total N=1,182	Not Eligible
7519.000110 NYSM NA	Oswego	West of Texas	A mid-19th century to early-20th century occupation site with buried artifacts; Phase I and Phase II total N=625	Not Eligible
7519.000111 NYSM NA	Oswego	West of Texas	A mid-19th century to early 20th century occupation site with two stone features and no additional artifacts	Not Eligible
7519.000112 NYSM NA	Oswego	Oswego East	A mid-19th century to early 20th century occupation site with buried artifacts; Phase I and Phase II total N=1,620	Not Eligible
7519.000113 NYSM NA	Oswego	Oswego East	A mid to 19th century early 20th century occupation site with buried artifacts N=1,210	Not Eligible
7519.000114 NYSM NA	Oswego	Oswego East	Mid-19th century to mid-20th century foundation and well	Not Eligible
7519.000115 NYSM NA	Oswego	Oswego East	Mid-19th century to early 20th century well and surface refuse scatter	Not Eligible

(CRIS 2024)

Table 2 - Archaeological and Underwater Sites within the 6-Mile Radius of NMP1 (Sheet 1 of 2)

Site ID#	County	Quadrangle	Type	NRHP Status
7540.000812	NA	NA	Two masted schooner which may be the Maggie Hunt	Undetermined
7510.00001 NYSM NA	Oswego	New Haven	Barn foundation and mid-19th to mid-20th century artifacts	Undetermined
7510.00025 NYSM 11397	Oswego	New Haven	Mid-19th century buried artifacts N=51	Undetermined
7510.00026 NYSM 11396	Oswego	New Haven	Mid-19th century buried artifacts N=66	Undetermined
7510.00027 NYSM 11391	Oswego	New Haven	Mid-19th century buried artifacts N=32	Undetermined
7519.000007 NYSM NA	Oswego	Oswego East	An undefined post contact period foundation	Not Eligible
7519.000081 NYSM 11400	Oswego	Oswego East	Mid to 19th century buried artifacts N=125	Undetermined
7519.000082 NYSM 11399	Oswego	Oswego East	Mid-19th to mid-20th century foundation, well, and cellar with associated period artifacts N=60	Undetermined
7519.000083 NYSM 11398	Oswego	New Haven	Barn foundation and scatter of mid-19th to mid-20th century artifacts N=69	Not Eligible
7519.000084 NYSM 11395	Oswego	New Haven	Mid-19th century buried artifacts N=26	Undetermined
7519.000085 NYSM 11394	Oswego	Oswego East	Barn foundation and scatter of mid-19th to mid-20th century artifacts N=94	Not Eligible
7519.000086 NYSM 11393	Oswego	Oswego East	Mid-19th century buried artifacts N=57	Undetermined
7519.000087 NYSM 11392	Oswego	Oswego East	19th century buried artifacts N=66	Not Eligible
7519.000091 NYSM NA	Oswego	Oswego	Late-19th to mid-20th century artifact scatter	Undetermined
7519.000092 NYSM NA	Oswego	Oswego	Late-19th to mid-20th century foundation and artifact scatter	Undetermined
7519.000093 NYSM NA	Oswego	Oswego	Mid-19th to mid-20th century foundation and artifact scatter	Not Eligible
7519.000103 NYSM NA	Oswego	Oswego East	A mid-19th century buried artifacts site N=34	Not Eligible
7519.000104 NYSM 11603	Oswego	Oswego East	Early to mid-19th century artifact sheet scatter N=252	Undetermined
7519.000105 NYSM 11604	Oswego	Oswego East	Late 19th century foundation, well and buried artifacts N=2	Undetermined
7519.000106 NYSM 11605	Oswego	Oswego East	Mid-19th century foundation with buried artifacts N=113	Undetermined

(CRIS 2024)

Table 2 - Archaeological and Underwater Sites within the 6-Mile Radius of NMP1 (Sheet 2 of 2)

Site ID#	County	Quadrangle	Type	NRHP Status
7519.000107 NYSM 11606	Oswego	Oswego East	Mid-19th century to early 20th century buried artifacts N=<850	Undetermined
7519.000117 NYSM NA	Oswego	Oswego East	Mid-19th century to early 20th century buried artifacts N=103	Undetermined
7519.000118 NYSM 11957	Oswego	Oswego East	Mid-19th century to early 20th century buried artifacts N=103	Eligible
7519.000119 NYSM 11958	Oswego	Oswego East	Mid-19th century to early 20th century buried artifacts N=1,164	Not Eligible
7519.000120 NYSM 11959	Oswego	Oswego East	Mid-19th to early 20th century store site with buried artifacts N=<4,400	Eligible
7519.000121 NYSM 11961	Oswego	Oswego East	Mid-19th century to early 20th century buried artifacts N=2,338	Eligible
7519.000122 NYSM 11962	Oswego	Oswego East	Mid-19th century to early 20th century occupation site with buried artifacts N=1,211	Not Eligible
7519.000123 NYSM NA	Oswego	Oswego East	Mid-19th century to early 20th century occupation site with buried artifacts N=45	Not Eligible
7519.000124 NYSM NA	Oswego	Oswego East	The proposed location of Montcalm Landing site in literature review which is not field verified (no site form)	Undetermined
7519.000125 NYSM NA	Oswego	Oswego East	The proposed location of Montcalm Landing site in literature review which is not field verified (no site form)	Undetermined
7540.000292 NYSM NA	Oswego	Oswego East	Late 19th century to early 20th century occupation site with buried cultural material	Undetermined
7540.000295 NYSM NA	Oswego	Oswego East	Late 19th century to early 20th century buried artifacts	Undetermined
7540.000296 NYSM NA	Oswego	Oswego East	Late 19th century to mid-20th century artifacts	Undetermined
7540.000565 NYSM NA	Oswego	Oswego East	Late 19th century to early 20th century foundation and buried artifacts	Eligible
7540.000579 NYSM 21134	Oswego	Oswego East	Late 19th century to early 20th century foundation and buried artifacts	Eligible
7540.000702 NYSM NA	Oswego	Oswego East	The proposed location of L'Anse aux Cabanes in a literature review which is not field verified (no site form)	Undetermined

(CRIS 2024)

Table 3 - Aboveground Resources within the 6-Mile Radius of NMP1 (Sheet 1 of 5)

Site ID	Historical Name	County	Historical Use	NRHP Status
70000426 7540.00081	Fort Ontario State Historic Site	Oswego	Military Fort	Listed
7510.000028	70 Soper Mills Rd	Oswego	Not stated	Not Eligible
7510.000029	26 Soper Mills Rd	Oswego	Not stated	Not Eligible
7510.000030	16 Soper Mills Rd	Oswego	Not stated	Not Eligible
7510.000031	New Haven Elementary School - 4320 Route 104	Oswego	School	Not Eligible
7519.000009	4518 County Route 4	Oswego	Residence	Not Eligible
7519.000021	533 Middle Rd	Oswego	Not stated	Not Eligible
7519.000022	530 Middle Rd	Oswego	Not stated	Not Eligible
7519.000023	534 Middle Rd	Oswego	Not stated	Not Eligible
7519.000024	544 Middle Rd	Oswego	Not stated	Not Eligible
7519.000025	543 Middle Rd	Oswego	Not stated	Not Eligible
7519.000026	545 Middle Rd	Oswego	Not stated	Not Eligible
7519.000027	547 Middle Rd	Oswego	Not stated	Not Eligible
7519.000028	551 Middle Rd	Oswego	Not stated	Not Eligible
7519.000029	567 Middle Rd	Oswego	Not stated	Not Eligible
7519.000030	573 Middle Rd	Oswego	Not stated	Not Eligible
7519.000031	580 Middle Rd	Oswego	Not stated	Not Eligible
7519.000032	581 Middle Rd	Oswego	Not stated	Not Eligible
7519.000033	595 Middle Rd	Oswego	Not stated	Not Eligible
7519.000034	616 Middle Rd	Oswego	Not stated	Not Eligible
7519.000035	658 Middle Rd	Oswego	Not stated	Not Eligible
7519.000036	671 Middle Rd	Oswego	Not stated	Not Eligible
7519.000037	672 Middle Rd	Oswego	Not stated	Not Eligible
7519.000038	681 Middle Rd	Oswego	Not stated	Not Eligible
7519.000039	682 Middle Rd	Oswego	Not stated	Not Eligible
7519.000040	703 Middle Rd	Oswego	Not stated	Not Eligible
7519.000041	704 Middle Rd	Oswego	Not stated	Not Eligible
7519.000042	713 Middle Rd	Oswego	Not stated	Not Eligible
7519.000043	719 Middle Rd	Oswego	Not stated	Not Eligible
7519.000044	739 Middle Rd	Oswego	Not stated	Not Eligible
7519.000045	741 Middle Rd	Oswego	Not stated	Not Eligible
7519.000046	749 Middle Rd	Oswego	Not stated	Not Eligible
7519.000047	758 Middle Rd	Oswego	Not stated	Not Eligible
7519.000055	4876 Route 104	Oswego	Not stated	Undetermined
7519.000057	5258 Route 104	Oswego	Residence	Not Eligible

(CRIS 2024)

Table 3 - Aboveground Resources within the 6-Mile Radius of NMP1 (Sheet 2 of 5)

Site ID	Historical Name	County	Historical Use	NRHP Status
7519.000058	5366 Route 104	Oswego	Not stated	Undetermined
7519.000059	5372 Route 104	Oswego	Not stated	Undetermined
7519.000060	5418 Route 104	Oswego	Not stated	Undetermined
7519.000067	4839 Route 104	Oswego	Not stated	Undetermined
7519.000068	4875 Route 104	Oswego	Not stated	Undetermined
7519.000069	4913 Route 104	Oswego	Not stated	Undetermined
7519.000070	4937 Route 104	Oswego	Not stated	Undetermined
7519.000074	The Price is Right Store - 5219 Route 104	Oswego	Store	Not Eligible
7519.000075	5259 Route 104	Oswego	Residence	Not Eligible
7519.000076	5359 Route 104	Oswego	Not stated	Not Eligible
7519.000077	5373 Route 104	Oswego	Not stated	Undetermined
7519.000078	5417 Route 104	Oswego	Not stated	Undetermined
7519.000095	Aladdin-Sunshine Kit House - 5898 Route 104	Oswego	Residence	Eligible
7519.000096	Welch-Robinson House 5740A Route 104	Oswego	Residence	Eligible
7519.000098	William Burt II House - 5603 Route 104	Oswego	Residence	Eligible
7519.000099	Scriba Rebekah Hall - 5515 Route 104	Oswego	Residence	Eligible
7519.000100	5509 Route 104	Oswego	Residence	Not Eligible
7519.000101	James Church House - 5471 Route 104	Oswego	Residence	Eligible
7519.000102	William E. Blossom House - 5470 Route 104	Oswego	Residence	Eligible
7540.000283	BIN 1-03660-0 - NY 104	Oswego	Bridge	Not Eligible
7540.000307	BIN 2209410 – East Albany St	Oswego	Bridge	Not Eligible
7540.000308	194 East Albany St	Oswego	Not stated	Not Eligible
7540.000309	188 East Albany St	Oswego	Not stated	Not Eligible
7540.000310	187 East Albany St	Oswego	Not stated	Not Eligible
7540.000311	186 East Albany St	Oswego	Not stated	Not Eligible
7540.000312	178 East 13th Street	Oswego	Not stated	Not Eligible
7540.000313	183 East Thirteenth St	Oswego	Not stated	Not Eligible
7540.000320	59 Mitchell St	Oswego	Not stated	Not Eligible
7540.000321	15 East Van Buren St	Oswego	Not stated	Not Eligible
7540.000323	5 Mitchell St	Oswego	Not stated	Not Eligible

(CRIS 2024)

Table 3 - Aboveground Resources within the 6-Mile Radius of NMP1 (Sheet 3 of 5)

Site ID	Historical Name	County	Historical Use	NRHP Status
7540.000324	143 East Seneca St	Oswego	Not stated	Not Eligible
7540.000328	37 Mercer St	Oswego	Not stated	Not Eligible
7540.000329	18 Minerva St	Oswego	Not stated	Not Eligible
7540.000330	49 East Ninth St	Oswego	Not stated	Not Eligible
7540.000331	19 East Van Buren St	Oswego	Not stated	Not Eligible
7540.000332	21 East Van Buren St	Oswego	Not stated	Not Eligible
7540.000335	174 East Eleventh St	Oswego	Not stated	Not Eligible
7540.000338	3 Mitchell St	Oswego	Residence	Not Eligible
7540.000339	53 Mercer St	Oswego	Residence	Not Eligible
7540.00034	90 Helen St	Oswego	Residence	Not Eligible
7540.000341	23 East Van Buren St	Oswego	Residence	Not Eligible
7540.000346	75 Mercer St	Oswego	Not stated	Not Eligible
7540.000376	226 East Bridge St	Oswego	Not stated	Not Eligible
7540.000381	145 East Seneca St	Oswego	Not stated	Not Eligible
7540.000458	10 Merrick St	Oswego	Not stated	Eligible
7540.000543	101 East Schuyler St	Oswego	Not stated	Eligible
7540.000544	172 Conway Terrace	Oswego	Not stated	Eligible
7540.000545	174 Conway Terrace	Oswego	Not stated	Eligible
7540.000546	176 Conway Terrace	Oswego	Not stated	Eligible
7540.000547	178 Conway Terrace	Oswego	Not stated	Eligible
7540.000548	180 Conway Terrace	Oswego	Not stated	Eligible
7540.000549	182 Conway Terrace	Oswego	Not stated	Eligible
7540.000550	183 Conway Terrace	Oswego	Not stated	Eligible
7540.000551	184 Conway Terrace	Oswego	Not stated	Eligible
7540.000552	185 Conway Terrace	Oswego	Not stated	Eligible
7540.000553	186 Conway Terrace	Oswego	Not stated	Eligible
7540.000554	187 Conway Terrace	Oswego	Not stated	Eligible
7540.000555	188 Conway Terrace	Oswego	Not stated	Eligible
7540.000556	189 Conway Terrace	Oswego	Not stated	Eligible
7540.000557	190 Conway Terrace	Oswego	Not stated	Eligible
7540.000558	191 Conway Terrace	Oswego	Not stated	Eligible
7540.000559	192 Conway Terrace	Oswego	Not stated	Eligible
7540.000560	193 Conway Terrace	Oswego	Not stated	Eligible
7540.000561	195 Conway Terrace	Oswego	Not stated	Eligible
7540.000562	197 Conway Terrace	Oswego	Not stated	Eligible
7540.000563	199 Conway Terrace	Oswego	Not stated	Eligible
7540.000564	201 Conway Terrace	Oswego	Not stated	Eligible

(CRIS 2024)

Table 3 - Aboveground Resources within the 6-Mile Radius of NMP1 (Sheet 4 of 5)

Site ID	Historical Name	County	Historical Use	NRHP Status
7540.000566	148 East Oneida St	Oswego	Not stated	Not Eligible
7540.000575	Fitzhugh Park Elementary School - 195 East Bridge St	Oswego	School	Not Eligible
7540.000662	276 Route 104	Oswego	Not stated	Not Eligible
7540.000675	City of Oswego East Side Wastewater Treatment Plant 71 Mercer St	Oswego	Infrastructure	Not Eligible
7540.000694	136 Midland St	Oswego	Not stated	Not Eligible
7540.000726	Shore Road Bulkhead	Oswego	Infrastructure	Undetermined
7540.000727	Stormwater Outfall Pipe	Oswego	Infrastructure	Undetermined
7540.000728	340 Route 104	Oswego	Not stated	Not Eligible
7519.000126	5947 Route 104	Oswego	Residence	Not Eligible
7519.000127	5859 Route 104	Oswego	Residence	Not Eligible
7519.000128	5870 NY Route 104	Oswego	Residence	Not Eligible
7540.000755	Conway Terrace Neighborhood	Oswego	District	Eligible
7540.000763	85 E 11th St	Oswego	Not stated	Not Eligible
7540.000766	366 Mitchell St	Oswego	Not stated	Not Eligible
7540.000769	249a Mitchell St	Oswego	Not stated	Not Eligible
7510.000033	276 County Route 1	Oswego	Not stated	Undetermined
7510.000034	4531 Route 104	Oswego	Residence	Not Eligible
7540.000799	Fitzhugh Park 151 East Tenth St	Oswego	Recreational/ Park	Undetermined
7540.000808	276 State Route 104	Oswego	Residence	Not Eligible
7519.000129	Novelis, Inc. Aluminum Mill - Alcan Road	Oswego	Industrial	Not Eligible
7540.000815	131 E Eleventh St	Oswego	Residence	Not Eligible
7540.000818	104 E 10th St	Oswego	Residence	Not Eligible
7540.00082	102 E Tenth St	Oswego	Residence	Not Eligible
7540.000823	177 East 11th St	Oswego	Not stated	Not Eligible
7540.000825	U.S. Border Patrol Schuyler St	Oswego	Government	Undetermined
7540.000827	179 East 11th St	Oswego	Not stated	Not Eligible
7519.000133	Evergreen Motel - 5047-5051 Route 104	Oswego	Recreation/ Tourism	Not Eligible
7519.000134	4618 Hall Road	Oswego	Residence	Eligible

(CRIS 2024)

Table 3 - Aboveground Resources within the 6-Mile Radius of NMP1 (5 of 5)

Site ID	Historical Name	County	Historical Use	NRHP Status
7519.000135	South Rural Fredricksburg Cemetery - Fredricksburg Fare	Oswego	Cemetery	Eligible
7519.000136	288 Klocks Corners Rd	Oswego	Residence	Not Eligible
7519.000137	Hillside Cemetery - 350 Klocks Corners Road	Oswego	Cemetery	Eligible
7510.000038	4269 NY Route 104	Oswego	Residence	Eligible
7510.000039	The First Congregational Church of New Haven 4266 NY Route 104	Oswego	Church	Eligible
7540.000834	28 E Tenth and 1/2 St	Oswego	Not stated	Not Eligible
7540.000835	6 Minerva Street	Oswego	Not stated	Not Eligible
7540.000837	106 E Tenth Street	Oswego	Not stated	Not Eligible

(CRIS 2024)

Source

CRIS (New York State Historic Preservation Office Cultural Resources Information System). 2024. Retrieved from <https://cris.parks.ny.gov/Default.aspx> (accessed September 15, 2024).

Constellation

200 Energy Way
Kennett Square, PA 19348
www.constellation.com

Letter No. RS-25-004

January 10, 2025

Clint Halftown, Nation Representative
Cayuga Nation
256 Cayuga Street
Union Springs, NY 13160
Subject: Constellation Energy Generation - Nine Mile Point Nuclear Station Unit 1 Subsequent License Renewal Request for Tribal Review

Dear Representative Halftown:

Constellation Energy Generation (CEG) is preparing an application to the U.S. Nuclear Regulatory Commission (NRC) for the subsequent license renewal of the Nine Mile Point Nuclear Station (NMPNS) Unit 1 (NMP1) Operating License (DPR-63), which expires in August 2029. A renewed license would allow NMP1 to operate for an additional 20 years until August 2049.

As part of the license renewal process, the NRC requires the subsequent license renewal application to include an environmental report (ER) that assesses the impacts from continued operation and any refurbishment to be undertaken to enable the operation of the unit. The ER addresses the potential impact on air quality, water resources, terrestrial and aquatic ecology resources, historic and cultural resources, socioeconomics, and human health.

This letter seeks input from the Cayuga Nation regarding tribal cultural properties within the area of NMP1 and potential effects that license renewal activities may have on these resources.

In the town of Scriba, Oswego County, New York, NMP1 is located along the shores of Lake Ontario. The larger NMPNS site, which encompasses NMP1, is situated on approximately 900 acres, of which approximately 188 acres are used for power generation. The vicinity (6-mile radius) surrounding NMP1 is a mixture of towns, residential development, and agricultural lands with forested and natural areas interspersed. Figures depicting the NMPNS site and the vicinity within a 6-mile radius of NMP1 are enclosed (Figure 1 and Figure 2).

During the subsequent license renewal term, CEG proposes to continue operating the NMP1 facility as currently operated. Any planned ground-disturbing activities, such as maintenance or construction necessary to support operations, will be in previously disturbed and developed areas. There have been no changes to onsite land uses, and there are no plans by CEG to change land uses within the site boundary for continued operation of NMP1. Therefore, CEG does not anticipate continued operation to adversely affect the environment or any tribal cultural properties or resources. In addition, the NRC may request an informal or formal consultation with your tribe.

As previously stated, this letter seeks your input on the proposed continued operation of NMP1 regarding tribal and cultural resources within the environs of the plant and surrounding area. Please provide additional information for CEG's consideration in the preparation of the ER and any records or comments to confirm CEG's conclusion that the NMP1 license renewal would not adversely affect any tribal cultural properties.

CEG plans to include a copy of this letter and your response in the final ER, which will be submitted to the NRC as part of the NMP1 license renewal application. Therefore, a response by April 14, 2025 is requested.

We welcome your input to this project and thank you in advance for your attention to this request. If there are any questions or requests for any additional information necessary to support the consultation process, please contact Ms. Kristin Meek, NMP1 License Renewal Environmental Lead, at 779-231-5709 or Kristin.meek@constellation.com.

Respectfully,

Zigmund A Karpa

Zigmund Karpa
Director Environmental Programs and Regulatory Policy
Constellation Energy Generation, LLC

Enclosures:
Figure 1 - NMPNS Site
Figure 2 - NMP1 6-Mile Vicinity



Figure 1 - NMPNS Site

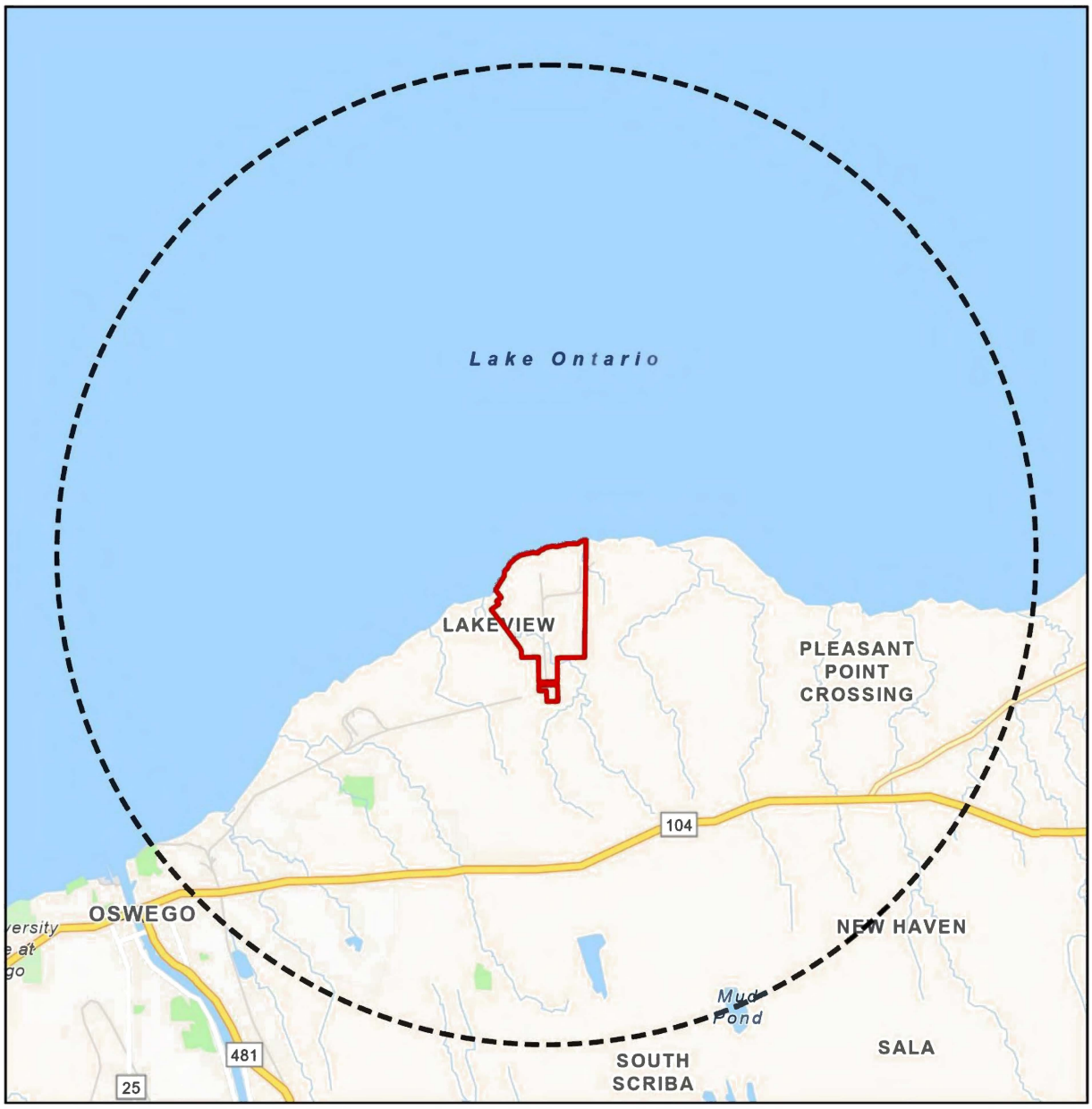


Figure 2 – NMP1 6-Mile Vicinity

Constellation

200 Energy Way
Kennett Square, PA 19348
www.constellation.com

Letter No. RS-25-005

January 10, 2025

Anthony Gonyea, THPO
Onondaga Nation
4040 Route 11
Nedrow, NY 13120

Subject: Constellation Energy Generation - Nine Mile Point Nuclear Station Unit 1 Subsequent License Renewal Request for Tribal Review

Dear Tribal Historic Preservation Officer Gonyea:

Constellation Energy Generation (CEG) is preparing an application to the U.S. Nuclear Regulatory Commission (NRC) for the subsequent license renewal of the Nine Mile Point Nuclear Station (NMPNS) Unit 1 (NMP1) Operating License (DPR-63), which expires August 2029. A renewed license would allow NMP1 to operate for an additional 20 years until August 2049.

As part of the license renewal process, the NRC requires the subsequent license renewal application to include an environmental report (ER) that assesses the impacts from continued operation and any refurbishment to be undertaken to enable the operation of the unit. The ER addresses the potential impact on air quality, water resources, terrestrial and aquatic ecology resources, historic and cultural resources, socioeconomics, and human health.

This letter seeks input from the Onondaga Nation regarding tribal cultural properties within the area of NMP1 and potential effects that license renewal activities may have on these resources.

In the town of Scriba, Oswego County, New York, NMP1 is located along the shores of Lake Ontario. The larger NMPNS site, which encompasses NMP1, is situated on approximately 900 acres, of which approximately 188 acres are used for power generation. The vicinity (6-mile radius) surrounding NMP1 is a mixture of towns, residential development, and agricultural lands with forested and natural areas interspersed. Figures depicting the NMPNS site and the vicinity within a 6-mile radius of NMP1 are enclosed (Figure 1 and Figure 2).

During the subsequent license renewal term, CEG proposes to continue operating the NMP1 facility as currently operated. Any planned ground-disturbing activities, such as maintenance or construction necessary to support operations, will be in previously disturbed and developed areas. There have been no changes to onsite land uses, and there are no plans by CEG to change land uses within the site boundary for continued operation of NMP1. Therefore, CEG does not anticipate continued operation to adversely affect the environment or any tribal cultural properties or resources. In addition, the NRC may request an informal or formal consultation with your tribe.

As previously stated, this letter seeks your input on the proposed continued operation of NMP1 regarding tribal and cultural resources within the environs of the plant and surrounding area. Please provide additional information for CEG's consideration in the preparation of the ER and any records or comments to confirm CEG's conclusion that the NMP1 license renewal would not adversely affect any tribal cultural properties.

CEG plans to include a copy of this letter and your response in the final ER, which will be submitted to the NRC as part of the NMP1 license renewal application. Therefore, a response by April 14, 2025, is requested.

We welcome your input to this project and thank you in advance for your attention to this request. If there are any questions or requests for any additional information necessary to support the consultation process, please contact Ms. Kristin Meek, NMP1 License Renewal Environmental Lead, at 779-231-5709 or Kristin.meek@constellation.com.

Respectfully,

Zigmund A Karpa

Zigmund Karpa
Director Environmental Programs and Regulatory Policy
Constellation Energy Generation, LLC

Enclosures:
Figure 1 - NMPNS Site
Figure 2 - NMP1 6-Mile Vicinity



Figure 1 - NMPNS Site

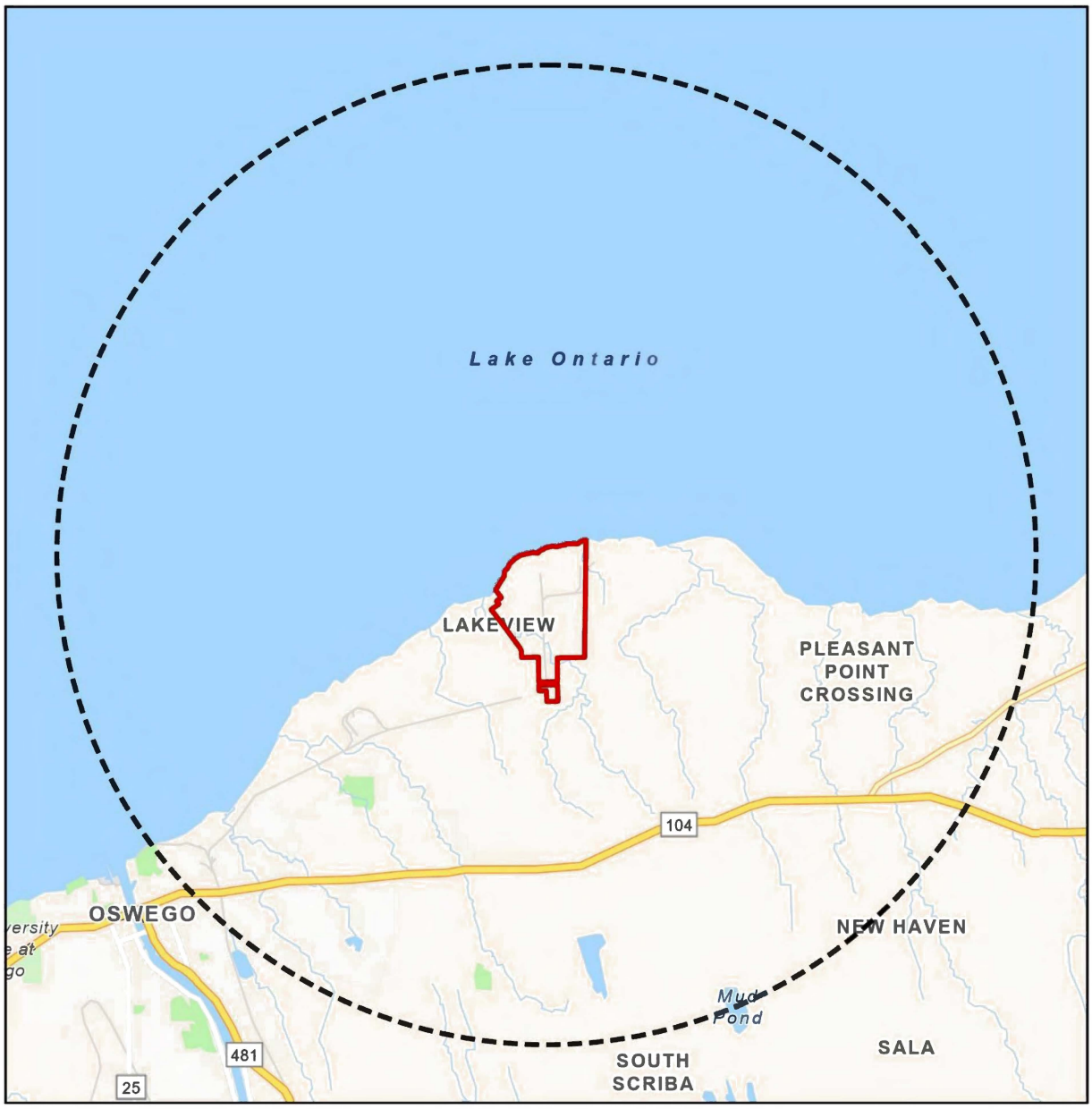


Figure 2 – NMP1 6-Mile Vicinity

Constellation

200 Energy Way
Kennett Square, PA 19348
www.constellation.com

Letter No. RS-25-006

January 10, 2025

Ray Halbritter, Nation Representative
Oneida Indian Nation
5218 Patrick Road
Verona, NY 13421
Subject: Constellation Energy Generation - Nine Mile Point Nuclear Station Unit 1 Subsequent License Renewal Request for Tribal Review

Dear Representative Halbritter:

Constellation Energy Generation (CEG) is preparing an application to the U.S. Nuclear Regulatory Commission (NRC) for the subsequent license renewal of the Nine Mile Point Nuclear Station (NMPNS) Unit 1 (NMP1) Operating License (DPR-63), which expires in August 2029. A renewed license would allow NMP1 to operate for an additional 20 years until August 2049.

As part of the license renewal process, the NRC requires the subsequent license renewal application to include an environmental report (ER) that assesses the impacts from continued operation and any refurbishment to be undertaken to enable the operation of the unit. The ER addresses the potential impact on air quality, water resources, terrestrial and aquatic ecology resources, historic and cultural resources, socioeconomics, and human health.

This letter seeks input from the Oneida Indian Nation regarding tribal cultural properties within the area of NMP1 and potential effects that license renewal activities may have on these resources.

In the town of Scriba, Oswego County, New York, NMP1 is located along the shores of Lake Ontario. The larger NMPNS site, which encompasses NMP1, is situated on approximately 900 acres, of which approximately 188 acres are used for power generation. The vicinity (6-mile radius) surrounding NMP1 is a mixture of towns, residential development, and agricultural lands with forested and natural areas interspersed. Figures depicting the NMPNS site and the vicinity within a 6-mile radius of NMP1 are enclosed (Figure 1 and Figure 2).

During the subsequent license renewal term, CEG proposes to continue operating the NMP1 facility as currently operated. Any planned ground-disturbing activities, such as maintenance or construction necessary to support operations, will be in previously disturbed and developed areas. There have been no changes to onsite land uses, and there are no plans by CEG to change land uses within the site boundary for continued operation of NMP1. Therefore, CEG does not anticipate continued operation to adversely affect the environment or any tribal cultural properties or resources. In addition, the NRC may request an informal or formal consultation with your tribe.

As previously stated, this letter seeks your input on the proposed continued operation of NMP1 regarding tribal and cultural resources within the environs of the plant and surrounding area. Please provide additional information for CEG's consideration in the preparation of the ER and any records or comments to confirm CEG's conclusion that the NMP1 license renewal would not adversely affect any tribal cultural properties.

CEG plans to include a copy of this letter and your response in the final ER, which will be submitted to the NRC as part of the NMP1 license renewal application. Therefore, a response by April 14, 2025, is requested.

We welcome your input to this project and thank you in advance for your attention to this request. If there are any questions or requests for any additional information necessary to support the consultation process, please contact Ms. Kristin Meek, NMP1 License Renewal Environmental Lead, at 779-231-5709 or Kristin.meek@constellation.com.

Respectfully,

Zigmund A Karpa

Zigmund Karpa
Director Environmental Programs and Regulatory Policy
Constellation Energy Generation, LLC

Enclosures:
Figure 1 - NMPNS Site
Figure 2 - NMP1 6-Mile Vicinity



Figure 1 - NMPNS Site

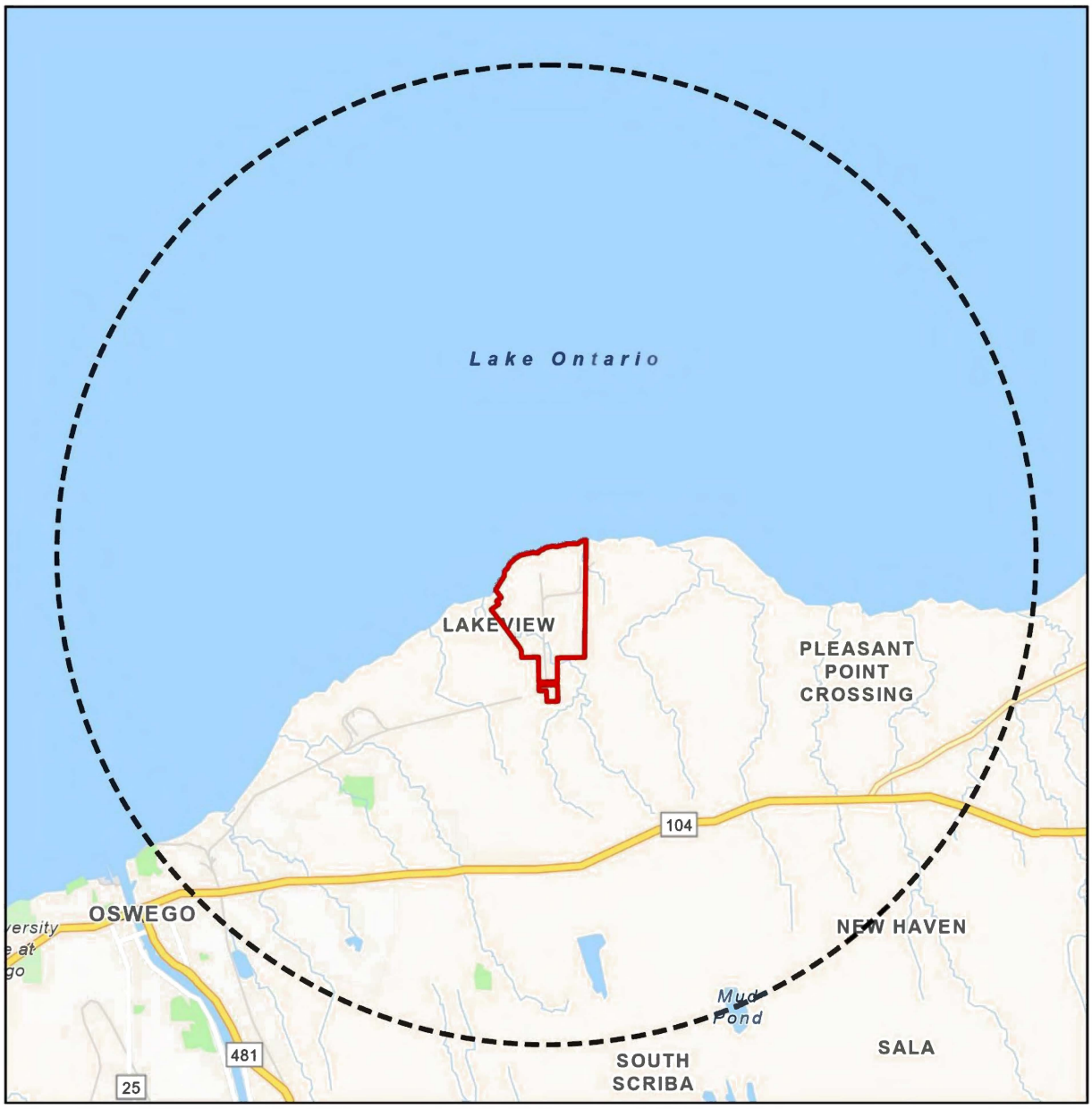


Figure 2 – NMP1 6-Mile Vicinity

Constellation

200 Energy Way
Kennett Square, PA 19348
www.constellation.com

Letter No. RS-25-008

January 10, 2025

William Tarrant, THPO
Seneca-Cayuga Nation
PO Box 453220
Grove OK 74345

Subject: Constellation Energy Generation - Nine Mile Point Nuclear Station Unit 1 Subsequent License Renewal Request for Tribal Review

Dear Tribal Historic Preservation Officer Tarrant:

Constellation Energy Generation (CEG) is preparing an application to the U.S. Nuclear Regulatory Commission (NRC) for the subsequent license renewal of the Nine Mile Point Nuclear Station (NMPNS) Unit 1 (NMP1) Operating License (DPR-63), which expires August 2029. A renewed license would allow NMP1 to operate for an additional 20 years until August 2049.

As part of the license renewal process, the NRC requires the subsequent license renewal application to include an environmental report (ER) that assesses the impacts from continued operation and any refurbishment to be undertaken to enable the operation of the unit. The ER addresses the potential impact on air quality, water resources, terrestrial and aquatic ecology resources, historic and cultural resources, socioeconomics, and human health.

This letter seeks input from the Seneca-Cayuga Nation regarding tribal cultural properties within the area of NMP1 and potential effects that license renewal activities may have on these resources.

In the town of Scriba, Oswego County, New York, NMP1 is located along the shores of Lake Ontario. The larger NMPNS site, which encompasses NMP1, is situated on approximately 900 acres, of which approximately 188 acres are used for power generation. The vicinity (6-mile radius) surrounding NMP1 is a mixture of towns, residential development, and agricultural lands with forested and natural areas interspersed. Figures depicting the NMPNS site and the vicinity within a 6-mile radius of NMP1 are enclosed (Figure 1 and Figure 2).

During the subsequent license renewal term, CEG proposes to continue operating the NMP1 facility as currently operated. Any planned ground-disturbing activities, such as maintenance or construction necessary to support operations, will be in previously disturbed and developed areas. There have been no changes to onsite land uses, and there are no plans by CEG to change land uses within the site boundary. Therefore, CEG does not anticipate continued operation to adversely affect the environment or any tribal cultural properties or resources. In addition, the NRC may request an informal or formal consultation with your tribe.

As previously stated, this letter seeks your input on the proposed continued operation of NMP1 regarding tribal and cultural resources within the environs of the plant and surrounding area. Please provide additional information for CEG's consideration in the preparation of the ER and any records or comments to confirm CEG's conclusion that the NMP1 license renewal would not adversely affect any tribal cultural properties.

CEG plans to include a copy of this letter and your response in the final ER, which will be submitted to the NRC as part of the NMP1 license renewal application. Therefore, a response by April 14, 2025 is requested.

We welcome your input to this project and thank you in advance for your attention to this request. If there are any questions or requests for any additional information necessary to support the consultation process, please contact Ms. Kristin Meek, NMP1 License Renewal Environmental Lead, at 779-231-5709 or Kristin.meek@constellation.com.

Respectfully,

Zigmund A Karpa

Zigmund Karpa
Director Environmental Programs and Regulatory Policy
Constellation Energy Generation, LLC

Enclosures:
Figure 1 - NMPNS Site
Figure 2 - NMP1 6-Mile Vicinity



Figure 1 - NMPNS Site

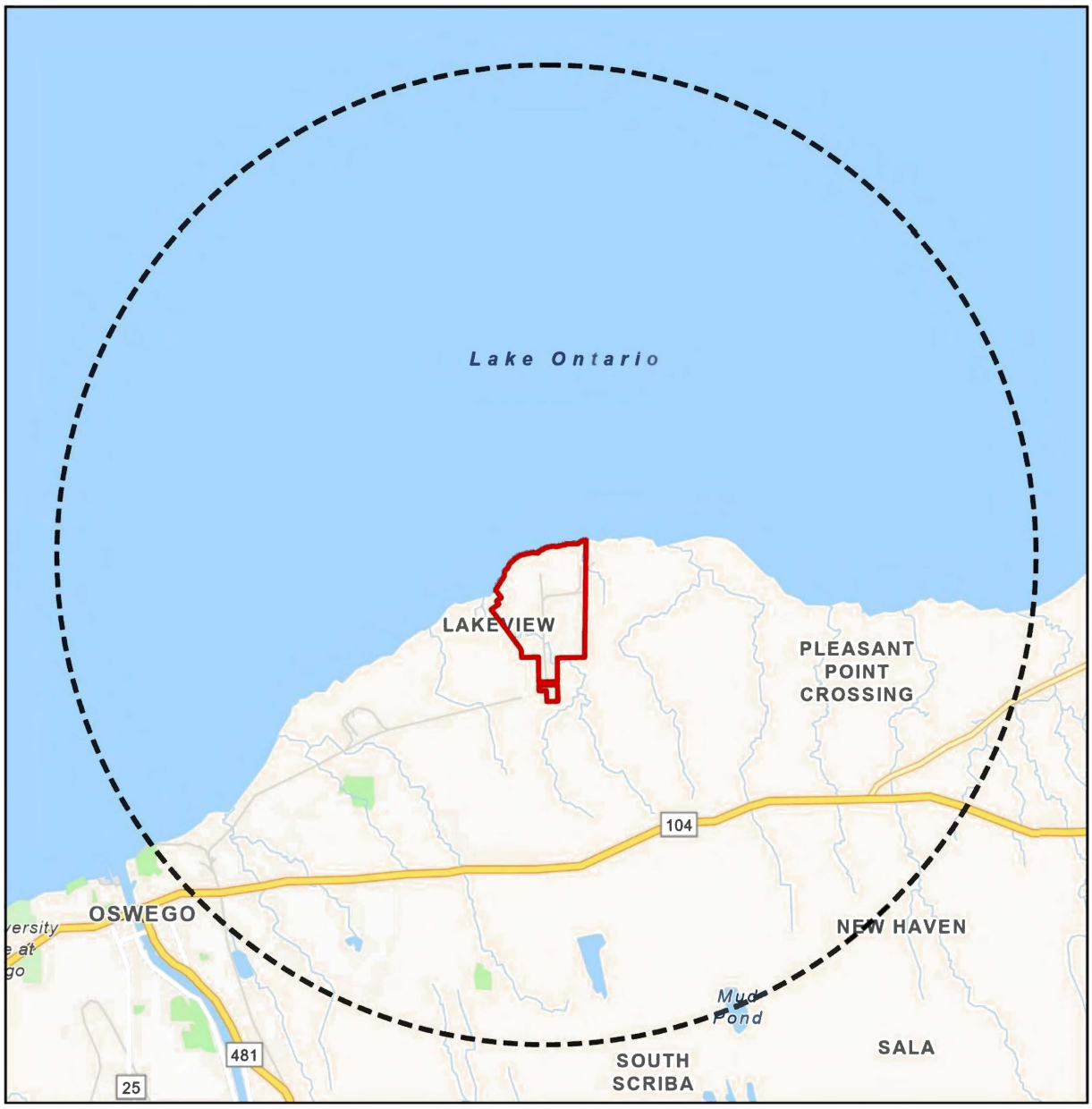


Figure 2 – NMP1 6-Mile Vicinity

Attachment D: Other Consultation Letters

Constellation

200 Energy Way
Kennett Square, PA 19348
www.constellation.com

RS-25-059

April 1, 2025

Christine Westerman, MPH
Division Director
New York State Department of Health – Center for Environmental Health
Division of Environmental Health Protection
Empire State Plaza
Corning Tower Room 1619
Albany, New York 12237

Subject: Constellation Energy Generation - Nine Mile Point Nuclear Station Unit 1 Subsequent License Renewal Request for Thermophilic Organism Review

Dear Director Christine Westerman:

Constellation Energy Generation, LLC (CEG), is preparing an application to the U.S. Nuclear Regulatory Commission (NRC) for the subsequent license renewal of the Nine Mile Point Nuclear Station (NMPNS) Unit 1 (NMP1) Operating License (DPR-63), which expires August 2029. A renewed license would allow NMP1 to operate for an additional 20 years until August 2049.

As part of the license renewal process, the NRC requires that the subsequent license renewal application include an environmental report (ER) that assesses the impacts from operation and any refurbishment to be undertaken to enable the continued operation of the unit. The ER addresses the potential impact on air quality, water resources, terrestrial and aquatic ecology resources, socioeconomics, and human health. As such, the NRC may request an informal or formal consultation with your agency.

This letter seeks input from the New York State (NYS) Department of Health – Center for Environmental Health, Division of Environmental Health Protection, concerning the potential existence and perceived public health risks associated with organisms that may be present in the portion of Lake Ontario that receives cooling water discharge from NMPNS Unit 1.

In the town of Scriba, Oswego County, New York, NMP1 is located along the shores of Lake Ontario. There is no public access to the NMPNS discharge structure, which reduces the potential for public contact with etiological agents. A security zone has been established on Lake Ontario for the purpose of restricting vessel traffic from approaching the shoreline adjacent to NMPNS. The security zone has been established by the U.S. Coast Guard and is demarcated using buoys. Figures depicting the NMPNS site and the vicinity (6-mile radius) of NMP1, including the public access areas to Lake Ontario, are enclosed (Figures 1 and 2, respectively).

The NRC requires that the applicant consult with the state environmental health agency regarding the potential public health risk posed by the plant's thermal discharge. Etiological agents including but not limited to, enteric pathogens, thermophilic fungi and bacteria, free-living amoebae, and blue-green algae, have the potential to increase in number by thermal discharge

in favorable conditions. The public can be exposed to them during swimming, boating, or other recreational uses of freshwater. The Center for Disease Control (CDC) National Outbreak Reporting System (NORS) reports there have been no cases of waterborne illness in untreated recreational water in New York between 2018 and 2022, which illustrates the very minimal risk presented.

During operation NMPNS has a thermal discharge to Lake Ontario under a State Pollutant Discharge Elimination System (SPDES) Permit No. NY0001015 issued by the NYS Department of Environmental Conservation – Division of Environmental Permits. A renewal application was submitted in May 2024 with final permit pending. The existing permit remains valid until issuance of the new permit.

The SPDES permit sets limitations and monitoring requirements for the effluent at NMPNS, including thermal loading restriction, which aim to avoid any potential impacts to local flora and fauna as well as human health impacts. The discharge temperatures to Lake Ontario would generally be below those that are most conducive to the growth of thermophilic microorganisms.

During the subsequent license renewal term, CEG proposes to maintain current operations of NMP1, as a 20-year extension does not substantially elevate the existing public health risks associated with harmful pathogens. The public health risk posed by the etiological agents attributable to NMPNS's thermal discharge would remain small (not detectable to minor) based on (1) the discharge structure and surrounding area is not accessible to the public via land or water and the discharge temperatures to Lake Ontario would generally be below those that are most conducive to the growth of thermophilic microorganisms, (2) the low and very low incidence of human infections from etiological agents as related to recreational use of untreated waters, and (3) the operation during the current license term is not known by CEG to have attributed to any cases of waterborne disease.

As previously stated, this letter seeks your input on the proposed continued operation of NMP1, specifically regarding public health risks associated with etiological agents and their existence at or near NMPNS and the adjacent portion of Lake Ontario. Please provide any additional information for CEG's consideration in the preparation of the ER and any records or comments to confirm CEG's conclusion that continuation of NMPNS's thermal discharge during a 20-year extension of its license would not significantly increase the public health risk posed.

CEG plans to include a copy of this letter and your response in the final ER, which will be submitted to the NRC as part of the NMP1 subsequent license renewal application. Therefore, a response by May 30, 2025 is requested.

If there are any questions or requests for any additional information necessary to support the consultation process, please contact Ms. Kristin Meek, NMP1 License Renewal Environmental Lead, at 779-231-5709 or Kristin.meek@constellation.com.

Respectfully,

Wilson, Christopher D

Digitally signed by Wilson, Christopher D
Date: 2025.04.01 09:29:38 -04'00'

Christopher D. Wilson, Director
Constellation Energy Group, LLC

Enclosures:
Figure 1 - NMPNS Site
Figure 2 - NMP1 6-Mile Vicinity Including Public Access Areas

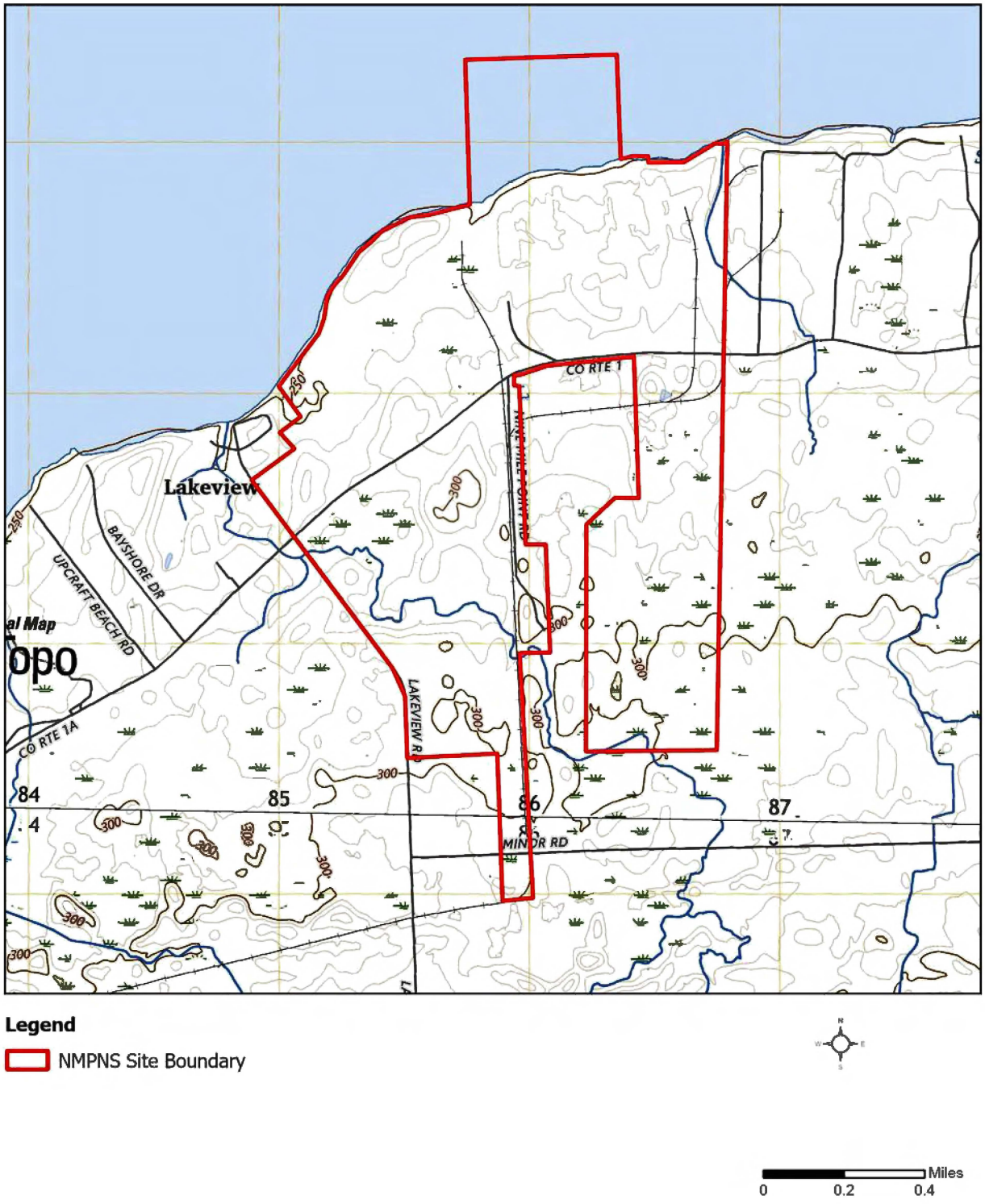


Figure 1 - NMPNS Site



Figure 2 – NMP1 6-Mile Vicinity Including Public Access Areas