STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
PUBLIC UTILITIES COMMISSION

THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID, Plaintiff,	:	
v.	:	
THE TOWN OF HOPKINTON; THOMAS E. BUCK; SYLVIA THOMPSON; BARBARA CAPALBO; BEVERLY KENNEY; and WILLIAM FELKNER, in their official capacities as members of the Hopkinton Town Council, Defendants.	:	
and		Docket No. 4076
THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID, Plaintiff,	:	
v.	:	
THE TOWN OF HOPKINTON and BRAD R. WARD, in his official capacity as the Building and Zoning Official of the Town of Hopkinton, Defendants.	:	

PREFILED TESTIMONY OF SUSAN MOBERG, PWS
ON BEHALF OF THE NARRAGANSETT ELECTRIC COMPANY
D/B/A NATIONAL GRID

September 24, 2009

Q. Please state your name and business address.

A. Susan Moberg, Vanasse Hangen Brustlin, Inc. (VHB), 10 Dorrance Street, Suite 400, Providence, Rhode Island.

Q. By whom are you employed and in what position?

A. I am employed by VHB as a Senior Project Manager and Manager of the Environmental Sciences Department in the Providence office.

Q. What are your responsibilities as Senior Project Manager and Manager of Environmental Sciences?

A. I am responsible for the management of various environmental investigation and permitting projects within the VHB Providence market area.

Q. Please describe your education, training and experience.

A. I received a Bachelor of Science Degree in Soil and Water Resource Science from the University of Rhode Island. I am a certified Professional Wetland Scientist with the Society of Wetland Scientists, a Professional Soil Scientist with the Society of Soil Scientists of Southern New England, a Rhode Island Department of Environmental Management Licensed Soil Evaluator and a Coastal Resources Management Council-certified Invasives Manager. I have sixteen years of experience performing environmental evaluation, investigation and permitting for various public and private sector projects. A copy of my vitae is attached as Attachment SM-1.

Q. Have you previously testified before the Public Utilities Commission or the EFSB?

A. Yes. I testified as an environmental witness before the PUC in Dkt. 4036 (Cottrell condemnation) and before the EFSB on a number of transmission siting cases, including

the Southern Rhode Island Transmission Project and the Rhode Island Reliability Project.

Q. Are you familiar with National Grid's proposal for a substation in Hopkinton, Rhode Island (the "Project")?

A. Yes. VHB has been engaged to perform environmental assessments of the proposed site and an alternate site. I have also worked with Project personnel on the layout of the proposed substation on the site.

Q. Are you familiar with the environmental conditions of the site of the Project?

A. Yes, I have studied the property located at Main Street/Route 3, identified as Assessor's Plat 22, Lot 19 (the "Project Site.") I have visited the site on a number of occasions. I also am very familiar with the area based on many years of professional work in southern Rhode Island. I supervised the field data collection and wetland delineation performed by VHB for the Project.

Q. Please summarize the environmental conditions of this area.

A. The environmental conditions of the Project Site are summarized as follows:

The site is situated on a glacial outwash plain. Surface topography is variable and can be described as gently rolling. Surficial geologic deposits are generally gravelly to sandy. Site soils are mapped as Merrimac sandy loam which are very deep, somewhat excessively drained soils formed in glacial outwash. One area of wetland was delineated on the site. The wetland is characterized by a mature red maple tree cover with an intermittent understory containing winterberry, swamp azalea, and highbush blueberry. Two isolated water bodies are present within the wetland which may provide habitat for

vernal pool dependent wildlife species. The site is situated within an area mapped as a groundwater recharge zone.

Q. Have you examined the potential impacts of the Project?

A. Yes, I have examined the environmental impacts associated with the construction and operation of the Project. Since the inception of the Project, VHB has worked with National Grid engineers to map the site and identify sensitive receptors at and in the vicinity of the site. VHB assisted National Grid with developing a project layout that avoids direct impact to sensitive environmental resources. Indirect impacts will be mitigated by design elements such as a rain garden for treatment of runoff from the site driveway, and plantings of native shrub species between the substation and the wetland to enhance the vegetated buffer around the wetlands. By employing these avoidance and mitigation techniques, environmental impacts resulting from the project are negligible.

Q. In addition to zoning which is before the PUC, are there local ordinances or permitting requirements that are applicable to the Project?

A. Not to my knowledge. VHB has contacted the Town of Hopkinton to verify whether the Town of Hopkinton has a Soil Erosion and Sediment Control Ordinance. We were informed that they do not. We have not identified any other Town ordinances that require application for environmental permits.

Q. What state environmental permits will National Grid be required to obtain for the Project?

A. The Project will require authorization under the Rhode Island Pollutant Discharge Elimination System (RIPDES) program which is administered by the Rhode Island

Department of Environmental Management (RIDEM). National Grid will prepare a Notice of Intent submission to the RIDEM which will include site plans, calculations regarding existing and proposed runoff patterns and rates, descriptions of proposed water quality improvement features and proposed erosion control measures, and a stormwater pollution prevention plan (SWPPP).

Q. Have you analyzed the potential environmental impact of other sites for the Project?

A. Yes, National Grid requested that I perform an assessment of an alternative site known as the Diesel Site, along with a right-of-way that National Grid has between the Diesel Site and the 115 kV transmission right-of-way.

Q. What are the results of your analysis of the environmental impacts of this alternative?

A. The results of my analysis are described in detail in the attached memorandum entitled "Environmental Evaluation of Potential Alternate Substation Site, Hopkinton, RI" dated June 15, 2009 (Att. SM-2.) In summary, I found that the Diesel Site is located adjacent to the Pawcatuck River and is encumbered by areas of extensive wetlands and floodplain. While adequate upland area for constructing a substation appears to be present, constructing the substation would require placing fill in the floodplain in order to raise the substation above the elevation of the floodplain. Connecting the substation site to the transmission and distribution network would require significant wetland impact on the site. Furthermore, the right-of-way north of the property that connects to the 115 kV right-of-way is not maintained and is overgrown with mature trees. It would require clearing in order to accommodate the transmission tap and distribution feeders. This

would impact wetland areas within the right-of-way and would also impact abutting property owners.

Q. How do the environmental impacts of constructing the Project on the proposed site compare with the environmental impacts on the alternative site?

A. As I mentioned, development of the Diesel Site would require placing fill in floodplain to construct the substation, permanent fill in wetland for transmission tap and distribution feeder structures, extensive temporary impacts for construction access, and more than 20 acres of tree clearing along the 8,260 feet of right-of-way from the substation site to the 115 kV right-of-way.

Development of the preferred site will not impact any wetlands. Because the preferred site is immediately adjacent to the 115 kV right-of-way, very minimal tree clearing will be needed for the transmission tap and distribution feeders. The portion of the site proposed for the substation itself is large enough that a buffer of trees can be retained between the substation and adjacent properties.

Q. How will National Grid mitigate any potential negative impacts of the Project on the Project Site?

A. As Mr. Rook described in his testimony, and as I mentioned above, impacts to sensitive wetlands are avoided with the proposed design. National Grid will enhance the vegetated buffer between the wetland and the substation by planting native shrubs in the area between the substation and the wetland. National Grid will also employ “Low Impact Development” techniques to manage and improve the quality of runoff from the access driveway. Runoff will be collected in a swale along the access driveway and discharged

to a rain garden. A rain garden is a shallow basin that is designed to improve water quality. It is excavated to a depth of several feet and backfilled with a specific soil media. It is topped with 6" of loam and planted with native grasses and shrubs. The rain garden will filter the runoff and promote infiltration of the runoff.

Q. Finally, Ms. Moberg, based upon your knowledge of the Project Site and the Project as proposed by National Grid, do you have an opinion as to whether the Project will cause significant environmental impacts?

A. Yes, I do. In my opinion, the Project will not cause significant environmental impacts. The project design was developed with attention to avoiding impacts to environmental resources. Wetlands and floodplain are completely avoided. Native plantings will enhance the buffer between the wetland and the substation. The tree clearing and grading proposed is the minimum needed to construct the substation, the transmission taps and the driveway. The proposed stormwater management design emphasizes low impact development techniques and promotes infiltration. Preservation of existing trees and construction of a landscaped berm on the east side of the substation will mitigate noise and visual impacts to abutters.

Q. Does this conclude your testimony?

A. Yes, it does.

ATTACHMENT

SM-1 Curriculum Vitae

SM-2 VHB Memorandum: "Environmental Evaluation of Potential Alternate Sites, Hopkinton, RI" (June 15, 2009)

Ms. Moberg leads Vanasse Hangen Brustlin, Inc.'s Rhode Island Environmental Services Group and serves as VHB's Program Manager for National Grid projects. She has expertise in environmental permitting and licensing, stormwater management and erosion control, site assessment, wetland delineation, and soil analysis

Susan Moberg has 16 years of professional experience with VHB, and leads VHB's Providence, Rhode Island Environmental Services Group. Ms. Moberg's experience with VHB includes wetland delineation, the preparation of associated State and Federal permit applications for projects in Rhode Island, Connecticut, and Massachusetts, as well as numerous environmental site assessments and remedial actions in Rhode Island, and Massachusetts. In her role as a wetland specialist, she has expertise in delineation, mapping, and functional analysis of wetlands. Ms. Moberg has expertise in preparing erosion and sedimentation control plans, identifying appropriate stormwater best management practices, and monitoring construction activities to ensure compliance with environmental regulations and permit conditions. Ms. Moberg's project experience includes:

Rhode Island Reliability Project

Ms. Moberg manages VHB's licensing, permitting and engineering contract with National Grid on the Rhode Island Reliability Project, which is a 24 mile portion of the New England East-West Solution transmission improvement project. The project spans five Rhode Island municipalities and involves reconstruction of existing facilities within the right of way, which include an existing 345 kV line and two 115 kV transmission lines, and construction of a new 345 kV transmission line. Improvements to West Farnum Substation and Kent County Substation are also planned. Susan has overseen the preparation of the Energy Facility Siting Board (EFSB) Environmental Report, state and federal wetland permit applications, various plans and graphics to support local planning and zoning applications, state and local traffic permit applications and maintenance and protection of traffic plans, and local stormwater/erosion control applications. Applications were filed in the Fall of 2008. Construction is anticipated to begin in 2010.

Southern Rhode Island Transmission Project

Susan managed VHB permitting team for the Southern Rhode Island (SRI) Transmission Project. The SRI Project involved the rehabilitation of existing 115kv transmission line over approximately 12 miles of right of way, construction of approximately 12 miles of new transmission line, expansion of an existing substation, and construction of a new substation. For this project, VHB prepared the EFSB Environmental Report, state and federal wetland permit application, developed stormwater best management plans, prepared state and local traffic permit applications and maintenance and protection of traffic plans, and provided construction monitoring and coordination with state and local regulators. Ms. Moberg provided expert witness testimony during the EFSB hearings. Project challenges included relocation of several Osprey nest sites and coordination with the Narragansett Indian Tribe. The project is anticipated to be complete in 2008.

Narragansett Electric

Ms. Moberg manages VHB's on-call services contract with the Narragansett Electric Company in Providence, Rhode Island. Services rendered under this contract include wetland delineations at substation and transmission line sites; freshwater wetland permitting for Spill Prevention Control and Countermeasures projects at several substations in Rhode Island; coastal permitting at substation sites; preparation of evaluations and Best Management Practice Plans for maintenance work conducted under the utility exemption of the Rhode Island Freshwater Wetlands Regulations; and providing construction/compliance monitoring at both permitted and exempt construction activity sites.

PUC Dkt. No. 4076
Attachment SM-1

E-183 Transmission Line Relocation Project

Susan has assisted Narragansett Electric in the preparation of permit applications for the relocation of 6,200 linear feet of 115 kV transmission line through Providence and East Providence, Rhode Island. Permitting efforts included Coastal Resources Management Council, Army Corps of Engineers, and Rhode Island Energy Facility Siting Board applications. This highly controversial project included the design of a wetland restoration plan for the bank of a tidally influenced river, and expert testimony at a series of EFSB hearings spanning a 12-month timeframe. Additional services provided included topographic survey and photosimulation. The project was completed in 2006.

Point Street Substation Expansion Project

Ms. Moberg assisted Narragansett Electric with the environmental permitting of the Point Street Substation Expansion project in Providence, Rhode Island. Required permits included a Coastal Resources Management Council Category A Assent and a Rhode Island Department of Environmental Management Order of Approval to Discharge Treated Dewatering Effluent to waters of the State. Permits were received in March 2004, and construction is underway. VHB also provided construction monitoring and compliance sampling.

3305 Distribution Line Re-Energization and Rehabilitation Project

Susan has acted as VHB Project Manager for the 3305 Distribution Line Re-energization and Rehabilitation project. The project consists of an approximately one mile segment of existing distribution line along existing right-of-way extending through the Great Swamp from West Kingston Substation to Kenyon Substation. VHB worked with Narragansett's engineers to ensure that the proposed design would be compatible with the Rhode Island Department of Environmental Management Freshwater Wetlands Regulations exemption for utility and maintenance projects. VHB coordinated with the Rhode Island Natural Heritage Program regarding the presence of rare, threatened and endangered species present along the ROW, which included one state-listed species of dragonfly known as the Ringed Bog Hunter. For the protection of the Ringed Bog Hunter, certain work activities had to be scheduled around anticipated emergence, perching and basking periods. Additional coordination with the RIDEM Fish and Wildlife Program and the US Fish and Wildlife Service Migratory Bird Program was needed due to the presence of osprey nests on two of the structures proposed to be maintained. Additional activities included RIDEM wetlands permitting for an extension of the 3305 Line north along existing roadway, and coordination, survey and permitting of an Amtrak ROW crossing.

Jamestown Electrical Supply Study

Susan has acted as VHB project manager for the Jamestown Electrical Supply Study in Jamestown, Rhode Island. The project involves the installation of a new submarine electrical distribution cable to provide more dependable electricity to residents on Conanicut Island. This project included an initial due diligence assessment of three alternative routes for the cable alignment, and preparation of permit applications for the preferred alignment. VHB coordinated with National Grid personnel, as well as state and federal regulators, local officials and other technical experts. The cable was successfully installed in 2003. VHB has recently finalized easement plans for the land portion of the cable at Fort Adams in Newport, Rhode Island.

New England Electric System

Susan served as VHB Project Manager supervising the preparation of environmental assessments of approximately 21 miles of underground electric transmission cables located in Rhode Island and Massachusetts. The purpose of the investigations was to provide an understanding of environmental conditions in the vicinity of each cable system and to identify potentially sensitive receptors, prior to emergency repairs,

Continued, p. 3

scheduled maintenance, or planned improvements of the facilities. These assessments were needed by NEES as part of contingency plans for each cable system.

Regulatory Opinions, Various Rhode Island Sites

Susan is routinely consulted by National Grid personnel to review proposed projects for permitting requirements. These tasks involve meeting on-site with National Grid personnel to review proposed activities and evaluate environmental conditions at the site, then providing a letter report describing the state and federal permits needed to complete the project. If appropriate, these opinion letters include suggested project revisions which would qualify the project as Exempt under Rhode Island Department of Environmental Management Regulations, thereby decreasing permitting costs and associated project delays.

E-183/F-184 Maintenance and Rehabilitation Project

Ms. Moberg served as project manager for the environmental permitting effort to facilitate the maintenance and rehabilitation of approximately five miles of transmission line through coastal marsh in Warren, Rhode Island. Required permits included a Coastal Resources Management Council Category A Assent, an Army Corps of Engineers Category 2 Programmatic General Permit, and Rhode Island Natural Heritage Program authorization. VHB reviewed the project alignment for several state-listed rare species, selected sites for three osprey nesting platforms, and resolved a notice of violation issued after a site inspection was conducted by CRMC during construction. The project was completed during winter 2004.

H17/G185-N Transmission Reconductoring

Susan worked with National Grid USA Service Company engineers to prepare a Notice of Intent for submission to the Energy Facility Siting Board for two reconductoring projects in Rhode Island. The Notice of Intent evaluated potential environmental and socioeconomic impacts of the project. Sue provided expert testimony at EFSB hearings for the project, which was approved without conditions.

Education	B.S. University of Rhode Island, Soil and Water Resource Science, May 1993
Specialized Training	Erosion and Sediment Control Site Plan and Site Inspection Workshop, Soil and Water Conservation Society, 1994 OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) Training (29CFR1910.120)
Registrations/ Certifications	Professional Soil Scientist, Society of Soil Scientists of Southern New England Registered Associate Wetland Scientist, Rhode Island Association of Wetland Scientists Licensed Class IV Soil Evaluator, Rhode Island Department of Environmental Management Professional Wetland Scientist, Society of Wetland Scientists
Affiliations	Society of Soil Scientists of Southern New England Rhode Island Association of Wetland Scientists RIDEM Wetlands Taskforce Society of Wetland Scientists

Transportation
Land Development
Environmental
Services

VHB *Vanasse Hangen Brustlin, Inc.*

10 Dorrance Street, Suite 400
Providence, Rhode Island 02903
401 272-8100
FAX 401 273-9694
www.vhb.com

Memorandum

To: Hopkinton Town Council

Date: June 15, 2009

CC: Chris Jayavendra, NG
Michael Rook, EIG

Project No.: 72158.00

From: Susan Moberg, PWS

Re: Environmental Evaluation of Potential Alternate Substation Site, Hopkinton, RI

As requested by National Grid, VHB performed an environmental constraints analysis of the alternative substation site recommended by the Hopkinton Town Council. This evaluation involved a site reconnaissance of the property containing the former Hopkinton Generating Station owned by Narragansett Electric, and the north-south right-of-way (34kV ROW) containing the 34kV electric line which connected this property to National Grid's east-west 115kV ROW further north. The 115kV ROW extends from Warwick, Rhode Island, through South County and west to Connecticut. VHB also reviewed published information on floodplains, rare, threatened and endangered species, and groundwater resources. Together the results of environmental reviews were used to evaluate the relative impact associated with developing the alternative site in lieu of the proposed site.

Construction Requirements

National Grid transmission and distribution engineers have advised that in order to connect the substation site to the transmission line in the 115kV ROW, two ~ 8,260 foot long 115kV transmission tap lines, and eight distribution feeder lines would ultimately need to be constructed overhead from the substation site to the 115kV ROW. Based upon the construction needed for the tap lines and the feeders, the existing 125-foot wide 34kV ROW would need to be expanded to at least 180 feet wide and up to 200 feet wide by purchase or condemnation of property rights from abutting property owners along 4,110 linear feet of the 34kV ROW in order to meet National Electric Safety Code requirements.

Site Reconnaissance

A site reconnaissance was conducted on Friday, June 5, 2009. At the time of the reconnaissance, it was raining and overcast. The reconnaissance involved accessing the generating station property by car along the existing paved access driveway. Wetlands subject to state and federal regulation were present along significant portions of the access driveway (Narragansett Way), on both sides at the toe of slope (refer to attached figure). The existing, de-energized 34kV line was visible to the west of the driveway. Two wetland areas are crossed by the 34kV ROW. Significant areas of standing water are present, making access to many of the existing severely deteriorated utility poles very difficult. At the point where further vehicle access was restricted by a security gate, the remainder of the driveway and property were accessed by foot.

The site of the former generating station appears to be situated in a sandy, upland oxbow of the Pawcatuck River, and is bordered on three sides by the river and associated wetlands. While a large area of upland may be available to utilize as a building site for a substation, the substation would be mostly located within 200-foot Riverbank Wetland regulated by the Rhode Island Department of

Environmental Management (RIDEM). A review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Mapping (FIRM) revealed that the building site would be entirely within 100-Year frequency floodplain, which is also regulated by the RIDEM as a wetland (refer to attached Firmette). Floodway is not mapped at this location, however, it should be presumed that floodway is present for a waterway with this contributing drainage area. The limits of floodway would need to be determined by a HEC-RAS study. Construction of buildings and other structures within floodway is prohibited by FEMA.

Although evidence of random solid waste dumping by third parties was observed within the entire property, on both sides of the security gate, no overt evidence of a release or threat of release of oil or hazardous materials was noted in the vicinity of the former generating station. Areas of remnant pavement were present, as well as sections of chain link fence and deteriorated utility poles. Vegetation did not appear to be strained by anything more than droughty soil moisture conditions typical of this type of surficial geology. No odors of petroleum products were noted and no stained soil was observed. These types of observations may have been limited by the inclement weather conditions. It is apparent that vehicular access to the site is on-going, despite the security gate.

Proceeding north along the 34kV ROW, which is evidenced by the existing utility poles, the ROW crosses a wetland associated with a watercourse. This wetland was dominated by Atlantic white cedar trees, which is a rare wetland cover type in Rhode Island. The cedar trees have grown significantly due to lack of ROW maintenance, and are as tall as the electrical conductors in most places. This wetland extends off-site to the east and west, and would be regulated as a Swamp by the RIDEM and would receive a 50-foot Perimeter Wetland.

After traversing a section of upland, the 34kV ROW crosses another Swamp characterized by standing water and a shrub cover type where vegetation is present. Snags and other standing dead trees are present in this wetland, providing high value habitat for waterfowl and other avifauna. The ROW then continues north over areas of elevated bedrock outcrops and more level areas of upland before reaching Chase Hill Road.

North of Chase Hill Road, the 4,110 linear feet 34kV ROW as far as the 115kV ROW is entirely unmaintained. Mature trees including white pine and white oak are present along the entire 34kV ROW north as far as the intersection with the 115kV ROW. Two areas of freshwater wetland are crossed along this segment of the 34kV ROW. One wetland system is present in a valley just north of Chase Hill Road and contains a water course. This bottomland wetland is characterized by emergent plant species growing in mucky, sandy soils. This wetland would be regulated as a Swamp by the RIDEM and would receive a 50-foot Perimeter Wetland. The watercourse would be regulated as a Stream and would receive a 100-foot Riverbank Wetland. Construction access across this wetland would not be prudent. A second wetland is crossed further north along the 34kV ROW. This wetland is on the side-slope of a hill and is characterized by mature red maple trees. While soils are mucky and seasonally saturated, access across this wetland may be feasible if appropriate best management practices, such as swamp mats, are employed. This Swamp would be regulated by RIDEM and would receive a 50-foot Perimeter Wetland. The remainder of the ROW is upland.

As part of our effort, VHB reviewed on-line data sources regarding the presence of rare, threatened and endangered (RTE) species, and groundwater resources. The US Fish & Wildlife Critical Habitat Mapper (http://crithab.fws.gov/) did not map any federally-listed endangered species at the alternate site. The RIDEM Environmental Data Map (http://www.dem.ri.gov/maps/index.htm) identified a large polygon associated with the Chapman Pond-Aguntaug Swamp complex south of the Pawcatuck River that partially extends across the river onto the site. Further coordination with the RIDEM would be required to determine what the RTE species is and what affect the project may have on it. The RIDEM Map server also identified the alternate site as being within a Sole Source Aquifer and a groundwater recharge zone. Further, the RIDEM Rules and Regulations for Groundwater Quality (RIDEM 2005, http://www.dem.ri.gov/pubs/regs/regs/water/gwqual56.pdf)

identifies the alternate site as located within a GAA groundwater area. GAA groundwater areas are presumed to be suitable for drinking water consumption without prior treatment.

Thus the expansion of the 34kV ROW and construction of the required transmission line and distribution feeders would involve significant clearing along the entire 6,000 linear feet of ROW, including clearing a portion of the cedar swamp. Some permanent, and significant areas of temporary wetland impact would be needed to perform the clearing and construct the lines. In the future access for maintenance would be difficult and disruptive to the wetlands and wildlife.

Summary and Conclusions

The project would require a Formal Wetland permit from the RIDEM and a Category II PGP Authorization from the Army Corps of Engineers. This process would likely take 16 to 18 months, and would require an alternatives analysis that proved that other sites with less wetland impacts were not available. This would be a difficult case to prove considering that the preferred site could be developed with no direct impacts to wetlands or rare, threatened or endangered species. For these reasons, the alternative site appears to be impractical from an environmental and regulatory perspective, as well as being more costly and more time consuming to construct, and more difficult to maintain.

Proposed Hopkinton Substation
Alternative Site Location
Hopkinton, Rhode Island

nationalgrid

Legend
- 100-Year Flood Area
- Wetland Area
- Boundary of National Grid Property
- Edge of R.O.W.
- Property Line

Sources:
Orthophoto obtained from RIDOT, dated April 2004.
Floodplain Data obtained from RIGIS on June 9, 2009.
Town Lots Obtained from Hopkinton Town Website on June 9, 2009.

Existing Ashaway Substation

Preferred Hopkinton Substation Site

Alternative Site
Former Hopkinton Generating Station Site

Maxson Street
Oak Street
Main Street
Edgewood Avenue
Wetland
115kV R.O.W.
River Road
Old Hopkinton Cemetery Road
34kV R.O.W.
Zone A Floodplain
Main Street (Route 3)
Hill Road
Chase
Narragansett Way
100-Year Floodplain
Pawcatuck River
Bradford Road (Route 91)
Chapman Pond

Vanasse Hangen Brustlin, Inc.

N

0 350 700 Feet

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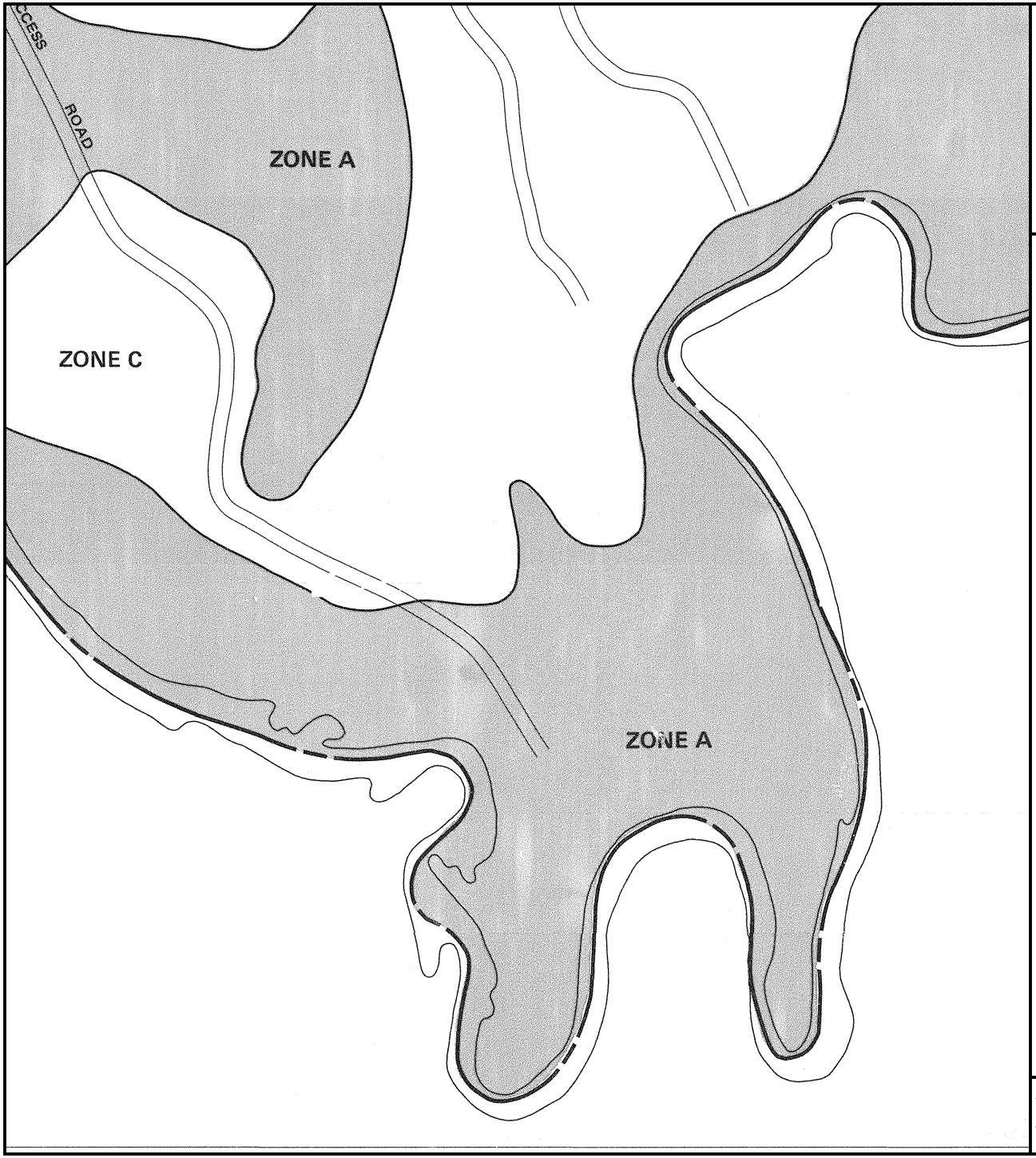


N

APPROXIMATE SCALE

500 0 500 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

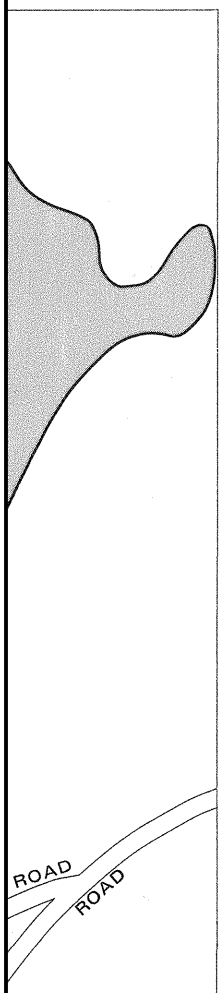
TOWN OF
HOPKINTON,
RHODE ISLAND
WASHINGTON COUNTY

PANEL 9 OF 10
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
440028 0009 B

EFFECTIVE DATE:
MARCH 16, 1981

federal emergency management agency
federal insurance administration



KEY TO MAP

500-Year Flood Boundary ——→ ZONE B

100-Year Flood Boundary ——→ ZONE A1 DATE / ZONE A5 DATE

Zone Designations* With Date of Identification e.g., 12/2/74

100-Year Flood Boundary ——→

500-Year Flood Boundary ——→ ZONE B

Base Flood Elevation Line With Elevation In Feet** ~~~513~~~

Base Flood Elevation in Feet Where Uniform Within Zone** (EL 987)

Elevation Reference Mark RM7×

River Mile • M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.

APPROXIMATE SCALE

500 0 500 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

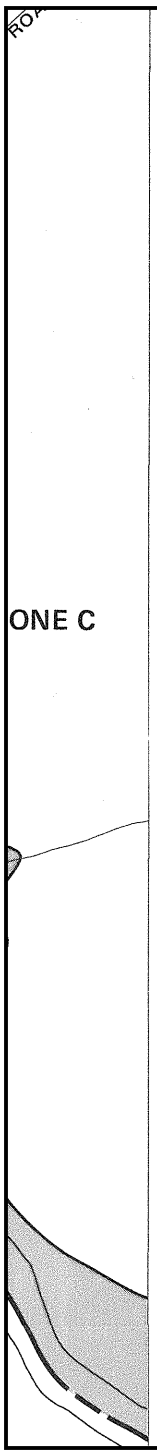
TOWN OF
HOPKINTON,
RHODE ISLAND
WASHINGTON COUNTY

PANEL 9 OF 10
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
440028 0009 B

EFFECTIVE DATE:
MARCH 16, 1981

federal emergency management agency
federal insurance administration



AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
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C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

INITIAL IDENTIFICATION:
MAY 31, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS:
APRIL 8, 1977

FLOOD INSURANCE RATE MAP EFFECTIVE:
MARCH 16, 1981

FLOOD INSURANCE RATE MAP REVISIONS:

APPROXIMATE SCALE
500 0 500 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF
HOPKINTON,
RHODE ISLAND
WASHINGTON COUNTY

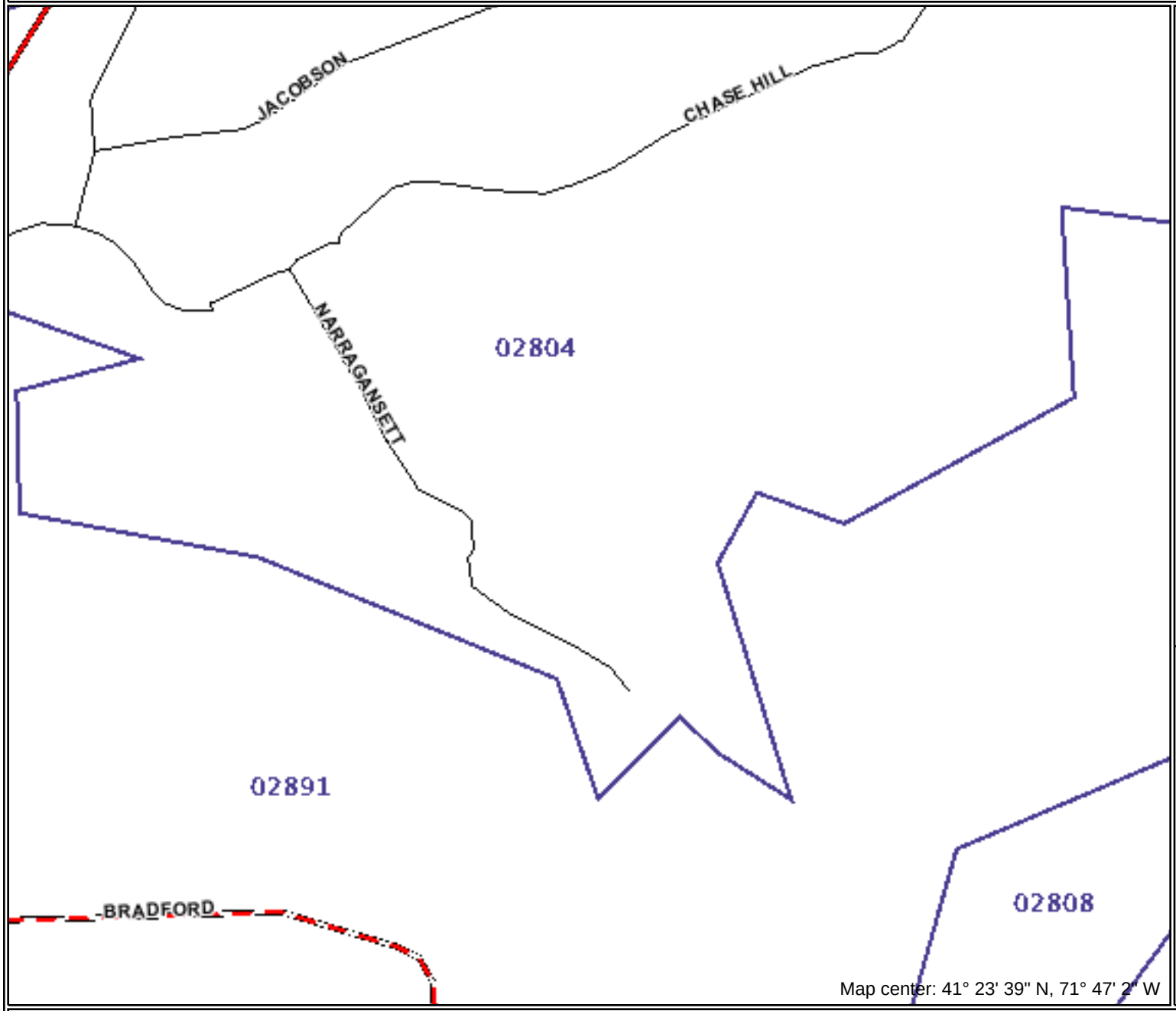
PANEL 9 OF 10
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
440028 0009 B

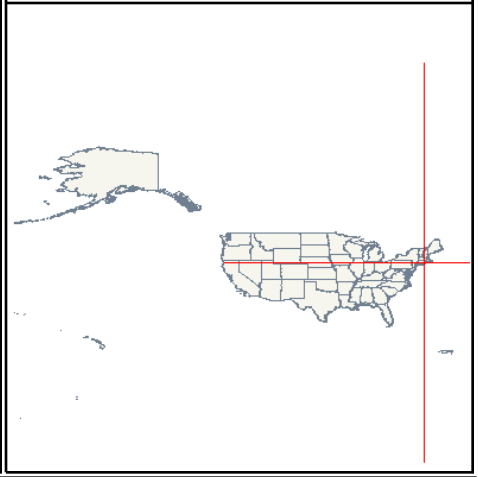
EFFECTIVE DATE:
MARCH 16, 1981

federal emergency management agency
federal insurance administration

Hopinton Alt Site - USFWS RTE

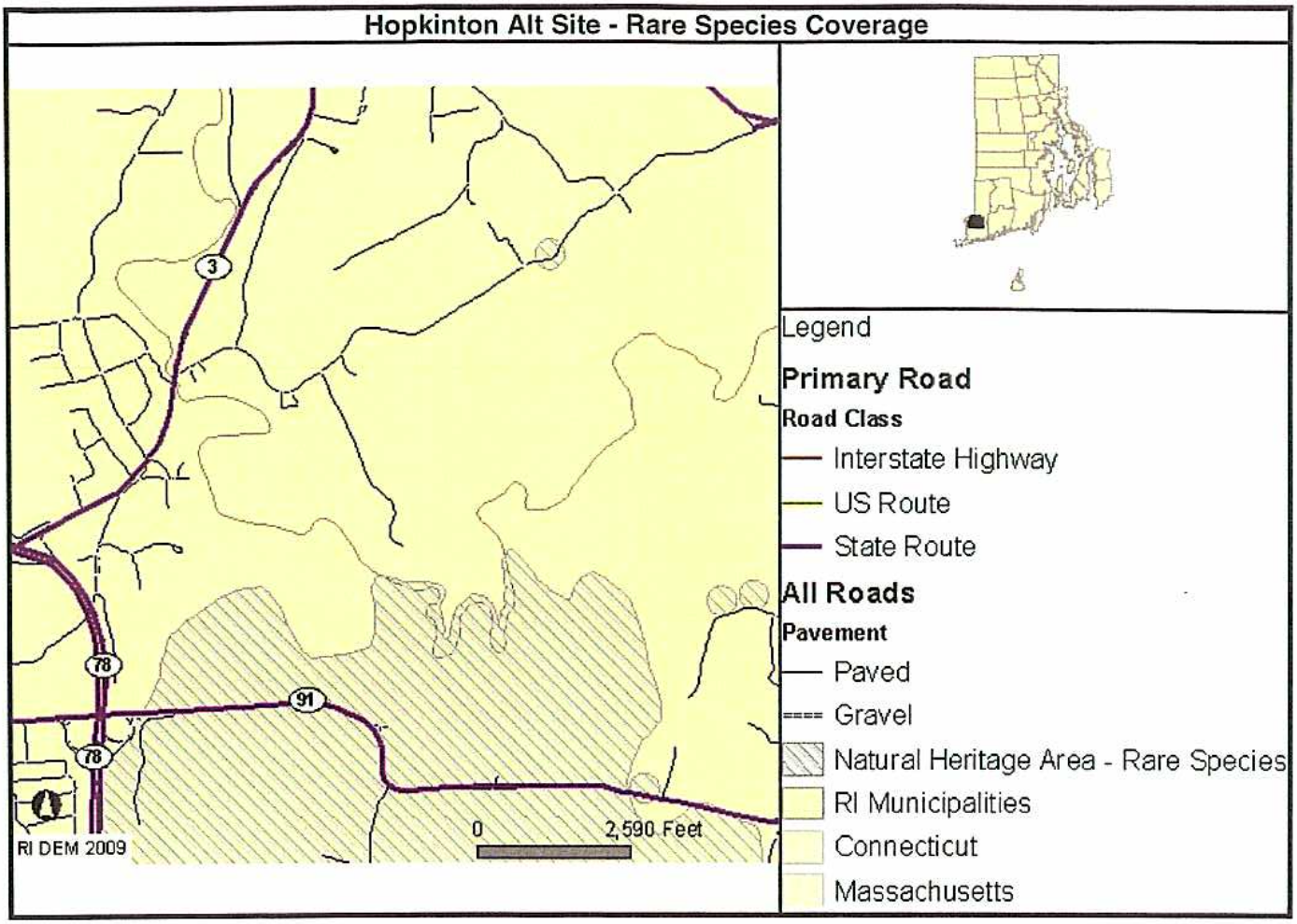


Critical Habitat
U.S. States
Zipcodes

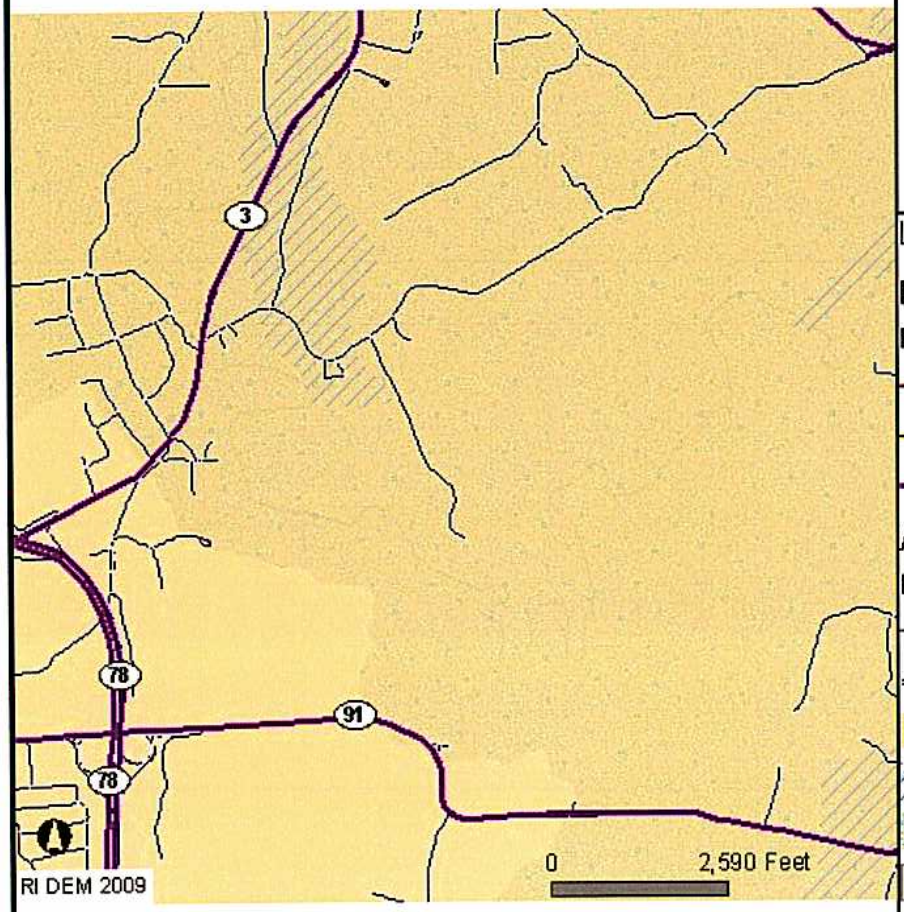


Disclaimer: This map DOES NOT represent all of the critical habitat designated by the U.S Fish & Wildlife Service. It shows only the available digitized critical habitats that have been submitted into this system as of print date.

Scale 1:15,349
U.S. Fish & Wildlife Service
Printed: Jun 15, 2009 1:50:36 PM


Hopkinton Alt Site - Rare Species Coverage
3
78
91
78
RI DEM 2009
0
2,590 Feet
Legend
Primary Road
Road Class
Interstate Highway
US Route
State Route
All Roads
Pavement
Paved
Gravel
Natural Heritage Area - Rare Species
RI Municipalities
Connecticut
Massachusetts

Hopkinton Alt Site - Groundwater Resources



Legend

Primary Road

Road Class

- Interstate Highway
- US Route
- State Route

All Roads

Pavement

- Paved
- Gravel
- Sole Source Aquifer
- Groundwater Reservoir
- Groundwater Recharge Zone
- RI Municipalities
- Connecticut
- Massachusetts